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April 6, 1976

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DEPARTMENT
OF COMMERCE

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PATENT AND TRADEMARK OFFICE NOTICES

Department of the Treasury U.S. Customs Service

(TMK–2–R : E : R)

Notice of Application for Recordation of Trade Name

DULONG FRERES & FILS

Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name DULONG FRERES & FILS used by Dulong Freres & Fils, a corporation organized under the laws of France, located at 29 Rue Jules-Guesde, Floriac pres Bordeaux, France.

The application states that the trade name is applied to wine, manufactured in France. The application states further that no foreign person, partnership, association or corporation is authorized to use the trade name sought to be recorded. Appropriate accompanying papers were submitted with the application.

Before final action is taken on the application, consideration will be given to any relevant data, views or arguments, submitted in writtng by any person in opposition to the recordation of this trade name. Any such submission should be addressed to the Commissioner of Customs, Washington, D.C. 20229, in time to be received not later than 30 days from the date of publication of this notice in the Federal Register.

Notice of the action taken on the application for recordation of the trade name will be published in the Federal Register.

LEONARD LEHMAN,
Assistant Commissioner, Regulations and Rulings.
Jan. 29, 1976.

Notice of Recordation of Trade Name

(T.D. 76–52)

EUROTIME

DEPARTMENT OF THE TREASURY
OFFICE OF THE COMMISSIONER OF CUSTOMS
Washington, D.C., February 19, 1976

On December 30, 1975, there was published in the Federal Register (40 F R. 59750) a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name EUROTIME used by Eurotime Corporation. The notice advised that prior to final action on the application, filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), consideration would be given to relevant data, views, or arguments submitted in opposition to the recordation and received not later than 30 days from the date of publication of the notice. No responses were received in opposition to the application.

The name "Eurotime" is hereby recorded as the trade name of Eurotime Corporation, a corporation organized under the laws of the State of New York, located at 212 Fifth Avenue, New York. New York 10010, when applied to watches and clocks and components for each, manufactured in Switzerland, West Germany, France and Hong Kong. No foreign person, partnership, association or corporation is authorized to use the trade name.

LEONARD LEHMAN,
Assistant Commissioner, Regulations and Rulings.

Notice of Recordation of Trade Name

(T.D. 76–40)

MARKETING PLANNING ASSOCIATES, INC.

DEPARTMENT OF THE TREASURY
OFFICE OF THE COMMISSIONER OF CUSTOMS
Washington, D.C., January 30, 1976

On October 17, 1975, there was published in the Federal Register (40 F.R. 48702) a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name Marketing Planning Associates, Inc., used by Marketing Planning Associates, Inc. The notice advised that prior to final action on the application, filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), consideration would be given to relevant data, views, or arguments submitted in opposition to the recordation and received not later than 30 days from the date of publication of the notice. No responses were received in opposition to the application.

The name "Marketing Planning Associates, Inc." is hereby recorded as the trade name of Marketing Planning Associates, Inc., a corporation organized under the laws of the State of California, located at 9701 Wilshire Boulevard, Seventh Floor, Beverly Hills, California 90210, when applied to articles of clothing, including male and female undergarments manufactured in Brazil and Denmark. No foreign person, parent or subsidiary company under common ownership or control, or other business entity is authorized to use the trade name.

LEONARD LEHMAN,
Assistant Commissioner, Regulations and Rulings.

Second Trial Voluntary Protest Program

A Second Trial Voluntary Protest Program will be conducted during the coming months. It will be increased in scale and somewhat modified in procedure from the first such program. Announcement of and description of the rules for the first program appeared in 923 O.G. 2 on June 4, 1974.

As before, the objective is to gain experience in carrying out such a program and to determine the extent of interest by the public in participating and in supplying pertinent references. To the extent there is participation, the program should be beneficial by bringing new art to the attention of the Office, preventing inadvertent issuance of invalid patents, and increasing confidence in the strength of those patents which survive the protest proceedings.

The first Trial Voluntary Protest Program showed a considerable interest by applicants and the public in taking part in protest proceedings. A summary of the results will be published soon in this Gazette. The second Trial Voluntary Protest Program is designed to gain additional information as to public participation and also to follow more closely the procedures which would be required in a continuing, permanent protest program.

Applications Involved

In the second Trial Voluntary Protest Program, a Request to Participate and Waiver of Confidentiality form (PTOL–224 Temp.) will be sent to each applicant to whom a Notice of Allowance is mailed during a selected three week period, probably in October, 1975. The total number of requests mailed will be about 4,500. Applications for plant patents will be excluded from the program. The reason for this exclusion is the high cost of printing colored drawings and the relatively limited prior art available. No other applications will be excluded from the trial program, regardless of subject matter, type of application or earlier proceedings.

Waiver of Confidentiality

Two copies of the form letter requesting voluntary waiver of confidentiality (form PTOL–224 Temp.) will be mailed in the same envelope along with the Notice of Allowance. An additional copy of the form letter will be made of record in each application at the time of mailing. The applicant will have three months from the notice of allowance date in which to either (1) elect to participate in the Trial Voluntary Protest Program by filing a signed waiver of confidentiality, or (2) elect not to participate in the program by paying the issue fee. If he does neither, the application will become abandoned, as provided in 37 C.F.R. 1.316. The waiver of confidentiality is a part of form PTOL–224 Temp. This procedure will avoid any increase in pendency time for those applications in which an election is made not to participate in the program. An early filing of a waiver of confidentiality by the applicant will result in early publication of the application.

Publication

If the applicant decides not to participate in the protest program and payment of the issue fee is timely made, the patent will issue routinely without delay.

If the applicant elects to participate in the protest program and a signed waiver of confidentiality is filed in the Office within 3 months of the notice of allowance date, the Notice of Allowance will be vacated. In such a case the issue fee should not be filed, as it will not be accepted and applied if filed with a signed waiver of confidentiality. An additional Notice of Allowance will be issued after the protest proceedings have been completed if only allowable claims remain in the application.

After a signed waiver has been filed, the application will be printed in the form of a patent and be available for sale as in the first Trial Voluntary Protest Program. At least one claim and a drawing figure, if any, will be printed in the OFFICIAL GAZETTE. These published applications will appear in about 6 to 9 issues of the OFFICIAL GAZETTE early in 1976. Advance notice will be given in the OFFICIAL GAZETTE of the dates on which applications will be published under this program.

Inspection of Files

The Patent and Trademark Office files of the published applications will be available for inspection by the public for a period of three months after publication. The application files will be retained in a single location in the Patent Issue Division during the protest period. This single location will be staffed with personnel to process papers directed to these files, supervise inspection of the files by the public, provide copies of file contents when ordered, and perform other related duties. A coin operated copying machine will also be available at this location.

Filing of Protests

Protests relating to the patentability of any published application must be filed in writing in the Patent and Trademark Office no later than three months after publication of the application. No extension of the three month protest period will be granted. Each protest must be filed in duplicate (one copy will be forwarded to the applicant and the other copy will be placed in the application file) and must indicate the grounds for protesting the allowance of any claim contained in the published application. If the protest involves prior art not of record in the application, two copies of the alleged prior art, together with an explanation of the relevance of such prior art to the allowed claims, should be included. The protester may also comment on the prior art record in the application and the manner in which it was applied.

In those applications where prima facie evidence of prior public use or sale the claimed invention is presented in accordance with 37 C.F.R. 1.292, public use proceedings will give the protester an opportunity to present evidence.

Should claims be copied from a published application for interference purposes, the applicant copying claims must also file a notice of such copying in the file of the published application to avoid the possibility of inadvertent issuance of the published application as a patent before conclusion of any interference proceedings.

For easy identification, all protests should be headed, "Protest Under Trial Voluntary Protest Program" and be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

The protester should fully identify himself and include his mailing address so that communications may be addressed to him. In view of administrative problems encountered in the first Trial Voluntary Protest Program in protecting the confidentiality of the identity of protesters, no attempt will be made by the Office to maintain the confidentiality of any protester under the new program.

If no protests are received during the protest period, the application file will be rerouted for the mailing of a new Notice of Allowance. The file will not be returned to the examining group except for consideration of matters which normally require return of an allowed file.

If one or more protests are filed in an application, the application file and the protest(s) will be returned to the examining group for consideration.

Consideration of Protest

The examining group will acknowledge receipt of all protests. The authority for deciding whether or not the evidence submitted constitutes a prima facie showing of unpatentability of any allowed claim will reside with the Group Director. If the Group Director decides that no such showing has been made, the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. Protesters will be notified in such cases that prosecution has not been reopened, and the applicant will be sent a duplicate copy of all protests. The decision of the Group Director will be final and will not be subject to petition by a protester.

If the Group Director decides that the submitted evidence constitutes a prima facie showing of unpatentability of any allowed claim, prosecution of the application will be reopened. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim considered unpatentable. The duplicate copy of each protest will be mailed to the applicant with the Office action. Protesters who submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

Response by the Applicant to Subsequent Office Actions

During this period, the applicant may present amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters who submitted evidence on which a rejection in the Office action is based to participate in later prosecution and to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response filed, including any appeal brief. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

Comment on Applicant's Response by the Protester

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent and Trademark Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

Any appeal by the applicant to the Board of Appeals in a protested application will be made special and will be taken up out of order.

Conclusion of Prosecution

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified and the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. A decision of the primary examiner to allow an application will not be subject to petition or appeal by any protester.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.
Sept. 16, 1975.

[938 O.G. 945]

PATENT NOTICES

Certificates of Correction for the Week of Apr. 6, 1976

Re. 28,577	3,903,164	3,919,502	3,927,788
Re. 28,630	3,904,372	3,919,512	3,928,430
D. 238,004	3,905,035	3,919,714	3,928,474
3,597,727	3,905,424	3,919,840	3,928,483
3,635,799	3,905,589	3,920,022	3,928,813
3,646,257	3,905,808	3,920,270	3,928,899
3,762,865	3,905,814	3,920,419	3,929,085
3,765,851	3,906,221	3,920,613	3,929,567
3,772,269	3,906,237	3,920,789	3,929,657
3,783,083	3,907,865	3,920,853	3,929,860
3,786,745	3,909,446	3,920,894	3,930,416
3,792,073	3,910,066	3,921,211	3,930,437
3,803,490	3,910,808	3,921,645	3,930,800
3,805,290	3,910,859	3,921,881	3,930,873
3,816,229	3,910,902	3,922,072	3,930,942
3,836,454	3,911,245	3,922,133	3,931,044
3,836,471	3,912,703	3,922,153	3,931,202
3,842,048	3,912,855	3,922,211	3,931,224
3,844,266	3,913,273	3,922,431	3,931,386
3,845,153	3,914,162	3,922,606	3,931,428
3,845,956	3,914,198	3,923,272	3,931,501
3,852,571	3,914,275	3,923,343	3,931,518
3,860,579	3,914,696	3,923,602	3,931,609
3,866,996	3,915,466	3,923,671	3,931,616
3,868,690	3,915,669	3,923,679	3,931,771
3,874,222	3,916,555	3,923,759	3,931,959
3,874,990	3,916,913	3,923,809	3,932,024
3,876,758	3,917,137	3,923,842	3,932,183
3,881,507	3,917,510	3,923,990	3,932,197
3,881,782	3,917,529	3,924,021	3,932,303
3,885,864	3,917,536	3,924,169	3,932,392
3,886,364	3,917,630	3,924,213	3,932,427
3,890,765	3,917,703	3,924,378	3,932,503
3,891,628	3,917,765	3,924,631	3,932,549
3,895,010	3,917,842	3,925,114	3,932,642
3,895,283	3,917,915	3,925,264	3,932,643
3,897,227	3,918,151	3,925,578	3,932,658
3,900,092	3,918,325	3,925,641	3,933,700
3,900,258	3,918,613	3,925,842	3,934,606
3,900,468	3,918,682	3,926,559	3,934,700
3,900,488	3,918,891	3,926,775	3,935,032
3,901,031	3,919,118	3,926,828	3,935,852
3,901,309	3,919,196	3,927,002	3,936,111
3,901,909	3,919,209	3,927,108	3,936,315
3,902,059	3,919,367	3,927,457	3,936,571

Dedication

2,885,270.—*John Clarence Karcher*, and *Forrest J. Allen, Jr.*, Dallas, Tex. SYSTEM FOR RECOVERING URANIUM FROM ITS ORES. Patent dated May 5, 1959. Dedication filed Sept. 19, 1975, by the assignee, *Concho Petroleum Company*.

Hereby dedicates to the Public the entire term of said patent.

Advance Orders for Patent Copies

Applicants and their attorneys or agents are reminded that advance orders for patent copies will be filled only when the order

1) is for ten (10) or more copies,
2) accompanies the Base Issue Fee remittance for the same patent, and
3) includes payment in the form of check, money order or an authorization to charge a deposit account.

Advance Orders for less than ten (10) copies will be returned.

Mar. 12, 1976.

RICHARD J. SHAKMAN,
Assistant Commissioner for Administration.

Disclaimer

3,611,525.—*Buton L. Cochran*, North Canton, Ohio. CUTOFF OR GROOVING TOOL AND HOLDER THEREFOR. Patent dated Oct. 12, 1971. Disclaimer filed Jan. 14, 1976, by the assignee, *The Warner & Swasey Company*.

The term of this patent subsequent to June 15, 1985, has been disclaimed.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of the patent applications, either paper copy (PC) or microfiche (MF), can be purchased at the prices cited from the National Technical Information Service (NTIS), Springfield, Va. 22161. Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

Patent application 608,955. High Power Reciprocal Co-Planar Waveguide Phase Shifter. Filed Aug. 29, 1975. PC $3.50/MF $2.25.

Patent application 612,530. Layered Dielectric Filter for Sidelobe Suppression. Filed Sept. 11, 1975. PC $3.50/MF $2.25.

Patent application 615,759. Low Power Solid State Three Phase Overcurrent/Undercurrent Protection Circuit. Filed Sept. 22, 1975. PC $3.50/MF $2.25.

Patent application 618,094. Projectile Guide Track. Filed Sept. 30, 1975. PC $3.50/MF $2.25.

Patent application 618,306. Discriminating Sensor for Contact Fuzing. Filed Sept. 29, 1975. PC $3.50/MF $2.25.

Patent application 618,307. Combinatorial Digital Filter. Filed Sept. 29, 1975. PC $3.50/MF $2.25.

Patent 3,909,145. Panel Grid Module Construction System. Filed Mar. 28, 1974. Patented Sept. 30, 1975. Not available NTIS.

Patent 3,910,189. Deployment of Conductors into the Atmosphere. Filed Mar. 25, 1974. Patented Oct. 7, 1975. Not available NTIS.

Patent 3,910,373. Acoustic Rotation Rate Sensor. Filed Nov. 7, 1973. Patented Oct. 7, 1975. Not available NTIS.

Patent 3,912,915. Doppler Data Processor with Digital Computing Pulse Rate Filter. Filed May 1, 1973. Patented Oct. 14, 1975. Not available NTIS.

Patent 3,912,934. Variable Free Stream Buffer. Filed Sept. 25, 1974. Patented Oct. 14, 1975. Not available NTIS.

Patent 3,912,986. High Voltage Capacitor. Filed Jan. 16, 1975. Patented Oct. 14, 1975. Not available NTIS.

Patent 3,913,015. Tuned Current Probe. Filed July 26, 1974. Patented Oct. 14, 1975. Not available NTIS.

Patent 3,913,018. Time Sharing Radiometer System. Filed June 4, 1973. Patented Oct. 14, 1975. Not available NTIS.

Patent 3,913,990. Polytetrafluoroethylene-Lined Bearing Improvement. Filed June 29, 1973. Patented Oct. 21, 1975. Not available NTIS.

Patent 3,913,997. Cabinet Closure System. Filed July 9, 1974. Patented Oct. 21, 1975. Not available NTIS.

Patent 3,914,184. Method for Converting Chrysotile Asbestos. Filed Oct. 17, 1973. Patented Oct. 21, 1975. Not available NTIS.

Patent 3,914,597. System for Adjusting Individual Sensors in an Array. Filed July 12, 1974. Patented Oct. 21, 1975. Not available NTIS.

Patent 3,914,637. Method and Apparatus for Focusing an Electron Beam. Filed Apr. 29, 1974. Patented Oct. 21, 1975. Not available NTIS.

Patent 3,914,843. Method of Connecting a Metal Conduit to a Plastic Conduit. Filed Dec. 20, 1974. Patented Oct. 28, 1975. Not available NTIS.

Patent 3,916,289. DC to DC Converter. Filed Jan. 16, 1975. Patented Oct. 28, 1975. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Mgmt. Branch,
General Services Division, Federal Bldg.,
Agricultural Research Service,
Hyattsville, Md. 20782

Patent application 534,925. Synthesis of Antitumor Alkaloids. Filed Dec. 20, 1974. PC $3.50/MF $2.25.

Patent application 574,677. A Method of Preparing Powdered Elastomer Compositions. Filed May 5, 1975. PC $3.50/MF $2.25.

Patent application 586,783. A Specimen Holder and Technique Employed to Effect a Continuous Maximum Concentration Gradient in Critical Point Drying. Filed June 13, 1975. PC $350/MF $2.25.

Patent application 595,958. Lubrication Compositions. Filed July 14, 1975. PC $3.50/MF $2.25.

Patent application 598,494. Carboxymethylated Cotton Fabric with Improved Conditioned and Wet Wrinkle Recovery by Rceation with Propylene or Ethylene Carbonate. Filed July 23, 1975. PC $3.50/MF $2.25.

Patent application 599,497. Isolation of Carboxy-Substituted Aliphatic Hydrocarbons. Filed July 28, 1975. PC $3.50/MF $2.25.

Patent application 604,362. Water-Soluble Polymers Via an Outwardly Dry Polymerization Process. Filed Aug. 13, 1975. PC $3.50/MF $2.25.

Patent application 604,363. A Method of Making Nongelling Aqueous Cationic Dialdehyde Starch Compositions. Filed Aug. 13, 1975. PC $3.50/MF $2.25.

Patent application 611,374. Oligomeric Polyesters from Long-Chain Dicarboxylic Acids as Plasticizers for Vinyl Polymers. Filed Sept. 8, 1975. PC $3.50/MF $2.25.

Patent application 619,412. New Composite Compositions from Graft Polymerized Rigid Fillers. Filed Oct. 3, 1975. PC $4/MF $2.25.

Patent application 630,373. Foamed and Solid Rubber-Starch Graft Copolymer Compositions and Methods of Preparation. Filed Nov. 10. 1975. PC $4/MF $2.25.

Patent application 642,836. Encapsulation by Entrapment. Filed Dec. 22, 1975. PC $4/MF $2.25.

Patent 3,766,219. Fluorinated Glycidyl Ethers and Use Thereof. Filed Jan. 16, 1970. Patented Oct. 16, 1973. Not available NTIS.

Patent 3,767,531. Preparation of Insolubilized Enzymes. Filed Feb. 14, 1972. Patented Oct. 23, 1973. Not available NTIS.

Patent 3,773,728. Copolymers of Fluoroalkyl Ethers and Maleic Anhydride. Filed July 14, 1972. Patented Nov. 20, 1973. Not available NTIS.

Patent 3,777,037. Cinnamyl Phenols Useful as Antimicrobial Agents. Filed Oct. 31, 1972. Patented Dec. 4, 1973. Not available NTIS.

Patent 3,823,128. Preparation of Edible Protein from Leafy Green Crops Such as Alfalfa. Filed May 16, 1972. Patented July 9, 1974. Not available NTIS.

U.S. ENERGY RESEARCH & DEVELOPMENT ADMINISTRATION
Assistant General Counsel for Patents,
Washington, D.C.

Patent application 528,766. Method of Converting Nuclear-Fuel Wastes to an Inert Solid. Filed Dec. 2, 1974. PC $3.50/MF $2.25.

Patent application 533,112. Rapid Synthesis of Carrier Free 11C-Dopamine Hydrochloride. Filed Dec. 16, 1974. PC $3.50/MF $2.25.

Patent application 533,741. Intrusion Detector Self-Test System. Filed Dec. 17, 1974. PC $3.50/MF $2.25.

Patent application 536,694. Method of Producing Hydrogen. Filed Dec. 26, 1974. PC $3.50/MF $2.25.

Patent 3,878,502. Ultrasonic Temperature Telemetry System. Filed June 26, 1973. Patented Apr. 15, 1975. Not available NTIS.

Patent 3,883,379. Method of Improving the Corrosion Resistance of Nickel-Copper Alloys. Filed Dec. 21, 1972. Patented May 13, 1975. Not available NTIS.

Patent 3,883,819. Apparatus for Uniform Pumping of Lasing Media. Filed May 23, 1974. Patented May 13, 1975. Not available NTIS.

Patent 3,884,718. Radioactive Battery. Filed Apr. 19, 1973. Patented May 20, 1975. Not available NTIS.

Patent 3,886,482. Traveling Wave Laser Systems. Filed Sept. 19, 1973. Patented May 27, 1975. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research,
Code 302, Arlington, Va. 22217

Patent application 446,257. A Unique Method of Raising Superconducting Temperature. Filed Feb. 27, 1974. PS $3.50/MF $2.25.

Patent application 497,549. Heat Transfer Device. Filed Aug. 14, 1974. PC $3.50/MF $2.25.

Patent application 511,328. The Solubilization of Chromate Salts in Organic Media. Filed Oct. 2, 1974. PC $3.50/MF $2.25.

Patent application 544,740. Epitaxial Film Transverse Junction PbSnTe Photodetector. Filed Jan. 28, 1975. PC $3.50/MF $2.25.

Patent application 549,396. Oil Level Detection Circuit. Filed Feb. 12, 1975. PC $3.50/MF $2.25.

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Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

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AF/JACP, Washington, D.C. 20314

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U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Mgmt. Branch,
General Services Division, Federal Bldg.,
Agricultural Research Service,
Hyattsville, Md. 20782

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Research Agreements and Patent Mgmt. Branch,
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U.S. DEPARTMENT OF TRANSPORTATION
Patent Counsel, 400 7th St. SW., Washington, D.C. 20590

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Assistant General Counsel for Patents,
Washington, D.C. 20545

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National Institutes of Health, Chief, Patent Branch,
Westwood Bldg., Bethesda, Md. 20014

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U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts. NW.,
Washington, D.C. 20240

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Assistant Chief for Patents, Office of Naval Research,
Code 302, Arlington, Va. 22217

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Research Agreements and Patent Mgmt. Branch,
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Hyattsville, Md. 20782

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U.S. ENVIRONMENTAL PROTECTION AGENCY
Room W513, 401 M St. SW., Washington, D.C. 20460

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U.S. ENERGY RESEARCH & DEVELOPMENT ADMINISTRATION
Assistant General Counsel for Patents,
Washington, D.C. 20545

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch,
Westwood Bldg., Bethesda, Md. 20014

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U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts. NW.,
Washington, D.C. 20240

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Code 302, Arlington, Va. 22217

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

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Patent 3,906,788. Self-Supporting Strain Transducer. Patented Sept. 23, 1975. Not available NTIS.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 13, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-30-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	2-12-75
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-13-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-5-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-9-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	2-10-75
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-24-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-9-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	9-15-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-5-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-8-75
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	4-1-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	7-9-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-11-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-10-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-11-75

Expiration of patents: The patents within the range of numbers indicated below expire during March 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (66 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,875,445 to 2,880,418 inclusive
Plant Patents..... Numbers 1,814 to 1,824 inclusive

PATENT APPLICATIONS

PUBLISHED APRIL 6, 1976
UNDER THE SECOND TRIAL VOLUNTARY PROTEST PROGRAM

NOTE- A copy of the notice setting forth the details of the Second Trial Voluntary Protest Program may be found in the Patent and Trademark Notices section of this issue.

Any protests relating to the patentability of these published applications must be filed in writing before July 13, 1976. These applications are available for inspection in the Allowed Files Branch, Crystal Plaza, Room 2-10C28. All correspondence should be addressed to:

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Washington, D.C. 20231

Printed copies of the published applications may be purchased from the Patent and Trademark Office at 50 cents each.

An "Index of Applicants and Assignees of Published Applications" and a concordance entitled "Classification of Published Patent Applications" are located in the back of this issue.

GENERAL AND MECHANICAL APPLICATIONS

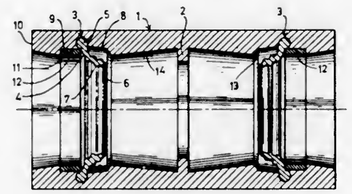
B 313,280
PLASTIC SOCKET MADE OF FIBRE REINFORCED THERMOSETTING RESIN MATERIAL
Gerrit Schuldink, Ommen, Netherlands, assignor to Industriele Onderneming Wavin N.V., Netherlands
Filed Dec. 8, 1972, Ser. No. 313,280
Claims priority, application Netherlands, Dec. 14, 1971, 7117092
Int. Cl.[2] F16L *17/02*
U.S. Cl. 285—110 **8 Claims**

References Cited
UNITED STATES PATENTS

1,909,478	5/1933	Wilson	285/379 X
2,245,153	6/1941	McWone	285/231
2,991,092	7/1961	McCKay	285/231 X
3,381,715	5/1968	Michael	285/423 X
3,649,053	3/1972	Synder	285/110
3,695,639	10/1972	Shire	285/231 X
3,791,678	2/1974	Putter	285/110
3,796,447	3/1974	Putter	285/379

FOREIGN PATENTS OR APPLICATIONS

406,757	8/1966	Switzerland	285/110
619,567	4/1961	Italy	285/110

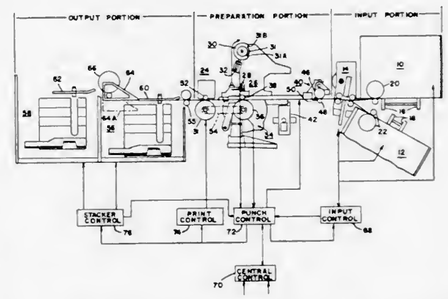


1. A socket of fibre reinforced thermosetting resin comprising: at least one inner push edge; annular grooves each situated in the vicinity of a respective free end of the socket for receiving sealing means; first recesses each opening into a respective one of said grooves and extending in the direction of said push edge, the inner diameter of said first recess being greater than the smallest inner diameter of said free end of the socket; two retaining rings; second recesses each opening into a respective one of said grooves and accommodating a corresponding one of said retaining rings, and each said second recess extending in the direction of said free end and having an inner diameter sufficiently large so as to accommodate the inner diameter of said corresponding retaining ring, the inner diameter of said corresponding retaining ring being at least equal to the smallest inner diameter of the socket adjacent the end of said second recess closest to said free end of the socket; the inner diameter of the socket starting from a position near the end of said first recess increases gradually in the direction of said push edge so as to form a further recess having a truncated conical shape; and a conical entrance provided within the socket between said second recess and said free end of the socket.

B 402,328
CARD ADVANCEMENT MECHANISM
Albert J. Romeo, Center Square, and Edward G. Sherbert, Plymouth Meeting, both of Pa., assignors to Decision Data Computer Corporation, Horsham, Pa.
Filed Oct. 1, 1973, Ser. No. 402,328
Int. Cl.[2] B44B *5/00*
U.S. Cl. 101—19 **8 Claims**

References Cited
UNITED STATES PATENTS

2,753,789	7/1956	Gardinor et al.	101/19
2,770,188	11/1956	Nolan	101/93 C
2,969,727	1/1961	Rudd et al.	101/19
2,972,296	2/1961	Haug	101/93 C
3,088,398	5/1963	Daly et al.	101/19
3,183,518	5/1965	Henry et al.	346/76
3,440,955	4/1969	Howard et al.	101/93 C



1. A punch card apparatus comprising an input portion, a card preparation portion, and an output portion, control means operatively connected to each of said portions, said control means connected to control the timing of punch cards being processed through said input, card preparation and output portions of said apparatus, means including said control means for normally allocating at least two clocking cycles to effect the processing of a punch card through said card preparation and output portins of said apparatus, said control means comprising means operative to sense the nature of the operation to be performed on the next punch card to be processed through said apparatus and additional means to sense the relative position of any punch card currently being pro-

cessed through said card preparation and output portions, and means including said control means responsive to signals generated to said sensing means to increase the throughput of punch cards in said card preparation portion of said apparatus such that a subsequently processed punch card will be processed through said card preparation and output portions of said apparatus in a lesser number of clocking cycles than is normally allocated to the processing thereof.

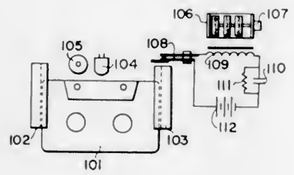
B 470,305
CASSETTE TYPE MAGNETIC RECORDING AND REPRODUCING APPARATUS

Tetsuji Yoshii, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 71,592, Sept. 11, 1970, Pat. No. 3,872,509. This application May 15, 1974, Ser. No. 470,305
Claims priority, application Japan, Sept. 19, 1969, 44-76031; Oct. 2, 1969, 44-78825; Mar. 31, 1970, 45-27573; Apr. 17, 1970, 45-37730[U]; Apr. 17, 1970, 45-37731[U]
Int. Cl.² G11B *27/14*
U.S. Cl. 360—137 **1 Claim**

References Cited
UNITED STATES PATENTS

2,477,146	7/1949	Scherbatskoy	360/137
3,133,711	5/1964	Jager	235/103
3,152,332	10/1964	Miyauchi	352/172



1. A cassette type magnetic recording and reproducing machine in which a tape is housed in a cassette, comprising:
   a. a cassette support;
   b. means for indicating the amount of feed of the tape in the cassette; and
   c. means, interposed between the cassette support and the indicating means, for automatically zero resetting the indicating means directly in response to movement of the cassette into the playing position of the tape, including, in electrical circuit, a power source, a switch which is closed on movement of the cassette into the playing position of the tape, an electromagnet which resets said indicating means, and a resistor and capacitor having a predetermined relatively short time constant, said electromagnet being operative for a relatively short time until said capacitor is charged.

B 472,591
WATER VESSEL PROPELLED BY MOTORIZED LAND VEHICLE

Howard A. Rhody, 9312 S. Torrey, Grand Blanc, Mich. 48439

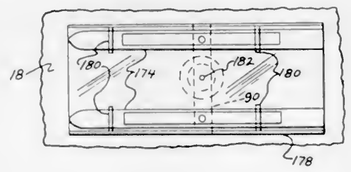
Division of Ser. No. 174,057, Aug. 23, 1971, Pat. No. 3,826,216. This application May 23, 1974, Ser. No. 472,591
Int. Cl.² B60F *3/00*
U.S. Cl. 114—.5 A **1 Claim**

References Cited
UNITED STATES PATENTS

2,342,535	2/1944	Frova	115/.5 A
2,662,236	12/1953	Kester	9/1 T
3,076,425	2/1963	Anderson	115/.5 A
3,332,388	7/1967	Moraski	115/.5 A

FOREIGN PATENTS OR APPLICATIONS

1,185,518	3/1970	United Kingdom	115/.5 A



1. A water vessel adapted to be propelled by a snowmobile, said water vessel comprising:
   a snowmobile having a frame supported by a pair of transversely spaced skis and a rotatably mounted endless drive belt, said drive belt being driven by power generating means of said snowmobile, said skis being operable for rotational movement about a vertical axis to steer said snowmobile;
   a pair of pontoons of a length exceeding the length of said snowmobile;
   a deck extending the full length of said pontoons, said deck having a forward end and a rear end;
   means connecting said deck to said pontoons to maintain said pontoons in a spaced, parallel relationship;
   a propeller rotatably carried by said vessel at the rear end of said deck;
   a rudder carried at the rear end of said deck of said vessel for steering the same;
   means for mounting said snowmobile on said deck, said mounting means comprising a pair of spaced, parallel rollers rotatably carried by said deck along axes transversely disposed to the fore-aft axis of said vessel; said pair of rollers supporting and being rotatable by a second endless drive belt, said first mentioned drive belt being supported by said second belt and adapted to rotate said second belt as said snowmobile is driven; and linkage means operatively connecting one of said rollers to said propeller to rotate same;
   said mounting means further comprising a plate mounted on the forward end of said deck for rotational movement about a vertical axis with respect to both said deck and said pontoons, said skis of said snowmobile being received on said plate and releasably held thereon; and means connecting said rotating plate to said rudder whereby said rudder is rotated in response to the rotational movement of the plate as said snowmobile skis are rotated;
   means connecting said snowmobile skis to said plate for preventing both lateral and forward movement of said snowmobile with respect to said deck;
   the endless drive belt of the snowmobile being of a greater length than the second endless drive belt rotating the pair of rollers causing the endless drive belt to overhang the rollers for an even distribution of weight;

the endless drive belt of the snowmobile and the second drive belt rotating the rollers being arranged tautly between their respective carrying wheels and rollers; and
   a shaft adapted for rotational movement about an axis transversely disposed with respect to the fore-aft axis of said water vessel, the outer end of said shaft being of an L-shaped configuration and extending beyond the outer contour of said pontoons, said support wheels being mounted on the end of the legs of said L-shaped shaft, said shaft being rotatable in such a manner as to position said support wheels in said lowered and raised positions, and means for selectively locking said support wheels in the raised and lowered positions.

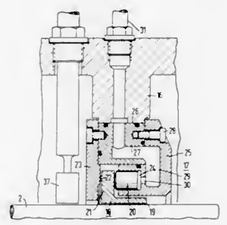
B 519,623
FLOATING RING SEAL MEANS

Dietrich Lambrecht; Erich Weghaupt, both of Mulheim (Ruhr); Lothar Grimm, and Helmut Munch, both of Frankenthal, all of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim-Ruhr, Germany

Filed Oct. 31, 1974, Ser. No. 519,623
Claims priority, application Germany, Nov. 2, 1973, 2354998
Int. Cl.² F16J *15/34*, *15/40*
U.S. Cl. 277—27 **8 Claims**

References Cited
UNITED STATES PATENTS

3,580,587	5/1971	Born	277/73
3,623,736	11/1971	Petrie	277/27
3,851,741	12/1974	Sugahara	277/73



1. In a rotating shaft machine having a housing and a pressurized chamber, floating ring seal means for rotating shafts for sealing off the pressurized chamber from a chamber at atmospheric pressure, and having a pump for cooling liquids; a floating ring seal in said housing, said ring having a radial flange which presses one side against the wall of said housing to provide a seal to prevent flow of liquid between said side of said radial flange and said housing wall, pistons located in the housing acting on the other side of said radial flange to avoid radial vibration of said floating ring with vibration of the rotating shaft and force it against the housing wall, said pistons being connected to and pressurized by a pressure source whose pressure increases proportionally to an increasing number of rotations of the rotating shaft.

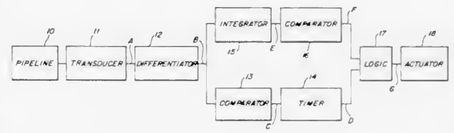
B 530,709
ELECTRONIC FLUID PIPELINE LEAK DETECTOR AND METHOD

Morris T. Covington, and Steven M. Griffin, both of Houston, Tex., assignors to Shafer Valve Company, Mansfield, Ohio

Filed Dec. 9, 1974, Ser. No. 530,709
Int. Cl.² G01M *3/08*
U.S. Cl. 73—40.5 R **10 Claims**

References Cited
UNITED STATES PATENTS

3,664,357	5/1972	Kreiss	73/40.5 R



1. A system for detecting irregularities in a fluid carrying pipeline or the like comprising; transducer means monitoring a characteristic of the fluid in the pipeline and providing an output signal proportional thereto; differentiator means receiving the output signal of said transducer means and providing an output signal proportional to the rate of change of said characteristic with respect to time; first comparator means receiving the output signal of said differentiator means, comparing that output signal with a preselected rate of change of said characteristic with respect to time and providing an output signal when the output signal of said differentiator means exceeds said preselected rate of change; timing means receiving the output signal of said first comparator and providing an output signal after a predetermined time delay; integrator means receiving the output signal of said differentiator means and providing an output signal proportional to the total change of said characteristic; second comparator means receiving the output of said interator means, comparing that output signal with a preselected total change of said characteristic and providing an output signal when the output of said integrator means exceeds said preselected total change; said output signal of said timing means and said output signal of said second comparator being indicative of an irregularity in the fluid pipeline of sufficient size to warrant correction.

B 532,679
TOWED DEVICE FOR MEASURING MAGNETIC FIELD AND THE VERTICAL GRADIENT THEREOF AT SEA

Georges Jean-Marie Pretet, St. Renan, France, assignor to Etat Francais, Paris Armees, France

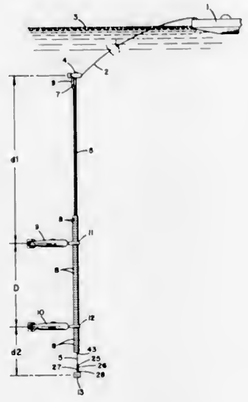
Filed Dec. 13, 1974, Ser. No. 532,679
Claims priority, application France, Dec. 13, 1973, 73.44465
Int. Cl.² B63B *21/56*
U.S. Cl. 114—235 B **6 Claims**

References Cited
UNITED STATES PATENTS

1,305,483	6/1919	Matsumura	114/235 B
2,401,929	6/1946	Hammond, Jr.	114/235 B
3,062,171	11/1962	Somervile	114/235 B
3,398,715	8/1968	Burg	114/235 B
3,455,159	7/1969	Gies, Sr.	73/170
3,461,830	8/1969	Pearce et al.	114/235 F

1. A towed device for measuring at sea variable magnitudes, comprising: a flexible carrying cable including a material having a low coefficient of elongation, a first and a second fish attached to said carrying cable, said first and second fish bearing measuring apparatus, said carrying cable being suspended from the end of a tow cable, a vertically downward pulling member connected to the bottom end of said carrying

cable, said pulling member including a diving wing having a weighted fuselage provided on both sides with ailerons at a negative angle of incidence, said first and said second fish

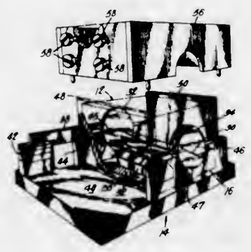


being fastened at a given distance apart in a central region of said carrying cable in such a manner that the measurements of the measuring apparatus are not affected on the one hand by the tow cable or on the other hand by the pulling member.

B 546,677
ADJUSTABLE TOOLING METHOD AND APPARATUS FOR INVESTMENT PATTERNS
John B. Witchell, Pierrefonds, Canada, assignor to United Aircraft of Canada Limited, Longueuil, Canada
Filed Feb. 3, 1975, Ser. No. 546,677
Int. Cl.² B22C *7/00*
U.S. Cl. 164—4 **12 Claims**

References Cited
UNITED STATES PATENTS

2,503,630	4/1950	Norton	164/45 X
2,752,653	7/1956	Emblem et al.	164/45
3,669,589	6/1972	Bordat	249/159 X
3,848,654	11/1974	Boyle et al.	164/45 X



1. An apparatus for making a mold for pre-investment pattern, including a base, a locating means having indexing means adapted to be removably fitted to mating indexing means on said base, support means for supporting a representation of a form over said base, means for adjusting said representation of a form relative to said base and said locating means and means for spatially fixing said representation relative to said means.

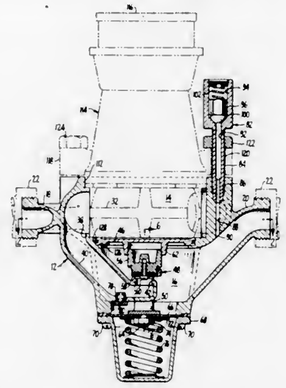
12. A method of providing stator vane castings for a stator ring in a gas turbine engine, comprising the steps of forming a pattern of the airfoil section of the vane, providing separate inner and outer shroud mold cavities, splitting said pattern, mounting one of said split pattern sections on a support means, providing a casting chamber with a base, placing a locating block in the bottom of said casting chamber on said base in a predetermined position relative to the said base, orienting the support member with the split pattern section thereon in said casting chamber in a position relative to said locating block, pouring casting material into said casting chamber, removing said so-formed cast having a split pattern airfoil section cavity and the locating block, matching the so-formed cast mold with a companion mold made from the other split pattern airfoil section, mounting said assembled cast pieces on a lathe by means of said locating block and machining the cast material in the areas of the ends of the mold cavity so as to provide a suitable profile for receiving the inner and outer shroud mold cavities, matching the profiled mold pieces defining the airfoil section cavity with the mold pieces defining the inner and outer shroud cavities, pouring investment materials such as wax or investment plastic, into the so-formed mold cavity, separating the mold, investing the so-formed vane pattern, testing the vane in an assembled vane ring, preparing a new investment pattern on the basis of the data from the test by using the same split pattern on the support means and orienting the split airfoil pattern section in the said casting chamber relative to the locating block in response to the data acquired from the test, repeating the steps of matching and forming the pre-investment pattern, preparing a new investment cast vane and repeating the steps of this method until a suitable throat area and stagger angle of the stator vane ring is obtained.

B 565,275
COMBINED WATER METER AND PRESSURE REGULATOR
Rudleigh G. Coffman, El Cerrito, Calif., assignor to Kaiser Aerospace and Electronics Corporation, Oakland, Calif.
Continuation-in-part of Ser. No. 468,410, May 9, 1974, abandoned. This application Apr. 4, 1975, Ser. No. 565,275
Int. Cl.² G01F *1/06*; **F16K** *31/12*
U.S. Cl. 73—199 **14 Claims**

References Cited
UNITED STATES PATENTS

868,599	10/1907	Coleman	137/505.44
2,274,697	3/1942	Hutchinson et al.	73/199
3,115,154	12/1963	Dillon	137/493.8
3,377,856	4/1968	Hasegawa	73/199

11. Combined water meter and pressure regulator apparatus comprising a fluid impervious housing having two interior cavities, inlet and outlet fittings opening through said housing for respectively admitting water thereinto and discharging water therefrom, a removable partition disposed in said housing between said cavities, a water meter measuring chamber received in one of said cavities, means within said housing for communicating water through said cavities in sequence from said inlet fitting to said outlet fitting, means within the other



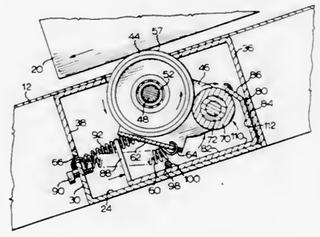
of said cavities for regulating the pressure of water flow therethrough.

B 580,379
BRAKING DEVICE
Frederick Arthur Bolton, Hamilton, and James Louis Eckebrecht, Burlington, both of Canada, assignors to Arcan Eastern Limited, Hamilton, Canada
Filed May 23, 1975, Ser. No. 580,379
Int. Cl.² B65G *13/00, 39/00*
U.S. Cl. 193—35 A **13 Claims**

References Cited
UNITED STATES PATENTS

2,390,785	12/1945	Eppler	193/35 A
3,314,514	4/1967	Hundhausen et al.	193/35 A
3,321,057	5/1967	De Good	193/35 A

1. A braking device for retarding moving objects comprising, in combination: a housing, a primary roll journalled within said housing having a peripheral surface projecting from said housing adapted to be frictionally engaged by said moving object for rotation of said roll thereby, a secondary roll, means journalling said secondary roll within said housing and means normally biasing said secondary roll journal means in a direction opposite to normal direction of rotation of said primary roll, a pressure plate slidably mounted within said housing for reciprocal travel towards and away from the peripheral surface of said primary roll, means for biasing said pressure plate against said secondary roll in a direction opposite to the normal direction of rotation of said primary roll, said pressure plate having a bevelled surface adapted to receive said secondary roll in wedging engagement between said pressure plate and said primary roll, whereby rotation of said primary roll in the direction of travel of an object thereon rotates said secondary roll in the opposite direction for frictional engagement with said pressure plate bevelled surface and wedging of the secondary roll between said primary roll and said pressure plate bevelled surface for retarding the rotation of said primary roll.



B 361,954
PROPYLENE OXIDE RECOVERY BY AZEOTROPIC DISTILLATION OF METHYL FORMATE-2-METHYLPENTANE

Werner Fuchs, Ludwigshafen; Rolf Platz; Norbert Rieber, both of Mannheim, and Andreas Scholz, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed May 21, 1973, Ser. No. 361,954

Claims priority, application Germany, May 26, 1972, 2225657

Int. Cl.² B01D *3/34*

U.S. Cl. 203—1 **5 Claims**

References Cited

UNITED STATES PATENTS

2,498,928	2/1950	Ray	203/60
2,622,060	12/1952	Robeson	203/37
3,258,491	6/1966	Lacey et al.	260/348.5 V
3,350,415	10/1967	Benning	260/348.5 V
3,350,418	10/1967	Bowe et al.	203/70
3,350,419	10/1967	Null et al.	203/70
3,449,219	6/1969	Schmidt	203/70
3,464,897	9/1969	Jubin	203/70
3,607,669	9/1971	Jubin	203/70
3,632,482	1/1972	Hoory et al.	203/70

FOREIGN PATENTS OR APPLICATIONS

1,150,060	6/1963	Germany	260/348.5

1. A process for the recovery of propylene oxide from a liquid mixture containing from 60 to 99% of propylene oxide, up to 10% of acetaldehyde, up to 25% of methyl formate and up to 3% of 2-methylpentane in addition to minor amounts of other low-boiling impurities by distillation, wherein

a. the relative amounts of methyl formate and 2-methylpentane in the liquid mixture are determined,

b. the methyl formate content is corrected in such a way as to give a ratio of at least 4 parts by weight of methyl formate to each part by weight of 2-methylpentane,

c. the mixture is supplied to the feed point of a column having from 100 to 200 theoretical trays, which feed point is spaced by from 30 to 60 theoretical trays from the ends of the column, and

d. propylene oxide is recovered at the bottom of said column.

B 391,828
PRODUCTION OF AMINES FROM ALCOHOLS

Guenther Boettger; Hubert Corr, both of Ludwigshafen; Herwig Hoffmann; Herbert Toussaint, both of Frankenthal, and Siegfried Winderl, Heidelberg, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 81,144, Oct. 15, 1970, abandoned. This application Aug. 27, 1973, Ser. No. 391,828

Claims priority, application Germany, Oct. 23, 1969, 1953263

Int. Cl.² C07C *85/02*

U.S. Cl. 260—563 R **6 Claims**

References Cited

UNITED STATES PATENTS

3,270,059	8/1966	Winderl et al.	260/585 B
3,475,344	10/1969	Adam et al.	260/585 B
3,520,933	7/1970	Adam et al.	260/585 B

1. In a process for the production of an amine by reacting an alkanol having one to eighteen carbon atoms; or a cycloalkanol having five to twelve carbon atoms; or an alkanolamine selected from the group consisting of ethanolamine, propanolamine, isopropanolamine, and hexanolamine; or a polyalcohol selected from the group consisting of diethanolamine, diisopropanolamine, ethylene glycol, propylene glycol, butanediol, pentanediol, hexanediol, 4,4'-bishydroxycyclohexyl-propane-(2,2); or a glycol ether selected from the group consisting of methyl glycol, ethyl glycol and butyl glycol; or and a polyalkylene glycol ether selected from the group consisting of polyethylene glycol ether, polypropylene glycol ether, and polybutylene glycol ether, with ammonia or a primary or a secondary amine, the ammonia or amine being present in an excess of from 5 to 50 moles over the stoichiometric amount of alcohol in the presence of hydrogen and a cobalt, nickel and copper-containing aluminum oxide or silicon dioxide supported catalyst at a temperature of from 100° to 200° C and at a pressure of from 10 to 250 atmospheres, the improvement which consists essentially of using a supported catalyst containing, based on the metal content of the catalyst, from 70 to 95% by weight of a mixture of cobalt and nickel and from 5 to 30% by weight of copper, the ratio by weight of cobalt to nickel being from 4:1 to 1:4, the metal content of the catalyst being from 5 to 80% by weight, based on the whole catalyst.

B 401,221
OIL SEPARATOR

Ralph L. Tuttle, 7135 Hollywood Blvd., Hollywood, Calif. 90028

Continuation-in-part of Ser. No. 291,725, Sept. 25, 1972, abandoned, which is a continuation-in-part of Ser. No. 221,915, Jan. 31, 1972, abandoned. This application Sept. 27, 1973, Ser. No. 401,221

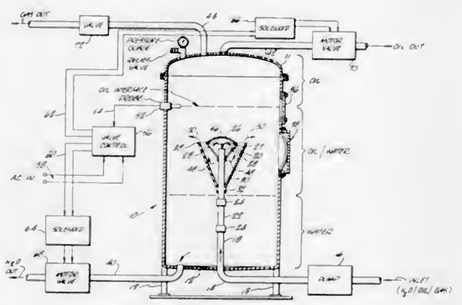
Int. Cl.² B01D *21/24*

U.S. Cl. 210—114 **11 Claims**

References Cited

UNITED STATES PATENTS

45,204	11/1864	Ham	55/462
663,099	12/1900	Reynolds	55/462
1,530,836	3/1925	Kuzilik	210/114
2,055,043	9/1936	Puls	55/462 X
2,205,336	6/1940	Beach	210/519 X
2,609,099	9/1952	Griswold	210/115
3,672,511	6/1972	Watson et al.	210/519



1. Apparatus for separating oil and water from an oil-water mixture, comprising: a vessel, an inlet conduit extending upwardly into said vessel, said inlet conduit having a discharge port at the terminus thereof, deflector means stationed within said vessel in juxtaposition to said discharge port, said deflector means comprising means for intercepting fluid discharged from said port including first intercepting means stationed opposite said discharge port and second intercepting means stationed opposite said first means whereby fluid directed against said first means is once reversed and directed against said second means whence said fluid is again reversed in direction, a first outlet port near the bottom of said vessel for drawing off separated water from said vessel, a second outlet port near the top of said vessel for drawing off separated oil from said vessel, and control means coupled to said outlet ports for independently controlling the rate of outflow therefrom.

B 402,657
ANTIVIRAL, SUBSTITUTED 1,3-DIMETHYL-1 H-PYRAZOLO(3,4B)QUINOLINES

Ronnie Ray Crenshaw, Dewitt; George Michael Luke, Lafayette, and Paul Siminoff, Dewitt, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,657

Int. Cl.² C07D *215/46, 215/20*

U.S. Cl. 260—288 CF **4 Claims**

References Cited

UNITED STATES PATENTS

3,234,142	2/1966	Wolfrum et al.	260/288 R
3,600,393	8/1971	Graeve et al.	260/288 R
3,790,576	2/1974	DeWald	260/288 CF

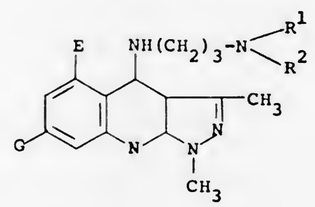
FOREIGN PATENTS OR APPLICATIONS

1,445,719	1/1969	Germany	260/288 CF
1,186,867	2/1965	Germany	260/288 CF
1,152,421	8/1963	Germany	260/288 CF

OTHER PUBLICATIONS

Wolfrum et al; Chemical Abstracts; Vol. 61, Col. 756f; 1963.
Stein et al; Chemical Abstracts; Vol. 72, 78941p; 1970.

1. A compound corresponding to the formula



wherein E is hydrogen or lower alkoxy of 1 to 3 carbon atoms, G is lower alkyl or lower alkoxy of 1 to 3 carbon atoms, R^1 and R^2 are alike or different and each is lower alkyl of 1 to 5 carbon atoms; or a pharmaceutically acceptable salt thereof.

B 433,892
METHOD OF MAKING RESISTIVE FILMS

Kiyotaka Wasa, Nara; Fumio Hosomi, Higashiosaka, and Shigeru Hayakawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 227,070, Feb. 17, 1972, Pat. No. 3,803,057. This application Jan. 16, 1974, Ser. No. 433,892

Int. Cl.² C23C *15/00*

U.S. Cl. 204—192 **5 Claims**

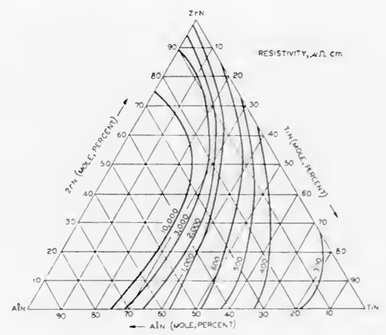
References Cited

UNITED STATES PATENTS

3,395,089	7/1968	Mayer et al.	204/192
3,664,931	5/1972	Gerstenberg	204/298
3,736,242	5/1973	Schwartz et al.	204/192

1. A method of making a thin resistive film comprising cathodically sputtering the thin resistive film onto a substrate from a composite cathode consisting essentially of Al, Ti and Zr and having a structure such that the surface area is 5 to 40% Al, 15 to 85% Ti and 10 to 80% Zr, the ratio of the area Al to Ti being less than 0.7, in a nitriding atmosphere at a pressure of 10^{-4} to 10^{-3} Torr.

3. A method of making a thin resistive film comprising cathodically sputtering the thin resistive film onto a substrate from a composite cathode consisting essentially of 10 to 50 mole % of AlN, 10 to 80 mole % of ZrN and 10 to 80 mole



% of TiN, the mole ratio of the AlN to TiN being less than 1.2, in a non-reactive gas at a pressure of 10^{-4} to 10^{-3} Torr.

B 456,384
PRODUCTION OF POLYETHYLENE

Richard Roy Cooper, St. Albans, and Kenneth Stephenson Whiteley, Welwyn Garden City, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 29, 1974, Ser. No. 456,384

Claims priority, application United Kingdom, Mar. 29, 1973, 15156/73

Int. Cl.² C08F *10/02, 10/08, 110/02, 210/08*

U.S. Cl. 260—88.2 B **15 Claims**

References Cited

UNITED STATES PATENTS

2,882,264	4/1959	Barnes et al.	260/94.9 B
2,953,552	9/1960	Stampa et al.	260/94.9 E
3,073,809	1/1963	Kluiber et al.	260/88.2 F
3,309,350	3/1967	Kelley et al.	260/88.2 B
3,405,115	10/1968	Schappert et al.	260/94.9 R
3,551,397	12/1970	Ratzsch et al.	260/94.9 R
3,654,254	4/1972	Job et al.	260/94.9 B
3,732,198	5/1973	Whiteley et al.	260/88.2 F

1. A process for the polymerization or copolymerization of ethylene in at least two reaction zones comprising:

a. passing a product mixture of ethylene, an ethylene polymer, and at least one further component selected from the group consisting of comonomer, chain transfer agent and inert diluent at a pressure in the range 300 to 3000 kgm/cm² from a reaction zone into a separator maintained at a pressure below the pressure of the product mixture, effecting separation into a gas phase and a liquid phase, said liquid phase comprising the ethylene polymer and dissolved gas;

b. passing said liquid phase to a low pressure hopper maintained at a pressure below that of said separator and removing the major portion of the dissolved gas from the polymer and low pressure hopper;

c. compressing the gas removed from said low pressure hopper to an intermediate pressure;

d. providing a stream of fresh ethylene and passing it to a compressor;

e. compressing the gas stream of fresh ethylene and passing it to the first zone of the polymerization reactor,

f. optionally mixing the gas phase from the separator with either a chain transfer agent, a stream of fresh ethylene or both which stream of fresh ethylene optionally contains comonomer, inert diluent or both,

g. passing the resulting gas phase to a compressor and compressing this gas phase, and passing this gas phase to at

least one zone, other than the first zone of the polymerization reactor;

h. mixing the compressed gas from the low pressure hopper with either

1. the stream of fresh ethylene which is compressed and passed to the first stage of the polymerization reactor, or

2. the gas phase from the separator which is compressed and passed to the polymerization reactor; and

i. introducing of a polymerization catalyst into at least the first zone of the polymerization reactor.

B 476,267

DISAZO COMPOUNDS FROM DIPHENYLENE SULFONES AND ACETOACETYLBENZIMIDAZOLONES

Klaus Hunger, Kelkheim, Taunus, and Bernhard Mees, Konigstein, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed June 4, 1974, Ser. No. 476,267

Claims priority, application Germany, June 6, 1973, 2328678

Int. Cl.² C09B *35/34*; **D06P** *3/00, 3/24, 3/52*

U.S. Cl. 260—157 **3 Claims**

References Cited

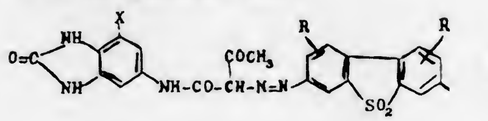
UNITED STATES PATENTS

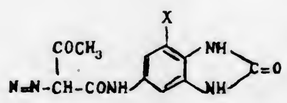
2,879,266	3/1959	Anderson	260/152

FOREIGN PATENTS OR APPLICATIONS

1,213,995	11/1970	United Kingdom	260/152

1. A disazo pigment of the formula





wherein R is hydrogen, methyl, methoxy, chlorine or bromine and X is hydrogen or chlorine.

B 512,818

MODULAR ELECTRICAL ENERGY STORAGE DEVICE

Richard C. Saunders, Simi, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 7, 1974, Ser. No. 512,818

Int. Cl.² H01M *10/00*

U.S. Cl. 136—6 LF **16 Claims**

References Cited

UNITED STATES PATENTS

3,551,205	12/1970	Fraioli et al.	136/22
3,645,792	2/1972	Hacha	136/6 LF X
3,770,502	11/1973	Nakabayashi	136/6 FS
3,829,327	8/1974	Omori et al.	136/121 X

1. An electrical energy storage device comprising:

a. a housing having side and end walls and a bottom member forming a container;

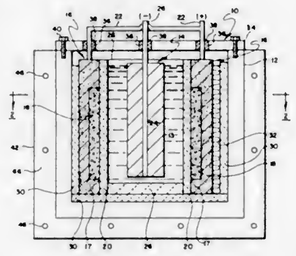
b. a molten salt electrolyte contained within said housing;

c. a negative electrode assembly in contact with said electrolyte;

d. a positive electrode assembly in contact with said electrolyte and spaced from said negative electrode assembly and comprising a body of active material retained within a material-holding member;

e. an electrolyte-permeable separator member having first and second opposing surfaces disposed between said negative and positive electrode assemblies, said first surface contacting said body of active material, said second surface facing and spaced from said negative electrode assembly, said porous separator member retaining said active material in place while permitting the free passage of ions therethrough;

f. a spacer member abutting said second surface of said separator member; and



g. a resilient body of at least partially compressed carbon or graphite fibers contained within said housing adjacent said positive electrode assembly for resiliently urging said spacer and separator members into contact with one another to maintain at least said members in substantially fixed position.

B 515,368

APPARATUS FOR PRODUCING MULTIPLE PANE WINDOWS

Jacques Charles Loubet, Montmorency, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Continuation of Ser. No. 335,016, Feb. 23, 1973, abandoned. This application Oct. 16, 1974, Ser. No. 515,368

Claims priority, application France, Mar. 2, 1972, 72.07230

Int. Cl.² B32B *31/12*

U.S. Cl. 156—446 **5 Claims**

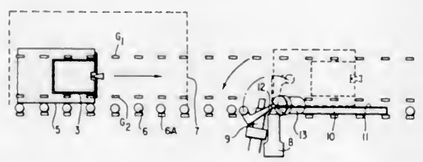
References Cited

UNITED STATES PATENTS

2,275,811	3/1942	Woefel	425/110
3,207,589	9/1965	Crowley	65/152
3,658,502	4/1972	Shepherd	65/58

FOREIGN PATENTS OR APPLICATIONS

2,128,717	12/1971	Germany	156/109



1. Apparatus for the manufacture of multiple pane windows of polygonal shape, said apparatus comprising means defining a rectilinear path of travel for a pair of edges of a pair of transparent sheets supported parallel to, in fixed position, and substantially in register with respect to each other, means disposed adjacent an upstream portion of said path to heat said edges upon passage thereof along said portion, a nozzle having an orifice disposed downstream of said heating means to inject a sealant between said edges, cooling means disposed along said path downstream of said heating means and nozzle to abstract heat from said sealant, crank means pivoted about a fixed axis transverse of said path and substantially intersecting the orifice of said nozzle, and means on said crank means to grip said sheets upon arrival of the trailing end of said edges substantially at said axis, whereby said sheets may be rotated by said crank means in the plane thereof about said axis with said axis substantially intersecting the trailing end of said edges to present another pair of the edges of said sheets to said path.

B 517,668

FLUID CAT CRACKER APPARATUS

David A. Evens, Cloquet, Minn., assignor to Continental Oil Company, Ponca City, Okla.

Filed Oct. 24, 1974, Ser. No. 517,668

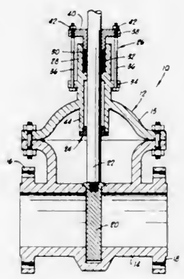
Int. Cl.² B01J *8/24*

U.S. Cl. 23—288 S **2 Claims**

References Cited

UNITED STATES PATENTS

3,527,694	9/1970	Luckenbach	208/164
3,556,472	11/1968	Grove et al.	251/214
3,582,041	6/1971	Priese	251/214
3,831,900	8/1974	Matousek et al.	251/214



1. In an apparatus for carrying out a petroleum fluid catalytic cracking process, said apparatus including a catalytic reactor and a catalyst regenerator connected by conduit means through which particulated catalyst and mixtures of particulated catalyst and oil flow at superatmospheric pressure and high temperature, and including at least one shutoff valve disposed in said conduit means, the improvement wherein:

said shutoff valve includes a valve stem disposed in a valve body, a valve stem guide means in and attached to said body, and a valve stem packing gland positioned between said guide means and the exterior of said valve body, and wherein said valve stem guide means comprises:

a. a cylindrical guide member having a bore therethrough in which said valve stem is slidably disposed;

b. at least one annular groove disposed in said bore; and

at least one expansible seal ring disposed within said groove around said valve stem, said seal ring being of a size and shape such that a seal is provided thereby between said valve stem and the inside surfaces of said groove whereby pressurized materials present within said valve body are prevented from flowing through said guide means into said valve stem packing gland and other areas of close clearance between said valve stem and said valve body.

B 520,878

SELF-EXTINGUISHING REINFORCED POLYCARBONATE MOLDING COMPOSITIONS

Peter Horn, Ludwigshafen, and Cai von Rumohr, Frankenthal, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Nov. 4, 1974, Ser. No. 520,878

Claims priority, application Germany, Nov. 5, 1974, 2355211

Int. Cl.² C08L *69/00*

U.S. Cl. 260—37 PC **7 Claims**

References Cited

UNITED STATES PATENTS

3,477,982	11/1969	Dijkstra et al.	260/45.7 P X
3,671,487	6/1972	Abolins	260/40 R
3,808,127	4/1974	Sander et al.	260/45.7 F X
3,817,907	6/1974	Muller et al.	260/37 PC

1. Self-extinguishing reinforced organic polycarbonate molding compositions comprising:

a. an organic polycarbonate;

b. from 0.5 to 15% by weight of particulate red phosphorus based on the weight of the polycarbonate, said red phosphorus having an average particle diameter of from 0.001 to 0.5 mm; and

c. from 5 to 50% by weight of a reinforcing agent based on the weight of the polycarbonate.

B 573,114

LATEX COMPOSITIONS

Valentino George Xanthopoulo, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Continuation-in-part of Ser. No. 367,504, June 6, 1973, abandoned, which is a continuation-in-part of Ser. No. 141,433, May 7, 1971, abandoned. This application Apr. 30, 1975, Ser. No. 573,114

Int. Cl.³ C08L *9/00, 9/04, 9/08, 25/14*

U.S. Cl. 260—29.7 T **9 Claims**

References Cited

UNITED STATES PATENTS

3,288,741	11/1966	Cheng	260/29.7
3,330,795	7/1967	Schluter	260/29.7
3,409,569	11/1968	Lane et al.	260/8

OTHER PUBLICATIONS

Union Carbide Publication, *Carbowax Polyethylene Glycols*, pp. 2, 3, 6–16, 19, 20.

Blackley *High Polymer Latices*, 1, pp. 121–122, (Applied Science, 1966).

1. A process of producing a high solids latex foamable to a stable froth which comprises polymerizing 100 parts by weight of a monomer mixture of (a) 30–100% by weight of an aliphatic conjugated C_4-C_8 diolefin and (b) 0–70% by weight of at least one copolymerizable compound, said monomer mixture being emulsified in less than 140 parts by weight of an aqueous phase containing less than 6 parts by weight of (A) a polymerization promoting emulsifier system consisting of (1) an alkali metal salt of an alkyl sulfate, alkoxyalkyl sulfate or alkoxyalkyl phosphate having a critical micelle concentration from about 0.002% to about 0.15% or (2) an alkali metal salt of sulfosuccinic acid or an amine derivative of sulfosuccinic acid having a hydrocarbyl substituent attached to an oxygen atom or a nitrogen atom, or a partial alkali metal salt of N-alkyl beta imino dicarboxylic acid, said salt (2) having a critical micelle concentration from about 0.01% to about 1.0% and (B) from about 0.001 to less than 0.1 part by weight of a water dispersible agglomerating system comprising the reaction product of a polyoxyalkylene glycol having a molecular weight of at least 5,000 with the polyepoxide obtained by reacting epichlorohydrin with a polyhydric phenol, said reaction product having a molecular weight of about 15,000 –20,000, said polymerization being carried out to at least 65% conversion to form a stable fluid latex and concentrating said latex to a solids level of at least 55%.

B 381,006

AMPLIFIER ARRANGEMENT WITH ZEROING DEVICE FOR PIEZOELECTRIC TRANSDUCERS

Hans-Joachim Wolf, Freienstein; Franz Meier, Hettlingen, and Hans Ulrich Baumgartner, Winterthur, all of Switzerland, assignors to Kistler Instrumente AG, Winterthur, Switzerland

Filed July 20, 1973, Ser. No. 381,006

Claims priority, application Switzerland, July 28, 1972, 11465/72

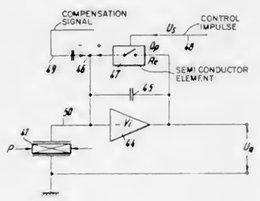
Int. Cl.² H03F *1/36*

U.S. Cl. 330—110 **20 Claims**

References Cited

UNITED STATES PATENTS

3,054,951	9/1962	Richard	324/123 R X
3,129,326	4/1964	Balaban	235/183
3,225,304	12/1965	Richards	330/110 X
3,449,741	2/1965	Egerton, Jr.	340/347
3,541,462	11/1970	Sarkisian et al.	330/9 X
3,711,783	1/1973	Kelling	330/29 X
3,760,287	9/1973	Harris	330/51 X
3,765,239	10/1973	Olsson	73/194 R



1. An amplifier measuring a circuit comprising:

a piezoelectric transducer for supplying output signals representative of an input quantity being measured;

an amplifier, having an input connected to said piezoelectric transducer, for providing an output representative of an operation effected on said output signals, said amplifier having an input impedance of at least 10^{10} ohm; and

means, connected to the input of said amplifier, for resetting the input voltage to a prescribed value, said means including at least one semiconductor element which receives a remote-controllable signal for controlling the resetting of said input voltage, said amplifier input further including a compensation input to which error signals are applied, for compensating for zero jumps in said semiconductor element.

B 412,023

NUMERICAL CONTROL SERVO SYSTEM

Allan G. Fiegehen, Orange; Robert P. Houghton, Anaheim; Cecil Earl Bradley, Alta Loma, and Paul F. Richenburg, Orange, all of Calif., assignors to General Automation, Inc., Anaheim, Calif.

Filed Nov. 1, 1973, Ser. No. 412,023

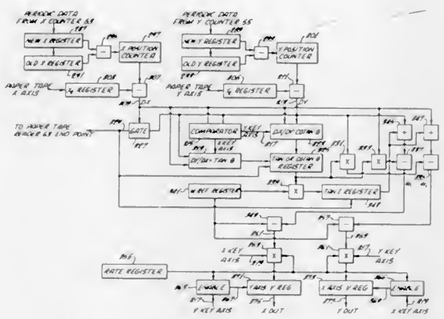
Int. Cl.² G05B *19/24, 19/40*

U.S. Cl. 318—574 **23 Claims**

References Cited

UNITED STATES PATENTS

3,422,325	1/1969	Gerber et al.	318/574
3,422,325	1/1969	Gerber et al.	318/574
3,473,157	10/1969	Little et al.	318/573 X
3,525,917	8/1970	Leenhouts	318/574 X
3,576,981	5/1971	Okamoto et al.	318/573 X
3,585,478	6/1971	Leenhouts	318/574 X
3,619,755	11/1971	Munro et al.	318/574 X
3,633,087	1/1972	Vawter et al.	318/574 X
3,767,990	10/1973	Kreithen et al.	318/574 X



1. A digital computer circuit arranged to drive a pair of motors, said motors connected to relatively move a tool and a workpiece along two mutually perpendicular axes, said motors being responsive to velocity command digital signals generated by said circuit to relatively move said tool and workpiece along a line the end points of which are defined by input digital data relative to said mutually perpendicular axes, comprising:

means for measuring the relative position of said tool and said workpiece and for periodically producing position digital signals defining the actual relative position of said tool and workpiece along each of said perpendicular axis;

means for adding a reference digital signal defining a predetermined length along one of said perpendicular axes to said position digital signal defining the actual relative position of said tool and workpiece along said one of said perpendicular axes to produce a target digital signal defining the location of a point along said line between said end points;

means responsive to said position digital signals, said target digital signal and said input digital data for generating a distance digital signal defining the distance between said point along said line between said end points and the actual relative position of said tool and workpiece along the other of said perpendicular axes; and

means for generating said velocity command signals in proportion to said reference digital signal for one of said pair of motors and in proportion to said distance digital signal for the other of said pair of motors.

B 530,285

HIGH SPEED SWITCHING CIRCUIT WHICH REDUCES EFFECT OF MINOR CARRIER STORAGE AND PREVENTS UNDESIRED OSCILLATION

Jyunji Sakamoto; Norio Imaizumi, and Eisuke Shiratani, all of Gunma, Japan, assignors to Tokyo Sanyo Electric Co., Ltd. and Sanyo Electric Co., Ltd., Osaka, both of, Japan

Filed Dec. 6, 1974, Ser. No. 530,285

Claims priority, application Japan, Dec. 7, 1973, 48-143188[U]

Int. Cl.² H03K *3/33, 5/08*

U.S. Cl. 307—300 **3 Claims**

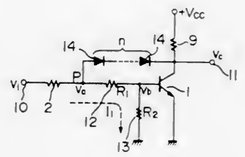
References Cited

UNITED STATES PATENTS

2,887,542	5/1959	Blair et al.	307/300
3,010,031	11/1961	Baker	307/237
3,534,281	10/1970	Hillhouse	307/300
3,710,041	1/1973	Hayashi	307/300

FOREIGN PATENTS OR APPLICATIONS

215,148	11/1957	Australia	307/237



1. A switching circuit comprising a transistor whose emitter is grounded, a load connected in the collector circuit of said transistor, a first resistor, the value of resistance of which is R_1, being connected between an input point and the base of said transistor, a second resistor, the value of resistance of which is R_2, being connected between the base of said transistor and the ground, at least one diode connected between said input point and the collector of said transistor, and an output terminal connected to the collector of the transistor.

DESIGN APPLICATIONS

PUBLISHED APRIL 6, 1976
UNDER THE SECOND TRIAL VOLUNTARY PROTEST PROGRAM

NOTE.—A copy of the notice setting forth the details of the Second Trial Voluntary Protest Program may be found in the Patent and Trademark Notices section of this issue.

Any protests relating to the patentability of these published design applications must be filed in writing before July 6, 1976. These applications are available for inspection in the Allowed Files Branch, Crystal Plaza, Room 2–10C28. All correspondence should be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

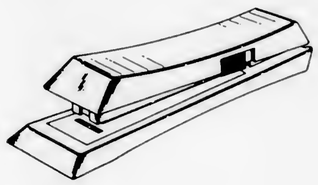
Printed copies of the published design applications may be purchased from the Patent and Trademark Office at 20 cents each. An "Index of Design Applicants and Assignees of Design Applications" and a concordance entitled "Classification of Published Design Patent Applications" are located in the back of this issue.

B 396,377
DESK STAPLER
Monte L. Levin, New York, N.Y., assignor to Swingline Inc., Long Island City, N.Y.
Filed Sept. 12, 1973, Ser. No. 396,377
Int. Cl. D19—*02*
U.S. Cl. D8—50

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UNITED STATES PATENTS

D. 127,378	5/1941	Pankonin	D8—50
D. 186,201	9/1959	Rosengren	D8—50
D. 187,627	4/1960	Kent	D8—50



B 443,446
HAIR DRYER OR SIMILAR ARTICLE
John C. Shalvoy, Fairfield, Conn., assignor to General Electric Company, Bridgeport, Conn.
Filed Feb. 19, 1974, Ser. No. 443,446
Int. Cl. D28—*03*
U.S. Cl. D86—10 F

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UNITED STATES PATENTS

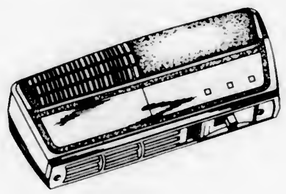
D. 226,510	3/1973	Benty et al.	D86—10 F
D. 203,580	2/1966	Cook	D4—14

OTHER REFERENCES

Jewelers' Circular-Keystone, February 1962, p. 6, Lady Norelco top center.

Housewares Electrics Shopper, February 1971, p. 5, Hallmark hair dryer top right.

Housewares, July 1972, p. 85, Flowtron dryer at right.



B 477,584
FOUNTAIN PEN
Michel Grinberg, Paris, France, assignor to St. Dupont, Paris, France
Filed June 7, 1974, Ser. No. 477,584
Claims priority, application France Dec. 11, 1973
Int. Cl. D19—*06*
U.S. Cl. D19—49

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D. 205,022	6/1966	Boss	D19—49
D. 218,491	8/1970	Bovin et al.	D19—49

OTHER REFERENCES

Bainbridge, Kimpton & Haupt, Inc. Cat. 1962, p. 329, item, dollar cartridge pen.

Office Applicances, December 1964, p. 85, item No. 14.



B 490,551
TIRE FOR A VEHICLE WHEEL
Claude Albert Hart, Sutton Coldfield, and Brian Howard Holmes, Birmingham, England, and Karl Gebert, Klein, Auheim, Germany, assignors to Dunlop Limited, Birmingham, England
Filed July 22, 1974, Ser. No. 490,551
Claims priority, application Great Britain Jan. 22, 1974
Int. Cl. D12—*15*
U.S. Cl. D12—146

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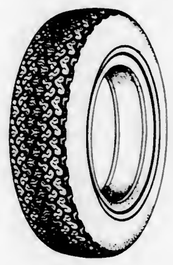
UNITED STATES PATENTS

D. 231,211	4/1974	Holmes	D12—146
D. 231,210	4/1974	Holmes	D12—146
D. 211,070	5/1968	Kolowski et al.	D12—147

OTHER REFERENCES

1971 Tread Design Guide, published Jan. 1, 1971, p. 26, Auburn Custom Snow SST tire, bottom right side of page.

1971 Tread Design Guide, published, Jan. 1, 1971, p. 26, Semperit Super Sport Radial HRVTT tire, bottom right side of page.

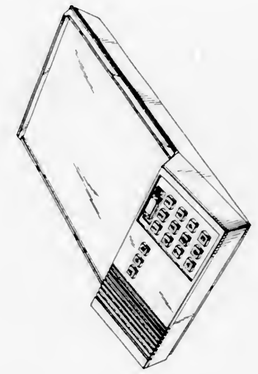


B 497,896
TELEPHONE ACCESSORY
Carl-Arne Breger, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Aug. 16, 1974, Ser. No. 497,896
Claims priority, application Sweden Mar. 1, 1974
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

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D. 222,268	10/1971	Fetzer	D26—14 A
D. 224,933	10/1972	Guldstrand	D26—14 A
3,102,169	8/1963	Ivens et al.	179—100
3,258,541	6/1966	Hopkins	179—90 R

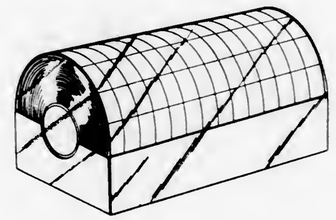


B 502,571
PACKAGE OF LABEL ROLLS
Thomas M. Smith, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio
Filed Sept. 9, 1974, Ser. No. 502,571
Int. Cl. D9—*03*
U.S. Cl. D9—193

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UNITED STATES PATENTS

D. 111,709	10/1938	Levy	D9—193
D. 187,007	1/1960	Katz	D9—184
D. 227,352	6/1973	Meng et al.	D9—193
2,454,352	11/1948	Staunton et al.	D9—193
3,568,829	3/1971	Brady, Jr.	206—447

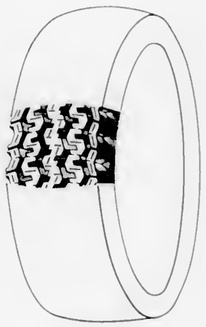


B 510,184
PNEUMATIC TIRE TREAD AND BUTTRESS
James F. Newman, St. Clair Shores, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Sept. 30, 1974, Ser. No. 510,184
Int. Cl. D12—*15*
U.S. Cl. D12—143

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D. 231,978	7/1974	Neale	D12—141
D. 228,889	10/1973	Boileau	D12—142
D. 225,914	1/1973	Bertazzoli	D12—141
D. 223,016	2/1972	Hawkinson	D12—146

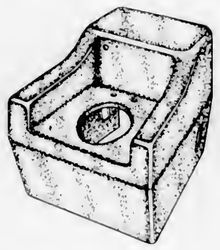


B 517,956
WATER CLOSET COVER
Nancy Mardesich Halvorsen, 215 Alhambra Ave., Santa Cruz, Calif. 95060
Filed Oct. 25, 1974, Ser. No. 517,956
Int. Cl. D23—*02*
U.S. Cl. D23—71

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D. 112,045	11/1938	Roberts	D6—7
D. 144,771	5/1946	Engman et al.	D23—53
D. 217,248	4/1970	Basner	D23—71
D. 203,435	1/1966	Sellars, Jr. et al.	D23—53
D. 213,958	4/1969	Ruggles	D23—71
2,658,201	11/1958	Sherwood	4—1
2,749,968	6/1956	Suser	4—1 X
3,245,090	4/1966	Slimmer	4—134
3,716,872	2/1973	Zieman	4—1

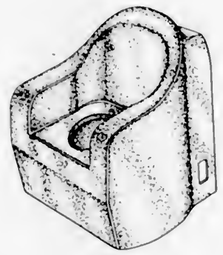


B 517,957
WATER CLOSET COVER
Nancy Mardesich Halvorsen, 215 Alhambra Ave., Santa Cruz, Calif. 95060
Filed Oct. 25, 1974, Ser. No. 517,957
Int. Cl. D23—*01*
U.S. Cl. D23—71

References Cited

UNITED STATES PATENTS

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D. 144,771	5/1946	Engman et al.	D23—53
D. 217,248	4/1970	Basner	D23—71
D. 203,435	1/1966	Sellars, Jr. et al.	D23—53
D. 213,958	4/1969	Ruggles	D23—71
2,658,201	11/1958	Sherwood	4—1
2,749,968	4/1956	Suser	4—1 X
3,245,090	4/1966	Slimmer	4—134
3,716,872	2/1973	Zieman	4—1

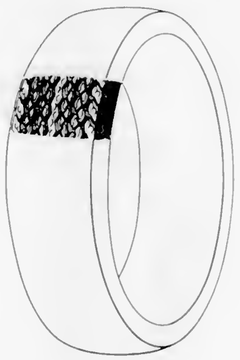


B 522,568
PNEUMATIC TIRE TREAD AND BUTTRESS
Arthur C. Blankenship, Howell, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Nov. 11, 1974, Ser. No. 522,568
Int. Cl. D12—*15*
U.S. Cl. D12—147

References Cited

UNITED STATES PATENTS

D. 233,228	10/1974	Mehring	D12—151
D. 230,380	2/1974	Vizina, Jr.	D12—142
3,856,067	12/1974	Gorter	152—209 R



DEFENSIVE PUBLICATIONS

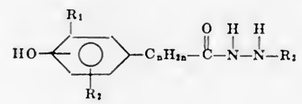
PUBLISHED APRIL 6, 1976

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

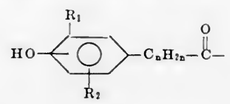
T945,001
STABILIZED POLYOLEFIN COMPOSITIONS
Martin Dexter, 416 Cedar Drive, Briarcliff Manor, N.Y. 10510
Filed Dec. 26, 1974, Ser. No. 536,671
Int. Cl. C08j *3/20*
U.S. Cl. 260—45.9 NC
No Drawing. 24 Pages Specification

Polymeric compositions, especially polyolefins, employed as insulators of copper wire filled with petroleum jelly is very effectively stabilized with alkylhydroxyphenylalkanoyl hydrazines having the formula



wherein

R_1 is lower alkyl,
R_2 is hydrogen or lower alkyl,
R_3 is hydrogen alkanoyl, or the group of the formula

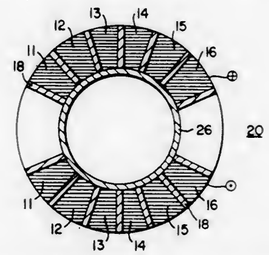


and n is 0 to 5,

in combination with phenolic antioxidants, and optionally, a thiosynergist and a phosphite.

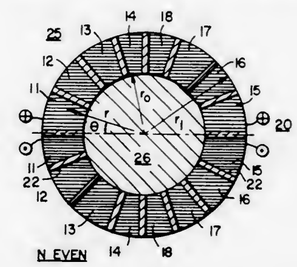
T945,002
SUPERCONDUCTIVE WINDING
Walter J. Carr, Jr., and Daniel W. Deis, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 2, 1975, Ser. No. 538,289
Int. Cl. H02k *9/00*
U.S. Cl. 310—40 R
2 Sheets Drawing. 13 Pages Specification

A superconductive field winding is provided for the rotor of a dynamoelectric machine. The winding consists of a number of multi-turn coils of a superconductive conductor which are wound about the periphery of the rotor thereby defining at least one pole pair. Selected coils of each pole pair are series-connected in groups of two coils or more and all of the series connected coil groups are connected in parallel one to another. Resistance elements connected in series with the parallel connected coils cause the current density of coil conductors disposed in regions of high field intensity to be reduced in relation to the current density of conductors lying in regions of low field intensity, thereby allowing the use of higher source current. A net increase



in the useful external magnetic field is therefore obtained for a given amount of superconductive material.

T945,003
SUPERCONDUCTIVE WINDING FOR AN IRON CORE ROTOR OF A DYNAMOELECTRIC MACHINE
Walter J. Carr, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 2, 1975, Ser. No. 538,290
Int. Cl. H02k *9/00*
U.S. Cl. 310—40
3 Sheets Drawing. 23 Pages Specification



Iron or other ferromagnetic material is utilized in the rotor core of a dynamoelectric machine having a superconductive field winding. A parallel connection arrangement of the winding in combination with a plurality of current dividing resistance elements provides a sinusoidal distribution of current density across the circumference of the rotor. The magnetic field associated with the sinusoidal current distribution is reduced in critical interior regions of the winding by the demagnetizing field produced by the magnetic poles of the ferromagnetic core, thereby allowing a larger current to flow in the winding without destroying superconductivity. The two

fields add in regions exterior to the winding, thereby providing a net increase in the useful external field obtained from a given amount of superconductive material.

T945,004

POLYAMINES AND THEIR PRODUCTION

Joseph Kestutis Valaitis, University Heights, and Harold James Harwood, Stow, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of application Ser. No. 352,845, Apr. 19, 1973. This application Dec. 16, 1974, Ser. No. 540,351

Int. Cl. C08g *73/02*
U.S. Cl. 260—2 R

1 Sheet Drawing. 6 Pages Specification

Polyamines of the formula:

$$NH_2(R—NH)_nR—NH_2$$

in which R is aliphatic or aromatic and *n* is 2 or more, are produced by heating an amine or a mixture of amines to such a high temperature that ammonia is liberated. The reaction is preferably carried out in the presence of a catalyst.

T945,005

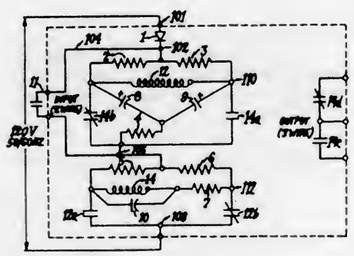
CONVERSION RELAYS

Joseph G. Russillo, Dover, N.H., assignor to General Electric Company

Filed Jan. 22, 1975, Ser. No. 543,283

Int. Cl. H01h *47/00*
U.S. Cl. 317—157

1 Sheet Drawing. 10 Pages Specification



A conversion relay circuit converts a two-wire contact into a three-wire contact. Impulses generated by a local demand meter are propagated along a two-wire transmission line to a two-wire contact. The relay circuit is coupled between the two-wire contact and a three-wire impulse driven demand meter. The relay circuit comprises first and second bridge circuits each containing a mercury wetted relay. The direction of current through one relay is controlled by the contacts of the other. A short circuit is alternately opened and closed across the first bridge circuit in response to impulses received by the two-wire input contact. A three-wire output contact is controlled by the relay in the second bridge. Resistive elements in the two bridges are chosen to limit the current through and thereby prevent the activation of the second bridge relay when the input contact is open.

Another circuit converts a three-wire contact into a two-wire (or three-wire) conversion contact. That circuit is coupled between a three-wire local demand meter and a two-wire transmission line. It is also compatible with a three-wire impulse receiver, such as an impulse driven demand meter.

T945,006

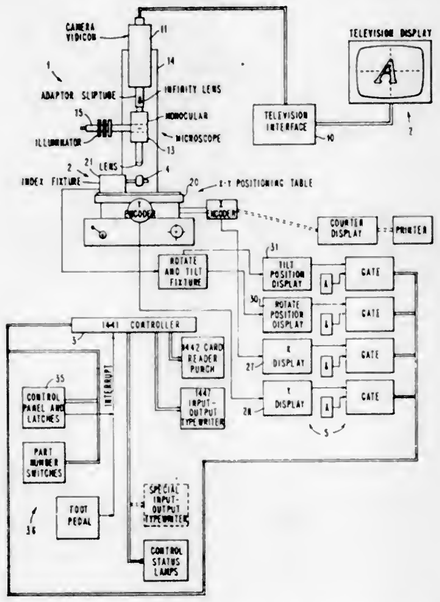
SYSTEM FOR MAGNIFYING, INSPECTING, AND ANALYZING COMPONENTS

Owen S. Speck, 3516 Merrick Court, and L. Elwood West, 3531 Greentree Road, both of Lexington, Ky. 40502

Continuation of application Ser. No. 415,278, Nov. 12, 1973, which is a continuation-in-part of application Ser. No. 91,086, Nov. 9, 1970. This application Jan. 23, 1975, Ser. No. 543,603

Int. Cl. H04n *7/18*
US. Cl. 178—6.8

14 Sheets Drawing. 37 Pages Specification



The system includes microscope **1** and fixture **2** to position type element **4**, and to enable rotational movement of typehead **4** for inspection of individual characters. IBM 1441 controller **3** with associated input/output equipment is interconnected by interface **5**. In conjunction with display unit **7**, having reference scales, the operator positions X-Y table **20** for measurement of selected character dimensions, and depresses a pushbutton on control panel **35**. This enters the measurements into the memory of the 1441 controller. The rotate position, the tilt position, and the part number are also read into the memory of the 1441 controller. From this information, controller **3** performs a table lookup operation to determine measurement differences, if any. After dimensions of all characters (or selected characters) on a particular type element have been checked, the output is printed by an IBM 1447 typewriter, and punched on cards by an IBM 1442 card reader punch.

T945,007

STABILIZED PILOT MILL

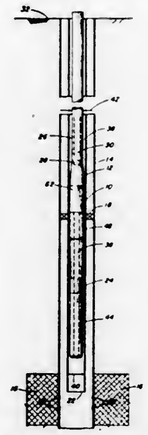
Carl E. Lindberg, New Orleans, La., assignor to Continental Oil Company, Ponca City, Okla.

Filed Feb. 5, 1975, Ser. No. 547,154

Int. Cl. E21b *29/00*
U.S. Cl. 166—298

1 Sheet Drawing. 12 Pages Specification

A stabilized pilot mill for increasing the diameter of a landing nipple in a tubing string, said pilot mill comprising: a tubular pilot section adapted to extend through the landing nipple and center the stabilized pilot mill in position; a tubular mill section joined to the pilot section and including an abrasive surface for abrasively removing the landing nipple when the pilot mill is rotated and a tubular stabilizing section joined to the other end of the mill section for further stabilizing the pilot mill during the removal of the landing nipple.



T945,008

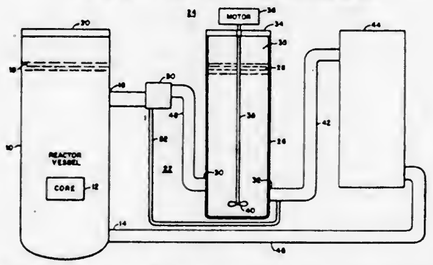
NUCLEAR REACTOR COOLANT TRANSPORT SYSTEM

James D. Mangus, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 10, 1975, Ser. No. 585,727

Int. Cl. G21c *15/00*
U.S. Cl. 176—50

2 Sheets Drawing. 15 Pages Specification



A system for transporting reactor coolant in nuclear reactors using a liquid coolant. The system diverts a portion of the output from the main circulating pump in the nuclear reactor primary flow system and introduces this diverted coolant back into the system upstream of the main circulating pump. This diverted coolant compensates for any pressure drop which may occur due to the pumping action, thereby maintaining a constant head to the circulating pump.

T945,009

FREEZER CABINET CONSTRUCTION

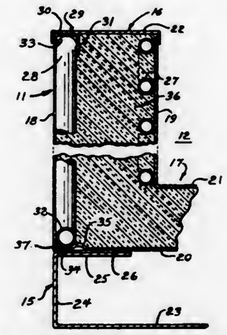
George J. Fleck, White Bear Lake, Robert H. Sitko, Stillwater, and Donald G. Selberlich, St. Paul, Minn., assignors to Whirlpool Corporation

Filed Feb. 24, 1975, Ser. No. 552,547

Int. Cl. A47b *77/08*; **A47f** *3/04*
U.S. Cl. 312—236

1 Sheet Drawing. 2 Pages Specification

A freezer cabinet construction and method of forming the same wherein a serpentine heat exchanger is associated with portions of the walls of the cabinet in such a manner as to retain the wall portions in assembled relationship. The improved cabinet construction eliminates the use of welding and a mechanical fastening and permits the use of prepainted wall panels. Insulation may be placed in the wall construction, further retaining the heat exchanger unit in the desired association with the wall portions.



T945,010

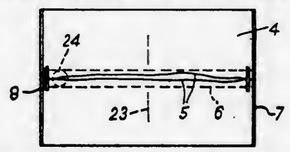
CARRIER-BAG PACKING UNIT

Henry Charles Deards, Welwyn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 28, 1975, Ser. No. 554,223
Claims priority, application Great Britain, Mar. 12, 1974, 10,897/74

Int. Cl. B65h *1/00*
U.S. Cl. 221—63

2 Sheets Drawing. 11 Pages Specification



A packing unit for packing goods in carrier bags of flexible sheet material, such as low density polyethylene as described in U.S. Pat. No. 3,834,528, including a generally horizontal surface upon which successive bags may be positioned for loading and an assembly of bags from which the bags may be drawn singly for loading, the bags hang from a support located adjacent to an edge of the loading surface. The bags are generally suspended in relation to the loading surface at a height such that at least three quarters of the length of the bags hangs below the panels of the edge of the loading surface; the bags back panels facing towards the surface. The bags are suspended from a pin which, in respect to each bag, passes between the folds at the inner edges of the two front panels thereof and through an aperture in the back panel thereof which is spaced inwardly from an edge seam of the bag, the bags being suspended with at least their lower edges hanging below the level of the edge of the surface.

The loading surface preferably includes a platform upon which an empty bag is initially laid, the platform being equipped with means for lowering it from its initial position, including clamps adjacent to the platform in its initial position for releasably holding the side folds of the bag.

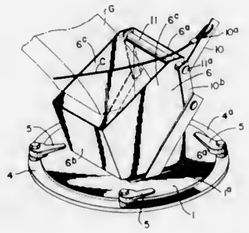
The unit is particularly adapted for use at supermarket check-out stations, or in shops where a number of packages are placed in a basket, bag or other container for removal by the customer.

REISSUES

APRIL 6, 1976

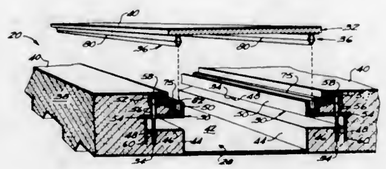
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,755
SEALED SILO FILLING LID
Sanford L. Hege, R.R. 1, Fayetteville, Pa. 17222
Original No. 3,733,764, dated May 22, 1973, Ser. No. 209,713, Dec. 20, 1971. Application for reissue Apr. 28, 1975, Ser. No. 572,470
Int. Cl.² E04H 7/22
U.S. Cl. 52—192 4 Claims



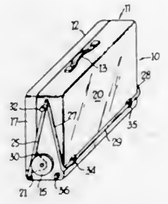
4. A filling lid for substantially sealed silos comprising, a base member assembled with an animal feed inlet in the upper end of the silo and having an opening therethrough registering with said inlet, a filling hopper supported on said base member over said opening and inlet and being open at the top to receive the usual gooseneck of a forage blower, a closure plate hingedly mounted on the underside of the base member and adapted to be pivoted outwardly to cover said opening in an airtight manner and to be pivoted inwardly to open said opening, a lever arm pivotally connected to the hopper at the upper end and extending through a slot adjacent said opening and pivotally connected at the lower end to the closure plate, and means connected to the lever arm and actuated from the base of the silo to pivot the lever arm to effect the actuation of the closure plate to the open or closed position with respect to said opening.

Re. 28,756
CONNECTING MEANS FOR TRENCH COVER PLATES
Frank W. Fork, Allison Park, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.
Original No. 3,494,381, dated Feb. 10, 1970, Ser. No. 540,686, Apr. 6, 1966. Application for reissue Mar. 29, 1974, Ser. No. 456,125
The portion of the term of this patent subsequent to Feb. 13, 1984, has been disclaimed.
Int. Cl.² F16L 55/00
U.S. Cl. 138—92 14 Claims



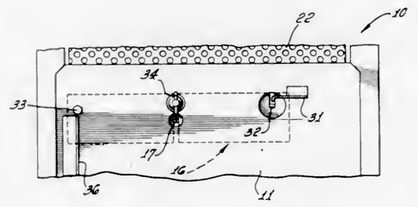
1. In a trench assembly adapted to be embedded in a concrete floor structure, the combination comprising:
generally rectangular aligned abutting cover plates;
longitudinal members positioned along the opposite sides of said cover plates for supporting the side edges thereof;
a base member disposed beneath said cover plates, said base member including a central web and laterally extended support flanges at a level above said web, one of said support flanges being positioned beneath each of said longitudinal members, *each of said longitudinal members extending laterally beyond the subjacent support flange*;
adjusting means for individually adjusting the level of said longitudinal members above said support flanges, said adjusting means comprising adjustable securing elements which secure said longitudinal members to said base member to provide a unitary subassembly [;] and *which have head portions secured against substantial movement in directions axially of said securing elements relative to said longitudinal members; and*
connecting means for detachably connecting said cover plates to said longitudinal members, comprising:
first elements secured to and depending from said cover plates toward said longitudinal members;
wall elements on said longitudinal members having surfaces engaged by said first elements; and
one of said elements having resilient portions which are deflected by the passage of the other of said elements to provide a resilient connection between said cover plates and said longitudinal members.

Re. 28,757
TROLLEY CASE
Khalil Ahmad Ibrahim Cassimally, 210-Third St. West, Roundup, Mont. 59072
Original No. 3,709,513, dated Jan. 9, 1973, Ser. No. 100,033, Dec. 21, 1970. Application for reissue Aug. 1, 1974, Ser. No. 493,744
Claims priority, application United Kingdom, Dec. 24, 1969, 62764/69; Feb. 24, 1970, 8784/70; June 12, 1970, 28541/70; June 22, 1970, 30072/70
Int. Cl.² B62B 11/00
U.S. Cl. 280—37 19 Claims



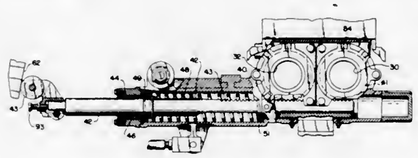
1. A collapsible trolley comprising a case including an openable lid forming the foot of the trolley and a jointed framework pivotally attached externally to the case, said framework including two side bars each having inner and outer portions connected together and a cross bar joining the outer ends of the outer portions of the side bars, the inner ends of said inner portions of said side bars being pivotally mounted on the sides of said case, and a pair of axles extending transversely of and fixedly mounted on the inner portions of said side bars at a location spaced from said inner ends of said inner portions, a pair of wheels respectively pivotably mounted on said pair of axles for pivotal movement therewith, and means for selectively holding said framework in closed and opened positions, whereby the framework is pivotable into a closed position in which said side bars are collapsed and located at the sides of said case and said cross bar extends across a major face of said case and is pivotable into an opened position in which said wheels project below the case and said side bars project outwardly substantially normally from said major surface of said case in a locked condition to form a wheeled trolley with the case forming the foot of the trolley and adapted to retain luggage in place on the side bars of said framework.

Re. 28,758
METHOD AND APPARATUS USED FOR BOOK BINDING
William R. Decker, 2316 Cameron, Covina, Calif. 91722
Original No. 3,717,366, dated Feb. 20, 1973, Ser. No. 155,771, June 23, 1971. Application for reissue June 11, 1974, Ser. No. 478,240
Int. Cl. B42d 1/00, 19/00
U.S. Cl. 281—21 16 Claims



1. A book binding apparatus for folding book covers and melting adhesive comprising in combination a means of measuring the thickness of assembled inside pages of a book to be bound by placing the assembled pages within a measuring device having parts capable of being moved so as to make contact with the collated pages to be bound, means of securing the parts in stationary configuration separated from each other by the distance equal to the thickness of the collated pages to be bound, means of mechanically linking the parts of the measuring device to an obstruction limiting the distance through which an unfolded book cover may be inserted into the folding device so as to adjust the unfolded cover into proper position for single or double folding to fit the cover to the assembled pages, means of clamping the cover to hold firmly in position while folding, means of folding the book cover, means of applying heat to the outside of the binding edge of a cover of an assembled book to be bound, and means of supporting the book so as to locate the binding edge exposed to the heat source while supporting the book cover and pages in proximity to each other.

Re. 28,759
MOLTEN GLASS GOB DISTRIBUTION SYSTEM
Wasyl Bystrianyk, Hartford, and Francis A. Sarkozy, West Hartford, both of Conn., assignors to Emhart Corporation, Hartford, Conn.
Original No. 3,721,544, dated Mar. 20, 1973, Ser. No. 199,458, Nov. 17, 1971. Continuation of Ser. No. 82,736, Oct. 21, 1970, abandoned, which is a continuation of Ser. No. 1,096, Jan. 7, 1970, abandoned. Application for reissue Apr. 4, 1974, Ser. No. 457,761
Int. Cl.² C03B 9/00, 5/30
U.S. Cl. 65—207 44 Claims

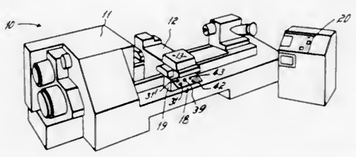


1. In a molten glass distribution system for conveying successively formed groups of glass gobs from the outlet of a feeder bowl to each of several groups of fixed chutes, said chute groups being arranged in a circular pattern around said feeder bowl for conveying the groups of glass gobs to the several individual sections of a multi-gob glassware forming machine, the improvement comprising an arcuate scoop for each gob in the group being formed at said feeder bowl outlet, a mechanism for supporting said scoops in depending relationship for rotation on individual vertically oriented scoop axes, said mechanism including means for rotating all of said scoops simultaneously and through mutually related angular displacements, mechanical control means for said scoop rotating means for successively varying these angular displacements whereby said scoops are cyclically aligned with each of said chute groups to provide groups of glass gobs to all of the individual machine sections, a housing for said mechanism, said housing supporting said scoops so that their respective axes of rotation are arranged in side-by-side relationship, said means for rotating said scoops including an annular spur gear circumscribing the upper end of each scoop, a horizontally extending member slidably supported in said housing and having a portion which defines a rack gear for meshing with said spur gears on said scoops to rotate the scoops, and said mechanical control means including means for reciprocating said member from and to successive linear positions.

Re. 28,760
PHOTOGRAPHIC ELEMENT INCLUDING SUPERIMPOSED SILVER HALIDE LAYERS OF DIFFERENT SPEEDS
John C. Marchant, and Robert F. Motter, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Original No. 3,620,747, dated Nov. 16, 1971, Ser. No. 730,593, May 20, 1968. Application for reissue Aug. 20, 1975, Ser. No. 606,259
Int. Cl.² G03C 1/76, 1/40
U.S. Cl. 96—74 25 Claims

1. A photographic element comprising a support having coated thereon:
a. a first photographic silver halide emulsion layer containing (1) nondiffusible photographic coupler which forms image dye and (2) a development inhibitor-releasing photographic coupler; and,
b. a second photographic silver halide emulsion layer containing nondiffusible photographic coupler which forms image dye, said second layer having a faster effective speed sensitivity than said first layer.

Re. 28,761
MANUAL CONTROL SYSTEM FOR NUMERICALLY CONTROLLED MACHINE
Thomas E. Hentz, Cincinnati, and Robert K. Burroughs, Batavia, both of Ohio, assignors to LeBlond Incorporated, Cincinnati, Ohio
Original No. 3,766,460, dated Oct. 16, 1973, Ser. No. 250,076, May 3, 1972. Application for reissue Oct. 29, 1974, Ser. No. 518,791
Int. Cl.² G05B 11/18
U.S. Cl. 318—571 33 Claims

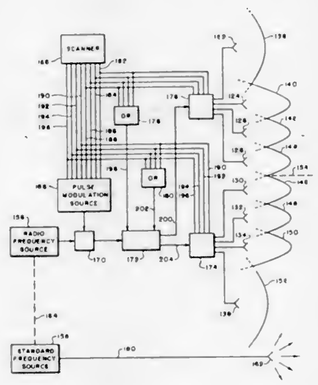


1. For use in combination with a numerically programmable machine having a slide and a motor for effecting movement of said slide, a control system for controlling energization of said motor, said control system comprising
a first source of *numerically controlled*, programmable position and velocity command signals,
a numerically controlled position servo loop including a comparator,

means for supplying a programmed command signal from said first source of command signals to said comparator,
means for supplying an error signal from said comparator to said motor,
a feedback signal generator,
means for supplying a feedback signal from said feedback signal generator to said comparator such that said error signal is representative of the difference between said command signal and said feedback signal,
a second source of unprogrammed *auxiliary* position control signals,
means for [supplying] *superimposing auxiliary* position control signals from said second source [to said comparator] *upon feedback signals from said feedback signal generator of said numerically controlled position servo loop*, and
[the improvement which comprises]
variable speed motor means for driving said second source of position control signals at a controlled rate so as to control the velocity of slide movement when said slide is under the control of said second source of unprogrammed position control signals.

Re. 28,762
RADIO NAVIGATIONAL AID WITH SEPARATE STANDARD FREQUENCY SIGNAL
Donald J. Toman, Pleasantville, N.Y., assignor to Tull Aviation Corporation, Armonk, N.Y.
Original No. 3,806,935, dated Apr. 23, 1974, Ser. No. 299,586, Oct. 20, 1972. Continuation-in-part of Ser. No. 54,510, July 13, 1970, Pat. No. 3,715,757. Application for reissue Oct. 24, 1974, Ser. No. 517,845
The portion of the term of this patent subsequent to Feb. 6, 1990, has been disclaimed.
Int. Cl.[2] G01S 1/16
U.S. Cl. 343—108 M **19 Claims**

1. An improved guidance method for a craft to be guided including
transmitting radio guidance signals from a ground station comprising a carrier having modulation [patters] *patterns* defining a predetermined guidance path plane for a craft to be guided,
transmitting a separate standard frequency signal from the ground station having a predetermined difference in



frequency from the guidance signal carrier frequency, and employing the standard frequency to control a local oscillator within a receiver in the craft to be guided to improve the discrimination function of the receiver is discriminating the desired guidance signals from other signals.

PLANT PATENTS

GRANTED APRIL 6, 1976

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,856
KALANCHOE PLANT
Adolf Grob, St. Gallen, Switzerland, assignor to Mikkelsens Inc., Ashtabula, Ohio
Filed Sept. 25, 1974, Ser. No. 509,144
Int. Cl. A01h 5/00
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar Kalanchoe characterized particularly by its dark red flower color, compact and vigorous growth habit, wide flower umbels with relatively large petals, and by its suitability for flowering during winter season.

3,857
ROSE PLANT—MEIBRICO VARIETY
Marie-Louise Meilland and Alain A Meilland, Antibes, and Michele Meilland Richardier, Tassin-la-Demi-Lune, France, assignors to The Conard-Pyle Company, West Grove, Pa.
Filed Oct. 24, 1974, Ser. No. 517,821
Claims priority, application Morocco, Dec. 7, 1973, 16,625
Int. Cl. A01h 5/00
U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class substantially as illustrated and described, distinguished as to novelty from the physical point of view: the plant, with medium green adult wood, is erect, the flower is double, coral inside, yellow and orange-pink outside, the petals are firm and show a yellow unguis; from the biological point of view: this rose plant grows vigorously, has great aptitude to forcing, its flowers last a long time when cut and the petals drop off cleanly.

3,858
ALMOND TREE
John H. Weinberger, Fresno, Calif., assignor to Phillip N. Jeffries, Shafter, Calif.
Filed Mar. 21, 1975, Ser. No. 560,992
Int. Cl. A01h 5/00
U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond tree, substantially as illustrated and described, generally characterized by medium size, medium vigor, open growth, stocky trunk and branches, a spreading branching habit, medium size, ovate, acutely pointed leaves in medium abundance, a medium blooming period, very light pink bloom in very heavy amount, and regular and very heavy bearing of early harvesting, medium size nuts having medium size kernels; the variety—while most nearly resembling the Nonpareil in tree, foliage, and nuts—being distinctively characterized, in comparison, by blooming three to five days later, by bloom more readily pollinated and fertilized, by setting fruit much more readily and which results in heavier production of nuts under similar conditions, and by production of nuts that are smaller both as to shell and kernel, the nuts having a broadly rounded base except for a small point, being smoothly ovate in edge view, and nearly oval in cross section.

3,859
CHRYSANTHEMUM PLANT NAMED GOLDEN ST. MORITZ
Robert E. Danielson, West Chicago, Ill., assignor to Pan-American Plant Company, West Chicago, Ill.
Filed Mar. 24, 1975, Ser. No. 560,772
Int. Cl. A01h 5/00
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinctive variety of chrysanthemum plant of the greenhouse pot plant type substantially as herein shown and described, characterized particularly by the uniqueness of its deep yellow color when compared with its parent cultivar "St. Moritz" and by the less reflexing of the outer ray petals.

3,860
ROSE PLANT
Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208
Filed Apr. 22, 1975, Ser. No. 570,513
Int. Cl. A01h 5/00
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, much branched, bush type, as illustrated and described, characterized by buds and flowers resembling the Windy City miniature rose (plant patent pending) in general form of bud but less double flower, the color being a lighter shade of pink with yellow at base of both inside and outside petal surfaces, the general color effect being pink with the reverse (outer) side of petals being a lighter pink blended with yellow; and further characterized by a plant which is of vigorous and compact habit but more restrained in growth than Windy City, easy to propagate from cuttings; with small glossy foliage, often tinted reddish or bronze on new growth; with flowers borne singly or several to stem in loose clusters.

PATENTS

GRANTED APRIL 6, 1976

ERRATA

For CLASS	See PATENT NO.
028–021	3,947,935
116–035	3,948,205
209–121	3,948,765
427–017	3,949,116
427–022	3,949,117
427–057	3,949,118
427–085	3,949,119
427–089	3,949,120
427–098	3,949,121
427–229	3,949,122
175–321	3,949,150
235–095 R	3,949,201
235–095 R	3,949,202
235–101	3,949,203
235–103	3,949,204
250–370	3,949,210
240–010 R	3,949,350

PATENTS

GRANTED APRIL 6, 1976

GENERAL AND MECHANICAL

NOTE—A cross reference listing of applications published under Trial Voluntary Protest Program on January 28, 1975 is located in the back of this Issue. These entries will be in numerical order by document publication number.

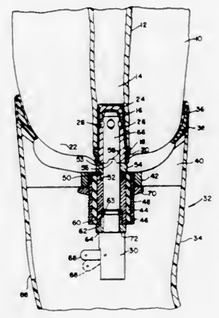
3,947,896
DOUBLE FACED ADHESIVE DEVICE FOR HOLDING A WOMAN'S SLIP
George F. Taylor, P.O. Box 625, Moultrie, Ga. 31768
Division of Ser. No. 281,161, Aug. 16, 1972, abandoned. This application Aug. 8, 1974, Ser. No. 495,560
Int. Cl.² A41D *1/14*
U.S. Cl. 2—217 **4 Claims**



1. In combination with an outer garment and an inner garment worn by a person, one of which garments tends to "ride" up with respect to the other, a device attached to and between said garments, said device constructed of a strip of material having opposite surface portions, with adhesive means applied to said opposite surface portions, whereby one surface portion is attached by said adhesive means to one garment and said other surface portion is attached by said adhesive means to said other garment.

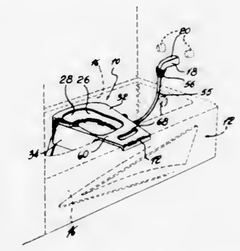
3,947,897
APPARATUS FOR CONNECTING A PROSTHESIS TO A BONE
Lester J. Owens, 3075 Saunders Place, Titusville, Fla. 32780
Filed Mar. 17, 1975, Ser. No. 559,108
Int. Cl.² A61F *1/08, 1/06, 1/00*
U.S. Cl. 3—2 **9 Claims**

1. An apparatus for connecting a prosthesis to a bone of a stump of an amputated limb comprising:
a. a tubular female socket adapted to be inserted within an intermedullary cavity of the bone,
b. said tubular female socket having an open lower end,
c. a sleeve of bio-compatible material encircling said lower end of said female socket,
d. said prosthesis having a contoured support for receiving said stump,
e. a resilient mounting means carried adjacent the center of said contoured support, and
f. a quick disconnecting lock pin supported by said resilient mounting means and adapted to be inserted in said open lower end of said tubular female socket for connecting



said prosthesis to said tubular female socket and said stump.

3,947,898
PORTABLE BIDET
Benoit Ducharme, 7393 18th Ave., Montreal H2A 2N4, Quebec, Canada
Filed Sept. 16, 1974, Ser. No. 506,563
Int. Cl.² A47K *3/22, 7/08*
U.S. Cl. 4—6 **8 Claims**



1. A portable bidet adapted, in use, to be supported in a conventional bathtub having a bottom and a sidewall, said bidet comprising:
a. an enclosure-forming body having a bottom with an opening therein, a top with an opening therein, and means at said top defining a seat for a user;
b. a support bracket integral with said body and extending in the general plane of said seat to project away therefrom and to be set, in use, on the top of the bathtub sidewall, said support bracket including a slot which is configured to serve as both a carrying handle and hanging means;
c. a support leg having a pivot means at one end and a foot portion at the other end, said pivot means being coupled between said one end of said leg and a side of said body opposite said support bracket, said leg being pivotal between a retracted position wherein the entirety of said leg adjoins said body and an extended position wherein said leg projects from said body and wherein said foot portion of said leg engages the bottom of the bathtub, the size and configuration of said leg corresponding to the size and configuration of said opening in said bottom of said body

so that said leg entirely closes said opening when said leg is in said retracted position;

d. a wash basin depending from said user's seat, said wash basin being entirely contained in said body spacedly therefrom;

e. said basin, said body, and said leg defining an enclosed, interior space within said body;

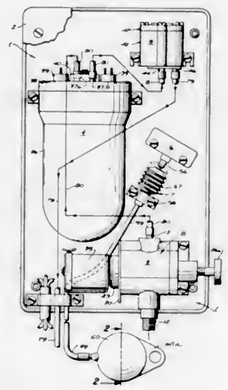
f. means for connecting said wash basin to a source of water, said water connection means being storable in said interior space when said portable bidet is not in use.

3,947,899

WARM WATER SUPPLY KIT

Joseph D. Robinson, 1209 W. 159th St., Gardena, Calif. 90247, and Joseph Fleming, 15925 McDermitt St., Fountain Valley, Calif. 92708

Filed Aug. 22, 1974, Ser. No. 499,656
Int. Cl.² A47K *11/08, 3/22*
U.S. Cl. 4—7 **1 Claim**



1. A bidet water supply kit, comprising:

a. a mounting base for installation on an essentially vertical surface;

b. a valve structure mounted on said base and including: a shut-off valve chamber having an inlet connected to a water supply line and an outlet forming a pressure regulator valve seat; a solenoid having a plunger carrying a shut-off valve element normally engageable with the inlet; a valve element for the pressure regulator valve seat: a pressure regulator diaphragm; an adjustment screw and spring for adjusting the diaphragm; and an outlet;

c. a heater unit mounted on said base and including: an inlet connected to the outlet of the valve structure: a normally on, low rate heating element and a normally off, high rate heating element therein: a thermostat control for both heating elements; and an outlet;

d. an anti-syphon valve mounted on said base and having an inlet connected to the heater unit outlet, and an outlet connected to a discharge line, said discharge line comprising a tube of plastic material extending from said base to a location remote therefrom, said anti-syphon valve having a chamber communicating with said inlet and outlet and an anti-syphon opening, a valve member held by pressure in said chamber in position to close said opening and movable, in the absence of pressure in said chamber, to open said opening and close said inelt;

e. a bidet device secured to the underside of a toilet seat at said remote location and including: an inlet connected to the discharge line; and a discharge nozzle directed upwardly and forwardly from the toilet seat;

f. a control switch mounted on said base for the valve structure solenoid and the main heating element;

g. and a pneumatic actuator for operating the control switch, the pneumatic actuator including: a bellows mounted on said base and positioned to engage the control switch thereby to open the valve structure for flow of water to the bidet nozzle, and to energize the main heating element: a tube of plastic material extending from the bellows and from said base to another location remote therefrom and a manually operated squeeze bulb at the end of said last-named tube for activating the bellows.

3,947,900

COMBINATION COMMODE CONSTRUCTION

James I. Duke, 9851 Bellefontaine, St. Louis, Mo. 63137

Filed Dec. 16, 1974, Ser. No. 532,777
Int. Cl.² E03D *1/22, 3/00, 3/12*
U.S. Cl. 4—11 **7 Claims**



1. A water closet construction adapted to service a plurality of distinct and spaced flush type toilet commodes which may have different flush water requirements comprising a water tank having a first outlet for communicating with a first toilet commode, a second outlet for communicating with a second toilet commode, said second outlet being displaced on said tank from said first outlet to permit each of said outlets to be individually and separately communicatively connected to its respective toilet commode, first valve means associated with the first outlet including means for moving the first valve means relative to the first outlet to flush the first toilet commode independently of said second toilet commode with water from the water tank, said first valve means including means for controlling the quantity of water discharged from the water tank to the first toilet commode, second valve means associated with the second outlet including means for moving the second valve means relative to the second outlet to flush the second toilet commode independently of said first toilet commode with water from the water tank, said second valve means including means for controlling the quantity of water discharged from the water tank through the second outlet to said second toilet commode, and means to refill the water tank to a predetermined water level after each flushing operation.

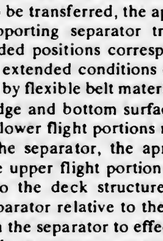
3,947,901

HANGER FOR TOILET BOWL DEODORANT

August W. Willert, Ladue, Mo., assignor to Irwin-Willert Company, St. Louis, Mo.

Filed Aug. 25, 1972, Ser. No. 283,723
Int. Cl.² E03D *9/02*
U.S. Cl. 4—231 **4 Claims**

1. In a hanger for a toilet bowl disinfectant or the like: a frame having support means to engage a rim of a toilet bowl to support the hanger thereon; a pair of laterally spaced forward legs depending from the support means, converging laterally and downwardly and having their lower portions offset rearwardly, the legs being adapted to hold a deodorant or like block; rearward leg means comprising a pair of legs having laterally spaced upper ends connected to the support means, the rearward legs depending from the support means in spaced relation to the first-named pair of legs, the rearward leg means converging downwardly to substantial intersection and being joined at the lower end thereof by a web that is bent forwardly to extend toward the aforesaid pair of legs; the frame being resilient to enable its installation over the rim of a toilet bowl, the offset in the pair of forward legs and the



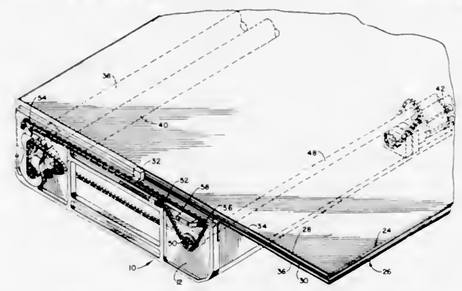
forward bend of the web of the rearward leg means providing a clamping effect engaging the rim of the bowl, the forwardly bent portion of the web having its end shaped to give substantially a point contact with the bowl.

3,947,902

APRON AND DRIVE MECHANISM FOR OBJECT TRANSFERRING APPARATUS

John Conde, and Jose Castro, both of Mayaguez, P.R., assignors to Mobilizer Medical Products, Inc., Summit, N.J.

Filed Mar. 17, 1975, Ser. No. 558,938
Int. Cl.² A61G *1/02;* **F16H** *7/18*
U.S. Cl. 5—81 R **15 Claims**



1. In an object transfer apparatus of the type having a chassis to establish a load carrying deck structure with inner and outer edges and at least one extensible apron assembly adjustable between a retracted condition overlying the deck structure and an extended condition located at least in part beyond the outer edge of the deck structure over a surface to or from which an object is to be transferred, the apron assembly being comprised of a supporting separator translatable between retracted and extended positions corresponding respectively to the retracted and extended conditions of the assembly and an apron established by flexible belt material trained about the top, leading outer edge and bottom surfaces of the separator to define upper and lower flight portions merging at the leading outer edge of the separator, the apron assembly being operative so that the upper flight portion may be either held stationary relative to the deck structure during translating movement of the separator relative to the object to be transferred or moved with the separator to effect lateral transfer of an object overlying the separator, movement of the separator being accompanied by a variation in the length of the upper and lower flight portions, the improvement comprising:

a finite length of flexible belt material to establish the apron;

first and second winding elements mounted for rotation on said chassis;

means connecting opposite ends of the apron to said first and second winding elements respectively such that linear movement of the upper apron flight portion relative to the separator is controlled by said first winding element and linear movement of the lower apron flight portion relative to the separator is controlled by said second winding element; and

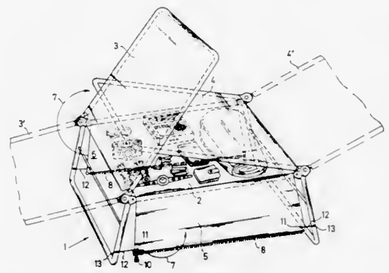
common drive means for translating the separator and for rotating said first and second winding elements, said drive means including shiftable transmission means by which said first and second winding elements may be operated either to retain, pay out or take in the upper and lower flight portions respectively in synchronization with movement of the separator.

3,947,903

FOLDING COUCH FOR BEACH OR CAMPING

Hans Reinhard Menke, Marienbader Platz 20, Bad Homburg v.d.h., Germany

Filed Apr. 19, 1974, Ser. No. 462,445
Int. Cl.² A47K *11/02*
U.S. Cl. 5—111 **2 Claims**



1. A folding couch comprising two elongated tubular portions, a head part comprising a first U-shaped tubular member having open ends, a first hinge means pivotally connecting the open ends of said first U-shaped tubular member to said two elongated tubular portions, respectively, a foot part comprising a second U-shaped tubular member, a second hinge means pivotally connecting the open ends of said second U-shaped tubular member to said two elongated tubular portions, respectively, a web covering said two elongated tubular portions and having two flaps extending on opposite sides a distance equal to half the distance between said two elongated tubular portions, said web extending the length and width of said head part and said foot part, means fastening said web to said two elongated tubular portions and to said head part and said foot part, zipper means fastened to said two flaps, said head part and said foot part pivotally hinged one part over the other part to form the closed ends of a pouch and to be overlain by said two flaps, said zipper closing said two flaps to form a closed pouch, and means to lock said zipper in closed pouch position.

3,947,904

ELECTRICANS' COMBINATION TOOL

William H. Hayes, Helena, Ala., assignor to Efficiency Tool Company, Inc., Pelham, Ala.

Filed Nov. 22, 1974, Ser. No. 526,119
Int. Cl.² B25F *1/00*
U.S. Cl. 7—3 A **5 Claims**

1. A combination tool comprising:

a first handle;

a second handle movably joined with said first handle at a pivot axis;

a first shank extending from said pivot axis and joined with said first handle;

a second shank extending from said pivot axis and joined with said second handle;

a first tool member joined and substantially normal to said first shank, and substantially parallel with said pviot axis, said tool member having a first flat end surface substantially parallel with said first shank;

a second tool member joined and substantially normal to said second shank, and substantially parallel with said pivot axis, said tool member having a second flat end surface substantially parallel with said second shank;

said first and second tool members having opposing surfaces with corresponding openings therein substantially parallel



with said shanks and substantially normal to said pivot axis, one of said openings comprising an oblong opening;

a protrusion extending from one of said tool members into said oblong opening;

means for changing the dimension of said protrusion into said oblong opening; and wherein

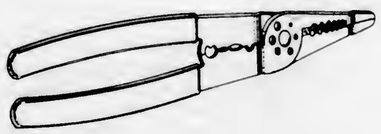
said first and second end surfaces define a flat hammer face with said opposing surfaces of said tool members abutting each other, and said openings define means for stripping insulation from wire extending between said tool members in a direction substantially parallel with said shanks.

3,947,905

MULTI-PURPOSE ELECTRICAL WIRING TOOLS

Ted Neff, 24921 Muirlands Blvd. Sp. 203, El Toro, Calif. 92630

Filed Mar. 12, 1975, Ser. No. 557,456
Int. Cl.² B25B 7/22; H02G 1/12
U.S. Cl. 7—5.6 **1 Claim**



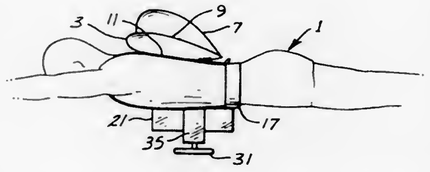
1. A multi-purpose tool comprising: A pair of operating members pivotably connected together in sliding relationship by a pivot member disposed in a pair of bores having a common pivot axis, said pivot member and bores being located in substantially the center of corresponding flat sections on each of said operating members, a pair of rearwardly extending portions disposed on one side of said flat sections and said pivot axis, said rearwardly extending portions having sections angularly offset toward each other immediately adjacent said flat sections so as to extend rearwardly in a common plane, at least four crimping means on said rearwardly extending portions, the first of which is immediately adjacent said offset sections and rearward thereof, said first crimping means consisting of an arcuate recess in the inwardly facing edge of one of the rearwardly extending portions, a tooth-like projection on the inwardly facing edge of the other rearwardly extending portion and opposite said recess, said projection extending across the central longitudinal axis of the tool and into said recess, a second crimping means immediately adjacent and to the rear of said first crimping means, said second crimping means being comprised of similar, relatively flat, arcuate recesses disposed opposite each other on the inner edges of said rearwardly extending portions, thereby forming a substantially oval-shaped opening when said extending portions are in a closed position, a third crimping means immediately adjacent and rearward of said second crimping means comprised of a pair of arcuate recesses similar to but smaller than those of said second crimping means, a fourth crimping means disposed immediately adjacent and rearward of said third crimping means and being comprised of a first semi-circular recess disposed on the inner edge of one of said rearwardly extending portions, a second semi-circular recess on the inner edge of the other rearwardly extending portion and cooperating with said first recess, said second recess further having a small tooth-like projection in the bottom of said recess and extending inwardly into a substantially circular opening formed by said semi-circular recesses, two handles formed on said rearwardly extending portions immediately to the rear of said fourth crimping means, said handles projecting rearwardly in spaced apart relationship, a pair of forwardly extending portions disposed on the opposite side of said flat sections and said pivot axis and extending in parallel but offset planes for most of their length and in a common plane for the balance of their length, said forwardly extending portions containing cutting means immediately adjacent said flat sections, said cutting means consisting of cooperating beveled sections forming sharp cutting edges disposed on opposite inner edges of said forwardly extending portions, said beveled sections being disposed on opposite sides of said tool so the cutting edges will bypass each other in a scissor-like shearing action when said forwardly extending portions are closed together, wire-stripping means immediately adjacent and forward of said cutting means, said stripping means consisting of six pairs of cooperating arcuate recesses on oppositely facing inner edges of said forwardly extending portions, each of said pairs forming sharp-edged circular openings when said forwardly extending portions are closed together, said pairs of arcuate recesses partially bypassing each other in a scissor-like shearing action, said circular openings forming said stripping means being of progressively smaller diameters with the smallest thereof being positioned fartherest away from said pivot axis of said tool, said forwardly extending portions having sections angularly offset toward each other out of said parallel offset planes and into a common plane, said offset sections being disposed immediately forward of said smallest stripping means, said forwardly extending portions remaining in said common plane for the balance of their length, a pair of gripping jaws immediately forward of said offset sections, said jaws having oppositely facing serrated surfaces on their inner edges in abutting relationship for the purpose of gripping various objects, shearing means consisting of six pairs of differently sized bores disposed on said flat sections, one of each pair being located on each of said flat sections, said pairs of bores cooperating with each other in axial alignment when said operating members are opened to a given point, at which point a bolt or screw may be inserted therethrough for shearing, said shearing being accomplished when said operating members are pivoted toward a closed position, thereby misaligning said bores and causing a shearing action on said bolt or screw, said bores further being disposed in a circular pattern completely around said pivot axis in said flat sections, and being equidistant from said pivot axis and equidistant from each other.

3,947,906

SWIMMING EQUIPMENT

Merle McLane, 5602 Lee Highway, Apt. 302, Arlington, Va. 22207

Filed Apr. 24, 1975, Ser. No. 571,052
Int. Cl.² A63B 31/08
U.S. Cl. 9—301 **4 Claims**



1. Swimming equipment for attachment to the body of a swimmer comprising

a harness,

said harness comprising shoulder strap members and a belt member to fasten on the body of a swimmer,

a fin member attached to said harness,

a press apparatus attached to said harness,

a bladder member within said press apparatus,

said press apparatus including means operable manually by the swimmer to compress said bladder member into a smaller volume and to release said bladder from its compressed state to expand to its original volume,

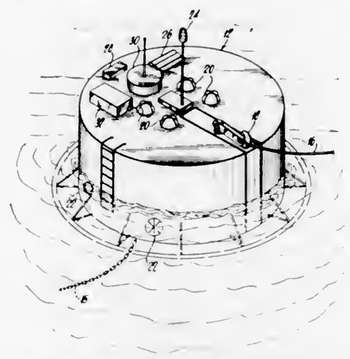
whereby the swimmer may alternately compress and release said bladder member to cause alternate sinking and rising toward the surface of the water thereby causing water to flow over the surfaces of said fin member and produce forward motion for the body of the swimmer.

3,947,907

REMOTE CONTROLLED SCUTTLING BUOY

Steve T. Synodis, Morris Plains, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed June 24, 1974, Ser. No. 482,416
Int. Cl.² B63B 21/52
U.S. Cl. 9—8 R **10 Claims**



1. A scuttling valve for admitting water to a submersible buoy or for releasing air from said buoy comprising:

a. a support plate adapted to be secured to an opening in said buoy, said support plate having an opening for passing said water or air, said opening serving as a valve seat;

b. an open cage means mounted on said support plate and surrounding said valve seat opening for providing free passageways, said cage being positioned with an exterior portion outside said buoy, and an interior portion inside said buoy;

c. a valve plug adapted to close said valve seat opening of (*b*), said plug fixedly mounted on a guide member which is arranged perpendicularly to said plug and valve seat and extends on both sides of said supporting plate of (*a*), said guide member being positioned by a valve guide secured to the exterior portion of said cage;

d. a fixed reaction plate mounted on the interior portion of said cage and having an opening for accepting and guiding the interior extending portion of said guide member of (*c*);

e. a spring means positioned between said reaction plate and said valve plug for resisting movement of said valve plug toward said reaction plate and for urging said valve plug against said valve seat;

f. a movable lift plate mounted perpendicularly on the interior end of said guide member and parallel to said reaction plate of (*d*);

g. a valve plug operator for positioning the movable valve plug relative to the valve seat by acting against the movable lift plate.

5. A remote controlled self-scuttling mooring buoy comprising:

a. a hollow body member having a plurality of compartments therein;

b. a plurality of scuttling valves mounted on said body member for admitting water to said compartments and for releasing air therefrom, each of said valves including a support member including an opening and serving as a valve seat, valve plug means for closing said opening, a fixed reaction member and bias means positioned between said reaction member and said valve plug means for normally maintaining said valve plug means against said valve seat for closing said opening, and expandible means coacting with said valve plug means for positioning said valve plug means with respect to said opening in opposition to said bias;

c. mooring hook means for mooring engagement with a mooring line for securing a vessel to said buoy, said mooring hook means responsive to a signal for movement between a first position for securing said mooring line to said buoy and a second position in which it is adapted to release said mooring line from said mooring hook means;

d. receiving means for receiving a signal and commanding a response to said signal;

e. actuating means responsive to said receiving means for releasing said mooring line from said mooring hook means and opening said scuttling valves, thereby freeing said vessel from said buoy and sinking said buoy.

3,947,908

LIFE-SAVING APPLIANCE

Andrey Maslenikow, 180 Parsippany, Boonton, N.J. 07005

Filed Dec. 3, 1974, Ser. No. 529,031
Int. Cl.² B63C 9/16
U.S. Cl. 9—318 **2 Claims**

1. A life-saving appliance comprising:

a. a receptacle containing a fluid that expands rapidly under ambient conditions;

b. sealing means extending across said receptacle for isolating the fluid from ambient conditions;

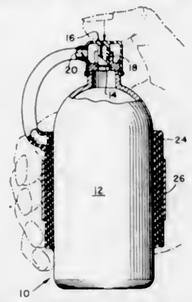
c. normally unactuated means operable, when manually actuated, to breach said seal;

d. an inflatable tube positioned about said receptacle in its normally deflated condition, said deflated tube being compressed so that it can conform to the configuration of said receptacle;

e. conduit means connected between said receptacle and said inflatable tube to serve as a flow path therebetween;

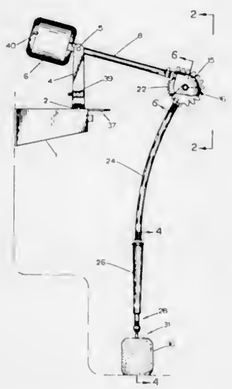
f. a band of material wrapped about said tube, in its deflated condition, to retain said tube in fixed position pressing against the exterior of said receptacle;

g. said band quickly losing its strength when coming in contact with water so that said deflated tube is filled by the rapid expansion of the fluid passing from the interior



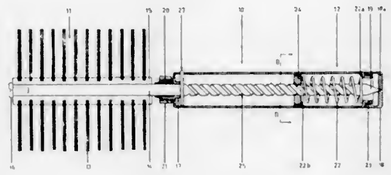
of the receptacle through the conduit means and thence into the inflatable tube after the means for breaching the sealing means have been manually actuated prior to throwing said life-saving appliance into the water.

3,947,909
POWER-DRIVEN KITCHEN UTILITY TOOL
Ming-Chuan Kuo, 19350 Christina Court, Cerritos, Calif. 90701
Continuation-in-part of Ser. No. 483,215, June 26, 1974, abandoned. This application May 5, 1975, Ser. No. 574,574
Int. Cl.² A46B *13/02*
U.S. Cl. 15—23 **19 Claims**



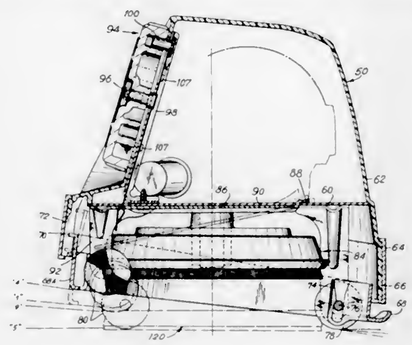
1. A hand-positioned, collapsible power-driven kitchen utility tool comprising a drive motor having an elongated rotary drive shaft; an elongated rotary-driven output shaft which is movable relative to the motor drive shaft; a gear assembly driven by the motor drive shaft and engaged with the driven output shaft for rotating the output shaft, the output shaft having a working end for attachment to an implement to be rotated in response to operation of the drive motor; the gear assembly comprising speed reduction means for reducing the speed of rotation of the driven output shaft relative to the motor drive shaft and for providing two-way swivel motion of the output shaft relative to the motor drive shaft during operation of the drive motor, the speed reduction means permitting the output shaft to swivel laterally relative to the axis of the motor drive shaft, and also to swivel toward and away from the motor drive shaft.

3,947,910
AUTOMATIC HAIR BRUSH
Jean Akerman, 49 rue Richet, 75009 Paris, France
Filed Dec. 21, 1973, Ser. No. 427,061
Claims priority, application France, Dec. 29, 1972, 72.46851; Mar. 21, 1973, 73.10174
Int. Cl. A46b *13/00*
U.S. Cl. 15—27 **11 Claims**



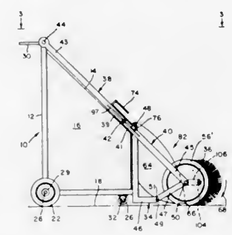
1. A hair styling brush comprising: an operating handle, a brush head in the form of a cylindrical body of revolution; a rotation axle attached to said head and supported for rotation inside said handle in such manner that said head starts to rotate when it contacts and is manually pulled along a hank of hair; and spring means interposed between handle and axle, said spring accumulating tensional energy due to said rotation so as to produce reverse rotation of the brush head upon release, thereby to produce automatic rolling-up on the brush of the hank under tension.

3,947,911
TILTING FLOOR CLEANER
Carl E. Meyerhoefer, Little Neck, N.Y., assignor to General Signal Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 323,335, Jan. 12, 1973, abandoned. This application Jan. 11, 1974, Ser. No. 432,531
Int. Cl.² A47L *11/16*
U.S. Cl. 15—50 R **14 Claims**



1. In a rug scrubbing machine, the combination of:
a frame with at least one substantially flat, circular scrubbing brush rotatably mounted on the frame and positioned below said frame;
means for supporting said machine, including rear wheel means fixedly mounted on said frame and at least one front wheel;
means for selectively positioning said front wheel so as to vary the inclination of the axis of said brush from the vertical whereby one side of the brush is able to engage a rug with varying degrees of contact, said means including a bracket for said front wheel, said bracket being pivotally mounted on a horizontal axis such that said front wheel can be moved thereby about said horizontal axis.

3,947,912
MANUALLY OPERATED SWEEPER
Abraham Michaels, 638 Spruce St., Philadelphia, Pa. 19106
Filed Sept. 13, 1974, Ser. No. 505,854
Int. Cl.² E01H *1/04*
U.S. Cl. 15—79 R **24 Claims**



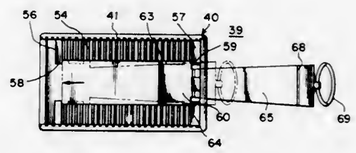
1. In a sweeper, the combination of
A. a frame having front and rear portions capable of being moved over a surface,
1. said frame defining a trash container receiving area;
B. a support connected to a front portion of the frame by pivot means,
1. said support rotatively carrying a surface sweeping brush,
2. said support having means to move the brush from a surface sweeping position to an elevated position between the front pivotal connection and the rear of the frame, and
C. a hopper carried by the support and positioned to receive sweepings from the brush,
1. said hopper including means to dump the hopper to transfer the sweepings from the hopper to the trash container receiving area.

3,947,913
COMBINES MOP OR BROOM AND SCRAPER
Ethelyn B. Nelson, 6410 Maiden Lane, Bethesda, Md. 20034
Filed Aug. 22, 1974, Ser. No. 499,850
Int. Cl.² A46B *17/08*; **A47L** *13/12*
U.S. Cl. 15—111 **1 Claim**



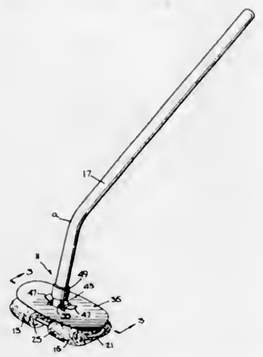
1. A cleaning implement comprising
a. an elongated cylindrical handle having two free ends thereof,
b. a cleaning device attached at one of said handle free ends, said cleaning device comprising a mop head, or broom bristles,
c. means for scraping hard to remove materials from surfaces to be cleaned while not making said implement unwieldy when used for mopping or sweeping and for allowing various orientations of said handle during scraping, said means mounted at the free end of said handle opposite the end of said handle said cleaning device is attached to and comprising (i) a generally elongated tubular extension, of substantially constant cross-section, of said handle having the same shape cross-section as the cross-section of said handle and having an inside circumference corresponding to the outside circumference of said handle and an outside circumference only slightly greater than the outside circumference of said handle, said extension having two ends and being attached to said handle at one end of said extension, (ii) a serrated peripheral edge defining the circumferential terminating edge of the end of said extension opposite the end thereof attached to said handle, and (iii) said extension formed of an integral piece of plastic, said plastic being hard enough to remove materials stuck to surfaces, but not being hard enough to mark or scratch said surfaces, and
d. a notch formed in said tubular extension at a portion thereof spaced from the furthestmost longitudinal extent of said handle for facilitating hanging of said cleaning implement upon a hook or the like.

3,947,914
COLLAPSIBLE BRUSH
Albert Jacoby, 4 Plymouth Place, White Plains, N.Y. 10605
Filed Feb. 15, 1974, Ser. No. 443,085
Int. Cl.² A46B *9/10*
U.S. Cl. 15—203 **7 Claims**



1. A collapsible brush comprising a body member including a pair of upwardly directed transversely spaced longitudinally extending parallel walls having a plurality of longitudinally spaced pairs of transversely aligned recesses formed in the confronting faces thereof, a plurality of longitudinally spaced transversely extending bars of non-circular transverse cross section having shafts at opposite ends thereof journalled in corresponding pairs of said recesses, each of said bars having a gear sector defining toothed arcuate underface, brush bristles secured to and projecting upwardly from each of said bars, a longitudinally slidable longitudinally extending rack underlying and engaging said gear sectors, a longitudinally extending handle member longitudinally movable along a path between said parallel walls between a retracted and an extended position, means including a lost motion coupling between said rack and said handle for oppositely moving said rack with the movement of said handle proximate its extended and retracted positions to rock said bars and swing said bristles between upwardly directed extended positions and overlapping collapsed positions respectively, means to maintain said bristles in locked upwardly direct position, said lost motion coupling including abutment means located at opposite ends of said rack, and said handle member having a head section moveable along said rack and alternatively engaging said abutments with the longitudinal movement of said handle member toward extended and retracted positions.

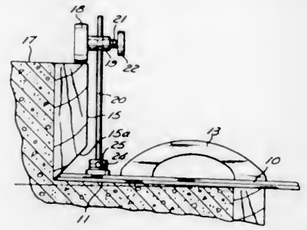
3,947,915
STEEL WOOL PADS AND HOLDER THEREFOR
Florence Kroll, 879 E. 19th St., Brooklyn, New York, N.Y. 10009
Filed Nov. 13, 1974, Ser. No. 523,256
Int. Cl.² A47L *13/04*
U.S. Cl. 15—209 D **11 Claims**



1. In combination a scrub-tool holder and a steel wool pad, said pad having upper and lower reaches and a slit through the center thereof defining overlying interior portions, comprising:
an elongated handle;
an open frame support means at one end of said handle adapted to support said steel wool pad, said frame support means having at least one end portion spaced from said handle and being tapered toward said end portion and adapted to extend through the slit in the pad so as to engage the edge walls of said slit, thereby leaving substantially all of the overlying interior portions of the upper and lower reaches of the pad in contact with one another; and
clamping means comprising rigid plate means on said handle mounted for reciprocal movement towards and away from the frame support means for fixedly holding on said frame support means a pad previously applied thereto and for urging the overlying interior portion of the upper reach of the pad against the contacting interior portions of the lower reach of the pad so as to provide added cushioning for the interior portion of the lower reach and to position the interior portion of the lower reach closer to the surface to be scrubbed.

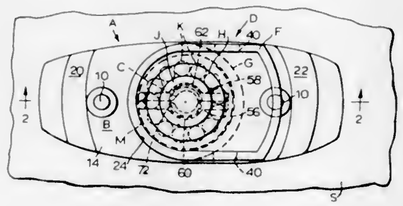
3,947,916
TROWEL FOR MASONRY STEPS
Harold Mitchell, 210 NW. 56th St., Fort Lauderdale, Fla. 33308
Filed Nov. 21, 1974, Ser. No. 526,008
Int. Cl.² E04F *21/16*
U.S. Cl. 15—235.8 **5 Claims**

1. A tool for troweling masonry steps comprising:
a trowel blade for troweling the surface of a step;
a substantially rigid support extending up from said blade near one end of the latter;
a reference member carried by said support and positioned beyond said support in the direction of said one end of the trowel blade for overlying engagement with the top of a riser form in front of the next higher step to impart a slight upward inclination to the trowel blade in the direction of said one end as said reference member rides over the top of said riser form;
said support comprising a post pivotally mounted at its lower end on said blade for adjustment between a retracted position toward the blade and an erected position extending up from the blade;
a carrier for the reference member projecting endwise from said post and supporting the reference member beyond said post in said one direction when the post is in its



erected position, said carrier being slidably adjustable lengthwise along said post;
and means for releaseably locking said carrier at a selected position along the post corresponding to the desired spacing of the reference member vertically above the blade.

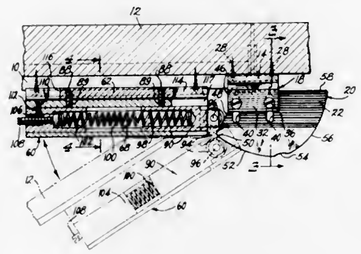
3,947,917
RUNNERS AND ATTACHABLE CASTERS FOR LUGGAGE CASES AND THE LIKE
Marvin Schwartzstein, Rydal, Pa., and Richard Molnar, Elmwood Park, N.J., assignors to York Luggage Corporation, Lambertville, N.J.
Filed Oct. 4, 1974, Ser. No. 512,072
Int. Cl.² B60B *33/00*
U.S. Cl. 16—30 **18 Claims**



1. A runner adapted to be secured to the bottom of a luggage case or the like for enabling connection thereto of an attachable caster, the runner comprising a runner body having a recess therein, a stud connected to the body and positioned in the recess so that no portion thereof extends beyond the recess, whereby the runner will engage a floor when a caster is not attached to the stud, the stud having means engageable by the caster.

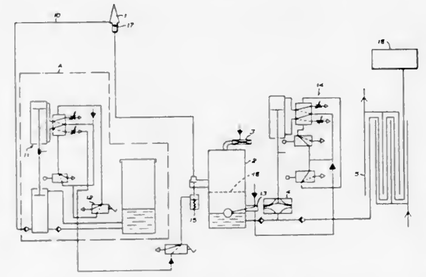
3,947,918
DOOR CLOSER
Lucien Henri Favre, Gland, Switzerland
Filed Feb. 25, 1975, Ser. No. 552,864
Int. Cl.² E05F *1/08*
U.S. Cl. 16—72 **11 Claims**

1. A door closer for mounting on a door, and door frame comprising:
a. a disc shaped cam including:
1. in succession a straight edge portion at an angle to said door frame, a curved edge portion curving away from said straight edge portion, and a notch,
2. a plurality of longitudinal grooves and ridges on at least one surface thereof extending parallel to said door frame,
3. at least one opening in said cam extending perpendicularly to said door frame,
b. means for mounting said cam on a door frame,



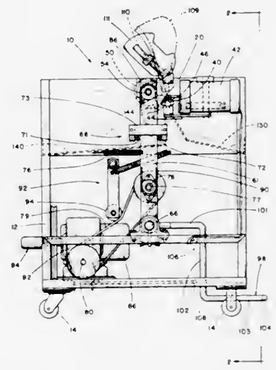
c. a cam follower including:
1. a housing,
2. a cam follower spring biased in said housing against said cam surface and means for adjusting the bias on said cam follower,
d. means for mounting said cam follower on a door.

3,947,919
PLANT FOR THE RECOVERY OF SLAUGHTERED ANIMAL BLOOD
Per Anders Gösta Ekdahl, N. Infartsvagen 53, S-244 00 Kavlinge, Sweden
Filed July 5, 1974, Ser. No. 486,092
Claims priority, application Sweden, July 17, 1973, 7309982
Int. Cl.² A22B *5/20*
U.S. Cl. 17—1 C **8 Claims**



1. A plant for recovering blood from slaughter animals comprising:
at least one stabbing knife;
a vacuum bloodtube having one end connected to and in communication with said stabbing knife, a metering apparatus connected to and communicating with said stabbing knife, said metering apparatus including a pneumatic metering pump for metering an anticoagulant into the blood through said stabbing knife, an impulse generator coupled to said metering pump and operated from the knife for actuating said metering pump;
a central vacuum container connected to the other end of said bloodtube;
a remote-controlled shutoff valve connected to said bloodtube for connecting and disconnecting said bloodtube with said container;
an injector arranged on the container for connecting a source of pressurized air to said container whereby blood is sucked to the container by the vacuum produced thereby;
and a pneumatic membrane pump connected between said container and a heat exchanger for cooling the blood, and a collector for the final collection of the blood.

3,947,920
MACHINE FOR SEPARATING MEAT TISSUE FROM BONE
Nicholas Michael Voornas, Evanston, Ill., assignor to Midaco Corporation, Elk Grove Village, Ill.
Filed Mar. 29, 1974, Ser. No. 456,358
Int. Cl.² A22B *5/16*
U.S. Cl. 17—21 **23 Claims**

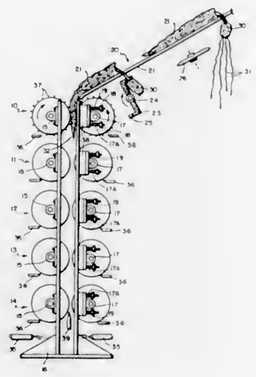


1. A machine for separating the tissue from the bone in a section of meat, said machine comprising a framework having sides, an elongate knife blade having a cutting edge, said knife blade being supported by said framework and extending between the sides of said framework, rotatable means supported by said framework between said sides thereof for urging a section of meat past said cutting edge of said knife blade, and moving means manually operable during operation of said machine for moving said rotatable means to and from a position adjacent said knife blade thereby to move a section of meat positioned adjacent said rotatable means toward said cutting edge of said knife blade and such that the bone in the section of meat is moved closely adjacent said cutting edge of said knife blade whereby the tissue in the section of meat is efficiently and quickly separated from the bone.

3,947,921
APPARATUS FOR CLEANING MARINE ANIMALS OF THE MOLLUSK TYPE
Zeki Berk, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Filed June 18, 1973, Ser. No. 370,998
Int. Cl.² A22C *29/00*
U.S. Cl. 17—71 **16 Claims**

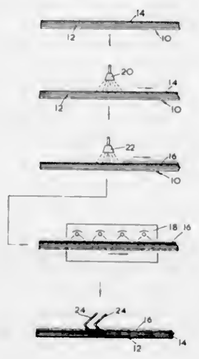
1. Apparatus for cleaning marine animals of the mollusk type comprising
means for holding said animal at the head region thereof;
means for applying pressure to the body of said animal;
means for relatively moving said head region and said body in opposite directions substantially simultaneously with the application of said pressure;
whereby the head portion and internal organs of said marine animal are substantially completely removed from the

body thereof, said pressure applying means including at least one pair of rollers between which said body is inverted; and



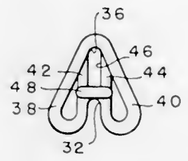
wherein said moving means includes means for rotating said rollers so that said body is moved in a direction away from said holding means.

3,947,922
FOUNDATIONS FOR CARD CLOTHING
Peter Ibbotson, Liversedge, England, assignor to The English Card Clothing Company Limited, Yorkshire, England
Filed Jan. 15, 1973, Ser. No. 323,652
Claims priority, application United Kingdom, Jan. 29, 1972, 4267/72
Int. Cl. D01g *15/84*
U.S. Cl. 19—114 **2 Claims**



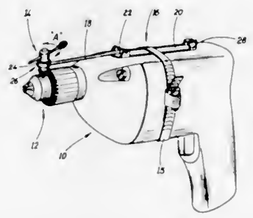
1. A card clothing foundation having a surface that is exposed during carding and having teeth projecting from that surface during carding and an anti-friction covering for reducing the retentivity of waste and fiber at said surface consisting essentially of a relatively thin carrier layer of hard wear resistant polyurethane in which a compatible silicone is incorporated.

3,947,923
FIBER CONDENSER
William John Schroder, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed May 16, 1975, Ser. No. 578,267
Int. Cl.² D01H *5/72*
U.S. Cl. 19—288 **1 Claim**



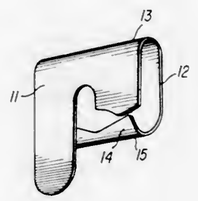
1. A roving guide for a spinning frame comprising: a generally flat unitary body member molded from a friction resistant plastic like material, said body member having two side walls diverging from an apex and a third wall interconnecting said diverging walls and having a portion thereof bowing upward to accommodate a screw, two substantially parallel walls spaced from one another and forming an opening therebetween connected at one end to said side walls adjacent the apex thereof and to said third wall at the other end and a projection on the face of said body member between the opening between said parallel walls and said third wall to guide roving away from the bowed portion of said third wall.

3,947,924
CHUCK KEY STORAGE APPARATUS
James C. Fox, 1930 Aurelius Road, Mason, Mich. 48854, and Chester J. Bilich, 36906 Briarcliff, Sterling Heights, Mich. 48077
Filed June 10, 1974, Ser. No. 477,690
Int. Cl.² B23B *39/00*; **A44B** *21/00*
U.S. Cl. 24—3 A **1 Claim**



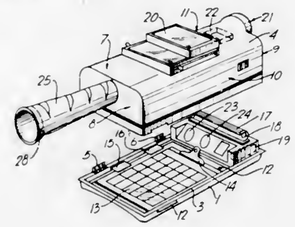
1. A chuck key storage apparatus adapted for use with a motor driven drilling machine, said chuck key storage apparatus comprising:
- a mounting plate adapted to be removably attached to the drilling machine motor housing with one axis of said plate beind disposed generally parallel to the axis of rotation of the drill chuck;
- an elongated arm pivotally mounted at one of its ends to said mounting plate with the pivotal axis being generally perpendicular to the axis of rotation of the drill chuck, for pivotal movement through an arc of approximately 180° between a stored position and a functional position;
- a chuck key mounting bearing connected to the opposite free end of said elongated arm and adapted to receive a chuck key for rotational movement about an axis disposed at a right angle to the pivotal axis of said elongated arm;
- a resilient clip which releasably engages said elongated arm between the ends of said arm to selectively retain said arm in the stored position 180° from the functional position, said resilient clip being connected to said elongated mounting plate.

3,947,925
BILLFOLD PROTECTION DEVICE
Fred M. Hargrave, Jr., J-21 Villa Caparra, Bayamon, P.R. 00619
Filed June 20, 1975, Ser. No. 588,835
Int. Cl.² A45C *13/18*; **A44B** *24/00*
U.S. Cl. 24—3 H **10 Claims**



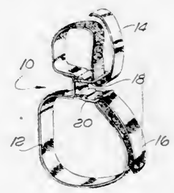
1. A device for locking a billfold in a pocket on a garment in which the pocket material is buttoned by a button connected to the garment and passed through a buttonhole in the pocket material, said device comprising:
- a substantially vertically extending inverted U-shape member adapted to be positioned in the pocket between the pocket material and the garment with the legs of the U-shape member straddling the connection of the button to the garment,
- an upwardly extending flange adapted to be positioned between the button and the pocket material and to abut the lower portion of the button, and
- means resiliently connecting the lower edge of said flange and the upper end of said member whereby the abutment of the flange with the button prevents the ready removal of the device from the pocket and the unbuttoning of the pocket and the resilient connection of the flange and the member renders the flange pivotable outwardly away from the button to clear the same to readily remove the device from the pocket to thereby permit unbuttoning of the pocket.

3,947,926
WEATHER BOARD RECORDER
James H. Hart, Monroe, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Apr. 28, 1975, Ser. No. 572,202
Int. Cl.² F21V *33/00*
U.S. Cl. 24—67.3 **4 Claims**



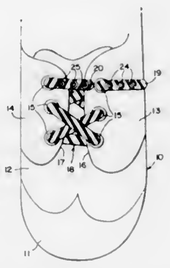
1. A weather board recorder, comprising
- a base member having an inner surface;
- a weather gasket around the base member;
- a cover member hingedly affixed to the base member for selectively providing access to the inner surface of the base member, said cover member having a top and sides;
- latch means on the base member for releasably securing the cover member to the base member;
- a clip board resting on the inner surface of the base member, said clip board having a head;
- clip means on the base member for retaining the clip board thereon;
- reflector means mounted on the base member in the area of the head of the clip board;
- lamp means mounted on the base member in operative proximity with the reflector means for illuminating the clip board;
- battery means mounted on the base member and electrically connected to the lamp means for energizing said lamp means;
- there being a hole formed through the top of the cover member; and
- viewer means mounted on the cover member over the hole for providing a view of the clip board.

3,947,927
SKI TIE
Allen M. Rosenthal, 6 Northstar St., Marina Del Rey, Calif. 90291
Filed Aug. 26, 1974, Ser. No. 500,422
Int. Cl.² A44B *21/00*; **B65D** *63/00*
U.S. Cl. 24—81 SK **5 Claims**



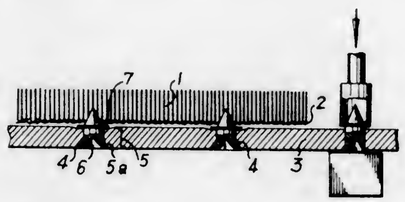
1. A tie for securing together a pair of skis and a pair of ski poles, comprising:
- an elongate flexible tape having opposite free end segments and a central segment therebetween, each free end segment and a respective portion of said central segment adjacent thereto having, on a first side of said tape, interengagable surface portions including a first surface portion provided with a multiplicity of male hook-shaped filamentary members and a second surface portion provided with a multiplicity of female loop-shaped filamentary members releasably inter-engagable with said male filamentary members; and
- first and second eyes for receiving therethrough respective ones of said free end segments, located on said central segment between said free end segments and spaced one from the other on a second side of said tape to define a flexible spacer segment therebetween, each eye being longitudinally spaced from at least part of the adjacent interengagable surface portion of said central segment and from a respective free end segment to define a long tape free end segment and a short tape free end segment whereby first and second enclosures for said skis and said ski poles, respectively, can be formed by threading said free end segments through said first and second eyes, respectively, for retention by engagement of their filamentary surfaces with the filamentary surfaces of respective adjacent portions of said central segment, said first and second enclosures being spaced apart by said spacer segment.

3,947,928
SNAP-ON SHOE LACE
Blanca Maldonado, Long Island City, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Feb. 6, 1975, Ser. No. 547,720
Int. Cl.² A43C 9/00
U.S. Cl. 24—143 R 3 Claims



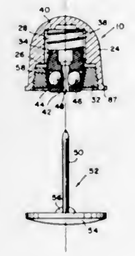
1. A snap on shoe lace adapted to be received through eyelet positioned in flaps of a shoe, which comprises:
a. an elongated flexible member having a pair of ends, a front, and a back face;
b. a plurality of snap members longitudinally arranged on said back face at one said end of said elongated member;
c. a plurality of snap receiving members contained in said elongated member along said front face at said other end of said elongated member, said snap members engaging into said snap receiving members;
d. a pluality of second snap receiving members contained in said front face at one said end of said elongated member;
e. a decorative shaped article; and
f. a plurality of second snap members affixed on a rear face of said decorative shaped article, said second snap members engaging into said second snap receiving members.

3,947,929
PRINTING BLANKET NEEDLE FOR SECURING A FABRIC TO A PRINTING BLANKET
Peter Zimmer, Untere Sparchen 54, A 6330 Kufstein, Austria
Filed Sept. 3, 1974, Ser. No. 502,413
Claims priority, application Austria, Sept. 4, 1973, 7666/73
Int. Cl.² B65G 15/42; A44B 9/00
U.S. Cl. 24—150 R 7 Claims



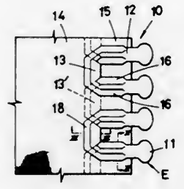
1. An anchoring needle for securing a web on one side of a printing blanket, comprising a shaft having a tapered first end portion formed as a tip, and a second end portion formed with an anchoring portion, said anchoring portion having an annular cutting edge adapted to penetrate the printing blanket when said second end portion of said needle is forced from said one side towards the other opposite side of the printing blanket and extending at most up to said other opposite side so that the latter is free of any unevenness resulting from the presence of said needle.

3,947,930
ANTI-THEFT FASTENING DEVICE AND TOOL FOR RELEASING SAME
Henry J. Martens, Lynnfield, and Jan Vandebult, Topsfield, both of Mass., assignors to I. D. Engineering, Inc., Peabody, Mass.
Division of Ser. No. 519,270, Oct. 30, 1974. This application Apr. 14, 1975, Ser. No. 568,151
Int. Cl.² A44B 9/00, 1/38
U.S. Cl. 24—155 BR 1 Claim



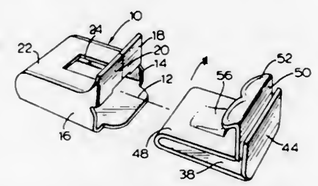
1. The combination of a fastening device and a detaching tool for releasing the same comprising:
a. a generally cylindrical non-metallic housing closed at one end and formed with a central opening and a relatively enlarged recess at the open end of said housing;
b. a ring mounted in said recess in said housing, said ring being formed with a downwardly and inwardly tapered inner surface;
c. an insert formed of magnetic material loosely received within said housing and extending upwardly substantially into said central opening, said insert being formed with a conical lower end adapted to mate with said tapered surface of said ring, an axial bore, and at least one transverse opening formed in said conical end of relatively greater dimension than said axial opening;
d. a pin extending upwardly through said axial bore of said insert;
e. a plurality of retaining balls disposed within said transverse opening of said insert;
f. spring means for resiliently biasing said insert toward the open end of said housing thereby adapting said balls to tightly frictionally engage said pin and retain the same in said insert,
g. a detaching tool for releasing said retaining balls and freeing said pin, said tool including electromagnetic means and circuit means for energizing said electromagnetic means, said detaching tool when positioned adjacent the closed end of said housing and when said electromagnetic means is energized functioning to retract said insert against the bias of said spring means thereby permitting movement of said retaining balls away from said pin to permit removal of said pin, and
h. a tag assembly in which said fastening device is mounted, said tag assembly including top and bottom tag cover sections rigidly secured together, one of said sections being formed with a tubular extension at one end thereof which loosely receives said fastening device, the other of said sections being formed with an opening to receive said pin, and antenna means and diode means mounted between said tag cover sections, said antenna means including a first antenna leg and a second antenna leg electrically connected to said first antenna leg through said diode means, said diode means being mounted on said antenna means in such a manner as to double the frequency received by said first antenna leg whereby said second antenna leg transmits said doubled frequency for actuating an alarm circuit.

3,947,931
SLIDING CLASP FASTENER
Ikuo Takamatsu, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan
Filed Dec. 27, 1974, Ser. No. 536,826
Claims priority, application Japan, Dec. 29, 1973, 49-493166[U]
Int. Cl.² A44B 19/40, 19/10
U.S. Cl. 24—205.16 C 2 Claims



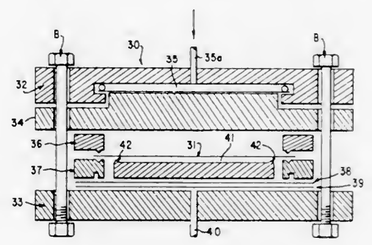
1. In a sliding clasp fastener including a pair of oppositely disposed stringer tapes each having a row of interlocking elements formed from a plastics filament into a continuous meandering structure, said elements each having two leg portions disposed astride of one longitudinal edge of said tape, a coupling head extending from said leg portions and adapted to interlock with that of an opposed interlocking element, and a connecting portion lying remote from said coupling head and connecting two adjacent interlocking elements, the improvement which comprises said leg portions being provided each with flattened oppositely projecting side portions, a flattened central portion projecting transversely with respect to said side portions, and a flattened, enlarged undersurface disposed for contact with the stringer tape, and said connecting portion being provided at the outer side thereof with a recess for receiving therein a side flange of a slider, with a flattened, enlarged undersurface disposed for contact with the stringer tape.

3,947,932
JEWELLERY CLASP
Alexander Flynn, Willowdale, Canada, assignor to Gozlan Brothers Limited, Toronto, Canada
Filed Apr. 5, 1974, Ser. No. 458,421
Int. Cl.² A44B 17/00
U.S. Cl. 24—230 CF 1 Claim



1. In a jewelry clasp, a one-piece holder folded from a metal blank having an axis of symmetry including a U-shaped socket formation having a central axis and an axial access opening, said socket formation including a pair of longitudinally extending substantially parallel arms, said socket formation opening at one end thereof, thereby presenting an access opening, of one said arms having an aperture adjacent said one end, the sides of said other arm having upstanding walls extending toward said one arm thereby forming said socket formation, a one-piece latch folded from a metal blank having an axis of symmetry including a U-shaped band portion lowermost having upper and lower branches which are resiliently displaceable in relation to each other, said band being adapted to register under slight compression axially snugly within said socket formation through said access opening with the separated ends of the branches thereof located outermost beyond said access opening and extending at substantially right angles thereto to present a first upper longer arm portion in spaced relation to a second lower shorter arm portion, with said first arm portion presenting a finger-engaging ledge at the outer extremity thereof, said upper resiliently displaceable branch of said U-shaped band portion having an integral raised portion interengageable with said aperture for locking same together against separation only when in axial snug registration and releasable only upon downward displacement of said first upper arm portion for withdrawal, said holder presenting flange formations extending from the ends of said upstanding walls across the end of said one arm and upwardly of the edge portion of said access opening contiguous said first upper arm portion, with the outer extremity thereof spaced below said finger-engaging ledge whereby said first upper arm portion may be displaced downwardly for release of said interengageable means.

3,947,933
METHOD OF CONSTRUCTING DISHED ION THRUSTER GRIDS TO PROVIDE HOLE ARRAY SPACING COMPENSATION
Bruce A. Banks, Olmsted Township, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Jan. 20, 1975, Ser. No. 542,157
Int. Cl.² H01J 9/00
U.S. Cl. 29—25.18 3 Claims



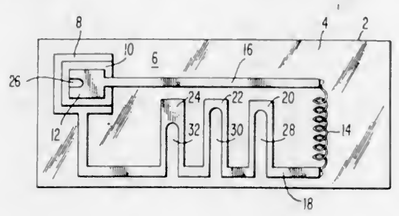
1. In a method of forming an ion thruster grid unit comprising the steps of applying first and second thin metal sheets to photoresist patterns corresponding to an array of holes; molding said thin metal sheets to impart a predetermined shape thereto; chemically etching the thin metal sheets to form holes therethrough according to said photoresist patterns; and mounting said molded sheets in parallel side by side relationship such that the two sheets are separated a small axial distance from each other; the improvement which comprises uniformly stretching one of said grids in the plane of said grid prior to said molding step such that said photoresist pattern corresponding to an array of holes is enlarged to increase the center-to-center spacing of the holes of said array of holes.

3,947,934
METHOD OF TUNING A TUNABLE MICROELECTRONIC LC CIRCUIT
Larry Alan Olson, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.
Continuation of Ser. No. 381,178, July 20, 1973, abandoned. This application Aug. 7, 1974, Ser. No. 495,424
Int. Cl.² H01F 21/00; H03H 3/00
U.S. Cl. 29—25.42 4 Claims

1. A method of tuning a frequency resonant microelectronic circuit which includes an adjustable printed capacitor and a

fixed principal inductor, to a desired center frequency, where the capacitor has a value higher than the final adjusted value comprising:

providing a printed trimmable inductor having substantially less inductance than said fixed principal inductor, in series with said principal inductor, said trimmable inductor being capable of being trimmed to increase its inductance,



trimming said capacitor whereby the resonant frequency of the circuit increases, said trimming being carried out until the resonant frequency of the circuit reaches a value somewhat higher than said desired center frequency, and

then trimming said trimmable inductor to cause the center frequency to decrease to the desired value.

3,947,935

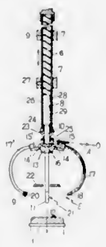
LEA MAKING APPARATUS

Tomokiyo Baba, 117, Tagisawa, Ohaza, Uedashi, Nagano, Japan

Filed Sept. 10, 1973, Ser. No. 395,843

Int. Cl.² B65H *55/00*

U.S. Cl. 28—21 **1 Claim**



1. A lea making mechanism of a reeling machine comprising:

a cylinder (**6**) having a tapered face (**23**), said cylinder being mounted for up and down movement on an upper portion of a machine frame,

a piston (**8**) situated within said cylinder (**6**) and pressed downwardly by a spring (**9**) received in said cylinder,

a rod (**10**) integrally mounted to said piston (**8**) and extending downward, said rod being formed at its lower end with a pointed head (**11**) and an opening (**21**),

a support (**13**) mounted on the intermediate portion of said rod (**10**),

levers (**15** and **15'**) outwardly bent and pivotably mounted on the support at their bent portion,

a lea leading pipe (**17**) and a lea receiving pipe (**17'**) secured to said levers so as to spread to an open-scissors position wider than the width of a hank thread bundle by means of a spring tensioned between said levers, and

an abutting plate (**22**) adapted to be struck with said support (**13**) during the downward movement of the cylinder and the piercing movement of said pointed head of said rod through the hank threads,

whereby owing to the forced downward movement of said cylinder only, said tapered face (**23**) of the cylinder pushes open said levers and the lower ends of both pipes (**17** and **17'**) are inserted in their closed-scissors position through said opening (**21**).

3,947,936

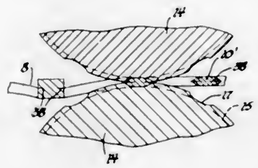
COINING EXPANDED METAL POSITIVE LEAD-ACID BATTERY GRIDS

Ellis G. Wheadon, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 12, 1974, Ser. No. 496,702

Int. Cl.² B23P *13/00*; **B21D** *31/04*

U.S. Cl. 29—2 **1 Claim**



1. A method of making positive lead-acid storage battery grid stock from strips of large-grained, leadcalcium alloy having grain boundaries extending substantially continuously from one face of the strip to the other comprising:

advancing a narrow strip of said lead alloy, having a predetermined thickness, longitudinally between two rows of progressive dies and cutters, said strip having a central, longitudinal lug-forming portion and two expandable grid-forming portions flanking the lug-forming portion and extending to both longitudinal edges of the strip, and said rows comprising a plurality of dies and cutters which converge in incremental steps on the central lug-forming portion of the strip passing between them;

expanding the grid-forming portions along the longitudinal edges thereof by periodically shearing rectangular wire-like segments from said edges into a plurality of tiers of undulatory skeletal elements extending at acute angles to the plane of said lug-forming portions and such that successive tiers are offset one from the other and joined one to the other by a plurality of nodes which join the ends of successive segments in one tier to the centers of like segments in successive tiers, said nodes having rectangular, vertically transverse cross-sections and widths significantly greater than said predetermined thickness and equal to the sum of the widths of the adjoining skeletal elements, whereby two reticulated portions comprising a plurality of polygonal paste-retaining cells bounded by said skeletal elements and nodes are formed and extend at acute angles from the central portion in gull-wing fashion when viewed head-on;

leveling the thusly expanded strip by folding said reticulated portions down into nearly the same plane as said central portion;

uniformly stretching the reticulated portions in directions substantially perpendicular to the direction the strip is fed through the dies by urging each tier of skeletal elements in those directions independently of the other tiers to uniformly size the cells, stretch the reticulated portions to a predetermined width and slightly rotate the rectangular nodes such that diagonally opposing edges of the nodes become salient in the principal planes of the reticulated portions;

flattening the reticulated portions by further rotating said nodes and compressing said salient edges into plateaus and thereby convert the rectangular cros-sections of said nodes to polygonal cross-sections having two opposing sides thereof laying in planes substantially parallel to the

faces of said central portions and spaced one from the other by a distance greater than said predetermined thickness but substantially less than twice said predetermined thickness; and

cold working and reshaping the elements and nodes into generally rounded and elliptical transverse cross-sections respectively and such that any sharp edges and corners on the elements and nodes are substantially removed, nodal expansion cracks are submerged into the nodes, and any continuous, straight-through grain boundaries are reoriented and broken up whereby the corrosion resistance of the grids in improved.

3,947,937

CONTROL GROOVE IN CUTTING ELEMENTS FOR METAL WORKING TOOLS

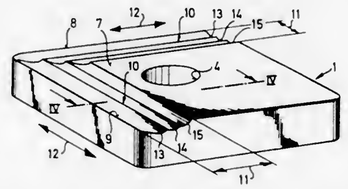
Karl Hertel, Oedenberger Strasse 29, D-8500 Nurnberg, Germany

Filed Aug. 7, 1975, Ser. No. 602,674

Claims priority, application Germany, Nov. 16, 1973, 2357180

Int. Cl.² B26D *1/00*

U.S. Cl. 29—95 R **5 Claims**



1. In a cutting element for cutting metals and having adjacent surfaces which meet to form a cutting edge, with a chip-controlling groove formed in one of the surfaces, the groove being composed of a plurality of depressions disposed parallel to one another, spaced apart in the direction of the groove width, and extending along substantially the entire cutting edge, the improvement wherein said groove is composed of more than two of said depressions, said depressions are arranged to form a ridge between each two adjacent depressions, the ridges being located such that, in the direction extending away from said cutting edge, each succeeding ridge is at a higher elevation than the preceding ridges.

3,947,938

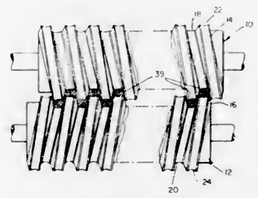
ROLL-PELLETIZER AND ROLLS THEREFOR FOR MAKING UNIFORM PARTICLE SIZE PELLETS

Ronald F. Cotts, Norristown, Pa., assignor to IU Conversion Systems, Inc., Philadelphia, Pa.

Division of Ser. No. 435,452, Jan. 22, 1974, Pat. No. 3,890,080. This application Mar. 20, 1975, Ser. No. 560,477

Int. Cl.² B21B *31/08*

U.S. Cl. 29—127 **1 Claim**



1. A compressive roll consisting of a cylindrical base member with a thin, continuous, non-yieldable strip of predetermined depth wound helically thereon and secured thereto, further including a continuous resilient strip helically wound thereon between successive wraps of said non-yieldable strip, the width of said resilient strip corresponding to the space between adjacent wraps of said non-yieldable strip, said resilient strip having in part of its width along the length thereof a reduced depth portion, the heighth of which is not less than that of a said non-yieldable strip.

3,947,939

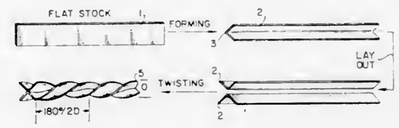
METHOD FOR THE MANUFACTURE OF TURBULATORS

Peter Steiner, Edison, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed July 18, 1974, Ser. No. 490,432

Int. Cl.² B21D *53/00*, *11/14*

U.S. Cl. 29—157 R **6 Claims**



1. A method of forming a multivane turbulator for insertion into a tube comprising: bending at least two strips of flat stock into V-shaped members, disposing said V-shaped members in a position which is adjacent their vertices and twisting said V-shaped members together from an end so as to form a plurality of vanes having a pitch self-supporting such that said vanes generally extend radially in cross section, and inserting the turbulator so formed into said tube.

3,947,940

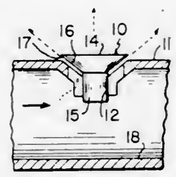
METHOD FOR MAKING CONE SPRAY NOZZLE

Frank B. Augustine, 1135 McLaughlin Road, Bridgeville, Pa. 15017

Division of Ser. No. 328,132, Jan. 30, 1973, Pat. No. 3,811,621. This application May 20, 1974, Ser. No. 471,535

Int. Cl.² B21D *53/00*

U.S. Cl. 29—157 C **3 Claims**



1. A method of making a cone spray nozzle comprising the steps of:

A. punching an opening having a plurality of grooves around the periphery thereof through a tubular member; and

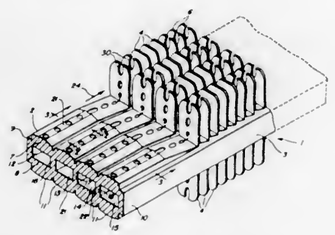
B. positioning a dispersion member in said opening having a stem portion engaging said periphery of said opening for fastening said dispersion member to the tubular member and having a tapered head portion to disperse fluid ejected from the tubular member through the grooves in a spray pattern by striking the tapered head portion.

3,947,941

METHOD OF MAKING A HEAT EXCHANGER

Joseph M. O'Connor, Chicago, and Stephen F. Pasternak, Park Ridge, both of Ill., assignors to Peerless of America, Incorporated, Chicago, Ill.

Filed Jan. 14, 1975, Ser. No. 541,060
Int. Cl.² B21D *53/02*; B23P *15/26*; F28F *1/26*
U.S. Cl. 29—157.3 B 6 Claims



1. The method of making a heat transfer element, comprising

a. forming an elongated tubular member having a wall portion having

1. an inner face,

2. an outer face, and

3. a plurality of openings

a. in said outer face,

b. extending into said tubular member and terminating at their inner ends in outwardly spaced relation to said inner face,

c. spaced from each other transversely to the length of said tubular member, and

d. spaced from each other longitudinally of said tubular member,

b. successively from one end portion of said tubular member toward the other end portion thereof,

1. making cuts into said tubular member, at an acute angle to the length of said tubular member, from said outer face to a depth wherein the cuts extend across certain of said openings and terminate at their inner ends in outwardly spaced relation to said inner face to thereby afford

a. elongated fins

1'. extending across said tubular member in a direction transverse to the length thereof,

2'. having elongated base portions directly attached to the underlying portion of said tubular member,

3'. having elongated outer edge portions extending transversely to the length of said tubular member, and

4'. having openings extending therethrough in spaced relation to said base portions and said outer edge portions, and

2. turning said fins outwardly into outwardly projecting relation to said tubular member.

3,947,942

SEAL FOR LP GAS CYLINDER VALVE AND METHOD AND TOOL FOR INSTALLATION OF SAME

William C. Blocker, 1406 N. Butler Ave., Indianapolis, Ind. 46218

Division of Ser. No. 478,049, June 10, 1974. This application Feb. 12, 1975, Ser. No. 549,336
Int. Cl.² B23P *15/00*
U.S. Cl. 29—157.1 R 3 Claims

1. A method of changing a hard nosed cylinder valve to a soft nosed cylinder valve with storage seals comprising the steps of:

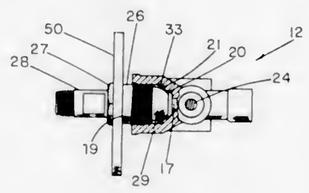
storing O-ring seals in a plate wrench;

untightening and removing a male hollow valve stem having an enlarged nose end from a cylinder valve, said valve having an internal tapered portion and an annular seat;

removing an O-ring seal from said plate wrench;

inserting said O-ring seal into said valve and onto said annular seat through which said stem projects;

extending said stem through said plate wrench;



mounting said stem onto said valve;

extending said stem through said seat and said O-ring;

keeping said enlarged nose end spaced apart from but adjacent to said tapered portion;

turning said plate wrench to tighten said stem on said body forcing said enlarged nose end against said O-ring seal effecting a seal between said stem and said valve;

keeping said wrench on said stem subsequent to said turning step; and,

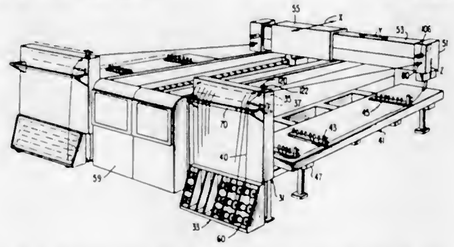
maintaining at least one O-ring in said wrench for replacement of said O-ring seal on said annular seat.

3,947,943

CABLE HARNESS FORMING MACHINE COMPRISING WIRE FEED-OUT MEANS IN HARNESS LAYING HEAD

Takamasa Kokubo; Mikio Sakai; Tomohide Inada; Takashi Nakanishi; Hiroshi Seki; Hazime Yaegashi; Kouji Izumi; Morio Matsumura; Takao Nomura, and Hisakazu Kato, all of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed July 1, 1974, Ser. No. 485,034
Claims priority, application Japan, June 30, 1973, 48-74069; June 30, 1973, 48-74070; June 30, 1973, 48-74071; June 30, 1973, 48-74072
Int. Cl.² H01R *43/00*; H01B *13/00*
U.S. Cl. 29—203 MW 26 Claims



1. In a machine for use in combination with a wire supply station and a harness board for forming a cable harness comprising a plurality of wire segments on said harness board, said supply station accommodating a plurality of wires from which said wire segments are subsequently cut, said harness board having wire end retainer means attached thereto for retaining a free end of a wire, said machine comprising a harness laying head and head control means for moving said head relative to said harness board and supply station, said head capable of

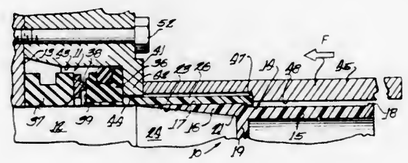
receiving predetermined one of said wires from said supply station and supplying the predetermined wire to said harness board to allow the free end of the predetermined wire to be retained by said retainer means, thereby laying the predetermined wire on said harness board to provide one of said wire segments, the improvement wherein said head comprises a wire feed-out station operable in a wire driving mode of positively driving the predetermined wire to said harness board, in a wire holding mode of holding the predetermined wire immovably relative to said head, and in a wire passage mode of allowing free passage therethrough of the predetermined wire, and said head control means comprises feed-out station control means for operating said feed-out station in timed relation to the movement of said head selectively in one of said wire driving mode in which the free end of the predetermined wire may be retained by said retainer means, said wire holding mode in which one of said wire segments may be cut from the predetermined wire, and said wire passage mode in which the predetermined wire may be laid on said harness board as said head is moved by said head control means, said head further comprising a wire outlet port for allowing passage therethrough of the predetermined wire from said feed-out station to said harness board, a wire cutting and pushing station between said feed-out station and said outlet port, said cutting and pushing station being operable in a wire freeing mode of allowing free passage therethrough of the wire not held by said feed-out station, in a wire cutting mode of cutting the wire held by said feed-out station into a wire section having a trailing end in said cutting and pushing station and a remainder continuing to said supply station, and in a wire pushing mode of pushing said trailing end substantially out of said outlet port, and said head control means comprises wire cut and push control means for operating said cutting and pushing station in timed relation to the operation of said feed-out station selectively in one of said wire freeing mode in which the predetermined wire is laid on said harness board by said head moved by said head control means, said wire cutting mode, and said wire pushing mode in which said wire section is eventually laid on said harness board as one of said wire segments.

3,947,944

SHAFT SEAL UNITIZED TRANSFER FIXTURE

Richard C. Washington, Chicago Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sept. 12, 1974, Ser. No. 505,425
Int. Cl.² B23P *19/02*
U.S. Cl. 29—235 10 Claims



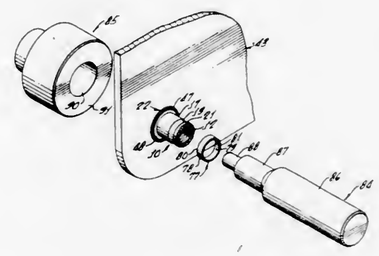
1. A transfer fixture for a seal assembly adapted to be positioned on a member, comprising a pilot and a sleeve, said pilot including a cylindrical barrel having a blind hole at one end adapted to receive an end of the member, and said sleeve comprising a hollow cylindrical member telescoped over the pilot, said sleeve including abutment means for pushing said seal assembly off said cylindrical barrel of said pilot and onto said member, and means to interlock the pilot and sleeve together for limited relative axial movement therebetween to provide a unitized fixture.

3,947,945

ARRANGEMENT FOR REMOVAL OF CAPTIVE FASTENER

Bulent Gulistan, Malibu, Calif., assignor to Deutsch Fastener Corporation, Los Angeles, Calif.

Filed Jan. 13, 1975, Ser. No. 540,583
Int. Cl.² B23D *19/02*
U.S. Cl. 29—235 11 Claims



1. In combination with a fastener element having a first exterior surface, a second exterior surface spaced from said first exterior surface, a third exterior surface including a portion converging from a location adjacent said first surface to a location adjacent said second surface, and a shoulder between said second and third surfaces, a resilient retainer ring encircling said fastener element, said ring having a free diameter less than that of said third surface and being slidable along said first and third surfaces and engageable with said shoulder, and means holding said retainer ring against substantial axial movement, whereby said engagement of said retainer ring with said shoulder limits axial movement of said fastener element relative to said retainer ring in one direction, a device for removing said fastener element from said retainer ring and holding means comprising

an annular member,

said annular member having an outer surface which adjacent one end thereof is of a diameter substantially equal to the diameter of said second surface and having a greater wall thickness adjacent said one end of said annular member than adjacent the other end thereof,

said annular member being expansible for extending past said second surface so as to encircle said fastener element at said third surface thereof, and contractable around said third surface with said one end of said annular member adjacent said shoulder,

whereby said retainer ring can slide along said outer surface and past said shoulder for allowing said fastener element to be withdrawn through said retainer ring.

3,947,946

METHOD AND APPARATUS FOR COUPLING TWO SINGLE ROWS OF CONTINUOUS ELEMENTS FOR A SLIDE FASTENER

Shigenori Omori, Uozu, and Makoto Yoshida, Kurobe, both of Japan, assignors to Yoshida Kogyo Kabushiki Kaisha, Japan

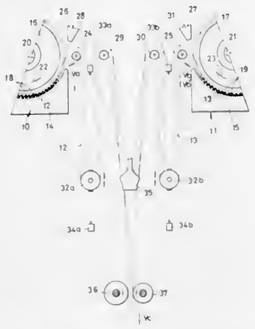
Filed Aug. 25, 1975, Ser. No. 607,188
Claims priority, application Japan, Sept. 5, 1974, 49-102235
Int. Cl.² B21D *53/50*
U.S. Cl. 29—408 6 Claims

1. A method of coupling or pairing two single rows of continuous element for a slide fastener which have been discharged continuously from a pair of separately located element forming and transporting stations, comprising:

guiding the single continuous fastener element rows around respective tension-applying means each movable between an upper limit position and a lower limit position and

adapted to impart constant tension to said single element rows;
advancing either one of the two single element rows at a speed different from the speed of travel of the other single element row;
coupling said two single element rows together into a double element row;
withdrawing the double element row at a speed higher than the speed of travel of either of said single element rows;
discontinuing the withdrawal of said double element row when either of said tension-applying means arrives at the upper limit position; and
resuming the withdrawal of said double element row and simultaneously maintaining or shifting the speed of travel of either of said single element rows from high to low or vise versa, when either tension-applying means arrives at the lower limit position.

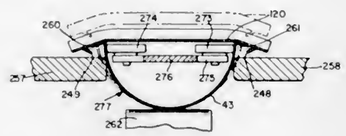
2. An apparatus for coupling or pairing two single rows of continuous element for a slide fastener which comprises:



a pair of oppositely disposed element shaping and transporting means rotatable in opposite directions and at different speeds for advancing the respective single element rows;
a pair of upper and lower limit switching means operatively associated with each of said shaping and transporting means;
a pair of tension-applying means each adapted to impart constant tension to said respective single element rows and each movable between said upper and lower limit switching means;
coupling means for coupling said two single element rows into a double element row; and
withdrawing means for withdrawing said double element row at a speed higher than the speed of travel of either of said single element rows, either one of said tension-applying means engageable with said upper limit switching means to discontinue the withdrawal of said double element row and with said lower limit switching means to change the speed of travel of either of said single element rows and simultaneously to resume the withdrawal of said double element row.

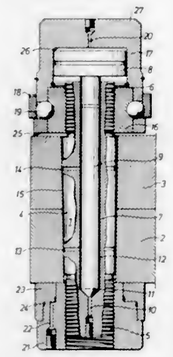
3,947,947
CONDUIT MAKING MACHINE, AND METHOD OF MAKING AN ARTICLE MADE THEREBY
James R. Hess, Bethel; Lester M. Burkholder, Bernville, and Richard L. Rettew, Newmanstown, all of Pa., assignors to Penn Berks Corporation, Bethel, Pa.
Continuation-in-part of Ser. No. 83,419, Oct. 23, 1970, abandoned. This application May 17, 1973, Ser. No. 361,145
Int. Cl.² B23P *17/00*
U.S. Cl. 29—411 **52 Claims**

1. A machine for continuously making elongated conduit comprising means for continuously providing a first material piece and means for continuously providing a second material piece, both at the machine inlet, means for continuously discharging substantially straight, rigid conduit at the machine outlet, means for moving the pieces in paths of travel through the machine in a longitudinal direction, means for forming the first piece during its continuous movement, means for forming the second piece during its continuous movement, means for making locking portions from but integral with one of the



pieces, and means for joining the pieces and fastening locking portions from the one of the pieces to the other of the pieces as a continuous joining and fastening operation, wherein the means for making locking portions comprises means for punching out connected tabs from the first piece and wherein said continuous fastening means comprises means for bringing tabs punched from the first piece into edge engagement with opposite free edges of the second piece.

3,947,948
METHOD OF ASSEMBLING AND DISASSEMBLING A PRE-TENSIONED SCREWED JOINT AND A DEVICE FOR CARRYING OUT THE METHOD
Roland Fredriksson, and Ingvar Eklund, both of Motala, Sweden, assignors to Aktiebolaget Motala Verkstad, Motala, Sweden
Filed Dec. 5, 1974, Ser. No. 529,935
Claims priority, application Sweden, Dec. 14, 1973, 7316955
Int. Cl.² B23P *19/02*
U.S. Cl. 29—427 **9 Claims**

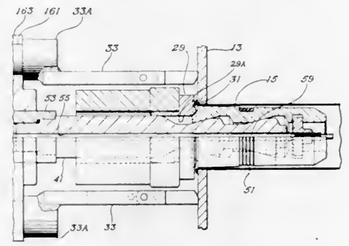


1. A method of assembling and disassembling a pre-tensioned screwed joint, which includes a screw threaded at both ends thereof and two joint portions through which said screw passes, comprising the steps of:
securing a first nut upon one end of said screw externally of said joint portions;
securing a threaded member upon the other end of said screw externally of said joint portions and interposing a spacer member between said threaded member and said joint portions;
disposing a piston rod, having a piston head secured thereto, within said one end of said screw;
introducing a pressure medium into an annular gap formed between said threaded member and said spacer member whereby said screw is drawn through said joint portions in the direction from said one end of said screw to said other end of said screw so as to tightly abut said first nut with the external surface of said joint portions at said one end of said screw;
supplying a pressure medium to said piston head whereby said piston rod engages an internal portion of said screw and elastically elongates said screw;
relieving said pressure within said gap;
removing said threaded member and said spacer member from said other end of said screw;
securing a second nut upon said other end of said screw so as to tightly abut the external surfaces of said joint portions at said other end of said screw; and
relieving said pressure applied to said piston head.

3,947,949
METHOD OF MAKING DISPERSION HARDENED COPPER PRODUCTS
Hans-Joachim Wallbaum, Osnabruck, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte AG, Hannover, Germany
Filed Apr. 23, 1975, Ser. No. 570,593
Int. Cl.² B22F *3/24*
U.S. Cl. 29—420.5 **2 Claims**

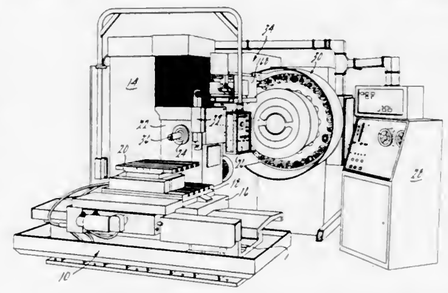
1. In a method for making semi-finished products of dispersion-strengthened copper alloys, wherein a powder is made of a dispersion-hardened copper alloy, the improvement of providing a blank in which disks of copper or a copper alloy alternate with layers of said powder inside of a copper tube and extruding the blank to obtain and extrude semi-finished products.

3,947,950
APPARATUS AND METHOD FOR BEADING TUBES
Charles L. Adams, Euless, Tex., assignor to Pressure Vessels, Inc., Fort Worth, Tex.
Filed June 24, 1974, Ser. No. 482,155
Int. Cl.² B23P *11/02*
U.S. Cl. 29—523 **13 Claims**



1. A method of beading to a header, the circular end of a hollow tube extending through an aperture formed through the header and projecting a short distance beyond one side of the header, said method being carried out with the use of an expandable mandrel adapted to be inserted into the tube and an annular non-segmented beading head movable axially relative to said mandrel and having an annular beading groove with inside wall structure adapted to engage the projecting end of the tube and to force the end of the tube outward relative to its axis, said method comprising the steps of:
inserting the mandrel into the end of the tube,
expanding the mandrel to apply pressure radially against the inside surface of the tube at a point spaced inward from its projecting end and to tightly grip the tube near the header and to expand the tube against the header, and
while said mandrel is expanded, moving the beading head forward relative to said mandrel to engage its groove with the end of the tube to force simultaneously, all portions of the projecting end of the tube around its 360° perimeter radially outward against the side of the header,
retracting the mandrel and the beading head, and removing the mandrel from the tube.

3,947,951
TOOL CHANGER
Richard A. Jerue, Birmingham, Mich., assignor to De Vlieg Machine Company, Royal Oak, Mich.
Filed Aug. 31, 1973, Ser. No. 393,497
Int. Cl.² B23Q *3/157*
U.S. Cl. 29—568 **16 Claims**

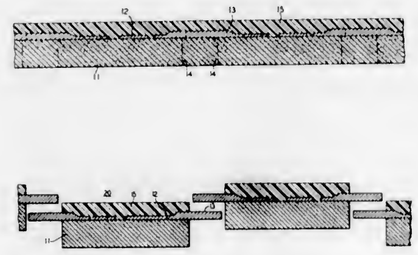


1. A tool changing mechanism for a machine tool having a drive spindle carried by a movable spindle head and adapted to receive the shank of a tool, said mechanism including:
a tool storage member mounted independently of the machine tool,
a plurality of tool holders releasably secured to said tool storage member and each operable to support a tool by engagement with the shank thereof,
said tool storage member being indexable to present tool holders and their tools successively to a tool removal position,
means for unlatching a tool holder in said tool removal position,
a shuttle frame mounted in a fixed position with respect to said machine tool and independently of the machine spindle head and extending between said tool removal position and an interchange position,
a shuttle linearly movable on said shuttle frame to engage a tool holder in said tool removal position and transfer such tool holder and its tool to said interchange position, and
an interchange mechanism mounted on the machine tool and operable to engage a tool supported by a tool holder in the interchange position, remove such tool from its tool holder and insert such tool in the machine tool spindle.

3,947,952
METHOD OF ENCAPSULATING BEAM LEAD SEMICONDUCTOR DEVICES
Thomas Samuel Miller, Allentown, and Malcolm Lunt White, Bethlehem, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of Ser. No. 101,475, Dec. 28, 1970, abandoned. This application July 15, 1974, Ser. No. 488,808
Int. Cl.² B01J *17/00*
U.S. Cl. 29—578 **3 Claims**

1. The process of fabricating a beam lead semiconductor device having an active device surface having beam leads affixed thereto and an oppositely disposed back surface, the device being adapted for mounting on a circuit board by means of pressure bonding said beam leads, said process including the formation of a protective silicone resin film upon only the active surface of the beam lead semiconductor device, the process comprising:

1. applying to the active device surface of a semiconductor wafer containing an array of semiconductor devices having said beam leads affixed thereto a uniform film of a silicone resin;
2. heating said wafer to cure said film;
3. forming on the surface of said film a mask conforming to the desired configuration of the protective resin film;



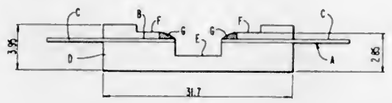
4. applying a solvent to remove the exposed resin film;
5. removing the mask on the surface of the remaining resin overlying the wafer; and
6. separating the wafer into individual semiconductor devices.

3,947,953

METHOD OF MAKING PLASTIC SEALED CAVITY MOLDED TYPE SEMI-CONDUCTOR DEVICES

Takeshi Okada; Sanenobu Sonoda; Katsumi Yamamoto, and Masahiro Fujimori, all of Ibaragi, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaragi, Japan

Filed Aug. 23, 1974, Ser. No. 499,947
Int. Cl.² H01L *21/304*; **B29C** *6/02*
U.S. Cl. 29—588 **3 Claims**



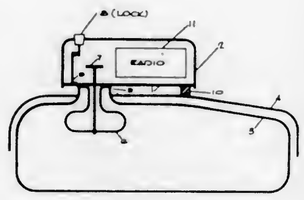
1. In a method of making a plastic sealed cavity molded type semi-conductor device wherein a molded plastic header having an external lead frame molded therein is provided with an internal cavity housing the semi-conductor element which is electrically connected to the internal end of the external leads by way of internal lead wires within the cavity and wherein a cap is heat and pressure sealed to the header to seal the cavity from ambient atmosphere, the improvement comprising the steps of:
   a. forming the external lead frame from a metal having a composition of Copper (89.6–98.97%), Phosphor (0.03–0.4%) and Tin (1–10%);
   b. heating the external lead frame to 80°C prior to embedding it in the header;
   c. molding said header by injection molding an epoxy resin powder at a temperature of 150°C, a pressure of 70kg/cm² and a plunger injection rate of 10 mm/sec such that said external lead frame is embedded therein and internal ends thereof protrude into the cavity; and
   d. honing the internal ends of the external lead frame by subjecting the surfaces to a liquid stream of water and aluminum oxide of 20 to 30 micron grain size in a mixture ratio of 2 parts water to 1 part abrasive material by volume at a flow rate of 1 sec/cm³ and under 3kg/cm² pressure.

3,947,954

METHOD OF AFFIXING AND SECURING A RADIO TO A MOTORCYCLE

Harry H. Weller, 907 W. 7th St., Plainfield, N.J. 07063

Filed June 25, 1974, Ser. No. 483,075
Int. Cl.² B62J *9/00*, *11/00*
U.S. Cl. 29—592 **11 Claims**



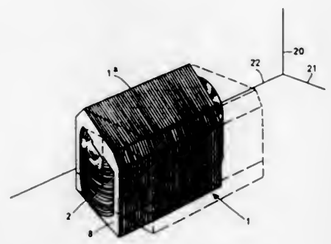
1. The process of mounting and securing against theft a radio, stereo tape player, circuitry or components thereof or the like on a motorcycle gasoline tank, comprising:
   a. affixing a base of a housing to said tank at the filler opening;
   b. placing said radio adjacent to said base;
   c. placing a cover over said base as to form a housing;
   d. securing said cover to said base by means of a lock.

3,947,955

METHOD OF MAKING AN INDUCTIVE STABILIZING BALLAST FOR A GAS AND/OR VAPOUR DISCHARGE LAMP

Alexander Joseph Gerardus Thiessens, and Leonard Woldring, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 21, 1975, Ser. No. 542,838
Claims priority, application Netherlands, Feb. 9, 1974, 741806
Int. Cl.² H01F *41/02*
U.S. Cl. 29—606 **6 Claims**



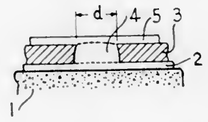
1. A method of manufacturing an inductive stabilizing ballast for an electric discharge lamp, said ballast comprising an electric coil and at least one pack of substantially identical laminations engaging one another over the largest part of their surface, the ballast being of the casing type, the method comprising, placing a stack of said laminations about the electric coil, and turning at least part of each lamination about an axis that is parallel to the centre line of the electric coil until the lamination parts are tightly clamped about the electric coil to provide substantial surface contact therebetween to enhance the removal of heat from the coil.

3,947,956

MULTILAYER THICK-FILM HYBRID CIRCUITS METHOD AND PROCESS FOR CONSTRUCTING SAME

Adrien Leroux; Alexandre Kocsis, both of Sherbrooke, Canada, and George D. Lane, Muncy, N.Y., assignors to The University of Sherbrooke, Sherbrooke, Canada

Filed July 3, 1974, Ser. No. 485,568
Int. Cl.² H05K *3/00*
U.S. Cl. 29—625 **6 Claims**



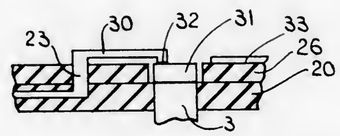
1. A process for constructing multilayer thick-film hybrid circuits on a surface of a substrate comprising in sequence the following steps: depositing, drying and then firing a first conductor plane by screen printing a thick-film conductor paste on the substrate, depositing registration ink by screen printing for making temporary vias, drying said registration ink, depositing by screen printing a thick-film dielectric paste over the surface of said substrate but not over said temporary vias, drying said dielectric paste, firing said temporary vias, drying said dielectric paste, firing said dielectric paste, said registration ink consisting of a substance whose point of sublimation or evaporation is slightly below the firing temperature of said dielectric paste, and, after sublimation or evaporation of said registration ink, depositing by screen printing additional conductor material, drying and firing said additional conductor material for forming a second conductor plane and filling the via holes and making connection with said first conductor plane.

3,947,957

MOUNTING INTEGRATED CIRCUIT ELEMENTS

Luttmer, Willem, Romiley, England, assignor to International Computers Limited, London, England

Filed Mar. 12, 1974, Ser. No. 450,323
Claims priority, application United Kingdom, Mar. 24, 1973, 14287/73
Int. Cl.² H05K *3/30*, *3/32*
U.S. Cl. 29—626 **4 Claims**



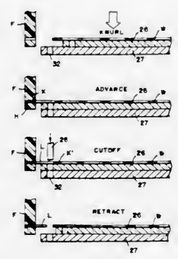
1. A process for mounting and interconnecting a plurality of integrated circuit chips with a multi-layer circuit system, comprising the steps of:
   a. providing a thermally conductive substrate;
   b. forming at desired positions on the substrate a plurality of chip support pillars having a first height;
   c. forming a first insulation layer on the substrate, the insulation layer extending up to the level of the chip support pillars leaving the tops of the pillars exposed;
   d. providing a circuit layer on the insulation and simultaneously increasing the height of the chip support pillars by the thickness of the circuit layer;
   e. providing at desired positions on the circuit layer interconnection pillars which are to be electrically connected to a subsequently applied circuit layer and simultaneously building the chip support pillars up to the height of the inter-connection pillars;
   f. providing insulation up to the level of the inter-connection and support pillars leaving the tops of both forms of pillar exposed.
   g. repeating stages (d), (e) and (f) until level of penultimate circuit conductor layer is reached; and then
   h. forming a final circuit layer and simultaneously building up support and any interconnection pillars to the level of the final circuit layer;
   i. providing inter connection pillars at those locations of the final circuit layer it is required to connect to the chips;
   j. providing a final insulation layer to encapsulate the final circuit layer leaving the tops of any interconnection pillars exposed and forming a recess in the insulation layer at each said component pillar of such size that a clearance is provided around the periphery of a chip when mounted on the associated support pillar;
   k. mounting the chips on the support pillars in such manner as to produce good thermal contact with the associated support pillar and leaving the circuit interconnection regions of the chips exposed; and
   l. providing circuit interconnections between the chip connection regions and the interconnection pillars.

3,947,958

ELECTRICAL FITTING PREPARATION

William A. Bowers, Roselle, Ill., assignor to Precision Paper Tube Company, Wheeling, Ill.

Filed Oct. 11, 1974, Ser. No. 513,954
Int. Cl.² H02G *15/00*
U.S. Cl. 29—629 **2 Claims**



1. In a method of making an electrical fitting, the steps of
positioning a unitary molded plastic form at one end of a path, said form having at least one elongated hole therein extending in the direction of said path,
sequentially knurling longitudinally spaced portions of a continuous wire in said path and intermittently gripping the knurled portion thereof and thereafter advancing said wire in said path into said hole to position a previously knurled portion in said hole, the wire diameter prior to knurling approximating the diameter of said hole whereby said knurled portion is adapted to anchor said wire in said hole, and
severing said wire a spaced distance from said hole to provide an electrical lead.

3,947,959

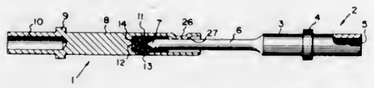
METHOD OF MAKING AN ELECTRICAL CONNECTOR

Gideon A. DuRocher, Mt. Clemens, Mich., assignor to Essex International, Inc., Fort Wayne, Ind.

Filed Dec. 3, 1973, Ser. No. 420,980
Int. Cl.² H02G *15/00*
U.S. Cl. 29—629 **10 Claims**

1. A method of producing an electrical connector comprising forming a conductive, tubular member open at one end and closed at its other end; introducing to said member a body of uncured, elastomeric resin having a plurality of electrically conductive particles dispersed therethrough, said body having

a cross-sectional area corresponding to that of said member and a thickness less than that of said member; seating and compacting said body against the closed end of said member;



and curing said resin in situ while maintaining said body compacted to form between the ends of said member a resilient, elastomeric, electrically conductive core.

3,947,960
WAND HAIR CUTTER
Walter Urbaniak, 1275 Lansdowne Ave., Camden, N.J. 08104
Filed Mar. 5, 1973, Ser. No. 338,259
Int. Cl.² B26B *21/12*
U.S. Cl. 30—30 **1 Claim**



1. In a hair cutter comprising an elongated member having a handle portion and a cutter portion in end-to-end relation, the improvement therein of:

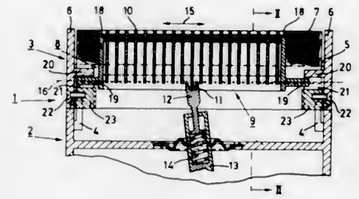
said cutter portion including two closely spaced fixed thin sections having generally flat opposing surfaces of generally uniform thickness and forming a holder for a replaceable double-edge safety-razor blade of a certain width, said blade holder sections being attached adjacent the handle end and open adjacent the other end to receive a blade therein, one of said sections have opposite toothed edges and the other of said sections having opposite substantially straight edges, said toothed edge section being substantially wider than said straight edge section to form a separate space between each of said toothed edges and the adjacent one of said straight edges for respectively locating the cutter edges of a razor blade means for operationally positioning an inserted flat blade between said flat surfaces with the cutter edges thereof substantially parallel to said straight edges and adjacent said toothed edges and overlying the teeth thereof, and respectively located in said spaces between said straight and toothed edges; said straight edge section having a certain thickness to form outer straight edges that serve as shaving-position rests against the skin of the user for the opposite cutter edges of the razor blade, said shaving rest edges of said straight edge section and the outer toothed edges of said toothed edge section forming a certain shaving plane on each side of said razor blade holder, said entire flat blade being positioned between said shaving planes with the cutter edges thereof adjacent said shaving planes;

said positioning means including two spaced indexing pins between said blade holder sections and at the handle end of said cutter portion to seat spaced portions of the end of an inserted blade, said indexing pins projecting normally from one of said opposing surfaces and through mating holes in the other of said opposing surfaces to align said fixed sections to form said shaving plane; and

means for closing said open holder end to retain the blade therein, said means for closing said open holder end including a removable U-shaped clasp for embracing substantially the full width of the section ends at said open end, said clasp bearing against the end of an inserted blade to retain said blade in operational position against said indexing pins, and including detent means in one of the legs thereof for completing a reliable connection with said holder, said clasp including overhanging side portions to enclose the opposite edges of an inserted blade at said open section end;

whereby the user may safely cut straight edges of his hair with the straight edge section adjacent his hair and trim any part of his hair with the toothed section adjacent his hair and using either hand in each case.

3,947,961
SHAVING HEAD FOR DRY-SHAVERS
Gerald Meyer, Klagenfurt, Austria, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 29, 1974, Ser. No. 465,311
Claims priority, application Austria, May 18, 1973, 4366/73
Int. Cl.² B26B *19/44*
U.S. Cl. 30—41 **9 Claims**



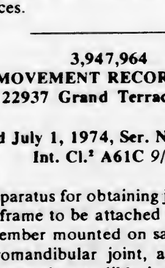
1. In a dry shaver, a shaving head removable from a shaver housing for cleaning, the shaving head comprising: a frame having side walls extending lengthwise defining therein a cutter chamber with open top and bottom parts, a perforated foil outer cutter secured to said frame closing said top part, a lower cutter having a plurality of blades with cutting edges, and a longitudinal axis in a plane of symmetry, mounting means for mounting said cutter in said frame in a first position with said cutting edges thereof resiliently urged against said foil at said top part, said cutter being rotatable about said axis, between said first position and a second position wherein said cutting edges are rotated toward said bottom open part to be accessible for cleaning, said shaver further comprising movable operating means engaging said lower cutter for moving said cutter between said first and second positions.

3,947,962
CHOPPER
Robert L. Smith, and Gary L. Smith, both of 435 Fair Drive, Apt. No. 103, Costa Mesa, Calif. 92626
Filed Jan. 31, 1975, Ser. No. 546,005
Int. Cl.² B05B *7/14*
U.S. Cl. 30—128 **5 Claims**

5. Application apparatus comprising:

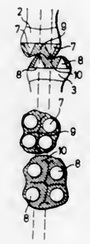
a spray gun; and

a chopper mounted on said spray gun, said chopper having a cutter roll, a backup roll, and an air motor with an output shaft coupled to a first of said rolls and an air outlet coupled to a second of said rolls;



said second roll having a jet outlet coupled to said motor air outlet and oriented to urge rotation of said second roll.

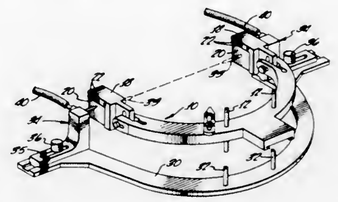
3,947,963
ARTIFICIAL TEETH AND METHOD OF MANUFACTURING A DENTURE
Gerd Haker, Hamburg, Germany, assignor to Vita Zahnfabrik H. Rauter KG, Sackingen, Germany
Filed Mar. 31, 1975, Ser. No. 565,575
Claims priority, application Germany, May 29, 1974, 2426190; Apr. 6, 1974, 7412130[U]
Int. Cl.² A61C *13/00*
U.S. Cl. 32—2 **10 Claims**



1. A method of manufacturing an artificial molar having cusps and occlusal relief comprising the steps of providing a base surface, providing cones each having a base and apex, securing the base of each cone upon the base surface, and covering the cones with dental material such that cusps are formed by the apices of the cones and occlusal relief is formed between the apices.

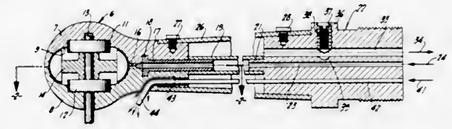
3,947,964
JAW MOVEMENT RECORD MEMBER
Robert L. Lee, 22937 Grand Terrace Road, Colton, Calif. 92324
Filed July 1, 1974, Ser. No. 484,617
Int. Cl.² A61C *9/00*
U.S. Cl. 32—19 **10 Claims**

1. In dental apparatus for obtaining jaw movement information including a frame to be attached to a person's maxilla, a dental record member mounted on said frame to overlie the person's temporomandibular joint, and means mounted to move with the person's mandible including drill means for recording in said record member jaw movement information, the improvement wherein said record member is a block of transparent rigid material such as polyester fiberglass resin, said record member having a pair of flat parallel surfaces which are mounted perpendicular to the person's jaw hinge axis through said joint, said record member further having means formed therein for mounting the member on said frame and having a small diameter hole extending through the block perpendicular to said surfaces as an accuracy index so that



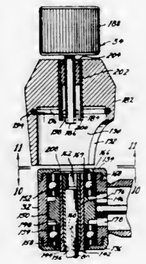
during the entire drilling operation it can be seen whether the drill bit is properly aligned, thereby assuring the accuracy of the recording.

3,947,965
PRESSURIZED DENTAL HANDPIECE
Lloyd P. Flatland, 15 Quisisana Drive, Kentfield, Calif. 94904
Filed Aug. 5, 1974, Ser. No. 494,542
Int. Cl.² A61C *1/08*
U.S. Cl. 32—26 **3 Claims**



1. A pressurized dental handpiece comprising a housing, a shaft journalled in and projecting from said housing, a rotor within said housing and fast on said shaft, a generally closed tubular extension from said housing and interiorly communicating therewith, a conduit for high pressure air passing through said extension and communicating with the interior of said housing adjacent said rotor, means opening the interior of said extension to the atmosphere, and means including a valve for restricting air flow in said opening means.

3,947,966
DENTAL HANDPIECE AND WRENCH THEREFOR
Nathaniel H. Lieb, Narberth; Franklin W. Kerfoot, Jr., Newtown Square, and Richard A. Wallace, Audubon, all of Pa., assignors to Star Dental Manufacturing Co., Inc., West Conshohocken, Pa.
Division of Ser. No. 217,745, Jan. 14, 1972, Pat. No. 3,773,263. This application June 5, 1974, Ser. No. 476,749
Int. Cl.² A61C *1/10*
U.S. Cl. 32—27 **6 Claims**



1. In combination, a turbine-driven dental handpiece and a collet wrench therefor, said handpiece comprising a turbine

housing, a rotor rotatably mounted in said turbine housing, said rotor including a rotor shaft having a bore extending therethrough, a collet threadedly received within said bore, said collet having a first bore extending inwardly from one end thereof for receiving a dental bur and a second bore of non-circular cross-section extending inwardly from the opposite end thereof, an end opening in said turbine housing in axial alignment with said second bore for access thereto, said wrench including a shaft of non-circular cross-section slidably and removably received within said second bore of said collet, and said wrench further including a tube in which said wrench shaft is rotatably mounted, said tube having at least one finger thereon, said rotor shaft having an axial slot projecting downwardly therein at its circumference whereby said finger passes through said opening and is received in said slot for releasably locking said rotor against rotation relative to said turbine housing, and whereby said shaft is adapted to threadedly advance and retract said collet within said rotor shaft.

3,947,967
ROOT CANAL MODEL FOR USE IN PRACTICAL DENTAL ART TRAINING

Yoshimasa Satake, 61, Karahashi-Hiragakicho, Minami, Kyoto, Japan

Filed Dec. 5, 1974, Ser. No. 529,741
Int. Cl.² G09B *23/28*
U.S. Cl. 32—71 **10 Claims**

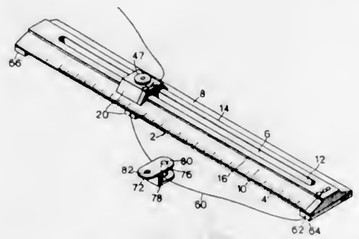


1. A root canal model for use in practical dental art training comprising a transparent plastic body and imitation dental pulp contained within the body, the body having at least one flat viewing surface to permit the pulp to be viewed without distortion.

3,947,968
DEVICE FOR DRAWING ELLIPSES

Danny Rosenheck, 26 Brodetski St., Tel Aviv, Israel

Filed Apr. 28, 1975, Ser. No. 572,177
Claims priority, application Israel, June 3, 1974, 44953
Int. Cl.² B43L *11/04*
U.S. Cl. 33—30 E **8 Claims**

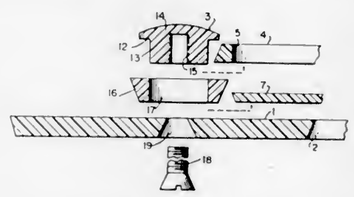


1. A device for drawing ellipses, comprising: a measuring stick having an upper face carrying graduated markings and a lower face restable on a flat surface on which the ellipse is to be drawn, the measuring stick being formed with a longitudinal slot extending the length thereof and closed at its ends, a cord having one end fixed to a first point on the measuring stick, a slide movable along the slot to align an indexing point thereof with a second point on the measuring stick, said slide including an upper section overlying the upper face of the measuring stick and a lower section underlying the lower face of the measuring stick, the two sections being connected to each other by a connection passing through said slot, said lower section of the slide being formed with a first bore aligned with said indexing point and extending transversely of the slide through which bore the cord passes, and with a second bore communicating with and at right angles to the first bore in the direction of the thickness of the slide, said upper section of the slide being formed with a pin passing through the slot of the measuring stick into said second bore and releasably engagable with the cord therein for fixing a predetermined length of the cord between the slide indexing point and the first point of the measuring stick, said first and second points of the measuring stick constituting the two focii of the ellipse to be drawn, and said predetermined length of cord being equal to the sum of the distances from said focii to all points on the ellipse to be drawn.

3,947,969
DRAWING INSTRUMENTS

Carlos Gonzalez Martinez, Plaza Fuensanta, No. 4, Murcia, Spain

Filed Dec. 14, 1973, Ser. No. 424,678
Claims priority, application Spain, Dec. 20, 1972, 409,846
Int. Cl.² B44D *3/30*
U.S. Cl. 33—174 B **5 Claims**



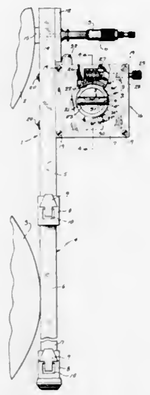
1. A drawing instrument comprising a planar support having a circular opening therein, a plurality of rotatable bearing means, means detachably securing said bearing means to said support in circumferentially spaced relation about said circular opening, a drafting template peripherally supported by said planar support, said template having a dimension slightly greater than said support opening for reception thereover and within said bearing means, circular means surrounding and engaging the periphery of said template, said circular means further peripherally engaging said rotatable bearing means enabling the rotation of said template within said bearings for desired positioning thereof, and means provided on said circular means to prevent relative rotation of said template with respect to said circular means.

3,947,970
ROLL ALIGNMENT GAUGE

John B. Lesure, Appleton, Wis., assignor to Appleton Mills, Appleton, Wis.

Filed Sept. 19, 1974, Ser. No. 507,266
Int. Cl.² G01C *9/28*
U.S. Cl. 33—182 **3 Claims**

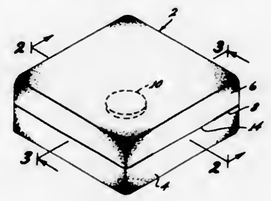
1. A method of determining the axial alignment of a pair of elongated cylindrical members, comprising the steps of providing a standard having a laterally adjustable member-engaging element and having a level mounted for pivotal movement with respect to the standard, placing the standard against the corresponding first ends of the elongated members with a first portion of the standard disposed against the side of a first of said members and said element disposed against the side of the second of said members, pivoting the level with respect to the standard until the level is leveled, placing the standard against the corresponding opposite ends of said members with said first portion disposed against the side of the first member and the element disposed against the side of the second member, and adjusting the lateral position of the element with respect to the standard until the level is leveled, the amount of lateral adjustment of the element constituting an indication of the parallel misalignment of the members.



3,947,971
FABRIC SOFTENER AND DISPENSER

Henry Bauer, Miraleste, Calif., assignor to John Levey, Westlake Village, Calif.

Filed Nov. 6, 1974, Ser. No. 521,361
Int. Cl.² F26B *19/00*; A61L *9/04*
U.S. Cl. 34—60 **10 Claims**

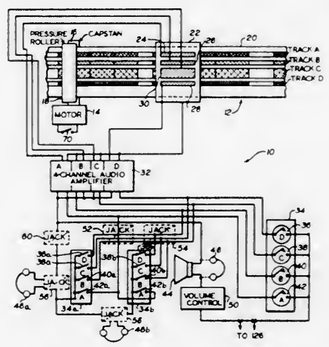


1. In combination,
a pair of flexible, porous, open-celled sheets joined together in face-to-face relation to form a packet;
said packet including a flexible opening;
said opening having a normally closed position when the sheets forming said packet are in their expanded condition;
said opening being expandable to an open position by squeezing the sides of said packet in a direction along the axis of said opening;
a space defined between said sheets;
said space being enclosed by said sheets except at said opening which leads from the exterior of said packet into said space;
a tablet contained within said space with said space having a configuration that generally conforms with the shape of said tablet;
said tablet formed of a solid fabric softener composition;
said fabric softener composition being partially water soluble, and
said sheets having a thickness sufficient to reduce the flow of water through said sheets to a level which prevents complete solution of said tablet from contact with a wet fabric load while permitting partial solution of the tablet and migration of the dissolved fabric softener composition from the interior to the exterior of said packet,
whereby the placement of said packet and tablet in a dryer containing a wet fabric load provides migration of the fabric softener composition through the walls of the flexible open-celled sheets by a kneading action with the packet first absorbing water from the load which solubilizes the fabric softener composition on the exterior of the tablet and with the solubilized fabric softener composition then passing through the walls of the open-celled sheets into contact with the fabric load as the packet is compressed by the weight of the fabric load during tumbling of the load within the dryer.

3,947,972
REAL TIME CONVERSATIONAL STUDENT RESPONSE TEACHING APPARATUS

Michael J. Freeman, 110 De Haven Drive, Yonkers, N.Y. 10703

Filed Mar. 20, 1974, Ser. No. 453,110
Int. Cl.² G09B *7/04*
U.S. Cl. 35—8 A **8 Claims**



5. A magnetic storage medium for providing a reproducible conversational responsive message to a particular reproducible interrogatory message from a plurality of different selectable reproducible responsive messages stored thereon, said storage medium comprising a plurality of coextensive audio tracks having audio information stored thereon for audio playback therefrom, said information being stored on each track in a plurality of reproducible information segments, each of said segments comprising a complete message reproducible directly in response to selective playback of said track upon which said segments are stored, one of said tracks stored information comprising interrogatory messages and associated multiple choice selectible responses to a particular interrogatory message, a plurality of said other tracks comprising responsive messages related in real time and content to said one track interrogatory messages and corresponding to said multiple choice selectible responses, only one of said plurality of other tracks comprising the correct selectible responsive message to a particular real time related interrogatory message, each track having an associated track width, said interrogatory message containing track having an associated track width greater than that of said other tracks, said plurality of other tracks other than said correct responsive message track for said particular interrogatory message comprising instruc-

tional messages corresponding to selection of an incorrect responsive message which are related in real time and content to said one track particular interrogatory message and being selectively reproducibly providable directly in response to selection of an incorrect responsive message, a different one of said multiple choice selectible responsive message containing tracks containing the correct responsive message to at least a different one of said interrogatory messages, said stored interrogatory messages and said responsive messages being spacially related to each other along said storage medium tracks in real time and further related in content to one another for providing a responsive message dependent on the track selected and the real time of selection for providing a conversational real time environment, said magnetic storage medium comprising magnetic tape, said interrogatory message containing track being centrally disposed on said tape medium with respect to said other responsive message containing tracks, whereby a real time multiple choice selection and determination of correct student response to an interrogatory may be provided directly in a conversational response to the appropriate track selection and distortions in said reproducible interrogatory message due to physical distortions in said tape are minimized.

3,947,973

NAVIGATION TEACHING AID

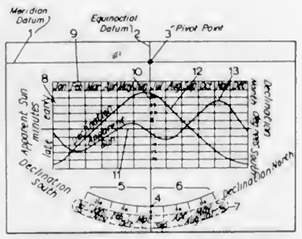
Gerald Raymond Dunn, Great Downs, Tollesbury, Near Maldon, Essex, England

Filed Dec. 12, 1973, Ser. No. 424,012

Claims priority, application United Kingdom, Dec. 12, 1972, 57295/72

Int. Cl.² G01C *21/00*

U.S. Cl. 35—10.2 **7 Claims**



1. A navigational instrument comprising: a first flat member having thereon a meridian datum, an equinoctial datum crossing the meridian datum at right angles and a sun's declination scale; a second flat member co-planar with the first member, which second member has thereon an axis datum, an equator datum crossing the axis datum at right angles, and an arcuate latitude scale graduated in degrees from zero, the equator datum passing through the zero and the axis datum passing through the 90° on either side of the zero, the datum crossing point on the second member being rotatable about the datum crossing point on the first member; and a third member rotatable about the two crossing points which has at one end a pointer which can sweep along the latitude scale and at the other end an equatorial dial.

3,947,974

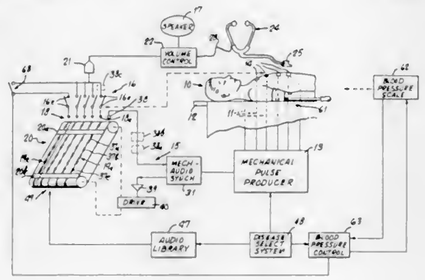
CARDIOLOGICAL MANIKIN AUSCULTATION AND BLOOD PRESSURE SYSTEMS

Michael S. Gordon, and Darrell G. Patterson, both of Miami, Fla., assignors to The University of Miami, Coral Gables, Fla.

Filed May 23, 1974, Ser. No. 472,715

Int. Cl.² G09B *23/30*

U.S. Cl. 35—17 **15 Claims**



14. A blood pressure testing simulation device comprising:
a. means for simulating at least a portion of a human arm;
b. means for applying a test pressure to said arm means;
c. means for indicating said test pressure;
d. means for sensing the pressure indication of said indicating means;
e. means for producing blood pressure sounds;
f. switch means disposed in said arm means in the region of the brachial artery and responsive to the proximity of a magnetic field for producing an output condition when a magnetic field is proximate;
g. stethoscope means, having means in its head for producing a magnetic field, for actuating said switch means to produce the output condition when its head is brought into contact with said arm means in proximity to said switch means; and
h. control means for actuating said sound-producing means in response to the sensing of given pressure indications by said sensing means when said output condition is present.

3,947,975

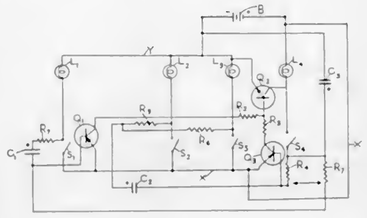
EDUCATIONAL TESTING AND TRAINING DEVICE

Ira Wallach, Club Marina Costa D'n Blaines, Mallorca, Spain

Filed July 5, 1974, Ser. No. 486,133

Int. Cl.² G09B *19/00*

U.S. Cl. 35—22 R **7 Claims**



1. A coded device comprising a plurality of at least three switch means independently selectively transferrable between open and closed states, a plurality of at least three electrically actuatable signal members, time interval means for providing a predetermined time interval, circuit means electrically connected to said switch means and time interval means for actuating said signal members in their actuated condition upon transfer of said three switch means to predetermined opened and closed states during said predetermined time interval, and the arrangement of said circuit means being such that at least one of said switch means must be at least twice transferred to opposite states in order to maintain said signal members in said actuated condition.

3,947,976

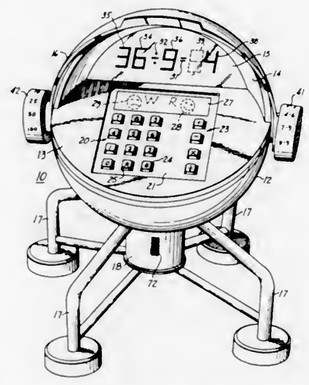
MATHEMATICAL PROBLEM AND NUMBER GENERATING SYSTEMS

William R. Hafel, Sunnyvale, Calif., assignor to Eric F. Burtis, Redwood City, Calif.

Filed Mar. 10, 1975, Ser. No. 556,981

Int. Cl.² G09B *19/02*

U.S. Cl. 35—31 C **8 Claims**



1. An apparatus for deriving two output numbers, comprising in combination:
means for providing a first number;
means connected to said first number providing means for providing a second number having a plurality of digit places, by subjecting said first number to a predetermined mathematical operation;
means connected to said second number providing means for deriving one of said two output numbers from a first digit place of said second number, and the other of said two output numbers from a different second digit place of said second number.

3,947,977

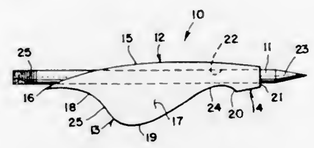
PENCIL HOLDER DEVICE

Leroy J. Bishop, San Francisco, Calif., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed May 27, 1975, Ser. No. 568,518

Int. Cl.² G09B *11/02*

U.S. Cl. 35—36 **2 Claims**



1. A pencil holder device used to hold a pencil in a proper position for writing, which comprises:
a. a one piece molded plastic body having a rear palm portion and a forward finger grip portion;
b. a slightly convex curved top base extending from a thin rear tail end to a forward end of said body;
c. said body having convex curved sidewalls;
d. a bottom base concavely curved downward from said thin rear tail end to an enlarged center section;
e. said bottom base concavely curved upward in a forward direction from said enlarged center section to a convex grove section having a forward shoulder;
f. said bottom base extending forwardly from said forward shoulder to said forward end; and
g. a first means of affixing said pencil to said body.

3,947,978

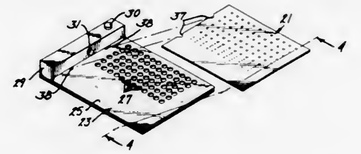
EDUCATIONAL LEARNING DEVICE

Neil M. Clark, St. Louis Park, and Douglas A. Messmer, Minneapolis, both of Minn., assignors to Techpower, Inc., Minneapolis, Minn.

Division of Ser. No. 204,521, Dec. 3, 1971, abandoned. This application Jan. 31, 1974, Ser. No. 438,255

Int. Cl.² G09B *7/06*

U.S. Cl. 35—48 R **12 Claims**



1. An electronic device, comprising:
a. a panel member carrying a plurality of electrical conducting paths insulated from each other on a top surface of said panel member;
b. a switching device removably positioned upon said panel member top surface including,
1. a sheet-like member of flexible, electrically nonconducting material having a top surface and a bottom surface, said flexible member bottom surface being positioned on said panel member top surface;
2. a plurality of selection areas disposed upon said flexible member top surface, said selection areas being grouped into a plurality of series, each series having a group of selection areas associated therewith; and
3. an electrically conductive material disposed upon said flexible member bottom surface opposite one of said selection areas for each series;
c. means in operative combination with said panel member for indicating that said selection area opposite said electrical conducting material has been pressed including,
1. a low energy circuit,
2. a high energy circuit having an indicator means; and
3. switch means in said low energy circuit responsive to at least a particular level of current flow in said low energy circuit for causing current flow in said high energy circuit; and
d. said electrically conductive material operative to bridge said panel member electrical conducting paths thus completing said low energy circuit and switching on said high energy circuit, when said selection area having electrically conductive material opposite thereof is pressed.

3,947,979

MUD RESISTANT ELASTOMER

James Sidles, Richfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

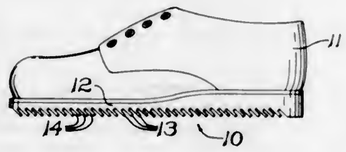
Filed Aug. 23, 1971, Ser. No. 173,883

Int. Cl.² A43B *13/04*

U.S. Cl. 36—32 R **8 Claims**

1. In a ground contacting element which covers substantially the entire bottom surface of a boot, overshoe, shoe or the like, a resilient body adapted to be fixedly secured to the base of an overshoe, said resilient body having a plurality of transversely extending flexible fins, said fins extending down-

wardly and rearwardly from said resilient body, each of said fins having a front and a rear face portion whose surfaces are parallel to each other and parallel to adjacent faces of adjacent fins, each of said fins being longitudinally extending and



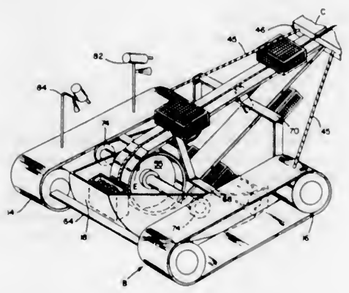
of uniform width for the entire length and height thereof, each fin having an adjacent fin defining a groove therebetween, each of said grooves is of uniform width for the entire length thereof, and each groove width is equal to said width of said fin.

3,947,980

PROCESS AND APPARATUS FOR DEEP-SEA PARTICLE HARVESTING

James E. Andrews, Kailua, and Maurice E. Morgenstein, Kaneohe, both of Kaneohe, Hawaii, assignors to Hawaii Marine Research, Inc., Kaneohe, Hawaii

Filed Feb. 10, 1975, Ser. No. 548,473
Int. Cl.² E02F *3/14*
U.S. Cl. 37—69 **12 Claims**



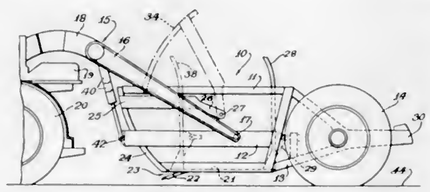
1. An apparatus for harvesting particles from the deep-sea bottom comprising: a towing vessel on the surface of the sea; a towed vehicle at the bottom of the ocean, said towed vehicle arranged for collection of mineral particles from the ocean bottom along its towed path and defining there within a trough for the collection of particles received during towed movement along the ocean floor; a towing strip connected to said vehicle at the lower end, connected to said towing vessel at the upper end, and extending angularly downward under tension from the vessel to the vehicle during towing; an elevator mechanism affixed to said towing strip between said vessel and said vehicle and including a first track defined on one portion of said towing strip and a second and separate track defined on another portion of said towing strip; a series of buckets for conveyance to the vehicle on said first track, from the vehicle on said second track; and, first means at said vehicle for loading said buckets and second means on said vessel for emptying said buckets.

3,947,981

SCRAPER BOWL WITH HYDRAULIC SAFETY LOCK

Daniel B. Shore, Niles, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Dec. 9, 1974, Ser. No. 530,796
Int. Cl.² E02F *5/00*
U.S. Cl. 37—126 AE **11 Claims**



1. In a frame-drawn scraper having a bowl with hydrospring suspension and hydraulic pump, comprising a 1st circuit operatively connecting the hydraulic pump to bowl raise-lower means, said bowl raise-lower means disposed between and connecting the scraper draft frame and said bowl whereby the bowl is moved in the direction away from the ground when the bowl raise-lower means is activated and can move in the groundward direction, and a 2nd circuit with accumulator means therein, hydraulically disposed between the hydraulic pump and bowl raise-lower means, to connect the accumulator means in circuit therewith;

the improvement characterized by:

the circuits including hose forming a portion in common to the two circuits, said circuits being connected hydraulically in parallel from said common hose portion to the bowl raise-lower means, the parallel portion of the 2nd circuit including said accumulator means;

1st lock valving connected in the 1st circuit between the hose and bowl raise-lower means; and

2nd lock valving connected in the 2nd circuit between the accumulator and bowl raise-lower means;

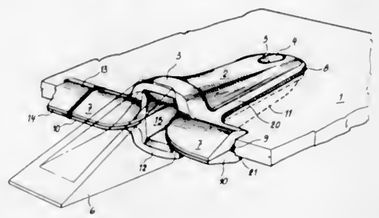
said valving having condition sensing means including operative connections to the bowl rendering each sensitive to a condition to responsively block flow in the respective circuits, effectively as a safety lock for automatically hydraulically stopping the bowl from unwanted extreme movement.

3,947,982

STRUCTURE FOR CONNECTING TEETH TO THE DIGGING EDGE OF A BUCKET

Tomaso Mantovani, Via Giovecca, 35, Mirabello (Ferrara), Italy

Filed Dec. 9, 1974, Ser. No. 530,965
Claims priority, application Italy, Dec. 10, 1973, 29004/73; Jan. 2, 1974, 28901-A/74
Int. Cl.² E02F *9/28*
U.S. Cl. 37—141 R **24 Claims**



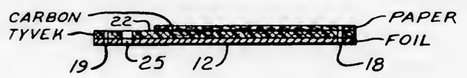
1. In a bucket of an earth-moving machine or the like, a bucket wall having a front, substantially straight, cutting edge region, said bucket wall being formed with an elongated notch extending therethrough inwardly from said front cutting edge region while being substantially perpendicular thereto, and a receptacle for receiving the tang of a bucket tooth, said receptacle being made in its entirety of a relatively hard, wear-resistant material and said receptacle being situated in said notch and having an outer peripheral region welded to said bucket wall and extending along said notch, said receptacle having an elongated hollow interior terminating in a front open end situated aproximately at the front cutting edge region of said wall for receiving a bucket-tooth tang introduced into the hollow interior of said receptacle through said front open end thereof, said receptacle being adapted to accommodate at an inner end region thereof a means for fixing a bucket tooth to said receptacle by cooperation with said tang of said bucket tooth, said receptacle being composed in its entirety of a pair of shells which together define the hollow interior of said receptacle, said shells engaging each other at surfaces of said shells which are situated in said notch and which are welded to each other to form said receptacle from said shells, and at least one of said shells having a pair of front lips projecting laterally respectively in opposed directions from said front open end of said receptacle and extending along while being welded to said front cutting region of said bucket wall, said lips respectively terminating in free ends adapted to be welded to free ends of adjoining lips of adjoining receptacles adapted to be received in additional notches of said bucket wall, and each of said shells having at the front of said receptacle an elongated reinforcing protrusion extending in the general direction of said front cutting edge of said bucket wall.

3,947,983

RESISTANT TAG STRUCTURE

Jerome J. Brunette, 911 Cambridge Drive, Libertyville, Ill. 60048

Filed June 4, 1975, Ser. No. 583,607
Int. Cl.² G09F *3/02*
U.S. Cl. 40—27 **7 Claims**



1. A tag structure adapted to receive handling information and retain the same under adverse weather and processing conditions comprising a laminate of a thin metal foil on a web of high density, self bonded spun polyethylene fibers each approximately 0.0002 inch in diameter, said laminate being generally rectangular and having a web face and a foil face, printed indicia on said web face for the receipt of information concerning an article to be tagged, said laminate being perforable without tearing thereof.

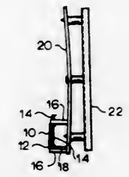
3,947,984

SUPPORT FOR DISPLAY ELEMENTS

Donald Winrow, Weston, Canada, assignor to Ferranti-Packard Limited, Toronto, Canada

Filed May 7, 1975, Ser. No. 575,123
Int. Cl.² G08B *5/22*
U.S. Cl. 40—28 R **2 Claims**

1. In a display or indicating device, having an array of display elements rotatably mounted on one side of a resilient flexible board of the type to bear printed circuits thereon and having such a printed circuit on the side remote from the array each said rotatably mounted element being provided with opposite contrastingly coloured surfaces, a magnet mounted on each said rotatably mounted member for rotation therewith and means mounted on said display board corresponding to each element for providing responsive to electrical energization a magnetic field which controls the orientation of said magnet and said element, wherein said circuit is utilized to control said electrical energization; means for biasing said



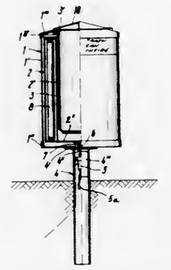
board into a concave shape facing the side on which the array is mounted.

3,947,985

COMBINED TRASH RECEPTACLE AND ADVERTISING MEDIUM

Franz Skrzypczak, Herten, Germany, assignor to Hans Jurgen Hauser, Herten-Scherlebeck, Germany

Filed May 2, 1974, Ser. No. 466,248
Claims priority, application Germany, May 3, 1973, 2322243
Int. Cl.² G09F *11/02*
U.S. Cl. 40—33 **19 Claims**



1. A combined trash receptacle and advertising medium, comprising a support including a hollow upright column; an outer housing stationarily mounted on said hollow column, at least a portion of said housing consisting of light-transmitting material; a trash can removably received in said outer housing and being spaced apart from said light transmitting portion; a frame rotatably mounted in said housing between said housing and said can; transparent advertising panels removably mounted on said frame behind said light-transmitting portion; means for illuminating said transparent advertising panels, said illuminating means being mounted on said frame between said panels and said can and comprising a plurality of upright fluorescent tubes; and means for rotating said frame in said housing and comprising an electric motor installed in said hollow column and conductor means extending through said column and arranged to connect said motor with an energy source.

3,947,986

ADVERTISING AND EMERGENCY SIGN

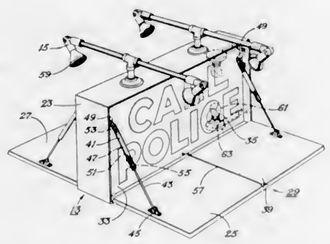
Charles M. Page, Rte. 1, Box 514, Azle, Tex. 76020

Filed Mar. 26, 1975, Ser. No. 514,478
Int. Cl.² G09F *13/00*
U.S. Cl. 40—67 **7 Claims**

1. An advertising and emergency sign device comprising:

a. a sign disposed so as to be readily seen by passersby; said sign including:

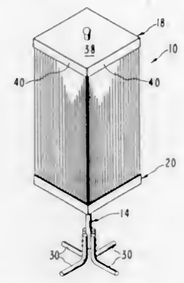
i. a central framework;
ii. two facade sides, disposed one on each side so as to be normally seen in a normal configuration; said facade sides bearing a normal notation;
iii. retainer means for retaining said sides connected with said central framework at least in said normal position; said retainer means being connected respectively to said facade sides and said central framework and comprising respective hinge means hingedly connecting one edge each of respective said facade sides with said central framework such that said facade sides will pivot downwardly from said central framework;
iv. interior message board disposed interiorly of said facade sides and connected with said central framework; said interior message board having displayed on respective sides an emergency message asking the passerby to summon aid;



v. release means for releasing at least one edge of respective said facade sides to allow said facade sides to fall away sufficiently to expose said interior message board;
vi. switch means for energizing said release means; said switch means being disposed at a point remote from said sign so as to be closed when a robbery and the like is in progress making display of the emergency message desirable; such that said interior message board with its emergency message is exposed silently so as not to endanger person's lives in the event of a robbery and the like;
vii. interior illumination means for illuminating said interior message board; said interior illumination means being disposed interiorly of said central framework and adapted to remain energized after said release means is energized by closure of said switch means;
b. exterior illumination means for illuminating said sign in said normal configuration for viewing at night;
c. support means supporting said sign.

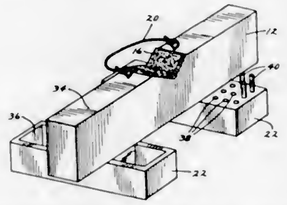
3,947,987
ROTATABLE POSTER DISPLAY UNIT
Robert E. Allen, Saratoga, Calif., assignor to Bemiss-Jason Corporation, Palo Alto, Calif.
Filed Nov. 5, 1973, Ser. No. 413,086
Int. Cl.² G09F *11/02*
U.S. Cl. 40—68 **2 Claims**

1. A display unit comprising: a core of cardboard material, said core having a pair of opposed ends and a generally continuous outer surface; a rod extending through the core and spanning said ends and having first means for positioning the lower end thereof on a supporting surface; a flat plate; a pin extending through the rod, the plate being supported on the pin and disposed for supporting the core on the rod at a location above said first means with said core being rotatable on the rod; a pair of end members shiftably mounted on respective ends of the core, each end member having an end wall and a continuous flange at the outer periphery of the end wall, the flange of one of the end walls being adjacent to and contiguous with the lower end of the core, the flange of the other end wall being adjacent to and contiguous with the upper end of the core; and a perforable, corrugated sheet removably wrapped around the outer surface of the core, the upper and



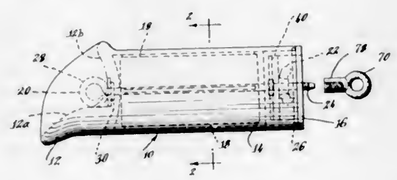
lower marginal edges being releasably received between the flange and the core, whereby the sheet is removably secured to the core.

3,947,988
PORTABLE RIFLE REST
Joseph W. Besaw, 1417 7th Ave. NW., Austin, Minn. 55912
Filed Dec. 26, 1974, Ser. No. 536,571
Int. Cl.² F41C *29/00*
U.S. Cl. 42—94 **5 Claims**



1. A portable gun rest for use on a supporting surface including:
A. an elongated upper block;
B. a pair of elongated lower foot blocks depending from below said upper block;
C. means for pivotally mounting at least one of said foot blocks on a vertical axis to move between a transport position in alignment with said upper block and a use position transverse thereof; and
D. said upper block being provided with an upwardly opening notch adapted to support a gun in a generally horizontal position.

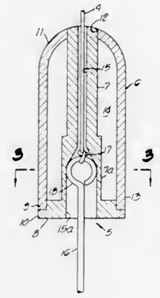
3,947,989
FISHING EQUIPMENT
Philip D. Bart, 46 Spinning Wheel Lane, Tamarac, Fla. 33313
Filed Dec. 23, 1974, Ser. No. 535,860
Int. Cl.² A01K *85/00*
U.S. Cl. 43—42.09 **9 Claims**



1. In a fishing lure, the combination comprising a head, a body and a tail, said head including a raised circumferential

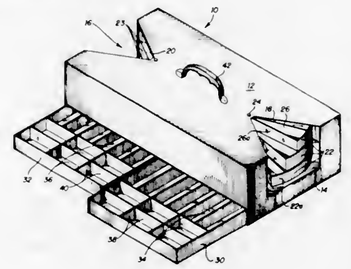
outer peripheral portion forming a cup shape and having a shaped profile with a forwardly protruding lower portion curving into an upper less sloping portion, said body being connected to said head, said body being hollow, said tail member further comprising a support means, a plurality of streamers attached to said support means, and means for removably securing said support means to said head through said body.

3,947,990
SUBMERSIBLE FLOAT
Donald K. Johnson, 16380 Terry Lane, Oak Forrest, Ill. 60452
Filed Apr. 10, 1975, Ser. No. 566,884
Int. Cl.² A01K *93/00*
U.S. Cl. 43—44.9 **9 Claims**



6. A float capsule device in combination with a fish hook and leader attached thereto, said float capsule device being frictionally affixed to the fish hook and surrounding a shank portion of the hook, said leader being tied with a knot to an eye portion of said fish hook at the end of said shank, said float capsule device concealing said knot and imparting buoyancy to said hook and leader.

3,947,991
FISHING TACKLE CONTAINER
Paul J. Morcom, Rte. No. 1, Box 235, Henderson, Tex. 75652
Filed Jan. 24, 1975, Ser. No. 543,879
Int. Cl.² A01K *97/04*
U.S. Cl. 43—54.5 R **12 Claims**



1. A compartmentalized container comprising:
a housing having an opening on one side and a cut-out adjacent thereto on the top of said housing, and
a plurality of horizontal trays disposed in a superposed stacked relation and rotatable about a vertical axis within said housing, each tray formed to define a cut-out therein of matching size and shape as the cut-out in the top of said housing and aligned so that the cut-outs in said trays may be aligned with the cut-out in said housing, wherein the walls of said trays completely close the opening in the side of said housing when the cut-outs in said trays are aligned with the cut-out in said housing and wherein each of the trays may be selectively rotated about said vertical axis such that the contents therein are accessible through the opening in the side and the cut-out in the top of said housing

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3,947,992
MOLDING TOY
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Continuation-in-part of Ser. No. 395,410, Sept. 10, 1973, Pat. No. 3,869,824, and a continuation-in-part of Ser. No. 223,148, Feb. 3, 1972, abandoned. This application Mar. 10, 1975, Ser. No. 556,978
Int. Cl.² A63H *33/06*
U.S. Cl. 46—17 **4 Claims**



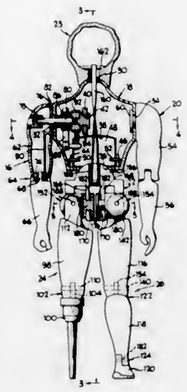
1. A molding craft comprising in combination:
a sheet-like base formed with a bottom wall portion and a plurality of ridge-like formations molded integral with said bottom wall and projecting upwardly therefrom,
said ridge-like formations defining separate compartments each totally circumscribed by respective of said ridge-like formations,
said ridge-like formations having a continuous upper rim defining respective envelopes of narrow surfaces representing partitions between said compartments,
a plurality of different quantities of differently colored casting materials disposed within each of said separate compartments and solidified in situ therein and each bonded to the bottom wall portions of each compartment to define different colored decorations for said composite article,
said narrow surfaces representing partitions between said compartments beng of different color than the colors of said different colored casting materials, said narrow surfaces extending above the level of said casting materials filling said compartments so as to be easily distinguishable by color and relief from the different colored casting materials in said compartments.

3,947,993
AIRFOIL AND MEANS FOR LAUNCHING SAME
Charles W. Hoppe, 30233 Southfield Road, Southfield, Mich. 48076
Filed Feb. 4, 1975, Ser. No. 546,879
Int. Cl.² A63H 33/18
U.S. Cl. 46—74 R 10 Claims



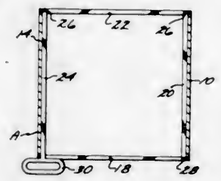
1. An airfoil adapted to be propelled through the atmosphere, said airfoil comprising an elongated member having a tapered nose portion; first surface means extending from said nose portion and functioning to stabilize said airfoil during a first stage of flight, said first surface means being operable beyond a predetermined velocity; second surface means extending from said nose portion and functioning to rotate said airfoil about its center of gravity along an axis which is traversing the longitudinal axis of said elongated member when the velocity of said airfoil is below a predetermined rate.

3,947,994
FIGURE TOY WITH MEANS FOR EXECUTING ARM THRUSTING MOVEMENT
Burton C. Meyer, Downers Grove, and Palmer J. Schoenfield, Evanston, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Nov. 15, 1973, Ser. No. 416,109
Int. Cl.² A63H 13/06
U.S. Cl. 46—148 11 Claims



1. An action figure toy including a torso having means defining an arm joint and a movable arm connected thereto, comprising:
a shaft mounted for rotation with respect to the torso having one end thereof connected to the movable arm;
an eccentric member rotatably mounted on the shaft at the arm joint;
a generally hollow upper arm portion having a shoulder and an elbow end, said shoulder end being secured to said shaft at the arm joint for rotation therewith;
a lower arm portion having an elbow end and a hand end, said lower arm portion being swingably mounted to said upper arm portion about an elbow pivot at the respective elbow ends;
a rod connected at one end to said eccentric member off center relative to the shaft and pivotally connected at the other end to the lower arm portion near the elbow end thereof at a point spaced from and off center relative to said elbow pivot, said arm being movable from a preset position wherein the upper arm is generally vertically oriented alongside the torso and the lower arm portion is generally horizontally positioned at right angles with the upper arm to a thrusting position wherein the upper arm portion and lower arm portion are generally horizontally aligned extending generally at a right angle with the torso after the shaft has been rotated to a predetermined arc and then from the thrusting position to an after-thrust position after further rotation of the shaft, whereby said arm moves in a programmed sequence simulating a thrusting movement in response to rotation of the shaft;
actuation means for selectively rotating said shaft, said actuation means including a pinion gear secured to said shaft for rotation therewith, a gear rack meshingly engaging said pinion gear and mounted for movement within the torso, a plate forming a movable part of the torso secured to said gear rack whereby the shaft is rotated in response to pushing the plate, and return means for positively pushing the movable plate back to its original position after actuation causing the arm to move from its after-thrust position to its preset position; and
detent means mounted on the eccentric member for positioning said eccentric member so that it will be in the preset position after actuation.

3,947,995
SOD SEEDLING GROWING APPARATUS
John C. Renfro, Dana Point, Calif., assignor to Renfro Development Corporation, Dana Point, Calif.
Filed Mar. 21, 1975, Ser. No. 560,692
Int. Cl.² B26D 1/00; A01G 9/02
U.S. Cl. 47—34 R 3 Claims

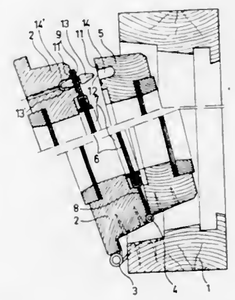


1. An apparatus for use in growing seedlings from seed embedded in humus contained in said apparatus when the latter rests on an open topped container in which fertile soil is disposed, which apparatus includes:
a. a frame of substantial depth that is defined by a plurality of side pieces connected in end-to-end relationship, said frame being adapted to be removably supported in a horizontal position on top of said container whereby said frame can be substantially filled with humus wherein said seeds are embedded, with at least one of said side pieces having a first longitudinal slot formed therein that is disposed adjacent to said container when said frame rests thereon, with said slot having first and second ends;
b. a plurality of elongate root-cutting blades that are pivotally connected in end-to-end relationship and when in a first position are disposed adjacent to the interior surfaces of said side pieces, with said blades lying in a plane substantially common to that of said slot, and with one of said blades having a first end portion that projects through said first end of said slot to the exterior of said frame;
c. a handle secured to said first end portion of said blade; and
d. means for pivotally connecting a free end of one of said blades to said frame adjacent said second end of said slot, said handle when grasped and pulled outwardly moving said blades from said first position to a second position wherein said blades are longitudinally aligned, with the movement of said blades from said first to said second position after said seeds have developed into seedlings severing the portion of the roots of said seedlings in said frame from those portions of said roots in said container to permit said frame to be separated from said container for the easy removal of said seedlings from said frame.

3,947,996
METHOD OF COATING SEEDS TO CONTROL GERMINATION AND THE RESULTANT COATED SEEDS
Harry Watts, Sarnia, Canada, assignor to The Dow Chemical Company, Midland, Mich.
Filed Jan. 21, 1974, Ser. No. 435,041
Int. Cl.² A01C 1/06
U.S. Cl. 47—57.6 8 Claims

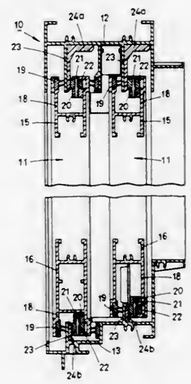
1. A seed enveloped in a continuous adherent coating to control germination until environmental conditions are satisfactory to continued crop growth wherein said coating consists essentially of a uniform blend of an aqueous latex of insoluble polymer and from 0.5 to 5 weight percent of polyvinyl alcohol wherein said weight percent is based upon the combined weight of polyvinyl alcohol and water insoluble polymer and drying the composition to provide a coating having an oxygen permeability sufficient to permit normal respiration of the seed and from 0.01 to 0.15 mm thickness on said seeds.

3,947,997
COUPLED WINDOW WITH TWO CASINGS AND THREE PANES
Arvo Mursula, Alavus, Finland
Filed May 1, 1975, Ser. No. 573,407
Claims priority, application Finland, May 28, 1974, 1634/74
Int. Cl.² E05C 7/02
U.S. Cl. 49—62 2 Claims



1. A window having two single-pane casings connected to each other by hinges and an intermediate pane having a gasket strip encircling the circumference thereof located between said casings, said intermediate pane being at one edge thereof secured to hinge flaps carried on the hinge pins of said hinges connecting said casings to each other, and said intermediate pane being provided at the opposite edge thereof with one single switch coupling having together turnable coupling tongues, each coupling tongue co-operating with a corresponding opening in a counterplate in said inner and outer casings, respectively, said coupling tongues and openings being shaped and arranged such that in one end position of said coupling tongues said intermediate pane is coupled to said inner casing, in an opposite end position of said coupling tongues said intermediate pane is coupled to said outer casing, and in an intermediate position of said coupling tongues said intermediate pane is coupled simultaneously to both said casings.

3,947,998
DUAL SASH WINDOW ASSEMBLY WITH WEATHERTIGHT SEALING MEANS
Isamu Matsubara, Nyuzen, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan
Filed Sept. 19, 1974, Ser. No. 507,480
Int. Cl.² E05D 13/00, 15/06
U.S. Cl. 49—209 6 Claims



4. In a dual sash window assembly comprising a supporting frame including a header and a sill and jambs, and a pair of horizontally movable sashes mounted within said supporting frame in parallel spaced planes, each of said sashes including top and bottom horizontal members and side vertical members, said side vertical members consisting of a first side vertical member to be held against one of said jambs of said supporting frame when the sash is in a closed position and a second side vertical member to meet the corresponding side vertical member of the other sash when the two sashes are in their closed positions, the combination thereof with:
means defining outwardly open channels along said top and bottom horizontal members and said first side vertical member of each sash;
a plurality of vertical rolls rotatably supported in selected positions internally of said channels;
a plurality of flanges projecting inwardly from said supporting frame and intruding into said channels, respectively, when said sashes are in their closed positions;
a plurality of raised roll seats formed on said flanges in such positions that said rolls ride on said roll seats, respectively, when said sashes are moved to their closed positions;
said rolls and said roll seats on each of said sashes being so arranged that said sashes undergo lateral displacement toward each other relative to said supporting frame when said sashes are moved to their closed positions;
first sealing strips arranged along said header and sill of said supporting frame in the middle of the transverse dimension thereof whereby said top and bottom horizontal members of said sashes become pressed against said first

sealing strips, respectively, upon lateral displacement of said sashes in their closed positions;

a second sealing strip arranged along said second side vertical member of one of said sashes whereby said second side vertical member of the other sash becomes pressed against said second sealing strip upon lateral displacement of said sashes in their closed positions; and

third sealing strips arranged internally of said channels along said first side vertical members of said sashes whereby said third sealing strips become pressed against the respective flanges intruding into the respective channels along said first side vertical members upon lateral displacement of said sashes in their closed positions.

3,947,999

SLIDING DOOR ASSEMBLY

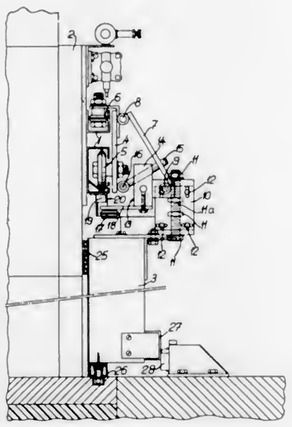
Pierre Disperens, En Vallaire, 1024 Ecublens, Switzerland

Filed Sept. 23, 1974, Ser. No. 508,284

Claims priority, application Switzerland, Sept. 27, 1973, 13831/73; Sept. 11, 1974, 12337/74

Int. Cl.² E05D *15/10*

U.S. Cl. 49—217 **10 Claims**



1. A sliding door assembly comprising a door, a door frame having a door opening, a horizontal rolling track fixed parallel to the frame above said door opening, a suspension member movably mounted along the track, a lever pivotally connected at its upper end to said suspension member and at its lower end to the upper portion of the door and by which the door is suspended from the track, the lever being pivotable between a first position in which the door is lowered and applied against the frame and a second position in which the door is raised and spaced apart from the frame, and means for moving the lever from its second to its first position in response to movement of said suspension member along the track into a closed position of the door and from its first to its second position in response to movement of said suspension member along the track from said closed position of the door, said means for moving said lever comprising a cam track fixed in relation to the frame, linkage means pivotally connected with the lower end of said lever and comprising a movable cam follower member, a roller carried by said cam follower member and engageable with said cam track to pivot said lever from said first position to said second position and means for guiding said cam follower member to move obliquely upwardly and outwardly from said frame.

3,948,000

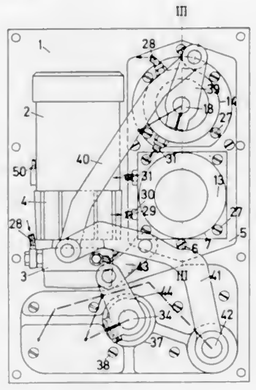
HYDRAULIC DOOR OPENERS

Pauli Dennis Pedersen, Landskrona, Sweden, assignor to Ingenjorsfirman Besam Aktiebolag, Landskrona, Sweden

Filed July 25, 1974, Ser. No. 491,839

Int. Cl.² E05F *15/04*

U.S. Cl. 49—340 **9 Claims**



1. A hydraulic door opener comprising in combination a hydraulically operated rotary motor, a motor shaft mounted in the motor and operatively connected with door engaging means, a hydraulic liquid reservoir, a door operating spring operatively connected with the shaft, a motor-driven hydraulic pump, an actuator for the motor of the motor-driven pump, hydraulic liquid conduits providing communication between the hydraulic pump, the hydraulically operated rotary motor and the hydraulic liquid reservoir and from the reservoir back to the pump so as to produce a closed hydraulic circuit, the rotary motor operating a door to tension the door operating spring, said hydraulic door opener including a spring housing for the door operating spring separately surrounding the spring and providing hydraulic liquid reservoir means as component part of the said hydraulic liquid circuit, said spring housing, said rotary motor and said hydraulic pump being mounted as separate assembly units within said opener to provide easy and separate access thereto.

3,948,001

CURVED SURFACE GRINDING MACHINE

Shinichi Miyazawa, Kawasaki; Kaneyoshi Miyasaka, and Hidehiko Takeyama, both of Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Sept. 25, 1974, Ser. No. 509,028

Claims priority, application Japan, Oct. 5, 1973, 47-112647

Int. Cl.² B24B *49/16*

U.S. Cl. 51—137 **7 Claims**

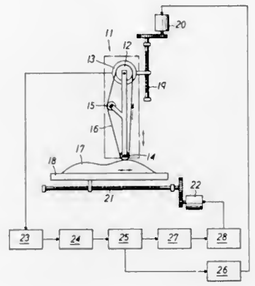
1. A curved surface grinding machine, comprising:

a working table for fixedly holding a work thereon and movable back and forth in a longitudinal direction by means of a servomotor;

a grinding head supported on a machine frame and movable perpendicularly toward and away from said working table by means of a servomotor, said grinding head including an abrasive grinding tool and a tool-driving electric motor for driving said grinding tool; and

means for controlling the movement of said working table and grinding head in response to variations in the load current of said tool-driving motor in such a manner as to effect uniform grinding on and impart a high degree smoothness to the surface of said work;

said controlling means including a detector adapted to detect the load current of said tool-driving motor, a comparator connected to said detector and adapted to produce an electric signal indicative of the difference between the load current detected by said detector and a



predetermined reference value, and means for controlling said servomotors of said working table and grinding head on the basis of the signal from said comparator.

3,948,002

VIBRATORY FINISHING APPARATUS

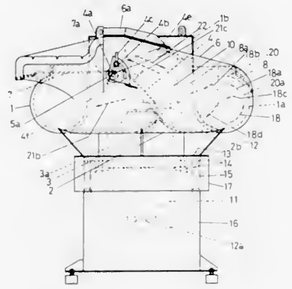
Hisamine Kobayashi, Nagoya, Japan, assignor to Kabushiki Kaisha Shikishima Tipton, Nagayo, Japan

Filed Apr. 14, 1975, Ser. No. 568,099

Claims priority, application Japan, July 11, 1974, 49-79343

Int. Cl.² B24B *31/00*

U.S. Cl. 51—163 V **20 Claims**



1. In a vibratory finishing apparatus with a vibratory finishing tub formed like an annular trough disposed in a horizontal arrangement and including a stationary dam member of triangular shape provided on the arcuate bottom of the trough and a movable flap member provided pivotally up and down between the stationary dam member and the open end of the trough which leads to a mass separating or sieving device, an improved apparatus wherein the trough has a region provided therein for moving a mass including workpieces and abrasive media which enters said region and is accumulated under compressed vibrations forward to said mass separating device, said region being defined by said stationary dam member, said movable flap member provided with an anti-backflow member thereon, at least one closure for closing the upper open portions of the trough between a point at which the mass begins to ascend and said open end of the trough, and a mass guiding plate for allowing the mass to enter said region and preventing the backflow of said mass, said guiding plate being so provided at upstream end of said closure as to traverse said trough radially.

3,948,003

APPARATUS FOR THE TREATMENT OF WORKPIECE SURFACES

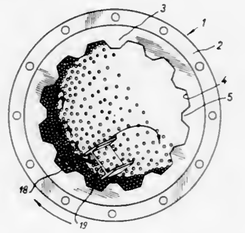
Oskar Pletscher, Zurich, Switzerland, assignor to Gebrueder Pletscher, Zurich, Switzerland

Division of Ser. No. 226,691, Feb. 16, 1972, Pat. No. 3,848,373. This application Sept. 25, 1974, Ser. No. 509,106

Claims priority, application Switzerland, Feb. 22, 1971, 2522/71

Int. Cl.² B24B *31/02*

U.S. Cl. 51—164 **23 Claims**



1. An apparatus for treating the surface of workpieces by means of a mass of smooth-surface or abrasive particles which impact against the surface of the workpiece, comprising means for elevating the particles to a path of free fall for such particles without appreciably entraining the workpieces, means for supporting and rotating the workpieces at the region of free fall of the particles, said supporting and rotating means incorporating said particle elevating means, said elevating means including entrainment means for predominantly only entraining and elevating said particles without appreciably entraining and raising said workpieces to thereby continually produce a separation action between the particles and the workpieces, the particles being elevated to said path of free fall to form a freefalling stream of particles raining down and impacting against the workpieces whereas the workpieces during said separation action being simultaneously exposed to a tumblind action and being freely rotatable at the region of a lower actuated supporting surface of said supporting and rotating means, said means for supporting and rotating the workpieces comprising a slightly inclined receiving mechanism substantially open at both ends, said supporting surface extending between said open ends, and means for introducing a friction-reducing medium for contact with the workpieces and particles.

3,948,004

APPARATUS FOR PRODUCING AN ELECTRICAL REMOVAL SIGNAL CORRESPONDING TO LATERAL AND RADIAL FORCE LOADS ON A TIRE

Peter Max Gruber, Pfungstadt, Germany, assignor to Gebr. Hofmann KG, Darmstadt, Germany

Filed Aug. 28, 1974, Ser. No. 501,435

Claims priority, application Germany, Aug. 30, 1973, 2343841

Int. Cl.² B24B *49/16*

U.S. Cl. 51—165 R **3 Claims**

1. Apparatus for producing a removal electrical signal indicating the amounts of material to be removed from a loaded tire in both lateral and radial directions comprising:

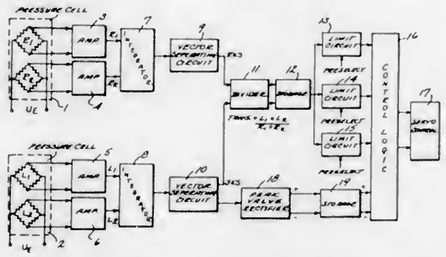
means for detecting the lateral forces and producing a first electrical signal which varies as a function of the detected force,

means for detecting the radial forces and producing a second electrical signal which varies as a function of the detected force,

means for dividing and first signal by said second signal to produce a tangent electrical signal which varies as a function of the tangent of the angle between the vector

representing said radial and lateral forces and the vector representing said radial force,

means for preselecting a plurality of tangent values and producing preset electrical signals representing said preset values, and



means for comparing said preset signals with said tangent signals and producing said removal signal as a function thereof.

3,948,005

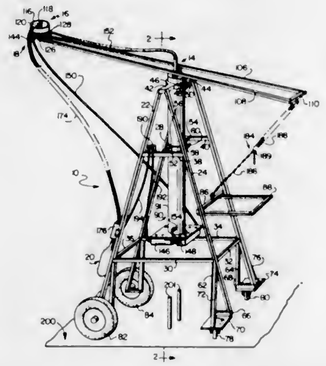
CEILING GRINDING APPARATUS

Jack W. Whitsett, 936 Castile Ave., Coral Gables, Fla. 33134

Filed Jan. 3, 1975, Ser. No. 538,333

Int. Cl.² B24B *23/00*

U.S. Cl. 51—180 **8 Claims**



1. A ceiling grinding apparatus, the combination comprising:

a portable support assembly;

a central elongated member coupled to said support assembly for vertical movement;

a boom assembly pivotally mounted on the top of said central member;

a grinding assembly coupled to a first end of said boom assembly,

said grinding assembly including blade means for grinding the ceiling and rotation means for rotating said blade means;

biasing means for biasing the second end of said boom assembly downwards and said first end upwards to force said blade means against the ceiling; and

elevating means carried on said support assembly for moving said central member vertically upward and downward,

said support assembly including

first and second elongated structural members located in the same vertical plane and oriented at an angle of approximately 40° to each other.

third and fourth elongated structural members located in the same vertical plane and oriented at an angle of approximately 40° to each other,

a horizontally oriented cross bar coupled at one end to said first and second structural members and at the other end to said third and fourth structural members,

clamping means on said cross bar for releasably supporting said central elongated member in a vertical position,

four wheels, each independently and rotatably coupled at the bottom of one of said elongated structural members, and

a plurality of horizontally oriented struts interconnecting said elongated structural members, the lowermost thereof being at a height approximately equal to one-third the height of said structural members.

3,948,006

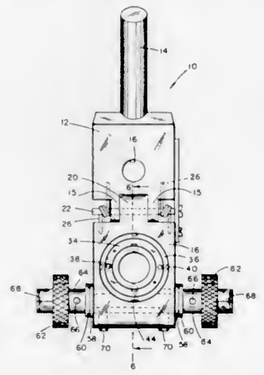
DIAMOND FACETING PLATFORM

Joseph Waldman, 899 Montgomery St., Brooklyn, N.Y. 11213

Filed Jan. 15, 1975, Ser. No. 541,334

Int. Cl.² B24B *19/16*

U.S. Cl. 51—229 **3 Claims**



1. An adjustable diamond faceting platform adapted to be mounted on a tong and suitable for supporting a dop, said platform comprising first and second plate members, hinge means connecting adjacent ends of said first and second plate members together to permit said plate members to pivot relative to each other about said hinge means, an opposite end of said first plate member being provided with mounting means for connection to the tong, an arcuate projecting tongue extending from one side of said second plate member at said adjacent end of said second plate member towards one side of said first plate member, spring means for biasing said second plate member about said hinge means to position a free end of said tongue adjacent to said one side of said first plate member, abutment means provided on said first plate member for engaging said tongue to move said free end of said tongue away from said one side of said first plate member to cause said second plate member to pivot about said hinge means to a desired angular orientation with respect to said first plate member, said second plate member being provided with a first opening extending from said one side of said second plate member to an opposite side of said second plate member, a dop receiving socket member having an axis of rotation being disposed in said first opening with a portion of said socket member extending outwardly from said opposite side of said second plate member to receive the dop, said socket member including means for connecting the dop thereto for common rotation about said axis, a worm gear provided on said socket member and within said first opening for rotation about said axis, a second opening extending through said second plate

member in communication with said first opening and in a transverse direction to said first opening, a worm rotatably mounted in said second opening proximate to said worm gear for meshingly engaging said worm gear and rotating the same with corresponding rotation of said worm, said worm being mounted with clearance for limited transverse movements in directions towards and away from said worm gear, adjustable bearing means mounted on the platform for engaging said worm and applying selective pressures to said worm in the direction of said worm gear, where suitable adjustment of said bearing means compensates for tolerances and wear and provides positive engagement between said worm gear and said worm, said worm having a central threaded portion meshingly engageable with said worm gear and having cylindrical shaft portions extending axially from each end of said threaded portion, each shaft portion being at least partially disposed within said second plate member, said bearing means cooperating with said shaft portions disposed within said second plate member, said shaft portions extending outwardly beyond said second plate member to be accessible for manual rotation of said worm, sleeve means being provided on each of said shaft portions disposed within said second plate member, said sleeve means including a cylindrical sleeve enclosing each shaft portion disposed within said second plate member, said sleeves being provided with smooth surfaces for minimizing friction between said sleeves and said shaft portions which are rotatably journalled through said sleeves, said bearing means including two set screws threadedly mounted on said second plate member, one of set screws being positioned on each side of said thread portion of said worm for engagement with an associated one of said sleeves, each of said set screws being mounted for advancement in direction of said worm gear and substantially normal to direction of said axis of rotation of said worm gear.

3,948,007

METHOD FOR WORKING THE MARGINAL ZONES OF A LENS

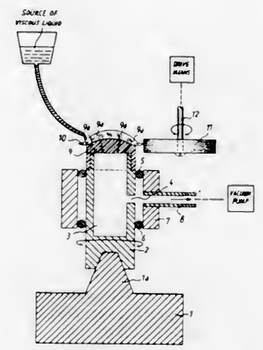
Paul Feneberg, Planegg, and Anton Schätz, Munich, both of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Filed May 29, 1974, Ser. No. 474,429

Claims priority, application Germany, May 30, 1973, 2327583

Int. Cl.² B24B *1/00*

U.S. Cl. 51—284 **8 Claims**



1. A method of working the marginal zones of a lens—particularly a contact lens—which is of soft and readily damaged material, comprising the steps of placing the lens onto a support having a curved surface so that a circumferential marginal zone of the lens projects beyond said surface; applying a viscous liquid between the lens and the surface; rotating the support; effecting centering of the lens on the surface of the rotating support; retaining the centered lens immovably on the surface of the rotating support; and grinding the marginal zone of the lens with a rotary grinding tool to obtain a desired profile for it.

3,948,008

PREFABRICATED STRUCTURAL ELEMENT, ESPECIALLY BALCONY ELEMENT

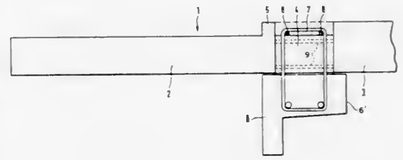
Werner Goetz, Obereschacher Str. 9, 773) Villingen-Schwenningen, Germany

Filed June 20, 1974, Ser. No. 481,385

Claims priority, application Germany, June 25, 1973, 7323502[U]

Int. Cl.² E04B *1/34, 1/04*

U.S. Cl. 52—73 **7 Claims**



1. A building structure comprising a prefabricated integral structural element and a supporting member having a predetermined width at its supporting surface, said prefabricated strucural element comprising a main floor section of a given thickness, a cantilevered floor section, rib means comprising reinforcing rod means rigidly interconnecting said main floor section and said cantilevered section in spaced relation so as to form a gap between the sections, said rod means extending uninterrupted across the gap, said rib means being spaced from each other to define passages therebetween said rib means being of smaller height than said given thickness, said element being supported on said supporting surface, said rib means having a length between said main floor section and said cantilevered section that is less than said width of said supporting surface so that the bottom of said gap is closed by said supporting surface, means rigidly secured to said supporting member to extend out of the supporting surface and into said gap for cooperation with said rib means for interconnecting said supporting member with said structural element, concrete filling said gap thereby embedding said rib means and said interconnecting means to form an integral structural combination, and further reinforcing rod means running substantially the entire length of the gap.

3,948,009

SOUND INSULATING WALL MADE FROM COMPOSITE RUBBER MATERIAL

Klaus Bernhard, Wermelskirchen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 11, 1974, Ser. No. 449,803

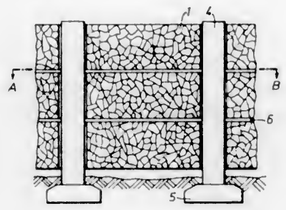
Claims priority, application Germany, Apr. 28, 1973, 2321676

Int. Cl.² E04H *1/82*

U.S. Cl. 52—144 **5 Claims**

1. Sound insulating wall consisting of boards 5 to 20 cm in thickness attached to a stable frame, said boards comprising a mixture of (1) rubber shavings having particle sizes of about 1 to 20 cm^3, (2) a binder of polyurethane foam which hardens to form a predominately closed cellular structure wherein said

binder is present in an amount of between 5 and 15 percent based on the dry weight of the rubber shavings and (3) open-



celled soft foam waste which is present in the spaces between the rubber shavings.

3,948,010

REINFORCING DEVICE FOR AN ELEMENT OF PRESTRESSED CONCRETE

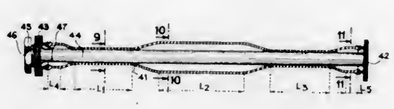
Roger Paul Sonneville, 5, rue Maurice Ravel, 92 Saint-Cloud, France

Continuation of Ser. No. 312,413, Dec. 5, 1972, abandoned. This application Nov. 18, 1974, Ser. No. 524,942

Claims priority, application France, Dec. 17, 1971, 71.45425; May 4, 1972, 72.15842

Int. Cl.² E04C *5/08*

U.S. Cl. 52—223 R **17 Claims**



1. A reinforcing device for the prestressing by compression of a concrete element and comprising a rigid reinforcement unit having a metal tube and two end pl .tes respectively permanently fixed to opposite ends of the tube, a first of which plates constitutes a first end wall defining a terminal transverse face of the unit whereas a second of said plates constitutes an opposite second end wall defining a terminal transverse face of the unit which second end wall defines an aperture in the extension of the interior of the tube, the first end wall defining an inner face facing the second end wall, means for urging the plates apart and thereby putting the whole of the tube under tension, the plates defining support surfaces which face each other and extend substantially radially outwardly of the tube for compressing the concrete element between the plates when the tube-tensioning means are rendered inoperative, the tube-tensioning means comprising metal pressure-applying means co-operative with the second plate and disposed within the tube and capable of axially abutting said inner face of said first end wall, and screw means interposed between the second plate and the pressure-applying means for urging the pressure-applying means against said inner end face, the pressure-applying means comprising a rigid metal core and being removable from the second plate and removable from the tube by way of said aperture after tensioning of the tube, the tube having in some regions of the tube a cross-sectional shape which has a first dimension in a first direction and a second dimension shorter than the first dimension in a second direction perpendicular to the first direction, the cross-sectional shapes of at least two of said regions of said tube having their first dimensions oriented differently and the second dimensions being but slightly larger than the corresponding dimension of the cross-section of the core so that the tube affords a lateral support for the core against buckling of the core.

3,948,011

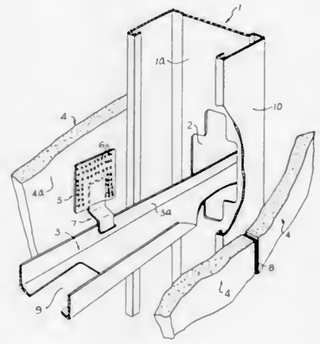
PARTITION SYSTEM FOR A BUILDING

Reginald Stanley Price, 3228 - 6th St., SW., Calgary, Alberta; Robert Stanley Agar, 16 Willow Wood Court, Willowdale, Ontario, and Stanley Elden Thorsell, 121 Conifer St., Sherwood Park, Alberta, all of Canada

Continuation-in-part of Ser. No. 293,662, Sept. 29, 1972, abandoned. This application Aug. 14, 1974, Ser. No. 487,821

Int. Cl.² E04H *1/00*; **A43B** *23/20*

U.S. Cl. 52 -241 **4 Claims**



1. A building partition wall comprising:

first and second runner members mounted horizontally on a ceiling and floor respectively in confronting relationship;

a plurality of spaced, vertical stud members extending longitudinally between the runner members and cooperating therewith to form a solid framework, each stud member having at least one cut-out extending therethrough, said cut-out in one stud member being aligned with a cut-out in each other stud member;

one or more horizontal channel members, each extending through a series of said aligned cut-outs and having an upwardly extending side leg;

a plurality of gypsum board panels, each suspended in side by side relationship from the horizontal channel member or members;

and a plurality of suspension assemblies affixed to the rear of each panel in spaced relationship, said suspension assemblies attaching the panel to said channel members;

each said suspension assembly comprising a gang nail plate and a separable hanger member,

each said gang nail plate comprising a plate and a plurality of integral, panel-piercing, non-threaded members projecting from the plate and extending into the panel without protruding through the front face thereof;

each said hanger member having a cam surface which cooperates with a side leg of the horizontal channel member from which it is suspended to draw the panel firmly against the adjacent vertical stud members.

3,948,012

SPACE FRAME SUPPORT SYSTEM

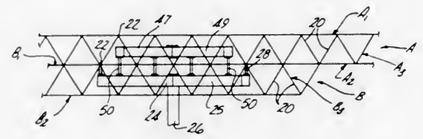
Hristo V. Papayoti, 2886 Sorrento, Ann Arbor, Mich. 48104

Filed May 24, 1973, Ser. No. 363,366

Int. Cl.² E04C *3/02*

U.S. Cl. 52—263 **21 Claims**

1. A support structure for a multiple-decked space frame system including a plurality of elongated stress and load transmitting struts interconnected by a plurality of stress and load distributing fixtures to define upper and lower grid-like chord frame structures disposed in spaced parallel planes, said space frames having in common an intermediate chord frame comprising their upper and lower chord frames respectively; a plurality of elongated stress and load transmitting struts each connecting respectively with fixtures of the upper and intermediate chord frame structures and the intermediate and lower chord frame structures to define a web structure intermediate said chord frame structures; and means for fastening said struts to said fixtures;; said support structure including a vertically upstanding column, a first column arm fixed to the upper end of said column, a second column arm mounted



above, axially aligned with and spaced from said first column arm, a plurality of posts mounted intermediate said first and second column arms for connecting them in a rigid manner, said first column arm further having a plurality of mounting means fixed to its upper surface and engaging the opposed fixtures of said intermediate chord frame to support said intermediate chord frame.

3,948,013

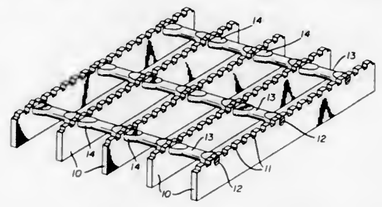
COLD FORGED STEEL GRATING

Lawrence E. Lobaugh, 132 Wilson Ave., Niles, Ohio 44446, and Thomas S. Gallo, 1119 Marshall Road, McDonald, Ohio 44437

Filed May 7, 1975, Ser. No. 575,464

Int. Cl.² E04C *2/42*, *5/04*; **B23P** *5/12*

U.S. Cl. 52—669 **6 Claims**



1. A grating comprising a plurality of similar load bearing spaced parallel longitudinally extending bearing bars, the upper edges of said bearing bars each having a plurality of longitudinally spaced notches therein and a plurality of longitudinally spaced openings therethrough, the openings of one bearing bar being disposed in transverse alignment with the openings in the adjacent bearing bars and a plurality of load bearing spaced straight parallel cross rods positioned through said openings in said bearing bars, portions of said bearing bars adjacent said openings overlying portions of the cross rods in clamping engagement with said cross rods and portions of said cross rods adjacent said bearing bars flattened and into clamping engagement with said bearing bars, said flattened portions of said cross rods engaging said bearing bars being relatively wider than said openings therein.

3,948,014

INTERNALLY CONTAINED TEAR-INDUCING TAB FOR VACUUM SEALED PACKAGES

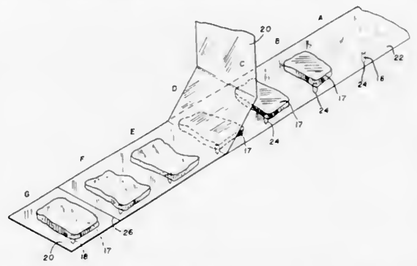
Robert O. Wolfelsperger, Fairfield, N.J., assignor to William E. Young, Atlantic Highlands, N.J.

Division of Ser. No. 462,305, April 19, 1974, Pat. No. 3,900,105. This application Mar. 6, 1975, Ser. No. 555,868

Int. Cl.² B65B *9/02*, *61/18*

U.S. Cl. 53—14 **6 Claims**

1. The method of forming a package with a tear-inducing means which is associated with the positioning of a product of determined size, said method including the steps of: (a) providing a lower flexible film having a width and length greater than the product to be packaged; (b) forming and providing a tear-inducing tab of relative thinness and having a substantial stiffness to resist bending of the tab, said forming including causing a sharp pointed end portion to be provided; (c) placing said tear-inducing tab on the lower film and positioning this tab so that the pointed portion is directed toward an edge of the lower film and at a selected distance inwardly from the edge of the lower film; (d) placing and positioning a product of selected size on the lower film so that the periphery of the product is at least a short distance in from the ends and side



edges of the lower film and also positioning the product so that the sharp pointed portion and a short adjacent portion of the tear-inducing tab extends beyond the periphery of the product, and (e) providing and positioning an upper flexible film over the lower film and product, the upper film being of substantially the same size as the lower film and drawing the upper film tightly around the top and sides of the product and sealing the upper and lower films to encase the product and that projecting portion of the tear-inducing tab which extends beyond the product, the projecting sharpened end as thus arranged effecting a puncture of one of the films when the projecting edge portion of the package is bent sufficiently to cause the sharp point to pierce the film.

3,948,015

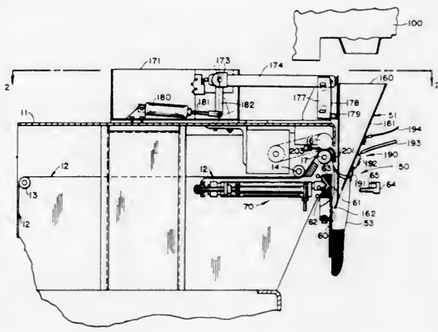
PACKAGING SYSTEM

Bernard Lerner, Hudson, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

Continuation-in-part of Ser. No. 139,453, May 3, 1971, Pat. No. 3,815,318, which is a division of Ser. No. 422,281, Dec. 6, 1973, and a continuation-in-part of Ser. No. 336,560, Feb. 28, 1973. This application Sept. 28, 1973, Ser. No. 401,600

Int. Cl.² B65B *31/04*, *43/32*

U.S. Cl. 53—22 B **43 Claims**



26. A packaging method comprising the steps of:

a. feeding packaging material along a feed path to position a container forming portion of the web at a loading station;

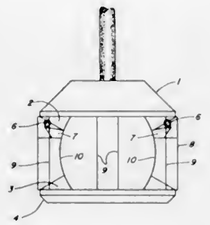
b. partially opening a preformed filling opening of such a positioned container portion by directing a flow of high velocity air toward said fill opening to partially open said fill opening;
c. providing a loading chute having a funnel-shaped region near a smaller end thereof, and extending said region into the fill opening of such partially open container portion; to further open such fill opening;
d. subsequently loading a substance through said chute into such container portion; and
e. withdrawing said chute and closing such loaded container portion.

3,948,016

METHOD OF WRAPPING BALES OF STAPLE FIBER

Bobby Gene Jones, Columbia, S.C., assignor to Allied Chemical Corporation, Petersburg, Va.

Filed Oct. 1, 1974, Ser. No. 510,931
Int. Cl.² B65B *1/24*
U.S. Cl. 53—24 **5 Claims**



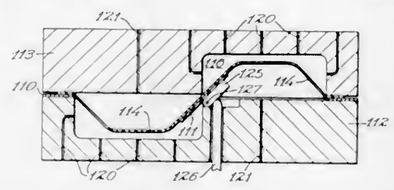
1. In a method of wrapping a bale of staple fiber with bale wrap, the bale being shaped with a ram against a platen in a bale press chamber comprising
dressing said ram head with said bale wrap while said bale press chamber is empty,
covering said platen with said bale wrap while said bale press chamber is empty,
said ram head and said platen being covered with sufficient bale wrap to overlap and cover the entire said bale and said bale wrap being position to overlap and cover the entire said bale
loading and tamping said staple fiber into said bale press chamber,
pressing said loaded tamped staple with said ram to compress said staple into a bale,
covering the remaining sides of said bale with bale wrap, leaving overlapping end flaps of bale wrap,
wrapping said covered bale with multiple wires,
joining the wires, so that each wire encircles the bale in a loose manner, and
releasing the ram,
the improvement comprising
before said ram is released, securing each of said bale wrap overlapping end flaps around one of said loose multiple encircling wires to bow said wire transverse to said wire axis, and pinning said wrap with a pinning means to hold said wire in the bowed position until said ram is released
so that said wire straightens out on release of said ram to exert tension on said overlapping end flaps of said bale wrap thereby eliminating the need to fasten said overlapping end flaps of said bale wrap.

3,948,017

PROCESS FOR FORMING VISUAL DISPLAY PACKAGES

Rudolph A. Faller, Edina, Minn., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Division of Ser. No. 451,019, March 14, 1974. This application May 5, 1975, Ser. No. 574,506
Int. Cl.² B65B *43/08*
U.S. Cl. 53—30 R **8 Claims**



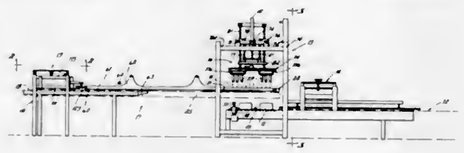
1. The method of forming a visual display container from a foldable packaging card blank having two window openings formed therein, said window openings disposed on either side of a rotatable platform section formed in said card blank and positioned within said card blank adjacent to a transverse fold line, said platform section being adapted to become an exterior portion of said container, and having a plastic film spanning said window openings and said platform section, which comprises the steps of:
locating at least one of said card blanks on a first platen having formed therein an opening of size and shape conforming to a first of said window openings in said card blank, and located adjacent thereto;
moving a second platen into registry with said first platen and said card blank, said second platen having formed therein an opening of size and shape similar to the second of said window openings in said card blank, and located adjacent thereto;
forming a recess pocket in said plastic film extending through each of said window openings in said card blank into said respective openings in said first and second platens and into conforming shape with a pocket-forming region located adjacent to said openings in said first platen and said second platen;
rotating said rotatable platform section in said card blank into position on the exterior of the recessed pocket formed in said film through said first window opening in said card blank; and
loading an article into said recessed pocket in said film.

3,948,018

DUAL CONVEYOR CASE PACKER

Edward F. Rowekamp, Cincinnati, Ohio, assignor to The Lodge & Shipley Company, Cincinnati, Ohio

Filed Aug. 30, 1974, Ser. No. 502,039
Int. Cl.² B65B *57/14, 5/06*
U.S. Cl. 53—61 **15 Claims**



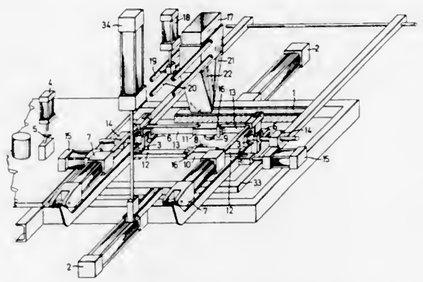
7. A case packer comprising,
a case conveyor having a loading station,
an article conveyor on each side of said case conveyor, said conveyor having means dividing articles from a single file section into a section having a plurality of files of articles,
means on each conveyor for stopping a pattern of articles at said loading station, each pattern consisting of said plurality of files and a predetermined multiple of rows of articles.
an article transfer mechanism overlying said article conveyors at said loading station,
said article transfer mechanism comprising,
a frame,
at least two laterally spaced lifting heads mounted on said frame, each lifting head including a pattern of article grippers,
means for moving each said head in lateral and vertical directions to alternately pick up a pattern of articles from said article conveyor and deposit said pattern in a case at said loading station,
electric eye means downstream of said article dividing means operable to detect a backup of articles feeding into said transfer mechanism,
and means for stopping the feed of articles through said dividing means upon detection of said backup.

3,948,019

APPARATUS FOR THE FULLY AUTOMATIC PRODUCTION OF FILLED, GUSSETED BAGS OF PLASTIC

Werner Döring, and Paul Raderschad, both of Hennef-Sieg, Germany, assignors to Siegrheinische Registrierwaagenfabrik "FIX" Peter Steimel KG, Hennef-Sieg, Germany

Filed Jan. 11, 1974, Ser. No. 432,794
Claims priority, application Germany, Jan. 15, 1973, 2301817
Int. Cl.² B65B *57/06, 43/02, 1/02*
U.S. Cl. 53—63 **18 Claims**



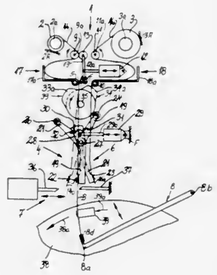
1. An apparatus suitable for production and filling of bags comprising:
a. a fixed frame having serially mounted thereon a number of working stations including a bag making station having means for producing bags, and a bag filling station having means for filling the bags,
b. transporting means for transporting the bags serially from station to station including from the bag making station to the bag filling station,
the improvement which comprises:
c. the bag making means comprising means for providing a length of the bag material longer than the length of the bag in flat, depending condition, and a cutter for cutting the material to the bag length,
d. the transporting means comprising transport grippers for holding the bag during the cutting below and adjacent the cutter so as to leave an upper, open end portion of the bag standing upright in flat condition above the transport grippers after the cutting, and for holding the bag during movement thereof to the filling station in said condition and holding the bag at the filling station in said condition, and means for selectively engaging and disengaging the transport grippers with the bag,
e. the means for filling the bag comprising bag holding means and opening means, the holding means comprising gripping jaws for gripping from outside the bag the upper corner portions of the bag disposed within said upright end portion of the bag disposed above the transport grippers, the opening means comprising grasping means for grasping the sides of the bag at the top between the gripping jaws and pulling the sides of the bag apart to open the bag for filling,
f. said selective engaging and disengaging means for the transport grippers permitting disengagement of the transport grippers after gripping of the bag by the gripper jaws and before opening of the bag by the opening means,
g. the filling station further comprising a bag filling means for introducing material into the open bag.

3,948,020

APPARATUS FOR MANIPULATING SHEET-LIKE BLANKS IN PACKING MACHINES FOR CIGARETTES OR THE LIKE

Reinhard Deutsch; Manfred Rudolph; Karl-Heinz Pawelko, all of Hamburg, and Willy Rudszinat, Dassendorf, all of Germany, assignors to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Filed Apr. 7, 1975, Ser. No. 565,460
Claims priority, application Germany, Apr. 10, 1974, 2417515
Int. Cl.² B65B *57/04*
U.S. Cl. 53—64 **17 Claims**

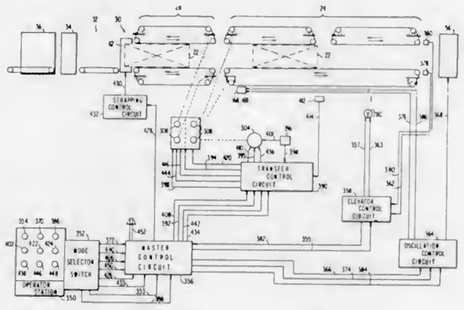


1. Apparatus for manipulating a succession of blanks which are obtained by severing webs of sheet-like material, particularly for making and transporting blanks in a packing machine for cigarettes or the like, comprising a mobile carrier having blank entraining means arranged to move along a first path; feeding means having first and second sources of discrete webs and means for advancing one of said webs at a time from the respective source along second paths; means for holding the leader of said one web at a first locus adjacent to said first path and for holding the leader of the other of said webs at a second locus; a conveyor movable between first and second positions and having means for gripping the leader of said one web at said first locus in said first position of said conveyor and for moving such leader across said first path during movement of said conveyor to said second position; means for thereupon severing said one web adjacent to said first locus to thereby form a blank which is moved by said entraining means along said first path; and means for transferring the leader of said one web from said first locus and the leader of said other web from said second to said first locus in response to a changeover from advancement of said one web to advancement of said other web.

3,948,021
COTTON PACKAGING METHOD AND APPARATUS

George S. Buck, Jr., and Roger Russell, both of Memphis, Tenn., assignors to Cotton Incorporated, Raleigh, N.C.

Filed Dec. 12, 1974, Ser. No. 532,008
Int. Cl.² B65B 63/02, 13/20
U.S. Cl. 53—124 D 32 Claims



20. A cotton packaging system comprising:
a press section comprising:
press means for forming a compressed bale of cotton; said press means including:
movable platen means movable between an initial bale forming position and a spaced bale completed position, and
oscillatable compression surfaces, and
conveyor means for ejecting a bale from said press section;
a strapping section including strapping means for banding a cotton bale at selected longitudinally spaced zones;
a transfer section including transfer conveyor means for receiving the ejected bale from said press section and delivering said bale toward said strapping means;
said press section, said transfer section and said strapping section being disposed in generally longitudinal alignment;
platen movement control means for initiating movement of said movable platen means to said initial position;
oscillation control means for initiating ejection of said compression surfaces;
transfer control means for initiating ejection of said bale from said press section;
strapping control means for initiating banding of said bale;
said transfer control means being operable to cause incremental advance of said bale from said transfer section into said strapping section.

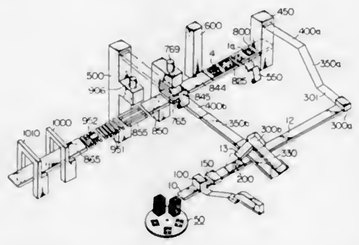
25. A cotton packaging system according to claim 20 including:
bale bagging means and bag shrinking means disposed in generally longitudinal alignment with said strapping section.

3,948,022
APPARATUS FOR MAKING A CARTONED PACKAGE

Eiji Minaka, Kawasaki; Kinyu Ishida, Takatsuki, and Norio Ishimaru, Matsuyama, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 22, 1974, Ser. No. 499,852
Int. Cl.² B65B 35/44, 41/18, 13/00
U.S. Cl. 53—156 14 Claims

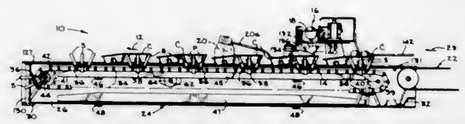
1. An automatic apparatus for making a unit package comprising a pair of protector plates having identical construction and a plurality of yarn packages rigidly held by said protector plates in parallel relationship each other and in non contact condition each other and a closed film enclosing said yarn packages inside said protector plates in sealed condition and at least a pair of closed tapes or strands tightly binding said protector plates, comprising in combination, an assembling conveyer means, a first means for reserving a plurality of said protector plates as first protector plates and supplying single protector plate positioned at a position adjacently upstream of said assembling conveyer means, means for supplying a first sheet of film on said first protector plate in superposed condition when said first protector plate is supplied from said first means for reserving and supplying said protector plates to a predetermined position on said assembling conveyer means, means for temporarily positioning a first combined body of said first protector plate with said first sheet of film on a position for mounting a plurality of said yarn packages on predetermined positions of said first protector plate via said first sheet of film, means for simultaneously supplying a second sheet of film on a second combined body composed of said yarn packages and said first protector plate and said first sheet of film and for sealing said first and second sheet of films, a second means for reserving a plurality of said protector plates as second protector plates and supplying single second protector plate on said plurality of yarn packages mounted on said first protector plate in sealed condition with said first and second sheet of films, means for binding said first and second protector plates of said fourth combined body with a pair of said closed tapes, so that said unit package is produced, means for intermittently driving all of said means in synchronous condition each other.



3,948,023
EGG CARTON CONVEYOR

Harold J. Mumma, Riverside, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Aug. 5, 1974, Ser. No. 495,687
Int. Cl.² B65B 35/30; B65G 15/42
U.S. Cl. 53—160 8 Claims

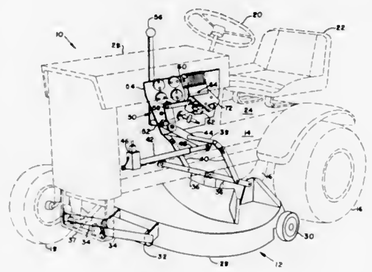


6. A carton conveyor for use with an egg grading machine which includes means for discharging eggs vertically downward into the egg-receiving pockets of egg cartons carried by said conveyor, said carton conveyor comprising a plurality of spaced carriers each being arranged to support one of said egg cartons, and means for moving said carton conveyor to successively bring each of said carriers into a position beneath said egg discharging means to receive the eggs discharged therefrom, each of said carriers comprising a plurality of supports extending transversely of the direction of movement of the conveyor, said supports being spaced longitudinally in the direction of movement of the conveyor and being arranged to support each row of eggreceiving pockets in the egg carton on both transversely extending sides thereof, said supports projecting upwardly from the conveyor for a distance such that the egg carton supported thereby is suspended above the conveyor and allowed to deflect downwardly upon the reception of eggs in the pockets thereof.

3,948,024
IMPLEMENT POSITION CONTROL SYSTEM

David Thomas Allen, and Robert Nick Behrens, both of Hori-con, Wis., assignors to Deere & Company, Moline, Ill.

Filed Sept. 20, 1974, Ser. No. 507,926
Int. Cl.² A01D 75/14
U.S. Cl. 56—11.2 9 Claims

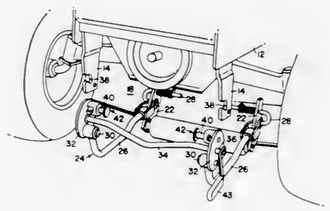


1. In combination with a member movably mounted on a support structure and having a reversible electric motor means coupled thereto for effecting movement thereof in opposite first and second directions respectively in response to selective energization of a motor power circuit means to first and second modes of operation for respectively directing current at opposite polarity to the motor means, a control system for selectively energizing said power circuit means so as to effect operation of said motor means, comprising: a control switch means and a cam means respectively including first and second support arms mounted side-by-side for independent pivotal movement about a fixed axis; said control switch means being connected to said power circuit means and including first and second control switches removably fastened to said second support arm and being normally open for effecting a de-energized condition in said power circuit means and respectively including first and second switch element means respectively selectively actuatable to establish closed conditions in said first and second control switches for respectively effecting said first and second modes of operation in said power circuit; said cam means including cam surface means so disposed relative to said first and second switch element means that the latter remain uninfluenced when the control switch means and cam means bear a neutral angular relationship relative to each other, but are respectively engaged and closed immediately upon said neutral angular relationship being disturbed by angular movement of the switch means in first and second opposite directions relative to the cam means or respectively engaged by angular movement of said cam means in said second and first directions relative to said control switch means; one and the other respectively of said control switch means and cam element means respectively forming part of a manually operable linkage means and a follow-up linkage means; said manually operably linkage means being selectively shiftable for moving said one of said control switch means and cam means angularly in said first and second directions relative to the other so as to disturb said neutral angular relationship; and said follow-up linkage means being connected between said motor means and said other of said control switch means and cam means so as to cause the latter to follow the manually-caused movement of said one of said control switch means and cam means so as to restore said neutral angular relationship.

3,948,025
IMPLEMENT DRAFT FRAME

Leon Paul Erdman, Beaver Dam, Wis., assignor to Deere & Company, Moline, Ill.

Filed Apr. 16, 1975, Ser. No. 568,702
Int. Cl.² A01D 35/12
U.S. Cl. 56—10.1 6 Claims

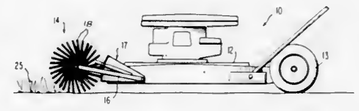


1. In an implement and tractor combination of a type including a draft frame connected between first and second mounting brackets respectively provided at a forward underside portion of the tractor and at a forward portion of the implement, the improvement comprising: said draft frame including a connection member and a fore-and-aft draft arm means having forward and rearward ends respectively pivotally connected to the connection member and the second mounting bracket; releasable fastener means fixing said connection member to said first mounting bracket in a working position holding the forward end of said draft arm means in an elevated position; one of said first mounting bracket and connection member including receptacle means and the other of said first mounting bracket and connection member including pin means received in and cooperating with the receptacle means for permitting pivotal movement of the connection member between said working position and a non-working position when the releasable means is released, wherein the forward end of said draft arm is in a lowered position; and operating means fixed to said connection member for pivoting it between said working and non-working positions.

3,948,026
LAWN MOWER

Thomas J. Whitechester, Rte. 8, Box 742-A, Yakima, Wash. 98902

Filed Oct. 31, 1974, Ser. No. 519,694
Int. Cl.² A01D 35/26
U.S. Cl. 56—255 4 Claims



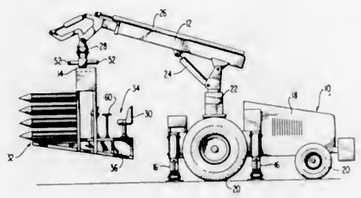
1. A lawn mower comprising a mower body including driven cutter means for mowing a swath of uniform width through grass as the mower is advanced, and spiked rotary supportive wheel substitute means mounted on the mower body at the front thereof in advance of the cutter means for rolling on the standing grass of a lawn substantially without flattening the grass and without appreciably penetrating the ground prior to cutting with said cutter means so that the grass in said swath is cleanly cut at a uniform height without uncut tracks of flattened grass.

3,948,027

CROP HARVESTING APPARATUS

John W. Edwards, Tampa, Fla., assignor to Ginny Bee Harvester Corporation, LaBelle, Fla.

Filed Nov. 5, 1974, Ser. No. 521,065
Int. Cl.² A01D *46/20*
U.S. Cl. 56—328 R 11 Claims



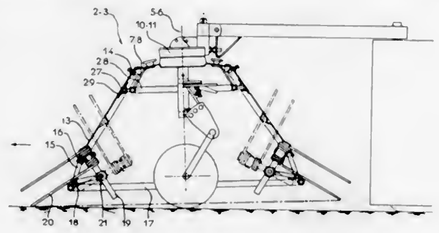
1. Apparatus for harvesting tree-borne crops comprising:
a tractor having wheels, an engine, brakes, and a transmission for coupling the engine to at least some of the wheels to drive the tractor, at least some of the wheels being steerable;
a boom having a first end rotatably connected to the tractor and having a second end;
at least one crop harvesting head;
a support station supporting the at least one crop harvesting head and rotatably connected to the boom second end, the support station including an operator location having first control means coupled to the tractor engine, transmission, brakes, and steerable wheels for controlling operation of the tractor from the support station, second control means coupled to the at least one crop harvesting head for controlling operation thereof, and third control means for controlling movement of the support station relative to the tractor.

3,948,028

HAY-MAKING MACHINE

Walter Reber, 50, avenue du Marechal Foch, Saverne (Bas-Rhin), France

Filed May 14, 1974, Ser. No. 469,787
Claims priority, application France, May 23, 1973, 73.19592
Int. Cl.² A01D *81/00*
U.S. Cl. 56—365 21 Claims



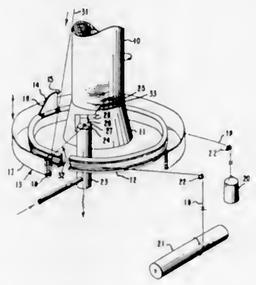
1. An agricultural hay-making machine for both tedding and windrowing, comprising at least two rotors, means mounting said rotors on said machine for rotation, each rotor comprising tool-carrier arms articulatedly connected to cranks which cranks are articulatedly connected between an annular support and push-rods, the push-rods being articulatedly connected to a hub for transposition of the annular support and the tool-carrier arms between a low swathing position and a higher tedding position.

3,948,029

STRING-UP AND CUT-DOWN DEVICE FOR A RING TWISTER

Trevor R. Bridle, Brockville; Christopher S. M. Godfrey, and David C. Riley, both of Kingston, all of Canada, assignors to Du Pont of Canada, Ltd., Montreal, Canada

Filed Nov. 7, 1974, Ser. No. 521,853
Claims priority, application Canada, Dec. 21, 1973, 188828
Int. Cl.² D01H *1/40*
U.S. Cl. 57—34 TT 4 Claims



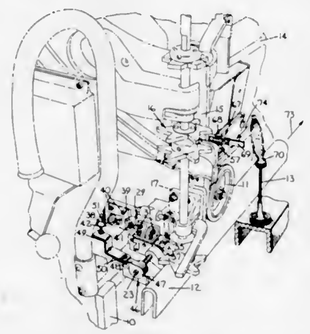
1. In a ring twister for winding yarn on the surface of a pirn carried by a rotating spindle including a ring positioned concentric with and mounted for traversing said spindle, a yarn disposal means located near the base of the spindle, said ring having a freely rotatable traveller through which yarn passes in a path past the yarn disposal means to the spindle, means for traversing said ring, and means for snagging the yarn mounted at the base of the spindle, the improvement for use in string-up and doffing the pirn comprising: a rotatable pulley mounted adjacent said yarn snagging means, said pulley being concentric with said spindle and having a diameter less than said ring; means for rotating said pulley; cutting means attached to said yarn disposal means; and an upstanding fin shaped guide attached to said pulley for engaging said yarn as said pulley is rotated and moving said yarn into engagement with said cutter at doffing and said snagging means at string-up.

3,948,030

SPINDLE PROTECTION DEVICE

Frederick L. Sprague, Hopedale, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed June 13, 1975, Ser. No. 586,530
Int. Cl.² D01H *9/10*
U.S. Cl. 57—53 4 Claims



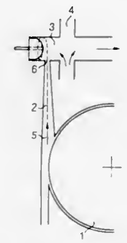
1. For a machine adapted to move along a spinning frame having mechanisms for donning empty bobbins on and doffing wound bobbins from a row of spindles supported by the spinning frame, a spindle protection device comprising:
a. a pivotable bobbin indicating lever;
b. a latching means for maintaining the donning mechanism in operating position including means operatively associated with said indicating lever for releasing said donning mechanism when said indicating lever is encountered by an undoffed wound bobbin, said means including:
1. a switch member operatively connected to said indicating lever;
2. means defining a self-contained energy package carried by the machine connected to said switch member; and
3. means interconnecting said energy package with said latching means for disengaging the latter from the donning mechanism upon actuation of said switch member by said indicating lever.

3,948,031

DUCT FOR FEEDING FIBERS TO A PNEUMATIC SPINNING CHAMBER HAVING A STATIONARY WHIRL

Ryszard Karol Jozwicki; Henryk Kubica, and Marianna Teresa Piatkowska, all of Lodz, Poland, assignors to Instytut Wlokiennictwa, Lodz, Poland

Filed June 28, 1974, Ser. No. 484,463
Claims priority, application Poland, July 2, 1973, 163777
Int. Cl.² D01H *1/12*; D02G *1/16*
U.S. Cl. 57—58.95 2 Claims



1. A duct for feeding fibres to a spinning chamber having main nozzles in which the yarn is formed under the action of air and having a stationary whirl, one end of the said duct being connected with a fibre opening-feeding device, the other end of the said duct being connected with a spinning chamber of a spinning frame, said duct tapering in the direction of flow of air through said duct, the area of the duct outlet being smaller than the sum area of the outlets of the main nozzles in the spinning chamber, the length of the said duct being greater than the length of processed fibres.

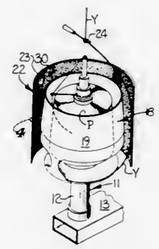
3,948,032

ANTI-FRICTION BALLOON RESTRAINER IN A TEXTILE YARN PROCESSING MACHINE

Christoph Quast, Moers, Germany, assignor to Palitex Project-Company G.m.b.H., Dusseldorf, Germany

Filed Oct. 17, 1974, Ser. No. 515,442
Claims priority, application Germany, Oct. 17, 1973, 2351974
Int. Cl.² D01H *1/42, 13/04*
U.S. Cl. 57—108 6 Claims

1. In a textile yarn processing machine, such as a twister, spinning frame or the like, having spindle assembly stations for the processing of yarn and each including a spindle assembly for carrying a package of yarn to be withdrawn and processed and which produces a rotating balloon of the yarn around the package as it is withdrawn therefrom, and a hollow balloon restrainer device having an inside wall surrounding the package of yarn and the balloon of yarn produced for contact by the rotating balloon of yarn to limit the size thereof during such yarn processing; the improvement of:
anti-friction means secured to and forming a coating on at least a portion of said inside wall of said balloon restrainer device for providing a reduced coefficient of friction surface, when compared with the surface of said inside



wall, for contact by the rotating balloon of yarn during yarn processing for reducing friction damage to the yarn being processed, said anti-friction means comprising low-pressure polyethlyene based material in the form of fine grains with almost spherical particles which have been subjected to a sinter process.

3,948,033

BULKED POLYESTER HETEROYARNS

Arthur Robert Henstock; Walter Raymond Jones, and Frank Wilding, all of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 21, 1974, Ser. No. 444,599
Claims priority, application United Kingdom, Feb. 23, 1973, 8989/73
Int. Cl.² D02G *3/28, 3/26*
U.S. Cl. 57—140 R 8 Claims

1. A bulked heteroyarn composed of two types of filaments, being 25–75% by weight substantially uncrimped, polyester filaments and 75–25% by weight helically crimped, polyester filaments, and having compact zones wherein substantially the whole of the filaments of one type is wrapped about and interlaced to some extent with filaments of the other type, alternating with loopy zones wherein at least the major proportion of the filaments of the one type are separated from the filaments of the other type and form irregularly shaped loops extending longitudinally of and outwardly from the axis of the yarn and wherein said heteroyarn has between 50 and 150 said loopy zones per meter and said loopy zones have lengths varying between 0.25 cm and 2.0 cm.

3,948,034

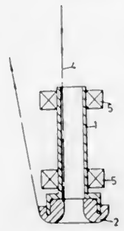
FALSE TWISTING FILAMENTARY YARNS

Raymond George Gosden, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 26, 1974, Ser. No. 465,141
Claims priority, application United Kingdom, Apr. 27, 1973, 20152/73
Int. Cl.² D02G *1/02, 1/20*
U.S. Cl. 57—157 TS 4 Claims

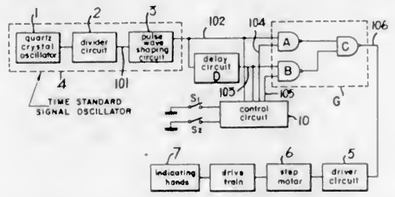
1. A method for false twisting an advancing filamentary yarn using a friction false twist device comprising a rotatable hollow spindle with a friction surface or bush mounted at one end thereof and presenting a continuous friction surface both on the inside and on the outside of the end portion of the hollow spindle in which yarn enters the spindle at the end opposite to the bush in a direction substantially parallel to the axis of rotation of the spindle and leaves the spindle in sub-

stantially the reverse direction so that the yarn maintains continuous contact with the surface of the bush while the



linear surface speed thereof increases by at least 50% in the direction of yarn travel.

3,948,035
TIME INDICATION SETTING CIRCUIT
Yasuo Kusumoto, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan
Filed Aug. 14, 1974, Ser. No. 497,371
Claims priority, application Japan, Aug. 14, 1973, 48-91042
Int. Cl.² G04C *3/00*; **G04B** *27/00*
U.S. Cl. 58—23 R **6 Claims**



1. A time indication setting circuit for an electronic timepiece comprising:
a. delay means for receiving an electrical time signal for delaying said electrical time signal;
b. a control circuit receptive of said time signal and the delayed time signal comprising means responsive to only said time and delayed time signals for selectively developing an electrical stop signal and means responsive to only said time and delayed time signals for selectively developing an electrical advance signal; and
c. gate means having an output and receptive of said time signal, said delayed time signal, said stop signal and said advance signal for applying said time signal and said delayed time signal to said output in response to said advance signal applied to said gate means, for blocking the application of any signal to said output in response to said stop signal applied to said gate means and for applying said time signal to said output in the absence of said stop signal and said advance signal applied to said gate means.

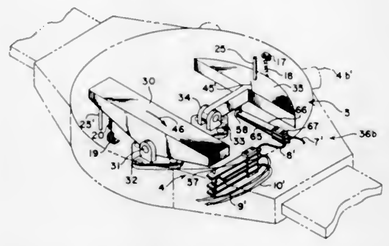
3,948,036
ELECTRONIC TIMEPIECE
Shigeru Morokawa, Higashiyamato, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Dec. 13, 1974, Ser. No. 532,593
Claims priority, application Japan, Dec. 24, 1973, 48-2427
Int. Cl.² G04C *3/00*, *13/02*; **G04B** *27/00*, *37/12*
U.S. Cl. 58—23 R **18 Claims**

1. An electronic timepiece comprising:
a. a time unit signal generator including an oscillator for generating a frequency reference signal and means for forming from said frequency reference signal a time unit signal consisting of a pulse signal having a given frequency;
b. a mechanical time keep means for effecting a time keep operation in accordance with the time unit signal from said time unit signal generator to display a kept time;
c. an electrical time keep means for effecting the time keep operation independently of said mechanical time keep means in accordance with the time unit signal from said time unit signal generator;



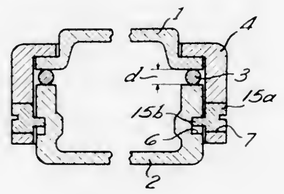
d. a manually operable correction means for correctting a kept time of said electrical time keep means; and
e. a synchronizing signal generation means for comparing respective kept times of said mechanical and electrical time keep means to bring the kept time of the mechanical time keep means into coincidence with the kept time of the electrical time keep means.

3,948,037
WRIST POSITION-ACTUATABLE SWITCH
Eugene R. Carlone, 150 W. 82 St., New York, N.Y. 10024
Filed Jan. 22, 1975, Ser. No. 543,148
Int. Cl.² G04B *19/30*
U.S. Cl. 58—50 R **11 Claims**



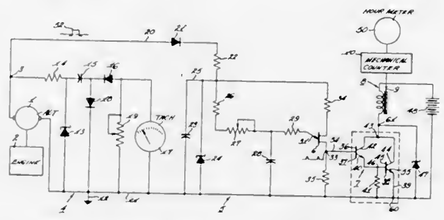
1. A wristwatch switch device comprising in combination: a wristwatch support structure, wristwatch means for keeping time mounted on the wristwatch support structure, an electrical time-display circuit means for facilitating the observing and reading of time-indicating indicia when the electrical time-display circuit means is actuated, the electrical time-display circuit means including a switch means for closing and breaking electrical circuit, the switch means including elements operatively connected to function as a gravity switch positioned on the support structure for closing circuit solely when said wristwatch support means is positioned in a predetermined upright plane such that predetermined mass of the gravity switch responsive to gravity is closable of electrical circuit responsive to movement of the support structure in solely one predetermined direction of movement along said predetermined upright plane to a closed-circuit positioned adapted such that movements in other planes and in other directions do not close circuit of the electrical time-display circuit means, said switch means further including elements for returning to an open-circuit state when the support structure is not in each of said predetermined plane and said closed-circuit position.

3,948,038
COUPLING STRUCTURE OF WATCHCASE
Katsuji Takagi, Tokyo, Japan, assignor to Heiwado Boeki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 10, 1975, Ser. No. 557,013
Claims priority, application Japan, Apr. 20, 1974, 49-45106[U]; Apr. 23, 1974, 49-46832[U]; Apr. 23, 1974, 49-46833[U]; June 20, 1974, 49-72817[U]; June 20, 1974, 49-72818[U]; June 20, 1974, 49-72820[U]
Int. Cl.² G04B *37/08*
U.S. Cl. 58—90 R **6 Claims**



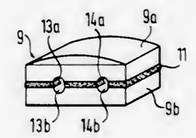
1. A coupling structure of watchcase comprising a front cap, a rear cap in which an inner mechanism is accommodated, a packing interposed between the front cap and rear cap, an outer rim peripherally engaged with said front cap and covering a zone at which said front cap abuts on said rear cap with interposition of said packing and coupling pins mounted in said rear cap and said outer rim, wherein said pin comprises an eccentric pin having an eccentricity between the axes of its head and threadless shank which corresponds to a margin required to adjust a force with which said packing is clamped and is inserted for rotary adjustment through and into said outer rim in engagement with said front cap and said rear cap, said eccentric pin being received within openings in said outer rim and rear cap and being configurated so that the periphery of the head and the shank present a slant surface for initially biasing said outer rim toward said rear cap and aligning said openings as said eccentric pin is received within said openings.

3,948,039
HOUR METER OPERATED RESPONSIVE TO TACHOMETER SIGNAL
James E. Leveraus, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Dec. 24, 1974, Ser. No. 536,088
Int. Cl.² G07C *3/02*; **G04F** *8/00*
U.S. Cl. 58—146 **10 Claims**



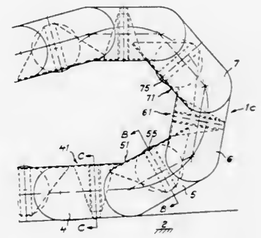
1. An hour meter circuit for operating an hour meter on a vehicle comprising, an oscillator circuit, a rectifying circuit connected to said oscillator circuit for energizing said oscillator circuit, an engine driven signal generator generating an electrical signal applied to said rectifier circuit, an electronic switching circuit triggered by said oscillator circuit, an hour meter, a solenoid intermittently energized by said electronic switching circuit, a solenoid operated counter, an hour meter connected to said counter, a source of electrical energy supplying electrical energy to said solenoid and said electronic switching circuit thereby providing an hour meter operating only when said engine driven signal generator is operating.

3,948,040
HINGED BRACELET AND METHOD OF MAKING THE SAME
Remigio Tuppini, Verona, Italy, assignor to Andreas Daub, Pforzheim, Germany
Filed May 7, 1975, Ser. No. 575,968
Claims priority, application Germany, May 25, 1974, 2425407; June 7, 1974, 2427512
Int. Cl.² B21L *9/00*; **F16G** *15/12*
U.S. Cl. 59—35 R **11 Claims**



1. In a hinged bracelet formed of a plurality of links arranged in several juxtapositioned, longitudinally extending rows; adjacent links belonging to adjoining rows being offset with respect to one another and being articulated to one another by hinge pins extending transversely to the longitudinal direction of the bracelet; each link being tranversed by two hinge pins; the improvement wherein each link is formed of two link parts bonded to one another along a parting plane; each link having two throughgoing bores extending transversely to the longitudinal direction of the bracelet and being spaced from one another in said longitudinal direction; each bore being formed by a longitudinally open groove provided in at least one of said link parts, said groove facing, with its longitudinal opening, the other of said link parts; each bore accommodating one of said hinge pins.

3,948,041
CHAIN CONSTRUCTION
Knut Vilhelm Börjesson, Torsbygaten 34 2tr, 123 41 Farsta, Sweden
Filed Oct. 3, 1974, Ser. No. 511,519
Int. Cl.² F16G *13/00*
U.S. Cl. 59—78.1 **19 Claims**



1. A chain construction adapted to support and guide at least one flexible energy-transferring line and to be attached at one end thereof to a connecting point and at its other end to an energy-consuming or energy-producing apparatus capa-

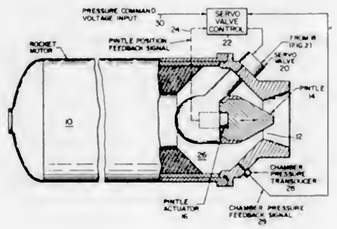
ble of moving in the longitudinal direction of the said line, a plurality of links comprising pairs of spaced link plates with adjacent link plates joined together in a manner such that said links can pivot through a predetermined angle, a support surface for each link plate at about the level of an edge thereof, said surfaces being mounted on at least some of the links so as to lie in one and the same plane, and support wheels rotatably mounted on predetermined links with the peripheral surface of each wheel extending slightly above the support surface adjacent to the mounting.

3,948,042

SYSTEM FOR CONTROLLING THE NOZZLE THROAT AREA OF A ROCKET MOTOR

James D. Beardsley, Ridgeley, W. Va., and John D. Shipley, Orlando, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 23, 1968, Ser. No. 788,990
Int. Cl.² F02K *1/18*
U.S. Cl. 60—242 **2 Claims**



1. In a missile having a motor with an exhaust nozzle the throat area of which is controllably variable to correspondingly vary the thrust developed by said motor, the combination of:

means for sensing sequential changes in pressure within said motor and developing an electrical output signal representative of such pressure changes;

a source of an input command signal representative of desired pressure changes within said motor over a given period of time;

means for comparing the input command signal from said source with the signal output of said sensing means to develop an error signal;

control means, including a movable pintle and an electrically-controlled hydraulically-pressurized servo valve connected thereto, for varying the throat area of said nozzle;

means for moving said pintle as a function of changes in the amplitude of said error signal to thereby regulate the operation of said control means;

said error signal being applied to said servo valve to regulate the amount of hydraulic pressure applied to said pintle and hence the instantaneous position of the latter;

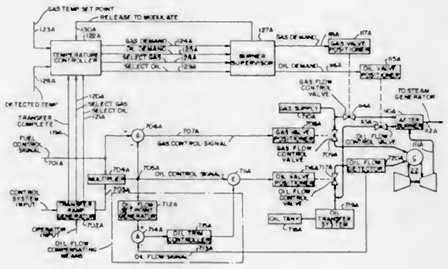
means for sensing the instantaneous position of said pintle and for developing an electrical variation representative thereof, and means for applying the electrical variation representative of the instantaneous position of said pintle to said control means to decelerate movement of the pintle during a period of rapid changes in pressure within said motor.

3,948,043

COMBINED CYCLE ELECTRIC POWER PLANT AND A GAS TURBINE AND AFTERBURNER HAVING COORDINATED FUEL TRANSFER

Lyle F. Martz, Verona, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 8, 1974, Ser. No. 495,714
Int. Cl.² F02K *3/10*
U.S. Cl. 60—243 **6 Claims**



1. A coordinated fuel transfer system for an afterburner in a combined cycle power plant, said afterburner being adapted to use first and second fuels to heat the exhaust gas of a gas turbine which is rotatably coupled to drive an electric generator, said system comprising,

first means to control a flow of the first fuel to the afterburner in accordance with an input fuel to the afterburner in accordance with an input signal to said first means,

second means to control a flow of the second fuel to the afterburner in accordance with an input signal to said second means,

means to generate first and second selection signals, the first selection signal being generated when the desired afterburner fuel is the first fuel, and the second selection signal being generated when the desired afterburner fuel is the second fuel,

means to detect a power plant temperature that is related to a flow of the first or the second fuel to the afterburner and to generate a signal representative of the detected temperature,

means to generate a signal representative of a desired value of the temperature that is detected by said temperature detecting means,

a controller to generate first and second fuel demand signals associated with the respective first and second fuels, said controller being responsive to a difference between the desired and detected temperature signals to vary the fuel demand signals associated with the fuel flowing to the afterburner to reduce such difference, and

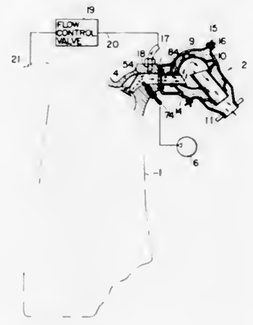
means to transmit the generated first and second fuel demand signals to the respective inputs of said first and second control means, said transmitting means being responsive to the first and second selection signals to interrupt such transmission upon generation of one of the first and second selection signals, and following such interruption to generate input signals to said first and second control means for controlling the flows of the first and second fuels to ignite the desired fuel from the existing fuel, and following such ignition to terminate the flow of the existing fuel and to restore the generated first and second fuel demand signals to the inputs of said first and second control means.

3,948,044

EXHAUST GAS PURIFYING DEVICE

Nobuaki Wakita, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 26, 1974, Ser. No. 464,442
Claims priority, application Japan, Aug. 27, 1973, 48-95181
Int. Cl.² F02M *25/06;* **F01N** *3/10*
U.S. Cl. 60—278 **7 Claims**



1. An internal combustion engine comprising:

a group of cylinders each having an exhaust port,

a housing defining a recombustion chamber therein,

a source of coolant adjacent said recombustion chamber,

gas passages connecting each exhaust port to said recombustion chamber, each of said passages having an inlet end connected to a respective one of the exhaust ports and an outlet end opening directly into said recombustion chamber immediately adjacent the periphery of said housing, all of said outlet ends terminating substantially the same distance, if any, from the periphery of said housing,

said gas passages being spaced different distances from said source,

means for injecting air into the gas passages, said means injecting less air into the gas passage most distant from said source than into the gas passage most adjacent said source so that less recombustion occurs and less heat is generated in the portion of the recombustion chamber most remote from the source where there is less thermal diffusion by the source than the portion thereof most adjacent the source where there is sufficient thermal diffusion by the source whereby the surface temperature of the recombustion chamber is substantially uniform.

3,948,045

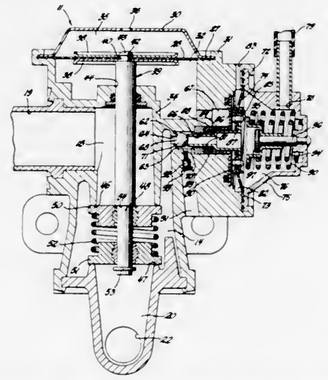
AIR CONTROL VALVE

John A. Budinski, Dayton; Wayne V. Fannin, Xenia, and Raymond A. Flora, Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 21, 1975, Ser. No. 569,605
Int. Cl.² F02B *15/10*
U.S. Cl. 60—290 **1 Claim**

1. In a valve for controlling the destination of high pressure air from a pump driven by an internal combustion engine, the engine having air and fuel induction means including a source of induction vacuum, the control valve including means for selecting among a plurality of outlets and a first differential pressure motor for actuating said selection means according to the pressure supplied to it; a pilot valve assembly comprising:

a housing defining a valve chamber, a first opening communicating the valve chamber with the pump and defining a first valve seat in the valve chamber, a second opening communicating the valve chamber with the first differential pressure motor and defining a second valve seat in the valve chamber and means providing restricted communication between the valve chamber and the atmosphere; a valve member within the valve chamber; a second differential pressure motor having an actuating chamber in communication with the source of induction vacuum and an output member comprising a tube having one end in communication with the actuating chamber, having a free end projecting through the second opening into the valve chamber and being adapted for axial movement with changing induction vacuum; the second differential pressure motor being adapted, with induction vacuum below a first predetermined level, to position the tube with its free end holding the valve member against the first valve seat, whereby the tube and first opening are closed and the first differential pressure motor is open to atmospheric air through the second opening and restricted communication means, the second differential pressure



motor further being adapted, with induction vacuum between the first and a second high predetermined level, to pull the tube away from its first opening closing position, whereby the valve member, due to differential air pressure, moves with and closes the free end of the tube and high pressure air is thereby communicated to the first differential pressure motor through the first and second openings; the second differential pressure motor further being adapted, with induction vacuum greater than the second predetermined level, to withdraw the free end of the tube from the valve chamber past the second valve seat, whereby the valve member, due to differential air pressure, is lodged in the second valve seat to close the second opening and is separated from the free end of the tube, whereby induction vacuum from the second differential pressure motor is communicated to the first differential pressure motor through the tube.

3,948,046

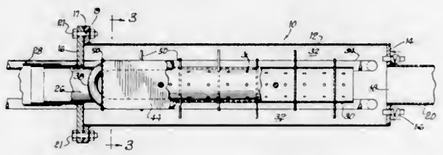
ANTI-POLLUTION DEVICE FOR TREATING EXHAUST FROM INTERNAL COMBUSTION ENGINES

George L. Davidson, Cincinnati, Ohio, assignor to Don F. Seyferth, LaQuinta, Calif.

Continuation of Ser. No. 334,392, Feb. 21, 1973, abandoned.
This application Sept. 23, 1974, Ser. No. 508,198
Int. Cl.² F01N *3/14*
U.S. Cl. 60—298 **17 Claims**

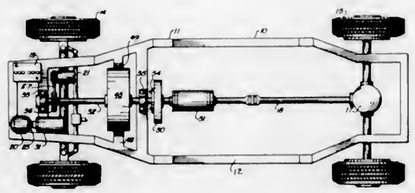
1. An anti-pollution device for treatment of gases exhausted from a fuel burning internal combustion engine comprising a reactor housing having an inlet through which the hot exhaust gases are introduced into the housing and an outlet through which the treated gases are issued from the housing for release into the atmosphere, a core tube having an outlet and an inlet mounted within the housing to extend lengthwise through the housing with the outlet of the core tube being connected in

sealing relation with the outlet of the housing so that only gases passing through the core tube will exhaust from the housing while the inlet of the core tube is open and in axially spaced facing relation with the inlet of the housing, with the core tube having a cross-section less than that of the interior of the housing to provide a spaced relation therebetween whereby the exhaust gases entering the housing through the inlet can flow into the open end of the core tube and about the core tube for passage through the core tube to the outlet, means for admixture of an oxygen containing gas with the hot exhaust gases introduced into the housing, temperature reduction means comprising heat transfer surfaces in the form of



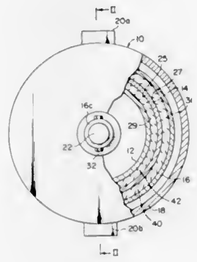
cooling coils within the housing in the path to be engaged by the gaseous mixture during passage through the housing from the inlet to the outlet, and means for circulating a fluid coolant through the cooling coils, baffles within the core tube and housing in the path of travel of the gaseous mixture through the core tube and housing to bring about turbulent flow for maximizing contact between the gaseous mixture and the exposed surfaces within the interior of the housing, at least a portion of said surfaces containing a metal which functions as a catalyst under the conditions existing within the housing to convert gaseous components of a lower oxidized state to a higher oxidized state.

3,948,047
HYDRAULIC VEHICLE DRIVE SYSTEM
Gene D. Gilbert, 1803 E. Fairmont, Phoenix, Ariz. 85016
Filed Oct. 29, 1974, Ser. No. 518,232
Int. Cl.² F15B *15/18*
U.S. Cl. 60—325 **4 Claims**



1. A fluid pressure system comprising:
a. a source of hydraulic fluid pressure;
b. a sequencing valve in hydraulic communication with said source of hydraulic pressure having alternate outlet ports, said valve having means for selectively diverting fluid pressure between said outlet ports;
c. a power means including:
i. a rotor rotatively disposed within housing means, said rotor having a series of peripheral pressure cavities;
ii. an output shaft connected to said rotor; and
iii. valve plate means oppositely disposed relative to said rotor and adapted to selectively isolate cavities in registry therewith forming pressure chambers;
d. fluid discharge means associated with said valve plate means oriented to direct fluid pressure toward said rotor; and
e. means interconnecting said sequencing valve to said fluid discharge means whereby fluid pressure is selectively delivered to the said pressure chamber in registry with a valve plate to propel said rotor.

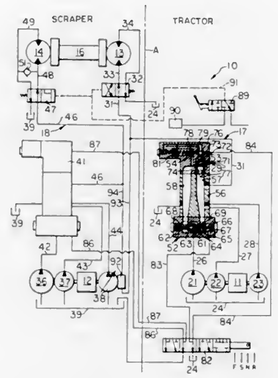
3,948,048
COAXIAL CYLINDRICAL FLUID DRIVE
Elmer Lifka, Western Springs, Ill., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Apr. 21, 1975, Ser. No. 570,022
Int. Cl.² F16D *33/00*
U.S. Cl. 60—330 **1 Claim**



1. A fluid drive comprising: an elongated cylindrical housing having two end walls, colinear input and output shafts protruding centrally from opposite housing end walls, a first cylinder having exterior and interior walls coaxial with and radially spaced within said housing, said first cylinder being fixedly secured to said output shaft and being mounted rotatable with respect to said input shaft, said first cylinder having longitudinally directed vanes projecting inwardly from its interior walls, a second cylinder having interior and exterior walls coaxial with and radially spaced within said first cylinder, said second cylinder being mounted for rotation with respect to both said input and output shafts and having longitudinally directed vanes projecting outwardly from its exterior wall and inwardly from its interior wall, a third cylinder having an exterior wall radially spaced within and coaxial with said second cylinder and having longitudinally directed vanes projecting outward from its exterior wall and fluid within the radial spaces defined between the various aforementioned cylinders.

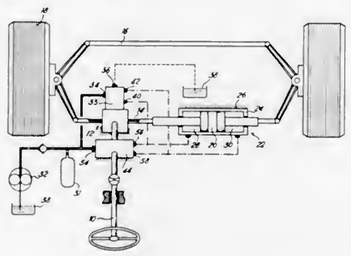
3,948,049
DUAL MOTOR HYDROSTATIC DRIVE SYSTEM
Edward J. Ohms, Decatur, and Wayne A. Peterson, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed May 1, 1975, Ser. No. 573,649
Int. Cl.² F15B *13/09, 18/00*
U.S. Cl. 60—426 **13 Claims**

1. A dual motor hydrostatic drive system, for transmitting power from a pair of prime movers to a common rotatable member, comprising;
a pair of hydraulic motors operatively drivingly connected to such rotatable member;
a first hydraulic circuit in communication with one of the hydraulic motors including pump means driven by one of such prime movers;
a second hydraulic circuit in communication with the other of said hydraulic motors including a fixed displacement pump and a variable displacement pump both driven by the other of such prime movers; and
means responsive to fluid pressure in the first and second hydraulic circuits for automatically varying the output displacement of the variable displacement pump so that



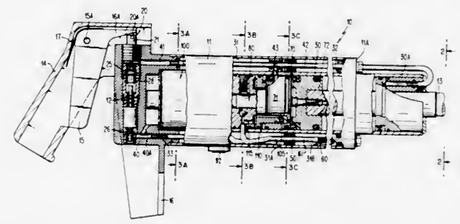
a predetermined relationship is maintained between the fluid pressures in the first and second hydraulic circuits.

3,948,050
POWER STEERING MECHANISM
Gilbert Kervagoret, Argenteuil, France, assignor to Societe Anonyme D.B.A., Paris, France
Filed Oct. 7, 1974, Ser. No. 512,599
Claims priority, application France, Oct. 9, 1973, 73.35929
Int. Cl.² F15B *13/14*
U.S. Cl. 60—477 **10 Claims**



1. A power assisted steering system including a fluid pressure source and a low pressure reservoir, power steering apparatus comprising a double-acting actuator having a housing, an actuator piston slidable in said housing and having a pair of opposed faces cooperating with opposite ends of the housing to define a pair of opposed fluid pressure receiving chambers, a fluid pressure distributing valve for controlling communication between said source, said chambers and said reservoir, a control member for operating said distributing valve to communicate high pressure fluid to a corresponding one of said chambers depending upon the direction of movement of said control member from a central idle position, and a reaction device comprising a housing defining a closed compartment therewithin, a reaction piston slidably mounted in said compartment, means for providing a predetermined force to one side of said reaction piston, connecting means connecting said reaction piston to said control member whereby the force exerted by said reaction piston on said control member yieldably urges said control member to said idle position with a force proportional to a net force acting on the reaction piston, means for generating a control pressure acting on said reaction piston in opposition to said predetermined force, said generating means being connected to said actuator piston chambers, and said control pressure being a function of the pressure differential in said chambers across said actuator piston.

3,948,051
FLUID PRESSURE AMPLIFIER
Don J. Marshall, Box 410, Rte. 6, Edgewater, Md. 21037
Filed Aug. 1, 1974, Ser. No. 493,702
Int. Cl.² F15B *7/02*
U.S. Cl. 60—542 **39 Claims**

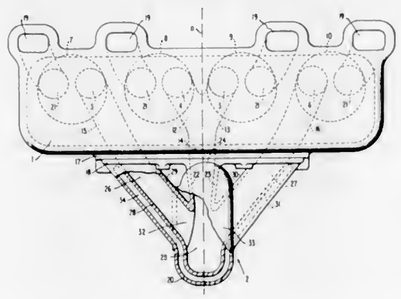


1. A fluid pressure amplifier for intensifying fluid pressure, said amplifier comprising: a housing including a gas-hydraulic interface piston; a first chamber having a slave piston mounted for reciprocation therein, a hydraulic fluid path intermediate said interface piston and said first chamber; a second chamber in said path intermediate said first chamber and said interface piston and check means in said path intermediate said second chamber and said first chamber; a third chamber, and a fluid intensifier piston having a head end and aa tail end, said head end being mounted for reciprocation in said third chamber and said tail end being mounted for reciprocation in said second chamber, said head end having a larger diameter than said tail end and being exposed to gas presssure and said tail end being exposed to hydraulic presssure in said second chamber; a gas inlet to said head end and said interface piston, said fluid intensifier piston movable from a first position to a second position by gas pressure on said head end to thereby increase hydraulic pressure in said first chamber; a relief means to effect a decrease of gas pressure upon said head end at least when said fluid intensifier piston reaches said second position whereby said piston moves from said second to said first position.

3,948,052
INSTALLATION OF AN EXHAUST GAS TURBO-CHARGER AT AN INTERNAL COMBUSTION ENGINE
Roland Merkle, Stuttgart; Wolfgang Rapp, Esslingen, and Friedrich Noltemeyer, Hohenacker, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany
Filed Oct. 26, 1973, Ser. No. 409,941
Claims priority, application Germany, Oct. 27, 1972, 2252705
Int. Cl.² F02B *33/40, 33/44*
U.S. Cl. 60—605 **7 Claims**

1. An exhaust gas channel system of a four-cylinder reciprocating piston in-line engine which comprises a cylinder head provided with an exhaust flange means along the side of the cylinder head and an exhaust gas turbo-charger having a housing means connected to the exhaust flange means of the cylinder head, the exhaust gas channel system being arranged in the cylinder head and in the housing means of the exhaust gas turbo-charger, characterized in that the internal combustion engine includes cylinder means having exhaust aperture means arranged in that half of the respective cylinder means

disposed nearest a cross center plane of the cylinder head, and exhaust gas channel means formed substantially exclusively by cast-in walls of the cylinder head and cast-in walls of the exhaust gas turbo-charger, said exhaust gas turbo-charger housing means including a counter-flange means matched to the exhaust flange means of the cylinder head, by means of which it is connected directly at the exhaust flange means of the cylinder head, the exhaust gas channel means are formed both in the cylinder head and also in the turbine housing means by cast-in wall means substantially aligned with each other in transition zones from cylinder head to exhaust gas



turbo-charger, the turbo-charger housing means includes a turbine scroll case, the exhaust gases are conducted by the exhaust gas channel means in the turbo-charger housing means substantially tangentially to the turbine scroll case symmetrically to the cross center plane of the cylinder head, and in that the two center exhaust gas channel means are combined into a central channel within the cylinder head, said central channel being continued in a further center channel by corresponding wall means cast-in in the exhaust gas turbo-charger, which further center channel, directly downstream of the entry thereof into the housing means, conducts the exhaust gases into a center area of the turbine scroll case.

3,948,053

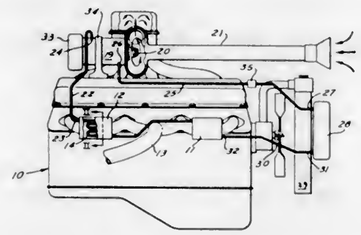
SYSTEM FOR UTILIZING WASTE HEAT OF AN INTERNAL COMBUSTION ENGINE

Joseph A. Gamell, Kalamazoo, Mich., assignor to Joseph Gamell Industries, Incorporated, Kalamazoo, Mich.

Continuation of Ser. No. 411,328, Oct. 31, 1973, abandoned, which is a continuation of Ser. No. 250,879, May 8, 1972, abandoned. This application Apr. 14, 1975, Ser. No. 567,704

Int. Cl.² F01K *23/10*

U.S. Cl. 60—618 **6 Claims**



1. Apparatus comprising in combination,
1. an internal combustion engine having a completely independent liquid primary cooling system including a radiator and cooling fan, and
2. apparatus for utilizing waste heat from said internal combustion engine comprising,
   a. supercharger means having an impeller mounted on said engine and situated in an air intake conduit of said internal combustion engine;
   b. turbine means driving said supercharger means and provided with a motive fluid inlet port and a motive fluid outlet port;
   c. vaporizer means intimately associated with said internal combustion engine, heated by said engine, and provided with a motive fluid outlet communicating with said motive fluid inlet port of said turbine means and provided with a motive fluid inlet;
   d. condenser means provided with a motive fluid inlet communicating via a confined flow passageway with said turbine outlet port and provided with a motive fluid outlet communicating with said vaporizer inlet, said condenser means being located in front of said radiator so that air circulating through said radiator also cools said condenser;
   e. a check valve means situated in said confined flow passageway between said turbine outlet port and said condenser inlet and permitting only unidirectional flow of motive fluid from said turbine means to said condenser means;
   f. said turbine means, vaporizer means and condenser means together defining a closed loop for circulating a motive fluid completely independent of the primary cooling system and of the fuel system of the internal combustion engine; and
   g. non-combustible motive fluid within said closed loop.

3,948,054

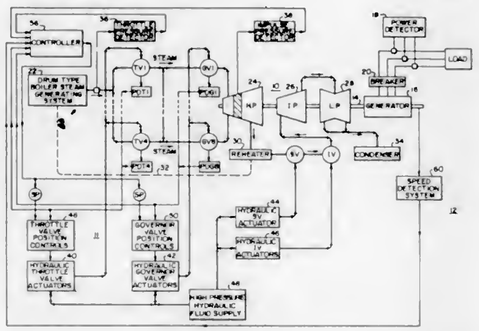
STEAM TURBINE BLADE PROTECTION SYSTEM AND METHOD ESPECIALLY FOR ELECTRIC POWER PLANTS

Francesco Lardi, and Donald J. Jones, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 27, 1973, Ser. No. 383,201

Int. Cl.² F01K *13/02*

U.S. Cl. 60—660 **25 Claims**



1. An electric power plant comprising a steam turbine having a plurality of turbine sections, said turbine having a plurality of inlet valves including a plurality of governor valves for supplying inlet steam to drive a turbine rotor, a generator driven by said turbine to produce electric power, a rotor blade protection system including means for automatically controlling the operation of said governor valves in a sequential valve mode or a single valve mode to meet load demand, said controlling means including means for transferring between sequential and single valve operating modes during turbine load operation substantially without disturbing the output of said generator, said controlling means further including means for responding to representations of predetermined parameters which are related to steam flow through the governor valves to detect excessive rotor blade loading conditions and to cause said transferring means protectively to transfer the turbine

from the sequential valve mode to the single valve mode if the turbine is in the sequential valve mode and if the predetermined parameters are interrelated in a manner which indicates an excessive blade loading condition.

3,948,055

METHOD FOR CONTROLLING STRESS AND INCREASING THE STRENGTH OF SUPPORT MEMBERS IN COAL MINES

Dal S. Choi, Ponca City, Okla., and Roger C. Parsons, St. John's, Canada, assignors to Continental Oil Company, Ponca City, Okla.

Filed Sept. 3, 1974, Ser. No. 502,699

Int. Cl.² E02D *3/14, 3/00*

U.S. Cl. 61—36 R **9 Claims**

1. A method for controlling stress and increasing the load-bearing strength of support members, said support members comprising coal in a coal mine by fracturing the interior portions of said support members, said method consisting essentially of;
   a. injecting from about 0.01 to about 5 weight percent based on the weight of said internal portions of a material selected from the group consisting of ammonia or hydrochloric acid into the interior portions of said support members; and,
   b. preventing the escape of said material through the exterior surfaces of said support members.

3,948,056

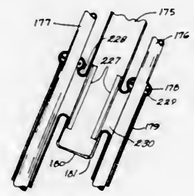
MODULAR OFFSHORE STRUCTURE SYSTEM

Maurice N. Sumner, 1718 Lubbock St., Houston, Tex. 77007

Division of Ser. No. 243,790, April 13, 1972, and a continuation-in-part of Ser. No. 107,288, Jan. 18, 1971, Pat. No. 3,716,993, which is a continuation-in-part of Ser. No. 649,889, June 29, 1967, Pat. No. 3,575,005. This application Jan. 8, 1975, Ser. No. 539,302

Int. Cl.² E02B *17/00;* **E02D** *25/00*

U.S. Cl. 61—46 **13 Claims**



1. A marine structure for use in making underwater couplings comprising:
   a submerged chamber; means for access to and from said chamber
   means to expell water therefrom:
   a guide means operably associated with said chamber for guiding and holding a piling
   an opening in said guide means communicating with said chamber

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3,948,057

PORTABLE MINE STOPPING DEVICE

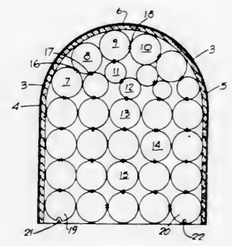
Hugo Hill, Rock Spring, Wyo., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Feb. 24, 1975, Ser. No. 552,175

Int. Cl.² E21F *17/00, 1/14*

U.S. Cl. 61—45 F **2 Claims**

1. A portable mine stopping device for blocking an air passage of a mine, said mine stopping device comprising
   a ribbed sheet of flowable material positionable on the sides and roof of an air passage of a mine for sealing irregularities in the sides and roof and extending across the air passage to prevent the flow of air therealong; and



a plurality of air cells positioned in closely adjacent relation within the confines of the sheet, said air cells being inflatable to substantially block the flow of air through the passage.

3,948,058

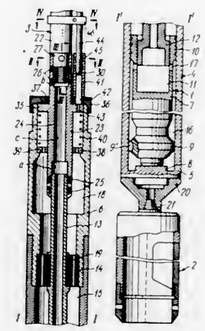
DEVICE FOR SOIL SAMPLING UNDER WATER

Evgeny Ivanovich Tanov, ulitsa Dzerzhinskogo, 34, and Viktor Yakovlevich Ploschadny, prospekt Svobody, 5, kv. 11, both of Ashkhabad, U.S.S.R.

Filed Oct. 16, 1974, Ser. No. 515,356

Int. Cl.² E02D *1/04*

U.S. Cl. 61—63 **8 Claims**



1. In a device for obtaining a sample of matter situated beneath a body of water, elongated housing means having a hollow interior limited at one end by a bottom anvil wall, said housing means having an opposed top end distant from said anvil wall, socket means fixedly carried by said housing means and extending downwardly beyond said bottom anvil wall thereof for receiving a sample of the matter beneath a body of water, striker means slidably situated within said housing means for repeatedly striking against said anvil wall for driving said socket means into the matter beneath the body of water so as to situate a sample of said matter in said socket means, said striker means having distant from said bottom anvil wall an upper hollow interior portion, tubular supply means for supplying to said striker means, in said upper interior hollow portion thereof, a fluid under pressure for driving said striker means against said anvil wall, said tubular supply means extending fluid-tightly through said top end of said housing means into the interior thereof and having a lower portion slidably received in said upper interior hollow portion of said striker means, the latter cooperating with said lower portion of said tubular supply means and with the inner surface of said housing means first to be driven downwardly by fluid under pressure into impact with said anvil wall, then to be raised in said housing means by said fluid under pressure away from

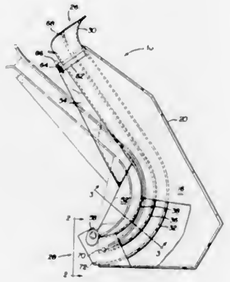
said anvil wall through a given upward stroke, and at the end of said upward stroke placing the space beneath said striker means in communication with the space in said housing means above said striker means to again be released to the force of the fluid under pressure to be driven thereby downwardly into impact with said anvil wall, and tubular discharge means operatively connected with said housing means and communicating with the interior space thereof above said striker means and surrounding the part of said tubular supply means which extends into the interior of said housing means so that through said tubular discharge means fluid under pressure can be discharged out of the interior of said housing means, said tubular supply means and said tubular discharge means both having substantially rigid portions extending upwardly beyond said housing means through a distance sufficient to extend upwardly beyond the surface of the body of water so the pressure of the body of water will not interfere with the flow of fluid through either of said tubular means.

3,948,059

CABLE PLOW CHUTE MULTI-LAY CABLES

John R. Pompa, Moline, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed Sept. 11, 1974, Ser. No. 505,172
Int. Cl.² E02F 5/00; F16L 1/02
U.S. Cl. 61—72.6 **9 Claims**



1. In a cable chute for guiding and dispensing a plurality of plastic pipes, electric cables or the like, said chute being suitable for attachment to the trailing end of a ground slitting implement and for insertion into the ground for a cable laying operation, comprising:

first and second releasably secured members;

said first member including a pair of generally parallel side plates and a first web connected with and generally perpendicular to said sidewalls, said first web including an arcuate portion defining a portion of a cable guiding conduit, one of said sidewalls having an arcuate edge generally parallel with the arcuate portion of said first web, and the other of said sidewalls having a greater width than said one sidewall to extend away from said first web beyond said edge in the same direction as said edge;

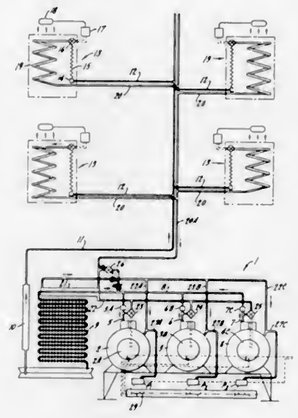
said second member including a supporting side plate having an arcuate edge adjacent to and complementary with the arcuate edge of said one sidewall member, the supporting slide plate being coplanar with said one sidewall and extending generally parallel with said other side wall member, and a plurality of cable guiding webs connected to said supporting side plate and extending substantially to said other sidewall member, said cable guiding webs including arcuate portions generally parallel with the arcuate portion of said first web to define a plurality of cable guiding conduits.

3,948,060

AIR CONDITIONING SYSTEM PARTICULARLY FOR PRODUCING REFRIGERATED AIR

Andre Jean Gaspard, 29 rue de l'Alma, Noumea (Nouvelle Caledonie), France

Continuation-in-part of Ser. No. 361,893, May 21, 1973, abandoned. This application Nov. 29, 1974, Ser. No. 527,959
Claims priority, application France, May 24, 1972, 72.18515
Int. Cl.² F25B 1/10
U.S. Cl. 62—175 **5 Claims**



1. In an air conditioning system for producing cool air, a pluraluty of evaporators to cool various rooms at different and variable temperatures, the evaporators being connected to each other in parallel by refrigerant supply and return lines, a condensation unit connected to the supply and return lines to be placed outside of the rooms to be cooled and including a plurality of compressors connected in parallel to the supply and return lines, means responsive to the pressure of the returning gaseous refrigerant in the return line to energize and deenergize the compressors at certain pressure levels in the return line so that the number of compressors in operation will be related to the heat load in the various rooms to be cooled, and a bypass between the discharge of the compressors and the return line with a control valve therein constructed to maintain the suction pressure at a generally constant level regardless of the number of evaporators operating.

3,948,061

CENTRIFUGAL REFRIGERATION UNIT

Johnny Evans Kidwell, Pryor, Okla., assignor to George B. Vest, Pryor; Oscar Jones, Salina and James R. Head, Tulsa, all of, Okla.

Filed Oct. 29, 1974, Ser. No. 518,705
Int. Cl.² F25B 3/00
U.S. Cl. 62—499 **7 Claims**

1. A centrifugal refrigeration unit comprising:

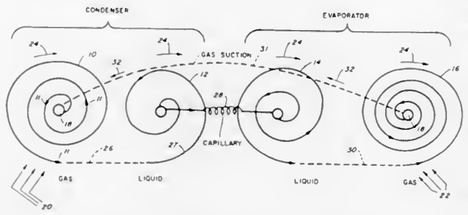
a. a hollow shaft having a first and second ends supported in bearings, and motor means to rotate said shaft in a given direction;

b. a condenser, comprising first and second metal tubing spirals mounted on a first end of said shaft, the first spiral spiraling outwardly from said shaft in a direction counter to said direction of shaft rotation, the second spiral spiraling outwardly from said shaft in the same direction as said shaft rotation, said first spiral having more turns than said second spiral;

c. an evaporator, comprising third and fourth metal tubing spirals mounted at the second end of said shaft, the third spiral spiraling outwardly in the opposite direction of shaft rotation, the fourth spiral spiraling outward in the same direction of shaft rotation said fourth spiral having more turns than said third spiral;

d. said first and fourth spirals in fluid communication at their inner ends to opposite ends of said hollow shaft, the second and third spirals connected and in fluid communication at their inner ends to opposite ends of a capillary tube, said first and second spirals connected together at their outer ends, said third and fourth spirals connected together at their outer ends; and

e. means to fill the tubing system with refrigerant.

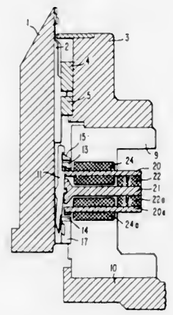


3,948,062

ELECTRONIC NEEDLE SELECTING MEANS FOR CIRCULAR KNITTING MACHINES

Norishige Sumitomo, Sakai, Japan, assignor to Precision Fukuhara Works, Inc., Kobe, Japan

Filed June 26, 1974, Ser. No. 483,287
Claims priority, application Japan, Aug. 15, 1973, 48-91444
Int. Cl.² D04B 9/00
U.S. Cl. 66—50 R **6 Claims**



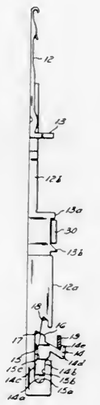
1. An electronic needle selecting device for a circular knitting machine having a circle of needles and a circle of jacks individually associated with the circle of needles, said jacks being movable between active and inactive positions and being adapted to be raised to raise said needles when in their active position, alternate ones of said jacks comprising a first series thereof while intervening ones of said jacks comprise a second series thereof, first jack moving means to move said jacks of said first series thereof to their active position, first electromagnetic means in addition to said first jack moving means and being operatively related to said first series of jacks to thereafter move selected ones thereof from their active to their inactive position when said first electromagnetic means is selectively pulsed according to a predetermined pattern, second jack moving means to move jacks of said second series thereof to their inactive position, second electromagnetic means in addition to said second jack moving means and being operatively related to said second series of jacks to thereafter move selected ones thereof from their inactive to their active position when said second electromagnetic means is selectively pulsed according to a predetermined pattern, and additional jack moving means following said first and said second electromagnetic means to thereafter raise those of said jacks of both of said series thereof which are in their active position thereby to raise such needles as are associated with such raised jacks, those of said jacks of both of said series thereof which are in their inactive position not being raised by said additional jack moving means whereby such needles as are associated with such non-raised jacks are not raised.

3,948,063

PATTERN MECHANISM

H. Leslie Curtis, Gilford, N.H., assignor to Scott and Williams, Inc., Laconia, N.H.

Filed Oct. 21, 1974, Ser. No. 516,161
Int. Cl.² D04B 9/00
U.S. Cl. 66—50 R **16 Claims**



1. A pattern mechanism for a knitting machine to selectively control movement of a needle mounted in a slot for longitudinal movement therein comprising a jack body movably mounted in said slot to operatively control movement of said needle in at least one direction, a butt element carried by said jack body and movable both longitudinally and transversely of said jack body, said butt element having means cooperating with the jack body to produce at least two alternate modes of operation in response to transverse position of the butt element relative to the jack, one of said modes providing lesser longitudinal free movement of said butt element relative to said jack body that the other of said modes, and selector means operable to transversely position said butt element in said one or said other mode to selectively determine a corresponding degree of free longitudinal movement of said butt element relative to said jack body.

3,948,064

SINGLE-TUB AUTOMATIC WASHER

Leo H. Sauer, and Jack F. Clearman, both of St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 25, 1974, Ser. No. 526,592
Int. Cl.² D06F 23/04, 39/08
U.S. Cl. 68—23.4 **11 Claims**

1. An automatic washer comprising:

a tub having circumferentially continuous walls tapering downwardly and outwardly relative to a vertical axis to form an annular liquid collection zone spaced radially outwardly from said axis at a maximum radius of said tub;

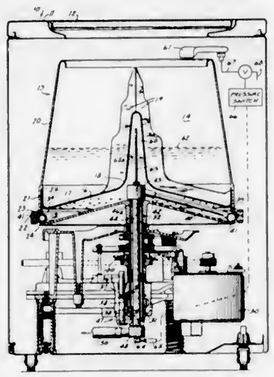
partitioning means dividing the interior of said tub into a washing chamber for containing washing liquid and items

to be washed and a sump chamber below said washing chamber, and forming an upright center post agitator in said tub;

a drive means for selectively oscillating said tub about its axis during a washing cycle and for spinning said tub about said axis in a direction during a liquid extraction cycle; and

liquid extraction means, said liquid extraction means comprising:

a plurality of stationary scoop conduits each having an inner end portion adjacent the axis of said tub and an outer end portion occupying a portion of said annular liquid collection zone of said tub,



each said outer end portion having an opening facing in a direction opposite to the direction of rotation of said tub during said liquid extraction cycle, and

the openings of said conduits being symmetrically spaced apart about said collection zone; and

liquid discharge tube means coaxial with said tub and communicating with said inner end portions of said scoop conduits for discharging liquid from said automatic washer, whereby washing liquid is forced into and through said scoop conduits as said tub spins, to be discharged through said liquid discharge means from said automatic washer, and whereby reaction forces resulting from said liquid extraction are substantially balanced among said plurality of symmetrically spaced scoop conduit openings.

3,948,065

CYLINDER LOCK

Kaarlo Martikainen, Joensuu, Finland, assignor to Oy Wartsila AB, Helsinki, Finland

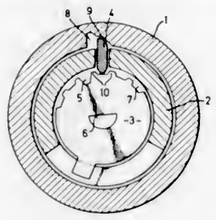
Filed June 6, 1975, Ser. No. 584,492

Claims priority, application Finland, June 17, 1974, 1833/74

Int. Cl.² E05B *63/00*

U.S. Cl. 70—1.5 **4 Claims**

1. A cylinder lock comprising an outer cylinder enclosing a rotatable inner cylinder which encloses a plurality of locking discs turnable with the key of the lock, and, between said outer cylinder and the peripheral edges of said locking discs, a locking bar locking said inner cylinder to said outer cylinder, which bar from a position locking the inner cylinder, in which position the bar is located partly in a groove in the inner wall of said outer cylinder, is movable to a position releasing said inner cylinder by passing into a channel formed jointly by locking bar notches in the peripheral edges of said locking discs when brought to a certain position, said groove in the inner wall of the outer cylinder being provided with a lateral step, so as to form, in said groove, a deep groove portion and a shallow groove portion, said locking discs, being provided, in addition to said locking bar notch, with a number of shallow notches, so dimensioned, that upon forming jointly by said



shallow notches a channel at the position of said locking bar, the locking bar is able to move into the shallow groove portion, but remains locked between the bottom of said shallow groove portion and the bottom of said shallow notches.

3,948,066

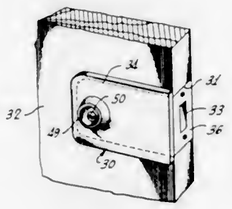
DOOR LOCK

Paul G. Solovieff, 14291 Browning Ave., Apt. No. 52, Tustin, Calif. 92680

Filed May 7, 1974, Ser. No. 467,806

Int. Cl.² E05B *63/08, 63/16, 65/06;* **E05C** *1/06*

U.S. Cl. 70—129 **12 Claims**



1. In a door lock having two side plates forming part of a housing for the lock, a bolt mounted between said side plates for sliding between a retracted, unlocked position and an extended, locked position, and at least one actuating element mounted on one of said plates for rotation about a first axis, and having an inner end that is disposed between said plates, an improved bolt-operating mechanism, comprising:

an actuating member carried by the actuating element on the inner end portion thereof and rotatable with the actuating element about said axis;

a toggle joint comprising first and second toggle links joined together by a first pivot;

a second pivot joining said first link to the inner end of said bolt;

a third pivot spaced inwardly from said bolt and mounting said second link in said housing alongside said inner end of said actuating element, for rotation about a second axis spaced from said first pivot, whereby back and forth rotation of said second link extends and contracts said toggle joint to extend and retract said bolt;

said second link being movable in a bolt-extending direction from a bolt-retracted position in which said first pivot is angularly spaced from a line between said second and third pivots, on one side of said line, to a bolt-extended position in which said first pivot is on the other side of said line;

spring means for urging said toggle joint yieldably toward the bolt-retracted position until the bolt is substantially extended, and toward the bolt-extended position after the bolt is substantially extended; and

abutment means on said second link disposed in te path of rotation of said actuating member to be engaged and moved, along with the second link, to a selected bolt-extended position during rotation in one direction, and to be engaged and moved from said bolt-extended position to a selected bolt-retracted position during rotation in the other direction;

said second axis being offset from said first axis away from said bolt and the rotation of said actuating element being eccentric relative to the rotation of said abutment means on said second link; and

said abutment means defining an aperture for receiving and releasing said actuating member as an incident to the eccentric rotation thereof, in said bolt-extended and bolt-retracted positions of said second link.

5. In a door lock having two side plates mountable against the opposite sides of a door adjacent one edge thereof, a bolt mounted between said plates for sliding between a retracted, unlocked position and an extended, locked position, and at least one actuating element mounted on one of said plates for rotation about a first axis and having an inner end that is disposed between said plates, an improved bolt-operating mechanism, comprising:

an actuating member carried by the inner end of said actuating element and projecting radially outwardly therefrom;

a toggle joint comprising first and second toggle links joined together by a first pivot;

a second pivot joining said first toggle link to the inner end of said bolt;

a third pivot spaced inwardly from said bolt and supporting said second link at a point on the second link spaced from said first pivot, for rotation about a fixed second axis that is parallel to said first axis and is offset therefrom away from said bolt, said third pivot being positioned adjacent the inner end of said actuating element to support said second link for eccentric rotation relative to said first axis;

said second link being movable in a bolt-extending direction from a bolt-retracted position in which said first pivot is angularly spaced from a line between said second and third pivots, on one side of said line, to a bolt-extended position in which said first pivot is aligned with said line;

abutment means on said second link projecting toward the side plate on which said actuating member is mounted and defining an aperture, said aperture being positioned, when said second link is in said bolt-retracted position, to receive said actuating member during the initial portion of the rotation of said actuating element from said one angular position, thereby to couple said second link to said actuating member for movement of said second link to said bolt-extended position;

said aperture also being positioned on said second link to release said actuating member due to said eccentric rotation as the link reaches said bolt-extended position, whereby the actuating element is rotatable on to said one angular position;

and spring means for urging said toggle joint yieldably toward the bolt-retracted position until the bolt is substantially extended, and toward the bolt-extended position after the bolt is substantially extended.

3,948,067

LOCKING SYSTEM FOR TWO OR MORE DOORS LEADING TO AN ENCLOSED AREA

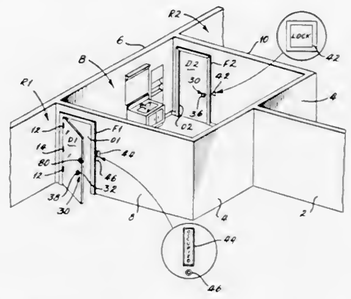
Francis C. Peterson, St. Louis County, Mo., assignor to C. Hager & Sons Hinge Manufacturing Company, St. Louis, Mo.

Filed May 12, 1975, Ser. No. 576,626

Int. Cl.² E05B *65/00, 63/14*

U.S. Cl. 70—263 **10 Claims**

1. A locking system for locking at least two doors which provide entry to an enclosed area, said locking system comprising an electrically operated lock on each door, energizing means for energizing the locks so that they lock the doors, means operable from within the enclosed area for releasing at



least one of said locks, and sensing means for detecting when one of the doors opens and for deactivating the locks so that they unlock the doors when either one of the doors is opened.

3,948,068

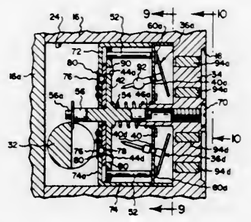
MAGNETIC LOCK

Wells F. Stackhouse, Ashville, N.Y., assignor to American Locker Company, Inc., Jamestown, N.Y.

Filed May 14, 1975, Ser. No. 577,449

Int. Cl.² E05B *47/00*

U.S. Cl. 70—276 **30 Claims**



1. A magnetic lock comprising in combination:

a pair of members mounted for movement between a divergent locking position and converging unlocking position;

a tumbler pin having a locking end portion and an opposite end portion including a magnetically attractable transversely enlarged portion;

bearing means for pivotally supporting said tumbler pin intermediate said end portions thereof on one of said members to assume a plurality of positions wherein said locking end portion points toward the other of said members, said other of said members having an opening arranged to receive said locking end portion of said tumbler pin and thereby permit converging unlocking movement of said members when said tumbler pin assumes a predetermined position relative to said one member; and

a magnetic key having a magnet device adapted to be positioned in essential alignment with said opening in the direction of movement of said members for attracting said enlarged portion and causing said tumbler pin to assume said predetermined position.

8. A magnetic lock comprising in combination:

a pair of members mounted for movement between a divergent locking position and a convergent unlocking position;

a magnetically attractable tumbler pin;

bearing means for tiltably supporting said tumbler pin on one of said members so as to enable said tumbler pin to

assume any one of a plurality of positions with one end thereof pointing towards the other of said members, said other of said members having an opening arranged to receive said one end and thereby permit movement of said members into said unlocking position only when said tumbler pin is in a predetermined position relative to said one of said members;

a key having a magnet device adapted to position said tumbler pin in said predetermined position; and

abutment means positionally fixed relative to said one of said members and arranged in a spaced relationship to said bearing means, said abutment means being arranged for engagement by said tumbler pin when moved into said predetermined position, and cooperating with said bearing means to provide a minimum three point support for said tumbler pin when in said predetermined position.

19. A magnetic lock comprising in combination:

a casing defining a key positioning recess, an internal cavity and a partition wall of non-magnetizable material separating said recess from said cavity, said partition wall having spaced recess and cavity bounding surfaces;

mounting means positionally fixed within said cavity relatively adjacent said cavity bounding surface;

locking means arranged within said cavity relatively remote from said cavity bounding surface, said locking means being mounted for movement relative to said mounting means between a divergent locking position and a convergent unlocking position;

at least one magnetically attractable tumbler pin;

bearing means for tiltably supporting said tumbler pin on said mounting means so as to assume any one of a plurality of positions with one end thereof pointing towards said locking means, said locking means having an opening disposed for alignment with and adapted to receive said one end of said tumbler pin only when said tumbler pin assumes a predetermined position relative to said mounting means;

a magnetic key having a magnet device, said key being adapted to be positionally oriented within said recess to arrange said magnet device for attracting an opposite end of said tumbler pin to cause said tumbler pin to assume said predetermined position, thereby to permit movement of said locking means into said convergent unlocking position, said partition wall having a thickness measured between said recess and cavity bounding surfaces sufficient to space said magnet device from said tumbler pin through a distance significantly diminishing the magnetic force of said magnet device acting on said tumbler pin; and

at least one element formed of "soft" magnetic material and arranged within said partition wall to extend essentially between said recess and cavity bounding surfaces, and said element being arranged for essential end to end alignment with said magnet device when said key is positionally oriented within said recess for magnetically "coupling" said tumbler pin with said magnet device.

24. A magnetic lock comprising in combination:

a lock casing defining a generally cylindrical bore opening;

a generally cylindrical lock plug supported within said bore opening for rotary movements between locked and unlocked positions thereof, said plug having a slot opening extending generally axially thereof for receipt of a magnetic key having at least one magnet device imbedded therein and a cavity separated from said slot by a partition wall and opening radially towards said casing, said casing having a recess opening radially towards said plug and arranged whereby said cavity is generally aligned with said recess when said plug is in said locked position thereof and rotatably displaced therefrom when said plug is in said unlocked position thereof; and

a magnetically operated plug locking, unlocking mechanism comprising a mounting member fixedly positioned within said cavity adjacent said partition wall, a locking tumbler supported within said cavity for essentially radially directed movements between an unlocking position thereof wherein it is wholly received within said cavity and a locking position thereof in which it is received within both said cavity and said recess, and at least one tumbler pin having a magnetically attractable end portion and a locking end portion, said tumbler pin being mounted on said mounting member to assume any one of a plurality of positions wherein said locking end portion points towards said locking tumbler and said attractable end portion is disposed adjacent said partition wall, said locking tumbler having an opening disposed for alignment with said locking end portion when said tumbler pin is disposed in a predetermined one of said plurality of positions in which said tumbler pin is placed by said magnet device acting on said attractable end portion when said key is inserted within said slot, said locking end portion blocking movement of said locking tumbler into said unlocking position except when said tumbler pin is disposed in said predetermined one of said plurality of positions.

28. In a magnetically operable lock having a pair of members mounted for movement between a divergent locking position and a converging locking position, a plurality of magnetically attractable tumbler pins, a plurality of bearing means for pivotally supporting said tumbler pins on one of said members each of said tumbler pins having one end projecting towards said other of said members and being movable to assume any position along a generally circular path, said other of said members having a plurality of openings in a face thereof arranged adjacent said one of said members and being associated one opening with each of said tumbler pins to assume a position in alignment with a predetermined position of said one end of its associated tumbler pin along said circular path, and a key having a plurality of magnet devices arranged for association one with each of said tumbler pins, each of said magnet devices being adapted to position its associated tumbler pin with its one end in said predetermined position in alignment with its associated opening to permit convergent movement of said members, the improvement comprising in combination:

said bearing means for said tumbler pins are spaced apart along an other circular path whose center is intersected by an axis extended co-directionally with the direction of movement of said members; and

said other of said members is additionally supported for rotation about said axis in a stepwise manner to successively position each of said openings thereof successively in association with each of said tumbler pins.

3,948,069

VEHICLE IGNITION LOCK DEVICE

Modestino Imbriano, 10 1/2 Jacques St., Somerville, Mass. 02145

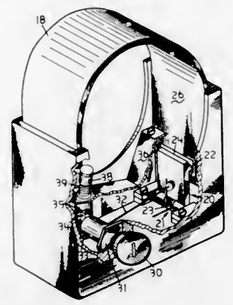
Filed Mar. 3, 1975, Ser. No. 554,568
Int. Cl.² E05B *17/14*
U.S. Cl. 70—428 **11 Claims**

1. An ignition safety lock for an automobile having the ignition lock on the steering column, said lock comprising;

a C-clamp sized to extend about the steering column on the side opposite the ignition lock and having a pair of arms that extend generally tangentially from the column on opposite sides of the ignition lock,

a shroud in the form of a housing adapted to removably receive the arms of the clamp, said housing enclosing the steering column ignition lock when it receives the arms of the C-clamp,

latching means carried by the clamp and housing for releasably latching the arms and housing together in a position wherein the housing encloses the vehicle ignition lock, and a lock means carried in the housing and connected to



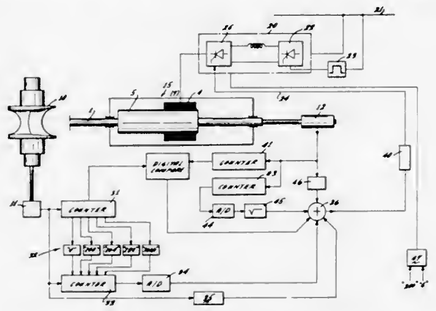
the latching means for releasing the latching means to remove the shroud from covering the ignition lock.

3,948,070

MOTION CONTROL FOR THE FEED MECHANISM IN PILGER ROLLING MILLS

Erhard Hentzschel, Aachen, and Heinz Schumacher, Ratingen, both of Germany, assignors to Mannesmannrohren-Werke AG, Dusseldorf, Germany

Filed Jan. 8, 1975, Ser. No. 539,588
Claims priority, application Germany, Jan. 10, 1974, 2401354
Int. Cl.² B21B *21/04*
U.S. Cl. 72—21 **10 Claims**



1. Apparatus for control of the feed mechanism in a rolling mill of the pilger variety, wherein the feed mechanism as coupled to a bloom retracts from the rolls of the mill during a rolling pass and is advanced in between passes, comprising:

an electrical linear motor connected for driving the feed mechanism;

first means connected to the rolls for providing a sequence of signals representing progressing angular positions of the rolls;

second means connected to the linear motor for providing a sequence of signals representing progressive positions of said linear motor as reciprocating the feed mechanism; and

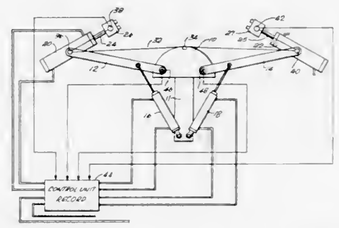
a control circuit for the linear motor and connected to the second means to establish therewith a feedback loop for the control of the linear motor, the control circuit being further connected to the first means and being responsive to the signals from the first means to determine the motion of the linear motor on the basis of particular relative positions of the rolls including a phase of motion wherein the speed of the retracting feed mechanism and bloom is servoed to the rolling speed followed by a phase of fast advancing terminating in a phase of reversal in the direction of motion in particular response to the signals of the first means as representing the beginning of the respective next rolling pass.

3,948,071

TENSION CONTROL FOR STRETCH-FORMING MACHINE

Robert L. Lieberman, Los Angeles, and Dale H. De Mott, Calabasas, both of Calif., assignors to DeMott Electronics Company, Van Nuys, Calif.

Filed Apr. 3, 1975, Ser. No. 564,677
Int. Cl.² B21D *11/04*
U.S. Cl. 72—21 **13 Claims**



1. A control system for a stretch-forming machine of the tape having a forming die and at least one rotating arm with a tension cylinder pivotally mounted on the arm at a pivot point, the tension cylinder moving a chuck for gripping the end of a work piece to wrap the work piece around the die by rotation of the arm, the control system comprising:

a flexible member extending between the tension cylinder pivot point on the arm and a point on the surface of the die, the flexible member being wrapped around the surface of the die by rotation of the arm, means for adjusting the length of the flexible member as the distance between the tension cylinder pivot point and said point on the die varies with rotation of the arm, first transducer means coupled to the flexible member for generating an output signal that varies in response to changes in the length of the flexible member between the tension cylinder pivot point on the arm and said point on the die, and control means responsive to the signal from the first transducer means for controlling the tension cylinder to adjust the position of the chuck relative to the tension cylinder pivot point with changes in the position of the arm.

3,948,072

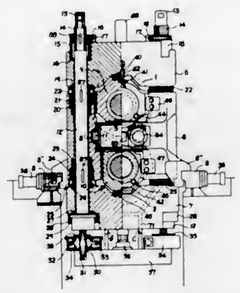
PRESTRESSED UNIVERSAL ROLLING MILL

Keiichi Aramaki, Fukuyama, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1975, Ser. No. 545,279
Claims priority, application Japan, Feb. 18, 1974, 49-18508
Int. Cl.² B21B *31/04*, *13/08*
U.S. Cl. 72—225 **5 Claims**

3. A prestressed universal rolling mill of a type in which a roll stand for supporting a top horizontal roll, a bottom horizontal roll and vertical rolls is divided into three parts composed of an upper cross beam, a lower cross beam and an intermediate frame and tied together by a plurality of tension bars, said tension bars having disposed thereon an upper thread ring and a lower thread ring being located at the top and bottom surfaces respectively of said intermediate frame, said tension bars are adapted so that said three parts of the roll stand are bound together by said tension bars with each thereof being elongated by the application of a hydraulic pressure and thereafter said hydraulic pressure is removed to apply a prestressing force to said roll stand wherein the im-

provement comprises that each of said tension bars is rotated within a hole provided in said three parts to permit an easy adjustment of the distance between the upper surface of said



upper thread ring and the lower surface of said lower thread ring, and that said tension bars are simultaneously rotated from a single source of power.

3,948,073

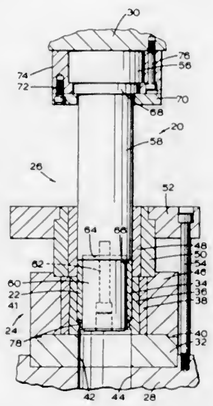
APPARATUS AND METHOD OF METAL FORMING

Robert Lovell, 224 Burningtree Drive, Naples, Fla. 33940

Filed Sept. 27, 1974, Ser. No. 509,778

Int. Cl.² B21D *51/24*

U.S. Cl. 72—256 **8 Claims**



1. A method of manufacturing a tubular component for use in pressure vessels from a tubular blank, the method comprising the steps:

simultaneously applying a compressive load axially at an end of the blank and applying an inwardly directed peripheral deforming force about the blank at an opposite end thereof while supporting the blank internally so that the deforming force thins the blank locally at said opposite end and thereby lengthens the blank axially so that the grain of the blank is orientated axially;

causing relative axial movement between said end and said deforming force so that the location of the deforming force changes continuously along the blank at a speed in the range 20 to 30 inches per second until the deforming force and the blank are no longer in contact, whereupon the blank has been converted into the required tubular component and the cross-sectional area of the component is reduced by about 70% relative to the blank.

3,948,074

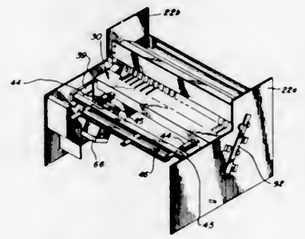
COMBINATION CLEAT BENDER AND BAR FOLDER APPARATUS

Leo Henry Stalzer, Chicago, Ill., assignor to Lion Services, Inc., LaGrange Park, Ill.

Filed Dec. 9, 1974, Ser. No. 530,646

Int. Cl.² B21D *11/04, 5/04*

U.S. Cl. 72—312 **4 Claims**



1. A sheet metal bending brake apparatus comprising:

a. a frame;

b. a generally rectangular work supporting surface mounted on said frame;

c. a fixed holding bar mounted on said frame adjacent the rear edge of said support surface and extending laterally and upwardly substantially co-extensive therewith, said bar comprising a generally vertical element extending across the front width of the frame and a forwardly, downwardly, angularly extending element having a plurality of slots formed therein so as to comprise discrete finger members upwardly unobstructed by the frame, said angularly extending element terminating in a plurality of securing jaw surfaces that are disposed forward of the plane of the vertical element, said securing surfaces being generally parallel to said support surface and spaced slightly above and rearwardly of the rear edge of said support surface;

d. a movable holding bar mounted on said frame adjacent said rear edge of the support surface movable between a rearwardly and upwardly clamping position in opposed clamping relationship to the fixed bar and substantially parallel to the support surface and a position forwardly and downwardly of the support surface; and

e. a bending brake element mounted on said frame rearwardly of said holding bars, said element having an uppermost surface substantially parallel to the uppermost surface of the vertical element of said fixed holding bar, said element extending rearwardly and downwardly therefrom, said element comprising a bending jaw surface essentially parallel to the securing jaw surfaces of said fixed holding bar, said bending jaw surface adapted to contact a sheet metal workpiece held between said holding bars and rotate around an axis adjacent and rearwardly of the jaws of the holding bars in the closed position, the movable holding bar being coordinated with the movement of the bending brake element to release from the holding position prior to the point when the bending brake has rotated 180°, said movable holding bar and bending brake element being formed with a plurality of slots complementary to the slots formed in the fixed holding bar.

3,948,075

APPARATUS FOR LIMITING THE WORKING STROKE OF A PRESS RAM

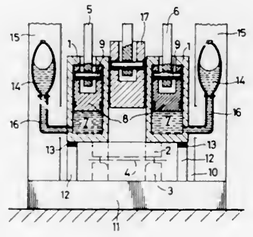
Kurt Finsterwalder, Goppingen-Bartenbach, and Karl-Heinz Philipp, Goppingen, both of Germany, assignors to L. Schuler GmbH, Germany

Filed Jan. 24, 1975, Ser. No. 543,914

Claims priority, application Germany, Jan. 25, 1974, 2403532

Int. Cl.² B21D *24/14*

U.S. Cl. 72—351 **10 Claims**



1. Press apparatus comprising:

a blank holding ram,

a drawing ram,

mechanical non-hydraulic driving means for reciprocally driving said holding ram and drawing ram such that said holding ram can hold a blank of material while said drawing ram moves relatively to said blank holding ram to perform a drawing operation on said blank,

and stop means for limiting the movement of said holding ram,

said driving means for said holding ram including a first driving part movable over a predetermined path and elastic pad means interposed between said first part and said holding ram, said elastic pad means including means temporarily elastically deformable by said first part during the portion of the travel path of said first part when said holding ram is engaged with said stop means.

3,948,076

AUTOMATIC PROCESS AND ALIGNING APPARATUS HAVING A PLURALITY OF ALIGNING STATIONS

Hans-Georg Eltel, Ettlingen; Waldemar Morlock, Karlsruhe-Rintheim, and Dieter Ruf, Karlsruhe, all of Germany, assignors to Eltel KG., Werkzeugmaschinenfabrik, Karlsruhe, Germany

Filed Sept. 17, 1974, Ser. No. 506,728

Claims priority, application Germany, Sept. 17, 1973, 2346796

Int. Cl.² B21D *17/02*

U.S. Cl. 72—384 **14 Claims**

1. A process for automatically straightening elongated and at least partly rotationally symmetrical workpieces, including the application of a sequence of straightening strokes to a workpiece at each of a plurality of straightening stations to counteract a deformation comprising the steps of:

a. rotating the workpiece through a full revolution;

b. detecting the maximum value and minimum value of deformation of said rotating workpiece;

c. determining the mean value of the maximum and minimum deformation detected;

d. again rotating the workpiece;

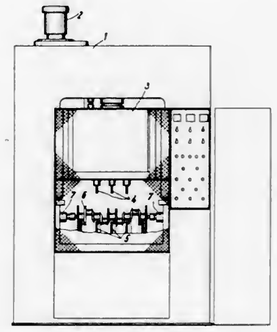
e. sensing the instantaneous values of deformation during rotation of the workpiece;

f. comparing the instantaneous values of deformation of the rotating workpiece with the mean value to detect a change of sign in the difference between said mean value and said sensed instantaneous values of deformation;

g. positioning the deformation of said workpiece towards an element applying the straightening stroke when said change of sign is detected;

h. comparing the instantaneous value of the positioned deformation to said mean value to determine whether a preset deformation tolerance is exceeded;

i. applying a straightening stroke if said sign is positive and said deformation tolerance is exceeded, the first straightening stroke of the sequence having a depth of stroke such that the straightening element is brought close to or touching the workpiece and a susequent straightening stroke of the sequence having a depth of stroke increased from that of the previous straightening stoke by the latest measured difference between the instantaneous value of the positioned deformation and the mean value; and



j. repeating steps (h) and (i) until the deformation tolerance is not exceeded.

3,948,077

FORGING PRESS WITH INDEPENDENT HAMMER-POSITION ADJUSTMENT AND OVERLOAD PROTECTOR

Werner Bothe, Dusseldorf, Germany, assignor to Maschinenfabrik Hasenclever GmbH, Dusseldorf, Germany

Filed Mar. 5, 1975, Ser. No. 555,429

Claims priority, application Germany, Mar. 9, 1974, 2411340

Int. Cl.² B21J *13/00*

U.S. Cl. 72—432 **10 Claims**

1. A press comprising:

a press frame;

a pressing table fixed on said frame;

a generally horizontal drive shaft on said frame having a rotation axis fixed relative to said frame;

a driver on said shaft eccentric to said axle;

a slide vertically slidable on said frame and including

a force-transmission block having a seat receiving said driver, whereby rotation of said shaft vertically reciprocates said block;

a wedge having relatively inclined upper and lower surfaces and displaceable horizontally, said upper surface bearing against said block, and

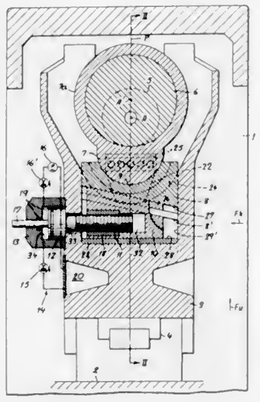
said slide bearing against said lower surface of said wedge, whereby the position of said wedge establishes the relative positions of said block and slide;

a cylinder on said slide;

a piston in said cylinder having one face turned horizontally toward said wedge and an opposite face turned away from said wedge;

a spindle on said piston extending from said one face and having a threaded region threadedly received in said wedge, whereby rotation of said spindle displaces said

wedge horizontally in said slide; and



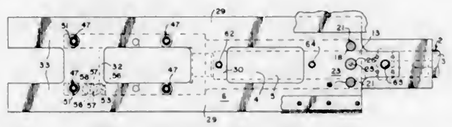
means for pressurizing said cylinder to the side of said opposite face for urging said piston toward said wedge with a predetermined force.

3,948,078

THERMAL ISOLATION MOUNTING FOR DRAWN AND WALL IRONING RAM

William John Cartwright, Palos Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed May 12, 1975, Ser. No. 576,513
Int. Cl.² B21J *13/04*
U.S. Cl. 72—456 **10 Claims**



1. In a can making machine, a frame, a reciprocal ram assembly comprising a generally horizontally disposed section, a plate section disposed in superposed relation to the ram section, said plate section being elongated lengthwise of the ram section, a slideway on the frame, said plate section housing edge portions slidably mounted in said slideway, said slideway and edge portions being in frictional heat generating engagement with each other, means fixedly securing said plate section to the ram section in a single area whereby said sections are accommodated by unrestricted expansion and contraction independently of each other and heat transfer therebetween is minimized.

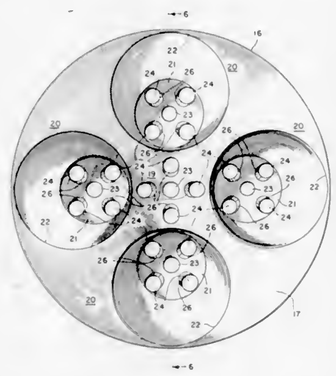
3,948,079

MULTIPLE APERTURE DIE

Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Continuation of Ser. No. 523,404, Nov. 13, 1974, abandoned. This application Oct. 2, 1975, Ser. No. 619,130
Int. Cl.² B21C *3/06*
U.S. Cl. 72—468 **7 Claims**

1. A die comprising:
a. a die body having an entrance end;
b. a plurality of die apertures extending through said die body;
c. said die apertures being arranged in the form of groups, each group comprising a plurality of die apertures;
d. a plurality of flared mouths, each flared mouth being associated with one of said groups and opening toward the entrance end of said die body;



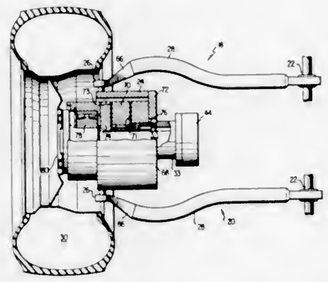
e. in each group of die apertures one of said die apertures is centered on the longitudinal axis of the flared mouth associated with said group.

3,948,080

APPARATUS FOR TESTING THE TRACTION PROPERTIES OF PNEUMATIC TIRES

Patrick L. Boyd, Landover Hills, Md., assignor to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.

Filed Sept. 3, 1974, Ser. No. 502,832
Int. Cl.² G01N *19/02*; G01M *17/02*
U.S. Cl. 73—9 **2 Claims**



1. In an apparatus of the type for measuring the traction forces of pneumatic tires, the combination comprising:
a. a frame;
b. a suspension system;
c. a hub assembly having said pneumatic tire rotatably secured thereto;
d. means for rotatably attaching said suspension system to said hub assembly;
e. means for rotatably attaching said suspension system to said frame;
f. a triaxial force transducer attached to said hub assembly for sensing traction and loading forces applied to said tire; and
g. a drive means rotatably coupled to said pneumatic tire for applying rotational torque thereto,
wherein said drive means comprises:

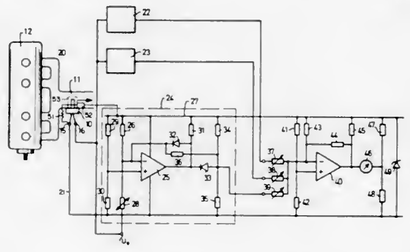
a drive shaft rotatably coupled to a driven axle by means of a constant velocity universal joint, said driven axle being rotatably coupled to said pneumatic tire,
wherein said hub assembly further comprises:
a housing having front and rear walls which partially enclose said traixial force transducer;
an aperture extending through said rear wall, said triaxial force transducer and said front wall for receiving said driven axle; and
a pair of bearings for rotatably supporting said driven axle and said pneumatic tire; said bearings being respectively directly secured to first and second flanges of said triaxial force transducer whereby a force applied to said transducer having components in a direction parallel to the direction of tire travel and in the direction perpendicular to the road surface caused by the application of torque to said pneumatic tire through a noncoaxial orientation of said drive shaft with respect to the axis of said driven axle is cancelled in said triaxial transducer,
wherein said suspension system comprises:
upper and lower arms each comprised of two legs of equal length having two ends; one end of each of said legs being joined together to form a vertex, said vertices being respectively connected to said hub assembly by said means for rotatably securing said suspension system to said hub assembly, the other end of each of said legs being connected to said frame by said means for rotatably securing said suspension system to said frame,
wherein said means for attaching said hub assembly to said suspension system comprises a pair of spherical bearings; and
wherein said means for attaching said suspension system to said frame comprises two pairs of spherical bearings.

3,948,081

EXHAUST GAS OPERATED APPARATUS FOR CONTINUOUSLY MEASURING AIR NUMBER OF ENGINE INTAKE MIXTURE

Wolf Wessel, Schwieberdingen; Ernst Linder, Muhlacker; Helmut Maurer, Schwieberdingen, and Horst Neidhard, Korntal, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Aug. 9, 1974, Ser. No. 496,292
Claims priority, application Germany, Aug. 16, 1973, 2341422
Int. Cl.² G01N *31/04*
U.S. Cl. 73—23 **9 Claims**



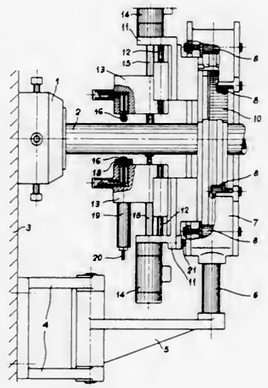
1. Apparatus for continuously measuring the composition of a fuel-air mixture of an internal combustion engine by means of an oxygen sensor located in an exhaust duct of said engine, comprising:
an oxygen sensor (**10**) positioned so as to respond to the oxygen content of exhaust gas in said exhaust duct;
a plurality of amplifiers (**22, 23, 24**) with their inputs supplied in common with the output of said oxygen sensor (**10**), each of said amplifiers having a different value of gain and having a negative-feedback resistor path (**36**) and also having input voltage comparison means, with reference voltage provision, for setting a threshold input voltage, different for each amplifier, and diode means for blocking delivery of the amplifier output and rendering ineffective said feedback path when the input voltage does not exceed said threshold input voltage, said different threshold input voltages of the respective amplifiers having values defining intervals of input voltage range over which the response characteristic of said oxygen sensor has a different slope;
indicator means, and
coupling means comprising coupling resistors for coupling the outputs of said amplifiers (**22, 23, 24**), so as to provide a common drive for said indicator means, whereby the indicator means is caused to represent the composition of the fuel-air mixture acting on said oxygen sensor.

3,948,082

METHOD AND DEVICE FOR CONTACTLESS MEASURING OF THE THICKNESS OF LAYERS, PARTICULARLY OF INSULATING LAYERS ON METALLIC PARTS

Bruno Zumbach, Orpund; Peter Nopper, Lyss, and Mathias Brunner, Magglingen, all of Switzerland, assignors to Zumbach Electronic-Automatic, Orpund, Switzerland

Continuation of Ser. No. 316,402, Dec. 18, 1972, abandoned, which is a continuation-in-part of Ser. No. 122,059, March 8, 1971, abandoned. This application Dec. 23, 1974, Ser. No. 535,964
Claims priority, application Switzerland, Mar. 11, 1970, 3588/70
Int. Cl.² G01B *13/12*; G01R *33/12*
U.S. Cl. 73—37.5 **24 Claims**

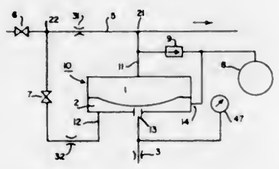


1. A method for measuring the thickness of an insulating layer on a metallic object, wherein a measuring head is approached to a predetermined distance from the layer and the thickness of the layer is measured by a measuring pick-up located in the measuring head and sensitive to the distance between it and said metallic object, the distance between the measuring head and a small area of the object to be measured being determined by directing a jet of air of small cross section from a measuring nozzle of small cross section against the surface of said layer and by mechanically controlling the position of said measuring head by motion transmission from non-pneumatic servo-motor means controlled by the pressure in said measuring nozzle, said distance between the measuring pick-up and said metallic object being measured in the vicinity of said nozzle and small area respectively.

3,948,083
FLUID PRESSURE APPARATUS

David John Wickham, London, England, assignor to Westinghouse Brake & Signal Company Limited, Chippenham, England

Division of Ser. No. 187,614, Oct. 8, 1971, Pat. No. 3,882,723. This application Dec. 31, 1974, Ser. No. 537,663
Claims priority, application United Kingdom, Oct. 26, 1970, 50800/70; Apr. 2, 1971, 8507/71; Apr. 2, 1971, 8508/71
Int. Cl.² G01M *3/28*
U.S. Cl. 73—39 **9 Claims**

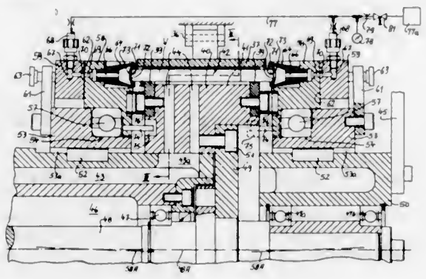


1. Leak detection apparatus including a fluid-tight vessel internally divided into a first and a second chamber by a flexible pressure responsive member, the first chamber having a first port for a first fluid pressure signal, the second chamber having a second port for a second fluid pressure signal, and the second chamber having a third port, the pressure responsive member being operable to effect closing of said third port when the force exerted on the pressure responsive member including the pressure in the first chamber exceeds the opposing force exerted on the member including the pressure in the second chamber, the third port being vented through a restricted passage to atmosphere, the fluid pressure in said passage from said second chamber depending on the degree of closure of the third port, the second port being connected to a reference pressure reservoir, and means for utilizing a pressure signal generated upstream of the restricted passage to provide an indication of fluid pressure leakage via the first port.

3,948,084
APPARATUS FOR TESTING CIGARETTES OR THE LIKE

Bob Heitmann, and Werner Hinz, both of Hamburg, Germany, assignors to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Filed May 6, 1974, Ser. No. 467,276
Claims priority, application Germany, May 12, 1973, 2324055
Int. Cl.² G01N *15/08;* **G01M** *3/04*
U.S. Cl. 73—41 **21 Claims**

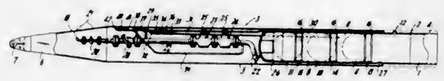


1. Apparatus for testing cigarettes or analogous rod-shaped articles wherein an open-ended tubular wrapper surrounds a gas-permeable filler, comprising means for conveying a succession of rod-shaped articles sideways past a testing station, said conveying means being rotatable about a first axis and having a plurality of receiving means for discrete rod-shaped articles; carrier means adjacent to one end of said conveying means; means for rotating said carrier means at the speed of said conveying means; and engaging elements provided on said carrier means, one for each of said receiving means and each in register with the respective receiving means, said carrier means being rotatable about a second axis which is inclined with respect to said first axis so that successive engaging elements approach and engage the adjacent ends of articles in registering receiving means during travel of said engaging elements toward said testing station and that successive engaging elements move away from the adjacent ends of articles in registering receiving means during travel beyond said testing station.

3,948,085
BALL LAUNCHING HEAD FOR TESTING A PIPELINE LAID ON A SUBMERGED BED

Ambrogio Scodino, San Donato Milanese, and Germano Zillani, Piacenza, both of Italy, assignors to Saipem S.p.A., San Donato Milanese, Italy

Filed Feb. 22, 1974, Ser. No. 444,771
Claims priority, application Italy, Feb. 23, 1973, 20744/73
Int. Cl.² G01M *3/02*
U.S. Cl. 73—49.8 **5 Claims**



1. An improved pipeline closing head adapted for attachment to an end of a Gunite-coated pipeline laid on a submerged bed for use in testing said pipeline by means of a filling ball adapted to be pushed through the pipeline from the head to the opposite end of the pipeline by water delivered upstream of the filling ball so that said pipeline is filled with water held at a predetermined pressure for a selected period of time and emptying balls adapted to be pushed by air through the pipeline from the head to said opposite end to eject water therefrom and then empty the pipeline of water, wherein the improvement comprises:

a hollow cylindrical body having an outer diameter corresponding to the outer diameter of the Gunite coating of the pipeline;

a crowned closing element at the rear end of the cylindrical body;

a cylindrical housing member, closed at its rear and to provide an air tight chamber adapted to contain the filling ball and the emptying balls, mounted in the cylindrical body so that its front portion extends outwardly beyond the front end of the cylindrical body for attachment to an end of the pipeline, said housing member having inner and outer diameters corresponding to the inner and outer diameters of the pipeline;

a ball passage indicator located in said extending front portion of the housing member;

conveying ducts mounted within said cylindrical body and adapted to deliver fluid to the upstream side of each of said filling ball and said emptying balls, respectively; and

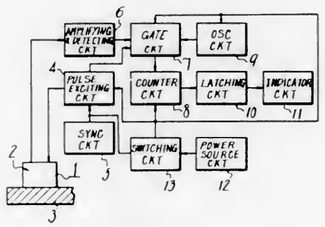
valves mounted within the cylindrical body and associated with said conveying ducts for individually controlling the flow of fluid through the respective ducts;

said cylindrical body being provided with a series of ports affording access to said conveying ducts and the control valves therefor.

3,948,086
PULSE REFLECTION TYPE ULTRASONIC THICKNESS METER

Toyohiko Kitada, Sagamihara, Japan, assignor to Kabushikikaisha Tokyo Keiki, Tokyo, Japan

Filed Oct. 3, 1973, Ser. No. 403,101
Claims priority, application Japan, Oct. 10, 1973, 48-101352
Int. Cl.² G01B *17/02*
U.S. Cl. 73—67.7 **1 Claim**



1. A pulse reflection type ultrasonic thickness meter, comprising:

a. a pulse exciting circuit;

b. an ultrasonic transducer controlled by said pulse exciting circuit to transmit ultrasonic pulses into an object whose thickness is to be measured and receive echo pulses from said object;

c. an oscillator circuit for producing clock pulses;

d. a gate circuit connected to receive the echo pulses and clock pulses;

e. a counter circuit connected to receive and count clock pulses passing through the gate circuit corresponding to the time difference between the transmitted and received pulses;

f. an indicator circuit connected to receive an output of said counter circuit and indicate the thickness of said object; and

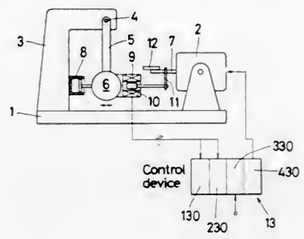
g. a switching circuit operating in synchronism with said pulse exciting circuit and disposed between an electrical power source and at least one of said counter circuit, pulse exciting circuit, oscillator circuit and gate circuit to connect said power source thereto during a measuring time period in which the ultrasonic transducer transmits the transmitted pulse and receives echo pulses and said counter circuit counts the clock pulses passing through said gate circuit and disconnects the power source therefrom during a subsequent sampling time period in which the indicator circuit receives the output of said counter circuit and indicates the thickness of said object.

3,948,087
VIBRATION APPARATUS FOR MINUTE VIBRATIONS

Kenji Shiraishi, Ohmiya, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Oct. [illegible] 1974, Ser. No. 511,058
Claims priority, application Japan, Oct. 5, 1973, 48-111509
Int. Cl.² G01N *29/00*
U.S. Cl. 73—71.6 **11 Claims**

1. An electro-dynamic vibration apparatus comprising a stationarily supported electro-dynamic shaker having a horizontally extending output shaft, a stationarily supported pendulum system having a resonant frequency sufficiently dissimilar from the frequency of vibrations in the environment of said apparatus to constitute a reference vibration isolation element, a table mechanically connected to said output shaft of said shaker to receive a device to be vibration-tested thereon

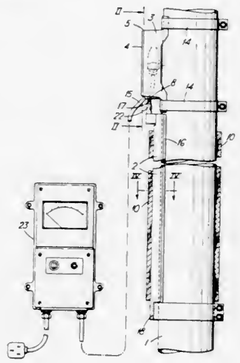


and a negative feedback loop provided between said pendulum system and said shaker.

3,948,088
MEASURING APPARATUS

Bryan Oliver Shepherd, Bournemouth, England, assignor to Portasilo Research Limited, Christschurch, England

Filed Jan. 29, 1973, Ser. No. 327,666
Claims priority, application United Kingdom, Feb. 17, 1972, 7475/72
Int. Cl.² G01B *5/30*
U.S. Cl. 73—88 R **2 Claims**



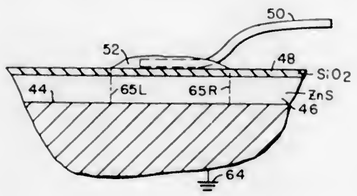
1. An improved apparatus for determining variations in a dimension of a structural member such as a support member for a container caused by compressive or tensile forces acting on said member, the apparatus comprising an elongate member secured to said structural member and extending in the direction in which the variation is to be measured, the elongate member having a free end, a position detector coupled to the elongate member adjacent said free end of the elongate member, and said position detector being secured to said structural member, the position detector being capable of sensing a change in distance between the free end of said elongate member and said position detector, wherein the improvement comprises: said elongate member being of angular cross-section and having longitudinally extending side edges, said side edges only of the elongate member being contiguous and in good thermal contact with said structural member, the linear coefficient of thermal expansion of the elongate member and said structural member in said direction being equal, and thermal insulating means substantially covering the elongate member and said structural member adjacent the elongate member.

3,948,089

STRAIN GAUGE APPARATUS

Bevil J. Shaw, Murrysville, and John deKlerk, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 12, 1973, Ser. No. 405,942
Int. Cl.² G01B 7/16
U.S. Cl. 73—88.5 R **19 Claims**



1. Signal generating apparatus responsive to strain in a given region of a body member, said apparatus comprising:

a. a body member having a substrate surface formed along the exterior thereof in the region from which a signal is desired,

b. a piezoelectric film affixed upon said substrate surface, said piezoelectric film being made of a crystalline material having a predetermined crystal lattice structure characteristic,

c. output signal coupling means for direct coupling of an electrical signal generated by the piezoelectrically active properties of said piezoelectric film between selected spatially separated portions of said piezoelectric film,

d. said output signal coupling means comprising an arrangement of first and second electrodes in spaced relationship in the thickness dimension the the piezoelectric film,

e. said body member being made of a conductor material and forming said first electrode,

f. a conductor disposed adjacent to and in signal coupling relationship to the outer face of the piezoelectric film, said conductor forming said second electrode,

g. insulating film means cooperative with said piezoelectric film to obviate possible short circuit effects between the conductor and the body member which may be caused by portions of said conductor extending into minute vacancies which may be present as imperfections in the piezoelectric film,

h. said insulating film means comprising an insulating film interposed between the outer face of the piezoelectric film and the adjacent conductor, and

i. the thickness of said piezoelectric film being no greater than 1.5 microns and the thickness of said insulating film being of no more than about 500 Angstroms.

3. Signal generating apparatus responsive to strains occurring in a given region of a body member, said apparatus comprising:

a. a body member of a conductive material having a zone of its exterior surface adapted to receive in molecularly bonded relationship thereto a deposit of a different solid-state material, said zone adjoining the region of the body member from which a signal responsive to strain is desired,

b. a dual layered arrrangement of solid-state films affixed to the body member on said zone prepared for receiving solid-state material, said dual layered arrangement comprising an inner film layer made of insulator material and an outer film layer made of piezoelectric material,

c. said inner insulator film layer being deposited onto the body member by a vapor deposit-type process to effect the formation of the inner insulator film layer as a stratum of solid-state material in molecularly bonded relationship to the body member,

d. said outer piezoelectric film layer being deposited onto the outer surface of the inner insulator film layer by a vapor deposit-type process to effect the formation of the outer piezoelectric film layer as a stratum of crystalline piezoelectric material in molecularly bonded relationship to the inner insulator film layer,

e. a pair of electrodes comprising said body member forming one electrode of the pair and a conductor element affixed to the outer surface of said outer piezoelectric film layer forming the other electrode, said pair of electrodes being operative to pick off an electrical potential generated by the portion of the outer piezoelectric film layer disposed therebetween, and

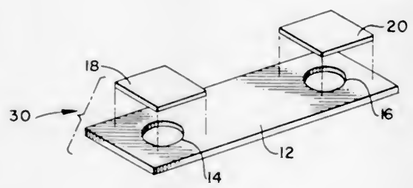
f. said inner insulator film layer sealing minute vacancies which may be present as imperfections in said outer piezoelectric film layer to obviate presence of a low impedance electrical path between the body member and the conductor element, whereby said dual layered arrangement composed of said inner and outer film layers constitutes a high internal impedance source of piezoelectric signals.

3,948,090

METHOD OF MEASURING DIMENSIONAL VARIATIONS IN A WORKPIECE

Irwin Berman, Upper Montclair; Charles F. Nash, Roseland; Robert Henschel, Lake Hiawatha; Joseph W. Schroeder, Clark; Anthony M. Mack, and Bernardino M. Alfano, both of Somerville, all of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Feb. 14, 1974, Ser. No. 442,451
Int. Cl.² G01B 5/00
U.S. Cl. 73—89 **7 Claims**



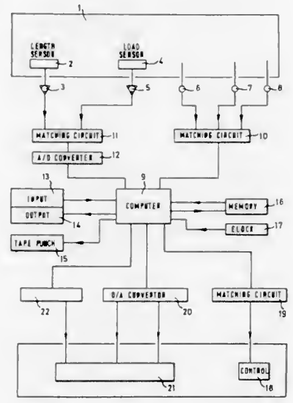
1. A method of determining dimensional changes in a workpiece comprising the steps of establishing two points on said workpiece a predetermined distance apart, forming a strip of rigid material having two holes therein spaced apart a distance corresponding to the distance between said points, securing two pads of image transfer material to said strip with each pad extending over a corresponding hole, rubbing said pads over said points to transfer the images of said points to said pads, then subjecting the workpiece to a predetermined load, then forming an additional strip of rigid material having two holes therein spaced apart a distance corresponding to the distance between said points, then securing two additional pads of image transfer material to said additional strip with each additional pad extending over a corresponding hole and then rubbing said additional pads over said points to transfer the images of said points to said additional pads, to enable any relative difference in said distances to be compared to ascertain any dimensional changes in said workpiece.

3,948,091

APPARATUS FOR DETERMINING THE PROPERTIES OF METALLIC MATERIALS

Hubert Paul Voll, Ougree, Belgium, assignor to Centre de Recherches Metallurgiques - Centrum voor Research in de Metallurgie, Brussels, Belgium

Filed May 21, 1974, Ser. No. 471,898
Claims priority, application Belgium, May 24, 1973, 800013
Int. Cl.² G01N 3/08
U.S. Cl. 73—95 **2 Claims**



1. Apparatus for determining the modulus of elasticity of a metallic material, which comprises:

a machine for subjecting a testpiece of metallic material to a tensile test, said machine including mobile member means engaging one of the ends of said testpiece for exerting traction thereon;

means applied to said mobile member means for subjecting same to controlled displacements whereby traction is exerted on said test-piece in controlled steps;

means for measuring the force applied to said test-piece by said mobile member means as a function of time and for providing data indicative thereof;

means for measuring the length of said test-piece as a function of time and for providing data indicative thereof; and

a computer which is connected to said mobile member controlled displacement subjecting means, said force measuring means and said length measuring means, said computer including means for processing said data from said force and length measuring means in accordance with preprogrammed formulas stored therein to provide an output indicative of the modulus of elasticity of said metallic material, said computer further including means for providing control signals for controlling the movement of said mobile member controlled displacement subjecting means;

said length measuring means comprising a length sensor which measures the length of said test-piece and an amplifier connected to receive the output of said length sensor;

said force measuring means comprising a load sensor which measures the load applied to said test-piece and a variable gain amplifier connected to receive the output from said load sensor; and wherein said apparatus further comprises:

a first matching circuit connected to receive the outputs from said amplifier and said variable gain amplifier;

an analog-to-digital converter connected to receive the output from said first matching circuit and to deliver an input to said computer;

a deviation calibration and correction device connected to said machine, a speed selector connected to said machine, an indicating member connected to said machine for providing an output indicative of the stop position and direction of movement of said test-piece, and a second matching circuit whose inputs comprise the outputs from said correction device, said speed selector, and said indicating member, and whose output is connected to said computer.

3,948,092

METHOD OF RECOVERING AND RE-CYCLING WATER-WASHABLE INSPECTION PENETRANTS

James R. Alburger, 5007 Hillard Ave., La Canada, Calif. 91011

Continuation-in-part of Ser. No. 513,105, Oct. 8, 1974. This application Jan. 13, 1975, Ser. No. 540,549
Int. Cl.² G01N 21/16
U.S. Cl. 73—104 **1 Claim**

1. In a water-washable inspection penetrant process for the detection of surface defects and discontinuities in test parts in which the following steps are carried out in sequence:

a. Apply a water-washable dyed liquid penetrant to said test parts,

b. Finish-wash the penetrant-treated test parts with water to deplete background entrapments of penetrant,

c. Dry the said test parts,

d. Develop indications of surface flaws on said test parts, and

e. Inspect said test parts for indications of flaw entrapments, the improvement which provides for the recovery of excess penetrant, in which the following step is introduced immediately following step (a) of penetrant application and prior to step (b) of finish-washing with water:

Spray-wash said test parts with an inhibited pre-wash stripper solution,

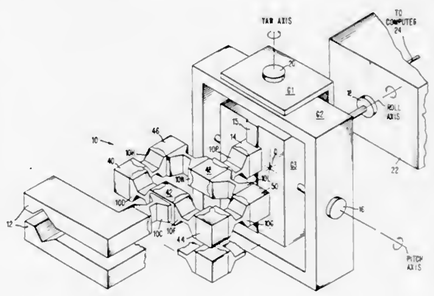
whereby excess surface penetrant is stripped off of said test parts and is recovered by flotation separation, said pre-wash stripper solution consisting of water which is saturated with dissolved penetrant, and said water-washable penetrant being a slow-solubility type dyed liquid having a solubility in water within the range of about 0.001% to 3%.

3,948,093

SIX DEGREE OF FREEDOM FORCE TRANSDUCER FOR A MANIPULATOR SYSTEM

George Arthur Fokchi, Yorktown Heights; Glenmore Lorraine Shelton, Jr., Carmel, and Sherman Sheau-Ming Wang, Mohegan Lake, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1975, Ser. No. 591,998
Int. Cl.² G01L 5/16
U.S. Cl. 73—133 R **13 Claims**



1. A multi-degree of freedom force sensor for providing force and moment data to determine the position and orienta-

tion of an object in the hand of a manipulator system, comprising a strain gauge assembly rigidly connected at a first end to said hand and rigidly connected at a second end to a drive member for said hand, said strain gauge assembly including a plurality of interconnected strain gauge modules, each of said strain gauge modules comprising a generally I-shaped beam having a thin central beam adapted for mounting strain gauges on its relatively wide, flat surfaces, and end portions of said I-beam providing means for rigidly interconnecting said strain gauge modules with the I-beam generally oriented at a 90° twist and/or rotation from each other, whereby said strain gauge modules can be configured in block-like fashion to provide a strain gauge assembly with the desired number of degrees of freedom sensing.

3,948,094

RECEIVING FIXTURE FOR TIRES OF MOTOR VEHICLE WHEELS

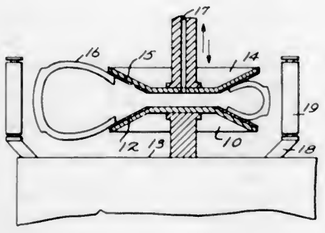
Herwig Honlinger, Jugenheim, Germany, assignor to Gebr. Hofmann, Darmstadt, Germany

Continuation of Ser. No. 291,164, Sept. 22, 1973. This application Dec. 3, 1974, Ser. No. 529,068

Claims priority, application Germany, Oct. 1, 1971, 2149115

Int. Cl.² G01M *17/02*

U.S. Cl. 73—146 **2 Claims**



1. A tire receiving and holding fixture having a pair of opposed mounting plates each having an extending flat tire engaging surface covered with an elastic material and formed as a truncated cone, said surfaces sloping toward each other for engaging opposing tire surfaces so as to accommodate a tire having a diameter within given limits and a plurality of rollers disposed about said plates for centering a tire held between said plates.

3,948,095

FORCE VARIATION TESTING OF TIRES

Donald K. Burgett, Tallmadge; James E. Rice, Cuyahoga Falls, and John W. Touchette, Hartville, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 30, 1975, Ser. No. 573,295

Int. Cl.² G01M *17/02*

U.S. Cl. 73—146 **10 Claims**

1. A tire testing machine comprising:

a load wheel rotatable about a first axis;

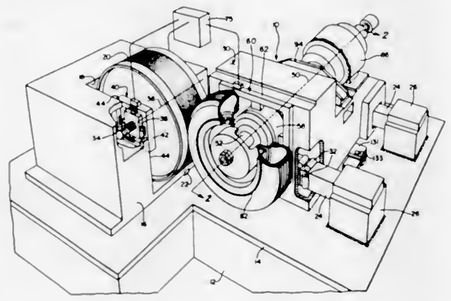
a rigid spindle rotatable about a second axis parallel to the first axis and having means for mounting a tire coaxially and corotatably therewith;

a bearing housing including a hydrostatic fluid film bearing supporting said spindle free of metal-to-metal contact with the housing;

a rigid, non-resonant support frame having a central opening therethrough in the direction of the second axis and accommodating said bearing housing therein;

spindle drive means for rotating the spindle and the tire thereon, the drive means being mounted integrally with the support frame;

and force measuring means having a first member fixed rigidly to the support frame, a second member fixed rigidly to the bearing housing, and a plurality of load-responsive members extending integrally between the first and the second member;



whereby the reactions of forces between the load wheel and the tire are communicated to the force measuring means only through the fluid film of the fluid film hydrostatic bearing.

3,948,096

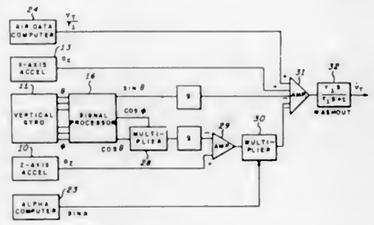
APPARATUS FOR COMPUTING THE ACCELERATION OF AN AIRCRAFT ALONG ITS FLIGHT PATH

Harry Miller, Scottsdale, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Division of Ser. No. 124,690, March 16, 1971, Pat. No. 3,791,208, which is a continuation-in-part of Ser. No. 873,044, Oct. 31, 1969, abandoned. This application Oct. 17, 1973, Ser. No. 407,401

Int. Cl.² G01C *21/10*

U.S. Cl. 73—178 R **3 Claims**



1. Apparatus for providing a measure of the acceleration of an aircraft along its flight path comprising

a. inertial means including accelerometers and gyroscopic means for providing a first signal in accordance with the acceleration of said craft along its flight path, said first signal including relatively long term error components produced by the erection characteristics of said gyroscopic means,

b. air data sensor means including a Pitot static source of air pressure for providing a second signal in accordance with the velocity of the aircraft along its flight path, said second signal including relatively short term error components produced by short term anomolies in said Pitot-static source,

c. a washout filter means having a time constant such as to block said long term components of said first signal and to suppress said short term components of said second signal, and

d. means supplying both of said signals to said washout filter means whereby to pass changing values of said air data

derived velocity signals to block said long term error components of said inertial acceleration signal and to suppress said short term components of said air data sensor signal.

3,948,097

FLOW VELOCITY MEASURING DEVICE

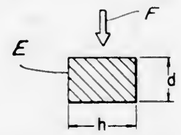
Yoshio Kurita; Katsumi Takahashi, and Toshio Aga, all of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Aug. 26, 1974, Ser. No. 500,451

Claims priority, application Japan, Aug. 28, 1973, 48-96435

Int. Cl.² G01F *1/32*

U.S. Cl. 73—194 VS **9 Claims**



1. Flow metering apparatus of the type having a vortex generation element with a generally clongate shape placed transversely in a stream of fluid to produce on opposite sides of the element vortices which are shed in alternating fashion, and having means for measuring the frequency of vortex production to determine the velocity of the fluid stream, the flow metering apparatus being characterized in that:

the vortex generation element is formed with a rectangular cross-section with a depth *d* along the direction of fluid flow and a height *h* across the direction of fluid flow which are in a ratio *d/h* lying between about 0.5 and 0.9;

the vortex generation element comprises passageway means extending through the element between the two opposed rectangle sides aligned with the direction of fluid flow for communicating fluid fluctuation therebetween; and

the passageway means forms an opening of area *A* in the element surface which is related to the area *Ao* of the element rectangle side containing the opening with a ratio *A/Ao* between about 0.3 and 1.0;

whereby vortices are stably and powerfully generated and the Strouhal number remains constant over a wide range of Reynolds numbers.

3,948,098

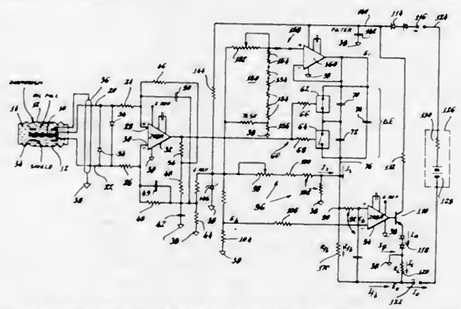
VORTEX FLOW METER TRANSMITTER INCLUDING PIEZO-ELECTRIC SENSOR

David A. Richardson, Sheldonville, and Robert J. Robinson, Lexington, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Apr. 24, 1974, Ser. No. 463,734

Int. Cl.² G01F *1/32*; G01R *23/06*; G08C *19/02*

U.S. Cl. 73—194 VS **19 Claims**



1. A piezo-electric flow-rate converter for transforming variable-frequency pressure pulses from a vortex-shedding flow meter into a d-c output signal to be transmitted through a two-wire transmission line to a central station which includes, in series between the two wires of said transmission line, a source of d-c voltage and a current-sensing means to produce an effect determined by the magnitude of d-c current flowing through said two-wire transmission line; said flow-rate converter comprising:

piezo-electric means responsive to said pressure pulses to develop a corresponding voltage signal varying in frequency with the applied pressure-pulse frequency;

first amplifier means having an input to which said variable-frequency voltage signal is coupled and including means to produce an alternating control signal at the frequency of said a-c voltage;

controllable current-source means having an input coupled to the output of said first amplifier means to receive said alternating control signal, said current-source means including means to develop a low-level continuous d-c signal current the magnitude of which is directly proportional to the frequency of said control signal;

second amplifier means having an input coupled to the output of said current-source means to receive said low-level continuous d-c signal current, said second amplifier means including an output circuit with first and second output terminals to be connected respectively to the two wires of said two-wire transmission line, said output circuit including current-varying means for controlling the magnitude of a relatively high-level d-c output current flowing through said terminals and powered by said source of d-c voltage;

a feedback resistor forming part of said converter and connected in the output of said second amplifier means to develop a feedback signal responsive to the current flowing through said output circuit terminals;

negative feedback circuit means coupling said feedback resistor to said input of said second amplifier means so as to effect correspondence between changes in the d-c output current flowing through said output terminals and changes in said low-level d-c signal current resulting from changes in the fluid flow rate; and

power circuit means coupled to said output terminals to produce, from the electrical power of said source of d-c voltage, d-c supply voltages for said first and second amplifier means and said controllable current-source means.

3,948,099

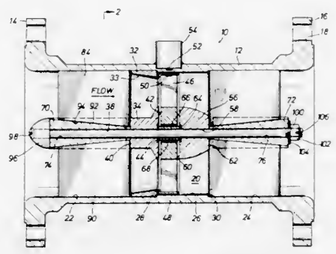
FLOW METER HAVING SELF-CENTERING ROTOR ASSEMBLY

Bernard H. Geisow, Houston, Tex., assignor to Daniel Industries, Inc., Houston, Tex.

Filed Sept. 30, 1974, Ser. No. 510,357

Int. Cl.² G01F *1/12*

U.S. Cl. 73—231 R **16 Claims**



1. A flow meter for measuring the volume of fluid flowing through a conduit, said flow meter comprising:

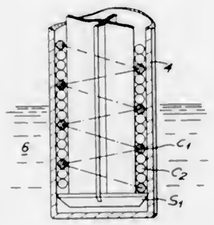
a housing defining a flow chamber, said housing defining inlet and outlet openings and having connection means for connection thereof into said conduit;
rotor assembly means disposed within said flow chamber and having a rotor element that is rotatable by the fluid flowing through said flow chamber;
first centering means being provided on said rotor assembly means;
rotor assembly support means being disposed within said flow chamber and engaging said housing, said rotor assembly support means engaging said first centering means of said rotor assembly means; and
second centering means being defined by said rotor means and being disposed within said flow chamber, said second centering means engaging said rotor assembly support means and reacting with said first centering means of said rotor assembly means to cause precise centering of said rotor assembly means within said flow chamber.

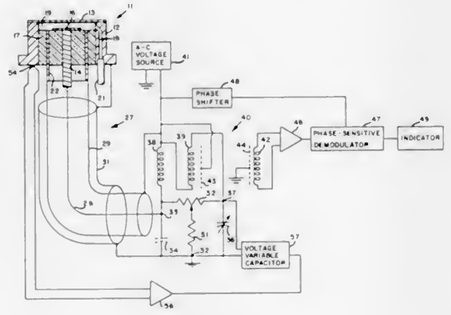
3,948,100

PROBE FOR MEASURING THE LEVEL OF A LIQUID

Marcel Paris, Manosque, and Serge Poinsot, Pertuis, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sept. 26, 1974, Ser. No. 509,630
Claims priority, application France, Oct. 5, 1973, 73.35706; Nov. 29, 1973, 73.42553
Int. Cl.² G01F *23/28*
U.S. Cl. 73—290 R **9 Claims**





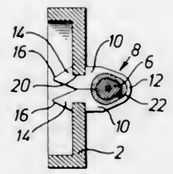
9. An application of the level-measuring probe according to claim 1 to the measurement of the level of liquid sodium within a nuclear reactor vessel.

3,948,101

BRACE ARRANGEMENT FOR A THERMOMETER

Ulf Linden, Hornarydsvagen 6, S-331 00 Varnamo, Sweden

Filed Mar. 21, 1974, Ser. No. 453,482
Claims priority, application Sweden, Mar. 27, 1973, 7304265
Int. Cl.² G01K *01/14*
U.S. Cl. 73—376 **4 Claims**



1. A thermometer comprising a thermometer body plate, a capillary tube and at least one substantially U-shaped resilient brace having a separate inner element with a flexible friction surface engaging the capillary tube for retaining the tube in a spaced relationship with respect to the brace at one side thereof, said body plate having at least one aperture therethrough, and leg portions at the free ends of the U-shaped brace adapted to be received in the aperture, said leg portions be provided with lateral projections engaging the sides of the body plate thereof at which the tube is positioned for maintaining the tube in spaced relationship to the body plate, said leg portions further being resiliently pressable in a direction substantially parallel with the side of the body plate engaged by the lateral projections for disengaging said lateral projections from the engagement therewith in order to allow adjustment of the capillary tube in relation to the thermometer body plate in the longitudinal direction of said tube.

3,948,102

TRIELECTRODE CAPACITIVE PRESSURE TRANSDUCER

Grant W. Coon, Palo Alto, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 493,363, July 31, 1974, abandoned. This application July 17, 1975, Ser. No. 596,788
Int. Cl.² G01L *9/12*
U.S. Cl. 73—398 C **8 Claims**

1. Apparatus for a capacitive transducer having first and second spaced-apart facing electrodes with a dielectric therebetween and a third electrode which partially shields said first electrode from said second electrode comprising:
a transformer having first and second primary windings and a secondary winding;
a reference capacitor;
means for coupling said secondary primary winding of said transformer between said first primary winding and said reference capacitor, said first primary winding, said second primary winding and said reference capacitor each forming one leg of a bridge;
means for inputing an a-c signal to said bridge;
means for connecting said ends of said first primary winding to said second and third electrodes, respectively;
means for connecting said first electrode to the end of said capacitor remote from said second primary winding; and
means coupled to said inputing means and said secondary winding for measuring only the capacitive component of a-c current flowing between said first and second electrodes.

3,948,103

CALIBRATION OF DIALED MEASURING INSTRUMENTS

Guy Francois Rosaz, Pontarlier, France, assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Nov. 18, 1974, Ser. No. 524,953
Claims priority, application France, Nov. 23, 1973, 73.41817
Int. Cl.² G01L *7/16*
U.S. Cl. 73—419 **5 Claims**



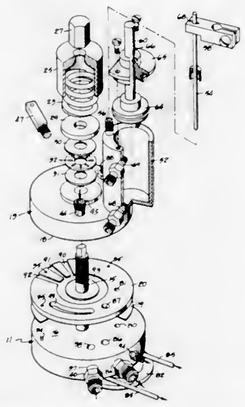
1. A method of calibrating a measuring instrument including an indicating hand pivoting about a graduated dial having equally spaced graduations in arcuate configuration and in which the angular position of the hand is related to the quantity to be measured by an approximately linear relationship which may progressively deviate from linear, comprising:
providing, prior to securing the dial, three reference lines corresponding to the positions of the indicating hand at three reference values of the quantity to be measured, said reference values corresponding to three given graduations on the dial;
shifting the dial to a position in which said three given graduations lie along said reference lines;
and securing the dial in said position.

3,948,104

AUTOMATIC ROTARY SAMPLE INJECTION VALVE

Thomas M. Stephens, Menlo Park, Calif., assignor to Envirotech Corporation, Menlo Park, Calif.

Continuation of Ser. No. 443,873, Feb. 19, 1974, Pat. No. 3,864,978. This application Oct. 4, 1974, Ser. No. 511,975
The portion of the term of this patent subsequent to Feb. 11, 1992, has been disclaimed.
Int. Cl.² G01N *1/10*
U.S. Cl. 73—422 GC **5 Claims**



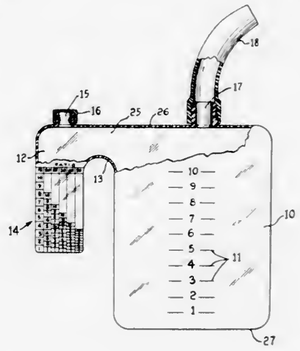
1. A device for procuring samples of a predetermined volume from a continuously flowing liquid stream comprising:
a. a valve body inclusive of upper and lower sections which are constructed and arranged to present flat faces each to the other;
b. at least one seal member interposed between said parallel faces of said sections;
c. means connected to said sections to rotate one section relative to the other through a preselected angle from a first position to a second position while maintaining parallelism between said faces;
d. a liquid inlet port formed through said lower section in fluid-flow communication with the flat face thereof and a liquid outlet port formed through said upper section in communication with the flat face thereof;
e. a slot formed through said at least one seal member connecting said inlet and outlet ports in continuous fluid-flow communication with each other between said first and second positions;
f. piston means arranged to travel in a bore formed in said upper section, which bore is located for communication with said slot at said first position;
g. actuating means to actuate said piston to travel in said bore to effectuate the drawing into said bore of a liquid sample from said slot at said first position of said body sections; and
h. a sample eject port formed through said lower body section and through said at least one seal member at a location spaced from said inlet port and said slot for receiving a liquid sample of predetermined volume released from said bore by action of said actuating means at said second position of said body sections.

3,948,105

PROPORTIONING AND MIXING GRADUATE

Earl Johnson, Jr., 17264 Arch St., Little Rock, Ark. 72206

Filed Apr. 1, 1975, Ser. No. 564,018
Int. Cl.² G01F *19/00*
U.S. Cl. 73—427 **8 Claims**



1. A three compartment proportioning and mixing graduate of transparent material having an elongate top and a flat bottom, said graduate comprising
a horizontally extending mixing compartment subjacently and coextensively underlying said top,
a main liquid-receiving compartment and a spatially separated smaller liquid-receiving compartment each in communication with and extending downwardly from the ends of said mixing compartment,
a horizontally extending neck interposed between said liquid-receiving compartments and bridging the space therebetween,
said neck defining a restricted portion of said mixing compartment bounded along the upper surface by said top and along the lower surface by said neck,
longitudinally spaced openings in said top, one above said main compartment and the other above said smaller compartment,

a single row of vertically spaced graduate marks and associated indicia disposed along said main compartment for visibly indicating the level of the surface of a liquid therein, and

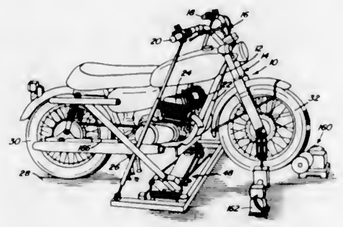
an array of ratio-designated rows of vertically spaced graduate marks and associated indicia disposed on an upstanding side of said smaller compartment, the marks in said array being positioned to selectively indicate predetermined volume relationships of the liquid contained within the respective liquid-receiving compartments.

3,948,106

MOTORCYCLE WHEEL BALANCING ASSEMBLY

Joseph M. Armbruster, P.O. Box 840, Waynesville, N.C. 28786

Filed Nov. 14, 1974, Ser. No. 523,889
Int. Cl.² G01M *1/28*
U.S. Cl. 73—457 **13 Claims**



9. A movement dampening structure for disposition between the lower portion of one side of an elevated motorcycle front fork assembly and the vertically reciprocal pickup rod of a strobe light actuator for a wheel spin balancing assembly, said movement dampening structure comprising an upstanding motion transmitting structure including relatively extendable and retractable elongated upper and lower end portions guidingly supported from each other for lengthwise extension and retraction, means carried by the lower and upper ends of said lower and upper end portions, respectively, for releasable attachment to said pickup rod and lower front fork portion, opposing and balanced compression and expansion coil springs connected between said upper and lower end portions yieldingly resisting retraction and expansion, respectively, of lower end portion relative to said upper end portion, said expansion spring means including means for adjustably expanding the latter independent of relative extension and retraction of said end portions.

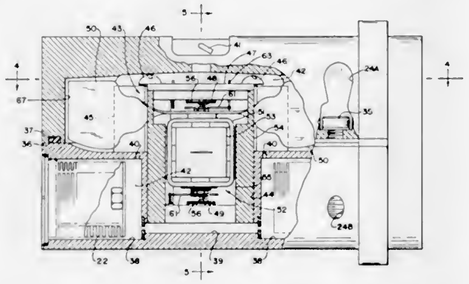
3,948,107

VELOCITY TRANSDUCER

Romeal F. Asmar, Concord, and Harold D. Morris, Orinda, both of Calif., assignors to Systron Donner Corporation, Concord, Calif.

Filed July 31, 1973, Ser. No. 384,240
Int. Cl.² G01P *15/08, 7/00*
U.S. Cl. 73—503 **26 Claims**

1. In combination with a velocity sensor of the type having a base member, a pickoff mounted on the base member, a fluid mass disposed for movement relative to the base member, a paddle assembly mounted within the base member having a paddle member in juxtaposition with said pickoff, said paddle member being pivotally mounted and in communication with the fluid mass, first electrical means connected to the pickoff for producing torque for retaining the paddle member in a predetermined position relative to the base member and for providing a first electrical output related to movement of the paddle member relative to the pickoff, second electrical means including a feedback capacitor for integrating the first electrical output and providing a second electrical output related to the velocity of the base relative to a predetermined axis, the second electrical output having a pass band limited at high frequency by the first electrical means, and limited at low frequency by the second electrical means, the improvement which comprises an automatic nulling feedback loop connected around the second electrical means for cancelling steady state signals at the input of the second electrical means, means for guiding the fluid mass within a closed path



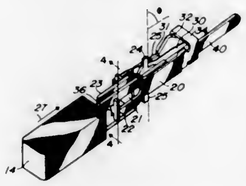
formed integrally with the base member, leaf spring pivot supports disposed within the paddle assembly for supporting the paddle member, whereby the pivotally mounted paddle assembly is stabilized from shock and vibration loads, and means for providing a return flux path completely surrounding the first electrical means, whereby the first electrical output is shielded from induced electrical noise from stray magnetic flux.

3,948,108

GUIDE AND KEY ASSEMBLY FOR A PUSHBUTTON RADIO RECEIVER

Alfred J. Clark, Palatine, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Dec. 31, 1974, Ser. No. 537,725
Int. Cl.² F16H *35/18*
U.S. Cl. 74—10.33 **7 Claims**



1. A keyslide mechanism for a pushbutton automotive radio receiver including in combination

a depressible pushbutton coupled to a button slide movable in a substantially horizontal plane, the slide provided with a key slot having vertical and horizontal dimensions and an engaging face of predetermined curvature located on the outward vertical dimension,

a tuner slide having a T-shaped lug, the lug, located in the key slot and horizontally slideable therein, forcibly engaged by the engaging face upon pushbutton depression,

the vertical dimension of the key slot allowing vertical deflection of the button slide with respect to the tuner slide upon pushbutton depression, and

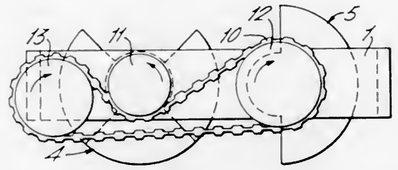
a memory means, presettably located at a position representative of desired receiver tuning, coupled to the tuner slide.

3,948,109

VIBRATORY SCREENING APPARATUS

Kunto Elonen, Tampere, Finland, assignor to Rauma-Repola Oy, Tampere, Finland

Filed Dec. 23, 1974, Ser. No. 535,790
Claims priority, application Finland, Dec. 28, 1973, 4010/73
Int. Cl.² F16H *33/00;* **B07B** *1/44*
U.S. Cl. 74—61 **3 Claims**



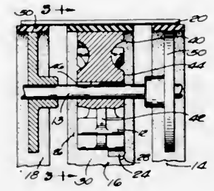
1. A vibratory structure of a screening apparatus comprising a frame; at least two shafts rotatably mounted in said frame; a pair of eccentric weights on each of said shafts, the weights of each pair being adjacent and angularly adjustable relative to each other on their respective shafts; drive pulleys on each of said shafts; drive means; and a belt connecting said drive means to said pulleys for synchronizing the rotation of said shafts.

3,948,110

ENDLESS CLEATED TRACK

George G. Lassanske, Oconomowoc, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Oct. 18, 1974, Ser. No. 515,824
Int. Cl.² F16H *7/00*
U.S. Cl. 74—229 **13 Claims**



1. An endless track assembly including a plurality of spaced and transversely extending traction bars, and three endless flexible belts secured to said traction bars for movement in parallel spaced relation, only the center one of said belts including one row of longitudinally spaced drive teeth projecting from the inner surface thereof.

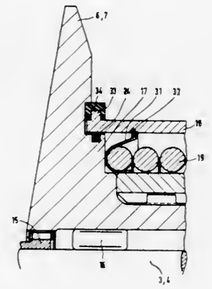
3,948,111

CYLINDER/PISTON AGGREGATE ON A ROTATING SHAFT

Otto Dittrich, Bad Homburg vor der Hobe, Germany, assignor to P.I.V. Antrieb Werner Reimers KG, Bad Homburg, Germany

Continuation of Ser. No. 200,009, Nov. 18, 1971, abandoned. This application Mar. 5, 1974, Ser. No. 448,355
Claims priority, application Germany, Nov. 27, 1970, 2058399
Int. Cl.² F16H *55/52, 55/22*
U.S. Cl. 74—230.17 F **5 Claims**

1. A cylinder/piston aggregate concentrically arranged on a rotating shaft and comprising a cylinder part comprising a cylinder jacket (**18**) and a cylinder bottom (**17**) and a piston part (**14**) mounted in the cylinder part for relative axial sliding movement therebetween, a first of the parts (**14**) being rigidly connected to the shaft while the second part (**17,18**) is movable relative to the shaft in at least one of the axial and circumferential directions, and a seal (**21**) between the piston part (**14**) and the inner wall of the cylinder jacket (**18**) wherein the improvement comprises means (**24,34**) yieldably and fluid-tightly connecting the cylinder jacket (**18**) and the cylinder bottom (**17**) with one another, whereby to permit the cylinder



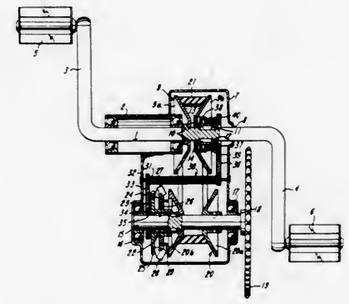
jacket (**18**) to tilt relative to the cylinder bottom (**17**), whereby the jacket (**18**) may undergo a self-centering adjustment with respect to the cylinder bottom (**17**) and the piston part (**14**) upon bending of the shaft, said connecting means including means (**33**) to prevent relative axial movement between the cylinder jacket (**18**) and the cylinder bottom (**17**).

3,948,112

OUTPUT SPEED-CONTROLLED TRANSMISSION

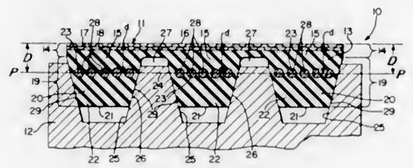
Robert B. Gilbert, 443 Hazelhurst St., New Lebanon, Ohio 45345

Filed Mar. 30, 1973, Ser. No. 346,625
Int. Cl.² F16H *55/52*
U.S. Cl. 74—230.17 E **18 Claims**



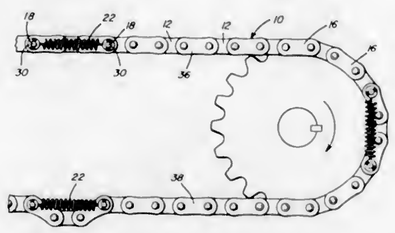
1. An output speed-controlled automatic transmission comprising an input shaft and an output shaft, adjustable drive means through which said input shaft drives said output shaft, means associated with said output shaft and responsive to the rotational speed thereof, said responsive means being operatively related to said drive means to adjust said drive means to change the transmission ratio between said input and output shafts in response to changes in rotational speed of said output shaft.

3,948,113
MULTI-RIBBED POWER TRANSMISSION BELT AND METHOD OF MAKING SAID BELT
Delyn M. Stork, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 29, 1974, Ser. No. 528,055
Int. Cl.² F16G 5/00, 1/22
U.S. Cl. 74—234 16 Claims



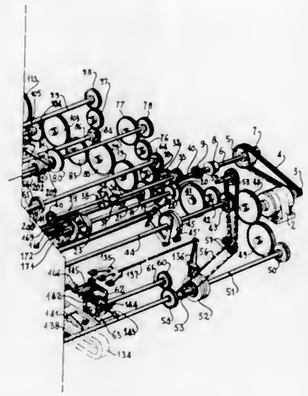
1. A belt of integral unitary construction which will transmit power at low tensions comprising a continuous singular body having top and bottom surfaces which are equally spaced apart across the width and throughout the continuous length thereof, said body comprising a neutral axis section extending throughout the length of said belt with a tension section on one side thereof extending toward the top surface of said belt and a compression section on the other side thereof, a continuous part of said tension section extending transversely across the entire width of the belt, and at least one groove in said compression section extending from the bottom surface through said compression and neutral axis sections into a portion of said tension section to form a plurality of power transmitting ribs extending longitudinally of the belt to provide a tension section, compression section and neutral axis in each individual rib, said continuous part of the tension section being a continuum of each tension section of each individual rib and being non-separately attached to each rib.

3,948,114
DRIVE CHAIN WITH SLACK TAKE-UP SPRINGS
Walter J. Koinzan, P.O. Box 255, Elgin, Nebr. 68636
Filed Apr. 29, 1975, Ser. No. 572,921
Int. Cl.² F16H 7/12; F16G 13/02
U.S. Cl. 74—242.11 C 7 Claims



1. In combination with a sprocket chain of the type including longitudinally spaced pairs of longitudinal links with corresponding ends of each pair of link straps interconnected by means of transverse members extending therebetween and with each pair of adjacent links connected at their adjacent ends by opposite side connecting straps extending therebetween and overlapped therewith and pivot shafts secured through overlapped ends of said link and connecting straps, one pair of corresponding ends of adjacent pivot shafts having at least one pivot shaft disposed therebetween projecting outwardly of the corresponding side of said chain, and an elongated at least slightly stretched expansion spring having its opposite ends anchored relative to said corresponding pivot shaft ends.

3,948,115
TRANSMISSION SYSTEM FOR A HIGH SPEED CIGARETTE PACKETING MACHINE
Enzo Seragnoli, Bologna, Italy, assignor to G. D. Societa per Azioni, Italy
Filed June 4, 1974, Ser. No. 476,306
Claims priority, application Italy, July 31, 1973, 3456/73
Int. Cl.² F16H 1/12; B65B 35/54; B41F 7/00; A24C 1/14
U.S. Cl. 74—421 R 5 Claims

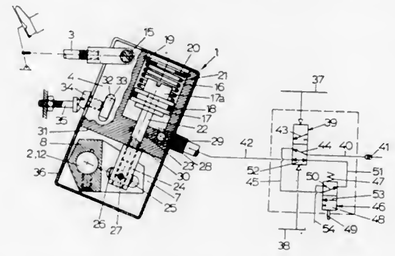


1. A transmission system for a wrapping machine comprising;
a system of mutually parallel drive shafts;
a train of gears, each gear being mounted on a respective drive shaft and meshing with another of said gears to drive it;
a motor disposed continuously to rotate one of said drive shafts and by said meshing gears continuously to rotate the other drive shafts;
a system of first driven shafts parallel to said drive shafts;
a system of wrapping wheels, each on one of said first driven shafts, said system of wrapping wheels defining an undulating path for articles to be wrapped, arcuately about successive wrapping wheels;
a system of Geneva wheels, one mounted on each of said first driven shafts to intermittently, unidirectionally, rotatingly drive that shaft and thereby the respective wrapping wheel;
a system of second driven shafts parallel said drive shafts;
rotary cam means mounted on each of said second drive shafts; and
reciprocatory means driven by said cam means in intermittent to-and-fro movements for performing wrapping operations on articles carried by said wrapping wheels and for transferring such articles to and from such wrapping wheels.

3,948,116
SPEED CONTROL GOVERNOR FOR REGULATING THE MAXIMUM SPEED OF INTERNAL-COMBUSTION VEHICLE ENGINES
Leendert Willem van Pelt, Nieuwerkerk a/d IJssel, Netherlands, assignor to Aart Groeneveld, Gorinchem, Netherlands
Filed May 30, 1974, Ser. No. 474,687
Int. Cl.² G05G 11/00, 1/08, 1/14
U.S. Cl. 74—482 8 Claims

1. A speed control governor for regulating the maximum speed of internal-combustion vehicle engines, particularly for heavy goods vehicles, the latter including a gear-shift mechanism, a fuel-supply pump, a fuel-supply regulating spindle for said pump, a member connected to said spindle and controlled for limited pivotal movement by an accelerator pedal, and an end abutment for said member, to define the angular end position of said spindle and thereby the value of the maximum speed of the engine; the governor comprising, in combination: adjusting means for resetting the end position of said spindle from the maximum engine speed to a lower limit value of the engine speed when said member connected to the spindle engages said abutment; and means for automatically operating said adjusting means when top gear of said gear-shift mechanism is selected.

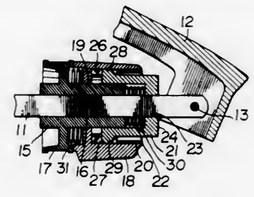
2. The governor as defined in claim 1, wherein said adjusting means includes regulating lever means mounted on said spindle and including first and second arms; said first arm being mounted on said spindle for free rotation and being connected to said pedal for pivotal movement thereby, and being formed as a block having a slot on one side thereof, said slot being enclosed between two side walls of said block, one of said walls having therein a bore to receive one end of said spindle; said second arm being rotatably positioned in said slot, to be fixedly secured to said one end of the spindle; said



first arm having a cylindrical recess and a bore extending from the bottom of said recess to said slot; a piston slidable in said recess, a piston rod connected to said piston and extending through said bore into said slot for connection to said second arm, spring means in said recess, to move said piston against said bottom of the recess; said abutment cooperating with said first arm to limit the pivotal movement of the latter when said pedal is depressed; said first arm having therein passage means communicating with said recess on the side of said piston opposite of said spring; a fluid-pressure source, and fluid-control valve means operable by said gear-shift mechanism; said recess being connectable to said source through said valve means, whereby said piston and thus said second arm are moved against said spring means into a position of maximum fuel supply relative to said first arm when the latter touches said abutment; said valve means being actuated by said gear-shift mechanism when the top gear is selected, to connect a portion of said adjusting means to the atmosphere, whereby said spring means moves said second arm with respect to said first arm to a position of reduced maximum fuel supply.

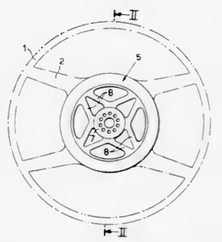
3,948,117
OPERATING HANDLE OF A FISHING REEL
Takehiko Kimura, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Sakai, Japan
Filed Oct. 31, 1974, Ser. No. 519,582
Claims priority, application Japan, Nov. 7, 1973, 48-129410
Int. Cl.² G05G 5/06
U.S. Cl. 74—547 7 Claims

1. An operating handle of a fishing reel for rotating a driving shaft having a square axle hole and supported on a body of the reel, comprising:
a. a stud extending into the square axle hole and cooperable with the driving shaft;
b. a handle arm pivoted at one end to one end of said stud with a pin extending perpendicularly to an axis of said stud, said arm having at the other end a grip and being freely turnable around the pivot to two positions with respect to said stud, one of said positions being a standing position and the other being a folded position in which said arm makes an acute angle with respect to said stud;
c. a sliding member movably supported on said stud in an axial direction of said stud to contact said arm and being nonrotatable with respect to said stud, said sliding member having a cylindrical body and being closed at one end and open at the other end, said closed end having at the center thereof a square hole engageable with said stud, and said closed end having a control face formed at an outer surface opposite said handle arm, said control face limiting movement of said arm to a predetermined folded position and keeping said arm in the standing position;
d. a push-out means, extending between said sliding member and said stud, for always resiliently urging said sliding member towards said handle arm along said stud;



e. an operating member rotatably supported on said stud, said operating member having a cylinder-like shape and a recess of an inner diameter larger than the outer diameter of said sliding member, said recess receiving said open end of said sliding member; and
f. means for restricting said sliding member from being axially moved, including grooves extending axially of said stud at an inner periphery of said operating member and projections formed at an outer periphery of said sliding member, said restricting means permitting said projections to enter said grooves respectively so that said handle arm may be placed in the folded position when said operating member is placed in a given circumferential position with respect to said sliding member, and preventing said projections from entering the grooves to restrict axial movement of said sliding member so that said handle arm may be kept in the standing position when said operating member is not in said give position.

3,948,118
SAFETY STEERING WHEEL FOR MOTOR VEHICLES
Carlo Zucchetti Garbin, Milan, Italy, assignor to Industria Napoletna Costruzione Autoveicoli Alfa Romeo Alfasud S.p.A., Naples, Italy
Filed Jan. 3, 1975, Ser. No. 538,250
Claims priority, application Italy, Jan. 8, 1974, 19198/74
Int. Cl.² B62D 1/08
U.S. Cl. 74—552 3 Claims



1. A safety steering wheel for motor vehicles, which minimizes injury to the driver upon impact between the driver and the steering wheel, comprising an outer rim and spokes assem-

bly, a central hub and a yieldable connection structure between said hub and said assembly, said connection structure including a peripheral rib having a generally annular configuration and a stiffness at least equal to that of said rim and spokes assembly and a lattice-like central framing having a resistance to bending less than that of the assembly formed by the rim, the spokes and the annular rib and a stiffness which is symmetrical with respect to said central hub irrespective of the position of the spokes and the point of impact on the outer rim, the members making up said lattice-like central framing being, each, tangent to said control hub.

3,948,119

DEVICE FOR LIMITING THE NUMBER OF REVOLUTIONS OF A SHAFT OR THE LIKE, ESPECIALLY FOR SLIDING ROOF DRIVES IN AUTOMOBILES

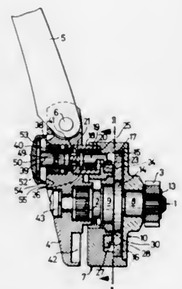
Albert Schlapp, Sprendlingen, Germany, assignor to Rockwell-Golde G.m.b.H., Frankfurt, Germany

Filed June 20, 1974, Ser. No. 481,182

Claims priority, application Germany, July 2, 1973, 2333666

Int. Cl.² F16H *1/28*

U.S. Cl. 74—805 **7 Claims**



1. A device for limiting the number of revolutions of a shaft or the like, especially for rotatable drives for sliding roofs of automobiles, comprising a rotatable shaft, an eccentric disc fixedly carried on the shaft for rotation therewith, an externally-toothed ring rotatably journalled on the circumferential surface of the disc and adapted for counter-rotation relative to the shaft by means of a fixed tooth arrangement surrounding the ring and concentric with the shaft axis, the fixed teeth projecting toward the external teeth of the ring for operational engagement therewith when the shaft is caused to rotate, shaft control means operatively engaging the ring for halting shaft rotation after a predetermined number of revolutions including a locking pin mounted adjacent the ring and disposed for manual movement when the ring is in a specific disposition between engaged and disengaged positions, the locking pin being adapted to permit rotation of the ring and thus the shaft in both rotational directions when in its engaged position and to completely halt rotation of the ring and the shaft when in its disengaged position.

3,948,120

WRENCH

Paul D. Hancock, Rte. 2 Box 99A, Malvern, Ark. 72104

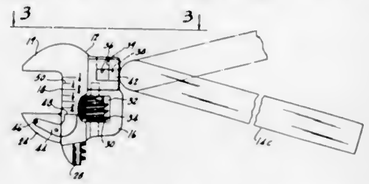
Filed Jan. 8, 1975, Ser. No. 539,345

Int. Cl.² B25B *13/16*

U.S. Cl. 81—165 **14 Claims**

1. An improved wrench comprising:

a wrench having a base including a fixed jaw and a work surface extending from said fixed jaw, said work surface having linear graduations in association therewith; an adjustable jaw slidable along said work surface; a pair of spring leaves, one of which is mounted on either side of said adjustable jaw and which extend below said jaw to resiliently grip said base for retaining said jaw in desired position along said work surface, said leaves coacting



with said graduations for indicating the spacing between said jaws; said base including a socket means; and

a wrench handle having means for engaging said socket means for transmitting rotational torque to said wrench head.

3,948,121

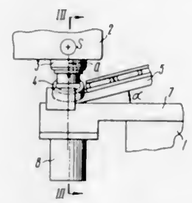
WORKPIECE LOADER

Grigor Arutjunovich Shaumian, deceased, late of Moscow, U.S.S.R.; by Alexandra Gavrilovna Strizhova, administrator, Ananievsky pereulok, 5, kv. 63, Moscow, U.S.S.R.; by Sergei Grigorievich Shaumian, administrator, Ananievsky pereulok, 5, kv. 63, Moscow, U.S.S.R.; by Era Grigorievna Kurpekova, administrator, Universitetsky prospekt 6, korpus 4, kv. 53, Moscow, U.S.S.R., and by Grinteza Grigorievna Shaumian, administrator, Universitetsky prospekt, 5, kv. 104, Moscow, U.S.S.R.

Filed June 4, 1975, Ser. No. 553,284

Int. Cl.² B23B *15/00*

U.S. Cl. 82—2.7 **1 Claim**



1. In an automatic rotor-type machine having a rotor and at least one spindle mounted on the rotor, the spindle having an axis of rotation and a nose, said spindle being adapted for carrying a workpiece having a basic hole with a top point; and a loader for feeding a workpiece having a basic hole onto the at least one spindle during rotation of the rotor, said loader comprising: a feed chute containing workpieces in an oriented state, said feed chute having a top portion; a device for catching one of said workpieces contained in said feed chute; and a pusher for a force-feed of said caught workpiece onto the at least one spindle, said pusher having a butt end facing said at least one spindle, the improvement that said feed chute, when in a machine loading position, is positioned at an incline to the axis of rotation of said at least one spindle so that serving as said catching device is said at least one spindle which is adapted, during rotation of said rotor, to effect a frictional catching of said workpiece at the top point of said basic hole thereof; and said pusher being so arranged that its butt end facing said at least one spindle is essentially at the same level with the top portion of said feed chute, while the distance between said pusher butt end to the nose of said at least one spindle, facing said butt end is shorter than the distance from said butt end of said pusher to said top point of the basic hole of said workpiece so that said at least one spindle will continually perform a frictional catching of the workpiece during running of the rotor.

3,948,122

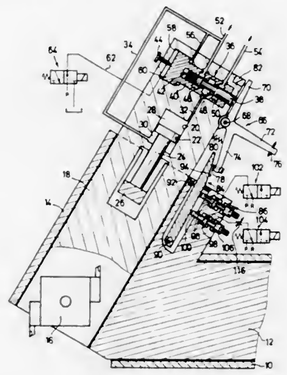
AUTOMATIC PROGRAMMED PROFILE LATHES

Helmut Link, Schanbach, and Guenther Gumhold, Plochingen, both of Germany, assignors to Index-Werke KG Hahn & Tessky, Esslingen, Germany

Filed July 22, 1974, Ser. No. 490,731

Int. Cl.² B23B *3/28*

U.S. Cl. 82—14 C **20 Claims**



1. Apparatus for controlling the operation of an automatic program profile lathe to selectively effect rough cutting of the workpiece held thereon comprising a cross feed, a post slidably located on said cross feed, a tool held on said post, hydraulic means for reciprocally moving said post in the in-feed direction toward said workpiece and in the out-feed direction away from said workpiece comprising a source of fluid under pressure, a pilot valve for regulating the flow of fluid to determine the direction of movement of said post, a lever pivotally mounted on said post for actuating said pilot valve, said lever having an arm extending therefrom, stop means pivotally arranged in the plane of movement of said arm, said stop means having a cam surface for engaging said arm on movement of said tool post in the in-feed direction, said arm being operable in response to the contour of said cam surface to operate said valve to limit the flow of fluid to said hydraulic means at a predetermined position for arresting the movement of said post in the in-feed direction and means for adjusting the position of said stop in the plane of movement of said arm to provide a plurality of selective positions for arresting the movement of said post at different distances of in-feed.

3,948,123

UPPER SUPPORT FOR TURNING MACHINES

Reinhard Dams, Buchholzer Str. 14, 3014 Misburg; Rolf Heineccius, Steinkamp 15, 3015 Wennigsen-Degersen, and Alvin Ultwer, Lessingstrasses 12, 3012 Langenhagen, all of Germany

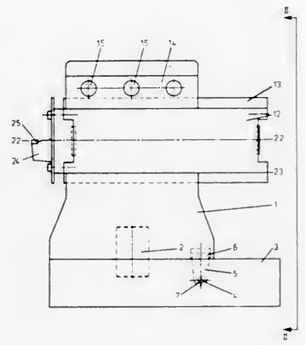
Filed Dec. 1, 1972, Ser. No. 311,247

Claims priority, application Germany, June 22, 1972, 2230482

Int. Cl. B34b *21/00*

U.S. Cl. 82—24 R **3 Claims**

1. A rotatable upper support for horizontal turning meachines, which has an upstanding turning tool carrier with turning tools interchangeably fastenable thereto, said tools adapted to be changed over at will for normal or overhead turning, wherein the improvement comprises said turning tool carrier (12) being constructed symmetrically about its horizontal mid-plane (22) which is arranged to lie at the height of the axis of rotation and having on each of its face sides (23) means for mounting the turning tool (24), and means are provided for shifting the turning tool carrier (12) in the direction of its longitudinal axis in exactly fixed increments with said turning tool carrier (12) including a plurality of hardened steel block means each having grooves (17) therein, the spacing of said grooves permitting shifting of the carrier (17) and



there being provided a shaft (19) running parallel to the turning tool carrier and a rotatable disk (20) trimmed on one side and fastened to said shaft for rotatable engagement with said grooves for positionally adjusting said carrier.

3,948,124

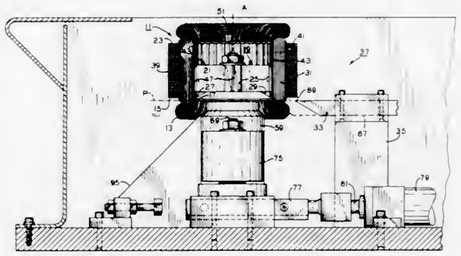
APPARATUS AND METHOD FOR SEVERING STATOR END TURNS

Frank R. Dombrowski, Kingston; Frank R. Kuzan, De Kalb, and Raymond L. Larson, Sycamore, all of Ill., assignors to General Electric Company, Fort Wayne, Ind.

Filed Jan. 17, 1975, Ser. No. 541,740

Int. Cl.² B26D *1/04, 1/12, 3/00*

U.S. Cl. 83—34 **39 Claims**

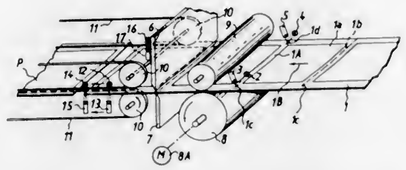


1. Apparatus for severing from a plurality of windings in a dynamoelectric machine stator a generally annular grouping of winding end turns extending from an end face of the stator comprising means movable generally in a predetermined plane for severing at least a portion of the winding end turns from the stator windings, and means for mounting the stator including means for positioning the end face generally adjacent the predetermined plane, and means for supporting the winding end turns adjacent the end face and the plane upon the severance of the winding end turn portion in response to the movement of the severing means into severing engagement therewith.

3,948,125
APPARATUS FOR TREATING WEBS OF PHOTOGRAPHIC MATERIAL OR THE LIKE

Friedrich Hujer, Grunwald, and Ferdinand Schaner, Munich, both of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Filed Sept. 20, 1973, Ser. No. 399,058
Claims priority, application Germany, Sept. 22, 1972, 2246467; Jan. 16, 1973, 2301885
Int. Cl.² B26D *5/24*
U.S. Cl. 83—62 **18 Claims**

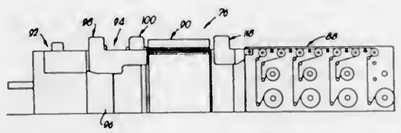


1. In an apparatus for treating a web which is provided with substantially uniformly spaced intentionally applied indicia, particularly for subdividing a web of photographic material into sections each of which carries the image of a film frame, a combination comprising advancing means operable to advance the web lengthwise along a predetermined path detector means adjacent to a portion of said path and arranged to scan the web for the presence of said indicia and to produce signals in response to detection of indicia; arresting means activatable to terminate the operation of said advancing means in response to said signals; means for deactivating said arresting means not later than on start of operation of said advancing means; means for activating said arresting means in response to transport of the web through a predetermined distance which is only slightly less than the distance between a pair of neighboring indicia on the web so that said arresting means can terminate the operation of said advancing means only after the web is transported through said predetermined distance to thus insure that said arresting means cannot be activated in response to signals produced by said detector means on detection of unintentionally applied indicia during transport of the web through said predetermined distance; and means for treating the web on stoppage of said advancing means.

3,948,126
CROSS PERFORATING OF CONTINUOUSLY MOVING, SUPERIMPOSED LEAVES

Larry B. Wolfberg, and John Harper, both of Wichita, Kans., assignors to Service Business Forms, Inc., Wichita, Kans.

Division of Ser. No. 309,128, Nov. 24, 1972, Pat. No. 3,866,497, which is a continuation-in-part of Ser. No. 210,124, Dec. 20, 1971, which is a continuation of Ser. No. 882,256, Dec. 4, 1969, abandoned. This application Dec. 11, 1974, Ser. No. 531,779
Int. Cl.² B23D *25/08;* **B26D** *1/56*
U.S. Cl. 83—37 **3 Claims**



1. In a method of producing successive lengths of cross-perforated, multi-leaved webs, each perforated at preselected, uniform intervals varying substantially from those of another length, the steps of:

drivingly engaging a multi-leaved web at fixed intervals along the length of the latter and thereby advancing the web along a path of travel past a series of separate, individually operable perforating heads, each capable of perforating a web at uniform intervals different from those possible with another head;

operating at least one head selected in accordance with the perforation interval to be produced on a particular web while maintaining the other heads disabled until the required length of web has been perforated;

disabling said one head;

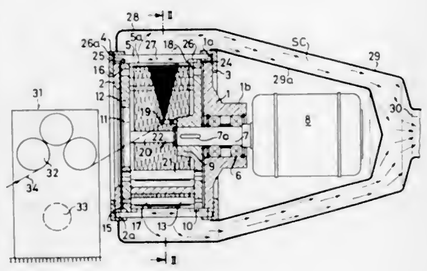
maintaining the web drivingly engaged at the same fixed intervals and reinstituting advancement of the web; and

operating another head selected in accordance with the next perforation interval to be produced while maintaining said one head and the remaining heads disabled until the next required length of web has been perforated.

3,948,127
APPARATUS FOR SEVERING TOWS OF FIBROUS MATERIAL

Ernst Vehling, Bordesholm, and Rolf Paulsen, Neumunster, both of Germany, assignors to Neumunstersche Maschinen- und Apparatebau GmbH, Neumunster, Germany

Filed Aug. 30, 1974, Ser. No. 502,001
Claims priority, application Germany, Aug. 30, 1973, 2343690
Int. Cl.² D01G *1/00, 1/04*
U.S. Cl. 83—100 **18 Claims**

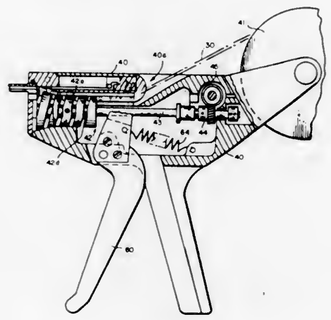


1. Apparatus for severing a tow of filamentary material, comprising a first cage including convoluting means forming a first annulus and having a passage, said convolvting means comprising a plurality of idler rollers parallel to the axis of said first annulus and each rotatable about its own axis; a second cage including a plurality of knives forming a second annulus surrounding said first annulus and defining therewith a substantially ring-shaped compartment in communication with the interior of said first cage by way of said passage, said knives having cutting edges facing said convoluting means; means for feeding the tow substantially axially of and into said first cage; means for guiding said tow in said first cage outwardly so that the tow extends through said passage and into said compartment; and means for rotating at least one of said cages with respect to the other of said cages about the axis of said first annulus to thereby wind the tow onto said convoluting means whereby the tow forms in said compartment a package of convolutions to which convolutions are being added from within in response to rotation of said one cage and the outermost convolutions of which are displaced radially outwardly into the range of and are severed by said cutting edges.

3,948,128
FEED AND SEVERING APPARATUS

David B. Russell, Southboro, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Dec. 7, 1973, Ser. No. 422,842
Int. Cl.² B25C *1/00*
U.S. Cl. 83—110 **22 Claims**

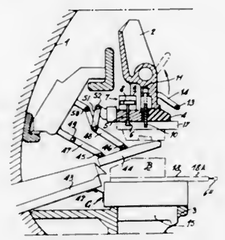


1. In a machine for dispensing fasteners severed from fastener attachment stock having a pair of side members and a plurality of cross members coupling together said side members, each of said fasteners comprising portions of said side members which form end members thereof and one of said cross members, said machine having guide means to guide and position said stock in the machine for severing and to position the fasteners after severing for dispensing and means for severing the side members of the stock to form said fasteners, said guide means including two guide channels, one channel for each of said side members and end members, said guide channels spaced apart a distance to cause said cross members to loop and the improvement comprising said guide channels continuous and shaped to guide said stock and fasteners in a first direction and then guide said fasteners in a second direction for dispensing and rotating means for advancing the stock and severed fasteners along the guide channel in both said first and second directions.

3,948,129
PRESS INCORPORATING A DEVICE FOR QUICK INTERCHANGE OF TOOLS

Alain Edouard Plegat, Asnieres, France, assignor to Societe Anonyme des Usines Chausson, France

Filed Sept. 11, 1974, Ser. No. 505,167
Claims priority, application France, Oct. 19, 1973, 73.37428
Int. Cl.² B26D *7/06*
U.S. Cl. 83—157 **11 Claims**



1. A device for quickly interchanging tools in a press having a table (3) and a platen (2, 4) movable one with respect to the other in vertical relationship, comprising

an intermediate plate (C) rigidly connected to said table (3);

retractable rolling means (27), lateral guiding means (30), and abuting means (31) carried by said intermediate plate (C) and protruding therefrom;

a plurality of sets of upper and lower tools (A, 13; 23, 24) to be respectively mounted in said press, each set of upper and lower tools being provided with a base plate (17, 18);

the base plate (18) for said lower tool having portions (18*a*, 53, 53*a*) engaging, respectively, said rolling means, said lateral guiding means (30) and said abuting means (31) of said intermediate plate (C) to locate each set of tools with respect to said table (3) and plate (C) of said press;

strut members (55, 60) engagable between said lower (24) and upper (23) tools of each set of tools to space the upper and lower portions of said upper and lower tools of each set of tools by a predetermined distance;

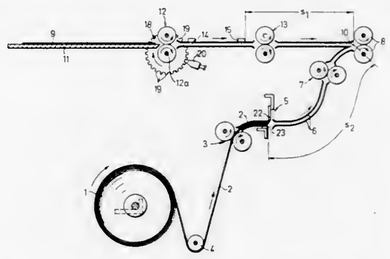
and connecting means (5, 6) carried by said platen (2, 4) of the press and engaging said upper tool (A, 23) to rigidly connect said upper tool to said platen (2, 4) of the press thus allow disengagement of said strut members (55, 6) for operation of the press,

the lower tool (24) being carried by said table (3) on said intermediate plate (C) and said upper tool (23) carried by said platen (2, 4) of the press.

3,948,130
DEVICE FOR CONTROLLING THE FEED OF COPYING MATERIAL IN COPYING MACHINES

Herbert Schröter, Taunusstein, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Filed Dec. 23, 1974, Ser. No. 535,354
Claims priority, application Germany, Dec. 24, 1973, 2364672
Int. Cl.² B26D *5/20*
U.S. Cl. 83—203 **9 Claims**



1. A device for controlling the feed mechanism for copying material to ensure that the respective leading edges of an original and the copying material are fed to a copying zone in congruence, the device being for use in a copying machine in which the original and sheet copying material stored in the machine and onto which the original is to be copied are together fed to a copying zone of the machine where copying is then effected, the device comprising

means to generate pulses in synchronism with movement of the original feed mechanism,

means responsive to the pulses,

means to count the number of pulses in a predetermined period of time and to store the number of pulses counted in that period of time,

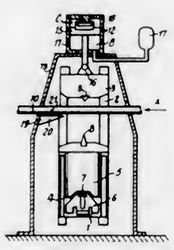
means to count a second number of pulses occurring after said predetermined period of time and to provide an output signal when the second number of pulses is equal to a predetermined number of pulses less the stored count, and

means responsive to the output signal to start feed of the copying material.

3,948,131
DEVICE FOR CUTTING MOVING INGOTS, TUBE SKELPS AND ROLLED STOCK

Sergei Vasilievich Yatsenko, prospekt Moskovsky, 204/1, kv. 36; Vadim Grigorievich Kononenko, ulitsa Chkalova, 15, kv. 12; Igor Pavlovich Komnatny, ulitsa Cheljuskintsev, 6, kv. 1; Viktor Alexeevich Stelmakh, ulitsa Kirova, 18, kv. 2; Serafim Vasilievich Schekochikhin, 1 Lesoparkovsky pereulok, 5, kv. 76; Stanislav Anisimovich Maznichenko, ulitsa Kharkovskikh divizy, 18, kv. 9, all of Kharkov; Mikhail Karpovich Silichev, ulitsa Michurina, 59, kv. 25, Krasnoyarsk; Vladimir Vladimirovich Lobanov, ulitsa Michurina, 53, kv. 54, Krasnoyarsk; Alexei Ivanovich Fedchenko, ulitsa Michurina, 55, kv. 60, Krasnoyarsk; Leonid Petrovich Babich, ulitsa Michurina, 59, kv. 11, Krasnoyarsk; Levon Khachaturovich Akhnazariants, ulitsa Kosiora, 23, kv. 23; Anatoly Semenovich Saveliev, ulitsa Chkalova, 7, kv. 22, both of Kharkov; Vladimir Feofanovich Merezhro, ulitsa Akademik Pavlova, 5, kv. 105; Alexandr Alexandrovich Vestman, ulitsa Michurina, 12, kv. 42, both of Krasnoyarsk; Vitaly Evgenievich Strizhenko, ulitsa Osnovyanskaya, 56, Kharkov; Viktor Sergeevich Pravdin, Trinadtsatay Parkovaya ulitsa, 38, korpus 1, kv. 7, Moscow; Veniamin Veniaminovich Fulmakht, Nevolesnaya ulitsa, 6a, kv. 16, Moscow; Boris Vasilievich Fitilev, Lomonosovsky prospekt, 15, kv. 123, Moscow; Dmitry Petrovich Evteev, Sirenevy bulvar, 27, korpus 3, kv. 45, Moscow; Alexandr Grigorievich Salenek, ulitsa Popovicha, 18, kv. 8; Georgy Fedotovich Dadykin, ulitsa Martenovskaya, 18, both of Bekabad Tashkentskoi oblasti; Ivan Savellevich Onuchko, ulitsa Cheljuskina, 15, Kharkov; Nikolai Nikitovich Golodov, ulitsa Lenina, 12, kv. 90, and Jury Alexandrovich Kamensky, ulitsa Aleyas, 37/39, kv. 10, both of Liepaya Latviiskoi SSR, all of U.S.S.R.

Continuation of Ser. No. 311,644, Dec. 4, 1972, abandoned, which is a continuation of Ser. No. 131,137, April 5, 1971, abandoned. This application Mar. 18, 1974, Ser. No. 452,398
Int. Cl.² B23D *25/04*
U.S. Cl. 83—308 6 Claims



1. Apparatus for serving continuously moving members such as ingots, tube skelps, rolled stock and the like, comprising in combination:

displaceable power chamber means including a power chamber, rod means in said power chamber for movement upon the generation of a power pulse in said power chamber,

said rod means including a first cutter for movement therewith for engaging the member to be cut in a direction substantially transverse to the direction of movement of the moving member;

anvil means in opposed relation to said power chamber means and including a second cutter in substantially aligned, cooperating relation to said first cutter for engaging the moving member from a direction opposite the first cutter;

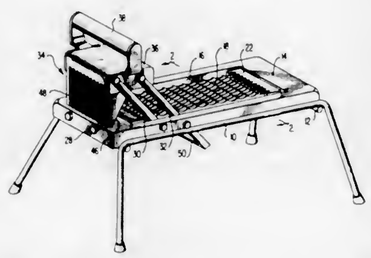
means operatively connecting said anvil means to said power chamber means for movement therewith in a direction opposite that of the rod means whereby the cutters move towards each other in a severing stroke in response to a power pulse in said power chamber causing said rod means movement; and

means operatively connected to said cutters for separating said cutters substantially after a cutting stroke has been effected, said last mentioned means comprises a frame surrounding said cutters, said cutters including means permitting movement thereof relative to said rod means and anvil means for movement of the cutters in the same direction the member being cut is being moved, said frame including camming means for engaging and orienting said cutters into an operative position and orienting said cutters into an operative position whereby impacted cutters in the member being cut are dislodged by engagement of the frame with the means permitting the relative movement of the cutters with respect to the rod and anvil means, said means permitting relative movement of the cutters including a pair of carriage members, one carriage member being attached to the rod means and the other carriage member being attached to the anvil means, each cutter being mounted on a respective carriage member, the carriage members being mounted in slots in the rod means and anvil means for movement in the direction in which the member is being moved.

3,948,132
SLICING DEVICE

Clarence W. Camp, Burlington, Vt., assignor to Edlund Company, Inc., Burlington, Vt.

Filed June 17, 1975, Ser. No. 587,612
Int. Cl.² B26D *4/14*
U.S. Cl. 83—425.3 7 Claims



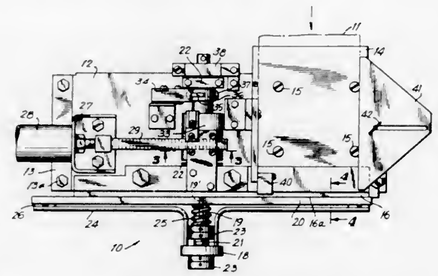
1. A slicing device comprising an elongated base, a plurality of horizontally disposed cutting blades mounted in said base for receiving an article to be sliced, an article engaging member, a plurality of link elements arranged in spaced parallel relation to one another and connected to said article engaging member and said base for moving said article engaging member from one end of said base towards the other end contemporaneous with the forcing of said article through said knives for slicing same and while maintaining said article engaging member in planes parallel to the plane of said base and cutting blades.

3,948,133
ROTARY BLADE CUTTING ASSEMBLY

Kenneth F. Diehm, Temple, and Lawrence H. Gruber, Sinking Spring, both of Pa., assignors to Trim-Master Corporation, Temple, Pa.

Filed Sept. 27, 1974, Ser. No. 509,761
Int. Cl.² B26D *5/08*
U.S. Cl. 83—556 7 Claims

1. A rotary blade cutting assembly comprising a fixed cutting blade and an elongated rotary cutting blade, said elongated rotary blade having a uniform thickness and flat surfaces, the intersection of two said elongated flat cutting surfaces defining a cutting edge, said fixed blade having at least two flat intersecting surfaces defining a cutting edge, said rotary blade being adapted to rotate into radial alignment with said fixed blade to thereby effect a cutting operation, means for intermittently rotating said rotary cutting blade to effect

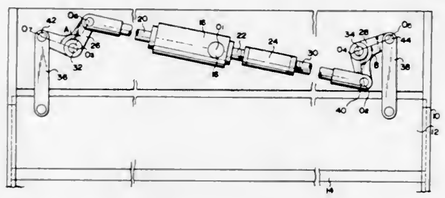


said cutting alignment, and means for maintaining each of a flat surface of said rotary blade and a flat surface of said fixed blade defining said respective cutting edges in pressure contact during each rotary position of said rotary blade.

3,948,134
MACHINE TOOL DRIVING APPARATUS

Masunori Mori, 21-5, Nozaki, Wakayama, Wakayama, Japan

Filed Dec. 18, 1974, Ser. No. 533,762
Claims priority, application Japan, Jan. 29, 1974, 49-11404
Int. Cl.² B26D *5/08*
U.S. Cl. 83—625 5 Claims



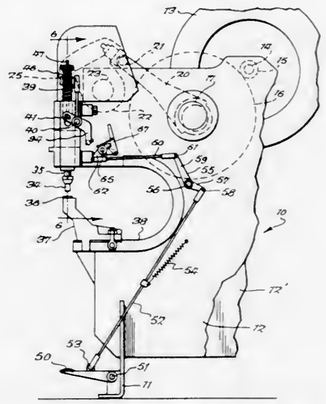
1. A machine tool driving device for a metal plate machining apparatus having a machine tool mounted on a tool support plate which is movable in a vertical direction toward and away from a metallic workpiece, said driving device comprising at least one pair of elongated links pivotally connected at a first end thereof to the tool support plate, a pair of rigid bell cranks each one of which is pivotable about an axis intermediate the ends of the two arms thereof, one arm of each said bell crank being pivotally connected to the second end of one of said links, an elongated driving source pivotally mounted intermediate the ends thereof and coupled pivotably at the ends thereof to the second arm of each said bell crank, the pivot axes of said pair of bell cranks and said driving source being in a common plane, said links being disposed symmetrically with respect to an imaginary plane passing through the center of said tool support plate whereby horizontal components of the driving force which is imposed on the support plate by said pair of links are cancelled by each other.

3,948,135
MACHINE TOOL

Henry A. Meier, Jr., Buffalo, N.Y., assignor to Buffalo Forge Company, Buffalo, N.Y.

Filed Sept. 12, 1973, Ser. No. 396,398
Int. Cl.² B26D *5/10*
U.S. Cl. 83—572 21 Claims

1. A machine tool for punching metal comprising a frame, a work support for holding a metal workpiece, a plunger mounted on said frame, a ram, means for selectively causing said ram to drive said plunger toward said work support, and

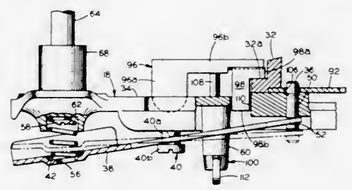


bolt means rectilinearly slidable relative to both said ram and said plunger for selectively locking said ram to said plunger for moving said plunger away from said work support.

3,948,136
MITRE BOX WITH IMPROVED INDEXING MEANS

Antoni P. Gutowski, New Britain, and Donald P. Ryan, New Hartford, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Continuation-in-part of Ser. No. 421,430, Dec. 3, 1973, Pat. No. 3,872,761. This application Mar. 19, 1975, Ser. No. 559,776
The portion of the term of this patent subsequent to Mar. 25, 1992, has been disclaimed.
Int. Cl.² B27G *5/02*
U.S. Cl. 83—767 10 Claims



1. A mitre box particularly adapted for use in cutting the ends of pieces of material at predetermined angles comprising:

a. a base formed of non-ferrous metal operable for supporting thereon the piece of material to be cut, said base including an arcuate-shaped section consisting of a raised portion having indicia provided thereon denoting a multiplicity of different values of angular measurement and a flange portion extending outwardly of said raised portion providing a shoulder;

b. swivel assembly means supported on said base for movement relative thereto, said swivel assembly means including a swivel having one end thereof pivotably mounted on said base and having first and second openings formed therein in spaced relation relative to each other adjacent to the free end of said swivel, a detent pin supported on said swivel for movement between an extended position and a retracted position relative thereto, a detent arm supported on said swivel for pivotal movement relative thereto having one end thereof cooperatively associated with said detent pin and operable for moving said detent pin from said extended position to said retracted position

thereof, and a spring having one end thereof seated against said swivel and the other end thereof seated against said detent arm operable for imparting a biasing force to said detent arm to move said detent pin to said extended position thereof;

c. locking means operable for detachably locking said swivel assembly means in aligned relation relative to any given one of said multiplicity of different values of angular measurement, said locking means including a locking member, a clamping member and tightening means, said locking member including a first leg portion and a second leg portion extending outwardly therefrom so as to provide substantially a right angle therebetween, said first leg portion of said locking member being positioned in said first opening in said swivel so as to be movable therewithin between a first position wherein said second leg portion of said locking member is in locking engagement with said flange portion of said arcuate member of said base and a second position wherein said second leg portion of said locking member is spaced from said flange portion of said arcuate section of said base, said clamping member including a first leg portion and a second leg portion extending outwardly therefrom so as to provide substantially a right angle therebetween, said clamping member being mounted on said swivel so as to be movable relative thereto with said first leg portion of said clamping member in engagement with said swivel at a point adjacent to said first and second openings in said swivel and with said second leg portion of said clamping member in engagement with said second leg portion of said locking member so as to be operable to selectively apply a bearing force thereto causing said second leg portion of said locking member when said bearing force is applied thereto by said second leg portion of said clamping member to be positioned in locking engagement with said flange portion of said arcuate section of said base and said first leg portion of said locking member to move between said second position and said first position thereof, said tightening means including a fastener supported in said second opening in said swivel so as to extend therethrough and having one end thereof affixed to said second leg portion of said clamping member, said tightening means further including means threadedly engaged on said fastener at the other end thereof operable through the tightening and loosening thereof to cause said second leg portion of said clamping member to selectively apply said bearing force to said second leg portion of said locking member;

d. upright assembly means supported on said swivel assembly means for movement therewith, said upright assemlby means including a pair of upright assemblies with one of said pair of upright assemblies being supported at one end of said swivel and the other of said pair of upright assemblies supported at the other end of said swivel, said upright assembly means further including guide means supported on said pair of upright assemblies operable for guiding a cutting instrument during a cutting operation; and

e. indexing means including an indexing plate made to precise dimensions supported on said base between said base and swivel and having means formed thereon cooperating with said swivel assembly means for establishing a very accurate angle of cut, said means of said indexing plate cooperating with said swivel asembly means comprising a plurality of spaced openings formed therethrough cooperating with said detent pin of said swivel assembly means when said detent pin is in said extended position thereof to cause said swivel to be locked to said indexing plate, said indexing means further including adjustment means formed on said indexing plate operable for adjusting the position of said indexing plate relative to said base and pointer means mounted on said swivel assembly means for movement therewith to identify the given one of said multiplicity of different values of angular measurement with which said swivel assembly means is aligned, said pointer means comprising an indexing pointer fixedly mounted on said swivel with the major axis of said indexing pointer coinciding with the major axis of said swivel.

3,948,137

PITCH DETERMINING VOLTAGE SIGNAL GENERATING CIRCUIT FOR A VOLTAGE CONTROLLED TYPE ELECTRONIC MUSICAL INSTRUMENT

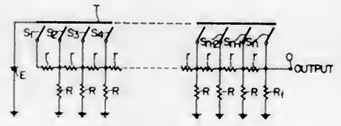
Naoyuki Nilnomi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

Filed Mar. 12, 1975, Ser. No. 557,524

Claims priority, application Japan, Mar. 15, 1974, 49-29796[U]

Int. Cl.² G10H *1/00, 5/02*

U.S. Cl. 84—1.01 **7 Claims**



1. In an electronic musical instrument comprising a keyboard circuit for producing at an output thereof a pitch determining voltage signal having a voltage representing the note of an actuated key, and a voltage controlled oscillator coupled to said keyboard circuit and responsive to the pitch determining voltage signal from the output of said keyboard circuit to generate a tone signal having a tone pitch which is a function of the pitch determining voltage signal, said keyboard circuit comprising:

a DC voltage source;

a voltage dividing network including a plurality of first resistors which are series connected and have a substantially equal resistance value, one end of the series-connection of said first resistors being connected to said output of said keyboard circuit, a second resistor connecting said output of said keyboard circuit to a reference potential point, and a plurality of third resistors connecting respective junctions between two adjacent series-connected first resistors to the reference potential point, said third resistors each having a substantially equal resistance value; and

a plurality of key switches respectively connected between said DC voltage source and (i) each of said junctions and (ii) both ends of said series connection of said first resistors.

3,948,138

VIBRATING STRING-MODULATED ELECTRONIC MUSICAL INSTRUMENT

Gary J. Gunn, 2121 Taylor St., San Francisco, Calif. 94133; Richard B. Hodges, 2313 Jefferson St., Berkeley, Calif. 94703, and Leonard A. Schmidt, 7701 Errol Drive, El Cerrito, Calif. 94530

Continuation-in-part of Ser. No. 346,474, March 30, 1973, abandoned. This application Apr. 28, 1975, Ser. No. 572,072

Int. Cl.² G10H *1/02, 5/02*

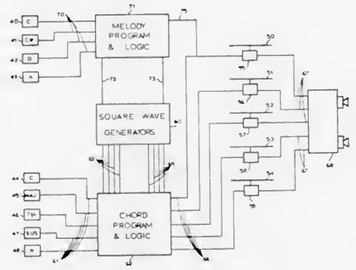
U.S. Cl. 84—1.07 **3 Claims**

1. A musical instrument comprising:

A. a plurality of strings arranged to be strummed,

B. each string having an analog switch assembly which is activated by the vibration of that string to be modulated by the amplitude of the vibration of the string to produce a signal that varies directly in strength with the amplitude of vibration,

C. a variable volume, extrinsic sound source means in circuit with each analog switch assembly, said sound source means providing a plurality of notes and having its volume modulated to vary directly with the strength of the signal from the analog switch assembly in circuit therewith and,



D. a plurality of switch means arranged in a keyboard and connected so that the operation of a switch means will close a circuit which includes an extrinsic sound source means whereby said sound source means is made audible only when said switch means is closed and the string that activates its analog switch assembly is vibrating.

3,948,139

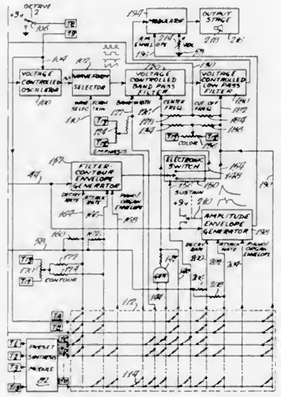
ELECTRONIC SYNTHESIZER WITH VARIABLE/PRESET VOICE CONTROL

Byron Melcher, Arlington Heights, Ill., and Alden J. Carlson, Edmonds, Wash., assignors to Warwick Electronics Inc., Chicago, Ill.

Filed Aug. 28, 1974, Ser. No. 501,200

Int. Cl.² G10H *1/04, 5/02*

U.S. Cl. 84—1.19 **22 Claims**



1. In an electronic musical synthesizer having a source of tone signals processed by a controllable filter having a variable frequency characteristic adjustable under control of a control signal, the improvement comprising:

variable means coupled to the controllable filter for generating a variable control signal which is adjustable to alter the frequency characteristic of the filter;

preset means coupled to the controllable filter for generating a preset control signal which produces a fixed frequency characteristic for the filter;

switching means having a preset state; and

circuit means responsive to the preset state of the switch for effectively disabling the variable means and enabling the preset means to cause the filter frequency characteristic to be controlled solely by the preset means.

3,948,140

PORTABLE DEVICE FOR GENERATING AND TUNING A WHOLE TONE SCALE

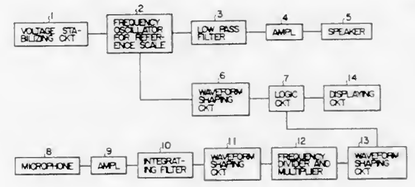
Satoshi Ichioka; Shinjiro Takeuchi, both of Toda; Tadashi Inoue, Tokyo, and Tomokazu Katsuragawa, Toda, all of Japan, assignors to Mishima Kosan Co., Ltd., Kitakyushu, Japan

Filed Aug. 28, 1974, Ser. No. 501,452

Claims priority, application Japan, Aug. 30, 1973, 48-97531

Int. Cl.² G10G *7/02*

U.S. Cl. 84—454 **1 Claim**



1. A portable device for generating and tuning a whole tone scale, comprising:

a means for converting and wave shaping a sound tone of a musical instrument to be tuned into an input electric signal to be tuned; a frequency multiplying and dividing means coupled to said converting and wave shaping means for generating a signal having frequencies corresponding to scale tones A_4 to $A_5\#$ by multiplying the frequency of the intput signal when said sound tone to be tuned has a lower frequency than the frequency of said tones A_4 to $A_5\#$ and by dividing the frequency of the input signal when said sound tone to be tuned has a higher frequency than the frequency of said tones A_4 to $A_5\#$, a pulsating circuit connected to said frequency multiplying and dividing means for converting the output of said frequency multiplying and dividing means into a pulse train signal; a reference scale frequency oscillating means for generating signals corresponding to the tone scale A_4 to $A_5\#$; a means coupled to said reference scale frequency oscillating means for converting the output of said reference scale frequency oscillating means into a sine wave for driving a loud speaker; a wave form shaping means coupled to said reference scale frequency oscillating means for converting the output of said reference scale frequency oscillating means into a pulse train signal; a logic means coupled to said pulsation circuit and said wave form shaping means for comparing the output of said wave form shaping means and the output of said pulsation circuit; and a means coupled to said logic circuit for visibly indicating the output of said logic means, whereby the diatonic scale of the musical instrument can be tuned and inspected by both the sense of hearing and the sense of sight.

3,948,141

LOAD INDICATING WASHER

Katsumi Shinjo, 8, 6-chome, Asahiminamidoori, Nishinariku, Osaka, Japan

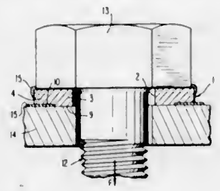
Filed Aug. 20, 1974, Ser. No. 499,088

Int. Cl.² F16B *31/02*

U.S. Cl. 85—62 **13 Claims**

1. A load-indicating washer having a central hole and a rim portion, the load indicating washer comprising: two bearing surface means provided in the rim portion, said two bearing surface means consisting of an upper bearing surface means and a lower bearing surface means, a depression provided in

each of said bearing surface means, each of said depressions being substantially ring-shaped and disposed substantially concentrically with the central hole, one of said ring-shaped depressions being disposed adjacent the central hole and the other ring-shaped depression being disposed along the periphery of the washer, means for communicating said depression disposed adjacent the central hole with the outside washer, and means selectively retained in each depression for visually indicating the load applied on the washer including at least



one layer of an indicating fluid, each of said bearing surface means includes a substantially flat portion, each of said bearing surface means includes a substantially flat portion, each of said depressions being connected to said flat portion by a wall extending substantially parellel to the axis of the central hole, and wherein said means for communicating said depression disposed adjacent the central hole includes a plurality of radially extending grooves provided in said substantially flat portion of said bearing surface means.

3,948,142

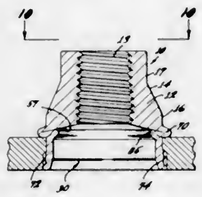
ONE-PIECE BLIND NUT ASSEMBLY

Thomas L. McKay, Los Angeles; James K. Blair, Canoga Park, and Harold R. Howard, Inglewood, all of Calif., assignors to Corlok Corporation, Canoga Park, Calif.

Filed Sept. 9, 1974, Ser. No. 504,507

Int. Cl.² F16B *13/06, 29/00*

U.S. Cl. 85—70 **17 Claims**



1. A one-piece blind nut for flush attachment to a workpiece wherein the blind nut is attached to the workpiece by axially collapsing the nut by use of a mandrel received within the nut and by an anvil which bears against one end of the nut, said nut comprising:

a body member having an internally threaded portion at one end thereof for receipt of the mandrel,

a serrated exterior end portion to secure the nut in nonrotating relation to the workpiece,

said body member including a circumferentially continuous deformable wall portion extending between the serrated end portion and the threaded portion,

means forming a cavity including a base in said body member bounded by said deformable wall portion and said cavity having an internal diameter greater than the diameter of said threaded portion,

said deformable wall being spaced radially outwardly of said threaded portion by said base and forming an enlarged open end of said blind nut,

said base extending radially inwardly between said deformable wall and said threaded portion and having a radial dimension between the deformable wall and the threaded portion greater than the cross-sectional dimension of the thickest portion of the wall portion between the serrated end portion and the threaded portion,

the external diameter of said body member in the portion thereof forming the deformable wall being so coordinated and correlated to be received within a workpiece having an aperture therein of a predetermined diameter and said external diameter being greater than the external diameter of the major portion of the threaded end,

the diameter of said cavity and the length thereof being so coordinated and correlated with the diameter and length of the mandrel to be threadably received in the threaded portion as to provide a clearance between the outer surface of said mandrel and the inner wall of said cavity while providing an annular clearance chamber to the rear and radially outwardly of the threaded portion of said nut, and

said deformable wall being contiguous with said serrated end portion and having a cross-section at least equal to or less than the cross-section of the remaining portion of the wall between the serrated exterior and the threaded portion and said wall being operative to deform as the mandrel and anvil are moved axially to each other to form a radially outwardly extending fold and being operative as said serrated end enters the workpiece to flow into said clearance to form an inwardly projecting fold.

3,948,143

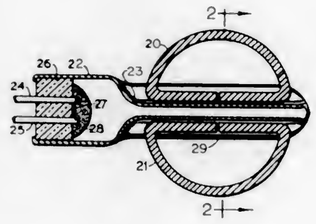
ELECTROPYROTECHNIC LINK

Charles R. Olsen, 307 Conestoga Way, Suite 37, Eagleville, Pa. 19408

Filed July 24, 1974, Ser. No. 491,462

Int. Cl.² H01H *37/76*

U.S. Cl. 89—1 B **11 Claims**



1. An electropyrotechnic link comprising:

a tubular case having an open end and a closed end and at least one indented wall portion extending longitudinally along the case;

at least one connector having a mounting portion releasably attached to the tubular case within the longitudinally indented wall portion of the case and free of engagement with the non-indented wall portions of the case and having another portion extending from the mounting portion for connection with another object;

an electrically activated pyrotechnic charge sealed within the open end of said tubular case so as to discharge within the case and cause the release of the connector when the charge is activated.

3,948,144

PERITROCHOID CURVED SURFACE GENERATING APPARATUS

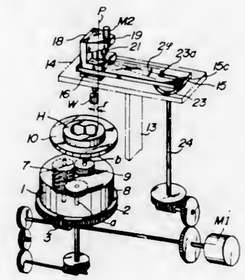
Masaaki Nagano, Toda, Japan, assignor to Yutaka Seimitsu Kogyo Ltd., Yono and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Oct. 26, 1973, Ser. No. 410,277

Claims priority, application Japan, Nov. 3, 1972, 47-109917

Int. Cl.² B23C *1/14*

U.S. Cl. 90—20 **6 Claims**



1. A peritrochoid curve surface generating apparatus comprising an outer cylinder rotatably supported by a frame on a base and formed in its upper end with an eccentric opening, an inner cylinder formed with an eccentric opening eccentric to its axis and accommodated within and fixed to said eccentric opening of said outer cylinder in an adjustable angular relationship therebetween, the outer cylinder defining a base circle and the inner cylinder defining a rolling circle for the peritroichoidal curved surface, each of said base and rolling circles having a radius, rotation of the inner cylinder relative to the outer cylinder changing a difference between radii of the base and rolling circles for the peritrochoid curved surface to vary its characteristic, clamping means for clamping said inner cylinder to said outer cylinder, a first central shaft rotatably journaled in an axis of said outer cylinder, an inner cylinder central shaft rotatably journaled in an axis of said inner cylinder, a second central shaft rotatably journaled in said eccentric opening of said inner cylinder, a work table fixed to an upper end of said second central shaft, a gear train for transmitting a rotation of said first central shaft to said second central shaft through said inner cylinder central shaft, rocking means rockable within a predetermined angle about a predetermined point, a cylindrical tool rotatable about its axis and mounted on said rocking means, the circumference of said tool being in contact with the rocking axis of said rocking means, and means for driving said outer cylinder and said inner cylinder in a determined geared relation and rocking said rocking means in a geared relation to the rotation of said outer cylinder.

3,948,145

FLUID CONTROL MECHANISM

John Francis Garaty, Fairy Meadow, Australia, assignor to Australian Iron & Steel Pty. Limited, Port Kembla, Australia

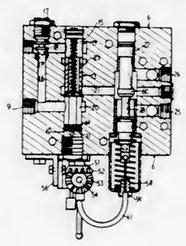
Filed Mar. 28, 1974, Ser. No. 455,769

Claims priority, application Australia, Apr. 2, 1973, 2840/73

Int. Cl.² F15B *11/20*

U.S. Cl. 91—61 **11 Claims**

1. A fluid control mechanism comprising a housing body, a high pressure fluid inlet passage in the body communicating with a priority flow dividing device in the body, including means compensating for fluid pressure and flow variations, said flow dividing device functioning to separate a fluid passing therethrough from the inlet passage into two volumetrically different flow paths, the first one of said flow paths being directed to a first balanced fluid control device adapted to supply a metered fluid flow to a first remote fluid powered device, and another of said flow paths being directed to a second fluid control device adapted to supply a controlled fluid flow through one of a plurality of passages in the body to a second remote fluid powered device for functional control thereof, and wherein said priority flow dividing device comprises a cylindrical chamber (19) formed within said body, a first passage (21) connecting said chamber to said first balanced fluid control device (22), a second passage (23) spaced from said first passage and connecting said chamber to said second fluid control device (24), a third passage (9) connecting said fluid inlet to said chamber at a point intermediate said first passage (21) and one end of said chamber and a fourth



passage connecting said inlet with said chamber at a point intermediate said second passage (23) and the opposite end of said chamber, a pressure balanced spool valve (14) disposed slidably within said chamber and including a first portion at least partly closing off at least said second passage (23), said spool valve (14) including a second portion disposed between said one end of said chamber and said third passage and connected to said first portion by a spindle disposed in the region of said third passage, said second portion of said valve including pressure bleed means (11) permitting fluid to enter the area (12) between said one end of the chamber and the adjacent end face of said second valve portion, said flow dividing device (13) further including resilient means (15) biasing said spool valve towards said one end of said chamber.

3,948,146

CONTROL SYSTEM FOR HYDRAULIC COUPLING

Gerhard Maurer, and Fritz Geiger, both of Friedrichshafen, Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Filed June 19, 1973, Ser. No. 371,561

Claims priority, application Germany, June 22, 1972, 2230425

Int. Cl.² F15B *11/16, 13/06;* **F16D** *25/06*

U.S. Cl. 91—411 A **4 Claims**

1. A hydraulic control system comprising:

a hydraulic coupling including a pair of piston cylinders provided with interconnected pistons reversibly displaceable by a pressure differential between said cylinders;

a source of pressure fluid having a high-pressure side and a low-pressure side;

a pair of conduits respectively leading to said cylinders;

a supply line and a discharge line respectively connected to said high-pressure side and to said low-pressure side;

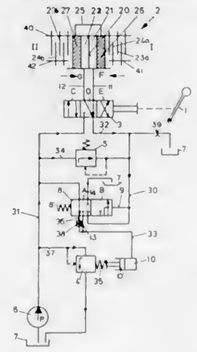
a selector valve interprosed between said pair of conduits and said supply and discharge lines for establishing either of two operating positions of said hydraulic coupling by connecting said supply line to a respective one of said conduits and said discharge line to the other of said conduits;

throttle means in said discharge line for building up a temporary pressure rise in response to fluid flow into said discharge line from said other of said conduits upon

connection of said one of said conduits to said supply line by said selector valve;

a bypass valve of variable flow resistance between said supply line and said low-pressure side provided with a control input connected to said supply line for subjecting said bypass valve to a supply-pressure component tending to lower said flow resistance by opening said bypass valve to drain said supply line to the low-pressure side;

biased valve means connected with said high-pressure side and said low-pressure side and controlled by a sensing input connected to said discharge line at a point upstream of said throttle means for displacement from a normal position established by its biasing means to an off-normal position against the force of said biasing means in response to a temporary rise in fluid pressure in said discharge line during a displacement of said pistons;



a further line provided with a restricted and an unrestricted branch terminating at said biased valve means, the latter connecting said restricted branch to said high-pressure side in said normal position and connecting said unrestricted branch to said low-pressure side in said off-normal position thereof; and

a hydraulic actuator connected to said further line and operatively linked with said bypass valve for exerting thereon a countervailing force opposing said supply-pressure component in the normal position of said biased valve means to close same for preventing draining of the supply line, said unrestricted branch when connected to said low-pressure side forming a discharging path for relatively quickly withdrawing said actuator to lower said flow resistance upon said temporary rise in fluid pressure, said restricted branch when connected to said supply line forming a charging path for relatively slowly advancing said actuator to increase said flow resistance upon the disappearance of said rise.

3,948,147
HYDRAULIC SYSTEM WITH AIR-VENTING ARRANGEMENT

Ivan Sauer, Schweiberdingen, and Manfred Rasper, Leonberg-Silberberg, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

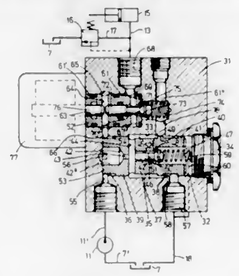
Filed Jan. 10, 1973, Ser. No. 322,502

Claims priority, application Germany, Feb. 12, 1972, 2206765

Int. Cl.² F15B *13/00*

U.S. Cl. 91—442 **3 Claims**

1. In a hydraulic system, a combination comprising a source of pressurized hydraulic fluid; a user; a valve housing having a bore defined by an inner surface; a valve body mounted in said bore and subdividing the same into an inlet compartment and an outlet compartment, said valve body having an outer circumferential surface in sliding sealing contact with said inner surface and a channel forming a throttling gap and establishing the only communication between said compartments; inlet means communicating said inlet compartment with said source; outlet means communicating said outlet compartment with said user; venting means communicating said outlet compartment with the ambient atmosphere; biasing means urging said valve body toward an open position in which said outlet compartment communicates with said venting means, the throttling effect of said throttling gap resulting in a pressure differential across and displacement of said valve body into a sealing position in which said outer circumferential surface prevents communication between said outlet com-



partment and said venting means so that the hydraulic fluid passes from said outlet compartment through said outlet means to said user; control valve means in said outlet means operative for establishing communication between said outlet compartment and said user when said valve body is in said sealing position thereof and for preventing such communication upon return of said valve body into said open position in response to cessation of flow of the hydraulic fluid through said throttling gap; and means for actuating said control valve means so as to establish communication between said user and said outlet compartment when said valve body is in said open position thereof so as to vent the spent hydraulic fluid through said venting means.

3,948,148
DEVICES FOR CONTROLLING PNEUMATIC ACTUATORS

Heinz Bringer, Vernon (Eure), France, assignor to Etat Francais, France

Filed Apr. 16, 1965, Ser. No. 450,248

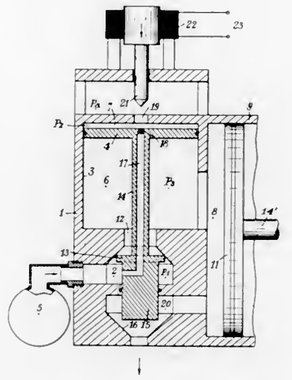
Claims priority, application France, Apr. 16, 1964, 64.971089

Int. Cl.² F15B *11/08*

U.S. Cl. 91—461 **5 Claims**

1. A device for controlling a pneumatic actuator comprising a working piston, a working chamber in which a pressure varying as a function of the effort to be exerted by said working piston is to be produced, a body, a cylindrical bore formed in said body, a regulating piston slidably fitted in said cylindrical bore, a rod rigid with said piston which emerges from said bore, an adjustment chamber and an amplifying chamber formed in said cylindrical bore on either side of said regulating piston, said adjustment chamber communicating with said working chamber, an inlet chamber formed in said body, a source of compressed gas delivering said gas under a constant pressure, said source being connected permanently to said inlet chamber, a first orifice connecting said inlet chamber to said adjustment chamber, a valve member carried by the rod of said regulating piston and closing said first orifice, another orifice of relatively small cross-sectional area connecting said amplifying chamber to said source of compressed gas, a third orifice having a greater cross-sectional area than said second orifice which connects said amplifying chamber to the surrounding atmosphere, a valve member adapted to obturate said third orifice and a control device acting upon said valve

member in order to vary the free cross-sectional passage area of said third outlet orifice and to adjust in proportion thereto



the pressure prevailing in said amplifying chamber and, therefore, the pressure in said adjustment chamber and in the working chamber of said pneumatic actuator.

3,948,149
PISTON MACHINE CONSTRUCTION

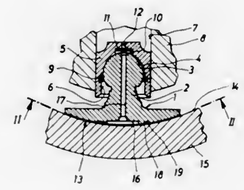
Hans-Jürgen Fricke, Stuttgart; Gerhard Nonnenmacher, Korntal; Walter Robeller, Boblingen, and Günter Kersten, Stuttgart, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Jan. 11, 1974, Ser. No. 432,742

Claims priority, application Germany, Feb. 17, 1973, 2307997

Int. Cl.² F01B *13/06*

U.S. Cl. 91—488 **6 Claims**



1. In a radial piston machine of the type having a housing, a reciprocable piston in said housing and having an axial end portion, and a piston-reciprocating element having a substantially rectangular glide surface located opposite said end portion and provided with two spaced longitudinal edges and two spaced transverse edges which extend from one to the other of said longitudinal edges, one of said element and piston being movable relative to the other in a manner resulting in the reciprocation of said piston, a combination comprising a glide shoe articulately connected to said end portion of said piston and having a glide face in gliding contact with said glide surface, said glide face having a recess which communicates via a passage with a source of pressure fluid and has rounded interior corners; a sealing rim of substantially constant width surrounding said recess; and a plurality of face portions which are located outwardly of said sealing rim and configurated so that hydrodynamic pressure fields develop between said face portions and the respectively juxtaposed surface portions of said glide surface.

3,948,150
TUBE FORMER

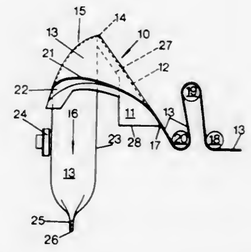
Jack Hobart, 24 Riversleigh Road, Leamington Spa, England

Filed Jan. 21, 1975, Ser. No. 542,813

Claims priority, application United Kingdom, Jan. 24, 1974, 3303/74

Int. Cl.² B31B *23/26, 23/60*

U.S. Cl. 93—20 **5 Claims**



1. A former, for manipulating an elongate sheet of packaging material into a tube, comprising a body, a preformer surface defined by said body and over which the sheet is to be pulled towards an edge of the preformer surface, said edge defining an aperture through which the sheet is to be drawn in a predetermined path that is at an acute angle to the preformer surface, the aperture and the preformer surface being so shaped and positioned relative to each other that the portion of the sheet passing through the aperture will be manipulated into a tube having its longitudinal edges slightly overlapped, the body defining an internal surface adjacent the aperture, said internal surface being at an acute angle to said path and to said preformer surface, and the dimensions of sad aperture and said internal surface being such that a clearance will be defined between the entire said internal surface and the wall of the tube of packaging material whereby the wall of the tube of packaging material may locally be distorted outwardly in any direction without engaging said internal surface of the body.

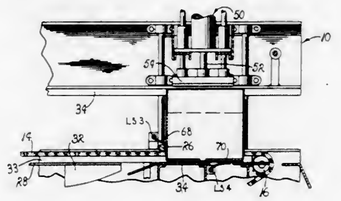
3,948,151
CASE SEALER FOR SEALING THE BOTTOM FLAPS OF ERECTED AND SQUARED CASES

Edward J. Derderian, 4514 N. Wilson Ave., Fresno, Calif. 93704

Filed Oct. 29, 1974, Ser. No. 518,503

Int. Cl.² B31B *1/62, 3/74*

U.S. Cl. 93—36.3 **2 Claims**



1. In a case sealing machine, the improvement comprising:

A. a case erecting station at which prescored case blanks formed of fibrous material are erected into open-top cases, each of said cases being characterized by a substantially squared configuration and having articulated, vertically oriented leading, trailing, and opposite side wall panels including downwardly projected, articulated bottom flaps;

B. a case sealing station disposed in spaced relation with said erecting station;

C. an intermittently operable conveyor for serially advancing each of said cases from said case erecting station to said case sealing station including an elongated, horizontally oriented support plate, and a pair of intermittently operable conveyor chains extended in spaced parallelism between said case erecting station and said case sealing station along opposite sides of said support plate, and a plurality of flight bars, each of said flight bars being orthogonally related to the longitudinal axis of said support plate and connected at the opposite ends thereof to said pair of conveyor chains for serially engaging the trailing wall panel of each of said cases and imparting thereto advancing motion;

D. means disposed between said case erecting station and said case sealing station for applying a film of fluid adhesive to selected surfaces of selected bottom flaps of each of said cases;

E. means for positioning said bottom flaps of each of said cases in an overlapping relationship;

F. means for causing each of said cases to assume and maintain a substantially rectangular configuration at said case sealing station including a pair of elongated, resiliently supported brake shoes disposed between said conveyor chains and arranged in substantially spaced parallelism with the longitudinal axis of said support plate and adapted to frictionally engage the opposite side wall panels of each of said cases for restraining the case against motion imparted thereto by a flight bar; and

G. means located at said case sealing station for forcing the film of adhesive applied to selected flaps into the fibrous material of the overlapping flaps of each case including an axially extensible ram having a pressure plate affixed thereto and supported thereby for displacement along a vertically oriented path into impacting engagement with the overlapping flaps of each case for a period of a predetermined duration.

3,948,152

CARTON MANUFACTURE

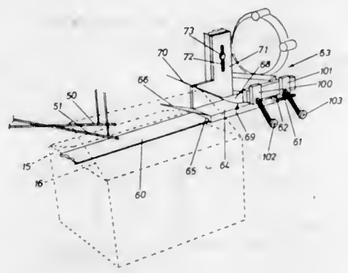
James Anthony Nolan, and Howard Tonge, both of Louth, England, assignors to Charles Baron, Louth, England

Filed July 22, 1974, Ser. No. 490,729

Claims priority, application United Kingdom, July 27, 1973, 35939/73

Int. Cl.² B31B *1/36, 1/68*

U.S. Cl. 93—49 M **14 Claims**



1. Apparatus for joining together two flaps of a carton, the apparatus comprising a conveyer means for moving a carton along a given path, an elongate, stationary mandrel positioned in said path, said mandrel extending in longitudinal relation to said path, guide means for directing two flaps of the carton in overlying relationship on the mandrel, and a head positioned adjacent the mandrel and operative to effect joining of the flaps with application of pressure against the mandrel.

3,948,153

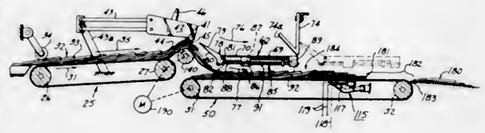
COUNT SEPARATOR FOR A STREAM OF OVERLAPPED ARTICLES

Orville V. Dutro, La Canada; Lyle V. Dutro, Altadena, and Sherman H. Hewson, La Canada, all of Calif., assignors to Mildred L. Taylor, Pasadena, Calif., a part interest

Filed July 12, 1974, Ser. No. 488,040

Int. Cl.² B31B *1/96*

U.S. Cl. 93—93 C **19 Claims**



1. A separator for forming spaced-apart groups of counted members from a stream of initially overlapped articles, comprising: output conveyor means defining an output path; retention means including a table adapted to be positioned in an article-supporting position above the output conveyor means, and to be moved therefrom to a non-supporting position, said article-supporting supporting position including at least part of a spur path, said paths diverging downstream from, and substantially adjacent to, a counting point; diverter means movably mounted to said table having a first position wherein it does not enter the stream to divert articles to the spur path, and a second position where it does enter the stream at a point substantially adjacent to the counting point whereby to divert the stream to the spur path and onto the table when the table is in its article-supporting position; counter means counting articles passing the counting point; diverter actuator means responsive to the completion of a count to cause the diverter to move to its second position; means to return the diverter to its first position; sensing means sensing the absence of articles from a location along the output path; means responsive to said sensing means to cause the table to move to its non-supporting position and transfer articles in the spur path to the output path, the sensing means being disposed downstream from the place where articles are received on the output path from the spur path, whereby at the start of a count, the diverter means diverts the stream of articles to the table in the spur path with the table in its article-supporting position while the output conveyor means conveys away an already-counted group of articles, the sensing means sensing the presence of articles at its location until the last article of the already-counted group has passed it, whereupon the responsive means moves the table to its non-supporting positon to cause the said transfer and removes the diverter means from the stream, whereby all articles thereafter pass to the output path, and the means to return the diverter to its first position do so, and when an article again reaches the sensing means, the table is moved to its article-supporting position in the spur path, completion of a predetermined count causing the aforesaid cycle to repeat.

3,948,154

AIR CIRCULATION SYSTEM

Masaru Asakai, Tokyo; Kaoru Masuko, Higashimurayama, and Kazuo Takeuchi, Mitaka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 2, 1974, Ser. No. 466,497

Int. Cl.² F24F *13/06*

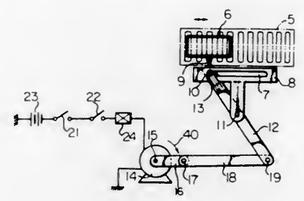
U.S. Cl. 98—2 **10 Claims**

1. In an air circulating system for admitting air to a passenger room of a motor vehicle, the improvement comprising:

a flat grille mounted on a wall of said passenger room for allowing to admit air conveyed through in air duct to said passenger room;

an outlet means communicating with said air duct and being rectilinearly reciprocative along said grille; and

actuating means connected to said outlet means for imparting smooth reciprocatory movement to said outlet means along said grille, said actuating means including an electric d-c motor, a control circuit connected to said d-c



motor for supplying d-c voltage periodically varying in intensity, a crank mechanism connected to the rotary shaft of said d-c motor for converting the rotation of said rotary shaft into a reciprocatory movement, and a linkage interconnecting said crank mechanism and said outlet means for conveying the reciprocatory movement of said crank mechanism to said outlet means.

3,948,155

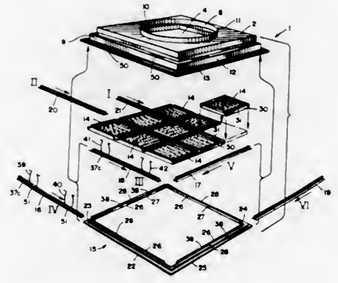
AIR DIFFUSERS

Warren R. Hedrick, Holland, Mich., assignor to Allied Thermal Corporation, New Britain, Conn.

Filed Aug. 12, 1974, Ser. No. 496,762

Int. Cl.² F24F *7/00, 13/00*

U.S. Cl. 98—40 D **14 Claims**



1. An air diffuser for distributing air into a room from the supply duct of an air distribution system, comprising,

a. a housing

1. having

a. an air inlet opening at one side thereof, and

b. an air outlet opening at the opposite side thereof and

2. defining an air chamber through which air may flow from said inlet opening outwardly through said outlet opening,

b. an air deflector unit extending across said outlet opening and forming the outer face thereof, said unit including

1. a plurality of air deflector sections and

2. a plurality of apertures in each section, each of said apertures being formed by adjacent depressed and elevated portions lanced in the face of said unit, wherein the surfaces of said portions are inclined at an acute angle with respect to the plane of the section, and the areas between all of the apertures remain as an integral part of said face, whereby

c. to impart a direction to the flow of air from said chamber, as it leaves said chamber, which is substantially parallel to the plane of said section.

3,948,156

AUTOMATIC BEVERAGE-MAKING APPARATUS

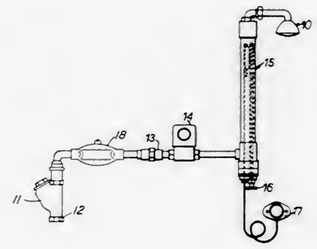
Edwin Wilson Smith, Hampton, England, assignor to Cona Limited, Wimbledon, England

Filed May 16, 1974, Ser. No. 470,486

Claims priority, application United Kingdom, June 11, 1973, 27758/73

Int. Cl.² A47J *31/047*

U.S. Cl. 99—280 **7 Claims**



1. An automatic beverage making apparatus comprising a stand; a receptacle associated with the stand for receiving the solid material from which the beverage is to be made; a conduit within the stand and having an inlet for connection to a water supply and an outlet to said receptacle, an electrical heater within said conduit and arranged to heat water continuously passing through a flow passage defined between the heater and the inner wall of the conduit when the apparatus is in operation; valve means associated with said conduit, normally closed and operable to permit water to flow through said conduit; means to supply electric current to said heater; switch means in said stand; and timing means provided in said stand and operable by switch means to open said valve means and energize said heater for a predetermined time sufficient to supply a predetermined quantity of heat to a predetermined quantity of water as it flows through said conduit, to bring water to the temperature required to brew the beverage said timing means then closing said valve means, and de-energizing said heater.

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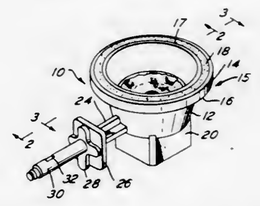
BREW CUP FILTER

John C. Layre, Warminster, Pa., assignor to Refreshment Machinery Incorporated, Warminster, Pa.

Filed Mar. 10, 1975, Ser. No. 556,606

Int. Cl.² A47J *31/40, 31/60*

U.S. Cl. 99—289 R **10 Claims**



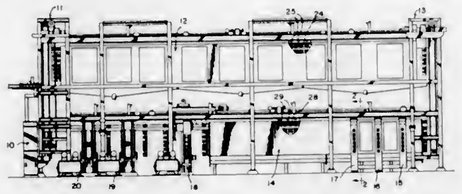
1. Filtering means for use in a beverage making machine comprising a brew cup having side walls and a bottom wall, an opening in said bottom wall, an axial discharge sleeve depending from said bottom wall and being arranged to receive beverage flowing through said opening, a guide spider comprising

a plate member and an extension depending from said plate member, said guide spider being within said brew cup such that said plate member is adapted to overlie said opening and said extension is received within said sleeve, means for urging said plate member in resilient juxtaposition to said bottom wall, filter material attached at the central portion of said plate member and means securing said filter material to said side walls of the brew cup at an elevation above the bottom of the brew cup such that said filter material is dish shaped in configuration when said plate is in juxtaposition to said bottom wall of said brew cup, the lowermost portion of the side walls of said brew cup adjacent said bottom wall being substantially free from contact with said filter material.

3,948,158
MULTIPLE-STAGE GANG-TYPE PLUG PUSHING ASSEMBLY

Alvin Borsuk, and Charles H. Johnson, both of Madison, Wis., assignors to Oscar Mayer & Co. Inc., Madison, Wis.

Filed Mar. 11, 1975, Ser. No. 557,256
Int. Cl.² A47J *27/12*
U.S. Cl. 99—355 **10 Claims**



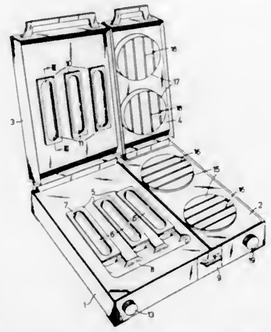
1. In a system for continuously making a loaf food product including a magazine of loaf molds adapted to be filled with a stuffable food material, said magazine of molds including a plurality of interconnected vertically aligned and horizontally extending tubular molds, wheels connected to the molds for movably supporting the magazine on rails for movement thereof along a path transverse the longitudinal axis of the molds, each mold having a plug at one end movably positionable within the mold and a removable cover over the other end, means for applying heat to the molds in a cooking station for cooking the food material, and means for applying a chilling action to the molds in a chilling station for chilling the food material following cooking thereof, a mechanism for simultaneously applying within the chilling station a predetermined force to the plugs of each mold at a plug take-up station to squeeze the food material in the molds against the mold sides and cover to obtain uniform cross-sectionally dimensioned loaves, said mechanism comprising a plurality of reciprocal driving rods engagable with mold plugs of the molds, means for driving the rods to move the rods toward the molds, and control means causing the driving means to apply to a predetermined force to the rods and thereby cause the plugs to squeeze the food material in the molds.

3,948,159
GRILLING APPARATUS

Knut Birger Vigerstrom, Stockholm, Sweden, assignor to Elektro-Food AB, Stockholm, Sweden

Filed Mar. 18, 1974, Ser. No. 452,383
Claims priority, application Sweden, Mar. 16, 1973, 7303707
Int. Cl.² H05B *7/09*
U.S. Cl. 99—358 **2 Claims**

1. Apparatus for grilling food such as sausages, hamurgers, rissoles and the like comprising a base and a hinged cover, electrode plates in said base and cover for heating food to be grilled, a source of electric power with adjustable voltage and means connecting said electrode plates in series with said source and with each other whereby current will flow through the food in said electrode plates, said base having a plurality of adjacently situated electrode plates of cast iron fixed thereto, some of said plates having cavities and some having a substantially planar surface arranged so that simultaneous cooking of different types of food is possible, the electrode plates of the cover being the same in number and of the same form as the electrode plates of the base and being individually

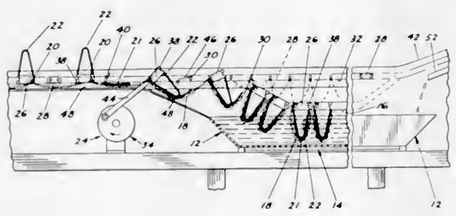


movably mounted in the cover, said electrode plates being individually weight and/or spring loaded for adjustment to the shape of and for uniformly pressing against the food to be grilled with a pressure of about 35–65 grams per cm², and electrode voltage adjustment means connected to said source of electric power and to said electrode plates for adjusting the voltage to about from 15–48 V

3,948,160
MULTIFOOD PRODUCT FRYING MACHINE

Daniel T. Stickle, 310 E. 40th St., Lubbock, Tex. 79404

Continuation-in-part of Ser. No. 390,164, Aug. 20, 1973, which is a division of Ser. No. 222,493, Feb. 1, 1972, Pat. No. 3,785,273. This application Feb. 18, 1975, Ser. No. 550,528
The portion of the term of this patent subsequent to Jan. 15, 1991, has been disclaimed.
Int. Cl.² A47J *37/12*
U.S. Cl. 99—404 **14 Claims**

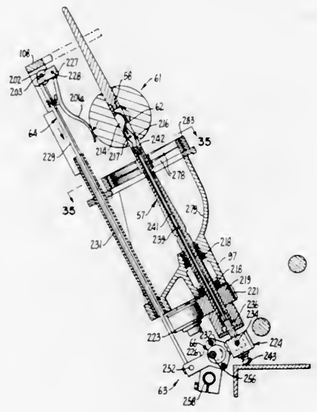


1. Cooking apparatus comprising:
a plurality of foldable product carrier sections linked together at opposite margins to form a continuous closed loop, each carrier section being collapsible from a substantially open condition to a closed condition by moving the linked margins of each section together,
an elongated shallow vat adapted to hold hot cooking fat,
guide means directing the linked carrier sections successively in a path along the length of the vat,
and means positioned adjacent one end of the vat for pushing each of the sections in succession toward the vat along the guide means, said pushing means including means for urging one linked margin of each section toward the other linked margin to close each carrier section as it advances toward the vat, the carrier sections advancing under the urging of the pushing means along the length of the vat in the closed condition.

3,948,161
SEED CELLING MACHINE

Sheldon E. Thorson, Pleasanton, Calif., assignor to Atlas Pacific Engineering Company, Emeryville, Calif.

Filed Sept. 18, 1974, Ser. No. 507,145
Int. Cl.² A23N *4/14*; B23Q *15/00*
U.S. Cl. 99—491 **16 Claims**

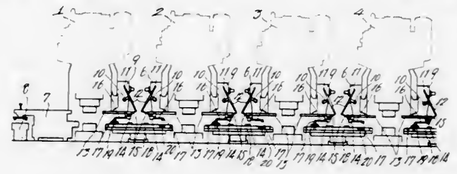


1. A device for removing the seed cell from fruit having a core hole formed therethrough, comprising: an elongate spindle for extending through the core hole of the fruit to support the fruit; spaced jaw means engagable with opposite ends of the fruit to support the fruit and move the fruit along the spindle to center the fruit at a seed-celling station; fruit holding means at the seed celling station engagable with the outer surface of the fruit to hold it substantially stationary at the seed-celling station; said spindle having a slot therein at the seed-celling station and an elongate bore extending through the spindle to the slot; a seed-celling knife pivotally mounted in the slot for pivotal movement outwardly of the slot beyond the spindle and into fruit at the seed-celling station; knife control means connected with the knife to move the knife outwardly an amount commensurate with the size of the fruit to cut the seed cell from the fruit; said knife control means including a movable fruit measuring finger at the seed-celling station engagable with an outer surface of the fruit and movable upon engagement with the fruit as the fruit moves along the spindle to the seed-celling station; linkage means connected between the fruit measuring finger and the knife; said linkage means including a lost motion device which takes up movement of the fuit measuring finger and sets the measurement in the knife control means and prevents movement of the knife upon movement of the fruit measuring finger; and knife control timing means connected with the linkage means to pivot the knife outwardly an amount determined by movement of the finger as set in the knife control means and in timed relationship with centering of the fruit at the seed-celling station, whereby the knife is prevented from entering the fruit before the fruit is centered at the seed-celling station and the knife is extended an amount proportional to the size of the fruit to remove the seed cell therefrom.

3,948,162
PRESS LINE SYSTEM

Munehiro Numba, Hino, Japan, assignor to Aida Engineering Limited, Japan

Continuation-in-part of Ser. No. 429,833, Jan. 2, 1974, abandoned, which is a continuation of Ser. No. 227,518, Feb. 18, 1972, abandoned. This application Apr. 3, 1975, Ser. No. 564,885
Claims priority, application Japan, Mar. 5, 1971, 46-11989
Int. Cl.² B30B *15/30*, *15/32*
U.S. Cl. 100—45 **3 Claims**



1. A press line system including a series of individually driven presses arranged in a line and each press having a feed side and a delivery side, the first press in the line having an unloader at the delivery side and means for feeding work thereto, each of the other presses having a loader at the feed side and an unloader at the delivery side, an intermittently driven conveyor arranged between the unloader and loader of each two adjacent presses in the line for moving the work from the preceding press to the succeeding press, each loader and unloader having a reciprocable carrier movable between fully advanced and fully retracted positions, each carrier having a feeding arm capable of upward and downward movements, a work clamping means carried by each feeding arm, said conveyor having a loading end adjacent the unloader of a preceding press and an unloading end adjacent the loader of a succeeding press, a first work receiving station, means mounting the first station at the loading end of each conveyor for upward and downward movements, said first station normally being in an elevated position, a second work receiving station, and means mounting the second station at the unloading end of each conveyor, said second station normally being in a lowered position, the arrangement being such that when work is fed to the first press, the first press operates on the work and upon completion thereof actuates the unloader for discharging the work from the press and clamping means which clamps the work, raises the feeding arm, retracts the carrier, lowers the feeding arm, unclamps the work, raises the feeding arm and deposits the work on the elevated first work receiving station which moves downward and positions the work on the conveyor which advances to the second work receiving station whereupon the first station is moved to its normal elevated position and the second station moves upward to load the work in the loader of the succeeding press which initiates a similar operation of the succeeding press.

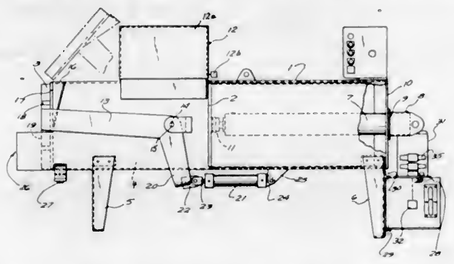
3,948,163
REFUSE COMPACTOR

David R. Ligh, Madison, N.J., assignor to Piezo Engineering Company, Madison, N.J.

Continuation-in-part of Ser. No. 289,235, Sept. 15, 1972, abandoned. This application Aug. 21, 1974, Ser. No. 499,426
Int. Cl.² B30B *15/16*
U.S. Cl. 100—53 **17 Claims**

1. In a refuse compactor, a combination comprising a horizontally oriented tubular housing having an open end and a circumferential wall bounding a compacting chamber; an inlet for admitting refuse to be compacted into said chamber; compacting means for exerting pressure upon refuse in said housing in direction axially towards said open end; a door mounted at said open end and being pivotable to and from a closure position overlying and closing the same, said door comprising a plate-shaped portion having a surface facing said open end

when said door is in said closure position; a pair of elongated arms located at opposite lateral sides of said housing and each having an elongated first end portion having one end rigid with said door and an elongated second end portion extending from another end of said first end portion at an angle to the latter and forming a juncture with said other end, said second end portions each having a free end; a connecting portion extending transversely of the axis of said housing and connecting said free ends of said second end portions with one another; pivot means extending through said junctures and pivotably connecting said arms to said housing at locations axially spaced from said open end; and a single fluid-operated cylinder and piston means connected with said connecting portion midway between said junctures for effecting pivoting of said arms about said pivot means.



3,948,164

CAN FLATTENING APPARATUS

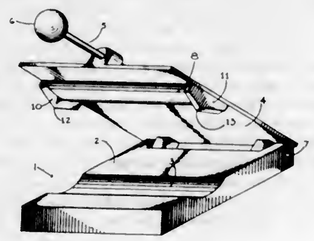
Eckhard T. Pobuda, 1325 Lafayette St., Denver, Colo. 80218, and Robert E. Krebs, 2000 Crystal Springs Road, San Bruno, Calif. 94066

Filed Feb. 19, 1974, Ser. No. 443,850

The portion of the term of this patent subsequent to Apr. 16, 1991, has been disclaimed.

Int. Cl.² B30B *1/04*

U.S. Cl. 100—98 R **4 Claims**



1. Apparatus for individually flattening selected size cylindrical metal cans comprising:

a. a horizontally disposed base having an elongated concave depression formed in the planar upper surface thereof for supporting a cylindrical can lying in said depression;

b. a moment arm;

c. hinge means hinging said arm to said base for pivotal movement of said arm downward toward said base transverse to said depression;

d. an arcuate die member fixed to said arm presenting a convex face towards said base, the radius of curvature of said convex face being substantially the same as the radius of said concave depression, said die member being arranged on said moment arm to press against the body of a can lying in said depression when said moment arm is pivoted downwardly toward said base;

e. two cutting members each which tapers to a point, one said cutting member fixed along each end of said die member protruding beyond its said face, for shearing into a can slightly back from the ends thereof in advance of said die member when said moment arm pivots said die member downwardly to press flat the body of a can lying in said depression in said base.

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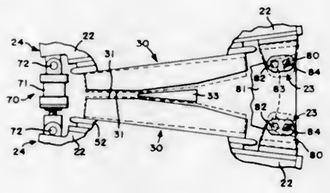
CONE PRESS

Peter Seifert, Middletown, Ohio, assignor to The Black Clawson Company, Middletown, Ohio

Filed Mar. 28, 1975, Ser. No. 563,124

Int. Cl.² B30B *9/06, 3/04*

U.S. Cl. 100—116 **5 Claims**



1. A press comprising a frame, a pair of rigid side structures, means for pivotally connecting said side structures to said frame, a pair of rotor assemblies having their axes arranged at an angle to each other and including confronting faces defining a pressing zone, means mounting each of said rotor assemblies for rotation in a respective said side structure, means for applying yieldable force urging said side structures toward one another, and means for adjusting said pivotally connecting means to vary the pressing action of said rotor assemblies.

3,948,166

DEVICE FOR SEPARATING THE ROLLERS OF A CALENDER

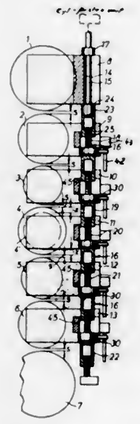
Reinhard Wenzel, Tonisvorst, Germany, assignor to Kleinewefers Industrie Companie GmbH, Krefeld, Germany

Filed Apr. 2, 1975, Ser. No. 564,461

Claims priority, application Germany, Apr. 2, 1974, 2415836

Int. Cl.² B30B *3/04*

U.S. Cl. 100—163 R **7 Claims**



1. A calender comprising two oppositely located calender sides spaced from each other in horizontal direction, two series of superimposed and vertically adjustable bearing means respectively supported by said calender sides, two series of superimposed calender rollers respectively supported by said bearing means, two suspension spindles respectively associated with said two series of superimposed bearing means and suspended on said calender, each of said suspension spindles comprising a plurality of vertically arranged screw means respectively associated individually with the calender rollers between the uppermost and lowermost calender rollers, each two vertically successive ones of said screw means comprising a sleeve memeber with an inner lefthand thread and a righthand threaded screw bolt, and also comprising a sleeve member with a righthand thread and a lefthand threaded screw bolt meshing with the respective adjacent lefthand threaded sleeve member, each of said screw means including an abutment member interposed between and fixedly connected to the sleeve member and the screw bolt of the respective one and the same screw means, and each sleeve member and the screw bolt threadedly engaging the latter being adjustable at will relative to each other for selectively moving the respective abutment member pertaining thereto toward and away from the respective adjacent bearing means.

3,948,167

ARRANGEMENT AT CENTRAL SUCTION INSTALLATIONS FOR SUCTION CONVEYANCE OF REFUSE AND WASTE

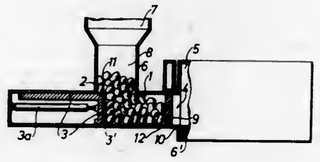
Sergio De Feudis, Nacka, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed Oct. 12, 1973, Ser. No. 405,923

Claims priority, application Sweden, Oct. 17, 1972, 13399

Int. Cl.² B30B *15/30, 15/32*

U.S. Cl. 100—215 **6 Claims**



1. An apparatus for the conveyance and collection of waste material by means of suction having a collection chamber at sub-atmospheric pressure for the material conveyed and collected in the system, the improvement comprising means to receive the material from the collection chamber, compact the material and discharge the compacted material into a transport container without substantial exposure of the interior of said transport container to the sub-atmospheric pressure in said collection chamber, and comprising in combination a compaction chamber having an inlet connected to said collection chamber and an outlet opening into said transport container, said inlet having sealing means operable controllably to close or open the inlet against communication of air from said compaction chamber to said collection chamber and said outlet having sealing means operable controllably to prevent or permit communication of air from the transport container to said compaction chamber, said compaction chamber including compaction means operable to compress the material in said compaction chamber to a reduced volume, said inlet sealing means being operable to close said inlet against air flow upon compaction of the material whereby said outlet sealing means may be opened without substantial flow of air through said outlet sealing means into said collecting chamber, said compaction means comprising means to discharge the material from said compaction chamber through said outlet after opening of said outlet sealing means.

3,948,168

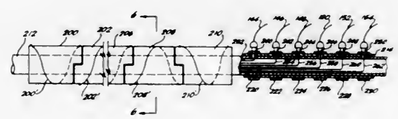
DIGITAL PRINTER

Robert S. Kuehne, Corona del Mar, Calif., assignor to Willison K. Vance, Corona del Mar, Calif., a part interest

Filed Aug. 14, 1974, Ser. No. 497,139

Int. Cl.² B41J *25/00*

U.S. Cl. 101—93.05 **18 Claims**



16. A digital printer for printing in alpha-numeric character form digital information received from a recirculating-type buffer memory device in the form of a video-type signal refreshed at a predetermined rate, which comprises:

a plurality of spindles mounted in tandem on a common rotatable shift, each of said spindles having a spiral electrical conductor at its periphery extending 360° around said spindle, said electrical conductors being electrically isolated from each other, the spiral conductors on adjacent spindles being displaced 180°, and wherein the spiral conductors on abutting spindles are terminated in the same exact transverse plane;

a synchronous electric motor for rotatably driving said spindles at a substantially constant speed;

a rotatably mounted paper drive roller for moving a continuous sheet of paper past said rotatable spindles in a direction normal to the axis of said spindles;

a speed reducing gear train for rotatably driving said paper drive roller from said synchronous electrical motor in the same direction of rotation as said spindles and at a speed of rotation proportional to, but substantially less than the speed of rotation of said spindles so that the paper and the segments of said spiral electrical conductors in juxtaposition thereto are moving in the same direction, with the velocity of the paper being substantially less than the tangential velocity of the spiral conductors;

printing means for forming a mark on said paper responsive to an electrical signal applied to said spiral electrical conductors;

printer control means for receiving a video-type electronic signal representative of alpha-numeric characters corresponding to said digital information and simultaneously producing a plurality of electrical output signals corresponding in number to the number of said spindles, each of said electrical output signals being in phase sequence with the rotation of the respective spindle, said means including (1) first and second shift registers, each of said shift registers being capable of storing information corresponding to one complete print line of marks, (2) means for loading said video-type signal corresponding to one complete line of marks into one of said registers and loading said video-type signal corresponding to the next print line of marks into the other of said shift registers, the video-type signal being alternately shifted between said shift registers, (3) means for alternately unloading the information stored in said shift registers to the spiral electrical conductors, the inactive shift register being unloaded during the period that the other of said shift registers is being loaded, one of said shift registers being loaded and the other of said shift registers being unloaded during each refresh cycle of said recirculatingtype buffer memory device, and (4) means to determine the end of each page of information and provide a space between adjacent pages, said printer control means and said synchronous motor being supplied with power from a common source;

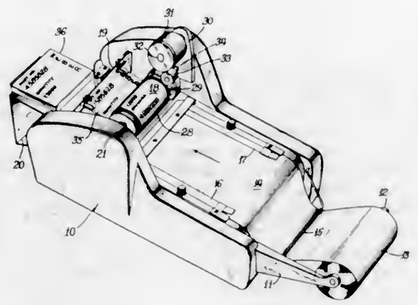
whereby a matrix of marks is placed on the paper so as to form alpha-numeric characters corresponding to said digital information.

3,948,169

COAXIALLY MOUNTED STENCIL DRUM AND RUBBER MAT ROLLER SEGMENTS

Jean R. Cole, Des Plaines, Ill., assignor to Weber Marking Systems, Inc., Arlington Heights, Ill.

Filed Nov. 14, 1974, Ser. No. 523,659
Int. Cl.² B41F *15/02, 15/38, 5/02*
U.S. Cl. 101—116 **5 Claims**



1. A cylindrical printing roller and ink supply therefore comprising in combination, a shaft, a first cylindrical portion, means mounting said first cylindrical portion in an axial concentric position on said shaft, said first cylindrical portion having a rubber mat printing element mounted on the outer surface thereof, a second cylindrical portion, means mounting said second cylindrical portion in an axial concentric position on said shaft, said second cylindrical portion having a section of its outer surface perforated and having a stencil printing element mounted on the outer surface thereof over the perforated section, said first and second cylindrical portions located in abutting side-by-side relationship on said shaft and together constituting the cylindrical printing roller, roller means for applying ink to said rubber mat printing element, said roller means engaging and having rolling contact with said rubber mat printing element on the outside thereof, and said second cylindrical portion having an ink supply chamber therein for passing ink outwardly through the perforated section and thence through said stencil printing element whereby the cylindrical printing roller may simultaneously print from the rubber mat and the stencil.

3,948,170

ARRANGEMENT IN SILKSCREEN PRINTING MACHINE

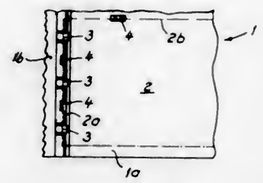
Sylve Jack Donald Ericsson, Branta Backen 17 IV, 147 00 Tumba, Sweden

Filed Apr. 19, 1973, Ser. No. 352,543
Claims priority, application Sweden, May 25, 1972, 6856/72; Jan. 30, 1973, 73012833
Int. Cl.² B41F *15/38;* **B65H** *7/08*
U.S. Cl. 101—124 **5 Claims**

1. In a stencil printing machine having a translatory movable printing drum means for carrying a length of sheet material to be printed, a stencil cooperatively associated with the drum, squeegee means for urging the stencil against the sheet material to be printed during a printing sequence, feed table means for feeding the length of sheet material to the drum, gripping element means mounted on the drum for gripping a leading edge of the sheet material and carrying it beneath the squeegee means, and sensing means for sensing when the sheet material deviates from a predetermined position in the printing machine, the improvement in sensing means comprising:

at least one beam transmitter and at least one beam receiver located adjacent thereto,

the beam receiver receiving a beam from the transmitter which has been reflected from the sheet material in the field of the beam transmitter,



the beam transmitter and receiver being firmly mounted on the drum adjacent the gripping element means in a location sensing the positioning of the sheet material leading edge in the gripping element means during a printing operation,

the beam transmitter and receiver producing an indicating signal in response to the sensing of position,

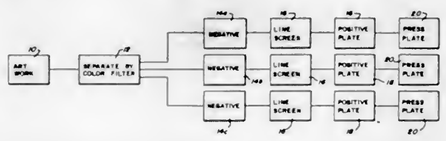
circuit means connecting the beam transmitter and receiver for receiving the indicating signal and activating an indicating means in response thereto.

3,948,171

METHOD FOR PRINTING MULTICOLOR HALFTONE IMAGES ON CYLINDRICAL OBJECTS

Richard E. O'Connell, Arlington Heights, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed May 2, 1974, Ser. No. 466,305
Int. Cl.² B41M *1/14;* **B41F** *17/22*
U.S. Cl. 101—211 **2 Claims**



1. A method for printing multicolor images having half-tone visual qualities which has no overprint of colors, which comprises:

a. preparing the art work in pre-selected colors without color blending and using white as a diluent of color strength, which art work colors are color separable by optical filters;

b. forming a series of color separated transparencies employing optical filters representing the original artwork colors;

c. forming a series of line screen color reversal transparencies from the separated transparencies first prepared;

d. forming a series of flexible line engraved printing press plates from said line screen transparencies wherein each line engraved press plate corresponds to one of the colors in the original art work and wherein the printed image from each of said line engraved press plates in the composite printed image made therefrom is separated from the color print image of the other press plates by a field color and the lines of the respective press plates are parallel to each other and run in the direction of the rotation of the printing cylinder during printing;

e. applying ink in appropriate colors to each of the line engraved printing press plates;

f. applying sequentially the inked line engraved printing press plates to a sector of a cylindrical offset printing surface in register to form a composite image so that each separate inked color image applied to said offset surface is separated from the other colors applied by a neutral field color on a workpiece;

g. transferring the composite multicolor image from the offset surface to a cylindrical can workpiece by rotational engagement with a composite image on the offset surface on the outer circumference of said can to print a multicolor image thereon having halftone visual qualitites without color overprinting or blending; and

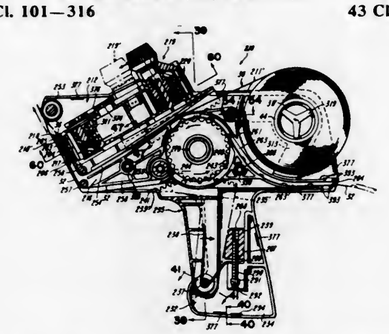
h. maintaining the orientation of the lines of the press plates in the direction of the rotation of the printing cylinder during printing.

3,948,172

LABEL PRINTING APPARATUS

William A. Jenkins, Englewood, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 366,919, June 4, 1973, abandoned, which is a division of Ser. No. 206,061, Dec. 8, 1971, Pat. No. 3,783,083, which is a continuation-in-part of Ser. No. 155,740, June 23, 1971, abandoned. This application June 3, 1974, Ser. No. 475,728
Int. Cl.² B41F *1/02;* **B65C** *11/02*
U.S. Cl. 101—316 **43 Claims**



1. A hand-held portable apparatus for printing on labels releasably secured to a web of supporting material, comprising: a frame having a handle, a platen and a cooperable print head mounted by the frame, gear means connected to the print head, spaced apart drive gears in engagement with the gear means for driving the print head, and a feed wheel disposed between the drive gears and engageable with the web downstream of the platen for advancing the web into a printing position between the print head and the platen, and means including an actuator disposed at the handle for driving the drive gears in one direction to effect movement of the print head relative to and into printing cooperation with the platen and in the opposite direction to effect movement of the print head relative to and out of printing cooperation with the platen.

3,948,173

MARKING ASSEMBLY

Kenneth S. Barasch, South Orange, N.J., assignor to Sibar Industries, Wilmington, Del.

Continuation-in-part of Ser. No. 478,275, June 11, 1974. This application Jan. 8, 1975, Ser. No. 539,536
Int. Cl.² B41K *1/40, 1/52*
U.S. Cl. 101—333 **6 Claims**

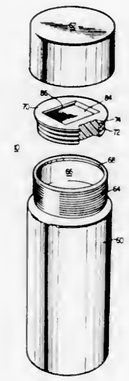
1. A marking assembly comprising:

an elongated hollow container-type member open at one end thereof so as to define a cavity therein and including a first portion having a first diametrical extent and a second portion integrally formed with said first portion and having a second diametrical extent which is less than that of said first portion, said open end being defined within said second portion;

insert support means snap-fitted within the open end of said member so as to enclose said cavity and having a support surface upon which indicia marking means may be supported, slot means being defined within said insert upon opposite sides of said support surface;

indicia marking means having flanged means projecting from opposite sides thereof adapted to be disposed within said insert slot means in a snap-fitted manner for removably securing said indicia marking means upon said insert support surface whereby said indicia marking means may be selectively interchanged;

a closure cap having an end member and adapted to be secured in an air-tight manner over said second portion,



said support means, and said indicia marking means, said cap having an inside diameter substantially equal to that of said second portion of said member while the outside diameter of said cap is substantially equal to that of said first portion whereby said assembly has a substantially smooth and continuous external surface over the entire extent thereof so as to be readily portable; and

inking pad means fixedly secured within said cap and upon the interior surface of said end member for inking said indicia marking means when said cap is secured upon said support means, the interior depth of said cap extending from the open end thereof to said pad being substantially equal to the height of said second portion of said member plus the height of said indicia marking means whereby, when said cap is placed upon said member, said ink pad means will be in contact with said indicia marking means for inking the same.

3,948,174

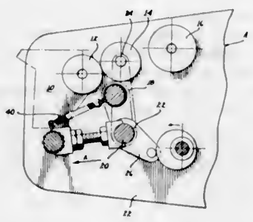
DEVICE FOR PREVENTING MALFUNCTION OF INK PICK-UP ROLLERS IN OFFSET PRINTING PRESSES

Earl C. Bleu, Sr., Phoenix, Ariz., assignor to Wallace J. Baker, Jr., Phoenix, Ariz.

Filed Mar. 1, 1972, Ser. No. 230,688
Int. Cl.² B41L *27/16*
U.S. Cl. 101—350 **4 Claims**

1. In an offset printing press having an ink feed mechanism supported by the frame thereof comprising an ink pick-up roller which transfers ink from a fountain ink roller to a press roller, the ink pick-up roller being connected to and actuated by a flexible ink pick-up bar having near its midpoint a cam follower responsive to a cam, the improvements comprising

means for bracing the ink pick-up bar at the cam follower to prevent the cam from pushing away the ink pick-up bar when



said ink pick-up roller is stuck to said fountain ink roller by viscous ink.

3,948,175

WARHEAD

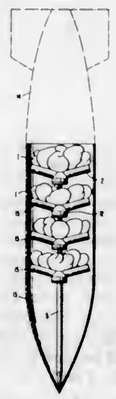
Ludwig Bucklisch, Unterach, Austria, assignor to Dynamit Nobel Aktiengesellschaft, Germany

Division of Ser. No. 300,226, Oct. 24, 1972, Pat. No. 3,857,338, which is a continuation-in-part of Ser. No. 112,379, Feb. 3, 1971, abandoned. This application July 2, 1974, Ser. No. 485,268

Claims priority, application Germany, Feb. 3, 1970, 2004637

Int. Cl.² F42B *25/02, 13/38*

U.S. Cl. 102—5 **10 Claims**



1. An independent weapon unit for use with warheads in bombs, rockets and the like, of the type which accommodate a plurality of independent weapon units in a single warhead; said independent weapon unit comprising: common central connecting means having a centrally disposed longitudinally extending axis, a plurality of launcher tubes connected to said central connecting means, each of said launcher tubes including means for accommodating at least one projectile, descent retarding means connected to said central connecting means for controlling the rate of descent of said weapon unit, stabilizing means connected to said central connecting means for stabilizing the weapon unit during the descent thereof, said descent retarding means and said stabilizing means being spaced from one another along said longitudinal axis at opposite sides of said central connecting means, and storage accommodating means permitting storage of a plurality of said independent weapon units adjacent one another extending in the direction of said longitudinal axis with the combined length of the stabilizing means of said plurality of independent weapon units in the stored condition being less than the sum of the length of the individual stabilizing means when the independent weapon units are in an operative descent condition,

wherein said stabilizer means is constructed as a weight attached to one of said plurality of launcher tubes and said central connecting means by flexible attaching lines, and wherein said storage accommodating means includes constructing said attaching lines sufficiently flexible to accommodate folding of said attaching lines and movement of said weight closer to said central connecting means in a stored condition.

3,948,176

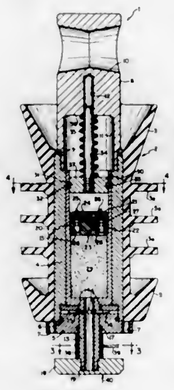
MECHANICAL INITIATOR FOR DETONATION OF EXPLOSIVES

Nelis N. Koomen, Phoenix, Ariz., assignor to Talley-Frac Corporation, Mesa, Ariz.

Filed Oct. 15, 1974, Ser. No. 514,793

Int. Cl.² F42B *3/10;* **F42C** *5/00*

U.S. Cl. 102—20 **8 Claims**



1. A mechanically actuable initiator responsive to direct mechanical actuation by a force about a threshold magnitude along a predetermined axial direction and non-responsive to forces in other directions, comprising:

a. an outer housing defining within it an axially extending chamber:

b. an inner housing axially movable within said chamber and forming an inner chamber for containing an explosive therein, one wall of said inner chamber forming at least one cavity in communication with said inner chamber for containing a primer charge;

c. a bore extending from said cavity through said one wall for slidably mounting a firing pin therein to fire such primer charge and consequently said explosive;

d. an actuating member extending from the inner housing and passing through one end of said outer housing for axially moving the inner housing in the outer housing;

e. a firing head axially movable within said inner housing;

f. locking means (i) for locking the firing head to the inner housing in a first position of the inner housing with respect to the outer housing to prevent relative axial movement between the firing head and inner housing, and (ii) responsive to movement of the inner housing in the outer housing to a second position for unlocking the firing head for axial movement with respect to the inner housing; and

g. means biasing the firing head toward said one wall of the inner chamber so that an axial force upon the actuating member moves the inner housing in the outer housing from the first to the second position, unlocking the locking means to permit the means biasing the firing head to drive it down upon the firing pin and thereby detonate the primer charge and thus the explosive.

3,948,177

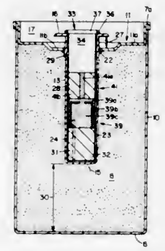
SELF-DISARMING EXPLOSIVE CARTRIDGES

Homer Lycurgus Fitch, Woodstock, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Filed July 12, 1974, Ser. No. 488,107

Int. Cl.² F42B *3/10*

U.S. Cl. 102—24 R **9 Claims**



1. An explosive cartridge for underwater firing which is self-disarming in the event of an underwater misfire, comprising:

a closed shell, and a main explosive charge therein;

a conduit having an open end and a closed end and extending closed end first into said shell as a primer well for support of a percussion impact-responsive primer in detonating relationship with said explosive charge;

said conduit supported intermediate its ends in a wall of said shell in watertight relationship therewith so as to have its open end outside said shell and spaced from said shell wall and its closed end spaced from the opposite shell wall; and

said conduit being yieldably movable from said watertight relationship toward said opposite shell wall in response to force of percussion impact initiation applied to said primer in a direction toward said opposite shell wall when said primer is supported in said conduit in said detonating relationship.

3,948,178

PROPELLENT-CHARGE CARTRIDGE CASE

Hans Werner Luther, Holzbuttgen, and Jürgen Prochnow, Dusseldorf, both of Germany, assignors to Rheinmetall G.m.b.H., Dusseldorf, Germany

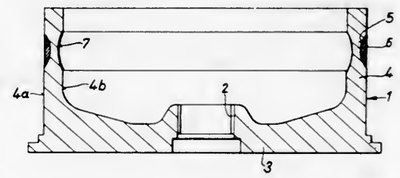
Filed Feb. 11, 1974, Ser. No. 441,002

Claims priority, application Germany, Feb. 17, 1973, 2307907

Int. Cl.² F42B *5/26*

U.S. Cl. 102—43 R **2 Claims**

1. A propellent-charge cartridge case comprising a cartridge-case stub having a base and a cartridge case wall extending axially from said base, an annular external groove formed in said wall and adapted to be juxtaposed with the internal wall of a barrel receiving the cartridge case, a resilient insert filling said annular groove and adapted to be pressed against said barrel wall upon the discharge of a charge received in said case, and an internal groove in said cartridge



case wall in the region of said external groove for weakening said cartridge case wall.

3,948,179

PRACTICE DEVICE FOR MORTARS

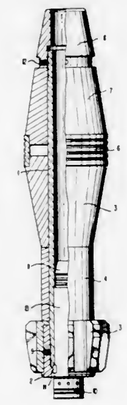
Heinz Gawlick; Rudolf Stahlmann, both of Furth, Bayern; Horst Rödder, Munnerstadt, and Günter Mauer, Poppenlauer, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft and Friedrich Wilhelm Heym, both of, Germany

Filed Jan. 10, 1974, Ser. No. 432,426

Claims priority, application Germany, Apr. 12, 1973, 2318382

Int. Cl.² F42B *13/20, 13/22*

U.S. Cl. 102—49.1 **20 Claims**

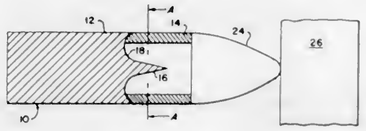


1. Practice device for mortars comprising a central tube for receiving a subcaliber training ammunition therein, and locking element means being firmly and detachably connected to the rear end of the central tube, the locking element means including bore means through which the subcaliber training ammunition is inserted within the central tube and for receiving and mounting the subcaliber ammunition within the central tube, at least one annular member for detachable mounting on the central tube and having a lateral dimension corresponding to a predetermined mortar caliber such that the practice device with the subcaliber ammunition may be fired from a mortar barrel of the predetermined caliber and may be reused as a practice device.

3,948,180
NON-EXPLOSIVE SHAPED-CHARGE FOLLOW-THROUGH PROJECTILE

Denis A. Silvia, Waldorf, Md.; William N. Wishard, and James R. Burns, both of Dahlgren, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 17, 1975, Ser. No. 559,294
Int. Cl.² F42B *13/06*
U.S. Cl. 102—52 4 Claims

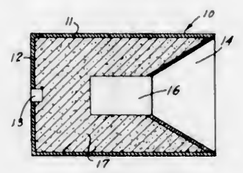


1. A penetrating member for a projectile comprising:
a cylindrical mass body made from a high-density material with a front end in the form of a concavely curved scoop with an outstanding spike in the center of the scoop; and
a tubular liner made from easily deformable material, one end of said liner abutting the scoop of said mass body,
so that, when the liner hits a target, the liner is driven back along the curve of said scoop and then forward around the spike to form a high-velocity jet of material which penetrates the target.

3,948,181
SHAPED CHARGE

John J. Bergstrom, Cedar Falls, Iowa, assignor to Chamberlain Manufacturing Corporation, Waterloo, Iowa

Filed May 14, 1973, Ser. No. 365,823
Int. Cl.² F42B *13/10*
U.S. Cl. 102—56 SC 3 Claims

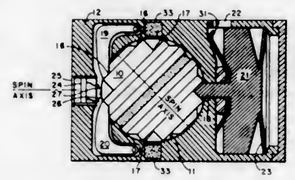


1. A shaped charge device providing follow-through of material comprising a generally cylindrical case formed with a rear end wall, a shaped charge forming liner mounted in the front end of said case, a solid cylindrical shaped body of follow-through material consisting of zirconium, titanium, Magnesium-Teflon or misch metals mounted on the longitudinal axis of said case between said rear end wall and said shaped charge forming liner, explosive material filling the remaining space of said case, detonating means mounted in said case for detonating said explosive in a region near said rear wall, and wherein said shaped charge forming liner is conical in shape and mounted so as to extend inwardly and symmetrically with respect to said case and the apex of said conical liner is truncated and forming an opening into which said body of follow-through material is received such that the liner and follow-through material form an integral shaped charge forming structure.

3,948,182
SEMI-ACTIVE ELECTRO-OPTICAL BOMBLET FUZE

James E. Means, Corona, and Matthew E. Anderson, Ontario, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 3, 1968, Ser. No. 766,035
Int. Cl.² F42C *13/02*
U.S. Cl. 102—70.2 P 8 Claims

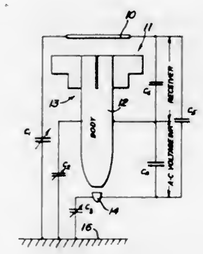


1. A fuze system for free-fall weapons, comprising:
a. A fuze, for fragmentation free-fall weapon, having contact and proximity fuze capabilities, said proximity fuze capability operable to be initiated from electromagnetic radiation of select bandwith,
b. at least one impact-initiated source of electromagnetic radiation of select bandwidth separate and apart from said fuze, for initiating the proximity fuze capability of said fuze,
c. said fuze comprising a cylindrical fuze housing whose spin axis coincides with the cylinder axis,
d. a spherical chamber in a forward portion of said housing along said spin axis,
e. an opening between the forward end of said housing and said spherical chamber,
f. an electromagnetic radiation receiver means mounted in said opening and operable to generate an electrical pulse upon receiving electromagnetic radiation of select bandwidth from said impact initiated source of electromagnetic radiation.
g. a first pair of electrical contacts connected to said electromagnetic radiation receiver means,
h. a gyro rotor having a diameter slightly less than the diameter of said spherical chamber and operable to slideably rotate therein to align its spin axis with the spin axis of said fuze housing,
i. a passage through said rotor along its spin axis,
j. an electrically initiated explosive detonator contained in said rotor passage at its forward end,
k. a second pair of electrical contacts connected to said electrically initiated explosive detonator for making electrical contact with said first pair of electrical contacts when the spin axes of said rotor and fuze housing are aligned, thus completing an electrical circuit between said electromagnetic radiation receiver means and said electrically initiated detonator,
l. an inertially actuated stab-detent means mounted in a rearward portion of said fuze housing,
m. a stab-sensitive explosive detonator contained in said rotor passage at its rearward end,
n. an output explosive lead between said spherical chamber and the outer wall of said fuze housing,
o. a torroidal explosive lead leading from said electrically initiated explosive detonator and from said stab-sensitive explosive detonator to the outer periphery of said rotor and which completes an explosive train between said detonators and said output explosive lead when said rotor spin axis is aligned with the fuze housing spin axis,
p. locking means for locking said rotor in safe position with its spin axis out of alignment with the fuze housing spin axis,
q. said locking means operable to release said rotor when said fuze is rotated about its spin axis at a certain minimum speed following safe separation of a weapon containing the fuze from a launch vehicle allowing said rotor to rotate and move to armed position aligning its spin axis with that of said fuze, thus aligning said electrically initiated explosive detonator into electrical contact with said electromagnetic radiation receiver means and said stab-sensitive explosive detonator with said stab detent means and then locking said rotor in armed position when the rotation of said fuze about its spin axis is reduced below said minimum speed, wherein when in armed position a concentration of electromagnetic radiation of proper bandwidth detected by said electromagnetic radiation receiver means will result in detonation thereof and wherein head-on impact will cause said stab-detent means to stab said stab-sensitive explosive detonator resulting in detonation thereof.

3,948,183
FLUIDIC CAPACITANCE DEVICE

Evan D. Fisher, Chevy Chase; Carl J. Campagnuolo, Potomac, and Stacy E. Gehman, Takoma Park, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 25, 1974, Ser. No. 527,177
Int. Cl.² F42C *13/00*
U.S. Cl. 102—70.2 P 10 Claims

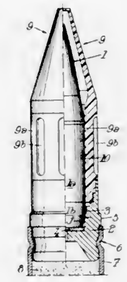


1. A fluidic capacitance fuze for a projectile including a receiver, the fuze comprising:
a fluidic generator located in the projectile for generating an A.C. signal from ram air introduced into the projectile during flight;
first means connecting the fluidic generator to the receiver for providing bias power thereto;
second means connecting the A.C. signal between the projectile body and a transmitter electrode connected to and insulated from the body;
third means connected at respective first ends thereof to the body and a receiver electrode, the latter mounted to and insulated from the body, the receiver and transmitter electrodes also being mutually insulated from one another, the second ends of the third connecting means connected to the receiver input for providing an input A.C. signal to the receiver;
stray capacitances existing between the electrodes and the body, the capacitances varying substantially when the projectile approaches a target thereby causing the receiver input to change and effect a charge firing condition.

3,948,184
SUB-CALIBRE PROJECTILE SHELLS

Bernard Pierre, Lyon, and Claude Sabin, Vierzon, both of France, assignors to Etat Francais, Paris, France

Filed Oct. 10, 1973, Ser. No. 404,895
Claims priority, application France, Oct. 10, 1972, 72.35763
Int. Cl.² F42B *13/16, 13/06*
U.S. Cl. 102—93 22 Claims



1. A shell comprising a sub-calibre projectile having a lateral wall of revolution, a shoe forming a base and having a forwardly open cavity, in which cavity the rear portion of said sub-calibre projectile is engaged, a destructible skirt fixed to said shoe and extending forwardly therefrom and mating over a certain length at least with said lateral wall of revolution of said projectile, and connecting means for temporarily rendering the sub-calibre projectile fast to said shoe, said connecting means comprising a bonding layer joining, over at least a portion of their length, the facing surfaces of the sub-calibre projectile and of the destructible skirt of the shell, the nature and the dimension of this bonding layer being such that, taking into account the weight and dimensional characteristics of the constituent elements of the shell and taking into account also the rate of firing envisaged, on one hand, the connection effected by this bonding layer between the sub-calibre projectile and the shoe through the destructible skirt is capable of withstanding, without risk of rupture, accelerations occurring in a feed device of a firing weapon and on arrival in firing position of the shell, and on the other hand, said connection is broken by the accelerations imparted to the shell on firing, this rupture of the connection ensuring the desired liberation of the sub-calibre projectile.

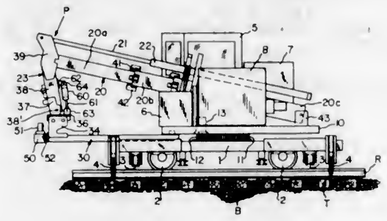
3,948,185
METHOD AND APPARATUS FOR REMOVING RAILROAD TIES

Paul S. Settle, Fox Chapel, and Rudolph G. Wilmer, Glenshaw, both of Pa., assignors to Railway Maintenance Corporation, Pittsburgh, Pa.

Filed Jan. 20, 1975, Ser. No. 542,577
Int. Cl.² E01B *29/06*
U.S. Cl. 104—9 13 Claims

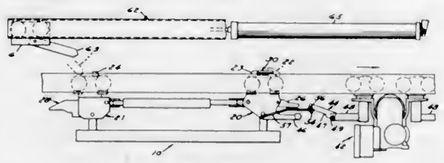
1. Apparatus for undercutting a railroad tie comprising: a vehicle having a main frame and flanged rail wheels mounted on said main frame adapted to travel along the rails of a railroad track supported on spaced ties resting in ballast; a platform located above said main frame and means mounting said platfrom on said main frame for rotation relative to said main frame; means for rotating said platform; a probe assembly mounted on said platform, said probe assembly including an elongated probe adapted to penetrate through the ballast below a tie, means for adjustably supporting said probe for movement relative to said platform and vibration exciter means attached adjacent one end of said probe to impart vibrations to said probe, whereby said probe is continuously

moved through ballast beneath a tie while vibrations are imparted to said probe by said vibration exciter means to vibrate



ballast adjacent to said probe to loosen ballast and form a trench beneath the tie and coincident therewith.

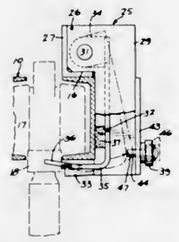
3,948,186
OVERHEAD POWER AND FREE CONVEYOR SYSTEM
Edward W. McCaul, Bloomfield Hills, Mich., assignor to Jervis B. Webb Company, Detroit, Mich.
Continuation of Ser. No. 179,956, Sept. 13, 1971, abandoned.
This application Apr. 24, 1975, Ser. No. 571,493
Int. Cl.² B61B *13/00*; B61J *3/04*
U.S. Cl. 104—172 S **14 Claims**



1. In a conveyor system including a carrier track; a plurality of carriers supported thereon; means for propelling said carriers along one portion of said carrier track comprising a chain track adjacent to said carrier track, an endless driven chain supported by said chain track, pushers carried by said chain and a driving dog on each carrier engageable by one of said pushers; a self-propelled tractor for propelling said carriers along another portion of the carrier track; and stations at which the propulsion of a carrier is transferrable between said propelling means and said tractor; the improvement wherein said tractor is supported by and travels on said other portion of the carrier track, releasable coupling elements are provided on said tractor and carriers for the propulsion of at least one of said carriers by said tractor, and at least one of said stations includes a switch in said other portion of the carrier track, and separate tracks for said carriers and said tractor selectively connectable with said other portion of the carrier track by said switch.

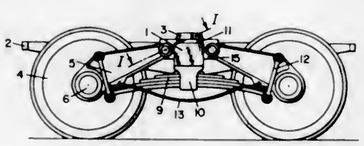
3,948,187
POWER AND FREE CONVEYOR SYSTEM
Guy R. Moore, Burlington, Canada, assignor to Welland Forge Limited, Welland, Canada
Filed Oct. 9, 1974, Ser. No. 513,277
Claims priority, application Canada, Oct. 10, 1973, 183048
Int. Cl.² B61K *7/16*
U.S. Cl. 104—250 **14 Claims**

1. In a conveyor system, the combination comprising
a track,
at least one carrier movable along said track,
a conveyor for driving said carrier along said track,
and means along said track responsive to the speed of said carrier along said track to stop said carrier when the speed exceeds a predetermined value,
said last-mentioned means comprising a first member mounted in the path of the carrier and engagable by the carrier as it moves along said track,
a second member normally held out of the path of the carrier,
said first member being held in the path of the carrier by gravity,



latch means for holding said second member out of the path of said carrier,
said second member being movable upon release of said latch means under the action of gravity into the path of said carrier,
and means responsive to the lateral movement of said first member to release said latch means when the carrier speed exceeds a predetermined value.

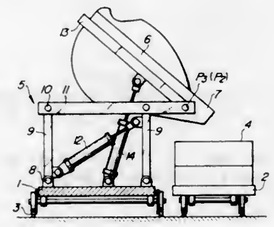
3,948,188
RESILIENT RAILWAY BOGIE
Jurg Zehnder, Zurich, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Continuation of Ser. No. 149,924, June 4, 1971, abandoned.
This application Aug. 29, 1973, Ser. No. 392,648
Claims priority, application Switzerland, June 5, 1970, 8454/70
Int. Cl.² B61F *3/08*, *5/06*, *5/38*, *5/52*
U.S. Cl. 105—167 **5 Claims**



1. A truck for a vehicle, especially a railway freight car, comprising:
first and second pairs of laterally spaced apart wheels operable for running on rails;
two axles each interconnecting the wheels in one of said pairs of wheels;
a cross-beam extending substantially parallel to said axles;
four rocker arms each connected at one end thereof to one end of each of said axles and the other end of each rocker arm connected to said cross-beam;
two spring rods each extending substantially parallel to said cross-beam and establishing a torsion connection between said rocker arms connected to the same axle;
a plurality of ball joint-type means connected to said cross-beam for mounting said spring rods and said rocker arms;
spring means interconnecting said cross-beam to said rocker arms and operable to urge said cross-beam and said rocker arms to an equilibrium relationship with respect to each other, whereby said axles exhibit pendulum movements in vertical and horizontal directions relative to said cross-beam; and

an imaginary plane defined by said one ends of said rocker arms being disposed vertically below another imaginary plane defined by said other ends of said rocker arms.

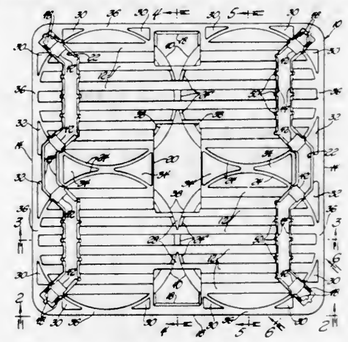
3,948,189
POURING LADLE AND POURING PLATFORM CAR FOR USE THEREWITH
Takashi Kawai, Tokyo, Japan, assignor to Hitachi Metals, Ltd., Japan
Filed July 16, 1974, Ser. No. 488,924
Claims priority, application Japan, July 20, 1973, 48-80589
Int. Cl.² B61D *9/02*
U.S. Cl. 105—271 **27 Claims**



1. A pouring platform car, characterized in that said pouring platform car comprises platform car means capable of moving with a relatively low speed in synchronism or non-synchronism with the speed of a mold conveyor and capable of moving with a relatively high speed irrespective to the speed of the mold conveyor, a frame body mounted on said platform car means such that said frame body can be moved back and forth toward or away from the mold conveyor, and a pouring ladle having a fulcrum as to the inclining motion thereof in the vicinity of a pouring gate, characterized in that said pouring ladle is provided with a partition wall having in the vicinity of the bottom of said ladle a passage through which melt can flow inwardly or outwardly, and said partition wall is provided between said fulcrum and the center of gravity concerning said melt, said pouring ladle being mounted on said frame body in such a manner that said pouring ladle can be freely inclined with the pouring gate directed toward the mold, wherein said car is adapted to run on a single rail laid on the ground in parallel with the mold conveyor.

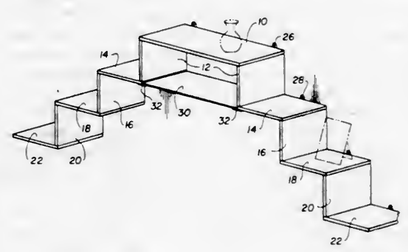
3,948,190
INDUSTRIAL LOAD-CARRYING PALLET
James M. Cook, III, Bloomfield Hills, and Edward K. Tazzia, East Detroit, both of Mich., assignors to Oakland Plastics Corporation, Troy, Mich.
Filed Oct. 4, 1974, Ser. No. 512,140
Int. Cl.² B65D *19/24*, *19/44*
U.S. Cl. 108—53 **16 Claims**

1. An industrial load-carrying pallet comprising; an integral sheet of material defining a top area on one face and a bottom area on the opposite face, a plurality of ribs formed in said sheet and extending downwardly thereinto from said top area, a plurality of support pedestals formed in said sheet and extending downwardly thereinto from said top area to lower extremities disposed below said ribs, a plurality of grooves formed in said sheet and extending downwardly thereinto from said top area, each of said grooves being arucate and disposed on the circumference of a groove circle for receiving the bottom rim of a drum, said pedestals having recesses extending thereinto from said lower extremities for receiving the top rim of a drum, said recesses being disposed on the circumference of a plurality of recess circles whereby each recess circle may receive the top rim of a drum, each of said groove circles being concentric to one of said recess circles, said pedestals including an elongated side pedestal along each of the opposite side extremities, each of said elongated side pedestals being generally W-shaped as viewed in plan and



from the center of said pallet, some of said recesses extending across said side pedestals.

3,948,191
COLLAPSIBLE SHELVING
Winnifred Hatherley, Mississauga, Canada, assignor to The Raymond Lee Organization, Inc., a part interest
Filed Jan. 14, 1974, Ser. No. 433,205
Int. Cl.² A47B *57/00*
U.S. Cl. 108—100 **1 Claim**



1. Collapsible shelving designed to be attached to a wall and designed to be supported by the walll when in an erected position and further designed to be collapsible and non-free-standing when detached from the wall, comprising:
a horizontal elongated rectangular board;
a plurality of non-elongated smaller boards that are equal in width to the width of the elongated rectangular board and that are less than half the length of the elongated rectangular board, the smaller boards being arranged into two like sets of boards, with each set of boards being connected together end to end to form a series and with each set connected at one end to a corresponding tip of the elongated rectangular board to form two like opposed sets of boards attached to and depending from opposed tips of the elongated rectangular board;
a like plurality of like hinges connecting the smaller boards in each set together and connecting each set to the elongated rectangular board;
means secured to aligned edges of all the boards to detachably secure them to a wall, with the elongated rectangular board being in a horizontal plane and being perpendicular to the smaller boards attached to it at each tip, and the boards in each of the sets of smaller boards being alternately vertical and horizontal to form two non-elongated stairway-like structures extending upwardly towards the elongated rectangular board when the boards are attached to the wall; and

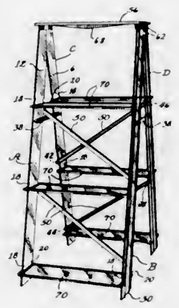
a flat horizontal shelf detachably securable to and extending between the bottom edges of corresponding vertically aligned boards in each set, when the boards are secured to a wall.

3,948,192

DECORATIVE STAND IN THE FORM OF A KITCHEN STEPLADDER

Bernard Yellin, 5252 S. Kolmar Ave., Chicago, Ill. 60632

Filed Mar. 10, 1975, Ser. No. 556,677
Int. Cl.² A47B *57/00*
U.S. Cl. 108—101 **7 Claims**



1. A decorative stand which is formed of components so that it can be packaged and shipped in a knockdown and disassembled condition and can be readily assembled at the point of use, said stand comprising a pair of oppositely positioned front legs and oppositely positioned rear legs, each leg having a generally flat wall surface, each of said legs formed of a plastic material, each leg having outwardly and inwardly facing edges and shelf supporting ledges formed integrally with each said leg, one or the other of said facing edges having a recess or notch positioned above and in close proximity to its shelf supporting ledge, a shelf adapted to rest on said shelf supporting ledges, said shelf having opposite ends, each of said opposite ends having integrally formed front and rear hooks which provide grooves facing each other, said hooks insertable in said recesses or notches of the facing edges of the legs when said shelf is initially connected to said leg, said shelf being moved to a position below said recesses or notches and to rest on said ledge when in secured supporting position with the grooves of the hook engaging the facing edges of legs and with the hook extending exteriorly around the exterior of the facing edges of the leg to detachably engage the pair of oppositely positioned legs.
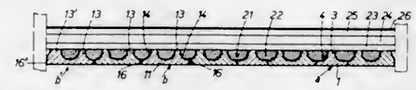
3,948,193

VAULT FOR FURNACES

Pierre Blanchet, Juvisy-sur-Orge; Guy Gasparini, Vedene, and Serge Dodard, Jouquerettes, all of France, assignors to Societe Europeenne des Produits Refractaires, France

Continuation-in-part of Ser. No. 273,963, July 21, 1972, abandoned. This application Mar. 6, 1974, Ser. No. 448,711
Claims priority, application France, July 27, 1971, 71.27454
Int. Cl.² E04B *7/08;* **F23M** *5/02*
U.S. Cl. 110—99 R **9 Claims**

1. A self-supporting vault capable of being utilized at temperatures above 1500°C, the vault comprising: (i) a plurality of arches arranged side-by-side, each arch being made of a plurality of archstones composed of a fused cast refractory material, each archstone comprising a lower portion of a thickness ranging from about 90 to about 130 mm, and at least one upper rib portion integral with said lower portion and having a height ranging from about 130 to about 270 mm, said upper rib portion extending along the longitudinal direction of the plurality of archstones of each respective arch wherein it is incorporated and the corresponding upper rib portions of the archstones of a given arch being arranged in an aligned and abutting relationship; (ii) a refractory concrete substan-



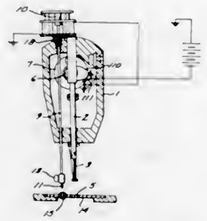
tially filling the entire recessed portions existing between the aligned upper rib portions; and (iii) a thermally insulating structure covering the filled ribbed archstones, said structure being such that the temperature at the top face thereof does not exceed about 120°C.

3,948,194

SEWING MACHINE ACCESSORY APPARATUS

Heinz Gunold, Obernburger Str. 125, 8751 Stockstadt, Germany

Filed July 23, 1973, Ser. No. 381,892
Int. Cl.² A41H *1/06;* **D05B** *35/00*
U.S. Cl. 112—131 **3 Claims**



1. In an automatic sewing machine for stitching an article, including a needle arm disposed for vertical translation on the sewing head of the machine, said needle arm having a needle secured to the lower end thereof, means for vertically translating said arm, a plate aligned in opposing relationship below said needle arm and means for translating the article to a preselected stitch pattern, the improvement comprising:
- an actuating rod disposed for vertical translation in substantially parallel alignment with said needle arm adapted to attach to a selected tool at the lower end thereof;
- means for selectively coordinating the vertical translation of said actuating rod with the feeding translation of said article;
- a mounting head secured for rotation to the free end of said actuating rod along an axis substantially transverse to the longitudinal axis of said rod;
- a plurality of color dispensers mounted to radially extend from said mounting head; and
- selecting means operatively connected to said mounting head for selecting an angular orientation thereof.

3,948,195

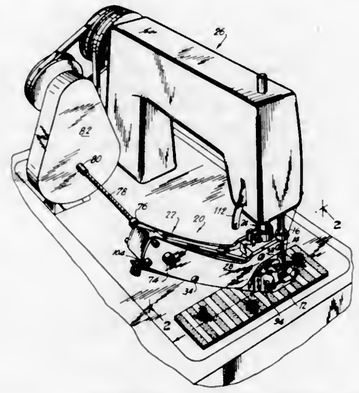
SHEET-MATERIAL FEEDING UNIT

Joseph Chudner, 2907 Brighton 8th St., Brooklyn, N.Y. 11235

Filed Mar. 7, 1975, Ser. No. 556,376
Int. Cl.² D05B *12/14, 27/10*
U.S. Cl. 112—214 **11 Claims**

1. In a feed unit which is adapted to be used with a machine, such as a sewing machine, where a sheet material is fed past a work station where operations are performed on the sheet material, support means, attaching means operatively connected with said support means for attaching said support means to a part of the machine, rotary drive gear means supported for rotary movement by said support means and having

external teeth, and endless belt means having internal teeth meshing with said external teeth of said drive gear means to



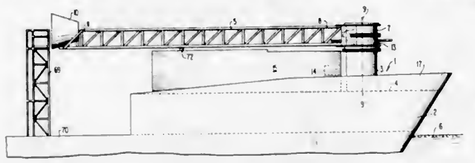
be driven without slip thereby, said belt means having an external friction surface for engaging sheet material and feeding the latter past a work station.

3,948,196

APPARATUS FOR BURNING FLUID AT A BURNER MOUNTED ON A FLOATING VESSEL SUBJECT TO WAVE ACTION

Donald L. Bleyl, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed July 18, 1975, Ser. No. 597,164
Int. Cl.² B63B *35/02*
U.S. Cl. 114—.5 D **5 Claims**



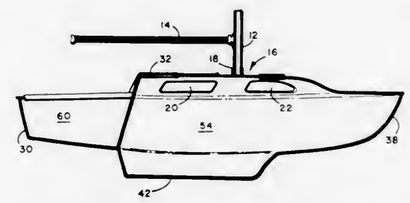
1. An apparatus for burning fluid at a burner mounted on a floating vessel subject to wave action, said apparatus comprising:
- floating vessel means;
- generally upright pedestal means;
- boom means mounted for swing movement across the surface of a body of water upon which said floating vessel means is floating;
- pivot means journaled on said pedestal means and supporting an inner portion of said boom means for said swinging movement;
- burner means carried by an outer portion of said boom means;
- outrigger means mounted on said pedestal means;
- drive means carried by said outrigger means and operable to engage and drive said pivot means to effect said swinging movement of said boom means; and
- wave-action-accommodating means operable to
  - sense the effects of wave-action-induced force acting on said boom means and tending to induce swinging movement of said boom means about said pedestal means and
  - apply a restraining force to said pivot means tending to counteract said wave-action-induced force acting on said boom means and tending to induce swinging movement of said boom means about said pedestal means.

3,948,197

SAILBOAT HULL CONFIGURATION

Arthur S. Henry, 5042 Doanoke Ave., Irvine, Calif. 94538

Continuation of Ser. No. 462,858, April 22, 1974, abandoned. This application July 14, 1975, Ser. No. 595,341
Int. Cl.² B63H *9/00*
U.S. Cl. 114—39 **5 Claims**



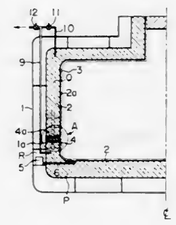
1. A sailboat hull adapted for receiving a mast and having a cockpit therein with a cabin enclosure wherein the improvement comprises:
- a boat hull having a depending keel formed in said hull with an interior thereof having more than fifty percent of its depth exposed to the interior of said cabin along at least part of its length said keel forming a walkway substantially along its entire length. To allow one to stand within the interior opening of said keel to the depth at which the interior of the keel is exposed within the cabin.

3,948,198

LOW TEMPERATURE LIQUEFIED GAS TANKER SHIP

Katsuro Yamamoto, Tokyo; Toru Sato, Kamakura, and Kenzi Ogino, Odawara, all of Japan, assignors to Bridgestone Liquefied Gas Company, Ltd., Tokyo, Japan

Filed Feb. 14, 1975, Ser. No. 549,923
Claims priority, application Japan, Feb. 16, 1974, 49-18691
Int. Cl.² B63B *25/16*
U.S. Cl. 114—74 A **7 Claims**

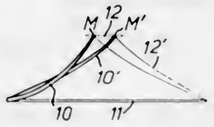


1. A tanker ship for carrying low temperature liquefied gases, comprising a hull structure, a compression resistant heat insulating layer provided inside said hull structure, and an inner membraneous vessel provided inside said heat insulating layer, characterized by a secondary barrier wall which covers a bottom portion and at least a lower side wall portion of said inner membraneous vessel, said secondary barrier wall having an outwardly bent flange-like upper edge portion which traverses said heat insulating layer and is fluid-tightly connected to said hull structure.

3,948,199
TUBULAR METAL MAST FOR THE RIGGING OF A SAILING BOAT

Gilbert Lamboley, Route de Saint-Romain, 69450 Saint-Cyr-Au-Mont-D'or (Rhone), France

Filed May 10, 1974, Ser. No. 468,889
Claims priority, application France, May 10, 1973, 73.16879
Int. Cl.² B63B *15/00*
U.S. Cl. 114—90 **9 Claims**

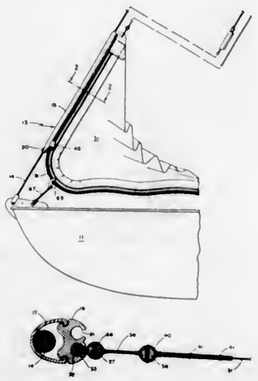


1. A tubular mast for the rigging of a sailing boat, said mast being formed of sheet metal bent to a tubular shape with edges of the metal sheet generally defining a line of separation in said mast extending at least along portions of the height thereof, said line of separation extending in a longitudinal plane through said mast and facilitating torsional flexibility in said mast, said mast having a base and a head, fastening means securing together the edges of said metal sheet at selected spaced intervals only for controlling said torsional flexibility with said torsional flexibility being greater at said base and said head than in a central part of said mast, at least certain of said fastening means being of the readily removable and addable type facilitating a rapid change in said torsional flexibility.

3,948,200
JIB SAIL SYSTEM

Frederick E. Hood; Donald K. Mitchell, both of Marblehead, and Bruce H. Walton, West Hyannisport, all of Mass., assignors to Hood Sailmakers, Inc., Marblehead, Mass.

Filed May 27, 1975, Ser. No. 580,887
Int. Cl.² B63H *9/04*
U.S. Cl. 114—105 **8 Claims**

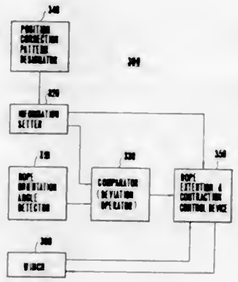


1. A jib sail system comprising:
a jib sail having at its luff edge a bead of relatively small cross-section and, closely adjacent said small bead, a rib of relatively large cross-section;
an elongate sail-support member having an aft-facing groove of C-shaped cross-section, the inside of said C-shaped groove corresponding in shape to said bead and being adapted to retain said bead with the sail extending through the mouth of the C-shape; and
at the base of said sail-support member, a guide comprising a pair of members which are spaced apart so as to form an oval channel and then approach each other to form an aft-facing slot, the portion of said oval aperture opposite said slot being aligned with said C-shaped groove, the balance of said oval aperture being of a size corresponding to the diameter of said rib and being shaped to guide said rib to a position just outside the mouth of the C-shaped groove, with the bead passing into said C-shaped groove whereby said rib guides the jib sail during raising while the bead retains the sail when raised.

3,948,201
POSITION CORRECTION SYSTEM OF FLOATING BODIES

Isamu Takeda, Naka; Ietoshi Yamura, Tokyo; Shojiro Yamada, Ichikawa, and Yoshio Seki, Tokyo, all of Japan, assignors to Mitsui Shipbuilding & Engineering Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1975, Ser. No. 570,026
Claims priority, application Japan, Apr. 23, 1974, 49-45057; Apr. 23, 1974, 49-45058
Int. Cl.² B63H *25/00;* **B63B** *35/44*
U.S. Cl. 114—144 B **22 Claims**

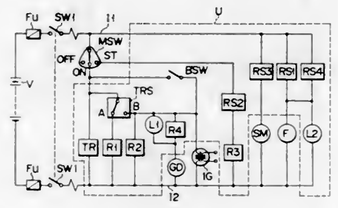


1. A position correction system of a floating body which is moored by at least three anchor ropes extending between said floating body and remote independent stationary anchoring points, said position correction system comprising means for detecting the orientation angle of each anchor rope; means for designating the angle of movement and the amount of movement of said floating body which are necessary to correct the position of said floating body; position correction parameter designating means which determines whether parallel movement of swinging movement is to be performed to correct the position of said floating body and sends the result of determination to said first mentioned means; a deviation operator which compares said angle of movement with said rope orientation angle for producing an output corresponding to the differential angle; a rope extension and contraction control device responsive to the output from said deviation operator and the output from said first mentioned means for producing an output for commanding paying out or taking up of respective anchor ropes; and winches mounted on said floating body for operating respective anchor ropes and controlled by the output from said rope extension and contraction control device; said rope extension and contraction control device including means for increasing or decreasing the length of each anchor rope by one unit length, and means for controlling the next unit length when each extended anchor rope is stabilized after completion of the control of the first unit length thus moving said floating body to a position designated by said first mentioned means in accordance with the determination made by said position correction parameter designating means.

3,948,202
VENTILATION CONTROL APPARATUS FOR AN ENGINE ROOM OF A SHIP

Norihiko Yoshikawa, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Oct. 29, 1974, Ser. No. 518,993
Claims priority, application Japan, Oct. 31, 1973, 48-122619
Int. Cl.² B63J *2/06*
U.S. Cl. 114—211 **8 Claims**



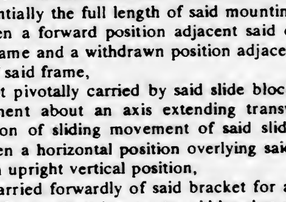
1. A ventilation control apparatus for an engine room of a ship which contains a gasoline engine of a spark ignition type, comprising:
a source of electrical power (V, I1, I2);
a ventilating device opened at one end to the engine room and at the other end to the atmosphere for ventilating the engine room;
a device (SM) coupled to the engine for starting the engine;
a main switch (MSW) coupled to the power source for starting the engine;
a timer (TR) coupled to the main switch (MSW) and to the timer switch (TRS) and responsive to the operation of the main switch (MSW) and to cause the timer switch (TRS) to be, for a predetermined period of time, in a first state (A) where the engine starting device (SM) is not energized and the ventilating device is energized and operated, and after the lapse of the predetermined period of time to cause the timer switch (TRS) to be in a second state (B) where the engine starting device (SM) is energized through the main switch (MSW) when the main switch (MSW) is operated to an engine starting position; and
a gas detector (GD) coupled to said ventilating device and to the power source so as to be operable at all times that the power source is energized, and in communication with the engine room for detecting the amount of combustible gas in the engine room, said gas detector being responsive to the amount of combustible gas in the engine room reaching a predetermined level for energizing and operating only the ventilating device independently of the state of the timer (TR), without affecting the operation of the engine.

3,948,203
MULTIPLE POINT SECURING CLEAT

Joseph E. Matthews, 4017 N. Witchduck, Virginia Beach, Va. 23455

Filed May 9, 1975, Ser. No. 576,185
Int. Cl.² B63B *21/04*
U.S. Cl. 114—218 **4 Claims**

1. A cleat comprising:
a pair of mounting bases adapted for securing to a surface;
means securing the mounting bases to the surface;
angular supporting pedestals projecting upwardly toward one another from the mounting bases;
an elongated main body extending across the pedestals, the main body including a central section spanning the pedestals, upwardly and outwardly extended inner wing sections on each side of the central section, and an outwardly and downwardly inclined outer wing section on each of the inner wing sections: and

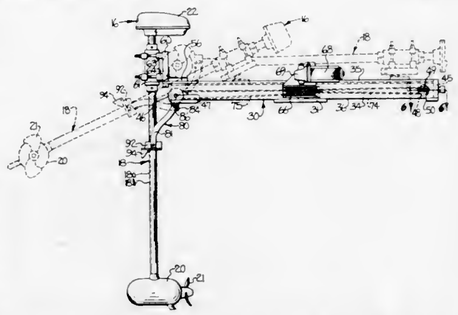


an annular peg projecting vertically from the central section.

3,948,204
APPARATUS FOR PIVOTALLY MOUNTING AN OUTBOARD MOTOR ON A FISHING BOAT

John O. Brock; Marmion Dean Davis, and James Robert Wray, all of Shelby, N.C., assignors to Interstate Industries, Inc., Shelby, N.C.

Filed Mar. 27, 1975, Ser. No. 562,597
Int. Cl.² B63H *21/26*
U.S. Cl. 115—18 E **12 Claims**



1. An apparatus for pivotally mounting an outboard motor, such as a shaft-mounted submersible electric motor, on a fishing boat or the like and such that the motor may be selectively pivoted between a vertically disposed operative position in the water and a horizontally disposed raised position removed from the water, said apparatus comprising
an elongated mounting frame adapted to be fixedly attached to a boat so as to extend in a generally horizontal direction, and defining an inner end and an outer end,
a slide block mounted for slideable linear movement along substantially the full length of said mounting frame and between a forward position adjacent said outer end of said frame and a withdrawn position adjacent said inner end of said frame,
a bracket pivotally carried by said slide block for pivotal movement about an axis extending transverse to the direction of sliding movement of said slide block and between a horizontal position overlying said slide block and an upright vertical position,
means carried forwardly of said bracket for attaching the shaft of an outboard motor to said bracket and such that the motor is substantially horizontally disposed when said bracket is in said horizontal position and is substantially vertically disposed forwardly of said mounting frame when said bracket is in said vertical position and said slide block is in its forward position,
guide means adapted to engage the shaft of the outboard motor at a point spaced from said attaching means for pivoting the outboard motor and bracket from their vertical positions to their horizontal positions during translation of the slide block from its forward position to its withdrawn position, and for pivoting the outboard motor

and bracket from their horizontal positions to their vertical positions during translation of the slide block from its withdrawn position to its forward position, and

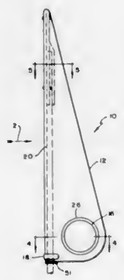
means for selectively translating said slide block between said forward and withdrawn positions to thereby pivot the motor between its vertical and horizontal positions.

3,948,205

DIRECTIONAL FINIAL INDICATOR

Chauncy F. Korten, Ann Arbor, Mich., assignor to Ridge Associates, Ann Arbor, Mich.

Filed Aug. 15, 1974, Ser. No. 497,521
Int. Cl.² B60Q *1/26*; G09F *17/00*
U.S. Cl. 116—35 R **17 Claims**



1. A pliable, directional, protective finial comprising an initially substantially flat, pliable sheet of material having a top and a bottom and a longitudinal axis of symmetry extending between the top and bottom, a separately distinguishable geometric shape visual indicator at the top of the pliable sheet and a pair of separately distinguishable geometric shape visual indicators at the bottom of the pliable sheet on opposite sides of the axis of symmetry, a shaft having an upper, free one end and another end adapted to be mounted to an object which is selectively movable, and means securing the pliable sheet to said one free end of the shaft and extending along the axis of symmetry thereof with the geometric shaped indicator at the top of the pliable sheet extending in one direction so as to provide front and rear indications and with the bottom of the pliable sheet wrapped around the shaft so that the bottom geometric shapes are aligned and extend perpendicularly to the geometric shape at the top of the pliable sheet to provide side indications, the width of the top of the pliable sheet having a wider dimension than the wrapped bottom and said visual indicator providing an indication of the location of the object.

3,948,206

JET POWERED WATERCRAFT

Nelson Tyler, Studio City, Calif., assignor to Still Water Properties, N.V., Curacao, Netherlands Antilles

Filed Sept. 6, 1974, Ser. No. 503,603
Int. Cl.² A63H *1/30*
U.S. Cl. 115—70 **13 Claims**

1. A jet powered watercraft comprising:

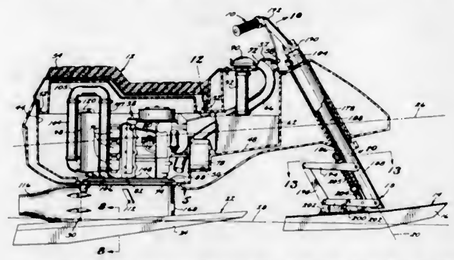
a hull including an engine compartment providing buoyancy;

a front ski assembly including a front ski located below and in spaced relation to said hull and further including means supporting said front ski on said hull for pivotal movement about a steering axis to steer the watercraft;

a rear ski underlying said engine compartment and operative with said front ski to hydrodynamically lift the watercraft to a cruise position above its displacement position by virtue of relative water flow upon the planing surfaces of said front and rear skis, said rear ski having an opening;

jet pump drive means located in said engine compartment;

a jet pump operative to receive water through said opening and accelerate the water for discharge at high velocity to propel the watercraft forwardly, said jet pump being located below said jet pump drive means, said jet pump



further being located above said planing surface of said rear ski whereby said jet pump is located above the water surface in said cruise position; and

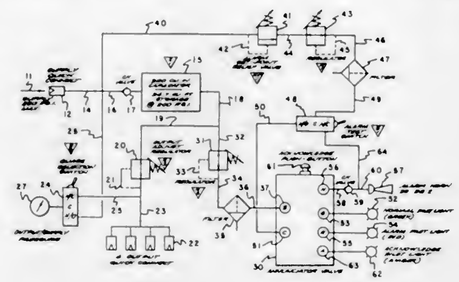
coupling means connecting said jet pump drive means to said jet pump for operation of said jet pump.

3,948,207

OUTPUT AIR SUPPLY HAZARD ANNUNCIATOR

Roy St. Paul, New Orleans, La., assignor to Raymond K. Goode Co., Inc., Metairie, La.

Filed Apr. 10, 1974, Ser. No. 459,629
Int. Cl.² G01L *19/12*
U.S. Cl. 116—65 **7 Claims**



1. Air breather annunciator means comprising:

a. air storage capacitor means adapted for being operably connected to a source of supply air;

b. air output regulator means connected in series with said air storage capacitor means for regulating the pressure of air supplied from said air storage capacitor means to an air demand operational station means;

c. first conduit means operably connecting said air storage capacitor means with said air output regulator means;

d. said air demand operational station means adapted for being operably connected to equipment requiring a source of pressure regulated air for life support;

e. second conduit means operably connecting said air output regulator means with said air demand operational station means;

f. annunciator means comprising alarm circuit means connected in parallel with said air demand station means at least across said air storage capacitor means for indicating an interruption of air flow to said air storage capacitor means, said alarm circuit means being further defined as comprising pressure sensing means for pneumatically sensing pressure variation and selectively actuated alarm means for indicating pressure changes from a predetermined set point as indicated by said pressure sensing means; and

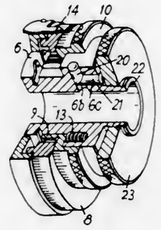
g. third conduit means operably connecting said alarm circuit means across the output of said air storage capacitor means.

3,948,208

ENGLISH/METRIC INDICATOR UNIT

Allen Elliott, Rexdale, Canada, assignor to Kenneth Ruddle; Clive Rathbone and Anthony Truslove, all of, England

Filed Aug. 23, 1974, Ser. No. 500,055
Int. Cl.² B23Q *17/00*
U.S. Cl. 116—115.5 **5 Claims**



1. An English/metric indicator unit for a machine tool, consisting of two directly meshing toothed gear members, the first of which is an externally-toothed gear wheel fitted onto means secured a rotary control member of a machine tool so as to turn with the member about its rotational axis, a base plate secured to the machine tool and having an eccentric aperture, said first gear member bearing a first calibrated scale in one of English or metric units and rotatable concentrically about said rotational axis, and the second gear member of which is a rotatable internally-toothed annular member in mesh with first said gear member and received in said eccentric aperture with its axis of rotation eccentric to the axis of rotation of the first gear member, said second gear member bearing an integral second calibrated scale rotatable eccentrically about the rotational axis of the first gear member, the number of teeth on the first and on the second gear members being chosen to provide an appropriate one of an English/metric or metric/English conversion ratio between the two gear members, the second calibrated scale indicating with reference to a datum, a converted reading of the other of the English or metric units upon rotation of said rotary control member.

3,948,209

INDICATOR APPARATUS

Shungo Takemoto, Ibaragi, and Tetuo Tanabe, Nagaokakyo, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 26, 1974, Ser. No. 492,143
Claims priority, application Japan, Aug. 4, 1973, 48-87910; Aug. 4, 1973, 48-87911
Int. Cl.² H03J *1/04*
U.S. Cl. 116—124.4 **8 Claims**

1. An indicating apparatus comprising:

a display case;

a display board defining a plurality of display perforations therein, said display board being arranged in the front end portion of said display case;

a block board defining a plurality of input perforations therein, said block board being positioned parallel to said display board in the rear end portion of said display case;

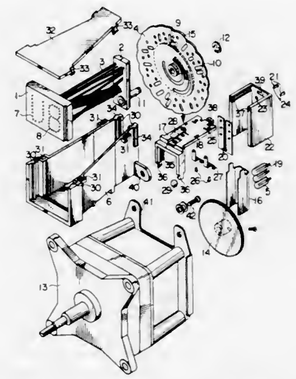
a plurality of optical fibers extending between said display board and said block board, each of said fibers being so arranged that input and output ends of said fiber are respectively opposed to one of said input perforations and one of said display perforations;

a disk-like sign board rotatably provided behind said block board, said sign board selectively masking a group of said input perforations of said block board and displaying a character or characters for indicating a VHF or UHF broadcasting station;

a lighting source in the rear of said sign board for applying a light beam thereof to said optical fibers;

a first gear wheel fixed on said sign board;

a driving means for selecting both VHF and UHF channels having a rotatable shaft projecting from the front wall of said driving means; and



a second gear wheel positioned behind the rear wall of said driving means, said second gear wheel being rotatable with said rotatable shaft;

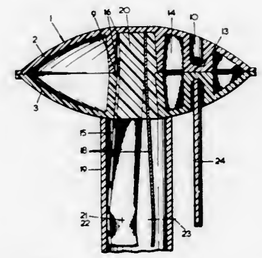
said display board being positioned parallel to and near the front wall of said driving means, said sign board being arranged parallel to and near the rear wall of said driving means, and said first gear wheel engaging with said second gear wheel.

3,948,210

CAP FOR A FLAG POLE

Antoon J. Van Rijn, Hertog van Beierenstraat 7, Ter Aar, Netherlands

Filed Apr. 23, 1974, Ser. No. 463,396
Claims priority, application Netherlands, Apr. 26, 1973, 7305856
Int. Cl.² G09F *17/00*
U.S. Cl. 116—173 **7 Claims**



1. A cap for a flag pole, which cap is provided with an opening for the mounting thereof onto the flag pole, characterized in that the cap consists of moulded or cast material and is composed of two halves which are substantially identical and are secured to each other, said halves being substantially hollow and being bonded by their peripheral edges to each other, along a surface perpendicular to the axis of the cap, the opening being positioned in the lower half of the cap and giving access to the interior of an axially-extending sleeve-like part centrally positioned within the hollow cap; said sleeve-like part extending entirely through said lower half and merges

into an opening in a sleeve-like part in the upper half which sleeve-like part is closed at its upper and, and wherein both sleeve-like members converge upwardly by having a frusto-conical shape and in which the smallest diameter of the opening in the lower half is smaller than the widest diameter of the opening in the upper half, which is positioned in the area immediately adjacent to said smallest diameter of the opening in the lower half.

6. A cap for a flag pole, which cap is provided with an opening for the mounting thereof onto the flag pole, characterized in that the cap consists of moulded or cast material and is composed of two halves which are substantially identical and are secured to each other, said halves being substantially hollow and being bounded by their peripheral edges to each other in a plane perpendicular to the axis of the cap, and in that in a centrally positioned mounting sleeve in the cap, a connecting element is fixedly secured and projects from the cap towards the flag pole, said connecting element being made from strips welded together in a part of it lying within the cap, and at a distance from each other in a part of it outside the cap, and being fixed into said opening by means of material cast into said sleeve.

3,948,211

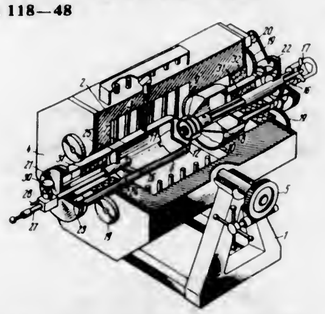
PLANT FOR CHROMIZING METAL ARTICLES

July Nikolaevich Griboedov, Vostochnaya ulitsa, 1/7, korpus 3, kv. 128; Boris Ivanovich Junts, Nizhegorodskaya ulitsa, 71, kv. 55; Igor Ivanovich Malanin, bulvar Karbysheva, 22, kv. 30; Dmitry Eduardovich Kharitonovich, Sivtsev-Vrazhek pereulok, 15/25, kv. 26; Lev Alexandrovich Zherdev, Sharikopodshipnikovskaya ulitsa, 2, kv. 156, and Dmitry Pavlovich Borisov, Sharikopodshipnikovskaya ulitsa, 2, kv. 195, all of Moscow, U.S.S.R.

Filed Apr. 8, 1975, Ser. No. 566,046

Int. Cl.² C23C *13/08*

U.S. Cl. 118—48 **4 Claims**



1. A plant for chromizing metal articles, comprising: a framework; a furnace secured on said framework and pivotally mounted about its transverse axis; a drive for reversibly pivoting said furnace about said transverse axis; a retort concentrically mounted within said furnace, said retort including a working chamber with a charging-and-discharging door and an auxiliary chamber, said chambers communicating through a relatively short, elongated throat section formed on said longitudinal axis; a cover closing said charging-and-discharging door of said retort; a screw element generally conforming to the length and diameter of said throat section and fixed therein, and a partition mounted in front of said screw on the side of said retort working chamber, said partition being provided with holes sufficient to let said grains of the chromium-containing material pass through but insufficient for the passage of articles to be treated; tubes for supplying gas into said retort; tubes for discharging gaseous products from said retort; tubes for introducing reagents into said working chamber and; a drive for reversible rotation of said retort about its longitudinal axis; whereby in one direction of pivot and a first direction of retort rotation said auxiliary chamber may be charged with said granular material, and in the reverse directions of pivot and rotation said grannular material charge may be transferred to said working chamber.

3,948,212

COATING APPARATUS

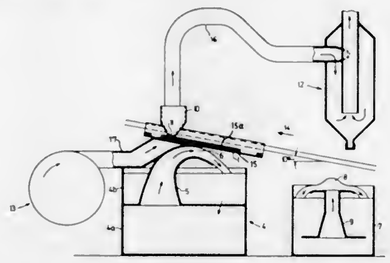
Rolf Mayer, Winnenden, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Division of Ser. No. 345,454, March 27, 1973, abandoned. This application July 18, 1974, Ser. No. 489,945

Claims priority, application Germany, Mar. 30, 1972, 2215623

Int. Cl.² B05C *3/09*

U.S. Cl. 118—50 **10 Claims**



1. In an apparatus for solder-coating a member having two major surfaces and provided with at least one passage which communicates the major surfaces, a combination comprising means for advancing the member in a predetermined path and in a given direction; means for contacting at least one of the major surfaces with molten solder as the member advances in said path so that excess solder at least partially obstructs the passage; means for maintaining the temperature of at least said excess solder obstructing the passage above its melting temperature as long as the member advances in a portion of said path downstream of said contacting means in said direction; and means for clearing the passage, including a suction source, and a suction nozzle adjacent said downstream portion of said path and directed against one of the major surfaces of the member when the latter advances in said downstream portion, said suction nozzle communicating with said suction source whereby a fluid stream is drawn through the passage when the latter communicates with said suction nozzle, which fluid stream entrains said excess solder and removes it from said passage.

3,948,213

COATING-IMPREGNATING CHAMBER FOR CATALYST SUPPORT MEMBERS

William A. Hoyer, Evanston, and Lowell W. Johnson, Fox Lake, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 21, 1974, Ser. No. 516,525

Int. Cl.² B05C *1/00*

U.S. Cl. 118—50 **4 Claims**

1. A treating chamber for use in effecting the multiple stage treatments of catalyst support members to provide a catalyst coating thereon, which comprises in combination,

an open-bottomed liftable housing section,

power operated means connective to such section for effecting the periodic lifting thereof,

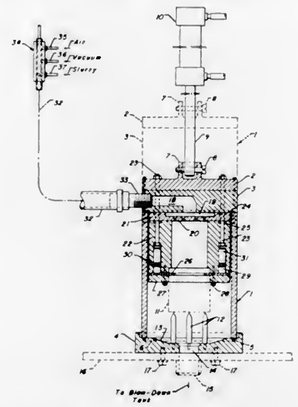
a base section,

a seal means for providing a pressure tight seal between said base section and the lower periphery of said housing section,

spaced support pins projecting into the lower central portion of the zone above the base section, and providing for an unobstructed fluid flow through a catalyst support member which is placed therein,

said housing section including an elevated seal means provided in a ring-like manner around the interior thereof to provide a fluid seal between the latter and the top external edge portion of the support member to be placed therein, such that a fluid stream will not flow in the annular space around the inserted member,

a fluid drain means from said base section within the confines of said liftable housing section and said seal means,



valve means for said drain means,

at least one conduit means to the upper interior portion of said housing whereby a fluid stream may be brought into the interior of said housing and into the passageways of said member to effect a thorough contacting of the surfaces thereof,

and valving means for said conduit means to regulate various fluid flows to the interior of said chamber.

3,948,214

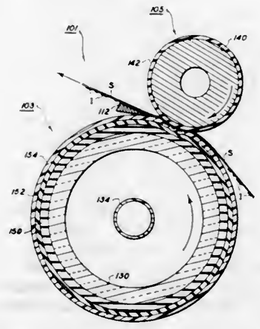
INSTANT START FUSING APPARATUS

Raghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 4, 1975, Ser. No. 547,076

Int. Cl.² G03G *15/20*

U.S. Cl. 118—60 **6 Claims**



1. In an electrostatic copying machine having a heated pressure fusing apparatus of the type including a heated fuser roll and a pressure back-up roll defining a nip through which support material bearing toner images is passed for fusing the toner images onto the support material, an instantly heated fuser roll comprising:

a cylindrical member made of material which transmits radiant energy,

a source of radiant energy positioned interior to said cylindrical member,

first, second and third layers of relatively thin material covering said cylindrical member,

said first layer being of an elastomeric material transmitting radiant energy covering the surface of said cylindrical member,

said second layer being an elastomeric material which absorbs radiant energy covering said first layer, and

said third layer which contacts the toner images to be fused being a material having toner release characteristics covering said second layer,

wherein said first, second and third layers have a combined thickness ranging from about 8 to about 15 mils.

3,948,215

FIXING TONER IMAGES IN ELECTROPHOTOGRAPHY

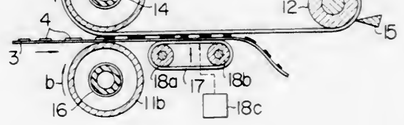
Ryoichi Namiki, Hino, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Division of Ser. No. 336,460, Feb. 28, 1973, abandoned. This application Dec. 20, 1974, Ser. No. 534,884

Claims priority, application Japan, Mar. 14, 1972, 47-25896

Int. Cl.² G03G *15/20*

U.S. Cl. 118—60 **4 Claims**



1. A device for fixing an electrophotographic image formed by toner particles adhering to selected areas on one side of a support sheet, comprising:

a first heater roller, a guide roller and an endless belt trained over said rollers and having a first run extending and moving away from the first heater roller;

a second heater roller disposed in pressing engagement with the first heater roller across a portion of said first run of the endless belt; and

means for heating the heater rollers to maintain the heater rollers and the portion of the endless belt between them at a higher temperature than the remainder of said first run of the endless belt;

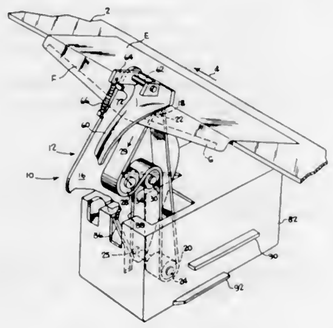
including cooling means disposed at the same side of said first run of the endless belt as the second heater roller and adjacent said second heater roller for cooling a portion of said first run of the endless belt which is moving away from the heater rollers and a support sheet or a portion thereof contacting said portion of the first run of the endless belt; and

whereby said sheet, introduced between the heater rollers, with the toner image bearing side facing and contacting the first heater roller, moves between the heater rollers and then away from the heater rollers along said first run of the endless belt, while the toner image is subjected to heat and pressure when between the two heater rollers, but is subjected to cooling when moved away from the heater rollers by said moving first run of the endless belt.

3,948,216
REMOVABLE LIQUID RESERVOIR ASSEMBLY FOR USE IN A POSTAGE METER MAILING MACHINE

Robert R. Reid, Stamford, and James G. Montagnino, Monroe, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Mar. 10, 1975, Ser. No. 556,710
Int. Cl.² B05C 1/02, 11/11
U.S. Cl. 118—257 11 Claims



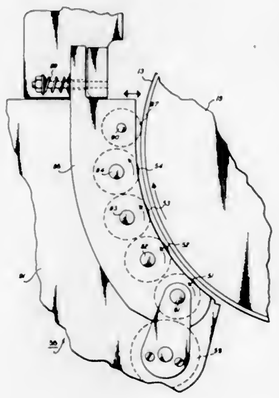
1. A liquid reservoir assembly for a postage meter mailing machine comprising:
- a container means for containing a supply of liquid,
- a guide assembly means for removably supporting the container means within the mailing machine,
- the guide assembly means including a base member adapted to be fixedly mounted on the mailing machine,
- a movable container support tray means slidably positioned within the base member to slide relative to it for a limited degree of travel to permit access to the container means within the mailing machine,
- the support tray means having container engaging means for engaging the container means to prevent inadvertent movement when placed therein, and
- means for maintaining the support tray means in an open position in which access to the container means for removal is possible,
- the means for maintaining the support tray means in the open position including means for preventing its sliding movement except when the container means is placed thereon.

3,948,217
MAGNETIC BRUSH DEVELOPMENT SYSTEM WITH FLOATING DEVELOPMENT ROLLS

John E. Forward, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 20, 1974, Ser. No. 525,529
Int. Cl.² G03G 15/09
U.S. Cl. 118—637 10 Claims

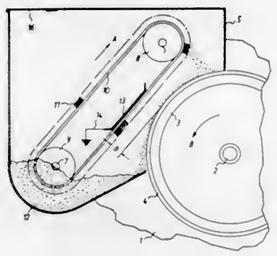
1. A magnetic brush development system for developing latent electrostatic images carried by a photoconductively coated substrate, said substrate being in the form of a rotatable drum, said system comprising the combination of
- a plurality of rolls, including at least one development roll, having separate axes of rotation;
- a housing having a bracket for supporting said rolls, said bracket being pivotally mounted for rotation about the axis of a first of said rolls remote from said development roll;
- follower means connected to said bracket adjacent said development roll, said follower means contacting said drum outboard of said coating; and
- biasing means coupled to said bracket for urging said follower means into contact with said substrate, whereby a fixed spacing is maintained between said rolls while said bracket swings toward and away from said substrate in a manner tending to maintain a substantially constant spacing between said development roll and said photoconductive coating.



3,948,218
ELECTROSTATIC COPIER DEVICE

Josef Pfeifer, Unterhaching; Rudolf Eppe, Taufkirchen, and Gunther Schnall, Eching, all of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Filed Nov. 27, 1974, Ser. No. 527,868
Claims priority, application Germany, Nov. 30, 1973, 2359872
Int. Cl.² G03G 15/08
U.S. Cl. 118—637 10 Claims

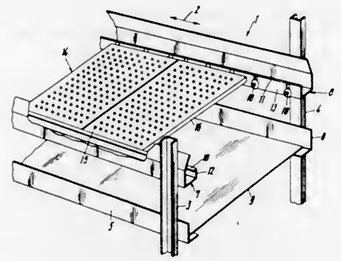


1. In an electrostatic copier using a particulate developer mix having particles of a given dimension, a combination comprising a source of said developer mix; a supply ramp having an inlet end located higher than said source; and conveying means for conveying said developer mix from said source to said inlet end, including an endless flexible belt having one end portion which extends into said source and another end portion which discharges onto said inlet end, at least one driven roller engaging said belt for driving the same, and a plurality of pins anchored in said belt and projecting from a conveying surface thereof so as to entrain developer mix from said source, the spacing between adjacent ones of said pins being greater than said dimensions but smaller than a multiple thereof.

3,948,219
BATTERY FARMING EQUIPMENT

Wilhelm Groppel, Melle, Germany, assignor to Wigro KG. Wilhelm Groppel, Melle, Germany

Filed Apr. 25, 1974, Ser. No. 463,983
Claims priority, application Germany, May 5, 1973, 2322811
Int. Cl.² A01K 31/00
U.S. Cl. 119—17 9 Claims

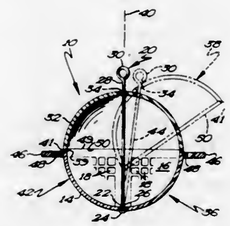


1. A life stock fattening battery comprising an elongated frame, an elongated perforated floor means extending longitudinally between an input end and an output end of the frame and having an unobstructed width substantially coextensive with the width of the frame, the floor being divided longitudinally into a plurality of substantially rigid sections in open communication and abutted with each other, a droppings plate supported on the frame parallel to and beneath the floor means, means attached with said frame for slidably and horizontally supporting said floor sections for longitudinal movement within the frame, and means defined by end portions of said frame and providing open access to the floor at each end of the frame for loading livestock and the floor sections at the input end of the frame and for unloading livestock and the floor sections at the output end of the frame.

3,948,220
BIRD FEEDING STATION

Kenneth L. Fiedler, 150 Graham St., Austin, Minn. 55912

Filed Aug. 26, 1974, Ser. No. 500,717
Int. Cl.² A01K 39/00
U.S. Cl. 119—51 R 4 Claims



1. A bird feeding station for dispensing suet to birds, hangable from a support, and entertaining to bird watchers, comprising:
- an open-top bowl with a chamber therein for containment of suet, said bowl having a plurality of perforations therein and through which suet may be extracted by birds;
- an elongated rod with upper and lower ends, said lower end of said rod passing through said chamber and carrying said bowl and said rod having a stop adjacent the upper end for attachment to the support;
- a cover for closing said open top of said bowl and having an aperture therethrough, with said rod passing through said aperture such that said cover is slidably mounted on said rod to move between a closed position wherein said cover engages and closes the open top of said bowl, and a loading position wherein said cover is spaced from said bowl along said rod and toward said stop to space said bowl and cover from one another;
- said aperture of said cover being greater in diameter than the diameter of said elongated rod, permitting free rotational movement of said cover about said rod and also permitting tilting of said cover relative to said elongated rod when in a loading position to facilitate insertion of suet between said bowl and said cover; and
- said lower end of said rod being loosely retained by said bowl to permit free rotational movement of said bowl about said rod, thereby permitting said bowl and said cover, when in closed position, to rotate together freely about said rod in response to movement of birds during their arrival at and use of the feeding station to thereby encourage bird acrobatics entertaining to bird watchers.

3,948,221
LIVESTOCK WATERING TROUGH

Emil L. Wiuniski, Mesa, Ariz., assignor to Corral Industries, Incorporated, Phoenix, Ariz.

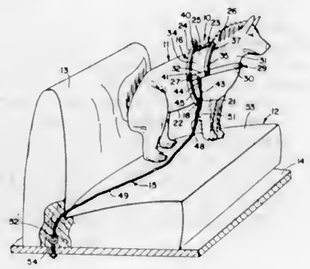
Filed June 26, 1974, Ser. No. 483,224
Int. Cl.² A01K 7/00
U.S. Cl. 119—78 7 Claims

1. A trough for livestock comprising:
- a molded plastic body member, the walls of which define an elongated closed ended concave cavity extending along its length,
- said walls of said cavity at the periphery of the opening outlining said cavity being turned back on themselves to define a pocket for receiving a supporting framework for the trough,
- said pocket extending around the cavity,
- a framework mounted within said pocket and having means at each end for mounting said member forming said cavity on two spaced upstanding pedestals,
- a water inlet pipe extending into one end of said cavity,
- valve means connected to said water inlet pipe mounted within and at one end of said cavity,
- cover means detachably mounted on the periphery of said cavity over said valve means and extending into said cavity for concealing said valve means from the livestock,
- means for detachably fastening said cover means to said trough, and
- insulating means for substantially filling said pocket for sealing said framework in said pocket,
- said cover means comprising a substantially right angular configuration having one leg formed to cover said valve means and fit against one end of said cavity adjacent said valve means and the other leg extending toward the bottom of said cavity and shaped to fit substantially the outline of the cross-section of said cavity, whereby said cover means conceals said valve means from the livestock and provides for the flow of water into all areas of said cavity.

3,948,222
ANIMAL SAFETY HARNESS

Frederic Longshore, and Claude H. Kissling, both of San Rafael, Calif., assignors to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Feb. 19, 1975, Ser. No. 551,036
Int. Cl.² A01K *3/00, 27/00*
U.S. Cl. 119—96 **4 Claims**



1. An animal safety harness adapted to hold an animal in a fixed position on an automobile seat having a seat portion and an upwardly extending backrest, which comprises:

a. an adjustable body strap adapted to secure around a rearward portion of said animal and to engage a belly of said animal;

b. an elongated back strap member joined at one end thereof to a top closed portion of said body strap, said back strap member adapted to extend forwardly on a back of said animal to a nape of said animal;

c. a pair of free ends of a U-shaped forwardly extending strap member affixed to said body strap, a closed end portion of said U-shaped strap member adapted to engage a chest area of said animal, leg portions of said U-shaped strap member adapted to engage the sides of said animal;

d. a pair of lower free ends of an inverted U-shaped strap element affixed to said leg portions of said U-shaped strap member, an upper closed portion of said inverted U-shaped strap element joined to a forward end of said back strap member, said upper closed portion of said inverted U-shaped strap element adapted to engage said nape of said animal;

e. a first chain member;

f. first means for detachably securing said first chain member to said leg portions of said U-shaped strap member;

g. a second chain member;

h. second means for detachably securing said second chain member to said first chain member; and

i. third means for permanently securing said second chain member to a floor of said automobile.

3,948,223
SERIALLY FIRED STEAM GENERATOR

Elliot Warren Benson, Verona, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jan. 2, 1975, Ser. No. 538,073
Int. Cl.² F22B *33/00;* **F22G** *7/00;* **F23M** *3/04*
U.S. Cl. 122—240 A **3 Claims**

1. The method of producing heat energy comprising the steps of:

providing fuel;

providing combustion air considerably in excess of that which is required for complete combustion at a first combustion zone;

burning the mixture of fuel and excess combustion air in said first combustion zone;

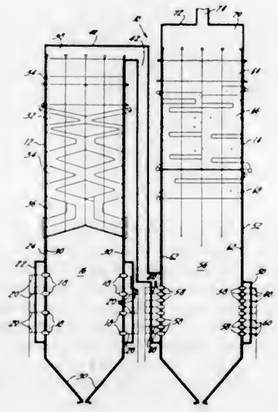
leading the exhaust gases including the excess combustion air from the first combustion zone to a second combustion zone;

adding combustion air, in addition to that contained in the exhaust gases from the first combustion zone at said second combustion zone;

providing additional fuel to be burned at said second combustion zone;

burning said additional fuel in the presence of the exhaust gases from said first combustion zone and in the presence of said added combustion air;

whereby the excess combustion air furnished at said first combustion zone and the exhaust gases furnished at said second combustion zone will prevent the temperatures within said combustion zones from rising above that at which oxides of nitrogen are substantially produced.



3. An apparatus for producing heat energy comprising:

a first unit having a first combustion zone;

a second unit having a second combustion zone;

means for supplying fuel and an amount of combustion air considerably in excess of that required to complete the combustion of said fuel to said first combustion zone;

means for flowing the exhaust gas from said first combustion zone into said second combustion zone;

means for adding fuel to said second combustion zone to combust said fuel in the presence of the exhaust gases from said first combustion zone;

tubes in said first unit for flowing water close to said first combustion zone so that said water is heated and generated into steam; and

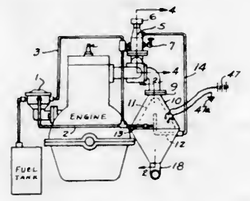
a superheater, said superheater being disposed in said second unit and heated by said second combustion zone.

3,948,224
SYSTEM TO PREVENT POLLUTION OF ATMOSPHERE

Edward M. Knapp, 951 N. Livingston St., Arlington, Va. 22205, and Stephen J. Nesbitt, 1111 Massachusetts Ave., NW., Washington, D.C. 20005

Filed Apr. 22, 1970, Ser. No. 30,689
Int. Cl.² F02B *43/00;* **F02M** *21/00*
U.S. Cl. 123—3 **2 Claims**

1. A fuel system for an internal combustion engine to which are attached a fuel storage tank, a fuel pump, and an exhaust pipe, said fuel system comprising in combination an evolvor to thermally crack liquid fuels into gas, a gas carburetor for said gas, and a valving system to furnish liquid fuels to the evolvor in amounts variable with the rate of operation of the engine, the gas carburetor combined into the fuel system consisting of a throat mated to the intake manifold of the engine, said throat containing a conventional throttle valve actuated by conventional mechanical linkage, the rotatable shaft of said throttle valve having mounted on it but outside of the carburetor throat a valve for the passage of liquid fuel, and the said carburetor throat having mounted inside of it a fuel gas/air mixing valve consisting of movable air and gas valve closure plates rigidly connected to opposite ends of a single rod, the air closure plate controlling the flow of air and being controlled by it, and the gas closure plate controlling the flow and admixing of gas into the air stream, the structure of closure plates being spring loaded to closed positions onto valve seats

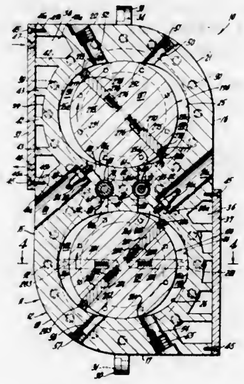


respective to the several closure plates under minimum rates of operation of the engine, said air and fuel closure plates having areas in direct proportion to a predetermined air/fuel gas ratio suitable to most efficient operation of the engine, and said closure plates being moved away from their respective valve seats in concert and in linear proportion to the operating requirements of the engine, the movement being caused by the air flow induced in turn by the engine, and transmitted through the throttle valve.

3,948,225
ROTARY INTERNAL COMBUSTION ENGINE WITH PARALLEL COEXTENSIVE ROTORS

William M. Lester, 8 Brayton Road, Livingston, N.J. 07039

Filed Nov. 27, 1974, Ser. No. 527,592
Int. Cl.² F02B *53/08*
U.S. Cl. 123—8.43 **2 Claims**

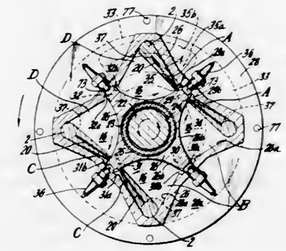


1. An engine comprising a casing having a pair of spaced, coextensive, substantially elliptically shaped cavities having parallel long axes and coaxial short axes, cylindrical rotor portions rotating in said cavities and rotatably contacting opposed sides of the cavities at their short axes, respectively, means to connect said rotor portions for concurrent rotation at the same rate of speed, sliding piston means on each of said rotor portions having wiping contact with the internal surface of the cavity for said rotor portion, said cavities each having an intake chamber on one side of the rotor portion in said cavity and an exhaust chamber on the other side of said rotor portion in said cavity, gas inlet means for each intake chamber, gas outlet means for each exhaust chamber, spark plug means for each exhaust chamber, a pair of separate passages in the casing and between the cavities and each connecting the intake chamber of one cavity with the exhaust chamber of the other cavity, separate valves in said passages, respectively, and means to alternately actuate said valves in synchronous relation with the rotation of said rotor portions in the respective cavities to open and close said passages, said cavities having parallel transverse axes, and said valve actuating means comprising means mounted for rotation on the axes of said rotor portions, said casing comprising a central section, said central section being formed with said cavities, said cavities being coextensive with said central section, side sections fixed to opposite sides of said central section, and said means mounted for rotation being located on one side of the central section, said valve actuating means being located on the other side of the central section.

3,948,226
INTERNAL COMBUSTION ENGINE

Edward Howard Green, 11 Army Trail Road, and Edward Howard Green, Jr., 21 N. Wisconsin Ave., both of Addison, Ill. 60101

Continuation-in-part of Ser. No. 286,294, Sept. 5, 1972, Pat. No. 3,871,337. This application Sept. 25, 1973, Ser. No. 400,580
Int. Cl.² F02B *53/06*
U.S. Cl. 123—18 R **19 Claims**



1. An internal combustion engine comprising, an engine block containing at least two combustion chambers, translation gear means and rotary valve means, means which oscillate back and forth in said combustion chambers, a separate shaft fixedly connected to each of said oscillating means, and a main shaft carried by said engine block, the translation gear means being disposed adjacent only a single side of the combustion chambers and the rotary valve means being disposed adjacent only a single side of the combustion chambers and opposite the side on which the translation gear means is disposed, the combustion chambers including exhaust outlet means and fuel intake means and the engine block containing ignition means, the main shaft being connected to the rotary valve means, said translation gear means operably connecting each of the oscillating means shafts to the main shaft, whereby during the combustion power cycle, the oscillatory motion of said oscillating means is transmitted and converted to rotary motion of the main shaft and rotary valve means.

3,948,227
STRATIFIED CHARGE ENGINE

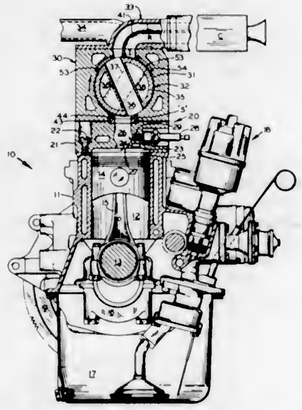
William D. Guenther, R.R. 2, Hagerstown, Ind. 47346

Filed Mar. 8, 1974, Ser. No. 449,241
Int. Cl.² F02B *19/10;* **F01L** *7/00*
U.S. Cl. 123—32 SP **14 Claims**

1. Engine apparatus for applying a stratified charge to an internal combustion engine having at least one cylinder, a piston mounted for reciprocation within the cylinder and

drivingly connected to a crankshaft, and charge forming means, said apparatus comprising:

1. a cylinder head disposed over the cylinder and defining a primary combustion chamber bounded by the cylinder walls, the piston and said head;
2. a pre-combustion chamber defined within said head in open communication with the primary combustion chamber;
3. a cylindrical valve body disposed for rotation within said head adjacent said pre-combustion chamber;
4. inlet means connected to said head for separately delivering a first lean charge from the charge forming means and



a second rich charge from the charge forming means to said valve body;

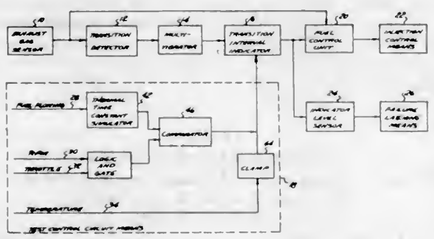
5. an outlet manifold connected to said head and having one end in open communication with said valve body;
6. inlet and exhaust passages defined within said valve body and disposed for establishing respective, sequential communication upon rotation of said valve body between said precombustion chamber, said inlet passage, and said inlet means for delivering a lean charge, then a rich charge, and upon further rotation to establish communication between said pre-combustion chamber, said outlet passage and said outlet manifold during respective intake and exhaust strokes of said engine.

3,948,228

EXHAUST GAS SENSOR OPERATIONAL DETECTION SYSTEM

David George Luchaco, Rochester, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 6, 1974, Ser. No. 521,310
Int. Cl.² B60Q *1/00*
U.S. Cl. 123—32 EA **21 Claims**



1. In a fuel injection system in combination with an internal combustion engine system with electrically controlled fuel injector means and having an exhaust gas sensor generating system control signals having a first signal voltage level for one chemical composition of exhaust gas and having a second signal voltage level for another chemical composition of exhaust gas, a sensor operational detection system comprising:

a waveshape transition detector responsive to the voltage transition of the sensor signals from the first voltage level to the second voltage level for generating a first electrical signal;

a multivibrator responsive to said first electrical signal for generating a rectangular output pulse having a predetermined time duration independent of the time duration of said first electrical signal;

a test control circuit means responsive to at least two predetermined engine operating conditions for generating a test enable electrical signal in response to the occurrence of said predetermined engine operating conditions;

transition interval indicator means enabled by said test enable electrical signal and responsive to said multivibrator output signal for indicating by means of a variable voltage the interval between successive voltage transitions from said first voltage level to said second voltage level of the sensor;

means responsive to said indicator means for varying in a predetermined relationship the electrically controlled fuel injection means for exposing the sensor to different chemical compositions of exhaust gases;

indicator level sensor means responsive to a predetermined voltage level of said indicator means for generating a second electrical signal when the interval between successive voltage transitions from said first voltage level to said second voltage level of the sensor exceeds a predetermined interval and

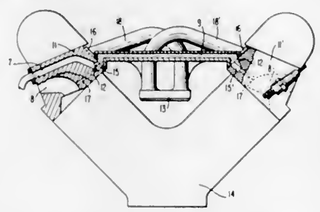
latching means responsive to said second electrical signal for generating and maintaining a failure electrical signal indicating that the sensor is misoperative.

3,948,229

MANIFOLD STRUCTURE FOR A FOUR-CYCLE INTERNAL COMBUSTION ENGINE

Jörg Abthoff, Pluderhausen; Reinhard Kirsch, Stuttgart; Rolf Ohlendorf, Schnait, and Franz Ruf, Stuttgart, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Sept. 4, 1974, Ser. No. 502,942
Claims priority, application Germany, Sept. 6, 1973, 2344864
Int. Cl.² F02M *35/10*
U.S. Cl. 123—52 M **7 Claims**



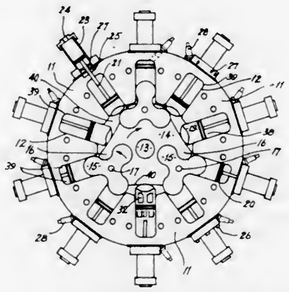
1. A four-cycle internal combustion engine with external ignition, with suction manifold means and with a separately provided forced air supply to exchaust channels of the engine, characterized in that an air supply channel means is cast-in adjacent one of the exhaust channels provided in a cast cylinder head means, said air supply channel means being in communication with a slot means extending on the suction manifold means side of the engine in the longitudinal direction of the engine block, said slot means being covered off on its open side by a flange means of the suction manifold means and being operatively connected with the individual exhaust channels by way of cross bores provided in the cylinder head means.

3,948,230

ROTARY ENGINE PROVIDED WITH FIRST AND SECONDARY ROTATABLY MOUNTED ROTORS

Alan Robert Burns, City Beach, Australia, assignor to Ruapehu Pty. Ltd., City Beach, Australia

Filed May 17, 1974, Ser. No. 470,908
Int. Cl.² F02B *75/22*
U.S. Cl. 123—55 R **6 Claims**



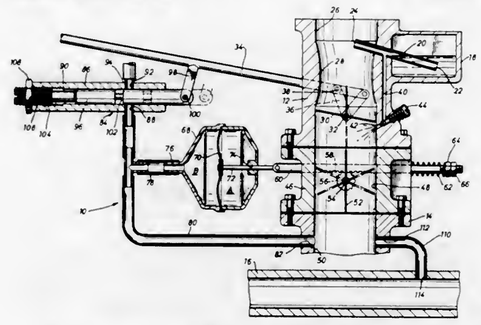
1. A rotary engine comprising a substantially cylindrical outer casing having chambers formed therein, pistons in said chambers, a central drive shaft, a substantially triangular shaped first rotor mounted to said drive shaft, substantially "clover" shaped secondary rotors one rotatably mounted to each of the three lobes of said first rotor, rotation of the drive shaft and first rotor being in the reverse direction from the secondary rotors, and lobes of said secondary rotors engaging the base of said pistons which are provided in chambers formed within the outer casing.

3,948,231

POWER AND DECELERATION GOVERNOR FOR AUTOMOTIVE ENGINES

Norris E. Smith, 412 Fairfield, Lufkin, Tex. 75901

Filed Jan. 2, 1974, Ser. No. 430,236
Int. Cl.² F12D *11/08*
U.S. Cl. 123—103 R **27 Claims**



1. A deceleration cut-off and mixture flow controlling system for an automotive engine equipped with a carburetion system for injecting a combustible mixture of fuel and air into the intake manifold of the engine, said carburetion system incorporating housing defining a flow passage, said housing having located therein a primary fuel jet and an idle fuel jet for supplying fuel into a flow passage defined to be mixed with a quantity of air to provide a combustible mixture that may be introduced into the intake manifold of the engine and having a throttle valve disposed between the primary and idle fuel jets and being controllably movable by a throttle linkage, said system comprising:

a valve shaft extending through said housing and having a portion thereof rotatably positioned within said flow passage;

a fuel mixture cut-off and mixture flow controlling valve disposed in the flow passage of the carburetion system downstream of the idle fuel jet and being rotatably supported by said valve shaft, said valve being rotatably movable between open and closed positions;

valve actuator means being operatively connected to said valve and being capable of inducing rotary movement to said valve shaft and said valve element;

a conduit communicating intake manifold pressure of said engine to said valve actuator means and causing said valve actuator means to impart controlling movement to said valve element responsive to the pressure condition within said intake manifold; and

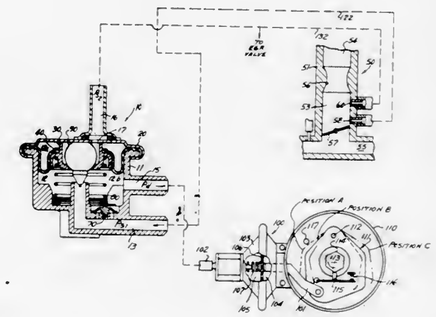
means responsive to the position of the throttle linkage of the carburetion system for at least partially controlling application of intake manifold pressure to said valve actuator means and causing said valve element to be open during idle operation of said engine, to be fully closed during deceleration of said engine and to be in a partially open fuel mixture flow limiting condition when the intake manifold pressure of said engine is above a predetermined miximum level.

3,948,232

ALTITUDE COMPENSATED NONLINEAR VACUUM SPARK ADVANCE CONTROL SYSTEM

Richard H. Gould; George Ludwig, both of Troy; William J. Walters, Milford, and Remy J. VanOphem, Sterling Hgts., all of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed May 10, 1974, Ser. No. 468,859
Int. Cl.² F02P *5/10*
U.S. Cl. 123—117 A **21 Claims**



1. In combination with an internal combustion engine ignition system of the type having a distributor with a vacuum servo controlled advance mechanism and a positive stop for maximum vacuum advance, a carburetor mounted on the intake manifold, said carburetor having an air-flow pressure with an air inlet on one end and a throttle valve body mounted in the opposite end, and a vacuum control assembly for regulating the vacuum servo mechanism of said distributor, the improvement comprising:

first means for sensing air flow through the carburetor and for providing a first pressure signal which is a function of air flow through the carburetor, said first means including means for preventing said first pressure signal from exceeding a predetermined value;

second means for sensing a second pressure signal which is a function of an engine operating parameter, said second means providing a second pressure signal; and

means for receiving said first and second pressure signals, said receiving means including means for providing a third pressure signal to control said vacuum servo mechanism of said distributor until said positive stop for maximum spark advance is reached, said third pressure signal being equal to said first pressure signal when said first pressure signal is below said predetermined value, and said third pressure signal being equal to the sum of said first and second pressure signals when said first pressure signal is at said predetermined value.

3,948,233

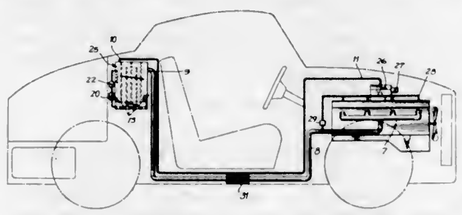
INTERNAL COMBUSTION ENGINE WITH POLLUTION CONTROL ARRANGEMENT

Edward Heibling, 726 E. 10th St., Brooklyn, N.Y. 11230

Filed Mar. 7, 1974, Ser. No. 448,930

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **3 Claims**



3. A drive, comprising an internal combustion engine having an intake for air and liquid fuel to be combusted, an exhaust manifold for combustion gases and a source of the liquid fuel; a closed casing adapted to contain a quantity of liquid; first conduit means connecting the interior of said closed casing with said exhaust manifold, so that combustion gases from the latter are admitted into said closed casing; depressurizing-baffle means in said closed casing for forcing said combustion gases to travel through said liquid; means for removing pollutants from said combustion gases; second conduit means connecting the interior of said closed casing with said intake for returning said combustion gases to said intake for mixing with the incoming air and liquid fuel; and means for automatically replenishing the liquid fuel in said closed casing so as to compensate for the loss of fuel from said quantity which results from enrichment of said combustion gases.

3,948,234

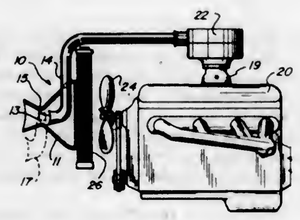
METHOD AND APPARATUS FOR SUPERCHARGING

Niles A. Shumaker, Jr., P.O. Box 156, Henderson, Colo. 80640

Filed Sept. 23, 1974, Ser. No. 508,487

Int. Cl.² F23L *17/02*

U.S. Cl. 123—119 CG **8 Claims**



1. A method for providing a pressure boost of substantially ambient temperature air to the combustion air intake of an internal combustion engine, comprising: inducing ambient temperature air to flow into a primary intake scoop opening by means of an engine cooling fan; accelerating the air in the primary intake scoop by passing the air through a venturi defined in the primary intake scoop; generating a pressure boost in a secondary intake scoop opening located within the venturi by impinging air accelerated by the venturi into the opening of the secondary intake scoop; conducting the air in the secondary intake scoop to the engine combustion air intake; and conducting substantially the remainder of the air induced into the primary intake scoop and not conducted to the engine combustion air intake to the exit of the primary intake scoop, whereby a portion of ambient temperature air induced into the primary intake scoop is provided at an elevated pressure to the combustion air intake of the engine to provide a supercharging effect and the remainder of the air induced in the primary intake scoop is conducted to the engine cooling means.

3,948,235

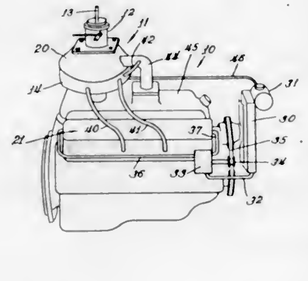
SYSTEM FOR UTILIZING WASTE HEAT OF AN INTERNAL COMBUSTION ENGINE

Joseph A. Gamell, Kalamazoo, Mich., assignor to Joseph Gamell Industries, Incorporated, Kalamazoo, Mich.

Continuation of Ser. No. 443,399, Feb. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 411,328, Oct. 31, 1973, abandoned, which is a continuation of Ser. No. 250,879, May 8, 1972, abandoned. This application Mar. 31, 1975, Ser. No. 563,665

Int. Cl.² F01K *23/06*

U.S. Cl. 123—119 C **9 Claims**



1. Apparatus for utilizing waste heat from an internal combustion engine for operating a supercharger and additionally injecting a fluid into the intake air mixture of the engine which comprises:

supercharger means having an impeller situated in an air intake conduit of an internal combustion engine,

turbine means driving said supercharger means and provided with a motive fluid inlet port and a motive fluid outlet port,

vaporizer means intimately associated with said engine adapted to be heated by the exhaust gases of said engine and provided with motive fluid outlet communicating with said motive fluid inlet port of said turbine means and provided with a motive fluid inlet,

condenser means provided with a motive fluid inlet communicating via a confined flow passageway with said turbine outlet port and provided with a motive fluid outlet communicating with said vaporizer inlet,

said apparatus being completely separated from the fuel system of said engine and having a non-combustible fluid therein, and

duct means adapted to transport a portion of the fluid expanded in said turbine into the input manifold of said engine.

3,948,236

METHOD OF REGULATING THE FUEL SUPPLY OF INTERNAL COMBUSTION ENGINES

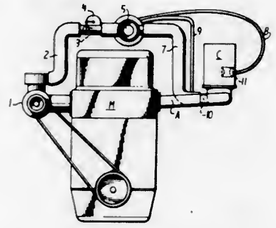
Andre Nartowski, Marly-le-Roi, and Claude Henault, Chevilly-la-Rue, both of France, assignors to Regie Nationale des Usines Renault and Automobiles Peugeot, both of, France

Filed Sept. 27, 1973, Ser. No. 401,280

Claims priority, application France, Nov. 24, 1972, 72.41785

Int. Cl.² F02M *23/04*; **F02D** *13/00*

U.S. Cl. 123—124 R **6 Claims**



1. A method of regulating the fuel supply of carbureted internal combustion engines as a function of altitude, speed and load on the motor, characterized by the steps of:

controlling the richness of the air-fuel mixture by supplying additional pressurized air into the intake manifold downstream of the carburetor; and

controlling said supply of pressurized air in a self-evident manner with a barometric responsive bellows and in accordance with the amplified pressure sensed at the carburetor venturi throat.

3,948,237

FUEL SUPPLY SYSTEMS FOR ENGINES

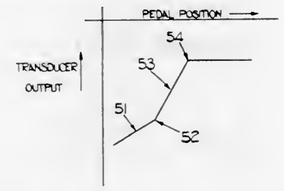
Malcolm Williams, Solihull; Christopher Robin Jones, Alcester, and Richard William Crookes, Solihull, all of England, assignors to C.A.V. Limited, Birmingham, England

Filed Dec. 28, 1973, Ser. No. 429,171

Claims priority, application United Kingdom, Jan. 6, 1973, 888/73

Int. Cl. F02m *39/00*; **F02b** *3/00*

U.S. Cl. 123—139 E **2 Claims**



1. A fuel system for an engine, including control means determining the rate of supply of fuel to the engine, and a demand transducer providing an input to the control means to influence the output thereof, said demand transducer comprising a control member movable progressively from a zero demand position to a maximum demand position, and a control network which when the control member is moved from the zero demand position produces an output which depends on the position of the control member until a predetermined position of the control member is reached, whereafter the control network produces an output which is substantially constant irrespective of the position of the control member, the output of said control network during movement of said control member from the zero demand position increasing at a first rate until an intermediate position is reached and then increasing at a second rate until said predetermined position is reached, and wherein the control network includes a transistor which provides the three required rates by virtue of being saturated, conductive but not saturated, and off respectively.

3,948,238

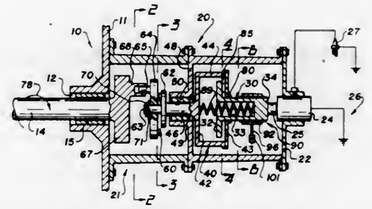
STRESSING MECHANISM FOR A PIEZOELECTRIC IGNITION SYSTEM

Frederick T. Jamieson, 4966 4th Ave., Delta, British Columbia, Canada

Filed Oct. 7, 1974, Ser. No. 512,183

Int. Cl.² H01V *7/00*

U.S. Cl. 123—148 BA **5 Claims**



1. Mechanism for stressing a piezoelectric crystal used in the ignition system of an internal combustion engine having a driven shaft, comprising a striker movably mounted in axial alignment with the driven shaft and having a head adjacent the crystal, a rotor rotatably mounted in juxtaposition with the striker, drive means operatively connecting the rotor to the driven shaft for rotation therewith, and cam mean interconnecting the striker and the rotor whereby the crystal receives current-generating blows from the head in timed relation to rotation of the driven shaft.

3,948,239

SIGNAL GENERATOR FOR USE IN A BREAKERLESS IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

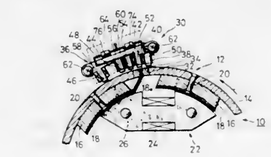
Mitsuo Katsumata, Numazu, Japan, assignor to Kokusan Denki Co., Ltd., Numazu, Japan

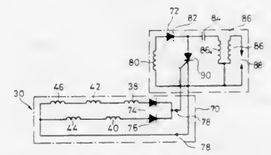
Filed Dec. 2, 1974, Ser. No. 528,678

Claims priority, application Japan, Dec. 6, 1973, 48-139145[U]

Int. Cl.² F02P *5/00, 3/06*

U.S. Cl. 123—149 C **1 Claim**





1. A signal generator for use in a breakerless ignition system for an internal combustion engine, comprising a magnet rotor rotatable in synchronism with said internal combustion engine and a stator including a plurality of signal coils disposed in a

magnetically and mechanically spaced relation from each other and a comb-like magnetic core member disposed adjacent to said rotor and having a plurality of teeth-like core portions around which said signal coils are wound, respectively, and a common yoke magnetically connected to said core portions, said signal coils constructed so that incremental voltages from said signal coils are established from the most advanced position to the most retarded position and said signal coils divided into at least two series connections of at least alternate signal coils, said series connections of signal coils each having a diode connected in series to the corresponding series connection and arranged in a parallel manner, and said signal coils having the number of turns gradually increasing from the most advanced position to the most retarded position relative to rotation of said rotor.

3,948,240

AUTOMATIC CHOKE VALVE APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

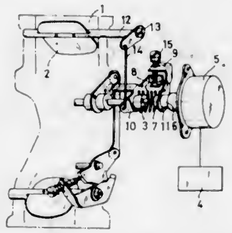
Yoshiaki Hirosawa, Tokyo; Toshio Nomura, Niiza, and Masahiko Iiyama, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1975, Ser. No. 558,714

Claims priority, application Japan, Mar. 15, 1974, 49-29023

Int. Cl.² F02M *1/10;* **F02D** *11/08;* **F02M** *23/04*

U.S. Cl. 123—179 G **8 Claims**



1. An automatic choke valve apparatus for an internal combustion engine comprising a choke valve mounted in an intake passage of an internal combustion engine, an operation shaft connected to said choke valve, an external pulse motor including a drive shaft, an intermediate torsion spring connecting said operation shaft and said drive shaft, coupling means between said shafts for imparting drive from said drive shaft to said operation shaft only in regular direction of rotation of the drive shaft, and a driving pulse circuit means connected to said pulse motor for driving the same between first through fourth operation conditions by respective detecting of closure of an engine ignition switch, closure of an engine starter switch, beginning of complete firing of the engine and continuing of the complete firing, said motor being driven in reverse direction of rotation in the first operation condition and in sequential regular directions of rotation in the second to fourth operation conditions.

3,948,241

LUBRICATING AND SEALING SYSTEM FOR INTERNAL COMBUSTION ENGINES

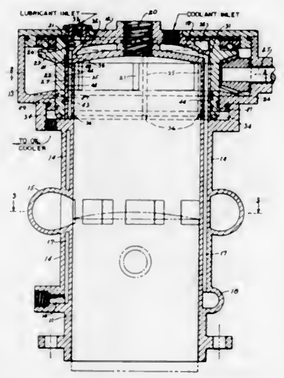
Frederick C. Melchior, Box 379, Warrenton, Va. 22186

Filed Aug. 2, 1973, Ser. No. 384,791

Int. Cl.² F01L *7/00*

U.S. Cl. 123—190 C **7 Claims**

1. An internal combustion engine comprising a piston and cylinder, said cylinder having a plurality of intake ports extending through the wall near the upper end thereof, said ports being spaced at intervals around the circumference of the cylinder, a cylindrical sleeve surrounding the outside wall of said cylinder with a cylindrical clearance space therebetween, means for mounting said sleeve valve for rotation with respect to said cylinder, said sleeve valve having a plurality of intake slots extending therethrough which register periodically with said intake ports as said sleeve valve rotates, and means for lubricating and sealing the portion of said clearance space above said intake ports, said means including a helically



shaped ring mounted in a helical groove in the inside wall of said sleeve valve near the upper end of said valve with the lower ends of said ring and groove terminating above said intake ports and extending across said clearance space above said intake ports to wipe only the portion of the opposed surface of the cylinder above said intake ports as said sleeve valve rotates.

3,948,242

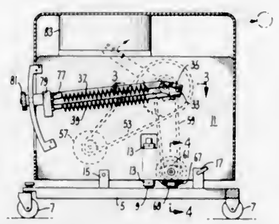
BALL THROWING MACHINE WITH OSCILLATING MEANS

James G. Haworth, 100 Green Lane, Eugene, Oreg. 97402

Filed Mar. 19, 1975, Ser. No. 559,728

Int. Cl.² F41B *3/00*

U.S. Cl. 124—7 **1 Claim**



1. An oscillating ball throwing machine comprising:
a. a base member,
b. a stub shaft extending upwardly from said base member,
c. a substantially flat, rectangular, vertically positioned frame plate having bearings thereon mounted for rotation on said stub shaft whereby said frame plate can rotate on its vertical axis above said base member,
d. a tube fixed at a right angle to said frame plate and fastened to said frame plate at only the center of said tube,
e. a shaft mounted for rotation within said tube, said shaft carrying a ball throwing arm at one end and a crank shaft at the opposite end, said crank shaft being connected to ball propelling springs,
f. a double sprocket journaled for rotation on the outside of said tube, said double sprocket including a first sprocket

carrying an arm adapted to contact said ball throwing arm and to push against said arm which is free to rotate relative thereto, a prime mover being mounted upon said frame plate, said first sprocket being driven by said prime mover,
g. a cam mounted for rotation on said frame plate and a cam follower mounted on said base member and spring bias means urging said cam against said cam follower whereby said frame plate is caused to oscillate upon rotation of said cam,
h. said double sprocket including a second sprocket attached to said first sprocket and being drivingly connected to said cam, and
i. a spring holding arm mounted for rotation on said tube, ball propelling springs, said arm having attached thereto said ball propelling springs.

3,948,243

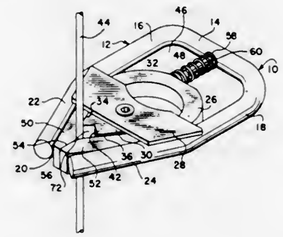
BOW STRING DRAWING AND RELEASING DEVICE

Matthew R. Gazzara, Sr., 345 S. White Horse Pike, Hammonton, N.J. 08037

Filed Dec. 27, 1974, Ser. No. 536,883

Int. Cl.² F41B *3/02*

U.S. Cl. 124—35 A **23 Claims**



1. In a drawing and releasing device to draw and release a bow string, the combination of
A. a frame,
1. said frame having a base and a right leg and a left leg extending from the base,
2. said right and left legs defining an opening therebetween,
3. said legs and said base defining a space therewithin;
B. a jaw member cooperating with said frame and being positioned in the said space,
1. said jaw member being movable within the said space between a bow string locking position and a triggering position,
2. said jaw member including a rear wall and a pair of jaws forwardly extending therefrom,
3. said jaw member including a locking surface on each jaw, said locking surfaces coacting to retain the bow string within the said space when in the locking position,
a. said locking surfaces being maintained in tight contact when the jaw member is in the said locking position,
b. said locking surfaces defining a passage therebetween when the jaw member is moved to the said triggering position which is sufficiently wide to pass a bow string between the locking surfaces; and
C. means to urge the jaw member to the said locking position a portion of said means contacting the base of the frame and the rear wall of the jaw member.

3,948,244

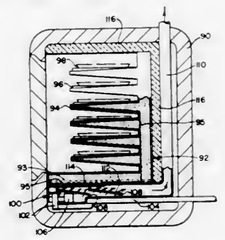
VAPOR TRANSFER OVEN

Lazaros J. Lazaridis, Lincoln; Edward F. Searight, Harvard, both of Mass., and Paul K. Shefsiek, Farmington, Mich., assignors to Thermo Electron Corporation, Waltham, Mass.

Division of Ser. No. 333,236, Feb. 16, 1973, Pat. No. 3,853,112, which is a continuation of Ser. No. 165,569, July 23, 1971, abandoned. This application Nov. 20, 1974, Ser. No. 525,546

Int. Cl.² A21B *1/28*

U.S. Cl. 126—19 R **13 Claims**



1. A food preparation oven comprising:
a. wall means forming a food preparation compartment;
b. heat source means external of said food preparation compartment;
c. working fluid;
d. means forming a hollow enclosure extending into said food preparation compartment, said enclosure permanently sealing said working fluid therein and forming an evaporator zone for retaining working fluid in the liquid state adjacent said heat source means and a plurality of condenser zones within said food receiving compartment communicating with said evaporator zone through the interior of said enclosure, the walls of said condenser zones providing surfaces upon which vaporized working fluid condenses and transfers thereto its latent heat of vaporization, thereby to provide heat to said food preparation compartments.

3,948,245

COMBINED DEVICE FOR PRODUCING AND EXCHANGING HEAT WITH A HEAT CONSUMING DEVICE

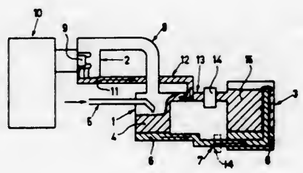
van der Sluys, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 25, 1974, Ser. No. 509,141

Claims priority, application Netherlands, Oct. 4, 1973, 7313626

Int. Cl.² F24J *1/00, 3/00*

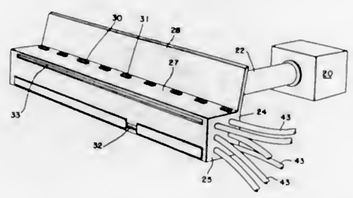
U.S. Cl. 126—263 **6 Claims**



1. A method of producing heat comprising the steps of reacting in a reaction vessel a molten material selected from the group consisting of Na, K, Na+K, Li+Na, Li+K, Li+Na+K, with a first gaseous material selected from the group consisting of Fl, Cl, and gaseous compounds thereof, and thereby producing a second gaseous material selected from the group consisting of gaseous Na, K, and mixtures of Na+K, and at

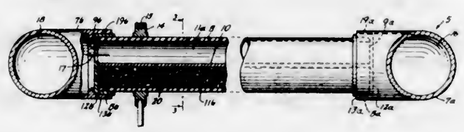
least one liquid salt thereof, exchanging said produced-heat with a heat consuming device by flowing said second gaseous material to said device, condensing said second material on said device, and conducting the condensate back to said reaction vessel.

3,948,246
HEATER FOR SPORTS BENCHES
John F. Jenkins, 137 N. Shore Road, Absecon, N.J. 08201
Filed July 17, 1974, Ser. No. 489,170
Int. Cl.² A61F *7/06*
U.S. Cl. 126—204 **3 Claims**



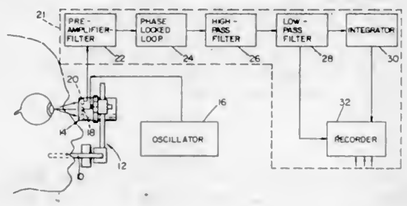
1. In a heater for benches for use in outdoor sports events, a self-contained heating means, external to the bench, a bench having back, front, sides and substantially unyielding top, thus producing a closed under-bench space, a conduit for heated air from the heater to the bench, a cross conduit for heated air under the bench for distribution of heat in both directions, and perforations in both the upper and lower part of the front of the bench and in the bench top for distribution of heated air from under the bench.

3,948,247
SOLAR HEAT-COLLECTOR DEVICE
Volkman Hellemann, 127 Mountainview Road, Warren Township, N.J. 07060
Filed May 12, 1975, Ser. No. 576,294
Int. Cl.² F24J *3/02*
U.S. Cl. 126—271 **9 Claims**



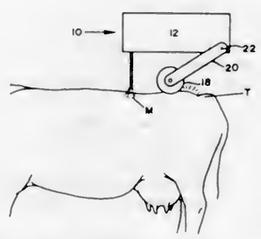
1. A solar heat-collector device comprising in combination: an elongated tubular means for housing solar heat elements and for providing a transparent housing wall receivable of light rays therethrough; adjustable mounting means for rotatably supporting said elongated tubular means rotatably around a longitudinal axis of the elongated tubular means such that the elongated tubular means may be altered to and fro intermittently for adjusting the position thereof for receipt of said light rays at variable angles relative to a fixed position of the adjustable mounting means; the elongated tubular means defining a substantially lineally extending transparent tube open at at-least one end thereof and defining therein a continuous channel between and including inlet and outlet structures for conductance of fluid therethrough, and solar heat elements including a substantially elongated metal plate within the tube positioned to substantially segregate the channel into upper and lower spaces and insulation elements positioned below said elongated metal plate within the lower space.

3,948,248
METHOD OF MEASURING OCULAR PULSE
Joel L. Zuckerman, 788 Farmington Ave., West Hartford, Conn. 06119, and Harry J. Grossman, 49 Walden R.F.D. 1, West Willington, Conn. 06279
Filed Sept. 5, 1974, Ser. No. 503,363
Int. Cl.² A61B *10/00*
U.S. Cl. 128—2 T **6 Claims**



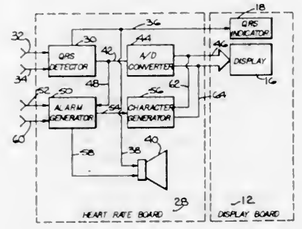
1. A method of observing pulsations in an eye comprising the steps of:
positioning said eye to receive continuous wave ultrasonic energy,
transmitting continuous wave ultrasonic energy to said eye from a source spaced from said eye,
receiving said energy reflected back from said eye, and
detecting a modulation in said reflected energy caused by a pulsation of said eye and providing a signal in response to said modulation.

3,948,249
METHOD AND APPARATUS FOR DETECTING AND IDENTIFYING A COW IN HEAT
Herman J. Ambrosini, 4265 Hall Road, Santa Rosa, Calif. 95401
Filed Mar. 31, 1975, Ser. No. 563,696
Int. Cl.² A61B *5/00*
U.S. Cl. 128—2 H **5 Claims**



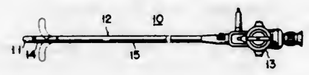
1. Apparatus for detecting a cow in heat comprising:
a frame member positioned to allow a cow to pass beneath it;
a heat sensitive member on said frame member conditioned to generate a current in response to the presence of a zone of a cow's back at elevated temperatures;
a first container for marking fluid mounted on said frame;
a conduit from said container opening below said frame in advance of said heat sensitive member;
an on-off valve in said conduit; and
valve control means connected to said heat sensitive member and operable in response to an electrical signal to open said valve.

3,948,250
PHYSIOLOGICAL INFORMATION DISPLAY
Sumner Weisman, Framingham, Mass., assignor to Becton, Dickinson and Company, East Rutherford, N.J.
Filed Sept. 16, 1974, Ser. No. 506,246
Int. Cl.² A61B *5/04*
U.S. Cl. 128—2.06 F **4 Claims**



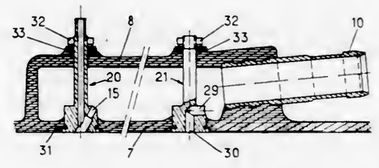
1. In a physiological function monitor module of the type comprising: a physiological function rate detector circuit adapted to receive an input from a patient and convert the same to a DC voltage output signal proportional to the rate of the physiological function of the patient under consideration; an alarm generator connected to the output of the detector circuit, said alarm generator including means for comparing the DC voltage level of the detector circuit to a preselected level and generating an alarm signal in the event said DC foltage level deviates beyond permissible bounds from said preset level; a digital display; and an analog/digital converter connected to the output of said detector circuit in driving relationship with said digital display; the improvement comprising a character generator connected to the output of said alarm generator and connected in driving relationship to the digital display in parallel with the analog/digital converter whereby said character generator drives said digital display to indicate an alarm condition in the event an alarm signal is generated, said alarm generator is adapted to generate a first signal in the event said detector circuit output exceeds said first preselected voltage level and a second signal in the event said detector signal is below said second preselected voltage level, and memory means adapted to maintain the output signal of said alarm generator at the first to occur of said first signal or second signal in the event said detector output signal varies from a first level above said first preselected voltage level to a second level below said second preselected voltage level or vice-versa.

3,948,251
FLEXIBLE TUBE ENDOSCOPE
Saburo Hosono, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 408,846, Oct. 23, 1973, abandoned. This application May 1, 1975, Ser. No. 573,735
Claims priority, application Japan, Oct. 25, 1972, 47-106836
Int. Cl.² A61B *1/06;* **F11L** *11/18*
U.S. Cl. 128—4 **7 Claims**



1. A flexible tube device for an endoscope having a distal end and a control unit, comprising a flexible tube, one end of which is connected to the distal end and the other end of which is connected to the control unit; and a central coaxial tube in the form of a continuous helical strip member disposed within the flexible tube and also connected to said distal end and engageable with said flexible tube, both along the longitudinal direction thereof; and a means to stiffen and relax rigidity of the device comprising an adjusting mechanism to which one end of the central tube is operatively connected for providing longitudinal movement between the tubes to control the pliability and the flexing of the flexible tube by varying the diameter of the central tube to cause an abutting force against the flexible tube to be varied as required.

3,948,252
APPARATUS FOR HYDROTHERAPEUTIC TREATMENT
Jean-Baptiste Montagne, 4, rue des Tourterelles, 67200 Oberhausbergen, France
Division of Ser. No. 486,583, July 8, 1974, Pat. No. 3,890,691. This application Jan. 13, 1975, Ser. No. 540,669
Claims priority, application France, July 9, 1973, 73.26061
Int. Cl.² A61H *9/00*
U.S. Cl. 128—66 **6 Claims**

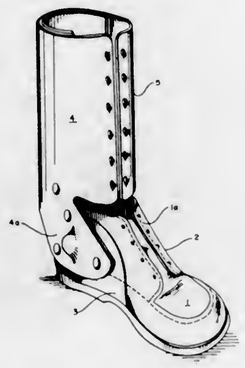


1. In an apparatus for hydro-therapeutic treatment, a combination comprising a vessel having a wall of plastic material provided at a portion of its outer surface with at least one channel constituted by a wall integral with the vessel wall; inlet means communicating with said channel for feeding a fluid under pressure thereinto; and a plurality of nozzles extending transversely through said channel through openings in said vessel wall and said channel wall and being axially immovably fixed at opposite ends in said wall of said vessel and said channel wall integral with said vessel wall, each of said nozzles having a passage communicating with the interior of said channel and having a discharge end at the inner surface of said vessel wall.

3,948,253
ORTHOPEDIC SHOE
Murray G. Burke, 21 Mic Mac Drive, Dartmouth, Nova Scotia, Canada
Filed Jan. 27, 1975, Ser. No. 544,501
Claims priority, application Canada, Nov. 22, 1974, 214438
Int. Cl.² A61F *3/00*
U.S. Cl. 128—80 J **7 Claims**

1. In an orthopedic device for the treatment of club foot comprising a relatively rigid foot holding means for holding the club foot and a relatively rigid calf holding means for holding the calf of the leg having said club food, said foot holding means and said calf holding means being connected to one another in a manner permitting the foot to move in relation to the calf only about a horizontal axis extending laterally relative to the ankle of the foot, the improvement wherein said calf holding means comprises:
a pair of vertically oriented calf support pieces that are curved to extend around portions of the calf;
each of said calf support pieces having spaced edges that are horizontally displaceable relative to adjacently disposed spaced edges of the other calf support piece;
first releasable connecting means for holding together two of said adjacently disposed edges of said calf support pieces, and
second releasable connecting means for holding the remain-

ing two adjacently disposed edges of said calf support pieces in various relative positions of adjustment to adjust

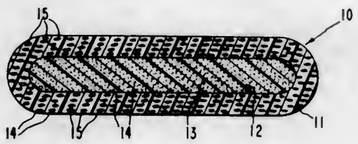


said calf holding means to different sizes of calf circumferences.

3,948,254
NOVEL DRUG DELIVERY DEVICE

Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 198,028, Nov. 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 42,786, June 2, 1970, Pat. No. 3,854,480. This application Aug. 28, 1974, Ser. No. 501,207
Int. Cl.² A61F 5/46; A61M 31/00
U.S. Cl. 128—127 **34 Claims**



1. A drug delivery device for the continuous administration of a drug at a controlled rate to produce a beneficial result, said device comprising (*a*) a wall formed of a microporous material having a plurality of micropores with diffusional conduits through the wall, (*b*) a reservoir surrounded by the wall comprising a solid carrier containing dissolved and undissolved drug with the carrier permeable to the passage of the dissolved drug by diffusion, (*c*) a medium made of pharmaceutically acceptable release rate controlling material housed in the micropores with the medium permeable to the passage of drug by diffusion, and (*d*) wherein drug is metered at a controlled and continuous rate from the device by passage from the solid and through the medium for a prolonged period of time to produce the desired results.

3,948,255
APPARATUS FOR ENDOTRACHEAL AND ESOPHAGEAL INTUBATION

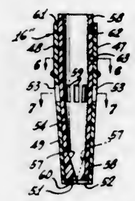
Kenneth L. Davidson, 12735 11th Ave., Victorville, Calif. 92392

Division of Ser. No. 476,955, June 6, 1974, Pat. No. 3,874,377. This application Jan. 20, 1975, Ser. No. 542,212
Int. Cl.² A61M 16/00
U.S. Cl. 128—145.5 **4 Claims**

1. An adapter for medical equipment designed for endotracheal and esophageal intubation, said adapter comprising:

an outer sleeve having an open upper end and a lower end and a bore extending therebetween, a portion of said sleeve adjacent the lower end being adapted to be received in a tube for esophageal and endotracheal intubation, a wall member extending across the bore adjacent the lower end of said outer sleeve, said wall member having a first opening therein; the center of which is eccentrically disposed with respect to the longitudinal axis of the bore, and said outer sleeve further including a plurality of circumferentially arranged ports in the wall thereof located intermediate the upper end and the wall member;

an inner sleeve having an open upper and lower end, and a bore extending therebetween, said inner sleeve mounted within said outer sleeve and rotatable therein between a first and a second position with respect to said outer sleeve, the lower end of said inner sleeve being located adjacent the wall member of said outer sleeve, an inwardly extending member extending across a circumferential portion of the lower end of the bore of said inner sleeve defining a second opening at said lower end eccentrically disposed with respect to the longitudinal axis of said inner sleeve and in alignment with said first opening,



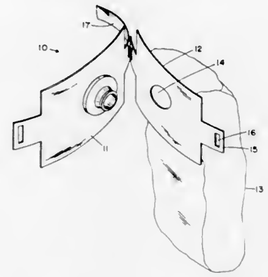
whereby said inwardly extending member cooperates with the wall member of said outer sleeve to seal the bore of said inner sleeve when said inner sleeve is in the first position and the second opening of the inner sleeve is aligned with the first opening of said outer sleeve when said inner sleeve is in the second position, a plurality of circumferentially arranged ports opening through the wall of said inner sleeve, said ports being longitudinally aligned with the ports of said outer sleeve and registrable therewith when said inner sleeve is in the first position thereby to provide communication between the outside of said adapter and the bore of said inner sleeve and for being out of registration when said inner sleeve is rotated in the second position, whereby in the first position the ports of the said inner and outer sleeves are in registration for fluid communication from the bore to the exterior of said adapter and the bore of said inner sleeve is sealed and rotation of said inner sleeve to said second position simultaneously moves said ports out of registration thereby sealing the wall of said adapter and aligns the opening in the bore of the inner sleeve with the opening of the outer sleeve thereby providing fluid communication through the bore of said inner sleeve.

3,948,256
OSTOMY APPLIANCE DEVICE

George A. Schneider, 1802 W. Minnehaha, St. Paul, Minn. 55104

Filed Apr. 16, 1975, Ser. No. 568,594
Int. Cl.² A61M 3/00; A61F 5/44
U.S. Cl. 128—283 **8 Claims**

1. An ostomy appliance device comprising: an inner plate having a round aperture and means for releasable attachment to a belt worn by the wearer; a first resilient annular sealing washer mounted in the inner plate aperture; a ring of stiff smooth-surfaced material sealably engaged in the opening of said first annular washer, said ring extending beyond said inner plate and having an opening for receiving the stoma; a second resilient annular sealing washer around said ring beyond the inner plate, said second washer having an annular resilient flange adjacent the outer surface of the inner plate;

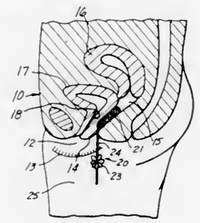


and an outer plate having an opening for receiving the extension of said ring and said second washer, said second washer releasably sealing closed the periphery of the outer plate opening when engaged therewith, said outer plate having means for releasable attachment to a belt worn by the wearer.

3,948,257
VULVAR DEODORANT SYSTEM

William Stephen Bossak, 727 Westbourne Drive, Apt. 305, West Hollywood, Calif. 90069

Continuation-in-part of Ser. No. 514,171, Oct. 11, 1974, abandoned. This application Aug. 21, 1975, Ser. No. 606,384
Int. Cl.² A61F 13/20
U.S. Cl. 128—285 **17 Claims**



1. An article of manufacture for use in a female vagina and vulvar region comprising in combination:

a tampon for insertion into the vagina;

means for deodorizing the vulvar area comprising means for retaining a deodorant, and a deodorant retained by said retaining means; and

means connected to said tampon and to said retaining means for suspending said retaining means and deodorant outside of the vagina and at a distance therefrom, when said tampon is inserted in said vagina.

3,948,258
DIAPER TAPE FASTENER

Hamzeh Karami, Crystal Lake, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

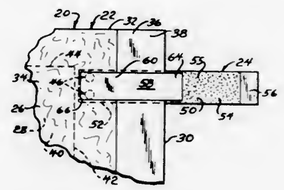
Filed Feb. 24, 1975, Ser. No. 552,584
Int. Cl.² A43C 11/00; A41B 13/02; A61F 13/16
U.S. Cl. 128—287 **20 Claims**

1. A disposable diaper, comprising:

an absorbent pad assembly having an absorbent pad, opposed first and second surfaces, at least one side edge, and opening means extending through the pad assembly and spaced from said side edge; and

a tape fastener comprising,

a pressure-sensitive tape strip having a first end section secured to the first surface of the pad assembly with adhesive on the first end section being exposed through said opening means of the pad assembly, and a second securement section extending past said side edge of the pad assembly, and

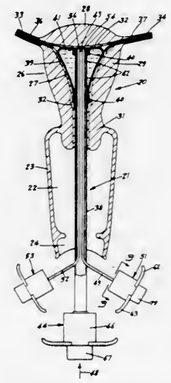


a sheet having a first surface and a second surface facing the second surface of the pad assembly and having at least a moderate affinity for adhesive on said tape strip, with said adhesive exposed through the opening means contacting the second surface of the sheet and retaining at least a portion of the sheet against the pad assembly.

3,948,259
DISPENSING INSTRUMENT

Lee R. Bolduc, Minneapolis, and Eugene A. Dickhudt, St. Paul, both of Minn., assignors to Population Research Incorporated, Minneapolis, Minn.

Continuation-in-part of Ser. No. 339,911, March 9, 1973, abandoned, and a continuation-in-part of Ser. No. 438,202, Jan. 31, 1974, Pat. No. 3,875,939. This application Mar. 15, 1974, Ser. No. 451,530
Int. Cl.² A61M 1/00
U.S. Cl. 128—235 **75 Claims**

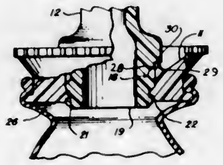


1. An instrument for use in performing female sterilization comprising: means for containing material for occluding the canals of the Fallopian tubes, dispensing means having a first portion positionable in the uterine cavity of the femal and operable to move the material from the means for containing material to the uterine cavity and a second portion operable to rapidly move the material from the uterine cavity into the canals of the Fallopian tubes, and control means connected to the first and second portions for automatically rapidly operating the second portion and for automatically operating the first portion to move material into the uterine cavity before operation of the second portion is completed.

3,948,260
CLOSURE MEANS FOR SYRINGE

Ronald Lee Whipperman, Gurnee Village; James Robert Gross, Bensenville Village, both of Ill., and Theodore Albert Miller, Jr., Ashland, Ohio, assignors to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 4, 1974, Ser. No. 520,339
Int. Cl.² A61M 3/00
U.S. Cl. 128—247 **7 Claims**

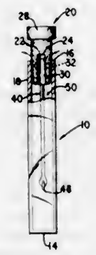


1. A rapid closure means for a syringe douche kit comprising: a first hollow nozzle member defining a hollow spray stem having an annular inlet and an outlet end, a connecting member attached to a flexible bag, said connecting member presenting an annular inner surface for receiving a portion of said nozzle, in one instance said nozzle having a double threaded means and said connecting member having at least two pairs of wedges disposed in a helical pattern and spaced at at least four different positions on said annular inner surface, and in another instance said nozzle having at least two pairs of wedges disposed in a helical pattern and spaced at at least four different positions on said nozzle and said connecting member haing a double threaded means, said wedges having an arcuate length that extends no more than about 50% of the annular inlet of said nozzle or said annular inner surface of said connecting member, said double threaded means or said wedges disposed externally of and adjacent to said inlet of said hollow nozzle member when disposed thereon, said double threaded means defined by two oppositely positioned helixes having the same angle of inclination, and sealing means operatively positioned between said nozzle member and said connecting member for contact therebetween, whereby upon engagement of said wedges by said double threaded means the nozzle member can be securely fastened in said connecting member with a minimum of effort and rotation.

3,948,261
UNIT DOSE CONTAINER FOR SURFACE ADMINISTERED VACCINES

Dale C. Steiner, Malvern, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 27, 1974, Ser. No. 527,567
Int. Cl.² A61B 17/20, 10/00
U.S. Cl. 128—253 **1 Claim**



1. A container for a unit dose of vaccine which is to be vaccum dried after filling and sealed after drying comprising:

A. A rigid vial closed at one end and having a filling orifice at the opposite end;

B. A closure for engaging the interior surface of said filling orifice comprising a compressible material having:

i. A substantially circular solid body portion having a first diameter at a first end greater than the diameter of the filling orifice and substantially continuously tapering to a second diameter at a second end having a diameter less than the diameter of said filling orifice;

ii. A flange connected to said first end and having a diameter greater than said first end;

iii. At least one longitudinal groove defined in the surface of said body portion and extending from said second end to a point intermediate said first and second ends and extending on both sides of a transverse plane of said body portion at which a third diameter is substantially equal to the interior diameter of said filling orifice;

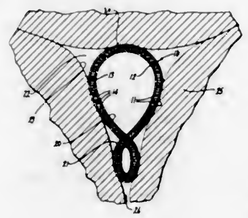
iiii. The distance between said first and second ends being greater than the diameter of said filling orifice; and

C. A bifurcated needle concentrically embedded in the body portion of said closure and extending past said second end, said needle being adapted to support a unit dose of vaccine during filling, drying, sealing and administration; whereby the length of said closure between said first and second ends prevents said needle from contacting the inside of said vial during filling, storage and removal.

3,948,262
NOVEL DRUG DELIVERY DEVICE

Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 185,208, Sept. 30, 1971, Pat. No. 3,896,819, which is a continuation-in-part of Ser. No. 42,786, June 2, 1970, Pat. No. 3,854,480, which is a continuation-in-part of Ser. Nos. 812,116, April 1, 1969, Pat. No. 3,598,122, and Ser. No. 864,175, Oct. 6, 1969, abandoned. This application Mar. 10, 1975, Ser. No. 556,546
The portion of the term of this patent subsequent to July 29, 1992, has been disclaimed.
Int. Cl.² A61F 5/46; A61M 7/00; A61J 1/00
U.S. Cl. 128—260 **20 Claims**



1. A delivery device for the controlled and continuous administration of drug to a body site environment over a prolonged period of time, said device comprising:

a. a means for containing and releasing the drug at a controlled rate comprising a reservoir containing a dissolved drug portion and an undissolved replacement drug portion in a liquid carrier material permeable to the passage of the drug therethrough, said drug having limited solubility in said liquid; the replacement drug portion being present in an amount in excess of its solubility in the carrier material and in an amount sufficient to maintain the amount of the dissolved drug portion substantially constant during said prolonged period of time, said means further comprising:

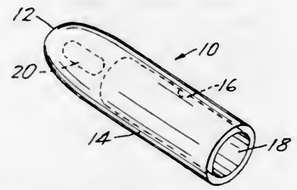
b. a shaped wall that surrounds the reservoir and is characterized by being insoluble in body fluid, maintaining its integrity during said prolonged period of time, and by being formed at least in part of a substantially homogeneous drug release rate controlling material permeable to the passage of the drug but having a lower permeability to the drug than the permeability of the liquid carrier material to the drug;

c. so that the device when placed at the body site, continuously releases drug from the reservoir to the body site at a physiologically or pharmacologically effective controlled rate by metered passage through the wall, the dissolved drug so released being replaced by the continuous dissolving of replacement drug in the carrier material so as to substantially maintain the amount of dissolved drug in the reservoir substantially constant during said prolonged period of time.

3,948,263
BALLISTIC ANIMAL IMPLANT

James F. Drake, Jr., Minneapolis, and Fred R. Paul, Jr., Burnsville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 14, 1974, Ser. No. 497,462
Int. Cl.² A61M 31/00; F42B 11/30
U.S. Cl. 128—260 **8 Claims**



1. A means for providing controlled sustained release of a biologically active material comprising a ballistic implant shaped for ballistically penetrating the epidermal covering of a live animal body and lodging totally within the tissues of the animal body, said implant comprising a ballistic-shaped, biologically compatible polymer body containing therein at least one biologically active material, said biologically active material being separated from the exterior of said ballistic implant by a material defining a means for providing controlled sustained release of said biologically active material to the tissue of the animal body when exposed to the fluids and cells of said living animal body.

3,948,264
INHALATION DEVICE

George A. Wilke, Evansville, Ind.; Norman C. Henderson, Columbus, Ohio; Stanley M. Stansell, Columbus, Ohio, and Paul E. McCrady, Columbus, Ohio, assignors to Mead Johnson & Company, Evansville, Ind.

Filed May 21, 1975, Ser. No. 579,525
Int. Cl.² A61M 15/00
U.S. Cl. 128—266 **7 Claims**

1. An inhalation device, for the dispensing of medicament in a powder form, having a body portion comprising

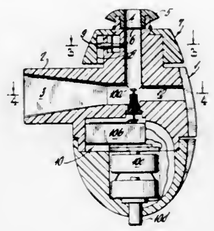
an air outlet channel in said body portion providing a mouthpiece for inhalation of air by the user;

a primary air inlet channel in said body portion communicating with said air outlet channel;

a secondary air inlet channel in said body portion providing an enclosure for movement therein resulting from said air inhalation of a capsule containing said medicament, said secondary inlet channel communicating with said primary air inlet channel and said outlet channel;

means for piercing holes in said capsule disposed around said secondary inlet channel; and

electro-mechanical means for vibrating said capsule, whereby after piercing of said capsule, upon activation of said vibrating means and inhalation, said medicament is ejected from said pierced capsule, dispersed into the stream of air inhaled through said inlet channels, and



inhaled into said outlet channel and the mouth of the user.

3,948,265
MEDICATED APPLICATOR

Safwat Daoud Al Ani, Dr Lindhsgata 1, Goteborg, Sweden (41325)

Filed Aug. 27, 1974, Ser. No. 501,073
Claims priority, application Sweden, Aug. 31, 1973, 7311859
Int. Cl.² A61M 7/00
U.S. Cl. 128—267 **5 Claims**



1. An applicator for application of active substances which have therapeutic and diagnostic properties onto body tissues comprising an elongated carrier provided on a portion of the surface of at least one end of said carrier with said active substance in a very thin, homogeneous, dry, liquid soluble layer of such a quantity as to correspond substantially to one precise dose for one specific occasion of use, said surface of said carrier which is provided with the active substance being non-liquid-absorbing.

3,948,266
NEEDLELESS HYPODERMIC INJECTOR

Wesley D. Clark, 26870 Taaffe Road, Los Altos Hills, Calif. 94022, and Keith E. Hollenbeck, 847 Tulane Court, Mountain View, Calif. 94040

Continuation-in-part of Ser. No. 342,508, March 19, 1973, Pat. No. 3,853,125. This application Oct. 25, 1974, Ser. No. 518,039
Int. Cl.² A61M 5/30
U.S. Cl. 128—272 **4 Claims**

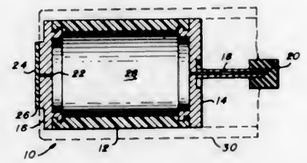
1. An ampule for receiving and temporarily holding a medicant, comprising

a. a main body forming a chamber, the interior of which is at less than ambient pressure,

b. a cannula extending from one wall of said body and in fluid communication with the interior of said chamber,

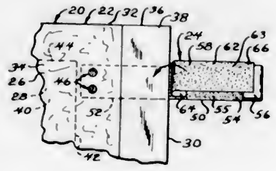
c. a rigid discharge portion contiguous with said body and having a bore extending therethrough which is in fluid communication with said chamber and is dimensioned for

needleless injection,
d. a puncturable seal mounted over the open end of said



cannula, and
e. a seal mounted over the open end of said bore.

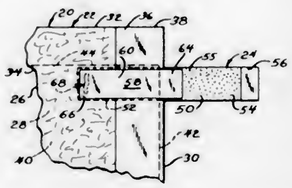
3,948,267
DIAPER WITH TAPE FASTENER
Hamzeh Karami, Crystal Lake, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Feb. 24, 1975, Ser. No. 552,586
Int. Cl.² A61F *13/16*; **A41B** *13/02*
U.S. Cl. 128—287 **18 Claims**



1. A disposable diaper, comprising:
an absorbent pad assembly having an absorbent pad, a fluid impervious backing sheet defining a first surface of the diaper, a second opposed surface, at least one side edge, and opening means extending through the pad assembly and spaced from said side edge; and
a tape fastener comprising,
a pressure-sensitive tape strip having a first end section secured to said backing sheet with adhesive on the first end section being exposed through said opening means of the pad assembly, and a second securement section extending past said side edge of the pad assembly, and
a sheet having a first surface and a second adhesive-bearing surface secured to the second surface of the pad assembly, with said adhesive of the tape strip exposed through the opening means contacting the adhesive on the second surface of the sheet to anchor the first end section of the tape strip to said sheet.

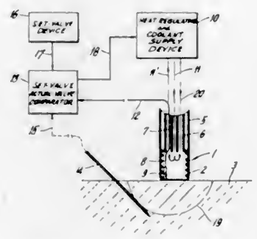
3,948,268
TAPE FASTENER FOR DISPOSABLE DIAPER
Hamzeh Karami, Crystal Lake, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Feb. 24, 1975, Ser. No. 552,585
Int. Cl.² A41B *13/02*; **A61F** *13/26*
U.S. Cl. 128—287 **10 Claims**

1. A disposable diaper, comprising:
an absorbent pad assembly having an absorbent pad, opposed first and second surfaces, and at least one side edge; and
a tape fastener comprising,
a pressure-sensitive tape strip having a first end section secured to the first surface of the pad assembly, and a second securement section extending past said side edge of the pad assembly,
a sheet having a first surface and a substantially adhesive-free second surface facing the second surface of the pad assembly and having a relatively high affinity for adhesive, and



first adhesive means intermediate the second surface of the sheet and the second surface of the pad assembly, said adhesive means being located adjacent one end of the sheet and being spaced from the side edge of the pad assembly to retain said one end of the sheet to the second surface of the pad assembly.

3,948,269
CRYOMEDICAL DEVICE
Hildebrand Zimmer, Ahrensbrug, Germany, assignor to Dragerwerk Aktiengesellschaft, Germany
Filed Aug. 29, 1974, Ser. No. 501,766
Claims priority, application Germany, Aug. 31, 1973, 2343910
Int. Cl.² A61B *17/36*
U.S. Cl. 128—303.1 **7 Claims**

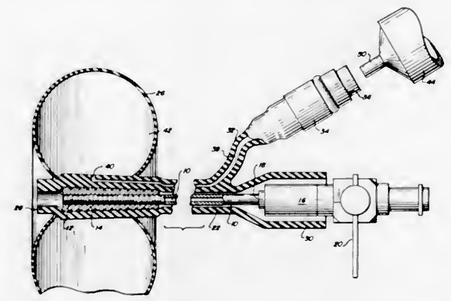


1. A cryomedical device for use in freezing the tissue of a body part, comprising a probe which is adapted to be positioned adjacent the body part for the rapid cooling of the tissue thereof, coolant supply means connected to said probe for supplying coolant at a selected rate thereto, first temperature sensing means in said probe adjacent the contact surface for sensing the probe temperature, second temperature sensing means for sensing the affected tissue temperature including a needle having means for penetrating the tissue for sensing the temperature below the surface of the tissue and control means connected to said first and second temperature sensing means and said coolant supply means for regulating the supply of coolant to said probe to control the temperature thereof in accordance with the temperature of the tissue.

3,948,270
UTERINE CANNULA
Harrith M. Hasson, 345 Fullerton Parkway, Chicago, Ill. 60614
Filed Oct. 15, 1974, Ser. No. 514,409
Int. Cl.² A61M *25/00*
U.S. Cl. 128—348 **8 Claims**

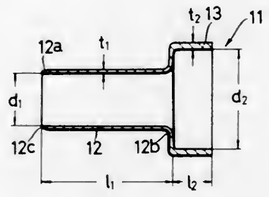
1. A cannula for human uterine elevation, which comprises:
a flexible, rubbery elongated outer tube carrying a balloon adjacent and encircling one open end thereof; means for inflating said balloon; a generally rigid elongated inner tube

positioned inside said outer tube, means for restraining said rigid tube within said outer tube, said inner tube being positioned so that its distal end is spaced inwardly from said one end of said outer tube, said balloon being located in a position



so that when said balloon is inflated, at least a portion of said balloon lies between the plane of said distal end of said inner tube and the plane of said open end; said balloon being located at a close enough distance from said open end to permit said balloon to be inflated inside the human female uterus.

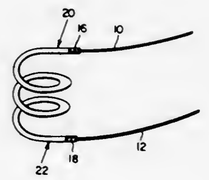
3,948,271
DRAIN FOR THE EARDRUM AND APPARATUS FOR INTRODUCING THE SAME
Taichiro Akiyama, 19-23, Shimoochiai 2-chome, Shinjuku, Tokyo, Japan
Division of Ser. No. 410,688, Oct. 29, 1973, Pat. No. 3,888,258. This application Jan. 27, 1975, Ser. No. 544,347
Claims priority, application Japan, Nov. 7, 1972, 47-111376; Nov. 7, 1972, 47-128293
Int. Cl.² A61M *27/00*
U.S. Cl. 128—350 R **6 Claims**



1. A drain for the eardrum comprising a drain element shaped and dimensioned for insertion through a correspondingly dimensioned hole bored in the eardrum to serve as a fluid drain therethrough; said element being formed of a polymeric material capable of absorbing a portion of said fluid and thereby swelling after insertion in the eardrum, the swelling of the element securely holding the element in place during use of the drain.

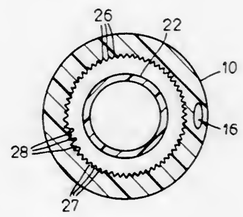
6. A method of inserting a drain in the eardrum comprising the steps of:
providing a hollow drain element of polymeric material having properties of absorbency and swelling and comprising a main portion and an enlarged ancillary portion at one end thereof;
extending a needle from a protective tube therefor and inserting it through said drain element in the direction from said ancillary portion to said main portion;
passing said needle through said eardrum;
pressing on said tube to push said element along said needle until said main portion but not said ancillary portion has passed through said eardrum;
withdrawing said needle into said tube;
and removing said tube and needle from said drain leaving said drain in position.

3,948,272
RECONSTRUCTION DEVICE FOR LACRIMAL DRAINAGE DUCTS
Pierre Guibor, New York, N.Y., assignor to Procedure Medical Products, Inc., New York, N.Y.
Filed Apr. 8, 1975, Ser. No. 566,622
Int. Cl.² A61M *27/00*, *25/00*; **A61F** *1/24*
U.S. Cl. 128—350 R **5 Claims**



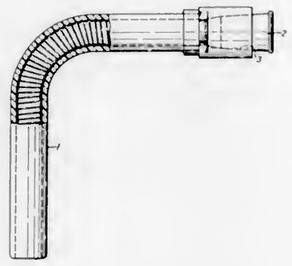
1. A reconstruction device for the lacrimal drainage ducts comprising:
a pair of arched probe members, each arch being between ten and thirty degrees; and
a length of tubing affixed at the ends thereof to one of each ends of said arched probes,
whereby said arched probe members serve to facilitate the insertion of said tubing into and through the lacrimal ducts during the performance of reconstructive surgery.

3,948,273
ENDOTRACHEAL TUBE HAVING A NON-STICKING INNER SURFACE
David H. Sanders, Deerfield, Ill., assignor to Medical Engineering Corporation, Racine, Wis.
Filed Sept. 13, 1974, Ser. No. 505,570
Int. Cl.² A61M *1/00*, *16/00*, *25/00*
U.S. Cl. 128—351 **2 Claims**



1. A tracheostomy or endotracheal tube formed from a flexible rubber material and including a series of thin ridges on the inner surface of said tube for preventing sticking between said tube and a suction catheter having an outer diameter substantially smaller than the internal diameter of said series of ridges for preventing sticking on insertion of the catheter into said tube.

3,948,274
TRACHEAL TUBE WITH DISPOSABLE CANNULA
Maurice I. Zeldman, Pittsburgh, and Gerald E. McGinnis, Monroeville, both of Pa., assignors to Lanz Medical Products Corporation, Wilmerding, Pa.
Filed Jan. 20, 1975, Ser. No. 542,516
Int. Cl.² A61M 16/00
U.S. Cl. 128—351 5 Claims

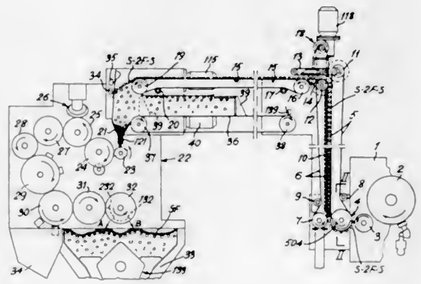


1. The combination of a rigid tracheal tube having substantially straight inner and outer end portions integrally connected by a curved central portion that has a radius of curvature between about ⅝ inch and 1 ¼ inch long, and a disposable cannula fitting in said tube and extending from end to end thereof, said end portions of the tracheal tube being disposed at an angle to each other of between about 90° and 100°, and said cannula being a normally straight one-piece flexible tube formed of a plastic and having a solid wall less than 1 mm thick circumferentially corrugated from approximately its inner end outwardly to a point at least as far as the outer end of said curved central portion of the tracheal tube, said corrugated wall stiffening radially the length of cannula extending through said curved central portion of the tracheal tube and maintaining said length of cannula uncollapsed, the cannula being removable from the tracheal tube by pulling the outer end of the cannula.

3,948,275
REINFORCEMENT OF TOBACCO STRUCTURE
Robert A. Sanford, Prospect, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.
Continuation of Ser. No. 259,296, June 2, 1972, abandoned.
This application Jan. 20, 1975, Ser. No. 542,589
Int. Cl.² A24B 3/14, 13/00, 18/08
U.S. Cl. 131—17 R 2 Claims

1. An expanded tobacco particle having a fibrous structure impregnated with a non-toxic resin, said particle being produced by impregnating tobacco with from about 0.25% to about 5% by weight, based on the weight of the tobacco, of said resin, and expanding the impregnated tobacco, whereby the area and spacing between the fibers of said fibrous structure is increased, relative to the area and spacing prior to expansion, and said resin binds to the fibers of said fibrous structure, bonding and reinforcing the fibrous structure thereby increasing the physical strength of said particle and decreasing the tendency of said particle to collapse.

3,948,276
SYSTEM FOR FEEDING PAIRS OF CIGARETTES WITH AN INTERPOSED DOUBLE LENGTH FILTER PLUG, DIRECTLY FROM A MAKER TO A PACKER
Dante Prandini, Reggio Emilia, Italy, assignor to AMF Incorporated, White Plains, N.Y.
Filed Apr. 25, 1974, Ser. No. 464,087
Claims priority, application Italy, June 14, 1973, 12670/73
Int. Cl.² A24C 1/14, 1/44, 5/33; A24D 1/10
U.S. Cl. 131—25 11 Claims



8. Apparatus providing a direct link-up between a cigarette maker producing cigarette assemblies each consisting of a filter plug connected between equal lengths of cigarette rods, and a packer comprising:

reservoir means including a hopper for receiving and holding cigarette assemblies;

transfer means for receiving cigarette assemblies from the maker and for transporting the assemblies to the reservoir means;

said transfer means including a fluted vacuum drum receiving cigarette assemblies from the cigarette maker and having two axially spaced areas of vacuum acting on the cigarette rod portions of such assemblies and a pair of vertically disposed endless belts each having a vertical run in spaced face to face relationship with a vertical run of the other belt providing an elevator means receiving cigarette assemblies from said drum and transporting such assemblies to a horizontally disposed conveyor;

each of said pair of belts being driven at the same speed as the other belt and engaging the filter plugs of said cigarette assemblies;

means for removing cigarette assemblies from the hopper one by one at a rate determined by the operating speed of the packer;

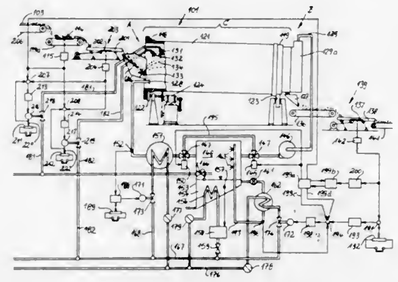
means for receiving the cigarette assemblies as they are removed from said hopper and cutting each filter plug into halves providing a pair of axially aligned filter tip cigarettes of equal lengths from each assembly with the filter tip of one cigarette of each pair being disposed adjacent the filter tip of the other;

means for forming a single aligned row of cigarettes moving laterally to their axes, and including means for turning one cigarette of each pair so all of the filter tips are disposed on the same side of said aligned row of cigarettes;

means for inspecting each of the cigarettes and removing unacceptable ones from the aligned row of cigarettes; and

means for transferring the remaining cigarettes to the packer thereby providing a substantially continuous flow of acceptable cigarettes to be packaged.

3,948,277
METHOD AND APPARATUS FOR CHANGING THE MOISTURE CONTENT OF TOBACCO
Waldemar Wochnowski, Hamburg-Meiendorf; Hans Förster, Hamburg; Jürgen Koehn, Wentorf, and Reinhard Hohm, Pinneberg, all of Germany, assignors to Hauni-Werke Korber & Co. KG, Hamburg-Bergedorf, Germany
Filed Aug. 17, 1973, Ser. No. 389,353
Claims priority, application Germany, Aug. 18, 1972, 2240682
Int. Cl.² A24C 3/04, 9/00
U.S. Cl. 131—135 35 Claims

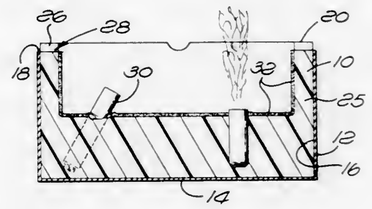


1. Apparatus for changing the moisture content of tobacco or analogous fibrous material, comprising conveyor means arranged to advance a stream of fibrous material along a first path including a conditioning zone having an inlet end and an outlet end; adjustable auxiliary moisturizing means operable to admit moisture to fibrous material at the inlet end of said zone; means for conveying a current of hot and normally humid gaseous fluid along a second path a first portion of which coincides substantially with the entire conditioning zone and wherein said fluid flows concurrent with fibrous material; adjustable conditioning means for changing the moisture content of said fluid in a second portion of said second path so that the moisture content of said fluid normally deviates from the moisture content of fibrous material in said zone and the fluid flowing in said zone exchanges moisture with fibrous material whereby the moisture content of fibrous material is changed to a final value; first detector means for measuring the final value of the moisture content of fibrous material which issues from said zone; first adjusting means operatively connected with said first detector means and arranged to adjust said conditioning means so that the moisture content of said fluid respectively decreases and increases when the measured final value of the moisture content of fibrous material respectively exceeds and is less than a predetermined value; second detector means for measuring the moisutre content of fibrous material ahead of said zone; and second adjusting means operatively connected with said second detector means and arranged to adjust said auxiliary moisturizing means when the measured moisture content of fibrous material upstream of said zone deviates from a fixed or variable predetermined moisture content.

3,948,278
DISPOSABLE ASH RECEPTACLE
James A. McDowell, 3706 W. 147th St., Hawthorne, Calif. 90250
Filed Apr. 7, 1975, Ser. No. 566,010
Int. Cl.² A24F 19/14
U.S. Cl. 131—235 R 12 Claims

1. A disposable receptacle for cigarette or cigar ashes, comprising:

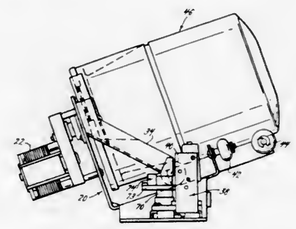
a body formed of rigid, foamed thermoplastic polymer and having bottom, side and top surfaces, said body having at least a top surface portion exposed for extinguishment by penetration of the lit end of said cigarette or cigar; incense in contact with said body for release of incense vapors upon contact by said lit cigarette or cigar end, said top body surface defines a cavity having a floor spaced downwardly therefrom for holding of cigarettes or cigar ashes or the like, said body having sufficient thickness



between said cavity floor and said bottom surface for said extinguishment by penetration and

a metal shell housing said body and formed with an internal dimension in substantial conformance with the outer dimensions of said body to enclose said bottom surface and major side surface portions of said body.

3,948,279
CIRCUITRY FOR COIN-HANDLING SYSTEM
Ashok K. Gupta, Hot Springs, Ark., assignor to U.M.C. Industries, Inc., New York, N.Y.
Filed Nov. 5, 1974, Ser. No. 520,973
Int. Cl.² G07D 1/00
U.S. Cl. 133—1 R 21 Claims



1. Circuitry for a coin-dispensing system which comprises a coin-receiving reservoir that can hold coins therein and that can be rotated in a predetermined direction to cause said coins to issue therefrom, an electric motor that can be energized to rotate said coin-receiving reservoir in said predetermined direction but that can be de-energized to permit said coin-receiving reservoir to come to rest, a coin-holding tube that can receive and hold coins which issue from said coin-receiving reservoir, a level-sensing device for said coin holding tube which develops a call for energization of said electric motor whenever the endmost coin within said coin-holding tube reaches a predetermined level, and control means that responds to said call from said level-sensing device to energize said electric motor, said control means including a subcircuit which initiates a pre-set time period during said call from said level sensing device, said control means providing a predetermined programmed plurality of energizations and de-energizations of said electric motor, said control means providing said predetermined programmed plurality of energizations and de-energizations of said electric motor throughout the duration of said call from said level-sensing device whenever said duration of said call from said level-sensing device is shorter than said pre-set time period, said control means providing said predetermined programmed plurality of energizations and de-energizations of said electric motor throughout said

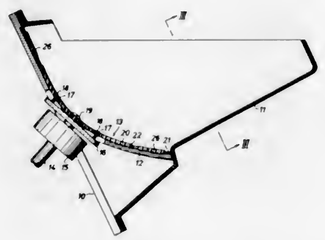
pre-set time period whenever said duration of said call from said level-sensing device equals said pre-set time period.

3,948,280

COIN LIFTING DEVICE HAVING A FLEXIBLE ROTOR DISC

Lars Gunnar Dahl, Sodra Sandby, and Kjell Gustav Landaeus, Lund, both of Sweden, assignors to Scan Coin AB, Malmo, Sweden

Filed Mar. 28, 1975, Ser. No. 563,267
Claims priority, application Sweden, Apr. 2, 1974, 7404415
Int. Cl.² G07D 9/00
U.S. Cl. 133—1 R **8 Claims**



1. A coin-lifting device adapted to receive a large number of coins and to discharge these one by one, comprising, in combination, a coin receptacle; a rotary flexible coin-lifting disc; a fixed generally concave support for the disc, against the surface of which the disc rotates, assuming as it does so the general contour of the support; the support being arranged between vertical and horizontal positions to impart to the disc a steeper inclination to the horizontal in the upper part of the rotational path thereof than in the lower part thereof; and a plurality of coin carriers in operative connection with the disc and rotated by the disc between coin-accepting and coin-discharging positions; the coin carriers being displaceable upon the rotation of the disc between projecting and retracted positions; and means for displacing the coin carriers to at least one of the projecting and retracted positions; the coin carriers in the projecting position being adapted to accept and lift coins from the receptacle to the discharge position, and at the discharge position being retracted to discharge coins therefrom.

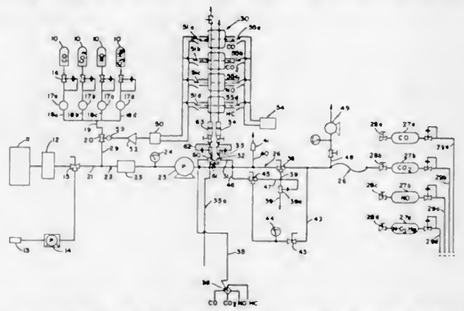
3,948,281

GAS BLENDING USING NULL BALANCE ANALYZER

Donny R. Strain, Waterford, and Daniel B. Martin, Troy, both of Mich., assignors to Scott Environmental Technology, Inc., Plumsteadville, Pa.

Continuation-in-part of Ser. No. 334,842, Feb. 22, 1973, Pat. No. 3,856,033. This application Oct. 26, 1973, Ser. No. 409,795
The portion of the term of this patent subsequent to Dec. 24, 1991, has been disclaimed.
Int. Cl.² G05D 11/08
U.S. Cl. 137—3 **10 Claims**

5. A method of charging a partly filled pressurized storage vessel with a thoroughly mixed blend of gases, the concentrations of which match the concentrations of the blend which is already in the vessel, wherein the charging pressure is a pressure at which the gaseous components of the blend do not freely intermix, which method comprises passing the blend in the pressurized vessel to a first analyzer device and measuring the concentration of the components of the blend in the pressurized vessel with said analyzer device, feeding the components of the blend from separate sources to low pressure mixing zone, mixing the components of the blend in the mixing zone at a pressure at which the components of the blend freely intermix, compressing the mixture and filling the vessel with the compressed mixture, measuring the concentration of the components of the compressed mixture with a second analyzer device and adjusting the feed to the low pressure mixing zone in a sense to compensate for departures of the



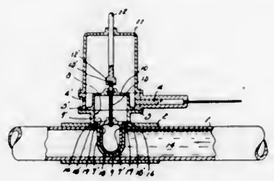
concentrations of the mixture as measured by said second analyzer device from the mixture previously in the vessel as measured by said first analyzer device to thereby match the mixture previously in the vessel.

3,948,282

METHOD AND DEVICE FOR ATTACHING SHUT-OFF CONTROL VALVE TO DISTRIBUTING WATER PIPE SUCH AS SERVICE PIPE WITHOUT STOPPING PASSAGE OF WATER THERETHROUGH

Masatoshi Yano, Suita, Japan, assignor to Yano Giken Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 349,481, April 9, 1973, abandoned. This application Dec. 11, 1974, Ser. No. 531,749
Claims priority, application Japan, Apr. 12, 1972, 47-36014
Int. Cl.² B23B 41/08; F16E 41/04
U.S. Cl. 137—15 **1 Claim**



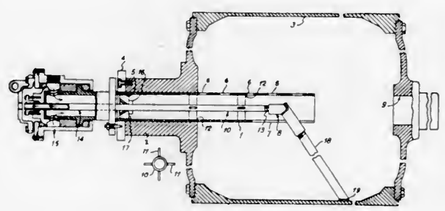
1. A method of attaching a shut-off valve to a water distribution pipe without stopping the flow of water therethrough comprising tightly attaching a flanged T-pipe to the surface of the water distributing pipe, attaching one end of a water control valve unit to the outer end surface of said flanged T-pipe, attaching a boring unit to the other end of said water control valve unit, actuating said boring unit to move in a direction transverse to that of the water distribution pipe to form a round opening in only one side of said water distribution pipe having a diameter equal to that of the water distribution pipe, closing the opening of the flange T-pipe, removing the boring unit from the water control valve unit, attaching a valve installing unit to the open end of said water valve unit, said valve installing unit including a water shut-off valve, a valve cover, and a detachable housing, securing the peripheral bottom portion of said housing to the upper peripheral portion of said water control upper valve unit, actuatiing the valve installing unit to lower the water shut-off valve into the formed opening of the water distribution pipe to close the channel thereof, fixing the valve cover to the flange portion of said T-pipe, removing the detachable housing from the water control unit, and removing the said water control valve unit from said flanged T-pipe.

3,948,283

ROTARY SYPHON

Abraham C. Miselem Asfura, and Abraham A. Miselem Alfonsa, both of Apartado Postal 31452, Mexico City, Mexico

Filed June 26, 1973, Ser. No. 373,812
Claims priority, application Mexico, June 30, 1972, 136678
Int. Cl. F26b 11/04
U.S. Cl. 137—152 **10 Claims**



5.

1. A rotary -syphon assembly for axial insertion into a rotary drum to be heated by a flow of heated fluid, the drum having at the insertion end a main journal with an axial bore, said assembly comprising: an elongated supporting tube sized for axially slidable insertion through the journal bore and for firm support in the journal bore when the axially inner end of said tube is cantilevered beyond the axially inner limit of journal-bore support, the cantilevered portion of said tube having an enlarged opening at one angular location and spaced from the axially inner limit of journal-bore support; articulated syphon-tube means comprising a horizontal-tube element, a radial-tube element, and a hinged elbow interconnecting said tube elements, said tube elements and elbow being of lesser diameter than the bore of said supporting tube; radial-strut means providing direct radial-positioning support of said horizontal tube element with respect to the bore of said support tube at plural axially spaced locations at least one of which is near said elbow; the enlarged opening being sized and located to permit said horizontal tube element to pass radially through the enlarged opening upon axial insertion or removal of said syphon-tube means via said supporting tube.

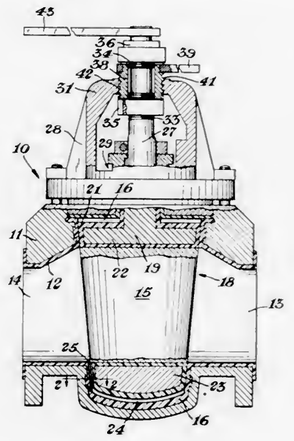
3,948,284

RISING-PLUG PLUG VALVE

Charles Joseph Walworth, Pinconning, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 19, 1974, Ser. No. 498,697
Int. Cl.² F16K 5/02
U.S. Cl. 137—238 **5 Claims**

1. In an improved rising-plug plug valve comprising
a valve body, the valve body defining
an inlet opening,
an outlet opening and
a passage therein, the passage providing full communication between the inlet opening and the outlet opening, the valve body defining
a plug receiving cavity having a generally frustoconical configuration, the plug receiving cavity intersecting the passageway between the inlet and the outlet,
a plug disposed within the plug receiving cavity, the plug having a general frustoconical configuration and mating with at least a portion of the walls of the plug receiving cavity, the plug defining
a fluid passageway which on rotation of the plug permits selective communication between the inlet and the outlet end, the plug having
an end of major diameter and
an end of minor diameter, the plug and valve body at the plug end of minor diameter defining
a closed cavity,
a means to selectively position the plug in the sealing engagement with the walls defining the plug receiving cavity and means to rotate the plug,



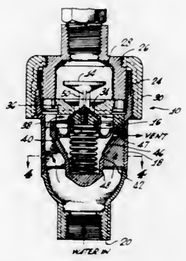
the improvement which comprises providing a groove in a surface extending between the cavity defined by the plug and the body and the outlet passageway to thereby provide fluid communication between the cavity defined by the plug and the body and the outlet passageway.

3,948,285

PRESSURE AND FLOW REGULATION DEVICE

Charles J. Flynn, Glendora, Calif., assignor to Rain Bird Sprinkler Mfg. Corporation, Glendora, Calif.

Filed Jan. 29, 1975, Ser. No. 545,241
Int. Cl.² B05B 1/30
U.S. Cl. 137—494 **7 Claims**



1. For use in a sprinkler system, a pressure and flow regulation device comprising:
a pressure actuated, snap acting valve for positively initiating flow to a sprinkler only after a predetermined minimum supply pressure is reached, said snap acting valve including:
valve closure means movable between open and closed position,
means biasing said valve closure toward said closed position, and
diaphragm means coupled with said valve closure and having a surface disposed to be acted upon by water pressure to urge said valve closure to said open position, said diaphragm serving to open said valve closure slightly when the supply pressure reaches said predetermined pressure and to thereby expose a larger area of said valve

closure to the supply pressure and force it rapidly open against the bias of said biasing means; and

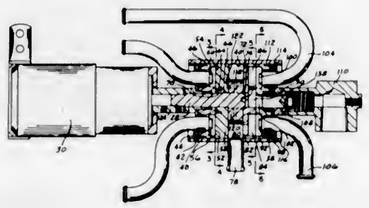
pressure regulation means constructed integrally with said snap acting valve for automatically regulating the pressure applied to the sprinkler to a selected value, whereby said snap acting valve eliminates undesirable low pressure flow to the sprinkler, and said pressure regulation means ensures that the sprinkler operates at a desired optimum pressure.

3,948,286

ROTARY VALVE FOR AN OXYGEN GENERATOR

Jack E. Dunbar, and Richard W. Hradek, both of Davenport, Iowa, assignors to The Bendix Corporation, South Bend, Ind.

Filed Dec. 13, 1974, Ser. No. 532,668
Int. Cl.² F16K *11/02*
U.S. Cl. 137—609 **15 Claims**



7. A breathing system wherein a product effluent having an oxygen concentration higher than air is produced comprising:

a first housing having a first chamber and a second chamber associated therewith, said first chamber and said second chamber each containing materials which will remove nitrogen from air flowing in a first direction to produce said product effluent and release nitrogen when a portion of said product effluent flows in a second direction;

control valve means having a second housing with a bore therein, said housing having an entrance port connecting said bore with a source of air under pressure, said housing having a first distribution port connecting said bore with said first chamber, said housing having a second distribution port connecting said bore with said second chamber, said housing having an exhaust port connecting said bore with the surrounding environment,

passageway means associated with said second housing for connecting said first chamber with said second chamber;

distribution disc means located in said bore having a first distribution opening adjacent the first distribution port, a second distribution opening adjacent the second distribution port, and an axial opening in line with said exhaust port;

control disc means located in said bore between the distribution disc means and the entrance port having a surface adjacent the distribution disc means which separates the first distribution opening from the second distribution opening, said surface having a passage for connecting one of said first and second distribution openings with said axial opening, said control disc means having an inlet port connecting the entrance port with the other of said first and second distribution openings; and

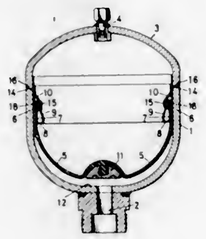
motor means connected to said control disc means for sequentially moving said inlet port relative to said distribution disc means to permit air under pressure to flow through the first distribution opening in said first direction to the first chamber to allow the product effluent to flow in said second direction from the second chamber through said second distribution port to said passage and out the exhaust port during a first time interval, to simultaneously interrupt the communication of the pressurized air in said first direction through said inlet port and the flow of the portion of said product effluent in said second direction through said passage and allow communication between said first chamber and said second chamber through said passageway means to equalize the pressure of the fluid therein during a second time interval, to permit air under pressure to flow in said first direction through said inlet port past the second distribution opening into the second chamber while the portion of said product effluent is flowing in said second direction from the first distribution opening into said passage during a third time interval, and again to simultaneously interrupt the communication of the flow of pressurized air in the first direction through said inlet port and the flow of the portion of said product effluent through said passage to the exhaust port to allow communication through said passageway means to equalize the pressure of the fluid in the first chamber and the second chamber during a fourth time interval to complete a single cycle.

3,948,287

ACCUMULATOR

Nobuyuki Sugimura, and Kazuo Sugimura, both of 1416 Sodeshi-cho, Shimizu, Shizuoka, Japan

Filed Apr. 12, 1974, Ser. No. 460,349
Int. Cl.² F16L *55/04*
U.S. Cl. 138—30 **2 Claims**



1. An accumulator consisting of a pressure container for liquid and an interior housed bladder for pressurized gas on one side opposite said liquid, comprising:

a pressure container combined of an upper lid body and a lower main body, said bodies each being generally cup-shaped with an end faced to mate with the other body end for welding the bodies together at such faces to form said container,

a bladder holding ring having in series positioned relation top to bottom, a cylindrical guide ring portion, a circular bladder flange holding recess portion and a circular curl portion, said guide ring portion snugly fitting against the interior of said lid body and extending past the lid body welding face, the outer surface of the guide ring having a cylindrical surface concentric with and extending past the lid body welding face in continuation of the interior surface of said lid body, said bladder holding recess being annularly about said ring in the portion so extending past the lid body welding face and positioned to receive a flange on the bladder, said curl portion being on the extremity of said ring beyond the recess and having a curved surface for supporting the blade smoothly when laying thereover,

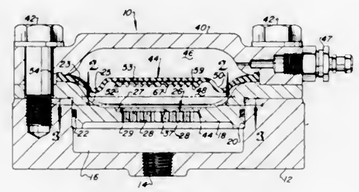
said main body end having an interior surface tapered to force the housed bladder flange into said recess when said welding faces are together, said guide ring guiding said cup-shaped lid and body, and backing said welding faces while holding said bladder properly housed and an auxiliary ring inside the guide ring portion and having a body portion extending upwardly from the bladder flange holding recess portion in inwardly spaced relation to the guide ring portion forming a hollow annular space between the guide and auxiliary ring portions opposite the welding faces of said accumulator lid and main bodies to trap any weld material entering the container at the weld faces.

3,948,288

HYDRAULIC ACCUMULATOR

James R. Mayer, Denver, Colo., assignor to Gardner-Denver Company, Dallas, Tex.

Filed Dec. 13, 1974, Ser. No. 532,434
Int. Cl.² F16L *55/04*
U.S. Cl. 138—30 **2 Claims**



1. A hydraulic accumulator comprising:

housing means divided into gas and liquid chambers by a diaphragm;

said housing means including liquid port means comprising a plurality of annular concentric rows of openings communicating with said liquid chamber; and

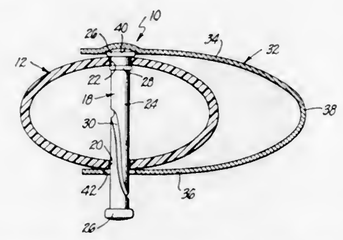
said diaphragm being characterized by a sheet of flexible rubberlike material molded to form a plurality of annular concentric raised ridges formed by a thickened portion of said sheet, said ridges being spaced apart for engagement with corresponding continuous annular concentric surfaces formed by a wall surface of said housing means and between said rows of openings for holding said diaphragm in spaced relationship to said port means.

3,948,289

FLOW REGULATORS

James B. Stephens, La Crescenta, Calif., assignor to Westates Space-Era Products, Inc., South El Monte, Calif.

Filed June 20, 1974, Ser. No. 481,306
Int. Cl.² F15D *1/02*
U.S. Cl. 138—37 **8 Claims**



1. A flow regulator structure having a flexible conduit which is capable of expanding and contracting in at least one cross-sectional dimension within the conduit, the conduit having a hole located therein which is moved relative to the remainder of the conduit during such expansion and contraction and having a flow control member mounted to the conduit and extending through said hole for controlling the flow, so that during such expansion and contraction there is relative movement between the flow control member and the hole in which the improvement comprises:

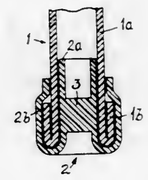
a spring means for controlling the expansion and contraction of the conduit adjacent to said hole and said flow control member in accordance with the internal pressure of the fluid within the conduit, said spring means engaging said flexible conduit adjacent to said hole and said flow control member.

3,948,290

MEANS FOR CONNECTING AN ELASTOMERIC TUBING TO A MEMBER

Kjell Oystein Arisland, St. Catharines, Canada, assignor to A/S Alto, Oslo, Norway

Filed June 6, 1974, Ser. No. 477,086
Claims priority, application Norway, June 6, 1973, 2370/73
Int. Cl.² F16L *55/10*
U.S. Cl. 138—89 **3 Claims**



1. A closure assembly for a resilient elastomeric tube, comprising:

an integral turned-back elastic outer wrap formed from, and at, the end of said elstomeric tube;

a plug member of elastomeric material having a relatively solid body portion positioned within said wrap and of a size to form a tight fit between said body and the interior of said wrap;

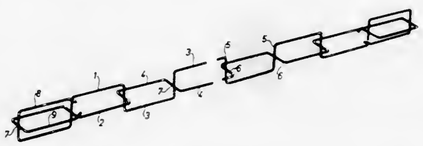
said plug member having an integral resilient tubular portion extending outward from said end of said tube and folded back to a position overlying said wrap and said body portion, whereby both said wrap and said folded back portion of said member exert a radially-inward elastic pressure on said body portion of said member.

3,948,291

STIFFENING DEVICE

Holger Alexis Persson, Enkoping, Sweden, assignor to AB Bahco Ventilation, Sweden

Filed May 17, 1974, Ser. No. 470,855
Claims priority, application Sweden, June 6, 1973, 73079881
Int. Cl.² F16L *3/00*
U.S. Cl. 138—103 **3 Claims**

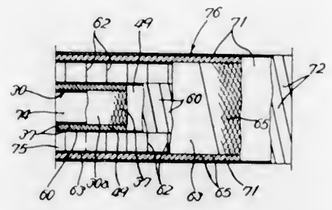


1. A stiffening device for filter hoses of square cross-section and joined at two diagonally opposed corners thereof with other, similar hoses to form a continuous row of such hoses, said stiffening device comprising two substantially identically shaped wires or strips, each of which is bent along a single plane repeatedly substantially at right angles to form a zig-zag configuration having alternate longitudinally and transversally extending portions, of which portions the latter have a length corresponding to the diagonal measurement of the hose, the two wires or strips being connected with each other at the centre points of the transversally extending portions and at right angles to the individual planes of said portions.

3,948,292
LAMINATED COMPOSITE PIPE

Toshiho Goto; Yoshinori Nishino, and Yasukazu Yamashita, all of Osaka, Japan, assignors to Hitachi Shipbuilding and Engineering Co., Ltd., Osaka, Japan

Filed Dec. 5, 1973, Ser. No. 421,960
Claims priority, application Japan, Dec. 8, 1972, 47-123073; Dec. 8, 1972, 47-123074
Int. Cl.² F16L 09/18
U.S. Cl. 138—113 11 Claims

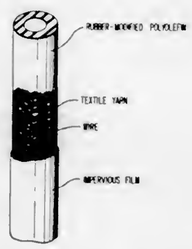


1. A laminated composite pipe comprising an inner pipe forming an inner channel, an outer pipe, and spacer means for defining a clearance between said two pipes to form an annular fluid flow channel therebetween, said spacer means comprising tape means and projections projecting from at least one surface of said tape means, said tape means being spirally wound around said inner pipe so that said projections abut against the inner pipe, and said tape means forming an axially continous cylindrical tape layer which is spaced from the inner pipe by said projections and forms the outer wall of said annular fluid flow channel.

3,948,293
HOSE CONSTRUCTION AND UTILIZATION

Ezra Lovell Bixby, Pennington, N.J., assignor to Goodall Rubber Company, Trenton, N.J.

Continuation of Ser. No. 271,460, July 13, 1972, abandoned, which is a continuation-in-part of Ser. No. 96,987, Dec. 10, 1970, abandoned. This application Apr. 19, 1974, Ser. No. 463,076
Int. Cl.² F16L 11/10
U.S. Cl. 138—126 7 Claims

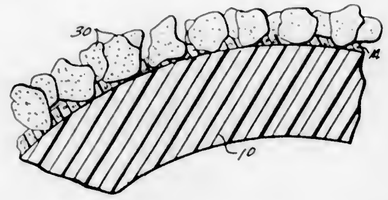


1. A plastic hose comprising:
a tubular body of an extrudable composition of polyethylene and butyl rubber having a fluid-carrying passage therewithin, said composition having a ratio by weight of polyethylene to butyl rubber of about 2:1,
a tubular braided cover of textile yarns surrounding the tubular body and conforming to the external surface thereof, a film surrounding the cover to unify the elements of the cover and provide an impervious barrier at the outermost exposed surface of the hose.

3,948,294
IMPACT-PROTECTIVE COATING FOR PLASTIC PIPE

Gerald M. Magarian, Long Beach, and Robert A. Thompson, Cerritos, both of Calif., assignors to Ameron, Inc., Monterey Park, Calif.

Continuation-in-part of Ser. No. 230,795, March 1, 1972, abandoned. This application Sept. 16, 1974, Ser. No. 506,609
Int. Cl.² F16L 9/14
U.S. Cl. 138—141 10 Claims

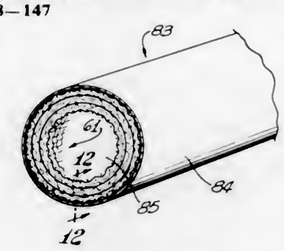


1. The combination of a plastic pipe, a film of bonding material on the pipe exterior surface, and an outer layer of crushable, multicellular, inorganic particles selected from the group consisting of natural volcanic lightweight aggregate, expanded shale, expanded clay, pumice, slag, and furnace cinder, or mixtures thereof, embedded in the bonding material so as to cover the exterior surface of the pipe, the particles being of substantially greater thickness than the film of bonding material so that the unembedded portions of the particles project away from the pipe body to provide a multicellular, inorganic coating which crushes by breaking to absorb energy upon impact and provides a level of impact protection for the pipe body.

3,948,295
INSULATION SYSTEM

Harold E. Lemont, Calabasas, and Robert C. Miller, Encino, both of Calif., assignors to Summa Corporation, Culver City, Calif.

Continuation-in-part of Ser. No. 272,469, July 17, 1972, abandoned. This application Apr. 18, 1973, Ser. No. 352,309
Int. Cl. F16l 59/02, 59/08; B32b 1/08
U.S. Cl. 138—147 34 Claims



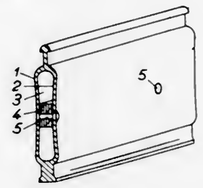
1. A thermal insulation comprising:
a first skin sheet of metal adapted to be positioned in a spaced relationship to a supporting structure;
a plurality of randomly interlocked fine metallic filaments affixed to said first skin sheet for positioning between said skin sheet and the supporting structure;
said metallic filaments being formed of a heat-conductive metal;
said filaments having a length which is substantially greater than the width of said filaments to provide a high resistance to conductive heat flow along the lengths of said filaments, and
said filaments having a shape which minimizes the contact area between adjacent filaments to reduce conductive heat flow between adjacent filaments,

whereby the heat-conductive metal in said insulation functions to achieve effective insulation by forcing heat flow through said insulation to traverse long heat flow paths along the lengths of said metallic filaments.

3,948,296
FRAME STAVE FOR HEALD FRAME OF WEAVING MACHINE

Bernhard R. Koch, Horgenberg, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland

Continuation of Ser. No. 369,349, June 12, 1973, abandoned. This application Jan. 20, 1975, Ser. No. 542,628
Claims priority, application Switzerland, June 30, 1972, 9872/72
Int. Cl.² D03C 9/06
U.S. Cl. 139—91 5 Claims

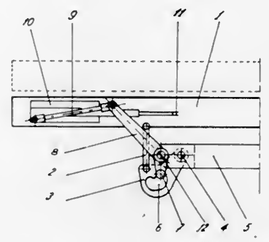


1. In a hollow metal frame stave for a weaving machine heald frame having two generally parallel sidewalls which define a hollow space therebetween, the improvement comprising insert means to place the sidewalls under tension, placed within and secured to said hollow frame stave substantially in the center thereof such that the height of said insert means extends over a portion of the height of the hollow space, and the insert means extends substantially along the entire length of said frame so as to minimize the generation of audible vibrations during operation of the weaving machine.

3,948,297
DEVICE FOR OPERATING THE WEFT NEEDLES IN SHUTTLE-LESS TEXTILE LOOMS

Mario Doriguzzi, Milan, Italy, assignor to Officine Doriguzzi S.a.s., Italy

Filed Apr. 29, 1974, Ser. No. 464,757
Claims priority, application Italy, May 4, 1973, 85555/73
Int. Cl.² D03D 47/08
U.S. Cl. 139—123 6 Claims

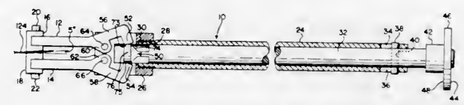


1. A device for operating the weft needle in a shuttleless loom which comprises a stationary frame member, a reed for beating the weft threads, a movable sley for moving the reed, a weft needle carried by a needle actuating member for inserting the weft threads into the shed of the warp, means for transforming the motion of the sley into reciprocating motion of said weft needle, said means comprising a rotatable actuating member pivotally mounted on said stationary frame member, a link interconnecting the movable sley with a lever arm on said rotatable actuating member to produce rotation thereof, said needle actuating member being reciprocally mounted on said sley, and a linkage between said needle actuating member and said rotatable actuating member for producing reciprocal movement of the needle actuating member.

3,948,298
AUTOMATIC LEAD STRAIGHTENING OF AXIAL LEADED COMPONENTS

Denver Braden, San Diego, Calif., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 26, 1975, Ser. No. 562,320
Int. Cl.² B21F 1/02
U.S. Cl. 140—147 3 Claims



1. A straightening mechanism for an elongated cylindrical element having an elongated axis comprising a pair of gripping means for engaging diametricaly opposite sides of the periphery of said element and a cam follower coupled to a second end of each of said gripping means, an elongated hollow tube, a support member secured to a first end of said tube with each of said gripping means being pivotly mounted on said support member intermediate said pad and said cam follower, an elongated rod slideably positioned inside of said tube so as to be capable of reciprocation back and forth along said elongated axis, coupling means constructed to limit the amount of said reciprocation of said rod and to couple together said rod and said tube so that they will rotate in unison, a cam secured to a first end of said rod which engages said cam followers and which is shaped so that when said rod is positioned in a first position said gripping means are pivoted to an open position at which said gripping means are not in engagement with said element and when said rod is positioned in a second position said gripping means are pivoted to a closed position at which said gripping means are in engagement with said element, an operating member having first and second control surfaces secured to the second end of said rod which is remote from said cam, control means constructed to interact with said operating member for controlling the position of said rod and drive means for rotating said tube, said rod, said support member and said gripping means as a unit about said element with simultaneously drawing said unit along said cylindrical element while said gripping means engage said cylindrical element, wherein said drive means comprises a carriage that carries said rod and a carriage reciprocation means for driving said carriage back and forth along said elongated axis in a reciprocating manner and said control means comprises a stationary frame member, an opening member secured to said frame member that engages said first control surface of said operating member to force said rod to said first position at a first time and a closing member secured to said frame member that engages said second control surface of said operating member to force said rod to said second position at a second time as said carriage and said rod reciprocate back and forth.

3,948,299
TREE DELIMBING APPARATUS

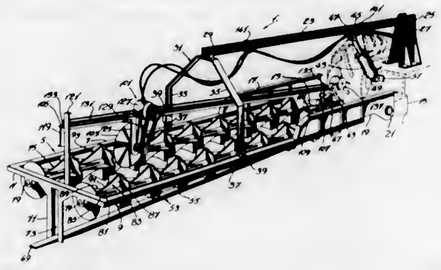
Leo Paul Laforge, and Robert Laforge, both of R.R. No. 1, Begin, Chicoutimi County, Quebec, Canada

Filed Nov. 11, 1974, Ser. No. 522,993
Int. Cl.² A01G 23/08
U.S. Cl. 144—2 Z 6 Claims

1. Apparatus for delimbing felled trees, comprising in combination:
a. a longitudinally elongated support member for supporting at least two trees extending substantially transversely thereto and substantially parallel to each other,

b. a longitudinally elongated frame extending over the support member, and

c. two parallel moving and delimbing means horizontally spaced apart from each other and rotatably mounted about a longitudinal axis on the frame, for moving the trees substantially simultaneously transversely between the support member and the frame and substantially simultaneously delimbing the same as they are moved



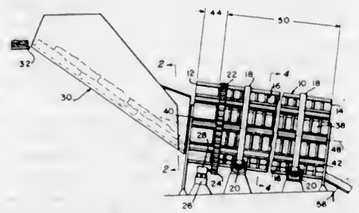
between said support member and said frame, each of a said moving and delimbing means comprising a plurality of mover and delimber stations, each station having one set of longitudinally extending, circumferentially spaced apart blades interleaved with a second set of longitudinally extending circumferentially spaced apart blades, the blades of each set sloping down to a point toward the blades in the other set.

3,948,300

DEBARKING APPARATUS INCLUDING LOG VELOCITY CONTROLLING MEANS

Douglas L. G. Young, Lennoxville, Canada, assignor to Canadian Ingersoll-Rand Company Ltd., Montreal, Canada

Filed Oct. 25, 1974, Ser. No. 517,894
Int. Cl.² B27L *1/04*
U.S. Cl. 144—208 B **7 Claims**



1. Debarking apparatus comprising rotatable debarking drum means including an inlet end for receiving logs to be debarked and a discharge end for discharging logs, log feed chute means downwardly sloping towards said inlet end of said drum means for feeding logs into said inlet end, anvil means extending longitudinally through said drum means and at a location to prevent logs within said drum means from being carried circumferentially around said drum means by rotation of said drum means, means carried by said drum means within said drum means adjacent said inlet end thereof controlling the velocity of logs supplied into said inlet end of said drum means by said log feed chute means, said log velocity controlling means comprising a plurality of vanes angled relative to the centerline of said drum means and longitudinally extending only a minor portion of the length of said drum means, and debarking tool means carried by said drum means within said drum means intermediate said angled vanes and said discharge end of said drum means for debarking logs in said drum means, said debarking tool means comprising means adapted for applying high unit pressure, impact blows to logs in said drum means during the rotation thereof.

3,948,301

BAMMER

Lela Mae Hays, P.O. Box 1091, Central Valley, Calif. 96019

Filed Mar. 5, 1973, Ser. No. 338,087
Int. Cl.² B25D *1/00*
U.S. Cl. 145—29 R **3 Claims**



1. A hammer type device comprising an open ended integrally formed cylindrical body member having a bore extending longitudinally therethrough and opening out of both ends thereof, a socket formed integrally with the body member intermediate the ends thereof and projecting radially outwardly therefrom, said socket having an internally threaded cylindrical recess defined therein and extending outwardly therefrom, said opposite ends of said bore each being internally threaded, a steel ball having a diameter slightly less than the diameter of said bore and adapted to be placed in said bore for free unhindered reciprocal movement between opposite ends of said bore, a pair of identical elongated cylindrically shaped head members each having a head portion of a diameter greater than the bore and a shank portion extending axially outwardly of said head portion and having thread portions thereabout time determined a size gated pitch adapted to be threadedly received in an associated end of said bore, each head member associated with one end of said bore and threadedly received thereon to retain said ball member inwardly of said bore, the threaded shank portion of each head member received in said bore with the head portion of each head member engaging an associated end of said housing, and an elongated shaft having a handle member disposed on one end thereof with the opposite end being of a reduced diameter than circuit diameter of the shaft and having screw type threads formed thereabout, said threaded end of said shaft adapted to threadedly engage said threaded recess of said socket to detachably attach said shaft to said body member, and said handle member adapted to be grasped in a hand of an individual to impart a hammer like motion to the device.

3,948,302

FOLDABLE SKI COVER

Richard S. Kohls, 415 1st North, Seattle, Wash. 98109

Continuation of Ser. No. 396,691, Sept. 13, 1973, Pat. No. 3,851,689. This application Sept. 25, 1974, Ser. No. 509,105
Int. Cl.² A45C *11/00*
U.S. Cl. 150—52 R **3 Claims**

1. A bag for carrying and storing a pair of skis therein, the bag being of a flexible, substantially waterproof material, comprising:

an elongated, generally tubular bag of a length sufficient to completely enclose a pair of skis in side-by-side relation, the bag having a closed front end for receiving the forward ends of the pair of skis and an open rear end for inserting the pair of skis,

longitudinal, flexible partitioning means extending substantially the entire length of the bag forming side-by-side compartments with each compartment receiving one each of the pair of skis, and



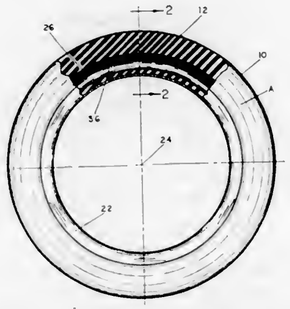
a plurality of separable fastenings means distributed along the length of the bag for fastening the bag around the skis and to hold the skis in position, with at least one of the fastening means disposed adjacent the open end of the rear of the bag.

3,948,303

REPLACEABLE RESILIENT TIRE

Ernest G. Patrick, 14510 Burin Ave., Lawndale, Calif. 90260

Filed Jan. 28, 1974, Ser. No. 437,062
Int. Cl.² B60C *7/24*
U.S. Cl. 152—327 **1 Claim**



1. A resilient tire capable of being removably mounted on a rim defined by a circular web of substantial width that has a pair of laterally spaced flanges projecting outwardly from the edges thereof, said web and flanges cooperating to define a circumferentially extending space therebetween, said tire including:

a. an elongate flexible body having first and second ends, said body having a transverse cross section that includes an inner section of such shape as to fit snuggle within said space and an outer section of a generally semi-circular shape, said inner and outer sections defining a pair of laterally spaced shoulders at their junction, said body having a longitudinal passage therein of tear shape transverse cross section that has the portion of narrowest width thereof in said inner section, and said body of such length that when said first and second ends are in abutting contact the innermost surface of said first section is substantially the same diameter as the part of the external surface of said web with which it will be aligned when said body extends circumferentially about said rim to define said tire thereon;

b. a rod of resilient polymerized resin that is disposed in said passage, said rod having first and second ends in which first and second transverse circumferential grooves are formed, said rod when said first and second ends thereof are adjacently positioned holding said first and seconds of said elongate body in abutting contact, and said rod having a longitudinal centerline that is disposed inwardly from the other extremities of said flanges when said body is disposed on said rim with said first and second ends in abutting contact to define said tire; and

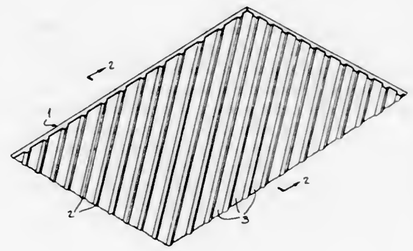
c. fastening means disposable within said passage to hold said first and second ends of said rod adjacently disposed, with said body, rod, and fastening means when disposed on said rim to define said tire not being laterally displaceable therefrom due to said centerline of said rod being inwardly disposed from the outer extremities of said flanges and said fastening means is a tubular sleeve disposed in said passage and extending over adjacent sections of said length in which said grooves are formed, said sleeve being defined by a permanently deformable material, and said sleeve including first and second transverse circumferential portions that by pressure are deformed inwardly to engage said grooves to maintain said first and second ends of said length adjacently disposed.

3,948,304

RAW PNEUMATIC TIRE CARCASS AND METHOD OF FABRICATING SAME

Henri J. Mirtain, Compiegne, France, assignor to Uniroyal, Clairoix, France

Filed Sept. 26, 1974, Ser. No. 509,523
Claims priority, application France, Oct. 5, 1973, 73.35763
Int. Cl.² B60C *5/12*
U.S. Cl. 152—354 **9 Claims**

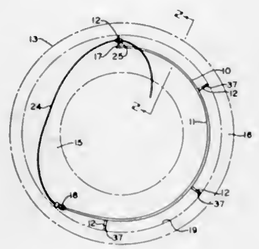


1. A raw pneumatic tire carcass comprising an uncured, elastomeric, bead-reinforced, annular body having an internal surface, and an elastomeric liner impervious to air superposed upon and affixed to said internal surface, said liner being substantially co-extensive from bead-to-bead with said internal surface and having a symetrically varying cros-section which is thickest at the median equatorial plane of said body and progressively narrower on either side of said plane, said liner and said body being cooperatively associated with one another such that, upon their common inflation, each is capable of undergoing a re-distribution in thickness such that said liner presents a substantially uniform thickness from bead-to-bead sufficient to remain impervious to air.

3,948,305
TIRE BEAD RETAINER AND METHOD OF INSTALLATION

George T. Watts, North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 9, 1975, Ser. No. 585,325
Int. Cl.² B60C 5/16
U.S. Cl. 157—1 10 Claims



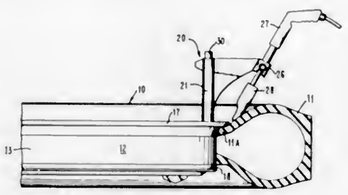
1. A tire bead retainer for positioning in an annular well of a wheel rim comprising an elongated band of resilient flexible material having a width not greater than the width of said well permitting radial movement of said band into said well, transverse bead separators mounted at spaced-apart positions, longitudinally of said band, each of said separators extending radially outward from said well to resist movement of tire beads mounted on said wheel rim into said wheel well, said band having end portions spaced apart a predetermined distance in the unstressed condition with one of said end portions being movable toward the other of said end portions for insertion of said retainer into the cavity of a tire, said predetermined distance between said end portions of said band in the unstressed condition causing resilient movement of said end portions apart after insertion into said tire to a position in which said band has a diameter greater than the diameter of said well for ease of mounting said tire on said rim, means for moving one of said end portions towards the other of said end portions and into said wheel well with said bead separators positioned between the beads on said tire, and said wheel rim having an opening and said means for moving said band into said wheel well including a cable member fastened to said band at a first position and a cable locking member mounted on said band at a second position spaced apart from said first position with said cable passing through said locking member and adaptable to be extended through said opening in said wheel rim for pulling said cable member through said locking member to reduce the distance between said first position and said second position whereby said band is wrapped around said rim in said wheel well.

3,948,306
TIRE REMOVING TOOL

Don J. Marshall, Box 410, Rte. 6, Edgewater, Md. 21037

Filed Nov. 14, 1974, Ser. No. 523,581
Int. Cl.² B60C 25/06
U.S. Cl. 157—1.26 11 Claims

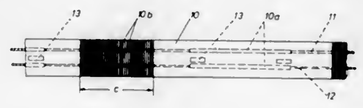
1. A tool for removing a tire from an annular rim including an upstanding, circumferentially extending flange and having a substantially closed web with a central aperture therein; said tool comprising: a barrel, a bracket connected to said barrel while extending radially therefrom; a rod having a first portion extending through said barrel and adjustable axially of said barrel; a second portion of said rod extending substantially perpendicular to said first portion; said second portion having a length sufficient to overlie the central aperture of the web of a rim; a shoe member slidably mounted on said second portion of said rod and adapted to embrace the web of said rim on one side thereof with said rod on the opposite side thereof and adjacent the periphery of said aperture; locking means for clamping said first portion of said rod in a predetermined position relative to said barrel and said bracket; and means on said bracket for receiving a power unit.



3,948,307
PLEATER TAPE FOR DRAPES OR CURTAINS OR THE LIKE

Alfred Schöler, Wuppertal, Germany, assignor to Vorwerk & Sohn, Wuppertal-Barmen, Germany

Filed Dec. 16, 1974, Ser. No. 532,821
Int. Cl.² A47H 13/14
U.S. Cl. 160—348 7 Claims



1. A pleater tape for forming multiple pleats in drapes and curtains, said multiple pleats having a center and being formed by at least two oppositely placed single pleats each having a width and a center, comprising:

a tape having a front side, a reverse side and an upper edge;

at least one pull cord affixed to said reverse side at certain points and running freely therebetween;

affixing means for displaceably affixing said at least one pull cord to said reverse side, said affixing means being arranged at said center of said multiple pleats;

a pocket in said tape extending in one dimension through the height of said tape and in the other dimension across one half of the width of the two single pleats forming the multiple pleat; and

a plate of synthetic material of the same size having side edges, said plate being disposed within said pocket.

3,948,308
FOLDABLE STORM WINDOW AND SCREEN

Stanley R. Facey, 1182 Herkimer St., Brooklyn, N.Y. 11233

Filed Mar. 12, 1974, Ser. No. 450,406
Int. Cl.² A47H 3/00; A47G 5/00
U.S. Cl. 160—369 5 Claims

1. A foldable window unit adapted to be installed outside a building around a window from a position within the building, said unit comprising

at least two rigid rectangular panels which when joined together are larger than the window to overlap outside edges of the window;

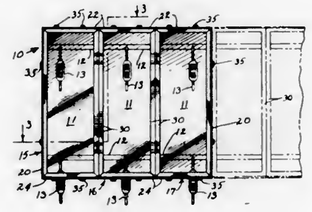
each panel including an outer rectangular frame, at least one of a rectangular transparent material, a rectangular screen material and the like, an inner rectangular frame clamping said rectangular material between said outer and inner frames, means securing said inner frame to said outer frame;

upper and lower brackets horizontally extending from one vertical sidewall of said inner frame to an opposite vertical sidewall of said inner frame, said brackets being vertically spaced from upper and lower walls of said inner frame;

hinge means securing said two panels together for permitting one panel to be folded with respect to the other panel to allow said window unit in a folded condition to pass through the window from the position within the building to the outside of the building, said hinge means being pivotally connected to adjacent vertical outer sidewalls of said outer frames of said rigid rectangular panels;

window securing means positioned within the window;

adjustable mounting means connecting said brackets of each panel to an associated one of said window securing means for drawing said panels against the outside edges of the window to fasten said window unit outside the building around the window;



said adjustable mounting means including a pair of turnbuckles associated with each of said panels, one end of each of said turnbuckles being connected to an associated one of said brackets of each of said panels and an opposite end of each of said turnbuckles being connected to its associated window securing means;

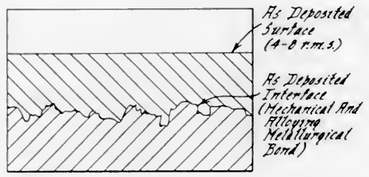
each of said brackets of said panels including slot means to allow positioning of said one end of each of said turnbuckles horizontally along its associated bracket between said one sidewall and said opposite sidewall of said inner frame of each of said panels; and

said associated window securing means including one screw hook connected to said opposite end of each of said turnbuckles.

3,948,309
COMPOSITE ROTOR HOUSING WITH WEAR-RESISTANT COATING

Leonard G. Cordone, Allen Park, and Yeshwant P. Telang, Grosse Ile, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 20, 1973, Ser. No. 390,132
Int. Cl.² B22D 19/08
U.S. Cl. 164—98 9 Claims



1. A method of preparing a coated rotor housing for a rotary internal combustion engine comprising:

a. defining a conductive mandrel having an outer surface complimentary to the resultant rotary housing surface,

b. electrolytically depositing a functional coating of a composite particle wear-resistant material onto said mandrel to form an assembly, the exposed surface of said assembly having a roughness characterized by projections at least 0.030 inches and concentrated in a number of 5-100 per cm^2,

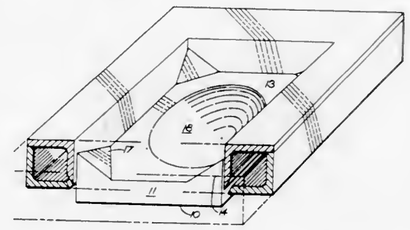
c. casting a molten metallic material about said assembly, the casting material upon cooling being predominantly mechanically locked to said assembly, and

d. stripping said mandrel from said coating.

3,948,310
BOTTOM BLOCK FOR D.C. CASTING OF ALUMINUM ROLLING INGOTS

Jorge B. Deschapelles, Ravenswood, W. Va., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Aug. 12, 1974, Ser. No. 496,798
Int. Cl.² B22D 11/08
U.S. Cl. 164—274 8 Claims



1. In a vertical DC casting apparatus for the casting of large rectangular-shaped aluminum rolling ingots conprising a DC casting mold and a bottom block, wherein the bottom block is adapted to be inserted into the mold before casting to thereby seal the discharge end of the mold and wherein the bottom block is adapted to be withdrawn from the mold during casting and thereby allow the solidifying ingot to emerge from the discharge end of the mold where coolant is applied onto the surfaces of the ingot, the improvement comprising a bottom block of generally rectangular horizontal cross section having generally pyramid-shaped projections at each corner on the top of the bottom block which extend laterally along the edges of the bottom block a distance from the corner of not more than one-third of the bottom block length and width respectively, for reducing the solidification rate at the corners of the solidifying ingot during the initial part of casting by preventing the application of coolant onto the corners of the ingot when the ingot initially emerges from the discharge end of the mold.

3,948,311
APPARATUS FOR CASTING METAL SLABS

Edmund Q. Sylvester, Shaker Heights, Ohio, assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed June 13, 1974, Ser. No. 479,033
Int. Cl.² B22D 33/02
U.S. Cl. 164—341 9 Claims

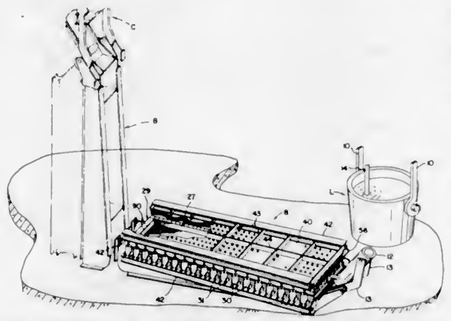
1. Apparatus for casting molten ferrous metal into slabs comprising:

a mold defining a slab casting cavity having a pouring end and a bottom end,

means for moving said mold between a pouring position with said bottom end slightly higher than said pouring end and with said slab casting cavity at an angle of at least about 2° to the horizontal and an upright position with said pouring end at the top, said mold comprising

two mold sections which define the faces of the slab to be cast, each section comprising a liner plate and a backing plate, said plates being parallel and spaced apart to define a spaced therebetween, means for securing said liner plate and said backing plate to one another in spaced apart relation which comprises a plurality of threaded stubs welded to the outer face of said liner plate and

extending through corresponding openings in said backing plate, a plurality of metal balls interposed between said liner plate and said backing plate, a plurality of smaller metal balls interposed between said backing plate and a pressure plate on the opposite side of said backing plate, and threaded means cooperating with said stubs for securing said backing plate to said liner plate with said balls clamped therebetween,



a sprue attached to said mold adjacent the pouring end of said casting cavity, and adapted to contain a reservoir of molten metal for feeding into said casting cavity when said mold is in both said pouring position and in said upright position, and

means for cooling said mold.

3,948,312

VENTILATION AND/OR AIR TEMPERATURE CONTROL APPARATUS

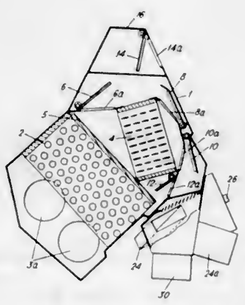
Arthur Robert Nisbet, Ammanford, Wales, assignor to Delanair Limited, Barking, England

Filed May 29, 1974, Ser. No. 474,260

Claims priority, application United Kingdom, Oct. 12, 1973, 47877/73; Germany, Mar. 4, 1974, 2410254; Mar. 4, 1974, 7407489[U]

Int. Cl.² F25B *29/00*

U.S. Cl. 165—16 **12 Claims**



1. Air conditioning control apparatus for a vehicle having an enclosed driving and/or passenger compartment, the apparatus comprising, in combination, air flow conduit means, a cooling device positioned in said means, a heating device downstream of said cooling device in said means, a series of governing devices for regulating the air flow to govern ventilation and temperature within the compartment, control means for determining the operation or position state of said devices, manually adjustable selector means connected to the control means for presetting the control means to maintain a desired condition of ventilation and/or temperature control, said control means comprising a series of control elements for said governing devices, a series of co-operating elements for said control elements, and a control member having said series of control elements fixed thereto, servo means for actuating relative movement between said member and said co-operating elements whereby to control the state of the governing devices, said governing devices comprising valves in the air flow conduit means that are adjustable to vary the relative proportions of the heated and unheated airstreams in respective airflows directed through said outlets to the upper and lower levels respectively in dependence upon the setting of the control means, such that when the compartment is to be heated the upper level discharge temperature is less than the lower level discharge temperature by permitting an adjustable part of the flow from the cooling device to bypass said heating device for the respective flows to said upper and lower levels.

3,948,313

ARRANGEMENT TO CONTROL HEAT FLOW BETWEEN A MEMBER AND ITS ENVIRONMENT

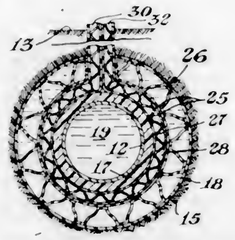
John S. Best, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 112,636, Feb. 4, 1971, Pat. No. 3,768,547. This application Feb. 9, 1973, Ser. No. 331,089

The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.

Int. Cl.² F28D *21/00*; **E21B** *43/24*

U.S. Cl. 165—45 **10 Claims**



1. An arrangement of elements located between an earthen support and a member maintained or adapted to be maintained at a temperature different than that of its adjacent earthen support, one of said elements comprising a layer of insulation material, another of said elements comprising a closed cell structure including a given contained fluid means for storing excess quantities of heat during a warm climatic season and dissipating the same during a cold climatic season thereby permitting the heat storage capacity of said means to be naturally regenerative by climatic seasonal changes, said elements thereby maintaining a relatively controlled temperature differential between said member and said earthen support.

3,948,314

THERMODYNAMICALLY INTEGRATED BUILDINGS

William E. Creswick, Sault Ste. Marie, and Cyril F. T. Rounthwaite, Toronto, both of Canada, assignors to Isothermic Systems Ltd., Sault Ste. Marie, Canada

Continuation-in-part of Ser. No. 231,600, March 3, 1972, abandoned. This application Dec. 18, 1973, Ser. No. 425,771

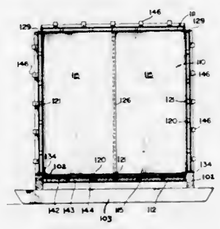
Claims priority, application Canada, Mar. 8, 1971, 107096

Int. Cl.² F25B *29/00*

U.S. Cl. 165—48 **13 Claims**

1. A building structure wherein the walls of same which are in thermal communication with the external atmosphere are adapted to bear at least a portion of the loads imposed by the structure, said load bearing walls being formed by a plurality of contiguous, liquid tight, hollow panels, each panel including an outwardly facing wall portion in thermal communication with the external atmosphere and an inwardly facing wall portion spaced from the first mentioned wall portion and in thermal communication with the internal atmosphere of the

building structure so that when an aqueous liquid flows through each panel such liquid is in direct contact with the respective spaced apart inner surfaces of said outwardly and inwardly facing wall portions, each of said panels including inlet means for the introduction of liquid therein and outlet means for the removal of liquid therefrom, said inlet and



outlet means of said panels being connected to provide such flow of the aqueous liquid through said panels, pumping means for forcing the liquid through said panels, and heating or cooling means for maintaining the temperature of the aqueous liquid passing through said panels whereby to maintain said load bearing walls substantially at a selected temperature to improve the stability of the building structure.

3,948,315

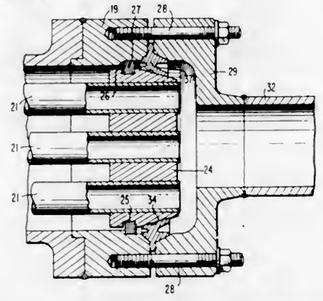
CLOSURE FOR HEAT EXCHANGER

John R. Powell, Tulsa, Okla., assignor to Brown Fintube Company, Tulsa, Okla.

Filed Aug. 13, 1974, Ser. No. 497,108

Int. Cl.² F28F *11/00*, *9/08*

U.S. Cl. 165—70 **6 Claims**



1. In a heat exchanger of the type having one or more tubes arranged in a hairpin shape and enclosed by a shell, the free ends of the tube or tubes being secured in a tube sheet, said tube sheet having sufficient clearance inside said shell to allow removal of said tube or tubes and said tube sheet through said shell, and including a locking ring for temporarily securing said tube sheet against movement relative to a terminal member of said shell, a closure member bolted on said shell terminal member for connecting a conduit with said tube or tubes, and a sealing arrangement for preventing the leakage of fluid between said shell terminal member and said tube sheet and between said shell terminal member and said closure member and between said closure member and said tube sheet, the improvement wherein said seal arrangement comprises:

a sealing surface on the exterior of said tube sheet between said locking ring and the terminal end of said tube sheet;

said terminal member having an internal frustoconical seat adjacent said locking ring and spaced radially outward from said tube sheet sealing surface;

said closure member having a frustoconical seat spaced radially outward from said tube sheet sealing surface and spaced axially from said terminal member seat;

a sealing gasket interposed between said tube sheet sealing surface and said closure member seat and said terminal member seat, said sealing gasket having circumferential grooves on axially opposite sides thereof, whereby fluid pressure urges adjacent portions of said gasket against said seats and said sealing surfaces.

3,948,316

PROCESS OF AND DEVICE FOR USING THE ENERGY GIVEN OFF BY A HEAT SOURCE

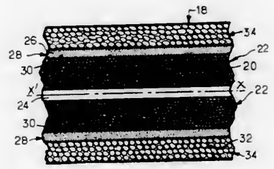
Daniel Souriau, Paris, France, assignor to Gaz de France, Delorme, France

Filed Feb. 1, 1974, Ser. No. 438,605

Claims priority, application France, Feb. 6, 1973, 73.04129

Int. Cl.² F28D *15/00*

U.S. Cl. 165—105 **9 Claims**



1. In combination with a heat source giving off heat, a heat-carrying fluid likely to be converted from the liquid state to the gaseous state and vice versa at temperatures about that of said heat source, and a flow circuit for said heat carrying fluid to receive heat from said source, the improvement in a device for using said heat comprising:

at least one first porous material means having an adequate porosity to prevent excessive pressure loss from occurring in the flow circuit of said heat-carrying fluid;

at least one second porous material means of lower porosity supported by said first porous material to form a blocking layer with such a porosity that under the operating conditions of said device said heat-carrying fluid may flow through said blocking layer only in the gaseous state;

a supply source means for feeding said heat-carrying fluid in the liquid state;

a feed line means communicating with said supply source for feeding said fluid from said supply source means in the liquid state to one side of said blocking layer;

bleeding means including a chamber for drawing off gaseous fluid arranged on the opposite side of said blocking layer;

a collecting header means for said fluid in the gaseous state connected to said bleeding means;

energy-recovering means connected to said header means for receiving said gaseous fluid from said collecting header and restoring it to the liquid state and means for conducting said heat-carrying fluid in liquid state to said supply source after the extraction of latent heat of evaporization from the gaseous fluid in said energy recovering means.

3,948,317

STRUCTURAL REINFORCED GLASS-CERAMIC MATRIX PRODUCTS AND METHOD

Gary Lee Moore, Swanton, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

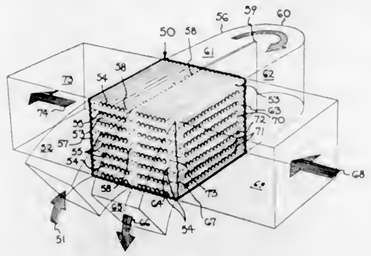
Division of Ser. No. 333,380, Feb. 16, 1973, Pat. No. 3,885,942. This application Jan. 16, 1974, Ser. No. 433,737

Int. Cl.² F28F *3/00*

U.S. Cl. 165—165 **2 Claims**

2. A structurally reinforced, integral and monolithic glass-ceramic counter-crossflow recuperator matrix comprised of a thermally crystallized glass material defining a plurality of

passageways through the monolithic structure of said recuperator matrix, said plurality of passageways being disposed in separate, plural substantially parallel planes, the passageways in each plane being parallel to each other, some of said passageways being adapted to convey a first fluid medium through the recuperator matrix in heat exchange relationship to a second fluid medium being conveyed through other of said passageways of the recuperator matrix, and a sintered and fused thermally crystallized glass-ceramic frit material filling preselected ones of said passageways throughout their length



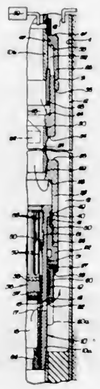
in a central region of alternate planes of the passageways which open on opposite faces of the matrix containing said frit material fused therein longitudinally throughout the length of such passageways with the material of the recuperator matrix and completely filling and closing said passageways thereby forming in said central region an interior wall-like structure in said alternate planes dividing said matrix into counter flow segments, the cross flow segment of the recuperator matrix comprising the parallel passageways in the planes between said alternate planes.

3,948,318

FLOW CONTROLLING SAFETY VALVE

John S. Page, Jr., 10424 Echo River Court, Fountain Valley, Calif. 92708

Filed Oct. 9, 1974, Ser. No. 513,470
Int. Cl.² E21B *43/12*
U.S. Cl. 166—224 A **18 Claims**



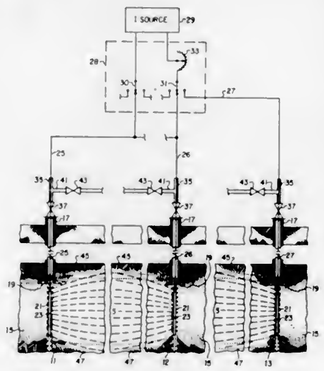
1. In combination,
a tubing in a well and having a first side port through which well production fluid is flowable,
b first means including a valving sleeve movable up and down between predetermined positions on the tubing to control flow of production fluid through said port, said means having different surfaces facing upwardly and downwardly for exposure to said flow and characterized in that the upward force exerted by said flow on said means is substantially equal to the downward force exerted by said flow on said means,
c said means having a control surface to receive selective application of control fluid pressure for moving the sleeve valve in one direction between said positions,
d and auxiliary means including fixed tubular weight carried above the valve to exert predetermined force on said first means tending to shift the sleeve valve in the opposite direction between said positions.

3,948,319

METHOD AND APPARATUS FOR PRODUCING FLUID BY VARYING CURRENT FLOW THROUGH SUBTERRANEAN SOURCE FORMATION

William C. Pritchett, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 16, 1974, Ser. No. 515,205
Int. Cl.² E21B *43/24*
U.S. Cl. 166—248 **10 Claims**



1. A method of heating a subterranean formation which comprises completing a plurality of wells within said formation in a predetermined pattern, installing electrical conductors in said wells, connecting said electrical conductors with the formation and with voltages so as to effect electrical conduction through the formation between wells, and heating said subterranean formation by said electrical conduction under conditions such that the electrical current flowing at different subterranean points varies at different times because of different current flow patterns to attain more nearly uniform heating of said subterranean formation, said electrical conduction effected by a multi-phase current source and said wells in said predetermined pattern have respective predetermined arrangement of electrical conductors therein; and each respective electrical conductor is connected with a predetermined phase of said multi-phase current source and said current flow patterns vary as said voltage differential configurations vary with the phase voltage changes on said electrical conductors connected with the respective phase leads with time.

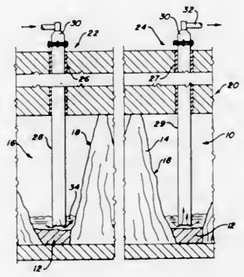
5. Apparatus for heating a subterranean formation comprising:
a. a plurality of wells extending from the surface of the earth to and completed within said subterranean formation in a predetermined pattern for producing said fluids;
b. a plurality of electrical conductors in respective said wells; each said electrical conductor being electrically connected with said subterranean formation for passage of current therethrough; and
c. a multi-phase electrical current source having respective leads for each respective phase thereof; respective said leads being connected with respective said electrical conductors in a predetermined configuration so as to vary the electrical current flowing at different subterranean points in said subterranean formation at different times because of different current flow patterns to attain more nearly uniform heating of said subterranean formation by electrical conduction therethrough within said predetermined pattern of wells.

3,948,320

METHOD OF IN SITU GASIFICATION, COOLING AND LIQUEFACTION OF A SUBSURFACE COAL FORMATION

Ruel C. Terry, Denver, Colo., assignor to In Situ Technology, Inc., Denver, Colo.

Filed Mar. 14, 1975, Ser. No. 558,423
Int. Cl.² E21B *43/24*
U.S. Cl. 166—272 **11 Claims**



7. A method of in situ production of a preheated coal formation having liquid permeable passages therethrough and wherein at least portions of the coal formation initially have a temperature in excess of 2500° Fahrenheit comprising the steps of:
establishing fluid injection and fluid removal passages connecting the coal formation to a surface location,
injecting a cooling fluid having a temperature below 2500° Farenheit into the formation,
injecting a fluid solvent material into the formation having the capability of dissolving the coal,
dissolving the coal with the solvent material,
allowing the formation to subside as the coal is dissolved therein so that more surface area of coal is exposed to the solvent, and
removing the admixture of the dissolved coal and solvent from the formation.

3,948,321

LINER AND REINFORCING SWAGE FOR CONDUIT IN A WELLBORE AND METHOD AND APPARATUS FOR SETTING SAME

Harrold D. Owen, Fort Worth; Robert Lee Roper, Burleson; J. C. Smith, Fort Worth, and James Douglas Young, Crowley, all of Tex., assignors to Gearhart-Owen Industries, Inc., Fort Worth, Tex.

Filed Aug. 29, 1974, Ser. No. 501,695
Int. Cl.² E21B *23/04*, *43/10*
U.S. Cl. 166—277 **44 Claims**

1. A method for emplacing a liner in a conduit in a well penetrating subterranean formations comprising:
a. suspending at a predetermined depth in said conduit at least one annular liner having a body portion including substantially cylindrical interior and exterior surfaces that are at least partially coextensive, having an outside diameter less than the internal diameter of said conduit, having sufficient malleability for and being adapted for being expanded to conformingly engage said conduit and having a modulus of elasticity in compression sufficient to retain tight frictional engagement with said conduit after expansion thereagainst; said liner also including adjacent said body portion a tubular swage at at least one end for expanding said liner outwardly into said tight frictional engagement with said conduit; said body portion being responsively connected with a reaction force setting means for holding said body portion at the desired setting depth against the force of said swage as said swage is forced interiorly of said body portion; said swage engaging a force generating means also suspended in said conduit for subjecting said swage to a force acting to force said swage into said body portion; and said reaction force setting means engaging said force generating means for



subjecting said reaction force setting means and body portion to a reaction force opposing movement of said body portion as said swage is forced thereinto;
b. actuating said force generating means and applying said force to said swage and said reaction force to said reaction force setting means, thereby forcing said swage interiorly of said body portion while said reaction force is still acting on said body portion and expanding said body portion outwardly into said tight frictional engagement with said conduit; and thereafter;
c. removing said force generating means from said well, leaving said liner expanded into said tight frictional engagement with said conduit with said swage forced interiorly of said body portion for reinforcement and having a bore penetrating longitudinally through both said swage and said body portion.

9. A combination liner and element for a conduit in a well penetrating subterranean formations and having a given diameter comprising:
a. a liner having:
i. an annular body portion having substantially cylindrical interior and exterior surfaces that are at least partially co-extensive, having an outside diameter less than said given diameter, having sufficient malleability for and adapted for being expanded to conformingly engage said conduit, and having a modulus of elasticity in compression sufficient to retain tight frictional engagement with said conduit after expansion thereagainst; and
ii. a tubular swage means adjacent said body portion for expanding said body portion outwardly into tight frictional engagement with said conduit; said swage means being adapted for being forced concentrically interiorly of said body portion and left in place therein after said body portion has been expanded into said tight frictional engagement with said conduit; said tubular swage means having extending longitudinally there-

through a bore that is large enough for passage of downhole tools, well fluids and the like;

b. a tubular element having an outside diameter less than said given diameter for being disposed concentrically interiorly of said conduit in said well; and

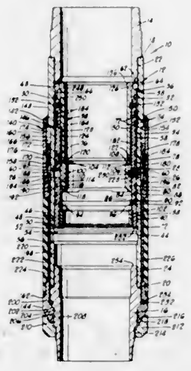
c. a connector means connected at its one end with said body portion and at its other end with said tubular element; said connector means having an expansible portion for retaining a sealing interconnection after expansion of said body portion.

3,948,322

MULTIPLE STAGE CEMENTING TOOL WITH INFLATION PACKER AND METHODS OF USE

Eugene E. Baker, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 23, 1975, Ser. No. 570,602
Int. Cl.² E21B *33/13, 33/16, 33/127*
U.S. Cl. 166—289 **21 Claims**



1. In a cementing packer tool for cementing through a tubular string in a well bore of the type which includes a tubular housing having at least one port extending through the wall thereof; means for interposing the tubular housing between adjacent sections of the tubular string and securing the housing thereto in communication therewith; sleeve valve means slidably disposed within the tubular housing for alternately opening and closing the port in the tubular housing to fluid flow therethrough in response to manipulation signals from the ground surface; means operatively engaging the sleeve valve means and the tubular housing for releasably maintaining the sleeve valve means in a condition opening the port in the tubular housing; and means operatively engaging the sleeve valve means and the tubular housing for releasably maintaining the sleeve valve means in a condition closing the port in the tubular housing; the improvement comprising:

a tubular inflation packer assembly having an upper end portion and a lower end portion, the lower end portion sealingly engaging the outer periphery of said tubular housing a distance below the port through the wall thereof, the upper end portion defining an annular space between the inner periphery of said inflation packer assembly and the outer periphery of said tubular housing communicating with and extending upwardly from the port through the wall of said tubular housing and having at least one port formed in the upper portion communicating between the annular space and the outer periphery of said tubular inflation packer assembly, said tubular inflation packer assembly further including:

means for providing an annular seal between the inner periphery of said tubular packer assembly and the outer periphery of said tubular housing intermediate the port formed in said tubular housing and the lower end portion of said inflation packer assembly for allowing one-way downward fluid flow therepast while preventing upward fluid flow therepast;

a tubular member carried by said tubular packer assembly and extending between the lower portion thereof and the upper portion thereof adjacent said means for providing an annular seal and defining a closed annular chamber between the inner periphery of said tubular inflation packer assembly and the exterior of said tubular housing intermediate the lower end portion thereof and said means for providing an annular seal;

a tubular resilient packer sealing member formed on the outer periphery of said tubular member; and

pressure responsive valve means interposed between the port in said tubular housing and the port formed in the upper end portion of said tubular inflation packer assembly for preventing fluid communication between the port in said tubular housing and the port in said inflation packer assembly and, alternately, placing said ports in fluid communication in response to the application of a predetermined pressure differential across said valve means.

8. A method of cementing the outer casing annulus between a casing string and a well bore in any desired number of stages wherein the casing string in the well bore includes a predetermined number of casing valves located in the casing wall at predetermined locations with an inflatable packer member disposed about at least one of the casing valves with the interior of the packer member communicating with the respective casing valve passage and with initially closed pressure responsive valve means interposed between the interior of the packer member and the outer casing annulus above the packer member, comprising the steps of:

a. closing the interior of the casing string at a point below the lowermost of said casing valves;

b. opening the lowermost of said casing valves to provide a fluid communication channel between the interior of the casing and the interior of the inflatable packer member;

c. pumping a quantity of working fluid downwardly through the casing and through the open casing valve into the interior of the inflatable packer member;

d. applying pressure to the working fluid until the inflatable packer member inflates and provides sealing engagement between the exterior of the casing and the well bore;

e. continuing to apply additional pressure to the working fluid until the pressure responsive valve means opens providing fluid communication between a portion of the interior of the inflatable packer member and the annulus between the casing and the well bore above the inflated packer member while maintaining fluid pressure within the remaining portion of the interior of the inflated packer member to provide continued sealing engagement between the exterior of the casing and the well bore;

f. pumping a quantity of cement slurry downwardly through the casing and through the open casing valve and open pressure responsive valve means of the inflatable packer member into the annulus between the exterior of the casing and the well bore above the inflated inflatable packer member forming an additional cementing stage of the outer casing annulus; and

g. closing said casing valve against additional fluid flow therethrough.

3,948,323

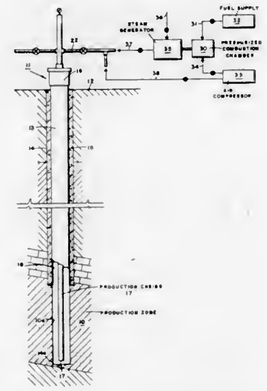
THERMAL INJECTION PROCESS FOR RECOVERY OF HEAVY VISCOUS PETROLEUM

John S. Sperry; Richard W. Krajicek, and Dudley P. South, Jr., all of Houston, Tex., assignors to Carmel Energy, Inc.

Filed July 14, 1975, Ser. No. 595,434
Int. Cl.² E21B *43/24*
U.S. Cl. 166—303 **9 Claims**

1. A method for recovering heavy viscous petroleum from a subterranean formation penetrated by an injection well, said method comprising:

a. injecting a heated fluid comprising steam and a heated non-condensable gas into the hydrocarbonaceous subterranean formation through the well to elevate the temperature of the heavy viscous petroleum contained therein for increasing its mobility, said heated fluid being injected into the formation at a predetermined initial injection rate under a pressure below the formation fracture gradient pressure until the heated fluid injection rate diminishes to a predetermined level;



b. discontinuing the injection of the heated fluid into the formation and substantially immediately injecting a heated non-condensable gas into the formation through the well to drive heat outwardly through the formation from the well to prevent formation blockage of movement of the heated fluid through the formation, said heated non-condensable gas being injected into the formation at a pressure below the formation fracture gradient pressure continuously until the injection rate thereof reaches a predetermined desired level; and

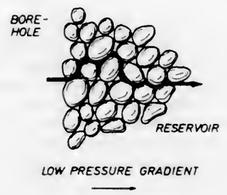
c. repeating steps (a) and (b) in sequence until said formation and petroleum contained therein are heated to a predetermined extent.

3,948,324

PROCESS FOR CHEMICALLY AND MECHANICALLY LIMITED RESERVOIR ACIDIZATION

James H. Lybarger, New Orleans, La., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 18, 1975, Ser. No. 550,308
Int. Cl.² E21B *43/25, 43/27*
U.S. Cl. 166—307 **3 Claims**



3. A process for treating a well that opens into an oil-productive unconsolidated siliceous reservoir in order to increase the rate at which fluid is produced from the well in response to a drawdown that causes a selected relatively high rate of fluid production from the well without damaging the well or the reservoir when the well productivity is unimpaired, which process comprises:

establishing a production-configuration of the effective flow channels for conveying fluid from within the reservoir to within a production conduit in the well;

injecting into the well, at a rate of flow that is controlled to keep it low enough to avoid any significant disruption of the production-configuration of the flow channels, a slug of each of a liquid oil solvent, a relatively dilute aqueous acid that is free of hydrogen fluoride and is capable of dissolving calcite, and a relatively dilute aqueous acid that contains hydrogen fluoride and is capable of dissolving silica; and

gradually reducing the fluid pressure within the borehole relative to that within the reservoir at a rate such that at least about 30 days are required for the magnitude of the drawdown or rate of fluid production to substantially equal the magnitude of the drawdown or rate of fluid production corresponding to the selected relatively high rate of fluid production from the well.

3,948,325

FRACTURING OF SUBSURFACE FORMATIONS WITH BINGHAM PLASTIC FLUIDS

Fred F. Winston, Tulsa, and Julius C. Carver, Oklahoma City, both of Okla., assignors to The Western Company of North America, Fort Worth, Tex.

Filed Apr. 3, 1975, Ser. No. 564,989
Int. Cl.² E21B *43/26, 43/27*
U.S. Cl. 166—308 **34 Claims**

1. A method of treating a fractured subsurface formation traversed by a well bore to increase its permeability comprising:

a. pumping a Bingham plastic fluid into said well bore at a pressure such that it enters a fracture of said formation;

b. relieving pumping pressure on said Bingham plastic fluid after it is positioned within said fracture such that the pumping pressure on said Bingham plastic fluid is less than the fracture pressure of said formation; and thereafter

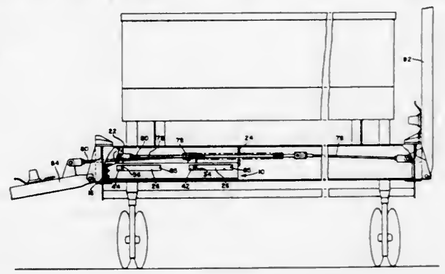
c. reapplying pumping pressure on said Bingham plastic fluid and said formation which is greater than said fracture pressure of said formation.

3,948,326

POWERED LINK DETENT DEVICE

Jimmy Don Harbert, Coal Valley, Ill., assignor to Deere & Company, Moline, Ill.

Filed Oct. 24, 1974, Ser. No. 517,465
Int. Cl.² A01B *35/32*
U.S. Cl. 172—130 **14 Claims**



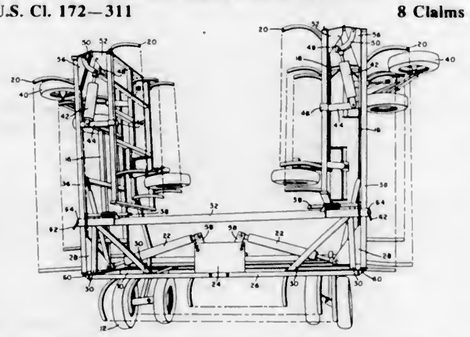
1. In combination with a powered extensible and retractable link having movable first and second sections, a device for alternately restraining movement of said first and second sections of said link, comprising: a guide means for linearly

defining and confining movement of said link sections; a detent means alternately registrable with each of said link sections to limit movement of that section in register; and an actuating means for the detent means movable by said first and second link sections during the defined and confined movement of said sections, during which movement said sections move said actuating means to respective first and second positions thereof, which actuating means when in said first position does cause said detent means to register with said first link section to limit movement of said first link section, and when in said second position does cause said detent means to register with said second link section to limit movement of said second link section.

3,948,327
WINGFOLD CONFIGURATION

Jimmy Jay Parker, Des Moines, and Darrel Lee Honnold, Winterset, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed June 26, 1974, Ser. No. 483,098
Int. Cl.² A01B 19/04, 73/00
U.S. Cl. 172—311 **8 Claims**

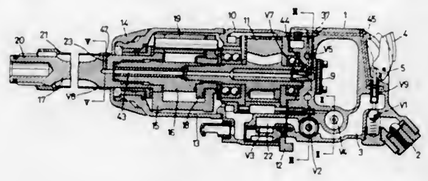


1. A foldable multiple sectioned farm implement comprising: a horizontally disposed section having ground wheels and depending groundworking tools; a plurality of transversely extending and horizontally aligned inner wing sections pivotally connected and positioned on opposite sides of said center section, said wing sections having depending groundworking tools; horizontally disposed outer wing sections having depending groundworking tools; pivot means pivotally connecting the outer wing sections at their inner wing extremities to the outer extremities of the inner wing sections about an axis at a level above the respective sections to permit the outer wing sections to swing to a horizontal position above the inner wing sections; a hydraulically powered folding means acting between each outer wing section and its respective adjacent inner wing section to fold and unfold the outer wing section between an extended position with respect to the inner wing and a folded horizontal position above and alongside the inner wing and in which the groundworking tools project upwardly from the respective outer wing sections, said hydraulically powered folding means comprising a pair of vertically disposed links pivotally connected at their lower ends, to the inner and outer wing sections respectively adjacent, but below the pivot means and pivotally interconnected at their upper ends above said pivot means, and an hydraulic cylinder positioned above the inner wing section and at one end to the inner wing section inboard of said links and extending transversely outwardly therefrom to an outer end connected to at least one of the links; and a hydraulically powered lifting means acting between the fixed center section and the adjacent inner wing section to rotate the inner wing and outer wing section when the latter is in its folded position between horizontal and vertical positions and when in said latter position the groundworking tools on the inner wing section project horizontally outwardly and the groundworking tools on the outer wing sections project inwardly.

3,948,328
PNEUMATIC IMPACT WRENCH WITH TORQUE RESPONSIVE CONTROL

Masaaki Hiraoka, Yao, and Hiromu Terada, Ikoma, both of Japan, assignors to Nippon Pneumatic Manufacturing Co., Ltd., Japan

Filed Sept. 23, 1974, Ser. No. 508,270
Claims priority, application Japan, Sept. 26, 1973, 48-109140
Int. Cl.² B25B 23/145
U.S. Cl. 173—12 **2 Claims**



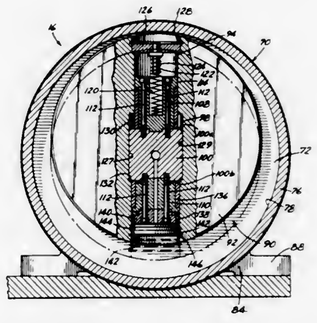
1. A pneumatic impact apparatus connected to a compressed air source, said apparatus comprising:
a rotary air motor connected to said compressed air source;
a torsion bar operatively attached to said motor for rotation therewith, said torsion bar having an exhaust passage directed through the side thereof;
fastening tool means attached to the forward tip of said torsion bar for rotation therewith and for fastening objects with said apparatus;
spindle casing means surrounding a portion of said torsion bar, the front portion of said casing means being attached to the forward portion of the torsion bar for movement therewith and the rearward portion of the casing means being feee from rotation with the torsion bar, said casing means further having an exhaust outlet therethrough open to the atmosphere aligned with the exhaust passage in the torsion bar for allowing air to pass therethrough from the exhaust passage when the rear portion of the torsion bar is not rotating freely from alignment with the casing means, whereby when the front portion of the torsion bar ceases to rotate upon final fastening of the object to be fastened and the rearward portion of the torsion bar is still twisted under the rotational torque from the air motor, the spindle means attached to the front portion of the torsion bar ceases to rotate, causing the exhaust hole at the rear portion thereof to come out of alignment with the exhaust passage in the still twisting portion of the torsion bar, and thereby stopping the flow of air through the exhaust passage outward to the atmosphere through the exhaust opening;
main valve means in the air passage connecting said air source and said air motor for controlling the air flowing to the air motor from the source, said main valve means having a spring for continuously holding the valve open and an expandable pilot chamber fitted against the spring for compressing the spring and closing the main valve means when air pressure is directed into the pilot chamber;
fluid control means connected at the inlet thereto to the inlet to said main valve means through a pilot passage for controlling and directing the fluid flow through the apparatus, said control means having first and second control orifices opposite each other, a first outlet connected to said pilot chamber of said main valve means, and a second outlet open to the atmosphere;
pressure adjusting valve means in said pilot passage between said main valve means and said fluid control means for adjusting the pressure of the fluid flowing to said control means through the pilot passage;
throttle valve means having an inlet operatively connected to said pilot passage following the pressure adjusting valve means, a first outlet connected to said exhaust passage of said torsion bar, and a second outlet connected to said second control orifice of said fluid control means for controlling the flow of air to the exhaust passage means in the torsion bar and for reducing the pressure of the air at the second control orifice of the fluid control means to less than the pressure of the air entering the inlet of the fluid control means from the pilot passage to allow the air in the fluid control means to exit through the second outlet to the atmosphere;
first manually operated control valve means having an inlet connected to said air source and an outlet therefrom operatively connected to said main valve means for allowing air to flow to said main valve means and said air motor from said air source;
second control valve means operatively linked to said first control valve means for opening and closing in conjunction with the opening and closing of the first control valve means, said second control valve means having an inlet thereto connected to the outlet from said first control valve means and an outlet therefrom connected to the first control orifice of said fluid control means for imparting a control pressure to the fluid control means opposite the reduced pressure at the second control orifice when the first control valve is opened and air is allowed to flow through the main valve to rotate the air motor and the torsion bar attached thereto;
whereby opening the first control valve means: allows air from the air source to flow to and through the main valve means held open by the spring to the air motor to rotate the air motor and the torsion bar attached thereto; opens the second control valve means and allows air from the outlet of the first control valve means coming from the air source to flow to the first control orifice of the fluid control means to provide a control pressure for the fluid control means; and allows air from the air source to flow into and through the pilot passage and the pressure adjusting valve means to the inlet of the fluid control means and to the inlet of the throttle valve means from which the air flows to the exhaust passage of the torsion bar while the air pressure at the second control orifice opposite the control pressure entering from the first control orifice is reduced to less than the pressure of the air entering the inlet to the fluid control means, thus causing the air entering the fluid control means to exit through the second outlet to the atmosphere; and
whereby closing the exhaust opening in the spindle casing due to the twisting of the torsion bar when the item to be fastened is fastened causes pressure to build up at the throttle valve and causes the pressure at the second control orifice to approach the pressure at the inlet from the pilot passage, thereby allowing the air in the fluid control means to pass out the first outlet therefrom to the pilot chamber of the main valve means, thus causing the pilot chamber to expand against the spring, close the main valve means, and halt the air flowing to the air motor, thereby discontinuing rotation of the motor and releasing the torque to the torsion bar, so that the exhaust passage and the exhaust outlet are once again aligned.

3,948,329
APPARATUS FOR EFFECTING GROUND PENETRATION OF A GROUND ENGAGING MEMBER

Ernest W. Cummings, 140 Essex Drive, Concord, Tenn. 37720

Filed Jan. 24, 1974, Ser. No. 436,080
Int. Cl.² H02G 9/00
U.S. Cl. 173—49 **7 Claims**

1. Apparatus for effecting penetration of a ground engaging member such as a plowshare or the like into the ground, said apparatus comprising, in combination, frame support means adapted for movement toward and away from the ground surface, a ground engaging member mounted on said frame means for movement therewith, and vibrator means supported by said frame means and adapted to impart a cyclical vibratory force to said ground engaging member, said vibrator means including housing means defining a substantially closed chamber therein, a rotatable drive shaft supported by said housing means and extending through said chamber, a mass member, means supporting said mass member on said drive shaft for rotation therewith about the axis of said drive shaft, and for radial movement with respect to the rotational axis of said shaft between positions of substantially zero eccentricity and maximum eccentricity means biasing said mass member toward a position of maximum eccentricity relative to its axis of rotation, and fluid pressure means including a variable volume fluid pressure chamber disposed within said mass



member and means for introducing fluid pressure into said pressure chamber for selectively varying the eccentricity of said rotatable mass member relative to the axis of rotation of said shaft in a manner to vary the amplitude of force transmitted to said ground engaging member, said vibrator means including variable speed drive means for selectively varying the rotational speed of said rotatable mass such that the amplitude and frequency of the force imparted to said ground engaging member is selectively variable to compensate for variations in ground conditions and maintain generally uniform movement of said ground engaging member with respect to the ground.

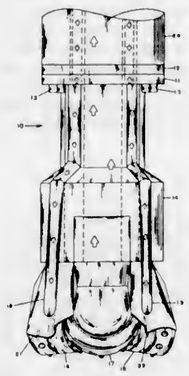
3,948,330
VACUUM, VACUUM-PRESSURE, OR PRESSURE REVERSE CIRCULATION BIT

James Wilson Langford, Jr., Red Oak, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 18, 1975, Ser. No. 550,492
Int. Cl.² E21B 9/08
U.S. Cl. 175—339 **3 Claims**

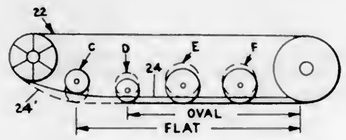
1. A rotary drill bit for forming a bore, comprising:
cutter means for forming the bore, said cutter means including a plurality of cutter members;
a body member rotatably supporting said cutter means, said body member having one end and another end, said body member supporting said cutter members in spaced relationship to engage and disintegrate the bottom of the bore upon rotation of said bit;
said body member having shield means projecting from said body member that projects proximate said cutter means with at least a first portion of said shield means having an outside diameter substantially equal to the outside diameter of said cutter means and substantially equal to the diameter of the bore, and at least a second portion having an outside diameter less than the outside diameter of said cutter means and less than the diameter of the bore;
a first passage means extending through said body member;

and
a second passage means spaced from said first passage



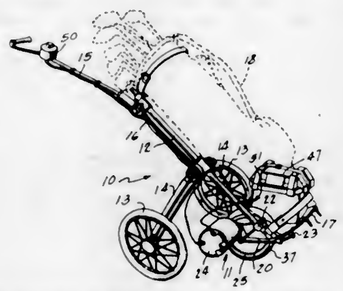
means extending from one end to the other end of said body member.

3,948,331
TRACK ASSEMBLY FOR SNOWMOBILES
Richard E. Esch, Sparta, Mich., assignor to C. L. Frost & Son, Inc., Grand Rapids, Mich.
Continuation-in-part of Ser. No. 383,690, July 30, 1973, Pat. No. 3,893,526. This application June 11, 1974, Ser. No. 478,346
Int. Cl.² B62D *57/02*
U.S. Cl. 180—5 R **15 Claims**



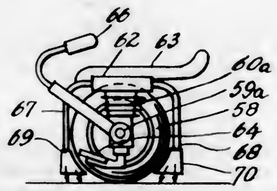
1. Apparatus for mounting bogie wheels on an elongated frame member of a snowmobile track assembly, said frame member having side and bottom surfaces and adapted to support means for movably supporting a flexible, endless track in a closed loop longitudinally around the ends of said frame member; said apparatus comprising means for rotatably mounting at least one bogie wheel on such a frame member; said mounting means including means for securing said bogie wheel in different positions with respect to such a frame member when mounted thereon whereby the position of said bogie wheel relative to said bottom surface of said frame member is selectively adjustable; said securing means including a support member having means for mounting said member on the frame member, an aperture having a noncircular cross section extending through said support member is a direction generally transverse to the frame member when the support member is mounted thereon, a cylinder having a noncircular cross-sectional shape mating with said aperture and slidably mounted in said aperture; said cylinder and aperture including means for preventing rotation of said cylinder in said aperture; means for rotatably mounting said bogie wheel on said cylinder; and means for retaining said cylinder in said support member.

3,948,332
ELECTRIC CADDY CART
Richard A. Tyner, 1619 N. Clybourn Ave., Chicago, Ill. 60614
Filed Jan. 22, 1975, Ser. No. 543,115
Int. Cl.² B62D *51/04*
U.S. Cl. 180—19 R **7 Claims**



1. A hand movable motorized golf cart comprising:
an elongated frame member;
handle means supported on said frame member for manipulating said golf cart;
a pair of foldable wheels carried by said frame member;
a bracket member supported on said frame member at the lower end thereof;
journal means formed in said bracket member for supporting a drive wheel axle therein;
a drive wheel axle supported in said journal means;
a drive wheel rotatably supported on said axle;
a drive motor mounted on said bracket member;
drive means operatively connecting said motor and said drive wheel;
said drive motor being adapted to be actuated by a battery power source, and
battery support means mounted at one end of said drive wheel axle, said battery support means comprising a support lug secured to said drive wheel axle, a battery support plate, and a support arm to which said support plate is attached, said support arm being removably securable to said lug.

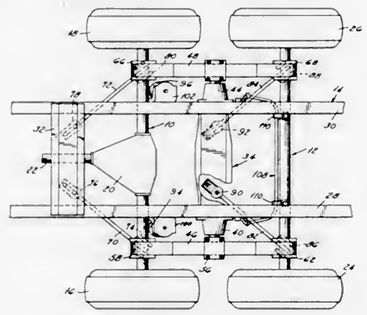
3,948,333
MONOCYCLE
Constantin Paul van Lent, 108-02 72nd Ave., Forest Hills, N.Y. 11375
Filed Jan. 9, 1974, Ser. No. 431,670
Int. Cl.² B62K *13/00*
U.S. Cl. 180—21 **1 Claim**



1. In a wheeled vehicle driven and supported upright on a single wheel, prime mover means for driving said wheel, a seating arrangement on said vehicle, means for controlling said vehicle while it is supported on said single wheel, means for compressing jets of air under high pressure, vertical nozzles positioned in front of and in the rear of said single wheel for directing said jets of air against a roadway, and air ducts for conducting said jets of air to said nozzles whereby tilting

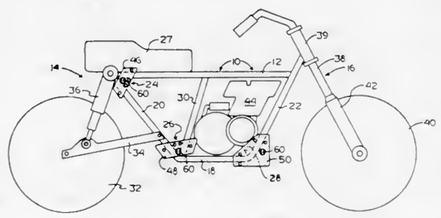
of the vehicle forwardly or rearwardly while it is in motion is prevented.

3,948,334
TANDEM REAR SUSPENSION FOR A MOTOR VEHICLE
Charles R. Danielson, La Porte, Ind., and Ernest Schoenberger, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Nov. 4, 1974, Ser. No. 520,699
Int. Cl.² B62D *61/00*
U.S. Cl. 180—24.13 **1 Claim**



1. A suspension system for a motor vehicle comprising:
a forward transversely extending rigid axle housing and a first pair of road wheels rotatably supported by said forward axle housing;
torque transmitting means rotatably supported by said axle housing, coupled to said first pair of road wheels and constructed to transmit driving torque to said first wheels;
a rearward dead axle and a second pair of road wheels rotatably supported by said rearward axle;
said wheels of said second pair being mutually independently rotatable;
a vehicle frame and suspension means operatively interconnecting said forward and rearward axles and said frame;
said suspension means comprising left and right longitudinally extending leaf springs;
left and right center pivot means pivotally connecting a midportion of said left leaf spring and a midportion of said right leaf spring to said frame;
left and right forward pivot means pivotally connecting the forward ends of said left and right leaf springs to said forward axle;
said left and right forward pivot means having left and right pivot axes that are fixed relative to said left and right forward ends of said left and right leaf springs, respectively, and relative to said forward axle housing;
left and right rear pivot means pivotally connecting the rearward ends of said left and right leaf springs to said rearward axle;
said left and right rear pivot means having left and right pivot axes that are fixed relative to said left and right rearward ends of said left and right leaf springs, respectively, and relative to said rearward dead axle;
pneumatic spring means operatively interposed between said forward axle and said frame;
said pneumatic spring means being constructed to be inflated at differing pressures to regulate the height of said vehicle frame above said forward axle;
left and right front suspension arms having forward ends and rearward ends pivotally connected to said frame and said forward axle housing, respectively;
said left and right front suspension arm extending forwardly and inwardly from said forward axle housing in the plan view and extending forwardly and upwardly from said forward axle housing in the side elevational view;
left and right rear suspension arms having forward ends and rearward ends pivotally connected to said frame and said rearward axle, respectively;
said left and right rear suspension arms extending forwardly and inwardly from said rearward axle in the plan view and extending forwardly and upwardly from said rearward axle in the side elevational view;
an anti-roll stabilizer bar of generally U-shape having left and right outer ends coupled to one of said frame or said rearward axle and a generally transversely extending portion secured to the other of said frame or rearward axle;
said anti-roll stabilizer bar being constructed to exert a spring force resisting angular displacement of said frame about a longitudinal roll axis.

3,948,335
MOTORCYCLE SIDECAR MOUNTING APPARATUS AND METHOD
Craig W. Vetter, Rantoul, Ill., assignor to Vetter Design Works, Inc., Rantoul, Ill.
Filed Jan. 16, 1975, Ser. No. 541,406
Int. Cl.² B62K *27/12*
U.S. Cl. 180—25 R **10 Claims**

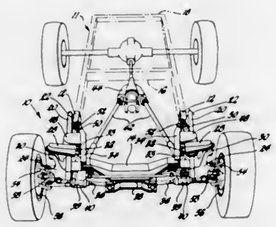


1. In a motorcycle having a rear wheel swing arm suspension system and a vertically disposed frame including a trapezoid-shaped section defined by an upper strut extending from a back to a front portion of the motorcycle, a lower strut beneath and substantially parallel to the upper strut, and rear and front diagonal struts respectively connecting together the rear ends and the front ends of the upper and lower struts, said struts further defining a first vertex adjacent the rear end of said upper strut and second and third vertices respectively adjacent the rear and front ends of the lower strut and substantially in front of and below said first vertex, said suspension system including a swing arm carrying the rear wheel at one end thereof and pivotally mounted at its other end to the frame adjacent said second vertex, apparatus for mounting a sidecar to the motorcycle, comprising:
three connectors each including
a mounting bracket, and
means carried by said mounting bracket for releasably attaching the sidecar to the mounting bracket; and
means for securing the mounting brackets of said three connectors to the frame respectively adjacent said first, second and third vertices.

3,948,336
VEHICLE SUSPENSION SYSTEM
Ernest L. DeFusco, Clawson, and John B. Swetka, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 12, 1974, Ser. No. 532,070
Int. Cl.² B60G *3/18*
U.S. Cl. 180—43 R **3 Claims**

1. In a vehicle having a sprung mass portion and an unsprung mass portion including a steerable road wheel rotat-

ably supported on a spindle-portion of a steering knuckle, a suspension system for said steerable road wheel comprising a torque-reaction strut, means supporting said torque-reaction strut on said sprung mass portion for projection in the direction of forward motion of said vehicle, knuckle support means connected to said torque-reaction strut and defining a generally vertically-oriented steering axis, means attaching said steering knuckle to said knuckle support means, an upper



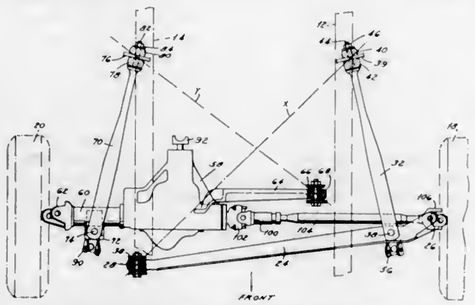
control arm disposed substantially transversely between said knuckle support means and said sprung mass portion, a lower control arm disposed substantially transversely between said sprung mass portion and said knuckle support means, and resilient means disposed between said sprung mass portion and one of said torque-reaction strut, and said upper and lower control arms rearwardly of said vertically-oriented steering axis for effecting primary suspension of said sprung mass portion relative to said unsprung mass portion.

3,948,337

INDEPENDENT FRONT SUSPENSION FOR FRONT WHEEL DRIVE

John A. Richardson, Windsor, Canada, and Donald G. Wheatley, Orchard Lake, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 4, 1973, Ser. No. 403,599
Int. Cl. B60K *17/30*
U.S. Cl. 180—43 R **6 Claims**



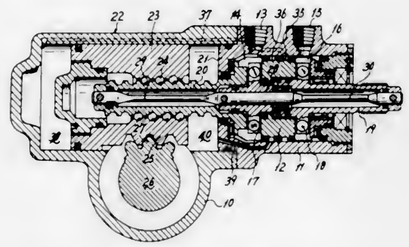
1. An independent wheel suspension system for a motor vehicle comprising:
- first and second dirigible road wheels,
- a chassis frame,
- suspension means interconnecting said wheels and said frame,
- said suspension means including first and second members rotatably supporting said first and second wheels, respectively,
- a first transverse suspension arm,
- first pivot means pivotally connecting one end of said first transverse arm to said frame,
- a second pivot means connecting the other end of said first transverse arm to said first member and providing a generally vertically arranged steering axis,
- a longitudinally extending first radius arm having one end connected to said first transverse arm,
- third pivot means connecting the other end of said first radius arm to said chassis frame,
- said first and third pivot means lying on a diagonally arranged pivot axis about which said first wheel is angularly displaced during jounce and rebound movement,
- a rigid housing constructed to support a differential gear assembly,
- fourth pivot means pivotally connecting said housing to said frame,
- fifth pivot means connecting said housing to said second member and providing a generally vertically arranged steering axis,
- a longitudinally extending second radius arm having one end connected to said housing,
- sixth pivot means connecting the other end of said second radius arm to said frame,
- said fourth and sixth pivot means lying on a diagonally arranged pivot axis about which said second wheel is angularly displaced during jounce and rebound movement,
- an extensible first axle shaft means drivingly connected to said first wheel and constructed to be connected to said differential gear assembly,
- a fixed length second axle shaft means rotatably supported by said housing and drivingly connected to said second wheel and constructed to be connected to said differential gear assembly,
- means constructed to connect said differential gear assembly to a vehicle engine.

3,948,338

POWER STEERING APPARATUS

Tohru Toshioka, Toyota; Minoru Kawabata, Aichi, and Toshimaso Miyata, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Japan

Filed Dec. 27, 1974, Ser. No. 536,798
Claims priority, application Japan, Dec. 28, 1973, 49-3188; Dec. 28, 1973, 49-3189
Int. Cl.² B62D *5/08*
U.S. Cl. 180—79.2 R **8 Claims**



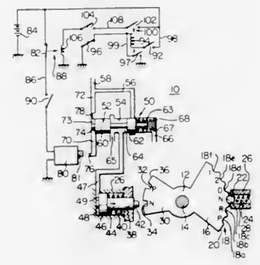
1. A power steering apparatus for a vehicle comprising:
- a hydraulic actuator for supplementing manual steering torque;
- a first valve means for controlling directions of pressure fluid to be supplied to the hydraulic actuator in response to manual steering;
- a second valve means including a movable core for reducing the supplemental force of the hydraulic actuator by bypassing the pressure fluid, the second valve means including first and second elements for retracting the movable core to open a by-pass passage and for controlling electric current therethrough;
- a vehicle speed detecting means for detecting the cruising speed of the vehicle;
- first switching means responsive to the vehicle speed detecting means for supplying electric current to said first and second elements of the second valve means so as to open the by-pass passage when the cruising speed exceeds a predetermined value; and
- second switching means capable of causing the first and second elements to decrease the electric current therethrough when the second valve means starts to by-pass the pressure fluid.

3,948,339

TRANSMISSION LOCKING DEVICE

Kazuyoshi Iwanaga, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sept. 19, 1974, Ser. No. 507,614
Claims priority, application Japan, Sept. 20, 1973, 48-109342[U]
Int. Cl.² B60R *21/08*
U.S. Cl. 180—82 C **4 Claims**



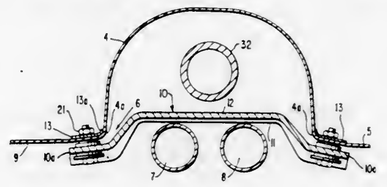
1. A locking device for preventing an automatic transmission of a motor vehicle from being shifted to a driving position when the driver of the vehicle fails to carry out a precautionary safety procedure, said device comprising: a transmission position selector movable between said driving position and a neutral position; first means movable from a retracted position to a protruded position to lock said selector in said neutral position; second means for moving said first means from said retracted position to said protruded position; and third means for actuating said second means when said driver fails to carry out said precautionary procedure; said transmission position selector including an arcuate plate with a recess formed therein; said first means including a locking plunger engageable in said recess, in said protruded position, and means for biasing said plunger to said retracted position; said second means including a first fluid chamber, a source of hydraulic fluid for communicating with said first fluid chamber to force said plunger to said protruded position, a flow control valve movable from a first position, blocking communication between said source and said first fluid chamber, to a second position, providing said communication, means for biasing said flow control valve to said first position, a second fluid chamber communicating with said source, and an exhaust conduit communicating with said second fluid chamber; said third means including a member movable between a position closing said exhaust conduit and a position opening said exhaust conduit, and a solenoid actuating said member to said closing position when said driver fails to take said precautionary procedure, whereby, when said exhaust conduit is closed, fluid pressure build up in said second chamber, from said source, will move said valve to said second position, in which position fluid pressure build up in said first chamber will move said plunger to said protruded position.

3,948,340

SOUND-PROOFING MEANS FOR MOTOR VEHICLES

Werner Breitschwerdt, Stuttgart-Botnang, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed June 3, 1974, Ser. No. 475,802
Claims priority, application Germany, June 13, 1973, 2329985
Int. Cl.² B62D *27/04*
U.S. Cl. 180—89 R **20 Claims**



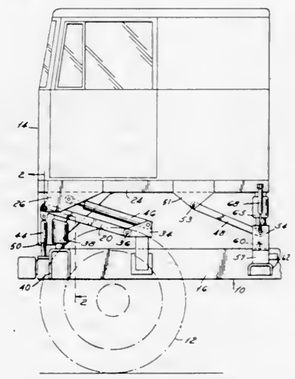
1. A noise damping arrangement for vehicles having a floor, a front seat means and a rear seat means mounted on said floor, a downwardly opening tunnel provided in said floor and extending at least between said front seat means and said rear seat means for accommodating at least one drive element of the vehicle, said tunnel terminating in spaced edge portions extending longitudinally of the vehicle, said spaced edges defining the width of the opening of said tunnel, the arrangement comprising: a cover means for enclosing at least a portion of said drive element in said tunnel, said cover means spanning the width of said opening of said tunnel with edge portions of said cover means being disposed over the respective spaced edges defining the width of said tunnel, said cover means having a length at least equal to the length of said tunnel between said front seat means and said rear seat means, and sound-damping means for mounting said cover means to said floor along said spaced edges of said tunnel.

3,948,341

TILT CAB TRUCK

Albert W. Foster, Royal Oak, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 23, 1974, Ser. No. 535,927
Int. Cl.² B62D *27/04*
U.S. Cl. 180—89 A **23 Claims**



1. A tilt cab truck comprising a truck chassis frame, a truck cab and suspension means interconnecting said frame and said cab,
- said suspension means being constructed to accommodate jounce and rebound movement of said cab relative to said frame,

said suspension means including a plurality of rigid suspension arms and pivot means pivotally connecting said arms to said frame and to said cab,

pivot means interposed between said cab and said frame providing a transverse tilt axis about which said cab may be angularly displaced relative to said frame,

means operatively interposed between said cab and said frame constructed to exert a force tending to angularly displace said cab about said transverse tilt axis,

spring means operatively interposed between said cab and said frame constructed to resiliently support said cab on said frame.

3,948,342

AUTOMATIC RAILLESS GROUND CONVEYOR INSTALLATION

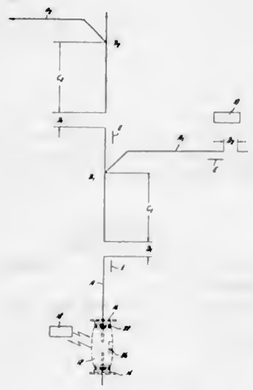
Herbert Pircher, Planegg, and Johannes Hambuch, Geiselbullach, both of Germany, assignors to Buro Patent AG, Glarus, Switzerland

Filed June 21, 1974, Ser. No. 481,897

Claims priority, application Switzerland, June 26, 1973, 9251/73

Int. Cl.² B60K *26/00*

U.S. Cl. 180—98 **15 Claims**



1. An automatic railless ground conveyor installation comprising a guide track for defining a route network having branches, a number of individual driverless traveling conveyor cars, each of said conveyor cars possessing steering mechanism and scanning elements for the contactless scanning of the guide track and a work control mechanism, said work control mechanism including code reading means for the contactless scanning of individual code markings identifying the branches and arranged at the branches and directly influencing the steering mechanism in the sense of reaching a destination determined by a target code set at the work control mechanism, the improvement comprising: that in front of each branch a partial section of the guide track defined by fixed points serves as a branch code track, the length of which constitutes the code of the branch, said work control mechanism being provided with a target code mechanism for introducing a target code in the form of a length, a length measuring device for measuring the length of the branch code track, and a comparator for comparing the target code introduced as a length by the target code mechanism with the measured length of the branch code track, the comparator being operatively coupled with the steering mechanism.

3,948,343

CONSTANT SUPPLY OF VACUUM OR PRESSURE FOR VACUUM OR PRESSURE OPERATED OR ASSISTED SYSTEMS IN VEHICLES

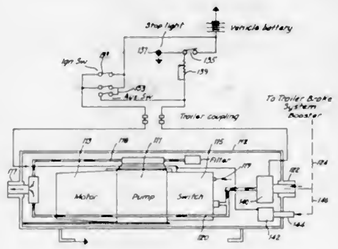
Joseph Malcolm, 19 Selina St., Doubleview, Western Australia

Filed Oct. 21, 1974, Ser. No. 516,876

Claims priority, application Australia, Oct. 26, 1973, 5421/73

Int. Cl.² B60K *26/00*

U.S. Cl. 180—103 R **3 Claims**



1. A vacuum or pressure unit in a vacuum or pressure system of a trailer vehicle wherein the vacuum or pressure system operates at least one of the vehicle components and is the sole source of vacuum or pressure, the vacuum or pressure unit comprising a pump in fluid communication with the vacuum or pressure system of the trailer vehicle, an electric motor operatively connected to the pump to drive the pump, a source of electrical energy connected to said motor, a pressure responsive electric switch mounted in the vacuum or pressure system of the vehicle and connected between said source of electrical energy and said motor, the pressure responsive electric switch closing the electrical circuit between the electric motor and the electrical energy source to activate the electric motor when the magnitude of pressure in the vacuum or pressure system is insufficient to operate the vehicle components at the desired efficiency, the pump, electric motor and switch being mounted in a fluid tight vacuum or pressure reserve tank, said reserve tank having a first port through which the pump communicates to the atmosphere and a fluid tight connection between the first port and the pump, and having a second port through which the interior of the reserve tank is in communication with the vacuum or pressure system of the vehicle, said second port having a solenoid valve providing a variable flow through the second port, the degree of flow through the solenoid valve being dependent upon the pressure applied to the braking system of the tractor vehicle.

3,948,344

LOW COST PLANAR AIR PALLET MATERIAL HANDLING SYSTEM

Raynor A. Johnson, and William D. Fletcher, both of 904 Old Baltimore Pike, Newark, Del. 19711

Filed Oct. 3, 1974, Ser. No. 511,828

Int. Cl.² B60V *1/04*

U.S. Cl. 180—124 **18 Claims**

1. An air pallet for frictionless movement of a load supported thereon relative to an underlying generally planar fixed support surface, said air pallet comprising:

a rigid, generally planar backing surface for supporting said load thereon,

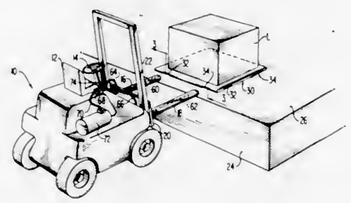
a thin flexible sheet directly underlying said backing surface and directly overlying said load support surface, having that portion facing said generally planar fixed support surface perforated, and defining with said backing surface, a plenum chamber,

said perforations unrestrictedly opening directly to said plenum chamber,

air dispersion means within said chamber to insure air flow throughout said chamber when said pallet is under load,

means for controlling pillowing of said sheet portion of said chamber to jack the backing surface and said load sufficiently to permit the pallet to accommodate surface irregularities for both said load support surface and said backing surface, without ballooning, and

air inlet means to said chamber for permitting air under pressure to enter said chamber for jacking said load and for discharge through said perforations to create an air film between said flexible thin sheet and said fixed support surface.



3,948,345

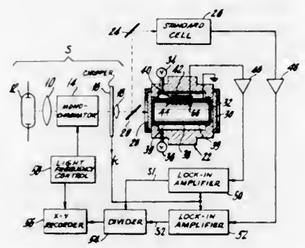
METHODS AND MEANS FOR ANALYZING SUBSTANCES

Allan Rosencwaig, 92 Royal Drive Apt. 338, Piscataway, N.J. 08854

Filed June 15, 1973, Ser. No. 370,526

Int. Cl.² G10I *1/10*

U.S. Cl. 181—.5 **13 Claims**



1. An apparatus for analyzing a solid or quasi-solid sample surrounded by fluid, including amplitude modulated energy source means for applying radiant energy of a predetermined frequency and periodically varying magnitude to the sample sufficient to produce detectable periodic variations which are indicative of the sample characteristic in the surrounding fluid, said source means including frequency varying means for varying the predetermined frequency of the energy which is applied, pickup means in the fluid and spaced from the sample for responding to the detectable variations in the fluid and producing electrical signals corresponding in amplitude and phase to the detectable periodic variations, said pickup means including means forming a chamber having internal walls which reflect both light and sound so that direct or scattered light does not strike an internal wall which can produce a detectable periodic variation and so that the chamber is susceptible of being a part of a high Q acoustic resonant system, said sample being located within the chamber, and means for indicating the intensity of the electrical signals at the different predetermined frequencies of the energy.

3,948,346

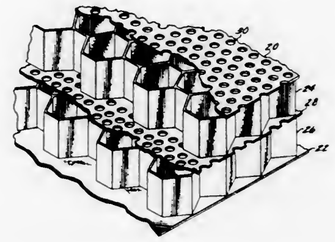
MULTI-LAYERED ACOUSTIC LINER

Guenter M. Schindler, Palos Verdes, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Apr. 2, 1974, Ser. No. 457,183

Int. Cl.² E04B *1/99*

U.S. Cl. 181—33 G **3 Claims**



1. A multi-layered acoustic liner with perforated sheets between layers of cellular cavity material and a perforated face sheet, each of said sheets having a perforated area of over half its total area for shifting part of the acoustic energy to a higher frequency level to achieve better absorption by the atmosphere, wherein the outgoing wave has a harmonic at some particular frequency $f_x = (x+1)\, f_o$ whose amplitude is greater than that of the corresponding harmonic of the incoming wave f_o where x = the number of layers in said panel.

3,948,347

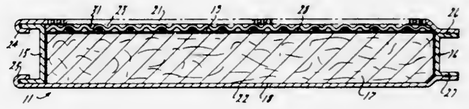
ACOUSTICAL PANEL

Richard A. Rutledge, Fraser, Mich., assignor to Gallagher-Kaiser Corporation, Detroit, Mich.

Filed Nov. 25, 1974, Ser. No. 526,505

Int. Cl.² B32B *15/02*; **G10K** *11/04*

U.S. Cl. 181—33 G **4 Claims**



1. A sandwich type acoustical panel comprising a frame, a fibrous matrix disposed within said frame, a plastic skin of thin, limp, flexible air- and water-tight protective material overlying and engaging the front face of said matrix, said skin having marginal portions overlying the edges of said matrix and fitting between said matrix and said frame, a metal face sheet secured along its opposite edges to the front of said frame and in spaced relation with said skin, said face sheet being perforated so that a substantial portion of its area is open, a solid metal back sheet secured to the back of said frame, and a grid spacer disposed in the air space between said face sheet and skin.

3,948,348

WAVE INTERFERENCE SILENCER CONSTRUCTION

Wilfred A. Bychinsky, Burton, Mich., assignor to General Motors Corporation, Detroit, Mich.

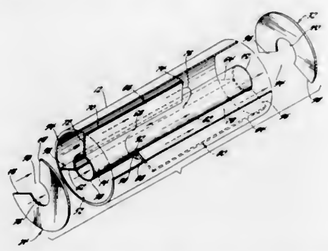
Filed May 12, 1975, Ser. No. 576,723

Int. Cl.² F01N *1/06*

U.S. Cl. 181—44 **3 Claims**

1. A wave interference silencer comprising an enclosure having an inlet and an outlet, means within said enclosure including first and second fins supported therein to define a first exhaust passage in communication with the inlet, means including a third fin and said second fin supported within said

enclosure to define a second exhaust passage in spaced parallelism to said first exhaust passage and in communication with said outlet, said second exhaust passage being series-connected in reverse flow relationship to said first passage, means defining a direct flow interconnection between said inlet and outlet, said last mentioned means including means for diverting exhaust flow from the inlet into both said direct flow



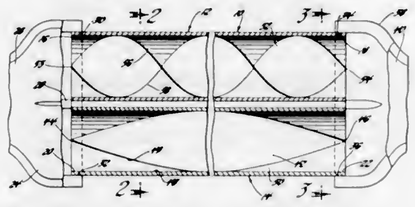
interconnection and said first and second series parallel passages, said first and second series flow connected and spaced parallel passages having an acoustical length greater than that of said direct flow interconnection for producing a frequency shift in noise frequencies to produce wave interference attenuation of sound waves propagated in the exhaust flow between the inlet and the outlet of said enclosure.

3,948,349

WAVE INTERFERENCE SILENCER

Wilfred A. Bychinsky, Burton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 12, 1975, Ser. No. 576,722
Int. Cl.² F01N *1/12*
U.S. Cl. 181—44 **4 Claims**



1. A wave interference silencer comprising a first tube having opposite open ends, a second tube having a length equal to that of said first tube also including opposite open ends, adapter means for directing exhaust flow into one end of each of said first and second tubes, second adapter means for receiving exhaust flow from the opposite ends of said first and second tubes, a twisted ribbon element located within at least one of said tubes including spaced apart edges thereon located in engagement with the inner circumference of said one tube to define a flow path through said one tube having a greater acoustical length than the path through the other tube to produce wave interference attenuation of sound frequencies in exhaust flow through said first and second tubes.

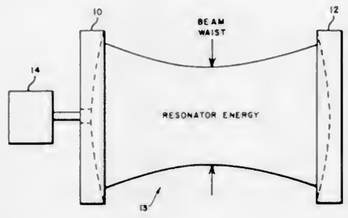
3. A wave interference silencer comprising first and second tubes, one of said tubes being located concentrically within the other tube and having a length corresponding to that of the other tube, a twisted ribbon located in the inner tube having spaced apart side edges thereon in engagement with diametric points on the inner circumference of said inner tube, a helical baffle located in the space between said first and second tubes having a pitch to define an acoustical path through the space between said first and second tubes approximately three times that of the acoustical path defined by the twisted ribbon supported within said inner tube for producing wave interference silencing of a lower frequency than that dependent on the length of either of said first and second tubes.

3,948,350

ACOUSTIC RESONANT CAVITY

Clifford W. Erickson, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 20, 1974, Ser. No. 534,995
Int. Cl.² G10K *11/00*
U.S. Cl. 181—175 **13 Claims**



1. Apparatus for producing a resonant acoustic beam, the apparatus comprising:

Fabry-Perot resonant cavity means having concave curved reflectors disposed along an axis; and

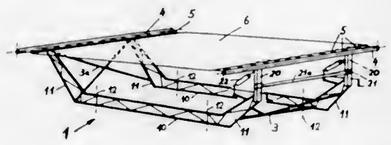
acoustic energy source means for introducing acoustic energy into the Fabry-Perot resonant cavity means, the acoustic energy resonanting as a beam within the Fabry-Perot resonant cavity.

3,948,351

CATCHING DEVICE FOR A FREE-FALLING BODY

René Baumann, Lucerne, Switzerland, assignor to Wiba AG, Kriens, Lucerne, Switzerland

Filed Feb. 28, 1975, Ser. No. 553,912
Claims priority, application Switzerland, Mar. 20, 1974, 3870/74; Sept. 24, 1974, 12902/74
Int. Cl.² A62B *1/22*; A63B *5/00*
U.S. Cl. 182—139 **29 Claims**



1. A catching device for a free-falling body, comprising a transportable base frame, a material web having two oppositely situated sides, a pair of oppositely situated support bars for holding the material web at said two oppositely situated sides, means for resiliently dampingly supporting the support bars at the transportable base frame in spaced relationship from the ground, tensioning means carried by said transportable base frame for tensioning the material web, said transportable base frame being constructed to be foldable, the foldable base frame comprising two essentially U-shaped supports which in the unfolded condition of the base frame are arranged in spaced substantially parallel relationship to one another, each U-shaped support having upwardly inclined directed legs merging with a substantially horizontal web portion of the associated U-shaped support, said two U-shaped supports being interconnected by transverse struts and by said oppositely situated support bars which are arranged at the ends of said legs, and said tensioning means being provided at least at one side of the base frame between the ends of the U-shaped supports and the neighboring support bar.

3,948,352

EXTENSION LADDER WITH LADDER LEVELER MEANS

Clayton E. Larson, Brooklyn, N.Y., and Edwin H. Lemp, Bellows Falls, Vt., assignors to White Metal Rolling & Stamping Corporation, Brooklyn, N.Y.

Filed July 15, 1975, Ser. No. 596,005
Int. Cl.² E06C *7/44*
U.S. Cl. 182—204 **8 Claims**



1. In an extension ladder having a bottom section and a top section wherein said sections are each formed of left and right spaced-apart siderails supporting a plurality of rungs there between and said sections are interlocked by slideable engagement of the siderails of the top section with flanges at the rear of the siderails of the bottom section, the improvement which consists of ladder leveler means to enable the ladder to be positioned upright or uneven or inclined surfaces which comprises:

A. a pair of sleeve members each formed of metal comprising
a G-shaped front portion,
a central web portion, and
a J-shaped rear portion, said portions being integral providing a channel form unit,

B. one of said sleeve members slideably encompassing one of the siderails of said bottom section and the other sleeve member slideably encompassing the opposite bottom section siderail,

C. a J-shaped guide member fixed upon each bottom section siderail at the outside rear thereof near the bottom end of the siderail, each said guide member comprising
a leg by which the guide member is fixed to its respective siderail,
a transverse web and
a lip extending from the end of the transverse web parallel to said leg,

D. a flange extending from the junction of said rear portion with said web portion of each said sleeve member into the gap between said leg and lip of said guide member whereby the rear of each sleeve member is retained by the respective guide member in slideable engagement with the respective siderail,

E. a plurality of spaced-apart, longitudinally aligned holes extending transversely through the central web portion of each sleeve member, and

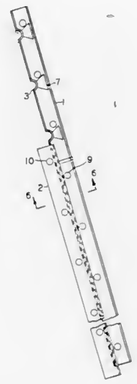
F. spring-biased pin means carried by each lower portion siderail to extend through holes in the respective sleeve members and hold the sleeve members at selected positions along the lower portion siderails.

3,948,353

EXTENSION LADDER

John G. Lane, No. 4 Perity Lane, Pittsburgh, Pa. 15220

Filed Mar. 20, 1974, Ser. No. 452,918
Int. Cl.² E06C *5/36*, *7/48*
U.S. Cl. 182—206 **6 Claims**



1. An extension ladder comprising a first metallic ladder portion supportable on the ground and a second extensible metallic ladder portion being relatively slidable thereon, said extensible ladder portion having a plurality of spaced, notched out portions along one flanged edge of the sides thereof to provide hooks for attachment to a gutter or other projection from a building wall by selective relative slidable movement of the ladder portions to prevent the danger of sliding of the ladder away from the building wall, said extensible ladder portion having a pair of closely spaced, longitudinally extending flanges, one surrounding said notches, said flanges extending along said flanged edge of the sides thereof having said notches to provide a track for the corresponding flange of said first ladder portion to enable sliding past said notched out portions without interference from said flange portions which surround said notches.

3,948,354

LUBRICATOR FOR CONCRETE PIPE VIBRATORS

Marvin D. Fosse, and William M. Montgomery, both of Nashua, Iowa, assignors to Hydrotile Machinery Company, Nashua, Iowa

Filed Sept. 18, 1974, Ser. No. 507,064
Int. Cl.² F16N *7/18*
U.S. Cl. 184—6.22 **35 Claims**

1. A vibrator system comprising:

a vibrating mechanism including motor means and shaft means rotatable about a vertical axis and driven by said motor means;

upper and lower bearing means in which said shaft rotates,

a reservoir located below the bearing means adapted to hold a lubricant,

a first chamber disposed above said upper bearing means,

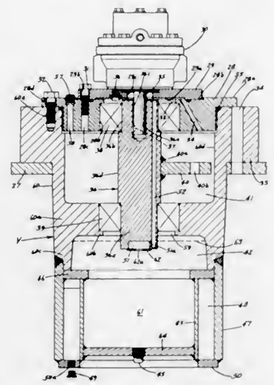
conduit means for transferring lubricant from said reservoir to the first chamber,

a second chamber disposed below said upper bearing means and in communication with said lower bearing means,

eccentric means located in and operating in said second chamber, and

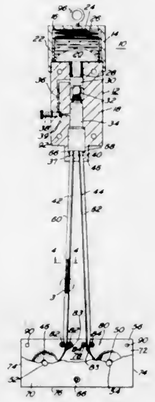
pump means for pumping a lubricant from said reservoir

through said conduit means to said first chamber where lubricant is caused to fall over the upper bearing means,



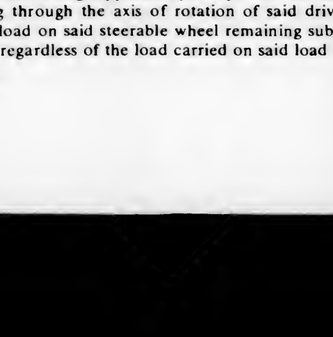
through said second chamber, over said lower bearing means and back to the reservoir.

3,948,355
VARIABLE RETRACTING DEVICE
Joseph J. Scott, 7812 Lexington, Philadelphia, Pa. 19152
Filed Jan. 31, 1975, Ser. No. 545,970
Int. Cl.² F03G *1/00*
U.S. Cl. 185—39 **10 Claims**



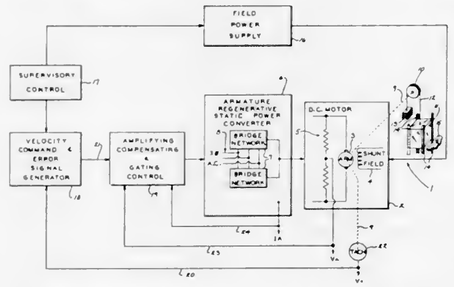
1. A variable retracting device comprising a collapsible elongated tubular element providing a cavity therealong for receiving fluid therein and having first and second ends, a fluid reservoir means communicating with the cavity of said tubular element at its first end and having control means for regulating the flow of fluid between the cavity of said tubular element and the reservoir means, a restricting means engaging and collapsing said tubular element at locations between its first and second ends, said restricting means being movable along the collapsed portion of said tubular element up to the uncollapsed portion containing fluid, and activating means for urging the relative movement of the restricting means along and toward the first end of the tubular element creating a fluid pressure in the uncollapsed portion of said tubular element, whereby the relative movement of the restricting means along and towards the first end of the tubular element takes place with the collapse of the tubular element at the location of the restricting means and at a rate depending upon the flow of fluid from the cavity of the tubular element to the fluid reservoir means regulated by the control means of said fluid reservoir means.

3,948,356
POWER MODULE AND CASTER SUPPORTED LOAD SUPPORTING FRAME
Derek K. Keene, Philadelphia, Pa., assignor to Eaton Corporation, Cleveland, Ohio
Filed Feb. 1, 1974, Ser. No. 438,814
Int. Cl.² B66B *9/20*
U.S. Cl. 187—9 R **3 Claims**



1. A material handling vehicle comprising a power module, said power module including a frame, at least one steerable wheel supported by said frame adjacent the forward end of said power module, at least one drive motor supported by said frame adjacent the rear end of said power module, a pair of drive wheels operatively connected to said drive motor, and a pair of coaxial stub axles attached to said frame and supporting said drive wheels; and a load handling module, said load handling module comprising a frame, an elevatable load receiving and operator's platform mounted on said frame, at least one caster wheel attached to the frame of said load handling module adjacent one end of said module, and means for supporting the opposite end of said load handling module on said power module; the improvement comprising cylindrical bearing surfaces coaxial with the axis of rotation of said drive wheels formed on portions of said stub axles extending laterally relative to the frame of said power module, and a pair of yoke members extending from the frame of said load handling module defining said means for supporting the opposite end of said load handling module, said yoke members having cylindrical bearing surfaces formed thereon complemental to and received by said bearing surfaces on said stub axles, at least a major portion of said load receiving platform being located between said at least one caster wheel and said bearing surfaces formed on said yoke members, the major portion of the load carried by said load platform transferred to said power module being supported by said power module on a line extending through the axis of rotation of said drive wheels with the load on said steerable wheel remaining substantially constant regardless of the load carried on said load receiving platform.

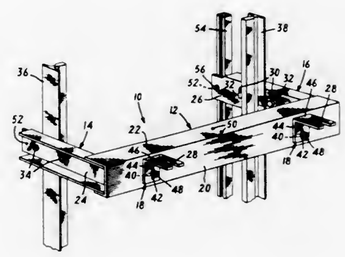
3,948,357
TRANSPORTATION SYSTEM WITH DECELERATING CONTROL
John T. Maynard, New Berlin, and Christopher Young, Glendale, both of Wis., assignors to Armor Elevator Company, Inc., Louisville, Ky.
Filed Apr. 29, 1974, Ser. No. 465,272
Int. Cl.² B66B *1/30*
U.S. Cl. 187—29 R **27 Claims**



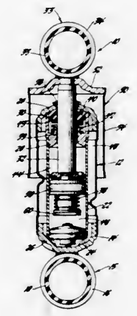
1. A transportation system including a guide path structure and a plurality of spaced landings and a transportation means comprising a transport vehicle, means mounting said vehicle for movement relative to said structure in a path extending adjacent each of said landings, motive means moving said vehicle relative to said structure, means responsive to an output of said motive means and providing an output proportional signal, means sensing the position of said vehicle, and control means cooperating with said motive means and moving said vehicle relative to said structure and stopping said vehicle at a selected landing and including pattern generating means operatively controlling the operation of said motive means, said pattern generating means including integrating means having an output providing a vehicle command signal and input means operatively connected to said output and receiving said vehicle command signal and operatively supplying an input responsive to said vehicle command signal to said integrating means and modifying means operatively coupled to said integrating means and varying said vehicle command signal in response to the sensed position of said vehicle, said control means including means receiving said vehicle command signal and said output proportional signal and providing an error signal operatively controlling the movement of said vehicle and stopping said vehicle at a selected landing.

3,948,358
ELEVATOR RAIL MOUNTING BRACKET
Richard E. Atkey, Memphis, Tenn., assignor to Dover Corporation, Memphis, Tenn.
Filed Aug. 16, 1974, Ser. No. 498,199
Int. Cl.² B66B *7/02*
U.S. Cl. 187—95 **7 Claims**

1. An elevator rail mounting system for positioning a pair of elevator guide rails, capable of centering an elevator therebetween, in a hoistway, having a pair of side walls and an entrance side defined by a landing sill and a hall door frame, comprising a U-shaped bracket capable of being mounted in the hoistway from the entrance side thereof, said U-shaped bracket including a cross member mounted from the entrance side of the hoistway and substantially adjacent and parallel thereto, said cross member having mounting means for fixedly supporting the landing sill and hall door frame in relation to the guide rails, whereby the angular relationships of and distances between the guide rails, the landing sill and the hall door frame are fixed to insure a constant running clearance between the elevator and the landing sill and to maintain the proper alignment of the elevator and the hall door frame, a pair of parallel rail brackets, spaced apart by a predetermined distance and extending into the hoistway perpendicularly from said cross member, for supporting the guide rails in a vertical plane substantially parallel to the entrance side of the hoistway and maintaining the distance between the guide rails at a predetermined fixed value independent of the side walls of the hoistway, whereby only a single supporting wall for the guide rails is utilized.



3,948,359
VEHICLE HYDRAULIC SHOCK ABSORBER AND INDICATING SYSTEM
Wesley A. Rogers, Grosse Pointe Park, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 14, 1975, Ser. No. 567,482
Int. Cl.² F16D *63/00*
U.S. Cl. 188—1 A **3 Claims**

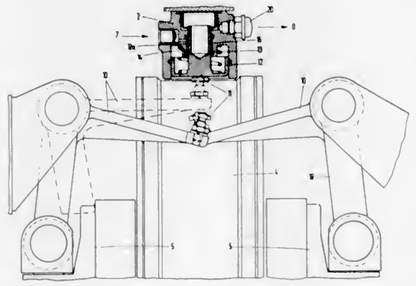


1. A vehicle hydraulic shock absorber and indicating system comprising: a hydraulic shock absorber normally filled with hydraulic fluid, said shock absorber including first and second electrically conductive relatively movable portions; means for electrically insulating the first and second relatively movable portions from one another, said electrically insulated portions comprising a capacitor having a capacitance progressively changing with changing levels of hydraulic fluid within the shock absorber; a capacitance responsive circuit electrically coupled to the first and second relatively movable portions of the shock absorber, said circuit being responsive to the capacitance of the capacitor formed by the first and second relatively movable portions for generating a signal representing the hydraulic fluid level in the shock absorber; and means responsive to the signal for indicating hydraulic fluid level within the shock absorber.

3,948,360
WEAR INDICATOR FOR DISK BRAKES ON A VEHICLE

Hans Pöllinger; Bernd Wosegien; Xaver Gmelch; Georg Freund, all of Munich, and Ernst Blaut, Minden, all of Germany, assignors to Knorr-Bremse GmbH, Munich, Germany

Filed Nov. 18, 1974, Ser. No. 524,876
Claims priority, application Germany, Nov. 16, 1973, 2357207; Mar. 6, 1974, 2410706
Int. Cl.² F16D *66/02*
U.S. Cl. 188—1 A **12 Claims**

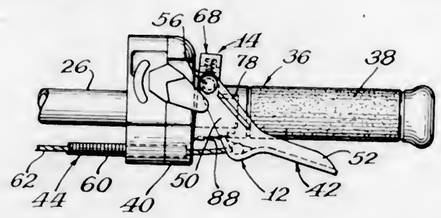


1. In a device for indicating wear of a brake lining on disc brakes of a vehicle, the combination of control mechanism means positioned in substantially the plane of a brake disc for generating a signal when predetermined wear of the brake lining occurs, a spring biased actuating element in said control mechanism means and movable in a raidal direction with respect to said brake disc, pivotally mounted suspension hangers on both sides of the brake disc and having brake shoes thereon engageable with said brake disc, and arm means extending at substantially right angles from each of said suspension hangers and each of said arm means spaced from each other in the peripheral direction of the brake disc to engage said actuating element for displacing said actuating element in said radial direction against the spring force.

3,948,361
PARKING BRAKE MECHANISM

John A. Carlson, Wichita, Kans., assignor to Arctic Enterprises, Inc., Thief River Falls, Minn.

Filed July 24, 1974, Ser. No. 491,292
Int. Cl.² B62L *3/06*
U.S. Cl. 188—24 **11 Claims**

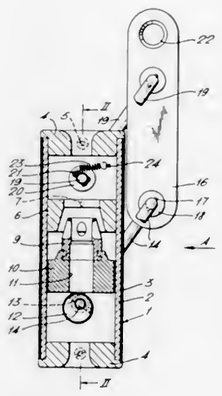


1. A combined parking brake and brake mechanism for a vehicle of the type utilizing a handle bar assembly which includes a hand grip portion, a brake assembly operatively mounted on said handle bar assembly, said brake assembly being of the type which includes a movable brake lever pivotally carried by said handle bar assembly adjacent said hand grip portion useful in normal braking for said vehicle, said lever being movable between a brake engaged position, and a brake disengaged position while being normally urged to a brake disengaged position, said parking brake mechanism comprising, in combination, a pin member mounted on said handle bar assembly adjacent said hand grip portion, said brake lever being pivotally carried by said pin member, an actuator member mounted on said handle bar assembly adjacent said hand grip portion, and being slidably carried by said pin member, said actuator member being movable between a first position, when said parking brake mechanism is disengaged, and a second position, when said parking brake mechanism is engaged, means for normally biasing said actuator member to the disengaged position for avoiding interference with the normal operation of said brake lever, and cooperating means on said lever and on said actuator member for locking said lever in said brake engaged position, only when said actuator member is in second position and while opposing the normal biasing of said actuator member to said disengaged position and when said lever is in said brake engaged position.

3,948,362
PERSONAL SAFETY EQUIPMENT

Thomas Charles Greest, Selsdon, England, assignor to Barrow Hepburn Equipment Limited, London, England

Filed Apr. 23, 1975, Ser. No. 570,965
Claims priority, application United Kingdom, Dec. 12, 1974, 53852/74
Int. Cl.² A47L *3/04*
U.S. Cl. 188—65.2 **10 Claims**

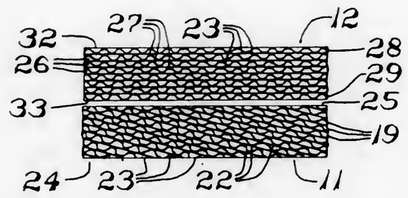


1. A safety device comprising a runner which can be threaded onto a suspended safety line and houses line-gripping means movable between an unlocked condition in which the runner is free to move along said line and a locked condition in which the line is gripped, and operating means which provides externally of the runner an attachment point for a personal safety belt and is operatively associated with said line-gripping means to cause movement thereof towards locked condition responsive to sudden downward acceleration of said attachment point; with the improvement that said operating means comprises first and second link members each of which is pivotally attached to the runner, and a bar member pivotally connected to said link members to form therewith and with the runner a parallel linkage, and that said attachment point is disposed at least as high as the level of the top of the runner housing when the runner is oriented for use on a vertical line with the operating mechanism in its runner-free position.

3,948,363
FRICTION MEMBER ASSEMBLY

William Edwin Ely, Troy, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 19, 1972, Ser. No. 245,425
Int. Cl.² F16D *55/00, 69/02*
U.S. Cl. 188—71.1 **1 Claim**



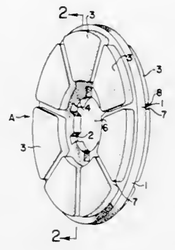
1. A friction mechanism such as a brake having rotatable and nonrotatable disc members with flat frictional surfaces, a first disc member comprising an annular body of laminated strips of high temperature material bonded together, each of said strips extending in substantially parallel planes circumferentially of said disc with one of said strips forming a frictional surface of said first disc member, a second disc member comprising a body having a second flat frictional surface and a plurality of laminated partially overlapping strips of high temperature material bonded together, each of said partially overlapping strips extending obliquely away from said second frictional surface and said second frictional surface being formed by overlapping ends of said partially overlapping strips extending obliquely away from said second frictional surface, said overlapping ends extending substantially radially of said second disc, means for displacing said frictional surfaces of said braking disc members into face-to-face frictional engagement whereby said strip forming a frictional surface of said first disc member will be engaged by said overlapping ends of said overlapping strips of said second disc member during the braking operation, said strips of said second disc member extending circumferentially and being laid up in overlapping relationship with one end of each strip forming a portion of said second flat frictional surface and the other end of said strip forming a portion of an opposite flat frictional surface on the other side of said second disc member whereby this surface may be engaged by another disc member having the construction of said first disc member upon displacement into face-to-face frictional engagement with said friction surface on the opposite face of said second disc member and said strips of high temperature material being sheets of pyrolized cloth and carbonaceous filler material.

3,948,364
SINGLE MIXTURE METALLIC BRAKE OR CLUTCH PLATE

Francis J. Lowey, deceased, late of Medina County, Ohio (by Old Phoenix National Bank, executor), assignor to Friction Products Co., Medina, Ohio

Continuation of Ser. No. 335,083, Feb. 28, 1973, abandoned.
This application July 10, 1974, Ser. No. 487,298
Int. Cl.² F16D *69/00*
U.S. Cl. 188—251 R **5 Claims**

1. A friction component suitable for clutches and brakes having unitary portions of different densities composed of a single compressed and sintered powdered metal base compound, said component comprising a wheel-like carrying portion being in the condition as sintered and having a hub portion that has a central axis and outer peripheral portion connected to said hub portion through a plurality of spaced spokes, the outer peripheral portion and said spokes having opposite axial faces disposed respectively in planes spaced from each other and substantially perpendicular to said axis, a plurality of sectors of greater axial thickness than said carrying portion, each of said sectors being disposed in an area bounded by a pair of said spokes and said hub and peripheral portions and being integral therewith, each of said sectors occupying the space between two successive spokes and each

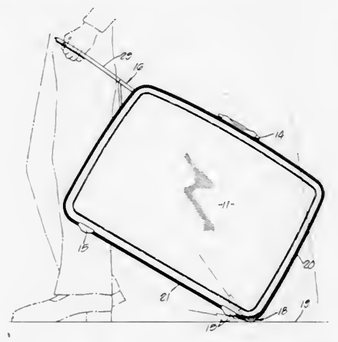


having opposite axial faces in spaced planes that are substiantially perpendicular to said axis and each of said sectors being substiantially uniformly less dense and porous throughout than said carying portion, whereby pores in said sectors are adapted to receive and cary a lubricant.

3,948,365
MOBILE LUGGAGE CASE

James S. Gregg, Denver; Robert W. Miller, Watkins; Lawrence R. Mobley, Parker; Charles J. Scott, and Joseph A. Woodburn, both of Denver, all of Colo., assignors to Samsonite Corporation, Denver, Colo.

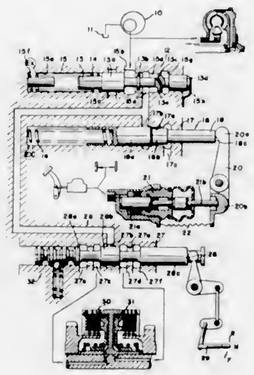
Filed Dec. 16, 1974, Ser. No. 533,337
Int. Cl.² A45C *5/14, 13/26*
U.S. Cl. 190—18 A **13 Claims**



1. A mobile luggage case, comprising, in combination:
top, bottom, front and rear end, and two side panels joined together to form a storage space enclosing container, said front end panel including walls defining an externally opening groove;
feetlike means on said bottom panel extending from said bottom panel outer surface;
a wheel assembly mounted on said container at the juncture of the rear end and bottom panels, said wheel assembly including wheel parts extending outwardly from said bottom and rear end panels; and
handle means pivotally connected to said walls defining said groove for movement from a first position retracted within said groove to a second position extending substantially normal to said front end panel, in which said handle means includes,
an elongated handle pivotally connected at one end within the groove,

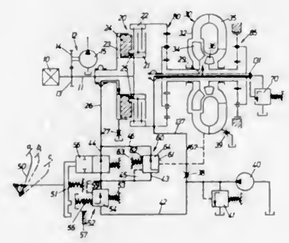
a first hook mounted within said groove, and
a second hook carried by said handle for cooperative locking engagement with said first hook on said handle being pivoted into said groove.

3,948,366
INCHING AND PRESSURE REGULATING VALVES FOR CLUTCHES
Shin Kitano, Aichi, and Yutaka Momose, Toyota, both of Japan, assignors to Aisin Seiki Co., Ltd., Japan
Continuation-in-part of Ser. No. 335,144, Feb. 23, 1973. This application Feb. 15, 1974, Ser. No. 443,096
Claims priority, application Japan, Mar. 8, 1972, 47-23781
Int. Cl.² F16D *67/04, 25/10*
U.S. Cl. 192—4 A **7 Claims**



1. A clutch fluid pressure control circuit which comprises:
a fluid pressure source;
a fluid pressure type actuated by means of said fluid pressure source;
a passage fluidically connecting said fluid pressure source to said clutch;
an inching valve which is connected to said passage and which controls the pressure transmitted to said clutch which is dependent upon the degree of depression of a brake pedal; and
regulator valve means comprising orifice means formed within said passage and being operable for decreasing the fluid pressure, within said passage, from said pressure source to said clutch when the fluid pressure to said clutch is decreased as a result of the inching action during braking and for maintaining a predetermined pressure by providing no interference of said orifice means for exhausting the fluid pressure from aid fluid pressure source during the time said brake pedal is not depressed;
said inching valve including a body portion, a valve member slidably disposed within said body portion, a single port defined within said body portion for fluidically connecting said inching valve to said regulator valve, and an exhaust port defined within said body portion for fluidically connecting said inching valve to a reservoir, said valve member including a single large diameter cylindrical section and a single small diameter cylindrical section integrally connected to said large section for permitting fluid communication between said single port and said exhaust port, said single port connecting said inching valve to said regulator valve being closed or blocked by said large diameter section when said brake pedal is not depressed whereby fluid communication between said single port and said exhaust port is interrupted and being opened when said pedal is depressed whereby fluid communication between said single port and said exhaust port is established,
said regulator valve including an inlet means connecting to said fluid pressure source and an outlet means connecting to said clutch, and further including a first large cylindrical section for controlling the fluid pressure from said pressure source to a reservoir and a second cylindrical section which regulates the fluid connection between said inlet means and said outlet means, said second section having a diameter less than that of said first section and said second section being operatively connected with said first section,
whereby the fluid connection between said inlet means and said outlet means is restricted by said second section when the pressure of said outlet means is low.

3,948,367
CLUTCH RESPONSIVE TO TORQUE OF TORQUE CONVERTOR
Hellmut Weinrich, Zang, and Heinrich Dick, Heidenheim, both of Germany, assignors to Volth Getriebe KG, Heidenheim (Brenz), Germany
Filed June 22, 1972, Ser. No. 265,286
Claims priority, application Germany, June 29, 1971, 2132144
Int. Cl.² F16D *39/00*
U.S. Cl. 192—3.33 **7 Claims**

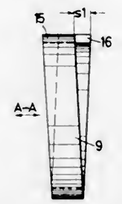


1. In a torque-delivering vehicle drive system having a friction clutch actuated by a pressurized medium, a hydrodynamic working circuit, including a pump wheel and a turbine wheel, operatively connected to the friction clutch and a control device including an operating lever for adjusting pressure of the pressurized medium to the friction clutch, the control device being part of a regulating device for maintaining the torque delivered by the vehicle drive system at a constant value corresponding to a given position of the operating lever by controlling pressure of the pressurized medium to the friction clutch, and means for supplying to said regulating device a measured signal corresponding to said torque, said measured quantity being a function of the difference between working fluid pressure on the outlet side of the pump wheel of the hydrodynamic working circuit and working fluid pressure on the inlet side of said pump wheel.

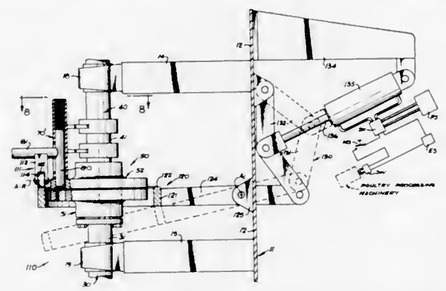
3,948,368
SLOTTED AND RESILIENT CORRECTING RING PREFERABLY FOR SYNCHRONIZING DEVICES IN CHANGE-SPEED GEARS OF MOTOR VEHICLES
Robert Muller, Weissach, Germany, assignor to Dr. Ing. H.c.F. Porsche Aktiengesellschaft, Germany
Filed Feb. 25, 1975, Ser. No. 553,149
Claims priority, application Germany, Mar. 28, 1974, 2414949
Int. Cl. F16d *13/00*
U.S. Cl. 192—53 C **7 Claims**

1. Synchronizing apparatus for change-speed gears including a slotted resilient correcting ring for attenuating the transfer of rotative shifting forces between two change-speed gear

members, wherein the free ends of said correcting ring are offset from one another a predetermined distance in a direction parallel to the central longitudinal axis of said correcting ring.

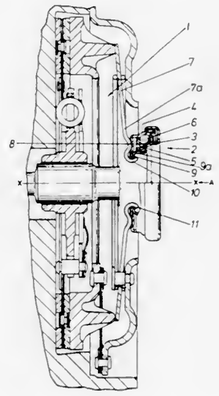


3,948,369
SYNCHRONOUS COUPLING
Ned Thurston Dodd, Rte. 2, Lula, Ga. 30554
Filed May 21, 1974, Ser. No. 471,991
Int. Cl.² F16D *11/04*
U.S. Cl. 192—67 R **2 Claims**



1. A coupling device for connecting driving machinery to driven machinery wherein the driven machinery has an initial non-interfering position in which the driven machinery will not interfere with the operation of the driving machinery if the driven machinery is disconnected from the driving machinery comprising:
support means;
a driving shaft rotatably mounted on said support means about a common rotational axis and having an adjacent end;
a driven shaft rotatably mounted on said support means about said common rotational axis coaxially with said driving shaft and having an adjacent end opposed to and spaced from the adjacent end of said driving shaft; and,
interconnecting means for selectively connecting the adjacent ends of said driving and driven shafts only at a prescribed relative rotational position between said driving shaft and said driven shaft to maintain synchronous movement therebetween, said interconnecting means including:
a first member fixably mounted on the adjacent end of one of said shafts, said first member defining a driving surface thereon generally normal to said common axis and facing the other of said shafts and further defining a hole opening onto said driving surface:
a drive pin assembly mounted on the adjacent end of the other of said shafts for rotation therewith, said driving pin assembly comprising a housing defining a passage therethrough and having a centerline generally parallel to said common axis and radially spaced therefrom so that said passage is selectively registrable with said hole in said first member, a drive pin slidably carried in said passage in said housing for selective extension from said housing into said hole in said first member and retraction into said housing from said hole in said first member, and means for urging said drive pin toward said first member;
an annular cam selectively positionable about said driving and driven shafts concentrically about said common axis and defining an annular camming surface thereon;
a positioning assembly connected to said drive pin for selectively moving said drive pin out of engagement with said hole in said first member, said positioning assembly including cam follower means rotatable with said drive pin assembly concentrically about said common axis and a positioning member connecting said cam follower means to said drive pin, said positioning member comprising a handle fixed perpendicular to said drive pin, and said cam follower means including a support member connected to said positioning member and a cam follower roller rotatably mounted on said support member adapted to rotatably engage said camming surface of said annular cam, said support member fixed perpendicular to said handle and comprising a mounting bracket for said cam follower roller;
positioning means for selectively moving said annular cam into engagement with said cam follower means on said positioning member to selectively urge said drive pin out of engagement with said hole in said first member as said cam follower means rides along camming surface of said annular cam; and, sensing means operatively connected to said positioning means to prevent said positioning means from moving said annular cam into engagement with said cam follower means to disconnect said drive pin from said hole in said first member until the driven machinery reaches its initial noninterfering position.

3,948,370
FRICTION CLUTCH AND BEARING ASSEMBLY
Horst Ernst, Elitingshausen; Manfred Brandenstein, Aschfeld, and Armin Olschewski, Schweinfurt, all of Germany, assignors to SKF Industrial Trading and Development Company, B.V., Amsterdam, Netherlands
Filed May 31, 1974, Ser. No. 475,320
Claims priority, application Germany, June 1, 1973, 2327936
Int. Cl.² F16D *19/00*
U.S. Cl. 192—98 **5 Claims**



1. An assembly of friction clutch and release bearing, said clutch being provided with a spring release member having, an inner peripheral edge defining a central bore, said spring

release member being formed with a frontal face having a curved section adjacent said peripheral edge and rolled into a torus along its peripheral edge, said bearing having a sheet metal race ring having a radially extending wall provided with a curved section conforming to that of the frontal face of said spring release member and an inner beaded edge, said beaded edge being adapted to enter into said torus and said curved surfaces being adapted to engage each other.

3,948,371

SELF CENTERING CLUTCH RELEASE BEARING

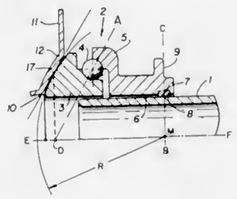
Klaus Lönne, Opladen, Germany, assignor to SKF Industrial Trading and Development Company, B.V., Amsterdam, Netherlands

Filed Dec. 5, 1973, Ser. No. 422,073

Claims priority, application Germany, Dec. 9, 1972, 7245141

Int. Cl.² F16D *23/14*

U.S. Cl. 192—98 **7 Claims**



1. A self centering clutch release bearing assembly having a central axis, comprising a supporting member, a first non-rotatable race adapted to engage a shift mechanism, means mounting said first race on said supporting member to be resiliently movable about a pivot point at an angle thereto, a second rotatable race, and a plurality of anti-friction bodies rotated therebetween, said second race having a spherical surface adapted to engage a clutch release member, said means for mounting said first race being arranged so that the point forming the pivot of angular movement of said bearing coincides with the center of the spherical surface of said second race and lies on the axis of said bearing in a plane intersecting the axis of said bearing in which the forces acting on said first race lie.

3,948,372

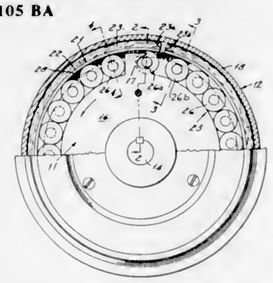
CENTRIFUGAL CLUTCH

Terence G. Hare, 22600 Middlebelt G-11, Farmington, Mich. 48024

Filed Apr. 29, 1974, Ser. No. 465,251

Int. Cl.² F16D *23/10*

U.S. Cl. 192—105 BA **8 Claims**



1. In a clutch construction comprising inner and outer relatively rotatable members, a flexible friction band interposed between said members, a plurality of separate elements interposed circumferentially between said band and said inner member in abutting engagement with one another and otherwise being independent of each other, and force applying means operable in response to rotation of one of said members to act on said elements and urge them radially outwardly and circumferentially to maintain said elements in abutting engagement not withstanding said radially outward movement thereof, the improvement comprising means on said one member operable upon overruning or deceleration to disengage said clutch, said force applying means comprising a projection on said one member and stop means on the trailing edge of said band, said disengaging means and said stop means having interengaging surfaces which engage upon deceleration or overrunning and move the band out of engagement.

3,948,373

CLUTCH DISK FOR MOTOR VEHICLE MAIN CLUTCHES

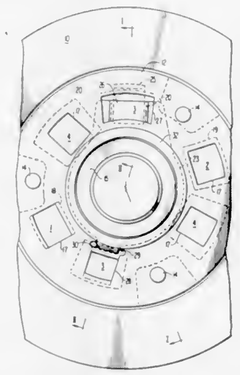
Günter Wörner, Rommelshausen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed July 25, 1974, Ser. No. 491,657

Claims priority, application Germany, July 28, 1973, 2338394

Int. Cl.² F16D *69/00, 13/68*

U.S. Cl. 192—106.2 **8 Claims**



1. A clutch disk for motor vehicle main clutches, in which a disk member carrying friction linings which is operatively connected with lateral members, is torsionally elastically connected with a hub member, and which includes several spring means having separate damping means, said spring means being retained in window means provided in one of two parts torsionally elastically connected with each other and cooperating with larger window means provided in the other of said two parts, and control means for controlling the start of operation of at least one of the damping means, characterized in that at least one of the spring means is retained in the hub member and the larger window means coordinated to said last-mentioned spring means is provided in the lateral members connected with the disk member, and in that the control means includes a laterally bent-off portion, a further window means provided in one of said lateral members including a circumferential enlargement engaged by said bent-off portion.

5. A clutch disk for motor vehicle main clutches, in which a disk member carrying friction linings which is operatively connected with lateral members, is torsionally elastically connected with a hub member, and which includes several spring means having separate damping means, said spring means being retained in window means provided in one of two parts torsionally elastically connected with each other and cooperating with larger window means provided in the other of said two parts, and control means for controlling the start of operation of at least one of the damping means, characterized in that at least one of the spring means is retained in the hub

member and the larger window means coordinated to said last-mentioned spring means is provided in the laterally members connected with the disk member, each spring means cooperating with a control means is retained in a flange of the hub member, and in that the control means includes a plate-like control member and surrounds the spring means coordinated thereto by means of a balcony-like indentation which also projects into the larger window means in the lateral member disposed on the same side.

3,948,374

CLUTCHES

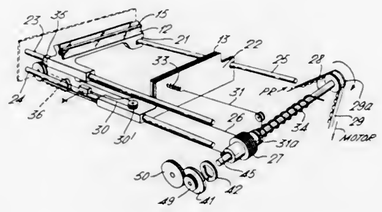
Alan Malcolm Whyte, Hitchin, England, assignor to Xerox Corporation, Stamford, Conn.

Filed July 16, 1974, Ser. No. 489,794

Claims priority, application United Kingdom, Dec. 21, 1973, 59525/73

Int. Cl.² F16D *13/04*

U.S. Cl. 193—33 **5 Claims**



1. A reproduction machine having a document scanning system, and an improved means for operating the latter, said means comprising:

a recycling clutch comprising rotatable input and output elements, cooperating drive engagement means on said elements respectively, one of which is pivotally mounted on its associated element and biased for engagement with the engagement means on the other element, a rotatable timing element adapted to be driven by said input element and arranged to come into engagement with said pivotally mounted engagement means to effect release of the clutch at intervals greater than a revolution of said input-element, and said pivotally mounted engagement means having means defining a cam surface thereon engageable by said timing element for maintaining said engagement means disengaged for a sufficient length of time to permit rotation of the output element in reverse direction under the influence of a biasing means through greater than one revolution.

3,948,375

SELF-ENFORCING PARKING SYSTEM

Clark L. Selby, Jr., 9332 Kessler Lane, Overland Park, Kans. 66212

Continuation-in-part of Ser. No. 377,706, July 9, 1973, Pat. No. 3,838,760, which is a continuation-in-part of Ser. No. 190,979, Oct. 20, 1971, Pat. No. 3,757,916. This application Dec. 17, 1973, Ser. No. 425,208

Int. Cl.² G07F *15/12*

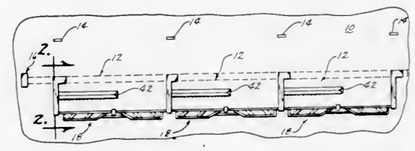
U.S. Cl. 194—1 R **1 Claim**

1. A self-enforcing parking system, comprising,

a plurality of parking stalls, each of said stalls having a movable barrier means movable between first and second positions, each of said stalls having a vehicle detection switch means which is operable when a vehicle enters the stall,

a central pay-out station remote from said stalls, said central pay-out station, comprising electronic means for indicating parking charges for the respective parking stalls, said central pay-out station also comprising coin receiving means which reduces the indicated parking charges corresponding to the monetary amount received thereby,

circuit means electrically connecting each of said vehicle detection switches to said central pay-out station so that the barrier means is moved to its second position after the vehicle has entered the parking stall,



said central pay-out station also comprising means for lowering the barrier means when the proper monetary amount has been inserted to bring the indicated parking charges to zero,

said central pay-out station having a dial means thereon with indicia provided which corresponds to the various parking stalls so that the motorist can dial the proper stall identification for indicating the parking charges to be paid.

3,948,376

COIN-COLLECTING RECEPTACLE FOR USE IN COIN-OPERATED DEVICES

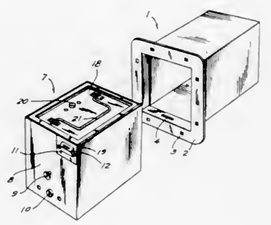
Tadeo Roman, Sao Paulo, Brazil, assignor to Diverama Diversoes Automati Cas Industria E Comercio Ltda°, Brazil

Filed Dec. 27, 1973, Ser. No. 428,907

Claims priority, application Brazil, May 10, 1973, 62373840

Int. Cl.² G07F *9/06*

U.S. Cl. 194—1 B **6 Claims**



1. In a coin-operated device, a combination comprising a container permanently attached to the device and having an open end facing the exterior of the device; a receptacle interchangeably inserted into said container through said open end and having walls a front one of which is accessible from the exterior of the device when the receptacle is fully inserted into said container, and a lid mounted on one of said walls for pivoting between an open position and a closed position, said walls and said lid of said receptacle when in its closed position completely enclosing an interior of said receptacle; means for preventing unauthorized access to said interior of said receptacle and including first means for locking said receptacle in said container and second means for locking said lid of said receptacle in said closing position; means for conducting coins from the exterior of the device into said interior of said receptacle and including a coin-accepting element at said front wall of said receptacle and provided with a slot; and means for commencing operation of the device upon acceptance of coins of proper value and including coin-distinguishing means in said interior of said receptacle and attached to said front wall of said receptacle in alignment with said slot.

3,948,377

COIN HANDLING APPARATUS FOR A VENDING MACHINE

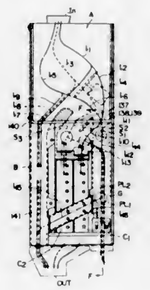
Yukichi Hayashi; Yutaka Yokoda, both of Tokyo; Masayuki Tamura, Sakado; Shinichi Kobayashi, Kamihukuoka; Kazuyuki Akai, Tokyo, and Selu Sakai, Yamato, all of Japan, assignors to Nippon Coinco Co., Ltd., Tokyo, Japan

Division of Ser. No. 432,977, Jan. 14, 1974, Pat. No. 3,896,915. This application Oct. 29, 1974, Ser. No. 518,460

Claims priority, application Japan, Jan. 17, 1973, 48-7549; Feb. 13, 1973, 48-17721; July 24, 1973, 48-83328; July 24, 1973, 48-83329; July 27, 1973, 48-84684; Aug. 22, 1973, 48-94078; Aug. 22, 1973, 48-94079; Aug. 23, 1973, 48-98931[U]

Int. Cl.² G07F 9/00

U.S. Cl. 194—1 C **1 Claim**



1. A vending machine incorporating an acceptor capable of sorting out coins of at least three different denominations of first, second and third orders in precedence comprising coin paths respectively directing coins of the second and third orders among the coins deposited in and sorted out by the acceptor to positions above their corresponding coin tubes, means for preventing introduction of the coins of the second and third orders to said coin tubes when said coin tubes already contain predetermined number of coins and passing the coins of the second and third orders to said coin tubes when said coin tubes contain coins of less than said predetermined number, a first path directing the blocked coin to a cash box, a second path directing the coin of the first order to the cash box, a third path leading from a predetermined position of said second path to a return outlet, means for temporarily retaining said coin of the first order by projecting first and second levers which are capable of projecting into and withdrawing from said second path at said predetermined position, passing the retained coin to said third path by withdrawing said first lever and to the cash box by withdrawing said second lever, coin payout means for paying out coins required for change or return purpose one by one from said coin tubes containing the coins of the second and third orders, a coin return device provided on the acceptor, said coin return device including a return lever pivotally supported at one end thereof on the acceptor and having interrupting pins provided integrally therewith for interrupting passage of the coins in the coin paths of the acceptor and a return spring, and an actuating lever provided on a movable iron piece of an electromagnet attached to the body of the vending machine and being adapted to push said return lever to a position wherein said interrupting pins interrupt passage of the coins when said electromagnet is in a deenergized state.

3,948,378

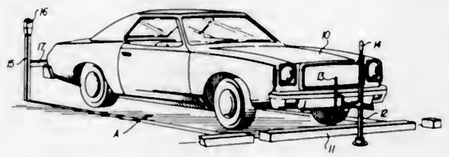
METERED PARKING STALL

Samuel E. Patton, 344 King George Ave., Roanoke, Va. 24016

Filed Mar. 4, 1975, Ser. No. 555,091

Int. Cl.² G07F 17/24

U.S. Cl. 194—1 R **26 Claims**



1. A parking system comprising:

a parking area adapted to accommodate a vehicle therein,

means adjacent one end of the parking area, said means being adapted to obstruct the movement from that end of a vehicle in the parking area,

a parking meter adjacent said parking area,

a barrier means adjacent the other end of the parking area, said barrier means being movable between a first position in which it extends transversely of the parking area a sufficient distance to block removal of a vehicle parked therein and a second position in which the barrier means does not block removal of a vehicle in the parking area,

means, actuable by a vehicle to be parked, operatively connecting said barrier means and said parking meter, said vehicle actuable means, when actuated by a vehicle, actuating said parking meter and moving the barrier means from its second position to its first position,

said parking meter, upon the insertion of a sufficient monetary amount therein, being adapted to deactuate said vehicle actuable means so that said barrier means thereby moves from its first position to its second position so that a parked vehicle may be removed from the parking area, and

said vehicle actuable means comprising:

an actuator member adapted to be contacted and moved by a vehicle to be parked,

a first member mounted on said parking meter and connected to said actuator member, and

a second member mounted on said parking meter, said second member being releasably connected to said first member, and said second member being connected to said barrier means whereby when said vehicle actuable means is initially actuated by a vehicle to be parked said actuator member is moved by the vehicle and said first member connected thereto is also moved which thereby moves said second member releasably connected thereto and said barrier means, connected to said second member, from its second to its first position and when a sufficient monetary amount is inserted in said parking meter said second member can be released from its releasable connection to said first member so that the barrier means, connected to said second member, moves from its first to its second position and a parked vehicle may be removed from the parking area.

3,948,379

VIBRATING CHAIR

Harry J. Warner, 1229 Hunt Road, Salt Lake City, Utah 84117

Filed Aug. 28, 1974, Ser. No. 501,377

Int. Cl.² G07F 5/10

U.S. Cl. 194—9 T **1 Claim**

1. A chair assembly comprising:

a reclining chair having a seat and an adjustable back;

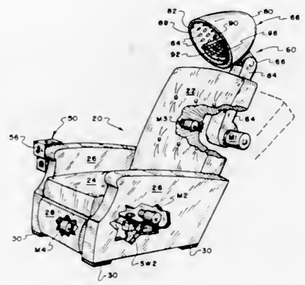
electrical means for vibrating at least part of the chair;

an audio alarm carried by the chair;

switch means connected to the audio alarm and located below the chair seat to be activated when the seat is occupied by a user;

coin-operated timer means comprising means (a) disabling the audio alarm and enabling the vibrating means for a predetermined interval of time when a coin is properly inserted and (b) enabling the audio alarm and disabling the vibrating means when the coin is not properly inserted;

a hair dryer mechanism adjustably carried by the back of the chair comprising blower means and hood means, the



hair dryer mechanism also comprising head support means disposed within and cooperating with the hood means to hold the head of the user in a disposition accommodating air circulation about the head within the hood means independent of the angle at which the chair is reclined and the adjusted position of the hood means, said hair dryer mechanism further comprising means electrically connected to the timer means enabling the hair dryer mechanism for said predetermined interval of time when a coin is properly inserted and otherwise disabling the hair dryer mechanism.

3,948,380

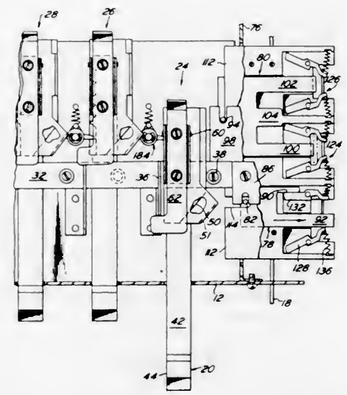
COIN OPERATED VENDING MACHINE

Harry Galin, Willow Grove, Pa., assignor to Wm. Wrigley, Jr. Company, Chicago, Ill.

Filed May 29, 1974, Ser. No. 474,467

Int. Cl.² G07F 5/06

U.S. Cl. 194—57 **10 Claims**



8. An article of manufacture for use in a vending machine comprising a bar member adapted to be moved horizontally in a direction corresponding generally to its longitudinal axis during a dispensing action, an actuator coupled to said bar member to provide a force transverse to said direction, at least two discrete cam means at spaced locations on said bar member for converting said transverse force of said actuator into movement of said member in said direction, a latch comprising a pair of fingers pivotably mountable about a vertical axis and biased to a first position wherein at least one of said fingers is positioned to block movement of said bar member, at least one of said fingers being pivotable to a second position wherein said bar member may move between said fingers, and a projection on said bar member positioned to move between the fingers to contact a side face of a coin held by the fingers to thereby pivot at least one finger about said vertical axis to its second position while the coin is propelled by said projection toward a receptacle.

3,948,381

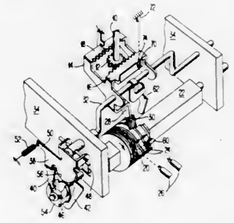
PRINTER WITH NON RETURN TO HOME RACK SHIFT SELECTION MECHANISM

Robert F. McDaniel, Paris, and John O. Schaefer, Lexington, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,406

Int. Cl.² B41J 23/04

U.S. Cl. 197—18 **5 Claims**



1. A printer having a type element mounted for rotation to present different characters to a print position, a pinion connected to said type element for rotation therewith, a drive device comprising a pair of rack members alternatively positionable to engage diametrically opposite portions of said pinion and means for driving an engaged rack member a measured distance wherein the improvement comprises:

a rack selection and positioning mechanism operatively connected to said racks and shiftable to a first rack select position and a second rack select position;

cyclically operable means for providing forces for moving said rack selection mechanism through an operating motion only at the beginning of each print operation;

first and second follower arms alternatively engageable with said cyclically operable means to shift said rack selection and positioning mechanism to said first or second rack selection positions at the beginning of each print cycle and effective to shift said racks to engage a selected one of said racks with said pinion if the other of said racks is engaged.

3,948,382

DATA TERMINAL PRINTING ASSEMBLY

Dale D. Nesbitt, Berkeley, and LeRoy O. Teagarden, Livermore, both of Calif., assignors to The Singer Company, New York, N.Y.

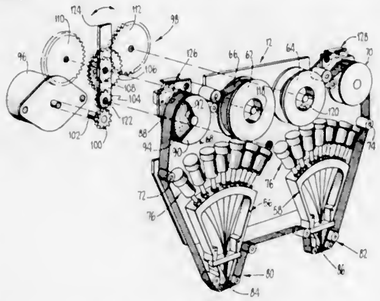
Continuation of Ser. No. 327,515, Jan. 29, 1973, abandoned. This application July 1, 1974, Ser. No. 484,892

Int. Cl.² B41J 33/44

U.S. Cl. 197—165 **5 Claims**

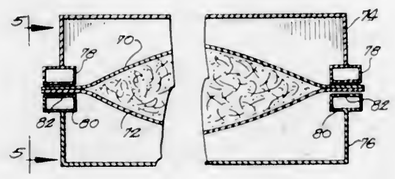
1. A matrix printer on a movable carriage, said printer having a plurality of wires for impacting through a ribbon to a record medium to print a character thereon comprising:

means for supplying ink for printing via said ribbon as the wires impact the record medium, said means including an ink ribbon, a first and second reel and ink replenishment means contacting said ribbon for ink replenishment;
means for transporting said ribbon past said wires at their point of impact by winding said ribbon off one of said reels and onto the other;
triggering means attached to said ribbon and located a predetermined distance from each tail-end of said ribbon, said predetermined distance being sufficiently long to insure that said tail-end of said ribbon cannot be unraveled from said reel before the ribbon direction is reversed;



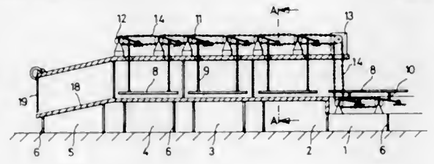
means for sensing the approach of the end-portion of said ribbon as said ribbon unwinds from one reel, said means including said triggering means and a switch activated by said triggering means;
means for sensing when the printer is located in a non-printout location, said means including a stationary strobe bar aligned with said record medium and sensors which move with said movable carriage;
means for reversing the direction of travel of the said ribbon, said means including:
an AND-gate having a first input from said switch, a second input from said printer carriage sensors, and having an output line;
motor drive means to drive said first and second reel, wherein a signal from said AND-gate output line initiates a direction-reversal of said motor drive means.

3,948,383
DOUBLE BELT AIR PRESSURIZED ELEVATOR FOR BULK MATERIAL
Anthony D. Janitsch, Belleville, and Claude Morissette, Montreal, both of Canada, assignors to Allis-Chalmers Corporation, Mllwaukee, Wis.
Filed Apr. 2, 1975, Ser. No. 564,434
Int. Cl.² B65G *15/18*
U.S. Cl. 198—165 **5 Claims**



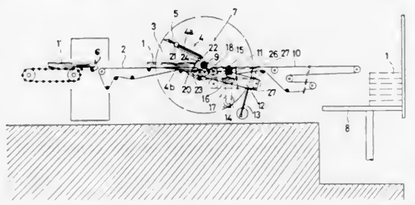
1. A conveyor system comprising a pair of flexible, fluid impervious endless belts, driven at the same speed, each belt having a portion in face-to-face relationship to the other to convey a material therebetween and to define a working zone and elevating section, the improvement comprising:
means urging the said belts toward one another in said working zone and elevating section to thereby substantially eliminate spillage of material from between said belts, said urging means comprising belt plenum chambers associated with the back surfaces of said belts in said working zone, and means for supplying fluid under pressure to said belt plenum chambers to urge said belts toward one another, and edge plenum chambers adjacent the back edges of said belts coextensive with said belt plenum chambers, and means to supply fluid under pressure to said edge plenum chambers to urge the edges of said belts in said working zone into contact with one another.

3,948,384
TRANSPORTATION DEVICE FOR CHILLING GOODS IN COOLING TUNNELS
Franz Auth, Bischofsheim, and Walter Spahn, Frankfurt am Main, both of Germany, assignors to Messer Greisheim GmbH, Frankfurt am Main, Germany
Filed Dec. 5, 1974, Ser. No. 529,697
Claims priority, application Germany, Dec. 22, 1973, 2364376
Int. Cl.² B65G *47/42*
U.S. Cl. 198—229 **2 Claims**



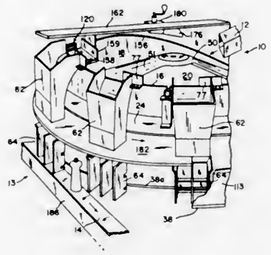
1. A transportation device for conveying large volume and heavy goods to be cooled in cooling tunnels comprising, in combination, an elongated cooling tunnel having an entrance end and a discharge end defining a direction of conveyance from said entrance end to said discharge end, a stationary grate mounted in said tunnel, said stationary grate having support surfaces arranged at intervals to each other along said direction of conveyance for supporting the goods to be cooled, a movable grate having support surfaces arranged at intervals to each other and located for being disposed between said support surfaces of said stationary grate, drive means for moving said support surfaces of said movable grate along a closed loop in a vertical plane parallel to said direction of conveyance in a forward direction along said direction of conveyance and in a rearward direction opposite said direction of conveyance, said support surfaces of said movable grate in said rearward direction being disposed below the level of said stationary grate support surfaces whereby the goods are thereby supported by said stationary grate, said support surfaces of movable grate in said forward direction being above the level of said stationary grate support surfaces whereby the goods are lifted from said stationary grate and transported forward by said movable grate, said closed loop being egg-shaped with its major axis being parallel to said direction of conveyance, said drive means including an eccentric crank-of-breech mechanism, a downwardly extending draw-rod being connected at each of the four corners of said movable grate, said draw rods being rigidly connected to said grate and flexibly connected to the crank arm of said mechanism, said mechanism being mounted to the roof of said tunnel, said tunnel comprising a plurality of segments, and a movable grate being mounted in each segment each with its drive means, said drive means being interconnected for mutual synchronous movement, said drive means interconnected by chain means, said segments including an entrance segment, said movable grate means at said entrance segment having its drive means mounted to the floor of said tunnel and connected to its movable grate by upwardly extending push rods, said tunnel having a downwardly sloping surface at said discharge end, and cleaning brush means being mounted at the lower side of said movable grates disposed for sweeping the floor of said tunnel in said rearward direction.

3,948,385
APPARATUS FOR INVERTING A SHEET MEMBER
Tsutomu Shinomiya, Iwatsuki, Japan, assignor to Kabushiki Kaisha Tomoku, Otaru, Japan
Filed Mar. 18, 1975, Ser. No. 559,658
Claims priority, application Japan, Aug. 29, 1974, 49-102754
Int. Cl.² B65G *47/24*
U.S. Cl. 198—237 **10 Claims**



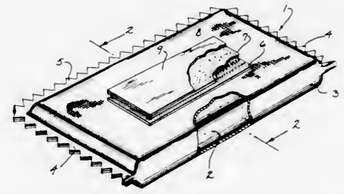
1. Apparatus for inverting a sheet member comprising means defining a conveyor passage along which a sheet member can be advanced, a rotatable arm assembly mounted along said passage and including upper and lower arms defining an opening therebetween adapted for receiving said sheet member, means for rotating said arms 360° at a non-uniform speed from an initial position in which said opening faces upstream of said passage back to a coincident final position, said arms passing through an upright position and a position in which said opening faces downstream of said passage, said upper arm including a swingable clamp means for rotating in a direction opposite to the direction of rotation of said arms when going from said initial position to said upright position and for rotating in the same direction as said arms when going from said upright position to the position in which said opening faces downstream.

3,948,386
APPARATUS FOR ORIENTING AND FEEDING ARTICLES
John C. Nalbach, Jersey City, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Continuation of Ser. No. 247,498, April 25, 1972, which is a continuation of Ser. No. 840,739, July 10, 1969, Pat. No. 3,662,782. This application Dec. 5, 1973, Ser. No. 421,809
Int. Cl.² B65G *47/14*
U.S. Cl. 198—287 **2 Claims**



1. Apparatus for orienting lightweight bottles comprising a hopper for holding randomly arranged bottles, rotatable discharge means including a plurality of chutes mounted adjacent said hopper and communicating therewith for receiving bottles therefrom by means whereby each bottle is introduced upright into a chute upper section, each of said chutes having upper and lower sections separated by a narrow space, a first stationary slide guide shelf extending laterally into said space for retaining upright bottles in said upper sections over a predetermined angular displacement of said rotatable discharge means, a second slide guide shelf adjacent the bottom of said lower chute section for receiving upright bottles therefrom, a conveyor positioned below said second shelf for receiving upright bottles therefrom, said shelves being of limited arcuate extent and arranged in overlapping relation whereby during rotation of said rotatable discharge means a bottle received from said hopper is retained in said upper chute section by said first stationary shelf, then discharged from an end of said first shelf into said lower chute section and onto said second shelf, temporarily retained in said lower chute section, and then transferred from an end of said second shelf onto said conveyor, and means for moving said conveyor at substantially the same speed as said lower chute sections.

3,948,387
FABRIC PACKAGE FOR A VAPORIZABLE ANTI-STATIC AND FABRIC SOFTENING BAR
Richard J. Haertle, Brookfield, Wis., assignor to Kleen Test Products, Inc., Milwaukee, Wis.
Filed June 25, 1973, Ser. No. 372,916
Int. Cl.² B65D *81/00*
U.S. Cl. 206—84 **5 Claims**



1. A package, comprising a solid antistatic and fabric softening material capable of vaporizing at elevated temperatures, and an envelope enclosing the material, said envelope being formed of a woven fabric composed of 60 to 70% by weight of thermoplastic synthetic fibers and 30 to 40% by weight of cellulosic fibers, said package produced by positioning the material between layers of said fabric, said layers having overlapping unjoined peripheral edge portions, applying pressure to the overlapping peripheral edge portions and subjecting the overlapping edge portions to ultrasonic vibrations to develop a temperature in said overlapping edge portion sufficiently high to melt said synthetic fibers and below the decomposition temperature of the cellulosic fibers to thereby provide a sealed bond between said edge portions, ng the overlapping edge portions to ultrasonic vibrations to develop a temperature in said overlapping edge portion sufficiently high to melt said synthetic fibers and below the decomposition temperature of the celluosic fibers to thereby provide a sealed bond between said edge portions.

3,948,388
FRAME-LIKE HOLDER FOR ARTICLES
David Charles Mueller, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.
Filed Jan. 25, 1971, Ser. No. 109,221
Int. Cl.² B65D *67/00*
U.S. Cl. 206—192 **7 Claims**

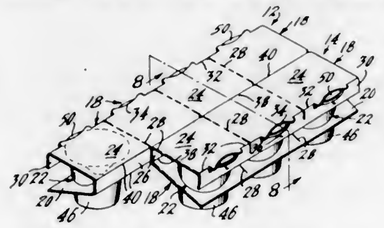
1. A composite frame-like holder for articles such as containers, comprising:
two sections, each section being an integral row of a plurality of substantially U-shaped frame-like holder units, each

of said units being for holding a single article therein, each unit having:

a top panel providing an overlying protective cover for the article,

a leg panel having a free outer edge and an aperture for receiving the article and

a side panel shorter than the axial length of said article, extending substantially vertically from said top panel and connecting said top panel to said leg panel, said side panel being defined by lines of weakness between said top and leg panels, said leg panels extending in a sloping, substantially diagonally downward direction from said side panel, and having its aperture positioned away from said side panel, each of said units of each rowed section being defined by severing means adjacent the edges of their respective adjoining unit panels, said edges running substantially vertical from adjacent said side panels to adja-



cent the said outer opposing edges of said other panels, each of said top panels of each section having, adjacent its edge opposite said side panel and adjacent the similarly opposing outer edge of said article, means for securing said article to said holder unit,

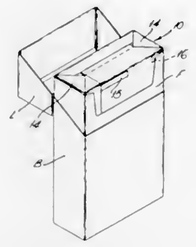
said composite holder being formed by each side panel of each holder unit of one section being severably affixed along its horizontal length to a side panel of a holder unit of the other section, such that the severably affixed side panels form a severably affixed, substantially vertical, horizontally-extending integral centre beam and two integral parallel rows of holder units, the centre beam being severable within and through the interior of a portion or all of its length, such that one or more of said units of said parallel rows can be severed from each other and from said composite holder in a manner that maintains the integrity of the severed units and of the remaining composite holder.

3,948,389
PACKETS

Desmond Walter Molins, and Robert William Davies, both of London, England, assignors to Molins Limited, London, England

Filed Apr. 22, 1974, Ser. No. 462,919
Claims priority, application United Kingdom, Apr. 26, 1973, 20008/73
Int. Cl.² A24F *15/12*; **B65D** *5/10*
U.S. Cl. 206—245 **5 Claims**

1. The combination of a hinged lid packet without an inner frame and arranged to open at one end and a packet for a substantially cuboid article having opposed end faces and comprising: two air-impervious tubes of rectangular section spaced apart by a gap, the tubes overlapping said opposed end faces of the article to provide a free end at each said face, each said free end being sealed flat up to the respective end face along a central plane parallel to one of the sides of the respective tube thereby forming a sealed margin of double thickness with triangulated portions at the ends thereof, said margin and said triangulated portions being folded over against the article; and a tubular body made from an air-impervious material which extends between the two end faces of the article and which is sealed to the outside surfaces of said tubes to bridge said gap therebetween, said packet being contained in the hinged lid packet and said tubular body being provided with a cut-out at the end corresponding to the opening end of the

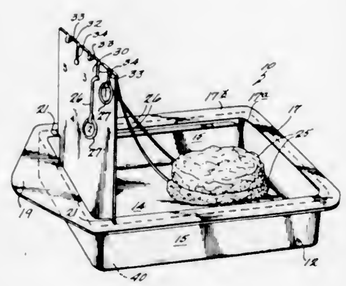


hinged lid packet to facilitate access to the contents of the packet.

3,948,390
LAPAROTGMY SPONGE PACKAGE AND COUNTER

John G. Ferreri, 255 Harrell Drive, Spartanburg, S.C. 29301

Filed Oct. 18, 1974, Ser. No. 516,018
Int. Cl.² A61F *13/00*; **B65D** *1/36, 81/36*
U.S. Cl. 206—370 **5 Claims**



1. A sponge package for packaging and counting sponges comprising

a. a generally bowl-shaped container having a lip portion formed around the open top thereof,

b. detachable means for insuring the sterility of sponges packaged in said container for detachably cooperating with said container lip portion,

c. a number of surgical sponges loosely lying in said container,

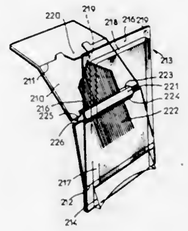
d. a card-like member contained within said container and disposed in a generally flat position and distinct from said sponges said member having an edge thereof having a number of slits formed therein corresponding to the number of sponges disposed in said containers, and

e. means formed on said container for supporting said card-like member in an upright position extending upwardly from said container past the top thereof, after said means for insuring the sterility of sponges packaged in said container are detached from said container, so that said card-like member may have sponges operatively disposed in the slits formed therein to provide a clear visual indication of the number of sponges disposed therein.

3,948,391
HOLDERS FOR NEEDLES AND LIKE ARTICLES

Roger John Beaman, Evesham, England, assignor to Needle Industries Limited, Birmingham, England

Filed May 8, 1974, Ser. No. 467,867
Claims priority, application United Kingdom, Nov. 1, 1973, 52965/73
Int. Cl.² B65D *85/28*
U.S. Cl. 206—382 **1 Claim**

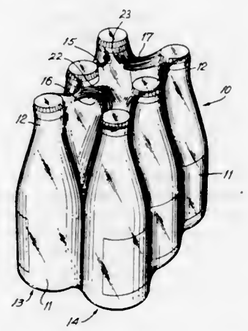


1. A holder for articles of the kind specified, comprising a base member, a mounting member for holding one or more such articles in assembled relation with the base member by engagement with the stem or shank-like portion of such article, and a cover member comprising a hollow shell of a shape holding transparent plastics material presenting an open side towards the base member, the cover member having a marginal portion secured to the base member and the shell being relatively movable between a closed position in which any of said articles held by the mounting are disposed within said hollow shell and in which the base member is generally flat, and an open position in which any of said articles held by the mounting member are disposed substantially externally of said hollow shell, the mounting member comprising a corrugation of the material of the base member displaced out of the general plane of the base member, marginal parts of the base member adjacent the corrugation being provided with cut-out portions for permitting such marginal parts to remain generally flat.

3,948,392
PACKAGE HAVING INTEGRAL MEANS FOR CARRYING AND METHOD FOR MAKING THE SAME

Clifford C. Faust, Riverside, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 8, 1974, Ser. No. 440,777
Int. Cl.² B65D *5/46, 65/16, 71/00, 85/62*
U.S. Cl. 206—432 **9 Claims**

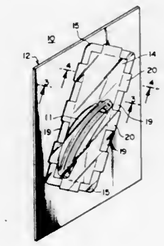


1. A package of articles comprising a plurality of articles each having an upper end portion of smaller cross section arranged in a substantially abutting array of two rows and a flexible plastic film about and retaining said array of articles, said film having opposite upper portions infolded between the upper end portions of abutting articles at opposite ends of the array of articles forming two integral reinforced finger grip means for grasping and carrying said package.

3,948,393
DISPLAY PACKAGE

William Lewi, Merrick, N.Y., assignor to Solo Products Corporation, Englewood, N.J.

Filed Jan. 30, 1974, Ser. No. 437,967
Int. Cl.² B65D *73/00*
U.S. Cl. 206—462 **9 Claims**

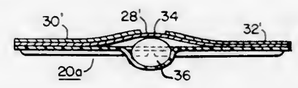


1. A package device comprising a base panel having a first opening therein, a receptacle member formed of a synthetic organic polymeric resin and having a second opening registering with said first opening and a peripheral wall bordering said second opening and projecting forwardly through said first opening said peripheral wall having an integrally formed outwardly directed peripheral flange bonded to the rear face of said base panel and having peripherally spaced recesses formed therein delineating peripherally spaced first ears lying in a common plane and a cover member overlying said second opening and secured to said base panel and having peripherally spaced recesses formed in the border thereof delineating peripherally spaced second ears coplanar with and interdigitating said first ears.

3,948,394
CHILD-PROOFED QUICK-OPENING PACKAGE

H. Richard Hellstrom, 5245 Center Ave., Pittsburgh, Pa. 15232

Filed Sept. 28, 1973, Ser. No. 401,835
Int. Cl.² B65D *85/00*
U.S. Cl. 206—531 **28 Claims**



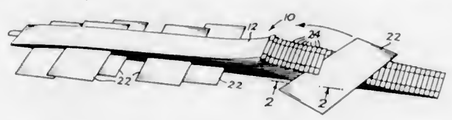
1. A child proof quick-opening package comprising a member of formable material, at least one pocket in said formable member, a frangible backing member adhered to said formable member for enclosing an item contained in said pocket, means for strengthening portions of said formable member, said strengthening means defining an angulation fold region extending between said portions and across said pocket, and a non-rupturable protective member adhered at least peripherally to a side of said frangible member and substantially coextending therewith, said protective member having narrow opening means therein extending substantially across said protective member and generally parallel with said fold region, said narrow opening means having insufficient width to emit said item in the non-angulated condition of said package.

3,948,395

INDEXING TAB FOR SORTING DEVICE

Kenneth E. Thornton, 18231 SE. McLoughlin Blvd., Portland, Oreg. 97222

Filed Sept. 27, 1974, Ser. No. 510,043
Int. Cl.² B42F *21/00*
U.S. Cl. 211—11 **18 Claims**



1. A sorting device comprising

a plurality of elongate divider leaves disposed in face-to-face relation and having an adjacent set of free ends mounted for swinging toward and away from each other to receive sheet material therebetween, and

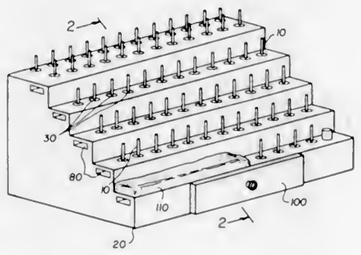
tabs secured to and projecting outwardly from said free ends of a pair of adjacent leaves, a tab on a leaf having a central body portion which is thicker than its associated leaf to maintain a spaced relationship between said free ends of the adjacent leaves and an end portion projecting outwardly from an end of said body portion transversely of the leaf and substantially parallel to the end edge of the leaf, said end portion being thinner than said body portion, with end portions of the tabs on adjacent leaves being spaced apart to define a guideway for insertion of sheet material between said free ends of the leaves.

3,948,396

DEVICE FOR HOLDING SPOOLS OF THREAD

Everett Upton, and Wrietha Upton, both of Exeter, Calif., assignors to The Raymond Lee Organization, Inc., a part interest

Filed Oct. 25, 1974, Ser. No. 517,872
Int. Cl.² A47B *81/00*
U.S. Cl. 211—59 **2 Claims**



1. A device for holding spools of thread and the like, said device comprising:

a hollow base having holes in the top and having a side opening;

a plurality of like vertically elongated posts extending vertically upward from the top of the base and arranged in rows, said rows being arranged in a plurality of elongated tiers each post being disposed slidably in a corresponding one of the holes in the top of the base in a manner at which said each post can be pushed upwardly from a normal position of minimum elevation and can be returned to normal position;

a horizontal platform disposed within the base below the top thereof in a position at which said platform is spaced below the lower ends of the posts when said posts are in positions of minimum elevation, said platform being exposed through said side opening in the base;

a like plurality of horizontal discs, each disc being disposed on a corresponding one of said posts above the base to act both as a support for the spool and as a stop to determine the minimum elevation desired; and

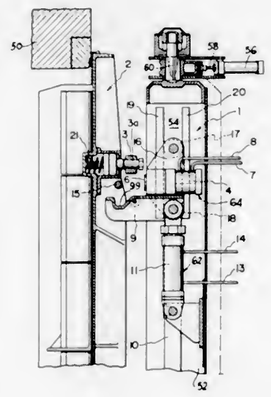
means cooperating with the base and posts to independently raise any one post or selected combination of posts in any given row to a level higher than any of the other posts in said given row, said means including an elongated push rod with a wedge shaped head at its forward end, said rod serving to push depressed posts upwardly when the wedge head is pushed through the opening and bears against the lower ends of posts to wedge the posts upwardly as its passes beneath them.

3,948,397

COKE OVEN DOOR LIFTER MECHANISM

Takatoshi Ikio, 5-32, 1-chome, Senbo, Tobata, Kitakyushu, Fukuoka, Japan

Filed Mar. 13, 1974, Ser. No. 450,778
Int. Cl.² B66C *13/00*
U.S. Cl. 212—4 **3 Claims**



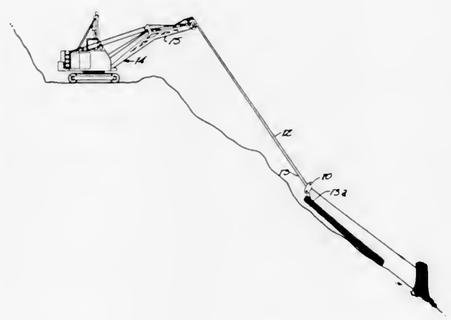
1. A coke oven door lifter for a coke oven door having a horizontal support bar, comprising a coke oven door having a horizontal support bar, a door lifter housing having a vertical trackway, a movable member guided on said trackway for vertical upward and downward movement therealong, a support arm carried by said movable member engageable with the horizontal support bar of the coke oven door to lift it when said movable member is moved upwardly, a locking bar release member movably mounted on said movable member, first fluid pressure operable means connected to said movable member to displace it along said trackway, a locking bar carried by said door and being movable between a latching and unlatching position, spring means biasing said locking bar into an unlatching position, said bar being movable by said locking bar release member against said biasing means to an unlatching position, second fluid pressure operable means connected to said locking bar release member to displace said locking bar release member when said movable member is in a raised position and engaged with said support bar to engage said locking bar and move it to an unlatching position to release said door and third fluid pressure operated means engageable with said door lifter housing to displace said housing toward and away from the coke oven door.

3,948,398

SELF-LOCKING LOG SKIDDING CARRIAGE

Donald E. Christensen, Orofino, Idaho, assignor to David Gladhart, Pierce, Idaho, a part interest

Filed Jan. 27, 1975, Ser. No. 544,355
Int. Cl.² B66C *21/00*
U.S. Cl. 212—122 **5 Claims**



1. A self-locking log skidding carriage for operation on a skyline and dragline, comprising:

a framework;

a first sheave mounted to the framework for free rotation thereon about a first axis and for operative engagement with a skyline;

a second sheave mounted to the framework for free rotation thereon about a second axis spaced from the first axis and for operative engagement with a dragline;

a pin fixed to the framework between the first and second sheave having a pin axis parallel to the axes of the first and second sheave;

a slotted locking wheel mounted to the pin for pivotal movement about the pin axis and sliding movement over the pin along a plane perpendicular to the pin axis;

a pawl fixed to the locking wheel;

a stationary abutment on the framework for engagement with said pawl;

spring means operatively connected between the pin and pawl for urging the pawl radially away from the pin;

stop means interconnecting the locking wheel and framework for restricting pivotal movement of the locking wheel and pawl about the pin axis between a first position wherein the pawl is engaged on one side of said abutment and the skyline is operatively clamped between the first sheave and locking wheel and a second position wherein the pawl is engaged on an opposite side of said abutment and the dragline is operatively clamped between the second sheave and locking wheel;

a first actuator means rigidly mountable to the skyline for engaging the locking wheel and forcibly moving the locking wheel and pawl to the second position from the first position in response to movement of the first actuator means between the first sheave and the locking wheel, to lock the skyline against movement between the locking wheel and first sheave and release the dragline for free movement over the second sheave;

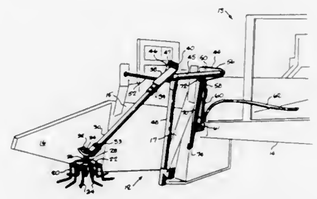
second actuator means rigidly mountable to the dragline for engaging the locking wheel and forcibly moving the locking wheel and pawl to the first position from the second position in response to movement of the second actuator means between the second sheave and locking wheel, to lock the dragline against movement between the locking wheel and second sheave and release the skyline for free movement over the second sheave.

3,948,399

BALE POSITIONING DEVICE

Robert E. Michaels, Star Rte., Ten Sleep, Wyo. 82442

Filed Mar. 15, 1974, Ser. No. 451,550
Int. Cl.² B65G *7/00*
U.S. Cl. 214—1 Q **12 Claims**



1. A bale positioning device for a bale loading machine having a body portion that includes an intake bale chute adapted to receive bales for loading as said intake bale chute is moved toward said bales, said bale positioning device comprising:

support means mounted on said body portion of said bale loading machine and having a movable portion extending therefrom to a position adjacent to said intake bale chute;

contact means mounted on said movable portion of said support means, said contact means including a freely rotatable spider wheel having a plurality of spring teeth extending from the periphery thereof and being positioned to contact a bale having improper loading alignment at said intake bale chute prior to said bale being received at said intake bale chute; and

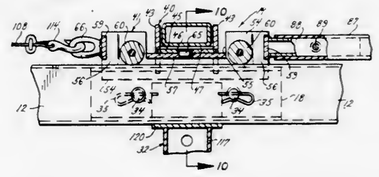
control means connected with said support means to cause a bale in contact with said contact means to be moved to proper alignment prior to being received at said intake bale chute as said bale loading machine is moved toward said bale.

3,948,400

ROLLER PAD FOR USE IN A MODULE MOVING SYSTEM

Bobby G. Baxter, Warrenton, Mo., assignor to The Binkley Company, Warrenton, Mo.

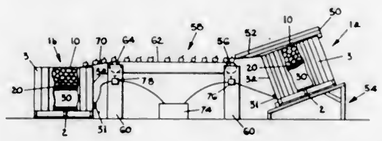
Division of Ser. No. 339,081, March 8, 1973, Pat. No. 3,887,083, which is a continuation-in-part of Ser. No. 216,204, Jan. 7, 1972, Pat. No. 3,794,186. This application July 22, 1974, Ser. No. 490,571
Int. Cl.² B65G *7/04*
U.S. Cl. 214—1 H **13 Claims**



1. A roller pad for use in a system for moving a module unit over tracks and onto a site foundation comprising an upper body section and a lower body section, first roller means for supporting the lower body section for movement along the tracks, a roller track segment adapted to support a portion of a module unit thereon, second roller means for supporting the roller track segment on the upper body section for free movement of the roller track segment in response to forces acting on the roller track segment by the load carried thereby and on the lower body section by the track on which it moves, and means for mounting the upper body section on the lower body

section for rotation freely relative thereto about a generally vertical axis with the pad on the track in response to forces acting on the roller track segment by the load carried thereby and on the lower body section by the track on which it moves.

3,948,401
METHOD AND APPARATUS FOR STORING AND DISPLAYING FRUIT
Charles E. Spencer, 705 E. Main St., Fennville, Mich. 49408
Filed June 24, 1974, Ser. No. 482,460
Int. Cl.² B65G *65/04*
U.S. Cl. 214—301 **11 Claims**

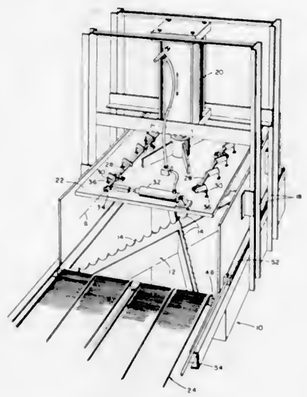


1. An article storage, shipping and display apparatus comprising:
an upwardly open container structure having a plurality of sidewalls and a base portion;
a liner member positioned within said container structure between the sidewalls thereof and adapted to receive articles for display at the top of said container, said liner member comprising a flexible diaphragm, said diaphragm being resiliently deformable to receive articles and contain same within the confines of said sidewalls and said base; and
an expander member positioned within said container structure between said diaphragm member and said base portion of said container structure, said expander member being adapted for connection to a source of fluid pressure and being expandable under the influence of fluid pressure to move said diaphragm member and the articles contained therein toward the top of the container as the articles are removed therefrom.

7. A method of storing and displaying articles in a retail outlet comprising: providing an upwardly open container structure having a plurality of sidewalls and a base portion; providing therein a liner member positioned within the container structure between the sidewalls thereof and adapted to receive articles for display at the top of the container, said liner member comprising a flexible diaphragm, said diaphragm being resiliently deformable to receive the articles and contain same within the confines of the sidewalls and the base; positioning an expander member within the container structure between said diaphragm member and said base portion of the container structure, said expander member being adapted for connection to a source of fluid pressure and being expandable under the influence of fluid pressure to move the diaphragm member and the articles contained therein toward the top of the container; and expanding said expander member as articles are removed from said container so that said diaphragm member and said articles are displaced toward the top of the container to replace the articles removed from the top of the container.

9. In an article conveyor having inlet and outlet ends; means for depositing articles on said conveyor at said inlet end and means for receiving articles at said outlet end; the improvement in said depositing means comprising;
an upwardly open container structure for holding articles to be deposited on the conveyor; said container having a plurality of sidewalls and a base portion:
a liner member positioned within said container structure between the sidewalls thereof and adapted to receive articles for display at the top of said container, said liner member comprising a flexible diaphragm, said diaphragm being resiliently deformable to receive articles and contain same within the confines of said sidewalls and said base; and
an expander member positioned within said container structure between said diaphragm member and said base portion of said container structure, said expander member being adapted for connection to a source of fluid pressure and being expandable under the influence of fluid pressure to move said diaphragm member and the articles contained therein toward the top of the container to urge the articles onto the conveyor.

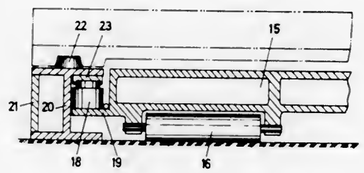
3,948,402
BAG OPENING AND EMPTYING
Charles Mandeville Schott, Jr., Hollobrook Road, Califon, N.J. 07830
Filed July 16, 1973, Ser. No. 379,483
Int. Cl.² B65G *65/04*
U.S. Cl. 214—305 **11 Claims**



3. A bag emptying machine comprising a fixed blade array disposed to engage a face of a bag, a presser having a bag-engaging surface, means to press said presser facewise upon a broad face of said bag and thereby urge the bag and contents against said blade array to cut an opposite face of the bag into a number of portions, a receiver for receiving the bag contents and a bag removing means for removing said bag when empty from said blade array, said bag removing means being mounted on said presser and movable therewith, movement of said presser in a retracting direction being effective to move said bag removing means away from the blade array and thereby remove the empty bag from said blade array.

3,948,403
DEVICE ADAPTED TO FACILITATE THE SIMULTANEOUS TRANSPORTATION OF A NUMBER OF STANDARDIZED LOAD UNITS
Anders Johansson, Bohus Bjorko, Sweden, assignor to Salen Interdevelop AB, Sundbyberg, Sweden
Filed Jan. 27, 1975, Ser. No. 544,580
Claims priority, application Sweden, Jan. 31, 1974, 7401232
Int. Cl.² B60P *1/02*
U.S. Cl. 214—512 **9 Claims**

1. A device adapted to facilitate the simultaneous transportation of a number of standardized load units along a groundwork by means of a support and a trolley member adapted to be introduced into the support, the improvement that the support is formed as a beam frame of rectangular configuration, the breadth and length thereof substantially corresponding to whole multiples of the breadth and the length of a standardized load unit, and which is open at least along one of its sides, the beams forming the sides of the frame being arranged in such a manner that they will form a channel at least along two parallel sides of the frame, said channel being open inwards with respect to the frame, and the trolley member includes a platform of the same general size as the said frame



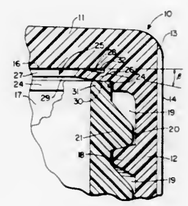
having marginal portions adapted to fit into the channels along the said at least two sides of the beam frame, the trolley member being provided with means for facilitating the movement along the groundwork and further means to lift the frame and the load from the groundwork.

3,948,404
COMPOSITE PACKAGE FOR CONTAINING PRESSURIZED FLUIDS
Guy Hathaway Collins, Newark, and Harlan Stuart Young, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 14, 1974, Ser. No. 523,711
Int. Cl.² B65D *23/00*
U.S. Cl. 215—1 C **2 Claims**



1. A composite package for containing carbonated soft drinks, beer, or aerosols comprising:
a. a biaxially oriented, polyethylene terephthalate bottle having a generally convex base merging into an inwardly recessed concave relatively crystalline central bottom region having a nub, said nub being centrally located and thick relative to the entire bottom wall and
b. support means engaging and maintaining said bottle in an upright position.

3,948,405
LINERLESS CONTAINER CLOSURE
Charles R. Yonker, Palos Heights, Ill., assignor to VCA Corporation, Baton Rouge, La.
Filed Feb. 11, 1975, Ser. No. 549,004
Int. Cl.² B65D *53/00*
U.S. Cl. 215—344 **2 Claims**

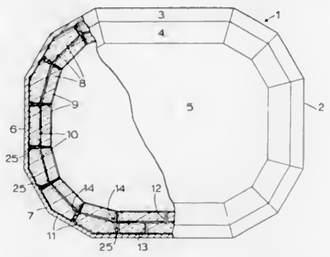


1. A one-piece, linerless, plastic cap for a container having a generally cylindrical neck portion comprising:
a. an annular top wall portion, said top wall having a shallow cylindrical recess in the underside thereof, said recess defined by a planar bottom wall and an inwardly facing, cylindrical shoulder;
b. an integral, generally cylindrical skirt section depending from said top wall section, said skirt section joining said top wall section outwardly of said cylindrical recess thereby providing a downwardly facing shoulder portion on said sidewall interior;
c. engaging means on the interior wall of said skirt portion adapted to engage retaining means provided on the exterior wall of said neck portion of said container;
d. a single, integral, flexible, annular, sealing ring provided on the underside of said top wall and having its proximate end integrally attached to said top wall section at the intersection of said planar bottom wall and said inwardly facing cylindrical shoulder and its distal end projecting downwardly and inwardly, said ring making sealing contact with the rim of said neck portion and the upper end of said neck portion being closely received within the lower portion of said cylindrical recess when said cap is secured to said container neck.

3,948,406
STORAGE TANKS, PARTICULARLY FOR LIQUIFIED GASES
John Paul Papanicolaou, Athens, Greece, and Telemachus Nicolas Galatis, London, England, assignors to Marine and Industrial Developments Limited, Piraeus, Greece
Filed Aug. 1, 1973, Ser. No. 384,748
Claims priority, application United Kingdom, Aug. 10, 1972, 37452/72
Int. Cl.² B65D *25/18, 25/14*
U.S. Cl. 220—9 F **8 Claims**

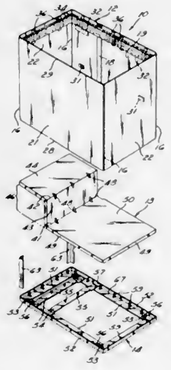
1. A container for storing substances at sub-zero temperatures, comprising a structural shell having a thermally insulating lining fixed thereto, said lining incorporating masses of thermally insulating load-bearing material and a monolithic matrix which is essentially composed of synthetic elastomeric material and defines a multiplicity of separate cells, which cells are occupied by said masses of thermally insulating material; said matrix comprising layers of synthetic elastomeric material forming uninterrupted fluid-impervious barriers which are disposed between the interior of said container and said shell and are mutually spaced apart depthwise of the

lining, and said matrix also comprising layers of synthetic elastomeric material which extend depthwise of the lining



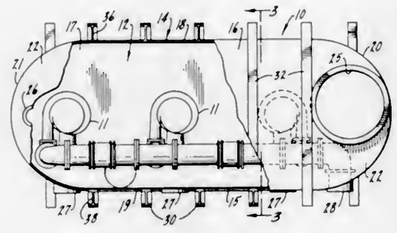
between said barriers and divide the areas between such barriers into said separate cells.

3,948,407
REFRIGERATED CABINET CONSTRUCTION
Richard L. Puterbaugh, St. Cloud, Minn., assignor to Franklin Manufacturing Company, St. Cloud, Minn.
Filed June 27, 1973, Ser. No. 374,276
Int. Cl.² F25D *23/06*; **B65D** *7/28*, *25/18*
U.S. Cl. 220—4 R **9 Claims**



1. In a refrigeration cabinet, an outer shell comprising four sidewalls, each sidewall perpendicular to its adjacent ones, said sidewalls being formed of a single continuous sheet, a rectangular inner liner within said outer sheet having dimensions smaller than the outer shell to thereby provide an insulating space therebetween, two edges of said sheet having integral means forming a self-made mechanical seam, said integral seam means including self-locking means resisting forces tending to separate said seam, said self-locking means including a reverse fold of material at each of said edges, said folds being interlocked with one another, and a layer of rigid insulating foam foamed in place in said insulating space on the interior of said sheet along each of said sidewalls, said foam substantially filling said space and preventing separation of said folds under compressive forces along the plane of a sidewall associated with said seam and opening of said folds out of the plane of the sidewall, said sidewalls each being substantially continuous and imperforate in their respective planes and forming along one edge a plane of a fifth side adapted to provide an access door into the insulated interior of said cabinet.

3,948,408
PUMP STATION STRUCTURE
Dennis C. Trout, and William P. Hazen, both of Overland Park, Kans., assignors to Ecodyne Corporation, Lincolnshire, Ill.
Continuation of Ser. No. 347,272, April 2, 1973, abandoned. This application Jan. 9, 1975, Ser. No. 539,659
Int. Cl.² B65D *7/02*
U.S. Cl. 220—5 A **4 Claims**



1. A horizontally elongated container for housing sewage treatment equipment for an underground installation, comprising:

a. side walls of substantially rectangular shape;

b. a substantially horizontal ceiling supported above said side walls, said ceiling having a substantially rectangular center section extending the length of said side walls and a pair of rounded end sections extending longitudinally beyond said side walls;

c. a substantially horizontal floor positioned below said side walls, said floor having a substantially rectangular center section extending the length of said side walls and a pair of rounded end sections extending longitudinally beyond said side walls;

d. end walls of semi-cylindrical shape secured along their vertical edges to said side walls and along their horizontal edges to the rounded end sections of said ceiling and floor;

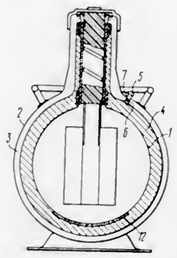
e. a plurality of rigid-frame beam rings extending around the flat-sided center portion of said container;

f. said rigid-frame beam rings include substantially vertical side ring members extending substantially the entire height of each of said side walls, a substantially horizontal floor ring member secured to the lower ends of said side ring members and a substantially horizontal ceiling ring member secured to the upper ends of said side ring members;

g. said ceiling ring member and said floor ring member extend respectively beyond the edges of said ceiling and said floor, and said side ring members are secured to the underside of said ceiling ring member and the topside of said floor ring member; and

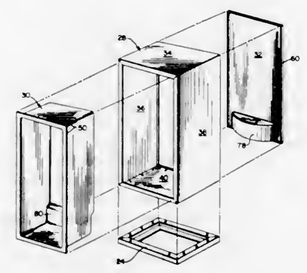
h. corner stiffener members secured between adjacent rigid-frame beam rings along the intersection between said ceiling and said side walls.

3,948,409
CRYOSTAT
Viktor Sergeevich Ovchinnikov, Yaroslavskoe shosse, 28, kv. 16; Eduard Ivanovich Grigorov, Prospekt Mira, 90, kv. 78; Arkady Lukyanovich Magdesian, ulitsa Zheleznodorozhnaya, 3, kv. 4; Andrei Vasilievich Bermishev, ulitsa Grishina, 8, kv. 44; Vladimir Ivanovich Gorelikov, Serpukhovsky val, 19/43, kv. 184; Alexandr Stepanovich Utkin, ulitsa Stroitelei, 10, kv. 285; Viktor Konstantinovich Fedotov, ulitsa Khalturina, 14, korpus 2, kv. 34, and Vladimir Yakovlevich Volkov, Arbatskaya ploschad, 6, kv. 39, all of, Moscow, U.S.S.R.
Filed Nov. 12, 1974, Ser. No. 523,236
Int. Cl.² B65D *25/18*
U.S. Cl. 220—9 C **5 Claims**



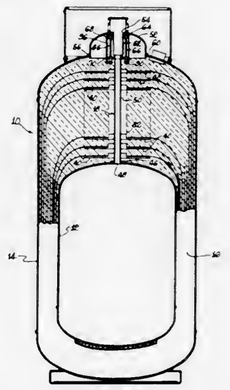
1. A cryostat comprising, a heat-insulated vessel, heat insulation closing the vessel, a vacuum-tight jacket enclosing said vessel spaced outwardly from said insulation and defining a vacuum space therebetween under vacuum in use, a vacuum valve mounted on said jacket for taking a vacuum on said vacuum space, a cup-shaped guard to preclude insulation from clogging said valve, said guard having a bottom spaced inwardly of said jacket disposed between the insulation and the jacket and having a mouth adjacent the interior of said jacket with which said valve communicates, and said cup-shaped guard having sidewalls having through openings therein spaced from said bottom for providing communication between the interior of said cup-shaped guard and said vacuum space.

3,948,410
REFRIGERATOR CABINET
Earl Anderson, Greenville, Mich., assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Aug. 12, 1974, Ser. No. 496,820
Int. Cl.² B65D *25/18*; **F25D** *11/00*
U.S. Cl. 220—9 G **8 Claims**



1. In a refrigerator cabinet construction, a one-piece wrap-around shell forming the top, side and bottom outer walls of said cabinet, said shell having overlapping portions at one bottom corner, a base assembly underlying the bottom wall of said cabinet, and attachment means including cooperating interfitting formations on said base assembly and said overlapping portions of said shell for securing said overlapping portions of said shell together while securing said base assembly to said shell.

3,948,411
LIQUEFIED GAS CONTAINER
Rolland R. Conte, Bourdonne, Conde, France, assignor to Beatrice Foods Co., Chicago, Ill.
Division of Ser. No. 314,136, Dec. 11, 9172, Pat. No. 3,866,758. This application Mar. 18, 1974, Ser. No. 452,112
Int. Cl.² B65D *25/18*, *81/38*
U.S. Cl. 220—9 LG **9 Claims**

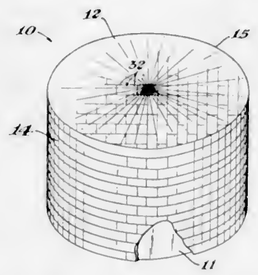


1. In a double walled liquefied gas container having an inner storage vessel with an opening at the top for access into the interior of the vessel, an outer shell substantially enclosing said inner vessel with an insulation space in between, a vertical neck tube connected at its lower end to the inner vessel about the opening for the transmission of liquid and vapor therethrough into and out of the vessel, the improvement comprising an outlet opening in the outer shell in substantial alignment with the opening in the inner vessel and means connecting the upper end of the neck tube with the outer shell for providing continuous communication between the opening in the inner vessel and the outer shell but in a manner to enable limited lengthwise and angular movements between the inner vessel and the outer shell comprising an elongate bellows having a passage extending continuously therethrough with the bellows connected at one end to the upper end of the neck tube and the bellows connected at its upper end to the shell, a disc member rigid with the upper end of the bellows and a second disc member rigid with the upper end of the neck tube, longitudinally aligned openings in the disc members, and connecting rods extending lengthwise between aligned openings of the disc members with adjustable stops for limiting relative movement between the disc members and the connecting rods.

3,948,412
INSULATION OF STEEL TANKS
Robert B. Bennett, Freeland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed May 16, 1975, Ser. No. 578,066
Int. Cl.² B65D *25/34*; **E04B** *3/32*, *3/35*
U.S. Cl. 220—9 A **8 Claims**

1. In an improved storage vessel facility, the storage vessel facility comprising a steel tank of generally cylindrical configuration, the tank having a generally cylindrical side wall and a generally conical roof, a plurality of thermal insulating panels disposed at least on the roof, a majority of the panels having a generally rectangular configuration, the panels com-

prising at least a layer of foam plastic insulating material, the panels having first and second major faces and edges, the first major face of the panels having affixed thereto a weather resistant layer, the edges of the panels being beveled in such a manner that the first major face has dimensions greater than the second dimension face, the foam plastic material of the

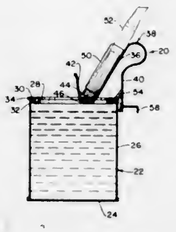


panel defining a plurality of slots, the slots extending inwardly into the panel from the second major face, the panels being affixed to an outer surface of the tank in a generally rectangular pattern by means of a plurality of studs and threaded retainers passing through the panels, the studs being generally peripherally disposed with respect to the panels.

3,948,413
PAINT BRUSH HOLDING ATTACHMENT FOR PAINT CANS

John E. Gorrell, 400 E. Pedregosa St., Santa Barbara, Calif. 91303, and Fred Lichtgarn, 314 Evonshire St., Santa Barbara, Calif. 93111

Filed July 5, 1974, Ser. No. 485,783
Int. Cl.² B44D *3/12*; B65D *25/00*
U.S. Cl. 220—90 **9 Claims**

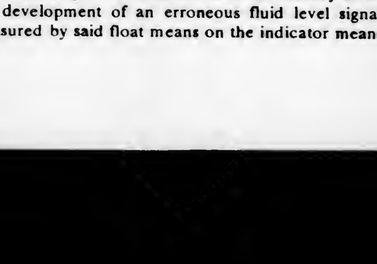


1. In combination with a paint can, said paint can having an access opening, an overhanging annular lip attached to said can and extending into said access opening, an enlarged annular bead formed upon the circumference of said lip, an attachment to connect with said can for supporting and wiping excess paint from the paint brush, said attachment comprising:
a main sheet material member having a first leg integrally connected to a second leg, said first leg being located directly adjacent said second leg, said first leg extending through said access opening and into said can;
first means connecting said first leg to said lip;
said second leg being in contact with said bead and positioned directly adjacent the exterior of said can, securing means connected to said second leg forcing said second leg into tight connection with the exterior of said can;
said first leg terminating in an upturned member which extends through said access opening and terminates exteriorly of said can, whereby the forming of said upturned member of a supportive surface is provided for the tip of the paint brush when it is placed against said main member and also the end of said upturned member providing a flat straight edge for wiping the brush; and
said first means including a notch in each lateral edge of the first leg of the main sheet material member; the notch being located to receive the inner edge of said lip when said attachment is properly located upon said can, said first means further including a longitudinal rod, said rod resting on said first leg adjacent said upturned portion with each end of said rod being located in contact with the under surface of said lip.

3,948,414
MASTER CYLINDER DIAPHRAGM

Sydney E. Hagerty, St. Joseph, Mich., assignor to The Bendix Corporation, South Bend, Ind.

Filed Dec. 13, 1974, Ser. No. 532,343
Int. Cl.² B65D *51/16*
U.S. Cl. 220—203 **6 Claims**

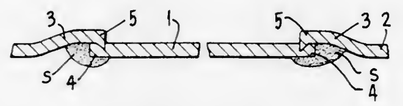


1. A cover means for use in a master cylinder for separating a reservoir in a housing from the atmosphere to prevent contaminants contained in the atmosphere from being communicated to the fluid in the reservoir and for allowing the level of the fluid in the reservoir to be monitored without interference, said cover means comprising:
diaphragm means having a peripheral surface which engages said housing for sealing the reservoir from the atmosphere and an expandable surface which moves with the surface of the fluid in the reservoir, said diaphragm means having an opening therethrough, said expandable surface having an annular projecting shoulder extending therefrom with a passageway therethrough for communicating air from the atmosphere into the reservoir;
cap means overlying said diaphragm means having a breather port therein for allowing air from the atmosphere to freely be communicated to said passageway;
fastener means attached to said housing for applying a biasing force to said cap means to establish a seal between said peripheral surface of the diaphragm means and the housing;
indicator means extending through said opening of the diaphragm means having a float means to engage said fluid in said reservoir; and
check valve means connected to said passageway in the diaphragm means and responsive to a pressure differential created across said diaphragm means between the atmosphere and the reservoir for allowing air from the atmosphere to enter said reservoir through said passageway to prevent said expandable surface from engaging and displacing the fluid in the reservoir thereby avoiding the development of an erroneous fluid level signal as measured by said float means on the indicator means.

3,948,415
EASY-OPENING CLOSURES

Michael Debenham, Frankston, Australia, assignor to The Broken Hill Proprietary Co., Ltd., Melbourne, Australia

Filed June 26, 1974, Ser. No. 483,446
Claims priority, application Australia, June 27, 1973, 3845/73; July 12, 1973, 4064/73
Int. Cl.² B65D *41/32*
U.S. Cl. 220—268 **6 Claims**

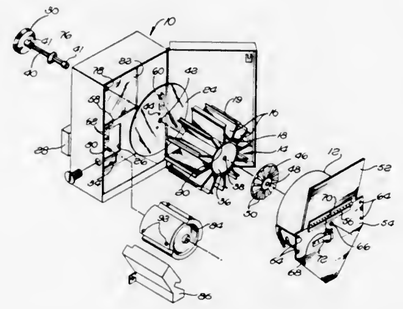


1. In an easy-opening closure of the push-in type comprising an aperture in a sheet metal container member and a closure member for said aperture having a free edge, the aperture surround and the free edge of said closure member being in at least partly overlapping relationship, the improvement comprising means to interengage portions of the free edge of said closure member and the aperture surround with each other to at substantially inhibit relatively movement of said closure member and said aperture surround in plane of said closure member to prevent separation of the closure member from the aperture surround, said means including an upstanding lip or burr formed on at least one of the closure member free edge and the aperture surround, said lip being no greater than half of the thickness of the sheet metal.

3,948,416
VENDING MACHINE

Richard W. Housman, 3416 Manning Ave., Los Angeles, Calif. 90064

Filed Feb. 18, 1975, Ser. No. 550,318
Int. Cl.² B65G *59/00*
U.S. Cl. 221—121 **7 Claims**

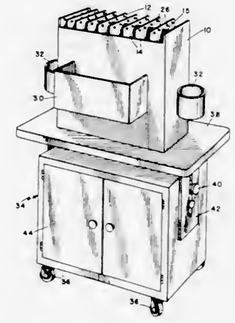


1. A vending machine, comprising:
a housing;
a merchandise storage member for rotation in said housing on a horizontal axis, comprising a hub and a plurality of partitions radially extending from said hub;
an annular wall around the outer periphery of said partitions defining therewith a plurality of storage bins for containing items of merchandise, and defining an opening for the bottommost of said bins; and
means for dispensing merchandise from said bottommost bin, comprising a selector member having an outer surface formed with a recess of predetermined width and adapted for reception of a single one of said items of merchandise, said member being rotatably mounted for vertical alignment of said recess with said annular wall opening;
said partitions being spaced sufficiently one from the other to contain a plurality of said items of merchandise loosely disposed side-by-side therebetween, the distances between adjacent ones of said partitions at the peripheries thereof being each at least twice said predetermined recess width.

3,948,417
HAIR ROLLER DISPENSER

Lou M. McCain, 1124 "F" Ave., Coronado, Calif. 92118

Filed Sept. 30, 1974, Ser. No. 510,243
Int. Cl.² A45D *6/00*
U.S. Cl. 221—135 **3 Claims**



1. A hair roller dispenser comprising:
an impermeable open-topped container for receiving and containing germicidal liquid,
a plurality of vertical baffles disposed in said container and defining a plurality of vertically extended compartments with each compartment being dimensioned to receive a vertical stack of hair rollers,
each of said compartments having disposed therein means for upwardly biasing a stack of hair rollers placed therein when said container contains the germicidal liquid,
each of said bias means comprising a buyant body, whereby a stack of rollers placed on top of one of said buoyant bodies will be biased upwardly by the buoyant force of the body in said germicidal liquid,
the upper ends of said baffles extending above the upper edges of said container, and the upper baffle ends having bumper means positioned above the upper container edges for preventing further upward movement of the top roller, whereby said roller can be removed by being moved laterally from under said bumper means and above the upper container edges.

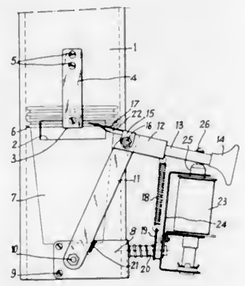
3,948,418
DISPENSER, NOTABLY FOR CONTAINERS

Cesare Arnaboldi, 188, Boulevard Voltaire, 75011 Paris, France

Filed Aug. 13, 1974, Ser. No. 497,103
Int. Cl.² B65G *59/06*
U.S. Cl. 221—251 **3 Claims**

1. Apparatus for the controlled dispensing of articles comprising a magazine, for a stack of said articles, having opposite side openings, a pair of first spring blades connected to said magazine and each having a portion extending through one of said side openings and positioned for retaining a peripheral edge of the lowermost article of said stack, a pair of second spring blades each connected to said magazine above said first spring blades and positioned through another of said side openings for engaging the stacked article just above the lowermost article to be released, a pair of supporting arms, each

pivotally connected at one end portion to said magazine, plate-shaped members each being connected to the other end portion of said arms, a connecting member being connected to said arm other end portions, a control rod being attached to said connecting member, said plate-shaped members each comprising a pair of parallel fingers extending across a pair of said first and second spring blades with each finger having a side projection, said projections being off-set in relation to each other, whereby according to the movement of said con-



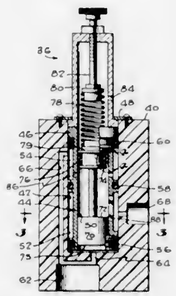
trol rod only one of said projections co-acts with its related spring blade at a time so that in an inoperative position of said control rod said first spring blades are clamped on the lowermost article of the stack while said second spring blades do not engage the stack and by a movement of said control rod to an operative position, against the action of spring means, said second spring blades are clamped on the article in the stack just above the lowermost article while said first spring blades free said lowermost article.

3,948,419

BEVERAGE FLUID FLOW CONTROLLER

Louis S. Polster, Los Angeles, Calif., assignor to Concession Service Corporation, Lynwood, Calif.

Filed Aug. 1, 1974, Ser. No. 493,781
Int. Cl.² B67D *5/14*
U.S. Cl. 222—61 **8 Claims**



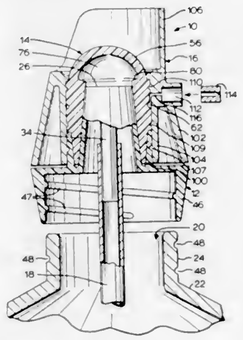
1. A carbonated beverage system comprising:
a beverage syrup tank;
a water carbonator;
means for supplying carbon dioxide under pressure to pressurize said syrup tank and for supplying carbon dioxide under substantially constant pressure to supply said carbonator;
a dispensing valve to dispense carbonated water from said carbonator and beverage syrup from said syrup tank for mixing into a carbonated beverage; and
a fluid flow control valve connected in the syrup line between said syrup tank and said dispensing valve to control syrup flow to maintain syrup-to-carbonated-water flow ratio for proper carbonated beverage mixing, said fluid flow control valve comprising:
a. a body;
b. an inlet and an outlet port in said body respectively to permit fluid flow into said body and fluid flow out of said body;
c. a bore in said body;
d. a spool reciprocably mounted to move in first and second directions in said bore, said spool having first and second lands defining an interland space and facing each other so that pressure between said lands is balanced on said spool, said spool having a first end face on the outer end of said first land and a second end face on the outer end of said second land;
e. connection means for connecting said inlet to said first end face of said spool so that pressure in said inlet urges said spool in the first direction along its bore;
f. a compressible spring bearing against said second end face of said spool to increase resistance to motion of said spool as said spool moves in said first direction;
g. a hole in said body, said hole venting said body to the atmosphere at a point beyond said second land;
h. an orifice adjacent said first land positioned so that, as said spool moves in said first direction, the area of said orifice is reduced to increase flow resistance, said orifice being serially connected between said inlet and an outlet so that, with increasing pressure in said inlet port, orifice area is reduced to maintain flow substantially constant.

3,948,420

ELASTOMERIC PUMPS

Frederick Harold Humphrey, Markham, Canada, assignor to Polypump Limited, Norwood, N.J.

Filed Dec. 24, 1974, Ser. No. 536,197
Int. Cl.² F04B *43/00*
U.S. Cl. 222—207 **13 Claims**



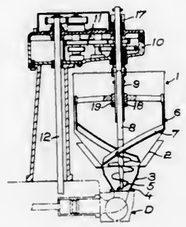
1. A fluid-handling device comprising:
a base member having a curved base wall closed upon itself and an end portion spanning across said curved base wall to define an edge thereof,
and an elastomeric member having
a. a closed curved wall portion which snugly embraces said curved base wall except for
b. an inlet chamber defined in part by a first recess in said closed curved wall, said inlet chamber being divided into upstream and downstream compartments by an inlet partition integral with said elastomeric member, the partition resting resiliently against the base wall and defining in the upstream compartment an acute angle with the part of the base wall it contacts; and except for
c. an outlet chamber defined in part by a second recess in said closed curved wall, said outlet chamber being divided into upstream and downstream compartments by an outlet partition integral with said elastomeric member, the partition resting resiliently against the base wall and defining in said last-mentioned upstream compartment an acute angle with the part of the base wall it contacts;
d. and a deformable, self-restoring bulb portion capping said closed curved wall portion and defining a pumping chamber with said end portion of the base member,
the fluid-handling device further including: passageway means joining the pumping chamber to the downstream inlet compartment and to the upstream outlet compartment, means communicating the upstream inlet compartment with a fluid reservoir, and means permitting exit of fluid from said downstream outlet compartment.

3,948,421

FEED MECHANISM FOR FEEDING A PRODUCT TO A GAUGING DEVICE OF A GAUGING AND CANNING MACHINE

Jean C. Marchadour, Route de Keradennec, Quimper (Finistere Sud), France

Filed Nov. 17, 1971, Ser. No. 200,262
Claims priority, application France, Nov. 20, 1970, 70.41804
Int. Cl.² B65G *65/46*
U.S. Cl. 222—240 **5 Claims**



1. A feed mechanism for feeding a product to a gauging device comprising
a hopper having wall means and a discharge outlet, said wall means converging towards the discharge outlet,
a first feed screw adjacent the discharge outlet and arranged to feed product through the discharge outlet,
a second feed screw co-axial with said first feed screw and located above the first feed screw so as to direct product downwardly,
said wall means comprising
a first frusto-conical wall portion surrounding said first feed screw and having its inner surface provided with rib means lying substantially along the generator line of said first wall portion, and
a second frusto-conical wall portion surrounding said second feed screw and having its inner surface provided with spiral fin means,
said second feed screw including blade means in scraping relationship with the interior of said second wall means, and
drive means rotating said first and second feed screws in opposite directions.

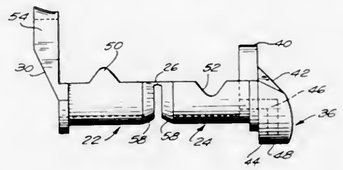
3,948,422

CLOSURE WITH INTEGRAL COVER FOR LATERAL SPOUT

Lewis A. Micallef, Fort Lee, N.J., assignor to Leeds and Micallef, Fort Lee, N.J.

Filed Aug. 30, 1974, Ser. No. 502,076
Int. Cl.² B67D *3/00*
U.S. Cl. 222—517 **23 Claims**

1. A closure for a container comprising; a cover half having a base portion for mounting the closure on a container and a cover extending therefrom, a spout half having a base portion for mounting the closure on a container and a spout with a pouring orifice therethrough extending therefrom, an integral hinge connecting the cover half to the spout half so as to form an integral one-piece closure with the halves having been



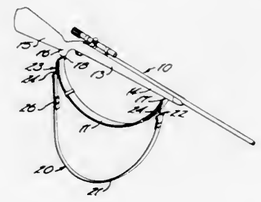
pivoted into engagement, and mating surfaces on the bases of the cover and spout halves to facilitate cooperative interengagement therebetween and to form the closure with the cover in position for removable engagement with the spout so as to permit opening and closing of the pouring orifice as desired.

3,948,423

AUXILIARY GUN SLING

David J. Hathaway, Rte. 2, Box 155, Sandpoint, Idaho 83864

Filed June 13, 1974, Ser. No. 478,861
Int. Cl.² F41C *33/00*
U.S. Cl. 224—1 A **3 Claims**

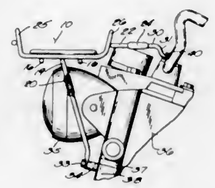


1. An extensible resilient auxiliary sling for use in combination with a conventional gun sling for holding a rifle or shotgun securely to the user's body, said auxiliary sling comprising:
an elongated resilient and elastic extensible strap having a smooth outer surface to present minimal frictional resistance to sliding movement over a user's clothing;
first mounting means for attaching one end of the strap to a sling swivel on the forearm of a gun stock;
second mounting means for attaching the remaining end of said strap to a sling swivel on the gun stock adjacent the butt;
said strap being of sufficient length in a substantially nonextended or relaxed condition whtn the rifle or shotgun is held in a carrying position to wrap in a winding spiral fashion about the user's torso from back to front starting from a position where the first mounting means and associated sling swivel are located adjacent to one of the user's shoulders and ending at a position where the second mounting means and associated sling swivel are located adjacent the front of the user's hip on the same side as said one shoulder; and
said strap being capable of extending sufficiently, when the rifle or shotgun is held in a firing position, to wrap around the user's torso from a position where the first mounting means and associated sling swivel are located adjacent to the user's hand supporting the forearm of the rifle or shotgun, around the user's torso and forwardly to a position wherein the second mounting means and associated sling swivel are located adjacent the user's other hand.

3,948,424
FRONT RACK FOR MOTORCYCLE

John L. Hunn, 4108 N. Lake Drive, and Todd M. Johnson, 2944 N. Frederick Ave., both of Milwaukee, Wis. 53211

Filed Feb. 24, 1975, Ser. No. 552,580
Int. Cl.² B62J 7/00
U.S. Cl. 224—41 8 Claims

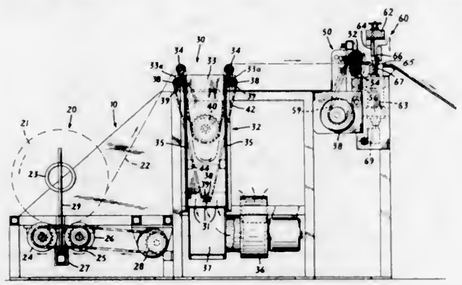


1. In combination with a motorcycle having a front steering assembly including a headlight, handlebars, and at least one instrument mounted above the headlight and forwardly of the handlebars, a front carrying rack having a substantially flat bottom portion positioned over the headlight, a pair of laterally-spaced, front supporting arms attached at spaced-apart locations to said bottom portion and extending downwardly and rearwardly therefrom and positioned and shaped to embrace said headlight to avoid obstructing the headlight beam, means connecting the lower ends of said front supporting arms to said steering assembly below said headlight, a pair of laterally-spaced rear supporting arms attached at spaced-apart locations to the rear of said rack and projecting rearwardly therefrom and positioned and shaped to partially encircle said instrument, and means for attaching the ends of said rear supporting arms adjacent said handlebars.

3,948,425
WEB HANDLING APPARATUS

John L. Bala, New Paltz, N.Y., assignor to Packaging Industries, Inc., Hyannis, Mass.

Continuation-in-part of Ser. No. 382,319, July 25, 1973, abandoned. This application June 21, 1974, Ser. No. 481,918
Int. Cl.² B65L 25/32
U.S. Cl. 226—43 13 Claims



1. In a web handling system in which increments of a continuous web are cyclically fed by a pair of rolls from a web supply through a process station at which an operation is performed on the web, said system further including means between said supply and said pair of rolls for accumulating a loop of web under predetermined tension, means for controlling operation of said rolls comprising,

an electric motor directly coupled to said rolls whereby rotation of said motor always causes corresponding rotation of said rolls,

pulse generating means coupled to said motor for producing a train of pulses representative of the extent and direction of rotation of said motor,

bi-directional pulse counter means capable of being manually preset to a predetermined count corresponding to a desired length of the increment of web to be fed through said process station in each cycle of operation,

means coupling the output of said pulse generating means to said counter to cause said counter to count up or down depending upon the direction of rotation of said motor, operation of said motor to move said web from said supply through said process station causing said counter to count down towards a zero count from said predetermined count,

sensing means operable in response to the accumulation of a loop of web of predetermined length at least as great as said increment,

voltage generating means responsive to operation of said sensing means to initiate rotation of said motor, said voltage generating means including

first circuit means for generating a voltage pulse of a polarity to cause said motor to rotate in the direction to withdraw the web from said process station towards said supply,

second circuit means actuated upon termination of said voltage pulse for generating a unidirectional voltage of a polarity to cause said motor to rotate in the direction to move the web from said supply to said process station,

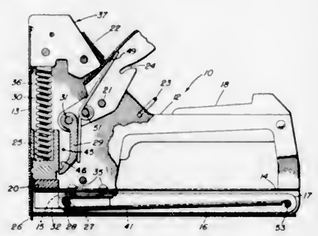
means coupling said voltage pulse and said unidirectional voltage successively in the order named to said motor to cause corresponding rotation thereof,

and means operative when the number of pulses produced by said pulse generating means in response to rotation of said motor in the direction to move the web from said supply to said process station equals a total count preset in said counter, to stop rotation of said motor.

3,948,426
FASTENER DRIVER WITH SAFETY DEVICE

Gabriel M. La Pointe, Worcester, Mass., assignor to Parker Manufacturing Co., Worcester, Mass.

Filed Jan. 20, 1975, Ser. No. 542,409
Int. Cl.² B25C 5/06
U.S. Cl. 227—8 2 Claims



1. A driver for fasteners, comprising

a. a housing having a handle and a fastener exit,

b. a magazine mounted in the housing for presenting the fasteners seriatim to the said fastener exit,

c. means mounted in the housing for driving a fastener through the exit into a surface, said means including a spring-loaded hammer with a driver blade adapted to strike the fastener, the hammer being slidable between a second position relatively close to the exit and a first position relatively far from the exit,

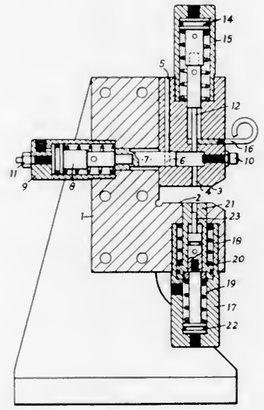
d. an actuator which is operable to cause the said driver blade to strike said fastener when the hammer is in the second position but which operation does not effect the hammer when the driver blade is in the first position, the actuator including a lifter which is provided to lift the hammer and then release it for the driving operation, the blade extending out of the exit when the hammer is in the second position, and lying substantially entirely within the housing at the exit when the hammer is in the first position, and

e. a spring mounted in the housing and normally holding the hammer in the second position but allowing the hammer to move to the first position when the fastener exit is pressed against a surface, the hammer including a recess and the lifter being biased toward a starting position in which it engages the recess when the driver is in its first position and does not engage the recess when the driver is in its second position, the pressing of housing and the exit against the surface pushing the blade which in turn moves the hammer to the first position at which the recess can be engaged by the lifter.

3,948,427
APPARATUS FOR DRIVING A LENGTH OF WIRE, ROD OR OTHER ELONGATED BODY THROUGH A WORKPIECE FOR EXAMPLE FOR RIVETING

Derek George Wilson Claydon, Drayton, near Banbury, and Gilbert George Hill, Bodicote, near Banbury, both of England, assignors to Alcan Research and Development Limited, Montreal, Canada

Division of Ser. No. 257,204, May 26, 1972, abandoned. This application Sept. 27, 1974, Ser. No. 509,745
Claims priority, application United Kingdom, June 2, 1971, 18697/71
Int. Cl.² A43D 69/12; B27F 7/00
U.S. Cl. 227—97 8 Claims

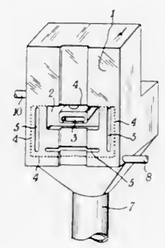


1. Apparatus for driving a length of wire, rod or other elongate body through a workpiece, comprising first and second dies which are formed with aligned bores, means for moving at least one of the dies towards and away from the other die, while maintaining the alignment of the bores in the dies, for releasably clamping the workpiece between the dies, a punch which conforms to the cross-sectional shape of the bore in the first die, and means for driving the punch along the bore in the first die towards the second die, and stop means for checking the forward movement of the punch selectively at a first position in which the leading end of the punch is flush with the end of the bore in the first die nearer the second die or a second position short of said first position.

3,948,428
DEVICE FOR COOLING WELDS

Franco Bonomo, Genzano, and Fernando Caldarelli, Pomezia, both of Italy, assignors to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

Filed July 16, 1973, Ser. No. 379,433
Claims priority, application Italy, Aug. 7, 1972, 52036/72
Int. Cl.² B23K 9/18, 25/00
U.S. Cl. 228—46 3 Claims



1. A device for cooling welding areas, comprising two hollow sliding blocks having confronting substantially flat surfaces to confine a molten metal bath of welding metal therebetween, each of said confronting surfaces having a main aperture opening therethrough, and each of said hollow sliding blocks having

a main nozzle extending through said main aperture,

a water supply duct connected with said main nozzle,

a plurality of secondary nozzles opening through said surface in a continuous series that encloses a zone that surrounds said main aperture,

a gas duct within said block for distributing a gas under pressure to said plurality of secondary nozzles,

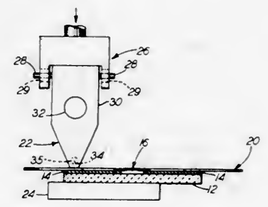
at least one slot through said surface within said zone surrounded by said plurality of nozzles for removing gas and steam and water from said zone and

a collecting chamber within said block, said collecting chamber being in communication with said at least one slot and said main aperture and having an aperture at its upper end communicating with the atmosphere and an exhaust duct at its lower end.

3,948,429
APPARATUS FOR THERMOCOMPRESSION BONDING

Robert W. Davies, Whitehall, and Thomas S. Ellington, IV, Bethlehem, both of Pa., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Nov. 1, 1974, Ser. No. 520,181
Int. Cl.² B23K 19/00
U.S. Cl. 228—44.1 A 11 Claims



1. An apparatus for thermocompression bonding an article which comprises:

a body of a first material resistant to oxidation;

a tip, of a second material capable of resisting deformation at bonding temperatures, at one extremity of the body for

contacting the article to be bonded, said tip having an elongated flat contacting surface;

a third material incorporated in the tip; and

means for heating the body and for melting the third material when the tip is not in contact with the article to be bonded, said third material solidifying and releasing its heat of fusion to the contacting surface to aid in maintaining the temperature of the surface when said surface is in contact with the article to be bonded, said third material being incorporated in the tip parallel to and adjacent the contacting surface.

3,948,430

METHOD OF MAKING AN AUTOMOBILE WINDOW AND FRAME

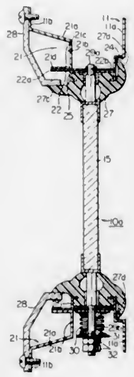
Shyouichi Koike, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 19, 1974, Ser. No. 443,620

Claims priority, application Japan, Feb. 20, 1973, 48-21746[U]

Int. Cl.² B23K *31/02*; B60J *1/00*

U.S. Cl. 228—141 **5 Claims**



1. In a method of constructing a window in a rear pillar of an automotive vehicle, the rear pillar including first and second spaced panels having aligned holes formed therethrough to receive the window and the edge portions of the holes bent and joined together to form the window frame, the improvement comprising the steps of;

a. bending the edge portion of the first panel to form a channel, the bottom of the channel facing the second panel and a folded back edge portion of the channel being perpendicular to the plane of the window;

b. bending the edge portion of the second panel toward the first panel so that the edge portion of the second panel is parallel to and mates with the folded back edge portion of the first panel;

c. joining the mated edge portions together, the edges thereat being spaced between the first panel proper and the window and the section of the edge portion of the second panel between the bottom of the channel and the second panel proper constituting the window frame;

d. fixing a third panel to the first panel to cover the channel;

e. bending the radially inner edge portion of the third panel toward the second panel over the mated edge portions of the first and second panels;

f. forming a sealing channel on the inner periphery of the window frame opening radially inwardly;

g. inserting a sealing member into the sealing channel, the sealing member covering the edges of the third panel and the window frame; and

h. mounting the window pivotally in the window frame.

3,948,431

MANUFACTURING METHOD OF METALLIC HONEYCOMB STRUCTURES

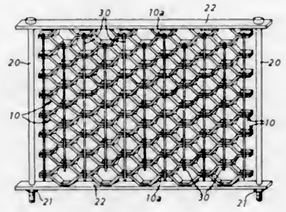
Itaru Niimi, Nagoya; Yasuhisa Kaneko, Toyota; Yoshiro Komiyama, Okazaki; Masaoki Hashimoto, Toyota, and Hitoshi Ogawa, Kariya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisin Seiki Kabushiki Kaisha, Kariya, both of, Japan

Filed Aug. 16, 1974, Ser. No. 497,934

Claims priority, application Japan, Sept. 6, 1973, 48-100525

Int. Cl.² B23K *1/04*

U.S. Cl. 228—173 **9 Claims**



1. A manufacturing method of a metallic honeycomb structure comprising the steps of

pressing a metallic band member in a wave-shape along the longitudinal direction thereof;

assembling a plurality of said pressed band members as a honeycomb structure by engaging the waved portions of one pressed band member with the corresponding waved portions of another pressed band member; each of said pressed band members having a recess at one side of each waved portion thereof;

clamping said band members in their assembled position in such a way to leave clearances for capillary effect between the engaged portions of said band members;

washing the clamped honeycomb structure members after said clamping process;

laying a plurality of bar soldering materials in the recesses of the engaged portions of said band members parallel to one another; and

melting said bar soldering materials in a heating kiln filled with reducing or inert gas to uniformly saturate said molten soldering materials into the clearances between the engaged portions of said band members and subsequently chilling said band members to complete the soldering joint of the engaged portions of said band members.

3,948,432

BRAZING PREFORMS AND METHOD OF BRAZING

Michael J. Pryor, Woodbridge; Stanley Shapiro, New Haven; Derek E. Tyler, Cheshire, and John Shabarack, Branford, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 303,649, Nov. 3, 1972, which is a continuation of Ser. No. 120,741, March 3, 1971, abandoned. This application Sept. 26, 1974, Ser. No. 509,412

Int. Cl.² B23K *1/04*, *35/30*

U.S. Cl. 228—223 **16 Claims**

1. A method of joining metal members by brazing which comprises:

A. providing a brazing preform prepared from an alloy consisting of manganese from 22 to 40%, iron from 0.1 to 2%, aluminum from 0.1 to 5%, zinc from 2 to 10%, balance copper;

B. bringing said metal members into joining relationship at at least one joining site and disposing said preform thereat to form a brazing assembly;

C. heating said assembly to brazing temperature;

D. holding the assembly at said brazing temperature for a period of time sufficient to allow said preform to melt and thereby wet and join said metal members in a brazed joint; and

E. allowing said joint to solidify.

3,948,433

PROCESS FOR THE MANUFACTURE OF A GLAZING UNIT

Gerard Palmers, Lommel, Belgium, assignor to Glaverbel-Mecaniver, Belgium

Filed Feb. 6, 1973, Ser. No. 330,096

Claims priority, application Luxemburg, Feb. 11, 1972, 64769/72

Int. Cl.² B23K *31/02*

U.S. Cl. 228—230 **7 Claims**

1. In a process for manufacturing a glazing unit by jointing a metallized margin of a sheet of glass to any intervening spacer strip following a course along the peripheral margin of the unit in which the joint between said sheet and said strip along at least a section of such course is formed by applying solder into the corner angle between said sheet and said strip to form a solder bead along said section, the improvement comprising the steps of progressively melting and spreading with a soldering iron solder metal along the joint angle and progressively transversing the joint by at least one finishing flame so that at each moment during its progress along the joint such finishing flame acts on such solder metal before it has completely solidified whereby a final bead is formed by solidification of solder metal from the molten condition in which it is left by such finishing flame, which bead has a curved surface which merges tangentially with the faces of the spacer strip and metallized margin defining the corner angle.

3,948,434

EXTREMELY RAPID AND ECONOMICAL METHOD FOR WELDING PIPES, ELONGATED REINFORCING BARS OR THE LIKE IN THE FIELD

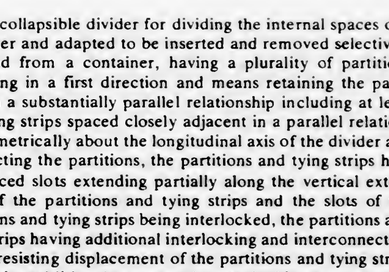
Ronald D. Rothchild, 1530 Main St., Concord, Mass. 01742

Filed Jan. 22, 1975, Ser. No. 543,131

Int. Cl.² B23K *23/00*

U.S. Cl. 228—241 **6 Claims**

1. A method of welding a first and second annular ferrous pipe member together along an interface therebetween comprising the step of igniting a mass of solid exothermic material positioned within at least one interior annular cavity situated adjacent said interface, said mass of exothermic material being capable of generating sufficient heat upon being ignited



to melt said members along said interface to form a weld thereat.

3,948,435

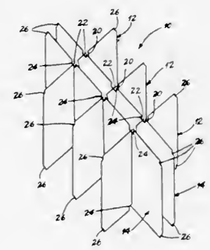
DIMENSIONALLY FIXED CONTAINER DIVIDER

Willard Palmer, Bartlett, Ill., assignor to Clevepak Corporation, New York City, N.Y.

Filed Jan. 2, 1975, Ser. No. 537,852

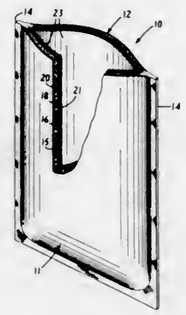
Int. Cl.² B65D *5/48*

U.S. Cl. 229—15 **1 Claim**



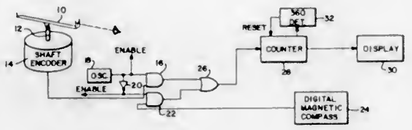
1. A collapsible divider for dividing the internal spaces of a container and adapted to be inserted and removed selectively into and from a container, having a plurality of partitions extending in a first direction and means retaining the partitions in a substantially parallel relationship including at least two tying strips spaced closely adjacent in a parallel relationship symetrically about the longitudinal axis of the divider and intersecting the partitions, the partitions and tying strips having spaced slots extending partially along the vertical extensions of the partitions and tying strips and the slots of the partitions and tying strips being interlocked, the partitions and tying strips having additional interlocking and interconnecting means resisting displacement of the partitions and tying strips comprising additional tongue and recess locking means on the partitions and tying strips, the tying strips being spaced substantially inwardly from the ends of the partitions whereby the spaces between the tying strips are spaced at a location substantially remote from the walls of a container having the divider therein whereby the risk of external intrusion into the space between the tying strips is substantially eliminated, the corners of the tying strips and partitions having arcuate relieved portions to facilitate introduction and removal of the divider into and from a container.

3,948,436
MULTILAYER BAG
John D. Bambara, Osterville, Mass., assignor to Packaging Industries, Inc., Hyannis, Mass.
Filed Nov. 4, 1974, Ser. No. 520,955
Int. Cl.² B65D *33/02*
U.S. Cl. 229—55 **11 Claims**



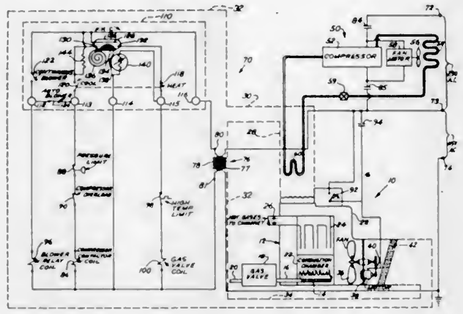
1. A padded and tear resistant bag having a bag body formed from at least one multilayer sheet, said sheet comprising a layer of tear resistant fibrous material having a resistance to tearing greatly exceeding that of paper, and a layer of synthetic foam material, the tear resistant and foam materials being joined together in said sheet over substantially the entire area of the body of said bag, whereby the foam provides cushioning to the bag body, increasing resistance to puncture from within, and enhances the tear resistance provided by the tear resistant fibrous layer.

3,948,437
AUTOMATED PELORUS SYSTEM
John T. Fowler, Winthrop, Mass., assignor to The Laitram Corporation, New Orleans, La.
Filed Aug. 8, 1974, Ser. No. 495,836
Int. Cl.² G06G *7/78*
U.S. Cl. 235—150.2 **6 Claims**



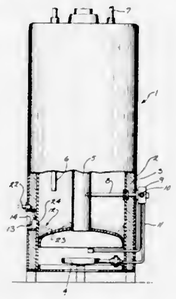
1. A pelorus system comprising:
a pelorus arranged for the visual sighting of objects in an azimuth plane;
encoder means coupled to said pelorus and operative to provide a digital signal representative of pelorus bearing;
a digital magnetic compass operative to provide a digital signal representative of magnetic compass bearing;
counter means;
gate means operative to convey said encoder signal and said magnetic compass signal to said counter means;
said counter means being operative to provide an output count representative of the magnetic bearing of an object sighted by said pelorus; and
display means for providing an output indication of said magnetic bearing.

3,948,438
THERMOSTAT SYSTEM
Robert C. Vlasak, Toledo, Iowa, assignor to Lennox Industries Inc., Marshalltown, Iowa
Filed July 17, 1974, Ser. No. 489,414
Int. Cl.² G05D *23/30*
U.S. Cl. 236—9 A **16 Claims**



1. Heating apparatus for maintaining the air in a working space at a first predetermined temperature at one time and at a second predetermined temperature at another time comprising in combination:
a heat source for generating heat into a heat reservoir;
a voltage source for generating a control current;
anticipator means including a thermistor responsive to the control current from the voltage source for dissipating heat at substantially the same steady-state rate at both the first and second predetermined air temperatures and over a predetermined range of voltages from the voltage source;
control means for energizing the heat source in response to a control signal;
electrical circuit means for interconnecting the voltage source, anticipator means and the control means, said electrical circuit means being switchable into a first state in which the control current is conducted to the anticipator means and the control signal is conducted to the control means so that the heat source generates heat, and switchable into a second state in which the control current is prevented from flowing through the anticipator means, and the control signal is terminated so that the heat source terminates the generation of heat;
circulation means for commencing the circulation of heat from the heat reservoir to the working space after the heat reservoir has been heated to a fixed temperature and for continuing the circulation of heat from the heat reservoir to the working space while the electrical circuit means is switched to the first state and for a period of time after the electrical circuit means is switched to the second state; and
thermostat means reponsive to the temperature of the air and in heat transfer relationship with the anticipator means, said thermostat means being settable to a first condition for switching the electrical circuit means to the first state at a first point in time when the air temperature decreases below the first predetermined temperature and for switching the electrical circuit means to the second state at a second point in time when the combined heat from the air and the anticipator means raises the temperature of the thermostat means to the first predetermined temperature, said thermostat means being settable to a second condition for switching the electrical circuit means to the first state at a third point in time when the air temperature decreases below the second predetermined temperature and for switching the electrical circuit means to the second state at a fourth point in time when the combined heat from the air and the anticipator means raises the temperature of the thermostat means to the second predetermined temperature, whereby the substantially constant steady-state rate of heat dissipation in the anticipator means at the first and second predetermined temperatures irrespective of voltage variations of the voltage source prevents a first time period between the first and second points in time and a second time period between the third and fourth points in time from decreasing below a predetermined minimum time duration.

3,948,439
SEDIMENT BUILDUP WARNING DEVICE FOR WATER HEATERS
Robert B. Heeger, Kankakee, Ill., assignor to A. O. Smith Corporation, Milwaukee, Wis.
Filed Dec. 4, 1974, Ser. No. 529,456
Int. Cl.² F23N *5/24*
U.S. Cl. 236—21 B **6 Claims**

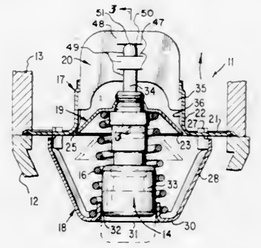


1. In a water storage tank adapted to contain water to be heated and having a shell closed at the lower end by a bottom head joined to the shell, a gas heating unit located adjacent the bottom head of the tank to heat said water, at least one flue secured to the bottom head above the gas heating unit and extending upwardly within the tank for discharge of flue gases, a first temperature sensor for controlling normal operation of the heating unit a temperature sensing warning device in contact with the wall of the tank located below said first sensor and from one to four inches above the joint between the lower head and shell with said device being disposed to sense the increase in temperature in the tank wall above the normal operating temperature as the result of buildup of insulating sediment on the bottom head of the storage tank preventing the passage of heat from the heating unit through the bottom head to the water contained in the tank, a safety shut down warning means associated with the temperature sensing device, and switching means electrically connected to the temperature sensing device and to the safety shut down warning means to actuate the latter when the switching means is operated by the temperature sensing device when the latter senses temperature in the tank wall which is above normal.

3,948,440
AUTOMOTIVE COOLING SYSTEM THERMOSTAT
Joseph Patton Wagner, Knoxville, and Boyd Paul Sliger, Concord, both of Tenn., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Sept. 20, 1974, Ser. No. 507,844
Int. Cl.² F01P *7/02*
U.S. Cl. 236—34.5 **19 Claims**

1. In a thermostatic valve having a valve opening for mounting in and controlling the flow of fluid in a conduit through said valve opening, said valve including a thermal actuator means responsive to temperature changes in said fluid, said thermal actuator means having a movable housing that carries a valve closure member on an inlet side of said valve opening and a stem extending from said housing through said valve opening and fixedly secured on an outlet side thereof, relative movement between said housing and stem causing said closure member to open and close said valve opening, the improvement comprising:
a lamina mounted in and bridging said valve, the plane of said lamina extending in the direction of fluid flow through said valve opening thereby substantially reducing the surface area of resistance to fluid flow through said valve opening to that of the leading edge of said lamina, said lamina including means for fixedly securing said free end of said stem on said outlet side of said valve.

6. A thermostatic valve for controllig the flow of fluid in a conduit comprising:
valve means including a valve seat;
thermal actuator means mounted for opening and closing said valve means in response to the temperature of said fluid in said conduit, said thermal actuator including a movable housing having a valve member mounted

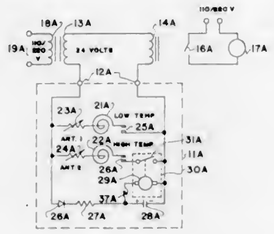


thereon and confining an expansible-contractible elastomeric material;
a stem extending from said housing and having a free end, said stem being subject to the forces of expansion and contraction of said elastomeric material resulting in relative movement between said movable housing and said stem with the free end of said stem secured, externally of said housing, said relative movement between said housing and said stem moving said valve member off and on said valve seat thereby opening and closing said valve means thereby controlling the flow of fluid through said valve means; and
means bridging said valve comprising a lamina, the plane of said lamina extending in the direction of fluid flow through said valve means, said lamina including means for fixedly securing said end of said stem externally of said housing.

3,948,441
TIME VARIABLE THERMOSTAT
Charles H. Perkins, Newtown Square; Richard K. Nurnberg, Norristown, both of Pa., and Carl J. Goodhouse, Litchfield, Conn., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Aug. 13, 1974, Ser. No. 497,151
Int. Cl.² G05D *23/00;* **F23N** *5/20*
U.S. Cl. 236—46 R **6 Claims**

1. A unitary electrical time variable set point thermostatic device adapted for use in a two wire control circuit of a heating or cooling system without additional wiring comprising:
a. thermostatic control means having temperature set points and responsive to ambient temperature for opening and closing a thermostatic switch therein, said switch energizing said control circuit to operate said heating or cooling system when said ambient temperature varies a determined amount from said set point;
b. electric timer means for cyclically changing said set point of said thermostatic means from an initial value at a selected time to a second value and at a selected time thereafter restoring said set point to said initial value;

c. electrical energy storage means for continuously energizing said timer means independent of said two wire control circuit, said electrical energy storage means comprising a battery connected to said electric timer means; and



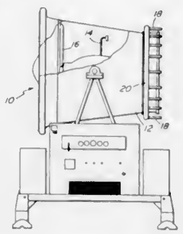
d. means connected in said control circuit for charging said battery during periods when said switch of said thermostatic control means is open.

3,948,442

APPARATUS AND METHOD FOR MAKING SNOW WITH UNIFORM DROP SIZE

Gordon C. Dewey, New York, N.Y., assignor to Hedco, Inc., Paramus, N.J.

Filed Sept. 30, 1974, Ser. No. 510,423
Int. Cl.² A01G *15/00*; E01H *13/00*
U.S. Cl. 239—2 S **13 Claims**



1. A method for the formation of snow, which includes:
a. providing substantially uniform water drops, more than 70 percent of the drops formed of a size within +25 percent of a predetermined length mean diameter, by:
i. discharging water from an orifice as a fluid stream; and
ii. disturbing cyclically the fluid stream emerging from the orifice to form uniform drops;
b. cooling the water drops to below 0°C;
c. commingling the water drops with ice nuclei to form a nuclei water droplet mixture; and
d. discharging the mixture into the atmosphere to form snow-like crystals.

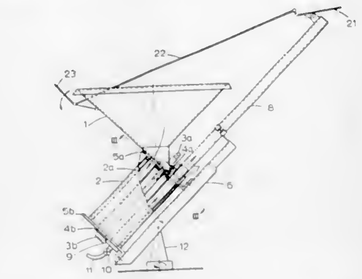
3,948,443

METHOD AND APPARATUS FOR SPREADING GRANULAR MATERIAL, ESPECIALLY FERTILIZER

Bjarne Omdal, Porsgrunn, and Johs. Skaadel, Skien, both of Norway, assignors to Norsk Hydro a.s, Oslo, Norway

Filed Nov. 25, 1974, Ser. No. 527,148
Claims priority, application Norway, Nov. 26, 1973, 4499/73
Int. Cl.² A01N *17/02*; A62C *1/12*; A01C *3/06*, *15/04*
U.S. Cl. 239—8 **17 Claims**

1. A method for spreading a granular material, particularly fertilizer, said method comprising:
feeding separate quantities of granular material into tube means; and
intermittently introducing into said tube means, behind each said quantity of material, separate individual pulses of compressed air, and individually shooting each said quantity of material out of said tube means.

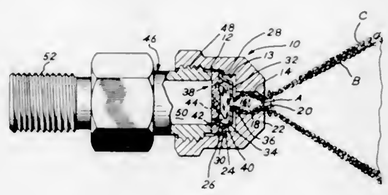


3,948,444

LOW DRIFT SPRAY METHOD

Kenneth E. Reed, St. Charles, Iowa, assignor to Delavan Manufacturing Co., West Des Moines, Iowa

Division of Ser. No. 414,733, Nov. 12, 1973. This application Aug. 25, 1975, Ser. No. 607,713
Int. Cl.² B05B *17/04*
U.S. Cl. 239—11 **5 Claims**



1. A method of producing large droplets of liquid comprising
imparting a swirling motion to said liquid,
passing said swirling liquid through first orifice means into a chamber larger in cross section than said first orifice means and such that the liquid continues to swirl in the chamber, and
producing a swirling discharge having a plurality of substantially large droplets of liquid therein by discharging the swirling liquid from said chamber through a second orifice at least as large in cross section as the first orifice means.

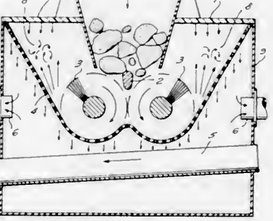
3,948,445

MATERIAL VAPOR GENERATOR WITH HEAT ACCELERATED VAPOR RELEASE

Frits J. Andeweg, 7737 Royal Lane, Dallas, Tex. 75230

Filed June 26, 1973, Ser. No. 373,682
Int. Cl. A61I *9/02*
U.S. Cl. 239—53 **7 Claims**

1. In a material vapor generator with heat accelerated and controlled vapor release: a reservoir material; vaporizable material impregnated in said reservoir material subject to activation by heat source means; positioning means holding said reservoir material for heat controlled vaporization release of said vaporizable material by heat from said heat source means; with said material vapor generator in the form of a lamp; and wherein said lamp is shaped for internal illumination with light source means supported by body means; and with said reservoir material in the form of side walling means supported by said body means in spaced relation from said light source means for air circulation in the space between said side walling means and said light source means.

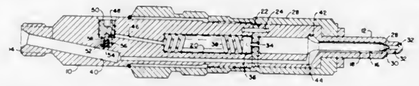


3,948,446

FUEL INJECTION NOZZLE

Madangopal Rameshwar Goyal, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jan. 29, 1975, Ser. No. 545,137
Int. Cl.² B05B *1/28*, *1/30*
U.S. Cl. 239—120 **5 Claims**



1. A fuel injection nozzle of the type in which an axially reciprocatable needle valve is biased in one direction by spring means contained in a spring chamber and in the opposite direction by fluid pressure routed to the valve by fluid inlet passage means, characterized in that fluid passage means provides direct communication between the spring chamber and inlet passage means, and a single one-way valve means in the fluid line passage means prevents fluid flow from the inlet passage means to the spring chamber while permitting fluid flow from the spring chamber to the inlet passage means.

3,948,447

PROCESS AND ARRANGEMENT FOR THE REGENERATION OF FOUNDRY SAND

Hermann Jacob, Fachenfelderweg 115, 2105 Seevetal (Horst), Germany

Filed Aug. 7, 1974, Ser. No. 495,524
Int. Cl.² B24C *19/00*
U.S. Cl. 241—5 **14 Claims**

1. A method for the regeneration of used foundry sand, particularly used foundry sand which is coated with a binder, comprising abrasively brushing used foundry sand so as to effect cleaning of the same; and propelling said used foundry sand against a bounce surface so as to permit rebounding of said used foundry sand and cleaning of the same by sand travelling towards said bounce surface.

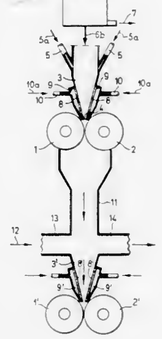
7. An arrangement for the regeneration of used foundry sand, particularly for the dry mechanical treatment of used foundry sand, comprising at least one brush-like member for the comminution and abrasive brushing of used foundry sand; means for feeding used foundry sand to said brush-like member; a strainer member extending by said brush-like member so that the latter is located on one side of said strainer member, said strainer member permitting the passage therethrough of particles having a size less than a predetermined size; means for collecting sand particles which have passed through said strainer member arranged on another side of the latter; and a bounce surface located on said one side of said strainer member so as to permit used foundry sand being regenerated and which is propelled in the direction of said bounce surface to rebound and undergo cleaning by sand traveling towards said bounce surface prior to passage of the used foundry sand through said strainer member.

3,948,448

METHOD FOR THE FINE COMMINUTION OF SOLID MATERIALS WITH A ROLLING MILL AND COMMINUTION DEVICE FOR CARRYING OUT THE METHOD

Peter Wehren, Zum Steinrutsch, and Heinz Meder, Im Kauelchen, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Aug. 1, 1974, Ser. No. 493,553
Claims priority, application Germany, Aug. 18, 1973, 2341867
Int. Cl.² B02C *23/40*
U.S. Cl. 241—18 **9 Claims**

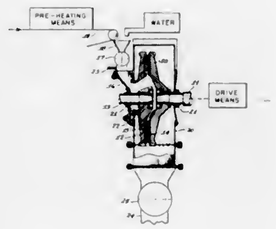


1. A method of comminution for the reduction of solid materials with a rolling mill having parallel grinding rollers with a grinding gap therebetween rotating toward each other into the gap, comprising the steps:
directing the charging material directly into the roller gap uniformly distributed along the length of the rollers at a high velocity substantially at the velocity of surface movement of the rollers;
and fluidizing the material immediately before directing it into the roller gap by delivering air distributed throughout the material so that air and material pass into the gap and the material is in a fluidized state at entry into the gap.

3,948,449
APPARATUS FOR THE TREATMENT OF LIGNOCELLULOSIC MATERIAL

Kenneth C. Logan, c/o Canadian Embassy, Budi Kemuliaan No. 6, Jakarta, Indonesia, and Friedrich O. B. Luhde, 8226 Lilly Stone Drive, Bethesda, Md. 20034

Division of Ser. No. 231,694, March 3, 1972, Pat. No. 3,808,090, which is a continuation-in-part of Ser. No. 77,374, Oct. 1, 1970, abandoned, which is a continuation-in-part of Ser. No. 888,728, Dec. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 704,497, Dec. 14, 1967, abandoned, which is a continuation-in-part of Ser. No. 569,351, Aug. 1, 1966, abandoned, which is a continuation-in-part of Ser. No. 357,008, March 25, 1964, abandoned, which is a continuation-in-part of Ser. No. 159,329, Dec. 14, 1961, abandoned. This application Apr. 29, 1974, Ser. No. 465,056
Int. Cl.² B02C *23/24*
U.S. Cl. 241—41 **3 Claims**



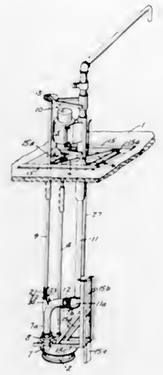
1. Apparatus for producing a pulp having a brightness of at least 50% G.E. and a Canadian Standard Freeness not exceeding 510cc. which includes abrading means for mechanically abrading lignocellulosic fibrous particles, means for feeding a body of wood particles to said abrading means, and means for feeding a substantial quantity of water to said abrading means separate from the moisture naturally present in the wood particles so that it together with moisture in the chips amounts to at least 200 percent of the weight of the dry wood particles and is sufficient to encase the fibers to prevent discoloration due to excessive heating trauma, drive means for operating said abrading means to produce a final product with a total consumption of 30–150 horsepower days per ton of said final product, sealed housing means for subjecting said wood particles during said abrading to an environmental pressure of 10–60 psig and a temperature of 160°F. to 300°F. and means for supplying an inert gaseous atmosphere to said housing means.

3,948,450
VALVE-LESS PUMP FOR LIQUID MANURE

Frank E. Erlitz, Rte. 1, Box 234A, Somerset, Wis. 54025

Filed Oct. 3, 1974, Ser. No. 511,628
Int. Cl.² B02C *23/26*
U.S. Cl. 241—46 R **4 Claims**

1. In an apparatus for transferring a liquid slurry from a storage pit, in combination, a unitary frame structure adapted to be moved from pit to pit comprising a discharge pipe carried by said frame and adapted to have one end extending into said pit for discharge of the slurry, an impeller supported by said frame and submerged in the slurry and located adjacent to the bottom of the pit, a conduit extending from the impeller, said conduit having a substantial vertical component and a generally horizontally directed free end adapted to be rotated in a generally horizontal plane, without rotation of the pump, for emitting said slurry from said free end a substantial distance above the bottom of the pit, means on said frame including a shaft extending out of said pit for moving the free end of said conduit into registry with said discharge pipe for transferring said liquid slurry from the pit, and for moving it

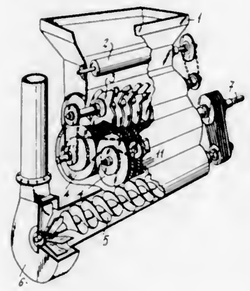


out of registry therewith for agitating said slurry in the pit by recirculation through said impeller.

3,948,451
MACHINE FOR THE WORKING OF CEREALS FOR THE NOURISHMENT OF CATTLE

Egidio Pecis, Via Marconi, 7, Zanica (Bergamo), Italy

Filed Sept. 11, 1974, Ser. No. 505,081
Claims priority, application Italy, Sept. 14, 1973, 2938/73
Int. Cl.² B02C *9/00*
U.S. Cl. 241—154 **4 Claims**

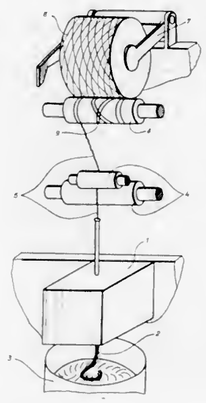


1. A machine for the working of cereals for the nourishment of cattle, comprising a housing having a hopper forming an opening for receiving the material to be worked and having an outlet for the worked material, and between said opening and said outlet, in said housing, a removable cutting group, a grinding group comprising at least a pair of grinding cylinders, each formed by a rotary shaft and a plurality of discs notched on their circumferential periphery and fixed on said shaft in side-by-side relation so as to form a cylinder capable of cooperating with a similar cylinder, and a conveying means for conveying worked material to said outlet, said cutting group comprising a plurality of star-shaped blades, each shaped as a three-point star, with each point of the star having a straight side and a convex side, a rotary shaft on which said blades are fixed axially spaced thereon and circumferentially staggered in a fan-wise arrangement, and stationary blades provided on the inside of the machine housing and cooperating with said star-shaped blades.

3,948,452
OPEN-END SPINNING MACHINE AND METHOD OF OPERATING THE SAME

Frantisek Burysek; Milos Mares, and Josef Havel, all of Usti Nad Orlici, Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed Sept. 24, 1973, Ser. No. 400,324
Claims priority, application Czechoslovakia, Sept. 25, 1972, 6506-72
Int. Cl.² B65H *67/04*
U.S. Cl. 242—18 A **20 Claims**



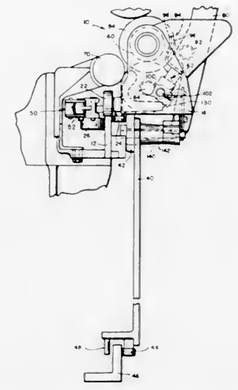
1. In an open-end spinning machine, a combination comprising first means for engaging a first bobbin and rotating the same as a predetermined speed in preparation for taking up a yarn thereon; second means for continuously advancing a yarn at a constant speed corresponding to the takeup speed, to said first bobbin so that the yarn can be wound onto the same and form a yarn package; third means for rotating an empty second bobbin at said predetermined speed; fourth means for severing the advancing yarn from the yarn package on said first bobbin, so as to form a free yarn end on the advancing yarn; fifth means for inserting said free yarn end substantially at the take-off speed into the interior of the rotating second bobbin for entrapping and taking up of a yarn reserve by the same, said fifth means comprising a yarn gripper movable between one position in which it engages the free yarn end, and another position in which it is located in the interior of said bobbin with said free yarn end; and sixth means for replacing said first bobbin having said yarn package thereon with the rotating empty second bobbin on said first means.

3,948,453
RIBBON BREAKING MACHINE

Samuel L. Abbott, Wilton, N.H., assignor to Abbott Machine Co., Inc., Wilton, N.H.

Filed Aug. 8, 1973, Ser. No. 386,777
Int. Cl. B65h *54/20*, *54/38*
U.S. Cl. 242—35.5 R **27 Claims**

1. A winding machine of the kind in which a package is wound by a rotating drum, a drum wheel at one end of the drum, a traction roll supported for movement into and out of engagement with said drum wheel, spring means yieldably holding the traction roll engaged with the drum wheel, a drive shaft for constantly driving the traction roll, a traction brake supported for movement into and out of engagement with the drum wheel and means for continuously throughout any winding operation alternately simultaneously engaging the traction roll and disengaging the traction brake and simultaneously disengaging the traction roll and engaging the traction brake, spring means for yieldably holding the traction roll engaged witih said drive shaft and means for increasing the spring

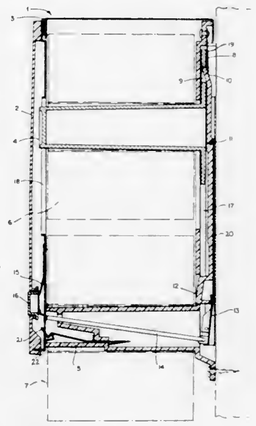


pressure from a predetermined low pressure at the beginning of the rotation of the package to a predetermined maximum when the rotation of the drum and the package are the same.

3,948,454
DISPENSER FOR MULTIPLE ROLLS OF SHEET MATERIAL

Lehyman John Bastian, Media, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Dec. 3, 1974, Ser. No. 529,071
Int. Cl.² B65H *19/00*
U.S. Cl. 242—55.3 **13 Claims**



1. Apparatus for dispensing sheet material from a roll, comprising:

a cabinet having a dispensing zone from which the sheet material may be removed from its roll and a storage zone from which the sheet material cannot be removed from its roll;

a first spindle attached to the cabinet in the dispensing zone for holding a primary roll of the material;

a second spindle attached to the cabinet and movable from a first position in the storage zone to a second position in the dispensing zone, the second spindle for holding a

reserve roll of the material and including a flange with a notch;

holding means for holding the second spindle in its first position in the storage zone, the holding means including a pivotably mounted latch lever arm engageable at its first end with the notch and engageable at its second end, opposite from the first, with the sheet material on the primary roll so that it is prevented by the existence of unused sheet material on the primary roll from moving sufficiently to release the first end of the latch lever arm from the notch;

means for moving the second spindle from its first position to the second position upon release of the holding means; and

release means for releasing the holding means and permitting the second spindle to move to the second position only upon substantial depletion of the sheet material of the primary roll.

3,948,455

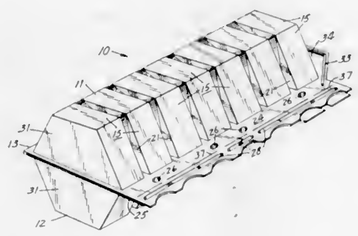
DISPENSER PACKAGE

Richard J. Schwartz, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 13, 1974, Ser. No. 523,428

Int. Cl.² B65H *19/04*

U.S. Cl. 242—55.3 **8 Claims**



1. A ribbon dispenser package for convolutely wound decorative ribbon products comprising

a one piece molded article defining a pair of mating shells which form a plurality of axially spaced chambers when folded on a centerline, each chamber having a convolutely wound roll of ribbon disposed therein and said article having opposed planar surface portions to engage opposite surfaces of the ribbon at an end of each roll, each said shell comprising

generally planar spaced outer wall members disposed in three planes, each wall member extending in a transverse direction to the package, and said planes being at an angular orientation to each other, and a flange having said planar surface portions extending along one edge of the shell lengthwise, said wall members having a width slightly greater than the axial width of a roll of said ribbon, said wall members forming part of one roll chamber being separated from the wall members forming another axially spaced roll chamber by integral radially extending partitions projecting into the shell to engage the edges of a roll of ribbon, and

means formed in said flange of each shell cooperating with means in the other shell for holding said shells together adjacent the opposed edges and disposed in spaced relationship permitting the ribbon to pass therebetween from the chambers to dispense the same.

3,948,456

FILM WINDING DEVICE FOR PHOTOGRAPHIC CAMERAS

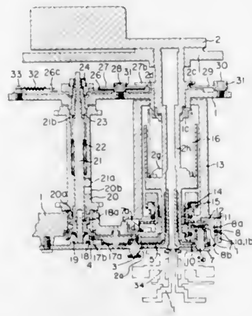
Terushige Shimizu, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed June 25, 1974, Ser. No. 483,047

Claims priority, application Japan, June 30, 1973, 48-77627[U]

Int. Cl.² G03B *1/04*

U.S. Cl. 242—71.4 **10 Claims**



1. In an improved film winding device for photographic cameras of the type having:

a film winding shaft;

a rotary driving member driven by the film winding shaft; and

a film winding means interconnected with the rotational motion of the rotary driving member, wherein the improvement comprises:

a first ratchet means provided on said rotary driving member;

a planet gear pivotally and rotatably supported on said rotary driving member;

a fixed gear engaged with the planet gear;

a sun gear engaged with said planet gear and rotatable relative to said rotary driving member with the ratio in the number of revolutions thereof being greater than 2 with respect to that of said rotary driving member; and

a second ratchet means provided on the sun gear to prevent said rotary driving member from reverse rotation in cooperation with said first ratchet means.

3,948,457

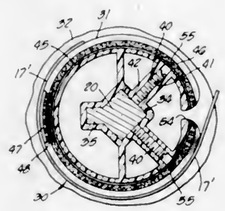
MICROFILM TAKEUP REEL AND CONVERTER KIT

Francis F. Spreitzer, 4415 W. 62nd St., Los Angeles, Calif. 90043

Filed Feb. 10, 1975, Ser. No. 548,205

Int. Cl.² B65H *75/28*

U.S. Cl. 242—74 **26 Claims**



1. A microfilm takeup reel adapted to be telescoped over the exposed outer end of a film reader takeup arbor and fixed thereto to thwart removal of said reel from the reader until the film has been restored to a storage reel, said takeup reel having a hub provided with radial flange means on at least one end thereof, means carried by said reel to hold a film leader releasably captive while being wound around the hub of said reel, and means for holding said takeup reel captively assembled to the takeup arbor of a film reader to thwart attempts of the user to remove the same from a film reader with film stored thereon.

3,948,458

REEL FOR ELONGATED CONVOLUTABLE OBJECTS

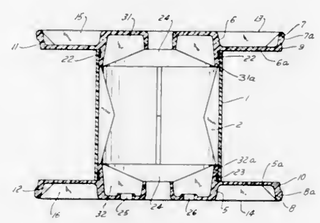
Christian Beck, Porz; Wilhelm Esser, Leverkusen; Wilhelm Kraft, Nurnberg, and Kurt Scholtis, Nordenham, all of Germany, assignors to Felten & Guilleaume Carlswerk Aktiengesellschaft, Cologne-Mulheim, Germany

Filed Sept. 10, 1974, Ser. No. 504,758

Claims priority, application Germany, Sept. 12, 1973, 2345946

Int. Cl.² B65H *75/14*

U.S. Cl. 242—118.7 **19 Claims**



1. A reel for elongated convolutable objects, particularly for cables and the like, comprising a tubular core portion having opposite open ends and a hollow interior; a pair of end flanges each having a radial inner annular flange portion which is cupped so as to have an open side facing axially inwardly of said core portion and which is in part received in one of said open ends and a radially outer annular flange portion which is cupped so as to have an open side facing axially outwardly of said core portion, and which has an outer circumferential edge face; connecting means connecting each of said end flanges to said core portion; and a plurality of reinforcing ribs extending radially between said inner and outer annular flange portions, each of said reinforcing ribs having a bifurcated section in the region of the respective outer circumferential edge face and a stem section in the region of said tubular core portion.

3,948,459

FOLDED VACUUM TANKS FOR HIGH SPEED MAGNETIC TAPE RECORDERS

Robert E. Schoeneman, East Setauket, N.Y., assignor to Potter Instrument Co., Inc., Plainview, N.Y.

Filed May 1, 1974, Ser. No. 466,025

Int. Cl.² G11B *15/58, 23/12*

U.S. Cl. 242—182 **1 Claim**

1. In a magnetic tape handler, the combination of:

a length of magnetic tape;

a pair of tape reels.

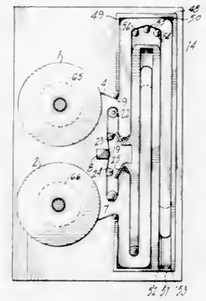
servo means for rotating said reels to wind said tape in a selected direction;

vacuum chamber means and tape guiding means for directing said tape along a predetermined path between said reels;

a record and/or reproduce head located tangentially to said path between said reels;

a tape drive capstan for moving said tape across said head located on one side od said head;

wherein said vacuum chamber means is directed around said tape reels and executes at least one turn of the order of 90°;



wherein said head is located substantially midway of the tape path between said reels;

and wherein said vacuum chamber means is folded symmetrically to substantially surround said reels.

3,948,460

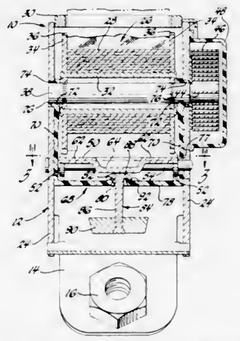
PENDULUM SUPPORT FOR A SEAT BELT RETRACTOR

Joseph D. Kondziola, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 28, 1975, Ser. No. 563,099

Int. Cl.² A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107.4 A **3 Claims**



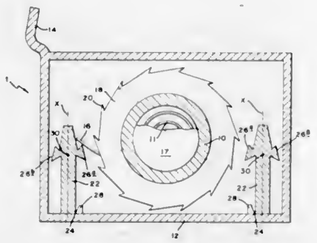
1. In a vehicle inertia responsive seat belt retractor having a housing, a belt reel having a reel shaft mounting the reel on the housing for belt winding and unwinding reel rotation, a locking bar, pivot means mounting the locking bar on the housing for movement between an undetenting position permitting rotation of the belt reel, a detenting position blocking rotation of the belt reel, and an inertia responsive member for moving the locking bar between undetenting and detenting positions, a support member for mounting the inertia responsive member comprising: laterally spaced side walls juxtaposed to the walls of the housing, first mounting means on the side walls of the support member to mount the support member on said reel shaft, second mounting means on the side walls of the support member to mount the support member on the locking bar pivot means, and an inertia member support portion integral with the side walls of the support member and bridging the lateral space therebetween, the inertia member support portion having means located at a predetermined location with respect to the first and second mounting means for mounting the inertia responsive member at a predetermined location relative the reel shaft and the locking bar.

3,948,461

TIPPING VEHICLE SENSITIVE RETRACTOR

Per Olaf Weman, Haslah, and Harald Martin Schmelow, Elerau, Krs. Segeberg, both of Germany, assignors to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 25, 1974, Ser. No. 526,653
Int. Cl.² B65H *75/48*
U.S. Cl. 242—107.4 B **4 Claims**



1. A safety belt retractor, comprising:
a. a support member;
b. reel means rotatably mounted on said support means;
c. belt means attached to said reel means for protraction and retraction with respect thereto;
d. biasing means for urging said reel means in a retracting direction;
e. ratchet means associated with said reel means for locking it;
f. a unitary tippable inertia and locking member mounted on the support means in a normally stable vertical position;
g. a stop on said support means;
h. said unitary member engaging said stop for pivoting thereagainst to tip from the vertical position for engagement with said ratchet means on the occurrence of acceleration forces sufficient to tip it to lock the reel from protraction of the belt;
i. said unitary member including a locking extension on at least one side thereof for engaging the ratchet; and
j. said unitary member of such shape that its center of gravity passes over the pivot formed by the member and the stop to retain the unitary member in its locking position when the unitary member has tipped from the vertical position to that locking position until retraction of the belt and movement of the ratchet in retracting direction pushes the unitary member to return to its stable vertical unlocked position.

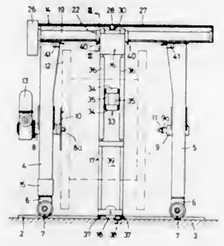
3,948,462

CABLE-WINDING MACHINE

Charles Maillefer, Renens, Switzerland, assignor to Maillefer S.A., Switzerland

Filed May 2, 1975, Ser. No. 574,241
Claims priority, application Switzerland, May 2, 1974, 5994/74
Int. Cl.² B65H *57/28*
U.S. Cl. 242—158 R **7 Claims**

1. A cable-winding machine resting upon a foundation and comprising two uprights, a crosspiece connecting said uprights at their upper ends, two drum-supports borne respectively by said uprights, and a traverse mechanism, each said upright having rolling means at its lower end, the axes of said drum-supports being parallel, and said crosspiece containing means for moving one of said uprights with respect to said crosspiece in a direction parallel to said axes and means for controlling movements of said traverse mechanism along said crosspiece, wherein said traverse mechanism comprises a rigid upright and further rolling means, said rigid upright being connected



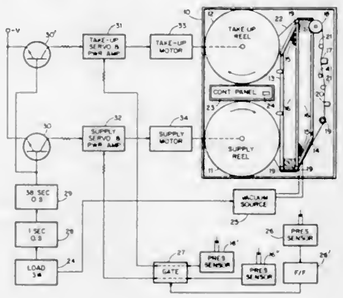
to said crosspiece and supported at its lower end on said foundation by means of said further rolling means.

3,948,463

WEB TRANSPORT LOAD AND UNLOAD SYSTEM

Joseph Charles Godbout, Acton, Mass., assignor to Data General Corporation, Southboro, Mass.

Filed Apr. 10, 1974, Ser. No. 459,815
Int. Cl.² G11B *15/58, 23/12*
U.S. Cl. 242—182 **9 Claims**



1. In a tape transport system wherein low inertia tape loops are formed with vacuum column buffer means in a tape path between a take-up reel and a supply reel, tape driving means along said type path for driving the tape, said vacuum column buffer means defining an elongated enclosure having a closed end and an open end for receiving the tape loop, vacuum source means coupled to the vacuum column through an opening at the closed end of the column, the improvement comprising:
means (concurrent) operative concurrently with the initial build-up of vacuum from said vacuum source means in said column, for automatically loading said vacuum column means within a predetermined time of said initial building of vacuum, to supply a predetermined length of tape from the supply reel of said tape storage means.

3,948,464

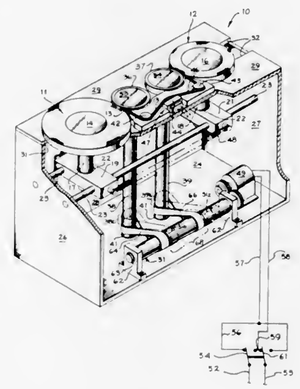
BI-DIRECTIONAL TAPE TRANSPORT APPARATUS

Koichi Hata, Sunnyvale, Calif., assignor to American Videonetics Corporation, Sunnyvale, Calif.

Filed Nov. 25, 1974, Ser. No. 526,725
Int. Cl.² B65H *75/34;* **G03B** *1/04;* **G11B** *15/60*
U.S. Cl. 242—192 **6 Claims**

4. In a tape transport apparatus of a type employing a length of pliable record tape adapted to be wrapped to form supply and take-up rolls, said tape transport apparatus comprising first and second rotating tape drive bodies, means supporting

both said supply and take-up rolls for reversible rotation each in two opposite directions and to respectively advance and retreat with respect to an associated one of said bodies during unwinding and winding of tape off of and onto the roll, means urging said rolls into engagement with an associated one of said bodies for engaging tape therebetween, first and second spindles supported to rotate respectively with said first and second bodies, said spindles being disposed substantially in a first plane, a third rotatable spindle for driving said first and second spindles and disposed transversely of said first and second spindles in a second plane substantially parallel to said first plane, means for rotating said drive spindle in each of two opposite directions, belts coupled between said drive spindle and said first and second spindles for driving each of said first and second spindles in both of two opposite directions for feeding the tape in opposite directions between the supply and take-up rolls, said belts being twisted to follow a cyclic path about an associated one of said first and second spindles then to travel along a stretch the plane of which is twisted through an angle permitting the belt to pass around said third spindle and return along a stretch twisted sufficiently to permit the



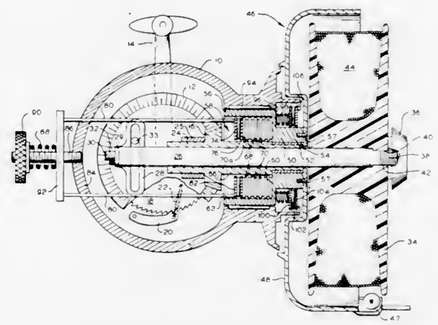
belt to pass around said associated spindle to complete the cycle of belt movement, each belt being disposed between spindles so as to respond to reversal of the rotation of said third spindle by shifting its ends axially along the spindles supporting such ends, the spindles associated with each belt having first driving and driven portions of predetermined diameter serving to define the rate of rotation of their associated drive body when rotating said third spindle in one direction and having second driving and driven portions adjacent said first driving and driven portions serving to carry an associated one of said belts when the ends thereof are axially shifted along said spindles and to define the rate of rotation of their associated drive body when rotating said third spindle in an opposite direction, said driving and driven portions serving to provide a greater rate of rotation for that drive body serving to drive the take-up roll when said third spindle rotates in the direction which feeds tape to the take-up roll and upon reversal of said third spindle to drive the tape from the take-up roll back to the supply roll and then to rotate the drive body associated with the supply roll at a greater rate than the other drive body.

3,948,465

FISHING REEL CONSTRUCTION

Paul A. Scusa, W. River Road, West Phoenix, N.Y. 13135

Filed May 30, 1974, Ser. No. 474,363
Int. Cl.² A01K *89/00*
U.S. Cl. 242—219 **2 Claims**



1. An improvement for fishing reels of both the spinning and spin cast type including:
driving means;
a driving member rotated by the driving means;
a non-rotatable spool for holding a fishing line;
a rotatable line handling member for controlling the line during winding and unwinding on the spool;
a driven sleeve operably connected to the line handling member, a portion of said sleeve encircling the driving member in spaced relation thereto whereby a cavity is formed between the sleeve and member;
friction elements received within the cavity, the elements being operably connected to rotate with either the driven sleeve or the driving member;
means including cooperating threaded members to bias the friction elements into engagement with one another, said means being adjustable to create varying biasing forces whereby the amount of the resistance to relative rotation between the driving member and the driven sleeve can be preset to allow slippage between the friction surfaces at a predetermined level of relative rotational force on the members; and
compensating means to decrease the engagement bias between the friction elements when the induced drag increases on the line as the latter is unwound from the spool.

3,948,466

PNEUMATIC CARRIER SEND AND RECEIVE TERMINAL

Joel Rudder, Rockaway; Stanley Arasim, Jr., Newfoundland, and Victor Vogel, Oakridge, all of N.J., assignors to Mosler Safe Company, Hamilton, Ohio

Filed Dec. 26, 1974, Ser. No. 536,455
Int. Cl.² B65G *51/32*
U.S. Cl. 243—24 **30 Claims**

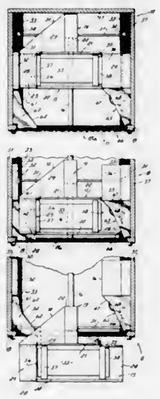
1. A pneumatic terminal comprising:
a chamber,
a pneumatic tube having an outlet operably connected to the chamber for the respective introduction and receipt of pneumatic carriers to or from within the chamber,
a carrier supporting tray mounted within the chamber for movement between a carrier receiving-dispatching position, wherein one end of the tray is operably aligned with said tube outlet, and a carrier presentment position wherein said tray is moved away from said outlet,
a carrier surrounding ring means, mounted on said one end of said tray, for providing an operative seal between one end of a pneumatic carrier and said tube outlet, said ring

means being aligned with said outlet when said tray is in its carrier receiving-dispatching position so that a carrier can move through said ring means into said tube, and

said terminal being adapted to be pressurized to a pressure greater than the pressure within the pneumatic tube so that a carrier can be conveyed from said terminal through said ring, said outlet and said tube,

cam means for moving a carrier axially with respect to said ring means said cam means including,

a first cam positioned within said terminal at least adjacent a path traversed by said ring means, as said tray moves



from its receiving-dispatching position toward its presentment position, said first cam engaging said carrier within said terminal and moving it outwardly of said ring in response to said tray movement toward said presentment position, and

a second cam positioned within said terminal at least adjacent a path traversed by another end of said tray as said tray moves from its presentment position toward its receiving-dispatching position, said second cam engaging said carrier within said terminal and moving it into sealing relationship within said ring in response to movement of said tray toward said receiving-dispatching position.

3,948,467

DEVICE FOR POSITION STABILIZATION

Jochen Kruslus, Markdorf, Germany, assignor to Dornier GmbH, Friedrichshafen, Germany

Filed Nov. 18, 1974, Ser. No. 525,026

Claims priority, application Germany, Jan. 19, 1974, 2402529

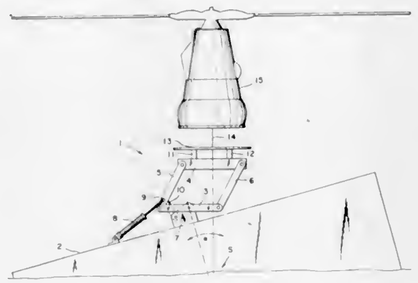
Int. Cl.² B64F *1/00*

U.S. Cl. 244—116 **5 Claims**

1. A device for position stabilization of a take-off and landing platform for aircraft, which comprises a forcibly-guided parallelogram linkage means having upper, lower, and side parts and adapted to be rotatably mounted on a mobile carrier,

a take-off and landing platform connected with and parallel to the upper parallelogram part,

and operating means rotatably connected at its ends to said



carrier and to one of the side parts of the parallelogram linkage.

3,948,468

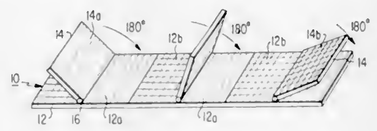
REPLACEABLE SOLAR ARRAY PANELS

Andrew Anchutin, Titusville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 27, 1971, Ser. No. 184,130

Int. Cl.² B64G *1/10*

U.S. Cl. 244—173 **14 Claims**



1. In a spacecraft an array of a plurality of geometrical members each member having at least one surface adapted for exposure to the sun and provided with solar cells on said one surface,

a first portion of said plurality of members being arranged so that said one surface of each such respective member is initially faced to be exposed to the sun,

a second portion of said plurality of members being arranged so that the entire surface of said one surface of each of such respective members of said second portion is covered and thereby prevented from exposure to the sun,

means for moving each member of said first portion from its initial position to a second position wherein each said one surface of said second portion of members is exposed to the sun,

said moving means replacing the one surface of each such member of said first portion of members with a respective one surface of a member of said second portion of members, the respective position of each of said second portion surfaces being in substantially the initial position of each of said first portion surfaces, and faced to be exposed to the sun whereby said spacecraft is provided with means to store for future use a plurality of solar cell members in a position wherein said one surfaces of said stored members are not initially exposed to the sun.

3,948,469

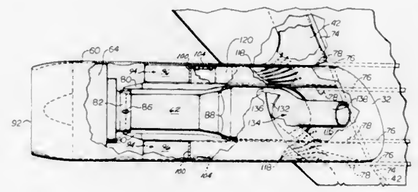
ENGINE MOUNTING AND BOUNDARY LAYER CONTROL FLUID SUPPLY APPARATUS

Robert B. Brown, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 25, 1974, Ser. No. 526,706

Int. Cl.² B64D *27/26*

U.S. Cl. 244—54 **13 Claims**



1. In an apparatus including a turbofan jet propulsion engine and an airfoil, said airfoil having a span, a leading edge, a trailing edge, a chordal plane, and first and second airfoil surfaces located on opposite sides of said chordal plane, said turbofan engine including turbine means for generating a first propulsive gas stream and fan means for generating a second propulsive gas stream, said turbine means being operatively coupled to drive said fan means, the improvement comprising:

cowl means for enclosing and supporting said turbofan engine, said cowl means having a forward portion located forwardly of the leading edge of said airfoil and having a rearward portion fixed to said airfoil, said forward portion being bisected by said chordal plane, said cowl means including means for mounting said turbofan engine in said forward portion of said cowl means, said cowl means having an inner surface spaced outwardly from said turbine means to define an annularly shaped fan duct therebetween, said forward portion of said cowl means terminating in a forwardly opening air intake for supplying air to said fan means and said turbine means, the rearward portion of said cowl means terminating in first and second nozzle means, said first nozzle means for directing a portion of said second propulsive gas stream from said fan means rearwardly in a chordwise direction across said first airfoil surface, said first nozzle means being positioned rearwardly from said leading edge, said second nozzle means for directing a portion of said second propulsive gas stream from said fan means rearwardly in a chordwise direction across said second airfoil surface, said second nozzle means being positioned rearwardly from said leading edge, said fan duct communicating with said first and second nozzle means to supply fan air thereto,

means for mounting said cowl means on said airfoil, and

turbine nozzle means coupled to said turbine means for receiving said first propulsive gas stream from said turbine means, bifurcating said first propulsive gas stream into first and second portions, and for directing said first and second portions of said first propulsive gas stream through respective ones of said first and second exhaust nozzles and rearwardly in a chordwise direction across respective ones of said first and second airfoil surfaces, said first and second nozzles being so oriented and constructed so as to direct respective portions of said first propulsive gas stream through the central portion of respective ones of said first and second exhaust nozzles, the portions of said second propulsive gas stream thereby surrounding respective portions of said first propulsive gas stream to shield said airfoil from said first propulsive gas stream.

3,948,470

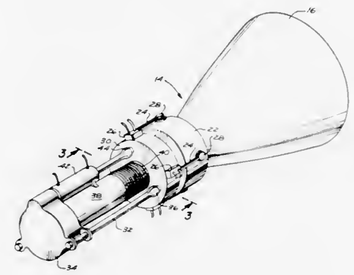
SYSTEM FOR IMPOSING DIRECTIONAL STABILITY ON A ROCKET-PROPELLED VEHICLE

Harold Perkins, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed July 31, 1974, Ser. No. 493,359

Int. Cl.² B64C *15/00*

U.S. Cl. 244—3.22 **3 Claims**



1. In a system particularly adapted for use in imposing directional control over a rocket-propelled vehicle, the improvement comprising:

A. a gimbal ring adapted to receive in supporting relation a rocket engine having a thrust axis concentrically related thereto;

B. an engine mounting platform supported for pivotal motion about an axis lying in a plane transversely related to the thrust axis of said rocket engine;

C. means for imparting pivotal motion to said gimbal ring about a plurality of axes extended diametrically therethrough including an annular array of uniformly spaced linear actuators rigidly affixed to said platform and having a plurality of axially extensible support beams disposed in substantial parallelism and connected to said gimbal ring; and

D. actuating means coupled with said engine mounting platform for imparting thereto pivotal oscillatory motion about said axis lying in a plane transversely related to the thrust axis of said rocket engine.

3,948,471

MODULAR KITE SYSTEM

Peter J. Pearce; Toby J. Cowan, both of Studio City, and Mark E. Jurey, Reseda, all of Calif., assignors to Synestructics, Inc., Chatsworth, Calif.

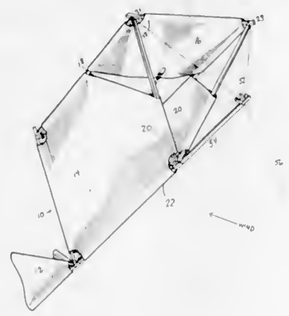
Filed Sept. 16, 1974, Ser. No. 506,321

Int. Cl.² B64C *31/06*

U.S. Cl. 244—153 R **13 Claims**

8. In a kite of the type having a frame structure with two plane aerodynamic surfaces intersecting at a dihedral angle and spreading in a generally upward direction when the kite is being flown, the improvement comprising: an air dam located above and between the aerodynamic surfaces, said air dam having its upwind edge attached to a normally horizontal lateral cross member of the frame and having a stiffened downwind edge; and tension means for yieldingly urging the center of the downwind edge of said air dam toward the down-

wind end of the line of intersection of the plane aerodynamic surfaces, whereby the stiffened downwind edge is capable of



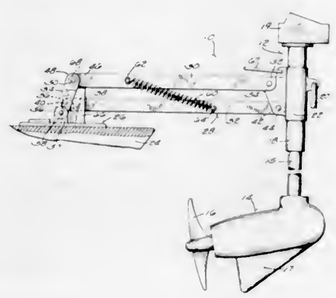
moving away from the line of intersection by a distance related to the windspeed.

3,948,472

MOUNTING ARRANGEMENT FOR SMALL OUTBOARD MOTORS

Silas L. Metcalf, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed May 3, 1974, Ser. No. 466,537
Int. Cl.² F16M *1/02*; **B63H** *21/26*
U.S. Cl. 248—4 **13 Claims**



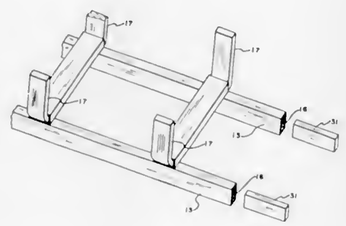
1. An outboard motor mounting arrangement including a member adapted to be mounted on a boat hull, a bracket movable between a storage position and an operating position and adapted to support an outboard motor, a first rigid link having one end pivotally connected to said bracket about an axis fixed with respect to said bracket and having a second end pivotally connected to said member about an axis fixed with respect to said member so as to extend in one direction from said member when said bracket is in the operating position, and so as to extend in the opposite directon from said member when said bracket is in the storage position, link means including a second rigid link having one end pivotally connected to said bracket about an axis fixed with respect to said bracket and having a second end, and means including a movable pivotal connection connecting said second end of said second link to said member, and means for yieldably urging said movable pivotal connection in the direction toward said bracket when said bracket is in the operating position to thereby releasably maintain said bracket in the operating position.

3,948,473

UNIVERSAL CABLE RACK

John R. Mason, Los Angeles, Calif., assignor to Dracon Industries, Chatsworth, Calif.

Filed Apr. 29, 1974, Ser. No. 464,849
Int. Cl.² F16L *3/22*
U.S. Cl. 248—49 **7 Claims**



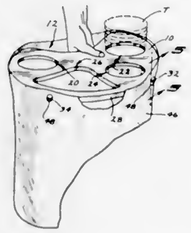
1. A unitary cable rack for use in supporting cable runs, comprising first and second tubular side stringers extending in parallel relation, one edge on each of said tubular side stringers lying in a common plane, a plurality of tubular cross straps having one side near the ends thereof affixed to said one edge of each of said tubular side stringers, said tubular cross-straps having accessible open ends and being spaced along said tubular side stringers and extending therebetween, a plurality of horn members, a generally vertical leg on each of said horn members, a generally horizontal leg on each of said horn members for insertion in said accessible open ends of said cross-straps, and an end portion on said generally horizontal leg, said end portion being bent out of alignment with the remainder of said generally horizontal leg for retaining said horn members in said cross straps, whereby the unitary cable rack has a cable run depth determined by the length of said generally vertical leg.

3,948,474

DEVICE FOR COLLECTING AND STORING TUMBLERS, LITTER AND THE LIKE

James F. Pomroy, St. Paul, Minn., assignor to Plastics, Inc., St. Paul, Minn.

Filed Dec. 23, 1974, Ser. No. 535,303
Int. Cl.² B65B *67/04*
U.S. Cl. 248—99 **2 Claims**



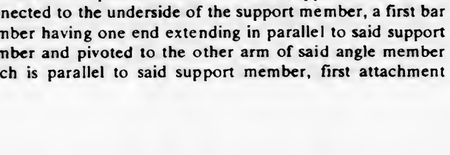
1. A device for collecting, storing and carrying tumblers, litter and the like comprising:
   a. a continuous planar flat support having
   b. a hand receiving recess extending inwardly from the edge of the flat support adapted for positioning of the user's hand within the recess with the fingers thereof under the support and within the bag substantially centrally thereof to thereby allow a balancing of the support on the user's fingers.
   c. at least one opening formed in said support to engage the wall of a tumbler inserted partially through the opening and allow further tumblers to be stacked in said first mentioned tumbler,
   d. a bag,
   e. a further opening formed in said support and spaced from said recess and said opening for the depositing of litter through said further opening and into the bag, and
   f. means for removably attaching said bag to the periphery of the support and across and outer extremities of the hand receiving recess for receiving items passed through said further opening.

3,948,475

HEADLIGHT MOUNTING BRACKET

Ronald W. Jones, 1217 Eastside Road, El Cajon, Calif. 92020

Filed Sept. 13, 1974, Ser. No. 505,549
Int. Cl.² E06B *7/28*
U.S. Cl. 248—226 R **3 Claims**



1. A headlight mounting bracket for mounting a headlight between the fork tubes of a motorcycle wherein the improvement comprises:
   an elongated central body member including means for mounting a headlight on said central body member,
   a pair of threaded adjustment bolts fixedly secured to, and extending from opposite ends of, said central body member,
   a sleeve adjustment nut threadably received on each of said adjustment bolts,
   an engagement sleeve received over each of said adjustment bolts each said sleeve having a first end frictionally contacting said adjustment nuts, each said engagement sleeve movable in a longitudinal direction along the axis of said bolt without rotation in response to said adjustment not being rotatably moved along the axis of said bolt,
   said engagement sleeve having second arcuate concave engagement ends for frictionally engaging the frame tubes of a motorcycle and holding a headlight on said central body member in a selected position and selected headlight aim,
   said sleeves comprise generally cylindrical members with a central bore sized to receive said adjustment bolts,
   said first ends of said sleeve having generally planar end walls oriented at 90° to the central axis of said sleeves,
   and said end walls being of a diameter to engage a face of said nuts.

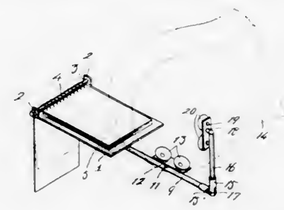
3,948,476

DETACHABLE MUSIC STAND FOR USE IN CONJUNCTION WITH A STRINGED INSTRUMENT

Shiniti Kuniyosi, 77-3-6 Minami Tumori-cho, Nisinari, Osaka, Japan

Filed Dec. 5, 1974, Ser. No. 518,803
Int. Cl.² G10G *5/00*
U.S. Cl. 248—443 **5 Claims**

1. A detachable music stand for use in conjunction with a stringed instrument which comprises in combination a music note support member, an angle member having one arm which is normal to the plane of said music note support member and connected to the underside of the support member, a first bar member having one end extending in parallel to said support member and pivoted to the other arm of said angle member which is parallel to said support member, first attachment means mounted on said first bar member at a midpoint between the opposite ends of the bar member for attaching to a selected portion of said instrument, a second bar member having one end pivoted to the other end of said first bar member for pivotal movement between a first position in which the



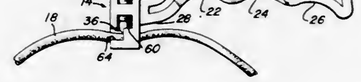
second bar member extends substantially in parallel to the first bar member and a second position in which the second bar member extends substantially at right angles thereto and second attachment means mounted at the other end of said second bar member for attaching to another portion of said instrument.

3,948,477

SCREW CLAMP FOR FLEXIBLE TUBING

Esteban Torres Lample, Guadalajara, Mexico, assignor to United States Surgical Corporation, New York, N.Y.

Filed July 2, 1973, Ser. No. 375,358
Int. Cl.² F16K *7/06*
U.S. Cl. 251—8 **4 Claims**



1. A screw clamp for use in an intravenous set having a screw clamp for clamping the flexible tubing for transporting parenteral fluid from the parenteral fluid container to the patient, the improvement comprising a screw clamp having a handle of suitable size and shape for being gripped by the middle, ring and small fingers of the hand, said handle including a relatively flat plate having a generally rectangularly shaped portion adapted to being gripped by said hand; a screw housing attached to said handle and comprising a rectangular prism having a base with a flat surface adapted to support one surface of said tubing, apertures formed in opposed side walls of said prism adjacent the flat surface of said base through which said flexible tubing can be passed, and a bore spaced from the flat surface of said base having internal screw threads in a wall portion thereof; and a thumbscrew threaded in said bore and defining a variable opening with said base, said thumbscrew having a cylindrical portion adapted to being grasped by said thumb and forefinger, a shaft having a threaded portion for engaging the internally threaded portion of said screw housing and an unthreaded end portion having a substantially flat bottom surface for contacting and clamping said flexible tubing, said thumbscrew adapted to being rotated with the thumb and forefinger of the hand gripping said handle to clamp the flexible tube against the flat surface of said base and vary the flow rate of fluid flowing therethrough, said handle, said screw housing, and said thumbscrew being formed from moldable plastic and said handle and said screw housing being of unitary construction.

3,948,478

HYDRAULIC SERVO SYSTEM FOR STEAM TURBINES

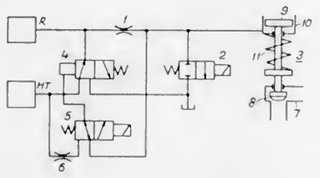
Tyge Vind, Finspong, Sweden, assignor to Stal-Laval Turbin AB, Finspong, Sweden

Filed Mar. 21, 1974, Ser. No. 453,361

Claims priority, application Sweden, Mar. 23, 1973, 73041006

Int. Cl.² F16K 31/12

U.S. Cl. 251—29 2 Claims



1. In a hydraulic servo system for steam turbines and the like for actuating the main valve between the turbine and the steam source in addition to other normal operational functions, including feeding source

means for supplying hydraulic fluid of a predetermined pressure to said system and

a servo motor having a connection to said system and actuated by the hydraulic fluid normally so as to maintain the main valve in opening position to supply steam to the turbine; the improvement enabling drainage of the servo motor and the system independent of one another comprising

a. drainage means operative to drain hydraulic fluid from said servo motor to rapidly close said main valve;

b. adjustable valve means connected to said hydraulic fluid supply means and to said drainage means between the two;

c. hydraulic conduit means located between said adjustable valve and said drainage means for feeding hydraulic fluid from the supply means to said servo system,

d. throttling means located in the hydraulic conduit means between said drainage means and said valve means for forming a throttled portion in said system;

e. said valve means being provided with control means controlled by the pressure drop between said throttling means and said servo motor to drain hydraulic fluid from said throttled portion and the servo system and effective to interrupt the supply of hydraulic fluid thereto in response to the pressure drop resulting from rapid drainage of hydraulic fluid from the servo motor through said drainage means.

3,948,479

LABYRINTH TYPE VALVE FOR HIGH PRESSURE DROP APPLICATIONS

Alfred Bedo, Raleigh, N.C., and Edward Beck, Cleveland Heights, Ohio, assignors to Sno-Trik Company, Solon, Ohio

Filed June 17, 1974, Ser. No. 479,865

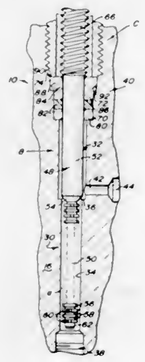
Int. Cl.² F16K 47/04

U.S. Cl. 251—121 12 Claims

1. A valve device for obtaining a constant rate of fluid output from a variable high pressure fluid input, said valve comprising:

a valve body having first and second ends including an elongated stem receiving passage extending between said ends; a valve seat disposed along said passage intermediate of said ends; a fluid inlet communicating with the passage on one side of said valve seat adjacent said second end, at least that portion of said passage extending between said fluid inlet and said valve seat being smoothed walled and having a substantially constant diameter over the axial length thereof; and, a fluid outlet communicating with said passage on the other side of said valve seat;

an elongated valve stem receivable within the passage to define an annular fluid flow chamber a least partially over the length thereof and including a seat engaging area thereon, the stem further including an elongated fluid flow control portion comprised of a plurality of first and second interchangeable annular sleeves releasably received thereon with said first sleeves defining a plurality of axially spaced apart, radially extending fins and said second sleeves defining spacer members, said first sleeves having diameters greater than the diameters of the second sleeves and including fluid flow means therein for allowing fluid flow therepast generally axial of said stem, said stem being selectively movable within said passage be-



tween a first position with said seat engaging area in engagement with said seat for blocking fluid flow from said inlet to said outlet with said flow portion of said stem fully inserted into that portion of said passage extending between said seat and said fluid inlet and a second position with said seat engaging area spaced from said seat toward said valve body first end with a portion of said flow control portion withdrawn from that portion of said passage between said seat and said inlet, said flow control portion of said stem establishing a variable tortuous fluid flow path along at least a portion of said passage between the fluid inlet and outlet for obtaining the desired constant rate of fluid output through the valve from a variable high pressure input; and,

alignment and sealing means for said valve stem disposed adjacent the first end of the valve body.

3,948,480

ROTARY BALL VALVE

George J. Paptzun, and Anthony B. Monnig, both of Cincinnati, Ohio, assignors to The Lunkenheimer Company, Cincinnati, Ohio

Filed Nov. 15, 1973, Ser. No. 416,051

Int. Cl.² F16K 5/00

U.S. Cl. 251—315 30 Claims

1. A rotary ball valve comprising:

a valve body having an interior wall defining a passageway therethrough,

a first annular seat support means having a seat support surface of frustoconical configuration extending inwardly into said passageway;

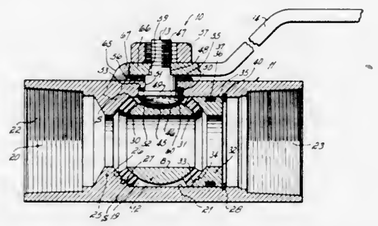
a first thin annular seat ring engaging said seat support surface;

a ball member in engagement with said seat ring and having a bore therethrough;

a second thin annular seat ring engaging said ball;

a second seat support means having a seat support surface of frustoconical configuration engaging said second annular seat ring;

means for securing said seat rings, said ball member and said seat support means in their respective positions within said passageway and in respective sealing relationship with each other and with said interior wall, and



a seat supporting surface of both said seat support means respectively engaging said interior wall at an angle with respect thereto, said interior wall extending in the form of a cylinder forwardly from said respective engagements toward said ball to provide sealing surfaces for engagement by said seat rings,

said seat rings each engaging said interior wall at said cylindrical extensions, said seat support surfaces, and said ball member.

3,948,481

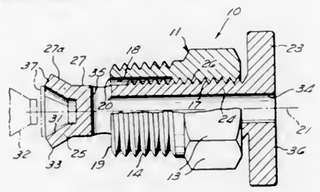
DRAINCOCK FOR AUTOMOTIVE COOLING SYSTEM

Barry R. Pollock, University Heights, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio

Filed May 2, 1974, Ser. No. 466,164

Int. Cl.² F16K 5/02

U.S. Cl. 251—351 1 Claim



1. A valve assembly for draining a fluid carrying vessel such as in an automotive cooling system, comprising a tubular integral body having external threads on a forward end, said body having a through bore, said through bore having internal threads at said rearward body end and a counterbore at said forward body end, said body including a radial end face at said forward end, a junction of said radial end face and said counterbore forming an annular valve seat, a valve stem having external threads in engagement with said internal body threads, said stem having an integral handle at a rearward end and an integral head at a forward end, said handle having a transverse width substantially greater than the diameter of said internal body threads, said stem having an axial passage extending from a point adjacent said head through a rearward face of said handle, said stem having a port on its periphery communicating with said axial passage to conduct fluid from a zone surrounding said head through said stem, said stem head having a conical tubular wall section along substantially its full length and increasing in diameter in a direction away from said handle, said conical tubular head being plastically deformed radially outwardly from an initial major diameter at least as small as said internal body threads to a major diameter sufficient to provide a conical sealing surface adapted to sealingly engage said seat.

3,948,482

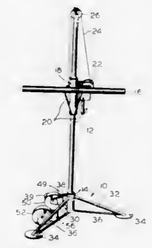
CAMPER JACKS

Carl R. Brophy, Box 122, Clackamas, Oreg. 97015

Filed Aug. 21, 1975, Ser. No. 606,476

Int. Cl.² B66F 7/26

U.S. Cl. 254—4 R 7 Claims



1. In a tripod camper jack,

post means,

carrier means movable up and down the post means,

a pair of fixed leg means rigidly fixed to the post means,

folding leg means,

means mounting the folding leg means pivotally on the post means for movement between a jacking position extending away from the pair of fixed leg means and a storage position extending along one of the fixed leg means,

a first roller mounted on the other of the fixed leg means in a raised position when the folding leg means is in its jacking position,

and a second roller mounted on the folding leg means in a raised position when the folding leg means is in its jacking position,

the rollers being positioned away from the leg means and adapted to engage the ground when the post means is tilted and the folding leg means is in its storage position.

3,948,483

SLIDING SHUTTERING RAISING DEVICE FOR THE CONTINUOUS PRODUCTION OF PARTITIONS AND SHUTTERING FITTED WITH THIS DEVICE

Jean Marie Charles Roger Gonzagues de Leaumont, Reims, France, assignor to Le Ciment Arme Demay Freres, Reims, France

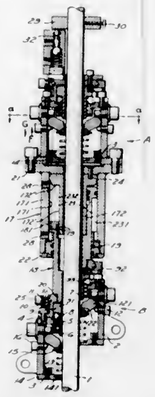
Filed May 31, 1974, Ser. No. 474,882

Int. Cl.² B66F 1/00

U.S. Cl. 254—106 5 Claims

1. In combination, a slide bar and a device for raising sliding shutterings on said slide bar, said sliding shuttering raising device comprising two spaced apart casing members and a jack member interconnecting said casing members, said casing members and said jack member each being coaxial with and movable on said slide bar, said jack member including a cylinder connected to one of said casing members and a piston connected to the other of said casing members, said piston and cylinder defining two separate fluid pressure chambers and said piston and cylinder being mounted for reciprocating movement relative to each other, said casing members each including a set of unidirectional locking jaws and an abutment surface surrounding said slide bar and locking jaws, each set of said locking jaws including a plurality of jaw members circumferentially disposed about said slide bar between said slide bar and said abutment surface, said abutment surface extending solely in the aixal direction and being spaced radially outwardly a predetermined distance from said slide bar, said jaw members each having a radially innermost front

surface and a radially outermost rear surface, said jaw members each having a length between said innermost surface and said outermost surface exceeding said predetermined distance, said innermost surface being spaced axially vertically below said outermost surface whereby said jaw members are angularly disposed in the space between said slide bar and said abutment surface, the vertical cross-sectional shape of said



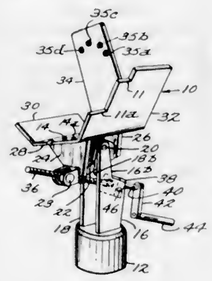
innermost surface being a sharp edge adjacent said slide bar arranged to engage said slide bar, said outermost surface being constructed and arranged to butt against said abutment surface, and spring means acting axially upwardly against said jaw members and urging said innermost surface against said slide bar and urging said outermost surface against said abutment surface.

3,948,484

TRANSFER CASE ASSEMBLY REMOVAL TOOL

William J. Tesinsky, Box 75, Stockett, Mont. 59480

Filed Dec. 20, 1974, Ser. No. 534,870
Int. Cl.² B66F *13/00*
U.S. Cl. 254—134 **2 Claims**



1. A tool for mounting onto a jack for supporting and securing a transfer case to be installed or removed from the transmission of a vehicle, said tool comprising

a. means for cradling a transfer case comprising a bottom plate, a pair of cradling walls extending from opposite sides from said bottom plate at an angle of more than 0° and less than 90°, and a rear plate extending upwardly from said bottom plate and being substantially normal to said bottom plate, said rear plate and side walls being unconnected to each other except by said bottom plate,

b. means for directly securing a transfer case to said cradling means, said securing means comprising means defining a plurality of apertures in said rear plate for receipt of bolts attachable to the transfer case to secure said rear plate to the transfer case,

c. a base member for mounting said tool onto a jack, and

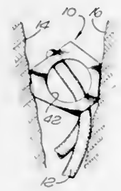
d. means for pivoting said cradling means about a substantially horizontal axis so that a transfer case secured thereto may be swung away from vehicle parts obstructing removal of the transfer case, said pivoting means comprising a pivot arm operatively connected to said cradling means bottom plate, a threaded pin operatively connected to said pivot arm, an elongated bolt threaded along most of the length thereof and disposed through said threaded pin and having a crank handle attached at one end thereof, a pair of side plates attached to said base and extending upwardly therefrom said side plates straddling said pivot arm and said elongated bolt, a roll pin pivotally connecting said pivot arm to said side plates, and a swivel block pivotally received between said side plates and receiving a non-threaded portion of said threaded bolt therein, said swivel block allowing relative rotary movement between it and said threaded bolt but not allowing relative longitudinal movement therebetween.

3,948,485

IRREGULAR, POLYGONAL MOUNTAINEERING CHOCK

Yvon Chouinard, 235 W. Santa Clara, Ventura, Calif. 93001, and Thomas M. Frost, 135 N. Evergreen Drive, Ventura, Calif. 93003

Filed Apr. 9, 1974, Ser. No. 459,430
Int. Cl.² B66D *1/00*
U.S. Cl. 254—135 R **17 Claims**



1. A mountaineering chock having a polygonal body with opposed ends and a plurality of side faces which intersect at longitudinally extending edges, in which:

there are two sets of opposed faces, with the opposed faces in in each set defining an acute angle;

the median distance between the opposed faces in one set is different from the median distance between the opposed faces in the other set, to provide a narrower set of faces and a wider set of faces; and

means are provided for receiving a rope sling in supporting engagement with said body and extending therefrom between the opposed faces of each of the sets of faces.

3,948,486

DEVICE FOR APPLYING A DETERMINED FORCE TO AN ELEMENT CONNECTED TO AN INSTALLATION SUBJECTED TO ALTERNATING MOVEMENTS

Gerard Jourdan, Paris; Philippe Joubert, Meudon-la-Foret, and Serge Holub, Saint Sebastion-sur-Loire, all of France, assignors to Institut Francaise du Petrole, des Carburants et Lubrifiants, France

Filed Sept. 7, 1973, Ser. No. 395,011
Int. Cl.² B66D *1/50*
U.S. Cl. 254—172 **31 Claims**

1. A device for applying a determined force to an element connected to an installation subjected to alternating movements, comprising, in combination, means for passive compensation which applies compensating forces to the element in response to the alternating movements, and complementary

means for effecting fine compensation of said compensating forces of said passive compensating means, said means for passive compensation being subjected to the action of a mass of gas whose volume and pressure vary as a function of the movements of the installation, said passive compensating means comprising at least one jack fed with fluid under pressure through said mass of gas, said jack exerting on the element a force whose value is proportional to the value of the pressure of said mass of gas, said passive compensating means being disposed in a geometrical configuration for applying a correcting factor to pressure variations in said mass of gas to effect said compensating forces, said correcting factor having a value depending on a trigonometric function of at least one variable angle of said geometrical configuration of said passive compensating means, said complementary means for effecting fine compensation actuating said one jack of said passive compensating means in response to the actual value of at least one measured parameter selected among the parameters whose values are a function of the movements of the installation.

5. A device for applying a determined force to an element connected to an installation subjected to alternative move-

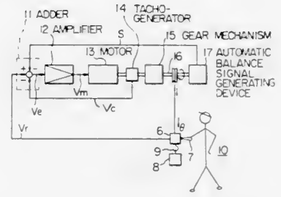
ments, comprising in combination passive compensating means for applying compensating forces to the element in response to the alternate movements and complementary means for effecting fine compensation of said compensating forces of said passive compensating means in response to the actual value of at least one measured parameter being a function of the alternating movements of the installation, said passive compensating means comprising at least one jack connected to at least one accumulator of pressurized fluid, said at least one jack having at least one element displaceable under the action of said alternating movements, and said passive compensating means being disposed in a geometrical configuration for applying a correcting factor to pressure variations in said accumulator to effect said compensating forces, said correcting factor having a value depending on a trigonometric function of at least one variable angle of said geometrical configuration of said passive compensating means, said complementary means being coupled to said one jack for varying said geometrical configuration of said passive compensating means in order to vary said correcting factor such that said fine compensation of said compensating forces are effected.

3,948,487

CONTROL LEVER MECHANISM IN LIFTING APPARATUS

Kenro Motoda, 9-32-4, Kami-Kitazawa, Setagaya, Tokyo, Japan

Continuation-in-part of Ser. No. 460,143, April 11, 1974, abandoned, which is a continuation of Ser. No. 356,065, May 1, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 512,889
Int. Cl.² B66D *1/48*
U.S. Cl. 254—173 R **1 Claim**



1. In a lifting apparatus for moving a load, said lifting apparatus being of the type including a crane type arm connected to and movably operable by a driving section, an operating section connected to said crane type arm, a load carrying member attached to said operating section, and a control lever mechanism mounted in said operating section and including a movable lever and means for generating a target speed signal representative of movement of said lever and for supplying said signal to said driving section, thereby operating said driving section to move said crane type arm; the improvement mechanism said control lever mechanism mechanism

a potentiometer having a rotary shaft, said potentiometer comprising means for generating said target speed signal upon rotation of said rotary shaft;

a driven gear fixed to said rotary shaft;

a sector-shaped driving plate having a sector gear in meshing engagement with said driven gear;

a driving shaft fixed to said driving plate and extending outwardly therefrom;

a lever attached to an end of said driving shaft, such that said driving shaft and said lever form a T-shaped rotary lever;

whereby clockwise or counterclockwise rotation by hand of said T-shaped rotary lever results in a corresponding rotation of said driving plate and respective counterclockwise or clockwise rotation of said driven gear and said rotary shaft of said potentiometer, thereby generating said target speed signal;

a first spring connected to a first side of said driven plate; and

a second spring connected to a second side of said driven plate;

said first and second springs comprising means, upon release of said T-shaped rotary lever, for returning said driven plate to a balanced null position whereat said target speed signal is zero.

3,948,488

MOUNTING MEANS FOR POWER ANCHOR WINCH

Norman D. Brockelsby, Grand Island, Nebr., assignor to Dutton-Lainson Company, Hastings, Nebr.

Filed Sept. 12, 1974, Ser. No. 505,316
Int. Cl.² B66D *1/00*
U.S. Cl. 254—186 R **5 Claims**

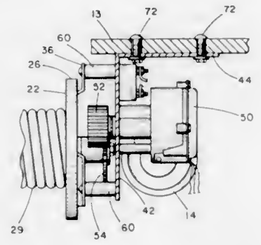
1. In a power winch for raising and lowering a boat anchor, said winch including a reel with a rim drivingly connected to a motor for rotating said reel,

an improved means for mounting said winch on a boat comprising, in combination:

a generally L-shaped mounting bracket, having a first plate and a second plate forming said L-shaped mounting bracket, said first plate having an inner surface and an outer surface, said motor being mounted on the inner surface of said first plate,

means projecting from the outer surface of said first plate

a reel bracket rotatably connected to said reel, said reel bracket including a plate connected adjacent to and within the rim of said reel and substantially perpendicular to the axis of rotation of the reel and at least three flange plates substantially parallel with said first plate and projecting outwardly of said rim, said flange plates positioned axially outward from said rim whereby said reel may be



freely rotated as the flange plates rest against a mounting location,

means for connecting said projecting means to said reel bracket, and

means on said second plate for connecting said second plate to a desired mounting surface whereby said power winch may be mounted on the boat in any one of a number of desired locations or orientations in which either the said second plate is mounted against the desired mounting surface or in which the motor and L-shaped bracket are on one side of the desired mounting location and the reel and reel bracket are on the other side of said mounting location.

3,948,489

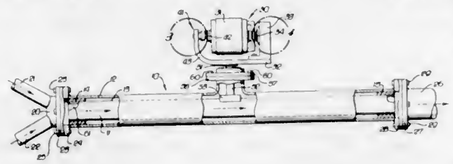
IN-LINE MIXER FOR FLUIDS

Harold T. Sawyer, 845 Via de la Paz, Pacific Palisades, Calif. 90272

Continuation of Ser. No. 302,003, Oct. 30, 1972, abandoned. This application Aug. 12, 1974, Ser. No. 496,396

Int. Cl.² B01F *5/00, 11/00*

U.S. Cl. 259—2 **9 Claims**



1. A mixer for the continuous mixing of fluids comprising a hollow main conduit for the continuous passage of fluids having an inflow port and an outflow port and being resilient throughout the length thereof between said ports, resilient supporting means having a supporting engagement with said conduit throughout at least a portion of its length, a plurality of supply conduits for respective fluids to be mixed, said supply conduits having discharge ends directed into said inflow port, a single source of sinusoidal energy having a predetermined mass and including a mounting member, said mounting member being subject to said sinusoidal energy, and being in direct communication with said hollow main conduit at a single location intermediate opposite longitudinal extremities of said resilient supporting means, said single source of sinusoidal energy having a line of action in perpendicular alignment with the longitudinal centerline of said main conduit, said source of sinusoidal energy having an attachment to the main conduit at an antinode and extending longitudinally for a distance less than the distance between adjacent nodes.

3,948,490

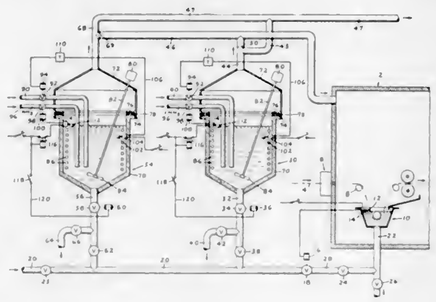
METHOD FOR MIXING VOLATILE LIQUID WITH NON-VOLATILE MATERIAL

Walter S. Troope, Latham, N.Y., assignor to Cluett, Peabody & Co., Inc., New York, N.Y.

Division of Ser. No. 234,442, March 9, 1972, Pat. No. 3,885,587. This application Mar. 5, 1975, Ser. No. 555,637

Int. Cl.² B01F *15/02;* **G05D** *11/02*

U.S. Cl. 259—4 R **12 Claims**



1. A method for mixing a measured amount of nonvolatile material with a measured amount of volatile liquid and for maintaining the proportion of such measured amount of material in such measured amount of liquid at substantially a constant level, the steps comprising, feeding said volatile liquid into an insulated vessel and by volatilizing a portion of said liquid and by circulating a coolant to lower the temperature of said vessel and said liquid therein, while continuing to feed said liquid into said vessel and after said liquid at said lowered temperature has reached a predetermined level in said vessel adding to said liquid in said vessel said measured amount of non-volatile material, continuing said feed of said liquid into said vessel until the liquid level of said volatile liquid in said vessel reaches said measured amount, as said liquid volatilizes, adding to said vessel additional of said liquid and maintaining said volatile liquid in said vessel at said measured amount and, while feeding said liquid and said non-volatile material to said vessel, agitating said liquid and said non-volatile material in said vessel.

3,948,491

PROCESS FOR BLENDING AN ADDITIVE SUCH AS COLOUR PIGMENT ETC. WITH A PLASTIC MATERIAL AND BLENDING APPARATUS INTENDED TO BE USED FOR SAID PROCESS

Kjell G. I. Karlsson, Tingsryd, Sweden, assignor to Perstorp AB, Perstorp, Sweden

Filed Mar. 28, 1974, Ser. No. 455,885

Int. Cl.² B01F *15/02;* **B29B** *1/10*

U.S. Cl. 259—21 **2 Claims**

1. An apparatus for molding a plastic comprising

a screw enclosed in a first housing for feeding plastic material to a molding means,

an opening in said first housing,

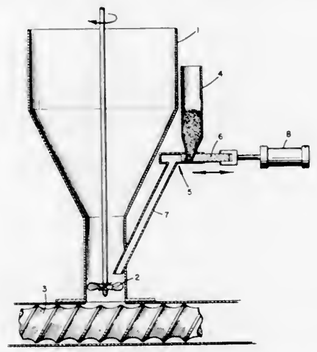
a first hopper for storage of plastic material having its longitudinal axis substantially perpendicular to that of the first housing and having a tubular portion communicating with the opening,

a second hopper for storage of a material to be mixed in metered amounts with the plastic material,

a second housing having its longitudinal axis substantially perpendicular to that of the first hopper, said second housing having an upper wall, a bottom wall and sidewalls enclosing a space,

a first opening in the said upper wall and a second opening in the said lower wall spaced longitudinally from the first opening, said second hopper being disposed above said first opening and communicating therewith,

a reciprocating plate having an opening therethrough disposed in the space enclosed by the second housing and slidably disposed against the upper and lower walls of the



second housing, whereby the volume of the said metered amounts is determined by the number of openings in the plate, the cross-section of the openings in the plate, the number of reciprocating motions of the plate per unit of time, and the thickness of the plate,

a conduit communicating from said second opening and with said tubular portion immediately above the opening in the first housing,

a stirrer disposed in the tubular portion of the first housing adjacent to the point where said conduit communicates with the tubular portion, and

means for sliding the plate back and forth to alternately align the opening therethrough with said openings in the upper and lower walls.

3,948,492

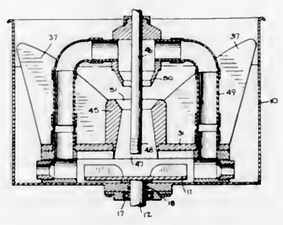
CENTRIFUGAL MIXING APPARATUS AND METHOD

Douglas W. Hege, Huntington Beach, Calif., assignor to Hege Advanced Systems Corporation, Huntington Beach, Calif.

Division of Ser. No. 259,678, June 5, 1972, Pat. No. 3,820,759. This application May 1, 1974, Ser. No. 466,023

Int. Cl.² B01F *5/16, 7/20, 15/02*

U.S. Cl. 259—24 **4 Claims**



1. An apparatus for mixing a second material into a first fluid material of the type including a motor-driven rotating centrifugal impeller and a conduit having an outlet coaxial with and adjacent to the centrifugal impeller for feeding the second material into the center of the impeller for outward flow therethrough, the improvement comprising:

a container for the first material;

means for directing a portion of the first fluid from the container inward for mixing with the second material as it enters the center of the impeller; and

means for directing at least a portion of the mixture flowing from the impeller outward at high velocity for dispersion in the fluid in the container, said means including a structure in radially spaced surrounding relation to the circumference of the centrifugal impeller, said structure having at least two circumferentially spaced passageways with inlets adjacent the impeller and equally spaced outlet nozzles opening into the container for conserving the momentum imparted to the fluid mixture by the impeller to produce secondary mixing action with the remainder of the material in the container.

3,948,493

PROCESS FOR CONVEYING A DEVELOPER MIXTURE

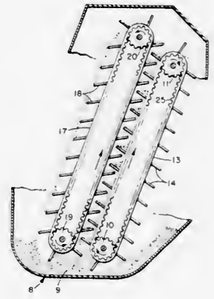
Hermann Moser, Darmstadt, and Wolfram Saupe, Mammolshain, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed June 27, 1973, Ser. No. 374,076

Claims priority, application Germany, June 30, 1972, 2232010

Int. Cl.² B01F *7/04*

U.S. Cl. 259—99 **7 Claims**



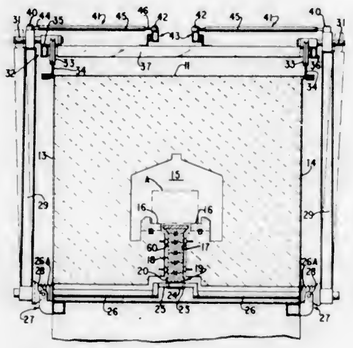
1. Apparatus for developing an electrostatic latent image on a photoconductor with a toner enriched dry developer mixed with a depleted dry developer which has fallen back from a circulating conveyor belt into a reservoir for the developer mixture, comprising a first endless inclined conveyor belt passed around two rollers, conveyor plates positioned on said belt at intervals along its length, said plates being mounted to intercept the belt substantially at right angles to the center line thereof and projecting outwardly from the belt, said belt and plates being inclined together in a manner that after the passing of the conveyor belt through the developer reservoir a substantial portion of the developer mixture raised from the stock falls back from the conveyor plates into the reservoir, while the remaining developer mixture is raised to a receiving station, a second circulating endless conveyor belt having plates positioned parallel to the first endless conveyor belt, said plates of the second belt intermeshing with the plates of said first belt in a comb-like manner, removing a portion of the developer mixture raised from the reservoir and returning a portion to the reservoir, said belts being circulatable in opposite directions.

3,948,494

WALKING BEAM FURNACE

Ewald R. Werych, Elm Grove, Wis., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed Oct. 21, 1974, Ser. No. 516,190
Int. Cl.² F27B 9/14
U.S. Cl. 266—5 H **12 Claims**



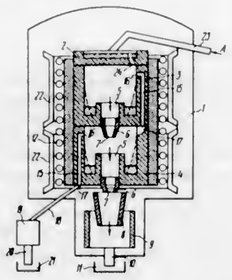
1. In a walking beam furnace, the combination of an elongated hearth having a floor with a longitudinal slot therein, a walking beam within said floor slot and having an upper edge at the approximate level of said hearth floor and a lower edge portion, means engageable with the lower edge portion of said walking beam for intermittently raising, moving forward, and lowering the beam, and means on the top of the furnace operatively connected to said means engageable with the lower portion of said walking beam means for actuating said means engageable with the lower portion.

3,948,495

APPARATUS FOR CONTINUOUS VACUUM-REFINING OF METALS

Vladimir Semenovich Cherednichenko, ulitsa Zorge, 269, kv. 79; Gennady Ivanovich Orlov, ulitsa Vatutina, 27, kv. 20, and Jury Anatolievich Naryshkin, ulitsa Bljukhera, 7, kv. 55, all of Novosibirsk, U.S.S.R.

Filed July 14, 1975, Ser. No. 595,683
Int. Cl.² C22B 25/06
U.S. Cl. 266—16 **2 Claims**



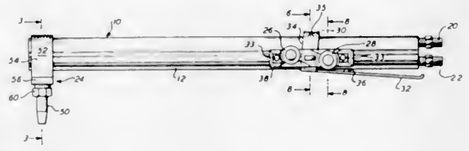
1. An apparatus for continuous vacuum-refining of metal, comprising a cylindrical vacuum chamber; a range of trays, having each a central hole and side walls, said trays being accommodated in said vacuum chamber, disposed in succession one above another in a vertical plane, forming a column and adapted to receive preliminary melted impure metal; a vapor pipe formed by the holes of said trays; a heater set up inside said vacuum chamber, encompassing the column of said trays and provided with a current lead to feed electric energy thereto for heating the metal accommodated in the trays and evaporating low-boiling impurities therefrom, said impurities being removed along said vapor pipe; a condenser located under the column of said trays and adapted to receive the impurities emerging from said vapor pipe; each of said trays has an overflow conduit located in its side wall at a certain distance from its upper end face, said overflow conduit communicating with the tray space, being positioned parallel to the tray axis, with the outlet of this overflow conduit being in communication with the underlying tray; an induction coil encompassing the column of said trays and establishing a magnetic field under whose effect the molten metal accommodated in the tray rotates climbing to the level of said overflow conduit; a cooler set up under said vacuum chamber and communicating with said outlet of said overflow conduit of the lower tray to supply metal therein.

3,948,496

OXYGEN-FUEL CUTTING TORCH

Henry A. Miller, Scotch Plains, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Jan. 16, 1975, Ser. No. 541,557
Int. Cl.² B23K 7/00
U.S. Cl. 266—23 P **17 Claims**



1. An oxygen-fuel cutting torch comprising:
a. an elongated body of extruded metal having a plurality of straight-through gas feed passages formed longitudinally of the body during the extrusion thereof,
b. a lateral socket at one end of the torch body extending transversely of and communicating with all the gas feed passages,
c. a gas dispensing tip mounted within the socket to receive and distribute gases from the communicating passages respectively, said tip being adapted to direct oxygen from a first passage to a cutting oxygen outlet and to direct oxygen and fuel gas from the second and third passages respectively, to a preheat flame outlet,
d. a manually operable valve for controlling feed of cutting oxygen from the first passage to the dispensing tip,
e. the second passage and the third passage each being intersected respectively by a transverse bore in the torch body,
f. and a manually adjustable throttling valve mounted in each transverse bore for adjusting respectively, the preheat oxygen and fuel gas flow rates.

3,948,497

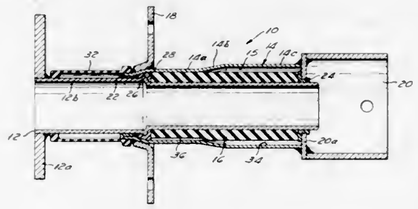
ENERGY ABSORBER

Thomas L. Lovitt, Huron; Thomas J. Lovitt, Sandusky; George W. Wight, Jr., Huron; Paschal P. Zapponi, Cleveland, and John C. Wagner, Norwalk, all of Ohio, assignors to Gould Inc., Chicago, Ill.

Filed July 8, 1974, Ser. No. 486,386
Int. Cl.² F16F 11/00
U.S. Cl. 267—9 B **14 Claims**

1. In an elastomeric spring and frictional dampening shock absorber of the type wherein an elastomeric member is loaded and relatively displaced by a movable member to provide additive, simultaneous frictional reaction forces and resilient deformation reaction forces through the stroke of said movable member the improvement comprising;

a. friction interface means for controlling the maximum frictional reaction force at a substantially constant predetermined value,
b. preload means for maintaining a predetermined minimum loading of said elastomeric member,
c. force relating means for inversely relating said friction reaction forces and said resilient deformation forces and for providing a substantially constant additive total of said reaction forces through a predetermined stroke of said movable member, said force relating means comprising primary friction means including a surface portion engaging said elastomeric member in sliding relationship to provide frictional reaction forces proportional to the area of engagement therebetween, said surface portion and



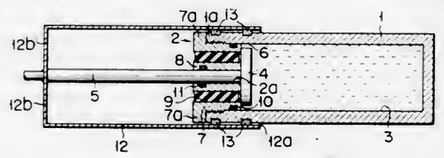
elastomeric member being arranged to progressively move out of engagement upon impact loading of said movable member to provide corresponding decreases in the frictional reaction forces, confining means for receiving said elastomeric member as it moves out of engagement with said surface portion and providing increasing resilient deformation reaction forces by constraining said elastomeric member in compressive-buckling deformation through the predetermined stroke of said shock absorber, and
d. all of said means cooperating in response to the completion of impact loading to permit restoration of said movable member to its initial position by use of the energy stored in the shock absorber during its loading.

3,948,498

FLUID FILLED SPRING DAMPER INCLUDING FLEXIBLE END WALL

Takeshi Hirano, Yokohama, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

Filed June 6, 1974, Ser. No. 477,096
Claims priority, application Japan, Sept. 25, 1973, 48-111593[U]
Int. Cl. B60g 11/62
U.S. Cl. 267—35 **9 Claims**



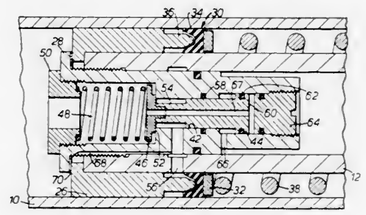
1. A damper comprising a cylinder having an open end at one end;
a cap member fitted to the open end of the cylinder to permit an operational medium to be sealed in a liquid-tight fashion into the interior of the cylinder, said cap member including an outer cylindrical metal member screwed into the open end of the cylinder, an inner cylindrical metal member having an inner bore provided at the axial direction thereof, and a flexible member secured between the inner and outer cylindrical metal members;
a piston disposed within the cylinder to be movable in the axial direction of the cylinder and normally positioned in an initial position;
a piston rod slidably inserted through said inner bore of the inner cylindrical metal member to be movable in the axial direction of the cylinder and secured at one end to the piston; and
an orifice means for imparting a fluid resistance of the operational medium as a reaction force to the piston when the piston is moved from the initial position in accordance with the sliding movement of the piston rod,
said flexible member being adapted to be resiliently deformed outward in the axial direction of the cylinder to permit the inner cylindrical metal member to be displaced outward due to the operational medium in the cylinder being subjected to increased pressure as the piston rod is forced more inwardly into the cylinder, and in consequece the piston is moved from the initial position, whereby increase in the pressure of the operational medium is controlled.

3,948,499

IMPACT ABSORPTION DEVICES AND VALVE STRUCTURE

John Stanley Eckersley, Pudsey, and Peter Noble, Huddersfield, both of England, assignors to Jonas Woodhead Limited, Leeds, England

Filed Sept. 6, 1974, Ser. No. 504,671
Claims priority, application United Kingdom, Sept. 7, 1973, 42197/73
Int. Cl.² F16F 9/10
U.S. Cl. 267—65 R **5 Claims**



1. An impact absorber comprising: a cylinder having a closed end; a working piston slidable within said cylinder, one side of said piston bounding a working chamber in said cylinder, said working chamber also being bounded by said closed end of said cylinder; a ram attached to the side of said piston remote from said working chamber and projecting from the opposite end of said cylinder, aid ram having a diameter less than that of said piston to define an annular space between said ram and said cylinder; an axially-movable annular piston slidable in said annular space to define a further working chamber, said further working chamber being located between said working piston and said annular piston; a spring biasing said annular piston toward said working piston; and a valve in said working piston arranged to control fluid flow out of said first-mentioned working chamber to said further working chamber, said valve comprising a valve housing, a valve guide bore formed in said housing and having an end opening into said first mentioned working chamber, a first cylindrical portion having a first diameter extending from said end, and a second cylindrical portion of a second diameter greater than said first diameter on the side of said first cylindrical portion remote from said end of said bore, a valve seat on said housing and encircling said end of said bore and facing said first mentioned working chamber, a valve spool member guided in said guide bore in sealing contact with said first and second cylindrical portions of said bore and having a valve head for seating against said valve seat, a spring biasing said valve member to

tend to maintain said valve head against said valve seat, and a passage providing fluid communication between said first-mentioned working chamber and the part of said bore on the side of said valve member remote from said first-mentioned working chamber.

3,948,500

SHOCK ABSORBERS FOR MOORING GUARDS

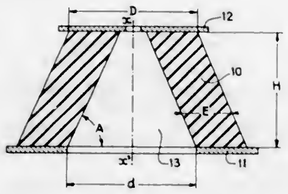
Gergely Korbuly, Courbevoie, and Denis Hamel, Saint Mande, both of France, assignors to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, Colombes, France

Filed July 18, 1974, Ser. No. 489,607

Claims priority, application France, July 18, 1973, 73.26237

Int. Cl.² F16F *7/12*

U.S. Cl. 267—140 **23 Claims**



1. A rubber shock absorber for a mooring guard comprising a hollow rubber element of revolution of generally truncated conical shape adhering to a base plate with an angle of inclination A of its wall in the order of 60° –85°, said rubber element having a hollow section of generally truncated conical shape with an axial height H and a conical wall with a radial thickness E such that the outer diameter D of the small base of the rubber element aligned with a small base at one end of the hollow section is substantially equal to the inner diameter *d* of a large base at the other end of the hollow section so that the wall of the rubber element operates essentially through bending and extension towards the outside under a crushing stress comprising an axial component and provides lateral stability to counteract the tangential components of this stress.

3,948,501

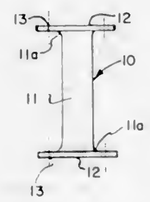
RESILIENT MOUNTING

Leonard J. Schwemmer, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Oct. 31, 1974, Ser. No. 519,886

Int. Cl.² F16F *7/12*

U.S. Cl. 267—140 **7 Claims**



1. A resilient mounting comprising

an elongate body of elastomeric material having a substantially uniform width and thickness, opposite ends of the body being oriented parallel to each other and normal to the longitudinal axis of the body,

support plates fixedly attached to the opposite ends of said body of elastomeric material and being disposed parallel to each other and normal to the longitudinal axis of said body of elastomeric material, and

a wedge member having a greater rigidity than said body of elastomeric material, the wedge member being disposed within and transversely of said body of elastomeric material between and in spaced relation to said plates, said wedge member determining the direction of buckling of said elongate body of elastomeric material in response to an axial thrust and being free during said buckling to move from between said plates so as not to restrict movement of said plates axially toward each other.

3,948,502

POWER-OPERATED WORK CLAMPING DEVICES

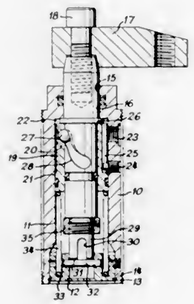
Laurence Alfred Waller, and John James Rogan, both of London, England, assignors to Spenklin Limited, London, England

Filed Nov. 12, 1974, Ser. No. 523,161

Claims priority, application United Kingdom, Nov. 26, 1973, 54735/73

Int. Cl.² B23Q *3/08*

U.S. Cl. 269—27 **6 Claims**



1. A power-operated work clamping device comprising a housing having a central bore, a tubular piston non-rotatably positioned in said bore and axially movable therein in response to the application of fluid pressure, means in said housing engaging said piston for restraining rotation thereof, and a clamping member having a connecting rod extending into said housing and fitting within said piston for relative angular and axial movement thereto, said piston being connected to said connecting rod by a projecting means from one of said piston and said rod and a co-operating cam slot in the other of said piston and said rod and into which said projecting means extends, said cam slot being shaped so that axial movement of said piston over a first distance in one direction produces a first angular movement of said connecting rod and clamping member, and thereafter axial movement of said piston over a second distance in said one direction produces a second axial movement of said connecting rod and said clamping member when said projecting means has reached the end of said cam slot, said cam slot being of a length to extend for said first distance and to end at the end of said first distance, axial motion restraining means located in said housing and positioned to be engaged by said connecting rod to prevent motion of said connecting rod in said one direction during angular movement thereof, whereby said connecting rod is restrained against axial movement during movement of said projecting means along said co-operating cam slot.

3,948,503

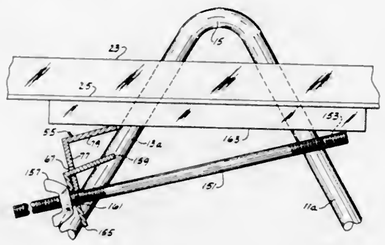
CLAMP FOR FORMWORK SYSTEM

Adolph Carl Weber, Ballwin, Mo., assignor to Midwestern Joists, Inc., Washington, Mo.

Filed Sept. 23, 1974, Ser. No. 508,545

Int. Cl.² B25B *1/10, 5/10*

U.S. Cl. 269—243 **2 Claims**



1. A clamp for use in erecting formwork for pouring a slab in place on steel joists, each joist being in the form of a truss having a web, a top chord and a bottom chord, the web being formed of metal bar stock and comprising inclined tension and compression members triangulating the space between the top and bottom chords, the top chord comprising a pair of metal bars having their vertical legs welded to opposite sides of the web, said clamp being adapted for the removable mounting of form supports extending transversely of the joists through the webs of the joists underneath the top chords of the joists, said form supports having openings for the clamp, said clamp having means at one end thereof for hooking onto an inclined web member of a joists and means at its other end for pushing the form support up another inclined web member of the joist, and comprising a screw having said hooking means at one end thereof, a member engageable with the form support for pushing it up said other inclined web member having a part engageable in one of said openings in the form support and a hole receiving the screw spaced from said part a distance for positioning the screw to extend underneath the form support, and a nut threaded on the screw engageable with the outside of said member.

3,948,504

METHOD AND APPARATUS FOR FORMING AND COLLATING PRINTED SIGNATURES

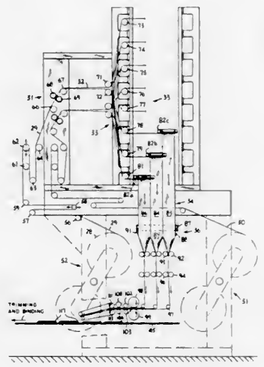
Richard Woessner, and Herman A. Dreyer, both of York, Pa., assignors to Motter Printing Press Co., York, Pa.

Filed Mar. 18, 1974, Ser. No. 452,361

Int. Cl.² B41F *13/56*

U.S. Cl. 270—21 **1 Claim**

1. In a method for forming and collating printed signatures for deposit on a signature gathering conveyor moving at a predetermined substantially constant speed in a path of travel including printing on a moving web, slitting the moving web longitudinally into a plurality of moving slit webs, superposing the moving slit webs to form at least one collated ribbon and folding the collated ribbon longitudinally, the improvement which comprises rewinding a printed web after printing and before forming the collated ribbon, unwinding the web before forming the collated ribbon, feeding the folded and collated ribbon toward and in substantially the same direction as the direction of travel of the gathering conveyor, cutting the folded and collated ribbon transversely at spaced intervals while feeding the folded and collated ribbon in substantially the same direction of travel as the direction of travel of the gathering conveyor, said cutting step partially but not completely severing the ribbon to form a group of folded, interleaved cut signatures still partially joined to said ribbon and advancing the cut signatures following the cutting step at an accelerated rate approximating the speed of the moving gathering conveyor to separate the cut signatures from the ribbon and to deposit them gently in a registered position on the upper surface of the span of the gathering conveyor.



3,948,505

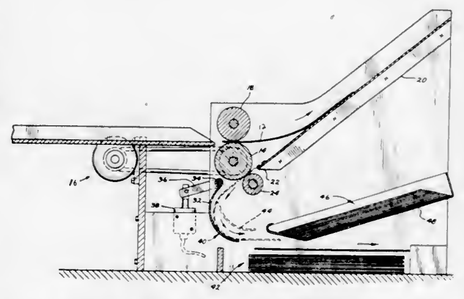
DOCUMENT TURN-AROUND SORTER/STACKER

Christian Paul Miller, Washington, D.C., and Franklin Penn Burroughs, Sr., Rockville, Md., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 1, 1974, Ser. No. 519,972

Int. Cl.² B65H *29/58*

U.S. Cl. 271—64 **2 Claims**



1. A document handling device comprising:

an upwardly inclined, sloped ramp having a surface adapted to have a low friction engagement with documents and having a lower lip at the bottom end thereof,

drive means for moving documents, said means comprised of a continuously rotating roller over which documents are conveyed at a generally upwardly facing document contact area thereof, to and up said ramp until said documents are momentarily released and disengaged therefrom whereafter said documents slide down said ramp and are further conveyed by said roller, at a generally downwardly facing document contact area thereof,

said roller being positioned parallel with and adjacent to the bottom lip of said ramp with the roller having its downwardly facing document contact area positioned with respect to said bottom lip in such a fashion that documents passing over said bottom lip come into contact with said roller at said area,

a curved generally semi-cylindrical member, comprising a pivotable curved sort gate movable from a first position to at least one other position, said sort gate having a

document contacting face over which documents pass on the inside surface of said sort gate, for receiving documents from said drive means and positioned proximate to said downwardly facing contact area of said roller so that documents delivered by said drive means engage said sort gate and face thereof,

said sort gate having sufficient curvature so that the downwardly facing surface of a document passing from said drive means becomes the upwardly facing surface thereof when passing from said curved sort gate,

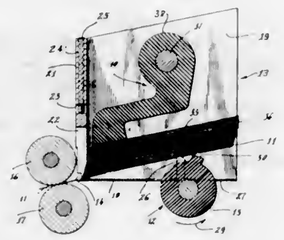
means for moving said sort gate from said first position to at least one other position so that documents received by said sort gate may be directed between a first location and at least one additional location, and

means for receiving and accumulating documents delivered by said sort gate.

3,948,506
TUNED CARD WEIGHT

William M. Crimmins, Vernon Hills, and Robert E. Petterec, Lindenhurst, Ill., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 18, 1975, Ser. No. 550,327
Int. Cl.² B65H *1/10*
U.S. Cl. 271—165 **5 Claims**



1. A tuned card weight for biasing a stack of cards in a card feeder capable of feeding cards at a predetermined rate, comprising:

a. a base section having at least one pair of opposing edges, one of the edges having an extension forming an acute angle with one side of the section;

b. a cantilever coupled to the other side of the base section adjacent the other of the edges; and

c. means connected to the cantilever for providing the resulting structure with a predetermined damped resonant frequency, said frequency being greater than said rate.

3,948,507
COPY STRIPPER

Klaus K. Stange, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 25, 1974, Ser. No. 526,874
Int. Cl.² B65H *29/56*
U.S. Cl. 271—174 **1 Claim**

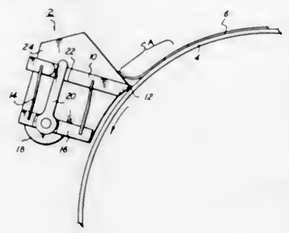
1. A sheet stripping device for removing a sheet of material from a moving support surface comprising:

a sheet stripping finger provided with an opening therein, said finger being adapted for substantially planar movement into and out of contact with the moving support surface;

spring means for biasing said stripper finger against said moving support surface, said spring means comprising a plurality of flexure blades resiliently supporting said sheet stripping finger, said flexure blades being substantially parallel to each other and perpendicular to the plane of movement of said stripping finger;

means for moving said stripper finger away from the moving support surface in opposition to the biasing force of said spring means including a rotary solenoid; and,

lever means connected to said rotary solenoid, said lever means projecting through the opening in said stripper finger, said rotary solenoid being biased toward a first position, said lever acting against the edge of the opening in said stripper finger to move said stripper finger away

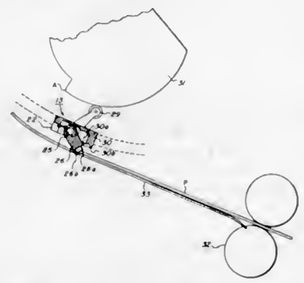


from the moving support surface when said solenoid is de-energized, said solenoid moving said lever to a second position upon energization thereof, movement of said lever means to said second position allowing said stripper finger to contact the moving support surface, said lever means being out of contact with said stripper finger when said solenoid is actuated to allow said stripper finger to freely follow the contour of said moving support surface.

3,948,508
SHEET DELIVERY APPARATUS

Yukio Kanazawa, Ebina, Japan, assignor to Rank Xerox Ltd., London, England

Filed Nov. 11, 1974, Ser. No. 522,397
Claims priority, application Japan, Dec. 24, 1973, 48-146926[U]
Int. Cl.² B65H *29/02*
U.S. Cl. 271—206 **1 Claim**



1. A sheet delivery arrangement comprising:

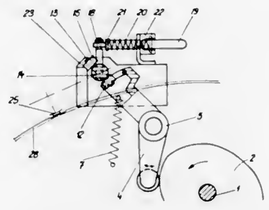
a plurality of paper storage trays for holding different sized copy sheets, a pair of endless chains, a plurality of gripper bars attached between said claims and extending generally at right angles to the longitudinal dimension of said chains, said bars having a generally U-shaped cross-section to define a channel, a shaft supported for rotation by each bar in said channel, a plurality of gripper fingers supported from said shaft, resilient means carried by said shaft for biasing said fingers toward one leg of said U, said one leg and said fingers when biased into contact with each other forming a gripper portion to hold sheets of paper in place, a lever arm coupled to said shaft, a rotatable release cam, spring means for urging said cam in a first direction, said lever arm operable to engage said cam and rotate it against the bias of said spring toward first

and second positions, first and second surfaces for limiting the rotation of said cam, said first surface being stationary and operative to limit the rotation of said cam to said first position, said second surface mounted for rotation into and out of engagement with said cam, means operable in response to the selection of a first sized paper to rotate said second surface into contact with said cam to limit rotation of said cam to said second position, and operable in response to the selection of a second size of paper to move said second surface out of engagement with said cam to permit rotation of said cam beyond said first position into contact with said first surface to define said first position, whereby said cam is operative to cause release of said paper along a first line in said delivery trays when in said first position and along a second line when in said second position.

3,948,509
CONTROL DEVICE FOR THE LATERAL STOP ON THE FEED TABLE OF SHEET FEEDS FOR FEEDING INDIVIDUAL SHEETS

Willi Becker, Bammental, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Continuation of Ser. No. 354,524, April 26, 1973, abandoned. This application Nov. 22, 1974, Ser. No. 526,235
Claims priority, application Germany, Apr. 29, 1972, 2221186
Int. Cl.² B65H *9/10*
U.S. Cl. 271—239 **4 Claims**

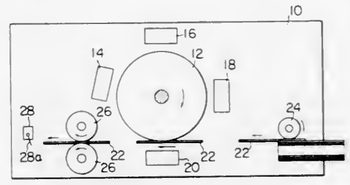


1. A control device for lateral stops on the feed table of a sheet feeding device comprising a control shaft rotatable about and displaceable substantially parallel to the longitudinal axis thereof, lateral stops carried by said control shaft, a first and a second roller mounted on said control shaft, lever means pivotable about a point intermediate the ends thereof, said lever means having at one end thereof a stop pin and a pair of sliding surfaces extending V-shaped toward one another, said second roller being disposed between said sliding surfaces, said lever means having at the other end thereof a follower roller, cam means engageable by said follower roller, and first and second spring means, said first spring means being connected to said lever means for continuously urging said follower roller into engagement with said cam means, said second spring means being operatively connected to said control shaft for rotating said control shaft about said longitudinal axis thereof until said first roller engages a stop surface disposed so as to stop said first roller in a given position wherein said lateral stops are lowered to the feed table, said lever means being pivotable in a given rotary direction wherein said second roller is slideable along one of said sliding surfaces so as to displace said control shaft and said lowered lateral stops in a first direction substantially parallel to the longitudinal axis of said control shaft simultaneously with the rotation of said control shaft until said first roller engages said stop surface, whereby one of said lowered lateral stops is moveable into engagement with a lateral edge of a sheet on the feed table. said lever means being also pivotable in a direction opposite to said given rotary direction wherein said second roller is slideable along said one of said sliding surfaces so as to displace said control shaft in a second direction opposite to said first direction whereby said one lateral stop is movable out of engagement with the lateral edge of the sheet on the feed table, said lever means being further pivotable in said direction opposite to said given rotary direction until said stop pin bears against said second roller so as to rotate said control shaft about said longitudinal axis thereof against the rotating action of said second spring means whereby said lateral stops are raised from the feed table.

3,948,510
SHEET JAM DETECTOR FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

Minoru Iwamoto, and Koichi Noguchi, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Sept. 30, 1974, Ser. No. 510,675
Claims priority, application Japan, Nov. 19, 1973, 48-129993
Int. Cl.² B65H *7/06*
U.S. Cl. 271—258 **11 Claims**



1. In an apparatus having feed means to feed sheets of uniform size through the apparatus one by one at regular intervals, a system for detecting a failure in the feeding of the sheets, said system comprising:

initiator means operative to energize the feed means;

terminator means operative to de-energize the feed means;

sensing means operative to sense the presence and absence of a sheet at a predetermined location in the sheet feed path of the apparatus;

first and second timing means responsive to the sensing means and connected to control the terminator means, the first timing means having two predetermined timing durations t_1 and t_2 and the second timing means having one predetermined timing duration t_3;

the first timing means being connected to the initiator means and set thereby to the first timing duration t_1 to begin timing when the initiator means energizes the feed means, the first timing means being shifted by the sensing means to the second timing duration t_2 when the presence of the first sheet is detected by the sensing means;

the first timing means being set to the second timing duration t_2 to begin timing when the subsequent absence of any sheet is detected by the sensing means and reset when the presence of the next sheet is detected by the sensing means, the second timing means being set to the third timing duration t_3 to begin timing when the presence of any sheet is detected by the sensing means and reset when the subsequent absence of the same sheet is detected by the sensing means;

the first and second timing means being arranged to control the terminator means to de-energize the feed means when any of the respective timing durations t_1, t_2 and t_3 elapses before the respective timing means is reset by the sensing means, the timing durations t_1, t_2 and t_3 being predetermined as follows:

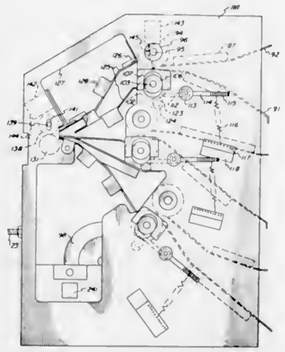
$$t_4 + t_5 > t_1 > t_4$$

$$t_5 + t_6 > t_2 > t_6$$

$$t_5 + t_6 > t_3 > t_5$$

where t_4 is the time duration between the energization of the feed means by the initiator means and the detection of the presence of the first sheet by the sensing means;
t_5 is the duration between the detection of the presence of any sheet and the detection of the absence of the same sheet by the sensing means; and
t_6 is the duration between the detection of the subsequent absence of any sheet and the detection of the presence of the next sheet by the sensing means when the feed of sheets through the apparatus is normal.

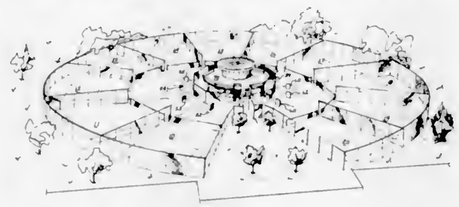
3,948,511
SHEET FEEDING DEVICES
Vernon J. Smith, Tewkesbury, England; Howard M. Smith, Venray, Netherlands, and Bernard F. Page, Coleford, England, assignors to Rank Xerox Ltd., London, England
Filed Nov. 19, 1973, Ser. No. 417,173
Int. Cl.² B65H *5/06*
U.S. Cl. 271—274 **1 Claim**



1. A sheet feeding device comprising a plurality of first rollers mounted on a shaft symmetrically about the center of the shaft, a plurality of second rollers opposite the first rollers mounted for rotation about an axis substantially parallel to the shaft,
means comprising a frame having a slot formed therein at each end of the shaft for supporting the shaft for movement in a plane toward and away from the axis and for rotation about an axis through the center of the shaft at right angles to the plane, means acting on the center of the shaft for biasing the shaft toward the axis, the biasing means comprising a lever and a ballrace, means including an overrunning clutch for driving the second rollers, a slip clutch having two members which will slip when a torque greater than a predetermined value is applied between them, and means for anchoring one of the members against rotation, the other of the members being connected for rotation with the first rollers.

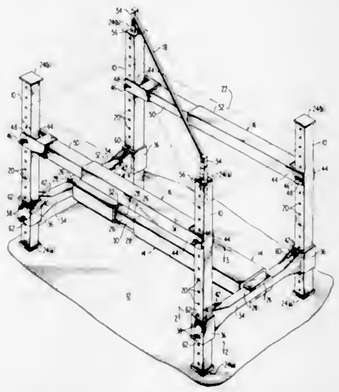
3,948,512
RECREATIONAL FACILITY
Everett E. Worthington, Honolulu, Hawaii, assignor to Tennis in the Round, Inc., Honolulu, Hawaii
Filed Dec. 4, 1974, Ser. No. 529,369
Int. Cl.² A63C *19/00*
U.S. Cl. 272—3 **3 Claims**

1. A recreational facility comprising: a curved array of rectangular tennis courts positioned about a service area and adjacent one another, each of said courts having a longitudinal axis, a rectangular boundary line unique to that court, and a mid-court net extending transversely of said longitudinal axis to divide said court into first and second halves; each of said longitudinal axes positioned at an angle of less than 90° with respect to the longitudinal axis of adjacent courts, the rectangular boundary line of each court on the second half of the court, overlapping the rectangular boundary line on the second half of an adjacent court; said second half of each court



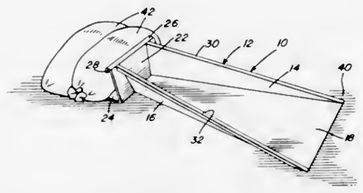
having a portion unique to that court and a portion overlapping the second half of each adjacent court, said second half of each of said courts abutting said service area.

3,948,513
APPARATUS FOR POLYMETRICALLY DEVELOPING MUSCALUTURE AND MAINTAINING PHYSICAL FITNESS
James Michael Pfotenhauer, 1302 N. 19th St., Escanaba, Mich. 49829
Filed May 6, 1974, Ser. No. 467,589
Int. Cl.² A63B *17/00*
U.S. Cl. 272—58 **10 Claims**



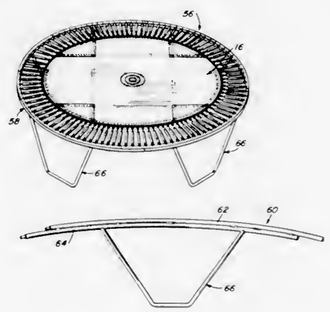
1. An invertable exercising apparatus for polymetrically developing the musculature and maintaining the physical fitness of a user, said apparatus comprising:
upstanding, mutually parallel, elongated legs operable to rest upon a datum plane and arranged in opposed, coplanar pairs to coincide with apices of a circumscribing rectangle;
body supporting means having opposed ends and being adjustably and disconnectably connected along the length of said legs for supporting the body of the user at selected elevations and orientations relative to said datum plane;
equipment supporting means having opposed ends and being adjustably and disconnectably connected along the length of said legs for supporting at selected elevations relative to said datum plane equipment to be manipulated by the user;
first connecting means connected to said body supporting means
for independently adjustably and disconnectably connecting said opposed ends of said body supporting means to selected locations along the length of said legs of said opposed, coplanar pairs to rigidly maintain said body supporting means in a selected spatial and orientational relation with said equipment supporting means during the performance of a first exercising routine by a user, and
for continuously resisting movement of said body supporting means relative to said legs in both vertical directions therealong;
second connecting means connected to said equipment supporting means
for independently adjustably and disconnectably connecting said opposed ends of said equipment supporting means to selected locations along the length of said legs of said opposed, coplanar pairs to rigidly maintain said equipment
supporting means in a selected spatial and orientational relation with said body supporting means, and
for continuously resisting movement of said equipment supporting means relative to said legs in both vertical directions therealong; and
first and second ground engaging means for alternately and independently supporting said legs in first and second positions invertably by 180° relative to one another;
said first engaging means being carried in a generally coplanar posture by first coplanar extremes of said legs to support said legs in said first position independently of said second ground engaging means while said body supporting means and said equipment supporting means are maintained in said selected spatial and orientational relation by said first and second connecting means;
said second ground engaging means being carried in a generally coplanar posture by second coplanar extremes of said legs to support said legs independently of said first ground engaging means with said exercising apparatus being inverted **180°** relative to the datum plane and without altering said selected spatial and orientational relation between said body supporting means and said equipment supporting means which is being continually maintained by said first and second connecting means;
said body supporting means comprising an elongated platform having top and bottom user-supporting surfaces both of which being padded to protect the user during use of the apparatus in either of its first and second positions.

3,948,514
INDOOR VAULTING BOX
Donald C. Von Holt, Quincy, Ill., assignor to James A. Von Holt, Qunicy, Ill., a part interest
Filed July 12, 1974, Ser. No. 488,239
Int. Cl.² A63B *5/00*
U.S. Cl. 272—59 C **4 Claims**



1. An indoor vaulting box defining an elongated trough constructed from a single generally rectangular sheet of metal having open front and rear ends and creased along transversely spaced longitudinal zones convergent toward the rear end of said sheet to define a pair of upstanding upwardly divergent opposite side flanges convergent toward the rear end of said sheet and interconnected along their lower marginal edge portions by means of an integral planar bottom wall extending therebetween and tapering in width toward said rear end of said sheet, said flanges further tapering in height toward said front end of said sheet, said box also including an upstanding rear wall extending and secured between the upstanding rear ends of said flanges and the rear marginal edge of said bottom wall, said rear wall terminating downwardly in an integral horizontally outwardly extending flange projecting outwardly from the rear end of said trough, and coplanar with said bottom wall and of sufficient planar extent for receiving at least one weighted sandbag thereon to anchor said vaulting box against appreciable movement in use, the upstanding rear marginal edges of said side flanges being contained in a rearwardly and upwardly inclined plane, said rear wall being substantially coplanar with said plane.

3,948,515
ROUND TRAMPOLINE
Harold L. McNeil, Tallahassee, Fla., assignor to Temple Baptist Church, Tallahassee, Fla., a part interest
Filed Apr. 3, 1974, Ser. No. 457,555
Int. Cl.² A63B *5/18*
U.S. Cl. 272—65 **3 Claims**

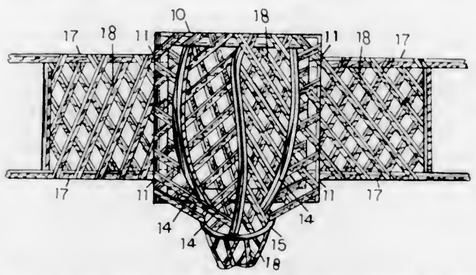


1. A round trampoline, comprising, in combination:
a. a sectional, substantially circular frame, the frame including a plurality of sections each formed by a pair of arcuate rails connected together to form a double rail, one of the rails staggered with respect to the other of the rails in order to form a staggered joint with an adjoining frame section and to lock the joint and prevent rotation or flexation of the adjoining sections;
b. leg means provided on the sections of the frame for supporting the frame on a support surface;
c. fastener means connecting the sections of the frame together;
d. a mat; and
e. resilient means for connecting the mat to the frame.

3,948,516
BASKETBALL RIM AND NET STRUCTURE
Willie G. Jones, Sr., 1026-26 St., Newport News, Va. 23607
Filed Apr. 15, 1975, Ser. No. 568,267
Int. Cl.² A63B *71/00*
U.S. Cl. 273—1.5 R **2 Claims**

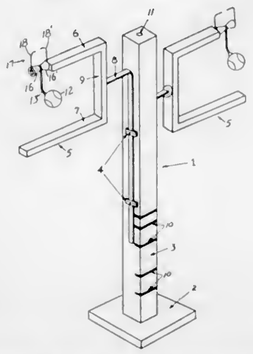
1. A net structure consisting of a rectangular frame, thin metal plates attached to the top member of said frame and extending downward therefrom, a rim attached to the lower end of said metal plates, said rim being further attached to the frame by means of a short metal plate which extends from the bottom member of the frame, said frame, plates, and rim having a net connected thereto, said net being the heighth of the frame and connected to the back of the frame and directly to the plates, and extending downward from the rim, said frame further having ropes attached thereto through holes in the sides thereof, said net being connected to the ropes as well

as to the frame, plates, and rim, said frame further having a spring member attached to both sides thereof in such a posi-



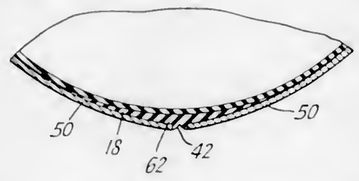
tion that the spring extends across the lower portion of said frame.

3,948,517
TENNIS STROKE PRACTICE DEVICE
Robert J. Feiler, 2 Oriole Place, Rye Town, Port Chester, N.Y. 10573
Filed Dec. 30, 1974, Ser. No. 537,678
Int. Cl.² A63B *61/00*
U.S. Cl. 273—29 A **4 Claims**



1. An apparatus for practicing strokes with a racket comprising; a substantially U-shaped frame and a substantially vertically upstanding support member having a base; means adjustably mounting said frame to said support member adjacent the upper end thereof; said U-shaped frame being positioned on said support member such that its legs extend substanially horizontal from said support member and are coplanar in a substantially first vertical plane to define upper and lower spaced apart legs defining a target channel therebetween; an elongated wire; said wire having means rotatably attaching one of its ends to said upper leg of said U-shaped frame adjacent the outer face end thereof, such that said wire is rotatable about the longitudinal axis of said upper leg in a substantially second vertical plane; a ball; said ball being mounted on the other end of said wire and being suspended between said upper and lower legs in said channel whereby a racket head may be swung through said channel without touching said legs to contact said ball for causing said ball to travel in said second vertical plane around the longitudinal axis of said upper leg of said U-shaped frame; a guide member; said guide member being a pair of elongated resilient arms, each of said arms being attached to said upper leg of said U-shaped frame member and extending substantially vertically upward therefrom, one of said arms being positioned on one side of said second vertical plane of travel of said ball and wire and the other arm being positioned on the opposite side of said second vertical plane of travel of said ball and wire, the upper end of each of said arms being bent towards said second vertical plane of travel to define a path through which said wire may pass when said ball is struck, whereby when said ball is hit correctly said wire will travel through said path without touching said arms and if said ball is hit incorrectly at least one of said arms will be touched by said wire.

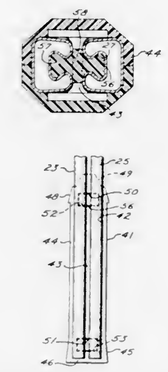
3,948,518
FOOTBALL
Herbert E. Tebbetts, Jr., Huntington Beach, Calif., assignor to AMF Incorporated, White Plains, N.Y.
Division of Ser. No. 325,572, Jan. 22, 1973, Pat. No. 3,887,416. This application Dec. 13, 1974, Ser. No. 532,379
Int. Cl.² A63B *41/00*
U.S. Cl. 273—65 EG **1 Claim**



1. A leather panel covered football which simulates the weighted ends, shape, bounce, flight and feel characteristics of a hand sewn leather football, comprising an inner ellipsoid shaped inflated rubber bladder, said bladder having a circular cross section, a cord wound reinforcing layer on said bladder, a layer of rubber on said cord layer, said rubber layer having four integral simulated raised seams which extend lengthwise of the bladder and are equidistantly circumferentially spaced thereof, and four exterior leather panels covering said rubber layer exclusive of said seams whereby said seams space said panels from each other, the edges of said panels being square and abutting said seams and said seams having a height equal to the thickness of said panels, said rubber layer having a thickness which gradually increases in thickness from a minimum midway of said seams to a maximum at said seams, whereby the exterior of said football has an out of round shape in that the outer diameter thereof gradually increases from a minimum midway of said seams to a maximum at said seams, whereby said football has inherent weighted ends and the shape, bounce, flight and feel characteristics of a hand sewn leather football.

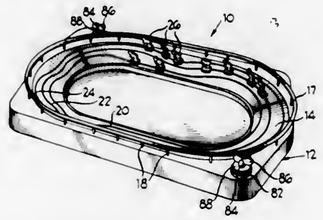
3,948,519
HANDGRIP FOR GAME RACKET
William E. Portz, Geneva, and John T. Kanne, Ashtabular, both of Ohio, assignors to True Temper Corporation, Cleveland, Ohio
Division of Ser. No. 294,825, Oct. 4, 1972, Pat. No. 3,879,036. This application Nov. 15, 1974, Ser. No. 523,992
Int. Cl.² A63B *49/08*
U.S. Cl. 273—73 J **3 Claims**

3. Handle structure for a game racket, said handle structure comprising a pair of laterally spaced extensions affording a handle, said extensions having laterally outwardly and inwardly facing side surfaces and front and back surfaces; connector means laterally connecting said extensions and maintaining said extensions in spaced relationship; a pair of complementary handgrip sections, each section having means providing spaced, parallel, elongated recesses disposed lengthwise of the section and an elongated central rib projecting between said extensions; said sections being disposed over said front and back surfaces of said pair of extensions, distal end portions of said extensions nesting within said elongated recesses; means defining cutout means in said rib; said connector means projecting laterally through said cutout means; said extensions having longitudinal groove means, said groove means having relatively narrow neck openings at said inwardly facing side surfaces and being widened with respect to said neck openings toward the bottom of said groove means; said connector means having protuberances projecting into and engaging said grooves and connecting said extensions to-



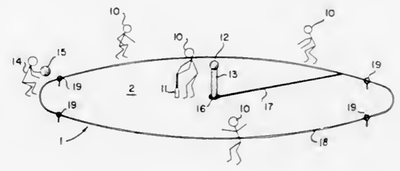
gether; said connector means having a central spacer portion disposed between said extensions and projecting perpendicular to the plane of said extensions substantially beyond said neck openings and spacing said extensions from each other.

3,948,520
COMPETITIVE ROUND-ABOUT RACING GAME
Gordon A. Barlow, Skokie, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Aug. 1, 1974, Ser. No. 493,512
Int. Cl.² A63F *9/14*
U.S. Cl. 273—86 F **10 Claims**



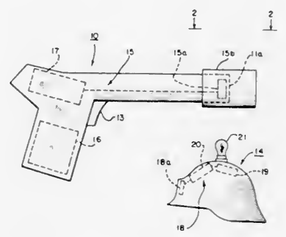
1. A racing type game, comprising:
a base structure having platform means with means defining a plurality of side-by-side non-intersecting tracks, a plurality of playing pieces movable along said tracks, independent individually controlled and variable speed drive means for at least some of said tracks and operatively associated with the playing pieces of the respective tracks for moving the playing pieces therealong in the same direction at varying speeds for the different tracks, and said tracks being variably spaced relative to each other and the size of said playing pieces to permit playing pieces of different tracks to pass each other at at least one selected portion along the length of the tracks and to cause the playing pieces of the different tracks traveling in the same direction to interfere with one another along at least another portion of the track to cause at least one of the playing pieces to disengage from the drive means and fall off of the track, said playing pieces being removably mounted on said tracks and removably connected to said drive means so as to be capable of being knocked off the tracks only upon interference by a playing piece approaching from the rear on an adjacent track.

3,948,521
BALL GAME AND APPARATUS
John E. C. Warren, 509 Riverside Drive, Melbourne Beach, Fla. 32951
Filed Mar. 21, 1972, Ser. No. 236,660
Int. Cl.² A63B *71/00*
U.S. Cl. 273—95 R **15 Claims**



1. Game and apparatus therefor wherein the apparatus comprises a single batter's post, a paddle means for the batter, a playing surface means, said playing surface means including a game area means, a target means normally atop said batter's post, and a player's means normally utilized by a player to dislodge the said target means from said batter's post to get the batter out.

3,948,522
PROJECTILE SIMULATION
Jon S. Fixler, Philadelphia, Pa., assignor to Industrial Patent Development Corporation, Philadelphia, Pa.
Filed Apr. 4, 1973, Ser. No. 347,933
Int. Cl.² A63F *9/02*
U.S. Cl. 273—101.2 **13 Claims**

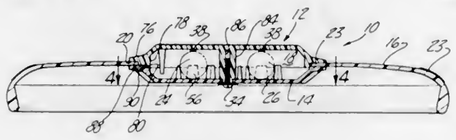


1. A system of simulating the firing and trajectory of a projectile comprising:
a. a portable apparatus for simulating the launching of a single projectile at a time having means for visually aiming said apparatus and means for producing a narrowly dispersed aimable beam of sound waves in a predetermined frequency range, said beam simulating the substantially straight trajectory of said single projectile in response to the manual orientation and actuation of said launcher by an operator, and
b. target means mounted separately from said launcher and being constructed to respond primarily to impingement thereupon of said aimed beam, said means being substantially non-responsive to sound waves outside said predetermined frequency range, said target means also including means for producing an indication when it responds.

3,948,523
LIGHTED ROTATING FLYING BODY

Henry G. Michael, 1724 Yorkshire, Birmingham, Mich. 48008

Filed Aug. 5, 1974, Ser. No. 494,926
Int. Cl.² A63H 27/12
U.S. Cl. 273—106 B 7 Claims

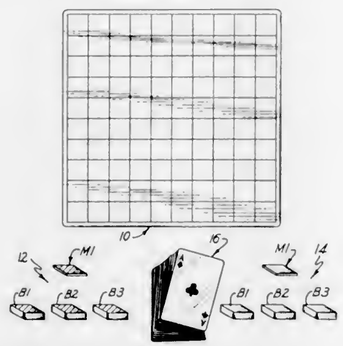


1. A rotating free flight flying body comprising a top body member and a bottom body member being dish like and concavely facing each other to form a chamber therebetween,
a lifting body member disposed between and extending radially outwardly from the periphery of said top and bottom body members;
means fastening said plurality of body members together,
lighting means disposed in said chamber, and
switch means for selectively actuating said lighting means, said switch means comprising said top body member and said bottom body member being mounted to be rotatable relative to each other, and means actuating said lighting means upon relative rotation of said top and bottom member from a first position to a second position.

3,948,524
GAME APPARATUS

Robert B. Ladd, Bryantville, and Harold F. Finizia, Roxbury, both of Mass., assignors to Robert B. Ladd, Bryantville, Mass.

Filed Mar. 14, 1974, Ser. No. 450,973
Int. Cl.² A63F 3/00
U.S. Cl. 273—135 R 11 Claims

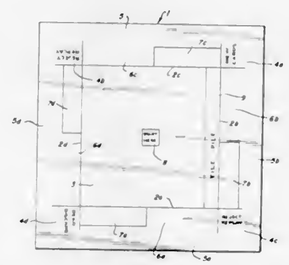


1. A game apparatus comprising:
a plurality of first tokens;
a plurality of second tokens visually distinct from said first token;
the first and second plurality of tokens each comprise two classes, the first class being visually distinct from the second class, the classes being markers and bridges;
a playing board having a substantially square playing surface marked into a plurality of smaller squares, said tokens being approximately the same size as the smaller squares of the playing board; and
playing cards provided with designations to determine placement of a selected number of the first and second tokens and then to determine the order of play.

3,948,525
CHANCE CONTROLLED MATCHING GAME

Hart T. Faintuch, and Mimi K. Faintuch, both of 686 Spring Road, Elmhurst, Ill. 60126

Filed Oct. 29, 1974, Ser. No. 518,499
Int. Cl.² A63F 3/00
U.S. Cl. 273—135 AC 15 Claims

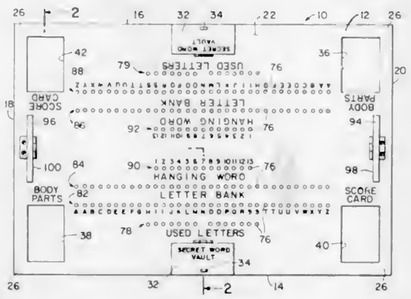


1. A competitive game of combined chance and judgment comprising:
a plurality of gaming pieces for selective disposition adjacent one another, each of said pieces being divided into a plurality of segments forming a plurality of groups arranged in a plurality of configurations, each group of segments for a gaming piece being distinguishably identified and consisting of at least one segment; and
a plurality of cards, each containing a designation of at least one of said configurations of said groups of segments, for specifying gaming pieces having respectively identical configurations of said groups of segments as candidates for selective disposition adjacent other gaming pieces.

3,948,526
GAME APPARATUS FOR A GAME OF HANGMAN

George J. Lukacik, Jackson, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed June 9, 1975, Ser. No. 585,361
Int. Cl.² A63F 3/00
U.S. Cl. 273—136 B 9 Claims

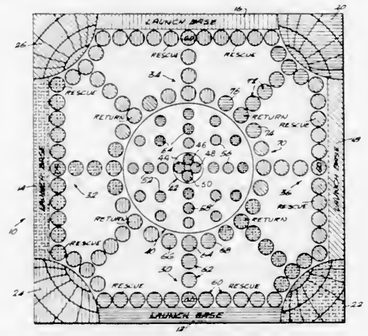


1. A game apparatus for the game of hangman, which comprises:
a. a playing board having a top playing surface, said top playing surface having at each corner thereof square holes therein, at a center of two sides square apertures therein, and a plurality of rows of holes therein;
b. a pair of scaffold members hingably joined to said top playing surface;
c. a plurality of letter pegs adapted to be inserted into said holes; and
d. a plurality of body members having means thereon for detachably mounting onto said scaffold members.

3,948,527
SIMULATED SPACE FLIGHT AND CAPSULE RECOVERY GAME

Enrique Aguirregomezcorta, 7555 SW. 29 St., Miami, Fla. 33155

Filed Nov. 25, 1974, Ser. No. 526,962
Int. Cl.² A63F 3/00
U.S. Cl. 273—134 AD 5 Claims



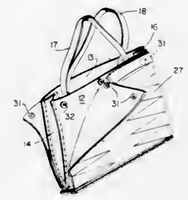
1. A space game apparatus comprising,
A. a like plurality of play pieces for each game participant for movement around a game board including indicia defining,
1. a plurality of play piece launch bases,
2. a like plurality of earth quadrants,
3. a moon area including,
a. an outer portion providing a plurality of crater move areas for the play pieces,
b. a moon center portion providing a plurality of moon landing bases,
4. a plurality of first paths, each defined by a plurality of play piece move areas extending from one of said launch bases to said moon outer portion,
5. a plurality of second paths, each defined by a plurality of play piece move areas extending from said moon outer portion to one of said earth quadrants,
6. a plurality of third paths, each defined by a plurality of play piece move areas extending from one of said launch bases to one of said earth quadrants;
B. means to determine the length of each play piece move of each contestant, which means comprises a first die and wherein said participants' play pieces are color keyed to said launch bases, earth quadrants, crater move areas, moon landing bases and first, second and third paths; and
C. an enlarged perforated disc, sized to fit over and generally cover said moon area with the exeption of said center portion and said crater move areas when said perforated disc is properly positioned in any one of four positions, said crater move areas and the perforations in said disc being symmetrically arranged to be in registration in all of said four positions, said disc being colored about the margins of each of the perforations to change the color code of the moon area.

3,948,528
TOTE BAG WITH ATTACHED, WRAP-AROUND GAME BOARD

Maurice Goodman, Jr., 177 E. 80th St., New York, N.Y. 10021; Robert G. Hammond, 440 E. 57th St., New York, N.Y. 10022, and Angelo J. Molinari, 30 George Brown Place, Amity Harbor, N.Y. 11701

Filed June 5, 1975, Ser. No. 583,867
Int. Cl.² A63F 3/00
U.S. Cl. 273—136 GA 7 Claims

1. The combination game and container comprising a bag having two opposing side walls and opposing end walls to form an enclosure, a separate wrap-around element, said element encircling the exterior of said bag and the end portions of said element being detachably secured to the respective top edge portions of said side walls, the exposed surface of said wrap-

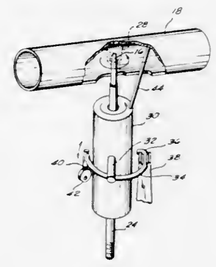


around element having impressed thereon the design of a board game, said board game being playable when said wrap-around element is detached from said bag and laid flat upon a suitable surface.

3,948,529
PHONOGRAPH TURNTABLE ANTI-SKATING DEVICE

Roland C. Wittenberg, New Hyde Park, N.Y., assignor to Pickering & Company, Inc., Plainview, Long Island, N.Y.

Filed Aug. 20, 1975, Ser. No. 606,068
Int. Cl.² G11B 3/10
U.S. Cl. 274—23 R 2 Claims



1. In a phonograph of the type including a generally horizontal base, a post extending longitudinally from said base, and a tone arm supported for rotational movement about said post the improvement comprising: an elongated weight disposed adjacent said post, means extending between said weight and tone arm, and means for applying a torque to said weight consisting of, a pin secured to and extending transversely from said weight, pin support means pivotally affixed to said base for rotation about an axis transverse to said post longitudinal axis and defining a support surface on which said pin rests, and means for varying the angle which said pin support surface makes with respect to the base.

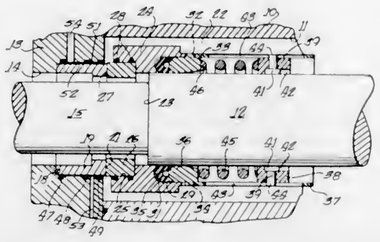
3,948,530
EXTERNALLY ADJUSTABLE MECHANICAL SEAL

Emeric J. Gyory, Park Ridge, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed July 26, 1974, Ser. No. 492,112
Int. Cl.² F16J 15/40
U.S. Cl. 277—3 14 Claims

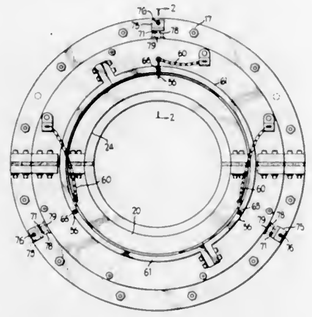
1. An externally adjustable sealing device comprising a rotary cylindrical sealing ring, a stationary cylindrical sealing ring having an external cylindrical surface, each ring having an annular end sealing face, biasing means urging the rotary sealing ring toward the stationary sealing ring to engage said sealing faces, said cylindrical external surface being divided

into a pair of axially spaced areas, and passage means for applying separate hydrostatic pressures solely to each of said



axially spaced areas to adjust the sealing face contact between the members.

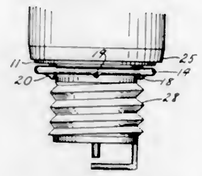
3,948,531
BULKHEAD SEAL
Joseph W. Mitrani, Glenview, Ill., assignor to Crane Packing Company, Morton Grove, Ill.
Filed Apr. 24, 1975, Ser. No. 571,286
Int. Cl.² F16J 9/00
U.S. Cl. 277—9 **14 Claims**



1. A packing assembly for emergency use around a shaft, said packing assembly comprising a plurality of overlapping packing segments forming a closed ring and a garter spring holding said segments together against a shaft, a housing surrounding the packing and secured to a wall through which the shaft passes, latch means for holding the segments out of contact with the shaft, control means for said latch means, and means accessible from either side of the housing for moving the latch means to release the packing for engagement with said shaft.

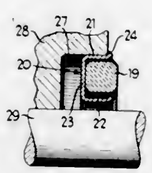
3,948,532
CAPTIVE TYPE SPARKPLUG GASKET
Harold P. Hopp, 35 Industrial Road, Lodi, N.J. 07644
Filed May 23, 1975, Ser. No. 580,486
Int. Cl.² F16J 15/08
U.S. Cl. 277—9.5 **2 Claims**

1. In a combination spark plug and captive gasket therefor, in which said spark plug includes a plug body having a threaded shank portion extending outwardly from a main body portion, said threaded shank portion including an undercut area adjacent said main body portion, said gasket including a plurality of mutually compressible flanges and a locking flange extending inwardly of said compressible flanges to be engaged wihin said undercut area, said locking flange having a free generally arcuate edge, said threaded shank having a given pitch and defining a continuous spiral recess between adjacent convolutions of thread, the improvement comprising: said arcuate free edge of said locking flange having at least one offset staked area wherein the effective width of said edge at said area is substantially greater than the thickness of metal



forming said locking flange; whereby said offset staked areas are prevented from cross-threading the thread on such shank portion to thereby prevent an installed spark plug from becoming unthreaded from a threaded spark plug opening while simultaneously disengaging said gasket from said plug.

3,948,533
COMPOSITE RING MADE OF PRESS FITTED PARTS AND METHOD OF ASSEMBLING
Eugene W. Novosad, Arlington Heights, Ill., assignor to Crane Packing Company, Morton Grove, Ill.
Filed Feb. 27, 1975, Ser. No. 553,451
Int. Cl.² F16J 15/34
U.S. Cl. 277—81 R **8 Claims**

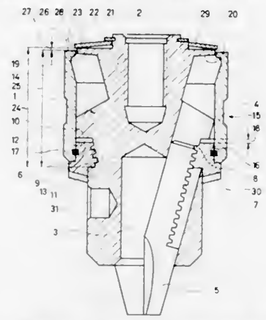


1. As an article of manufacture a composite ring comprising an inner ring and an outer ring, said inner and outer rings each having a cylindrical surface in contact with a cylindrical surface of the other ring to form an interface, the surface of the inner ring being comprises of a brittle granular material, and a layer of polytetrafluoroethylene particles interposed between said inner and outer rings at the interface, the rings having an interference fit at the said interface and said polytetrafluoroethylene particles lubricating the interface during the assembly of the inner and outer rings and providing a fluid-tight seal at said interface.

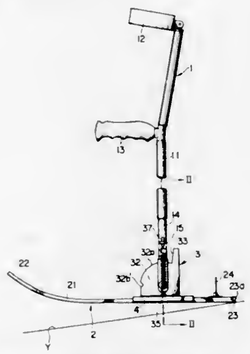
3,948,534
CHUCK FOR HAMMERDRILLS AND THE LIKE
Albrecht Schnizler, Jr., and Walter Hilburger, both of Nurtingen, Germany, assignors to Metabowerke KG Closs, Rauch & Schnizler, Nurtingen, Germany
Filed July 11, 1974, Ser. No. 487,811
Claims priority, application Germany, July 14, 1973, 2335865
Int. Cl.² B23B 31/12
U.S. Cl. 279—62 **10 Claims**

1. A chuck for hammerdrills and the like, comprising a chuch body having an axis, one axial end for connection to a power tool, and another end axially spaced from said one end; a plurality of jaws on said chuck body and projecting axially beyond said other end for engaging and holding a tool bit; a plate spring mounted on said body at said one end thereof and having a circumferential marginal portion; and a sleeve

mounted on said body so as to surround the same with freedom of turning movement and limited axial displacement with respect thereto and operative, when turned in one direction, for moving said jaws inwardly towards one another into engagement with a tool bit located between said jaws, said sleeve being axially displaced subsequent to such engagement relative to said body towards said one end thereof into frictional locking contact with said marginal portion of said spring.

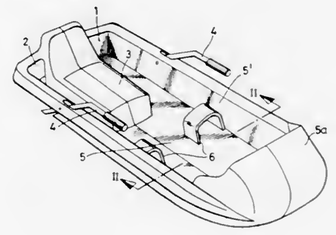


3,948,535
SKI-EQUIPPED CRUTCH
Takafusa Negi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan
Continuation of Ser. No. 420,090, Nov. 29, 1973, abandoned. This application May 8, 1975, Ser. No. 575,701
Claims priority, application Japan, Dec. 2, 1972, 47-120981; Dec. 2, 1972, 47-120982
Int. Cl.² A63C 11/22
U.S. Cl. 280—11.37 B **4 Claims**



1. A ski-equipped crutch comprising: a pole member, a pole-ski member, a holding member fixedly attached to said pole-ski member and rotatably attached to said pole member, said holding member including a guide plate having a smooth guiding free end surface provided with spaced notches, an elastic engaging means for releasably locking said pole member and said holding member into engagement with each other at at least first and second selected positions, in said first position said ski pole member being substantially perpendicular to the longitudinal direction of said pole member and in said second position said ski pole member being substantially aligned with said pole member, said engaging means including a tubular bifurcated lower end portion formed in said pole member, said holding member being received in said bifurcated lower end portion, a ball movably received between said tubular lower end portion of the pole member and said guiding surface of said holding member, and a biasing means received within said tubular lower end portion and acting along the longitudinal direction of said pole member for urging said ball into engagement with said guide surface, said ball moving in and out of said notches and smoothly along said guide surface when a force urging rotation of said pole member with respect to said pole-ski member exceeds the biasing force urging said ball into said notches.

3,948,536
SNOW VEHICLE
Reinhard Konrad, Fellengatter 45, A-6820 Frastanz, Austria
Filed Jan. 21, 1975, Ser. No. 542,663
Claims priority, application Austria, Jan. 29, 1974, 715/74
Int. Cl.² B62D 13/06
U.S. Cl. 280—18 **7 Claims**

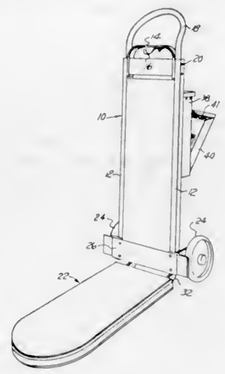


1. A snow vehicle comprising:
a. two elongated body portions, each body portion including
   1. a bottom wall having an external bottom face shaped for longitudinal sliding engagement with a snow face, and
   2. a longitudinal side wall projecting from said bottom wall in a direction away from said bottom face;
b. fastening means for releasably and fixedly fastening said body portions to one another in a position in which said bottom faces are elongated in a common direction and transversely juxtaposed,
   1. the fastened body portions jointly constituting the trough-shaped body of said vehicle,
   2. said bottom walls of said fastened body portions jointly constituting the imperforate bottom of said body;
c. binding means on said body portions for securing respective feet of a person to said body portions; and
d. seating means permanently attached to at least one of said body portions and providing a seat on said body.

3,948,537
HAND TRUCK
Michael Arthur Black, Tustin, Mich., assignor to Brooks & Perkins, Incorporated, Southfield, Mich.
Filed Jan. 6, 1975, Ser. No. 538,531
Int. Cl.² B62B 1/04
U.S. Cl. 280—36 C **15 Claims**

1. A hand truck intended primarily for luggage comprising an elongated generally rectangular back frame having a substantially vertical rest position and rearwardly inclined position for transporting luggage thereon, a handle at the upper end of said frame, a pair of wheel support brackets fixedly connected to and extending rearwardly from the lower end of said frame, axially aligned wheels mounted on said brackets, a nose extension having an inner end pivotally connected to said frame adjacent the lower end thereof of an axis spaced from the axes of said wheels and movable between a rest position in which it is disposed substantially against the front side of said frame and a transport position in which it extends forwardly from the lower end of said frame, hinge brackets fixedly connected to and extending rearwardly from the inner end thereof, said hinge brackets having pivot means connected to said frame adjacent the lower end of said frame, abutment surfaces forwardly of and above said pivot means, said hinge brackets having abutments thereon located sub-

stantially above the pivot axis of said pivot means engageble with the abutment surfaces on said frame when said nose



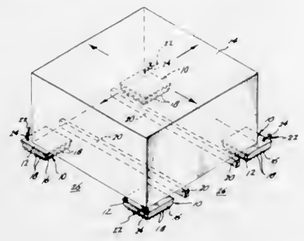
extension extends forwardly from said frame in transport position to maintain said extension in load sustaining operating position.

3,948,538

SELF EQUALIZING BALL CASTER LIFT MAT

Harry Hovila, 17517 Clover Road, Bothell, Wash. 98011

Filed June 16, 1975, Ser. No. 587,245
Int. Cl.² B62B *21/18*
U.S. Cl. 280—43.23 **16 Claims**



1. An apparatus for supporting a load for traverse across a generally planar supporting surface comprising:

a frame member having an upper portion and a lower portion, said frame member including a supporting surface on the upper portion thereof for contacting the underside of a load to be supported, said frame member including a bottom portion,

a flexible, fluid impervious member and attachment means for attaching said flexible member to the bottom portion of said frame member, said flexible member and said frame member being so constructed so as to form a fluid chamber and to present a surface portion of said flexible member spaced from and in a generally parallel relationship to said supporting surface,

a plurality of roller means, each of said roller means having a body and roller member for contacting and rolling over said supporting surface, said roller member being mounted on said body for rolling movement,

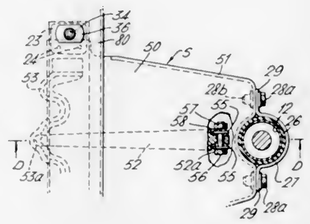
retention means associated with said plurality of roller means for mounting and orienting said roller means for independent, relative movement toward and away from said frame member in a direction transverse to said supporting surface, the body of each of said roller means coacting with said surface portion of said flexible member so that fluid pressure present in said chamber is transmitted to said roller means to bias the movement of said roller means away from said frame member.

3,948,539

ENERGY ABSORBING STEERING ASSEMBLY

Genyo Murase, Nagoya; Hisahal Mineda, and Yozo Yamaguchi, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 256,872, May 25, 1972, Pat. No. 3,822,608. This application Apr. 17, 1974, Ser. No. 461,650
Claims priority, application Japan, May 25, 1971, 46-35819; May 28, 1971, 46-37156; May 31, 1971, 46-37678
Int. Cl. B62d *1/18*
U.S. Cl. 280—87 R **6 Claims**



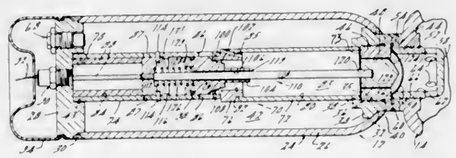
1. In a vehicle having a steering column assembly, including a steering shaft, steering gear means, means for flexibly coupling said shaft vertically to said gear means for forward pivotal movement of said shaft, and a column tube having said steering shaft journalled therein and permitting said forward pivotal movement of said shaft, apparatus for supporting said steering column assembly, comprising: a support structure releasably coupled at its front part to the body structure of said vehicle and fixedly coupled at its rear part to said steering column tube, said steering assembly support structure including an impact energy absorbing member transversely mounted on said body structure to be plastically expanded forwardly and means coupled with said steering column for forwardly expanding said energy absorbing member by impact energy exerted thereon from said steering column.

3,948,540

CONTROLLED FLOW FLUID SUPPLY FOR OCCUPANT RESTRAINT SYSTEMS

George B. K. Meacham, Birmingham, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 278,162, Aug. 4, 1972. This application May 15, 1974, Ser. No. 470,087
Int. Cl.² B60R *21/08*
U.S. Cl. 280—150 AB **26 Claims**



1. A fluid supply for use with an occupant restraint system including an inflatable confinement having a collapsed non-operative position and an expanded operative condition for restraining movement of the vehicle occupant in the event of a collision, and means for directing inflating fluid to the confinement, said fluid supply comprising:

a. a source of pressurized inflating fluid;

b. means defining a discharge passage communicating said source of pressurized inflating fluid with said fluid directing means;

c. means defining a control pressure chamber initially charged with pressurized fluid;

d. port means communicating said control pressure chamber with said discharge passage to permit fluid flow from said control pressure chamber to said discharge passage;

e. means sealing said discharge passage to prevent fluid flow to said directing means;

f. means operable upon occurrence of a collision to activate said fluid source and disable said sealing means such that fluid flows from said port means through said discharging passage;

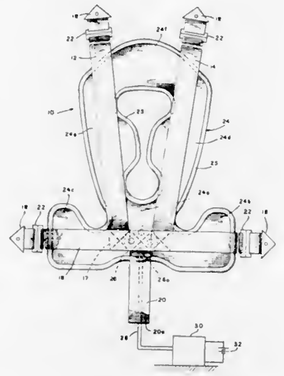
g. flow control means associated with said discharge passage responsive, upon actuation of said fluid source and disabling of said sealing means, to the difference between the pressure in said fluid source and the pressure in said control pressure chamber, to move progressively from a first position restricting flow from said fluid source to said discharge passage when said pressure difference is less than a predetermined value, to a position permitting increased flow from said fluid source to said discharge passage as the pressure difference increases above said predetermined value.

3,948,541

INFLATABLE BODY AND HEAD RESTRAINT

Marvin Schulman, Broomall, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 483,603, June 27, 1974, Pat. No. 3,905,615. This application June 23, 1975, Ser. No. 589,296
Int. Cl.² B60R *21/10*
U.S. Cl. 280—150 AB **4 Claims**



1. A vehicle occupant restraint system comprising:

an inflatable bladder member having a central pocket portion, first and second pelvic portions extending outward from said central pocket portion, first and second chest portions extending outward from said central pocket portion, and a chin bag portion interconnecting and in fluid communication with the distal ends of said first and second chest portions; and

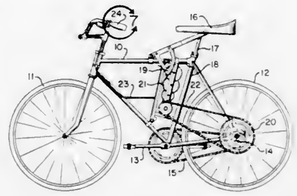
gas generator means positioned within said central pocket portion for producing pressurized gas upon reception of a command signal.

3,948,542

BICYCLE WITH AUXILIARY SEAT DRIVE

Aleksander Lukich, 1005 Hill St., Apt. 2, Santa Monica, Calif. 90405

Filed Feb. 13, 1975, Ser. No. 549,729
Int. Cl.² B62M *1/20*
U.S. Cl. 280—226 R **8 Claims**



1. A bicycle with an auxiliary seat drive including, in combination:

a. a frame;

b. front and rear wheels rotatably mounted on said frame;

c. a pedal drive on the frame;

d. a rear drive sprocket coupled to the rear wheel;

e. a chain connecting said pedal drive to the rear drive sprocket to rotate said rear wheel;

f. a seat;

g. seat mounting means supporting said seat for generally up and down movement relative to said frame including a first tube; horizontal sliding means secured to said seat and slidably coupled to the upper end of said first tube, a portion of said frame including a larger diameter tube telescopically receiving the lower end of said first tube; spring biasing means in said second tube urging the lower end of said first tube upwardly; a lever arm pivoted to said frame at one end and to said seat at its other end to form an acute angle with the horizontal;

h. gear ratchet means mounted on said frame and coupled to said lever arm by a sector gear means mounted on said lever arm for converting downward movement of said seat into a rotary gear motion;

i. an auxiliary drive sprocket coupled to said rear wheel;

j. transmission means connecting said gear ratchet means to said auxiliary drive sprocket whereby the weight of a bicycle rider on said seat moving it downwardly imparts driving force to said rear wheel; and

k. a series of indents on a portion of said sector gear means, said frame portion including a locking projection for insertion into any one of said detents to lock said sector gear means and thus said seat in a given position when it is not desired to use the seat drive.

3,948,543

MOTORCYCLE SUSPENSION SYSTEM

John M. MacDonald, and Charles J. MacDonald, both of 1260 Bluesky Drive, Cardiff, Calif. 92007

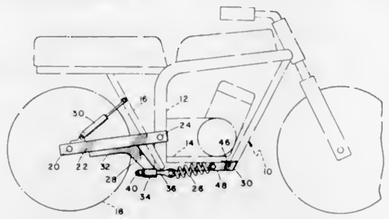
Filed Jan. 24, 1975, Ser. No. 543,686
Int. Cl.² B62K *25/04*
U.S. Cl. 280—284 **5 Claims**

1. An improved rear wheel suspension system for a motorcycle or the like having a frame, a rear wheel, a substantially horizontal longitudinally extended swing arm assembly pivoted at its forward end to the frame, and a wheel journalled to the rearwardly extended end of said swing arm assembly, said suspension system comprising:

a. a rigid extension arm projecting down from said swing arm assembly and having a substantially horizontal longitudinal bore therethrough;

b. a spring means having one end thereof connected to said frame and the other end thereof connected to said swing arm assembly by means of a clevis engaging said spring and having a threaded shank extending through said bore

and secured by a nut on the side of said extension arm remote from said spring, such that the swing arm is adjustably downwardly biased thereby and upward force on the swing arm is reacted through said spring means as a substantially horizontal force on said frame.

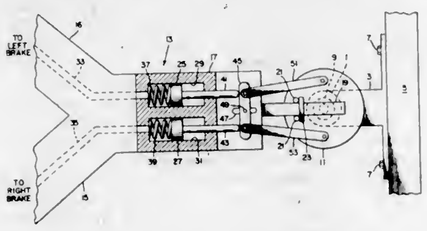


3,948,544

SURGE BRAKE COMBINATION VEHICLE STABILIZER

Rex Wallace Presley, Livonia, and Jack Richardson Lorraine, Howell, both of Mich., assignors to The Bendix Corporation, South Bend, Ind.

Filed Feb. 24, 1975, Ser. No. 552,084
Int. Cl.² B60T 7/20
U.S. Cl. 280—446 B **10 Claims**



1. Apparatus for automatically eliminating a sway condition in a trailer towed by a tow vehicle and having brakes for retarding its rate of movement, comprising a hitch connecting the trailer to the tow vehicle, sensing means on the hitch for sensing the amplitude and direction of hitch lateral force, the sensing means including a reaction wheel and means for rotating the reaction wheel through an angle corresponding to hitch lateral force, and means connected to the sensing means for operating the trailer brakes for automatically eliminating a sway condition in the trailer including a pair of pistons reciprocating in associated cylinders operatively connected to the brakes, and means connecting the pistons to the reaction wheel for moving the pistons differentially in the cylinders in response to movement of the reaction wheel to operate the brakes for eliminating the sway condition in the trailer.

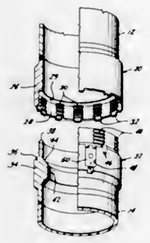
3,948,545

MECHANICALLY OPERATED BREECH BLOCK

James Vaull Bonds, Houston, Tex., assignor to McEvoy Oilfield Equipment Co., Houston, Tex.

Filed Mar. 11, 1974, Ser. No. 449,616
Int. Cl.² F16L 35/00
U.S. Cl. 285—4 **21 Claims**

1. A structure comprising
first and second tubular connectors having bores therethrough adapted to engage each other to coaxially connect a pair of pipes,
a port in the wall of one of said connectors,
cooperative latch means on the outside of said connectors adapted to be positioned, when said connectors are in engagement, to latch said connectors against disengagement,
the latch means on the first connector having a portion engageable with the latch means on the second connector, and



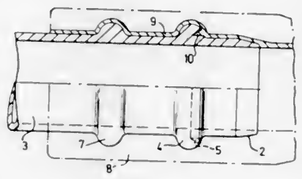
disengagement means extending through said port and projecting into said bore of said one connector operable by a releasing tool inside said bore without the releasing tool extending into said port to cause disengagement of said portion from the latch means on the second connector, whereby the connectors may be disengaged.

3,948,546

MOLDED STRUCTURES

Joseph A. Welsby, Antrim, Ireland, and Kenneth Welch, deceased, late of Armagh, Ireland (by Kathleen J. Welch, executrix), assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 26, 1973, Ser. No. 335,963
Claims priority, application United Kingdom, Mar. 28, 1972, 14388/72
Int. Cl.² F16L 13/10
U.S. Cl. 285—239 **4 Claims**



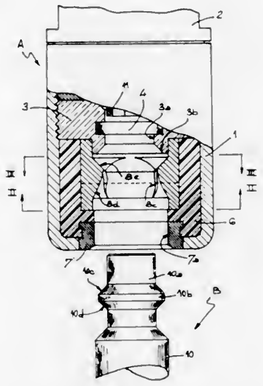
1. A hose coupling member for incorporating into a laminated hose structure having an inner layer of elastomeric material, said member including a rigid nipple with the hose body formed therearound and having the inner layer thereof being adhered generally to the nipple surface, at least one outwardly extending generally semi-circular annular projection on the outer surface of said nipple and engaging said inner layer of elastomeric material of said hose, a V-shaped recess formed in said projection radially outwardly of the nipple surface, the inner elastomeric layer of the hose filling said recess without being adhered to the faces thereof to form a sealing tongue which, by the pressure of the fluid passing between the inner layer of the hose and the nipple surface, is urged into sealing engagement with the recess face opposite to the one along which the fluid enters said recess thus preventing flow of liquid beyond the recess.

3,948,547

PIPE COUPLINGS

Henry Gache, Annecy, France, assignor to Gedic, S.A., Saint-Jorioz, France

Filed July 11, 1975, Ser. No. 594,977
Claims priority, application France, July 12, 1974, 74.25774
Int. Cl.² F16L 37/08
U.S. Cl. 285—317 **9 Claims**



1. In a pipe coupling having a female coupling element of the kind having an internal bore to receive a male element, and a locking member displaceable transversely to the bore against resilient return means, the locking member having a keyhole shaped opening through it in the direction of the bore, the narrow part of this opening normally being held in the bore by the return means and displacement of the locking member bringing the wider part of the keyhole shaped opening into alignment with the bore, so that a male element with a shoulder proximate its free end can be inserted into the bore, the shoulder passing through the wider part of the opening, subsequent return of the locking member by the return means bringing the narrower part of the opening around the male element on the opposite side of the shoulder to the free end to prevent uncoupling,
the improvement in the female coupling element which comprises doubly oblique opposed side surfaces at each side of the narrower part of the opening, such that on insertion into the bore of a male element whose shoulder has a frustoconical leading surface, the action of said leading surface bearing on said doubly oblique side surfaces automatically displaces said locking member to allow said shoulder to pass through it.

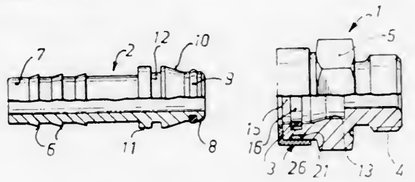
3,948,548

HOSE AND PIPE COUPLING

Hans-Hermann Voss, Iserlohn, Germany, assignor to Armaturenfabrik Hermann Voss, Wipperfurth, Germany

Filed Nov. 6, 1974, Ser. No. 521,438
Claims priority, application Germany, Nov. 11, 1973, 7340346; Sept. 20, 1974, 2444993
Int. Cl.² F16L 37/00
U.S. Cl. 285—321 **14 Claims**

1. A coupling for hoses, pipes and the like comprising:
a coupling head having an input coupling, a slot-like circumferential opening, and an internal annular groove;
locking means comprising an elastic annular spring member having a slot and a pair of spring arms extending from said slot in opposite directions in substantially ringlike manner, said pair of spring arms encompassing said coupling head, said locking means being partially inserted in said internal annular groove of said coupling head as well as through said slot-like circumferential opening in the coupling head; and



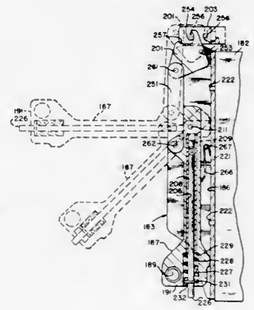
a nozzle for insertion into the input coupling opening of said coupling head, said nozzle including an annular groove for at least partly receiving therein said elastic annular spring member.

3,948,549

ROTATABLE LOCKING MECHANISM HAVING MOVABLE DETENTS

John A. Duran, Glendora, Calif., assignor to Avibank Mfg., Inc., Burbank, Calif.

Division of Ser. No. 430,725, Jan. 4, 1974. This application Mar. 17, 1975, Ser. No. 559,085
Int. Cl.² E05C 3/30
U.S. Cl. 292—26 **1 Claim**



1. A releasable detent locking mechanism with rotatable movement for providing a collapsible hand-held carrier bar for a rack-mounted chassis, comprising:
first and second pivotally connected members having closely confronting wall portions which undergo relative rotational movement while maintaining substantially constant clearance therebetween;
an elongate spindle receiving bore means provided in said first member and extending adjacent to and inwardly of the associated wall portion;
at least one transverse detent receiving opening means extending in said first member between said associated wall portion and said bore;
spindle release means mounted for axial movement in said bore means;
movable detent means disposed in said detent receiving opening means for cooperative movement of said detent means by said spindle release means between protruding and retracted positions relative to said first member wall portion;
locking indent means provided in said second member wall portion confronting said first member wall portion and being positioned in the rotational path of said detent means for cooperating with said detent means in its protruding position to lock said members against the otherwise relative rotatability therebetween, whereby said

detent means may be displaced between its protruding and retracted positions by said spindle means to lock or release the relative rotatability of said members respectively;

said second member is a support member comprising at least one bracket adapted to be secured to the front panel of said rack mounted chassis;

said first member is a rotatable member comprising at least one elongate bar supporting arm having one end pivotally mounted to said bracket support member and having the opposite end adapted to provide a support for said carrier bar;

said spindle receiving bore means and transverse detent receiving opening means being provided in said rotatable arm member for receiving said spindle release means and said movable detent means;

said locking detent means being provided on said bracket support member and having first and second indentations for locking the rotational position of said rotatable arm member in a collapsed out-of-the-way position and an outwardly extended manually accessible position;

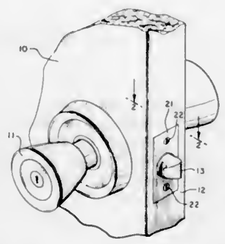
manually engageable actuator release means mounted on said rotatable arm member adjacent said handle means and being connected to said spindle release means for manually releasing said detent means from its protracted position to its retracted position to permit the unlocking of said rotatable member in either said collapsed or extended rotational positions to move said rotatable member to the opposite position; and

chassis locking means connected to said bracket support member and to said rotatable arm member for locking said chassis to said rack when said rotatable member is disposed in its collapsed out-of-the-way position and unlocking said chassis from said rack to permit removal and transporting away therefrom when said rotatable member is released and rotated to its outwardly extended and manually accessible position.

3,948,550
DOOR LATCH

Kenneth Viglucci, 103 Crest Road, and Joseph Reiner, 30 Sutton Place, both of Toms River, N.J. 08753

Filed Oct. 3, 1974, Ser. No. 511,542
Int. Cl.² E05C 7/00, 19/00
U.S. Cl. 292—137 **1 Claim**



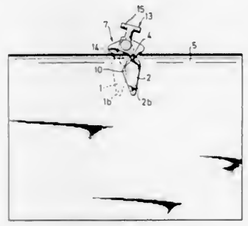
1. A latch for use with a door knob lock for contact with a corresponding opening formed in a door jamb comprising:

a bolt having a free end and a beveled surface thereat along its closing edge, and including a slot defined by a first side wall substantially perpendicular to the axis of the bolt and formed adjacent to the edge of the door, a second spaced-apart wall having a length substantially smaller than the length of said first side wall formed within the bolt and within the door jamb recess, and a base surface interconnecting the walls together, the width of said slot being greater than a gap between the door and the door jamb, the intersection of said base surface with said second wall forms a notch having an acute angle, said base surface is inclined with respect to the axis of said bolt in a direction widening towards said free end, so that upon insertion of a flat instrument into said slot on said base surface, said bolt is biased in a locking direction toward its free end securely into the door jamb, and its intersection with said first wall forms an acute angle.

3,948,551
CLAMP AND PRODUCT HANDLING EQUIPMENT PROVIDED THEREWITH

Walter Reist, Schonenbergstrasse 16, 8340 Hinwil, Switzerland

Filed Nov. 1, 1973, Ser. No. 411,689
Claims priority, application Switzerland, Nov. 10, 1972, 16383/72
Int. Cl.² B65G 9/00
U.S. Cl. 294—16 **14 Claims**

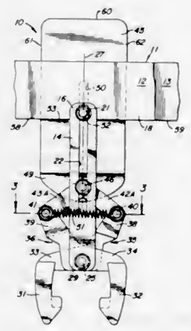


1. A clamp for seizing and holding and/or manipulating articles, comprising clamp jaws which form a clamp gap when the clamp is closed, means for pivotably mounting said clamp jaws, said clamp jaws being movable in a substantially scissor-like manner at the region of the clamp gap away from one another into their open position and towards one another into their closed position, said mounting means defining a pivot axis for the clamp jaws which extends substantially perpendicular to a plane in which the clamp jaws move in said scissor-like manner, and means for resiliently connecting said clamp jaws with one another in the lengthwise direction of the pivot axis.

3,948,552
BOTTLE GRIPPING APPARATUS

Gene H. Hamrick, 2407 Graham Road, Stow, Ohio 44224

Filed Jan. 8, 1975, Ser. No. 539,337
Int. Cl.² B66C 1/42
U.S. Cl. 294—115 **6 Claims**

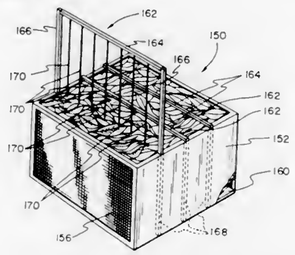


1. A bottle gripping apparatus adapted to be mounted on at least one supporting bar, said bottle gripping apparatus comprising: a frame means; a guideway provided in said frame means; a mounting pin pivotally to secure said frame means to the supporting bar, said mounting pin being slidably received in said guideway; a fulcrum supported by said frame means; first and second, opposed gripper jaws; each said gripper jaw carried on a corresponding first and second lever arm; said first and second lever arms being convergent and being pivotally mounted on said fulcrum to permit said first and second jaws to be relatively movable toward and away from each other; spring means continuously biasing said first and second gripper jaws toward each other; a control member movably mounted on said frame means; a pivot pin secured to said control member and being slidably received in said guideway; link means connected between said pivot pin and said first and second lever arms to move said first and second jaws in response to movement of said control member.

3,948,553
METHOD OF HARVESTING TOBACCO AND APPARATUS FOR BULK HANDLING THE HARVESTED TOBACCO

Charles W. Suggs, Raleigh, N.C., assignor to ACHS, Raleigh, N.C.

Continuation-in-part of Ser. No. 506,265, Sept. 16, 1974. This application Dec. 4, 1974, Ser. No. 529,490
Int. Cl.² A24B 1/10
U.S. Cl. 294—5.5 **17 Claims**

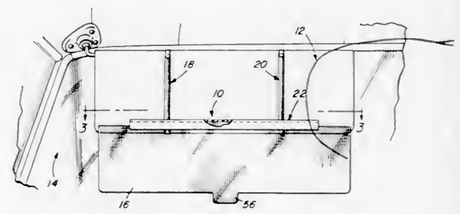


1. A bulk tobacco support structure for containing and supporting a bulk volume of tobacco and adapted to receive tobacco leaves in a first filling position and to support a continuous vertical volume of tobacco leaves of a vertical distance substantially greater than the length of the respective leaves comprising the volume of tobacco therein in a second 90° rotated drying position, said bulk tobacco support structure as oriented in said rotated drying position comprising: a container-type tobacco support structure for holding and supporting a volume of randomly aligned tobacco leaves wherein the leaves in said rotated position are generally disposed in vertical planes and the vertical height of said volume of leaves being substantially greater than the length of the respective leaves comprising the volume, said container including a back of a substantial cross sectional area with both the height and width of said back being substantially greater than the length of the respective tobacco leaves comprising the volume of leaves therein; a pair of laterally spaced side members extending from said back with the respective side members being disposed in generally parallel relationship; top and bottom areas defined between said laterally spaced side members, said top and bottom areas being at least partially open in order that air may pass therethrough; tine frame means detachably secured about one edge of said side members and longitudinally spaced relative to said back; elongated tine means supported at one end by said tine frame means and extending therefrom through the volume of tobacco leaves within said container for supporting the continuous volume of vertically integrated tobacco leaves within the container wherein the height of the vertically integrated volume of tobacco leaves is substantially greater than the length of the respective leaves comprising the volume; and vertically spaced tine support means remotely spaced from said tine frame means and disposed across said container for supporting said tine means projecting through the volume of tobacco within said container.

3,948,554
SUN SHIELD

Jesse J. Barbee, Rte. 4, Box 895, Phenix City, Ala. 36867

Filed Oct. 1, 1974, Ser. No. 511,036
Int. Cl.² B60J 3/00
U.S. Cl. 296—97 C **4 Claims**



1. A sun shield for attachment to a vehicle visor, having remote side edges and side faces, for selectively intercepting rays of light of brilliance interfering with normal vision, comprising, in combination:

a. a lens;

b. clamp means for mounting on a visor; and

c. holder means movably attaching the lens to the clamp means, said clamp means including a pair of arms arranged in spaced, substantially parallel relationship, each arm comprising a pair of elements having post portions including one pair of adjacent ends arranged in frictionally engaged telescoping relationship, and a second pair of remote ends provided with lock means for engaging over the remote side edges of the visor, said lock means including a generally U-shaped portion extending in cantilever fashion from the post portion of the element for embracingly engaging the corresponding visor edge and terminating in an inwardly directed cleat insertable into a visor, the cleats acting to retain the element associated therewith in a position relative to the other of the elements, said holder means including a carrier member provided with sockets arranged slidably embracing the arms and engaging one of the visor faces, the lens being attached to the carrier member for movement therewith, and the sockets arrangeable relative to the visor for permitting the carrier member to maintain a position relative to the arms and visor.

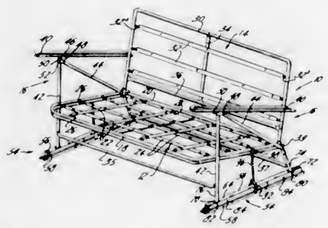
3,948,555
GLIDER

Bertram Lesser, Mamaroneck, N.Y., and Frank J. Hart, Fair Lawn, N.J., assignors to Duralite Company, Inc., Passaic, N.J.

Filed Aug. 14, 1974, Ser. No. 497,201
Int. Cl.² A47C 1/00
U.S. Cl. 297—39 **12 Claims**

1. A glider designed for easy assembly, comprising, in combination, a frame having first and second ends and including a seat portion, a back rest portion and a pair of substantially vertically disposed side members mounted on each of said ends of said frame, a pair of elongated roller support members each including an upper track member and a lower track member, said upper track member being a substantially inverted U-shaped member which opens downwardly and includes a substantially horizontally disposed top wall and a pair of spaced side walls connected to said top wall, securing means for pivotally securing a first portion of each of said side members of said frame to said upper track members, support

means connected to said upper track member for supporting a second portion of each of said side members in said upper track members, so that said second portions of said side members of said frame are adapted to be removed from said upper track members, to facilitate collapsing of said glider for storage purposes, and at least two rollers rotatably mounted to and between said side walls of said upper track member, said lower track member includes a track portion adapted to receive said rollers, and a floor engaging member, said frame further including biasing means extending between said side members of said frame and said lower track members for

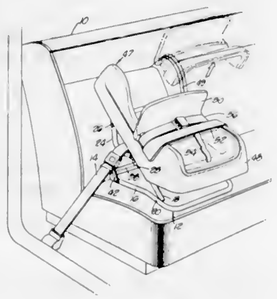


yieldingly urging said rollers in contact relation with said track portions thereof, said first and second portions of said side members of said frame comprise first and second downwardly extending strut members, and said top wall of said upper track members includes at least a first opening for receiving a lower end of said first strut member and a second opening for receiving a lower end of said second strut member, said securing means pivotally securing said lower end of said first strut member to said side walls of said upper track member, and said support means supporting, without securing, said one end of said second strut member.

3,948,556
CHILD'S CAR SEAT

Richard E. Hyde, Palos Verdes Estates, and Lee T. Carmichael, Pasadena, both of Calif., assignors to Strolee of California, Compton, Calif.

Filed June 17, 1974, Ser. No. 479,849
Int. Cl.² A47D *1/10*
U.S. Cl. 297—250 **2 Claims**

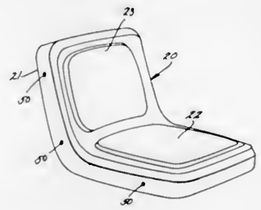


1. A child's car seat comprising
a support frame positionable on an automobile seat, said support frame including means for receiving an automobile seat belt to prevent relative movement between said support frame and the automobile seat;
a seat structure capable of receiving and restraining a small child; and
means for operably mounting said seat structure to said support frame such that said seat structure may be oriented in a plurality of positions without releasing the automobile seat belt and without otherwise disturbing said support frame, said means for operably mounting said seat structure to said support frame including first pivotally mounted linkages extending between said support frame and said seat structure and second pivotally mounted linkages extending between said support frame and said seat structure, said second pivotally mounted linkages being longer than said first pivotally mounted linkages and located below said first pivotally mounted linkages such that said seat structure may be pivoted relative to said support frame to a sitting position and to a reclining position.

3,948,557
FASTENING SYSTEM FOR REMOVABLE SEAT INSERT

Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.

Filed Apr. 21, 1975, Ser. No. 569,975
Int. Cl.² A47C *27/00*
U.S. Cl. 297—283 **12 Claims**



1. A passenger seat for a mass transit vehicle comprising:
a frame;
a one-piece rigid shell mounted on the frame, and having interior boundaries defining mounting openings;
an insert having elongated fastening means, the insert mounted to the shell so the elongated fastening means extend through the mounting openings; and
an insert restraining means for securing at least some of the elongated fastening means to prevent movement of the elongated fastening means back through the mounting openings of the shell, the insert restraining means including a movable member which is movably mounted to the passenger seat, the movable member having a first position permitting insertion of the elongated fastening means through the mounting openings and a second position preventing the withdrawal of the elongated fastening means through the mounting openings.

3,948,558
SEAT BACKREST HAVING AN ADJUSTABLE LUMBAR SUPPORT

Albert Anthony Obermeier, Waterloo, and James Edward Thompson, Cedar Falls, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Mar. 31, 1975, Ser. No. 563,611
Int. Cl.² A47C *3/00*
U.S. Cl. 297—284 **8 Claims**

1. A seat backrest comprising: a rigid frame supporting a contourable portion constituted by a flexible covering and an elastomeric layer interposed between the covering and the frame; and means between the frame and the covering to impart a curvature to the covering to produce a desired lumbar contour including a lumbar pad, a pivot plate pivotally attached at one end to the frame and to the lumbar pad at the other, and camming means including a wedge block slidably inserted between the pivot plate and the frame, and manually

operable means extending to one side of the backrest for sliding the wedge block towards and away from the point of

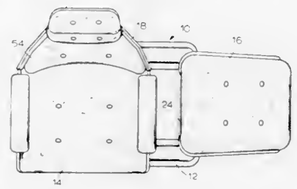


pivotation of the pivot plate to cam the lumbar pad into a plurality of positions.

3,948,559
ADJUSTABLE CHAIR

Larry A. Hain, Columbia, and Ronald C. Webb, Red Lion, both of Pa., assignors to Dentsply Research & Development Corporation, Milford, Del.

Continuation-in-part of Ser. No. 551,873, Feb. 21, 1975, abandoned. This application July 31, 1975, Ser. No. 600,766
Int. Cl.² A61G *15/00*
U.S. Cl. 297—330 **10 Claims**



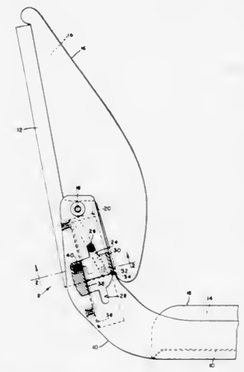
1. An adjustable chair comprising in combination a base having an upper portion movable vertically relative to the lower portion thereof, a seat unit supported upon said upper portion of said base for direct vertical movement therewith, a back pivotally connected to the normally rear edge of the seat, an elongated support having one end extending laterally from said upper portion of said base, meas fixedly connecting the other end of said support to said upper portion of said base, a leg rest connected to said one end of said support for support of said leg rest substantially in horizontal alignment with said seat unit, and means connecting said seat to said upper portion of said base for pivotal movement about a substantially vertical axis between a first position in which the front to rear axis of said seat is aligned with the longitudinal axis of said leg rest and a second position in which said front to rear axis of said seat is disposed tranversely to the axis of said leg rest to facilitate a person sitting upon said seat without obstruction by said leg rest when said seat is in said second position.

3,948,560
SEAT HAVING AN ADJUSTABLE BACK

Albert Anthony Obermeier, Waterloo, and James Edward Thompson, Cedar Falls, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Mar. 31, 1975, Ser. No. 563,612
Int. Cl.² B60N *1/02*
U.S. Cl. 297—355 **10 Claims**

1. A seat having an adjustable back, comprising: a back portion; a seat portion pivotally supporting the back portion and having a channel therein perpendicular to the axis of pivotation; a tilt adjustment slide positioned in the channel for reciprocating sliding therein perpendicular to the axis of pivotation; said tilt adjustment slide having a groove therein oblique to the channel; manually operable means for causing

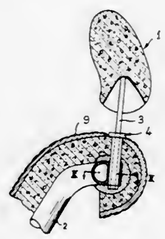


sliding of the slide in the channel; and engaging means carried by the back portion and engaging the groove for sliding movement therein and pivotal movement relative to the channel in response to movement of the slide whereby the back portion is moved relative to the seat portion.

3,948,561
HEAD REST MOUNTING

Daniel de Rosa, Boulogne-Billancourt, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt and Automobiles Peugeot, Paris, both of, France

Filed Jan. 9, 1975, Ser. No. 539,804
Claims priority, application France, Jan. 18, 1974, 74.01736
Int. Cl.² A47C *1/10*
U.S. Cl. 297—391 **3 Claims**

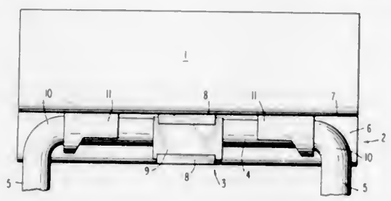


1. A device for mounting a head rest on the back rest of a vehicle seat having a back rest frame structure comprising, in combination, a socket member, means for supporting a head rest on said socket member, a seat frame element on the back rest frame structure defining a passage aperture for accommodating said socket member in an operative position with a head rest supported on said docket member disposed above the back rest, means on said socket member for locking said socket member to said seat frame element in said operative position, said locking means being arranged to permit the insertion of said socket member within said passage aperture in a first rotary position of said socket member with respect to said seat frame element and to lockingly engage said seat frame element in a second rotary position of said socket member to releasably retain said socket member in said operative position.

3,948,562
SUPPORT FOR A HEADREST PIVOTAL WITHIN CERTAIN LIMITS

Christian Grabner, Sindelfingen; Ludwig Weber, Boblingen, and Kurt Niethammer, Unterjettingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Aug. 12, 1974, Ser. No. 496,895
Claims priority, application Germany, Aug. 10, 1973, 2340530
Int. Cl.² A47C 1/10
U.S. Cl. 297—408 **22 Claims**

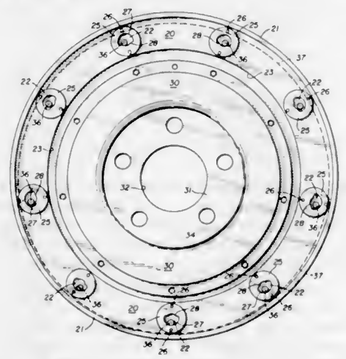


1. A bearing arrangement for a headrest means, the arrangement comprising: support means for supporting the headrest means so as to be pivotal between predetermined positions, said support means including a bearing bolt means, at least one bearing socket means for mounting the headrest means to the support means, said bearing socket means being securely connected with a lower area of the headrest means, said bearing socket means including a plurality of spaced walls which are arranged to form a socket having a triangular cross section, said bearing bolt means being received in said socket, at least one of said walls being formed by an elastic member engaging said bearing bolt means and pressing said bearing bolt means with a predetermined prestress against the remaining walls of the bearing socket means.

3,948,563
METHOD AND APPARATUS FOR TRANSMITTING TORQUE

Henry Replin, Denver, Colo., assignor to Vector Wheel Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 313,649, Dec. 11, 1972, abandoned. This application Feb. 11, 1974, Ser. No. 441,194
Int. Cl.² B60B 23/10
U.S. Cl. 301—5 R **32 Claims**

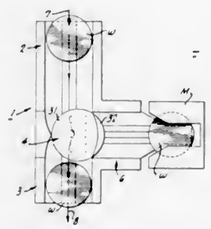


1. A method of advantageously utilizing torque, comprising: applying a relative torque between an inner member and an outer member, applying a radial force component to the outer member radially, displacing the inner member within the outer member, selectively and sequentially interlocking the inner member and the outer member at positions remote from the centers of the members but at a substantially constant position relative to that at which the radial force is applied to the outer member, and accordingly forming a force couple between the instantaneous location at which the radial force is applied to the outer member and the instantaneous location at which force is transmitted through the interlock between the inner member and the outer member, whereby a rotary motion is imparted to the assembly by the force couple.

3,948,564
FLUID BEARING APPARATUS AND METHOD UTILIZING SELECTIVE TURNTABLE DIVERTER STRUCTURE

Alan G. Flint, San Jose, Calif., assignor to GCA Corporation, Bedford, Mass.

Continuation of Ser. No. 434,018, Jan. 17, 1974, abandoned. This application May 19, 1975, Ser. No. 578,550
Int. Cl.² B65G 51/00
U.S. Cl. 302—31 **23 Claims**



1. Fluid bearing apparatus for handling articles comprising
A. a first fluid bearing track structure over which articles enter said apparatus from a first station,
B. a second fluid bearing track structure over which articles pass from said apparatus to a second station,
C. a third fluid bearing track structure angularly oriented relative to said first and second fluid bearing track structures,
D. a selectively indexable article storage magazine at one end of said third track structure, and
E. article diverter means interposed between said three fluid bearing track structures for selectively diverting articles from said first track structure onto said third track structure and into said magazine, comprising
1. a selectively rotatable fluid bearing turntable structure for receiving articles from said first track structure and either passing said articles on a fluid cushion onto said second track structure or diverting the same on a fluid cushion onto said third track structure,
a. said turntable structure including a crescent shaped diverting gate thereon with which said articles come in contact when positioned on said turntable to direct such articles in one of two directions, and
2. mechanism including means for selectively rotating said turntable between positions in which said articles are diverted thereby onto said third track structure or bypass the same.

14. A method of selectively and automatically handling articles on a fluid bearing without manual handling during manufacturing procedures comprising
A. feeding articles on a fluid cushion from a first station toward a second station,
B. determining the need for said articles at said second station,
C. causing said articles to pass on a fluid cushion onto and over a selectively positionable fluid bearing turntable having a crescent shaped diverting gate thereon with which said articles come in contact during their movement toward said second station,
D. positioning said crescent shaped diverting gate of said turntable in the path of travel of said articles to divert said articles in sequence from their path of travel toward said second station, and
E. collecting said diverted articles at a third station until such articles are required at said second station.

3,948,565
METHOD OF MAKING AND PIPELINE TRANSPORTING A NON-CORROSIVE SULFUR-WATER SLURRY

Richard J. Horvath, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

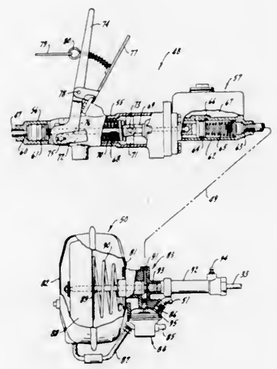
Filed Mar. 23, 1971, Ser. No. 127,332
Int. Cl.² B65G 53/30
U.S. Cl. 302—66 **7 Claims**

1. A method for the production of a sulfur-water slurry wherein the sulfur is present in two particle size ranges comprising injecting a portion of molten sulfur into hot water under swirling conditions and injecting another portion into still water at a temperature lower than that of the agitated water.

3,948,566
TRAILER BRAKE SYSTEM

William T. Salam, Highland Park, Ill., assignor to Stromberg-Hydramite Corporation, Chicago, Ill.

Filed June 3, 1974, Ser. No. 475,828
Int. Cl.² B60T 3/14
U.S. Cl. 303—7 **1 Claim**

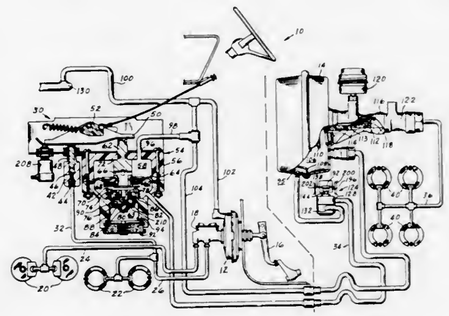


1. In a braking system for a towing vehicle having a hydraulic brake system and a towed vehicle having a hydraulic system, the combination of
a source of hydraulic pressure carried by the towing vehicle,
a coupling unit carried by a towed vehicle for transmitting hydraulic pressure forces generated in the towing vehicle brake system to the towed vehicle brake system,
said coupling unit including means for converting hydraulic pressure forces generated in the towing vehicle brake system into a mechanical force, and means for converting the aforesaid mechanical forces into a hydraulic pressure force in communication with the towed vehicle brakes by means of
a hydraulic pressure port which opens into a closed chamber having a movable piston therein,
a second closed chamber having a port which is connectable to said hydraulic pressure conduit means,
said second closed chamber having a movable piston therein,
mechanical link means extending between the aforesaid movable pistons and effective to generate pressure in the second closed chamber, and thereby the hydraulic pressure conduit means, in response to movement of the movable piston in the first closed chamber in a brake applying direction, and
return means for returning the second movable piston and mechanical link means to a brake pressure release position upon release of the application of force to the first movable piston,
a hydraulic pressure line connecting the source of hydraulic pressure to the coupling unit,
hydraulic pressure conduit means extending from the coupling unit to the towed vehicle brakes,
a pneumatic/hydraulic force generating unit in the hydraulic pressure conduit means between the coupling unit and towed vehicle brakes,
said pneumatic/hydraulic force generating unit being carried by the towed vehicle and being located a fixed distance from the coupling unit,
said pneumatic/hydraulic unit being activated by pressure derived from the coupling unit,
said pneumatic/hydraulic unit being effective to increase the pressure applied to the towed vehicle brakes upon application to it of pressure from the source of hydraulic pressure carried by the towing vehicle, and
means for mechanically setting a towed vehicle brakes upon operation of the towed vehicle and the towing vehicle brake system in the event of failure of the hydraulic brake system.

3,948,567
SWAY CONTROL MEANS FOR A TRAILER

John T. Kasselmann; Henry Dorsett, and Harold J. Burkett, all of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Feb. 12, 1975, Ser. No. 549,406
Int. Cl.² B60T 13/08
U.S. Cl. 303—7 **7 Claims**



1. In a tow vehicle-trailer braking system having a first brake applying servomotor responsive to an operator input for establishing a first braking signal which will actuate the wheel brakes in the tow vehicle and a second brake applying servomotor responsive to said first braking signal for establishing a second braking signal which will actuate the wheel brakes in the trailer, sway control means for supplying said second brake applying servomotor with an independent actuation signal to momentarily activate the wheels brakes in the trailer, said sway control means comprising:
a housing having a chamber therein with an entrance port, an exit port and an atmospheric port, said entrance port being adapted to receive said first braking signal from said first brake applying servomotor, said exit port being connected to the second brake applying servomotor;

distribution valve means located in said chamber for controlling a first flow path between the entrance port and the exit port;

poppet valve means located in said chamber for controlling a second flow path between the exit port and the atmospheric port;

resilient means connected to said housing for holding said distribution valve means away from said poppet valve means to permit the first braking signal to be communicated through said first flow path without interruption; and

mass means responsive to sway for activating said distribution valve means to interrupt communication in the first flow path by overcoming said resilient means to actuate said poppet valve means and allow air to flow through the atmospheric port into the second flow path to establish said independent actuation signal.

3,948,568

ARRANGEMENT FOR AUTO CHECKING A HYDRAULIC SYSTEM

Heinz Leiber, Leimen, Germany, assignor to Teldix GmbH, Heidelberg, Germany

Filed July 17, 1974, Ser. No. 489,439

Claims priority, application Germany, Aug. 22, 1973, 2342307

Int. Cl.² B60T *8/02*

U.S. Cl. 303—21 AF **17 Claims**

1. An autochecking arrangement for a hydraulic system including an actuating piston, a pressure source for supplying pressure for displacing said actuating piston a valve means connected in the pressure line between the pressure source and said actuating piston for causing displacement of said actuating piston, when said valve means is actuated, and pump means connected in said hydraulic system, said autochecking arrangement comprising: pressure means connected into said hydraulic system and emitting signal corresponding to at least two different sensed pressure thresholds; switch means for controlling said valve means and said pump means to sequentially provide different actuation states of said hydraulic system and different pressures therein; monitoring means responsive to said signals from said pressure sensing means corresponding to said two different pressure thresholds, for determining if, in the individual actuation states caused by said switch means, said pressure thresholds are reached within given time periods; and, warning means responsive to an output from said monitoring means for producing an indication when said given time periods are exceeded.

3,948,569

DEVICES FOR CONTROLLING CARBON DISC BRAKES, MORE PARTICULARLY FOR AIRCRAFT

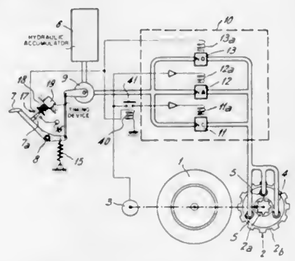
Pierre Gentet, Colomiers; Louis Signorelli, and Alain Yves Louis Marcel Geoffroy, both of Toulouse, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Aug. 26, 1974, Ser. No. 500,737

Claims priority, application France, Sept. 5, 1973, 73.32016

Int. Cl.² B60T *8/02*

U.S. Cl. 303—21 A **7 Claims**



1. A device for controlling the braking pressure of a carbon disc brake as for example in undercarriages of aircraft carrying a heavy load comprising at least one tachometric dynamo for determining the rotational speed of a disc of a brake, an inverted time-delay means acting to increase the pressure in the disc brake, means for applying the output of said dynamo to said delay means, a brake control means including a potentiometer with its output signal applied to the input of an operational amplifier followed by a second similar amplifier, said two amplifiers having a common negative feedback connection so as to operate as follower amplifiers for controlling braking pressure via a solenoid valve, the direct connection between the output of said first amplifier and said second amplifier comprising a diode which opposes the direct flow of current and a capacitor in parallel beyond said diode towards said second amplifier, and means controlled by voltage of said tachometric dynamo so as to modify the charging state of said capacitor if there is a variation in the input voltage of said first amplifier.

3,948,570

METHOD AND SYSTEM FOR CONTROLLING THE BRAKING PRESSURE IN RESPONSE TO THE RATE OF VARIATION IN WHEEL SPEED

Yukitsugu Fukumori, and Masaaki Katsumata, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 3, 1975, Ser. No. 546,774

Claims priority, application Japan, Feb. 8, 1974, 49-15520; Apr. 3, 1974, 49-37681

Int. Cl.² B60T *8/02*

U.S. Cl. 303—21 P **7 Claims**

1. A method of controlling a brake of an automotive vehicle having a plurality of wheels a manual brake apply means for applying a braking pressure to said wheels, means disposed in a conduit for said pressure for controlling the application of said pressure to said wheel, comprising the steps of:

a. sensing the speed of said vehicle and producing a first signal having a frequency proportional to said speed;

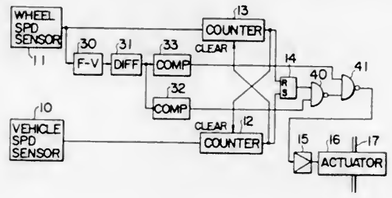
b. sensing the circumferential speed of said wheel and producing a second signal having a frequency proportional to said circumferential speed;

c. counting the frequency of said first signal for producing a disabling signal when a first predetermined number is counted and applying the same to said control means to cause the same to interrupt the passage of said braking pressure;

d. counting the frequency of said second signal for producing an enabling signal when a second predetermined number is counted and applying the same to said control means to cause the same to provide conduit for said pressure to thereby apply a braking pressure to said wheel; and

e. enabling both of the steps of (c) and (d) when the rate of change in said circumferential speed of the wheel is within a preselected range and enabling one of the said steps (c) and (d) when said rate is outside of said preselected range.

3. A brake control system for an automotive vehicle having a plurality of wheels and manual brake apply means for applying a braking pressure to said wheels, comprising, a vehicle speed detector for sensing the speed of said vehicle and producing a first signal having a frequency proportional to the vehicle speed, a wheel speed detector for sensing the circumferential speed of said wheels and producing a signal having a frequency proportional to the circumferential speed of the wheel, a first counter for counting the frequency of said first signal to produce an output when a first predetermined number is counted and a second counter for counting the frequency of said second signal to produce an output when a second predetermined number is counted, said first counter being arranged to clear said second counter and said second counter being arranged to clear said first counter, and means disposed in the passage of said brake pressure to control the application of said pressure to said wheels in response to said first and second signals such that said braking pressure is applied upon the occurrence of said second signal and interrupted upon the occurrence of said first signal.



3,948,571

VALVE FOR CONTROLLING PRESSURE MEDIUM ACTUATED BRAKES FOR RAILWAY AND OTHER VEHICLES

Erik Hefter, Germering, and Hans Pöllinger, Munich, both of Germany, assignors to Knorr-Bremse GmbH, Munich, Germany

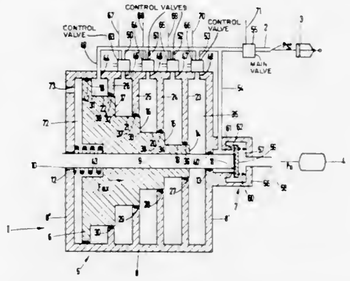
Filed Nov. 7, 1974, Ser. No. 521,910

Claims priority, application Germany, Nov. 7, 1973, 2355541

Int. Cl.² B60T *8/18, 15/04*

U.S. Cl. 303—22 R **5 Claims**

1. A control valve for pressure medium actuated brakes for a railway or other vehicle and comprising a multi-stage axially displaceable stepped piston valve member having a plurality of annular radial surfaces thereon with a predetermined surface area ratio to one another, a double valve connected between a supply of pressure medium, a vent and a brake and operable by said piston valve member so that the pressure medium at the brake is controlled in response to the position of said double valve, a plurality of control valves selectively operable to subject said radial surfaces individually or in combination to said pressure medium at the brake in response to a selected pressure stage, and thereby exerting an axial force upon said piston valve member directed to open said vent via said double valve, and spring means acting upon said piston valve member for applying an axial force against said piston valve member independently of the pressure medium at the brake and in opposition to the force exerted by the pressure medium against said radial surfaces and directed to open a connection from said supply of pressure medium via said double valve to said pressure medium at the brake, such that



said applied force and the force by said pressure medium are constant and balance each other at all stages of braking, said piston valve member has a radial surface opposed to said plurality of radial surfaces and said axial force applying means acts upon said opposed radial surface.

3,948,572

TWIN TRACK LAYING CHAIN

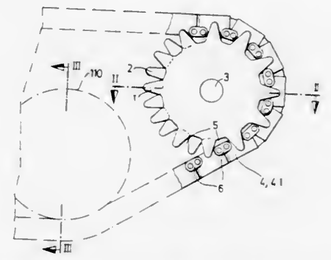
Otto Körner, Wermelskirchen; Manfred Boms, Dabringhausen, and Klaus Spies, Remscheid, all of Germany, assignors to DIEHL, Nurnberg, Germany

Filed Jan. 16, 1975, Ser. No. 541,435

Claims priority, application Germany, Jan. 16, 1974, 2401841; Jan. 16, 1974, 7401304

Int. Cl.² B63D *55/20*

U.S. Cl. 305—57 **5 Claims**



1. In combination with a first and a second toothed driving gear axially aligned with regard to each other, a twin track laying chain which includes: a first track laying chain, a second track laying chain arranged in the same plane as and parallel to said first track laying chain, each of said track laying chains comprising chain link bodies with guiding means and also comprising connectors respectively interconnecting said chain link bodies of the pertaining chain, the connectors of said first chain being drivingly receivable by the tooth spaces of said first driving gear, the connectors of said second chain being drivingly receivable by the tooth spaces of said second driving gear, said first and second chains being offset relative to each other so that the teeth of said first driving gear are in alignment with the tooth spaces of said second driving gear, said guiding means being formed by guiding mandrels arranged on those sides of said chain bodies which face each other, so that said guiding mandrels face each other in spaced relationship to each other, and tread roller means extending at least approximately over the width of both said first and said second chains, and at both sides of its central plane being

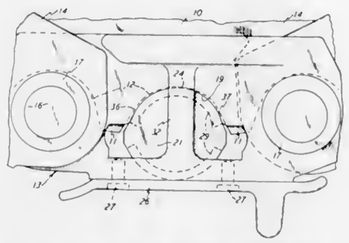
provided with symmetrical recesses for centering said guiding mandrels of said two chains.

3,948,573

CRAWLER TRACTOR TRACK CHAIN DRIVE ASSEMBLY

John M. Baylor, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed June 19, 1975, Ser. No. 588,407
Int. Cl.² B62D *55/08*
U.S. Cl. 305—57 **8 Claims**



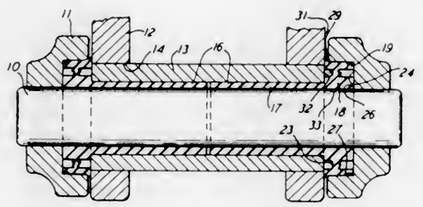
1. A crawler tractor track chain drive assembly comprising a drive sprocket having teeth and spacings therebetween, a track chain including a plurality of track chain links disposed in pairs in end-to-end relation along said track chain and with each of said pairs being two of said chain links laterally spaced apart from each other, a track plate removably attached to each of said pairs of said links and extending thereover, a plurality of pins articularly connecting said pairs of said links together in a chain arrangement, each of said links including a flange extending toward the other of said links in the paired arrangement and with said flanges being spaced from each other in pairs and being spaced from the respective said track plate to present an opening at the central portion of each of said pairs of said links, and an elastomeric bushing member disposed in each of said openings and being of a size to extend in contact with each said pair of flanges and in contact with said track plate and thereby being secured in a fixed position on said track chain and being disposed in said sprocket spacings and thereby engaged by said sprocket teeth.

3,948,574

JOINT WITH A COMBINED SEAL AND BUSHING

John M. Baylor, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed June 19, 1975, Ser. No. 588,408
Int. Cl.² B62D *55/08*
U.S. Cl. 305—58 PC **7 Claims**



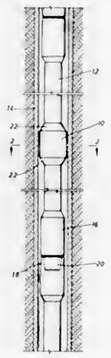
1. A joint with a combined seal and bushing, comprising a cylindrical member, a bushing on said cylindrical member and terminating in an end surface, two pivotal members piloted on said cylindrical member and said bushing and extending radially outwardly therefrom and being pivotal relative to each other and spaced apart, one of said pivotal members having a circular counterbore facing said bushing end surface and with said counterbore having a base surface parallel to and spaced from said bushing end surface, and an elastomeric combined seal and bushing member disposed in said counterbore and having two cylindrically-shaped portions of different diameters and concentrically disposed and nested together with one thereof telescoped inside the other, and with both said portions having a flat annular surface on each axial end thereof and extending along respective planes transverse to the cylindrical axis of said portions and with the two said annular surfaces of each said portion being in respective abutment with said bushing end surface and said counterbore base surface, said elastomeric member being compressed between said two pivotal members and being of an axial length to present a bushing therebetween and thereby maintain the space between said two pivotal members and thus avoid wear and noise creation therebetween, and said elastomeric member having an elastomeric web integral with its said two cylindrically-shaped portions and being compressed therebetween to urge said portions radially away from each other and into snug contact with the other three said members for forming seals thereat.

3,948,575

DRILL PIPE AND DRILL COLLAR CONTAINING MOLDED CASING PROTECTOR AND METHOD OF PROTECTING CASING THEREWITH

Eugene P. Rosser, 1231 Americana Bldg., Houston, Tex. 77002

Filed Oct. 24, 1974, Ser. No. 517,499
Int. Cl.² F16C *1/26*
U.S. Cl. 308—4 A **18 Claims**



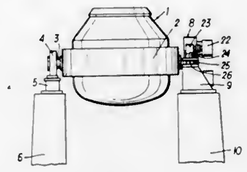
1. A string of drill pipe having lengths of pipe connected by enlarged couplings and operable in a well casing, said string of drill pipe having between couplings casing protectors comprising continuous annular rings of an oil impermeable and gas impermeable synthetic resin molded directly around said drill pipe, the outside diameter of said casing protectors being greater than the outside diameter of said enlarged couplings, said casing protectors having a slick, hard outer surface for substantially non-damaging contact with said casing.

3,948,576

EXPANSION BEARING ASSEMBLY FOR A CONVERTER CARRYING TRUNNION

Ernst Riegler, Enns, and Manfred Schmidt, Linz, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Apr. 3, 1975, Ser. No. 564,816
Claims priority, application Austria, Apr. 5, 1974, 2862/74
Int. Cl.² F16C *1/24*
U.S. Cl. 308—6 R **15 Claims**



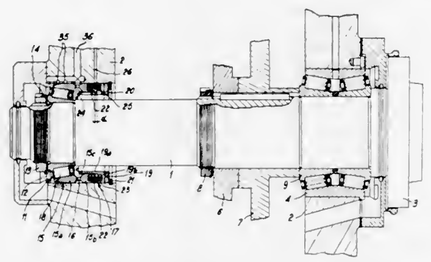
1. An expansion bearing assembly for a converter carrying trunnion which comprises:
- a bearing secured to the carrying trunnion and capable of accommodating angular and wobbling movements of the carrying trunnion,
- a spur gear wheel connected to the carrying trunnion,
- a common bearing and drive housing jointly accommodating the carrying trunnion and the spur gear wheel, and supporting said bearing, and
- a base for supporting said housing.

3,948,577

SPINDLE ASSEMBLIES FOR MACHINE TOOLS

Louis Jean Marie Gamet, Bougival, France, assignor to La Precision Industrielle, France

Filed Jan. 21, 1975, Ser. No. 542,787
Claims priority, application France, Jan. 31, 1974, 74.03218
Int. Cl.² F16C *13/00, 33/00, 35/00*
U.S. Cl. 308—207 A **14 Claims**



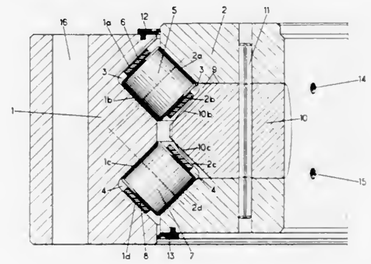
1. A rotary spindle assembly for a machine tool, the assembly comprising a spindle having a nose end and an opposite end; a first conical roller bearing assembly supporting said nose end of said spindle; a second conical roller bearing having an outer race and supporting said opposite end of said spindle and tapering towards the axial center of said spindle; a housing for the outer race of said second bearing; a cylindrical extension extending from said outer race axially towards said axial center of said spindle, said outer race and said cylindrical extension being axially slidable in said housing; an annular thrust block surrounding said spindle; a plurality of compression springs arranged between said thrust block and said cylindrical extension to bias said outer race away from said axial center of said spindle; and fluid pressure means for applying an adjustable biasing force on said outer race, said biasing force acting thereon in the same direction as said compression springs.

3,948,578

BEARINGS

Jacques Lucien Joseph Martin, Paris, France, assignor to Societe Anonyme dite: R.K.S., Avallon, France

Filed Mar. 13, 1974, Ser. No. 450,685
Claims priority, application France, Mar. 20, 1973, 73.09979
Int. Cl.² F16C *33/00*
U.S. Cl. 308—214 **7 Claims**



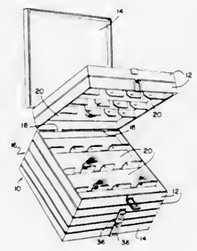
1. A bearing having two rows of cylindrical oblique contact rollers, each row being located in an annular space defined between two annular monobloc race members, each said annular space containing a surface which is loaded and which forms a track for the rollers, and another surface which is non-loaded, and one of the race members having a filling orifice which extends into one of said annular spaces through a non-loaded surface thereof and through which the rollers can be inserted into said annular space.

3,948,579

TACKLE BOX WITH IMPROVED TRAY STRUCTURES

Roy E. Schirmer, 54 Haven Drive, Fort Smith, Ark. 72901

Filed Dec. 28, 1973, Ser. No. 429,364
Int. Cl.² F16B *12/00;* **A47B** *47/00*
U.S. Cl. 312—111 **3 Claims**



1. A tackle box with improved component structures comprising a series of open boxes in relatively back-to-back relation to each other defining recesses therein and having hinged connecting means joining adjacent open edges of the boxes together throughout a connecting common plane said adjacent open edges being intermediate of an open face of said boxes; means securing adjacent bottom surfaces of said boxes together; a plurality of variously arranged and shaped compartments being positioned within and throughout said recesses in said series of open boxes; said compartments being constructed and arranged as tray elements for each of said

recesses in said series of open boxes; a plastic cover being translucent and hingedly connected at one edge to each of said recesses of said series of open boxes to cover and be coterminous with the open recess thereof to retain items in place within such compartment; clip means being provided for securing closed the adjacent open and free edges of the open boxes and forming said series of open boxes in an arrangement that each is immediately accessible apart from another of said series; a handle being disposed and mounted along one of the free edges of the open boxes for carrying the assembled tackle box when the series of open boxes is closed; said series of open boxes being constructed of material selected from a group consisting essentially of wood, metal, cellulose, plastic, cardboard, paper or the like; selected ones of said series of open boxes may be added to or deleted from by interarranged means of added, deleted or interarranged disposition of said hinged connecting means; and said hinged connecting means including hinges, hinge posts and securing screws therefor.

3,948,580

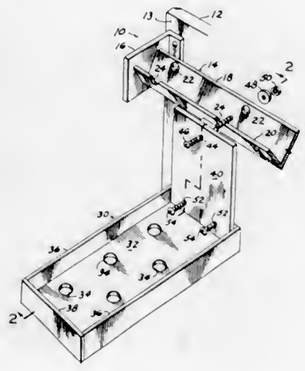
FOODS DISPLAY SHELF

Jerry L. Lavarnway, Oklahoma City, Okla., assignor to Canadian Valley Meat Company, Oklahoma City, Okla.

Filed July 25, 1974, Ser. No. 491,892

Int. Cl.² A47F *3/04*; A47B *96/06*

U.S. Cl. 312—116 **1 Claim**



1. In combination with an upwardly open refrigerated food display case having a vertical side wall projecting above the case opening and containing an elongated support bar horizontally disposed in parallel spaced relation with said side wall intermediate its height, said support bar having upwardly directed leg portions, one said leg portion having an upwardly open recess therein, another said leg portion, adjacent said side wall, having an aperture cooperatively aligned with the recess;

a shelf panel disposed on that side of said support bar opposite the side wall,

said panel having a plurality of openings therethrough and having surrounding upturned flanges,

one of said flanges forming an upstanding end wall on said panel projecting above the upper limit of the remaining flanges a distance at least as great as the transverse width of the end wall;

bolt means including an elongated bolt extending through the upper end portion of said upstanding end wall, said support bar leg recess and aperture for connecting said panel to said support bar;

nut and washer means maintaining an end portion of said elongated bolt within the aperture; and,

a pair of elongated threaded screws extending through the lower end portion of said upstanding end wall, in transversely spaced relation, and contacting said side wall for supporting said shelf panel horizontally.

3,948,581

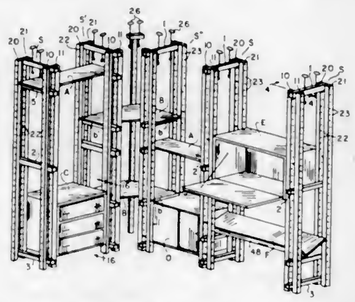
KNOCKDOWN FURNITURE ASSEMBLIES

Philip L. Helman, 12407 Braxfield Court No. 6, Rockville, Md. 20852; Gary W. Kanegis, and Meryl E. Kanegis, both of 13587 N. Vega Drive, N.W.D.C., Littleton, Colo. 80120

Filed July 2, 1974, Ser. No. 485,286

Int. Cl.² A47B *53/00, 57/12, 57/24*; A47F *5/08*

U.S. Cl. 312—198 **5 Claims**



1. A knockdown furniture assembly comprising

a. a pair of vertical skeletal supports adapted to be laterally spaced a predetermined distance from each other and adapted to be detachably fixed in place between the floor and ceiling of a room,

b. each vertical support comprised of a pair of vertical members both at the front and rear thereof with a gap between each pair of members, and provided with a plurality of transverse cylindrical openings along the length thereof, said openings being in alignment in each pair of vertical members,

c. substantially horizontal connecting bars adjacent to the top and bottom of each vertical support extending between the front and rear pairs of vertical members within the gap between each pair of members,

d. means for rigidly fastening the opposite ends of each connecting bar to the pairs of said vertical members,

e. a plurality of cylindrical rods adapted to be inserted into a plurality of aligned pairs of said cylindrical openings in said vertical members, and

f. a detachable furniture unit fitting closely within the lateral spacing between said skeletal vertical supports provided with openings on the lateral walls thereof for interengagement with said cylindrical rods.

4. In a knockdown furniture assembly extending along each of two juxtaposed walls disposed perpendicularly to each other at the corner of a room, comprising

a. an independently self-sustaining vertical skeletal support adapted to be fixed detachably between the floor and ceiling of a room, in a plane parallel to each wall and adjacent to said corner,

b. said support comprising two pairs of vertical standards displaced a substantial distance from each other, with the standards of each pair spaced from each other by a relatively small gap, and with the respective standard of each pair being in alignment with the respective standard of the widely displaced pair,

c. substantially horizontal connecting bars at least at the top and bottom of said skeletal support in the gaps between the vertical standards, and spanning said substantial distance between said pairs of standards,

d. elongate fastening means extending through said vertical standards and horizontal connecting bars for integrating said skeletal vertical support,

e. each pair of said vertical standards having a plurality of equidistantly displaced coaxial openings at common levels in planes perpendicular to that of said skeletal support, for selectively receiving cylindrical rods adapted to bridge the small gaps therebetween,

f. a supporting bar having notches in the bottom edge adjacent to the opposite ends thereof and displaced from each other a distance corresponding to the spacing between said planes, for engaging the cylindrical rods on a common level, passing through each pair of standards,

g. floor engaging means at the bottom end of said skeletal support,

h. adjustable clamping means at the upper end of said skeletal support for fixing said skeletal support between the floor and ceiling of the room, and

i. a polygonal shelf adapted to have adjacent perpeneicular edges resting on the supporting bars on the same level in said skeletal supports adjacent to the corner of the room.

3,948,582

OPTICAL FIBRE CONNECTOR

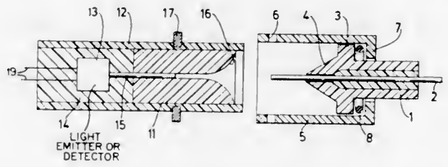
David Joseph Martin, Leicester Forest East, England, assignor to BICC Limited, London, England

Filed Nov. 15, 1974, Ser. No. 524,240

Claims priority, application United Kingdom, Nov. 16, 1973, 53462/73

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96 C **16 Claims**



1. An optical fibre connector comprising at least two separately formed bodies of substantially elongate form, each having an axial bore in which an optical fibre can be fitted and, associated with the two bodies or with each pair of adjacent bodies, means for connecting said bodies together in substantially axial alignment, one of said bodies having an end of such a configuration having regard to the configuration of an end of the other of said bodies that as said bodies are moved axially towards one another to connect said bodies together, an optical fibre carried by one of said bodies is constrained to lie in substantially axial alignment with and to enter the bore of the other of said bodies and that when said bodies each carrying an optical fibre are connected together the neighbouring end faces of the optical fibres abut or are closely spaced apart.

3,948,583

ISOLATION OF PASSIVE DEVICES AND INTEGRATION WITH ACTIVE DEVICES IN OPTICAL WAVEGUIDING CIRCUITS

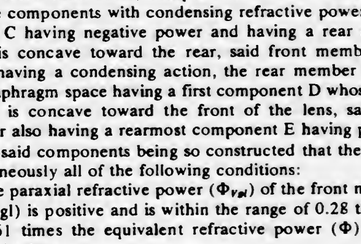
Ping King Tien, Chatham Township, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 9, 1974, Ser. No. 531,207

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96 WG **9 Claims**

1. An optical circuit comprising a substrate having a first index of refraction, an isolating layer disposed on said substrate and composed of material of much lower index of refraction than said first index, at least one passive optical device formed over said isolating layer, and at least one active optical device coupled with said passive optical device and formed at least in part in an aperture through said isolating layer, said active device including in a position under the aperture a substrate portion, the active and passive devices having the same potentially active waveguiding layer for a first frequency in common, said active optical device including means separate from said passive device for lower-frequency



signal coupling with both the substrate portion and common layer portion of said active device.

3,948,584

HIGH SPEED LENS HAVING SHORT BACK FOCUS AND COMPACT REAR MEMBER

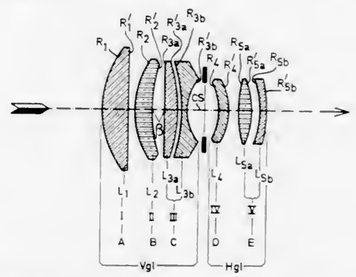
Heinrich Basista, Oberkochen, and Bernhard Sonnenberg, Heidenheim-Schnaitheim, both of Germany, assignors to Carl Zeiss-Stiftung, Carl Zeiss, Heidenheim on the Brenz, Germany

Filed Mar. 25, 1974, Ser. No. 454,321

Claims priority, application Germany, Mar. 27, 1973, 2315071

Int. Cl.² G02B *9/60, 9/62, 9/64*

U.S. Cl. 350—214 **14 Claims**



1. A high speed lens having a short back focus and a compact rear member, said lens having at least five components formed into a front member of at least three components and a rear member of at least two components separated from the front member by a diaphragm space, the components being identified herein consecutively from front to rear by the letters A through E, the first three components A, B, and C being air spaced from each other, components A and B both being positive components with condensing refractive power, component C having negative power and having a rear surface which is concave toward the rear, said front member is a whole having a condensing action, the rear member behind said diaphragm space having a first component D whose front surface is concave toward the front of the lens, said rear member also having a rearmost component E having positive power, said components being so constructed that they fulfill simultaneously all of the following conditions:

a. the paraxial refractive power (Φ_{Vgl}) of the front member (Vgl) is positive and is within the range of 0.28 times to 0.61 times the equivalent refractive power (Φ) of the entire lens;

b. a diverging air lens β is formed between components B and C and is so dimensioned that the sum of the surface refractive powers of the neighboring surfaces defining the air lens (ϕ_{β}) has a negative value within the range of 0.326 times to 0.612 times the equivalent refractive power (Φ) of the entire lens;

c. the positive component B is a meniscus convex toward the front of the lens, this component B having a Gardner curvature number (δ_B) which is positive and within the

range of 2.0769 to 2.9532, this component B also having a surface power sum (ϕ_B) within the range of 0.690 times to 1.070 times the equivalent refractive power (Φ) of the entire lens;

d. components A and B are so dimensioned relative to each other that their refractive power distribution factor (Ψ_{BA}) constituting the quotient of the difference of their surface power sums ($\phi_B - \phi_A$) divided by the sum of their surface power sums ($\phi_B + \phi_A$) is within the range from zero to 0.205; and

e. the air lens β is so dimensioned that its Gardner curvature number is in a finite region of position having a positive sign with a numerical value within the range from + 1.0000 to + 1.8339.

3,948,585
OPHTHALMOSCOPE EXAMINATION PATTERN HAVING SLIT AND SURROUNDING RING

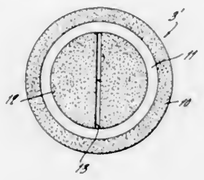
Helmut A. Heine, Herrsching, Upper Bavaria, and Klaus Heilmann, Munich, both of Germany, assignors to Propper Manufacturing Company, Inc., Long Island, N.Y. and Optotechnik Heine KG, Germany

Filed June 20, 1974, Ser. No. 481,034

Claims priority, application Germany, Oct. 23, 1973, 2353121

Int. Cl.² A61B *3/12*

U.S. Cl. 351—13 **2 Claims**



1. An ophthalmoscope comprising means for projecting a beam of light into the eye of a patient and onto the fundus of the eye and shaping means for forming an examination pattern in said beam for projection onto said fundus, said shaping means including a non-light transmissive pattern forming mask having a light transmissive ring portion and a light transmissive slit portion which lies within and is enclosed by said ring portion.

3,948,586
JAM DETECTING DEVICE IN A COPYING MACHINE

Shigehiro Komori; Hisashi Sakamaki, both of Yokohama; Hiroyuki Hattori, Mitaka; Toshihide Iida, Tokyo; Kokchi Miyamoto, Tokyo, and Kazumi Umezawa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 303,000, Nov. 2, 1972. This application Apr. 4, 1974, Ser. No. 457,891

Int. Cl.² G03G *15/22*

U.S. Cl. 355—14 **4 Claims**

1. A jam detecting device for use in a copying machine comprising:

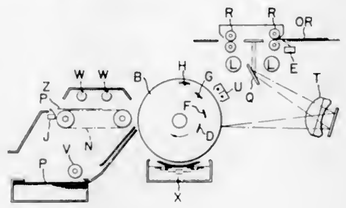
means for transporting copying materials along a path extending from a copying material stacking position to a discharging port, wherein transport commences for an individual copying material during each copying cycle of the machine,

a movable photosensitive member,

jam detecting means for detecting the jamming of copying material within the machine,

means for activating said jam detecting means in response to said photosensitive member being moved to a predetermined position,

said jam detecting means including discharge detecting means disposed along the transport path in the vicinity of said discharging port for detecting the discharge of each said copying material during a copying cycle subsequent to the cycle when transport of each said copying material commences, and



means coupled to and operated by said jam detecting means for indicating the presence of jammed copying material after said jam detecting means is activated and when said discharge detecting means does not detect the discharge of copying material during said subsequent cycle.

3,948,587
RETICLE AND TELESCOPIC GUNSIGHT SYSTEM

Paul E. Rubbert, 2001 - 86th Ave. NE., Bellevue, Wash. 98004

Filed Jan. 28, 1974, Ser. No. 437,342

Int. Cl.² G01C *3/20*

U.S. Cl. 356—21 **91 Claims**



1. In combination, a firearm capable of propelling a bullet along a substantially predeterminable trajectory and a telescopic sight for aiming at targets of known or estimatable heights mounted on said firearm, said sight including power varying means for varying the power of magnification of images viewed therethrough and a reticle comprising means defining first and second vertically aligned target-spanning and aiming apertures located proximate the center of the field of view of said sight, the height of said first aperture being greater than the height of said second aperture, and the lower margin of said first aperture being coincident with the upper margin of said second aperture or vertically spaced from said upper margin by a distance not exceeding the lesser of (*a*) the difference of the heights of said apertures and (*b*) one quarter the height of said first aperture, the reticle being so positioned within the sight that the apparent angles subtended by said apertures vary inversely to the power of magnification, and said sight being so angled relative to the bore of said firearm and said apertures being so vertically dimensioned that:

there is a first power of magnification to which there is a related first target height h_1 and when said firearm is discharged while said sight, at said first power of magnification, is aimed at a firs target of height h_1 located at a first distance from said firearm such that the upper and lower margins of said first aperture respectively coincide with the upper and lower margins of the image of said first target, the bullet discharged will strike said first target;

and when said firearm is discharged while said sight, at said first power of magnification, is aimed at a second target of height h_1 located at a second distance from said firearm substantially greater than said first distance such that the upper and lower margins of said second aperture respectively coincide with the upper and lower margins of the image of said second target, the bullet discharged will strike said second target;

and when said firearm is discharged while said sight, at said first power of magnification, is aimed at a third target of height h_1 located at a third distance from said firearm whereat the height of the image of said third target appears substantially smaller than the height of said first aperture and substantially greater than the height of said second aperture, aiming of the sight being such that the point midway between the lower margin of said first aperture and the upper margin of said second aperture is aligned coincident with the center of said third target, the bullet discharged will strike said third target.

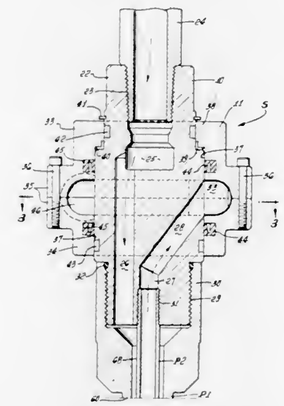
3,948,588
SWIVEL FOR CORE DRILLING

Alfred R. Curington, and Theodore J. Roscoe, Jr., both of Houston, Tex., assignors to Bakerdrill, Inc., Spartanburg, S.C.

Division of Ser. No. 392,628, Aug. 29, 1973, Pat. No. 3,871,486. This application Oct. 24, 1974, Ser. No. 517,510

Int. Cl.² F04B *35/00*

U.S. Cl. 417—405 **4 Claims**



1. A swivel for use in core drilling a bore hole: comprising a stator having a discharge chamber extending circumferentially therearound, a rotor rotatable in said stator and having a first passage extending from its upper end to its lower end through which drilling fluid under pressure may be forced for effecting drilling of the bore hole, said rotor having a second passage extending from the lower end of said rotor to said chamber in communication with said chamber for receiving core material formed by the drilling operation and discharging the material into said chamber, the lower portion of said second passage being coaxial of said rotor, the upper portion of said second passage being inclined from said lower portion to communicate with said chamber, said rotor having inner connecting means at the lower portion of said rotor and coaxial therewith for connection with an inner pipe from which the core material discharges into said lower portion of said second passage, said rotor having outer connecting means at the lower portion of said rotor and coaxial therewith for connection with an outer drill pipe surrounding the inner pipe, whereby when an outer drill pipe is attached to said outer connecting means and an inner drill pipe is attached to said inner connecting means to form a space therebetween said drilling fluid discharges from said first passage into the space, and means at the upper portion of said rotor and coaxial therewith for connection to apparatus for rotating said rotor and the inner and outer pipes adapted to be connected thereto.

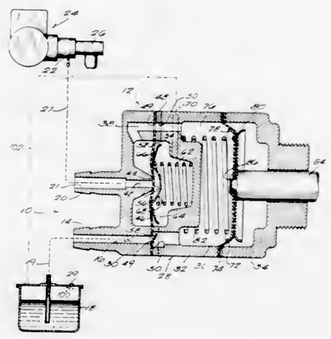
3,948,589
PRIMER VALVE

Chester G. DuBois, Zion, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 297,179, Oct. 13, 1972, abandoned, which is a continuation-in-part of Ser. No. 85,954, Nov. 2, 1970, Pat. No. 3,746,036. This application Feb. 12, 1975, Ser. No. 549,200

Int. Cl.² F04B *19/00;* **F02H** *1/16*

U.S. Cl. 417—487 **11 Claims**



1. A primer for supplying fuel to an internal combustion engine, said primer comprising a housing including a partition dividing said housing into first and second chambers, an inlet in said housing communicating with said first chamber and adapted to communicate with a fuel source, an outlet communicating with said second chamber and adapted to communicate with the engine, a flow passageway extending in said housing from said first chamber, through said second chamber to said outlet and including a port communicating with said second chamber, surrounded by a valve seat, and separating said flow passageway into an upstream portion communicating with said first chamber and a downstream portion communicating with said outlet, a first diaphragm mounted by said housing in said second chamber and including a first side cooperating with said housing to partially define said flow passageway and located in operative relation to said port, said first diaphragm being movable relative to said port in response to opposing forces acting thereon between a port closing position and a port opening position, said first diaphragm also including a second side, a first spring means acting between said partition and said second side of the said first diaphragm and urging said first diaphragm toward said port closing position to shut off fuel flow to the engine, a second diaphragm mounted by said housing in said first chamber and having a first side cooperating with said housing to define a fuel pumping sub-chamber communicating with said upstream portion of said flow passageway, said second diaphragm being movable relative to a position adjacently spaced from said partition and in which the volume of said fuel pumping sub-chamber is reduced, a second spring means acting between said partition and said first side of said second diaphragm for biasing said second diaphragm away from said position, check valve means associated with said inlet and operable to admit fuel through said inlet into said fuel pumping sub-chamber and to prevent escape of fuel through said inlet from said fuel pumping sub-chamber, and actuating means for selectively moving said second diaphragm to said position against the action of said second spring means to close said check valve means and to increase the pressure of the fuel in said upstream portion of said flow passageway to thereby move said first

diaphragm against the action of said first spring means to said port opening position.

3,948,590

AXIALLY CENTERING MEANS FOR FLUID MACHINES

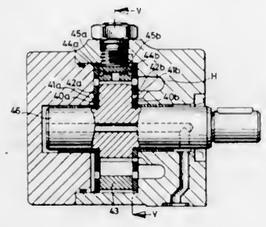
Robert Gelin, Blaustein, Germany, assignor to G. L. Rexroth GmbH, Lohr, Main, Germany

Filed June 14, 1974, Ser. No. 479,491

Claims priority, application Germany, June 20, 1973, 2331462

Int. Cl.² F01C *21/16*; F04C *15/04*

U.S. Cl. 418—81 **12 Claims**



1. A hydraulic pump having a high-pressure side and a low-pressure side, comprising a rotatable member mounted for rotation about an axis and having spaced end faces extending transversely of said axis; wall means defining at each of said end faces at least one fluid compartment which is open to the respective end face, passage means connecting said compartment with said high-pressure side, and a restricted outflow gap connecting said compartment with said low-pressure side; and a fixed throttle interposed in each of said passage means, said end faces being subjected to respective fluid pressures which permanently tend to equalize with one another and therefore to axially center said rotatable member in the event of axial displacement thereof, all of the fluid flowing from said high-pressure side of said pump over said restricted outflow gap to said low-pressure side passes through said fixed throttle independent of the axial displacement of said rotatable member.

3,948,591

APPARATUS FOR THE BELLOWLESS VULCANIZATION OF TIRE BLANKS

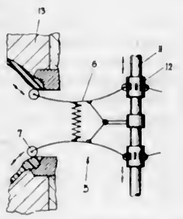
Egon Kratochvil, Maria Enzersdorf, and Günther Pech, Vienna, both of Austria, assignors to Semperit Aktiengesellschaft, Vienna, Austria

Division of Ser. No. 329,848, Feb. 5, 1973. This application Mar. 28, 1975, Ser. No. 563,182

Claims priority, application Austria, Feb. 8, 1972, 993/72; Feb. 8, 1972, 994/72

Int. Cl.² B29H *5/02, 17/26*

U.S. Cl. 425—32 **9 Claims**



1. An apparatus for the bellowless vulcanization of tire blanks by means of a press mechanism provided for the tire mold for pressing the tire beads against the bead sections of the vulcanization mold, the improvement comprising said press mechanism possessing press rollers, rod means for displaceably mounting said press rollers, said press rollers having their axes of rotation extending substantially perpendicular to the tire radius, said press rolls upon assuming their press-on position delimiting a circle, the diameter of which approximately corresponds to the diameters of the tire bead and which is disposed substantially concentrically with respect thereto.

3,948,592

SPINNING UNIT FOR MELT SPINNING HIGH POLYMERS

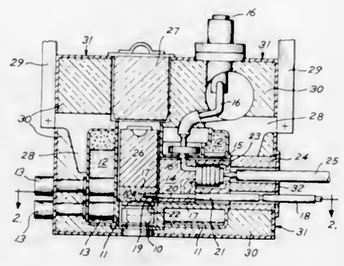
Valter Schad, Rommerz, and Walter Blomeyer, Wolfgang, both of Germany, assignors to Zimmer Aktiengesellschaft, Germany

Filed June 18, 1974, Ser. No. 480,521

Claims priority, application Germany, June 22, 1973, 2331764

Int. Cl.² B29F *3/06*

U.S. Cl. 425—192 S **3 Claims**



1. An improved Spinning unit, particularly for the melt spinning of high polymers, such as polyesters, polypropylene and polyamides, comprising a spinning pump mounted on a pump base and a nozzle unit, disposed within a housing and adapted to be pressed against the pump base by means of a horizontal screw connection means which is independent of the housing, characterized by the fact that the screw connection means comprises: at least one threaded draw spindle which has a threaded portion adjacent to one of its ends and which includes a shoulder that is spaced from the one end and that is adapted to abut against the nozzle unit or the pump base; and a counter-thread portion situated in the pump base or the nozzle unit; the draw spindle permeating the nozzle unit and the pump base and having its threaded portion adapted to be threadedly interconnected with the counter-thread portion by rotation of the draw spindle about its longitudinal axis; the nozzle unit and the pump base being drawn and pressed together by and between the shoulder and the interconnection of the thread and counter-thread portions.

3,948,593

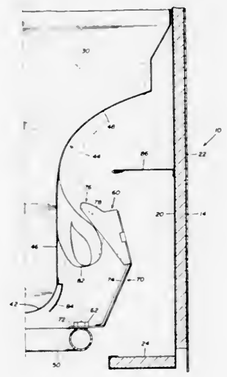
COMBUSTION METHOD USING GAS FLOW INTERACTION AND HEAT REFLECTION

Lewis Frank Moore, and George McNair Price, both of Shreveport, La., assignors to Frymaster Corporation, Shreveport, La.

Division of Ser. No. 223,443, Feb. 4, 1972, Pat. No. 3,809,062. This application Mar. 1, 1974, Ser. No. 447,089

Int. Cl.² F23C *5/00*; F23M *3/06*

U.S. Cl. 431—8 **12 Claims**



1. A combustion process comprising:

discharging two or more gas jets in parallel directions such that adjacent parallel jets at least partially converge with each other to cause turbulent intermixing of gas and secondary air to form a combustible gas/air mixture;

at least partially deflecting the gas/air mixture with a deflector positioned in the path of said jets into a combustion zone adjacent said deflector to cause further turbulent intermixing of the gas and secondary air;

combusting said gas/air mixture in said combustion zone; and

reflecting heat into said combustion zone with said deflector.

3,948,594

CERAMIC REFRACTORY SETTER

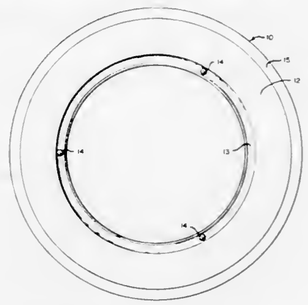
William W. Irwin, Jr., East Liverpool, Ohio, assignor to The Joseph Dixon Crucible Company, Jersey City, N.J.

Filed Oct. 21, 1974, Ser. No. 516,189

Int. Cl.² F27D *5/00*

U.S. Cl. 432—259 **4 Claims**

1. A refractory setter for the support of ceramic ware during glost firing, comprising a one-piece annulus having a vertically extending circumferential rim and an annular flange integrally joined to the said rim adjacent the top of the rim, said flange extending inwardly from said rim and being inclined upwardly at a angle of substantially 15°, said flange further having a circumferential groove adjacent the inner edge thereof, and a



plurality of ceramic spheres disposed in substantially uniformly spaced relation in said groove on which articles of ceramic ware are adapted to rest.

3,948,595

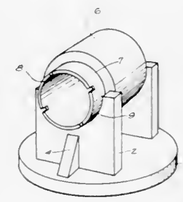
APPARATUS FOR THE HIGH TEMPERATURE ANNEALING OF METALLIC COILS

Francis O. Raabe, Butler Township, Butler County, and Frank A. Yossa, Butler, both of Pa., assignors to Armco Steel Corporation, Middletown, Ohio

Division of Ser. No. 349,559, April 9, 1973, Pat. No. 3,846,190. This application June 4, 1974, Ser. No. 476,334

Int. Cl.² C21D *9/00*

U.S. Cl. 432—260 **4 Claims**



1. Means for supporting a coil of silicon steel in an annealing furnace with the coil axis horizontally oriented during a high temperature anneal conducted at a temperature of from about 1900°F. to about 2300°F., said coil support means comprising an elongated element insertable within the eye of said coil and means to hold said elongated element in a horizontal position within said furnace, said elongated element and holding means being of such size and configuration that said coil within said furnace is contacted only by said elongated element and only within its eye, said elongated element being of a length greater than the length of said coil whereby the ends of said elongated element when inserted in said eye of said coil are free and extend beyond the end of said coil, said holding means being a unitary structure comprising a horizontal base, a pair of parallel uprights being affixed to said base, said uprights being spaced from each other by a distance greater than the length of said coil and less than the length of said elongated element, said uprights having upper ends configured to support said free ends of said elongated element.

3,948,596

OXIDATION DYE FOR KERATINIC FIBERS CONTAINING 2-HALO-5-ACETAMINOPHENOL AS A COUPLER

Gregoire Kalopissis, Paris, and Andree Bugaut, Boulogne-sur-Seine, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed June 24, 1974, Ser. No. 482,560

Claims priority, application Luxemburg, June 22, 1973, 67861

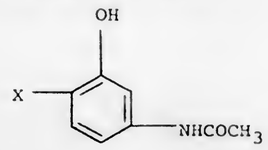
Int. Cl.² A61K *7/13*

U.S. Cl. 8—10.2 **15 Claims**

1. A dye composition for keratinic fibers comprising an aqueous or hydroalcoholic solution of

a. at least one oxidation base being an aromatic or heterocyclic compound carrying either two amino groups or one amino group and one hydroxy group, fixed in para position relative to each other on the aromatic or heterocyclic nucleus of said compound, said oxidation base being in the form of a free base or in the form of an acid addition salt thereof; and

b. at least one coupler of the formula:



wherein X represents fluorine, chlorine or bromine, said coupler being present in an amount of 0.5 - 3.5 percent based on the total weight of said composition and the molar ratio of said oxidation base to said coupler being between 2.5:1 and 1:2.5.

3,948,597

DUPLEX MULTICOLOR PRINTED CLOTH AND METHOD FOR THE PRODUCTION OF THE SAME

Hiroshi Sakaoka, Kyoto, Japan, assignor to Hayashi Chemical Industry Co., Ltd., Kyoto, Japan

Filed Sept. 23, 1974, Ser. No. 508,515

Int. Cl.² D06P *1/58, 3/00*

U.S. Cl. 8—14 **6 Claims**

1. A method for the production of a duplex multicolor printed cloth comprising dyeing the opposite surfaces of a cloth with different dyes having different color tones, at least one of the opposite surfaces of said cloth being dyed by printing in a fine spot pattern with a dispersion including dye particles granulated in a diameter of 10 to 1000 microns and coated with water-soluble high molecular substance capable of temporarily preventing the dissolution of the dye into the dye medium, and the dyed color at the outer surface being locally penetrated or seen through said cloth to assume a mixed multicolor fine spot printed pattern on said one surface of said cloth.

3,948,598

BLACK-DYEING PROCESS OF BASIC DYEABLE POLYESTER FIBERS

Tetsuo Okaniwa, Minoo, and Sadaharu Abeta, Toyonaka, both of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed June 3, 1974, Ser. No. 476,001

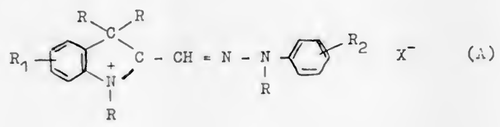
Claims priority, application Japan, June 1, 1973, 48-62210; July 26, 1973, 48-84755

Int. Cl.² C09B *27/00, 45/48;* **D06P** *5/00*

U.S. Cl. 8—41 C **8 Claims**

1. A process for dyeing basic dyeable polyester fibers a deep black comprising contacting said polyester fibers with a dye bath containing a combination of five kinds of dyes, the combination comprising

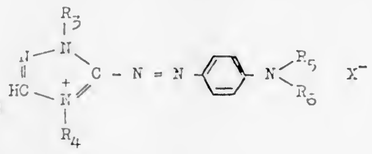
1. at least one dye of the general formula (A),



(A)

wherein R, each of which may be the same or different, represents a methyl group or an ethyl group; R_1 represents a hydrogen atom or a halogen atom; R_2 represents a hydrogen atom, a lower alkyl group having 1 to 3 carbon atoms, or a lower alkoxy group having 1 to 3 carbon atoms; and X^- represents an anion;

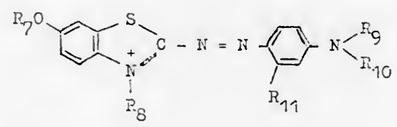
2. at least one dye of the general formula (B),



(B)

wherein R_3, R_4, R_5, and R_6, which may be the same or different, each represents a lower alkyl group having 1 to 3 carbon atoms or an aralkyl group in which the aryl moiety is phenyl or naphthyl and in which the alkyl moiety has 1 to 2 carbon atoms, each of which group may be substituted with a halogen atom, a hydroxy group, or a lower alkoxy group having 1 to 2 carbon atoms; and X^- represents an anion;

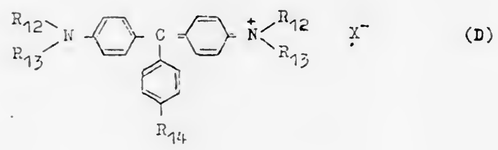
3. at least one dye of the general formula (C),



(C)

wherein R_7 represents a lower alkyl group having 1 to 2 carbon atoms; R_8 represents a lower alkyl group having 1 to 3 carbon atoms, which may be substituted with a halogen atom, a carbamoyl group, a hydroxy group, or a lower alkoxy group having 1 to 2 carbon atoms; R_9 and R_{10} each represents a lower alkyl group having 1 to 3 carbon atoms or an aralkyl group in which the aryl moiety is phenyl or naphthyl and in which the alkyl moiety has 1 to 2 carbon atoms, each of which group may be substituted with a halogen atom, a lower alkoxy group having 1 to 2 carbon atoms, or a hydroxy group; R_{11} represents a hydrogen atom or a lower alkyl group having 1 to 3 carbon atoms; and X^- represents an anion;

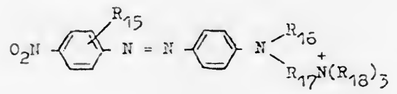
4. at least one dye of the general formula (D),



(D)

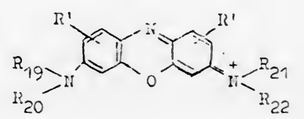
wherein R_{12} and R_{13} each represents a lower alkyl group having 1 to 3 carbon atoms or an aralkyl group in which the aryl moiety is phenyl or naphthyl and in which the alkyl moiety has 1 to 2 carbon atoms, each of which group may be substituted with a halogen atom, a hydroxy group, or a cyano group; R_{14} represents a hydrogen atom or an amino group, which may be substituted with an alkyl group having 1 to 3 carbon atoms or a phenyl group; and X^- represents an anion; and

5. at least one dye of the general formula (E) or (F), the general formula (E) being represented by



(E)

wherein R_{15} represents a hydrogen atom, a halogen atom, or a cyano group; R_{16} represents a lower alkyl group having 1 to 3 carbon atoms or an aralkyl group in which the aryl moiety is phenyl or naphthyl and in which the alkyl moiety has 1 to 2 carbon atoms; R_{17} represents a lower alkylene group having 1 to 3 carbon atoms; R_{18} represents a lower alkyl group having 1 to 3 carbon atoms; and X^- represents an anion; and the general formula (F) being represented by



(F)

wherein R_{19}, R_{20}, R_{21}, and R_{22}, which may be the same or different, each represents a hydrogen atom, a lower alkyl group having 1 to 3 carbon atoms, or a phenyl group; R′, each of which may be the same or different, represents a hydrogen atom, a lower alkyl group having 1 to 3 carbon atoms, or a halogen atom; and X^- represents an anion, wherein said dye bath contains at least 2.0% by weight of each of the dyes of formulas (A) - (E).

3,948,599

NONCAKING, READILY SOLUBLE DYESTUFF GRANULATES OF ANIONIC DYESTUFFS

Ulrich Irmiger, Mettau, and Zdenek Koci, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,840

Claims priority, application Switzerland, May 5, 1972, 6758/72

Int. Cl.² C09B *67/00, 1/00, 27/00*

U.S. Cl. 8—79 **3 Claims**

1. Solid non-dusty, noncaking, readily water soluble dyestuff granulates of anionic dyestuffs, the said granulates containing at least one anionic dyestuff, optionally together with a surface-active agent and/or further auxiliaries, dissolve in a melt of urea and wherein said granulates contain 1 to 80 percent by weight of said at least one anionic dyestuff, 20 to 99 percent by weight of said urea, and optionally 1 to 5 percent by weight of said surface-active agent, and optionally 5 to 60 percent by weight of said further auxiliaries.

3,948,600
SELECTED AMMONIUM SULFONATE CATALYSTS FOR AN IMPROVED PROCESS UTILIZING MILD CURING CONDITIONS IN DURABLE PRESS FINISHING OF CELLULOSE-CONTAINING FABRICS

Robert M. Reinhardt, New Orleans, and Russell M. H. Kullman, Metairie, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

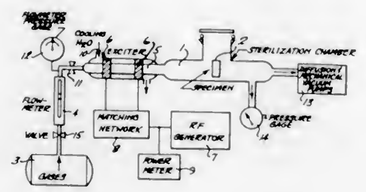
Filed Feb. 27, 1975, Ser. No. 554,054
Int. Cl.² D06M *15/56*
U.S. Cl. 8—182 **5 Claims**

1. In a mild cure finishing process for producing durable press textile fabrics that are composed of at least 50% of a cellulosic fiber whereby the textiles are impregnated with an aqueous solution containing an N-methylolamide crosslinking agent and a strongly acidic catalyst, curing said textile, without pre-drying, at a temperature of about 60°C to 105°C to reduce moisture content of the finished textile to about 2 to 5%, the improvement characterized by using as catalyst an ammonium sulfonate salt selected from the group consisting of: ammonium methanesulfonate; ammonium carboxymethanesulfonate ($NH_4O_3SCH_2COOH$), ammonium benzenesulfonate, and ammonium p-toluenesulfonate.

3,948,601
STERILIZING PROCESS AND APPARATUS UTILIZING GAS PLASMA

Sheila J. Fraser, Seattle; Roger B. Gillette, Auburn, and Richard L. Olson, Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 313,954, Dec. 11, 1972, abandoned, which is a continuation-in-part of Ser. No. 207,487, Dec. 13, 1971, Pat. No. 3,851,436. This application June 25, 1973, Ser. No. 373,262
Int. Cl.² A61L *1/00*
U.S. Cl. 21—54 R **18 Claims**



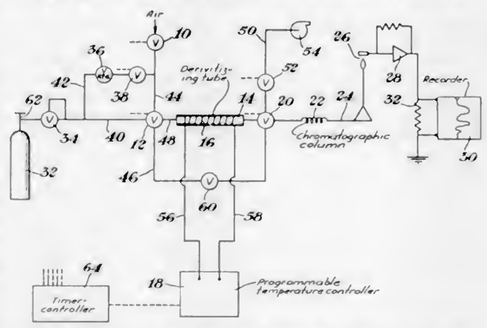
1. The process of sterilizing which comprises passing a substantially continuous flow of gas plasma to a space at subatmospheric pressure in contact with product not appreciably deteriorable by such gas plasma, and thereby sterilizing such product.

3,948,602
ANALYTICAL METHOD OF MONITORING AIR FOR CHLOROMETHYL ETHER

Richard A. Solomon, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 327,184, Jan. 26, 1973, abandoned. This application Sept. 4, 1973, Ser. No. 393,765
Int. Cl.² G01N *31/08*
U.S. Cl. 23—232 C **6 Claims**

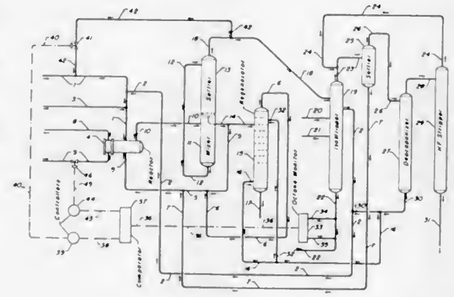
1. A method for determining the presence of chloromethyl methyl ether in air at the part per billion level, comprising reacting chloromethyl methyl ether from the air with an alkali metal salt of an alcohol or a phenol, wherein said salt is contained on a solid support for reaction with said chloromethyl methyl ether substitution reaction product, passing the reaction product through a gas chromatographic column, then eluting the reaction product therefrom through a detector therefor and displaying the output of said detector on a readout device.



3,948,603
CONTROL SYSTEM FOR HF ALKYLATION

Robert F. Zabransky, Oak Brook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed May 10, 1974, Ser. No. 468,955
Int. Cl.² G01N *31/00*; C07L *3/12*
U.S. Cl. 23—253 A **3 Claims**



1. For a process for alkylating an isoparaffin with an olefinic feed stream, to produce a normally liquid alkylate product, wherein (1) said feed stream contains at least two olefinic hydrocarbons and is contacted in admixture with a hydrogen fluoride catalyst, in a reaction zone, and (2) at least a portion of the reaction zone effluent is recycled thereto, the control system, for regulating the temperature within said reaction zone, which comprises, in cooperative combination:

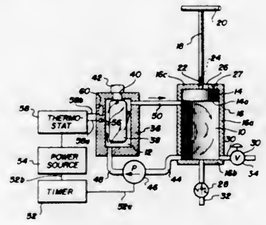
a. conduit means for introducing a cooling medium into said reaction zone, and for removing it therefrom, said cooling medium indirectly contacting the reaction mixture within said zone;
b. first flow-varying means for adjusting the flow of said cooling medium into said reaction zone;
c. second flow-varying means for adjusting the flow of effluent recycled to said reaction zone;
d. a hydrocarbon analyzer receiving a sample of said normally liquid alkylate product and developing an output signal representative of a composition characteristic of said sample;
e. first signal-receiving means to which said output signal is transmitted by said hydrocarbon analyzer, said first signal-receiving means in turn transmitting said signal to said first flow-varying means, whereby the flow of said cooling medium is adjusted in response to said composition characteristic; and,

f. second signal-receiving means to which said output signal is transmitted by said hydrocarbon analyzer, said second signal-receiving means in turn transmitting said signal to said second flow-varying means, whereby the flow of said recycled effluent is adjusted in response to said composition characteristic.

3,948,604
ALCOHOLIC BREATH SIMULATION SYSTEM

Joseph P. Hoppesch, Schaumburg, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 2, 1974, Ser. No. 430,288
Int. Cl.² G01N *1/22*
U.S. Cl. 23—254 R **9 Claims**

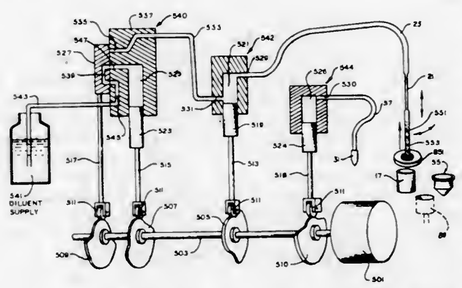


1. An alcoholic breath simulation system comprising a wall defining an alcohol container, the wall having at least a portion thereof permeable by ethyl alcohol, the wall portion having an inner surface exposed to ethyl alcohol when ethyl alcohol is introduced into the container, the wall portion also having an outer surface, means surrounding the container to define an alcohol chamber with the container supported in the chamber and with the wall portion spaced from the chamber-defining means, means defining a gas reservoir adapted to enclose a predetermined volume of gas, the alcohol chamber and the gas reservoir being connected in a closed gas circuit, and pump means associated with the gas circuit and operable to circulate gas therein from the gas reservoir to the alcohol chamber, over the outer surface of the container wall portion, and from the alcohol chamber to the gas reservoir to complete the circuit.

3,948,605
DILUTER FOR A KINETIC ANALYSIS APPARATUS

John G. Atwood, Redding; Lucien C. Ducret, Riverside, and Charles F. De Mey II, West Redding, all of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Aug. 22, 1974, Ser. No. 499,596
Int. Cl.² G01N *1/14*, *1/18*
U.S. Cl. 23—259 **7 Claims**



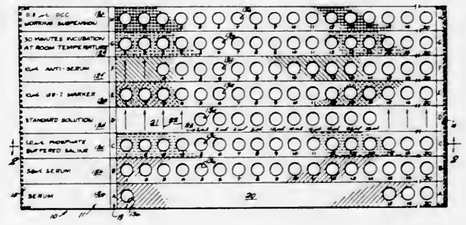
1. A mechanism for moving a probe rotationally about a vertical axis between two spaced locations and translationg said probe vertically at each of said locations, comprising:

a. a central shaft defining said vertical axis;
b. a fixed cylindrical cam member disposed coaxially about said shaft and containing a slot defining a camming surface having two vertical portions interconnected at their upper ends by a horizontal portion;
c. a movable cylindrical cam member mounted for coaxial rotation about said shaft between angularly spaced limits and containing an opening defining a second camming surface, the vertical position of said second camming surface at said limits of rotation coinciding respectively with the lower ends of said vertical portions of the first camming surface, the second camming surface at a location intermediate said limits of rotation having a vertical position which coincides with said horizontal portion of the first camming surface, said second camming surface having smooth transitional portions between said vertical positions and said intermediate location;
d. a radial arm mounted for vertical and rotational displacement on said central shaft and extending through the slot and opening of the fixed and movable cam members, respectively, and operatively engaging said camming surfaces;
e. means on the distal end of said radial arm for mounting a probe; and
f. means to rotate said movable cam member.

3,948,606
PROGRAMMED TEST TUBE RACK FOR MANUALLY PERFORMING MEDICAL DIAGNOSTIC ASSAYS

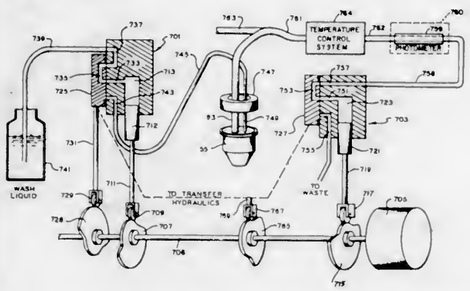
Derrold D. Johnson, 1145 NW. 185 Terrace, Miami, Fla. 33169

Filed Jan. 26, 1973, Ser. No. 326,975
Int. Cl.² B01L *9/06*; G01N *33/16*
U.S. Cl. 23—259 **9 Claims**



1. An apparatus for performing medical diagnostic assays requiring the manual performance of a plurality of various operations in sequential order on a group of test tubes, comprising, in combination, a test tube support structure, said test tube support structure having a unitary top face, said top face comprising a plurality of rows of test tube support stations all of which are fixed with respect to said unitary top face, each row having a plurality of laterally spaced and aligned individual test tube stations, the individual stations of each row being in perpendicular alignment with corresponding stations of each of the other rows, the centers of all of the individual stations of all of the rows defining on said top face a grid or pattern of horizontal and vertical lines passing through the centers of all of said stations to permit individual test tubes to be individually manually moved perpendicularly from row to row stepwisely upon the completion of particular assay operations thereupon, one or more of said stations being omitted from one or more of said rows to provide for skipping of certain operations on certain test tubes being manually advanced stepwisely perpendicularly from row to row in the performance of a particular assay, and indicia along each row descriptive of the particular operation to be performed on test tubes stationed along that row in the performance of a particular assay.

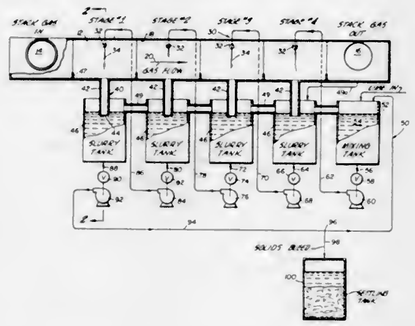
3,948,607
TRANSFER SYSTEM FOR USE IN ANALYSIS APPARATUS
John G. Atwood, Redding; Lucien C. Ducret, Riverside, and Hamilton W. Marshall, Jr., Ridgefield, all of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Aug. 22, 1974, Ser. No. 499,618
Int. Cl.² F04F 1/00; G01N 1/14, 1/18, 21/26
U.S. Cl. 23—259 **9 Claims**



1. A method of transferring a reaction mixture sample to a photometer sample cell comprising:
a. positioning a transfer probe above a reaction cup containing said mixture sample, said probe being flow-coupled in series with the sample of a photometer system;
b. applying suction to said photometer cell to create a partial vacuum in said probe using positive displacement means;
c. oscillating said probe up and down whereby said probe will alternately draw in slugs of air and slugs of said reaction mixture sample;
d. continuing to apply suction to said photometer cell until one slug of said reaction mixture sample is located in and completely fills said photometer cell;
e. immobilizing said one slug in said photometer cell while photometrically analyzing same;
f. discharging a wash liquid into said cup after said reaction mixture sample has been withdrawn therefrom;
g. after completion of step e, appling suction to said photometer cell while continuing oscillation of said probe to draw into said probe and through said photometer cell a plurality of slugs of wash liquid separated by slugs of air; and
h. discharging the wash liquid to waste.

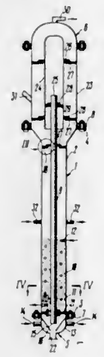
3,948,608
APPARATUS FOR TREATING STACK GASES
Alexander Weir, Jr., 8229 Billowvista Drive, Playa Del Rey, Calif. 90291
Filed Mar. 24, 1972, Ser. No. 237,812
Int. Cl.² B01D 47/06; B01J 1/00; C01B 17/00
U.S. Cl. 23—284 **21 Claims**

1. An apparatus for wet scrubbing stack gases, comprising:
an elongated chamber having an inlet at one end thereof for receiving the stack gases, an outlet at said other end discharging the scrubbed stack gases and sidewall means defining therebetween a substantially horizontally extending flow path for the stack gases passing therethrough with a substantially unrestricted cross-sectional flow area throughout the length thereof to avoid any substantial pressure drop between said inlet and said outlet;
means for spraying a liquid reagent across said chamber substantially perpendicular to said flow path to substantially cover at least at one stage between said inlet and said outlet said cross-sectional flow area with spray droplets of said liquid reagent through which the stack gases pass whereby pollutants contained within the stack gases are removed therefrom by said spray droplets; and
discharge means at the bottom of said sidewall means for discharging pollutant laden liquid which impinges on said



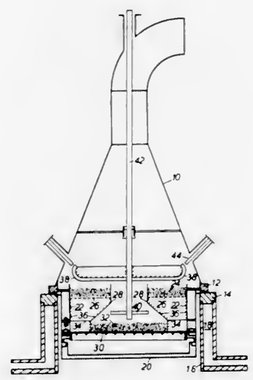
sidewall means and is removed therefrom to said discharge means by the influence of gravity and the washing action created by subsequently impinging liquid droplets.

3,948,609
REACTION APPARATUS
Nazim Museib Ogly Guseinov, ulitsa Gusi Gadzhieva, 3 blok, 1, kv. 12, and Vageb Safarovich Aliev, ulitsa Nizami, 66 blok, 5, kv. 40, both of Baku, U.S.S.R.
Filed Jan. 2, 1974, Ser. No. 429,829
Int. Cl.² B01J 8/08, 8/12, 8/18
U.S. Cl. 23—288 K **5 Claims**



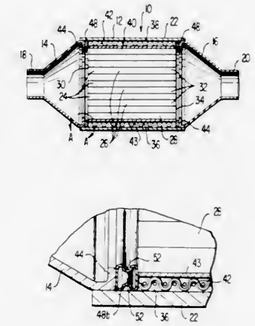
1. An apparatus for oxidatively reacting hydrocarbons in the presence of a catalyst comprising: a vertical casing; at least one reactor having an inlet for the introduction of reaction materials and an outlet for discharging the reaction products disposed in said casing; an annular space formed between said casing and said reactor for accomodating a bed of catalyst; a mixing chamber mounted at the bottom of said casing communicating with said annular space with said catalyst accomodated therein and the reactor; inlet pipes communicating with said mixing chamber for the introduction of reactants into said mixing chamber; means for directing the reactants and the catalyst from said mixing chamber into said reactor; a separator disposed at the top of said casing communicating both with the reactor outlet and the annular space; an outlet pipe for the discharge of reaction products from said reactor outlet; means for separating the catalyst from the reaction products, with the catalyst returning to said annular space, and the reaction products exiting via the outlet pipe; and a means for circulating a coolant inside said casing; said separator being a receptacle having a diameter by far greater than the diameter of the reactor, said receptacle being fitted with a pipe for charging the casing of the apparatus with the catalyst before starting the process; said means for separating comprising a shell being disposed in the receptacle serving to change the direction of a stream of the products of the reaction leaving the reactor mixed with the catalyst and embracing a portion of the reactor with its outlet so that a clearance is formed between the internal surface of the shell and the reactor which enables the products of the reaction and catalyst to pass; the distance between the outlet from the reactor and the surface of the shell opposite the outlet from the reactor, as well as the inside diameter of the receptacle of the separator, being selected depending on the velocity of the products of reaction and the catalyst leaving the reaction.

3,948,610
CATALYST BEDS FOR OXIDIZING AMMONIA TO NITROGEN OXIDES
David Malcolm Sutcliffe; Richard John Young, and Wilhelm Wyrwas, all of Norton, England, assignors to Imperial Chemical Industries Limited, London, England
Filed June 4, 1973, Ser. No. 366,977
Claims priority, application United Kingdom, June 5, 1972, 26131/72
Int. Cl.² B01J 8/02; C01B 21/26
U.S. Cl. 23—288 K **9 Claims**



1. A reactor for oxidizing ammonia predominantly to nitrogen oxides, the said reactor having at least two catalyst beds charged with particulate cobalt oxide catalyst and having inlet means for reactant gas and outlet means for reacted gas, the catalyst bed nearest the inlet means occupying part of the cross-section of the reactor and permitting gas to bypass it and the subsequent catalyst bed occupying a part of the cross-section of the reactor greater than that not occupied by the first mentioned catalyst bed, wherein a septum is present to guide on to the second bed the gas that has bypassed the first bed and to guide away from the subsequent bed the gas that has passed through the first bed, said reactor having a cooling jacket to safeguard from overheating due to high temperature reaction gases, and the flow of reactant gas being from top to bottom in said reactor.

3,948,611
CATALYTIC CONVERTER HAVING HOLLOW, GAS-FILLED MOUNTING MEANS FOR A MONOLITHIC CATALYST
Alfred Stawsky, Bronx, N.Y., assignor to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.
Filed June 10, 1974, Ser. No. 478,059
Int. Cl.² B01J 8/02; F01N 3/15
U.S. Cl. 23—288 FC **7 Claims**

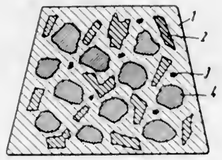


1. Apparatus useful for purifying gases comprising:
a casing defining an enclosed space;
means defining a gas inlet communicating with the enclosed space;
means defining a gas outlet communicating with the enclosed space;
a ceramic structure in the enclosed space and having a unitary, skeletal structure with a plurality of gas inlets, a plurality of gas outlets, and gas flow paths through the skeletal structure from the gas inlets to the gas outlets, said ceramic structure being positioned in said casing to provide a space therebetween;
a catalyst structure supported on said ceramic structure;
a first flange member adjacent the periphery of a first end of the ceramic structure and positioned inwardly with respect to said casing to bridge said space between said casing and said ceramic structure and positioned over the marginal edge portion of said ceramic structure; and
a first pleated, hollow, thin metal shell gasket member filled with a heat-expansible gas, said gasket member being freely axially and radially movably positioned under compression between the first flange member and the ceramic structure to provide a resilient, expansible connection between the first flange member and the ceramic structure and to thereby provide a substantial mounting pressure of the proper magnitude so as to grippingly hold said ceramic structure over the temperature range experienced by the apparatus.

3,948,612
PIG FOR MANUFACTURING CAST IRON
Uwe Schulten-Baumer, Hammer Mark 3, Essen, Germany
Filed Dec. 27, 1973, Ser. No. 428,863
Claims priority, application Germany, Dec. 29, 1972, 2263945
Int. Cl.² B21C 37/00
U.S. Cl. 29—187.5 **6 Claims**

1. A molded pig for the production of cast iron comprising pig iron and pieces of solid charge materials including scrap and fuel and consisting essentially of, by weight: 1–50% low-carbon metallic charge components: 1–30% scrap iron said scrap iron having a higher carbon conent than said low-carbon

metallic charge components; 5–15% solid carbonaceous fuel material and the balance being pig iron, the pig iron being



molten and poured over the charge materials thereby enclosing and substantially covering them.

3,948,613

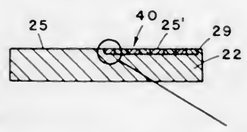
PROCESS FOR APPLYING A PROTECTIVE WEAR SURFACE TO A WEAR PART

Theodore C. Weill, 110 Carol Circle, Tylertown, Miss. 39667

Division of Ser. No. 312,860, Dec. 7, 1972, Pat. No. 3,894,674. This application May 6, 1974, Ser. No. 467,192

Int. Cl.² B32B *15/04*

U.S. Cl. 29—191 **7 Claims**



1. A wear part having a relatively large wear surface, said part comprising:

a steel base member having a surface thereon exposed to wearing conditions;

a plurality of wear-resistant tiles of material positioned on said base member in a pattern to substantially cover the wear-exposed surface of said base member, said tiles having an abraded surface facing said base member; and

solder means having a melting point below 800°F disposed between said tiles and said base member for bonding said tiles to said base member.

3,948,614

COMPOSITE METAL SHEETINGS

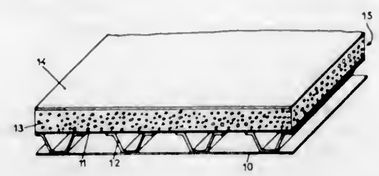
Fernand Michalon, Saint-Etienne, France, assignor to Bennes Marrel, Saint-Etienne, France

Filed Dec. 6, 1972, Ser. No. 312,522

Claims priority, application France, Dec. 6, 1971, 71.44565; Apr. 14, 1972, 72.13888

Int. Cl.² B32B *15/08*

U.S. Cl. 29—191 **1 Claim**



1. A composite sheet comprising first and second flat imperforate sheets, a plurality of elongated parallel omega-shaped channel members being disposed between said first and second sheet in contact therewith and connecting means for securing said channel members to said first and second sheets, said composite sheet further comprising a plate of cellular material secured to the uppermost surface of one of said sheets and a metal sheet secured to said sheet of cellular material.

3,948,615

FINE GRAINED GLASS-TO-METAL SEALS

Thomas H. Gray, Pittsburgh, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 399,589, Sept. 21, 1973. This application July 28, 1975, Ser. No. 599,459

Int. Cl.² B32B *15/04, 15/18*

U.S. Cl. 29—195 **1 Claim**

1. An article of manufacture comprising a glass chamber sealed to an enclosing metal element, said metal element having grains substantially all of which are smaller than ASTM size No. 6 and consisting essentially of from about 38–45% nickel, from about 3–15% chromium, from about 0.1–1.0% titanium, up to 0.1% carbon and the balance iron and residuals.

3,948,616

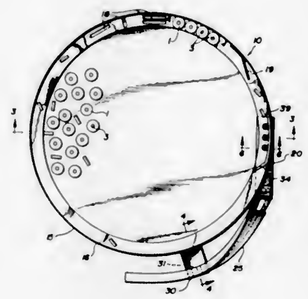
APPARATUS FOR PIN INSERTION AND METHOD

George J. Gardner, Pinellas Park, Fla., assignor to Tangen Drives, Inc., Clearwater, Fla.

Filed July 24, 1974, Ser. No. 491,508

Int. Cl.² B23P *15/00, 19/08*

U.S. Cl. 29—429 **11 Claims**



11. The method of inserting a pin into a blank having a bore while feeding the blank and pin from separate blank and pin feeding means comprising the steps of:

discharging the pins above the blanks,

directing the blank horizontally to present its bore in a vertical orientation,

confining the pins as fed in a vertical orientation above the blanks,

recycling the pins which do not find a blank bore into the pin feeding means,

rotating the blanks approximately 90° to a position where the bore is substantially horizontal to present an axle-like relationship of pin to blank,

supporting and confining the ends of the axle-like pin,

passing the blanks over an escapement slightly wider than the blank, thereby dropping those blanks not having a pin and passing the blanks having pins supported at their ends and recycling the blanks which drop through the trap back into the blank feeder.

3,948,617

METHOD OF REDUCING SULPHUR DIOXIDE EMISSIONS FROM COMBUSTIBLE MATERIALS

Benjamin Withorn, 601 Forbes St., Falmouth, Va. 22401

Continuation-in-part of Ser. No. 296,674, Oct. 11, 1972, abandoned. This application Feb. 19, 1974, Ser. No. 443,403

Int. Cl.² C10L *9/00;* **C21B** *5/00;* **C10B** *57/00;* **C10L** *1/00*

U.S. Cl. 44—4 **6 Claims**

1. The method of treating a sulphur containing combustible fuel which is fed under pressure to a burner structure through a suitable feed line, comprising, introducing under pressure into said feed line adjacent to and immediately prior to the introduction of said fuel to said burner structure, a sulphur neutralizing alkali, said alkali and said combustible fuel being pre-mixed in said feed line leading to said burner, said alkali fed in metered amounts into the said fuel feed line immediately prior to the feed of said combined charge of alkali and fuel to said burner structure to thereby neutralize the sulphur dioxide formed during the combustion of the said fuel and admixed alkali to thus effect a release into the atmosphere a gas substantially free of sulphur dioxide.

3,948,618

FUEL COMPOSITIONS CONTAINING GLYCERIDES FOR REDUCING THE PLUGGING OF EXHAUST GAS CATALYSTS

Leonard M. Niebylski, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed June 5, 1975, Ser. No. 584,140

Int. Cl.² C10L *1/18*

U.S. Cl. 44—66 **16 Claims**

1. As a composition of matter, a gasoline for use with an internal combustion engine comprising:

i. an antiknock amount of a cyclopentadienyl manganese tricarbonyl antiknock compound wherein said cyclopentadienyl group is a hydrocarbon group containing from 5 to about 17 carbon atoms, and

ii. an amount sufficient to reduce the plugging of an exhaust gas catalyst of a glyceride.

3,948,619

GASOLINE COMPOSITION

Calvin J. Worrel, Detroit, Mich., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 203,461, Nov. 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 73,265, Sept. 17, 1970, abandoned. This application Feb. 15, 1973, Ser. No. 332,641

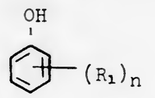
Int. Cl.² C10L *1/22*

U.S. Cl. 44—58 **26 Claims**

1. A liquid hydrocarbon fuel of the gasoline boiling range containing

I. the reaction product of:

A. one mole part of an alkylphenol having the formula:



wherein *n* is an integer from 1 to 2, and R_1 is an aliphatic hydrocarbon radical having a molecular weight of from about 400 to 1500;

B. from 1–5 mole parts of an aldehyde having the formula:



wherein R_2 is selected from hydrogen and alkyl radicals containing 1–6 carbon atoms; and

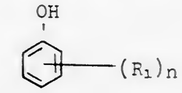
C. from 0.5-5 mole parts of an amine having at least one amino group having at least one active hydrogen atom, and

II. normally liquid hydrocarbon polyolefin having an average molecular weight of from about 300 to about 2000.

21. A concentrate for use in liquid hydrocarbon fuel boiling in the gasoline boiling range containing

I. from 0.8–30 weight percent of the reaction product of:

A. one mole part of an alkylphenol having the formula:



wherein *n* is an integer from 1 to 2, and R_1 is an aliphatic hydrocarbon radical having a molecular weight of from about 400 to 1500;

B. from 1–5 mole parts of an aldehyde having the formula:



wherein R_2 is selected from hydrogen and alkyl radicals containing 1–6 carbon atoms; and

C. from 0.5–5 mole parts of an amine having at least one amino group having at least one active hydrogen atom,

II. from 0.5–12 weight percent of aromatic hydrocarbon,

III. from 0.1–12 weight percent of an alkanol having about 6 or more carbon atoms, and

IV. from 50–98% by weight of a normally liquid hydrocarbon polyolefin having an average molecular weight of from 300–2000.

3,948,620

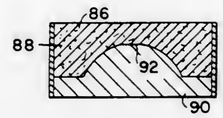
METHOD OF MAKING CUTTING MASTER FOR EROSION MACHINING

Thomas J. O'Connor, 100 Morgan Road, Ann Arbor, Mich. 48106

Continuation-in-part of Ser. Nos. 68,711, Sept. 1, 1970, and Ser. No. 253,906, May 16, 1972, which is a division of Ser. No. 545,652, April 27, 1966, Pat. No. 3,663,786. This application Sept. 14, 1973, Ser. No. 397,335

Int. Cl.² C08G *51/12*

U.S. Cl. 51—298 A **1 Claim**



1. The method of forming an oversize cutting master for total form abrasion machining of a predetermined form in carbon or the like having a predetermined exact size comprising producing a surface on a body of rigid material which is substantially a mirror image of the predetermined form to be machined and oversize from said predetermined exact size by

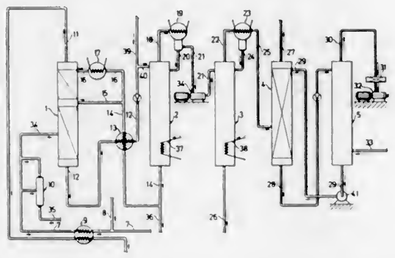
a predetermined exact amount and making the surface abrasive, wherein the cutting master is cast of a settable plastic having small particles of sand therein at the abrasive surface of the finished cutting master and the oversize cutting master is produced by orbiting a model of the form to be abrasion machined in the settable material while the settable material is setting.

3,948,621

PROCESS FOR THE SIMULTANEOUS SEPARATION OF ETHYLENE OXIDE AND CARBON DIOXIDE FROM THE GASEOUS MIXTURES OBTAINED IN THE DIRECT OXIDATION OF ETHYLENE WITH OXYGEN

Gioacchino Cocuzza, Catania; Benedetto Calcagno, Milan, and Gianni Torreggiani, Busto Arsizio (Varese), all of Italy, assignors to Societa' Italiana Resine S.p.A., Milan, Italy

Filed Dec. 26, 1973, Ser. No. 428,570
Claims priority, application Italy, Dec. 22, 1972, 33442/72
Int. Cl.² B01D *53/14, 19/00*
U.S. Cl. 55—29 **12 Claims**



1. An improved process for the simultaneous separation of ethylene oxide and carbon dioxide from the gaseous mixtures obtained in the direct oxidation of ethylene with oxygen, comprising

a. cooling the gaseous mixture containing ethylene oxide, unreacted ethylene, water vapour, carbon dioxide and inert gases after addition of methanol to a temperature such that the water vapour present separates in the form of an aqueous methanol solution;

b. washing the obtained gaseous mixture in an absorption zone with methanol, the mehthanol being fed into the intermediate part of the absorption zone as a main methanol stream and into the upper part as a secondary methanol stream, maintaining the temperature of the secondary methanol stream at least about 30° C lower than that of the main methanol stream and removing from the upper part a gaseous mixture being practically free of ethylene oxide and containing carbon dioxide and ethylene and from the lower part of the absorption zone a solution of ethylene oxide in methanol; and

c. recovering the ethylene oxide from the methanol solution.

3,948,622

SEPARATION OF AQUEOUS HYDROGEN CHLORIDE FROM GASEOUS CHLORINATED HYDROCARBONS

Utah Tsao, Jersey City, N.J., assignor to The Lummus Company, Bloomfield, N.J.

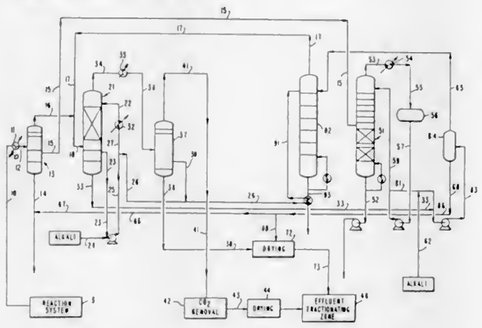
Filed July 12, 1974, Ser. No. 488,247
Int. Cl.² B01D *53/00*
U.S. Cl. 55—32 **12 Claims**

1. A process for treating a gaseous chlorinated hydrocarbon effluent containing hydrogen chloride, water vapor and carbon dioxide, comprising:

a. cooling the gaseous chlorinated hydrocarbon effluent to condense aqueous hydrogen chloride containing the major portion of the hydrogen chloride present in said gaseous chlorinated hydrocarbon effluent;

b. introducing uncondensed effluent from step (a) into a direct contact quench zone;

c. contacting the uncondensed chlorinated hydrocarbon effluent with quench liquid to cool the effluent and condense further water vapor;



d. withdrawing condensed water vapor from the quench zone and adding base to the withdrawn condensed water vapor to maintain the condensed water vapor on the alkaline side;

e. cooling a portion of the condensed water vapor from step (d); and

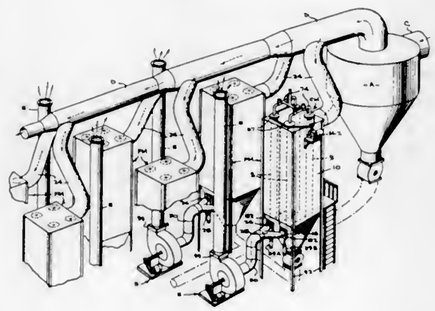
f. employing the cooled portion of the condensed water vapor from step (e) as the quench liquid in the quench zone.

3,948,623

HIGH TEMPERATURE AIR FILTRATION SYSTEM AND METHOD FOR FOUNDRIES

Donald H. Ostby, 839 E. Forest Ave., Muskegon, Mich. 49442, and Joseph H. Smith, 6737 Old Channel Trail, Montague, Mich. 49437

Filed Dec. 20, 1974, Ser. No. 534,861
Int. Cl.² B01D *46/04*
U.S. Cl. 55—96 **28 Claims**



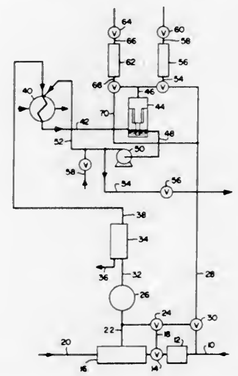
21. Apparatus as defined in claim 19 wherein said combustible fluid shock-wave generator means comprises propane gas-fired generator units disposed at opposite ends to each filter unit to provide sonic shock-wave induced explosions interiorly of said filter unit from both ends, and said filter screen units have pressure relief means embodied therewith to preclude damage to said screen units by said shock-wave explosions.

3,948,624

REMOVAL OF SULFUR COMPOUNDS FROM GAS STREAMS

Louis Leonard Fornoff, Cedar Grove, N.J., and William George Matthews, Flushing, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 4, 1974, Ser. No. 439,531
Int. Cl.² B01D *53/00*
U.S. Cl. 55—73 **5 Claims**



1. Process which comprises providing a gas stream effluent from a contact process sulfuric acid absorber, said gas stream effluent being at a temperature of from 120°F. to 200°F. as a result of passage through said absorber, and comprising SO_2, oxygen, SO_3, sulfuric acid vapor and sulfuric acid mist, cooling said gas stream effluent to a temperature of from 50°F. to 100°F. and intimately contacting same with an aqueous sulfuric acid solution containing from 93 to 99 weight-% H_2SO_4 whereby said gas stream becomes saturated with respect to H_2SO_4 vapor at the existing temperature and contains sulfuric acid mist particles, thereafter passing said gas stream to a mist eliminator to remove said mist particles while maintaining the gas stream saturated with respect to sulfuric acid vapor, withdrawing the demisted gas stream from the mist eliminator and further treating said gas stream to remove SO_2 therefrom.

3,948,625

IRRADIATION AND ELECTROSTATIC SEPARATOR

Mortimer A. Schultz, State College, Pa., assignor to Environmental Master Systems, Inc., New Philadelphia, Ohio

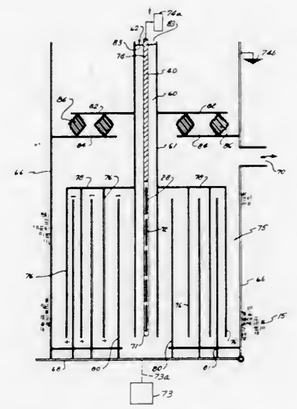
Filed July 24, 1972, Ser. No. 274,661
Int. Cl.² B03C *3/12*
U.S. Cl. 55—102 **8 Claims**

I. An apparatus for removing pollutants from industrial gases, including

a conduit defining a passageway having an inlet and an outlet, means to convey the industrial gases into said passageway inlet,

an elongated irradiation conduit portion zone intermediate said inlet and outlet within said passageway, said zone comprising a plurality of serially disposed isotope sources in said conduit portion, an effective passageway portion measured from the beginning of the elongated irradiation zone to the outlet, each of said isotope sources creating a radiation field at energy levels in excess of at least 1,000,000 electron volts, and providing a substantial dosage level in excess of **200** Rads, so that pollutants are effectively charged in passage through the irradiation zone,

electrodes of alternating polarity adjacent and downstream of said elongated irradiation zone, said electrodes extending for a length which is substantially coextensive with the



conduit portion, said electrodes, and a connected voltage source, establishing an electrostatic field to attract particles oppositely charged in said irradiation zone, and

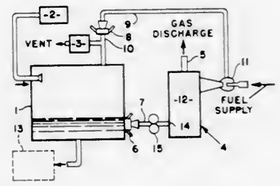
means to remove pollutants attracted to said electrodes, whereby the isotope sources along the substantial portion of the path and the effective length of the electrodes attain high efficiencies of collection.

3,948,626

REFUELING EQUIPMENT FOR AIRCRAFT FUEL TANKS AND THE LIKE

Kenneth R. Bragg, Redondo Beach, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Oct. 25, 1974, Ser. No. 517,921
Int. Cl.² B01D *19/00*
U.S. Cl. 55—160 **18 Claims**



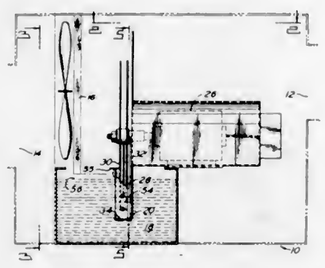
1. A refueling system for a fuel tank in which the ullage gas is noncombustible and includes inert gas which is introduced into said tank from a source of such inert gas to pressurize said tank; said tank having an ullage gas outlet port and a fuel inlet port; said system comprising a fuel delivery conduit detachably connected with said fuel inlet port to refuel said tank; and means for removing oxygen dissolved in the fuel during the course of its flow through said system, and including a gas discharge opening through which the liberated oxygen is discharged from said system whereby deoxygenated fuel is delivered from said fuel delivery conduit into said tank; said means comprising an ullage gas conduit detachably connected with said ullage gas outlet port for mixing of ullage gas with the fuel flowing through said system; and fuel-gas separator means

having said gas discharge opening; the flow of deoxygenated fuel through said fuel delivery conduit into said tank being effective to displace ullage gas through said ullage gas conduit as said tank is filled with deoxygenated fuel.

3,948,627
LIQUID SPRAYER

Gerald L. Schwarz, Shaker Heights, and Hugo Schlachet, Cleveland Hts., both of Ohio, assignors to Bessam Manufacturing, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 165,236, July 22, 1971, Pat. No. 3,798,881. This application Aug. 23, 1973, Ser. No. 390,955
The portion of the term of this patent subsequent to Mar. 26, 1991, has been disclaimed.
Int. Cl.² B01D *47/00*
U.S. Cl. 55—230 **10 Claims**



1. In an apparatus for filtering, washing and cooling gases the combination including:

inlet ducting means for conducting a gas to means forming a chamber and outlet ducting means for conducting said gas away from said chamber, a pool of water located in the bottom portion of said chamber, a foraminous wall within said chamber extending transverse to the direction of gas flow and through which said gas passes in its trip from the inlet ducting to the outlet ducting, means for forcing said gas through said foraminous wall and means for spraying a droplet curtain of said water across the chamber between the inlet and the wall, said water droplets serving to filter, wash and cool said gas, said foraminous wall serving to prevent entrainment of large droplets of water in the stream of gas passing therethrough, the improvement comprising,

the means for spraying water including a plurality of discs rotating in vertical planes substantially perpendicular to the flow of said gas, the lower portions of said discs being covered with said pool of water,

a shroud spaced from and encompassing the water covered portions of said discs, the bottom of said shroud being curved with said curve having an axis substantially parallel but not coaxial with the axis of said discs, the spacing between the discs and the shroud being greater at the points of entry into the water than at the points of exit from said water,

shield means extending partially around the periphery of at least one disc above the water level for controlling the direction of the water sprayed from said disc,

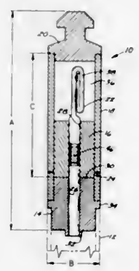
means for adjusting the volume of water flow into the shroud from the pool and,

scraper means extending from the shroud toward the rotating discs for scraping excess water from the rotating discs.

3,948,628
VENT ASSEMBLY INCLUDING AN AIR LOCK

Joseph C. McGuire, Kennewick, Wash., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Division of Ser. No. 296,680, Oct. 11, 1972, Pat. No. 3,876,403. This application Jan. 14, 1974, Ser. No. 433,127
Int. Cl.² B01D *39/12*
U.S. Cl. 55—309 **6 Claims**



1. A vent assembly comprising:

a vent structure including a tubing of predetermined length and size, said tubing having an undeformed normally lower portion and a formed normally upper portion, said upper tubing portion being flattened and folded against itself, and means provided in said upper tubing portion for separating its opposing proximate faces to prevent sintering and similar closures thereof;

air lock structure including at least one bleed hole therein; and

means connecting a normally lower portion of said air lock structure below said at least one bleed hole to said undeformed lower tubing portion, said air lock structure and connecting means enclosing said formed upper tubing portion to provide an air lock chamber which houses the same.

3,948,629
HYDRATION OF SILICATE GLASSES IN AQUEOUS SOLUTIONS

Roger F. Bartholomew, Painted Post; Larry E. Campbell; Stanley S. Lewek, both of Corning; Joseph E. Pierson, and Stanley D. Stookey, both of Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

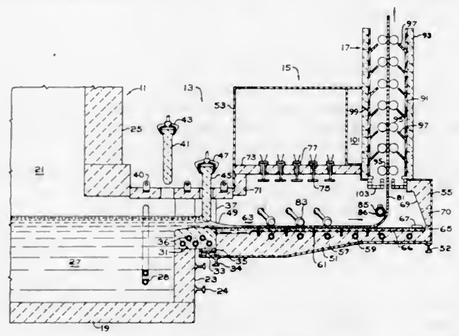
Filed Apr. 29, 1974, Ser. No. 465,243
Int. Cl.² C03C *17/00*
U.S. Cl. 65—30 R **14 Claims**

1. A method for making a hydrated glass body exhibiting thermoplastic properties which comprises contacting a fine-dimensioned anhydrous glass body consisting essentially, in mole percent on the oxide basis, of about 3–25% Na_2O and/or K_2O and 50–95% SiO_2, the sum of those components constituting at least 55% of the total composition, with an aqueous solution environment having a pH less than 6, as measured at room temperature, this contact being made at a temperature in excess of 100°C. and at a pressure in excess of 20 psig for a period of time sufficient to hydrate at least a surface portion having an amount of H_2O absorbed therein effective to impart thermoplastic properties thereto.

3,948,630
GUIDE FOR USE IN APPARATUS FOR MANUFACTURING FLAT GLASS

Jon S. Sieja, Tarentum, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 15, 1974, Ser. No. 515,127
Int. Cl.² C03B *18/02*
U.S. Cl. 65—65 A **28 Claims**



1. In an apparatus for making flat glass comprising a forming chamber containing a pool of molten metal for receiving molten glass for forming, means for advancing the glass along a path on the surface of the pool of molten metal, means for cooling the glass during its advance, means for applying forces to the glass to form a continuous sheet of flat glass therefrom during its advance and means for contacting and lifting the continuous sheet of glass upwardly from the pool of molten metal and for conveying it substantially vertically upwardly therefrom wherein the first means for contacting and lifting the continuous sheet of glass is located a sufficient distance from the pool of molten metal to avoid marking the glass, the improvement comprising

means for engaging the lifted portion of said glass sheet disposed below said first means transversely to the normal vertical path of travel of the lifted portion of the glass sheet and in spaced relation from the adjacent surface of the lifted portion of said sheet a distance sufficiently close to engage said sheet momentarily when said sheet intermittently moves from its normal vertical path of movement toward and into contact with said glass engaging means so as to cause said sheet to move toward its normal path of movement.

21. In a method of making flat glass comprising the steps of delivering molten glass onto the surface of a pool of molten metal in an enclosed forming chamber, advancing the glass along the surface of the pool of molten metal, cooling the glass to form a continuous sheet of glass, advancing the sheet of glass along a path on the pool of molten metal and thereafter applying a tractive force to the sheet of glass for lifting the sheet of glass upwardly from the pool of molten metal and conveying it substantially vertically upwardly therefrom, wherein the tractive force is applied at a sufficient distance from the pool of molten metal to avoid marking the glass by its application and wherein the continuous sheet of glass being conveyed upwardly from the pool of molten metal to where the tractive force is applied is subject to movement from a desired path lying in a plane aligned normal to the surface of the pool of molten metal and normal to the path of advance of the glass along the surface of the pool of molten metal, the improvement comprising

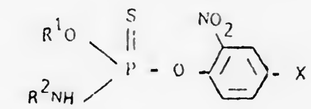
disposing a means for engaging the lifted portion of said glass sheet at a location below the point at which said tractive force is applied to said sheet and in a region extending both transversely to the normal vertical path of travel of the lifted portion of the sheet and in closely spaced relation to the adjacent surface of the lifted portion, and maintaining rhe spacing between said glass engaging means and the normal vertical path of travel of the lifted portion of said glass sheet sufficiently close to engage said sheet momentarily when said sheet intermittently moves from its normal vertical path of movement toward and into contact with said glass engaging means so as to cause said sheet to move toward its normal path of movement.

3,948,631
PHOSPHORO-AMIDO-THIOATES

Gerhard Schrader, Wuppertal-Cronenberg; Ludwig Eue; Helmuth Hack, both of Cologne, all of Germany; Seiichi Hirane, Kokubunji, Japan; Masahiro Aya, Kodaira, Japan; Shigeo Kishino, Machida, Japan, and Nobuo Fukazawa, Hachioji, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 10,052, Feb. 9, 1970, Pat. No. 3,787,538. This application Aug. 1, 1973, Ser. No. 384,675
Claims priority, application Japan, Feb. 8, 1969, 44-9106
The portion of the term of this patent subsequent to Mar. 12, 1991, has been disclaimed.
Int. Cl.² A01N *9/36*
U.S. Cl. 71—87 **14 Claims**

3. A method of combating undesired vegetation which comprises applying thereto a herbicidally effective amount of a phosphoro-amido-thioate of the formula



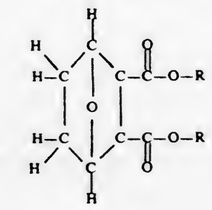
in which R^1 is alkyl of 1–4 carbon atoms, R^2 is selected from the group consisting of n-propyl, alkyl of 4–6 carbon atoms and cycloalkyl of 5–6 ring carbon atoms, and when R^2 is n-propyl or alkyl of 4–6 carbon atoms, X is selected from the group consisting of alkyl of 1–4 carbon atoms and chloro, whereas when R^2 is cycloalkyl of 5–6 carbon atoms, X is selected from the group consisting of alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms, chloro and hydrogen.

3,948,632
CONTROL OF ALGAE, AQUATIC PLANTS, AND THE LIKE

Edward R. Ritchey, 303 S. Fifth St., St. Joseph, Mo. 64501

Filed Apr. 8, 1974, Ser. No. 458,989
Int. Cl.² A01N *9/28*
U.S. Cl. 71—88 **5 Claims**

1. A process for killing terrestrial plants, which comprises contacting said plants with a mixture comprising about 17% wt. water, about 33% wt. of a compound having the formula



wherein R is potassium, and about 50% wt. of a triethanolamine/copper sulfate compound mixed in a proportion of about 2 parts of triethanolamine per 1 part of copper sulfate.

3,948,633

3,5-DIMETHYL-2-THIENYLCARBOXANILIDE AND 3,5-DIMETHYL-2-THIENYL-(N-HALOALKYLTHIOCARBOXANILIDE) HERBICIDES

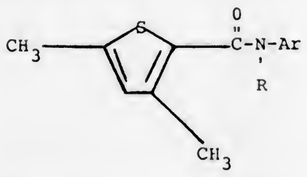
John W. Kobzina, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 383,751, July 30, 1973, Pat. No. 3,892,775. This application Apr. 21, 1975, Ser. No. 570,339

Int. Cl.² A01N 9/12

U.S. Cl. 71—90 **9 Claims**

1. A method for controlling undesirable vegetation which comprises applying thereto an herbicidally effective amount of a compound of the formula



wherein R is haloalkylthio of 1 to 2 carbon atoms and of 3 to 5 chloro or bromo groups, and Ar is phenyl or 2-fluorophenyl.

3,948,634

HERBICIDE

Adolf Fischer, Mutterstadt, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Continuation-in-part of Ser. No. 299,597, Oct. 20, 1972, abandoned. This application May 9, 1974, Ser. No. 468,371

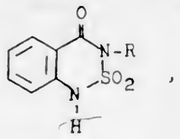
Claims priority, application Germany, Nov. 6, 1971, 2155284

Int. Cl.² A01N 9/22

U.S. Cl. 71—91 **4 Claims**

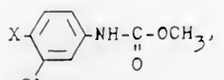
1. A herbicide composition comprising, as the herbicidal components, a herbicidally effective amount of a mixture of

a. a compound of the formula



wherein R denotes lower alkyl or an alkali metal, alkaline earth metal, ammonium, lower hydroxyalkylamine or lower alkylamine salt of said compound, and

b. a compound of the formula



wherein X denotes chlorine or bromine, the weight ratio of (*a*) to (*b*) being in the range of 3:1 to 1:2.

3,948,635

PROCESS FOR SELECTIVE POST-EMERGENCE WEEDING OF CROPS, AND NEW PRODUCTS BY WHICH THE PROCESS CAN BE IMPLEMENTED

Christian Vachette, Paris, and Pierre Faillet, Sartrouville, both of France, assignors to Societe SEPPIC, Paris, France

Filed June 4, 1969, Ser. No. 830,536

Int. Cl.² A01N 9/22

U.S. Cl. 71—92 **6 Claims**

1. A process for post-emergence weeding of crops comprising the use of a mixture containing one herbicide selected from the following group: cyclohexyl-3-trimethylene 5,6-uracil, 1-butyl-3(3,4-dichlorophenyl)-1-methyl-urea, 5-amino-4-chloro-2-phenylpyridazine-3-one, and 3-methoxycarbonylaminophenyl-N-(3'-methylphenyl)-carbamate; and a non-phytotoxic oil wherein said oil is essentially paraffinic and contains no more than 10% sulfonatable products and is used in concentrations of 2–25 liters/hectare, and wherein said uracil is used in concentrations of 0.4–2 kg/hectare; said phenylpyridazine is used in concentrations of 1.2–4.8 kg/hectare; said carbamate is used in concentrations of 0.5–5 kg/hectare.

3,948,636

FLOWABLE AQUEOUS COMPOSITION OF WATER-INSOLUBLE PESTICIDE

Alfred F. Marks, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Nov. 9, 1972, Ser. No. 305,064

Int. Cl.² A01N 9/24

U.S. Cl. 71—112 **15 Claims**

1. A flowable, storage-stable, aqueous pesticide concentrate readily dilutable in water to provide an effective amount of pesticide for spray application which, prior to dilution, consists essentially of, by weight of the total concentrate,

a. from 10 to 60% of an essentially water-insoluble pesticide component having an average particle size ranging between about 1 and 10 microns;

b. from 1 to 10% of at least one nonionic surfactant; and

c. from 0.02 to 1.0% of a heteropolysaccharide gum,

the balance being water.

3,948,637

PROCESS FOR CLASS IV-B METALS ORE REDUCTION

Paul Franklin Taylor, P.O. Box 468, Crossville, Tenn. 38555

Filed June 10, 1974, Ser. No. 478,345

Int. Cl.² C22B 1/00, 34/10

U.S. Cl. 75—1 T **20 Claims**

1. A method of reducing titanium dioxide to titanium metal comprising the steps of: (A) Adding powdered titanium dioxide to materials selected from the group consisting of sugar and starch, and a base hydroxide, (B) mixing, and adding to a reduction container, (C) applying heat to the mixture until combustible materials burn, (D) adding water, boiling and flushing, (E) leaching with hydrochloric acid and hydrocarbon solvents, (F) again adding water, boiling and flushing, then (G) drying, and (H) smelting the remaining material to produce titanium metal.

3,948,638

METHOD FOR THE PRESS GRANULATION OF INDUSTRIAL DUSTS SEPARATED IN DUST REMOVAL SYSTEMS

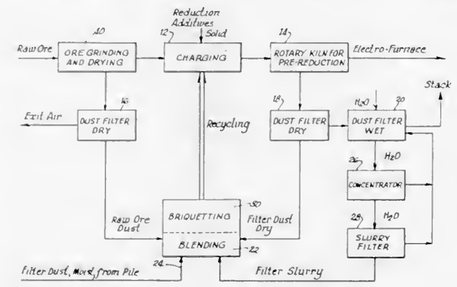
Wolfgang Pietsch, Lowenstein-Hirrweiler, Germany, assignor to Hutt GmbH, Stuttgart, Germany

Filed Mar. 22, 1974, Ser. No. 453,824

Claims priority, application Germany, Mar. 23, 1973, 2314637

Int. Cl.² C22B 1/08; C21B 3/04

U.S. Cl. 75—3 **7 Claims**



1. In a material treating system wherein the material is fed into a reactor and wherein portions of the material exit from the reactor as flue dust with the surfaces of the dust particles carrying at least one reaction product from the group comprising oxides, hydroxides, carbonates and carbon containing products, the improved method for recovering and agglomerating the dust and for recycling the dust comprising the steps of mixing with the dust from 10 to 40 percent by weight of dust comprising material of substantially the same composition but which has not previously been fed to a reactor whereby it is substantially free of said reaction products, subjecting the mixture to compression forces for agglomerating the mixture into granules, and introducing the granules as a portion of the material fed to the reactor.

3,948,639

PROCESS AND DEVICE FOR FLASH SMELTING SULPHIDE ORES AND CONCENTRATES

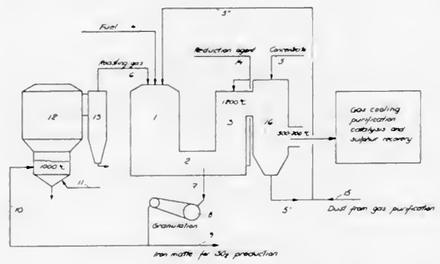
Esko Olavi Nermes, and Timo Tapani Talonen, both of Kokkola, Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Oct. 24, 1973, Ser. No. 409,100

Claims priority, application Finland, Oct. 26, 1972, 2978/72

Int. Cl.² C22B 1/02

U.S. Cl. 75—9 **4 Claims**



1. In a process for flash smelting a raw material selected from sulphide ores and concentrates in a flash smelting furnace having a lower horizontal furnace for the smelt, a vertical reaction zone connected at its bottom and communicating with one end of the lower furnace, means for feeding fuel to the reaction zone, a vertical rising zone connected at its bottom and communicating with the other end of the lower furnace, the steps of:

a. feeding flue gases from the rising zone directly to a pretreatment zone at about **1000°–1400°C** into contact with raw material fed to the pre-treatment zone for endothermal decomposition of raw material while simultaneously,

b. cooling the flue gases emerging from the rising zone at about 1000°–1400°C in the pre-treatment to about 450° – 900°C,

c. withdrawing the cooled gases from the pretreatment zone and recovering sulphur from the same, and

d. withdrawing and conducting decomposed and pretreated raw material from the pre-treatment zone to the vertical reaction shaft of the flash smelting furnace.

3,948,640

METHOD OF CARRYING OUT HEAT-REQUIRING CHEMICAL AND/OR PHYSICAL PROCESSES

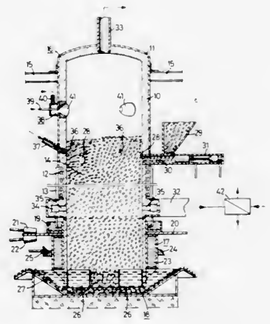
Hans Ivar Elvander; Ingvar Anton Olof Edenwall, both of Heisingborg, both of, Helsingborg; Karl Goran Gorling, Lidingo, and Douglas Sewerin Ekman, Helsingborg, all of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Apr. 22, 1974, Ser. No. 462,958

Claims priority, application Sweden, Apr. 30, 1973, 7306063; Mar. 1, 1974, 7402747

Int. Cl.² C21C 5/52; C22B 1/10

U.S. Cl. 75—11 **58 Claims**



1. A method of carrying out heat-requiring processes in a reactor chamber which includes a bed which comprises material taking part in the process, where in at least part of the energy required for said process is generated electroinductively in the bed itself by at least one induction coil through which alternating current is arranged to pass and which is located externally of the reactor chamber, wherein the improvement comprises using a bed having a resistivity (ρ) within the range of between 10^{-4} and **10** ohm m and a low frequency alternating current which is at most 10 times the mains frequency, and maintaining a relationship between the least cross dimension (d) of the bed area and the penetration depth (δ) of the inductive field at a value between 0.2 and 2.5, which also satisfies the relationship

$$\frac{d}{\delta} = k\,(0.54 - 0.35 \cdot {}^{10}\log \rho)$$

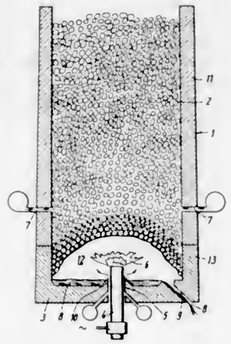
where k is a numerical value between 1.1 and 1.5.

3,948,641

APPARATUS FOR THE CONTINUOUS PRODUCTION OF STEEL FROM ORE

Hans-Jurgen Langhammer, Bremen, Germany, assignor to Klockner-Werke AG, Duisburg, Germany

Division of Ser. No. 337,738, March 2, 1973, Pat. No. 3,894,864. This application Apr. 1, 1974, Ser. No. 457,123
Claims priority, application Germany, Mar. 4, 1972, 2210468
Int. Cl.² C21C *5/52*; **H05B** *7/18*
U.S. Cl. 75—11 **20 Claims**



1. An arrangement for the continuous production of steel from charges which include a substance selected from the group consisting of ore, sinter and pellets, comprising wall means, including an at least approximately vertical circumferential wall and a transversely extending lower wall which together bound an upright melting zone adapted to contain a charge which descends therein by gravity from an upper portion to a lower portion of the zone; an upright passage in said transversely extending lower wall and communicating with said lower portion of said zone; an electrode extending through said passage and having an end portion from which an electric arc is directed at the bottom end of said charge so that said bottom end is continuously melted as said charge descends by gravity into said lower portion of said zone; and an opening in said wall means for the substantially continuous evacuation of the resulting molten material from said lower portion of said zone.

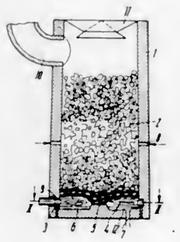
3,948,642

METHOD OF MELTING AND ARRANGEMENT THEREFOR

Reinhold Gross, Heiligenhaus, Germany, assignor to Klockner-Werke AG, Duisburg, Germany

Filed May 14, 1974, Ser. No. 469,968
Claims priority, application Germany, May 26, 1973, 2327073
Int. Cl.² C21C *5/52*; **C21B** *11/00*
U.S. Cl. 75—12 **43 Claims**

1. A method of melting particulate substances, comprising forming a column of particulate material in a melting zone; effecting melting of said column in a first region of said zone so as to cause the formation of molten material which flows into a second region of said zone, said melting being performed such that at least one portion of said column is caused to support said column in said zone and bears against a third



region of said zone which is substantially free of contact with the molten material in said second region of said zone thereby preventing substantial heat transfer from the molten material in said second region of said zone to said column during said melting.

3,948,643

METHOD FOR REFINING STEEL

Bengt Fredriksson, and Jan Uggla, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 21, 1974, Ser. No. 444,654
Claims priority, application Sweden, Feb. 23, 1973, 7302555
Int. Cl.² C21C *5/52*; **H05B** *5/14*
U.S. Cl. 75—13 **1 Claim**

1. A method for refining steel in a channel-type electric induction furnace having an enclosed upper hearth provided with a slag tapping hole, a lower gas-pressure-tightly enclosed hearth, said hearths having lower portions, and a closed duct interconnecting the lower portions of said hearths pressure-tightly and forming a gravity flow path from said upper hearth to said lower hearth, said duct having a normally closed melt tap hold in an upper portion positioned above said lower hearth, said hearths having bottoms provided with channel-type inductors of which the upper hearth's inductor is tilted towards said duct; characterized by the use of gas pressure in the lower furnace to control the flow of molten metal into said lower furnace and the removal of slag from the upper furnace.

3,948,644

STEEL MAKING VESSEL WITH DUST RECYCLING METHOD AND MEANS

Harvey W. Maurice, Butler, and Jal K. Pearce, Pittsburgh, both of Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1972, Ser. No. 238,337
Int. Cl.² C21B *3/04*; **C21C** *5/38*
U.S. Cl. 75—25 **6 Claims**

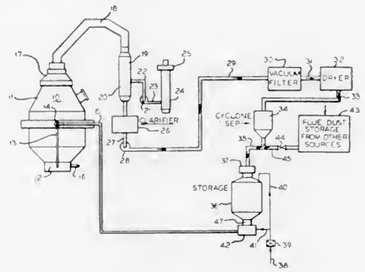
6. The invention set forth in claim 3:

a. said separation means comprises wet gas scrubber means which produces a wet mass of particulate matter,

b. clarifier means coupled with the separation means to receive the wet mass therefrom, said clarifier means removing some of the water from said mass of particulate matter,

c. vacuum filter means coupled to receive said matter from the clarifier means,

d. dryer means coupled to receive said matter from the vacuum filter means, and



e. a centrifugal separator for receiving said matter from the dryer means prior to transport to the aforesaid storage means.

3,948,645

METHOD OF CARRYING OUT HEAT-REQUIRING CHEMICAL AND/OR PHYSICAL PROCESSES IN A FLUIDIZED BED

Hans Ivar Elvander; Ingvar Anton Olof Edenwall, both of Helsingborg; Karl Göran Görling, Lidingo, and Douglas Sewerin Ekman, Helsingborg, all of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Apr. 22, 1974, Ser. No. 462,959
Claims priority, application Sweden, Apr. 30, 1973, 7306065; Oct. 23, 1973, 7314373; Mar. 1, 1974, 7402747
Int. Cl.² C22B *1/10*
U.S. Cl. 75—26 **58 Claims**

1. A method of carrying out heat-requiring processes in a reactor containing a fluidized bed, comprising electroinductively generating at least part of the energy required to carry out the process in the bed itself by passing alternating current through at least one induction coil located externally of the reactor chamber, said fluidized bed containing material which provides the bed with a resistivity of between 10^{-1} and 10 ohm m, the frequency of the alternating current being so selected in dependence of the selected smallest cross dimension (d) of the bed area and of the resistivity (ρ) of the bed, that the relationship between said smallest cross dimension (d) and the electromagnetic field penetration depth (δ), is maintained at a value of between 0.2 and 1.5, which also satisfies the relationship

$$d/\delta = k\,(0.54 - 0.35 \cdot {}^{10}\log \rho)$$

where k is a numerical value between 1.1 and 1.5.

3,948,646

METHOD OF DIRECT REDUCTION OF IRON ORES

Heinz-Dieter Pantke, Essen-Frintrop, and Ulrich Pohl, Mulheim (Ruhr), both of Germany, assignors to Thyssen Niederrhein AG Hutten- und Walzwerke, Oberhausen, Germany

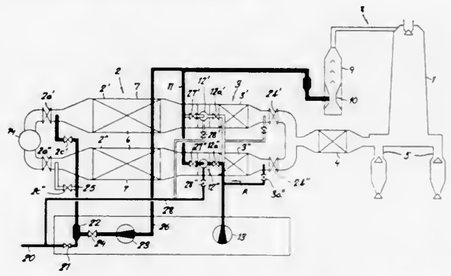
Division of Ser. No. 400,058, Sept. 24, 1973, Pat. No. 3,883,123. This application July 16, 1974, Ser. No. 488,929
Claims priority, application Germany, Sept. 23, 1972, 2246885
Int. Cl.² C21B *13/02*
U.S. Cl. 75—34 **1 Claim**

1. A method of reducing iron ore using apparatus including a pair of reformers and a shaft furnace, said method comprising the steps of:

a. heating a first regenerative reformer by combustion of a fuel in combustion air preheated by contact with a heat storage mass;

b. concurrently with step (a) passing a mixture of oxidizing medium and a process hydrocarbon through a second reformer previously heated as at step (a) to transform said process hydrocarbon to reducing gas, passing the reducing gas into contact with a heat storage mass for subsequent preheating of air as in step (a), and feeding said reducing gas through a regeneratively heated buffer heat exchanger containing a heat-storage mass;

c. feeding reducing gas from said buffer heat exchanger substantially continuously through a shaft furnace to reduce iron ore therein; and



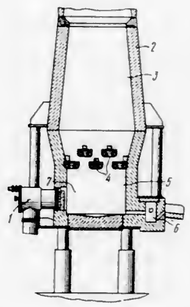
d. periodically functionally interchanging the first and second reformers so as alternately to effect heating of the second reformer subsequent to its use to produce reducing gas in step (b) and produce reducing gas in the first reformer heated as in step (a), the reducing gas traversing each reformer being passed through the common buffer heat exchanger in step (c) so that the reducing gas entering said furnace from both of said reformers enters said furnace only after heat exchange with said mass whereby temperature fluctuations in the reducing gas admitted to the furnace are minimized.

3,948,647

METHOD OF MELTING SOLID IRON IN A GAS CUPOLA

Anatoly Alexeevich Cherny, ulitsa Stavy 7, kv. 40; Vladimir Alexandrovich Grachev, ulitsa Odesskaya, 6, kv. 54; Evgeny Mikhailovich Kirin, ulitsa Suvorova, 166, kv. 9, and Nikolai Andreevich Goreiov, ulitsa Ulyanovskaya, 8, kv. 65, all of Penza, U.S.S.R.

Continuation of Ser. No. 447,030, Feb. 28, 1974, abandoned. This application June 18, 1975, Ser. No. 587,876
Claims priority, application U.S.S.R., Mar. 27, 1973, 1900192
Int. Cl.² C21B *11/02*
U.S. Cl. 75—43 **4 Claims**



1. A method of melting solid iron in a gas cupola comprising the steps of: heating the cupola to a temperature higher than the iron melting temperature; charging the cupola with a

burden comprising solid iron and fluxes to be melted; upon completion of charging the burden, charging the cupola with a refractory material in a quantity required to form a layer over the surface of the burden; melting the burden; upon completion of melting the burden, melting the layer of refractory material; cooling the cupola to solidify the refractory material which provides hot repair of the refractory lining of the cupola.

3,948,648

METHOD OF REMOVING SLAG INCRUSTATIONS CONTAINING CALCIUM OXIDE

Walter Meichsner, Homberg; Wolfgang Ullrich, Rheinkamp-Baerl, and Heinrich Rellermeyer, Duisburg-Hamborn, all of Germany, assignors to August Thyssen-Hutte AG, Duisburg-Hamborn, Germany

Filed Jan. 9, 1974, Ser. No. 431,834

Int. Cl.² C21C *1/02*; **B08B** *9/00*

U.S. Cl. 75—46 **9 Claims**

1. In a process for refining iron to prepare steel wherein pig iron is initially produced in a blast furnace, thereafter transferred in a molten condition together with some blast furnace slag to a ladle wherein a calcium containing agent is added to desulfurize the pig iron, said ladle is thereafter emptied of desulfurized pig iron which is transferred into a steel making vessel leaving behind in said ladle residual slag incrustations on the inner walls thereof and said ladle is reused for a second charge of pig iron from said blast furnace, the improvement for removing the residual slag incrustations on the walls of said ladle which comprises adding to said ladle a material which is an oxide of boron or a composition which yields an oxide of boron at temperatures at which pig iron melts, which material is added to said ladle such that the boron oxide is present in an amount of between 0.1 and 8 weight percent, based upon the weight of said residual slag incrustations, whereby solid residual slag is dislodged from the walls of said ladle and thereafter removing said solid residual slag from the ladle.

3,948,649

FREE CUTTING STEEL

Tetsuo Takahashi, Nagoya, and Minoru Yanagida, Ohfu, both of Japan, assignors to Daido Seiko Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 275,900, July 28, 1972, abandoned. This application Mar. 1, 1974, Ser. No. 447,324

Claims priority, application Japan, Aug. 4, 1971, 46-58893

Int. Cl.² C22C *38/60*

U.S. Cl. 75—128 P **14 Claims**

1. A free cutting steel for machine structural use having an excellent machinability for cutting with a high speed steel cutting tool, which consisting essentially of carbon 0.08 to 0.65%, silicon 0.10 to 0.35%, manganese 0.30 to 1.90%, nickel 0 to 4.50%, chromium 0 to 3.50%, molybdenum 0 to 0.70%, lead 0.02 to 0.10%, and the balance iron and inherent impurities, and further contains oxide inclusion within a range from 100 to 450 grams per ton of the steel, lead within the range of 0.02 to 0.10 percent by weight of the said oxide inclusion being uniformly dispersed composite inclusion consisting essentially of SiO_2 40 to 60% by weight, MnO 10 to 30%, Al_2O_3 5 to 25% and MO up to 15%, wherein MO is an oxide of a metal selected from the group consisting of calcium, magnesium and iron, and the sum of SiO_2, MnO and Al_2O_3 amounts to at least 85% of the oxide inclusion, and substantially all of the lead being uniformly distributed in the steel as finely divided particles in the form of composite inclusions comprising sulfides and finely divided lead particles.

3,948,650

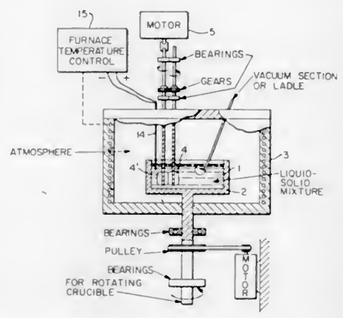
COMPOSITION AND METHODS FOR PREPARING LIQUID-SOLID ALLOYS FOR CASTING AND CASTING METHODS EMPLOYING THE LIQUID-SOLID ALLOYS

Merton C. Flemings, Cambridge; Robert Mehrabian, Arlington, and David B. Spencer, Bedford, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 258,383, May 31, 1972, abandoned, which is a continuation-in-part of Ser. No. 153,819, June 16, 1971, abandoned. This application July 17, 1973, Ser. No. 379,991

Int. Cl.² C22C *1/02*; **C22B** *4/06*

U.S. Cl. 75—135 **33 Claims**



1. The method for forming a metal composition having solid discrete degenerate dendrites homogenously dispersed within a liquid phase of said metal composition which comprises:

a. heating a first metal composition to form a liquid-solid mixture of said first metal composition wherein less than about 65 weight percent thereof is solid and

b. vigorously agitating said liquid-solid mixture to convert the solid therein to discrete degenerate dendrites derived from said first metal composition, said degenerate dendrites comprising up to about 65 weight percent of the heated metal composition and wherein the remainder of the heated metal composition is liquid.

3,948,651

ALLOYS OF ALUMINUM-LEAD-COPPER

Charles E. Lundin, P.O. Box 624, Evergreen, Colo. 80439

Filed Feb. 3, 1971, Ser. No. 112,421

Int. Cl.² C22C *1/02*

U.S. Cl. 75—138 **4 Claims**

3. The method of making an improved aluminum-lead alloy which comprises melting aluminum and adding thereto lead and an effective amount of a homogeneity promotor, said promoter consisting essentially of erbium hydride, and said lead comprises about 5–30% by weight of the total alloy.

3,948,652

CONTACT MATERIAL FOR HIGH-POWER VACUUM CIRCUIT BREAKERS

Horst Schreiner, Nurnberg, Austria, and Heinrich Hässler, Wendelstein, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 10, 1972, Ser. No. 251,889

Claims priority, application Germany, May 18, 1971, 2124707

Int. Cl.² C22C *19/00*

U.S. Cl. 75—170 **4 Claims**

1. A contact material for high-power vacuum circuit breakers comprising an alloy consisting essentially of a base metal comprising nickel and at least one alloying metal selected from the group consisting of bismuth, tellurium and lead; characterized by containing at least one auxiliary metal selected from the group consisting of cerium, lanthanum, titanium and tin, said auxiliary metal forming a eutectic with said base metal, said eutectic comprising about 15 to about 50% of the total volume of said alloy, said eutectic surrounding crystals consisting mainly of said base metal, said alloying metal being contained in said crystals and comprising not more than 5% by weight of said crystals and being dispersed in said eutectic to an extent of less than 5% by weight of said eutectic.

3,948,653

NOVEL NONPRECIOUS ALLOY SUITABLE FOR FUSION TO PORCELAIN

John Aloysius Tesk, Woodridge; Ronald Peter Dudek, River Grove, and Peter Kosmos, Alsip, all of Ill., assignors to Howmedica, New York, N.Y.

Filed June 2, 1975, Ser. No. 582,761

Int. Cl.² C22C *19/05*

U.S. Cl. 75—171 **8 Claims**

1. A nonprecious alloy consisting essentially of the following constituents in the indicated percentages by weight:

Constituent	Proportional Range
Chromium	12–15%
Aluminum	0–1%
Silicon	0–1%
Tin	0.00–1.25%
Manganese	0.01–0.75%
Gallium	4.5–8%
Molybdenum	5–8%
Iron	3–10%
Nickel	Balance

with the proviso that the combined percentage of tin, gallium and silicon must be at least 5.75%.

3,948,654

ELECTROPHOTOGRAPHIC PROCESS

Donald J. Fisher, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 25, 1974, Ser. No. 454,343

Int. Cl.² G03G *13/24*

U.S. Cl. 96—1 SD **13 Claims**

1. In an electrophotographic process including the repetitive cycles of placing an electrostatic charge on a photoconductive insulating layer, forming an electrostatic latent image thereon by exposure of said layer to a pattern of light and shadow, developing said latent image by application thereto of a free flowing developer material, and cleaning said layer, the improvement comprising contacting the surface of said photoconductive insulating layer with a material selected from the group consisting of perfluoro-organic acids having from 5 to 26 carbon atoms, salts of said acids, amides of said acids, esters of said acids, and mixtures thereof, said material having a melting point of at least about 45°C, said contacting being sufficient to form a film of the material on said surface.

3,948,655

ELECTROSTATOGRAPHIC PROCESS FOR PREPARING GRAVURE PRINTING MEMBER

John B. Wells, Savannah, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 26, 1973, Ser. No. 427,592

Int. Cl.² G03G *13/26*

U.S. Cl. 96—1 R **9 Claims**

1. A method for preparing a gravure printing member comprising contacting, in the absence of light, a first member having latent electrostatographic charged image areas with a second member having a multiplicity of cells and containing in said cells below the contact plane, a liquid but hardenable material which is impervious to a printing fluid and not dissolvable by said printing fluid and which has a viscosity sufficiently low to permit removal by electrostatic attraction and a conductivity less than 10^{12} ohm/cm, separating the members whereby the liquid is removed from the cells by electrostatic attraction in the charged areas of the image and hardening the liquid remaining in the cells of said second member to form an imaged gravure printing member.

3,948,656

METHOD FOR THE PREPARATION OF PHOTOCONDUCTIVE CdSSe

Kenneth H. Maxwell, Palmyra, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 16, 1974, Ser. No. 470,491

Int. Cl.² G03G *5/02*, *5/08*; **C01B** *19/00*

U.S. Cl. 96—1.5 **24 Claims**

9. The pigment of claim 8 wherein the inert gas is selected from the group of helium, neon, argon, krypton and xenon.

3,948,657

PHOTOSENSITIVE MATTER FOR ELECTROPHOTOGRAPHY AND METHOD OF THE PRODUCTION THEREOF

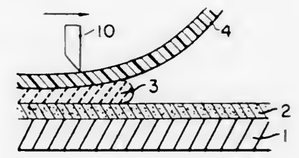
Hideo Yoshikawa; Umi Tosaka; Takehiko Matsuo, all of Tokyo, and Hirokazu Negishi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1969, Ser. No. 868,135

Claims priority, application Japan, Nov. 7, 1968, 43-81542; Mar. 20, 1969, 44-21404; Mar. 21, 1969, 44-21215

Int. Cl.² G03G *5/05*, *5/087*; **B32B** *31/06*, *31/12*

U.S. Cl. 96—1.5 **14 Claims**



10. A method for producing an electrophotographic photosensitive member comprising the steps of applying, to the exposed surface of a layer of photoconductive material on a base, a localized quantity of a polymeric solventless-type liquid resin adhesive containing dispersed therein fine grains of a photoconductive material having the same composition as the photoconductive constituent in said layer of photoconductive material, laying over said adhesive a pellicular layer of insulative material, and applying pressure with a traveling motion to the exposed surface of said pellicular layer to spread said adhesive uniformly between said respective layers of photoconductive and insulative material to create a second photoconductive layer $\leq 10\ \mu$ thick which simultaneously bonds said pellicular layer to said first mentioned layer of photoconductive material, said first mentioned layer of photoconductive material being produced by mixing said photoconductive constituent with a resin binder and applying the mixture to said base, and said polymeric solventless-type liquid adhesive being employed in greater proportion to said fine grains of photoconductive material than said resin binder is in relation to said photoconductive constituent whereby said second photoconductive layer is formed with an appreciably higher electrical resistance than said first mentioned layer of photoconductive material.

11. A method for producing an electrophotographic photosensitive member comprising the steps of coating the exposed surface of a layer of photoconductive material on a base with a liquid polymeric material and curing said polymeric material to provide a layer of insulative material impermeable to polymeric solventless-type liquid resin adhesive material for sealing the surface of said layer of photoconductive material, thereupon applying, to the exposed surface of said impermeable layer, a localized quantity of a polymeric solventless-type

liquid resin adhesive, laying over said adhesive a pellicular layer of insulative material, and applying pressure with a traveling motion to the exposed surface of said pellicular layer of insulative material to create an adhesive layer by spreading said adhesive uniformly between said impermeable layer and said pellicular layer and to bring said pellicular layer into intimate contact with the layer of adhesive thus formed and within 10 μ from said surface of said impermeable layer.

3,948,658

BICHARGE PHOTOCONDUCTIVE ZINC OXIDES CONTAINING IODINE

Robert S. Bowman, Pittsburgh, Pa., assignor to St. Joe Minerals Corporation, New York, N.Y.

Filed July 26, 1973, Ser. No. 382,641
Int. Cl.² G03G *5/04*
U.S. Cl. 96—1.8 **5 Claims**

1. A method of producing bicharge photoconductive zinc oxide which comprises heating photoconductive zinc oxide in air to a temperature of from about 100°C to about 500°C. in the presence of iodine in an amount of from about 0.005 to about 0.1 percent by weight of the zinc oxide or an inorganic or organic iodide containing an equivalent amount of iodine for a time sufficient to distribute uniformly said iodine or iodide throughout the mass of said zinc oxide.

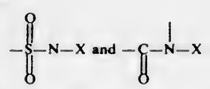
3,948,659

METHOD OF PROCESSING COLOR PHOTOGRAPHIC MATERIALS

Seiya Yamaguchi; Isao Shimamura; Keiichi Adachi, and Hidefumi Sera, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Mar. 11, 1974, Ser. No. 449,810
Claims priority, application Japan, Mar. 9, 1973, 48-27666
Int. Cl.² G03C *5/32*
U.S. Cl. 96—60 R **11 Claims**

1. A bleaching method for a color photographic material which has been subjected to imagewise exposure and development, said bleaching method comprising processing the developed photographic material with an aqueous solution containing (1) a metal complex salt of an organic acid as a bleaching agent, said metal selected from the group consisting of iron (III), cobalt (III) and copper (II), and (2) a compound



represented by the general formula



wherein A represents —COR, —SO_2R, or R; B represents —COR′, —SO_2R′, a hydrogen atom or an alkali metal atom, at least one of A and B being —COR, —SO_2R, —COR′ or —SO_2R′; X represents a halogen atom; and R and R′ each represents an akyl group, an aralkyl group or an aryl group; said R and R′ may combine to form a cyclic compound selected from the group consisting of a N-halogen phthalimide, a N-halogen succinimide, a N-halogen saccharin, a N-halogen barbituric acid, a N-halogen hydantoin and a N-halogen isocyanuric acid, and said cyclic compound may have two or more nitrogen atoms each substituted with a halogen atom.

3,948,660

METHOD FOR THE MANUFACTURE OF FRESNEL LENSES USING LIGHT-SENSITIVE MATERIALS

Reinhold Deml, Munich, and Ulrich Greis, Weyarn, both of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Filed Aug. 2, 1973, Ser. No. 385,192
Claims priority, application Germany, Aug. 5, 1972, 2239853
Int. Cl.² G03C *5/00*, *11/00*, *5/04*
U.S. Cl. 96—38.3 **15 Claims**

1. A method of forming a circular one-focal-point Fresnel lens from a layer of light-sensitive material of the type which after exposure to light can be made to undergo a change of optical path-length dependent upon the amount of exposure to light by subjecting the light-sensitive material to a predetermined reaction, comprising, in combination, the steps of positioning a layer of such light-sensitive material coincident with the focal surface of a circular phase zone lens comprised of concentric annular lens components whose successive radii are proportional to the square roots of successive integers and whose successive focal lengths are inversely proportional to the square roots of the respective integers so as to together define a focal surface each portion of which is spaced from the phase zone lens by a distance inversely proportional to the square root of the distance of the portion from the central symmetry axis of the circular phase zone lens; directing light towards that side of the circular phase zone lens which faces away from the layer of light-sensitive material, so that the light emerges through that side of the circular phase zone lens which faces towards the layer of light sensitive material and impinges upon the layer of light-sensitive material; and converting the exposed layer of light-sensitive material into a circular one-focal-point Fresnel lens by subjecting the light-sensitive material to the predetermined reaction to cause each exposed portion of the layer of light-sensitive material to undergo a change of optical path-length corresponding to the exposure of such portion.

3,948,661

PROCESS FOR DIAZO-TYPE MULTICOLOR REPRODUCTION

Kouzi Nihyakumen, Hirakata; Taizo Yokoyama, Osaka; Yasuo Ueda, Kitano; Yasutcki Kamezawa, Osaka, and Tatsuo Aizawa, Kuwata, all of Japan, assignors to Mita Industrial Company Ltd., Osaka, Japan

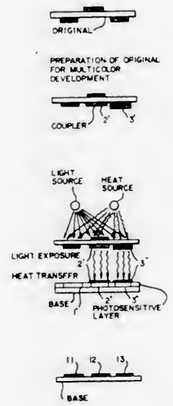
Continuation of Ser. No. 308,502, Nov. 21, 1972, abandoned, which is a continuation-in-part of Ser. No. 12,049, Feb. 17, 1970, Pat. No. 3,715,213. This application Sept. 30, 1974, Ser. No. 510,693
The portion of the term of this patent subsequent to Mar. 13, 1990, has been disclaimed.
Int. Cl.² G03C *1/58*, *1/52*; B41M *5/00*
U.S. Cl. 96—49 **9 Claims**

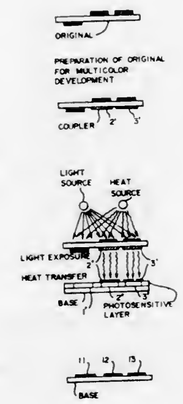
1. A process for multi-color reproduction which comprises

(A) exposing image-wise a diazo-type photosensitive material to actinic light by exposing through an original sheet of an assembly which consists of (i) a transparent or semi-transparent original sheet having opaque image areas on both surfaces and a layer containing at least one thermovolatile or sublimable azo coupler (a), said layer being on one surface of said original sheet with the proviso that coupler (a) is located in only preselected areas which are image areas on firstly the surface to which the layer of coupler (a) is applied, secondly areas contiguous with the opaque image areas on the opposite surface to which the layer of coupler (a) is applied, or thirdly both at the same time, and (ii) a diazo-type photosensitive material having a photosensitive layer containing at least one photosensitive diazonium salt (c), an acidic stabilizer and an azo coupler (b) having a substantially lower rate of coupling with the diazonium salt (c) under the developing conditions than that of the azo coupler (a), said original sheet (i) being superposed on said diazo-type photosensitive material (ii) so that the layer of the azo coupler (a) comes into face-to-face contact with the photosensitive layer;

(B) heating said assembly to thereby heat-transfer said layer of coupler (a) to the corresponding position on the surface of said photosensitive layer, said steps (A) and (B) being performed simultaneously or in the time sequence of (A) to (B) or (B) to (A); and

(C) contacting the exposed photosensitive material with a mixture of ammonia and steam or an alkali-containing aqueous liquid developer to thereby develop said photosensitive material, whereby in the unexposed latent image area of the portion to which the coupler (a) has been heat-transferred, a dye (c)-(a) having a certain hue or





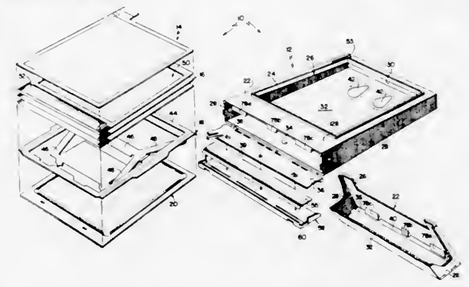
color is formed by the selective reaction of the heat-transferred coupler (a) with the diazonium salt (c) and at the same time, in the unexposed latent image areas to which the coupler (a) has not been heat-transferred, a dye (c)-(b) having a different hue or color from said dye (c)-(a) is formed by the reaction of the coupler (b) with the diazonium salt (c), thus producing a multi-colored copied image.

3,948,662

METHOD OF PROCESSING FILM UNIT WITH PROCESSING SOLUTION WAVE FRONT MODIFYING MEANS

William W. Alston, Jr., Somerville; John J. Driscoll, Andover, and Richard R. Wareham, Marblehead, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 246,701, April 24, 1972, Pat. No. 3,779,770. This application Sept. 20, 1973, Ser. No. 399,149
Int. Cl.² G03C *5/24*, *5/54*, *1/48*; G03D *9/02*
U.S. Cl. 96—63 **1 Claim**



1. A method of distributing a processing fluid between predetermined layers of a film unit provided in a film container which is adapted to be inserted into and supported in a photographic apparatus for locating said film unit in said film container in position for exposure, said film container being of the type which further includes an exposure aperture through which said film unit is adapted to be exposed, a withdrawal slot through which said film unit is adapted to be withdrawn from said film container, said fluid distribution control means in said film container adjacent said withdrawal slot, said method comprising the steps of: progressively advancing said film unit from said exposure position in said film container past

said fluid distribution control means adjacent said withdrawal slot, through said withdrawal slot, and between pressure applying means mounted on said apparatus;

applying a first compressive pressure to said film unit with said pressure applying means to dispense a fluid processing composition, from a container associated with said film unit, between predetermined layers of said film unit and for advancing said fluid along a wave front between said layers as said film unit is advanced relative to said pressure applying means; and

simultaneously applying a second compressive pressure to said film unit with said fluid distribution control means adjacent said withdrawal slot to modify the shape of said liquid wave front to effect a more substantially uniform distribution of said fluid between said layers;

said first compressive pressure being applied across the entire width of an image forming area of said film unit and said second compressive pressure being applied to only a portion of the width of said image forming area.

3,948,663

MULTI-LAYER COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Keisuke Shiba; Hideki Naito; Nobuo Yamamoto, and Masakazu Yoneyama, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 27, 1974, Ser. No. 501,107
Claims priority, application Japan, Aug. 27, 1973, 48-95965
Int. Cl.² G03C *1/76*, *7/16*, *1/84*, *1/38*
U.S. Cl. 96—67 **24 Claims**

1. A multi-layer color photographic light-sensitive material which comprises a support having thereon at least two hydrophilic colloid layers, at least one of the hydrophilic colloid

layers being a light-sensitive silver halide emulsion layer, at least one of the hydrophilic colloid layers containing a basic synthetic polymer and at least one of the hydrophilic colloid layers containing a surface active agent represented by the General Formula (II)



(II)

wherein D_1 and D_2 each represents an aliphatic group having 4 to 20 carbon atoms; and M represents a cation; or the General Formula (III)



wherein D_3 represents an aliphatic group having 6 to 40 carbon atoms; M′ represents a cation; and b represents 1 or 2.

3,948,664

POLYETHYLENE TEREPHTHALATE FILM FOR USE AS SUPPORT FOR RADIOGRAPHIC FILM

Hiroshi Okuyama; Teruo Kobayashi, and Noburo Hibino, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 252,061, May 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 851,853, Aug. 21, 1969, abandoned. This application Oct. 15, 1973, Ser. No. 406,525

Claims priority, application Japan, Aug. 21, 1968, 43-59473

Int. Cl. G03c *1/84*

U.S. Cl. 96—84 R **12 Claims**

1. A process for producing a radiographic polyethylene terephthalate film support, which comprises incorporating into said polyethylene terephthalate at a temperature of about 300°C, 1,5-di(o-methylphenylamino)-4,8-dihydroxyanthraquinone as a coloring compound prior to shaping said polyethylene terephthalate film.

3,948,665

LAMINATES FOR THE MANUFACTURE OF FLEXOGRAPHIC PRINTING PLATES COMPRISING PHOTOCROSSLINKABLE REACTION PRODUCT OF SATURATED POLYESTER GLYCOL, DIISOCYANATE, AND DIOL

Peter Richter, Ludwigshafen; Herbert Stutz, Karlsruhe; Lothar Metzinger, Bad Duerkheim; Otto Volkert, Ludwigshafen; Heinz-Ulrich Werther, Ludwigshafen, and August Wigger, Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Jan. 2, 1974, Ser. No. 429,737

Claims priority, application Germany, Jan. 5, 1973, 2300371

Int. Cl.² G03C *1/94, 5/00;* **G03F** *7/00*

U.S. Cl. 96—86 P **2 Claims**

1. An element for the production of a flexographic printing plate, comprising dimensionally stable base and a photo-crosslinkable layer of a photo-crosslinkable material containing 0.01 to 10 percent by weight of photoinitiator and, if desired, further conventional additives, wherein the photo-crosslinkable material of the layer consists essentially of (a) 70 to 100 percent by weight of a non-crystallizing polyurethane elastomer which is soluble in developer and has been produced by reaction of an aliphatic saturated polyester glycol having a molecular weight of about 400 to 4,000 with an aliphatic diisocyanate and at least one low molecular weight aliphatic diol of which 25 to 100 mole percent is but-1-ene-3,4-diol, as chain extender, wherein the molar ratio is about 3 to 6 parts of diisocyanate and 2 to 5 parts of low molecular weight diol per part of polyester glycol and the NCO/OH molar ratio always being about 0.9 to 1.0 and (b) 0 to 30 percent by weight of an acrylic or allylmonomer which is substantially compatible with the polyurethane elastomer, and the layer A has a Shore A hardness of 30° to 90° in the photo-crosslinked state.

3,948,666

SUPPORT FOR LIQUID PHOTOSENSITIVE RESIN

Yasuhisa Kitanishi, and Hikoichiro Yamada, both of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Apr. 4, 1974, Ser. No. 457,893

Claims priority, application Japan, Apr. 13, 1973, 48-41352; May 2, 1973, 48-48411

Int. Cl.² G03C *1/68*

U.S. Cl. 96—115 P **16 Claims**

1. A liquid photosensitive resin and support therefore for use in preparing a printing plate using a liquid photosensitive resin which includes a mixture of a polymerization initiator activatable by actinic light and a liquid compound having a polymerizable or cross-linkable ethylenic carbon-to-carbon double bond which comprises a liquid photosensitive resin layer and a support, said support consisting essentially of a flexible self-supporting base plate and an adhesive layer thereon for adhering a layer of said photosensitive resin, said adhesive layer being a layer of a cross-linked polyester-polyurethane resin which is the reaction product of (A) a linear polyester-polyurethane resin obtained by reacting a linear hydroxyl-terminated bifunctional polyester resin with a bifunctional isocyanate compound with (B) a polyfunctional isocyanate on the surface of said base plate, the reaction between (A) and (B) being carried out until isocyanate groups disappear.

3,948,667

PHOTOSENSITIVE COMPOSITIONS

Mitsuo Ichikawa, Hachioji; Yasumasa Takeuchi, Yokohama; Takao Miura, Ibaraki; Yoshiyuki Harita; Mitsuru Tashiro, both of Yokohama, and Takahiro Tsunoda, Funabashi, all of Japan, assignors to Japan Synthetic Rubber Company Limited, Tokyo, Japan

Continuation of Ser. No. 264,436, June 20, 1972, abandoned. This application July 1, 1974, Ser. No. 484,982

Claims priority, application Japan, June 21, 1971, 46-44731; June 22, 1971, 46-44991

Int. Cl.² G03C *1/68*

U.S. Cl. 96—115 R **12 Claims**

1. Solvent-developed type photosensitive compositions comprising at least one member selected from the group consisting of cyclized butadiene polymers and copolymers, an organic solvent, and at least one member selected from the group consisting of photosensitizers and photosensitive crosslinking agents which are soluble in the organic solvent.

3,948,668

FLUOROCARBON-CONTAINING PRINTING INK AND PROCESS FOR IMAGE PRINTING

Mason Hayek, and Richard J. Moody, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 15, 1974, Ser. No. 451,503

Int. Cl.² C09D *11/00*

U.S. Cl. 106—22 **1 Claim**

1. In a printing ink comprising a dye or pigment coloring agent, a water or organic liquid vehicle, and a surfactant, the improvement comprising incorporation therein of from 0.01% to 1.0%, based on total weight, of the surfactant

$C_nF_{2n+1}CH_2CH_2O(CH_2CH_2O)_xH$

where n has an average value of about 7 and x has an average value of about 10.6.

3,948,669

GLASSES AND GLASS-CERAMICS CONTAINING RUTILE FIBERS

William T. Brydges, III, and Dennis W. Smith, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 472,142, May 22, 1974, Pat. No. 3,901,719. This application Mar. 28, 1975, Ser. No. 563,153

Int. Cl.² C03C *3/22*

U.S. Cl. 106—39.8 **6 Claims**

1. A composite article consisting essentially of long single crystal rutile fibers of high aspect ratios contained within a glass-ceramic matrix, said article having an overall composition consisting essentially, by weight on the oxide basis, of about 45–65% B_2O_3, 5–30% Al_2O_3, 5–30% TiO_2, and 3–30% RO, wherein RO consists of an alkaline earth metal oxide selected from the group MgO, CaO, SrO, and BaO, and wherein the crystal phase of said glass-ceramic matrix consists essentially of fine grained rutile and $Al_4B_2O_9$.

3,948,670

ALUMINA-CHROME REFRACTORY

Edward L. Manigault, Cincinnati, Ohio, assignor to NL Industries, Inc., New York, N.Y.

Filed Oct. 24, 1974, Ser. No. 517,473

Int. Cl.² C04B *35/10, 35/48*

U.S. Cl. 106—57 **9 Claims**

1. A refractory composition comprising from 70% to 96% tabular alumina, from 0% to 10% calcined alumina, from 1% to 10% milled zircon, from 3% to 10% chromic oxide refractory grains, from 0% to 18% of a phosphorus compound, from 0% to 4% bentonite and from 0% to 10% water, in which the particle size of the chromic oxide refractory grains is −10 mesh with at least 70% of the particles being +200 mesh, all of the percentages expressed on a weight basis.

3,948,671

SIZE-GRADED QUATERNARY BATCH FOR BONDED BASIC REFRACTORY SHAPES

Donald L. Guile, Horseheads, and Robert K. Smith, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed June 17, 1974, Ser. No. 480,285

Int. Cl.² C04B *35/04*

U.S. Cl. 106—58 **9 Claims**

1. A size-graded batch for the production of basic refractory bodies consisting essentially of, with percentages on the weight basis, a mixture of,

dead-burned magnesite and at least one refractory grain consisting essentially of on the oxide basis 50–67% MgO and 33–50% CaO and selected from the group of dead-burned grain and fused grain,

20–30% being a fine magnesite fraction whose particles are substantially all −100 Tyler mesh and composed of said dead-burned magnesite,

10–20% being a fine-intermediate refractory grain fraction whose particles are substantially all in the range of −4+65 Tyler mesh, substantially all at least $\sqrt{2}$ times the size of the largest allowed particle size in said fine magnesite fraction, and composed of said refractory grain,

15–25% being a coarse-intermediate refractory grain fraction whose particles are substantially all in the range of −4+65 Tyler mesh, substantially all at least $\sqrt{2}$ times the maximum allowed particle size in said fine-intermediate refractory grain fraction, and composed of said refractory grain, and

35–45% being a coarse refractory grain fraction whose particles are substantially all in the range of −4+65 Tyler mesh, substantially all at least $\sqrt{2}$ times the maximum allowed particle size in said coarse-intermediate grain fraction, and composed of said refractory grain.

3,948,672

PERMEABLE CEMENT COMPOSITION AND METHOD

Bobby G. Harnsberger, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 429,426, Dec. 28, 1973, Pat. No. 3,861,467. This application Sept. 26, 1974, Ser. No. 509,383

Int. Cl.² C04B *7/02*

U.S. Cl. 106—90 **3 Claims**

1. A treating composition suspended in a hydrocarbon carrier oil consisting of a diesel oil containing from 100 to 800 ppm of naphthenic acids therein for use in forming a permeable cement barrier in the bore hole adjacent to an unconsolidated sand-containing producing formation, said composition consisting essentially of cement, from about 3 to about 12 parts by weight of sand particles having an average mesh size of from about 10 mesh to about 80 mesh, from about 0.7 to about 0.95 part by weight of salt water, each per part by weight of cement, and from 0.1 to 1.0% by weight of xanthan gum, based on the amount of water, and wherein said suspension contains from about 0.5 to 5 pounds of said treating composition per gallon of the hydrocarbon oil fraction.

3,948,673

WATER SOLUBLE SIZING FOR GLASS FIBERS AND GLASS FIBERS SIZED THEREWITH

Kenneth P. Chase, and William N. Stassen, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 19, 1973, Ser. No. 408,235

Int. Cl.² C04B *7/02*

U.S. Cl. 106—99 **19 Claims**

1. A product comprising an aqueous cementitious composition containing glass fibers having a size in contact with the surface of said fibers, said size consisting essentially of at least one water-soluble polymer and a solution rate modifier selected from the group consisting of sulfuric acid, nitric acid, hydrochloric acid, acetic acid, potassium hydroxide, tetramethylammonium hydroxide, sodium hydroxide and glycerol, said solution rate modifier being present in an amount sufficient to alter the rate of solution of said polymer in said aqueous cementitious composition.

3,948,674

LUBRICATED THERMOPLASTIC RESIN COMPOSITIONS

Antony W. M. Coaker, and Elmer E. Cowell, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 107,526, Jan. 18, 1971, Pat. No. 3,809,667. This application Aug. 27, 1973, Ser. No. 392,144

Int. Cl.² C08K *5/10;* **C08L** *1/10*

U.S. Cl. 106—178 **8 Claims**

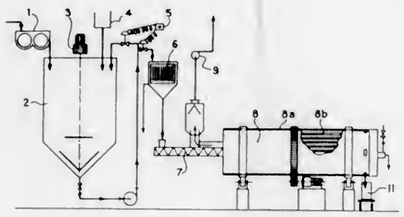
1. A composition of matter comprising a thermoplastic cellulose resin and a copolymer, liquid at about room temperature, of (1) from about 5 to about 95% by weight of an alkylacrylate wherein the alkyl radical contains from 1 to about 12 carbon atoms and (2) from about 95 to about 5% by weight of a dissimilar alkylacrylate wherein the alkyl radical contains from about 2 to about 24 carbon atoms, wherein the acrylic copolymer is present in amounts of from about 0.001 to 8.0 parts by weight per 100 parts by weight of thermoplastic resin.

3,948,675

PRODUCTION OF PARTICULATE PLASTICISED NITROCELLULOSE

Roger Maurice Rat, Saint-Medard-en-Jalles; Francois Ange Pollozec, and Jacques Plazanet, both of Bergerac, all of France, assignors to Societe Nationale des Poudres et Explosifs, France

Filed July 30, 1973, Ser. No. 383,791
Claims priority, application France, Aug. 1, 1972, 72.27745
Int. Cl.² C08L *1/18*
U.S. Cl. 106—195 **9 Claims**



1. A process for the production of particulate plasticised nitrocellulose, which comprises the steps of:
i. forming a suspension of nitrocellulose flock in water,
ii. adding a gelatinising plasticiser to said suspension while stirring the latter, whereby said nitrocellulose becomes impregnated with said plasticiser,
iii. separating the plasticised nitrocellulose obtained from the suspension, and
iv. drying the separated plasticised nitrocellulose at a temperature of up to 60°C.

3,948,676

PROCESS FOR PREPARING HYDROPHOBIC PARTICLES

Siegmar Laüfer, Rheinfelden, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 201,487, Nov. 21, 1971, abandoned. This application May 23, 1974, Ser. No. 472,924
Claims priority, application Germany, Nov. 24, 1970, 2057731
Int. Cl.² C09C *1/28*
U.S. Cl. 106—309 **48 Claims**

1. A process for preparing hydrophobic finely divided oxides of metals or oxides of silicon comprising activating finely divided particles of oxides of metals, oxides of silicon or mixtures of these oxides by heating the particles at about 700° – 1000°C for less than about 60 seconds in a stream of inert gas to completely free the particles of physically adsorbed and chemically bonded water, contacting the activated particles with at least one organosilicon compound and anhydrous ammonia gas for less than about 60 seconds at a temperature of about 20° – 100°C.

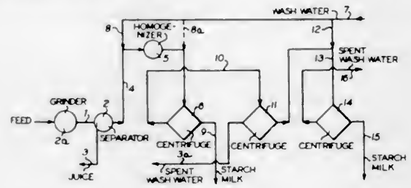
3,948,677

PROCESS FOR THE RECOVERY OF STARCH FROM THE CELLULAR TISSUE OF ROOT CROPS

Heinrich Huster, and Franz Heimeier, both of Oelde, Germany, assignors to Westfalia Separator AG, Oelde Westphalia, Germany

Filed May 3, 1974, Ser. No. 466,949
Claims priority, application Germany, May 9, 1973, 2323248
Int. Cl.² C13L *1/02*
U.S. Cl. 127—66 **5 Claims**

1. Process of recovering starch from cell tissue of a root crop, which comprises:
a. grinding the root crop,
b. separating the ground root crop into a liquid fraction containing impurities and a solids-containing fraction containing starch and cell tissue including cell fibers having included starch,



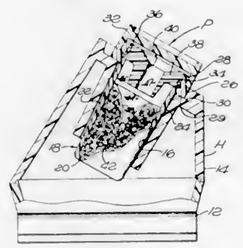
c. adding washing water to the separated solidscontaining fraction and separating the resulting admixture by centrifuging into starch milk and aqueous phase containing fibers in at least one centrifuging step,
d. homogenizing the cell fibers to free the cell fibers of included starch and separating the homogenization product in the centrifuging step (s) of (c) into starch milk and aqueous phase.

3,948,678

SOLDER IRON DRESSING SYSTEM HAVING A TEFLON PACKING

John Dezzani, 10513 Downey Norwalk Road, Norwalk, Calif. 90650

Filed Jan. 7, 1974, Ser. No. 431,261
Int. Cl.² B08B *1/00*
U.S. Cl. 134—6 **6 Claims**



1. A process for treating the working end of a soldering iron while at an elevated temperature comprising the steps of:
providing a tetrafluoroethylene resin material in a porous mass;
placing a non-metallic halide on exposed surfaces of said material to provide a dressing member; and
contacting said dressing member with said working end whereby to sublime a quantity of said halide for treating said working end, as by removing oxide skin.

3,948,679

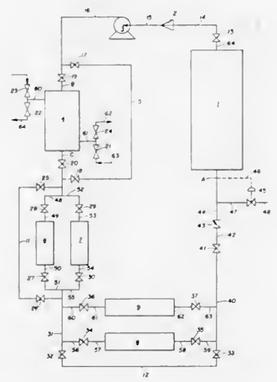
CLEANING LIQUID SYSTEMS INCLUDING CONTROLLED HEATING AND COOLING OF THE LIQUID

George W. Lewis, Metairie, La., assignor to Halliburton Company, Duncan, Okla.

Filed Nov. 27, 1974, Ser. No. 527,795
Int. Cl.² B08B *3/10*
U.S. Cl. 134—10 **25 Claims**

1. A process for dislodging adherent deposits from surfaces in a system having a liquid therein, the system having the surfaces in direct contact with said liquid of the system, which process consists essentially of the sequential steps of:

while maintaining in the system said liquid of the system,
a. contacting the deposit-containing surfaces with said liquid of the system at a first temperature;
b. increasing the temperature of said liquid at a controlled heating rate in the range of about 40° to about 160°F per hour to a predetermined second temperature;
c. maintaining the temperature of said liquid at said second temperature for a first period of time;



d. decreasing the temperature of said liquid at a controlled cooling rate in the range of about 80° to about 320°F per hour to a third temperature; and
e. maintaining the temperature of said liquid at said third temperature for a second period of time to thereby dislodge at least a portion of said deposits from said surface.

3,948,680

LEAD-ACID STORAGE BATTERY CAPABLE OF ACTIVATION BY THE ADDITION OF ELECTROLYTE

George W. Mao, and Anthony Sabation, both of St. Paul, Minn., assignors to Gould Inc., Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 377,525, July 9, 1973, abandoned. This application July 8, 1974, Ser. No. 486,663
Int. Cl.² H01M *4/36*
U.S. Cl. 136—26 **12 Claims**

1. A lead-acid storage battery comprising a container having a plurality of cell compartments and a plurality of battery elements consisting of a plurality of positive and negative charged plates with separators positioned therebetween disposed in the cell compartments, said battery being sealed to at least substantially prevent the ingress of air and said battery elements containing a conditioning amount of a metallic sulfate and residual electrolyte and said battery being otherwise substantially free of electrolyte and being activatable by addition of electrolyte thereto.

3,948,681

FUEL CELL UTILIZING DIRECT HYDROCARBON OXIDATION

Hugh J. Barger, Jr., Woodbridge, and Alayne A. Adams, Lee District, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 28, 1974, Ser. No. 446,886
Int. Cl.² H01M *8/10*
U.S. Cl. 136—86 D **3 Claims**

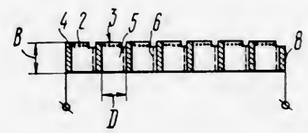
1. A fuel cell of the direct hydrocarbon oxidation variety comprising a container in which is disposed a fuel, a first planar electrode with one face thereof in contact with said fuel, an oxidizing agent, a second planar electrode with one face thereof in contact with said oxidizing agent, and an electrolyte in contact with the other face of each of said first and second electrodes, said electrolyte being the compound $CF_3SO_3H.H_2O$, said compound being a monohydrate of fluorine and carbon sulfonic acid and having a liquid state at the operating temperature of said fuel cell.

3,948,682

SEMICONDUCTOR PHOTOELECTRIC GENERATOR

Ninel Mineevna Bordina, Bolshaya Cherkizovskaya ulitsa, 8, korpus 7, kv. 171; Vitaly Viktorovich Zadde, poselok Severny, 9, linia, 3, kv. 120; Alla Konstantinovna Zaitseva, ulitsa Verkhnyaya, 3, kv. 5; Arkady Pavlovich Landsman, Rizhsky proezd, 3, kv. 140; Dmitry Semenovich Strebkov, Kirovogradsky proezd, 3, korpus 1, kv. 17; Valentina Ivanovna Streltsova, Zarevy proezd, 5, korpus 3, kv. 318, and Vadim Alexeevich Unishkov, ulitsa Bazhova, 15, korpus 1, kv. 142, all of Moscow, U.S.S.R.

Filed Oct. 31, 1974, Ser. No. 519,697
Int. Cl.² H01L *31/06, 31/18*
U.S. Cl. 136—89 **8 Claims**



1. A semiconductor photoelectric generator comprising semiconductor photocells each having a doped region, a base region, a metal current lead to said base region; a metal current lead to said doped region; a working surface receiving incident radiation; rectifying barriers, at least one of said rectifying barriers being provided at a distance from said working surface not exceeding the diffusion length of minority current carriers in said base region; isotype $p\text{-}p^+$ or $n\text{-}n^+$ junctions provided in direct proximity to said working surface; said photocells having the shape of parallelepipeds, at least one linear dimension thereof being commensurate with the diffusion length of minority current carriers in said base region; all said current leads interconnecting said photocells into a generator.

3,948,683

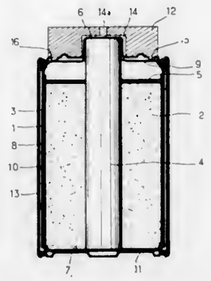
ELECTRIC GENERATORS PARTICULARLY DRY CELL BATTERIES

Maurice M. Garcin, 9, rue de la Moselle, Paris 19eme, France

Filed Oct. 16, 1973, Ser. No. 406,826
Claims priority, application France, Oct. 20, 1972, 72.37208
Int. Cl.² H01M *6/06*
U.S. Cl. 136—107 **11 Claims**

1. The combination of an energy storage cell and protective element therefor comprising
a cell having a casing and electrode means exposed at one end thereof for making electrical connection to said cell;
a generally flat and substantially rigid protective element body of electrically nonconductive material shaped to substantially cover and conceal said electrode means;
breakable retaining means integrally formed on said body for engaging said cell in locking relationship to prevent removal of said body without breakage of said retaining means; and
means at the electrode end of said casing for engaging said retaining means,
said electrode means including a central electrode having a portion protruding from one end of said casing and said casing includes a disk shaped plate surrounding said protruding portions;

wherein said means for engaging said retaining means comprises a plurality of apertures through said plate;



and wherein said retaining means comprises a plurality of deformable projections extending from said body through said apertures.

3,948,684

OXYGEN ELECTRODE AND PROCESS FOR MAKING THE SAME

William A. Armstrong, Ottawa, Canada, assignor to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence, Canada

Filed Oct. 29, 1973, Ser. No. 410,423
Claims priority, application Canada, Nov. 1, 1972, 155352
Int. Cl.² H01M *27/04*
U.S. Cl. 136—120 FC **17 Claims**



1. An improvement in a process for preparing a gas permeable hydrophobic electrode structure in which a manganese dioxide catalyst is bound to both faces of an electrically conductive metal current collecting grid, and in which a hydrophobic semi-permeable membrane is provided on one side of said coated grid, the improvement comprising: producing said manganese dioxide by the step of chemically decomposing an alkali metal permanganate in situ on an activated carbon substrate at a temperature below about 125°C.; and binding said manganese dioxide together within the pore structure of said activated carbon substrate by means of a fluorocarbon polymer.

3,948,685

METHOD FOR MAKING FINE GRAINED METALS FOR GLASS-TO-METAL SEALS

Thomas H. Gray, Pittsburgh, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 399,589, Sept. 21, 1973. This application July 28, 1975, Ser. No. 599,460
Int. Cl.² C21D *7/14*; C22C *38/50*
U.S. Cl. 148—2 **1 Claim**

1. A method for making small grained metals suitable for use in making glass-to-metal seals comprising compositing an alloy consisting essentially of 38–45% nickel, 3–15% chromium, 0.1–1.0% titanium, up to 0.1% carbon and the balance iron and residuals by vacuum melting, solidifying and hot rolling said alloy to a band gauge of from about 0.1–0.15 inches, cold rolling the hot rolled band to an intermediate cold rolled strip gauge from about 0.02–0.08 inches, annealing said strip, cold rolling the annealed strip to final gauge and annealing the cold rolled strip at final gauge, said alloy having a grain size finer than ASTM No. 6.

3,948,686

ZINC DUST PRIMER SYSTEMS FOR METAL SHEETS DEFORMABLE BY NONCUTTING PROCESSES

Karl-Heinz Lochner, Bonn, and Johann Lenzen, Dusseldorf, both of Germany, assignors to Bonaval-Werke GmbH, Bonn, Germany

Filed Oct. 23, 1974, Ser. No. 517,355
Claims priority, application Germany, Oct. 26, 1973, 2353701
Int. Cl.² C23F *7/08, 7/26*; C23C *17/00*
U.S. Cl. 148—6.15 R **12 Claims**

1. An improved zinc dust primer system for metal which primer system can be deformed without suffering damage and which comprises a lower layer (a), applied to a metal layer or base which has been preliminarily treated by phosphating or chromating, consisting of a zinc dust primer having a zinc content of 80 to 95 percent by weight, wherein the improvement comprises a firmly adhering covering film (b) which consists essentially of a mixture of 50 to 70 percent by weight of a substance promoting sliding selected from the group consisting of oil, silicone oil, wax, fat, graphite, molybdenum sulphide and other heavy metal sulphides, and 50 to 30 percent by weight of an organic binder based on high polymers or on substances forming high polymers.

3,948,687

HIGH TEMPERATURE RESISTANT DIFFUSION COATING

Alfonso L. Baldi, Drexel Hill, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. Nos. 304,220, Nov. 26, 1972, and Ser. No. 254,403, May 18, 1972, Pat. No. 3,785,854, and Ser. No. 219,514, Jan. 20, 1972, Pat. No. 3,801,357, and Ser. No. 90,682, Nov. 18, 1970, Pat. No. 3,764,371, said Ser. No. 219,514, and Ser. No. 90,682, each is a continuation-in-part of Ser. No. 837,811, June 30, 1969, abandoned. This application May 7, 1973, Ser. No. 357,616
Int. Cl.² C23F *7/14*
U.S. Cl. 148—6.16 **4 Claims**

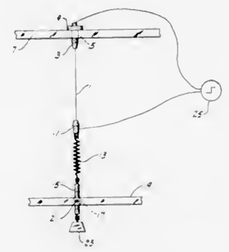
1. A method for protecting aluminum-diffusion-coated martensitic or age-hardenable stainless steel, which method comprises applying to the diffusion coated surface a porous adherent layer of essentially inert colloidal particles of refractory solid then applying on said porous layer a layer consisting essentially of an aqueous solution of chromic acid, phosphoric acid and the magnesium salts of said acids, the solution containing dispersed particles of polytetrafluoroethylene resin less than one micron in size, the magnesium being in a concentration of about 0.9 to about 1.4 mols per liter, the chromate ion concentration about 0.4 to about 0.8 mol per liter, the phosphate ion concentration about 1.5 to about 3.5 mols per liter, and the resin concentration about 3 to about 10 grams per liter and calcining the combination, the first layer weighing about 0.1 to about 0.4 milligrams per square centimeter of surface when dry, and the second layer being made sufficiently heavy so that the combined layers when cured weigh at least about 0.4 to about 1 milligram per square centimeter of surface.

3,948,688

MARTENSITIC ALLOY CONDITIONING

Joel P. Clark, Plainville, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 28, 1975, Ser. No. 554,244
Int. Cl.² C22F *1/10*
U.S. Cl. 148—11.5 R **10 Claims**



1. A process for conditioning an annealed martensitic alloy of titanium and nickel to improve its service life and provide enhanced elongation activity under high operating stress, the process comprising the steps of:

maintaining the alloy under a tensile stress sufficient to strain it beyond its plastic yield point while repeatedly thermally cycling the alloy in a primary temperature range between a lower temperature limit below the temperature at which conversion of martensite to austenite commences on heating and an upper temperature limit at least about equal to the temperature at which essentially all the martensite is converted to austenite on heating; and

thereafter maintaining the alloy at a tensile stress sufficient to strain it beyond its plastic yield point while repeatedly thermally cycling the alloy in a secondary temperature range between a lower temperature limit equal to or higher than the temperature at which conversion of martensite to austenite commences on heating and an upper temperature limit equal to or lower than the temperature at which conversion of austenite to martensite commences on cooling.

3,948,689

CHROMIC-PHOSPHORIC ACID COATED ALUMINIZED STEEL

Alfonso L. Baldi, Drexel Hill, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. Nos. 357,616, May 7, 1973, and Ser. No. 304,220, Nov. 6, 1972, Pat. No. 3,936,539, and Ser. No. 254,403, May 18, 1972, Pat. No. 3,785,854, and Ser. No. 219,514, Jan. 20, 1972, Pat. No. 3,801,357, and Ser. No. 90,682, Nov. 18, 1970, Pat. No. 3,764,371, said Ser. No. 219,514, and Ser. No. 90,682, each is a continuation-in-part of Ser. No. 837,811, June 30, 1969, abandoned. This application Oct. 9, 1973, Ser. No. 404,665
Int. Cl.² B32B *15/18*
U.S. Cl. 148—31.5 **8 Claims**

1. A jet engine compressor member which in normal use is exposed to the weather, said member being a steel that has a surface containing at least 1% chromium covered by an aluminum diffusion case 0.1 to 2 mil thick, the case being coated with a fired layer of a mixture of from about 5 to 100 parts phosphoric acid and about 1 to 25 parts chromic acid, said layer weighing at least about 0.5 milligrams per square centimeter of coated surface.

3,948,690

MOLDED MAGNETIC CORES UTILIZING CUT STEEL PARTICLES

Norman M. Pavlik, Pittsburgh, and James W. Cunningham, Vandergrift, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 396,260, Sept. 11, 1973, abandoned. This application Oct. 24, 1974, Ser. No. 517,700
Int. Cl.² C04B *35/00*
U.S. Cl. 148—31.55 **32 Claims**

25. A microlamination suitable for use in molded magnetic components comprising, a substantially flat, elongated rectangular steel particle having dimensions including from about 0.05 and about 0.10 inch in length, about 0.005 and about 0.05 inch in width and from about 0.002 and about 0.02 inch in thickness, a carbon content of less than about 0.002% by weight, are substantially stress-free and having a magnetically insulating coating covering the surface of the microlaminations.

3,948,691

METHOD FOR MANUFACTURING COLD ROLLED, NON-DIRECTIONAL ELECTRICAL STEEL SHEETS AND STRIPS HAVING A HIGH MAGNETIC FLUX DENSITY

Izumi Matsushita; Takayasu Sugiyama; Masakatsu Sumimoto, and Osamu Honjo, all of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 391,019, Aug. 23, 1973, abandoned, which is a continuation of Ser. No. 183,323, Sept. 24, 1971, abandoned. This application June 21, 1974, Ser. No. 481,890
Claims priority, application Japan, Sept. 26, 1970, 45-83780
Int. Cl.² H01F *1/04*
U.S. Cl. 148—112 **1 Claim**

1. A method for producing a cold rolled nondirectional electrical steel sheet or strip having a high magnetic flux density which comprises:

a. continuously casting molten steel containing 0.003 – 0.1% carbon, less than 4.0% silicon and less than 3.0% aluminum, which three components being controlled within the range defined in FIG. 8, into a slab at a temperature higher by about 30° to 70°C than the liquidus temperature, and solidifying the molten steel at a ratio of cooling water to molten steel of about 0.5 to 3 liters per Kg of steel, so as to produce a slab in which columnar grains cover more than 50% of the whole cross section or of the total thickness of the slab starting from both surfaces.

b. heating the slab uniformly to a temperature in the range of 1000° to 1350°C for a period selected to convert more than about 10% of the volume of the slab into gamma phase without breaking down the slab.

c. hot rolling the slab along the plane perpendicular to the direction of the developing columnar grains with a reduction of greater than about 98% to produce a sheet of intermediate gauge

d. acid pickling the hot rolled sheet

e. cold rolling the sheet with a reduction from about 64 – 84%

f. heating the cold rolled sheet at a heating rate of from about 1.6° to 100°C/second; and

g. annealing the material at a temperature between about 600° to 1200°C for more than 10 seconds.

3,948,692
METHOD OF PREPARING MULTI-LAYER SEMICONDUCTOR HETERO-STRUCTURES ON THE BASIS OF COMPOUNDS $A^{III}B^{V}$ WHERE A^{III} IS A METAL OF GROUP THREE AND B^{V} IS A NON-METAL OF GROUP FIVE

Lev Vasilievich Golubev, ulitsa Karpinskogo, 21, kv. 33, Leningrad; Evgeny Fedorovich Korneev, prospekt 50 letiya Oktyabrya, 54, kv. 13, Chernovitsy, and Jury Vasilievich Shmartsev, prospekt M. Toreza, 9, kv. 1, Leningrad, all of U.S.S.R.

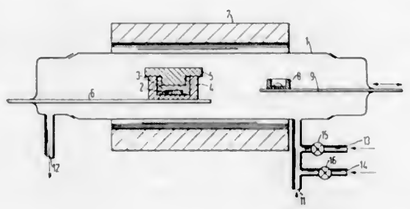
Filed June 24, 1974, Ser. No. 482,595
Int. Cl.² H01L *7/38*
U.S. Cl. 148—171 **4 Claims**

1. A method of preparing a multi-layer semiconductor heterostructure on the basis of compounds $A^{III}B^{V}$, where A^{III} is an element of the third group and B^{V} is an element of the fifth group of the Periodic System, consisting in crystallization of layers of the multi-layer semiconductor heterostructure by passing current pulses through the substrate, liquid phase, the liquid-to-solid interface of the phases and said substrate, and a source selected from a compound of the formula $A^{III}B^{V}$ wherein A^{III} and B^{V} are as defined above.

3,948,693
PROCESS FOR THE PRODUCTION OF YELLOW GLOWING GALLIUM PHOSPHIDE DIODES

Claus Weyrich, Gauting, and Guenter Winstel, Ottobrunn, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed July 23, 1974, Ser. No. 490,997
Claims priority, application Germany, July 27, 1973, 2338264
Int. Cl.² H01L *7/38*
U.S. Cl. 148—171 **4 Claims**



1. A process for the production of yellow glowing gallium phosphide diodes by a liquid phase epitaxial process which comprises covering a substrate with a tellurium doped gallium melt saturated with gallium phosphide, diffusing gaseous oxygen and nitrogen into said melt as dopants, growing a first epitaxial layer on said substrate from said melt, growing a second epitaxial layer over said first layer, injecting vaporized zinc into said second layer during the growth of said second epitaxial layer and controlling the temperature of the layers to cause diffusion of the zinc from said second into said first layer to a predetermined depth.

3,948,694
SELF-ALIGNED METHOD FOR INTEGRATED CIRCUIT MANUFACTURE

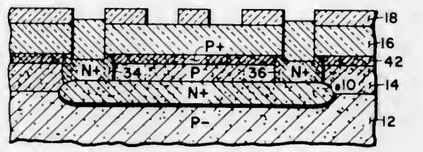
B. David Mills, III, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Apr. 30, 1975, Ser. No. 572,971
Int. Cl.² H01L *21/265*
U.S. Cl. 148—187 **9 Claims**

1. A self-aligned method of manufacturing integrated circuits comprising the steps of:

a. providing a buried layer and an upper layer over a semiconductor substrate, said upper layer and said substrate being of a first conductivity type, and said buried layer being of a second conductivity type opposite to said first conductivity type;

b. forming a single masking means over the upper surface of said upper layer, said single mask means having a predetermined pattern of openings formed therein;

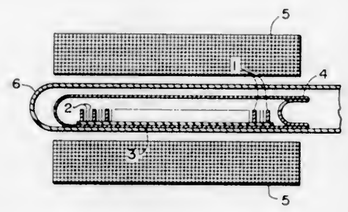


c. forming a semiconductor device by applying impurities through said predetermined pattern of openings formed in said forming step and by applying impurities through portions of said masking means not constituted by said predetermined pattern of openings.

3,948,695
METHOD OF DIFFUSING AN IMPURITY INTO SEMICONDUCTOR WAFERS

Noboru Ryugo; Keizo Inaniwa, and Ichiro Takei, all of Takasaki, Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 7, 1974, Ser. No. 440,358
Claims priority, application Japan, Feb. 7, 1973, 48-14696
Int. Cl.² H01L *7/44*
U.S. Cl. 148—189 **15 Claims**



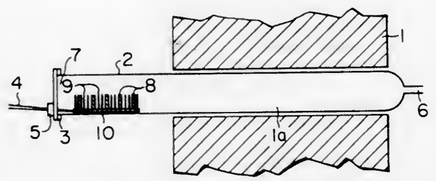
1. A method of diffusing an impurity into a semiconductor wafer, comprising accommodating a semiconductor wafer and an impurity source in a pressure-reduced vessel such that the wafer and the source are arranged with their surfaces opposed, heating said pressure-reduced vessel so as to deposit the impurity on surface portions of said semiconductor wafer, removing said wafer subjected to the deposition from said vessel, and thereafter heating said wafer so as to diffuse said deposited impurity into said surface portions of said semiconductor wafer.

3,948,696
METHOD OF DIFFUSION INTO SEMICONDUCTOR WAFERS

Keizo Inaniwa, and Noboru Ryugo, both of Takasaki, Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 28, 1974, Ser. No. 446,791
Claims priority, application Japan, Feb. 28, 1973, 48-23208
Int. Cl.² H01L *7/44*
U.S. Cl. 148—189 **11 Claims**

1. A method for diffusing an impurity into a semiconductor wafer comprising preparing a diffusion furnace composed of a furnace core tube having an inlet with a releasable closure means and a heater, inserting said semiconductor wafer into said furnace core tube through said inlet, closing said inlet by said closure means, creating a vacuum in the interior of said furnace core tube, forming an atmosphere of an impurity within said tube, depositing the impurity on a surface portion of said semiconductor wafer, and diffusing the impurity into said surface portion of said semiconductor wafer in an oxidizing atmosphere.



3,948,697
GUM PROPELLANT GRAINS WITH INHIBITOR COATING

Joseph E. Flanagan, Woodland Hills; George A. Lo, Canoga Park; Milton B. Frankel, Tarzana, and Vernon E. Haury, Simi, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 189,588, Oct. 15, 1971, abandoned. This application July 11, 1973, Ser. No. 378,094
Int. Cl.² C06B *45/22*
U.S. Cl. 149—11 **8 Claims**

1. A gun propellant consisting of a plurality of inhibited, particulate, grains; each of said grains consisting of:

a fuel,

an oxidizer,

a cellulose binder, and

an inhibitor coating secured to the exterior surface of said grain and consisting of the reaction product of a polyfunctional isocyanate and a polyol--.

3,948,698
SOLID PROPELLANT COMPOSITIONS HAVING EPOXY CURED, CARBOXY-TERMINATED RUBBER BINDER

Donald E. Elrick, Rawlings, and Harry Gilbert, Cumberland, both of Md., assignors to Hercules Incorporated, Wilmington, Del.

Filed Sept. 6, 1967, Ser. No. 667,623
Int. Cl.² C06D *5/06*
U.S. Cl. 149—19.6 **6 Claims**

1. A solid propellant composition comprising a solid oxidizer and a polymeric binder formed by reacting an uncured carboxy-terminated rubber with, as sole curing agent, a mixture of difunctional epoxides and trifunctional epoxides wherein the diepoxide:triepoxide mole ratio in said mixture is 15:1 to 1:1, in the presence of a curing catalyst selected from the group consisting of a chromium salt of an aliphatic carbon acid containing 2 to 22 carbon atoms, chromium naphthenate and vanadium naphthenate, the ratio of epoxy groups in said mixture to carboxyl groups in said binder being in substantially stoichiometric proportions.

3,948,699
HYDROGEN GAS GENERATORS FOR USE IN CHEMICAL LASERS

Orval E. Ayers, Huntsville, and Roy E. Patrick, Redstone Arsenal, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 8, 1974, Ser. No. 522,156
Int. Cl.² C06B *43/00, 27/00, 23/00;* **C01B** *6/10*
U.S. Cl. 149—22 **8 Claims**

1. A solid propellant composition that produces high temperature, chemically pure hydrogen or deuterium from a self-sustaining reaction after said reaction is initiated by a heat source sufficient to initiate said reaction, said solid propellant composition comprising a uniform mixture of a stoichiometric amount of trivalent metal oxide of the formula Q_2O_3, where Q is a trivalent metal selected from iron, aluminum, gallium, cobalt, and indium, said trivalent metal oxide rendered moisture free by drying at a temperature at least 10 percent above that temperature needed to remove water of hydration, and a stoichiometric amount of a complex boron compound selected from the complex boron compounds having the formulas: $M(BH_4)_x$ and $M(BD_4)_x$, wherein x is the valence of the metal (M), M is an alkali metal or an alkali earth metal, H is hydrogen, and D is deuterium, said stoichiometric amount being based on the reaction:

$$3M(BH_4)_x \text{ or } 3M(BD_4)_x + 2(x)\,Fe_2O_3 \rightarrow 3M(BO_2)_x + 4(x)\,Fe + 6(x)\,H_2 \text{ or } 6(x)\,D_2$$

wherein x is as previously identified.

3,948,700
METHOD FOR PRODUCING HIGH TEMPERATURE HYDROGEN

Orval E. Ayers, Huntsville, and Roy E. Patrick, Redstone Arsenal, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 8, 1974, Ser. No. 522,157
Int. Cl.² C06B *23/00, 27/00;* **C01B** *1/00*
U.S. Cl. 149—109.2 **4 Claims**

1. A solid propellant composition that produces high temperature, chemically pure hydrogen or deuterium from a self-sustaining reaction after said reaction is initiated by a heat source sufficient to initiate said reaction, said solid propellant composition comprising a uniform mixture of a stoichiometric amount of ferric oxide (Fe_2O_3) that has been rendered moisture free by drying at a temperature of about 550°C and a stoichiometric amount of an unsolvated compound selected from the unsolvated compounds consisting of unsolvated aluminum hydride and unsolvated aluminum deuteride, said stoichiometric amount being based on the reaction:

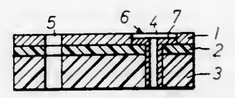
$$2\,AlX_3 + Fe_2O_3 \qquad 2\,Fe + Al_2O_3 + 3\,X_2,$$

wherein X is hydrogen or deuterium.

3,948,701
PROCESS FOR MANUFACTURING BASE MATERIAL FOR PRINTED CIRCUITS

Helmut Fasbender, and Horst Hirschfeld, both of Kassel, Germany, assignors to AEG-Isolier-und Kunststoff GmbH, Kassel, Germany

Continuation of Ser. No. 271,760, July 14, 1972, abandoned. This application Oct. 2, 1974, Ser. No. 511,493
Claims priority, application Germany, July 20, 1971, 2136212; July 20, 1971, 7127826[U]
Int. Cl.² C23F *1/00;* **H05K** *1/00;* **B32B** *31/22*
U.S. Cl. 156—3 **3 Claims**



1. In the manufacture of base material for printed circuits comprising a resin impregnated carrier material and a chemically decomposable heat-hardenable resinous adhesive film on a surface of said carrier, the improvement comprising coating an aluminum foil with an adhesive film of an acrylonitrile-butadiene copolymer in combination with a phenolic resin as said decomposable heat-hardenable resinous adhesive film, placing the film side of the thus-coated foil on a surface of the

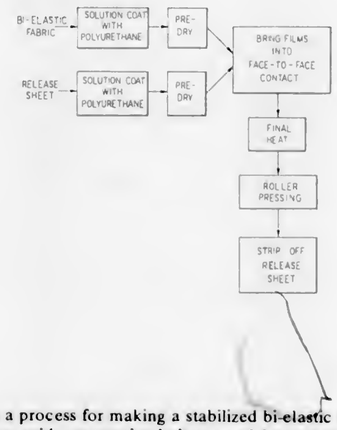
resin impregnated carrier material, bonding said film to said carrier material by applying heat and pressure thereto to form a pressed base material having a foil which can be etched away to expose an adhesive surface which is substantially free of impurities and etching away metal foil from the film before a circuit is formed on said base material.

3,948,702

BI-ELASTIC TEXTILE FABRIC

Hans Theissen, Monchen-Gladbach, Germany, assignor to Krall & Roth Weberei, KG, Monchen-Gladbach, Germany

Filed June 14, 1974, Ser. No. 479,476
Int. Cl.² B32B *31/00*
U.S. Cl. 156—278 5 Claims



1. In a process for making a stabilized bi-elastic fabric construction, said construction being one of the type comprising:

A. a woven bi-elastic fabric whose warp and weft members are each formed of a ply yarn,

B. said ply yarn comprising in combination:

1. an elastomeric thread from about 140 to 280 denier,
2. a coarse, staple, non-stretchable yarn of about 10 to 15 denier, and
3. a fine staple, non-stretchable yarn of from about 4 to 6 denier,
4. said coarse yarn and said fine yarn being so twisted with said elastomeric thread that said elastomeric thread is substantially hidden in said ply yarn when observed in side elevation,

the improvement which comprises stabilizing such fabric construction by the steps of:

A. steam shrinking said fabric in a relaxed state until the individual fibers are brought together into approximate adjoining relationship,

B. decondensing said relaxed, steam shrunk fabric,

C. washing said so decondensed, relaxed fabric in a neutral or slightly alkaline bath while maintaining bath temperature in the range of about 40°C to 50°C.,

D. drying said so washed fabric at about 100°C. while simultaneously stretching as necessary in each of warp and weft directions to permit said fabric, when dry, to be about equally elastic in each of warp and weft directions, and

E. fixing said so dried and stretched fabric at about 175° to 185°C. for about 30 to 40 seconds.

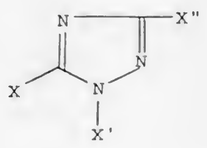
3,948,703

METHOD OF CHEMICALLY POLISHING COPPER AND COPPER ALLOY

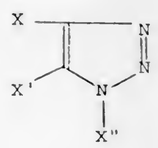
Kazuyoshi Kushibe, Shizuoka, Japan, assignor to Tokai Denka Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1973, Ser. No. 419,030
Claims priority, application Japan, Mar. 27, 1973, 48-34067
Int. Cl.² C09K *13/06*
U.S. Cl. 156—20 9 Claims

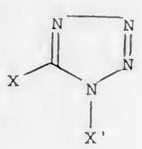
1. Method of chemically polishing copper or a copper alloy which comprises contacting copper or a copper alloy with an aqueous solution containing one or more members selected from azoles having the structure represented by the general formulae



(I)

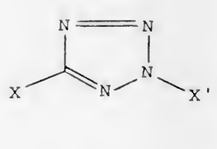


(II)



(III)

, or



(IV)

wherein X, X′ and X″ represent any of hydrogen, amino, aminoalkyl containing 1–3 carbon atoms and alkyl containig 1–3 carbon atoms, hydrogen peroxide, and sulfuric or nitric acid.

3,948,704

METHOD OF AND APPARATUS FOR MAKING LONGITUDINALLY PARTITIONED TUBULAR BODIES AND CONTAINER ASSEMBLIES

Stephen F. Evans, Forest Park, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 13, 1973, Ser. No. 415,483
Int. Cl.² B29D *23/10*
U.S. Cl. 156—69 1 Claim

1. A method of making a collapsible, longitudinally partitioned tubular dispensing container assembly comprising a unitary tubular body having an integral chordal partition wall and a discrete thermoplastic head fitment, said head fitment comprising a downwardly extending cylindrical skirt and an interior chordal divider wall, said fitment being provided with a downwardly opening chordal slot in the bottom edge portion of said chordal divider wall and through the oppositely disposed portions of said skirt disposed adjacent the intersections of said divider wall with the radially inwardly facing surface of said skirt, said method comprising the steps of:

associating said head fitment with a single sheet of flexible, body-forming material so that a top edge portion of said sheet is disposed in said chordal slot,

looping said sheet of material to form said tubular body so that the remaining top edge portion of said sheet is tightly wound about said skirt, and so that circumferentially overlapped areas of said sheet extend longitudinally of said body adjacent the side edges of said partition wall, said sheet having surfaces which are heat sealable to each other and to said skirt,

heat sealing said circumferentially overlapped areas to form two longitudinal seams,

forming a circumferential seam by heat sealing a radially outwardly facing surface of said skirt to the adjacent said remaining top edge portion of said sheet, and

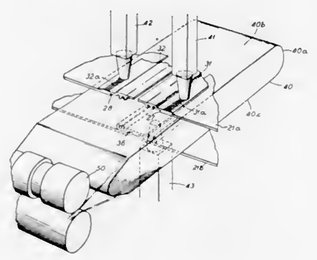
forming an internal chordal seam by heat sealing said top edge portion of said sheet within said slot.

3,948,705

METHOD FOR MAKING MULTIPLE PLASTIC BAGS WITH RECLOSABLE FASTENERS THEREON

Steven Ausnit, 124 E. 61 St., New York, N.Y. 10457

Division of Ser. No. 275,063, July 25, 1972, Pat. No. 3,853,671. This application Oct. 18, 1974, Ser. No. 515,875
Int. Cl.² B32B *31/16*
U.S. Cl. 156—73.4 18 Claims



1. The method of making material for multiple plastic bags with reclosable fasteners thereon comprising,

continuously feeding a continuous strip of thermoplastic film with a bag rear wall portion and with separated front wall edges above the rear wall portion,

continuously feeding a rear fastener strip having a center web portion onto the bag rear wall portion between said edges, feeding from fastener strips having web portions over the respective edges of the film,

and simultaneously sealing said web portions of the strips to the film with continous heat sealing means.

3,948,706

METHOD FOR METALLIZING CERAMIC GREEN SHEETS

Arnold Friedrich Schmeckenbecher, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1973, Ser. No. 424,505
Int. Cl.² C04B *39/00*
U.S. Cl. 156—89 7 Claims

1. A process for making a multilayer ceramic electrical interconnection structure comprising:

providing a thermoplastic sheet on a ceramic green sheet;

forming openings in the said thermoplastic sheet in a desired pattern;

applying a conductive metal paste to the said thermoplastic sheet to fill the said openings and to thereby form a metallized composite structure;

laminating the said composite structure with at least one other similar metallized composite structure; and

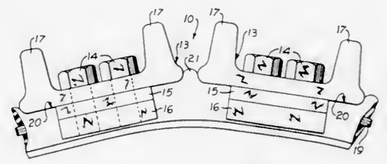
firing the laminated structure by heating from room temperature to the temperature of volatilization of the thermoplastic sheet and then to the sintering temperature of the ceramic green sheet to produce said multilayer ceramic structure.

3,948,707

FLEXIBLE SEALED TRACK BELT

Charles E. Grawley, Peoria; Robert W. Untz, Hanna City, and Marvin E. Beyers, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 282,707, Aug. 22, 1972, Pat. No. D231,700. This application Feb. 13, 1974, Ser. No. 442,153
Int. Cl.² B29D *17/00*
U.S. Cl. 156—137 4 Claims



1. A method of making a sealed track belt comprising:

arranging a band of uncured elastomer in a cylindrical configuration and supporting said band in said configuration;

applying at least one ply of inextensible reinforcing substantially across the width of said band in said cylindrical configuration to form an inextensible cylindrical reinforcing ply;

subsequently applying a layer of uncured elastomer over said cylindrical reinforcing ply, said layer having sufficient thickness to cover said reinforcing ply and to form corner filets between flat shoe sites subsequently formed on the surface of said layer;

thereafter forcing a plurality of flat rectangular plates against the outer surface of said layer of uncured elastomer at equally spaced circumferential intervals with sufficient force to form a plurality of flat track shoe sites; and

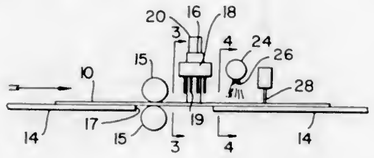
curing said band and layer of elastomers with said flat plates forced against said layer of uncured elastomer thereby forming a plurality of permanent flat track shoe sites in the outer periphery of said belt with an inner circular periphery.

3,948,708

METHOD OF FORMING A PANEL

Richard P. Doerer, Grosse Pointe, Mich., assignor to Van Dresser Corporation, Detroit, Mich.

Filed Mar. 26, 1973, Ser. No. 344,869
Int. Cl.² B31F *1/00*
U.S. Cl. 156—196 **4 Claims**



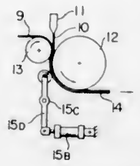
1. A method of forming a curved flexible self-supporting sheetlike structure, comprising the steps of providing a sheet of woodlike fibrous material permeated with waxes and formed of wood fibers in a resin binder and having a substantial resistance to bending, advancing the sheet edgewise into, through and out of a water treatment zone while applying water at a temperature of 180°F. to 212°F. continuously to limited areas of the sheet within said zone progressively from the leading edge to the trailing edge of the sheet to soften the waxes and resin binder and make the sheet sufficiently ductile to permit forming without tearing or blowing, placing the sheet between heated dies and forming a curvature in the sheet by the application of heat and pressure to the opposite sides of said sheet by said dies, and holding the sheet between said dies until the sheet is sufficiently dry to hold its shape.

3,948,709

PROCESS AND APPARATUS FOR PRODUCING EXTRUSION-LAMINATED FILMS

Saburo Ida, Nagoya, and Kuniharu Tobita, Ibaraki, both of Japan, assignors to Oji Yuka Goseishi Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1973, Ser. No. 391,752
Claims priority, application Japan, Sept. 12, 1972, 47-91586
Int. Cl.² B29C *15/00*
U.S. Cl. 156—209 **12 Claims**



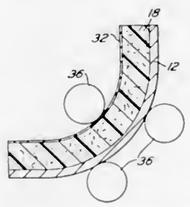
1. In the production of a laminated film by melt extruding a covering resin film on a substrate resin film thereby to form a laminated film and cooling said laminated film, an improved process for producing a laminated film to be laterally stretched by clamping tools clamping the lateral edge parts thereof, which process comprises (1) applying a pressing force to the laminated film undergoing cooling, at a part thereof where said covering resin film can be plastically deformed more easily than the substrate resin film, at parts thereof to be clamped by said clamping tools, from the side of the substrate resin film, and toward and against a hard surface thereby to cause the substrate film to deflect elastically and concavely under said pressing force while retaining the original thickness thereof, the covering resin film undergoing cooling thereby being squeezed and plastically reduced in thickness at its part between said hard surface and the substrate resin film thus deflected, and (2) removing said pressing force from the laminated film thereby to permit the substrate resin film to return from its deflected state substantially to its undeformed planar state, whereby the covering resin film at said part thereof thus reduced in thickness, continuing to retain its reduced thickness and to retain its bonded state to the substrate resin film, follows the substrate resin film as it thus returns to its planar state, and a depressed region of thin film is thereby formed in the laminated film at a part thereof corresponding to said part of reduced thickness of the covering resin film and can be advantageously utilized for positive gripping by said clamping tools.

3,948,710

METHOD OF CONTOURING A PLANAR LAMINATE STRUCTURE

William B. Harvey, 8932 Footed Ridge, Columbia, Md. 21045

Continuation-in-part of Ser. No. 462,397, April 19, 1974. This application Sept. 12, 1974, Ser. No. 505,213
Int. Cl.² B31F *3/00*
U.S. Cl. 156—211 **25 Claims**



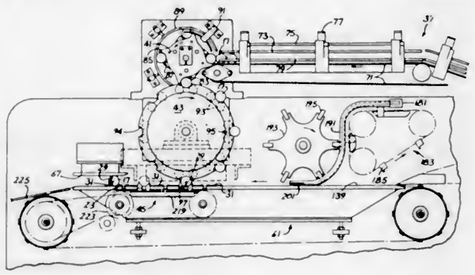
1. A method of contouring a planar laminate structure composed of a porous plastic layer secured to opposingly mounted planar paper layers including the steps of:
a. removing a predetermined thickness of one of said paper layers to form a contour layer surface;
b. moistening said contour layer surface;
c. bending said planar laminated structure to a predetermined radius of curvature, said contour layer surface forming at least a portion of a concave surface of said laminated structure; and,
d. drying said laminated structure to provide a rigid laminate structure having said predetermined radius of curvature.

3,948,711

METHOD AND APPARATUS FOR MAKING DISPENSERS

Robert J. Piatek, Mount Prospect, Ill., assignor to Kraftco Corporation, Glenview, Ill.

Filed Feb. 11, 1974, Ser. No. 441,268
Int. Cl.² B65B *11/00*; B65C *3/26*
U.S. Cl. 156—215 **10 Claims**



1. A method of making dispensing packages each having a dispensing nozzle secured thereon by a strip secured to an outer collapsible wall of a longitudinally seamed package with the nozzle located on a seam-free portion of the package wall, said method comprising the steps of: continuously moving a procession of strips along a path of travel with a predetermined and uniform positioning of the strips relatively to each other, feeding a procession of dispensing packages to an orienting station, orienting the seams of each of the packages to a predetermined position at said orienting station, discharging said oriented packages and continuously forwarding said oriented packages from the orienting station while maintaining a specific orientation of said seam, bringing each of the continuously traveling packages into engagement with one of the continuously traveling strips with a predetermined relationship between an edge of the strip and the longitudinal seam of the package, and conforming and securing the strip to the shape of the outer surface of the wall of the package with the nozzle positioned against the seam free portion of the package wall as the packages move continuously forward.

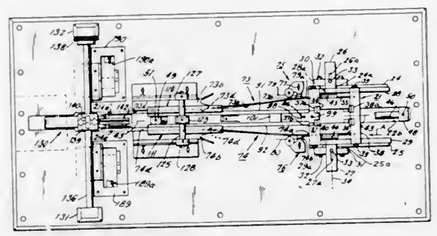
7. Apparatus for making a dispensing package with a dispensing nozzle positioned thereon from a closed, nondispensing package having an imperforate, collapsible wall and a longitudinal seam so that the nozzle is located on a seam-free portion of the outer surface of the closed package, comprising means for continuously moving a procession of the packages along a first path of travel, means in the first path of travel for uniformly positioning the seams of the packages, means for moving a procession of nozzles in a predetermined orientation along a second path of travel, means for continuously moving a succession of closely spaced pressure adhesive strips having an aperture therein intermediate the ends of the strips along a third path of travel, at least a portion of which lies in a plane common to a portion of the second path and in coincidence therewith and at least another portion of which lies in a plane common to a portion of the first path and in coincidence therewith, means for inserting a nozzle in the aperture at the point of coincidence of the second and third paths of travel, means for positioning a package in the space between successive strips at the point of coincidence of the first and third paths of travel so that the seam of each package is located parallel to and near an edge of a strip with nozzle, said package positioning means continuously moving said packages in unison with said continuously moving strips, and means for rolling the package under pressure onto the strip and nozzle.

3,948,712

METHOD AND APPARATUS FOR PRODUCING CLOSED LOOP ACCORDION PLEATED FILTERS

Charles G. Stannard, East Granby, Conn., assignor to Sprinter System of America, Ltd., East Windsor, Conn.

Filed Sept. 30, 1974, Ser. No. 510,221
Int. Cl.² B31F *1/00*
U.S. Cl. 156—218 **23 Claims**



1. A method for folding and joining an accordion pleated filter having a pair of downwardly facing end flaps at opposite ends thereof comprising the steps of:
lowering the filter upon a pair of spaced elongated guides to rest the folds adjacent the end flaps upon said guides;
moving the lowered filter in a feed direction along the twisted downstream ends of said guides to move said end flaps to a horizontal position;
moving the filter off the downstream end of said guides and sliding the end flaps upon a pair of spaced horizontally aligned blades respectively aligned with the downstream ends of said blades;
depositing an adhesive upon one of said end flaps; and
simultaneously swinging the blades downwardly and moving said blades towards one another to firmly press the outer surfaces of said end flaps together whereby said end flaps are joined together by said adhesive means.

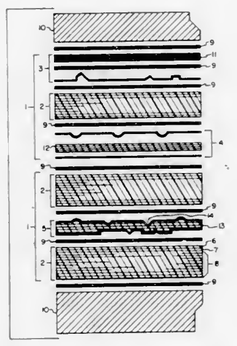
5. Apparatus for joining the end flaps of an accordion pleated filter members and the like comprising:
a pair of elongated guides each having upstream and downstream ends;
said guides being vertically aligned at their upstream ends and having a gradual twist provided therein intermediate the upstream and downstream ends whereby said downstream ends are horizontally aligned;
means for moving said filters onto the upstream ends of said guides and downstream along said guides whereby the gaps between a spaced pair of pleats in said members are supported by said guides and whereby the end flaps are gradually moved from vertical orientation to horizontal orientation as the members move along the length of said guides;
means adjacent the downstream ends of said guides for applying an adhesive to one of said passing outer flaps;
a pair of blade means each being aligned with the downstream ends of said guides for receiving and supporting said outer flaps as a filter member passes downstream from the guides;
said blade means having a pair of rotatably mounted blades;
means for reciprocally moving said blades towards and away from one another;
means responsive to the reciprocal movement for rotating the blades from a horizontal orientation, when the blades are apart, to a vertical orientation, when the blades come together, to press the outer flaps into firm engagement and thereby cause the flaps to be joined to one another by said adhesive.

3,948,713

PROCESS FOR EMBOSSING HIGH PRESSURE DECORATIVE LAMINATES

Daniel L. Cannady, Jr., Allendale, S.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 12, 1973, Ser. No. 423,952
Int. Cl.² B44C *1/24*, *3/08*
U.S. Cl. 156—220 **5 Claims**



1. A method for producing a laminate with an embossed surface comprising the steps:
a. preparing at least one laminating assembly containing at least two laminate lay ups with an embossing assembly disposed therebetween, wherein the laminate lay ups comprise in superimposed relationship an amino-

triazinealdehyde impregnated print sheet and a plurality of thermosetting phenolic resin impregnated core sheets; the embossing assembly comprises two embossed metal sheets, each metal sheet having a patterned embossing side and a support side, the support side having indentations therein which form a pattern on the embossing side, and an accompanying unimpregnated fibrous support layer of a plurality of sheets, each sheet having a thickness of between about 0.001–0.02 inch, said support layer having a thickness of from 0.5–7 times the depth of the deepest indentation per embossed metal sheet, said support layer disposed between the support sides of the embossed metal sheets; wherein the embossing assembly is disposed next to the print sheets of the laminate lay ups,

b. heat and pressure consolidating the laminate lay ups to a unitary structure, and removing the embossing assembly.

3,948,714

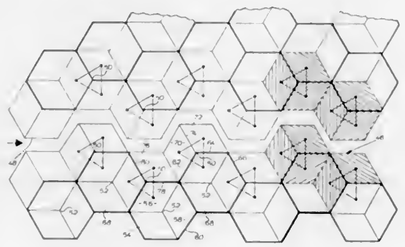
LARGE-AREA REFLECTORS FROM PLASTICS

Fritz Steiner, Wagshurst; Hans-Erich Gubela, Wuppertal-Barmen, and Hans-Erich Gubela, Sasbachwalden, all of Germany, assignors to Firma Hans Gubela, Cologne, Germany

Filed May 23, 1973, Ser. No. 363,175

Int. Cl.² B29C *27/02*; **B29D** *11/00*

U.S. Cl. 156—245 **2 Claims**



1. A method of manufacturing large-area reflectors from plastics which reflectors comprise a plurality of closely adjoining triples of which each is formed by three reflecting square surfaces at a corner of a cube on the back of the reflector, said square surfaces having edges, said cube corner defining a point, in which the large-area reflector is assembled from a plurality of individual flat plastic molded parts of which each includes a plurality of said triples, each of said parts having a plurality of external rims characterized by the steps of:

forming said parts with the rims extending along the edges of said square surfaces and spaced from the point defined by the cube corner, and joining the plastic molded parts with the rims engaging each other complementarily.

3,948,715

AUTO-DETECTING MEANS FOR DETECTING DRAWNOUT TERMINATION END OF OLD PAPER ROLL AND BEGINNING END OF NEW PAPER ROLL IN PAPER SPLICING APPARATUS

Masateru Tokuno, Nishinomiya, Japan, assignor to Rengo Co., Ltd., Osaka, Japan

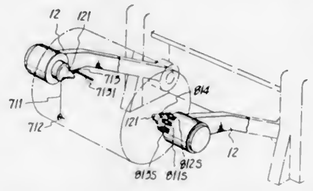
Filed Nov. 6, 1973, Ser. No. 413,327

Claims priority, application Japan, May 21, 1973, 48-57066; July 25, 1973, 48-84413

Int. Cl.² B65H *19/08*, *25/14*

U.S. Cl. 156—351 **5 Claims**

1. An apparatus for splicing a leading end of a fresh web roll which is releasably attached to said roll and which is not yet unwound, with a running web which is being continuously withdrawn from an expiring web roll, without interrupting the continuous operation thereof which comprises a mill stand, roll supporting means for rotatably supporting said fresh web roll and said expiring web roll in said mill stand in mutually opposed positions, each of said roll supporting means including opposing rotating shaft means supported by arm means, means for rotating said fresh web roll and expiring web roll, respectively, a roll supporting frame disposed above said mill stand and extending from a position above the fresh roll to a position above the expiring roll, said roll supporting frame containing splicing rolls rotatably mounted therein which are adapted to guide the running web, means for suspending the roll supporting frame so that each end thereof may move up and down with the other end thereof acting as a pivot point, means for moving said splicing rolls within said roll supporting frame from one end portion of the roll supporting frame to the other end portion thereof, a web guiding roll disposed above the mill stand and below the roll supporting frame, means for supporting said guide roll in said position, said web guiding roll having a cutting means operatively associated therewith for cutting the web running from the expiring web roll after the splicing operation has been achieved, and a detecting system provided on each of said roll supporting means for



detecting when the expiring roll is becoming depleted, said detecting system comprising a plurality of proximity switches disposed on one of the arms of the roll supporting means and a detector element attached to the shaft means of said arm and rotatable therewith, a pin inserted into the end face of the web roll at a point near the other shaft means of said web roll, said pin being connected to said shaft means by a wire, a limit switch located in close proximity to said other shaft means so that as the pin becomes disengaged from the web roll due to its reduction in size, said pin or the wire associated therewith will strike and actuate the limit switch which in turn moves the splicing rolls and renders the proximity switches responsive to the detector element, the detection of the detector element by the proximity switches lowering the roll supporting frame to cause the running web to contact the guide roll containing the cutting means and to bring it into engaging relationship with the fresh, fully wound web roll, and to actuate the cutting means, whereby the leading end of the fresh web roll is spliced with the running web of the expiring roll and said running web is cut free from said expiring roll.

3,948,716

PREPARATION OF MOULDING COMPOUNDS

David Philip Fry, Cardiff, Wales, assignor to BP Chemicals International Limited, Great Britain

Filed Oct. 1, 1973, Ser. No. 401,977

Claims priority, application United Kingdom, Oct. 11, 1972, 46786/72

Int. Cl.² C09J *5/06*

U.S. Cl. 156—324 **14 Claims**

1. A process for the preparation of an unsaturated polyester resin based sheet moulding compound which comprises (i) impregnating a continuous web of fibrous reinforcement with a liquid unsaturated polyester resin system consisting essentially of an unsaturated polyester, a liquid copolymerisable monomer, a polymerisation initiator and a gelling agent for the copolymerisable monomer, said gelling agent being capable of forming stable gels of the copolymerisable monomer when heated to a temperature below the temperature at which cross-linking of the system occurs, (ii) subsequently heating the impregnated web to a temperature sufficient to cause the gelling agent to gel the copolymerisable monomer almost instantaneously and (iii) recovering from said heating a sheet moulding compound ready for use without further maturation.

3,948,717

TIRE BUILDING DRUM

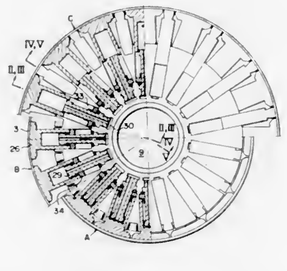
Masayoshi Suzuki, Kodaira, and Kazuo Ozaki, Higashiyamato, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Apr. 14, 1975, Ser. No. 568,053

Claims priority, application Japan, Apr. 15, 1974, 49-42637

Int. Cl.² B29H *17/14*, *17/22*

U.S. Cl. 156—415 **12 Claims**



1. A tire building drum comprising:

a main tire building drum including a plurality of first main arcuate segments circumferentially spaced apart from each other and a plurality of second main arcuate segments each of which is interposed between said first arcuate segments to define said main tire building drum in the form of a cylindrical shape with said first main arcuate segments for holding a circumferential central portion of a composite annular tire member;

a pair of auxiliary tire building drums partially engageable with the radially inner surfaces of the opposite end portions of said main tire building drum to axially be slidable toward and away from the equatorial plane of said main tire building drum, each auxiliary tire building drum including a plurality of first auxiliary arcuate segments disposed opposingly to said first main arcuate segments and a plurality of second auxiliary arcuate segments disposed opposingly to said second main arcuate segments to define said auxiliary tire building drum in the form of a cylindrical shape with said first auxiliary segments for holding axial opposite end portions of said composite annular tire member;

a rotary shaft carrying thereon said main and auxiliary tire building drums for rotation of said main and auxiliary tire building drums;

first diameter control means for expanding and collapsing said first main and auxiliary arcuate segments between a collapsed state and an ultimately expanded state through a partially expanded state;

second diameter control means for expanding and collapsing said second main and auxiliary arcuate segments between said collapsed state and said ultimately expanded state; and

a pair of slide means for axially sliding said auxiliary tire building drums towards and away from the equatorial plane of said main tire building drum.

3,948,718

APPARATUS FOR PRESSING A MOVING WEB OF MATERIAL AGAINST A SUPPORTING SURFACE PARTICULARLY TO A HEATING PART

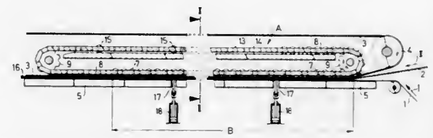
Hans Mosburger, Weiherhammer, Germany, assignor to BHS-Bayerische Berg-Hutten-und Salzwerke Aktiengesellschaft, Munich, Germany

Filed Feb. 28, 1974, Ser. No. 446,718

Claims priority, application Germany, Mar. 2, 1973, 2310613

Int. Cl.² B32B *31/04*

U.S. Cl. 156—543 **10 Claims**



1. An apparatus for pressing a moving web of material, specifically a web of corrugated cardboard, against a stationary supporting surface structured as a heating part, comprising successively arranged press members acting upon the web of material, which according to the desired degree of pressing can be transferred by adjustment means from an inoperative position into an operative position thereby increasing the press surface, wherein the successive press members and adjustment means supporting the latter are displaceable parallel to the conveying direction of the web of material, their number being increasable in operative position for extending the press surface and decreasable for reducing said press surface.

3,948,719

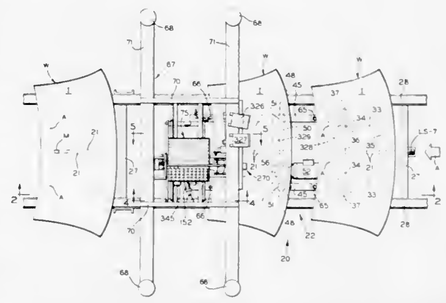
MIRROR MOUNT APPLYING METHOD AND APPARATUS

Robert R. Beckham, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Jan. 30, 1975, Ser. No. 545,529

Int. Cl.² B32B *31/00*; **B65H** *29/00*

U.S. Cl. 156—556 **35 Claims**



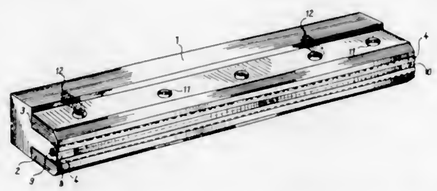
1. Apparatus for applying a mirror mount on a windshield comprising: a frame; means on said frame for supporting a windshield in a generally horizontal plane; a carriage mounted on said frame for movement relative thereto transversely across said windshield supporting means; means including a press member mounted on said carriage for receiving a mirror mount; means for locating said carriage relative to said windshield in a position orienting said press member is a desired relation to said windshield; and means for actuating said press member upon attainment of said desired relation to apply said mirror mount in a desired region on said windshield.

3,948,720

WELDING JAW

Wilhelm Reil, Bensheim-Auerbach, Germany, assignor to Altstaedter Verpackungs-Vertriebs GmbH, Pfungstadt, Germany

Filed July 29, 1974, Ser. No. 492,431
Claims priority, application Germany, Aug. 10, 1973, 2340557
Int. Cl.² B32B 31/20
U.S. Cl. 156—583 13 Claims



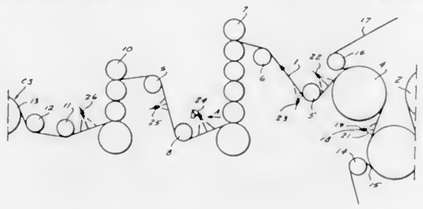
1. A welding jaw comprising a carrier of thermally conductive material, a surface to said carrier, two spaced apart parallel heating elements on said surface, said elements having outer surfaces remote from the carrier and being electrically insulated from said carrier, the part of said surface of said carrier which lies between said elements being at a greater distance from said outer surfaces of said elements than further parts of said surface of the carrier located laterally of said elements, and means to cool the carrier, whereby, when said elements contact, compress and weld thermoplastics material in a welding zone, softened material contacts at least said further parts of said surface of said carrier, to be cooled, and thus hardened, thereby.

3,948,721

METHOD AND APPARATUS FOR WETTING THE WEB IN PAPER MAKING MACHINES

Karl H. Winheim, Gustav-Freytag-Strasse 35, 6000 Frankfurt am Main, Germany

Filed Sept. 3, 1974, Ser. No. 502,399
Int. Cl.² D21F 11/00
U.S. Cl. 162—207 24 Claims



1. Apparatus for wetting a continuous web of at least partially dried paper which is moved in a paper making machine along a predetermined path and in a predetermed direction toward a collecting station where the web is converted into a roll, comprising a plurality of wetting units including a first wetting unit adjacent to a first portion and a second wetting unit adjacent to a second portion of said path, said second portion of said path being located downstream of said first portion, as considered in said direction, and each of said units including a plurality of spraying devices forming at least one row extending substantially transversely of the respective portion of said path, each of said devices having means for directing at least one spray of atomized liquid against one side of the moving web and each wetting unit further comprising a substantially cylindrical member located downstream of the respective spraying devices, as considered in said direction, and engaging the freshly moistened side of the web to distribute the liquid in the material of the web.

21. A method of treating a continuous web of paper in a paper making machine, particularly a web of newspring paper, comprising the steps of drying the web; transporting the dried web along a predetermined path and in a predetermined direction toward a station where the web is converted into a roll; and increasing the moisture content of the web in a plurality of successive stages in a plurality of different portions of said path, each of said stages comprising spraying atomized liquid onto one side of the moving web in the respective portion of said path and thereupon mechanically distributing the freshly sprayed liquid at the respective side of the web to promote the penetration of liquid into the material of the web.

3,948,722

WARP KNITTED PAPER MAKER'S FELT AND METHOD FOR THE PRODUCTION THEREOF

John Brian Wheeldon, and David Gill, both of Blackburn, England, assignors to Scapa-Porritt Limited, Blackburn, England

Filed July 29, 1974, Ser. No. 492,676
Claims priority, application United Kingdom, July 28, 1973, 36022/73
Int. Cl.² D21F 7/08
U.S. Cl. 162—289 13 Claims

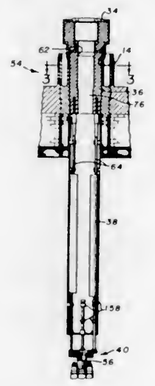
1. In a paper making machine having a paper maker's felt therein for supporting paper during the manufacture of the paper, the improvement comprising a dimensionally stable warp knitted paper maker's felt, said warp knitted paper maker's felt including a plurality of interlocked yarns having a weight per unit length equivalent to at least 500 denier.

3,948,723

DEVICE FOR FACILITATING THE INSERTION AND WITHDRAWAL OF FUEL ASSEMBLIES FROM A NUCLEAR REACTOR

Christo Andrea, Windsor Locks, and Edward Arnold Siegel, Bloomfield, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 2, 1974, Ser. No. 430,217
Int. Cl.² G21C 19/20
U.S. Cl. 176—30 4 Claims



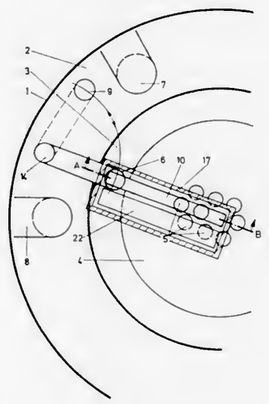
1. In combination a nuclear reactor and a fuel subassembly and isolating device for the reactor, said reactor including a vessel containing a coolant, a core surrounded by said coolant, said core containing a plurality of fuel subassemblies, said fuel subassemblies including handle means on the upper ends thereof, each of said handle means being configured to form a camming surface, and a closure head for said vessel containing an access port positionable above the various fuel subassembly locations; said centering and isolating device comprising: plug means for insertion into said access port, said plug having means for limiting penetration thereof into said port and further including a longitudinally extending opening therethrough of a size to permit passage of a fuel subassembly; an elongated structural tube attached to the lower end of and extending downwardly from said plug means; a downwardly extending camming tube vertically disposed under said structural tube; means for interconnecting said structural tube and said camming tube, said means permitting limited radial movement of said camming tube relative to said structural tube and being capable of raising and lowering said camming tube relative to said structural tube; said camming tube having a larger internal cross section than the external cross section of said fuel subassemblies and being configured to engage said camming surfaces of adjacent fuel subassemblies which lowered about a selected subassembly to bring said camming tube into axial alignment with said selected subassembly; whereby upon lowering said camming tube into said reactor core to isolate a selected fuel subassembly radial movement of said camming tube occurs if said tube is misaligned with said subassembly to thereby bring said tube and said subassembly into axial alignment with one another.

3,948,724

DEVICE TRAVELING IN NUCLEAR REACTOR ROTARY COVER FOR HANDLING ROD-SHAPED MEMBERS IN THE REACTOR

Helmut Rothfuss, Bensberg, Germany, assignor to Interatom Internationale Atomreaktorbau GmbH, Bensberg, Cologne, Germany

Filed Jan. 9, 1974, Ser. No. 431,966
Claims priority, application Germany, Jan. 20, 1973, 2302831
Int. Cl.² G21C 19/20
U.S. Cl. 176—30 7 Claims



1. A device for handling rod-shaped members of a nuclear reactor comprising a reaction vessel, a reactor core containing rod-shaped members in the reaction vessel, a rotary cover on the reaction vessel, means for rotating the rotary cover, a slot in said rotary cover, a hoisting unit arranged on said rotary cover, means for moving said hoisting unit along said slot, a grip for grasping a rod-shaped member, transmission means interconnected with said hoisting unit for movement of said grip in the slot, whereby through rotation of said rotary cover and movement of said hoisting unit along the slot, said grip may be moved into position for transfer of any desired rod-shaped member.

3,948,725

NEUTRAL PROTEASE USEFUL FOR ANIMAL TISSUE AND CELL CULTURE

Yoshio Irie, Matsudo, Japan, assignor to Godo Shusei Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 474,771, May 30, 1974. This application July 2, 1975, Ser. No. 592,534
Int. Cl.² C12K 9/00
U.S. Cl. 195—1.8 3 Claims

1. A method for dispersing animal tissue, which comprises admixing the animal tissue with a neutral protease having the following characteristics:

a. optimum pH of 8.5 for proteolytic activity to casein,
b. stable within a pH range of 4–9,
c. active within a temperature range of 20°–75° C, with the optimum temperature being 60° C,
d. absence of activity at pH below 3 and pH above 10, and absence of activity upon heating at 65° C for 10 minutes,
e. activity inhibited by ethylenediaminetetraacetate, citric acid, o-phenanthroline, 2,2′-dipyridyl, sodium fluoride, N-bromosuccinimide and iodine,
f. activity enhanced by Ca^{++}, Mn^{++}, Mg^{++}, Fe^{++}, $Fe^{+++}$to and Al^{+++},
g. molecular weight of 35,900 as determined by ultracentrifugal analysis,
h. elemental analysis of 46.57% C, 7.17% H, 31.57% O, 14.48% N and 0.21% S, and
i. cleaves the peptide bonds in the oxidized B-chain of insulin at positions Phe(1)-Val(2), His(5)-Leu(6), His(10)-Leu(11), Glu(13)-Ala(14), Ala(14)-Leu(15), Leu(15)-Tyr(16), Tyr(16)-Leu(17), Leu(17)-Val(18), Gly(23)-Phe(24), Phe(24)-Phe(25), Phe(25)-Tyr(26) and Lys(29)-Ala(30).

3,948,726

PRODUCTION OF CEPHALOSPORIN C

Toshihiko Kanzaki, Hyogo; Yukio Fujisawa, and Haruo Suide, both of Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sept. 30, 1974, Ser. No. 510,862
Claims priority, application Japan, Oct. 1, 1973, 48-110723
Int. Cl.² C12D 9/04
U.S. Cl. 195—36 C 5 Claims

1. A method for producing cephalosporin c, which comprises cultivating a cephalosporin C-producing, polyene-antibiotics-resistant mold belonging to the genus Cephalosporium in a culture medium containing an assimilable carbon source and a digestible nitrogen source to accumulate cephalosporin C in said medium, and recovering the accumulated cephalosporin C from the medium, said mold being induced from a parent microorganism and having an increased resistance to polyene-antibiotics of not less than 20 percent over the corresponding resistance of the parent microorganism.

3,948,727

BIOLOGICAL INDICATOR AND METHOD OF PRODUCTION THEREOF

Eberhard Steiger, Leipzig, Germany, assignor to VEB Kombinat Medizin-und Labortechnik, Liepzig, Germany

Filed June 7, 1973, Ser. No. 367,988
Int. Cl.² C12K 1/04
U.S. Cl. 195—54 12 Claims

1. Biological indicator for the reproducible testing of chemical sterilizations, consisting essentially of a dried suspension of native germs originating from a spore soil and now free of their soil biotope and a receiving body in which the germs are contained, the indicator being essentially free of germs not sufficiently resistant to have withstood heating at 80°C. for 1 hour and the receiving body being impervious to the germs and permeable relative to the chemical sterilizing agent.

3,948,728
STEROID-Δ-ISOMERASE

Peter Röeschlau; Gunter Lang; Klaus Beaucamp, all of Tutzing, Upper Bavaria, and Erich Bernt, Munich, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim-Waldhof, Germany

Filed Apr. 9, 1975, Ser. No. 566,481
Claims priority, application Germany, Apr. 19, 1974, 2418978
Int. Cl.² C07G 7/028; C12D 13/10; C12K 1/00
U.S. Cl. 195—62 **20 Claims**

1. Steroid-Δ-isomerase, characterized by:
a. a maximum activity at pH 7.5 to 8.0,
b. a Michaelis constant K_m [M] of 2.7×10^{-4} with regard to Δ^5-cholesten-3-one, of 2.5×10^{-4} with regard to Δ^5-pregen-3,20-dione and of 2.2×10^{-4} with regard to Δ^5-androsten-3,17-dione, measured in phosphate buffer of pH 7.5 at an optimum ionic strength of 0.4 to 0.6M and
c. being activatable by surface-active materials or phosphate buffer.

3,948,729
ASSAY OF GENTAMICIN IN BLOOD

Gardner Middlebrook, and W. D. Tigertt, both of Baltimore, Md., assignors to Johnston Laboratories, Inc., Cockeysville, Md.

Filed Mar. 18, 1974, Ser. No. 452,264
Int. Cl.² G01N 33/16; G01T 1/16
U.S. Cl. 195—103.5 R **9 Claims**

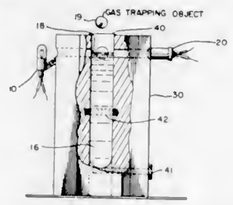
1. A method of determining the level of gentamicin in blood plasma which comprises:
a. Incubating a viable innoculum of a gentamicin susceptible strain of an adaptive urease producing microorganism for an initial period in an alkaline liquid culture medium containing urea and an aliquot of the liquid portion of blood from a patient being treated with gentamicin;
b. Adding a measured amount of C^{14} urea to said medium after said initial period of incubation;
c. Further incubating said culture for a subsequent period in a closed container having a gas space over the alkaline liquid medium at a temperature at which further urease synthesis is interrupted but at which preformed urease activity is enhanced;
d. Acidifying the medium of step (c) after incubation to terminate further activity;
e. Determining the amount of $C^{14}O_2$ in the gas space in said container after said subsequent period of incubation; and
f. Directly comparing said amount of $C^{14}O_2$ with that produced from control media containing an aliquot of pooled normal liquid from human blood and known concentrations of gentamicin processed in the same manner, as specified in steps (a) through (e) above.

3,948,730
CATALASIMETER

Marcel Gagnon, St. Lambert; Michel Baril, Pointe Claire; Francois-Gros D'Aillon, Rosemere, and Claude Savoie, St. Basil le Grand, all of Canada, assignors to Universite du Quebec a Montreal, Montreal, Canada

Filed July 11, 1974, Ser. No. 487,615
Int. Cl.² G01N 31/14
U.S. Cl. 195—103.5 R **2 Claims**

1. A method of measuring the concentration of a catalase enzyme in a medium by reacting it with H_2O_2 of a predetermined concentration to produce a gas, said method comprising the steps of:
a. saturating a gas-trapping object of known weight with said medium containing said catalase enzyme; l
b. placing said gas-trapping object into an open container which contains, to a predetermined depth, a quantity of said H_2O_2; and
c. measuring the time taken for said gas-trapping object to sink into said H_2O_2, and the time taken to produce a quantity of gas sufficient to buoy said gas-trapping object to the surface of said H_2O_2, wherein the time taken for said gas-trapping object to sink into said H_2O_2 and to be buoyed to the surface by said gas is proportional to the concentration of said catalase enzyme in said medium; said time measurement being effected by:
i. breaking at least one light beam with said gas-trapping object upon its entry into said fluid to thereby start a counter; and



ii. breaking said at least one light beam with said gas-trapping object when said gas-trapping object is buoyed to said surface, to thereby stop said counter, thereby determining the elapsed time between successive breakings of said at least one light beam; and
d. said time measurement being delayed for a predetermined time after said gas-trapping object has broken said beam upon entry into said H_2O_2 in said container.

3,948,731
METHOD AND APPARATUS FOR MEASURING REACTANT CONCENTRATIONS AND QUANTITIES

James C. Weaver, Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 24, 1974, Ser. No. 517,422
Int. Cl.² C12K 1/04
U.S. Cl. 195—103.5 R **8 Claims**

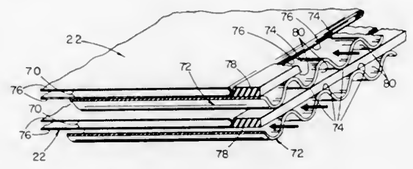
4. A process for measuring the concentration of a substrate in a liquid which comprises calibrating an apparatus suitable for reacting said substrate to form and measure the amount of a vaporous product by contacting a known amount of substrate with a fixed amount of enzyme or microorganism and measuring the amount of vaporous product, said apparatus comprising a membrane permeable to a vaporous product formed when said substrate reacts when contacted with a microorganism or an enzyme, said enzyme or said microorganism being immobilized adjacent said membrane, means for contacting said enzyme or microorganism with said substrate to produce a vaporous product and means for measuring directly the amount of said vaporous product passing through said membrane and thereafter contacting said fixed amount of enzyme or microorganism with a liquid containing said substrate and measuring the amount of said vaporous product passing through said membrane.

3,948,732
CELL CULTURE ASSEMBLY

Ihsan A. Haddad, Bedford, and Alvin R. Arsenault, Burlington, both of Mass., assignors to Instrumentation Laboratory, Inc., Lexington, Mass.

Continuation of Ser. No. 365,535, May 31, 1973, Pat. No. 3,887,436. This application Aug. 22, 1974, Ser. No. 499,515
Int. Cl.² C12B 1/00
U.S. Cl. 195—127 **9 Claims**

1. A replaceable, sterilizable cell growth assembly comprising a tubular chamber of gas permeable liquid impermeable material having an inner surface to which cells adhere, said chamber being disposed in a plurality of layers in stacked relation, spacer structure between adjacent layers of said chamber maintaining said adjacent layers spaced from one another to permit gas to contact external surfaces of said layers over substantially their entire lengths, supply conduit structure connected to said plural layer chamber for introducing culture media for flow through each plural layer chamber, and return conduit structure connected to said plural layer

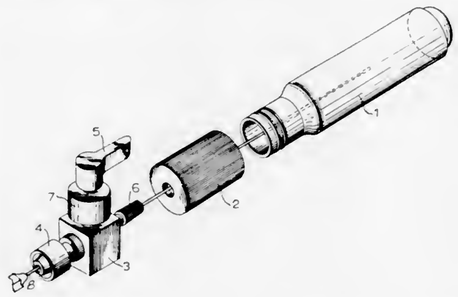


chamber for receiving culture nutrient media from said plural layer chamber structure, said supply and return conduits each being adapted to be detachably connected to cooperating structure.

3,948,733
SIMPLIFIED PROTEIN HYDROLYSIS APPARATUS

Edith J. Conkerton, New Orleans, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Dec. 12, 1973, Ser. No. 423,959
Int. Cl.² C12B 1/14
U.S. Cl. 195—142 **3 Claims**



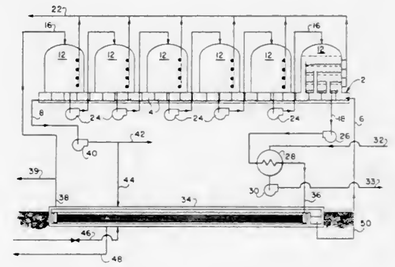
1. A new simplified hydrolyzing apparatus capable of operating under a positive pressure, comprising:
a. a chamber for placing a sample mixture,
b. an inert fitting means for attaching the chamber to a tapered connection,
c. a two-way valve containing an on-off control with a leak-proof sealing means, and a Luer taper inlet connection capable of attaching to said inert fitting means,
d. a means to connect the two-way valve to an evacuating device, said hydrolyzing apparatus capable of retaining positive internal pressures from about 16 to about 59 pounds per square inch.

3,948,734
DIRECT CONTACT MULTI-STAGE FLASH DESALINATION

Arthur L. Kohl, Woodland Hills; Thomas T. Shimazaki, Granada Hills, both of Calif., and William B. Suratt, Fort Lauderdale, Fla., assignors to The United Sates of America as represented by the Secretary of the Interior, Washington, D.C.

Filed July 23, 1974, Ser. No. 491,012
Int. Cl.² B01D 3/02
U.S. Cl. 202—173 **4 Claims**

1. An apparatus for distillation of brines in a series of condensation chamber modules superimposed over a series of flash chambers, through which a flow of heated brine is maintained and wherein baffle means hermetically sealing each adjacent flash chamber downstream of brine flow at a pressure lower than that pressure which exists within the flash chamber preceding said adjacent flash chamber enabling said brine to flow between said flash chambers, each said module comprising a condensate inlet means and a condensate outlet means, and at least first and second contiguous stages;
said first stage communicating with a first of said flash chambers having a brine inlet, a brine outlet, and a vapor outlet; said first stage comprising a direct condensation chamber having a vapor inlet, a condensate inlet, and a condensate outlet, said condensate inlet including means for distributing condensate in the form of a rain of drops thereof from a source thereof in said second stage, said drops falling by gravity through substantially the entire volume of said first stage; and wherein vapor from said flash chamber flows through said vapor outlet said first flash chamber and into said vapor inlet which is positioned to direct said vapor into and substantially perpendicular to the rain produced by said condensate inlet distributing means;
said second stage communicating with a second of said flash chambers located down the brine stream from said first flash chamber, and having a second brine inlet, a second brine outlet, and a second vapor outlet; and said second

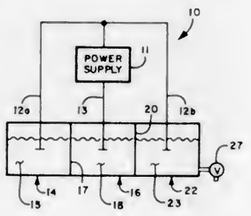


stage comprising a second direct condensation chamber having a second vapor inlet, a second condensate inlet, and a second condensate outlet having structure in common with said first stage condensate inlet and constituting said liquid distributing means, said second condensate inlet including further means for distributing condensate in the form of a rain of drops of condensate having as a source of condensate from at least said module condensate inlet means, said drops falling by gravity through substantially the entire volume of said second stage; and wherein vapor from said second flash chamber flows through said second vapor outlet of said second flash chamber and into said second vapor inlet which is positioned to direct said vapor into and substantially perpendicular to the rain produced by said second condensate inlet distributing means, said second stage further comprising means to evacuate non-condensable gas therefrom and to maintain said second stage at a pressure lower than said first stage, and said source of condensate in said second stage is maintained at a sufficient head of liquid to overcome the pressure differential between said first and second stages and thereby effect flow of condensate from said second stage to said first stage while hermetically sealing said first stage condensation chamber from said second stage condensation chamber.

3,948,735
CONCENTRATION AND PURIFICATION OF PLUTONIUM OR THORIUM

John A. Hayden, Arvada, and Carl E. Plock, Golden, both of Colo., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed June 1, 1973, Ser. No. 365,917
Int. Cl.² C01G *56/00;* **C25C** *1/22*
U.S. Cl. 204—1.5 **6 Claims**

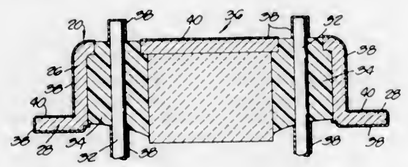


1. A method for separating and concentrating materials selected from the group consisting of plutonium, thorium and mixtures thereof from a feed solution containing said materials as cations comprising passing an electrical current between a first anode in said feed solution and a cathode in a concentration solution through an intermediate cation permeable membrane thereby effecting repulsion of said cations from said feed solution through said cation permeable membrane into said concentration solution, said cations forming an anionic complex in said concentration solution; passing said electrical current between said cathode in said concentration solution and a second anode in a separate purification solution through an intermediate anion permeable additional membrane biasing said anionic complex to permeate said anion permeable additional membrane into said purification solution; and concentrating and recovering said materials within said separate purification solution.

3,948,736
METHOD OF SELECTIVE ELECTROPLATING AND PRODUCTS PRODUCED THEREBY

Robert A. Russell, Rosemont, Pa., assignor to Ametek, Inc., New York, N.Y.

Filed July 22, 1974, Ser. No. 490,737
Int. Cl.² C25D *5/02*
U.S. Cl. 204—15 **12 Claims**



1. A method of forming a gold plating on selected portions of the surface of an article which is or can be made susceptible to electrodeposition thereon of both gold and aluminum metal, comprising the steps of:

a. placing the article to be coated into an electroplating means for electrodeposition of aluminum comprising a suitable electrolyte having disposed therein an anode of aluminum metal;

b. electroplating the article with aluminum by interconnecting the article and the aluminum electrode with a source of electric current so that the article forms the negative electrode and the anode of aluminum metal forms the positive electrode;

c. removing the aluminum coating from the composite thus formed in those portions selected for gold plating; and

d. placing the partially coated composite thus formed into an electroplating means for electrodeposition of gold so as to electroplate the partially coated composite with gold in the selected areas where aluminum coating was removed.

3,948,737
PROCESS FOR ELECTROLYSIS OF BRINE

Edward H. Cook, Jr., Lewiston; Alvin T. Emery, Youngstown, and Blaine O. Schoepfle, Snyder, all of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 212,171, Dec. 27, 1971, abandoned. This application Oct. 9, 1974, Ser. No. 513,376
Int. Cl.² C25B *1/16, 1/26, 13/08*
U.S. Cl. 204—98 **10 Claims**

1. In a process wherein an aqueous alkali metal chloride solution is electrolyzed in an electrolytic cell having an anode compartment containing an anode, a cathode compartment containing a cathode and a substantially fluid impervious permselective barrier separating the anode and cathode compartments, which barrier consists essentially of a hydrolyzed copolymer of tetrafluoroethylene and a sulfonated perfluorovinyl ether having the formula:

$$FSO_2CF_2CF_2OCF(CF_3)CF_2OCF{=}CF_2$$

said copolymer having an equivalent weight of from about 900 to 1600, the improvement which comprises continuously flowing an aqueous alkali metal chloride solution through the anode compartment of said cell, while adding water to the cathode compartment of said cell and passing an electric current between the anode and cathode, introducing said alkali metal chloride solution into the anode compartment at an alkali metal chloride content of at least 250 grams per liter and a pH not in excess of 4.5, controlling the rate of flow of said solution through the anode compartment so that the alkali metal chloride content of the solution removed from the anode compartment is at least 25 grams per liter less than that of the solution introduced into the anode compartment, adding sufficient alkali metal chloride and hydrochloric acid to the solution removed from the anode compartment to increase the alkali metal chloride content to at least 250 grams per liter and lower the pH to at least 4.5, reintroducing the thus-treated solution into the cell anode compartment, and controlling the rate of addition of water to the cathode compartment and the rate of removal of catholyte liquor from the cathode compartment such that the alkali metal hydroxide content of the catholyte liquor removed is not in excess of about 33% by weight.

3,948,738
PROCESS FOR THE REGENERATION OF EXHAUSTED CHROMIUM-PLATING SOLUTIONS BY TWO-STAGE DIAPHRAGM ELECTROLYSIS

Akira Fujii, Kawasaki, Japan, assignor to Kabushiki Kaisha Fuji Kuromu Sha, Yokohama, Japan

Filed Jan. 29, 1974, Ser. No. 438,146
Int. Cl.² C25B *1/00;* **C25C** *1/06*
U.S. Cl. 204—151 **5 Claims**

1. A process for treating an exhausted iron-containing chromium-plating solution by two-stage diaphragm electrolysis to remove iron values contained in said exhausted chromium-plating solution and regenerate the solution, comprising the steps of conducting a first electrolysis with an accompanying electrodialysis of chromic acid values in a diaphragm electrolytic cell partitioned by a diphragm into an anode compartment containing a diluted aqueous chromic acid solution and a cathode compartment containing an exhausted chromium-plating solution; interrupting said first electrolysis when the chromic acid concentration in the anode compartment reaches a predetermined level due to the transfer and extraction of the chromic acid values in the cathode compartment into the anode compartment by the electrodialysis while iron values precipitate in the cathode compartment; withdrawing for use as a chromium-plating bath the solution obtained in the anode compartment; transferring the obtained solution in said cathode compartment into said anode compartment; charging said cathode compartment with an exhausted chromium plating solution; and conducting a second electrolysis to effect the electrolytic oxidation in said anode compartment and to effect the electrodialysis of the chromic acid values in said cathode compartment to transfer and extract the chromic acid values into said anode compartment while the iron values precipitate in the cathode compartment as the hydroxide, thereby increasing the chromic acid concentration in said anode compartment to a predetermined level.

3,948,739
COATING COMPOSITIONS HARDENABLE BY IONIZATION BEAMS

Dinkar Chaudhari; Ernst Häring, both of Cologne; Arnold Dobbelstein, Junkersdorf, and Wilfried Hoselmann, Cologne, all of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Germany

Filed Oct. 9, 1973, Ser. No. 404,148
Claims priority, application Germany, Oct. 9, 1972, 2249446
Int. Cl.² C08F *2/46, 20/20, 22/22*
U.S. Cl. 204—159.22 **6 Claims**

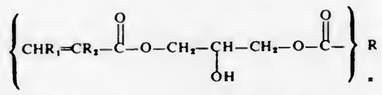
1. In coating compositions hardenable by ionizing radiation comprising as binding agents a mixture of

A. at least 1 unsaturated olefin compound containing urethane groups, and

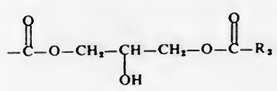
B. at least 1 further unsaturated olefin compound that may be copolymerized,

the improvement comprising said unsaturated olefin compound (A) containing the urethane groups consisting essentially of a reaction product of

a. a compound of the general formula



wherein n is 1 or 2, where R stands for a straight chain or branched alkyl group of valence n, where R_1 is hydrogen, methyl or the group



where R_2 is a monovalent alkyl group and where R_2 is hydrogen or methyl. and

b. a compound containing at least 1 isocyanate group.

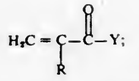
3,948,740
POLYMERIZATION OF WATER SOLUBLE MONOMERS WITH RADIATION AND CHEMICAL INITIATOR

Charalambos J. Phalangas, Princeton Junction, N.J., assignor to Hercules Incorporated, Wilmington, Del.

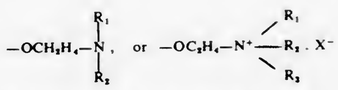
Filed May 4, 1973, Ser. No. 357,356
Int. Cl.² C08F *2/46, 4/00*
U.S. Cl. 204—159.23 **14 Claims**

1. A process of preparing water-soluble, substantially linear, high molecular weight polymers which comprises

irradiating an aqueous solution comprising from about 10% to about 60% by weight of (1) at least one water-soluble, ethylenically unsaturated monomer conforming to the formula



wherein R is hydrogen, methyl, or ethyl and Y is $-NH_2$, $-OM$,



wherein M is a cation, R_1, R_2, and R_3 are 1 to 4 carbon alkyl groups, and X is an anion, and

from about 5 to about 5,000 ppm of a chemical, free-radical initiator for the polymerization of ethylenically unsaturated compounds,

said initiator having a dissociation rate constant above about 1×10^{-4} reciprocal seconds at 100°C., does not substantially catalyze the polymerization of ethylenically unsaturated monomers at temperatures below about 50°C., and does substantially catalyze the polymerization of ethylenically unsaturated monomers at temperatures below about 100°C.,

with high energy ionizing radiation at an intensity of from about 1,000 rads to about 1,000,000 rads per hour to a dose of from about 1,000 to about 150,000 rads,

to form a reaction mass in which from about 30% to about 95% by weight of the water-soluble ethylenically unsaturated monomer initially present in aqueous solution has been converted to water-soluble polymer and in which chemically induced polymerization occurs,

terminating the high energy ionizing radiation of the reaction mass before formation of water-insoluble polymer in the reaction mass, and allowing the chemically induced polymerization of the reaction mass to continue.

3,948,741
LIQUID PHASE CHLORINATION OF NORMAL PARAFFINS

David R. McCoy, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 25, 1974, Ser. No. 526,869
Int. Cl.² C07C *17/10*
U.S. Cl. 204—163 R **20 Claims**

1. The method which comprises

forming a charge mixture consisting essentially of liquid phase and containing (i) a normal paraffin hydrocarbon and (ii) a diluent-solvent selected from the group consisting of chlorinated aliphatic hydrocarbons, fluorinated aliphatic hydrocarbons, and chlorinated fluorinated aliphatic hydrocarbons, said diluent-solvent being present in said charge mixture in amount above about 65 volume percent;

chlorinating said normal paraffin hydrocarbon in said charge mixture in the presence of a free radical initiator, thereby forming reaction mixture containing a 1-chloro normal alkane; and

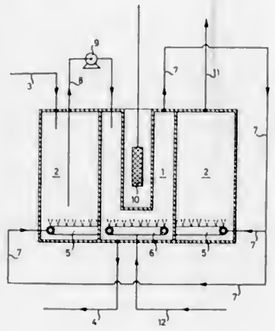
recovering said reaction mixture containing said 1-chloro normal alkane.

3,948,742

PREPARATION OF POLYCHLORCYCLOPENTANE AND HEXACHLORCYCLOPENTADIENE

Sigurd Rösinger, Frankfurt am Main; Heinz Boesenberg, and Adolf Gaube, both of Hofheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 16, 1971, Ser. No. 208,871
Claims priority, application Germany, Dec. 19, 1970, 2062773
Int. Cl.² B01D 1/10; C07C 17/10
U.S. Cl. 204—163 HE 6 Claims



1. A process for the preparation of polychlorcyclopentane by reacting liquid chlorinated cyclopentanes with gaseous chlorine, which comprises reacting chlorinated cyclopentanes having a chlorine content of about 4 chlorine atoms per molecule with gaseous chlorine at a temperature in the range of from 40° to 170°C, and at a pressure of from 0 to 20 atmospheres gage, in the presence of an electro-magnetic radiation with a wave length of less than 1 A, and with a dose rate of from 10^2 to 10^7 rad per hour, to form polychlorcyclopentanes having a chlorine content of from 5.0 to 7.0 chlorine atoms per molecule.

3,948,743

METHOD FOR GEL ELECTROPHORESIS

James F. Monthony, Albany, and Christopher J. Siebert, Berkeley, both of Calif., assignors to Bio-Rad Laboratories, Richmond, Calif.

Filed Apr. 14, 1975, Ser. No. 567,672
Int. Cl.² B01K 5/00
U.S. Cl. 204—180 G 14 Claims

1. A pre-cast crosslinked polyacrylamide adapted for use in gel electrophoresis and containing therein a strongly ionizable neutral salt in a concentration of about 0.005N – 1.0N the pH of said polyacrylamide being between about 6 and 8.

3,948,744

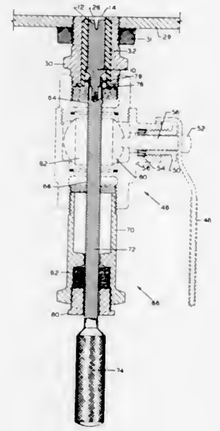
FLUSH MOUNTED CORROSION ELECTRODE

Ralph H. Cushing, Omaha, Nebr., assignor to Northern Natural Gas Company, Omaha, Nebr.

Filed Jan. 2, 1975, Ser. No. 537,840
Int. Cl.² G01N 27/30, 27/08
U.S. Cl. 204—195 C 5 Claims

1. An electrode assembly contained within the wall of a conduit which contains a corrosive atmosphere for use in measuring the corrosion current at the inside surface of the conduit, said electrode assembly comprising:

a. An electrode comprising a metallic conductor having a threaded aperture at one end and a section of reduced diameter at its other end, said section having means thereon for attachment to a tool for insertion of said electrode within and retraction of said electrode from the wall of the conduit and means protruding therefrom for making an electrical connection; and a removable metallic tip having a threaded male member protruding from one end thereof and adapted to fit snugly within said aperture to secure said tip to said conductor, and having the surface contour of the other end of said tip shaped such that when said electrode is inserted within the wall of the conduit, said shaped surface of said tip can be positioned exactly flush with the inside surface of the conduit for accurate measurement of the corrosion current thereat;



b. Hollow cylindrical holding means open at both ends and mounted within an opening in said conduit for positioning said electrode within said holding means such that said shaped surface of said tip is positioned exactly flush with the inside surface of said conduit; and

c. Retaining means for retaining said electrode in said flush-mounted position, said retaining means being detachably mounted on the end of said holding means opposite from said conduit.

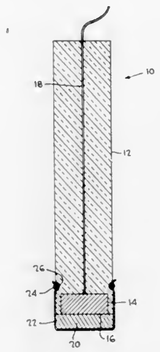
3,948,745

ENZYME ELECTRODE

George G. Guilbault, New Orleans, La., and Glenn J. Lubrano, Raleigh, N.C., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed June 11, 1973, Ser. No. 368,578
Int. Cl.² G01N 27/46
U.S. Cl. 204—195 B 1 Claim

1. An electrode assembly for use in amperometric analysis of a glucose solution comprising electrically insulating support means, a platinum electrode mounted in said support means and having an active exposed working face, a layer of solid polymeric material comprising a diazo derivative of polyacrylic acid covering said working face of said electrode, said polymeric material having glucose oxidase chemically bound thereto, and a cellophane membrane covering said layer of solid polymeric material and holding said layer in contact with said working face of said electrode.

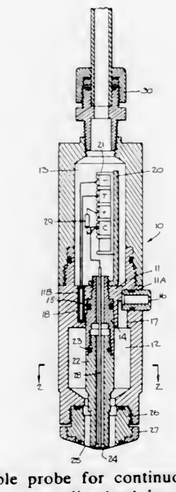


3,948,746

DISSOLVED OXYGEN PROBE

Robert L. Poole, Willow Grove, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Filed Jan. 20, 1975, Ser. No. 542,678
Int. Cl.² G01N 27/46
U.S. Cl. 204—195 P 7 Claims



1. An immersible probe for continuously measuring the concentration of oxygen dissolved in a liquid, said probe comprising:

A. a tubular insulating casing having an electrolyte chamber whose open mouth is at the lower end of the casing, said chamber having an insulating stem coaxially disposed therein,

B. a noble metal measuring electrode mounted at the tip of said stem adjacent the mouth of said electrolyte chamber,

C. a diffusing membrane permeable to oxygen, said membrane closing the mouth of said electrolyte chamber and covering said measuring electrode, and

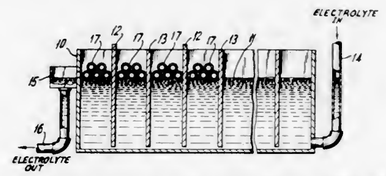
D. a tubular copper counter-electrode whose lower end encircles the other end of said stem and lies within said chamber, the upper end of said counter-electrode projecting outside said chamber and being connected to a first terminal, a connection between said measuring electrode and a second terminal external to said chamber being effected by a lead passing through said stem and said tubular counter-electrode, said chamber being filled with an aqueous solution of potassium hydroxide to bridge said electrodes to form an oxygen-sensitive galvanic cell generating a current proportional to the concentration of oxygen diffusing through said membrane, the copper counter-electrode reacting with hydroxide ions to produce copper oxide which adheres to the copper without forming a precipitate that would otherwise clog said cell.

3,948,747

ELIMINATION OR CONTROL OF ACID MISTS OVER ELECTROLYTIC CELLS

Joseph J. Cordiano, and Walter L. Brytczuk, both of Roselle Park, N.J., assignors to Amax Inc., New York, N.Y.

Filed May 9, 1975, Ser. No. 576,138
Int. Cl.² C25D 1/00
U.S. Cl. 204—242 8 Claims



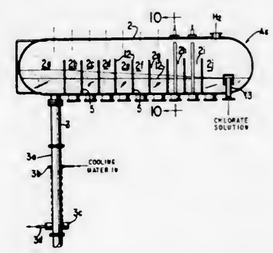
1. In an electroplating system comprising a tank with an electrolyte and electrodes supported therein, the improvement comprising an assembly of freely movable, floatable, non-conductive elongated members chemically inert to the electrolyte and arranged to cover the surface of the electrolyte in parallel, close-packed, self-locating relationship with each other, the assembly of said elongated members being substantially parallel to the electrodes, with the length thereof longer than the width of the electrode, such that the formation of acid mist over the tank due to gas evolution at the electrodes is substantially inhibited.

3,948,748

APPARATUS FOR THE PRODUCTION OF ALKALI METAL CHLORATES

Georg Messner, Munich, Germany, and Vittorio De Nora, Nassau, Bahamas, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Division of Ser. No. 238,804, March 28, 1972, Pat. No. 3,809,629. This application Nov. 21, 1973, Ser. No. 417,790
Int. Cl.² C01B 11/26
U.S. Cl. 204—270 14 Claims



1. In a chlorate electrolyzer, a series of bipolar connected electrolyzer cell units, each cell unit containing dimensionally stable metal anodes and cathodes in leaf form with the leaves of the cathode extending between the leaves of the anode and

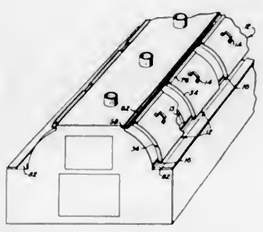
uniformly spaced therefrom, a cathode back plate supporting the cathode leaves, an anode back plate supporting the anode leaves, said back plates being in electrical connection with each other to form the bipolar connection between the cell units, a gas separation tank above said cell units, means to connect said cell units and said gas separation tank comprising a riser connection from the top of each of said cell units to the bottom of said tank, a down-comer connection from said tank to the bottom of each of said cell units, separating partitions in said gas separation tank, separating said tank into individual compartments connected to the riser and down-comer of each of said cell units, thereby forming separated circulation paths between each of said cell units and its connected gas separation compartment in said gas separation tank, means in said separating partitions to permit controlled flow from one circulation path to another and means in said tank to prevent direct flow from said riser connection to said down-comer connection.

3,948,749

ALUMINUM POTLINE SHIELD

Arthur F. Sargent, Parma, Ohio, assignor to Copperloy Corporation, Cleveland, Ohio

Filed Apr. 2, 1975, Ser. No. 564,423
Int. Cl.² C25C 7/00; F16B 5/08
U.S. Cl. 204—279 **10 Claims**



1. A curved shield device for use in covering side openings in aluminum reduction potlines comprising a series of planar pre-rolled extrusion members longitudinally joined together, a base member disposed along the bottom edge of said extrusion member, and an insulated lip member disposed along the top edge of said extrusion members, whereby said bottom base member of said shield is adapted to be disposed in a longitudinal groove below said potline openings, and said lip member is adapted to overlap and rest on a longitudinal lip member disposed along the top of said potline openings.

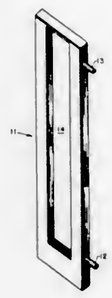
8. A method of constructing a curved shield device for use in covering openings in aluminum reduction potlines, comprising forming pairs of planar intermediate, pairs of planar end extrusions, and a planar center extrusion wherein each of said extrusions contain stiffener ribs on their inner surfaces, rolling each of said extrusions to a predetermined curvature, longitudinally joining said intermediate extrusions to respective sides of said center extrusion, joining said end extrusions to respective sides of said intermediate extrusions, securing a base member to the bottom edge of said joined extrusions, and securing an insulated lip member to the top edge of said joined extrusions.

3,948,750

HOLLOW BIPOLAR ELECTRODE

Wilfredo E. Figueras, Amherst, and Edward H. Cook, Jr., Lewiston, both of N.Y., assignors to Hooker Chemical & Plastics Corporation, Niagara Falls, N.Y.

Filed May 28, 1974, Ser. No. 474,115
Int. Cl.² C25B 11/02, 11/04
U.S. Cl. 204—286 **6 Claims**



1. A hollow bipolar electrode, which electrode comprises an anode member and a cathode member, each of which are formed of non-foraminous metal, said anode and cathode members being joined together in electrically conductive contact, at least one of said members having a concave portion which, when said members are so joined together, forms a hollow section in the interior of said bipolar electrode and, at least one gas vent between the interior of said hollow section and the exterior of said electrode, said vent or vents effecting the release of gases from the interior of said hollow section.

3,948,751

VALVE METAL ELECTRODE WITH VALVE METAL OXIDE SEMI-CONDUCTIVE FACE

Giuseppe Bianchi, Milan, Italy; Vittorio De Nora, Nassau, Bahamas; Patrizio Gallone, and Antonio Nidola, both of Milan, Italy, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 690,407, Dec. 14, 1967, Pat. No. 3,616,445. This application Oct. 29, 1968, Ser. No. 771,665
Int. Cl.² C25B 11/10
U.S. Cl. 204—290 F **10 Claims**

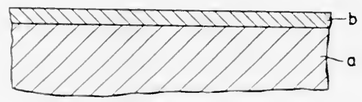
1. An electrode comprising a chlorine resistant metal base from the group consisting of titanium and tantalum, having a coating thereon containing an oxide of a platinum group metal and a mixture of metal oxides forming a semi-conductor coating on said base, said mixture of metal oxides forming the semi-conducting coating comprising a material from the group consisting of titanium dioxide and tantalum pentoxide and at least one doping oxide from the group consisting of an oxide of silver, tin, chromium, lanthanum, aluminum, cobalt, antimony, molybdenum, nickel, iron, tungsten, vanadium, phosphorus, boron, beryllium, sodium, calcium, strontium, lead, copper and bismuth, and mixtures thereof, the percentage of doping oxide being between 0.10 and 50% of the material from the group consisting of titanium dioxide and tantalum pentoxide and the ratio of platinum group metals to the non-precious metals in said oxide coating being between 20:100 and 85:100, all said percentages being based upon the metal in said oxides.

3,948,752

ELECTRODE FOR ELECTROCHEMICAL PROCESS

Konrad Koziol, Rothenbach an der Pegnitz; Karl-Heinz Sieberer, Zirndorf uber Nurnberg, and Hans-Carl Rathjen, Rothenbach an der Pegnitz, all of Germany, assignors to Firma C. Conradty, Nurnberg, Germany

Filed Nov. 13, 1973, Ser. No. 415,421
Claims priority, application Germany, Nov. 14, 1972, 2255690
Int. Cl.² C25B 11/08, 11/10
U.S. Cl. 204—290 F **3 Claims**



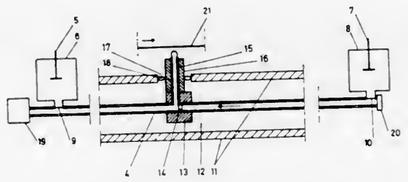
2. An electrode for electrochemical processes, particularly for the electrolysis processes for manufacturing chlorine, consisting of a metal resistant to the electrolysis medium and of an active cover layer bonded thereon and containing the substances causing the electrode process which substances are selected from the group consisting of $Pd_xM_yM_zO_z$, wherein M is Fe, Co, Ni, and Mn with $0.7 \leq x < 1$; $0.7 \leq y < 1$, and $0 \leq z \leq 0.1$ and mixtures thereof.

3,948,753

APPARATUS FOR ISOTACHOPHORETICAL SEPARATION

Tord Lennart Arlinger, Ekero, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden

Filed Nov. 13, 1974, Ser. No. 523,498
Claims priority, application Sweden, Nov. 13, 1973, 7315417
Int. Cl.² B01K 5/00
U.S. Cl. 204—299 R **4 Claims**



1. Apparatus for isotachophoretical separation, comprising a column consisting of a capillary tube and arranged between two electrodes, the sample subject to separation being introduced into said column between leading and terminating electrolytes, respectively, a detector for detection of different sample zones being arranged in a position along the column, characterized in a shunt tube bifurcating from the column in close proximity to the detector position, said shunt tube having smaller cross section than the column and having an open outer end provided with a closable lid, and means for providing a flow of leading electrolyte in the direction towards the sample zones.

3,948,754

PROCESS FOR RECOVERING AND UPGRADING HYDROCARBONS FROM OIL SHALE AND TAR SANDS

John D. McCollum, Munster, Ind., and Leonard M. Quick, Park Forest South, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed May 31, 1974, Ser. No. 474,908
Int. Cl.² C10G 1/04
U.S. Cl. 208—11 LE **25 Claims**

1. A process for recovering hydrocarbons from oil shale or tar sands solids and simultaneously for cracking, hydrogenating, desulfurizing, demetalating, and dentrifying the recovered hydrocarbons, comprising contacting the oil shale or tar sands solids with a water-containing fluid under super-atmospheric pressure, at a temperature in the range of from about 600° F. to about 900° F., in the absence of externally supplied hydrogen, and in the presence of an externally supplied catalyst system containing a sulfur- and nitrogen-resistant catalyst selected from the group consisting of at least one soluble or insoluble transition metal compound, a transition metal deposited on a support, and combinations thereof, wherein said catalyst is present in a catalytically effective amount, wherein said transition metal in said catalyst is selected from the group consisting of ruthenium, rhodium, iridium, osmium, palladium, nickel, cobalt, platinum, and combinations thereof, wherein sufficient water is present in the water-containing fluid and said pressure is sufficiently high so that the water in the water-containing fluid has a density of at least 0.10 gram per milliliter and serves as an effective solvent for the recovered hydrocarbons; and lowering said temperature or pressure or both, to thereby make the water in the water-containing fluid a less effective solvent for such hydrocarbons and to thereby form separate phases.

3,948,755

PROCESS FOR RECOVERING AND UPGRADING HYDROCARBONS FROM OIL SHALE AND TAR SANDS

John D. McCollum, Munster, Ind., and Leonard M. Quick, Park Forest South, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed May 31, 1974, Ser. No. 474,909
Int. Cl.² C10G 1/04
U.S. Cl. 208—11 LE **20 Claims**

1. A process for recovering hydrocarbons from oil shale or tar sands solids and simultaneously for cracking, desulfurizing, and demetalating the recovered hydrocarbons, comprising contacting the oil shale or tar sands solids with a water-containing fluid under superatmospheric pressure, at a temperature in the range of from about 600°F. to about 900°F., in the absence of externally supplied hydrogen, and in the presence of an externally supplied, sulfur-resistant catalyst, selected from the group consisting of at least one basic metal carbonate, basic metal hydroxide, transition metal oxide, oxide-forming transition metal salt, and combinations thereof, wherein said catalyst is present in a catalytically effective amount, wherein the transition metal in the oxide and salt is selected from the group consisting of the transition metals of Groups IVB, VB, VIB, and VIIB; wherein the metal in the basic metal carbonate and hydroxide is selected from the group consisting of alkali metals; wherein sufficient water is present in the water-containing fluid and said pressure is sufficiently high so that the water in the water-containing fluid has a density of at least 0.10 gram per milliliter and serves as an effective solvent for the recovered hydrocarbons; and lowering said temperature or pressure or both, to thereby make the water in the water-containing fluid a less effective solvent for such hydrocarbons and to thereby form separate phase.

3,948,756

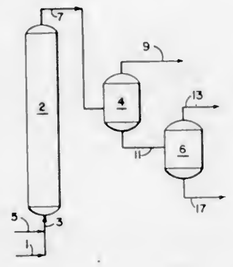
PENTANE INSOLUBLE ASPHALTENE REMOVAL

Ronald H. Wolk, Trenton, N.J.; Govanon Nongbri, Newtown, Pa., and Seymour B. Alpert, Princeton, N.J., assignors to Hydrocarbon Research, Inc., Morristown, N.J.

Continuation of Ser. No. 173,209, Aug. 19, 1971, abandoned. This application Sept. 13, 1973, Ser. No. 397,070

Int. Cl.² C10G *34/06*

U.S. Cl. 208—57 **5 Claims**



1. A continuous catalytic process for the removal from residual petroleum oils of the pentene insoluble asphaltene fraction prior to hydrodesulfurization which comprises:

a. feeding said residual oil with hydrogen upwardly through an ebullated bed reaction zone containing a particulate hydrogenation-type catalyst.

b. maintaining said reaction zone at a temperature between about 700° and 800°F, liquid space velocity between about 0.1 and 2.0 $V_f/hr/V_r$ and hydrogen partial pressure of between about 1200 and 3000 psi;

c. converting between about 5 and 45 percent of the material in said residual oil boiling above 975°F to material boiling below 975°F to achieve at least a 20 weight percent conversion of said asphaltenes;

d. passing the effluent to an atmospheric distillation zone;

e. removing a vaporous overhead with an upper boiling point of less than about 800°F and a liquid bottom containing minimum pentane insoluble asphaltenes.

3,948,757

FLUID CATALYTIC CRACKING PROCESS FOR UPGRADING A GASOLINE-RANGE FEED

Charles W. Strother, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed May 21, 1973, Ser. No. 361,911

Int. Cl.² C10G *11/02;* **B01J** *9/20*

U.S. Cl. 208—74 **4 Claims**

1. A fluid catalytic cracking process for simultaneously cracking a gas oil feed and upgrading gasoline-range hydrocarbon feed which process comprises the steps of;

a. contacting the gasoline-range feed with freshly regenerated catalyst in a relatively upstream portion of a short-time dilute-phase riser reaction zone maintained at first catalytic cracking conditions including a gasoline-range feed residence time of less than about **0.5** seconds in the presence of said catalyst, a temperature within the range of about **1250°** F. to about **1500°** F. and a catalyst to gasoline-range feed ratio of at least about **75** to **1**;

b. contacting the gas oil feed with used catalyst in a relatively downstream position of the short-time dilute phase riser reaction zone maintained at second catalytic cracking conditions including a gas oil residence time of less than about **10** seconds in the presence of used catalyst, a temperature in the range of from about **900°** to about 1100° F. and a catalyst to gas oil feed ratio of from about **4** to about **25** to **1**;

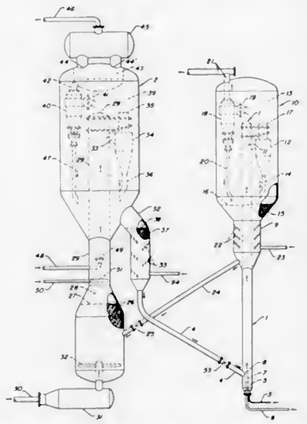
c. passing catalyst and feed streams in admixture through the riser reaction zone to produce spent catalyst, containing coke, and product components including gasoline;

d. discharging the mixture from said reaction zone into cyclone separators to effect the separation of spent catalyst from product components and any unreacted feed;

e. recovering product components and any unreacted feed;

f. passing spent catalyst to a first dense bed of fluidized particulate material maintained in a regeneration zone at oxidizing conditions and therein oxidizing coke to produce partially spent regeneration gas, containing CO, and freshly regenerated catalyst;

g. passing said regenerated catalyst and partially spent regeneration gas to a dilute phase transport riser main-



tained in said regeneration zone at conversion conditions and therein essentially completely converting CO to CO_2 to produce spent regeneration gas;

h. transferring within said transport riser at least a portion of the heat of combustion of CO to regenerated catalyst passing through the riser thereby heating said catalyst to a temperature of from about **1250°** F. to about **1500°** F.; and,

i. separating regenerated catalyst from spent regeneration gas and passing regenerated catalyst into a second dense bed or particulate material from which freshly regenerated catalyst is returned to the reaction zone of (a) above.

3,948,758

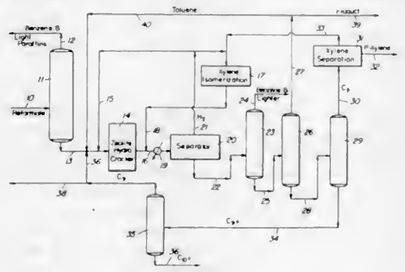
PRODUCTION OF ALKYL AROMATIC HYDROCARBONS

John C. Bonacci, Cherry Hill, and Ronald P. Billings, Clementon, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed June 17, 1974, Ser. No. 479,930

Int. Cl.² C10G *13/04*

U.S. Cl. 208—92 **10 Claims**



1. An improved method for producing aromatic hydrocarbons from a hydrocarbon charge containing aromatic hydrocarbons including benzene and C_8 alkyl aromatics and aliphatic hydrocarbons which charge is rich in such aromatic hydrocarbons and lean in aliphatic hydrocarbons boiling above about 220°F. by reason of conversion under severe conditions which comprises subjecting said charge to distillation conditions of temperature and pressure such that at least a portion of the benzene content of said fraction is separated as vapor from a alkyl aromatic fraction containing aliphatic hydrocarbons and the major portion of C_8 aromatics in said charge, reacting said alkyl aromatic fraction in the presence of hydrogen in contact with a catalyst containing type ZSM-5 zeolite, Zeolite ZSM-12, zeolite ZSM-21 or zeolite beta in combination with a hydrogenation/dehydrogenation component at conversion conditions to convert aliphatic hydrocarbons to lower boiling material of five carbon atoms and lighter separable from aromatics by distillation including a temperature of about 500° to 1000°F., a pressure of about 100 to about 600 pounds, a hydrogen to hydrocarbon mol ratio of 1 to 6 and weight hourly space velocity of 0.5 to 15 and distilling the product of so reacting said fraction to separate therefrom desired aromatic hydrocarbons substantially free of aliphatics.

3,948,759

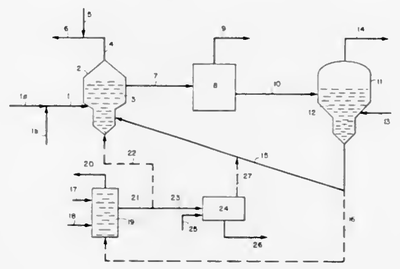
VISBREAKING A HEAVY HYDROCARBON FEEDSTOCK IN A REGENERABLE MOLTEN MEDIUM IN THE PRESENCE OF HYDROGEN

Laurence F. King, Mooretown; Noel J. Gaspar, and Israel S. Pasternak, both of Sarnia, all of Canada, assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 345,540, March 28, 1973, Pat. No. 3,871,992. This application Feb. 27, 1975, Ser. No. 553,492

Int. Cl.² C10G *13/06;* **B01J** *35/12, 21/02, 23/04*

U.S. Cl. 208—106 **26 Claims**



1. A process for converting a heavy hydrocarbon feedstock at least a portion of which boils above about 650° F. at atmospheric pressure to lighter hydrocarbon materials which comprises contacting said feedstock in the presence of hydrogen with a regenerable alkali metal carbonate molten medium containing from 0.1 to 25 weight percent, calculated as oxide and based on total molten medium, of a glass-forming oxide selected from the group consisting of oxides of boron, phosphorus, vanadium, silicon, tungsten and molybdenum, and thereby suppressing the formation of carbonaceous materials, at a temperature in the range of from about the melting point of said medium to less than about 1000° F. and at elevated pressures for a time sufficient to form lighter hydrocarbon materials and carbonaceous materials, said carbonaceous materials being suspended uniformly throughout the molten medium.

3,948,760

CATALYTIC CONVERSION OF HYDROCARBONS BY IMPROVED ZEOLITE CATALYST

John L. Gring, Lowell, Ark., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 40,352, May 25, 1970, Pat. No. 3,875,290. This application Jan. 23, 1975, Ser. No. 543,209

Int. Cl.² C10G *13/02;* **B01J** *29/28*

U.S. Cl. 208—111 **15 Claims**

1. In a method for catalytically converting at least a portion of a hydrocarbon feed which comprises contacting said hydrocarbon feed at hydrocarbon conversion conditions with a catalyst comprising a metal, hydrogen ion-exchanged aluminosilicate wherein the metal is selected from the group consisting of aluminum, zirconium and chromium, the improvement which comprises preparing said metal, hydrogen, ion-exchanged aluminosilicate by a process comprising heating an aqueous slurry of a nitrogen compound forming ammonia on hydrolysis and a water-soluble salt of said metal with a predominantly ammonium-exchanged crystalline aluminosilicate having pores of diameter of about 6 to 15A. and a silica-to-alumina mole ratio of about 2:1 to about 20:1 to allow the metal to precipitate within the lattice structure of the aluminosilicate, and calcining the resulting material to form a metal, hydrogen ion-exchanged crystalline aluminosilicate, said process adding about 0.5 to 15 percent by weight of said metal based upon the total weight of the aluminosilicate on an ignited basis.

3,948,761

ISOMERIZATION OF ALIPHATIC HYDROCARBONS

Michael Siskin, Maplewood, and Joseph J. Porcelli, Scotch Plains, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 210,607, Dec. 21, 1971, abandoned. This application Feb. 25, 1974, Ser. No. 445,163

Int. Cl.² C07C *5/28;* **C10G** *35/06*

U.S. Cl. 208—134 **20 Claims**

1. An isomerization process comprising:

contacting in a reaction zone and at substantially liquid phase catalyst isomerization conditions including a temperature varying between about 0° and 150°C;

a feed stock comprising a component selected from the group consisting of a saturated acyclic hydrocarbon having at least four carbon atoms, a saturated alicyclic hydrocarbon having at least five carbon atoms and mixtures thereof, said feed stock additionally containing a component selected from the group consisting of at least about 1 wppm, based on said feed stock, of sulfur compounds, at least about 0.001 wt. %, based on said feed stock, of an unsaturated hydrocarbon compound or mixtures thereof;

hydrogen at a partial pressure of at least about 5 psig and a catalyst system comprising a metal halide selected from the group consisting of gallium bromides and chlorides and the chlorides, bromides and fluorides of niobium, tantalum, molybdenum or tungsten in combination with at least an equal molar amount, based on the metal halide, of a hydrogen halide selected from hydrogen fluoride, hydrogen chloride, and hydrogen bromide, at least a portion of said metal halide being dissolved in said hydrogen halide.

3,948,762

HYDROCARBON CONVERSION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 19, 1974, Ser. No. 490,171

Int. Cl.² C10G *35/08;* **B01J** *23/42, 23/44*

U.S. Cl. 208—139 **19 Claims**

1. A process for reforming a gasoline fraction which comprises contacting the gasoline fraction at reforming conditions

in the presence of hydrogen with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to about 2 wt. % rhodium, about 0.01 to about 5 wt. % nickel and about 0.1 to about 3.5 wt. % halogen, wherein the platinum or palladium, rhodium, and nickel are uniformly dispersed throughout the porous carrier material and wherein substantially all of the platinum or palladium, rhodium, and nickel are present in the corresponding elemental metallic states.

3,948,763

SULFIDING PROCESS FOR DESULFURIZATION CATALYSTS

Robert D. Christman, and Kirk J. Metzger, both of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 292,747, Sept. 27, 1972, abandoned. This application Mar. 25, 1974, Ser. No. 454,102

Int. Cl.² C10G *23/02*

U.S. Cl. 208—216 **4 Claims**

1. In a process which comprises hydrodesulfurizing a petroleum distillate feed containing from 0.2 to 2.0 weight percent sulfur and having a 90% distillation condensation point of less than 625°F. at a temperature in the range of 550° to 640°F. and in the presence of a catalyst comprising from 0.1 to 5 weight percent cobalt, from 0.1 to 5 weight percent nickel, from 5.0 to 15 weight percent molybdenum, and alumina; the improvement which consists essentially of initially contacting said catalyst with said sulfur-containing petroleum distillate feed under sulfiding conditions of at least 660°F. for a period in the range of 4 to 48 hours, and thereafter contacting said catalyst with said feed under hydrodesulfurization conditions at a temperature in the range of 550° to 640°F.

3,948,764

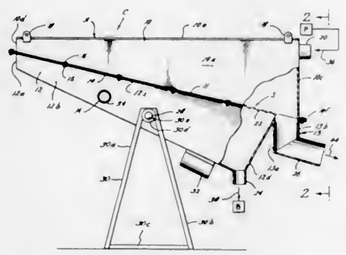
CATALYST SCREENING UNIT

Tommy Ray Edwards, Dickinson, Tex., assignor to Browning-Ferris Industries, Inc.

Filed Sept. 23, 1974, Ser. No. 508,449

Int. Cl.² B07B *7/06*

U.S. Cl. 209—30 **2 Claims**



1. A catalyst screening unit for separating incoming feed catalyst into whole catalyst, broken catalyst, fines, and dust therein for use with a catalytic reactor, comprising:

a housing including a catalyst receiving chamber separated from a lower, waste chamber by an inclined screen, said housing including a positive pressure means mounted with an inlet for delivering incoming feed catalyst into said catalyst receiving chamber under positive pressure and an outlet chamber for discharging whole catalyst therefrom;

a vibrating means mounted with said housing for vibrating said housing and said screen, said inclined screen having properly sized openings therein to allow broken catalyst, fines and dust to pass through said screen with vibration thereof;

said lower, waste chamber including a first vacuum means for substantially removing the dust from said catalyst receiving chamber, from said waste chamber and from the broken catalyst and the fines within said waste chamber;

a second vacuum means for vacuuming the fines from said lower, waste chamber, said second vacuum means mounted with said lower, waste chamber;

said lower, waste chamber further including trough means formed therewith for promoting effective collection of broken catalyst and fines within said lower, waste chamber;

said lower, waste chamber further including a broken catalyst-fines outlet mounted with said lower, waste chamber adjacent said trough means at substantially the lowermost portion of said waste chamber;

said inlet mounted with said catalyst receiving chamber; and,

said outlet chamber mounted with said lower, waste chamber.

3,948,765

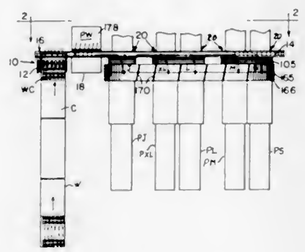
EGG HANDLING APPARATUS

Wayne Harold Anschutz, Topeka, Kans., assignor to Seymour Foods, Inc., Topeka, Kans.

Continuation-in-part of Ser. No. 398,636, Sept. 19, 1973. This application Aug. 28, 1974, Ser. No. 496,456

Int. Cl.² B07B *13/08*

U.S. Cl. 209—74 M **15 Claims**



1. In a machine for grading shelled eggs according to the weight of the eggs, an endless traveling conveyor means for advancing the individual eggs to one of a series of transfer stations at each of which eggs of like weight characterization are discharged for further handling, means for providing a clock signal when an individual egg reaches each transfer station, said conveyor having longitudinally spaced, individual egg receiving pockets, means at each of said transfer stations for discharging eggs laterally from the conveyor pockets which are advanced to that station, one or more egg weighing devices arranged at an egg receiving station along one side of said conveyor, means at said receiving station for delivering successive eggs to individual weighing devices and each said weighing device comprising means for generating an electrical impulse which varies according to the weight of the eggs, means at said receiving station for moving eggs from said weighing devices into the pockets of said conveyor, an electrical control circuit for actuating the operation of the egg discharging means at said transfer stations, said control circuit actuating said discharging means being responsive to said electrical impulses and said clock signals whereby to discharge eggs of the same weight characterization at each of said transfer stations.

3,948,766

MAGNETIC SEPARATOR

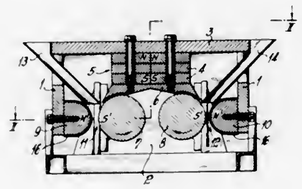
Heinrich Spodig, Netteberge 84, 4711 Bork, Westfalen, Germany

Filed June 25, 1973, Ser. No. 372,706

Claims priority, application Germany, June 27, 1972, 2231380

Int. Cl.² B03C *1/10*

U.S. Cl. 209—219 **17 Claims**



1. A permanent-magnet magnetic separator device, comprising a magnetic circuit having an air gap into which a mixture of magnetically attractable and magnetically non-attractable materials is to be passed, said magnetic circuit including a separator member comprised of magnetizable material, said separator member being located adjacent to said air gap, and said magnetic circuit further including permanent magnet means operative for establishing a flow of flux through said magnetic circuit and across said air gap and operative for magnetizing said separator member by induction so that magnetically attractable material in a mixture entering said air gap will be segregated by said separator member, wherein said device comprises a quadratic support structure comprised of two spaced and parallel magnetically conductive portions and two further portions perpendicular to said two spaced magnetically conductive portions, and wherein said device includes two elongated parallel spaced separator members, and wherein said magnetic circuit includes two air gaps, with one separator member being located adjacent to one air gap and the other separator member being located adjacent to the other air gap, with said separator members being oriented parallel to said two parallel magnetically conductive portions, and wherein said magnetic circuit further includes a connecting member of magnetically permeable material connecting together said two portions of magnetically conductive material and extending in direction transverse to the elongation of said separator members, and wherein said permanent magnet means comprises a permanent magnet arrangement comprised of a plurality of permanent magnet members supported from above by said connecting member and having a pole shoe portion proximate to and partially surrounding said separator members, to magnetize said separator members by induction, and elongated half-round members of magnetically conductive material each extending parallel to but spaced from a respective one of said separator members to define with the latter a respective one of said air gaps, and wherein said half-round members are connected in magnetic circuit with said parallel magnetically conductive portions and with said connecting member so that said half-round members are magnetized by said permanent magnet arrangement by induction with a polarity opposite to the induced polarity of said separator members.

3,948,767

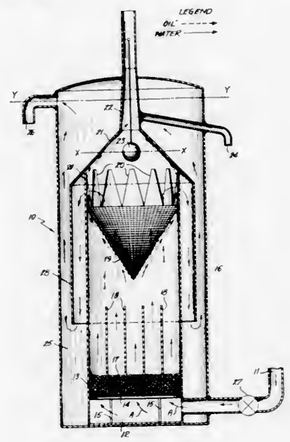
METHOD AND APPARATUS FOR SEPARATING OIL FROM AQUEOUS LIQUIDS

Willis F. Chapman, 6511 Jay Miller Drive, Falls Church, Va. 22041

Filed Feb. 6, 1974, Ser. No. 440,093

Int. Cl.² B01D *13/00*

U.S. Cl. 210—20 **4 Claims**



4. A method for separating oily particles from an emulsion of said oily particles in an aqueous liquid comprising the steps of, first passing said emulsion through a bed of oleophilic granules having a specific gravity different from the specific gravity of the aqueous liquid to cause the granules to resist the movement of the emulsion, the passage of said emulsion through said bed serving to remove the emulsified oily particles from said emulsion, then passing said aqueous liquid from which emulsified oily particles have been removed beyond said bed, the oleophilic granules in said bed retaining the removed oily particles until they accumulate sufficiently to coalesce and form nonemulsified oily droplets, the movement of the aqueous liquid past said bed serving to carry away said droplets of oil, and then passing the upwardly moving aqueous liquid containing said oil droplets through a screen inclined to the direction of movement of said water at an angle steep enough to remove the oil so that water free of oil will pass through said screen to enable its removal, and the oil is left on said inclined screen to be propelled toward a storage area by the movement of the water, and removing the oil-free water which passes through said screen.

3,948,768

METHOD AND APPARATUS FOR SEPARATING OIL FROM AQUEOUS LIQUIDS

Willis F. Chapman, 6511 Jay Miller Drive, Falls Church, Va. 22041

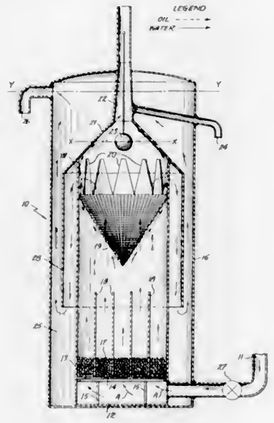
Continuation-in-part of Ser. No. 440,093, Feb. 6, 1974. This application July 7, 1975, Ser. No. 591,841

Int. Cl.² B01D *13/00*

U.S. Cl. 210—20 **11 Claims**

1. A method for separating oil from a mixture of oily particles in an aqueous liquid comprising the steps of, first passing said mixture upwardly as a non-turbulent rising mixture column through an upwardly unconfined mass of oleophilic granules having a specific gravity greater than water with a velocity adequate to separate and lift the granules individually so that they are completely free from mutual support in the upwardly rising mixture, but at a velocity not so great as to prevent the granules from descending by gravity against the flow of the mixture, whereby the granules will move up and down to

collect and coalesce fine oily particles and release the surplus oil back into the rising mixture column in the form of visible droplets, and then passing the upwardly moving mixture containing said droplets of oil through a steeply inclined screen to remove the oil droplets so that water free of oil will pass



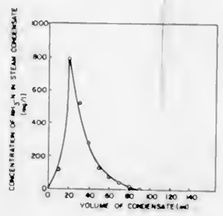
through said screen to enable its removal, and the oil is left as a film on the material of said inclined screen to be propelled upwardly via a solid oleophilic path toward an oil storage area above said screen by the upward movement of the water, and removing the clarified water which passes through said screen.

3,948,769

LIGAND EXCHANGE PROCESS FOR REMOVAL OF AMMONIA

Richard A. Dobbs, Cincinnati, Ohio, assignor to The United States of America as represented by the United States Environmental Protection Agency, Washington, D.C.

Filed Apr. 8, 1974, Ser. No. 458,496
Int. Cl.² B01D *15/06*
U.S. Cl. 210—32 **1 Claim**



1. A process for removing ammonia from waste water which comprises:

conditioning a hydrous zirconium oxide ligand exchanger to accept ammonia in solution, by contacting said exchanger with a strongly basic solution of a metal capable of forming a complex with NH_3;

thereafter bringing an ammonia containing solution into contact with said conditioned ligand exchanger whereby ammonia is complexed with said exchanger;

and regenerating said ligand exchanger by contacting it with steam at a pressure of about 30 PSIG and at a temperature of about 135°C.

3,948,770

METHOD FOR CLARIFYING OILY WATER MIXTURES

Robert R. Goodrich, Morristown, and Edward R. Corino, Succasunna, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 385,604, Aug. 3, 1973, abandoned. This application Apr. 24, 1975, Ser. No. 571,268
Int. Cl.² B01D *15/00*
U.S. Cl. 210—40 **6 Claims**

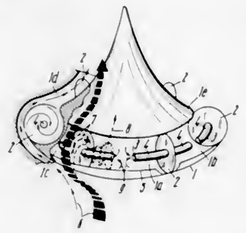
1. A process for rapidly separating fine oil droplets dispersed in sea water comprising the steps of adding in dry form to said sea water a flocculant mixture comprising montmorillonite clay selected from the group consisting of sodium, calcium and forms thereof, with an anionic polyelectrolyte which is an anionic copolymer of acrylamide, said mixture contacting said oil droplets for accumulating and agglomerating said oil droplets to assist in their separation from said water, wherein said mixture has a ratio by weight of about 1:40 to about 1:800 parts of anionic polyelectrolyte to clay and further wherein said flocculant mixture is disposed in said sea water in a ratio of about 50 to about 200 parts per million by weight in sea water, said accumulated and agglomerated oil droplets being permitted to settle substantially to the surface of the water.

3,948,771

METHOD AND APPARATUS FOR SEPARATING SUSPENDED MATTER FROM A FLUID BY CENTRIFUGAL FORCE

Ernst-August Bielefeldt, Hollenstedt, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Germany

Continuation of Ser. No. 420,659, Nov. 30, 1973, abandoned. This application June 6, 1975, Ser. No. 584,295
Int. Cl.² B01D *21/26*
U.S. Cl. 210—84 **17 Claims**



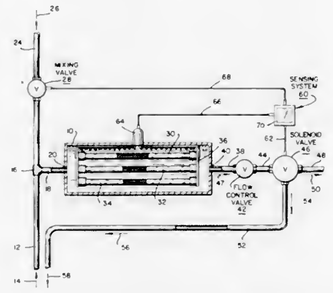
1. A method of separating a specifically heavy phase of suspended matter from a lighter fluid by centrifugal force comprising the steps of directing the fluid to be treated along an annular main flow path having a mean radius, equal to one half the sum of its inner and outer radii, which alternately increases and decreases progressively longitudinally of the flow direction so as to form a partial toroidal layer and past an annular flow-off edge projecting tangentially in the flow direction on the radially inner side of the main flow path and forming a wall of a toroidal whirl chamber tangent to the radially inner side of, and communication with, the annular main flow path concentric with such annular main flow path, and having an outer radius, transversely of such annular main flow path, substantially equal to the inner radius of such annular main flow path, to produce a stationary whirl in the form of a torus in the toroidal whirl chamber at least contacting, in its zone of tangency with the main flow path, such partial toroidal layer, and in which stationary whirl heavier suspended matter is separated from the fluid, by centrifugal force, to provide purified fluid; at a predetermined location in the stationary toroidal whirl, separating and withdrawing part of the purified fluid from the stationary whirl; and returning the non-separated portion of the fluid volume, whose suspended matter content is now increased into the main flow.

3,948,772

SPLIT STREAM ULTRAVIOLET PURIFICATION DEVICE

Sidney Ellner, 6 Tudor Place, Hartsdale, N.Y. 10530

Filed Apr. 16, 1975, Ser. No. 568,660
Int. Cl.² B01D *21/24*
U.S. Cl. 210—96 R **9 Claims**



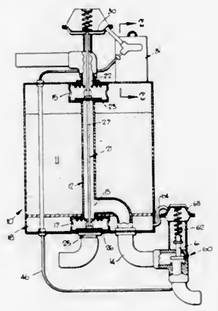
1. An ultraviolet purification device comprising an ultraviolet purification chamber having a liquid inlet opening and a liquid outlet opening, a first inlet conduit for supplying opaque liquid to said inlet opening from a source of untreated liquid, a second inlet conduit for supplying clear liquid to said inlet opening, with said clear liquid mixing with and diluting said opaque liquid, metering valve means disposed within said second inlet conduit for controlling the flow of clear liquid to said chamber, a discharge conduit leading from the outlet opening of said purification chamber, means for producing ultraviolet radiation centrally located within said chamber, ultraviolet sensor means disposed in said purification chamber at one peripheral extremity thereof, and control means connected to said ultraviolet sensor means and operable in response to signals received from said sensor means for regulating said metering valve means to control the flow of clear liquid through said second inlet conduit into said chamber in accordance with the level of ultraviolet radiation sensed by said ultraviolet sensor, whereby clear liquid is fed to said chamber and mixed with said untreated liquid in proportion to the opacity of the liquid detected by said sensor means.

3,948,773

AUTOMATIC CONTROL FOR FILTERING EQUIPMENT UNDER PRESSURE

Alfred Denholm Tucker, Box 531, Berri, Austria (5343)

Filed June 13, 1974, Ser. No. 478,964
Int. Cl.² B01D *29/38*
U.S. Cl. 210—108 **6 Claims**



1. Filter backwash means for a filter having a filter bed comprising

a reversing valve having a valve operating member which in one position allows liquid to flow through the filter bed from its inlet end to its outlet end and in another position allows liquid to flow in the reverse direction for backwash of the filter bed,

a pressure responsive diaphragm operatively connected to the valve member, a spring urging the diaphragm in one direction

actuating means operatively coupled by a coupling conduit to said pressure responsive diaphragm to actuate the pressure responsive diaphragm upon pressure build-up at the inlet end to in turn effect movement of the valve member from said position of flow from the inlet end to the outlet end, to said position of flow for backwash,

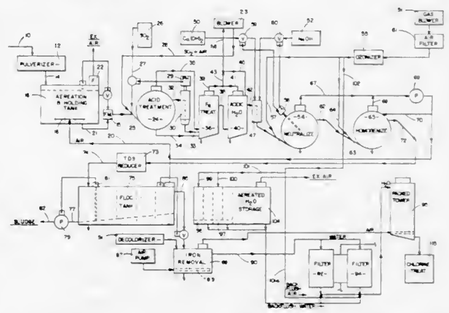
said actuating means comprises a cistern, a drain outlet opening in the cistern near its base, a float valve within the cistern, a supply conduit extending to the float valve and arranged to supply water at pressure thereto at a rate which exceeds the rate of drain from the cistern, said supply conduit being in direct fluid flow communication with said coupling conduit, the arrangement being such that upon water discharge from the float valve, the pressure within said coupling conduit reduces and the force action on said pressure responsive diaphragm reduces to be less than the force of the spring, but upon cessation of discharge the pressure force exceeds the spring force, thereby effecting movement of said valve member.

3,948,774

WATER PURIFICATION PROCESS AND APPARATUS

William Edward Lindman, Fountain Valley, Calif., assignor to Environment Improvement, Inc., Torrance, Calif.

Filed Oct. 5, 1973, Ser. No. 403,893
Int. Cl.² C02B *1/20, 1/34*
U.S. Cl. 210—192 **25 Claims**



1. Apparatus for obtaining purified water and solid components from aqueous feedstock containing oxidizable contaminants, comprising:

a closed reaction chamber characterized by a physical structure adapted to effect continuous turbulence of a flowsteam moved therethrough and including a generally spherical, sealed vessel having a tangentially directed liquid inlet near the bottom thereof, a liquid outlet spaced therefrom, and a gas outlet near the top;

a second sealed treating vessel containing a porous bed formed of pieces of metallic iron, said vessel being connected to the liquid outlet and to the gas outlet from said spherical vessel so as to convey the fluid from both of said outlets through said bed;

conduit and pump means for continuously circulating a gaseous stream of oxygen-free sulfur dioxide through said two vessels in succession and through a closed return path formed partially outside said vessels in contact with a source of pressurized sulfur dioxide;

successive flow-controlled neutralizing and flocculating vessels connected to said second treating vessel for re-

ceiving the treated feedstock flow stream therefrom and adapted for separating purified water and solid components, said neutralizing vessel comprising a successive pair of generally spherical, sealed vessels, each having a tangentially directed, liquid inlet near the bottom thereof;

an ozone generator and means for passing a stream of ozone gas from said generator through each of said sealed vessels in intimate admixture with the treated feedstock;

a sealed preliminary holding tank located anterior to and flow connected to said first spherical vessel, means for circulating exhaust gas through said holding tank drawn from said pair of spherical neutralizing vessels, and means for controlled filtered venting of gas from the holding tank.

16. A corona-free ozone generator, comprising a pair of planar, spaced apart walls of dielectric material having outer surfaces and opposed inner surfaces defining a flow channel therebetween for flow of a gas containing oxygen, a plate electrode positioned at the outer surface of each wall in parallel relation thereto and contiguous therewith, means connected with the electrodes for producing an electric field across said flow channel between the walls, and means for effecting flow of said gas through said flow channel and for confining the flow to said flow channel between the opposed inner surfaces, thus preventing contact between the electrodes and said gas, for corona-free production of ozone when the electric field is established.

20. A sulfur dioxide generator, comprising hopper means for holding a supply of particulate sulfur, a combustion chamber, conduit means connected with said hopper means and with said combustion chamber for conveying particulate sulfur from the hopper means to the combustion chamber, said conduit means including a nozzle communicating with said combustion chamber and connected with a source of air under pressure whereby said particulate sulfur is conveyed by said high pressure air through the conduit means and nozzle into the combustion chamber, valve means in said conduit means for controlling the flow of particulate sulfur from the hopper means into the conduit means and to the nozzle, means for igniting the particulate sulfur conveyed into the combustion chamber to produce gaseous sulfur dioxide, and outlet means to convey the sulfur dioxide gas from the combustion chamber.

3,948,775

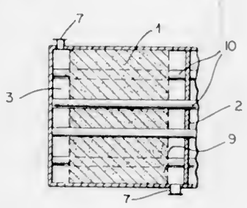
HORIZONTAL PACKED COLUMN CONSISTING OF MULTIPLE CHAMBERS WITH FLUID DISTRIBUTORS

Seiya Otani; Takeshi Umemoto; Masazumi Kanaoka; Shoichi Akita, all of Yokohama; Koji Ogawa, Kawasaki; Yoshio Noguchi, and Hiroshi Fujita, both of Yokohama, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 260,357, June 7, 1972, abandoned. This application June 24, 1974, Ser. No. 482,023

Int. Cl.² B01D *29/08*

U.S. Cl. 210—264 **3 Claims**



1. A packed horizontal column for adsorptive separation processes, said column comprising a series of separate chambers arranged substantially in horizontal succession, each of said chambers being horizontally displaced from one another, a plurality of walls separating each said chamber from its neighboring chambers, each of said chambers comprising a bed of packing material supported by a holding device, and each of said chambers having a fluid inlet opening and an inlet distributor at one end thereof, and also having a fluid outlet collector and a fluid outlet opening at the end thereof which is horizontally opposite to said fluid inlet opening, said one end and said opposite end being horizontally displaced from one another therebetween constituting the axis of said chamber, said fluid inlet opening and inlet distributor being symmetrically disposed with respect to said fluid outlet opening and outlet collector about a point on said axis midway between said horizontally opposite ends, each of said chambers further including a group of spaced-apart rods extending substantially horizontally from end to end between said horizontally opposite ends, each of said rods being spaced from the other adjacent rods of the group at a distance of from 0.1 to 1 meter, and the ratio of the cross-sectional area of said fluid inlet to the cross-sectional area of said fluid outlet being about $\sqrt{2:1}$.

3,948,776

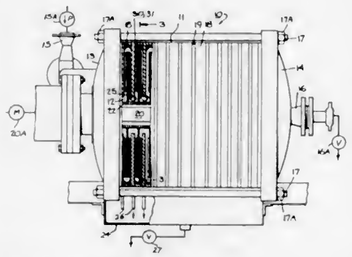
APPARATUS AND SYSTEM FOR GENERATING A PROTECTIVE COATING IN A ROTARY CONCENTRATOR FOR ABRASIVE SOLIDS-CONTAINING FLUIDS

James Donovan, Cambridge, Mass., assignor to Artisan Industries Inc., Waltham, Mass.

Filed Nov. 18, 1974, Ser. No. 524,820

Int. Cl.² B01D *29/00*

U.S. Cl. 210—320 **11 Claims**



1. In an apparatus for continuous separation of an abrasive solids-containing fluid into a vehicle fluid and a concentrated slurry of solids which includes (1) a housing characterized by an interior surface and a longitudinal axis and having an inlet for introducing a solids-containing fluid into said housing and and outlet for removing a concentrated slurry of solids therefrom; (2) at least two substantially parallel, coaxially disposed, spaced-apart annular elements mounted within said housing on the longitudinal axis thereof and established stationarily with respect thereto between said inlet and said outlet; (3) a rotor shaft extending within said housing along the longitudinal axis thereof and passing coaxially through said annular elements in spaced diametral relation thereto leaving openings for fluid flow between the outer surface of said shaft and the inner circumferential surfaces of said annular elements, said shaft being rotatable with respect to said housing and said annular elements, and (4) a radially extensive rotor element having one side and another, opposite side and an outside edge mounted to said rotor shaft to turn therewith with its outside edge terminating in spaced relation to the interior surface of said housing and positioned between said spaced-apart annular elements to define a flow path for solids-containing fluid from said inlet to said outlet extending across at least one side of one of said spaced-apart annular elements between it and one side of said rotor element, then between the outside edge of said rotor element and the interior surface of said housing and then between the other, opposite side of said rotor element and the other of said annular elements with at least one of those elements being a filter means comprising a filter chamber having at least one filtering surface serving as a boundary of said flow path with the interior of that chamber being in fluid flow commmunication with the exterior of said housing for the removal of filtrate vehicle fluid from that chamber, the improvement comprising means within said housing for detaining abrasive solids from the abrasive solids-containing fluid and thereby autogenously providing an essentially static deposit of abrasive solids between said housing and said flow path for protecting the interior surface of said housing from abrasion by further solids moving in said flow path.

3,948,777

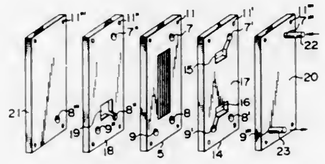
SOLUTION SEPARATING AND RECOVERING EQUIPMENT

Kazuo Murata, and Katsuzi Ashida, both of Takatsuki, Japan, assignors to Yuasa Battery Company Limited, Japan

Filed Sept. 16, 1974, Ser. No. 505,961

Int. Cl.² B01D *31/00*

U.S. Cl. 210—321 R **8 Claims**



1. A solution separating and recovering equipment comprising at least one set of associated plates comprising

a separating plate having a central opening therein in which a solution separating module is mounted so as to prevent flow through the opening without passing through the module, the separating module including a normally flat microporous membrane which is repeatedly bent in a zigzag manner along regularly and closely spaced parallel lines and compressed in a direction normal to the lines so as to form a plurality of essentially identical, parallel, V-shaped channels for guiding the flow of solution across the separating module,

a solution guide plate sealably fitted to one side of the separating plate, the solution guide plate having an inlet opening therethrough which communicates with one end of each of the plurality of channels and having a central portion which overlies a major portion of the channels and renders the channels triangular in cross-section, and

a permeate guide plate sealably fitted to the other side of the separating plate, the permeate guide having an outlet opening therethrough which communicates with the channels in the separating module on the permeate side for removing the permeate, and a pair of side plates fitted to the other sides of the solution guide plate and the permeate guide plate and having means therein for transferring the respective fluid therethrough to the juxtaposed guide plate.

3,948,778

FILTER APPARATUS

Hans Muller, Alte Landstrasse 415, 8708 Mannedorf, Switzerland

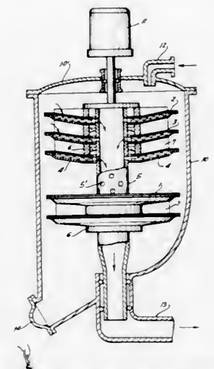
Filed July 17, 1974, Ser. No. 489,422

Claims priority, application Switzerland, July 19, 1973, 10615/73

Int. Cl.² B01D *33/02*

U.S. Cl. 210—330 **10 Claims**

1. In a filter apparatus, a combination comprising a receptacle having an inlet for fluid to be filtered; an upright hollow shaft rotatably mounted in said receptacle; drive means connected to said shaft for rotating the same; a plurality of filter elements mounted on said shaft axially spaced from each other, each of said filter elements including a plate member and a filter cloth overlying an upwardly facing side of said plate member defining therewith a space communicating with the interior of said hollow shaft; outlet means for filtered fluid in said receptacle communicating with the interior of said upright hollow shaft at the lower end of the latter; and spacing



means located between each pair of adjacent filter elements and including a ring portion surrounding said shaft and a plurality of spoke portions projecting outwardly from said ring portion and each having an upper edge engaging a downwardly facing said side of the plate member, and a lower edge engaging the filter cloth on the lower filter of the pair, so as to hold said filter cloth against the associated plate member of said lower filter element.

3,948,779

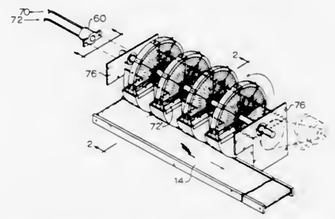
DISC FILTER

Clifford E. Jackson, 10 Brant St. E., Orillia, Ontario, Canada

Continuation of Ser. No. 319,304, Dec. 29, 1972, abandoned. This application Aug. 9, 1974, Ser. No. 496,266

Int. Cl.² B01D *33/06*

U.S. Cl. 210—331 **1 Claim**



1. A rotary vacuum disc filter comprising a plurality of filter sectors,

wherein each sector is constructed to be assembled with similar sectors to form a generally circular disc, each said sector having a larger dimension in the radial direction than in the axial direction,

said sector including a forming member on each side thereof,

said forming members being spaced from each other in the axial direction,

each said forming member being porous and shaped to form outwardly facing, radially extending ridges and valleys,

flexible filter material shaped to be applied to radially outer portions of each side of said sector, on the outside of said forming members, and mounted on said sector,

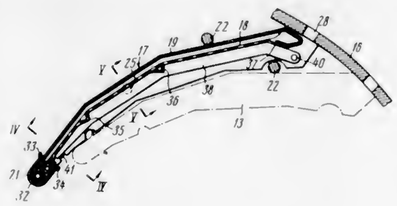
means causing the filter material so mounted to follow the ridges and valleys of the forming member to which it is applied,
means including said filter material defining a chamber in said sector for receiving filtrate passing inwardly through said filter material,
said sectors being assembled to form a generally circular filter,
said circular filter being rotatably mounted to rotate about the axis of the circle of said filter,
means for causing said filter to perform its filtering action in sectors which are partially submerged in a mixture of solids and liquids to be filtered,
means operative during the partial submersion of each of said sectors to cause a pressure differential across the filter media due to the existence of atmospheric pressure on the outside of said filter media and the provision of subatmospheric pressure on the inside of said filter media,
and means operative during a portion of the time when the sector is not partially submerged for directing a short sharp blow of high pressure air outwardly through said filter media for detaching accumulated filter cake from said filter media.

3,948,780

CENTRIFUGE FOR SEPARATION OF SUSPENSIONS

Mikhail Ivanovich Ilin, ulitsa Sadovaya, 214, kv. 5; Gennady Mikhailovich Chudakov, ulitsa Krasnaya, 35, kv. 10, both of Krasnodar; Valery Alexandrovich Trofimov, ulitsa Kirova, 67, kv, 25; Alexandr Ivanovich Boitsov, prospekt Pobedy, 91, kv. 60, Penza, and Serafim Vladimirovich Danilin, ulitsa Ordzhonikidze, 8, Krasnodar, all of U.S.S.R.

Filed Apr. 22, 1975, Ser. No. 570,423
Int. Cl.² B01D *33/02*
U.S. Cl. 210—380 R **9 Claims**



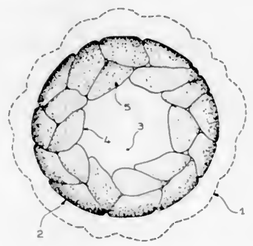
1. A centrifuge for the separation of suspension comprising: a casing; a drive shaft located in said casing; a rotor mounted on said drive shaft; the bottom of said rotor with holes for the discharge of the centrifugate; the cover of said rotor with a hole for the delivery of suspension; a shell with holes for unloading the sludge; arc-shaped vanes arranged side by side in a ring between said bottom and cover of the rotor and facing them by their side surfaces, the inlet end of each vane being curved into an eye which fits over a pin secured to said bottom and cover of the rotor at the point where the suspension is delivered whereas the outlet end of the vane rests on said rotor shell near the hole for unloading the sludge; a fluted body of each of said vanes; a sieve of each of said vanes, provided with flat projections arranged one after another in the direction of suspension flow and extending from one side of said sieve to the other; strips arranged longitudinally relative to said sieve of the vane and pressing said sieve against said body of the vane.

3,948,781

SELECTIVELY PERMEABLE MEMBRANE ON HOLLOW CORD

Robert Brun, Bollene, and Michel Pages, St. Martin d'Ardeche, both of France, assignors to Rhone-Poulenc-Textile, Paris, France

Filed May 10, 1974, Ser. No. 468,999
Claims priority, application France, May 14, 1973, 73.17325
Int. Cl.² B01D *31/00*
U.S. Cl. 210—500 M **16 Claims**



1. A selectively-permeable tubular element which comprises an essentially tubular sheath of uniform textile material having an external diameter up to about 10mm, the whole of which has been heated to a uniform temperature such that the sheath can subsequently be bent in an arc of radius of curvature not exceeding about 10cm while retaining substantially circular cross-section, with a selectively permeable membrane applied to the sheath.

3,948,782

DRILLING WITH LOW VISCOSITY FLUIDS

Karl D. Dreher, and William B. Gogarty, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 375,293, June 29, 1973, abandoned. This application Sept. 10, 1973, Ser. No. 395,672
Int. Cl.² C09K *7/02*
U.S. Cl. 252—8.5 P **13 Claims**

1. In a process of drilling a well utilizing a circulating drilling fluid, the improvement comprising circulating a composition at flow rates predetermined to produce retroviscous behavior, the composition containing lamellar micelles, having an axial ratio of at least 3.5 and having a viscosity of at least 75 cp at a shear rate of 10^{-1} seconds at 23°C., and comprised of about 30 to about 70% of a liquid hydrocarbon, about 15 to about 66% of water, about 4 to about 15% of surfactant which is an alkaryl sulfonate having an average equivalent weight of about 350 to about 525, or a carboxylate having an average equivalent weight of about 200 to about 500, the percents based on weight, the composition being optically clear, phase stable, exhibiting birefringence and the composition exhibiting a substantial increase in flow rate at minor increase in pressure drop while the fluid is under flow conditions at a certain pressure.

3,948,783

PROCESS FOR THE SECONDARY AND TERTIARY RECOVERY OF PETROLEUM

Miklos Tamas Szabo, Pittsburgh; Lawrence James Guilbault, McMurray, and Nancy Spicer Sherwood, Pittsburg, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Apr. 30, 1974, Ser. No. 465,638
Int. Cl.² E21B *43/20*
U.S. Cl. 252—8.55 D **3 Claims**

1. A process for the secondary and tertiary recovery of petroleum from subterranean formations penetrated by an injection well and a producing well, which comprises introducing into said reservoir through said injection well a displacing medium comprising water and from about 0.001 to about 1 percent by weight of a block polymer of the formula A-B-A wherein the A block represents from 10 to 100,000 mer units of a water-soluble monomer selected from the group consisting of 3-acrylamido-3-methyl butyl trimethyl ammonium chloride, 2-acrylamido-2-methyl propane sulfonic acid, dimethyl diallyl ammonium chloride, methacryloyloxyethyl trimethyl ammonium chloride, methacryloyloxyethyl trimethyl ammonium methosulfate, and acrylamide and the B block represents from 10 to 5,000 mer units of N-vinyl pyrrolidone.

3,948,784

TREATMENT OF INDUSTRIAL GRINDING AND CUTTING LUBRICANTS

Hobart M. Krillic, South Holland, and Edward F. Leary, Western Springs, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Mar. 24, 1975, Ser. No. 561,738
Int. Cl.² C10M *1/10, 3/02, 3/04, 5/04*
U.S. Cl. 252—26 **14 Claims**

1. A method of treating aqueous solutions of water-soluble lubricants containing suspended particles of water insoluble inorganics from the group consisting of metals, metallic oxides, silica and carbon which comprises the steps of:
A. adding at least 0.5 ppm by weight of a cationic polyelectrolyte to said water-soluble solutions;
B. dispersing said cationic polyelectrolyte and allowing the suspension to stand at least 2 minutes to allow flocculation and settling of said suspended particles to occur; and then,
C. separating the water-soluble lubricant from the settled particles.

4. The method of claim 1 wherein the cationic polyelectrolyte is a quaternary ammonium polyamine formed by reaction of an alkylene dihalide, a water-soluble basic nitrogen compound from the group consisting of ammonia and the lower ethylene polyamines.

3,948,785

PROCESS OF MANUFACTURING FERRITE MATERIALS WITH IMPROVED MAGNETIC AND MECHANICAL PROPERTIES

Jean Berchtold, 8185 Prestwick Drive, La Jolla, Calif. 92037

Continuation of Ser. No. 103,480, Jan. 4, 1971, abandoned. This application May 18, 1973, Ser. No. 361,697
Int. Cl.² C04B *35/30, 35/38*
U.S. Cl. 252—62.62 **10 Claims**

1. In a process for preparing manganese zinc ferrite powder, nickel zinc ferrite powder, or nickel zinc cobalt ferrite powder by calcining solid ferrite forming metal compounds to form said ferrite, cooling said ferrite and subsequently sintering said ferrite, the improvement which comprises (1) controlling the oxygen content of the ambient atmosphere during said calcining to form a ferrite having an oxygen content which is substantially stoichiometric, (2) cooling said ferrite by quenching in a liquid to strain and fracture said ferrite by thermal shock while maintaining said substantially stoichiometric oxygen content and (3) controlling the oxygen content of the ambient atmosphere through said sintering to maintain said substantially stoichiometric oxygen content of said ferrite.

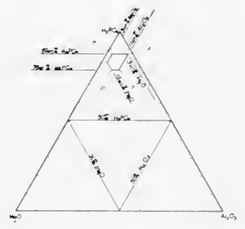
3,948,786

INSULATIVE COATING FOR ELECTRICAL STEELS

James D. Evans, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Oct. 11, 1974, Ser. No. 513,951
Int. Cl.² H01B *3/02*
U.S. Cl. 252—63.5 **4 Claims**

1. A coating solution for forming an insulative coating directly on electrical steels and on electrical steels having a mill glass thereon, said solution containing an Al^{+++}, Mg^{++} and $H_2PO_4^-$ concentration in the following relative relationship on a water-free basis: from 3 to 11% by weight Al^{+++} calculated as Al_2O_3, from 3 to 15% by weight Mg^{++}, calculated as MgO, and from 78 to 87% by weight $H_2PO_4^-$ calculated as H_3PO_4, the total weight percentage of Al^{+++} (as Al_2O_3), Mg^{++} (as MgO) and $H_2PO_4^-$ (as H_3PO_4) being 100% on a water-free basis, said concentration of Al^{+++}, Mg^{++} and $H_2PO_4^-$ comprising 100 parts by weight calculated as Al_2O_3, MgO and H_3PO_4 respectively on a water-free basis, and from 0 to 150 parts by weight of colloidal silica on a water-free basis, at least 45% by weight of said coating solution being water.



3,948,787

CAPACITOR AND DIELECTRIC IMPREGNANT COMPOSITION THEREFOR

Ralph H. Munch, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 357,158, May 4, 1973, abandoned. This application Dec. 12, 1973, Ser. No. 424,037
Int. Cl.² H01B *3/18;* **H01G** *4/02*
U.S. Cl. 252—63.7 **8 Claims**

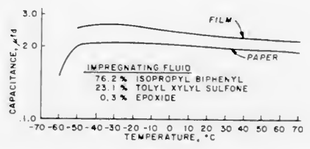
1. A composition useful as a capacitor impregnant comprising a mixture of a diaryl sulfone and an ester of a carboxylic acid selected from the group consisting of aliphatic dicarboxylic acids having from 4 to 10 carbon atoms and aromatic dicarboxylic acids having from 8 to 16 carbon atoms.

3,948,788

DIELECTRIC COMPOSITION FOR IMPREGNATING ELECTRICAL CAPACITORS

Ralph H. Munch, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 280,911, Aug. 15, 1972, abandoned, which is a division of Ser. No. 232,152, March 6, 1972, abandoned. This application Dec. 13, 1973, Ser. No. 424,491
Int. Cl.² H01B *3/18;* **H01G** *4/02*
U.S. Cl. 252—63.7 **9 Claims**



1. A composition useful as a capacitor impregnant comprising a mixture of a diaryl sulfone and a halogen-free aromatic organic compound selected from the group consisting of alkyl benzene, alkyl naphthalene, alkyl biphenyl, alkyl polyphenyl, alkaryl ethers and alkyl-substituted derivatives thereof, diaryl alkanes and alkyl-substituted derivatives thereof, and diaryl ethers and alkyl-substituted derivatives thereof wherein said alkyl groups and alkanes have from 1 to about 20 carbon

atoms, said aryl radicals are phenyl, naphthyl, biphenyl or polyphenyl and said polyphenyls include from 3 to about 5 phenyl groups.

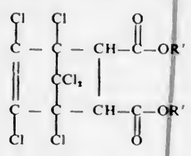
3,948,789

ELECTRICAL DEVICES CONTAINING IMPROVED DIELECTRIC FLUIDS

William T. Brooks, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

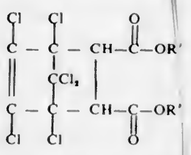
Filed Mar. 3, 1975, Ser. No. 554,893
Int. Cl.² H01B *3/18;* **H01G** *4/02*
U.S. Cl. 252—65 **10 Claims**

1. A dielectric fluid consisting essentially of a major amount of a liquid polyorgansiloxane and a minor amount of a compound soluble in said siloxane, which compound has the general formula



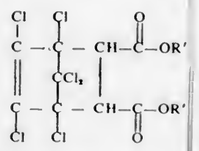
wherein each R′ is a hydrogen atom or an alkyl radical containing from 1 to 12 carbon atoms.

3. A dielectric fluid as defined in claim 2 wherein the siloxane has the general formula $R_3SiO(R_2SiO)_xSiR_3$ wherein R is a hydrocarbon or a halogenated hydrocarbon radical and x is an integer, and the compound has the general formula



wherein R′ is an alkyl radical containing from 4 to 8 carbon atoms.

6. In an electrical device containing a dielectric fluid, the improvement comprising employing as the dielectric fluid a composition consisting essentially of a major amount of a liquid polyorganosiloxane and a minor amount of a compound soluble in said siloxane, which compound has the general formula



wherein each R′ is a hydrogen atom or an alkyl radical containing from 1 to 12 carbon atoms.

3,948,790

DETERGENT COMPOSITIONS CONTAINING SHORT CHAIN QUATERNARY AMMONIUM CLAYS

Peter Roscoe Hartley Speakman, Newcastle-upon-Tyne, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 27, 1975, Ser. No. 544,092
Claims priority, application United Kingdom, Jan. 31, 1974, 4578/74
Int. Cl.² C07F *5/06;* **C11D** *3/12, 9/18;* **D06M** *11/00*
U.S. Cl. 252—120 **17 Claims**

1. A detergent composition comprising from about 5 to about 99% by weight of an organic anionic, nonionic, ampholytic or zwitterionic detergent, or a mixture thereof, and from about 1 to about 50% by weight of the composition of an impalpable smectite clay having an ion-exchange capacity of at least about 50 meq/100 grams, in which clay from about 5 to about 100 molar percent of the exchangeable cations are alkyl-substituted ammonium ions of the general formula

$$R^1R^2R^3R^4N^+ \quad (I)$$

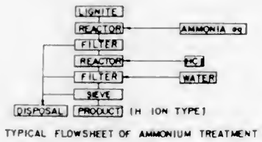
wherein each of R^1, R^2, R^3 and R^4 represents an alkyl group having 1 to 4 carbon atoms or hydrogen, provided that the total number of carbon atoms does not exceed 8, and that not more than any two of R^1, R^2, R^3 and R^4 represent hydrogen.

3,948,791

ION EXCHANGER AND METHOD FOR THE PRODUCTION THEREOF

Mitsuharu Tominaga, Tokyo; Mamoru Mimori, Funabashi, and Kinnosuke Okuda, Ichikawa, all of Japan, assignors to Japan Metals and Chemicals Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1973, Ser. No. 389,445
Claims priority, application Japan, Aug. 23, 1973, 48-84378
Int. Cl.² B01D *15/00;* **B01J** *1/04*
U.S. Cl. 252—179 **2 Claims**



TYPICAL FLOWSHEET OF AMMONIUM TREATMENT PROCESS

1. The method of manufacturing an ion exchanger comprising the steps of crushing lignite into particles with a grain size no greater than 5mm, immersing the particles in an aqueous solution of ammonia at an elevated temperature or normal temperature, and treating the ammonia treated system with an aqueous solution of a salt of a metal in Group II of the periodic table.

3,948,792

CORROSION AND SCALE SOFTENING COMPOSITION

Robert G. Watson, LaGrange, and Edwin S. Troscinski, Westmont, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 233,308, March 9, 1972, abandoned, which is a continuation-in-part of Ser. No. 28,984, April 15, 1970, abandoned. This application Dec. 13, 1973, Ser. No. 424,254
Int. Cl.² C02B *5/02, 5/06;* **C23F** *11/18, 11/14*
U.S. Cl. 252—181 **19 Claims**

1. A corrosion and scale inhibitor composition for automobile and diesel coolant systems comprising an aqueous solution containing the following:

I.

A. from 40 to 90% water

B. from 2 to 20% of an alkali metal silicate calculated as sodium metasilicate pentahydrate

C. from 0 to 15% of an alkali metal nitrite calculated as sodium nitrite

D. from 0 to 15% of an alkali metal nitrate calculated as sodium nitrate

E. from 0 to 5% of a compound selected from the group consisting of mercaptobenzothiazole and alkali metal salts thereof

F. from 3 to 60% of a compound selected from the group consisting of boric acid and alkali metal borates, the latter being calculated as the tetraborate pentahydrate

G. an amount of a base selected from the group consisting of the alkali metal hydroxides, carbonates, and bicarbonates sufficient to provide a pH of about 8.5 to 10.5 in an aqueous solution of said composition.

II. from 0.1 to 50% by weight, based on the weight of the solids present in I, of a polymeric dispersant which is a water-soluble carboxylic acid polymer selected from at least one member selected from the group consisting of a carboxylic acid containing vinyl addition polymer and carboxymethyl cellulose.

3,948,793

ULTRA-PURE METAL HALIDE PARTICLES

Scott Anderson, Champaign, Ill., assignor to Anderson Physics Laboratories, Inc., Champaign, Ill.

Division of Ser. No. 861,408, Sept. 26, 1969, Pat. No. 3,676,534. This application June 5, 1972, Ser. No. 259,858
Int. Cl.² H01J *7/18, 35/20;* **H01K** *1/56*
U.S. Cl. 252—181.1 **7 Claims**

1. A composition for use as a vaporizable fill for electric discharge devices comprising:

free-flowing metal halide particles of a substantially uniform size and generally spheriod shape in the range between 100 and 2,000 microns and which have a total oxygen content of less than 50 parts per million wherein the halide is selected from the group consisting of the iodides, bromides and chlorides of the metals of the Lanthanide series, Groups 1*a*, 2*a*, 3*a*, 4*a*, 1*b*, 2*b*, 3*b*, and mixtures thereof.

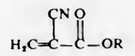
3,948,794

ADHESIVE COMPOSITIONS CONTAINING A CYANOACRYLATE AND ITACONIC ANHYDRIDE

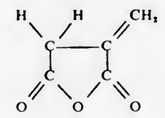
Eberhard Konig, Eschborn, Germany, assignor to USM Corporation, Boston, Mass.

Filed June 12, 1974, Ser. No. 478,514
Claims priority, application United Kingdom, June 16, 1973, 28717/73
Int. Cl.² C08F *222/32*
U.S. Cl. 252—182 **5 Claims**

1. An adhesive composition comprising one or more polymerizable esters of 2-cyanoacrylic acid according to the general formula



where R is an alkyl or alkenyl group having 1 to 16 carbon atoms, a cyclohexyl group or a phenyl group, together with an anionic polymerization inhibitor and a free radical polymerization inhibitor, characterized in that the adhesive includes from about 0.1 to about 10% by weight based on the weight of the composition of a compound according to the formula



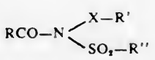
3,948,795

METHOD OF LOW-TEMPERATURE ACTIVATION OF PEROXIDES

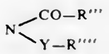
Yasumasa Kawabe, Shizuoka, and Masaaki Suzuki, Tokyo, both of Japan, assignors to Tokai Denka Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1973, Ser. No. 427,396
Int. Cl.² C01B *15/02;* **C11D** *7/54*
U.S. Cl. 252—186 **7 Claims**

1. Method of low-temperature activation of hydrogen peroxide or a hydrogen peroxide adduct, which comprises adding to said peroxide an activator comprising an aromatic compound



wherein R is a substituted or an unsubstituted monovalent aromatic group; R′ and R″ are each either a substituted or an unsubstituted monovalent aromatic group or



wherein R‴ and R⁗ are each a substituted or an unsubstituted monovalent aromatic group and Y is either CO or SO_2, R′ and R″ being different or the same and may form a divalent aromatic group when combined with each other, and X is either CO or SO_2.

3,948,796

TRIALLYL CYANURATE WITH HIGH RINGBOUND CHLORINE CONTENT

Raymond Broisman, Linden, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 127,026, March 22, 1971, abandoned, which is a division of Ser. No. 848,690, Aug. 8, 1969, Pat. No. 3,644,256. This application June 25, 1973, Ser. No. 373,558
Int. Cl.² C07D *251/28*
U.S. Cl. 252—187 C **2 Claims**

1. A composition consisting essentially of a mixture of triallyl cyanurate and at least one compound having chlorine substituted on a triazine ring, said composition containing 0.05 to 3.0% of chlorine bound to a triazine ring.

3,948,797

PROCESS FOR RESTORATION OF PERFORMANCE OF A CHEMICAL LIGHT SYSTEM

Mary-Louise Vega, Califon, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 29, 1973, Ser. No. 420,116
Int. Cl.² C09K *11/00, 11/06*
U.S. Cl. 252—188.3 CL **4 Claims**

1. A process for the rejuvenation of an oxalate component of a chemical lighting system, said oxalate component comprising an oxalic acid diester and a fluorescer in organic liquid solvent, which process comprises mixing the oxalate component with a molecular sieve and then separating the treated component therefrom.

3,948,798
TITANIUM-ACTIVATED LANTHANUM OXYSULFIDE PHOSPHOR AND METHOD OF PREPARING SAME
John L. Ferri, Towanda, and James E. Mathers, Ulster, both of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.
Filed Dec. 23, 1974, Ser. No. 535,492
Int. Cl.² C09K *11/46, 11/14*
U.S. Cl. 252—301.4 S **8 Claims**

1. A luminescent composition consisting essentially of a lanthanum oxysulfide host and from about 0.0001 moles to about 0.05 moles of titanium per mole of host as an activator.

3,948,799
PROCESS FOR PREPARING SILICA ORGANOSOLS
David P. Schaefer, Hinsdale, and Linda J. Pluta, North Riverside, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.
Filed Sept. 28, 1973, Ser. No. 401,772
Int. Cl.² B01J *13/00*
U.S. Cl. 252—309 **2 Claims**

1. A process for preparing a silica organosol which comprises the steps of:
A. Adding a hydroxy free organic liquid having a dipole moment in Debye Units greater than 3 to an aqueous colloidal silica sol said silica sol composed of discrete silica particles having an average particle size diameter of 3–300 mμ, said sol further characterized as having a silica concentration of from 10–60% by weight silica expressed as SiO_2; while,
B. Simultaneously removing water from the aqueous colloidal silica sol until the water content has been reduced to not more than 5% by weight and the amount of hydroxy free organic liquid added is an amount sufficient to produce a product of not greater than 60% SiO_2; and then,
C. Recovering a silica organosol comprised of silica particles uniformly dispersed in the hydroxy free organic liquid.

3,948,800
DISPERSANT COMPOSITIONS
Norman Anthony Meinhardt, Lyndhurst, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 159,017, July 1, 1971, Pat. No. 3,804,763. This application May 25, 1973, Ser. No. 363,935
Int. Cl.² B01F *17/22, 17/32, 17/36*
U.S. Cl. 252—356 **17 Claims**

1. An oil-soluble dispersant composition having demulsifying characteristics which is the reaction product obtained by the reaction, at a reaction temperature in the range of about 25°C. to about 300°C., of a carboxylic acid acylating agent (A) having at least 30 aliphatic carbon atoms per molecule, with
I. a hydroxy compound (B) sekected from the group consisting of polyhydric aliphatic alcohols and aromatic alcohols;
II. a polyoxyalkylene polyamine (C) having an average molecular weight of at least about 200 and selected from the group consisting of those corresponding to the formula, $H_2N—Alkylene—(—O—Alkylene)_m—NH_2$, and $R—[—Alkylene—(—O—Alkylene)_n—NH_2]_{3-6}$, wherein m has a value of about 3 to about 70, *n* has a value of from about 1 to about 40 with the proviso that the sum of all the n's is from about 3 to about 70, and R is a polyvalent saturated hydrocarbon radical of up to about 10 carbon atoms and has a valence of 3 to 6; and
III. an alkylene amine (D);
wherein both (B) and (C) are present in amounts of at least about 0.001 equivalent per equivalent of (A), and (D) is present in an amount ranging from zero to about 4 equivalents per equivalent of (A).

9. An oil soluble dispersant composition having demulsifying characteristics which is the reaction product obtained by the reaction, at a reaction temperature in the range of 25°C. to 300°C., of a substantially saturated hydrocarbon substituted dicarboxylic acid acylating agent (A) in which the substitutents are derived from 1-olefin polymers or halogenated 1-olefin polymers, having an average molecular weight in the range of about 700 to 5000, with
I. a polhydric aliphatic alcohol (B) haviing from 2 to 10 hydroxy groups per molecule;
II. a polyoxyalkylene polyamine (C) having a molecular weight in the range of from about 200 to about 4000, and selected from the group consisting of those corresponding to the formula $H_2N—Alkylene—(—O—Alkylene)_m—NH_2$, and $R—[—Alkylene—(—O—Alkylene)_n—NH_2]_3—_6$, wherein *m* has a value of about 3 to about 70, *n* has a value of from about 1 to about 40 with the proviso that the sum of all the *n*'s is from about 3 to about 70, and R is a polyvalent saturated hydrocarbon radical of up to about 10 carbon atoms and has a valence of 3 to 6; and (III) an alkylene amine (D);
wherein both (B) and (D) are present in amounts ranging from about 0.01 to about 4 equivalents per equivalent of (A), and (C) is present in an amount ranging from about 0.01 to about 2.0 equivalents per equivalent of (A).

3,948,801
STABILIZER COMPOSITION OF PHOSPHITE AND LIGNIN
David V. Braddon, Charleston Heights, and Sten I. Falkehag, Mount Pleasant, both of S.C., assignors to Westvaco Corporation, New York, N.Y.
Division of Ser. No. 288,907, Sept. 14, 1972, Pat. No. 3,822,225. This application June 13, 1973, Ser. No. 370,564
The portion of the term of this patent subsequent to Jan. 29, 1991, has been disclaimed.
Int. Cl.² C09K *15/32;* **C08L** *97/00;* **C09K** *15/34*
U.S. Cl. 252—400 A **2 Claims**

1. A stabilizing composition which consists of, (a) at least one phosphite from the group consisting of triaryl phosphites, trialkyl phosphites, tri(aryl-alkyl) phosphites, and mixtures thereof, and (b) a technical lignin which has been heated in an aqueous solution containing a nucleophile and having at least 0.35 catechol groups per 1000 grams of said lignin, wherein the weight ratio of the phosphite to the said lignin is from 97/3 to 10/90.

3,948,802
COMPOSITION AND METHOD FOR MAINTAINING A CONSTANT CONCENTRATION OF AGENTS AND AMOUNT OF SOLVENT IN A WOOD TREATING PROCESS
Harold G. Liddell, Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 276,682, July 31, 1972, Pat. No. 3,874,908. This application Oct. 15, 1974, Ser. No. 514,688
Int. Cl.² C09K *15/08;* **B27K** *3/00;* **C09K** *15/00*
U.S. Cl. 252—404 **4 Claims**

1. A wood treating composition of matter comprising:
A. from about 10 to about 40 weight percent of a wood preservative; and
B. from about 5 to about 60 weight percent of at least one of ethylene glycol, proplylene glycol, a corresponding liquid polyglycol having a molecular weight up to about 4000, or a mono alkyl ether of ethylene or propylene glycol or polyglycol both dissolved or dispersed in a halogenated aliphatic hydrocarbon solvent of 1-2 carbon atoms, said solvent boiling between about ambient tempeerature and 140°C.

3,948,803
CATALYST
Robert L. Carney, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.
Filed May 28, 1974, Ser. No. 473,628
Int. Cl.² B01J *27/26*
U.S. Cl. 252—429 R **3 Claims**

1. A catalyst composition consisting essentially of a solution of a compound of the formula $MX(CuCN)_n$ wherein M is lithium or magnesium, X is chloro, bromo, or iodo and n is one, two or three, in a solvent therefor.

3,948,804
SUPERACTIVE ACIDIC BIMETALLIC CATALYTIC COMPOSITE AND USE THEREOF IN CONVERSION OF HYDROCARBONS
Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Dec. 10, 1973, Ser. No. 423,606
The portion of the term of this patent subsequent to July 10, 1990, has been disclaimed.
Int. Cl.² B01J *27/12, 27/10*
U.S. Cl. 252—442 **10 Claims**

1. A catalytic composite of a porous carrier material, from about 0.01 to about 2 wt. % elemental platinum group metal, about 0.01 to about 5 wt. % tin in the form of a tin halide or tin oxyhalide and uniformly dispersed throughout the porous carrier material in a particle size which is less than 100 Angstroms in maximum dimension, and an amount of halogen determined by the following equation:

$$\text{wt. \% halogen} = (K_1)(SA) + (K_2)(K_3)(M_{Sn})$$

where
K_1 is about 0.004 to about 0.006 wt. % Halogen/M^2/g
K_2 is about 3 to about 5 atoms of halogen/atoms of tin
K_3 is the gram atomic weight of the halogen
M_{Sn} is moles of tin contained in the composite per 100 g. of composite
SA is the surface area of the carrier material in M^2/g.

3,948,805
CATALYSTS FOR CONVERTING MALEIC ANHYDRIDE TO γ-BUTYROLACTONE
Georg Michalczyk, Neukirchen-Vluyn, and Karl-Heinz Gluzek, Alpen, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany
Filed July 15, 1974, Ser. No. 488,352
Claims priority, application Germany, Aug. 3, 1973, 2339343
Int. Cl.² B01J *21/18, 29/06, 23/16*
U.S. Cl. 252—447 **6 Claims**

5. A co-catalyst comprising a mixture of 0.1 to 100 parts by weight of nickel-copper chromite on alumina catalyst according to claim 1 per 1 part by weight of a palladium catalyst.
6. A co-catalyst according to claim 5 wherein said palladium catalyst comprises from 0.1 to 10.0 weight percent palladium supported on a carbon base.

3,948,806
LARGE PORE SILICA AND POLYMERIZATION CATALYST
Donald R. Witt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed July 26, 1973, Ser. No. 382,899
Int. Cl.² B01J *21/08, 29/00*
U.S. Cl. 252—451 **4 Claims**

1. A method of preparing a silica composition which comprises:
a. contacting a silane with an alkali metal hydroxide to form a composite, said silane having the formula $(RO)_nSiX_{4-n}$ in which formula R is a hydrocarbyl radical containing 1 to 12 carbon atoms and selected from the group consisting of alkyls, cycloalkyls and aryls; *n* is an integer having a value within the range of 1 to 4; and X is a halogen selected from the group consisting of fluorine, chlorine, or is an alkyl or aryl radical containing from 1 to 12 carbon atoms; and
b. introducing said composite into contact with a mineral acid to produce a hydrogel; and,
c. recovering the silica composition from said hydrogel.

3,948,807
OXIDE CATALYSTS AND PROCESS FOR PREPARATION THEREOF
Yoshio Fuchigami, Kurashiki, and Yusaku Arima, Kitakyushu, both of Japan, assignors to Kuraray Co., Ltd., Japan
Filed Jan. 2, 1974, Ser. No. 429,705
Claims priority, application Japan, Feb. 9, 1973, 48-16870; Jan. 13, 1973, 48-6937
Int. Cl.² B01J *29/16, 29/26*
U.S. Cl. 252—456 **9 Claims**

1. In a process for preparing an oxide catalyst composed of vanadium oxide and titanium oxide in which more than 50% of the titanium oxide is in the rutile crystalline form, the improvement comprising calcining an intimate mixture of (a) vanadium oxide or a vanadium compound which, when calcined in an oxidizing atmosphere at 400° to 600°C. will give vanadium oxide and (b) a titanium oxide hydrogel which when dried at 250°C. will give titanium oxide having a crystallite size of not more than 70 A as calculated by the Sherrer method based on its X-ray diffraction peak at 2θ=25.4°, in an oxidizing atmosphere containing more than 10% by volume of oxygen at a temperature of 400° to 600°C.

7. An oxide catalyst suitable for use as a fluidized bed catalyst for preparing acetic acid by the gaseous phase oxidation of butenes, said catalyst consisting essentially of vanadium oxide, titanium oxide and silica, and having the following features:

a titanium-to-vanadium atomic ratio	0.1 to 10
a rutile content of titanium oxide	more than 50%
a silica content based on the total weight of the composition	10–90% by weight
a bulk density	0.6 – 1.2 g/ml.
a specific surface area	10 – 200 m^2/g
a pore volume	0.1 – 0.5 ml/g
a pore diameter	at least 50 A.

3,948,808
ZINC ALUMINATE CATALYST COMPOSITIONS
E. O. Box, Jr., and Floyd Farha, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 337,406, Mar. 2, 1973, Pat. No. 3,823,088, which is a continuation-in-part of Ser. No. 255,152, May 19, 1972, abandoned.
Filed Mar. 5, 1974, Ser. No. 448,204
Int. Cl.² B01J *23/10*
U.S. Cl. 252—462 **2 Claims**

1. A catalyst composition consisting of zinc aluminate promoted with 0.05–20 weight percent, calculated as the metal, of (1) at least one of copper, bismuth, manganese, rhenium, nickel, platinum, palladium and iridium and (2) cerium or lanthanum.

3,948,809
ABSORBENT AND THE PROCESS FOR PRODUCING IT
Joseph Rangott Norman, South Coogee, and David Graham Wood, Sardinia, both of Australia, assignors to Unisearch Limited, Kensington, Australia
Filed Jan. 18, 1973, Ser. No. 324,578
Int. Cl.² B01J *21/04*
U.S. Cl. 252—463 **6 Claims**

1. A process for producing an absorbent, capable of absorbing sulphur-containing oxides from industrial gases, from materials containing aluminum oxide consisting essentially of

naturally occurring bauxite or red mud waste product from aluminum plants comprising the steps of leaching said material with an alkaline solution; separating the resultant leach liquor from the undissolved material; adding up to about 30% by weight of an alkali metal carbonate to the separated leach liquor, said weight being based on the weight of the original alkaline solution; drying the liquor so as to produce the absorbent in solid form; and calcining said absorbent.

3,948,810

MONOLITHIC CATALYST SUPPORT MEMBER

George L. Hervert, Woodstock, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 23, 1974, Ser. No. 491,007
Int. Cl.² B01J 35/02
U.S. Cl. 252—477 R 7 Claims

1. A rigid and monolithic catalyst support member which comprises in combination, a plurality of spaced-apart, rigid ceramic sheet members and a multiplicity of substantially round pellets of rigid refractory material positioned in a layer in a spaced-apart manner between said sheet members in which said refractory material is fused to said spaced ceramic sheet members, with said round pellets being staggeredly positioned in said layer to thereby provide turbulent fluid flow for a stream passing between said sheet members.

3,948,811

ELECTRICALLY CONDUCTIVE SHEET COMPOSITION

Jerome Francis Clary; Robert Emerson Wiley, and Richard Earl Bowns, all of Port Huron, Mich., assignors to Acheson Industries, Inc., Port Huron, Mich.

Filed May 29, 1973, Ser. No. 364,749
Int. Cl.² H01B 1/02
U.S. Cl. 252—512 10 Claims



1. A composition, for use as an electrically conductive material, comprised of in weight percent,
about 5 to about 90% of a heat stable elastomeric polymer selected from at least one of the group consisting of fluoroelastomer polymers and modified fluoroelastomer polymers,
about 10 to about 95% of conductive pigment,
and wherein said conductive pigment is substantially a finely particulated material selected from at least one material of the group consisting of, silver, copper, noble metals and alloys thereof,
said composition being substantially free of polytetrafluoroethylene.

3,948,812

CONDUCTIVE COMPOSITIONS AND PROCESSES THEREFOR

Sidney A. Corren, Katonah, and Myron A. Coler, Scarsdale, both of N.Y., assignors to Myron A. Coler, Scarsdale, N.Y.

Continuation of Ser. No. 199,309, Nov. 16, 1971, abandoned, which is a continuation of Ser. No. 84,504, Oct. 27, 1970, abandoned, which is a continuation of Ser. No. 818,394, April 22, 1969, abandoned, which is a continuation-in-part of Ser. No. 340,823, Jan. 28, 1964, abandoned. This application Mar. 26, 1974, Ser. No. 454,860
Int. Cl.² H01B 1/02
U.S. Cl. 252—512 25 Claims

1. A process for the preparation of a glassy-ceramic body having desired electrical characteristics which comprises heating a finely divided admixture of about 1 to 30% by weight of boron and 99 to 70% by weight of a Group 6*b* metal selected from chromium, molybdenum, tungsten, and mixtures thereof, based on the total weight of metals present which may be in elemental, alloy, boride or sulfide form, with glassy-ceramic-forming material selected from silica glasses, borate glasses, phosphate glasses, slags, fluorite, frits, clays having natural glass-forming constituents, and mixtures thereof, at a temperature in the range of about 800° to 1350°C. to produce said glassy-ceramic body.

23. A process for the preparation of a ceramic body having desired electrical characteristics which comprises heating a finely divided admixture of boron and a Group 6*b* metal selected from chromium, molybdenum, tungsten, and mixtures thereof, which metal may be in elemental, alloy, boride or sulfide form, with fusible ceramic material selected from silica glasses, borate glasses, phosphate glasses, slags, fluorite, frits, clays having natural glass-forming constituents, and mixtures thereof, to a temperature above the softening point of said fusible ceramic material and cooling the resulting material to form said ceramic body.

25. A ceramic body made by the process of claim 23.

3,948,813

OXYGEN SENSITIVE, REFRACTORY OXIDE COMPOSITION

Cressie E. Holcombe, Jr., Oak Ridge, and Douglas D. Smith, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Dec. 2, 1974, Ser. No. 528,765
Int. Cl.² H01B 1/02
U.S. Cl. 252—520 4 Claims

1. A sintered compact composition consisting essentially of 25 to 75 mole % Nb_2O_5 with the balance being a Group IVB dioxide, said compact being gray to black in color with an electrical resistivity of less than 10^3 ohm-cm, containing binary compounds consisting essentially of integer molar ratios of Nb_2O_5 and said Group IVB dioxide and being capable of direct electrodeposition of an adjacent metallic layer and of conversion to an insulator substantially white in color when heated in air.

3,948,814

ACETALDEHYDE ETHYL LINALYL ACETAL PERFUME COMPOSITIONS

David de Rijke, Naarden, Netherlands, assignor to Naarden International, N.V., Naarden-Bussum, Netherlands

Filed Aug. 10, 1972, Ser. No. 279,297
Claims priority, application Netherlands, Aug. 11, 1971, 7111071
Int. Cl.² A61K 7/46; C07C 43/30
U.S. Cl. 252—522 2 Claims

1. A perfume composition comprising a mixture of perfumery materials including acetaldehyde ethyl linalyl acetal in an amount sufficient to give a flowerlike undertone to said composition.

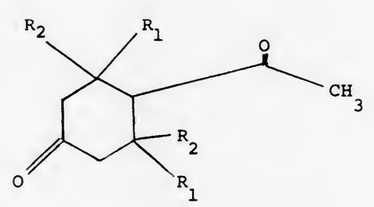
3,948,815

PERFUME COMPOSITIONS

Bernard Pierre Corbier, 19 Avenue Fouques, and Paul José Teisseire, 14 Avenue Pierre Semard, both of Grasse, France

Division of Ser. No. 110,652, Jan. 28, 1971, Pat. No. 3,875,241, which is a continuation-in-part of Ser. No. 585,269, Oct. 10, 1966, Pat. No. 3,578,715. This application Feb. 3, 1975, Ser. No. 546,564
Claims priority, application Switzerland, Oct. 14, 1965, 14216/65
Int. Cl.² A61K 2/46; C11B 9/00
U.S. Cl. 252—522 26 Claims

1. A perfume composition containing a compound having the formula



or its corresponding ring substituted lower enolethers, lower enolesters and ketals, R_1 and R_2 representing lower alkyl or cyclo lower alkyl groups.

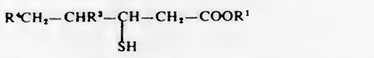
3,948,816

MERCAPTO CARBOXYLIC ACID ESTERS

Daniel Helmlinger, Dubendorf; Dietmar Lamparsky, Wangen-Dubendorf; Peter Schudel, Grut; Trudi Sigg-Grütter, Winterthur, and Jost Wild, Zurich, all of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 223,044, Dec. 2, 1971, abandoned. This application Mar. 28, 1974, Ser. No. 455,761
Int. Cl.² A61K 7/46; C11B 9/00
U.S. Cl. 252—522 4 Claims

1. An odorant composition containing an olfactible amount of a compound having the general formula



wherein R^1 is an alkyl group having 1 to 6 carbon atoms and is preferably unbranched, R^3 signifies hydrogen or alkyl containing 1–3 carbon atoms and R^4 signifies alkyl, preferably unbranched, containing 1–7 carbon atoms, and at least one fragrance material having a note selected from lavender, chypre, gardenia, jasmine and rose.

3,948,817

PROPELLING GAS SYSTEM FOR ALCOHOLIC PERFUMED LIQUIDS FOR USE IN AEROSOL DISPENSERS

Gisela Grothoff, Nollenlinde 7, 466 Gelsenkirchen-Buer, Germany

Continuation of Ser. No. 223,194, Feb. 3, 1972, abandoned. This application Jan. 23, 1975, Ser. No. 543,366
Int. Cl.² C11B 9/00
U.S. Cl. 252—522 10 Claims

1. A perfume composition adapted for dispensing in a pressurized aerosol dispenser which consists essentially of a solution in an aqueous ethyl alcohol solvent of conventional perfume ingredients and a propellant comprising a major portion of dimethyl ether or methyl ethyl ether or a mixture of both, the propellant being present in such an amount as to produce an aerosol when the composition is released from a pressurized aerosol dispenser but insufficient to produce precipitation of the perfume ingredients thereof.

3,948,818

DETERGENT COMPOSITION

Shinichi Tomiyama, Ichikawa, and Masahide Iimori, Tokyo, both of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed May 16, 1974, Ser. No. 470,373
Claims priority, application Japan, May 21, 1973, 48-56556
Int. Cl.² C11D 1/10, 3/33, 3/34
U.S. Cl. 252—542 7 Claims

1. In a detergent composition consisting essentially of surfactant component and builder component, the improvement which comprises: said detergent composition contains, as a surfactant component, from 10 to 30 percent by weight, based on the weight of said detergent composition, of at least one salt selected from the group consisting of the lysine, hydroxylysine, arginine, histadine and ornithine salts of alkylbenzene sulfonic acids having 8 to 18 carbon atoms, alkane sulfonic acids having 14 to 22 carbon atoms, alkene sulfonic acids having 14 to 22 carbon atoms, sulfonates of fatty acids having 8 to 22 carbon atoms and lower alcohol esters thereof, and monohydric alcohol monoester sulfates having 10 to 22 carbon atoms.

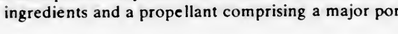
3,948,819

CLEANING COMPOSITION

Arthur G. Wilde, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 39,143, May 20, 1970, abandoned. This application June 18, 1973, Ser. No. 370,785
Int. Cl.² C11D 1/34, 1/66, 3/10, 3/36
U.S. Cl. 252—545 4 Claims

1. A cleaning composition having particular utility in the removal of soil from aluminum airplane surfaces and substantially preventing the redeposition thereon, consisting essentially of an aqueous solution, each liter thereof having dissolved therein
1. an effective amount for cleaning said airplane surfaces of at least 1 gram of a nonionic surfactant system consisting essentially of
a. a first ethoxylated nonionic surfactant containing 35–55% oxyethylene units by weight, and
b. a second ethoxylated nonionic surfactant containing at least 55% oxyethylene units by weight but not less than 10% more oxyethylene units by weight than does the first surfactant,
said surfactants being selected from the group consisting of
A. polyethoxylated alkyl phenols containing 8 to 12 carbon atoms in the alkyl group, polyethoxylated fatty acids of fatty acids containing about 18 carbon atoms, and polyethoxylated sorbitan esters of fatty acids wherein each fatty acid contains from 12 to 18 carbon atoms wherein the mol ratio of the first ethoxylated surfactant to the second ethoxylated surfactant is about 3.5:1 to 1:3, and
B. ethoxylated C_{11-15} secondary alkanols wherein the mol ratio of the first ethoxylated surfactant is about 4:1 to 1:3.5, and
2. in a concentration effective to substantially prevent redeposition of soil, at least 0.1 millimol per liter of a fluoroaliphatic phosphate selected from the group consisting of



$[CF_3(CF_2)_7SO_2N(C_2H_5)C_2H_4O]PO(ONH_4)_2$

and

$[CF_3(CF_2)_{5-14}C_2H_4O]_2PO[ONH_3(C_2H_4OH)_2]$.

3. A cleaning composition having particular utility in the removal of soil from aluminum airplane surfaces, consisting essentially of an aqueous solution, each liter thereof having dissolved therein, in a concentration effective for cleaning said airplane surfaces, at least 1 gram of a nonionic surfactant system consisting essentially of

a. a first ethoxylated C_{11-15} secondary alkanol nonionic surfactant containing 35–55% oxyethylene units by weight, and

b. a second ethoxylated C_{11-15} secondary alkanol nonionic surfactant containing at least 55% oxyethylene units by weight but not less than 10% more oxyethylene units by weight than does the first surfactant, wherein the mol ratio of the first ethoxylated alkanol surfactant to the second ethoxylated alkanol surfactant is about 4:1 to 1:3.5, and sufficient potassium carbonate to make the pH of said solution 9–10.8.

3,948,820

CURABLE POLYPHOSPHAZENE COPOLYMERS AND TERPOLYMERS

Kennard A. Reynard, Mentor, and Selwyn H. Rose, Beachwood, both of Ohio, assignors to Horizons Incorporated, Cleveland, Ohio

Continuation of Ser. No. 303,159, Nov. 2, 1972, abandoned. This application Aug. 7, 1974, Ser. No. 495,464

Int. Cl. C08g *33/16*

U.S. Cl. 260—2 P **11 Claims**

1. Polyphosphazenes having a degree of polymerization of 10 to 50,000 the skeletal chains of which comprise randomly repeating units represented by the general formulas



and

wherein each R is a monovalent radical selected from the group consisting of alkyl, substituted alkyl, fluoroalkyl, aryl, substituted aryl and arylalkyl and not every R in the polyphosphazene is required to be identical to every other R; and each R′ is a monovalent group containing OH functionality and the ratio of R′:R being between 0.5 to 99.5 and 35 to 65.

3,948,821

SOLID AMINO ACID PRODUCTS FOR POLYPEPTIDE SYNTHESIS AND METHOD OF MANUFACTURE THEREOF

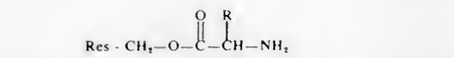
Peter L. deBenneville, Philadelphia, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 770,797, Oct. 25, 1968, abandoned. This application June 4, 1973, Ser. No. 366,883

Int. Cl.² C08J *9/16*

U.S. Cl. 260—2.5 B **5 Claims**

1. A solid phase crosslinked aromatic hydrocarbon macroreticular resin or polymer unsubstituted with nitro or bromo groups and containing at least 50% by weight alkenyl aromatic monomer units, said resin containing $-CH_2-$ groups added by chloromethylation and having amino acid units linked to at least 50% of said $-CH_2-$ groups by means of an esterification reaction carried out in the presence of an inert solvent having a dielectric constant greater than 35 at 20°C., said resin having a majority of pores of at least 30 Angstroms diameter and a surface area in the dried state of at least 5 square meters per gram, said amino acid being linked to said resin through a methylene group to the carboxyl function of said amino acids in accordance with the formula



wherein Res is the macroreticular resin or polymer base and R is the remainder of the amino acid.

3,948,822

LATEX FOR FORMING NON-GELLING VULCANIZABLE SOLID FOAM

Popke Wietsma, Velp, Netherlands, assignor to Chemische Industrie AKU-Goodrich B.V., Arnhem, Netherlands

Filed July 13, 1973, Ser. No. 378,940

Claims priority, application Netherlands, July 14, 1972, 7209742

Int. Cl.² C08L *7/02, 9/10;* **C08J** *9/30*

U.S. Cl. 260—2.5 L **3 Claims**

1. A process for the preparation of a rubber latex composition adapted to be converted into a wet foam and dried without substantial gelling to form a solid foam which comprises mixing with the latex from about 1.5 to about 8 parts by weight disodium-N-octadecyl sulfosuccinamate and from about 0.1 to about 1 part sodium formaldehyde sulfoxylate by weight per 100 parts by weight dry latex.

3,948,823

METHOD OF MAKING PERMSELECTIVE INTERPOLYMER MEMBRANES

Lester T. C. Lee, Parsippany, and Kang-Jen Liu, Somerville, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 1, 1972, Ser. No. 276,993

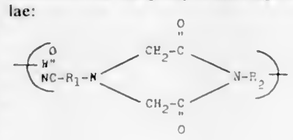
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.

Int. Cl.² C08J *9/00*

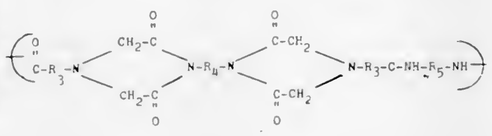
U.S. Cl. 260—2.5 M **9 Claims**



1. A process for the manufacture of a substantially macroscopically homogeneous membrane comprising forming a common solution of (a) from about 5 to about 80 percent of a matrix polymer; (b) from about 5 to about 95 percent of poly[1,ω-alkylene (2,6-diketopiperazine)1,4-dicarboxamide] selected from the group consisting of those having the formulae:



and



wherein R_1 and R_3 are substituents selected from the group consisting of phenylene radicals and alkylene radicals having 1 to 12 carbon atoms and R_2,R_4 and R_5 are substituents selected from the group consisting of aliphatic and aromatic diradicals having 1 to 12 carbon atoms and may include oxygen, sulfur, and nitrogen atoms, wherein said matrix polymer (a) is compatible with the polymer (b), and wherein the ratio of (a) to (b) produces a membrane with a water content of from about 15 percent to about 75 percent, forming a membrane of a desired thickness, and crosslinking the membrane to convert it into an insoluble membrane of predetermined porosity.

3,948,824

CELLULAR POLYMERIC MASSES

Janis Robins, St. Paul, Minn., assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 287,387, Sept. 8, 1972, abandoned, which is a continuation of Ser. No. 109,947, Jan. 26, 1971, abandoned, which is a continuation-in-part of Ser. Nos. 72,113, Sept. 14, 1970, abandoned, and Ser. No. 723,873, April 24, 1968, abandoned, and Ser. No. 596,106, Aug. 1, 1966, abandoned, and Ser. No. 536,180, March 14, 1966, Pat. No. 3,485,797. This application Mar. 22, 1974, Ser. No. 454,030

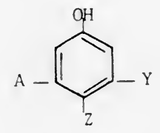
The portion of the term of this patent subsequent to Dec. 23, 1986, has been disclaimed.

Int. Cl.² C08G *14/14, 18/14, 18/18*

U.S. Cl. 260—2.5 F **7 Claims**

1. Cellular polymeric masses, the polymeric composition of which comprises the reaction product of a mixture containing

a. phenolaldehyde benzylic ether resin comprising the reaction product of a phenol having the general formula:



wherein, A, Y and Z are hydrogen, hydrocarbon radicals, oxyhydrocarbon radicals or halogen, with an aldehyde having the general formula R′CHO, wherein R′ is hydrogen or a hydrocarbon radical of 1–8 carbon atoms, at a mole ratio of aldehyde to phenol of greater than 1, in the liquid phase under substantially anhydrous conditions with the removal of water above 100°C. and at temperatures below about 130°C. in the presence of catalytic concentrations of a soluble divalent metal salt dissolved in the reaction medium;

b. a polyisocyanate;

c. a source of foaming gas.

3,948,825

CURING AGENT FOR USE IN MAKING CELLULAR POLYURETHANE COMPOSITIONS

Edward R. Pray, Dearborn, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed July 5, 1974, Ser. No. 485,798

Int. Cl.² C08G *18/32*

U.S. Cl. 260—2.5 AQ **4 Claims**

1. A reaction product of methylene dianiline with 0.7 to 2.5 times as many moles of an alkylene oxide selected from the group consisting of ethylene oxide and propylene oxide.

3,948,826

FLAME RETARDANT POLYURETHANE FOAM

Lawrence A. Smalheiser, Spring Valley, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

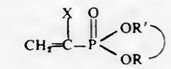
Filed Aug. 22, 1974, Ser. No. 499,666

Int. Cl.² C08G *18/14;* **C08L** *75/04*

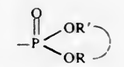
U.S. Cl. 260—2.5 AJ **20 Claims**

1. A method for forming a flame retardant polyurethane foam from a polyurethane foam formulation which comprises incorporating in said formulation an effective amount for flame retardancy and lessened discoloration of a copolymer of:

a. a bis(hydrocarbyl) vinylphosphonate having the formula



wherein X is selected from the group consisting of hydrogen, halogen, cyano, aryl, haloaryl, C_1–C_{18} alkyl, C_1–C_{18} halo-alkyl and



wherein R and R′ are hydrocarbyl and substituted hydrocarbyl groups consisting essentially of hydrogen and carbon and containing up to about 18 carbon atoms, inclusive with the proviso that R and R′ may be the same, different or conjoint; and

b. vinyl chloride.

3,948,827

DRY PLANOGRAPHIC PRINTING INK COMPOSITION

Atsumi Noshiro, Yokohama, and Yoshio Inoue, Annaka, both of Japan, assignors to Dai Nippon Printing Company Limited, Tokyo, Japan

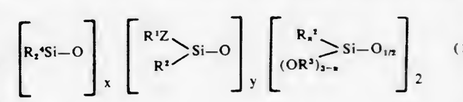
Filed Oct. 18, 1974, Ser. No. 516,083

Claims priority, application Japan, Oct. 26, 1973, 48-119835

Int. Cl.² B41M *1/00;* **C09D** *11/10;* **G03F** *7/02*

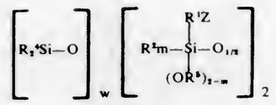
U.S. Cl. 260—3.3 **19 Claims**

1. A dry planographic printing ink composition which comprises a vehicle for an ink, a pigment and a solvent, characterized by using as a portion of the vehicle 1 to 40% by weight of a silicone modified alkyd resin containing 5 to 50% by weight of at least one organopolysiloxane substituted by amino groups and having the average composition formula:



(1)

and



(2)

wherein Z is an amino group or a monovalent substituent having a terminal amino group, R^1 is a divalent hydrocarbon group having 1 to 3 carbon atoms, R^2 is a monovalent hydrocarbon group having 1 to 3 carbon atoms, R^3 is hydrogen or a monovalent hydrocarbon group having 1 to 4 carbon atoms, R^4 is methyl or phenyl but wherein at least 90 molar % of which is methyl, R^5 is hydrogen or a monovalent organic group, n is 1, 2 or 3, m is 0 or 1, $x+y$ is 6 to 200 and y/x is 1/100 to 40/100, and w is 5 to 50, said vehicle being selected from the group consisting of drying oil, synthetic drying oil, rosin, copal, dammer, shellac, hardened rosin, rosin esters, phenolic resins, rosin-modified phenolic resins, maleic acid resins, alkyd resins, petroleum resins, vinyl resins, polyamide resins, epoxy resins, aminoalkyd resins, polyurethane resins, aminoplast resins, nitrocellulose, ethyl cellulose, chlorinated rubber, cyclized rubber, glue, casein, dextrin and zein.

3,948,828
LIQUID TO PASTY DYESTUFF PREPARATIONS

Carl Becker, Basel, and Jacques Wegmann, Bettingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 8, 1974, Ser. No. 458,925

Claims priority, application Switzerland, Apr. 13, 1973, 5337/73

Int. Cl.² C08L *1/26*

U.S. Cl. 260—13 **11 Claims**

1. A process for coloring polyester or polyamide material, comprising the step of coating polyester or polyamide granulates, flakes or powders with a composition comprising:

a. at least 35% of a solvent having a boiling point above 90°C, a flash point above 20°C, a water-solubiligy of 1 to 35%, and which is selected from the group consisting of alcohols, esters, ethers and ketones;

b. 10–40% of a dyestuff or optical brightener which is difficultly soluble or insoluble in water, which contains no dispersing agent and which is dissolved or dispersed as fine particles in said solvent; and

c. 5–25% of a resin dissolved in said solvent, wherein said resin is chemically stable in the presence of molten polyamide or polyester material and is selected from the group consisting of cellulose ethers and hydrogenated colophonium esters.

3,948,829
STRIPPABLE, THIN, PROTECTIVE COATING

Eduard P. Babayan, Huntington Beach, Calif., assignor to Hitco, Irvine, Calif.

Filed Apr. 5, 1973, Ser. No. 348,132

Int. Cl.² C08G *18/32*

U.S. Cl. 260—18 TN **11 Claims**

1. A sprayable composition for forming a coherent, adherent, strippable coating for metal surfaces which cures by condensation at 200°–300°F in the absence of free radicals to form a film exhibiting an adhesion to aluminum of between 0.2 lb/in to 2 lb/in, an elongation of 75% to 150% and a tensile strength from 1,000 to 4,000, said composition consisting essentially of

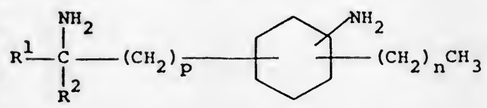
a first part comprising a solvent solution of the reaction product of a high vinyl content, hydroxy substituted liquid prepolymer of a diene containing 4–12 carbon atoms having a vinyl content from 70–90%, an equivalent weight from 1,000 to 5,000 and a hydroxyl functionality of from 2–5; and

75% to 125% based on the functionality of the prepolymer of a polyisocyanate of the formula:

$$R(NCO)_m$$

where R is a polyvalent hydrocarbon radical containing 2–30 carbon atoms and m is an integer from 2–4; and

a second separate part comprising a solvent solution of 5–20 phr of an amine curing agent mixture consisting essentially of a cycloaliphatic diamine of the formula:



where R^1 and R^2 are lower alkyl, p is an integer from 0–4 and n is an integer from 0–4 and a minor amount of a N-primary amino-lower alkyl substituted cyclohexylamine.

3,948,830
POZZOLANIC MATERIAL-BASED COATING AND STRUCTURAL COMPOSITION AND METHOD FOR FORMING

James H. Donnelly, San Francisco, and William D. McGuigan, Los Altos Hills, both of Calif., assignors to James H. Donnelly, San Francisco, Calif., a part interest

Filed Oct. 9, 1973, Ser. No. 404,743

Int. Cl.² C08L *91/00*

U.S. Cl. 260—18 PN **8 Claims**

1. In a method for forming a pozzolanic material-based coating and structural composition from 100-150 parts by weight of pozzolanic material, 3–20 parts by weight of liquid epoxy resin, 3–30 parts by weight of a polyfunctional cross-linking agent capable of forming chemical bridges between said pozzolanic material and epoxy resin, said agent comprising an organic compound including at least two amino and at least two carbonyl functional groups, 2–30 parts by weight of lime, and water, said pozzolanic material component comprising greater than 50% of the nonaqueous weight of said composition on a lime-free and filler-free basis, comprising the steps of (a) intimately mixing the polyfunctional cross-linking agent with a major portion of the pozzolanic material in an aqueous dispersion, and lime, (b) mixing the epoxy resin with the aqueous dispersion of step (a), and (c) permitting said mixture to set.

3,948,831
DYEABILITY OF POLYESTER TEXTILE FIBER

Gerald Cohn, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 14, 1969, Ser. No. 877,045

Int. Cl.² C08G *63/12, 63/76*

U.S. Cl. 260—22 R **3 Claims**

1. A polyester composition having improved dyeability consisting essentially of a mixture of linear thermoplastic fiber forming polyester resin and from 0.005 to 5 percent based on the polyester resin of at least one surfactant which is insoluble in the polyester resin and is stable in polyester under polycondensation conditions in the form of a dyed fiber.

3,948,832
STABILIZED ETHYLENE-CARBON MONOXIDE COPOLYMERS CONTAINING AN EPOXY COMPOUND

Donald E. Hudgin, Princeton Junction, N.J., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sept. 25, 1974, Ser. No. 508,973

Int. Cl.² C08G *2/26*

U.S. Cl. 260—23 EP **7 Claims**

1. A stabilized ethylene carbon monoxide copolymer composition containing about 0.1 to 20% based on the weight of polymer in the composition of an organic compound free of substituents which interfere with the stabilizing effect of the compound and containing at least one epoxy group.

3,948,833
COMPOSITIONS FOR RIGID ASBESTOS - REINFORCED POLYVINYL CHLORIDE

Lior Kacir, and Moshe Narkis, both of Haifa, Israel, assignors to Centre for Industrial Research (CIR) Ltd., Haifa and Palram Plastic Works, Kevutzat Poalim Ltd., Ramat Yohanan, both of, Israel

Filed Apr. 13, 1973, Ser. No. 350,701

Claims priority, application Israel, Apr. 17, 1972, 39240

Int. Cl.² C08L *91/00*

U.S. Cl. 260—23 XA **16 Claims**

1. Asbestos-vinyl chloride polymer composition suitable for processing into rigid products by extrusion and injection molding comprising (a) a vinyl chloride homopolymer, vinyl chloride copolymer or mixtures thereof, (b) up to 150% by weight based on the weight of polymer of asbestos, and (c) a stabilizer system which comprises 1–5% by weight based on the weight of polymer of at least one organometal compound where the metal is selected from Ba, Cd, Zn, Sn, Pb, or Ca or their combinations, at least 3% by weight based on the weight of polymer of epoxide and 3–20% by weight based on the weight of polymer of a compound selected from a polyol or a metal derivative thereof or an amino compound of polyacetic acid.

3,948,834
POWDER COATING AGENTS

Otto Brussmann, Lambsheim; Felix Miksovsky, Ludwigshafen; Rolf Fikentscher, Ludwigshafen, and Horst Diefenbach, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Aug. 28, 1973, Ser. No. 392,250

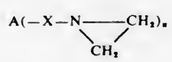
Claims priority, application Germany, Aug. 29, 1972, 2242456

Int. Cl.² C08F *27/00*

U.S. Cl. 260—27 R **8 Claims**

1. A powder coating agent which comprises a mixture of

A. at least one compound of the formula:



in which n is one of the integers from 2 to 6, X is one of the groupings —NHCO—, —CO—, SO_2— or —O—CO— and A is alkyl, aryl, aralkyl, or a cycloaliphatic or heterocyclic radical whose valence is equal to n; and

B. a binder which is solid at ambient temperature and which contains hydroxyl groups, said binder being an acrylate resin having a hydroxyl number of from 30 to 250 based on an ester of acrylic and/or methacrylic acid with an alcohol of one to eight carbon atoms, said component A being contained in the mixture in an amount of from 1 to 50% by weight based on the sum of the components (A) + (B); said coating being designed to be applied to a surface by electrostatic powder spray or fluidized bed coating techniques.

3,948,835
SILICON-MODIFIED PREPOLYMERS

Gerd Greber, Binningen; Roland Darms, Therwil, and Dieter Lohmann, Pratteln, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

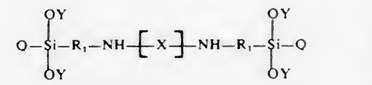
Filed May 24, 1974, Ser. No. 473,048

Claims priority, application Switzerland, June 7, 1973, 8258/73; Aug. 2, 1973, 11229/73

Int. Cl.² C08G *77/00, 73/00*

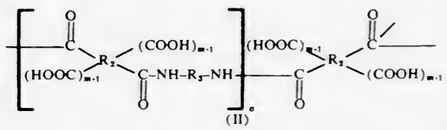
U.S. Cl. 260—2 S **15 Claims**

1. A silicon-modified polyamide, polyamide-acid or polyamide-amide-acid monomer or prepolymer with an inherent viscosity of 0.04 to 4.0, which have the formula I



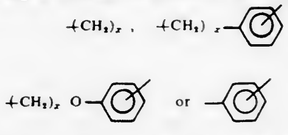
(I)

wherein X represents a structural element of the formula II



(II)

a denotes a number from 0 to 100, and the individual m, R_1, R_2, R_3, Q and Y independently of one another denote the following: m denotes the number 1 or 2, R_1 denotes a radical



with x denoting a number from 1 to 4, R_2 denotes a carbocyclic-aromatic or heterocyclic radical, wherein the carbonamide and carboxyl groups are bonded to different ring carbon atoms and the carboxyl groups are each in the ortho-position to a carbonamide group, R_3 denotes an aliphatic radical with at least 2 carbon atoms, or a cycloaliphatic, araliphatic, carbocyclic-aromatic or heterocyclic radical, Q denotes methyl, phenyl or a —OY radical, with Y having the meaning indicated below, and Y denotes an alkyl radical with 1 to 6 carbon atoms or a phenyl radical, and the corresponding cyclised derivatives.

3,948,836
SURFACE TREATMENT COMPOSITION FOR METAL WORKING

Uraji Narushima, Yokohama; Kazuhiko Nishimoto, Souka, and Shinji Sasakuma, Uji, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Apr. 5, 1974, Ser. No. 458,452

Claims priority, application Japan, Apr. 5, 1973, 48-39023

Int. Cl.² C08L *91/06*

U.S. Cl. 260—28.5 A **14 Claims**

1. A surface treatment composition for metal working which comprises 20 to 50 parts by weight of (A) a mixture of (A-1) a chlorine-containing thermoplastic synthetic resin or chlorine-containing rubber having a molecular weight of 8000 to 10,000, which resin and rubber materials are selected from the group consisting of chlorinated polyethylene, chlorinated polypropylene, polyvinyl chloride, polyvinylidene chloride and chlorinated natural rubber and (A-2) a chlorine-containing thermoplastic synthetic resin or chlorine-containing rubber having a molecular weight of 17,000 to 19,000, which resin or rubber materials are selected from the group consisting of chlorinated polyethylene, chlorinated polypropylene,

polyvinyl chloride, polyvinylidene chloride and chlorinated natural rubber, wherein the ratio of the component (A-1) to the component (A-2) is about 1.2 : 1 to 1.8 : 1 by weight, 2 to 15 parts by weight of (B) a plasticizer selected from the group consisting of phthalates, adipates, alkylphosphates and chlorinated paraffins and 2 to 20 parts by weight of (C) a wax having 30 to 80 carbon atoms and melting at 60 to 120°C, said wax being selected from the group consisting of animal wax, vegetable wax, petroleum paraffin wax, petrolatum and microcrystalline wax.

3,948,837

STABLE POLYURETHANE DISPERSIONS AND METHOD THEREFOR

Karl Schmitt; Josef Disteldorf, both of Herne, and Werner Flakus, Recklinghausen, all of Germany, assignors to Veba-Chemie AG, Gelsenkirchen-Buer, Germany

Filed May 20, 1974, Ser. No. 471,722

Claims priority, application Germany, May 22, 1973, 2325825

Int. Cl.² C08G *18/32;* **C08J** *3/00*

U.S. Cl. 260—29.2 TN **4 Claims**

1. Method for producing cross-linked polyurethane aqueous dispersions which comprises

i. reacting branched polyesters containing more than two —OH groups per molecule and having terminal hydroxyl groups and 3-isocyanto-methyl-3,5,5-trimethylcyclohexyl isocyanate in inert solvents at temperatures of from 10° to 50°C, said isocyanate being used in an amount such that there are from 1.4 to 2.0 —NCO equivalents per —OH group equivalent;

ii. reacting the initial reaction product from (i) with primary or secondary diamines or diols in amounts such that from 30 to 70% of the —NCO group present in said initial reaction product are reacted;

iii. reacting the second reaction product from (ii) with aqueous solutions of sodium salts of monobasic aminoacids such that from 10–25% of the —NCO groups present in said second reaction product are reacted with said aminoacids; and

iv. removing the inert solvent by distillation.

3,948,838

SOIL RELEASE COMPOSITION

Everett H. Hinton, Jr., Raleigh, N.C., and Larry E. Avery, Cheraw, S.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Division of Ser. No. 176,368, July 28, 1971, Pat. No. 3,824,125, and a continuation-in-part of Ser. No. 747,473, July 25, 1968, Pat. No. 3,650,801. This application Mar. 12, 1974, Ser. No. 450,378

Int. Cl.² C08L *61/20*

U.S. Cl. 260—29.4 UA **19 Claims**

1. An aqueous composition consisting essentially of water and (a) 2 to 8 parts of a hydrophilic, water dispersible copolymer of methacrylic acid and ethyl acrylate 1 to 4 parts of water-soluble polyacrylic acid and 2 to 8 parts of a higher trialkyl trimellitate or (b) 2 to 8 parts of said methacrylic acid-ethyl acrylate copolymer, 1 to 4 parts of said polyacrylic acid, 2 to 8 parts of said trimellitate and 7.5 to 30 parts of a durable press textile reactant selected from the group consisting of formaldehyde, water-soluble precondensates of formaldehyde with an amino compound and blocked isocyanates.

3,948,839

FLATTING AGENTS

Edward R. deVries, Lebanon, N.J., assignor to Unifilm Corporation, Somerville, N.J.

Division of Ser. No. 365,827, June 1, 1973, Pat. No. 3,865,899. This application Feb. 14, 1974, Ser. No. 442,364

Int. Cl.² C08K *3/00;* **C08L** *67/00, 79/00*

U.S. Cl. 260—29.4 R **5 Claims**

1. A flatting agent consisting of discrete particles having a fine size range from about 0.02 to about 10 microns of the in situ prepared cross-linked reaction product of

a. a crystalline, thermoplastic polar nylon or polyester organic polymer containing reactive hydrogen groups and having a softening point of from about 120° to about 240°C. which is insoluble in common coating solvents for film-forming organic binders and soluble only at elevated temperatures in strong organic solvents for said organic polymer and

b. a cross-linking agent chemically reactive with said organic polymer and containing chemically reactive isocyanate or methylol groups.

5. A flatting agent dispersion consisting of the discrete particles defined by claim 1 dispersed in an inert liquid dispersion medium comprising

c. a common coating solvent for a compatible film-forming organic binder in which said organic polymer and said cross-linked reaction product are insoluble and

d. a strong organic solvent for said organic polymer in which the organic polymer is soluble only at elevated temperatures and in which said cross-linked reaction product is insoluble.

3,948,840

AQUEOUS SOLVENT FOR HALOGEN-CONTAINING ACRYLONITRILE POLYMER

Jeno G. Szita, Norwalk, and Arutun Maranci, Westport, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 10, 1974, Ser. No. 459,507

Int. Cl.² C08L *33/20*

U.S. Cl. 260—29.6 AB **6 Claims**

3. An acrylonitrile polymer solution comprising 8 to 15% of acrylonitrile polymer containing 55 to 80% acrylonitrile and 15 to 40% of halogen-containing comonomer comprising at least one of vinyl chloride, vinylidene chloride, vinylidene chlorobromide, vinyl bromide, and vinylidene bromide dissolved in a solvent comprising an aqueous solution of at least 30% on weight of solvent of sodium thiocyanate and 2 to 25% on weight of solvent of dipropylene glycol.

3,948,841

PROCESS FOR PRODUCING TRANSPARENT GELS WITH IMPROVED MECHANICAL AND SORPTION PROPERTIES FROM COPOLYMERS OF 2-HYDROXYETHYL METHACRYLATE AND AMIDES OF ACRYLIC OR METHACRYLIC ACID

Karel Dusek, No. 33 Zeyerova alej, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 362,498, May 21, 1973, abandoned. This application May 9, 1974, Ser. No. 468,415

Claims priority, application Czechoslovakia, May 22, 1972, 3474-72

Int. Cl.² C08F *2/10, 20/56*

U.S. Cl. 260—29.6 TA **11 Claims**

1. A process for producing transparent hydrophylic gels having improved mechanical and sorption properties made from copolymers of 2-hydroxyethyl methacrylate and amides of methacrylic or acrylic acid, comprising copolymerizing 2-hydroxyethyl methacrylate with about 20 to about 90 weight percent of methacrylamide or about 20 to about 80 weight percent of acrylamide in the presence of about 0.01 to 10% of a crosslinking agent selected from the group consisting of esters of methacrylic and acrylic acids with C_{1-4} alkylene glycols; poly (C_{1-4}) alkylene glycols; polyols; glycerine; N,N'-

alkylene-bis-acrylamides and methacrylamides; tri-acryloyl-triazine and divinyl sulphone and compatible mixtures thereof and up to about 80% of a diluent selected from the group consisting of glycols, polyglycols and aqueous mixtures thereof; C_{1-4} mono- and dicarboxylic acids; C_{1-3} aliphatic alcohols and aqueous mixtures thereof; formamide, dimethylformamide and aqueous mixtures thereof; aqueous solutions of mono-di- and trivalent methal perchlorates; nitrates; bromides; organic acid salts; C_{3-6} glycol ethers; C_{3-6} alcohols; C_{3-6} ketones; aromatic acids; and some heavy metal chlorides and subsequently heating of said gels in an aqueous medium having a pH of between 0.5 and 8.

3,948,842

FIRE RETARDANT POLYMERIC ADDITIVES OF VINYLIDENE HALIDES WITH BIS(HYDROCARBYL) VINYL PHOSPHATES AND C_1–C_{20} ALKYLESTERS OF ACRYLIC AND METHACRYLIC ACIDS

Paul Kraft, Spring Valley, and Siegfried Altscher, Monsey, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 49,204, June 23, 1970, Pat. No. 3,725,509, which is a continuation-in-part of Ser. No. 160,905, July 8, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 397,515

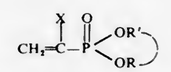
Int. Cl.² C08L *43/02, 27/00*

U.S. Cl. 260—29.6 TA **19 Claims**

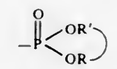
1. An aqueous emulsion comprising particles of an emulsion polymer consisting of:

1. from about 10 to 98% by weight of a vinylidene halide;

2. from about 1% to 89% by weight of at least one bis(hydrocarbyl) vinyl phosphonate having the structure:



wherein X is selected from the group consisting of hydrogen, halogen, cyano, aryl, C_1–C_{18} alkyl and



wherein R and R' are hydrocarbyl and substituted hydrocarbyl groups which can be the same, different or conjoint; and

3. from about 1% to 45% by weight of at least one third comonomer selected from the C_1-C_{20} alkyl esters of acrylic or methacrylic acid.

3,948,843

ADDITIVES FOR OILS

Francoise Saint-Pierre, Paris, and Bernard Chauvel, Ermont, both of France, assignors to Rhone-Progil, Courbevoie, France

Filed Mar. 28, 1974, Ser. No. 455,612

Claims priority, application France, Mar. 29, 1973, 73.11345

Int. Cl.² C08K *5/01, 5/15;* **C10M** *1/18*

U.S. Cl. 260—30.4 A **10 Claims**

1. A method for the preparation of an additive for oils which comprises polymerizing by an anionic process, in the presence of a catalyst consisting of an organo lithium compound at least one vinyl aromatic compound and of at least one conjugated diene in the presence of a solvent, the copolymer obtained having a mean molecular weight within the range of 25,000 to 125,000 and a weight ratio of vinyl aromatic compound to conjugated diene compound from 20/80 to 70/30, hydrogenating olefinic bonds of said polymer in the presence of the same solvent, the solvent being a support oil having a viscosity from 1 to 24 cst at 50°C, a flash point of at least 120°C and a pour point not greater than −10°C, and being employed in an amount such that the concentration of hydrogenated copolymer in said oil is within the range of 5–30% by weight.

3,948,844

COPOLYAMIDES CONTAINING CAPROLACTAM, LAURICLACTAM AND 11-AMINOUNDECANOIC ACID

Fritz Raabe, Bonn, and Eduard De Jong, Bonn-Beuel, both of Germany, assignors to Plate Bonn Gesellschaft mit beschrankter Haftung, Bonn, Germany

Continuation-in-part of Ser. No. 384,371, July 31, 1973, Pat. No. 3,883,487. This application May 6, 1974, Ser. No. 467,234

Claims priority, application Germany, May 12, 1973, 2324160

The portion of the term of this patent subsequent to May 13, 1992, has been disclaimed.

Int. Cl.² C08G *69/46, 69/14*

U.S. Cl. 260—30.8 R **18 Claims**

1. A composition of matter comprising a copolyamide consisting essentially of recurring units of caprolactam, lauriclactam, 11-aminoundecanoic acid and a hexamethylene diamine salt of an aliphatic dicarboxylic acid corresponding to the formula

$$HOOC—(CH_2)_n—COOH \qquad (I)$$

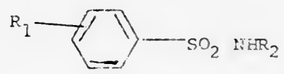
in which n is 4, 7, 8, 10 or 11,

said units being incorporated in the copolyamide in the following proportions:

caprolactam	20–40% by weight
lauriclactam	20–35% by weight
11-aminoundecanoic acid	15–35% by weight
hexamethylene diamine salt of the acid of formula (I)	15–40% by weight

and a plasticizer which is compatible with a suitable for plasticizing said copolyamide.

15. The composition of matter as defined by claim 1, wherein said plasticizer is selected from the group consisting of a sulfonic acid derivative of the formula



wherein R_1 is hydrogen or methyl and R_2 is hydrogen, lower alkyl or cyclohexyl; a phenol carboxylic acid; a phenol carboxylic acid alkyl ester and bisphenol A.

3,948,845

OPALESCENT POLYMER COMPOSITIONS

John W. Marx, Leavenworth, Kans., and James N. Short, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 263,998, June 19, 1972, abandoned. This application Oct. 17, 1974, Ser. No. 515,605

Int. Cl.² C08K *5/05, 5/06, 5/10*

U.S. Cl. 260—31.2 MR **17 Claims**

1. Opalescent-appearing compositions comprising a solvent-dispersant and a block copolymer enclosed by encapsulating means wherein at least a portion of said encapsulating means is optically transparent or translucent,

wherein said block copolymer consists essentially of a copolymerized monovinyl-substituted aromatic compound and a copolymerized conjugated diene, wherein said monovinyl-substituted aromatic compound comprises at least about 75 weight percent of said block copolymer, wherein in said solvent-dispersant and block copolymer composition, said block copolymer represents about 5 to

25 weight percent based on total weight of said solvent-dispersant and said block copolymer,

wherein said solvent-dispersant contains 5 to 16 carbon atoms per molecule and is selected from the group consisting of normally liquid esters, mono- or dialkyl ethers of dipropylene or diethylene glycol, higher alcohols, admixture of any of these, or optionally in admixture with aromatic hydrocarbons, and

wherein said block copolymer is further characterized as a terminated block copolymer with a molecular weight of at least about 500,000 prepared by the anionic solution polymerization of said monovinyl-substituted aromatic compound and of said conjugated diene employing a lithium-based initiator consisting essentially of a hydrocarbon lithium initiator, and

wherein said solvent-dispersant contains one or more components from said group of amounts and ratios sufficient to effect opalescent appearance in said composition.

3,948,846
POLYMERIC DISPERSION

Julian Alfred Waters, Reading, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 27, 1972, Ser. No. 301,332

Claims priority, application United Kingdom, Nov. 1, 1971, 50639/71; Aug. 8, 1972, 36937/72

Int. Cl.² C08K *5/01;* **C08L** *9/06*

U.S. Cl. 260—33.6 UA **18 Claims**

1. A dispersion of particles of a block copolymeric material in a saturated aliphatic hydrocarbon diluent which is substantially free of water, in which the block copolymeric material consists of a thermoplastic tertiary butyl styrene polymer A soluble in the diluent and having a molecular weight as determined by gel permeation chromatography of 10,000 to 100,000, terminally attached to block A an elastomeric polymer block B having a molecular weight of 1,000 to 100,000 and derived from a conjugated diene, and terminally attached to block B a polymer block C of molecular weight 20,000 to 1,000,000 which is insoluble in the diluent, forms at least part of the core of the said particles and is derived from styrene or from a monomer mixture of which a major constituent is styrene.

2. A dispersion as claimed in claim 1 in which the polymer block forming the core of the particles is a thermoplastic polymer.

3,948,847
PROCESS FOR THE MANUFACTURE OF POLYMER SOLUTIONS

Roxburgh Richmond Aitken, and James Peter Brown, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 799,488, Feb. 14, 1969, abandoned. This application Aug. 10, 1971, Ser. No. 170,053

Int. Cl.² C08G *18/08, 18/12;* **C08K** *5/10*

U.S. Cl. 260—34.2 **1 Claim**

1. A process for the manufacture of a solution of high molecular essentially linear polyurethane elastomer which comprises reacting together, in a first portion of a liquid which is a solvent for the polyurethane, an organic diisocyanate, an essentially linear hydroxyl-terminated polyester, polyesteramide or polyether and a low molecular weight difunctional isocyanate-reactive compound the amount of said liquid in said first portion being less than sufficient for a solution in that amount of solvent of all of the polyurethane to be formed from the initial reactants to have a viscosity which does not exceed the viscosity desired for the final product, initially carrying out the reaction in said first portion of solvent until formation of polyurethane increases the viscosity to substantially the value desired for the final product and thereafter continuing the reaction while adding the remaining solvent for the polyurethane in a continuous manner and at such a rate that the viscosity of the solution remains substantially constant at the value desired for the final product, whereby the viscosity-reducing effect of the solvent addition counteracts the viscosity-increasing effect of the continuing reaction, and finally terminating the reaction when the desired concentration of polyurethane in the solution has been achieved.

3,948,848
LOW TEMPERATURE SOLVENTLESS SILICONE RESINS

Alan E. Mink, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 4, 1975, Ser. No. 601,781

Int. Cl.² C08L *83/04*

U.S. Cl. 260—37 SB **10 Claims**

1. A curable composition consisting essentially of a mixture of

A. a copolymer of (in mole percent) 35 to 42 monophenylsiloxane, 0 to 12 diphenylsiloxane, 35 to 50 dimethylsiloxane and 8 to 15 vinylmethylsiloxane, and

B. a copolymer of (in mole percent) 8 to 15 diphenylsiloxane, 30 to 55 methylhydrogensiloxane, 28 to 45 dimethylsiloxane and 5 to 12 trimethylsiloxane in amount such that there is a stoichiometric amount of SiH and Si vinyl ± 10 percent of either ingredient.

3,948,849
ADHESIVE COMPOSITIONS

Walter P. Bark, Jr., Shaler Township, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 1, 1974, Ser. No. 520,018

Int. Cl.² C08L *63/10*

U.S. Cl. 260—37 EP **9 Claims**

1. An adhesive composition suitable for application at room temperature and which on curing results in a resin having improved tensile lap shear and T-peel strengths and improved heat aging properties which consists essentially of

an anhydride component consisting of a solid biphenyl dianhydride having one anhydride function on each phenyl group as the only phenyl substituent selected from diphenyl methane tetracarboxylic dianhydrides, benzophenone tetracarboxylic dianhydrides, benzhydrol tetracarboxylic dianhydrides, benzhydrol tetracarboxylic dianhydride lower alkyl ethers, lower alkyl carboxylic acid esters of benzhydrol tetracarboxylic dianhydrides and mixtures thereof, and up to about 75 weight percent maleic anhydride;

sufficient liquid, nitrile rubber-modified epoxy resin selected from a diglycidyl ether of bisphenol A and mixtures thereof to result in an A/E ratio of about 0.4 to about 1.5, said nitrile rubber comprising a carboxyl terminated free radical copolymer of butadiene and acrylonitrile in which the carboxyl groups of the nitrile rubber are reacted with epoxy groups of the epoxy resin; and

a finely divided solid filler comprising a powdered metal;

said nitrile rubber being used in an amount to provide a ratio of about 50 to about 500 epoxy groups in the unmodified epoxy resin per carboxyl group in the nitrile rubber and said powdered metal being used in an amount of at least 20 parts per 100 parts of unmodified epoxy resin.

3,948,850
STABILIZED ETHYLENE-CARBON MONOXIDE COPOLYMERS

Donald E. Hudgin, Princeton Junction, N.J., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 29, 1974, Ser. No. 501,524

Int. Cl.² C08K *8/00*

U.S. Cl. 260—45.7 P **7 Claims**

1. A stabilized ethylene-carbon monoxide copolymer composition containing about 0.1 to 20% based on the weight of polymer in the base composition of a dihydrogen phosphoric acid salt of an alkali or alkaline earth metal.

3,948,851
FLAME RETARDANT POLYCARBONATE COMPOSITION

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 28, 1973, Ser. No. 429,121

Int. Cl.² C08K *5/41, 5/42, 5/45*

U.S. Cl. 260—45.8 RW **10 Claims**

1. A flame retardant aromatic carbonate polymer composition comprising in admixture an aromatic carbonate polymer and a minor amount of a monomeric alkali metal and alkali earth metal aromatic, sulfonesulfonate, or mixtures thereof.

3,948,852
NICKEL STABILISERS FOR SYNTHETIC POLYMERS

Michael Rasberger, Allschwil; Jean Rody, Basel; Paul Moser, Riehen, and Helmut Muller, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

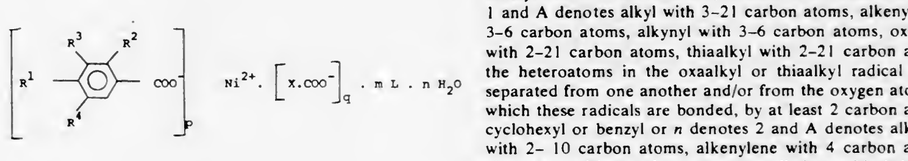
Filed July 26, 1974, Ser. No. 491,978

Claims priority, application Switzerland, Aug. 7, 1973, 11407/73; Jan. 28, 1974, 1103/74

Int. Cl.² C08J *3/20*

U.S. Cl. 260—45.75 N **21 Claims**

1. A composition of matter consisting of a polymer and 0.01-5% by weight of at least one compound of the formula



wherein either R^1 is hydroxyl and R^2 is hydrogen or R^1 is hydrogen and R^2 is hydroxyl, R^3 and R^4 are hydrogen or alkyl with 1–5 C atoms, either p is 1 and q is 1 or p is 2 and q is zero, X is optionally hydroxyl-substituted alkyl, cycloalkyl, aryl, alkaryl or aralkyl, m is a value from 1-2, n is a value from 0 to 2 and L is the ligand $R^5—N(R^6)—R^7$, in which R^5 is alkyl, alkoxyalkyl, alkylthioalkyl, aryl, aralkyl or cycloalkyl and R^6 is H, alkyl, aralkyl or cycloalkyl or R^5 and R^6 together with the N atom form a pyrrolidine, piperidine or morpholine ring which is substituted by alkyl groups or is unsubstituted, and R^7 is H, alkyl or aralkyl.

3,948,853
CHLORINATED RESIN INTENDED FOR WATER TREATMENT

Douglas Patrick Horning, 358 E. 57th Ave., Vancouver, British Columbia, and Ross Elmore Robertson, 3720 Underhill Drive, Calgary, Alberta, both of Canada

Filed Sept. 21, 1973, Ser. No. 399,621

Claims priority, application Canada, Oct. 5, 1972, 153360

Int. Cl.² C08G *12/40*

U.S. Cl. 260—67.6 R **12 Claims**

1. Solid, water-insoluble, cross-linked polymeric material, having chloro-substituted nitrogen atoms wherein the chlorine content is at least 1 percent by weight and said polymeric material being selected from the group consisting of (*a*) urea-paraformaldehyde resin, (*b*) melamine-paraformaldehyde resin and (*c*) urea-melamine-paraformaldehyde resin.

3,948,854
SALICYLIC ACID HYDRAZIDE STABILIZERS FOR POLYMERS

Siegfried Rosenberger, Riehen, and Kurt Schwarzenbach, Pfeffingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

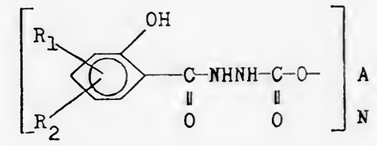
Filed May 8, 1975, Ser. No. 575,669

Claims priority, application Switzerland, May 16, 1974, 6720/74

Int. Cl.² C08J *3/20*

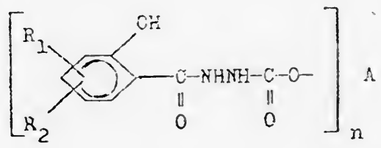
U.S. Cl. 260—45.85 A **7 Claims**

1. Compounds of the formula



in which R_1 denotes hydrogen, alkyl with 1–8 carbon atoms, alkenyl with 3 or 4 carbon atoms, cycloalkyl with 5–8 carbon atoms, aralkyl with 7–9 carbon atoms, phenyl, chlorine, bromine, hydroxyl, alkoxy with 1–18 carbon atoms or acyloxy with 2–18 carbon atoms, R_2 denotes hydrogen, alkyl with 1–5 carbon atoms, alkenyl with 3 or 4 carbon atoms, cyclohexyl, aralkyl with 7–9 carbon atoms, chlorine or bromine, n denotes 1 and A denotes alkyl with 3–21 carbon atoms, alkenyl with 3–6 carbon atoms, alkynyl with 3–6 carbon atoms, oxaalkyl with 2–21 carbon atoms, thiaalkyl with 2–21 carbon atoms, the heteroatoms in the oxaalkyl or thiaalkyl radical being separated from one another and/or from the oxygen atom, to which these radicals are bonded, by at least 2 carbon atoms, cyclohexyl or benzyl or n denotes 2 and A denotes alkylene with 2– 10 carbon atoms, alkenylene with 4 carbon atoms, alkynylene with 4 carbon atoms, oxaalkylene with 4–10 carbon atoms or thiaalkylene with 4–10 carbon atoms, the hetero-atoms in the oxaalkylene or thiaalkylene radical being separated from one another and/or from the oxygen atoms, to which these radicals are bonded, by at least 2 carbon atoms.

5. Organic material which contains, as the stabiliser, compounds of the formula



in which R_1 denotes hydrogen, alkyl with 1–8 carbon atoms, alkenyl with 3 or 4 carbon atoms, cycloalkyl with 5–8 carbon atoms, aralkyl with 7–9 carbon atoms, phenyl, chlorine, bromine, hydroxyl, alkoxy with 1–18 carbon atoms or acyloxy with 2–18 carbon atoms, R_2 denotes hydrogen, alkyl with 1–5 carbon atoms, alkenyl with 3 or 4 carbon atoms, cyclohexyl, aralkyl with 7–9 carbon atoms, chlorine or bromine, n denotes 1 and A denotes alkyl with 1–21 carbon atoms, alkenyl with 3–6 carbon atoms, alkylnyl with 3–6 carbon atoms, oxaalkyl with 2–21 carbon atoms, thiaalkyl with 2–21 carbon atoms,

the heteroatoms in the oxaalkyl or thiaalkyl radical being separated from one another and/or from the oxygen atom, to which these radicals are bonded, by at least 2 carbon atoms, cyclohexyl or benzyl or *n* denotes 2 and A denotes alkylene with 2– 10 carbon atoms, alkenylene with 4 carbon atoms, alkynylene with 4 carbon atoms, oxaalkylene with 4–10 carbon atoms or thiaalkylene with 4–10 carbon atoms, the hetero-atoms in the oxaalkylene or thiaalkylene radical being separated from one another and/or from the oxygen atoms, to which these radicals are bonded, by at least 2 carbon atoms.

3,948,855

PROCESS FOR REACTING A PHENOL WITH A VICINAL EPOXY COMPOUND IN THE PRESENCE OF PHOSPHORUS OR CARBON CONTAINING ACID, ESTER OR ACID ESTER

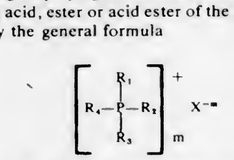
William O. Perry, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 181,191, Sept. 16, 1971, abandoned, which is a continuation-in-part of Ser. No. 41,618, May 28, 1970, abandoned. This application June 21, 1973, Ser. No. 372,364

Int. Cl.² C08G *30/04*

U.S. Cl. 260—47 EP **20 Claims**

1. In a process for preparing phenolic hydroxy ethers which comprises reacting a polyhydric phenol with a polyepoxide having more than one 1,2-epoxy group, the improvement comprising employing as the catalyst therefor, a phosphonium salt of an acid, ester or acid ester of the element carbon represented by the general formula



wherein R_1, R_2, R_3 and R_4 are independently selected from the group consisting of aliphatic hydrocarbon radicals containing from about 1 to about 20 carbon atoms, aromatic hydrocarbon radicals, alkyl substituted aromatic hydrocarbon radicals and radicals represented by the formula $-R_5Y$ wherein R_5 is an aliphatic hydrocarbon radical having from about 1 to about 20 carbon atoms and Y is a member selected from the group consisting of Cl, Br, I, and NO_2, and wherein X is the anion portion of an acid, ester or acid ester of the element carbon and wherein m is the valence of the anion X.

3,948,856

ACID INTERCHANGE POLYMERIZATION PROCESS FOR PRODUCING AN AROMATIC POLYESTER

Robert W. Stackman, Morris, N.J., assignor to Celanese Corporation, New York, N.Y.

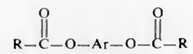
Continuation-in-part of Ser. No. 401,081, Sept. 26, 1973, abandoned. This application Nov. 27, 1974, Ser. No. 527,613

Int. Cl.² C08G *63/04, 63/10, 63/30*

U.S. Cl. 260—47 C **22 Claims**

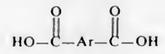
1. An acid interchange polymerization process for producing an aromatic polyester comprising reacting while dissolved in a solvent which does not interfere with the acid interchange reaction substantially stoichiometric amounts of

a. at least one aromatic diester of the structure



wherein R is hydrogen, an alkyl radical containing from 1 to up to about 6 carbon atoms, or a cycloalkyl radical containing up to about 8 carbon atoms, and wherein Ar is an arylene radical, and

b. at least one aromatic dicarboxylic acid of the structure



wherein Ar is an arylene radical,

at a temperature of about 220°C. to about 350°C. in the presence of a catalytically effective amount of a catalyst consisting of a mixture of a transition metal salt of a strong inorganic acid and a transition metal salt of an aliphatic carboxylic acid containing up to about 4 carbon atoms, said catalyst mixture comprising about 25 to 75 percent by weight of said strong inorganic acid salt, and correspondingly about 75 to 25 percent by weight of said aliphatic carboxylic acid salt.

3,948,857

PROCESS FOR PREPARING AROMATIC POLYSULPHONES

Ronald George Feasey, Knebworth; Eric Nield, Watton-at-Stone, and John Brewster Rose, Letchworth, all of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 166,266, July 26, 1971. This application June 11, 1974, Ser. No. 478,332

Claims priority, application United Kingdom, Aug. 6, 1970, 37948/70

Int. Cl.² C08G *75/24*

U.S. Cl. 260—49 **5 Claims**

1. A process for the preparation of aromatic sulphone copolymers in which a polyaryl sulphone containing repeat units $-Ar\text{-}SO_2-$, where Ar is a bivalent aromatic residue which may vary from unit to unit in the polymer chain and at least some of the Ar units have an aromatic ether or thioether group in the polymer chain ortho or para to at least one $-SO_2-$ group, is charged to a reaction vessel and reacted with reactive material selected from the group consisting of (i) at least one alkali metal salt of a halophenol or halothiophenol and (ii) at least one mixture of essentially equimolar quantities of (a) at least one alkali metal salt of a dihydric phenol or thiophenol and (b) at least one dihalobenzenoid compound in which the halogen atoms of the halophenol, halothiophenol and dihalobenzenoid compound are activated by an electron-attracting group which is inert to the reaction, said reactive material being polymerisable to give a polymer of different constitution to that of said polyarylsulphone, after which the copolymer so formed is recovered from the reaction mixture.

3,948,858

POLYMERIZATION OF ETHYLENICALLY UNSATURATED COMPOUNDS

Ulfert Elle Wiersum, Velp, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Filed Sept. 20, 1974, Ser. No. 507,795

Claims priority, application Netherlands, Sept. 22, 1973, 7313098

Int. Cl.² C08F *112/08*; **C08G** *63/12*

U.S. Cl. 260—75 UA **6 Claims**

1. In a process for carrying out the free radical polymerization of ethylenically unsaturated compounds, the improvement which comprises initiating the said reaction with a 1,2-diaryl-1,2-dicyano-1,2-dihaloethane compound wherein the halogens are chlorine or bromine.

3,948,859

COPOLYESTER HOT-MELT ADHESIVES

Bobby J. Sublett, and Willis C. Wooten, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 476,980, June 6, 1974, abandoned. This application July 9, 1975, Ser. No. 594,847

Int. Cl.² C08G *63/18*

U.S. Cl. 260—75 R **2 Claims**

1. A hot melt adhesive composition comprising a copolyester derived from Components (1), (2), (3) and (4) as follows:

1. from about 75 to 95 mole percent terephthalic acid or ester forming derivatives thereof;
2. from about 5 to 25 mole percent adipic acid or ester forming derivatives thereof;
3. from about 55 to 85 mole percent 1,6-hexanediol; and
4. from about 15 to 45 mole percent ethylene glycol,

said copolyester having a softening point within the range of about 70° to 120°C. and an inherent viscosity of at least about 0.50 as measured at 25°C. using 0.50 gram of copolyester per 100 ml. of a solvent consisting of 60 percent by weight phenol and 40 percent by weight tetrachloroethane.

3,948,860

PROCESS FOR THE PRODUCTION OF FLAME-RETARDANT POLYURETHANES

Yoshikatsu Ogawa, Takatsuki; Haruhiko Hisada, Yao; Takeshi Kasahara, and Fumihiko Kizaki, both of Sakai, all of Japan, assignors to Marubishi Yuka Kogyo Kabushiki Kaisha, Japan

Filed Feb. 13, 1974, Ser. No. 442,003

Claims priority, application Japan, Feb. 20, 1973, 48-19715

Int. Cl.² C08G *18/50, 18/15*

U.S. Cl. 260—77.5 AR **7 Claims**

1. A process for the production of flame-retardant polyurethanes by reacting a polyisocyanate and a polyhydroxyl compound in the presence of a catalyst and, optionally, other additives, characterized in that 3 mols of dibromoeopentyl glycol is reacted with 0.5 to 4 mols of phosphoric anhydride, the ester thus obtained is reacted with at least one member selected from the group consisting of alkylene oxides and haloalkylene oxides and then, the phosphorus compound thus obtained and having a hydroxyl value of not more than 170, as a portion of the polyhydroxyl component, is incorporated with another polyhydroxyl compound and reacted with the polyisocyanate component.

3,948,861

POLYAMIDE-IMIDES FROM BIS-IMIDE AND DIALDOXIME

Michel Bargain, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

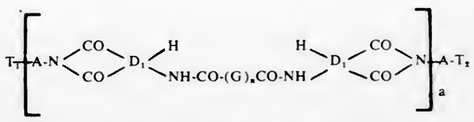
Filed Nov. 16, 1973, Ser. No. 416,431

Claims priority, application France, Nov. 21, 1972, 72.41271

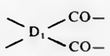
Int. Cl.² C08L *69/00*

U.S. Cl. 260—78 UA **15 Claims**

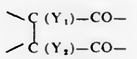
1. A polyamide-imide heat-curable to a heat-resistant polymer having great chemical inertness at temperatures of 200° to 300°C, said polyamide-imide consisting essentially of molecules consisting essentially of the formula:



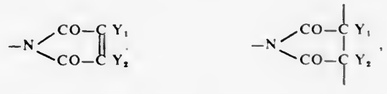
in which A denotes a divalent organic radical possessing at least 2 carbon atoms,



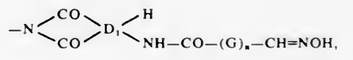
denotes a radical of the formula:



in which each of Y_1 and Y_2, which may be identical or different, represents H, CH_3 or Cl, *n* is 0 or 1, G denotes a divalent organic radical with 1 to 24 carbon atoms, *a* which can vary from molecule to molecule is a whole number, said number being from 1 to 12, or zero in some of the molecules, each of T_1 and T_2, which may be identical or different, denotes a radical of one of the formulae:



and



in which Y_1, Y_2, D_1, *n* and G are as defined above, 0.5 to 50 radicals >N — A — N< being present per radical G.

3,948,862

CONTINUOUS PROCESS FOR PREPARING ALIPHATIC POLYCARBONAMIDES

John M. Iwasyk, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 6, 1974, Ser. No. 467,145

Int. Cl.² C08G *69/28*

U.S. Cl. 260—78 R **2 Claims**

1. In a continuous process for preparing fiber-forming aliphatic polycarbonamides which includes the steps of passing an aqueous solution of a diamine-dicarboxylic acid salt through a reaction zone to form a reaction mass at amide-forming temperatures and at a pressure permitting the formation of steam along with a measurable amount of vaporized diamine and venting the steam and vaporized diamine until the composition consists essentially of aliphatic polycarbonamide and the pressure is substantially atmospheric, the improvement comprising: mixing said steam and vaporized diamine formed with said reaction mass to recombine a substantial portion of said vaporized diamine with said reaction mass for reaction therewith before the venting step.

3,948,863

SOLID, WATER-INSOLUBLE POLYPEPTIDES HAVING IONIZABLE SIDE CHAINS

Akira Akamatsu, Yokohama; Katsunobu Matsushita, Kawasaki, and Sadao Koizumi, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

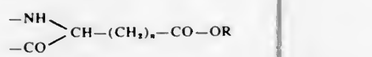
Continuation-in-part of Ser. No. 403,156, Oct. 3, 1973, abandoned. This application May 30, 1974, Ser. No. 474,664

Claims priority, application Japan, Oct. 18, 1972, 47-104250

Int. Cl.² C08G *69/10, 69/48*

U.S. Cl. 260—78 A **6 Claims**

1. A method of modifying a shaped body of a polypeptide having repeating units of the formula



wherein *n* is 1, 2, or 3, and R is lower alkyl having one to four carbon atoms, or phenyl-lower-alkyl, which comprises

a. contacting said body with hydrazine or an amine having at least two primary amino groups until the carboalkoxy or carbophenylalkoxy groups in 2% to 96% of said units are converted to hydrazide or amide moieties corresponding to said hydrazine or amine, and 2% to one half of said units are cross-linked by said hydrazine or amine, while at least 2% of said carboalkoxy or phenylalkoxy groups remain unchanged, and

b. contacting said body having said moieties with water in the presence of a saponification agent until said remainder of carboalkoxy or carbophenylalkoxy groups is saponified.

3,948,864

PARTIALLY CROSSLINKED SILALACTONE POLYMERS, THEIR PREPARATION AND THEIR USE

Michel Bargain, and Zéno Pasquini, both of Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

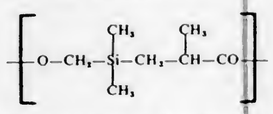
Filed June 12, 1974, Ser. No. 478,604

Claims priority, application France, June 13, 1973, 73.21494

Int. Cl.² C08G *63/68, 63/02*

U.S. Cl. 260—78.3 R **9 Claims**

1. A 3,5,5-trimethyl-1-oxa-5-sila-cyclohexan-2-one polymer having repeat units of formula I



I

at least some of the units being crosslinked to one another.

3,948,865

CHEMICAL TREATMENT OF ARYLENE SULFIDE POLYMERS

Donnie G. Brady, and Jennings P. Blackwell, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 31, 1974, Ser. No. 519,666

Int. Cl.² C08G *75/00*

U.S. Cl. 260—79 **8 Claims**

1. A process for improving the physical and chemical properties of an arylene sulfide polymer which comprises treating said polymer in particulate form with a fluid treating agent selected from the group consisting of hydrogen peroxide, an alkali metal or alkaline earth metal hypochlorite and chlorine under conditions of concentration of treating agent, time and temperature to effect the desired improvement, and thereafter separating said treating agent and said polymer and recovering the treated polymer.

3,948,866

POLYMERIZATION WITH THE AID OF MACROMOLECULE HAVING BOTH A MONOMER SOLUBLE PORTION AND SUSPENSION SOLUBLE PORTION

Horst Pennewiss, Darmstadt; Helmut Knoell, Reichenbach uber Bensheim, and Juergen Masanek, Pfungstadt uber Darmstadt, all of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Filed Feb. 18, 1971, Ser. No. 116,648

Claims priority, application Germany, Feb. 27, 1970, 2009218

Int. Cl.² C08F *15/02, 15/36*

U.S. Cl. 260—79.3 MU **8 Claims**

1. In a process for the polymerization of ethylenically unsaturated monomers in a liquid monomer phase suspended in a liquid organic suspending medium, in the presence of a free radical forming initiator and of a suspension stabilizer, the improvement wherein said suspension stabilizer is a graft copolymer or block copolymer formed between at least two different vinyl, vinylidene, or alkylene oxide monomers, said graft or block copolymer having at least one macromolecular portion which is solvated by said liquid monomer phase and at least one macromolecular portion which is solvated by said liquid organic suspending medium.

3,948,867

PROCESS FOR POLYMERIZING ACRYLIC ACID WITH INHIBITOR AND RETARDER PRESENT AND THE USE OF RESULTANT POLYACRYLIC ACIDS

Erich Bader, Hanau am Main, and Heinz Haschke, Grossauheim, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Continuation of Ser. No. 160,161, July 6, 1971, abandoned. This application Aug. 15, 1974, Ser. No. 497,645

Claims priority, application Germany, July 3, 1970, 2032953

Int. Cl.² C08F *1/82, 1/80, 3/44*

U.S. Cl. 260—80 M **10 Claims**

1. A process for the production of a polyacrylic acid in the form of small beads consisting predominantly of beads having an average diameter between 0.05 and 5 millimeters by the polymerization of monomeric acrylic acid in a vigorously stirred liquid hydrophobic reaction medium that is maintained at its boiling point in the presence of (a) a free-radical hydrophobic polymerization catalyst in an amount equivalent to between 0.05 and 5% by weight of the acrylic acid, (b) a polymerization inhibitor in an amount equivalent to between 0.02 and 0.2% by weight of the acrylic acid, and (c) a polymerization retarder in an amount equivalent to between 0.2 and 1.0% by weight of the acrylic acid, the said polymerization being effected by slowly adding to the vigorously stirred liquid hydrophobic reaction medium that is maintained at its boiling point, a solution in the liquid hydrophobic reaction medium of the monomeric acrylic acid, the said solution of monomeric acrylic acid including the free-radical catalyst (a), the polymerization inhibitor (b), and the polymerization retarder (c), or by slowly adding, to the vigorously stirred liquid hydrophobic reaction mixture containing the polymerization inhibitor (b), a solution in the liquid hydrophobic reaction medium of a stabilizer-free monomeric acrylic acid containing the free-radical polymerization catalyst (a) and the polymerization retarder (c), and subsequently recovering the resulting small beads of polyacrylic acid from the reaction medium.

3,948,868

HOMOGENEOUS STYRENE/ISOOLEFIN COPOLYMERS

Kenneth W. Powers, Berkeley Heights, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 813,183, April 3, 1969, abandoned. This application Feb. 17, 1971, Ser. No. 116,222

Int. Cl.² C08F *2/04*

U.S. Cl. 260—80.7 **11 Claims**

1. A process for preparing a substantially homogeneous random terpolymer, wherein said homogeneous random terpolymer has a single glass transition temperature as determined by differential thermal analysis, which comprises continuously terpolymerizing a feed compositon of between about 0.5 and about 30.0 wt. % styrene, between about 0.5 and about 30.0 wt. % of a conjugated multi-olefin monomer, the remainder of the feed composition being an isoolefinic monomer, utilizing a Friedel-Crafts catalyst, in a well stirred reactor, said reaction being carried out in a solvent for the resulting terpolymer, said solvent comprising a mixture of about 20 to about 80 volume % of at least one polar nonaromatic organic solvent and about 80 to about 20 volume % of at least one nonaromatic nonpolar hydrocarbon solvent, based on the solvent mixture; the ratio of polar to nonpolar solvents being so selected that the ratio of the reactivity ratio of styrene to the reactivity ratio of the isoolefin monomer is maintained at about 0.4 to about 3.0.

3,948,869

PROCESS FOR POLYMERIZING CONJUGATED DIENES

Adel Farhan Halasa, Bath, and Richard Gutierrez, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 8, 1974, Ser. No. 458,951

Int. Cl.² C08F *4/52, 36/04, 36/06*

U.S. Cl. 260—85.3 R **19 Claims**

1. A process for the hydrocarbon solution polymerization of a monomer composition consisting essentially of 10–95 percent by weight of a conjugated diene and 5–90 percent by weight of an alpha olefin having 2–8 carbon atoms to produce a copolymer having 5–90 percent of the alpha olefin in the resultant copolymer comprising the steps of maintaining said monomer composition at a temperature of −10° to 70°C. in intimate contact with a catalyst composition consisting essentially of:

a. A metal halide compound having the formula $TiBr_nCl_{4-n}$ or VBr_mCl_{5-m} wherein *n* has a value of 0–4 and *m* has a value of 0–5;

b. An aluminum hydrocarbon compound having the formula AlR_3 wherein R is a hydrocarbon group having 1–8 carbon atoms selected from the class consisting of alkyl, aryl and cycloalkyl group; and

c. CS_2;

the proportion of said metal halide compound being 1–10 millimoles per 100 grams of said monomer composition; the proportion of said aluminum compound being 0.9–3 moles per mole of metal halide compound; and the proportion of said CS_2 being 0.01–0.5 mole per mole of said metal halid compound, said polymerization being conducted for a period of at least one hour.

3,948,870

METHOD OF PREPARING HYDROPHILIC COPOLYMERS OF ACRYLONITRILE

Vladimir Stoy; Artur Stoy; Jaroslav Prokop; Renata Urbanova, and Josef Kucera, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Sept. 17, 1973, Ser. No. 397,744

Int. Cl.² C08F *8/12, 20/44*

U.S. Cl. 260—85.5 R **14 Claims**

1. A method of preparing hydrophilic polymers of acrylonitrile comprising the steps of copolymerizing acrylonitrile with about 0.01 to about 30% by weight of a monomer selected from the group consisting of monomers of the formula

$CH_2{=}CRCONHR^1$,

wherein R is hydrogen or methyl and R^1 is hydrogen, methyl or ethyl, N,N-dialkylacrylamides and methacrylamides and N-alkylolacrylamides and methacrylamides, thereafter subjecting said polymer to treatment with 50 to 95% by weight based on the copolymer of an aqueous acidic hydrolytic agent (b) selected from the group consisting of 40 to 75% nitric acid, 60 to 95% sulfuric acid, and 40 to 95% aqueous zinc chloride solution containing 0.001 to 10% of anhydrous hydrogen chloride, at a temperature between about −25° to 50°C for a period of time sufficient to effect partial homogeneous hydrolysis of said polymer and to convert 1 to 98% of the original nitrile groups into amido groups, and subsequently isolating the product thus formed by separating the acidic hydrolytic agent therefrom.

3,948,871

COMPOSITION FOR HARD TYPE CONTACT LENS WITH WETTABLE SURFACE

George H. Butterfield, Jr., Portland, Oreg.; George H. Butterfield, Sr., deceased, late of Portland, Oreg., and by David Gordon, executor, Portland, Oreg., assignors to George H. Butterfield and Son, Portland, Oreg.

Continuation of Ser. No. 246,453, April 21, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 439,407

Int. Cl.² C08F *15/16*

U.S. Cl. 260—86.1 E **4 Claims**

1. A contact lens composition consisting essentially of the polymerization product of from about 85% to about 95% by weight of methyl methacrylate and from about 5% to about 15% by weight of hydroxy ethyl methacrylate, the hydroxy ethyl methacrylate being substantially neutralized to a pH of between about 6.5 and about 8.5 prior to combining with the methyl methacrylate.

3,948,872

POLYMERIZATION PROCESS FOR PRODUCING LOW CIS-CONFIGURATION HOMOPOLYMERS

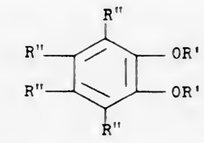
William J. Trepka, and Ralph C. Farrar, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 25, 1971, Ser. No. 109,684

Int. Cl. C08f *136/04, 136/06*

U.S. Cl. 260—94.2 M **4 Claims**

1. A polymerization process of preparing a homopolymer of a conjugated diene having decreased cis-content, comprising: contacting the conjugated diene having from 4 to 12 carbon atoms per molecule in a polymerization zone with an organolithium compound having the formula RLi_x wherein R is selected from the group consisting of aliphatic, cycloaliphatic, and aromatic radicals, *x* is an integer from 1 to 4, inclusive, R has a valence equal to the integer and contains from 1 to 20 carbon atoms, inclusive; and a 1,2-dimethoxybenzene:



wherein R′ is an alkyl radical having in the range of 1 to about 6 carbon atoms, R″ is H or R′, the total of all carbon atoms in all R″ groups being less than 11 per molecule and at least one R″ is H″, said 1,2-dimethoxybenzene being present in a quantity sufficient to effect a decreased cis-content of the resulting homopolymer.

3,948,873

PROCESS FOR PREPARING CARBON MONOXIDE-ETHYLENE COPOLYMERS

Donald E. Hudgin, Princeton Junction, N.J., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 10, 1974, Ser. No. 513,619
Int. Cl.² C08F *210/02*
U.S. Cl. 260—94.9 B **10 Claims**

1. In a process for preparing ethylenecarbon monoxide copolymers by reacting a mixture of ethylene and carbon monoxide at a temperature of about 20° to 150°C and a pressure of at least about 300 psig, the improvement comprising carrying out the reaction in the presence of an organic peroxide catalyst present in an amount effective to produce the desired product and 0.1 to 20% of KH_2PO_4 based on the total weight of monomeric components present in the reaction mixture.

3,948,874

METHOD FOR REMOVING LIGNIN FROM TALL OIL

Fredrik Teodor Emanuel Palmqvist, Solna, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Apr. 8, 1974, Ser. No. 458,694
Claims priority, application Sweden, May 7, 1973, 7306345
Int. Cl.² C09F *1/00*
U.S. Cl. 260—97.7 **2 Claims**

1. In the treatment of tall oil which has been obtained by splitting sulphate soap with an acid and which, after removal of splitting liquid, still contains acid splitting liquid residues, the method for removing lignin from said tall oil which comprises subjecting the tall oil to a drying operation to free the tall oil from an additional quantity of splitting liquid, and thereafter mechanically separating lignin in solid form, together with an acid residue of salt crystals, from the tall oil thus dried.

3,948,875

PROCESS FOR THE PREPARATION OF EPIDERMAL GROWTH FACTOR AND NEW DERIVATIVE USING CROSS-LINKED POLYACRYLAMIDE GEL AT A pH OF 1-3

Stanley Cohen, 3708 Wimbledon Road, Nashville, Tenn. 37215, and C. Richard Savage, Jr., 921 Pine Hill Drive, West, Schenectady, N.Y. 12303

Filed Nov. 27, 1973, Ser. No. 419,231
Int. Cl.² C07G *7/00*
U.S. Cl. 260—112 R **15 Claims**

1. A process for the preparation of substantially pure epidermal growth factors which comprises homogenizing submaxillary glands of adult male mice, separating the resulting homogenate into a solid fraction and a supernatant fraction, passing the supernatant fraction through a column of cross-linked polyacrylamide gel at a pH of 1 to 3 to selectively adsorb epidermal growth factor from said supernatant fraction, eluting the column to recover a fractional eluate having epidermal growth activity and absorption of ultraviolet light of wave length about 280 μ.

3,948,876

PROCESS FOR THE PURIFICATION OF SYNTHETIC CALCITONINS

Werner Rittel, Basel; Max Brugger, Birsfelden, and Bernhard Riniker, Frenkendorf, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 3, 1974, Ser. No. 529,195
Claims priority, application Switzerland, Dec. 14, 1973, 17550/73
Int. Cl.² C07C *103/52*; C07G *7/00*; C08H *1/00*
U.S. Cl. 260—112.5 T **9 Claims**

1. Process for the purification of synthetically produced calcitonins having an isoelectric point which is between the pH values of approx. 5 to 10, wherein the calcitonin-peptide is precipitated as inner salt from an aqueous solution of a salt, said salt being soluble in water or in a solution of water and an organic peptide solvent, with acids or bases by adjustment of the pH to the isoelectric range.

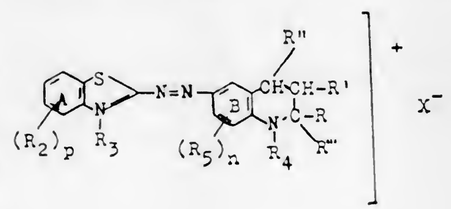
3,948,877

BASIC BENZOTHIAZOLYL-AZO-QUINOLINYL DYESTUFFS

Hans-Peter Kuhlthau, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 9, 1973, Ser. No. 414,291
Claims priority, application Germany, Nov. 10, 1972, 2255059
Int. Cl.² C09B *29/36*; D06P *3/24*, *3/52*, *3/70*
U.S. Cl. 260—146 R **12 Claims**

1. Dyestuff of the formula



wherein

R, R′, R″ and R‴ are hydrogen, methyl, ethyl or propyl, at least two of which are hydrogen;

R_2 and R_5 are halogen, C_1-C_6-alkyl, chloro-C_1-C_6-alkyl, bromo-C_1-C_6-alkyl, hydroxy-C_1-C_6-alkyl, methoxy-C_1-C_6-alkyl, cyano-C_1-C_6-alkyl, acetoxy-C_1-C_6-alkyl, aminocarbonyl-C_1-C_6-alkyl, carboxy-C_1-C_6-alkyl, allyloxy-C_1-C_6-alkyl, methoxycarbonyl-C_1-C_6-alkyl, cyclohexyl, phenylmethyl, phenylethyl, β-phenyl-β-hydroxyethyl, phenylpropyl-(2,2), hydroxyl, C $_1$-C_6-alkoxy; phenyloxy, naphthyloxy, 4-methylphenyloxy, 2-methylphenyloxy, 4-chlorophenyloxy, 2-chlorophenyloxy, 2-methyl-4-chlorophenyloxy, phenylmethyloxy, phenylethyloxy, β-phenyl-β-hydroxyethyloxy, phenylpropyl-(2,2)-oxy, nitro, C_1-C_6-alkoxycarbonyl, phenyloxycarbonyl, naphthyloxycarbonyl, 4-methylphenyloxycarbonyl, 2-methylphenyloxycarbonyl, 4-chlorophenyloxycarbonyl, 2-chlorophenyloxycarbonyl, 2-methyl-4-chlorophenyloxycarbonyl, phenylmethyloxycarbonyl, phenylethyloxycarbonyl, β-phenyl-β-hydroxy-ethyloxycarbonyl, phenylpropyl-2,2-oxycarbonyl, carboxyl, nitrilo, thiocyano, β-ethyl-capronylamino, benzoylamino, acetylamino, carbamoyl, N-(C_1-C_6-alkyl)carbamoyl, N,N-di-(C_1-C_6-alkyl)dicarbamoyl, N-(C_1-C_6-alkyl)-N-phenylcarbamoyl, N-(C_1-C_6-alkyl)-N-naphthylcarbamoyl, N-(C_1-C_6-alkyl)-N-4-methylphenylcarbamoyl, N-(C_1-C_6-alkyl)-N-2-methylphenylcarbamoyl, N-(C_1-C_6-alkyl)-N-4-chlorophenylcarbamoyl, N-(C_1-C_6-alkyl)-N-2-chlorophenylcarbamoyl, N-(C_1-C_6 -alkyl)-N-2-methyl-4-chlorophenylcarbamoyl, sulphamoyl, N-(C_1-C_6-alkyl)sulphamoyl, N,N-di-(C_1-C_6-alkyl)sulphamoyl, C_1-C_6-alkylsulphonyl, phenylsulphonyl, naphthylsulphonyl, 4-methylphenylsulphonyl, 2-methylphenylsulphonyl, 2-chlorophenylsulphonyl, 4-chlorophenylsulphonyl, 2-methyl-4-chlorophenylsulphonyl, or trifluoromethyl;

R_3 is cyclohexyl, phenylmethyl, phenylethyl, -phenylhydroxyethyl, phenylpropyl-(2,2), C_1-C_6-alkyl, or C_2-C_6-alkenyl, said alkyl and said alkenyl being unsubstituted or substituted by chloro, bromo, hydroxy, methoxy, cyano, acetoxy, aminocarbonyl, carboxy, allyloxy or methoxycarbonyl;

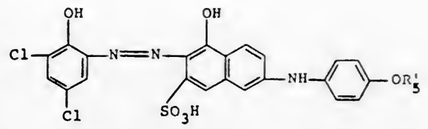
R_4 is C_2-C_6-alkenyl or C_1-C_6-alkyl, which is unsubstituted or substituted by halogeno, C_1-C_6-alkoxy, hydroxy, hydroxy-C_1-C_6-alkoxy, halogenohydroxy, cyano, carboxy, aminocarbonyl, acetyloxy, allyloxy, benzoyloxy, methoxybenzoyloxy or methoxycarbonylbenzoyloxy, cyclohexyloxy, phenyloxy, methoxyphenyloxy, methylphenyloxy, ethylphenyloxy, chlorophenyloxy, cyclohexylphenyloxy, isopropyloxyphenyloxy, phenylphenyloxy, benzylphenyloxy, tetrahydronaphthoxy, benzyloxy, phenylethyloxy, phenylpropyloxy, phenylthio, cyclohexyl, benzyl, phenylethyl, phenylpropyl-(2,2), phenyloxy-C_1-C_6-alkoxy, naphthyloxy-C_1-C_6-alkoxy, or phenylaminocarbonyloxy;

p is 0, 1, 2, 3 or 4;

n is 0, 1, 2 or 3;

X^- is an anion; or

ring A is fused to a benzene ring.



wherein R_5' is methyl or ethyl.

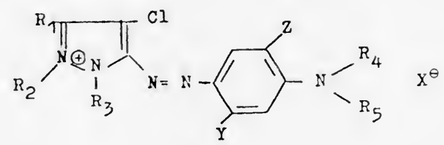
3,948,878

PYRAZOLIUM-AZO-PHENYL COMPOUNDS

Gérard Emile Edgard Coispeau, Soisy-sur-Montmorency, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation-in-part of Ser. No. 334,501, Feb. 21, 1973, abandoned. This application Jan. 27, 1975, Ser. No. 544,541
Claims priority, application France, Feb. 24, 1972, 72.06219; Dec. 28, 1972, 72.46600
Int. Cl.² C09B *43/00*, *29/08*, *29/26*
U.S. Cl. 260—147 **5 Claims**

1. Dyestuff of the formula:



in which R_1 is unsubstituted phenyl or phenyl substituted by one or two chlorine, nitro, methoxy or ethoxy, R_2 is methyl or ethyl, R_3 is methyl or ethyl, Y is hydrogen, methyl, methoxy, ethoxy, benzoylamino or acetylamino, Z is hydrogen, methoxy or ethoxy, R_4 is hydrogen or alkyl containing 1 to 5 carbon atoms, R_5 is alkyl containing 1 to 5 carbon atoms, cyanethyl or succinimido ethyl, and X^- is a colourless monovalent anion.

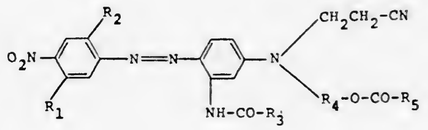
3,948,879

PHENYLAZONAPHTHOLSULFONIC ACIDS HAVING A SUBSTITUTED ANILINO GROUP IN THE 6-POSITION OF THE NAPHTHALANE RING

Jacky Dore, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 144,620, May 18, 1971, Pat. No. 3,782,897. This application July 11, 1973, Ser. No. 378,257
Claims priority, application Switzerland, June 2, 1970, 8228/70; Jan. 22, 1971, 985/71
Int. Cl.² C09B *29/30*, *45/16*
U.S. Cl. 260—198 **3 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen, chloro or bromo,

R_2 is chloro or bromo,

R_3 is lower alkyl or monosubstituted lower alkyl wherein the substituent is chloro, bromo, cyano or lower alkoxy,

R_4 is $-CH_2CH_2-$ or $-CH_2-\underset{CH_3}{CH}-$,

and

R_5 is lower alkyl or lower chloroalkyl.

3,948,880

PHENYL-AZO-PHENYL COMPOUNDS OF LOW SOLUBILITY IN WATER

Wolfgang Groebke, Oberwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 228,353, Feb. 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 15,830, March 2, 1970, abandoned. This application May 28, 1974, Ser. No. 473,384
Claims priority, application Switzerland, Apr. 2, 1969, 5043/69
Int. Cl.² C09B *29/08*
U.S. Cl. 260—207.1 **9 Claims**

1. A compound of the formula

wherein

R_1 is hydrogen, chloro or bromo,

R_2 is chloro or bromo,

R_3 is lower alkyl or monosubstituted lower alkyl wherein the substituent is chloro, bromo, cyano or lower alkoxy,

3,948,881
PROCESS FOR THE PRODUCTION OF ALKYLENE GLYCOL ALGINATES

Clifford H. G. Strong, Guelph, Canada, assignor to Uniroyal, Ltd., Canada

Filed Oct. 25, 1974, Ser. No. 518,126
Claims priority, application Canada, July 16, 1974, 204887
Int. Cl.² C08B *37/04*
U.S. Cl. 260—209.6 **24 Claims**

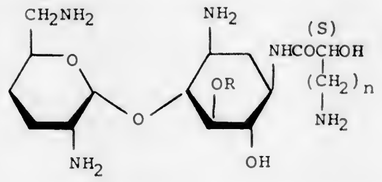
1. A process of making alkylene glycol alginates from a seaweed of the Class Phaeophyceae which comprises treating said seaweed with an aqueous solution of a strong acid, separating the acid treated seaweed from the aqueous acidic solution, washing the separated seaweed with water to remove residual treating acid and water soluble components therefrom, reacting the resulting treated seaweed with an alkylene oxide, and recovering alkylene glycol alginate from the resulting reaction mixture.

3,948,882
PROCESS FOR THE PRODUCTION OF A 1-N((S)-α-HYDROXY-ω-AMINOACYL)-3′,4′-DIDEOXYNEAMINE OR -3′,4′-DIDEOXYRIBOSTAMYCIN

Hamao Umezawa; Sumio Umezawa, both of Tokyo; Eiichi Akita, Kamakura; Yukio Horiuchi, Yokohama; Shuntaro Yasuda, Yokohama, and Osamu Tsuchiya, Yokohama, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed July 17, 1974, Ser. No. 489,243
Claims priority, application Japan, Aug. 1, 1973, 48-85885
Int. Cl.² C07G *3/00*
U.S. Cl. 260—210 AB **2 Claims**

1. A process for the production of a 1-N-((S)-α-hydroxy-ω-aminoalkanoyl-3′, 4′-dideoxyneamine or -3′, 4′-dideoxyribostamycin of the formula



(II)

wherein R is a hydrogen atom or β-D-ribofuranosyl group of the formula



and *n* is a whole number of 1 to 4, which consists essentially of the following four steps:

a. reacting 3′, 4′-dideoxyneamine or 3′, 4′-dideoxyribostamycin with trifluoroacetic acid to prepare 3′, 4′-dideoxyneamine tetra-trifluoroacetate or 3′, 4′-dideoxyribostamycin tetra-trifluoroacetate;

b. esterifying at random the hydroxyl groups of the 3′, 4′-dideoxyneamine tetra-trifluoroacetate or 3′, 4′-dideoxyribostamycin tetra-trifluoroacetate by reacting with an (S)-α-hydroxy-ω-phthalimidoalkanoic acid of the formula

$$R_1R_2N-(CH_2)_n-CH(OH)-COOH$$

wherein R_1 and R_2 taken together form a phthaloyl group and *n* is a whole number of 1 to 4, to prepare a mixture of differently O-(S)-α-hydroxy-ω-phthalimidoalkanoylated 3′, 4′-dideoxyneamine tetra-trifluoroacetates or 3′, 4′-dideoxyribostamycin tetra-trifluoroacetete;

c. treating the whole mixture of said differently O-(S)-α-hydroxy-ω-phthalimidoalkanoylated products with aqueous hydrazine or an aqueous alkali metal hydroxide, to effect the liberation of trifluoroacetic acid, the removal of the phthaloyl group and the migration of the (S)-α-hydroxy-ω-aminoalkanoyl group from the 6-hydroxyl group to the 1-amino group of the neamine or ribostamycin moiety simultaneously, whereby the desired 1-N-((S)-α-hydroxy-ω-aminoalkanoyl)-3′, 4′-dideoxyneamine or -3′, 4′-dideoxyribostamycin is formed, and

d. recovering said desired 1-N-((S)-α-hydroxy-ω-aminoalkanoyl)-3′,4′-dideoxyneamine or -3′,4′-dideoxyribostamycin.

3,948,883
SYNTHESIS OF PURINE NUCLEOSIDES

Ramachandran S. Ranganathan, Rowland Heights, Calif., assignor to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Nov. 11, 1974, Ser. No. 522,492
Int. Cl.² C07H *19/16*
U.S. Cl. 260—211.5 R **15 Claims**

1. A process for synthesizing a desired purine-containing nucleoside comprising

a. condensing a thionoxazolidine with nitropyrimidine having the following formula:

wherein X is NHR′, NR′₂, fluoro, chloro, OR′, or SR′, wherein R′ is hydrogen or lower alkyl, Y is H, CH_3, fluoro, chloro, NHR′, NR′₂, OR′ or SR′ wherein R′ is hydrogen or lower alkyl, Z is Cl, Br or I,

Said thionoxazolidine comprising an adduct of a sugar unit and an oxazolidine ring unit having the carbon atoms in the 1,2 positions on the sugar unit in common; said sugar unit being selected from the group consisting of monosaccharides, disaccharides and polysaccharides;

b. reducing the N-alkylated condensation product to produce an amino-pyrimidine nucleoside;

c. heating said amino-pyrimidine nucleoside under conditions to cyclize same to a mercapto-purine nucleoside; and

d. desulfurizing said cyclized product to produce the desired purine-containing nucleoside.

3,948,884
MYCAROSYL MACROLIDE ANTIBIOTICS

Robert John Theriault, Kenosha, Wis., assignor to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 246,095, April 17, 1972, Pat. No. 3,784,447. This application Sept. 6, 1973, Ser. No. 394,905
Int. Cl.² C07H *17/00*
U.S. Cl. 260—210 AB **1 Claim**

1. The desisovaleryl derivative of niddamycin.

3,948,885
5-HYDROXYL-1,2,3-TRIAZOLE-4-CARBOXAMIDE NUCLEOSIDE

Joseph T. Witkowski, Laguna Niguel; Roland K. Robins, Santa Ana, and Frank A. Lehmkuhl, Costa Mesa, all of Calif., assignors to ICN Pharmaceuticals, Inc., Irvine, Calif.

Filed Mar. 19, 1973, Ser. No. 342,616
Int. Cl.² C07H *19/04*
U.S. Cl. 260—211.5 R **2 Claims**

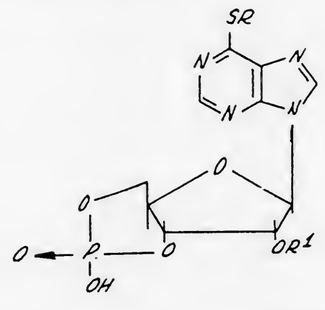
1. 5-Hydroxy-1-β-D-ribofuranosyl-1,2,3-triazole-4-carboxamide.

3,948,886
6-SUBSTITUTED PURINE 3′,5′-CYCLIC NUCLEOTIDES

Dennis A. Shuman, Mission Viejo; Rich B. Meyer, Jr., Laguna Beach, and Roland K. Robins, Santa Ana, all of Calif., assignors to ICN Pharmaceuticals, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 234,371, March 13, 1972, abandoned. This application June 8, 1973, Ser. No. 368,323
Int. Cl.² C07H *19/20*
U.S. Cl. 260—211.5 R **7 Claims**

1. A compound of structure:



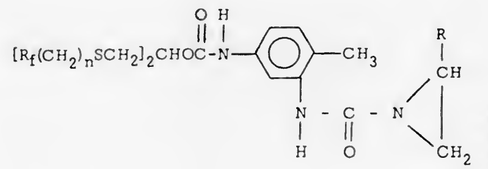
wherein R is C_1C_8 alkyl or C_1–C_8 alkylphenyl and R^1 is hydrogen or C_1 – C_{18} acyl.

3,948,887
FLUORINE AND SULFUR-CONTAINING COMPOSITIONS

Robert Bonner Hager, Collegeville, and Sameeh Said Toukan, Phoenixville, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 283,886, Aug. 25, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 459,258
Int. Cl.² C07D *203/00*
U.S. Cl. 260—239 E **5 Claims**

1. A composition of matter having the following formula:



wherein R_f is selected from the group consisting of $CF_3(CF_2)_y$, $(CF_3)_2CF(CF_2)_y$, and $(CF_3)_2CFO(CF_2)_y$ where *y* is an integer of 1 to 14; *n* is an integer of 1 to 12, and R is hydrogen or methyl.

3,948,888
PROCESS FOR REMOVING BORIC ACID FROM LACTAMS

Hans-Helmut Schwarz, Krefeld-Traar, and Otto Immel, Krefeld, both of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Jan. 7, 1974, Ser. No. 431,285
Claims priority, application Germany, Jan. 13, 1973, 2301587
Int. Cl.² C07D *201/16;* **C01B** *35/10*
U.S. Cl. 260—239.3 A **6 Claims**

1. A process for removing boric acid from a lactam which comprises mixing at least one member selected from the group consisting of oxides and hydroxides of alkali metal and alkaline earth metal oxides with the boric acid containing lactam in a molar ratio amount of selected member to boric acid of from 0.5:1 to 3:1, maintaining the reaction temperature of said mixture at from 40° to 150°C. for from 5 minutes to 2 hours and then filtering resulting reaction mixture.

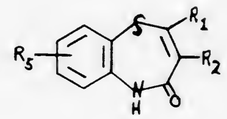
3. The process of claim 1 wherein said lactam is caprolactam.

3,948,889
5-[(SUBSTITUTED AMINO)ALKYL]-2-ARYL-3-HALO-1,5-BENZOTHIAZEPIN-4(5H)-ONES

John Krapcho, Somerset, and Chester Frank Turk, Kendall Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 462,266, April 19, 1974, Pat. No. 3,895,006. This application Jan. 30, 1975, Ser. No. 545,459
Int. Cl.² C07D *281/02*
U.S. Cl. 260—239.3 B **3 Claims**

1. A compound having the formula



wherein R_1 is phenyl or substituted phenyl wherein the substitutent is selected from the group consisting of alkyl, alkoxy, halogen, trifluoromethyl or



R_2 is chlorine or bromine and R_3 is hydrogen, alkyl, alkoxy, halogen or trifluoromethyl; and wherein the terms alkyl and alkoxy, in each instance employed, refer to groups having 1 to 6 carbon atoms.

3,948,890

4H-1,3-BENZOXAZIN-2-ONE-3-ACETOHYDROXAMIC ACID DERIVATIVES

Giselbert Karl Suchowsky, deceased, late of Milan, Italy (by Brunhilde Pasewald Suchowsky, sole heir; Luigi Bernardi, Milan, Italy; Severina Coda, Milan, Italy, and Lorenzo Pegrassi, Milan, Italy, assignors to Farmitalia Societa Farmaceutica Italia, Milan, Italy

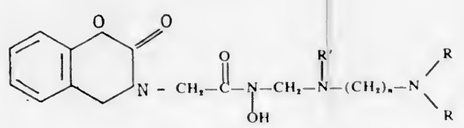
Filed Dec. 29, 1972, Ser. No. 319,724

Claims priority, application Italy, Dec. 28, 1971, 32992/71

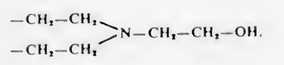
Int. Cl. C07d *87/08*

U.S. Cl. 260—244 R **3 Claims**

1. A compound of the formula:



wherein R′ and R are lower alkyl containing from 1 to 4 carbon atoms; n is an integer from 0 to 3; and R′ together with the $-(CH_2)_n-NR_2$ group jointly represent the group



3,948,891

HETEROCYCLIC PEROXIDES

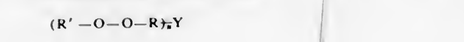
Duane B. Priddy, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 385,914, Aug. 6, 1973, Pat. No. 3,890,316. This application Oct. 4, 1974, Ser. No. 512,279

Int. Cl.² C07D *295/10*

U.S. Cl. 260—247 **3 Claims**

1. A compound of the formula



(I)

wherein

R is a cycloalkylidene radical of 5–7 carbon atoms,

R′ is tertiary alkyl of 4–8 carbon atoms,

Y is a heterocyclic radical or lower alkyl substituted heterocyclic radicals thereof of the group

4-morpholinyl-,

1-piperidinyl-,

1-pyrrolidinyl, and

1,4-piperazinediyl, and

n is the valence of Y.

3,948,892

2-ALKOXY(AND 2-AMINO)-3-AMINO-2-HETEROCYCLIC-THIO-PROPANAMIDES

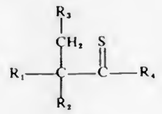
Bernard Loev, Broomall, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 322,572, Jan. 10, 1973, Pat. No. 3,860,592. This application Oct. 15, 1974, Ser. No. 514,684

Int. Cl.² C07D *237/08, 239/26*

U.S. Cl. 260—247.1 M **6 Claims**

1. A compound of the formula:



in which:

R_1 is 2-pyrimidyl, 4-pyrimidyl or 2-pyrazinyl;

R_2 is lower alkoxy, allyloxy, cyclopropanemethoxy, di-lower alkylamino, piperidino, pyrrolidino, N-lower alkylpiperazino or morpholino;

R_3 is di-lower alkylamino, piperidino, pyrrolidino, N-lower alkylpiperazino or morpholino;

R_4 is NH-(lower alkyl), N(lower alkyl)$_2$, NH-phenyl, NH—$(CH_2)_n$-cycloalkyl, said cycloalkyl having 3–6 carbon atoms, or NH—R_5;

n is 0 or 1 and

R_5 is an allyl or propargyl group optionally substituted by methyl or ethyl groups, said R_5 having 3–6 carbon atoms

or a pharmaceutically acceptable acid addition salt thereof.

3,948,893

1-PHENYL-SUBSTITUTED 1,3,5-TRIAZINES

Gerd Aichinger; Axel Haberkorn, both of Wuppertal; Heinrich Kolling, Haan; Eckart Kranz, and Josef Reisdorff, both of Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

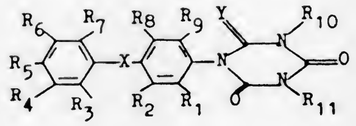
Filed Mar. 18, 1974, Ser. No. 452,140

Claims priority, application Germany, Mar. 20, 1973, 2313721

Int. Cl.² C07D *51/26*

U.S. Cl. 260—248 NS **16 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable nontoxic salt thereof wherein

R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 and R_9 are the same or different and each is selected from the group consisting of hydrogen, straight or branched chain lower alkyl, halo lower alkyl, lower alkoxy, halo lower alkoxy, lower alkylthio, halo lower alkylthio, halogen, nitro, cyano, amino, lower alkanoylamino, lower alkoxycarbonylamino, carboxy, lower alkoxycarbonyl, carbamoyl, lower alkanoyl, halo lower alkanoyl, lower alkylsulphinyl, lower alkylsulphonyl, halo lower alkylsulphonyl, and sulphamoyl;

R_{10} is hydrogen, straight or branched chain lower alkyl, cycloalkyl of 3 to 7 carbon atoms, halo lower alkyl, lower alkoxy, lower alkoxy lower alkyl, halo lower alkoxy lower

alkyl, lower alkylthio lower alkyl, halo lower alkylthio lower alkyl, lower alkenyl, lower alkynyl, lower alkoxycarbonyl, (lower alkylthio)carbonyl, (lower alkylthio)thiocarbonyl, lower alkanoylamino, succinimido, phthalimido, amino, dilower alkylamino, benzyl, phenyl, or benzyl or phenyl substituted by halogen;

R_{11} is hydrogen or lower alkyl;

X is sulphur, sulphinyl or sulphonyl; and

Y is oxygen or sulphur.

3,948,894

3-AMINO-5,6-DIARYL-1,2,4-TRIAZINES

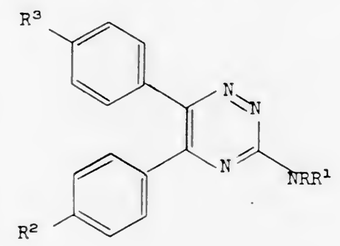
William B. Lacefield, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 31, 1974, Ser. No. 438,156

Int. Cl.² C07D *253/06*

U.S. Cl. 260—249.5 **12 Claims**

1. The compound of the formula:



wherein

R and R¹, when taken separately are hydrogen, C_1–C_3 alkyl or $-CH_2CH(OH)-R^4$, R^4 being hydrogen, methyl or ethyl;

R and R¹, when taken together with the nitrogen atom to which they are attached, are selected from the heterocyclic group consisting of

1. 4-(β-hydroxyethyl)piperazino,
2. 4-hydroxypiperidino,
3. 4-methylpiperazino,
4. piperidino and
5. pyrrolidino;

R^2 and R^3 are independently C_1–C_3 alkoxy, dimethylamino, fluoro and methylsulfinyl;

and the pharmaceutically acceptable acid addition salts thereof; subject to the limitations that

1. when one of R and R¹ is hydrogen, the other is $-CH_2CH(OH)-R^4$;
2. when R^2 is fluoro, R^3 is C_1–C_3 alkoxy;
3. when R^3 is fluoro, R^2 is C_1–C_3 alkoxy or dimethylamino; and
4. when R^2 and R^3 are both methoxy, one of R and R¹ is other than methyl.

3,948,895

SYNTHESIS OF 3,5-DIAMINOPYRAZINOIC ACID FROM 3,5-DIAMINO-2,6-DICYANOPYRAZINE AND INTERMEDIATES

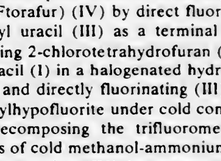
Dennis S. Donald, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 184,578, Sept. 28, 1971, abandoned. This application Mar. 6, 1972, Ser. No. 232,206 The portion of the term of this patent subsequent to Nov. 6, 1992, has been disclaimed.

Int. Cl.² C07D *241/46*

U.S. Cl. 260—250 BN **3 Claims**

1. A compound of the formula



wherein

R is [—COOH, $-CONH_2$ or —H] —COOH or $-CONH_2$.

3,948,896

N-MONO(ALKOXYMETHYL) PHENOBARBITALS, PROCESS THEREFOR AND THERAPEUTIC COMPOSITION AND METHOD CONTAINING SAME

Julius A. Vida, Billerica, Mass., assignor to The Kendall Company, Walpole, Mass.

Continuation-in-part of Ser. No. 336,424, Feb. 28, 1973, abandoned. This application Jan. 18, 1974, Ser. No. 434,385

Int. Cl.² C07D *239/62*

U.S. Cl. 260—257 **3 Claims**

1. N-mono(alkoxymethyl)phenobarbital in which the alkoxy group has from 1 to 4 carbon atoms.

3,948,897

SYNTHESIS OF 1-(TETRAHYDRO-2-FURANYL)-5-FLUOROURACIL (FTORAFUR) VIA DIRECT FLUORINATION

Leroy B. Townsend, and Robert A. Earl, both of Salt Lake City, Utah, assignors to The United States of America as represented by the Secretary of Health, Education and Welfare, Washington, D.C.

Filed Oct. 9, 1973, Ser. No. 405,532

Int. Cl.² C07D *239/52*

U.S. Cl. 260—260 **4 Claims**

1. A process for the production of 1-(tetrahydro-2-furanyl)-5-fluorouracil (Ftorafur) (IV) by direct fluorination of 1-tetrahydro-2-furanyl uracil (III) as a terminal reaction which consists of reacting 2-chlorotetrahydrofuran (II) with 2,4-bis-trimethylsilyl uracil (I) in a halogenated hydrocarbon solvent to product (III) and directly fluorinating (III) with an excess of trifluoromethylhypofluorite under cold conditions of about −78° C. and decomposing the trifluoromethylhypofluorite adduct by means of cold methanol-ammonium hydroxide and separating and extracting (IV) by means of a halogenated hydrocarbon solvent.

3,948,898

1,3-DIOXO-2-AMINOALKYL-4,4-DIMETHYL-ISOQUINOLINES AND SALTS THEREOF

Eberhard Kutter; Volkard Austel, both of Biberach an der Riss; Wolfgang Eberlein, Mettenberg-Biberach, and Joachim Heider, Warthausen-Oberhoefen, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

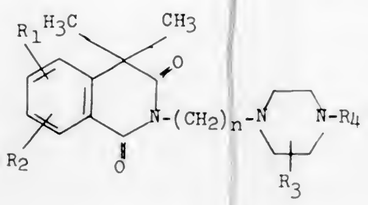
Filed Sept. 4, 1974, Ser. No. 503,072

Claims priority, application Germany, Sept. 8, 1973, 2345422; Sept. 8, 1973, 2345423

Int. Cl.² C07D *217/16*

U.S. Cl. 260—268 BQ **2 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, halogen, methoxy or methylthio,
R_2 is hydrogen or methoxy,
n is 2 or 3,
R_3 is hydrogen or methyl, and
R_4 is pyridyl, methyl-pyridyl, phenyl, chlorophenyl, trifluoromethyl-phenyl, tolyl, xylyl, ethyl-phenyl, diethyl-phenyl, methoxy-phenyl or dimethoxy-phenyl,
or a non-toxic, pharmacologically acceptable acid addition salt thereof.

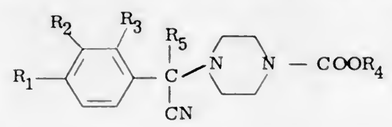
3,948,899

α-CYANOBENZYLPIPERAZINES AND A PROCESS FOR PRODUCING THE SAME

Katsumi Sakai, Kamiichi; Riitiro Iwaki, Tokyo; Katsuki Taoka, Komae; Hiroshi Nakajima, Toyama, and Yasuo Yamada, Komae, all of Japan, assignors to Fuji Chemical Industry Co., Ltd. and Nippon Chemiphar Co., Ltd., Tokyo, both of, Japan

Filed Aug. 7, 1974, Ser. No. 495,426
Claims priority, application Japan, Aug. 16, 1973, 48-92096
Int. Cl.² C07D *295/18*
U.S. Cl. 260—268 C **7 Claims**

1. α-cyanobenzylpiperazine represented by the formula



or a non-toxic acid addition salt thereof, wherein R_1 is halogen or alkoxy of 1–3 carbon atoms, R_2 and R_3 are each hydrogen or alkoxy of 1–3 carbon atoms, R_4 is alkyl of 1–3 carbon atoms, and R_5 is hydrogen or alkyl of 1–3 carbon atoms.

3,948,900

PREPARATION OF 1-METHYLPIPERAZINE AND 1,4-DIMETHYLPIPERAZINE AS CO-PRODUCTS

Philip Hotchkiss Moss, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

Filed Aug. 16, 1974, Ser. No. 498,188
Int. Cl.² C07D *295/04*
U.S. Cl. 260—268 SY **9 Claims**

1. In a process for the preparation of 1-methylpiperazine and 1,4-dimethylpiperazine as co-products comprising mixing and reacting formaldehyde and piperazine in the presence of a liquid solvent and then hydrogenating the resulting reaction product in said liquid solvent in the presence of a hydrogenation catalyst at an elevated temperature in liquid phase, the improvement comprising the step of:
mixing and reacting the formaldehyde and piperazine in a molar ratio of from more than 1.3:1 to less than about 2.0:1;
hydrogenating the formaldehyde:piperazine reaction product using methanol as the major solvent of said liquid solvent, wherein the liquid solvent contains less than about 35% water by weight, based upon the total weight of the liquid solvent present, whereby the resulting crude hydrogenated product is essentially free from piperazine as an impurity; and
recovering the 1-methylpiperazine and 1,4-dimethylpiperazine co-products.

3,948,901

BIS (2,4-DIOXOTETRAHYDROPYRIMIDINYL-5-SULPHONOAMIDO) DIPHENYLSULPHONER

Vladimir Savich Reznik, ulitsa Gospitalnaya, 34, kv. 34; Nikolai Grigorievich Pashkurov, ulitsa Druzhby, 6, kv. 20; Abdurakhim Abdurakhimovich Muslinkin, ulitsa Zhdanova, 60, kv. 33; Nikolai Mikhailovich Smirnov, ulitsa Artilleristov, 25/38, kv. 65, all of Kazan, and Nikolai Mikhailovich Goloschapov, ulitsa Druzhby, 9, kv. 110, Zagorsk, all of U.S.S.R.

Filed Apr. 22, 1974, Ser. No. 463,168
Int. Cl.² C07D *239/44*
U.S. Cl. 260—239.75 **5 Claims**

1. ω,ω'-bis(2,4-dioxotetrahydropyrimidinyl-5-sulphonoamido) diphenylsulphones having the general formula:



wherein R_1, R_2, R_3 and R_4 are hydrogen or lower alkyl.

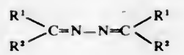
3,948,902

METHOD FOR PREPARING AZINES

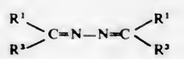
Jean Pierre Schirmann, Brignais, and Francis Weiss, Pierre-Benite, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation of Ser. No. 267,921, June 30, 1972, abandoned. This application Oct. 16, 1974, Ser. No. 515,156
Claims priority, application France, July 15, 1971, 71.25824
Int. Cl.² C07C *109/00*
U.S. Cl. 260—240 G **15 Claims**

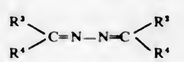
1. A method for preparing symmetrical azines of the formulas



(I)

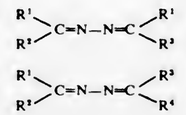


(II)



(III)

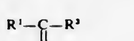
and unsymmetrical azines of the formulas



(IV)

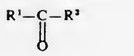
(V)

and mixtures of azines (I), (II), and (IV), and (I), (III) and (V), wherein R^1, R^2, R^3 and R^4 each is a hydrogen atom, a straight chain alkyl radical of from 1 to 12 carbon atoms, a branched chain alkyl radical or unsubstituted or alkyl substituted cycloalkyl radical of from 3 to 12 carbon atoms, or a phenyl radical; further provided that R^1 and R^2 can be the same or different radicals, R^3 is a radical different from R^1 and R^2 and R^3 and R^4 are radicals different from each other and each is different from R^1 and R^2; or R^1 and R^2 or R^1 and R^3 or R^3 and R^4 bonded to the same carbon atom together from an unsubstituted or alkyl substituted alkylene radical of from 3 to 11 carbon atoms, each of the aforesaid radicals being unsubstituted or substituted with one or more chlorine or fluorine atoms or nitro or methoxy groups, which comprises reacting in the absence of a nitrile and in the liquid phase a carbonyl compound of the formula



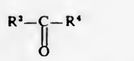
(VI)

alone or together with a different carbonyl compound



(VII)

or



(VIII)

wherein R^1, R^2, R^3 and R^4 each has the same meaning as defined above, with ammonia and hydrogen peroxide in the presence of an effective amount of at least one catalyst selected from the hydroxides and chloride, fluoride, nitrate, sulfate, phosphate, pyrophosphate, borate, carbonate, formate, acetate, propionate, butyrate, isobutyrate, hexanoate, octanoate, dodecanoate, stearate, oxalate, succinate, glutarate, adipate, benzoate, phthalate, methanesulfonate, ethanesulfonate, benzenesulfonate, and p-toluene sulfonate salts of the metals of Groups Ia and IIa of the Periodic Table of the Elements, ammonia, mono-, di-, and trialkylamines wherein the alkyl substituents have from 1 to 12 carbon atoms, tetraalkylammonium wherein the alkyl substituents have from 1 to 12 carbon atoms, and benzyltrimethylammonium, and recovering the azine or mixtures of azines from the reaction medium.

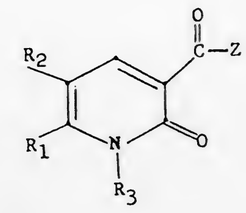
3,948,903

SUBSTITUTED N-(1,2-DIHYDRO-2-OXONICOTINYL)-CEPHALEXINS AND -CEPHALOGLYCINS

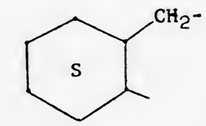
Leonard Doub, and James S. Kaltenbronn, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Continuation-in-part of Ser. No. 315,632, Dec. 15, 1972, Pat. No. 3,873,523. This application Nov. 11, 1974, Ser. No. 522,569
Int. Cl.² C07D *501/34*
U.S. Cl. 260—243 C **9 Claims**

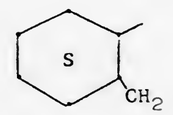
1. Amide compounds having the formula



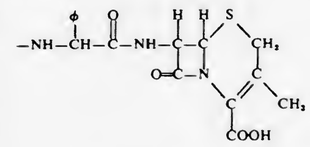
and pharmaceutically-acceptable salts thereof; where R_1 is cyclopentylmethyl, cyclopentenylmethyl, cyclohexyl, cyclohexylmethyl, benzyl, phenethyl, adamantyl, methoxybenzyl, hydroxybenzyl, chlorobenzyl, furfuryl, thenyl, pyridyl, furyl or thienyl; R_2 is hydrogen or together with R_1 represents the group

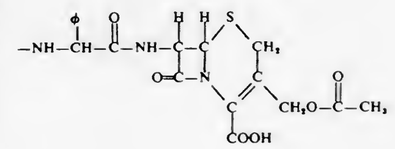


or the group



R_3 is hydrogen or methyl; and Z is one of two groups having the respective formulas





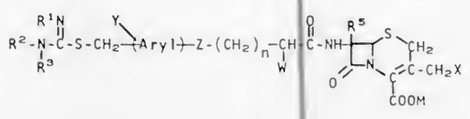
3,948,904

ISOTHIOUREA SUBSTITUTED CEPHALOSPORIN DERIVATIVES

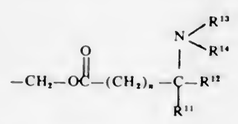
Abraham Patchornik, Ness-Ziona, and Fortuna Haviv, Rehovot, both of Israel, assignors to Yeda Research & Development Co. Ltd., Rehovot, Israel

Filed June 24, 1974, Ser. No. 482,264
Int. Cl.² C07D *501/18*
U.S. Cl. 260—243 C **38 Claims**

1. A compound selected from a base of the formula



wherein Aryl is selected from phenyl or 2-thienyl; Y is selected from hydrogen, chlorine, bromine, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, or an alkoxy group of from 1 to 4 carbon atoms with the proviso that when Aryl is 2-thienyl, Y is hydrogen; each of R^1, R^2 and R^3 is selected from hyrdogen or a straight or branched lower alkyl group of from 1 to 4 carbon atoms; Z is selected from a bond, oxygen, sulfur or imino with the proviso that when Aryl is 2-thienyl, Z is a bond; W is selected from hydrogen, methyl, amino, hydroxy, SO_3H, or $COOR^4$ wherein R^4 is selected from hydrogen or 5-indanyl; *n* is zero, 1 or 2 with the proviso that when W is other than hydrogen or methyl and Z is other than a bond, *n* is not zero; R^5 is selected from hydrogen or methoxy; M is selected from hydrogen, a pharmaceutically acceptable non-toxic anion or cation charge, an alkanoyloxymethyl group wherein the alkanoyl moiety has from 1 to 5 carbon atoms and may be straight or branched, or an alkanoylaminomethyl group wherein the alkanoyl moiety has from 1 to 5 carbon atoms and may be straight or branched and wherein the amino nitrogen may be substituted with an alkyl group of from 1 to 4 carbon atoms, an alkoxycarbonylaminomethyl group wherein the alkoxy moiety has from 1 to 4 carbon atoms and may be straight or branched and wherein the amino nitrogen may be substituted with an alkyl group of from 1 to 4 carbon atoms, p-(alkanoyloxy)benzyl wherein the alkanoyl moiety has from 1 to 5 carbon atoms and may be straight or branched or aminoalkanoyloxymethyl as represented by the group



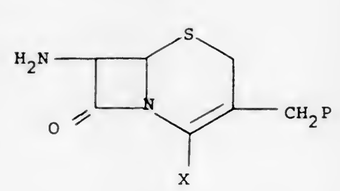
wherein *n'* is zero to 5, each of R^{11} and R^{12} is selected from hydrogen or lower alkyl of from 1 to 4 carbon atoms, and each of R^{13} and R^{14} is selected from hydrogen or a straight or branched lower alkyl group of from 1 to 4 carbon atoms; X is selected from hydrogen, acetoxy, 1,3,4-thiadiazol-5-ylthio, 3-methyl-1,2,4-thiadiazol-5-ylthio, tetrazol-5-ylthio, 1-methyltetrazol-5-ylthio, 2-methyl-1,3,4-oxadiazol-5-ylthio, or 2-methyl-1,3,4-thiadiazol-5-ylthio; and pharmaceutically acceptable salts thereof.

3,948,905
SUBSTITUTED SULFONYLACETAMIDO CEPHALOSPORINS

Robert M. De Marinis, King of Prussia, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 249,858, May 3, 1972, Pat. No. 3,865,819. This application Dec. 3, 1974, Ser. No. 529,166
Int. Cl.² C07D *501/28*
U.S. Cl. 260—243 C **5 Claims**

1. A compound of the structure:



where P is chloro, bromo, iodo, formyloxy, isothiocyanato or haloacetoxy and X is carboxy, protected carboxy or a group COOM wherein M is an alkali metal.

3,948,907
HETEROCYCLIC PEROXIDES

Duane B. Priddy, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 385,914, Aug. 6, 1973, Pat. No. 3,890,316. This application Oct. 4, 1974, Ser. No. 512,280
Int. Cl.² C07D *295/10*
U.S. Cl. 260—246 B **2 Claims**

1. A compound of the formula

$$[R''(O-O-R)_2Y']R''(O-O-R-Y')_2$$

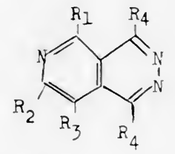
wherein R'' is 1,1,4,4-tetramethyltetramethylene,
R is a cycloalkylidene radical of 5–7 carbon atoms,
Y' is a monovalent heterocyclic radical of the group 4-morpholinyl,
1-piperdinyl, and
1-pyrrolidinyl.

3,948,908
PYRIDOPYRIDAZINE DERIVATIVES

Shojiro Yurugi, Senbonmaruta, and Shintaro Kikuchi, Takarazuka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 15, 1972, Ser. No. 315,315
Claims priority, application Japan, Dec. 28, 1971, 47-1253
Int. Cl.² C07D *295/00*
U.S. Cl. 260—246 B **8 Claims**

1. A pyrido [3,4-d]pyridazine derivative shown by the general formula:



wherein R_1 is hydrogen or an alkyl group of 1 to 3 carbon atoms; R_2 is an alkyl group of 1 to 4 carbon atoms, phenyl, naphthyl, benzyl or phenethyl; R_3 is hydrogen or an alkoxy group of 1 to 3 carbon atoms; and R_4 is morpholino, piperidino or pyrrolidino and a pharmaceutically acceptable salt thereof.

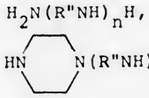
3,948,909
ASHLESS DETERGENT DISPERSANT FOR HYDROCARBON OILS

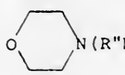
Nobukazu Okamoto, Ohi, Japan, assignor to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 28, 1974, Ser. No. 483,921
Int. Cl.² C07D *295/00*
U.S. Cl. 260—247.2 A **11 Claims**

1. An ashless detergent dispersant composition consisting essentially of a reaction product obtained by a two stage reaction in which, in the first stage, (A) alkenyl dicarboxylic acid or alkenyl dicarboxylic acid anhydride, wherein the alkenyl has at least 40 carbon atoms, is reacted with (B) an alkanolamine of the formula $HN(R'OH)_2$, wherein R' is alkylene having 2 to 10 carbon atoms, at a molar ratio of (A):(B) in the range of from 1:0.05 to 1:0.65, to form an intermediate;
and, in the second stage, said intermediate is reacted with
(C) a member selected from the group consisting of amines of the formulae

(a) $H_2N(R"NH)_nH$,

(b) 

(c) 

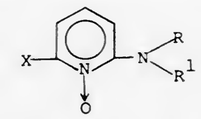
wherein R'' is alkylene having 1 to 10 carbon atoms
and *n* is an integer of from 1 to 6,
at a molar ratio of (alkenyl dicarboxylic acid or alkenyl dicarboxylic acid anhydride moiety in said intermediate) :C in the range of from 1:0.1 to 1:0.5, to obtain a reaction product containing ester, amide and imide linkages.

3,948,910
AMINOHALOPYRIDINE-N-OXIDES

Howard Johnston, and Alin H. Gulbenk, both of Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 28, 1973, Ser. No. 429,301
Int. Cl.² C07D *295/08*
U.S. Cl. 260—247.5 G **14 Claims**

1. A compound corresponding to the formula



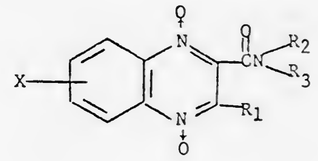
wherein X represents chloro or bromo; R represents hydrogen; R^1 represents a straight or branched chain alkyl of 3 to 6 carbon atoms or cyclohexyl; or R and R^1 taken together with the nitrogen atom represents 1-morpholino, 1-pyrrolidino, 1-piperidino, 1-(2-(loweralkyl)piperidino) (wherein alkyl represents from 1 to 4 carbon atoms), 1-hexamethylenimino or tetrahydro-1-pyridyl.

3,948,911
SUBSTITUTED QUINOXALINE-2-CARBOXAMIDE 1,4-DIOXIDES

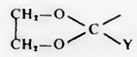
James W. McFarland, Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Nov. 19, 1974, Ser. No. 525,183
Int. Cl.² C07D *241/44*
U.S. Cl. 260—250 QN **11 Claims**

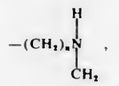
1. A compound selected from the group consisting of



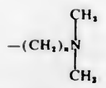
wherein X is a 6- or 7-position substituent selected from the group consisting of formyl, acetyl, hydroxymethyl, 1-hydroxyethyl and



wherein Y is selected from the group consisting of hydrogen and methyl: R_1 is hydrogen or methyl; R_2, when taken separately, is hydrogen or alkyl having 1 to 4 carbon atoms; R_3, when taken separately, is hydrogen, alkyl having 1 to 4 carbon atoms, $-(CH_2)_nOH$, $-(CH_2)_nOCH_3$, $-(CH_2)_nNH_2$,



or



wherein n is 2 or 3 and R_2 and R_3, when taken together with the nitrogen atom to which they are attached, form a member selected from the group consisting of pyrrolo, pyrrolidino, piperidino, and the pharmaceutically acceptable acid addition salts of those compounds wherein R_2 has an ω-aminoalkyl moiety.

3,948,912
NITROIMIDAZOLYL-TRIAZOLO-PYRIDAZINE COMPOUNDS AND THERAPEUTIC COMPOSITIONS

Herbert Berger, Mannheim-Kafertal; Rudi Gall, Grossachsen; Kurt Stach, Mannheim-Waldhof; Wolfgang Vomel, and Rita Hoffmann, both of Mannheim, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim-Waldhof, Germany

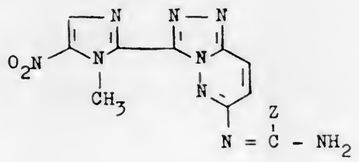
Filed Mar. 17, 1975, Ser. No. 559,285

Claims priority, application Germany, Apr. 17, 1974, 2418435

Int. Cl.² C07D *237/26*

U.S. Cl. 260—250 AC **6 Claims**

1. Nitroimidazolyl-triazolo-pyridazine compound of the formula:



wherein

Z is amino, or monolowerakylamino, and the pharmacologically compatible acid-addition salts thereof.

3,948,913
5-NITROFURYL DERIVATIVES

Graham Arton Howarth, Knutsford, and James Gainer, Tyldesley,, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

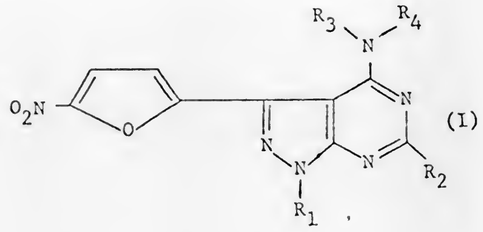
Continuation-in-part of Ser. No. 247,284, April 25, 1972, abandoned. This application July 3, 1974, Ser. No. 485,472

Claims priority, application United Kingdom, Apr. 27, 1971, 11492/71; Feb. 2, 1972, 4788/72; Mar. 3, 1972, 10021/72; Mar. 3, 1972, 10022/72

Int. Cl.² C07D *487/07*

U.S. Cl. 260—256.4 B **7 Claims**

1. A compound of formula I



wherein

R_1 represents alkyl of 1 to 3 carbon atoms,

R_2 represents a hydrogen atom or alkyl of 1 to 3 carbon atoms, and

R_3 represents a hydrogen atom, alkyl or hydroxy-alkyl of 1 to 3 carbon atoms, alkoxyalkyl wherein the alkoxy and alkyl moieties may each have from 1 to 3 carbon atoms or a hydroxy group, while

R_4 has the meaning given above for R_3 except that it may not represent a hydroxy group, or

R_3 and R_4 together represent pyrrolidine, morpholine, piperidine or azepine, as well as the 5-N oxides of said compounds and/or pharmaceutically acceptable acid addition salt thereof.

3,948,914
5-NITROPYRIMIDINE DERIVATIVES

Hanspeter Fischer, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

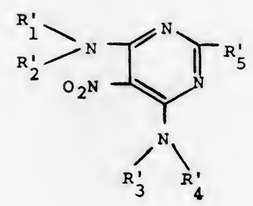
Filed Nov. 12, 1973, Ser. No. 415,209

Claims priority, application Switzerland, Nov. 16, 1972, 16728/72

Int. Cl.² C07D *239/48, 239/50*

U.S. Cl. 260—256.4 N **2 Claims**

1. A 5-nitropyrimidine compound of the formula Ia



wherein R'_1 represents alkyl with 1 to 6 carbon atoms, alkenyl with at most 5 carbon atoms, cycloalkyl with 3 to 6 carbon atoms, hydroxyalkyl with 1 to 6 carbon atoms, or cyanoalkyl with 1 to 6 carbon atoms in the alkyl group, R'_2 and R'_3 each independently represents hydrogen or alkyl with 1 to 6 carbon atoms, R'_4 represents alkyl with 2 to 6 carbon atoms or cyclo-

alkyl with 3 to 6 carbon atoms, R'_5 represents alkyl with 1 to 4 carbon atoms or trihalomethyl.

3,948,915
2-HALOPYRIMIDINE DERIVATIVES AND A METHOD FOR THEIR PREPARATION

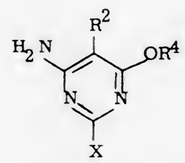
Tadamasa Hirayama; Masahiro Kamada, and Hideaki Tsurumi, all of Tokyo, Japan, assignors to Dalichi Seiyaku, Co., Ltd., Tokyo, Japan

Filed July 8, 1974, Ser. No. 486,634

Int. Cl.² C07D *239/26, 239/34*

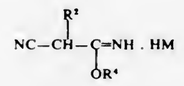
U.S. Cl. 260—256.4 C **5 Claims**

1. A process for preparing a 2-halopyrimidine compound represented by the formula:

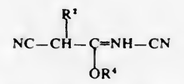


wherein R^2 represents hydrogen, halogen, C_{1-6} lower alkyl, phenyl, C_{1-6} alkyl or halo-substituted phenyl, or amino, and R^4 represents C_{1-6} lower alkyl and X represents Cl, Br, F, or I, which comprises the steps of:

reacting a cyanoacetimidate compound represented by the formula:



wherein R^2 and R^4 represent the same as above, and M represents a mineral acid residue, with cyanamide, to produce an N-cyanocyanoacetimidate represented by the formula:



wherein R^2 and R^4 represent the same as above, and thereafter reacting said N-cyanocyanoacetimidate with HF, HCl, HBr, or HI.

3,948,916
DIGLYCIDYL COMPOUNDS OF N-HETEROCYCLIC COMPOUNDS

Daniel Porret, Binningen; Jurgen Habermeier, Pfeffingen; Willy Fatzer, Bottmingen, and Dieter Baumann, Birsfelden, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

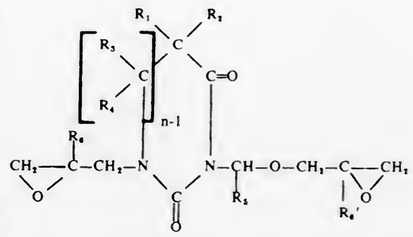
Continuation-in-part of Ser. No. 135,485, April 19, 1971, abandoned. This application Sept. 13, 1973, Ser. No. 396,931

Claims priority, application Switzerland, Apr. 20, 1970, 5878/70

Int. Cl.² C07D *239/20*

U.S. Cl. 260—260 **7 Claims**

1. A N-heterocyclic diglycidyl compound of the formula



wherein R_1, R_2, R_3 and R_4 independently of one another each represents a member selected from the group consisting of hydrogen atom and alkyl with 1 to 4 carbon atoms, or wherein R_1 and R_2 together form a divalent aliphatic hydrocarbon radical selected from the group consisting of tetramethylene and pentamethylene, R_5 represents a hydrogen atom or the methyl group, R_6 and R_6' independently of one another each represents a member selected from the group consisting of hydrogen atom and methyl group, and n denotes an integer having a value of 1 or 2.

3,948,917
1,4-DITHIINO[2,3-c]PYRROLE DERIVATIVES

Claude Jeanmart, Brunoy; Andre Leger, Paris, and Mayer Naoum Messer, Bievres, all of France, assignors to Rhone-Poulenc S.A., Paris, France

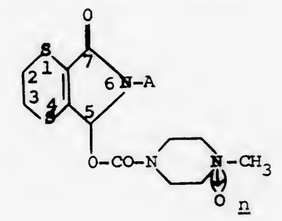
Filed Dec. 3, 1973, Ser. No. 421,060

Claims priority, application France, Dec. 4, 1972, 72.43054; Oct. 19, 1973, 73.37402

Int. Cl.² C07D *409/14*

U.S. Cl. 260—268 BQ **8 Claims**

1. A 1,4-dithiino[2,3-c]pyrrole of the formula:



wherein A is phenyl, 2-pyridyl, 3-pyridazinyl, 2-quinolyl or 1,8-naphthyridin-2-yl, or a said radical singly substituted by halogen, alkyl of 1 through 4 carbon atoms, alkoxy of 1 through 4 carbon atoms, cyano or nitro, and n is zero or 1, or a non-toxic pharmaceutically-acceptable acid addition salt thereof.

3,948,918
1-[1-(INDOL-3-YLETHYL)-PIPERAZIN-4-YL]-3-SUBSTITUTED UREAS

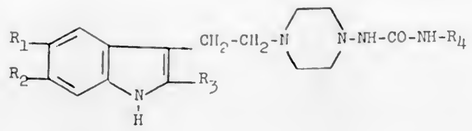
Edward J. Glamkowski, Warren, and Philip A. Reitano, Raritan, both of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed May 31, 1974, Ser. No. 475,316

Int. Cl.² C07D *295/00, 295/22*

U.S. Cl. 260—268 BC **7 Claims**

1. A compound of the formula:



wherein R_1 and R_2 are hydrogen or alkoxy of from 1 to 3 carbon atoms; R_3 is hydrogen or alkyl of from 1 to 3 carbon atoms; and R_4 is alkyl of from 1 to 4 carbon atoms, cycloalkyl of from 3 to 8 carbon atoms; phenyl; or phenyl mono-, di-, or tri-substituted by halogen, alkyl of from 1 to 3 carbon atoms, alkoxy of from 1 to 2 carbon atoms, trifluoromethyl or nitro; and the physiologically tolerable acid addition salts thereof.

3,948,919
2-HYDROXYMETHYL-3-HYDROXY-6-(1-HYDROXY-2-T-BUTYLAMINOETHYL)PYRIDINE PREPARATION AND INTERMEDIATE COMPOUNDS

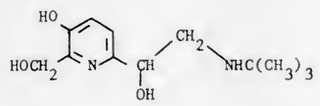
Susumu Nakanishi, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 428,451, Dec. 26, 1973, abandoned. This application Oct. 9, 1974, Ser. No. 513,213

Int. Cl.² C07D *213/69*

U.S. Cl. 260—296 R **13 Claims**

1. A process for producing a compound selected from the group consisting of



and the pharmaceutically accepted acid addition salts thereof, comprising the steps of heating 2-phenyl-4H-pyrido[3,2-d]-1,3-dioxin-6-epoxyethane with at least a molar amount of t-butylamine, and acid hydrolyzing the resulting product at a pH of from about 1 to 6.

3,948,920
ANTI-MALARIAL AGENTS

Ibrahim Mohamed Nabih, Cairo, Egypt, assignor to Aktiebolaget Astra, Sodertalje, Sweden

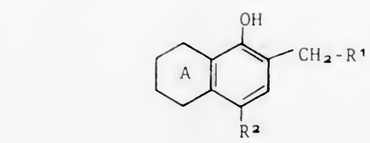
Division of Ser. No. 296,877, Oct. 12, 1972, abandoned. This application Aug. 7, 1974, Ser. No. 495,270

Claims priority, application Sweden, Oct. 19, 1971, 13236/71

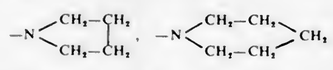
Int. Cl.² C07D *215/44*

U.S. Cl. 260—288 A **3 Claims**

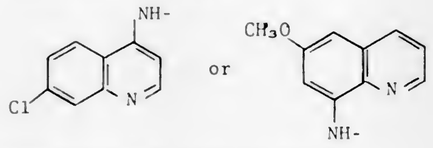
1. A compound selected from the group consisting of a compound of the formula



wherein A designates that the fused six-membered ring could be either unreduced, partially reduced, or totally reduced, and wherein R^1 is $-N(CH_3)_2$, $-N(C_2H_5)_2$,



or $-N(CH_2CH_2Cl)_2$ and R^2 is



and pharmaceutically acceptable salts thereof.

3,948,921
O-ETHYL-S-(PROPYL, BUTYL OR PROPARGYL)-S-[2,6-DICHLOROPICOLYL-(3)]-DITHIOPHOSPHATES

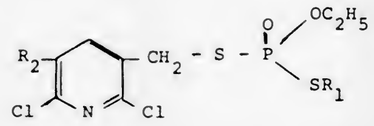
Odd Kristiansen, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 437,413, Jan. 28, 1974, abandoned. This application Nov. 5, 1974, Ser. No. 521,223

Int. Cl.² C07D *213/65*

U.S. Cl. 260—294.8K **4 Claims**

1. A compound of the formula



wherein R_1 represents n-propyl, isopropyl, sec.butyl or propargyl, and R_2 represents hydrogen or chlorine.

3,948,922
OXIDATION OF THIOLS AND DISULFIDES TO SULFONIC ACIDS

Orville G. Lowe, 3815 Los Feliz Blvd., Los Angeles, Calif. 90027

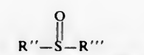
Continuation-in-part of Ser. No. 320,070, Jan. 2, 1973, abandoned. This application Dec. 13, 1974, Ser. No. 532,722

Int. Cl.² C07 *213/71*

U.S. Cl. 260—294.8 F **26 Claims**

1. A process for formation of a sulfonic acid through oxidation of a thiol or a disulfide, said process comprising:

reacting a thiol having the formula RSH or a disulfide having the formula RS—SR′ with a sulfoxide having the formula



in the presence of a moderating excess of water and a halogen or hydrogen halide catalyst in which the halogen or hydrogen halide catalyst is iodine, bromine, chlorine, hydrogen iodide, hydrogen bromide, hydrogen chloride or a mixture thereof;

R and R′ being either an aliphatic, cycloaliphatic, aromatic, or a heterocyclic group and —S—R′ also being $-SO_3Z$ in which Z is a monovalent salt forming cation or hydrogen;

R and R′ containing up to about 20 carbon atoms and being free of substituent groups which are reactive under the conditions of said process, being free of olefinic and acetylenic unsaturation, and being free of a tertiary carbon atom bonded directly to the sulfur atom of the thiol or disulfide group;

R″ and R‴ being lower alkyl groups which may be the same or different and may be bonded together to form a ring structure;

said thiol or disulfide reactants being soluble or partially soluble in the reaction mixture;

said water being present in an amount of about one-half mole or more for each mole of thiol reactant and an amount in excess of about one mole for each mole of said disulfide reactant, and

continuing said reaction until the oxidation of said thiol or said disulfide to a sulfonic acid is substantially completed.

3,948,923
PENTAHYDROQUINOLIZINE DERIVATIVES

Horst Meyer; Friedrich Bossert, both of Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

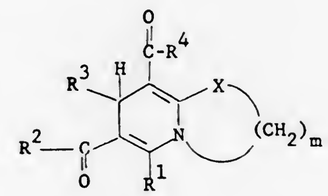
Division of Ser. No. 336,477, Feb. 28, 1973, Pat. No. 3,856,798. This application May 9, 1974, Ser. No. 468,432

Claims priority, application Germany, Mar. 6, 1972, 2210633

Int. Cl.² C07d *213/57*

U.S. Cl. 260—294.9 **7 Claims**

1. A compound of the formula:



wherein

X is $-CH_2-$;

m is 3;

R^1 is hydrogen or lower alkyl;

each of R^2 and R^4, independent of the other, is lower alkoxy or alkynyloxy of 2 to 4 carbon atoms; and

R^3 is lower alkyl; phenyl; phenyl substituted by one to three substituents selected from the group consisting of lower alkyl, trifluoromethyl, cyano, halo, nitro and carbo(lower alkoxy); pyridyl; furyl; thenyl; or naphthyl.

3,948,924
CAROTENE STABILIZERS AND STABILIZATION OF CAROTENE

Solomon Aronovich Giller, ulitsa Pernavas, 10, kv. 76; Gunar Yanovich Dubur, ulitsa Suvorova, 117, kv. 12, both of Riga; Ian Rikhardovich Uldrikis, ulitsa Darza, 2, kv. 2, Elgava; Gunar Jamovich Tirzit, ulitsa Zhagatu, 22, kv. 33, Riga; Andrei Robertovich Valdman, ulitsa Lenina, 167, Riga; Ivan Markovich Zakharchenko, ulitsa P. Stuchki, 9/11, kv. 4, Riga; Yazep Yanovich Spruz, ulitsa Lenina, 103, kv. 8, Rezekne; Vitaly Evgenievich Ronis, ulitsa Ermolovoi, 17, kv. 66, Moscow, and Alexandr Andrejevich Makarov, p/o Lugovaga, 3, Moskovskaya oblast, all of U.S.S.R.

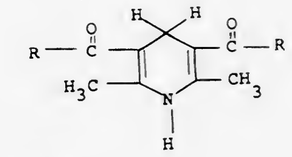
Continuation of Ser. No. 269,391, July 6, 1972, abandoned, which is a division of Ser. No. 55,288, July 15, 1970, abandoned. This application Feb. 26, 1974, Ser. No. 445,999

Claims priority, application U.S.S.R., July 22, 1969, 1352174

Int. Cl.² C07D *211/80*

U.S. Cl. 260—295.5 R **2 Claims**

1. A compound having the formula:



where R is lower alkyl.

3,948,925
NOVEL THIAZOLE DERIVATIVES

Jacques Perronnet, Paris, and Laurent Taliani, Les Pavillons-sous-Bois, both of France, assignors to Roussel-UCLAF, Paris, France

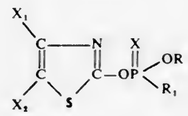
Filed Oct. 17, 1974, Ser. No. 515,479

Claims priority, application France, Oct. 25, 1973, 73.38071

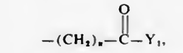
Int. Cl.² C07D *277/34*

U.S. Cl. 260—302 E **23 Claims**

1. A compound of the formula



wherein X is selected from the group consisting of oxygen and sulfur, X_1 is selected from the group consisting of alkyl of 1 to 6 carbon atoms, cyano and



Y_1 is selected from the group consisting of alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms and amino, *n* is 0,1 or 2, X_2 is selected from the group consisting of hydrogen, chlorine, bromine, alkyl of 1 to 6 carbon atoms, cyano and



R is alkyl of 1 to 6 carbon atoms, R_1 is selected from the group consisting of alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms and



and R_2 and R_3 are selected from the group consisting of hydrogen and alkyl of 1 to 6 carbon atoms with the proviso that X_1 is other than alkyl when X_2 is alkyl or hydrogen.

3,948,926

O,O-DIETHYL-2-(5-ETHYL-6-BROMOTHIAZOLO[3,2-b]-s-TRIAZOLYL)THIONOPHOSPHATE

Saburo Kano, No. 1968-3, Sohi, Odawara, Kanagawa; Osami Nomura, No. 2800, Kofuzu, Odawara, Kanagawa; Mitsuo Asada, No. 9-27, Tanjogaoka, Hiratsuka, Kanagawa; Meiki Ando, No. 1-56-6, Azuma-cho, Oisomachi, Naka, Kanagawa; Michihiko Matsuda, No. 25, Kokufuhongo, Oisomachi, Naka, Kanagawa; Tomio Yamada, No. 358, Tokunobu, Hiratsuka, Kanagawa; Hitoshi Watanabe, No. 845-1, Manda, Hiratsuka, Kanagawa, and Takuzo Taniguchi, No. 8-11, Inamuragasaki 2-chome, Kamakura, Kanagawa, all of Japan

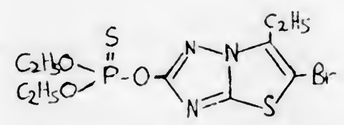
Division of Ser. No. 386,020, Aug. 7, 1973, which is a continuation-in-part of Ser. No. 319,490, Dec. 29, 1972, Pat. No. 3,904,639. This application Oct. 10, 1974, Ser. No. 513,861

Claims priority, application Japan, Dec. 30, 1971, 46-3186

Int. Cl.² C07D *513/04*

U.S. Cl. 260—306.7 E **1 Claim**

1. The compound of the formula



3,948,927

2,2-DIMETHYL-3R-CARBOXY-6S-AMINO-1-OXA-4-AZA-5R-BICYCLO-[3,2,0]HEPTAN-7-ONE

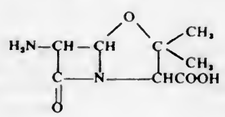
Saul Wolfe, Kingston, Canada, assignor to Queen's University, Kingston, Canada

Continuation of Ser. No. 242,842, April 10, 1972, abandoned. This application Aug. 12, 1974, Ser. No. 496,620

Int. Cl.² C07D *498/04*

U.S. Cl. 260—307 FA **2 Claims**

1. The compound of the formula



3,948,928

3-SUBSTITUTED-1,2-BENZISOXAZOLES AND PHARMACEUTICALLY ACCEPTABLE ACID ADDITION SALTS THEREOF

Haruki Nishimura, Ikeda; Masanao Shimizu, Kobe; Hitoshi Uno, Takatsuki; Tetsuo Hirooka, Settsu; Yoshinobu Masuda, Osaka, and Mikio Kurokawa, Kobe, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

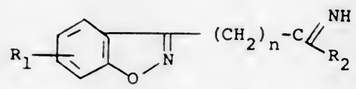
Filed Mar. 12, 1973, Ser. No. 340,195

Claims priority, application Japan, Mar. 17, 1972, 47-27865; Mar. 17, 1972, 47-27866

Int. Cl.² C07D *261/20*

U.S. Cl. 260—307 DA **10 Claims**

1. A 3-substituted-1,2-benzisoxazole of the following formula:



wherein R_1 is hydrogen, hydroxy, nitro, alkyl of 1 to 5 carbon atoms, alkoxy of 1 to 5 carbon atoms, halogen or amino; R_2 is hydroxyamino or an acyloxyamino selected from the group consisting of benzoyloxyamino, 3,4,5-trimethoxybenzoyloxyamino, ethoxycarbonyloxyamino and acetoxyamino; *n* is an integer of 0 to 3; and the benzene ring may be substituted by 1 or 2, the same or different, group R_1, and its pharmaceutically acceptable acid addition salts.

3,948,929

PHENYL-AND (SUBSTITUTED)-PHENYL-1,2,3-TRIAZOLE-ALKANOIC AND- ALKENOIC ACIDS

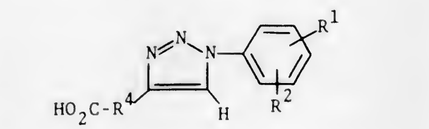
Robert Thomas Buckler, Edwardsburg, Mich.; Harold Eugene Hartzler, Elkhart, Ind.; Shin Hayao, Tokyo, Japan, and Gust Nichols, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 364,609, May 29, 1973. This application July 15, 1974, Ser. No. 511,845

Int. Cl.² C07D *249/06*

U.S. Cl. 260—308 A **5 Claims**

1. A compound having the formula



wherein

R^1 is hydrogen; and

R^2 respectively is selected from the group consisting of hydrogen and halogeno when R^4 is selected from the group consisting of $-CH_2-$, $-CH_2-CH_2-$ and $-CH_2-CH_2-CH_2-$ radicals and from the group consisting of halogeno when R^4 is a $-CH=CH-$ radical.

3,948,930

PHENYL-AND (SUBSTITUTED)-PHENYL-1,2,3-TRIAZOLE-ALKANOIC AND- ALKENOIC ACIDS

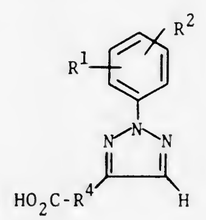
Robert Thomas Buckler, Edwardsburg, Mich.; Harold Eugene Hartzler, Elkhart, Ind.; Shin Hayao, Tokyo, Japan, and Gust Nichols, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 364,609, May 29, 1973. This application July 15, 1974, Ser. No. 511,846

Int. Cl.² C07D *249/06*

U.S. Cl. 260—308 A **5 Claims**

1. A compound having the formula



wherein:

R^1 is hydrogen;

R^2 is selected from the group consisting of halogeno; and R^4 is selected from the group consisting of $-CH_2-CH_2-$ and $-CH=CH-$ radicals.

3,948,931

TRIAZOLO BENZODIAZEPINE-1-CARBOXAMIDES

Hans Allgeier, Haagen, Germany, and Andre Gagneux, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

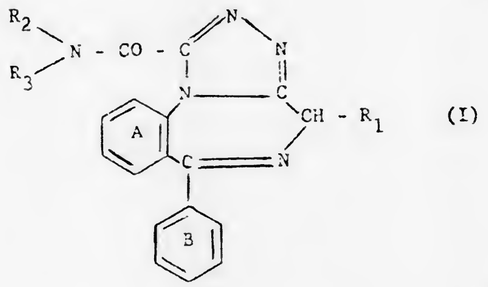
Filed Nov. 21, 1973, Ser. No. 418,137

Claims priority, application Switzerland, Nov. 28, 1972, 17300/72

Int. Cl.² C07D *487/04*

U.S. Cl. 260—308 R **8 Claims**

1. A diazepine derivative of the general formula I



(I)

wherein R_1 represents hydrogen, R_2 and R_3 each independently represent hydrogen or alkyl having 1 to 6 carbon atoms, ring A is unsubstituted, or substituted in the 8-position by halogen up to atomic number 35, or trifluoromethyl or nitro, and ring B is unsubstituted, or substituted in one o-position by halogen up to atomic number 35, or by trifluoromethyl or a nitro group, their 5-oxides and their pharmaceutically acceptable acid addition salts.

3,948,932

PHENYL- AND (SUBSTITUTED)-PHENYL-1,2,3-TRIAZOLE-ALKANOIC AND -ALKENOIC ACIDS

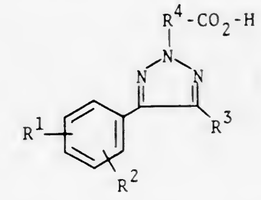
Robert Thomas Buckler, Edwardsburg, Mich.; Harold Eugene Hartzler, Elkhart, Ind.; Shin Hayao, Tokyo, Japan, and Gust Nichols, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 364,609, May 29, 1973. This application Oct. 18, 1974, Ser. No. 515,974

Int. Cl.² C07D *249/06*

U.S. Cl. 260—308 A **12 Claims**

1. A compound having the formula



wherein:

R^1 is selected from the group consisting of: hydrogen, methyl, acetamido, and halogeno when R^2 is hydrogen; and chloro when R^2 is chloro;

R^3 is selected from the group consisting of hydrogen, acetyl, methyl, and phenyl; and

R^4 is selected from the group consisting of $-CH_2-$, $-CH_2-CH_2-$, and $-CH_2-CH_2-CH_2-$ radicals.

3,948,933

PYRROLO[1,2-c]IMIDAZOLEDIONES

Luigi Fontanella, Milan, Italy, assignor to Gruppo Lepetit S.p.A., Milan, Italy

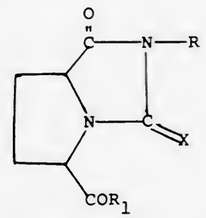
Filed Nov. 1, 1973, Ser. No. 411,626

Claims priority, application Italy, Nov. 3, 1972, 31274/72

Int. Cl.² C07D *49/32*

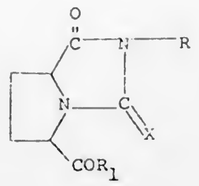
U.S. Cl. 260—309.5 **7 Claims**

1. A pyrrolo[1,2-c]imidazoledione represented by the formula

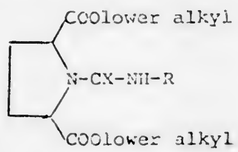


wherein R represents a phenyl or cyclohexyl radical; X represents oxygen and R_1 represents a hydroxy, lower alkoxy, di-lower alkylamino-lower alkoxy, or an $-NR_2R_3$ radical, wherein R_2 and R_3 each independently represents hydrogen, lower alkyl, hydroxy-lower alkyl, a phenyl or a benzyl radical, or, together with the adjacent nitrogen atom, represent a pyrrolidino, a piperidino, a morpholino or a piperazino radical.

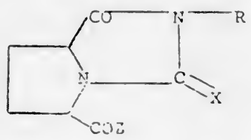
4. A process for preparing a pyrrolo(1,2-c)imidazoledione of the formula



wherein R represents a phenyl or cyclohexyl radical; X represents oxygen; and R_1 represents hydroxy, lower alkoxy, dilower alkylamino-lower alkoxy, an $-NR_2R_3$ radical wherein R_2 and R_3 each independently represents hydrogen, lower alkyl, hydroxy-lower alkyl, a phenyl or a benzyl radical, or, together with the adjacent nitrogen atom, represent a pyrrolidino, a piperidino, a morpholino or a piperazino radical, which comprises reacting a pyrrolidine-2,5-dicarboxylic acid lower alkyl ester with an isocyanate derivative of the formula R-CNX wherein X and R have the meaning previously given to give a compound corresponding to the formula



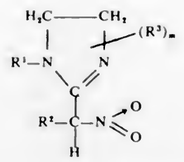
and cyclizing the latter by heating it for about 1 to about 3 hours at about 180° to about 260°C., hydrolytically cleaving the obtained lower alkyl ester with aqueous strong base or strong mineral acid, transforming the obtained carboxylic acid into the halide or mixed acid anhydride having the formula



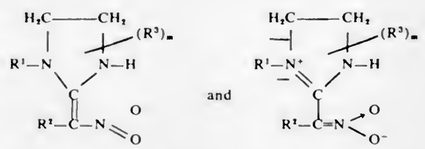
wherein Z is chloro, bromo or —O—COO-lower alkyl and reacting said compound with a dilower alkylaminolower alkanol or an amine HNR_2R_3, wherein R_2 and R_3 have the same meaning as above.

3,948,934
2-(NITROMETHYLENE)-1,3-DIAZACYCLOALKANE INSECT CONTROL AGENTS
Charles H. Tieman; Willy D. Kollmeyer, and Steven A. Roman, all of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.
Continuation-in-part of Ser. No. 412,373, Nov. 1, 1973, abandoned. This application Sept. 27, 1974, Ser. No. 510,100
Int. Cl.² C07D *49/34*
U.S. Cl. 260—309.6 **6 Claims**

1. A compound of the group consisting of compounds of the formula:



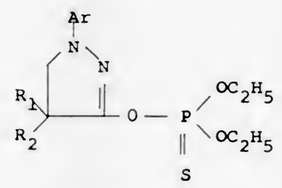
derivatives thereof wherein the alpha hydrogen is replaced by middle halogen and resonance hybrids represented by the formulae:



wherein R^1 contains up to eight carbon atoms and is straight-chain alkyl, haloalkyl, alkenyl, (middle halo)alkenyl or alkynyl, R^2 is hydrogen, middle halogen or phenylthio, optionally substituted by one or more of middle halogen, nitro or alkyl or alkoxy of from 1 to 3 carbon atoms, R^3 is alkyl of one to eight carbon atoms, and *m* is 0 or 1, with the proviso that in said resonance hybrids the R^3 substituent may only replace a hydrogen at the carbon in the 4 or 5 position.

3,948,935
PYRAZOLINE DERIVATIVES
Michel Sauli, Paris, France, assignor to Rhone-Poulenc S.A., Paris, France
Filed July 15, 1974, Ser. No. 488,678
Claims priority, application France, July 17, 1973, 73.26153; May 8, 1974, 74.15939
Int. Cl.² C07D *231/08*
U.S. Cl. 260—310 D **14 Claims**

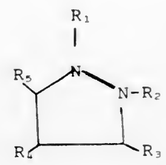
1. A pyrazoline of the formula:



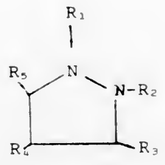
wherein Ar represents phenyl, or phenyl substituted by up to three substituents selected from the class consisting of chlorine and nitro, the phenyl radical carrying at most one nitro radical, and R_1 and R_2 each represent hydrogen or methyl.

3,948,936
NOVEL PYRAZOLIDINES USEFUL AS HERBICIDES
Barrington Cross, Rocky Hill; Charles Paul Grasso, Cranbury, and Bryant Leonidas Walworth, Pennington, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.
Filed Nov. 22, 1974, Ser. No. 526,358
Int. Cl.² C07D *231/04;* **A01N** *9/22*
U.S. Cl. 260—310 D **8 Claims**

1. A compound having a formula selected from the group consisting of:



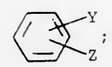
(I)



(II)

• HX

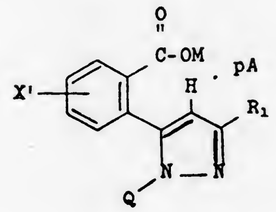
wherein R_1 and R_2 each represent alkyl C_1–C_4; R_3 and R_5 each represent members selected from the group consisting of cycloalkyl C_3–C_7, benzyl, alkyl C_2–C_{12} and



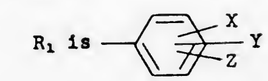
Y and Z each represent members selected from the group consisting of hydrogen, halogen, alkyl C_1–C_4, alkoxy C_1–C_4, and carboxy; R_4represents a member selected from the group consisting of hydrogen, alkyl C_1–C_{10} and alkoxy C_1–C_4, provided when R_4 is hydrogen or methyl, at least one of R_3 and R_5 is a member other than phenyl; and HX represents an acid.

3,948,937
PYRAZOLE PLANT GROWTH REGULANTS
Alexander Lawrence Johnson, and Philip Bliss Sweetser, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 230,508, Feb. 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 136,576, April 22, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 397,720
Int. Cl.² C07D *231/12*
U.S. Cl. 260—311 **6 Claims**

1. A compound of the formula:



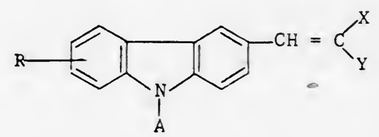
wherein
M is selected from hydrogen, alkali metal, alkaline earth metal, and $NR_4R_5R_6R_7$;
R_4, R_5 and R_6 are each selected independently from hydrogen, alkyl of one to four carbon atoms and hydroxyalkyl of two to four carbon atoms;
R_7 is selected from hydrogen, alkyl of one to twelve carbon atoms and benzyl;
R_1 is



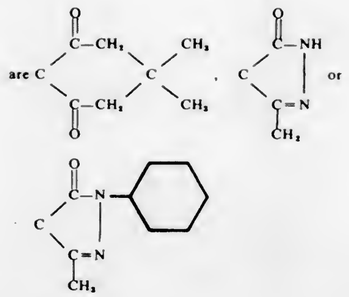
A is selected from HCl, H_2SO_4, HNO_3, and H_3PO_4
P is selected from 0 and 1;
X is selected from hydrogen, halogen, alkyl of one to four carbon atoms, hydroxy, alkoxy of one to four carbon atoms, alkylthio of one to four carbon atoms, alkylsulfonyl of one to four carbon atoms, trifluoromethyl and nitro;
Y is selected from hydrogen, chlorine, bromine, methoxy and methyl;
Z is selected from hydrogen, chlorine and methyl;
Q is selected from hydrogen, alkyl of one to four carbon atoms, alkanoyl of one to four carbon atoms, alkoxycarbonyl of two to five carbon atoms, or benzenesulfonyl optionally substituted with chlorine or one or two methyls; and
X′ is selected from hydrogen, fluorine, chlorine, bromine and methyl;
with the proviso that
1. when M is other than hydrogen, *p* is 0; and
2. the total number of carbon atoms in X, Y, and Z cannot exceed 4.

3,948,938
POLYMERIC MATERIALS COLORED WITH YELLOW METHINE DYES AND PIGMENTS
Edgar E. Renfrew, Lock Haven, Pa., assignor to American Color & Chemical Corporation, Charlotte, N.C.
Division of Ser. No. 319,602, Dec. 29, 1972, Pat. No. 3,844,715. This application May 3, 1974, Ser. No. 466,847
Int. Cl.² C07D *209/82, 403/06*
U.S. Cl. 260—315 **5 Claims**

1. A compound of the formula



wherein
R is hydrogen, chorine, bromine, nitro or acetamido;
A is lower alkyl, benzyl or cyano(lower alkyl);
X is cyano, lower carbalkoxyl, R_1CO or R_1-SO_2;
Y is lower carbalkoxyl, R_1CO or R_1-SO_2;
X and Y taken together with the carbon to which they are attached



R_1 is a member selected from the group consisting of lower alkyl, chloro(lower alkyl), bromo(lower alkyl), cyano(-lower alkyl), phenyl, (lower alkyl)phenyl, chlorophenyl, bromophenyl, nitrophenyl and cyanophenyl.

3,948,939

9-ACYL-1,2,3,4-TETRAHYDROCARBAZOLE-3 AND 4-CARBOXYLIC ACIDS

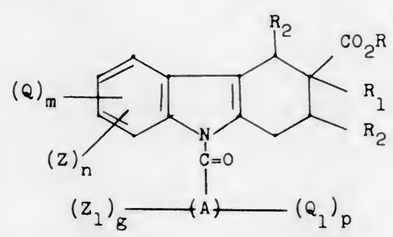
Ernest John Alexander, East Greenbush, and Aram Mooradian, Schodack, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 314,099, Dec. 11, 1972, Pat. No. 3,905,998, which is a continuation-in-part of Ser. No. 200,205, Nov. 18, 1971, Pat. No. 3,758,496, which is a continuation-in-part of Ser. No. 42,620, June 2, 1970, Pat. No. 3,687,969. This application Oct. 15, 1974, Ser. No. 514,767

Int. Cl.² C07D *209/86*

U.S. Cl. 260—315 **41 Claims**

1. A compound having the formula



wherein:

A. represents 2-thienyl;

Q and Q_1 represents substituents selected from lower-alkyl, phenyl-lower-alkyl, lower-alkoxy, phenyl lower-alkoxy, phenoxy, phenyl, di(lower-alkyl)-amino, lower-alkanoylamino, trihalomethyl, trihalomethoxy, halo and hydroxy, where phenyl is unsubstituted or substituted by from one to three of the same or different substituents selected from lower-alkyl, lower-alkoxy, trihalomethyl and halo;

Z and Z_1 represent substituents selected from lower-alkylthio, lower-alkylsulfinyl, lower-alkylsulfonyl, amino and nitro;

m represents an integer from 0 to (3-n) inclusive;

p represents an integer from 0 to (3-g) inclusive;

n and g represent integers from 0 to 1 inclusive;

R represents hydrogen, lower-alkyl, 4-acetamidophenyl, lower-alkanoyloxymethyl, benzoyloxymethyl or benzoyloxymethyl substituted on phenyl by from one or two of the same or different substituents selected from lower-alkyl, lower-alkoxy, trihalomethyl, nitro and halo; and

R_1 and R_2 each represent hydrogen or methyl, at least one of which is hydrogen; or

$(Q)_m$ taken together with $(Z)_n$, or $(Q_1)_p$ taken together with $(Z_1)_g$ represents methylenedioxy attached to adjacent carbon atoms.

3,948,940

PESTICIDAL PHTHALIMIDO PHOSPHOROUS ESTER COMPOUNDS

Jozef Drabek, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

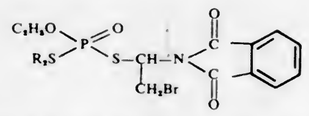
Filed Oct. 2, 1972, Ser. No. 293,875

Claims priority, application Switzerland, Oct. 4, 1971, 14464/71; July 27, 1972, 11230/72

Int. Cl.² C07D *209/48*

U.S. Cl. 260—326 E **5 Claims**

1. A compound of the formula



in which R_2 is ethyl, n-propyl, isopropyl, n-butyl, isobutyl or n-pentyl.

3,948,941

PREPARATION OF IMIDES USING CN^- CATALYSTS

Tad L. Patton, Baytown, Tex., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Oct. 26, 1973, Ser. No. 410,210

Int. Cl.² C07D *209/48, 207/40*

U.S. Cl. 260—326 N **20 Claims**

1. In the process of preparing imides by the reaction of carboxylic anhydrides with organic isocyanates, the improvement which comprises:

utilizing a CN^- ion as the catalyst.

3,948,942

N-PHENYL MALEIC IMIDES

Jean-Claude Debourge, Lyon; Jean-Michel Gaulliard, Orlienas; Daniel Pillon, Lyon, and Stephane Trinh, Champagne, all of France, assignors to PEPRO, Societe pour le Development et la Vente de Specialities Chimiques, Lyon, France

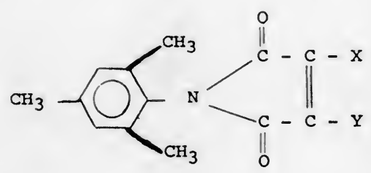
Filed Apr. 5, 1974, Ser. No. 458,098

Claims priority, application France, Apr. 18, 1973, 73.15601

Int. Cl.² C07D *207/404*

U.S. Cl. 260—326.5 FM **2 Claims**

1. A of of, the formula



in which X and Y, which may be the same or different, represent hydrogen or a halogen atom.

3,948,943

AMINOCARBOXYLIC ACID HIGHER ALKYLAMIDES

Hans Eberhardt, and Rolf Stefan Brickl, Biberach and der Riss, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

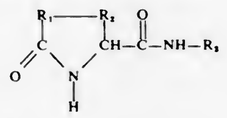
Filed Apr. 29, 1974, Ser. No. 464,834

Claims priority, application Germany, May 3, 1973, 2322232

Int. Cl.² C07D *207/26*; **C07C** *103/75, 103/50*

U.S. Cl. 260—326.45 **4 Claims**

1. A compound of the formula



wherein

R_1 is methyl or phenyl,

R_2 is hydrogen or, together with R_1, ethylene, and

R_3 is straight or branched alkyl of 8 to 22 carbon atoms.

3,948,944

O-ETHYL-S-PROPYL DERIVATIVES OF 1,3-DITHIOLAN-4-YL PHOSPHORODITHIOATES-METHYL

Paul L. Valint, Jr., Woodbridge, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Continuation of Ser. No. 41,599, May 28, 1970, abandoned. This application Jan. 15, 1973, Ser. No. 323,482

Int. Cl. C07d *339/06*

U.S. Cl. 260—327 M **3 Claims**

1. O-Ethyl-S-1-propyl-S'-[(2,2-dimethyl-1,3-dithiolan-4-yl)-methyl]-phosphorodithioate.

3,948,945

5-HOMOTHIOCHROMANYL-(DI)-PHOSPHORIC (-PHOSPHONIC) ACID ESTERS

Gerhard Hörlein, Frankfurt am Main; Gerhard Salbeck, Kelkheim, Taunus; Ludwig Emmel, Bergen-Enkheim, and Werner Bonin, Kelkheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

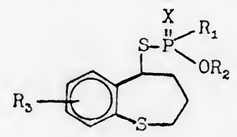
Filed Aug. 12, 1974, Ser. No. 496,891

Claims priority, application Germany, Aug. 14, 1973, 2341022

Int. Cl.² C07D *337/08*

U.S. Cl. 260—327 B **8 Claims**

1. 5-homothiochromanyl-(di)-thio-phosphoric (-phosphonic) acid esters of the formula



where

R_1 is (C_1-C_4)alkyl, (C_1-C_4) alkoxy,

R_2 is (C_1-C_4)alkyl,

R_3 is hydrogen, (C_1-C_4) alkyl or halogen, and

X is oxygen or sulfur.

3,948,946

CYCLIC ACETALS AND MERCAPTALS

Kurt Hofer, Munchenstein, and Anton Voykowitsch, Binningen, both of Switzerland, assignors to Sandoz Ltd., (Sandoz AG), Basel, Switzerland

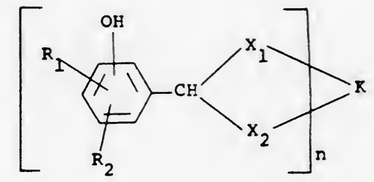
Continuation of Ser. No. 300,199, Oct. 24, 1972, abandoned. This application Sept. 20, 1974, Ser. No. 507,811

Claims priority, application Switzerland, Oct. 26, 1971, 15641/71

Int. Cl.² C07D *339/06*

U.S. Cl. 260—327 M **23 Claims**

1. A compound of formula,



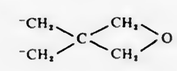
in which

R_1 is tertiary alkyl of up to 12 carbon atoms and is in a position adjacent to the hydroxy group,

R_2 is methyl, t-butyl or phenyl,

n is 1 or 2,

K is a 2n-valent hydrocarbon radical of 2 to 12 carbon atoms, selected from the group consisting of divalent saturated aliphatic radicals of 2 to 12 carbon atoms in which one C-C bond may be replaced by a C—O—C bond; 1,2-cyclohexylene; divalent aromatic radicals of 6 to 12 carbon atoms; divalent saturated araliphatic radicals of 7 to 12 carbon atoms; tetravalent saturated aliphatic radicals of 4 to 8 carbon atoms; 3-methoxy-1,2-phenylene and the radical of the formula



and

X_1 and X_2, which may be the same or different, each signifies an oxygen or sulphur atom, X_1 and X_2 being bonded to adjacent or next adjacent atoms in the radical K, provided that when *n* is 2, the two divalent radicals attached to the radical K may be the same or different.

3,948,947

THIAZANTHENYL SEMICARBAZIDES

Stewart Sanders Adams; Bernard John Armitage; Norman William Bristow, and Bernard Vincent Heathcote, all of Nottingham, England, assignors to The Boots Company, Nottingham, England

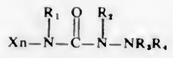
Continuation of Ser. No. 277,342, Aug. 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 858,183, Sept. 15, 1969, Pat. No. 3,686,218, which is a continuation-in-part of Ser. No. 662,587, Aug. 23, 1967, Pat. No. 3,644,420. This application Dec. 20, 1973, Ser. No. 426,799

Claims priority, application United Kingdom, Sept. 27, 1968, 46085/68; Apr. 5, 1967, 15692/67; Sept. 2, 1966, 39384/66

Int. Cl.² C07D *335/14*

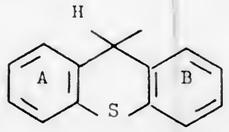
U.S. Cl. 260—328 **4 Claims**

1. A compound of formula I



(I)

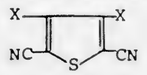
wherein Xn represents the group



in which the rings A and B may optionally contain substituents selected from halogen, lower alkyl, lower alkoxy and hydroxy;
R_1 is hydroxy, lower alkoxy, lower alkanoyloxy, hydrogen or lower alkyl;
R_2 is hydrogen or lower alkyl;
R_3 is hydrogen or lower alkyl;
R_4 is hydrogen or lower alkyl;
together with pharmaceutically acceptable acid addition salts of compounds of formula I; and, when R_3 and R_4 are each lower alkyl, pharmaceutically acceptable quaternary salts of compounds of formula I.

3,948,948
3,4-DIHALO-2,5-THIOPHENEDICARBONITRILES
Christian T. Goralski; R. Garth Pews, both of Midland, and George A. Burk, Bay City, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Nov. 23, 1973, Ser. No. 418,536
Int. Cl.² C07D *333/12*
U.S. Cl. 260—332.5 **3 Claims**

1. A compound corresponding to the formula



wherein each X individually represents chloro or bromo.

3,948,949
XANTHENE DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF
Joachim Gante; Hans-Adolf Kurmeier; Albrecht Wild, and Werner Mehrhof, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany
Filed Jan. 28, 1974, Ser. No. 436,849
Claims priority, application Germany, Feb. 1, 1973, 2304763
Int. Cl.² C07D *311/82, 311/84*
U.S. Cl. 260—335 **9 Claims**

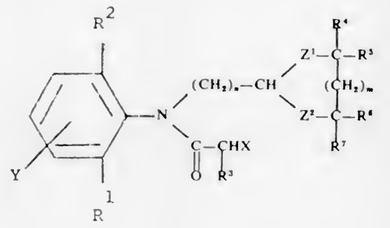
1. A xanthene of the formula

Z-CHR,R₂

wherein Z is 2-xanthenyl or 2-xanthenyl substituted at the 1-, 3-, 4-, 5-, 6-, 7- or 8-position by F, Cl or Br, R_1 is CH_2OH or CH_2OAc, wherein Ac is alkanoyl of 2–4 carbon atoms and R_2 is alkyl of 1-4 carbon atoms.

3,948,950
HETEROCYCLIC ANILIDS
Sidney B. Richter, Chicago, and John Krenzer, Oak Park, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.
Division of Ser. No. 357,746, May 7, 1973, Pat. No. 3,859,308. This application June 3, 1974, Ser. No. 475,545
Int. Cl.² C07D *321/06*
U.S. Cl. 260—338 **3 Claims**

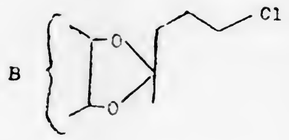
1. A compound of the formula



wherein Y is hydrogen; R^1 is selected from the group consisting of hydrogen, lower alkyl and lower alkoxy; R^2 is lower alkyl; R^3, R^4, R^5, R^6 and R^7 are independently selected from the group consisting of hydrogen and lower alkyl, provided that at least two of R^4, R^5, R^6 and R^7 are hydrogen, X is chlorine or bromine, m is the integer 2; Z^1 and Z^2 are oxygen; and *n* is 1.

3,948,951
ARYL KETALS OF 1-CHLORO-4-OXO-PENTANE
Michael Rosenberger, Bloomfield, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 289,015, Sept. 14, 1972, Pat. No. 3,856,817, which is a division of Ser. No. 11,023, Feb. 12, 1970, Pat. No. 3,708,500, which is a continuation-in-part of Ser. No. 824,319, May 13, 1969, Pat. No. 3,544,600, and Ser. No. 825,389, May 16, 1969, abandoned. This application Oct. 15, 1974, Ser. No. 514,710
Int. Cl.² C07D *317/48, 317/70*
U.S. Cl. 260—340.5 **1 Claim**

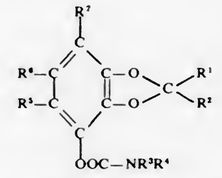
1. A compound of the formula



wherein B with the dioxolanyl ring is phenylenedioxy, 4,5-dimethylphenylenedioxy or 2,3-naphthalenedioxy.

3,948,952
BENZODIOXOLE DERIVATIVES USEFUL AS PESTICIDES
Peter Stuart Gates, Cambridge, and John Gillon, Linton, both of England, assignors to Fisons Limited, London, England
Continuation-in-part of Ser. No. 327,462, Jan. 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 130,487, April 1, 1971, Pat. No. 3,736,338, which is a continuation-in-part of Ser. No. 706,628, Feb. 19, 1968, abandoned. This application Aug. 17, 1973, Ser. No. 389,202
Claims priority, application United Kingdom, Feb. 21, 1967, 8174/67
The portion of the term of this patent subsequent to May 29, 1990, has been disclaimed.
Int. Cl.² C07D *317/46*
U.S. Cl. 260—340.5 **14 Claims**

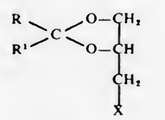
1. A compound of the formula



wherein R^1 and R^2 are selected from the group consisting of hydrogen and alkyl of 1 to 6 carbon atoms and a group where R^1 and R^2 together with the linking carbon atom form a cycloaliphatic ring selected from the group consisting of cycloalkane and cycloalkene rings of 5 to 7 carbon atoms;
R^3 is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and lower alkanoyl, with the proviso that acetyl is excluded from the definition of R^3
R^4 is selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkenyl of up to 4 carbon atoms and alkynyl of up to 4 carbon atoms; and
one of R^5 R^6 and R^7 are selected from the group consisting of hydrogen, halogen and alkyl of 1 to 4 carbon atoms, and wherein the remaining members of R^5, R^6 and R^7 each represent hydrogen.

3,948,953
DIOXOLANE DERIVATIVES HAVING SURFACTANT PROPERTIES
David R. McCoy, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.
Filed Aug. 5, 1969, Ser. No. 847,729
Int. Cl.² C07D *317/24*
U.S. Cl. 260—340.9 **11 Claims**

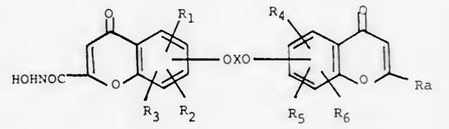
1. Solubilized drivatives of 2,2-dialkyl-1,3-dioxolane-4 methylol included within the structure



of which R—C—R′ is the residuum of aliphatic ketones R—C—R′,
wherein R and R′ are alkyl groups which contain a total of 6 to 30 carbon atoms and X is a solubilizing group selected from alkoxylates containing 2 to 4 carbon atoms, sulfates and phosphates.

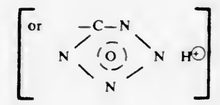
3,948,954
BIS-CHROMONE-TETRAZOLE/HYDROXAMIC/CARBOXYLIC ACIDS
Hugh Cairns, and Norman Harold Rogers, both of Loughborough, England, assignors to Fisons Limited, England
Filed Jan. 21, 1974, Ser. No. 435,008
Claims priority, application United Kingdom, Jan. 19, 1973, 2862/73
Int. Cl.² C07D *311/02*
U.S. Cl. 260—345.2 **10 Claims**

1. A compound of formula I,



I

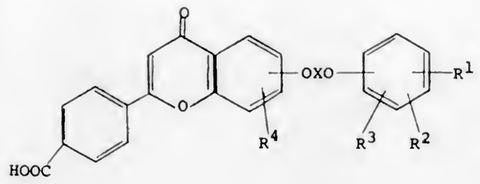
in which
R_1, R_2, R_3, R_4, R_5 and R_6, which may be the same or different, each represent hydrogen, halogen, hydroxy, alkyl of 1 to 6 carbon atoms, alkoxy of one to six carbon atoms, alkenyl of up to six carbon atoms; the alkyl and alkoxy groups being unsubstituted or substituted by hydroxy, alkoxy of 1 to 6 carbon atoms, halogen or phenyl and
X is an alkylene containing from 2 to 10 carbon atoms which is unsubstituted or is substituted with an OH group, or an alkylene group containing from 2 to 10 carbon atoms which is interrupted by an oxygen atom, and which is otherwise unsubstituted or is substituted by an —OH group,
Ra is —COOH,



or a pharmaceutically acceptable salt thereof.

3,948,955
4′-CARBOXY-FLAVONE
Thomas Brian Lee; David Norman Hardern, and John Raymond Bantick, all of Loughborough, England, assignors to Fisons Limited, London, England
Filed Nov. 11, 1974, Ser. No. 522,590
Claims priority, application United Kingdom, Nov. 21, 1973, 54004/73
Int. Cl.² C07D *311/02*
U.S. Cl. 260—345.2 **12 Claims**

1. A compound of the formula:



wherein

R^1, R^2, R^3 and R^4, which may be the same or different, each represent hydrogen, hydroxy, lower alkanoyl, or lower alkyl, and

X represents an alkylene chain containing from 2 to 10 carbon atoms, optionally substituted with a hydroxy group, or

a pharmaceutically acceptable salt thereof.

3,948,956

PROCESS FOR THE PURIFICATION OF CRUDE TRIMELLITIC ANHYDRIDE

Kurt Handrick, Essen, Germany, assignor to Bergwerksverband GmbH, Essen, Germany

Continuation of Ser. No. 280,104, Aug. 14, 1974, abandoned, which is a continuation-in-part of Ser. No. 46,932, June 1, 1970, abandoned. This application Oct. 29, 1974, Ser. No. 518,868

Claims priority, application Germany, May 31, 1969, 1943562

Int. Cl.² C07D *307/89*

U.S. Cl. 260—346.3 **9 Claims**

1. A process for purification of crude trimellitic anhydride that is contaminated with small proportions of trimellitic acid and one or more additional benzenecarboxylic acids or anhydrides to convert the trimellitic acid contained therein to trimellitic anhydride and simultaneously remove a substantial proportion of the other contaminants which process comprises forming a suspension of the crude solid trimellitic anhydride particles in a liquid medium consisting of benzene, acetic anhydride, and glacial acetic acid in which trimellitic anhydride is only sparingly soluble at the boiling point of the medium in such proportions that the amount of benzene in the medium is at least 2 and at most 6 times the weight of the trimellitic anhydride contained therein and the amount of acetic anhydride is sufficient to convert substantially all of the trimellitic acid in the crude trimellitic anhydride to trimellitic anhydride and heating the said suspension at about the boiling point of the suspending medium for a period at least sufficient to convert substantially all of the trimellitic acid to trimellitic anhydride, and subsequently separating the thus-purified suspended trimellitic anhydride particles from the suspension.

3,948,957

3-AZIDO-2,6-DINITROANILINES

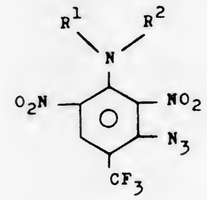
James R. Beck, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed June 23, 1975, Ser. No. 589,314

Int. Cl.² C07C *117/00*

U.S. Cl. 260—349 **7 Claims**

1. A compound having the formula:



wherein

R^1 is hydrogen, C_1–C_5 nontertiary alkyl, C_3–C_4 alkenyl, chloro C_2–C_3 alkyl, chloro C_3–C_4 alkenyl or C_4–C_7 cycloalkylalkyl;

when R^1 is hydrogen, R^2 is C_1–C_7 nontertiary alkyl, $N(R^3)_2$, C_3–C_4 alkenyl, phenyl, chlorophenyl or N-methyl-2-propionamide;

when R^1 is other than hydrogen, R^2 is C_1–C_7 nontertiary alkyl, chloro C_2–C_3 alkyl, C_3–C_4 alkenyl, chloro C_3–C_4 alkenyl or C_4–C_7 cycloalkylalalkyl;

each R^3 is C_1–C_3 alkyl.

3,948,958

PROCESS FOR MAKING 3-PRENYLATED MENAQUINONES AND ETHER INTERMEDIATES

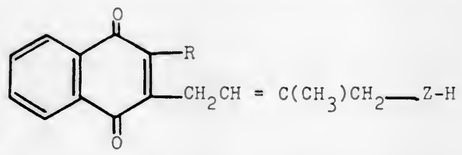
Henry Rapoport, Berkeley, and Clinton D. Snyder, Monte Sereno, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Apr. 7, 1975, Ser. No. 565,472

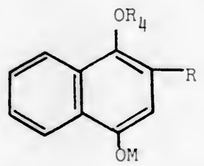
Int. Cl.² C07C *41/04, 45/16, 49/66*

U.S. Cl. 260—396 K **23 Claims**

1. A method of preparing menaquinones of the formula



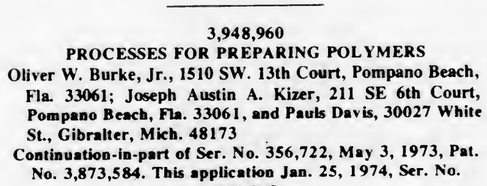
wherein R is lower alkyl and Z is $-(CH_2CH=C(CH_3)CH_2)_m-$, $-(CH_2CH_2CH(CH_3)CH_2)_n-$, or combinations thereof, and in which each of *m* and *n*, and their sum, is 0 to about 12, comprising reacting alkali metal salt of the formula



wherein R_4 is lower alkyl or monocyclic hydrocarbon aralkyl of 8 to about 12 carbon atoms having at least two carbon atoms in the chain directly between the fused ring and the aryl group of the aralkyl, and M is alkali metal, with prenyl halide of the formula

$$X-CH_2CH=C(CH_3)CH_2-Z-H$$

wherein X is halogen, to provide prenylated 1-naphthol of the formula



and

oxidizing the prenylated 1-naphthol to produce the corresponding menaquinone.

3,948,959

PROCESS FOR PREPARING ALPHA, BETA UNSATURATED ACIDS BY CATALYTIC OXIDATION OF CORRESPONDING SATURATED ACIDS IN THE GAS PHASE

Enrico Cavaterra, Saronno (Varese); Guido Petrini, Milan; Romano Covini, Milan, and Luciano Moreschini, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

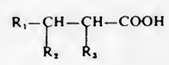
Filed Aug. 12, 1974, Ser. No. 496,516

Claims priority, application Italy, Aug. 13, 1973, 27817/73

Int. Cl.² C07C *51/24*

U.S. Cl. 260—405.5 **2 Claims**

1. A process for preparing alpha, beta-unsaturated aliphatic carboxylic acids containing 3 to 8 carbon atoms, from the corresponding saturated acids having the following general formula:



wherein R_1, R_2, R_3 are H or alkyl radicals having 1 to 5 carbon atoms, by oxidative dehydrogenation in the vapour phase, with oxygen or oxygen-containing gaseous mixtures, at temperatures ranging from 300° to 500°C and in the presence of a catalyst containing, in combination with oxygen, iron, phosphorus and at least one element selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, calcium, strontium, barium and magnesium, in an amount such that the atomic ratios of the various elements are defined by the empirical formula $FeP_xMe_yO_z$ where Me is at least one of the aforementioned alkaline or alkaline-earth elements, *x* is 0.2 to 3, *y* is 0.01 to 2 and *z* is the amount of oxygen bound to the other elements and corresponding to their state of oxidation in the catalyst.

3,948,960

PROCESSES FOR PREPARING POLYMERS

Oliver W. Burke, Jr., 1510 SW. 13th Court, Pompano Beach, Fla. 33061; Joseph Austin A. Kizer, 211 SE 6th Court, Pompano Beach, Fla. 33061, and Pauls Davis, 30027 White St., Gibralter, Mich. 48173

Continuation-in-part of Ser. No. 356,722, May 3, 1973, Pat. No. 3,873,584. This application Jan. 25, 1974, Ser. No. 436,745

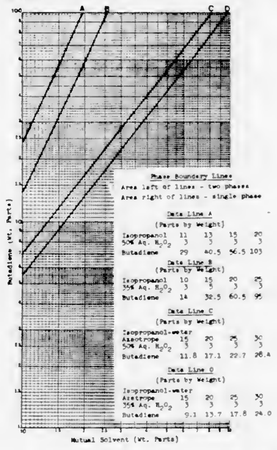
Int. Cl.² C08H *3/00*

U.S. Cl. 260—407 **15 Claims**

1. A method for forming a polymer material solid at ambient temperatures and having a number average molecular weight in the range of 500 to 10,000, which method comprises:

a. forming a combination of two intraphase polymerization systems, each of said intraphase polymerization systems containing a combination of polymerizable unsaturated material, aqueous hydrogen perioxide as polymerization catalyst, and a mutual solvent therefor in proportions for effecting intraphase polymerization in said system and one of said systems being a major phase and the other a minor phase, by combining the following ingredients:

1. from 0–95 parts by weight of drying oil substance selected from the class consisting of the drying oils, the air-blown or bodied drying oils, and the fatty acids derived from the foregoing, and dimers, trimers, and tetramers thereof,
2. from 5–100 parts by weight of polymerizable monomer material which forms polymeric material which, at said molecular weight range and at ambient temperature, is a solid, and which is selected to consist essentially of from 2 to 100 percent by weight of material having a water solubility at 20°C. of no more than 3.5 weight percent and from 0 to 98 percent by weight of material having water solubility at 20°C. greater than 3.5 weight percent, and selected from the ethylenically unsaturated monomers that have and are polymerizable with the aid of hydrogen perioxide through at least one $>C=C<$ group and contain not more than 14 carbon atoms,
3. an amount in the range of from 0.5 to 10 parts by weight of hydrogen peroxide (100% basis) per 100 parts by weight of said ingredients (1) and (2),



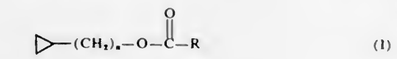
4. an amount in the range of from 0.4 to 50 parts by weight of water per 100 parts by weight of ingredients (1), (2) and (5), and
5. an amount in the range of from 5 to 100 parts by weight, per 100 parts by weight of ingredients (1) and (2), of liquid organic mutual solvent-diluent for said hydrogen peroxide, monomer material, water and any drying oil substance present therewith, which amount lies at a point in said range sufficiently high to enable step (b) to produce polymers in said average molecular weight range but not so high as to completely convert the two phases into a single phase, and is at least half as great by weight as the weight of ingredient (4), and which liquid organic mutual solvent-diluent comprises at least one compound which contains at least one group selected from the class consisting of hydroxyl, keto and ether groups and combinations thereof, and

b. heating said combination, essentially in the absence of material which appreciably decomposes hydrogen peroxide to form oxygen, at sufficient temperatures in the range of above 100°C. to about 200°C. for sufficient time to form polymer material having a number average molecular weight in the range of 500 to 10,000 and containing groups derived from the solution of hydrogen perox-

ide in said liquid organic mutual solvent-diluent.

3,948,961
ORGANIC COMPOSITIONS
Clive A. Henrick, and Gerardus B. Staal, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.
Filed July 17, 1974, Ser. No. 489,279
Int. Cl.² C09F *5/08*
U.S. Cl. 260—410 **10 Claims**

1. Compounds of formula I:



(I)

wherein,

n is an odd integer of 3 to 13 and

R is hydrogen, alkyl of one to 16 carbon atoms, alkenyl of two to 16 carbon atoms, alkynyl of two to 16 carbon atoms, cycloalkyl of four to eight carbon atoms, aryl of six to 14 carbon atoms, aralkyl of seven to 15 carbon atoms, said cycoalkyl, aryl or aralkyl being optionally sustituted by one or more halogen, alkyl, alkoxy, aryl, aralkyl, aryloxy or aralkoxy groups, with the proviso that each compound of formula I contains at least 15 carbon atoms in the molecule.

3,948,962
IRIDIUM CARBONYL COMPLEXES
Donald E. Morris, Kirkwood, Mo., and Harold Burnham Tinker, Zurich, Switzerland, assignors to Monsanto Company, St. Louis, Mo.
Filed Aug. 19, 1974, Ser. No. 498,335
Int. Cl.² C07F *15/00*
U.S. Cl. 260—429 R **16 Claims**

1. Compounds having the following general formula

$$IrX(CO)_2(R_3M)$$

wherein X is selected from the group consisting of chlorine and bromine; M is selected from the group consisting of phosphorus, arsenic, antimony, and bismuth; and R is an alkyl, aryl, alkoxy, or aryloxy radical having from one to twenty carbon atoms.

2. Compounds having the following general formula

$$[Ir(CO)_2(R_3M)_2]^+[Ir(CO)_2X_2]^-$$

where X is selected from the group consisting of chlorine, bromine, and iodine; M is selected from the group consisting of phosphorus, arsenic, antimony, and bismuth; and R is an alkyl, aryl, alkoxy, or aryloxy radical having from one to twenty carbon atoms.

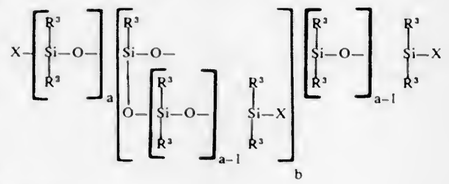
3. Compounds having the following general formula

$$IrI(CO)(diene)(R_3M)$$

wherein I is iodine, diene is a diolefinic hydrocarbon selected from the group consisting of 1,5-cyclooctadiene, norbornadiene, duroquinone, cyclooctatetraene, 1,5-hexadiene, 1,3-cyclohexadiene, and 2,5-dimethyl-1,5-hexadiene, M is selected from the group consisting of phosphorus, arsenic, antimony, and bismuth; and R is an alkyl, aryl, alkoxy, or aryloxy radical having from one to twenty carbon atoms.

3,948,963
EQUILIBRATED MIXTURES OF ORGANOPOLYSILOXANES CONTAINING SULFONIC ACID GROUPS AND PROCESS FOR THE PREPARATION OF SUCH ORGANOPOLYSILOXANES
Gerd Rossmy, Essen-Werden, Germany, assignor to Th. Goldschmidt AG, Essen, Germany
Filed May 22, 1974, Ser. No. 472,360
Claims priority, application Germany, June 22, 1973, 2331677
Int. Cl.² C07F *7/08*
U.S. Cl. 260—448.2 N **25 Claims**

1. An equilibrated mixture of organopolysiloxanes of the average unit formula

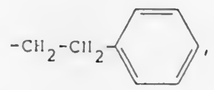


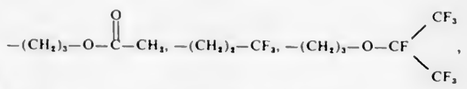
wherein:

$b = 0 - 50$;

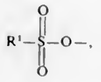
a is a numeral which is selected so that the average unit molecule comprises 2 – 100 silicon atoms and the ratio of R^3 groups which are not linked to trifunctional Si-atoms to R^3 groups which are linked to trifunctional Si-atoms is at least 4;

R^3 is alkyl, substituted alkyl selected from the group consisting of $-(CH_2)_2-CN$, $-CH_2-Br$, $-(CH_2)_3Cl$,



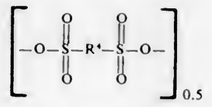


and $-(CH_2)_3-O-$alkyl, vinyl, or aryl and X is halogen,



wherein R^1 is alkyl, aryl or alkaryl,

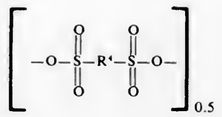
or



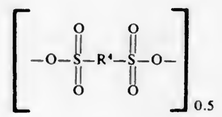
wherein R^4 is divalent hydrocarbon, at least 3% of X constituting said



or



groups, the number of said



groups in the unit not exceeding 10,

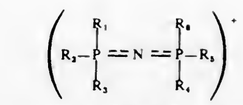
and a portion of X may be trialkylsiloxy and wherein the free valences are saturated by intermolecular or intramolecular linking.

3,948,964
STABILIZATION OF PARTIALLY HYDROLYZED SILICIC ACID ESTERS
Dieter Barfurth, Neiderkassel-Rheidt; Werner Dittrich, Herten, and Heinz Nestler, Ranzel, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Cologne, Germany
Filed Nov. 16, 1973, Ser. No. 416,567
Claims priority, application Germany, Dec. 1, 1972, 2258900
Int. Cl.² C07F *7/04, 7/18*
U.S. Cl. 260—448.8 R **15 Claims**

1. A stabilized silicic acid ester composition comprising a partially hydrolyzed silicic acid ester having between 2 and 10-[Si-O]- groups and, dissolved therein, a stabilizer selected from the group consisted of cyclic ethers containing carbon, hydrogen and oxygen only, ether alcohols having the formula R^1-O-R^2-OH in which R^1 and R^2 independently represent alkyl or alkylene radicals having up to 6 carbon atoms, carboxylic acid alkyl esters wherein the alkyl group has 1 to 6 carbon atoms, the carboxylic acid being in dissolved form, and ketones having a chain length of up to 10 carbon atoms.

3,948,965
CATALYTIC PROCESS FOR POLYHYDRIC ALCOHOLS AND DERIVATIVES
James N. Cawse, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Filed July 12, 1974, Ser. No. 488,603
Int. Cl.² C07C *27/06*
U.S. Cl. 260—449 R **18 Claims**

1. A process for making alkane polyols which comprises reacting at a pressure of from about 500 psia to about 50,000 psia and a temperature of about 100°C. to about 375°C., a mixture consisting essentially of oxides of carbon and hydrogen in the presence of a bis(triorgano phosphine) iminium cation of the formula



wherein R_1, R_2, R_3, R_4, R_5 and R_6 are alkyl, cycloalkyl, aryl, alkaryl, araalkyl, beta-hydroxyethyl, ethoxymethyl, ethoxylethyl, phenoxyethyl or a polyalkylene ether group of the formula $C_nH_{2n}O)_x$-OR wherein n has an average value from 1 to 4, *x* has an average value from 2 to about 150, and R may be hydrogen or alkyl of 1 to about 12 carbon atoms and a rhodium carbonyl complex, said complex is provided to the reaction as a rhodium carbonyl cluster which possesses an infrared spectrum which exhibits three intense wavelength bands between about plus and minus 10 cm^{-1} of about 1868 cm^{-1}, about 1838 cm^{-1}, and about 1785 cm^{-1}, at a pressure of at least about 500 pounds per square inch absolute.

3,948,966
PROCESS FOR PREPARING BENZENE DERIVATIVES HAVING ISOCYANATOMETHYL GROUP
Yoshiaki Inamoto, Wakayama; Hisao Kitano; Yoshiaki Tanaka, both of Osaka; Fumio Tanimoto, Kyoto; Atsushi Nishibata, and Susumu Handa, both of Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan
Filed Oct. 11, 1974, Ser. No. 514,100
Claims priority, application Japan, Oct. 18, 1973, 48-117181
Int. Cl.² C07C *118/00*
U.S. Cl. 260—453 P **8 Claims**

1. A process for preparing benzene derivatives having one or more isocyanatomethyl side chains, comprising the steps of:

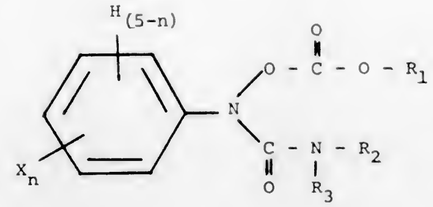
adding to liquid dimethylformamide having completely dissolved therein a catalytic amount of acidic metal chloride-dimethylformamide compound in which said acidic metal chloride moiety is selected from the group consisting of lithium chloride, copper chloride, beryllium chloride, magnesium chloride, calcium chloride, zinc chloride, aluminum chloride, silicon chloride, titanium chloride, zirconium chloride, vanadium chloride, chromium chloride, iron chloride, their corresponding oxychlorides and mixtures thereof, reactants consisting essentially of

1. a benzene derivative selected from the group consisting of chloromethylbenzene, bis-chloromethylbenzene, tris-chloromethylbenzene and nucleus-substituted derivatives thereof wherein the substituents are free of atoms of elements other than hydrogen, carbon, chlorine and oxygen, and
2. sodium cyanate having a purity of at least 70 weight percent,

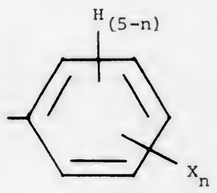
and reacting the resulting mixture at a temperature of 60° to 160°C. until there is formed the corresponding benzene derivative having one or more isocyanatomethyl side chains, and recovering the latter benzene derivative from the reaction mixture.

3,948,967
ARYL UREA CARBONATES
John Krenzer, Oak Park, and Sidney B. Richter, Chicago, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.
Continuation of Ser. No. 695,338, Jan. 3, 1968, Pat. No. 3,864,377. This application Aug. 26, 1974, Ser. No. 500,218
The portion of the term of this patent subsequent to Jan. 25, 1989, has been disclaimed.
Int. Cl.² C07C *69/96*
U.S. Cl. 260—463 **3 Claims**

1. A compound of the formula



wherein each X is independently selected from the group consisting of chlorine, bromine, lower alkyl, lower alkenyl, lower chloroalkyl, lower bromoalkyl, nitro, lower alkoxy, lower alkylthio and di(lower alkyl)amino; n is an integer from 0 to 3; R_1 is



wherein each X is independently selected from the group consisting of chlorine, bromine, lower alkyl, lower chloroalkyl, lower bromoalkyl, nitro, lower alkoxy and di(lower alkyl)amino; n is an integer from 0 to 3; and R_2 and R_3 are independently selected from the group consisting of hydrogen, lower alkyl and lower haloalkyl.

3,948,968

PREPARATION OF NITRILES FROM CARBOXYLIC ACIDS

Roy B. Duke, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 386,788, Aug. 8, 1973, abandoned. This application Apr. 14, 1975, Ser. No. 567,670

Int. Cl.² C07C *120/08*

U.S. Cl. 260—465 B **10 Claims**

1. A process for producing nitriles from corresponding carboxylic acids, said process comprising in combination:

a. forming a complex of said carboxylic acid selected from the group consisting of p-toluic, o-toluic, m-toluic, phthalic, isophthalic, terephthalic, benzoic, malonic, succinic, adipic, suberic, pimelic, azelaic, sebasic, undecanedioic, dodecanedioic, tridecanedioic, tetradecanedioic, maleic, fumaric, and citric acids with a nitrogenous base comprising at least one compound selected from the group consisting of pyridine, alkyl derivatives of pyridine, quinoline, alkyl derivatives of quinoline, and mixtures of the foregoing,

b. contacting said complex with ammonia at a temperature of about 200° to 800°C,

c. recovering the nitriles thus produced,

wherein about 3 to about 15 moles of ammonia are employed per mole of said carboxylic acid.

3,948,969

4-HYDROXYPHENYL-1,3-DIOXO-2-INDENYLIDENE ACETONITRILES

Hans Junek, and Herwig Fischer-Colbrie, both of Graz, Austria, assignors to Lonza Ltd., Gampel, Valais, Switzerland

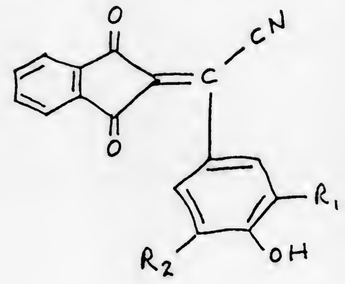
Filed Aug. 16, 1974, Ser. No. 498,115

Claims priority, application Switzerland, Aug. 20, 1973, 11921/73

Int. Cl.² C07C *121/76*

U.S. Cl. 260—465 F **16 Claims**

1. A 4-hydroxyphenyl-1,4-dioxo-2-indenylidene-acetonitrile having the formula:



wherein R_1 and R_2 are the same or different and are each hydrogen, halogen, cyano, alkyl having 1 to 4 carbon atoms or alkoxy having 1 to 4 carbon atoms.

3,948,970

SUBSTITUTED TOLYL ESTERS OF PGA_1

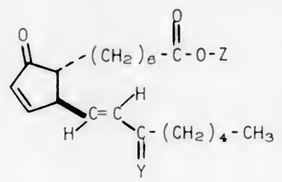
Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 431,600, Jan. 8, 1974. This application Dec. 12, 1974, Ser. No. 531,989

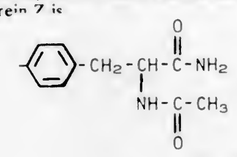
Int. Cl.² C07C *133/08, 103/82*

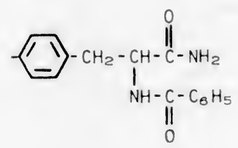
U.S. Cl. 260—468 D **10 Claims**

1. An optically active compound of the formula:

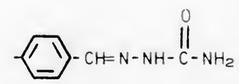


or a racemic compound of that formula and the mirror image thereof, wherein Z is

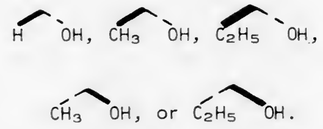




or



and wherein Y is



3,948,971

N-PROTECTED-α-AMINO ACID COMPOUNDS

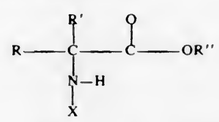
Daniel F. Veber, Ambler, and Stephen F. Brady, Meadowbrook, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 3, 1972, Ser. No. 249,976

Int. Cl.² C07C *125/06*

U.S. Cl. 260—471 C **12 Claims**

1. A compound of the formula:



wherein X is selected from the group consisting of 1-methylcyclobutyloxycarbonyl and 1-methylcyclohexyloxycarbonyl; R′ is hydrogen; R is hydrogen, loweralkyl, or substituted loweralkyl wherein the substituent is selected from the group consisting of hydroxy, amino, carboxy, benzyl and hydroxybenzyl; and R″ is hydrogen, benzyl or loweralkyl.

3,948,972

ESTERIFICATION OF NITROBENZOIC ACIDS

James Albert Baker, 5 Dove House Crescent, Farnham Royal, Slough, Buckinghamshire; Antony Gray, 723 Bath Road, Taplow, Maidenhead, Berkshire, and John Francis Benford, 14 Hanwood Close, Woodley, Berkshire, all of England

Continuation of Ser. No. 187,159, Oct. 6, 1971, abandoned. This application Nov. 12, 1973, Ser. No. 414,891

Int. Cl.² C07C *76/02*

U.S. Cl. 260—471 R **9 Claims**

1. In the known method of esterifying a nitrobenzoic acid with glycerol by heating a mixture of the nitrobenzoic acid and glycerol in the presence of (a) a catalytic quantity of an acid esterification catalyst which is soluble in the reaction mixture at the reaction temperature and (b) of an entraining liquid to separate liberated water by azeotropic distillation, the improvement comprising the combination of using an entraining liquid having a boiling point above 100°C and heating the reaction mixture to a temperature above 100°C.

3,948,973

HALOCYCLOPROPYL SUBSTITUTED PHENOXYALKANOIC ACIDS

Donald K. Phillips, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

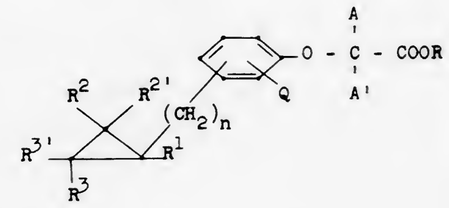
Continuation-in-part of Ser. No. 284,577, Aug. 29, 1972, abandoned. This application Feb. 19, 1974, Ser. No. 443,418

Claims priority, application United Kingdom, Aug. 13, 1973, 38311/73

Int. Cl.² C07C *69/76*

U.S. Cl. 260—473 G **11 Claims**

1. A compound of the formula



wherein:

R is hydrogen or alkyl of 1–6 carbon atoms;

A and A′ are alkyl of 1–3 carbon atoms;

Q is hydrogen, halogen or alkyl of 1–3 carbon atoms;

R^1 is hydrogen, alkyl of 1–3 carbon atoms or phenyl;

R^2 is hydrogen or halogen;

$R^{2'}$ is hydrogen or halogen, at least one of R^2 and $R^{2'}$ being halogen;

R^3 is hydrogen, alkyl of 1–3 carbon atoms or phenyl;

$R^{3'}$ is hydrogen or alkyl of 1–3 carbon atoms;

n is 0 or 1;

a compound of the above formula where Q and R^3 together form an ethylene bridge and $(CH_2)_n$ is a single bond to the benzene ring ortho to Q, thereby forming the six-membered non-aromatic carbocyclic ring of a 2,3-dihydro-1H-cyclopropa[a]-naphthalene ring system;

or a pharmacologically acceptable salt of a compound of the above formula where R is hydrogen.

3,948,974

ESTERIFICATION OF ORTHOPHTHALIC ACID WITH OLEFIN

Louis R. Kray, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 20, 1969, Ser. No. 851,754

Int. Cl.² C07C *69/80*

U.S. Cl. 260—475 R **3 Claims**

1. The process which comprises reacting orthophthalic acid with an olefin of from about 6 to 12 carbon atoms in the presence of a boron trifluoride etherate catalyst at temperatures in the range of 50°C. to 90°C. for about 2 to 6 hours.

3,948,975

HYDROXYALKYL ESTERS OF N-PHOSPHONOMETHYL GLYCINE

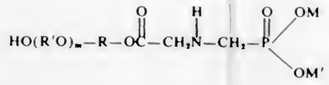
John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 5, 1974, Ser. No. 495,011

Int. Cl.² C07C *101/18*

U.S. Cl. 260—482 R **9 Claims**

1. A compound of the formula



wherein R is an alkylene or alkoxy substituted alkylene containing up to 18 carbon atoms, R′ is alkylene or alkoxy substituted alkylene groups containing from 2 to 4 carbon atoms, *m* is an integer of from 0 to 3 and M is hydrogen and M′ is hydrogen, alkali metal, alkaline earth metal, ammonium or organic ammonium.

3,948,976

PARTIAL ESTERS OF HYDROXY POLYCARBOXYLIC ACIDS

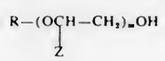
Tzeng Jiueq Suen, New Canaan; Arthur James Begala, Jr., Fairfield, and Martin Grayson, Stamford, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 29, 1974, Ser. No. 456,120

Int. Cl.² C07C *69/70*

U.S. Cl. 260—484 P **20 Claims**

1. A partial ester of a hydroxy lower alkyl polycarboxylic acid having at least one unesterified carboxylate radical in the molecule and having at least one other carboxyl group of the molecule esterified with an alcohol having the formula



wherein

m is an integer from 1 to 20

Z is hydrogen or methyl and

R is alkyl, alkenyl, cycloalkyl or aralkyl having 8 to 20 carbon atoms.

3,948,977

ALKOXY ACID OR ESTER PREPARATION

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 13, 1974, Ser. No. 532,563

Int. Cl.² C07C *69/66*

U.S. Cl. 260—484 R **16 Claims**

1. A process for producing an alkoxyacetic acid which comprises contacting carbon monoxide with formaldehyde, an alcohol, and a catalyst comprising hydrogen fluoride in a reaction zone and under reaction conditions effective to form an alkoxyacetic acid including a temperature between 0° and 100°C and a carbon monoxide partial pressure between 10 and 4000 psig.

3,948,978

PRODUCTION OF GLYCOL MONOESTERS OF α, β-UNSATURATED CARBOXYLIC ACIDS

Harry Distler, Ludwigshafen, and Kurt Schneider, Bad Duerkheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Dec. 4, 1974, Ser. No. 529,346

Claims priority, application Germany, Dec. 13, 1973, 2361907

Int. Cl.² C07C *69/54*

U.S. Cl. 260—486 B **14 Claims**

1. A process for the production of glycol monoester of an α,β-unsaturated carboxylic acid of three or four carbon atoms and a 1,3-diol of two to four carbon atoms by the reaction of an α,β-unsaturated carboxylic acid of three or four carbon atoms and a 1,2-alkylene oxide of two to four carbon atoms at elevated temperature in the presence of a catalyst and a polymerization inhibitor, wherein molecular oxygen or a gas containing the same is added to the reaction mixture in an amount providing up to 1000 ppm of molecular oxygen in the reaction mixture.

3,948,979

PROCESS FOR SYNTHESIS OF CRYSTALLINE 2-METHACRYLOYLOXYETHYLTRIMETHYLAMMONIUM CHLORIDE

Kendall W. Patterson, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed July 3, 1974, Ser. No. 485,471

Int. Cl.² C07C *69/54*

U.S. Cl. 260—486 R **10 Claims**

1. A process for manufacture of 2-methacryloyloxyethyltrimethylammonium chloride comprising

a. forming a solution of dimethylaminoethyl methacrylate in an organic reaction to solvent therefor,

b. admixing methyl chloride to the solution of dimethylaminoethyl methacrylate in at least a substantially stoichiometric amount,

c. agitating the admixture of step (b) and maintaining the temperature of the admixture from about 25°C. to about 70°C., thereby producing a slurry having a dispersed phase comprising 2-methacryloyloxyethyltrimethylammonium chloride crystals and a continuous phase comprising reaction solvent and unreacted dimethylaminoethyl methacrylate and methyl chloride,

d. washing the 2-methacryloyloxyethyltrimethylammonium chloride crystals with an organic washing liquid which is a nonsolvent for said crystals and which is a solvent for both dimethylaminoethyl methacrylate and the reaction solvent,, and

e. recovering 2-methacryloyloxyethyltrimethylammonium chloride.

3,948,980

TERTIARY PHOSPHINE

Udo Dettmeier, Hurth-Hermulheim, and Hans-Jerg Kleiner, Bad Soden, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

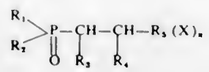
Continuation of Ser. No. 171,304, Aug. 12, 1971, abandoned. This application May 31, 1974, Ser. No. 475,275

Claims priority, application Germany, Dec. 30, 1970, 2064574; July 7, 1971, 2133794

Int. Cl.² C07F *9/53*

U.S. Cl. 260—488 J **8 Claims**

1. A compound of the formula



in which R_1 and R_2 are alkyl of 1 to 12 carbon atoms or cycloalkyl of 4 to 8 carbon atoms, R_3 is hydrogen, lower alkyl, cycloalkyl of 4 to 8 carbon atoms, or a group of the formula

$$-R_6-Y$$

in which R_6 is lower alkylene and Y is hydroxy, lower alkoxy or lower alkanoyloxy, R_4 is hydrogen, lower alkyl or a group of the formula

$$-R_7-Y$$

in which R_7 is lower alkylene and Y is as defined above, R_5 is a saturated lower alkylene radical of 1 to 5 carbon atoms and *n* is 1 to 3, X is hydroxy, lower alkoxy, or lower alkanoyloxy, with the proviso that in the molecule at least 2 Y are present.

3,948,981

PROCESS FOR PRODUCING PGE_2 FROM PGA_2

John E. Pike, and William P. Schneider, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 403,087, Oct. 3, 1973, abandoned, which is a continuation of Ser. No. 159,478, July 2, 1971, Pat. No. 3,772,350, which is a continuation-in-part of Ser. No. 71,390, Sept. 11, 1970, abandoned. This application Dec. 18, 1974, Ser. No. 534,008

Int. Cl.² C07C *51/00*

U.S. Cl. 260—514 D **1 Claim**

1. A process for producing PGE_2 which comprises:

1. silylating PGA_2, thereby preparing a PGA_2 silyl ether:

2. epoxidizing the reaction product of step 1, thereby preparing a mixture of alpha and beta 10,11-epoxide wherein the ratio of alpha epoxide to beta epoxide is greater than 1 to 1;

3. selectively, non-ethylenically reducing the reaction product of step 3, thereby preparing a mixture of PGE_2 and 11β-PGE_2 wherein the ratio of PGE_2 to 11β-PGE_2 is greater than 1 to 1; and

4. separating PGE_2 from 11β-PGE_2.

3,948,982

POLYHALOBENZENEPOLYCARBOXYLIC ACID PROCESSES

James O. Knobloch, Naperville; James P. Nelson, Woodridge, and John B. L. Harkness, Naperville, all of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Sept. 10, 1973, Ser. No. 395,719

Int. Cl.² C07C *51/42*

U.S. Cl. 260—525 **12 Claims**

1. The process of isolating a polyhalobenzenepolycarboxylic acid from a sulfuric acid medium comprising diluting said sulfuric acid medium with liquid sulfur dioxide and partitioning said polyhalobenzenepolycarboxylic acid from said sulfuric acid medium.

3,948,983

PROCESS FOR THE PREPARATION OF ACETIC ACID BY CATALYTIC GAS-PHASE OXIDATION OF BUTENES

Klaus Hachmann; Johann Gaube; Rudolf Brockhaus, and Franz Langheim, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft

Continuation-in-part of Ser. No. 396,678, Sept. 13, 1973, abandoned, which is a continuation of Ser. No. 200,515, Nov. 19, 1971, abandoned. This application May 21, 1974, Ser. No. 471,978

Claims priority, application Germany, Dec. 5, 1970, 2059945

Int. Cl.² C07C *51/32*

U.S. Cl. 260—533 R **13 Claims**

1. In a process for the production of acetic acid by the catalytic gas phase oxidation of butenes in a reactor cycle having a vanadate catalyst, the improvement comprising carrying out the process continuously by reacting about 0.4 to 12 percent by volume of butenes with about 1 to 7 percent by volume of oxygen at a temperature of about 160° – 400°C in the presence of steam to produce a gas stream leaving the reactor containing acetic acid produced by the reaction of said butenes and said oxygen and recycling a portion of said acetic acid containing gas stream, said acetic acid having a concentration in the effluent gas of the reactor of about 1.5 to 10 percent by volume.

3,948,984

PROCESS OF MAKING PENICILLAMINE

Friedrich Asinger, Aachen; Heribert Offermanns, Grossauheim, and Miklos Ghyczy, Laurensberg, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Continuation of Ser. No. 862,148, Sept. 4, 1969, abandoned. This application Mar. 29, 1973, Ser. No. 346,825

Int. Cl.² C07C *99/10*

U.S. Cl. 260—534 S **13 Claims**

1. A process for producing penicillamine or its hydrochloride which comprises the following steps:

a. reacting isobutyraldehyde with a stoichiometrical equivalent of elemental sulfur or a 7-phenyl-7-alkylamino-8-thioxo-1,2,3,4,5,6-hexathiocane and ammonia or the addition compound of ammonia and ammonium nitrate having the formula $NH_4NO_3.2NH_3$, the reactants being present in the reaction mixture in proportions of 2 mols of isobutyraldehyde to each gram-atom of sulfur or equivalent amount of the sulfur-containing compound and each mol of ammonia or equivalent amount of the addition compound of ammonia and ammonium nitrate, the said reaction being conducted by heating the reaction mixture at a temperature between 50° and approximately 100°C in the presence of a secondary or tertiary amine having a boiling point between about 40° and 150°C and a flushing agent that is capable of removing the water that is formed in the said reaction as an azeotrope with the said flushing agent while the water formed during the reaction is withdrawn therefrom as an azeotrope with the said flushing agent during the heating of the reaction mixture, and recovering the 2-isopropyl-5,5-dimethylthiazoline-Δ^3 thus produced from the reaction mixture,

b. dissolving the said recovered thiazoline in an inert solvent and passing substantially anhydrous hydrogen cyanide into the said solution of the said thiazoline in a stoichiometric amount or in an amount in excess of that stoichiometrically required to convert the said thiazoline to 2-isopropyl-5,5-dimethylthizaolidine-4-carbonitrile at a temperature below about 10°C to convert the said thiazoline to 2-isopropyl-5,5-dimethylthiazolidine-4-carbonitrile and recovering the carbonitrile thus formed from the reaction mixture,

c. heating the said recovered carbonitrile together with concentrated hydrochloric acid at a temperature between approximately 70° and approximately 110°C for a period sufficient to convert the said carbonitrile into a mixture of 2-isopropyl-5,5-dimethylthiazolidine-4-carboxylic acid hydrochloride, ammonium chloride and a minor amount of DL-penicillamine hydrochloride, and subsequently recovering the mixture in dry form by evaporation at a subatmospheric pressure,

d. subjecting the resulting dry mixture to distillation with steam to produce a mixture consisting essentially of DL-penicillamine hydrochloride and ammonium chloride, and

e. subsequently recovering the DL-penicillamine hydrochloride from the said mixture.

3,948,985

METHOD OF PRODUCING CARBOXYMETHYLOXYSUCCINIC ACID

John H. Blumbergs, Highland Park; Michael J. McCarthy, Fanwood; Joseph H. Finley, Metuchen, and John M. Polkowski, South River, all of N.J., assignors to FMC Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 306,728, Nov. 15, 1972, abandoned. This application Oct. 11, 1974, Ser. No. 514,018

Int. Cl.² C07C *59/23*

U.S. Cl. 260—535 P **6 Claims**

1. In the process of producing carboxymethyloxysuccinic acid including the steps (a) forming the calcium salt of carboxymethyloxysuccinic acid by reacting maleic acid and gly-

colic acid in aqueous basic media in the presence of calcium ions; (b) acidifying the resultant calcium salt of carboxymethyloxysuccinic acid with sulfuric acid calcium sulfate; (c) removing the calcium sulfate; and (d) recovering carboxymethyloxysuccinic acid from its aqueous solution, the improvement which comprises carrying out the acidification between about 40°C and 80°C whereby the calcium sulfate precipitates as the dihydrate.

3,948,986

ALPHA-HYDROXY OR ALKOXY ACID PREPARATION

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 20, 1975, Ser. No. 542,138
Int. Cl.² C07C *59/08*
U.S. Cl. 260—535 R **12 Claims**

1. A process for producing an alpha-hydroxy carboxylic acid which comprises contacting carbon monoxide with a saturated C_2–C_{16} aldehyde, water and a catalyst comprising hydrogen fluoride in a reaction zone and under conditions effective to form an alpha-hydroxy carboxylic acid including a temperature between 0° and 100°C and a carbon monoxide partial pressure between 10 and 4000 psig.

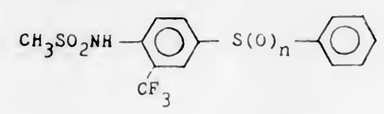
3,948,987

SUBSTITUTED METHANESULFONANILIDES

Tomas L. Fridinger, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 19, 1974, Ser. No. 462,546
Int. Cl.² C07C *143/72*, *143/84*
U.S. Cl. 260—556 F **5 Claims**

1. A compound of the formula



wherein *n* is zero, one or two and agriculturally acceptable salts thereof.

3,948,988

CYCLIC PROCESS FOR PREPARING AND WORKING UP A HYDROXYLAMMONIUM SALT SOLUTION

Abraham H. de Rooij, Geleen, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Continuation-in-part of Ser. Nos. 422,711, Dec. 7, 1973, Ser. No. 422,713, Dec. 7, 1973, Ser. No. 114,172, Feb. 10, 1971, abandoned, and Ser. No. 114,171, Feb. 10, 1971, abandoned.
This application Apr. 1, 1975, Ser. No. 564,085
Int. Cl.² C07C *131/04*
U.S. Cl. 260—566 A **2 Claims**

1. In a cyclic process for producing cyclohexanone oxime wherein a buffered, aqueous reaction medium containing a member selected from the group consisting of phosphoric acid, ammonium bisulfate, buffer salts of said phosphoric acid and said bisulfate and mixtures thereof is circulated between a hydroxylamine synthesis zone and a cyclohexanone oxime synthesis zone, a source of a nitrogen containing member selected from the group consisting of nitrate ions and nitrogen oxide being supplied to said reaction medium as said reaction medium circulates from said oxime synthesis zone to said hydroxylamine synthesis zone, said hydroxylamine synthesis zone containing a noble metal catalyst, introducing molecular hydrogen to said hydroxylamine synthesis zone, said nitrogen containing member being catalytically reduced by said hydrogen to hydroxylamine in said hydroxylamine synthesis zone, withdrawing said reaction medium being rich in hydroxylamine from the hydroxylamine synthesis zone and circulating said hydroxylamine rich, reaction medium to said oxime synthesis zone, said oxime synthesis zone being supplied with cyclohexanone, said cyclohexanone being converted to cyclohexanone oxime by reacting with said hydroxylamine in said oxime synthesis zone, separating said cyclohexanone from said aqueous reaction medium and recycling said aqueous reaction medium to said hydroxylamine synthesis zone, the improvement consisting of subjecting said recirculating, aqueous reaction medium from said oxime synthesis zone, first to contact with a nitrous gas at a temperature of at least 40°C to hydrolyze any residue cyclohexanone oxime in said aqueous recirculating medium to cyclohexanone and second to a stripping step wherein residue cyclohexanone is removed from said recirculating, aqueous reaction medium.

3,948,989

N-MONOSUBSTITUTED AMIDE PRODUCTION

Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 12, 1974, Ser. No. 478,536
Int. Cl.² C07C *103/08*
U.S. Cl. 260—561 N **7 Claims**

1. A process for preparing N-monosubstituted amides comprising reacting ethylenically unsaturated hydrocarbons having from 3 to about 20 carbon atoms and water or secondary or tertiary alcohols containing from 3 to about 20 carbon atoms with a nitrile having from 2 to about 20 carbon atoms in the presence of a catalyst comprising a compound of a Group VIII metal having an atomic number of 44 and greater.

6. A process according to claim 2 for the production of N-tert.-butyl acrylamide which comprises reacting isobutylene with acrylonitrile in the presence of palladium chloride catalyst.

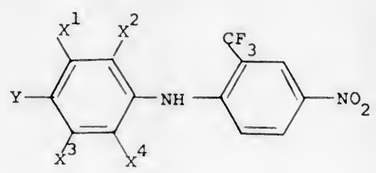
3,948,990

CHEMICAL COMPOUNDS AND COMPOSITIONS

Charles Brian Barlow, Camberley, and Brian Graham White, Crowthorne, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 230,512, Feb. 29, 1972, abandoned.
This application Aug. 13, 1974, Ser. No. 497,055
Claims priority, application United Kingdom, Mar. 19, 1971, 7292/71; Aug. 26, 1971, 40087/71; Feb. 4, 1972, 5356/72
Int. Cl.² C07C *87/54*, *87/64*
U.S. Cl. 260—576 **6 Claims**

1. A compound of the formula:



wherein X^1, X^2, X^3 and X^4, which may be the same or different, are halogen atoms, and Y is halogen, trifluoromethyl or nitro.

3,948,991

CYCLIC ALDOL CONDENSATION PROCESS AND CATALYST REGENERATION PROCEDURE

Sun W. Chun, Murrysville; Franklin E. Massoth, Valencia, and Howard G. McIlvried, McCandless Township, Allegheny County, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 837,912, June 30, 1969, abandoned. This application Apr. 21, 1972, Ser. No. 246,267
Int. Cl.² C07C *47/36*, *47/50*, *49/06*, *49/42*
U.S. Cl. 260—586 E **4 Claims**

1. In a cyclic process for the aldol-condensation of a carbonyl compound wherein the carbonyl compound is condensed by flowing it over a catalyst comprising metallic tin on a high surface area support consisting essentially of non-acidic silica until the activity of said catalyst is decreased by carbonaceous deposits and then reactivating the catalyst, the improvement which comprises the step of reactivating the deactivated catalyst when the carbon content of the carbonaceous deposits on the deactivated catalyst is greater than about 10 percent of the catalyst weight by stopping the feed of the carbonyl compound and flowing a stream of a reducing gas containing at least about 50 percent hydrogen with the remainder being an inert diluent gas in contact with said deactivated catalyst at conditions including a temperature of at least about 650° to about 1,000° F. to produce a reactivated catalyst with a carbon content of between about five percent and about 10 percent as carbonaceous deposits on the reactivated catalyst.

3,948,992

OXIDATION OF HYDROCARBONS IN THE PRESENCE OF SYNERGISTIC COMBINATION OF INITIATORS

Matthew A. McMahon, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Jan. 26, 1973, Ser. No. 327,039
Int. Cl.² C07C *27/12*, *29/00*, *45/02*
U.S. Cl. 260—586 P **14 Claims**

1. The process for preparing an oxidation product of an alkyl, aralkyl, or cycloalkyl hydrocarbon which comprises oxidizing said hydrocarbon at 75°–200°C in the presence of (i) an oxygen containing gas and (ii) an oxidation initiator containing an initiating quantity of an alkyl, aralkyl, or cycloalkyl hydroperoxide and a nitrogen oxide thereby forming said oxidation product of said hydrocarbon; and recovering said oxidation product of said hydrocarbon.

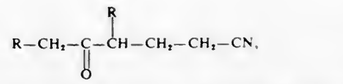
3,948,993

PROCESS FOR PRODUCTION OF 3-HYDROXY-CYCLOHEXENE-2-ONES

Martin Cherubim, Rheinkamp-Eick, and Faisal AboDagga, Rheinkamp-Utfort, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Division of Ser. No. 284,190, Aug. 28, 1972, abandoned. This application Mar. 4, 1974, Ser. No. 447,710
Int. Cl.² C07C *49/48*
U.S. Cl. 260—586 C **2 Claims**

1. The process for the production of 3-hydroxy-cyclohexene-2-ones comprising reacting at a temperature of about 50° to about 150°C a cyanoethylated ketone of the formula:



wherein R is selected from the group consisting of hydrogen and CH_3, in water and in the presence of a strong mineral acid, and wherein the said water is employed in an amount of from about 30 to about 300 grams per mole of ketone and wherein about 0.05 to 2.0 moles of mineral acid is employed per mole of ketone.

3,948,994

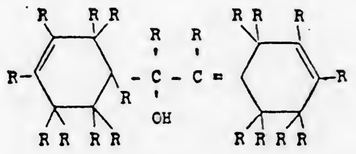
OXO- AND HYDROXY-SUBSTITUTED HYDRO STILBENES

Paul W. Solomon, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 354,094, April 24, 1973, Pat. No. 3,897,501, which is a continuation-in-part of Ser. No. 714,070, March 18, 1968, Pat. No. 3,763,240, which is a continuation-in-part of Ser. No. 509,624, Nov. 24, 1965, abandoned. This application Apr. 21, 1975, Ser. No. 570,330
Int. Cl.² C07C *33/02*, *35/21*, *49/61*
U.S. Cl. 260—586 R **3 Claims**

1. 1-oxo-1-(3-cyclohexen-1-yl)-2-(3-cyclohexenylidene)ethane.

2. Unsaturated mono-ols characterized by the following formula:



wherein R is independently selected from the group consisting of hydrogen, methyl and ethyl and wherein the total number of carbon atoms in all of said R groups does not exceed 8.

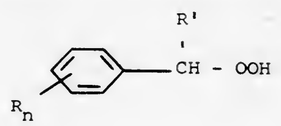
3,948,995

PROCESS FOR CONVERTING ALKYLAROMATIC HYDROPEROXIDES INTO PHENOLIC PRODUCTS AND CARBONYL PRODUCTS

Michel Jouffret, Francheville-le-Bas (Rhone), France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed July 24, 1974, Ser. No. 491,486
Claims priority, application France, July 27, 1973, 73.27647
Int. Cl.² C07C *45/00*, *37/08*
U.S. Cl. 260—592 **11 Claims**

1. In a process for converting a primary or secondary alkylaromatic hydroperoxide of the general formula:



in which:

R represents a hydrogen or halogen atom, an alkyl radical containing 1 to 4 carbon atoms, a said alkyl radical substituted by a halogen atom, a nitro or alkoxy radical containing 1 to 4 carbon atoms, a nitro group, or an alkoxy radical containing 1 to 4 carbon atoms;

R′ represents a hydrogen atom; an alkyl radical containing 1 to 4 carbon atoms; a cycloalkyl radical; an aryl radical;

or an aralkyl radical or, when R is in the ortho-position, together with R forms a divalent alkylene radical; and

n represents an integer from 1 to 3, into phenolic and/or carbonyl compounds, which comprises reacting the hydroperoxide with a catalytic amount of a acid catalyst in the presence of an inert organic solvent, the improvement wherein the solvent is an aprotic polar solvent selected from a polymethylene-sulphone containing 3 to 6 methylene groups, one or more of said methylene groups optionally being substituted by an alkyl radical with 1 to 4 carbon atoms, and alkylene glycol carbonate containing 2 to 4 carbon atoms in the alkylene part.

3,948,996

NOVEL PRODUCTS

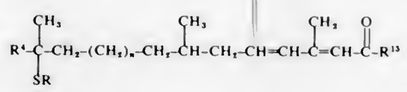
Clive A. Henrick, and John B. Siddall, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 256,605, May 24, 1972, Pat. No. 3,826,804, which is a continuation-in-part of Ser. No. 201,189, Nov. 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 191,812, Oct. 22, 1971, abandoned. This application Oct. 9, 1973, Ser. No. 404,633

Int. Cl.² C07C *49/20*

U.S. Cl. 260—593 R **4 Claims**

1. A compound selected from those of the following formula:



wherein,

n is zero or one;

each of R and R⁴ is methyl or ethyl; and

R¹⁵ is lower alkyl.

3,948,997

VAPOUR PHASE OXIDATION PROCESS

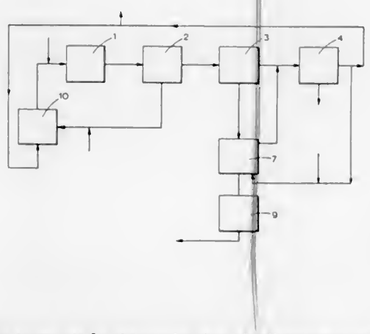
Brian Keith Howe, St. Albans; Francis Robert Frederick Hardy and Douglas Alfred Clarke, both of Luton, all of England, assignors to Laporte Industries Limited, London, England

Continuation of Ser. No. 821,888, May 5, 1969, abandoned. This application Mar. 14, 1974, Ser. No. 451,228

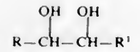
Claims priority, application United Kingdom, May 6, 1968, 21422/68; May 6, 1968, 21421/68

Int. Cl.² C07C *45/00*

U.S. Cl. 260—596 **13 Claims**



1. In a process for the production of a dicarbonyl compound by catalytic vapour phase oxidation of cyclohexane-1,2 diol or an aliphatic diol of the formula:



in which R and R¹, which may be the same or different, are hydrogen or an alkyl group containing up to 3 carbon atoms, comprising passing a gaseous mixture of oxygen and said diol at a temperature of between 180° and 600°C over an oxidation catalyst, the improvement wherein said oxidation catalyst consists essentially of one or more metals selected from a copper phosphorus alloy containing up to 15% phosphorus in the form of copper phosphide and a silver-copper-phosphorus alloy containing from 1 to 99% silver, balance copper-phosphorus containing up to 15% phosphorus in the form of copper phosphide, the catalyst optionally containing one or more elements selected from the group consisting of gold, arsenic, antimony and tin.

3,948,998

PROCESS FOR PRODUCING p-TOLUALDEHYDE

Susumu Fujiyama; Takehiko Takahashi; Shigeki Kozao, all of Niigata, and Toyomi Kasahara, Kurashiki, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Dec. 5, 1974, Ser. No. 530,006

Claims priority, application Japan, Dec. 21, 1973, 48-143101

Int. Cl.² C07C *45/14*

U.S. Cl. 260—599 **9 Claims**

1. A process for producing p-tolualdehyde which comprises reacting toluene with carbon monoxide in the presence of hydrogen fluoride and boron trifluoride, characterized by (1) mixing all of the toluene, all of the hydrogen fluoride and part of the boron trifluoride, thereby forming a toluene-hydrogen fluoride-boron trifluoride complex solution, and adding carbon monoxide to the solution to react the toluene with carbon monoxide, thereby converting a portion of the toluene to p-tolualdehyde, and then (2) adding the remainder of the boron trifluoride to the reaction system and reacting the remainder of the toluene with carbon monoxide, thereby converting a substanial amount of the toluene to p-tolualdehyde, the amounts of boron trifluoride in (1) and (2) being divided such that the vapor pressures of the complex in (1) and (2) are substantially equal.

3,948,999

HYDROFORMYLATION OF AN UNSATURATED COMPOUND

Edwin H. Homeier, Maywood, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 13, 1973, Ser. No. 387,995

Int. Cl.² C07C *47/20*

U.S. Cl. 260—604 HF **9 Claims**

1. A process for the selective preparation of linear aldehydes and alcohols which comprises hydroformylating an unsaturated compound with carbon monoxide and hydrogen in the presence of a catalyst containing rhenium complex at a temperature in the range of about 60°C. to about 300°C. and a pressure of from about one atmosphere to about 500 atmospheres and recovering the resultant aldehydes and alcohols.

3,949,000

ASYMMETRIC DIPHOSPHINES, THEIR PREPARATION AND THEIR USE

Paul Aviron Violet, Saint-Genis-Laval, France, assignor to Rhone-Poulenc S.A., Paris, France

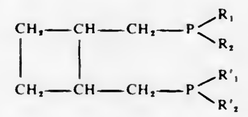
Filed May 17, 1974, Ser. No. 470,866

Claims priority, application France, May 21, 1973, 73.18319

Int. Cl.² C07F *9/02*

U.S. Cl. 260—606.5 P **4 Claims**

1. A stereoisomer of a diphosphine of the formula:



in which the phosphinomethyl groups are in the trans-position relative to one another, and the radicals R_1, R_2, R'_1 and R'_2, which may be identical or different, each represent; straight or branched alkyl of 1 to 8 carbon atoms, cycloalkyl of 5 or 6 ring carbon atoms, or aryl consisting of one or more benzene rings which are bonded to one another by a valency bond or which form with one another an ortho- or peri-condensed system, the said aryl being unsubstituted or substituted by straight or branched alkyl of 1 to 4 carbon atoms.

3,949,001

PROCESS FOR PRODUCING ARYL α-HALOALKYL SULFONES

Cal Yale Meyers; Walter Sidney Matthews, III, both of Carbondale, Ill., and Ashok M. Malte, Poona, India, assignors to Southern Illinois University Foundation, Carbondale, Ill.

Division of Ser. No. 98,094, Dec. 14, 1970, Pat. No. 3,830,862. This application Dec. 17, 1973, Ser. No. 425,294

Int. Cl.² C07C *149/06*

U.S. Cl. 260—607 A **7 Claims**

1. A process for preparing aryl α-haloalkyl sulfones from aryl alkyl sulfones which comprises the steps of:

reacting an aryl alkyl sulfone with a carbon tetrahalide represented by the formula $CBr_mCl_nF_p$ where m is an integer between 0 and 4 inclusive, p is an integer between 0 and 2 inclusive, and m+n+p = 4, in the presence of a strong base to form an α-halogenated product and a dihalocarbene.

3,949,002

PROCESS FOR PRODUCING SULFONE CONTAINING THIOPHENOLS

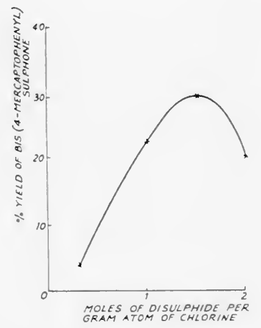
Ronald George Feasey, Knebworth, and John Brewster Rose, Letchworth, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 29, 1971, Ser. No. 194,004

Int. Cl.² C07C *149/32*

U.S. Cl. 260—609 D **10 Claims**

1. A method for the preparation of aromatic thiols which comprises reacting in an inert solvent the corresponding aromatic halide having the halogen atom activated by an inert electron-attracting group attached to the same aromatic ring as the halogen atom and ortho or para thereto, wherein said electron-attracting group is $-SO_2-$, with an alkali metal disulphide in stoichiometric proportion of from 1.0 to 2.0



moles per gram atom of activated halogen to be replaced and then acidifying the reaction mixture.

3,949,003

PRODUCTION OF HYDROPEROXIDES

John G. Zajacek, Strafford, and Francis J. Hilbert, Yeadon, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 16, 1971, Ser. No. 124,972

Int. Cl.² C07C *179/02*

U.S. Cl. 260—610 B **12 Claims**

1. A method for the production of the hydroperoxides of hydrocarbons having no aliphatic or cycloaliphatic tertiary carbon atoms in the molecule, said hydrocarbons being selected from the group consisting of cycloalkanes and n-alkyl-substituted benzenes having from 5 to 12 carbon atoms in the molecule, which comprises contacting said hydrocarbon in the liquid phase with molecular oxygen at a temperature in the range of from 80°C. to 180°C. in the presence of a tertiary alcohol selected from the group consisting of tertiary butyl alcohol and cumenol and a tertiary hydroperoxide selected from the group consisting of tertiary butyl hydroperoxide and cumene hydroperoxide.

3,949,004

HYDROPEROXIDE PRODUCTION

Harold A. Sorgenti, Olympia Fields, Ill., and Stephen N. Rudnick, Roxbury, Mass., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 124,971, March 16, 1971, abandoned. This application Oct. 23, 1973, Ser. No. 408,957

Int. Cl.² C07C *179/02, 31/13, 45/16*

U.S. Cl. 260—610 B **9 Claims**

1. A method for the production of the hydroperoxides of hydrocarbons having no aliphatic or cycloaliphatic tertiary carbon atoms in the molecule, said hydrocarbons being selected from the group consisting of cycloalkanes having from 5 to 12 carbon atoms in the molecule, ethylbenzene, n-propylbenzene, n-butylbenzene, diethylbenzene and di-n-propylbenzene, which comprises contacting said hydrocarbon in the liquid phase with molecular oxygen at a temperature in the range of from 80°C. to 180°C. in the presence of a stabilizing agent selected from the group consisting of a tertiary butyl alcohol and water, said stabilizing agent being in the range of from about 2 weight percent to 20 weight percent based on said hydrocarbon.

3,949,005
HEXAFLUORO-t-BUTYL-DIFLUOROMETHYL ETHER AS AN INHALATION ANESTHETIC

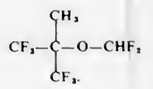
Louise S. Croix, Summit, N.J., assignor to Airco, Inc., Montvale, N.J.

Division of Ser. No. 468,478, May 9, 1974, Pat. No. 3,883,664, which is a continuation-in-part of Ser. No. 326,481, Jan. 29, 1973, abandoned, which is a continuation of Ser. No. 174,957, Aug. 8, 1971, abandoned. This application Feb. 27, 1975, Ser. No. 553,856

Int. Cl.² C07C *43/00, 43/12*

U.S. Cl. 260—614 F **1 Claim**

1. Hexafluoro-t-butyl difluoromethyl ether of the formula:



3,949,006
SYNTHESIS OF VITAMIN A, INTERMEDIATES AND CONVERSION THEREOF TO VITAMIN A

William Oroshnik, Plainfield, N.J., assignor to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 246,939, April 24, 1972, abandoned. This application Apr. 23, 1973, Ser. No. 353,215

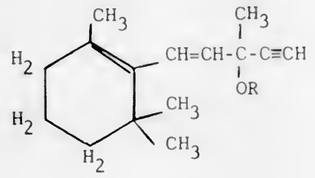
Int. Cl.² C07C *29/00*

U.S. Cl. 260—617 A **8 Claims**

1. A process for synthesizing Vitamin A from beta-ionone by increasing the length of its conjugated aliphatic chain while still obtaining the trans form of Vitamin A, comprising:

a. ethynylating beta-ionone to form ethynyl-beta-ionol,

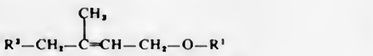
b. etherifying the hydroxyl group of said ionol at the tertiary carbon atom to form a compound having the general formula:



in which R is lower alkyl, lower alkenyl, phenyl, aralkyl,

c. forming the cuprous acetylenyl derivative of a compound of Formula I,

d. coupling said acetylenyl derivative to a reactant having the general formula:

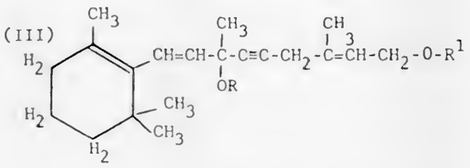


(II)

in which R^1 is hydrogen or

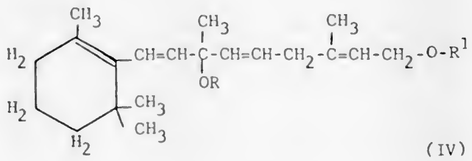


R^2 being lower alkyl, phenyl, or aralkyl, and R^3 is halogen to form a compound having the general formula:



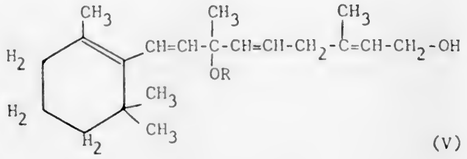
(III)

e. semi-hydrogenating the acetylenic bond of the compound of Formula III to form a compound having the general formula:



(IV)

f. subjecting the compound of Formula IV to hydrolysis to convert the terminal ester group to a terminal hydroxyl group to form a compound having the general formula:



(V)

and,

g. subjecting a compound of Formula V to the presence of a sufficiently strong basic medium to effect 1,4 elimination of ROH therefrom, formation of an additional double bond and conjugation of all five double bonds in the molecule in order to form Vitamin A.

3,949,007
PROCESS FOR THE PRODUCTION OF PRIMARY ALKENOLS

Johann Grolig; Gerhard Scharfe, both of Leverkusen, and Wolfgang Swodenk, Odenthal-Globusch, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 59,356, July 29, 1970, abandoned. This application July 12, 1973, Ser. No. 378,726

Claims priority, application Germany, Aug. 1, 1969, 1939142

Int. Cl.² C07C *29/00*

U.S. Cl. 260—635 R **8 Claims**

1. The process for the production of a primary alkenol or an alpha, omega-alkenediol which comprises contacting a primary alkenol or an alpha, omega -alkenediol acetate with about 2 to 25 times the stoichiometric amount of methanol at a temperature ranging between about 0° and 150°C. in the presence of one or more hydroxides or alkoxides of a metal of the first to third main groups of the Periodic Table or stoichiometric mixtures of two of said alkoxides as catalyst, distilling off the methyl acetate formed in the reaction as an azeotrope with methanol, adding methanol to the residue and distilling off said added methanol, thereby to complete the conversion of said primary alkenol or alkenediol acetate to said primary alkenol or alkenediol, and subjecting the distillation residue to a vacuum distillation to distill off the primary alkenol or alkendiol and leave behind the catalyst which is recycled.

3,949,008
PURIFICATION OF CRUDE DINITROTOLUENE BY EXTRACTION WITH C_5-C_8 ALKANES

David H. Rosenblatt, Baltimore, and William H. Dennis, Jr., Braddock Heights, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 5, 1974, Ser. No. 529,972

Int. Cl.² C07C *79/10*

U.S. Cl. 260—645 **6 Claims**

1. A process for purifying an impure dinitrotoluene, consisting of 2,4- and 2,6-dinitrotoluene isomers mixed with a small amount of isomeric dinitrotoluene impurities, which comprises suspending the impure dinitrotoluene in a liquid consisting essentially of an alkane containing between 5 and 8 carbon atoms and separating the undissolved purified dinitrotoluene from the liquid alkane, whereby the isomeric dinitrotoluene impurities are removed in the alkane extract and a purified dinitrotoluene product containing a reduced amount of isomeric dinitrotoluene impurities and an increased ratio of 2,4- to 2,6-dinitrotoluenes is obtained.

3,949,009
PROCESS FOR PREPARING TRICHLOROETHYLENE

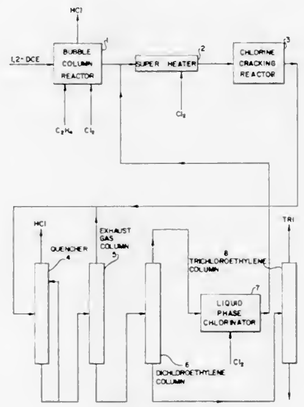
Heinz Rassaerts, Hallenin-Rif, Sbg, Austria; Gerhard Sticken, Lippramsdorf, and Wilhelm Knepper, Marl, both of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Germany

Filed Mar. 26, 1974, Ser. No. 454,786

Claims priority, application Germany, Apr. 4, 1973, 2316723

Int. Cl.² C07C *21/10*

U.S. Cl. 260—654 H **11 Claims**



1. In a process for making trichloroethylene by chlorinating 1,2-dichloroethane in the liquid phase in the presence of ethylene followed by simultaneous chlorination and dehydrochlorination of the liquid phase reaction product, the improvement comprising:

a. chlorinating 1,2-dichloroethane in the liquid phase in the presence of about 1 to 10 moles percent of ethylene relative to chlorine employed with a chlorine feed molar consumption ratio of chlorine to 1,2-dichloroethane of about 0.7 to 1.4 to 1 at temperatures ranging from about 40° to 150° C, a superficial gas velocity in excess of 8 cm/second and gas dwell times of about 0.3 to 10 seconds producing a liquid phase chlorinated product;

b. reacting said liquid phase chlorinated product in the gas phase with recycled tetrachloroethanes and chlorine wherein about 20 – 70 moles of chlorine are reacted with 100 moles of chlorinated hydrocarbons at temperatures of from about 380° to 500° C and the dwell times are about 20 to 30 seconds producing a gas phase chlorinated product;

c. said gas phase chlorinated product is quenched to separate hydrogen chloride and producing a quenched gas phase chlorinated product, said quenched gas phase chlorinated product is separated by distillation into a low boiling point dichloroethylene fraction and a high boiling point trichloroethylene fraction;

d. reacting said dichloroethylene fraction in the liquid phase with equimolar amounts of chlorine at temperatures of from about 60° to 150° C to produce said recycled tetrachloroethanes comprising symmetrical and asymmetrical tetrachloroethanes and recycling said tetrachloroethanes to step (b); and

e. separating by distillation said high boiling point trichloroethylene fraction to produce trichloroethylene product.

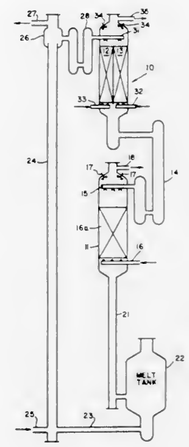
3,949,010
PRODUCTION OF CHLORINATED HYDROCARBONS

Morgan C. Sze, Upper Montclair, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Apr. 8, 1974, Ser. No. 458,654

Int. Cl.² C07C *21/00*

U.S. Cl. 260—654 R **10 Claims**



1. A process for producing a chlorinated hydrocarbon comprising:

contacting in a first reaction zone a hydrocarbon and a member selected from the group consisting of chlorine, hydrogen chloride and mixtures thereof, with a molten salt mixture comprising the higher and lower valent chlorides of a multivalent metal and the oxychloride of the metal; said first reaction zone being operated at a pressure of from 15 to 50 psig;

recovering chlorinated hydrocarbon from the first reaction zone;

passing molten salt from the first reaction zone to a second reaction zone positioned below the first reaction zone; contacting the salt mixture in the second reaction zone with molecular oxygen to generate oxychloride, said second reaction zone being operated at a pressure of at least 50 psig and at least 10 psig greater than the pressure in the first reaction zone; and

passing molten salt mixture from the second reaction zone to the first reaction zone.

3,949,011

METHOD OF PREPARING CYCLOOLEFINES

Viktor Sergeevich Smirnov, Kutuzovsky prospekt, 26, kv. 555; Vladimir Mikahilovich Gryaznov, Moskovsky Gosudarstvenny Universitet, korpus "L", kv. 11; Margarita Meerovna Ermilova, B.Cherkizovskaya ulitsa, 6, korpus 3, kv. 103, and Natalya Vsevolodovna Orekhova, ulitsa M.Ulyanovoi, 9, korpus 1, kv. 95, all of Moscow, U.S.S.R.

Filed July 1, 1974, Ser. No. 484,578

Int. Cl.² C07C *5/16*

U.S. Cl. 260—666 A **10 Claims**

1. Method of selectively hydrogenating a cyclodiene into the corresponding cyclic mono-olefine, which comprises subjecting said cyclodiene to hydrogenation with hydrogen in the presence of a catalyst selected from the group consisting of alloys of 1 to 11 percent by weight ruthenium with the balance palladium and alloys of 1 to 5 percent by weight rhodium with the balance palladium, at temperatures from room temperature to 220°C and at a pressure from 1 to 1.5 atm.

3,949,012

HYDROCARBON UPGRADING PROCESS

Robert M. Suggitt, Wappingers Falls; Walter C. Gates, Jr., Newburgh, and Ralph B. Hudson, Jr., Beacon, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,508

Int. Cl.² C07C *9/00, 5/02*

U.S. Cl. 260—683.9 **18 Claims**

1. A process for converting a mixture of n-paraffin and oxygenated n-paraffin by-products having from 6 to 30 carbon atoms to substantially pure n-paraffin which comprises catalytically hydrogenating said mixture at a temperature of from about 600° to 750°F. in the presence of a catalyst composed of alumina and a Group VIII metal and from about 10 to 5000 parts per million of nitrogen present as ammonia or an organonitrogen compound selected from the group consisting of monoalkylamines, dialkyamines, trialkylamines, nitriles and alkenylpolyamines in said paraffin mixture.

3,949,013

COMPOSITION AND PROCESS

Jin Sun Yoo, Riverdale, and Robert Koncos, Park Forest, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation of Ser. No. 187,116, Oct. 6, 1971, abandoned, which is a continuation of Ser. No. 753,052, Aug. 16, 1968, abandoned. This application Apr. 15, 1974, Ser. No. 460,862

Int. Cl.² C07C *3/21*

U.S. Cl. 260—683.15 D **10 Claims**

1. In a process for polymerizing monoethylenically unsaturated olefins of 2 to about 8 carbon atoms to dimers through tetramers, the improvement which comprises polymerizing said olefin in contact with a solid catalyst which comprises a black amorphous (as determined by X-ray diffraction), solid reaction product of a complex of

A. a nickel compound at last slightly soluble in a solvent wherein the complex of (A) and (B) is formed, and

B. a hydrocarbon phosphine electron donor ligand, with

c. a combination of reducing agent capable of reducing nickel acetylacetonate to an oxidation state of less than 2, and non-protonic Lewis acid capable of forming a coordination bond with nickel; said reactants being combined in a molar ratio of (B) to (A) of about 3 to 10:1 and a molar ratio of (C) to (A) of about 2 to 40:1, said components (C) and (A) being combined to reduce nickel represented by (A) to an oxidation state of less tha 2, and said components (C), (B) and (A) being combined to produce a black amorphous catalyst and an effective polymerization catalyst and the polymerization is conducted in the substantial absence of any organic solvent used in the preparation of the catalyst.

3,949,014

BINDER

Tatsuo Maki, Hirakata; Setsuo Hori, Kyoto; Yuji Sakamoto; Minoru Yoshimoto, both of Hirakata, and Tsuneo Manabe, Takatsuki, all of Japan, assignors to Showa High Polymer Co., Ltd., Japan

Filed Apr. 10, 1974, Ser. No. 459,850

Int. Cl.² C08L *63/00*

U.S. Cl. 260—836 **6 Claims**

1. A binder combination comprising (a) 20 – 99 parts by weight of primary binder of a polyamine-epichlorhydrin resin obtained by reacting epichlorhydrin with a polyamine resin having at least 2 groups selected from the group consisting of primary, secondary, tertiary amino and quaternary ammonium, and at least one of which is primary, secondary or tertiary amino, in an amount of 0.5 – 2.5 equivalents per amino group; and (b) 1 – 80 parts by weight of secondary binder which is an amphoteric, polymeric high molecular weight compound having at least 2 cationic groups, selected from the group consisting of primary, secondary, tertiary amino and quaternary ammonium, at least one of which is primary, secondary or tertiary amino, and at least 2 anionic groups selected from the group consisting of carboxyl and sulfone, said cationic and anionic groups in said amphoteric compound compound being on a single polymer.

3,949,015

INTERNALLY PLASTICIZED POLY(VINYL CHLORIDE)

John J. Laverty, Sterling Heights, and Zachariah G. Gardlund, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 12, 1974, Ser. No. 460,285

Int. Cl.² C08L *27/06, 67/00*

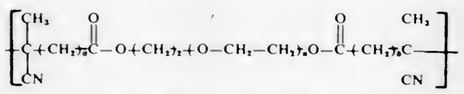
U.S. Cl. 260—873 **5 Claims**

1. A flexible poly(vinyl chloride) molded article comprising by weight,

A. 100 parts of an A-B-A type block copolymer wherein,

a. A is a vinyl polymer segment formed predominantly from vinyl chloride, said segment having an average molecular weight (Mn) in the range of 15,000 to 20,000, and

b. B is described by the general formula:



where *a* and *b* may vary from 2 to 10 and n may vary from 135 to 500, said copolymer having a molecular weight (Mn) in the range of 33,000 to 60,000, and

B. from 5 to 40 parts of a plasticizer.

3,949,016

METHOD FOR COPOLYMERIZING MONOMERS OF DIFFERENT TYPES AND POLYMER BLENDS CONTAIN THE COPOLYMER

Elias Agouri; Philippe Mornet, both of Pau; Claude Parlant, Arthez-de-Bearn, and Jacques Rideau, Pau, all of France, assignors to Societe Nationale des Petroles d'Aquitaine, Courbevoie, France

Division of Ser. No. 342,193, March 16, 1973, Pat. No. 3,851,015, which is a continuation-in-part of Ser. No. 227,265, Feb. 17, 1972, abandoned, which is a continuation-in-part of Ser. No. 851,977, Aug. 18, 1969, abandoned. This application Aug. 22, 1974, Ser. No. 499,537

Int. Cl.² C08L *23/06*

U.S. Cl. 260—876 B **3 Claims**

1. A homogenous plastic composition formed of about 25 to 40% by weight of polymethylmethacrylate, 25 to 40% by weight of high density polyethylene and 50 to 20% by weight of a block copolymer of ethylene with an alkyl methacrylate, containing 10 to 30% by weight of alkyl methacrylate the alkyl of which has 1 to 6 carbon atoms.

3,949,017

PROCESS FOR GRAFTING OF PLASTICS MATERIALS

Elias Agouri; Philippe Mornet, both of Pau; Claude Parlant, Arthez-de-Bearn, and Jacques Rideau, Pau, all of France, assignors to Societe Nationale des Petroles d'Aquitaine, Courbevoie, France

Continuation of Ser. No. 215,423, Jan. 4, 1972, abandoned, which is a continuation of Ser. No. 885,368, Dec. 12, 1969, abandoned. This application Nov. 19, 1973, Ser. No. 417,383

Int. Cl.² C08F *255/02, 255/06, 257/02, 279/00*

U.S. Cl. 260—878 R **12 Claims**

1. An improvement in the process for forming graft copolymers of a polymer and a monomer which is polymerizable by free radicals, in which process the polymer, the monomer, an organometallic compound and a generator of free radicals are combined in an inert liquid medium and under an inert atmosphere, wherein the improvement comprises

a. that the temperature of the components is maintained at −80°C to 60°C at all times during reaction, and

b. that the organometallic compound is combined with the polymer before or at the same time as the organometallic compound is combined with the monomer.

3,949,018

PREPARATION OF POLYOLEFINS WITH PEROXIDE END-GROUPS AND THEIR USE IN THE SYNTHESIS OF BLOCK COPOLYMERS

Elias Agouri; Robert Laputte, and Jacques Rideau, all of Pau, France, assignors to Aquitaine Total Organico, Courvevoie, France

Filed June 12, 1972, Ser. No. 261,966

Claims priority, application France, June 14, 1971, 71.21468

Int. Cl.² C08L *23/00, 4/34, 8/06, 255/00*

U.S. Cl. 260—878 B **36 Claims**

1. A process for preparing polymers containing peroxide end-groups, in which at least one monomer is polymerized, using a co-ordination catalyst formed from an organometallic compound of a metal in columns I or III of the Periodic Table of Elements, linked with a compound of a transition metal in columns IV to VIII of this Table, in the presence of an adjuvant with the formula M(X)p, where M is one of a group consisting of boron and metals in column IIb of the Periodic Table of Elements, p is the valency of M, and X is at least one monovalent organic radical, a hydrogen atom or halogen, the resulting polymer is then treated with a peroxidation agent, without being deactivated, and the polymer with the peroxide groups that forms is collected.

3,949,019

PROCESS FOR THE MANUFACTURE OF GRAFT POLYMERS

Gerhard Zeitler, Hessheim; Heinz Mueller-Tamm, Ludwigshafen, and Friedrich Urban, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Aug. 15, 1974, Ser. No. 497,572

Claims priority, application Germany, Aug. 23, 1973, 2342486

Int. Cl.² C08F *265/04, 255/00;* **C08L** *23/26*

U.S. Cl. 260—878 R **3 Claims**

1. A process for manufacturing homogeneous graft polymers of ethylene copolymers and ethylenically unsaturated carboxylic acids which comprises:

a. mixing granules of an ethylene/vinyl ester, ethylene/acrylate or ethylene/methacrylate copolymer having a diameter of from 1 to 10 mm and from 0.5 to 10% by weight, based on the ethylene copolymer, of an ethylenically unsaturated carboxylic acid containing from 0.002 to 0.5% by weight, based on the ethylene copolymer, of a free-radical polymerization initiator at a temperature of from 20° to 100°C whereby said ethylenically unsaturated carboxylic acid is caused to diffuse into the ethylene copolymer, and

b. passing said mixture to an extruder wherein said mixture is subjected to shear forces at a temperature of from 5° to 100°C above crystallite melting point of the copolymer whereby a homogeneous graft polymer is formed, the heat applied to the mixture extrusion thereof in the form of heat of shear is less than 50% of the total heat necessary.

3,949,020

THERMOPLASTIC BLOCK POLYMERS

Robert T. Prudence, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 3, 1974, Ser. No. 502,592

Int. Cl. C08f *236/04, 297/04, 236/06*

U.S. Cl. 260—879 **7 Claims**

1. A process for the preparation of thermoplastic block polymers by contacting conjugated diolefinic monomers mixed with an amount of divinylbenzene under solution polymerization conditions with a polystyryl lithium catalyst, said amount of divinylbenzene varying from about 2/1 to about 10/1 of divinylbenzene/active lithium ratio, whereby resulting in a thermoplastic block polymer that is non-gel and has the divinylbenzene coupling agent attached to the diolefinic portion of the polymer block.

3,949,021

CROSS-LINKED N-VINYL PYRROLIDONE POLYMER COMPOSITION SUITABLE FOR CONTACT LENSES

Tetsunosuke Kunitomo, Kamakura; Hideki Kenjo, Yokohama; Syoji Nagaoka, Kamakura; Takeshi Yoshioka, Kamakura, and Hiroshi Tanzawa, Kamakura, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Aug. 7, 1974, Ser. No. 495,529
Claims priority, application Japan, Aug. 13, 1973, 48-90005
Int. Cl.² C08L *1/28, 39/06*
U.S. Cl. 260—895 4 Claims

1. A cross-linked N-vinyl pyrrolidone polymer composition suitable for use in contact lenses, which composition has capacity to absorb at least about 60% by weight of water, comprising a polymer of a vinyl monomer consisting essentially of N-vinyl pyrrolidone cross-link polymerized in the presence of water-insoluble polymer dissolved therein and a cross-linking agent having at least two polymerizable unsaturated bonds in its molecule.

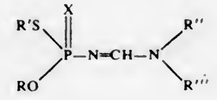
3,949,022

N-[N',N'-DISUBSTITUTED-AMINOMETHYLIDENE]-(THIONO)THIOL-PHOSPHORIC ACID ESTER IMIDES

Hellmut Hoffmann, Wuppertal; Ingeborg Hammann, Cologne, and Günter Unterstenhöfer, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 345,399, March 27, 1973. This application Jan. 21, 1974, Ser. No. 435,055
Claims priority, application Germany, Apr. 6, 1972, 2216552
Int. Cl.² C07F *9/24*; A01N *9/36*
U.S. Cl. 260—943 4 Claims

1. An N-(N',N'-distubstituted aminomethylidene)-(thiono)-thiol phosphoric acid ester imide of the formula



in which

R is alkyl with 1 to 6 carbon atoms.

R' is lower alkylmercapto-lower alkyl or N-alkylcarbamoyl-methyl,

R'' and R''' each independently is ethyl, n-propyl, isopropyl, n-butyl, isobutyl, sec.-butyl, tert.-butyl, n-pentyl, n-hexyl or allyl, and

X is oxygen or sulfur.

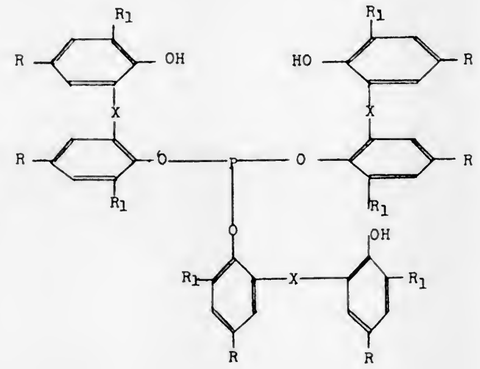
3,949,023

NOVEL OXIMINO-PHOSPHOROTHIOLATE DERIVATIVES

Mitsuru Sasaki; Isao Ohno, both of Minoo; Hisami Takeda, Takarazuka; Takeo Satomi, and Kunio Mukai, both of Amagasaki, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

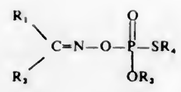
Filed Dec. 6, 1973, Ser. No. 422,388
Claims priority, application Japan, Dec. 8, 1972, 47-123592
Int. Cl.² C07F *9/165*; A01N *9/36*; C07D *317/14, 211/08*
U.S. Cl. 260—944 3 Claims

1. An oximino-phosphorothiolate of the formula,



wherein X is sulfur, R_1 is a C_4–C_{12} alkyl radical wherein the carbon adjacent to the ring is branched, and R is selected from the group consisting of hydrogen and a C_1–C_{12} alkyl radical.

8. A phosphite ester represented by the formula:



wherein R_1 is a C_1–C_4 alkyl group; R_2 is a C_1–C_4 alkyl group; R_3 is a C_1–C_4 alkyl group and R_4 is an alkyl thioalkyl group wherein each alkyl moiety thereof has 1 to 4 carbon atoms or an alkoxy alkyl group wherein the alkoxy moiety and the alkyl moiety thereof have 1 to 4 carbon atoms.

3,949,024

PHOSPHITE ESTERS OF HINDERED BIS AND TRIS PHENOLS

Walter Beck, Bedford, and David Y. Kim, Lowell, both of Mass., assignors to Stepan Chemical Company, Northfield, Ill.

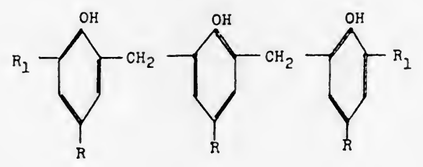
Continuation-in-part of Ser. No. 789,967, Jan. 8, 1969, abandoned. This application Dec. 1, 1971, Ser. No. 203,871
Int. Cl.² C07F *9/145*; C08K *5/53*
U.S. Cl. 260—949 17 Claims

1. A phosphite ester of a hindered bis phenol represented by the formula:

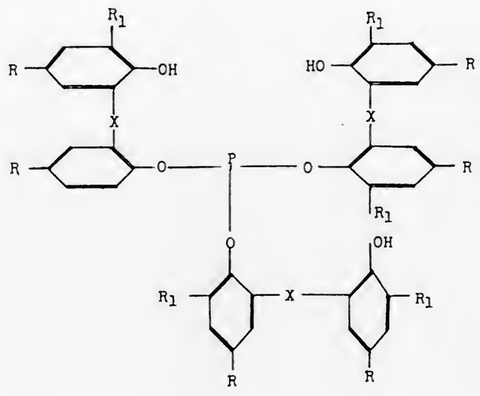
wherein X is sulfur, R_1 is a C_1–C_{12} alkyl radical, a cycloalkyl radical or an alkyl-substituted phenol radical represented by the formula:

where R' is an radical, radica, and *n* is 1, 2, 3 or 4, and R is selected from the group consisting of hydrogen and a C_1–C_{12} alkyl radical.

15. A phosphite ester of a hindered tris phenol, the hindered tris phenol represented by the structural formula:



wherein R_1 is a tertiary butyl radical and R is hydrogen or a C_1–C_{12} alkyl radical, and wherein the phosphorus atom is bonded directly to an oxygen atom of a phenolic hydroxyl group after removal of the hydrogen, all of the bonds of the phosphorus atom being bonded to an oxygen atom of two or three a hindered tris phenols of the above formulation.

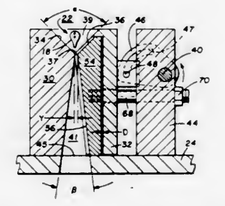


3,949,025

VARIABLE THROAT VENTURI APPARATUS FOR MIXING AND MODULATING LIQUID FUEL AND INTAKE AIR TO AN INTERNAL COMBUSTION ENGINE

Robert Dixon Englert, Corona Del Mar; Kenneth Ronald Armstrong, Lakewood, and Lester Porter Berriman, Irvine, all of Calif., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 4, 1974, Ser. No. 430,808
Int. Cl.² F02M *9/06*
U.S. Cl. 261—62 11 Claims



1. In a liquid fuel and intake air mixing and modulating device for supplying a combustion mixture to an internal combustion engine as a high velocity air stream incurring sonic velocity over most of the operating range of the engine to which it is supplied by efficient kinetic energy conversion of the air stream to static pressure and including a housing; oppositely positioned members within said housing defining by their walls a venturi flow passage intervening therebetween; fuel intake means to receive quantities of liquid fuel to be introduced in a substantially uniform pattern into said passage; and adjustment means operative to vary the flow area of said passage in correlation to operating demands imposed upon the engine, the improvement comprising control means operative to reduce the divergence angle of the venturi diffuser concomitantly with adjustment means variation of said passage toward idle operation for adjustably varying the area ratio between the exit plane of said passage and the throat plane of said passage to within a predetermined range from between less than about 21:1 at idle and greater than about 1.3:1 at wide open throttle.

3,949,026

METHOD OF FABRICATION OF FUEL ELEMENTS FOR NUCLEAR REACTORS

Jacques Devillard, St. Ismier, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Continuation-in-part of Ser. No. 352,732, April 19, 1973, abandoned. This application Oct. 24, 1973, Ser. No. 410,003
Claims priority, application France, Apr. 25, 1972, 72.14642
Int. Cl.² G21C *21/00*
U.S. Cl. 264—.5 8 Claims

1. A method for making a fuel element assembly comprising a graphite jacket containing fissle material for a high temperature nuclear reactor comprising

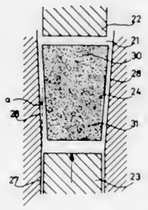
moulding a jacket by placing at atmospheric pressure without application of pressure a dry mixture of graphite and a powdered thermosetting resin in a mould and heating said mixture to thermoset said resin so that it holds the mass of thermoset resin and graphite together, said thermosetting resin being selected from the group consisting of urea formaldehyde, epoxides, melamine formaldehyde, polyurethanes, phenol-formaldehyde, and polyesters,

coking said moulded jacket of thermoset resin and graphite to form a porous jacket,

filling said coked moulded jacket with a mixture of particles of fissile material and graphite to obtain the said fuel element assembly, and

closing said assembly and impregnating said closed assembly with a gaseous hydrocarbon at elevated temperature to deposite pyrolytic carbon in the pores of said jacket.

3,949,027
MANUFACTURING PROCESS FOR IMPROVED NUCLEAR FUEL TABLETS
Alfred-Jean Flipot, Geel, and Armand Smolders, Olmen, both of Belgium, assignors to Belgonucleaire, Brussels, Belgium and Centre d'Etude de l'Energie Nucleaire, both of Brussels, Belgium
Filed Mar. 7, 1973, Ser. No. 338,850
Claims priority, application Belgium, Mar. 24, 1972, 115513
Int. Cl.² G21C *21/00*
U.S. Cl. 264—.5 **3 Claims**



1. A process for the compaction of a ceramic nuclear fuel pellet in a compaction chamber comprising an upper fixed punch and a lower movable punch surrounded by a stationary vertically extending lateral wall by compressing the pellet therein, wherein compression is effected by shifting the movable punch towards the fixed punch, and wherein the lateral wall is inclined outwardly toward the direction of the fixed punch for at least a part of the distance between the fixed and movable punches wherein the angle between the inclined wall and an imaginary line where a noninclined wall would have been is between 1°30′ and 0°6′.

3,949,028
METHOD OF MAKING CELLULAR POLYMERIC SHAPED ARTICLES HAVING RELIEF PATTERNS
Shinji Murakami, Kyoto, and Kazuo Okuse, Uji, both of Japan, assignors to Eiwa Chemical Industrial Co., Ltd., Tokyo, Japan
Filed Oct. 23, 1974, Ser. No. 517,314
Int. Cl.² B29D *27/00*
U.S. Cl. 264—22 **6 Claims**

1. A method of making cellular polymeric shaped articles having a relief pattern on their surfaces comprising forming thermoplastic polymer composition containing 0.2 to 20 parts by weight of azodicarbonamide per 100 parts by weight of the polymer into a desired shape, printing a pattern on the surface of the shaped body, irradiating the printed shaped body with light rays of wave lengths 100 to 500 mμ for 1 to 60 minutes and heating the irradiated body to effect expansion of the composition in the non-irradiated areas.

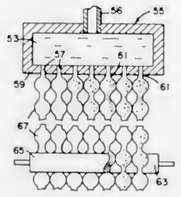
3,949,029
PRODUCTION OF POROUS SHAPED INORGANIC STRUCTURES USING GAS-LADEN MOLECULAR SIEVE ZEOLITES
Günter Ulisch, Leverkusen-Kuppersteg, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed June 24, 1974, Ser. No. 482,129
Claims priority, application Germany, July 5, 1973, 2334224
Int. Cl.² C04B *11/00;* **B29H** *7/20*
U.S. Cl. 264—42 **4 Claims**

1. In the production of a porous shaped inorganic structure where an aqueous suspension of inorganic solids in a liquid is mixed with a gas-generating compound and the suspension is poured into a mold, the improvement which comprises employing as said gas-generating compound about 0.5 to 10% by weight of the total solids of a molecular sieve zeolite laden with a gas, whereby said zeolite under the action of the water gives off the gas with which it is laden and thereby forms the pores of the structure.

3,949,030
METHOD FOR PRODUCTION OF CELLULAR FUSED SILICA
Yorihiro Murata, North Tonawanda, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.
Continuation-in-part of Ser. No. 288,846, Sept. 13, 1972, abandoned, which is a division of Ser. No. 137,627, April 26, 1971, abandoned. This application July 12, 1974, Ser. No. 487,952
Int. Cl.² B29H *7/20*
U.S. Cl. 264—43 **10 Claims**

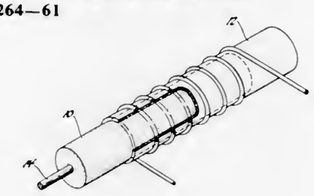
1. A method of making a cellular fused body consisting essentially of silica which comprises:
1. forming a substantially homogeneous mixture of finely divided silica and from about 0.1% to about 10% of finely divided boron oxynitride, said finely divided silica having a maximum particle size less than about 200 microns and a mean particle size less than about 10 microns; and said finely divided boron oxynitride having a maximum particle size less than about 300 microns and a mean particle size less than about 15 microns;
2. heating said mixture to a temperature of at least the melting point of said silica whereby the silica melts and the boron oxynitride decomposes to produce gas which forms primary and secondary closed cells within the molten silica, said primary closed cells defined by a matrix consisting essentially of said silica, said matrix containing said secondary closed cells, said secondary cells being at least an order of magnitude smaller than said primary cells; and
3. cooling the bimodal cellulated mass to form a rigid body.

3,949,031
METHOD FOR MAKING CELLULAR ARTICLES
Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Continuation-in-part of Ser. No. 65,158, Aug. 19, 1970, abandoned, which is a division of Ser. No. 743,683, July 10, 1968, Pat. No. 3,607,596. This application Aug. 9, 1973, Ser. No. 387,022
Int. Cl.² B29C *23/00;* **B29D** *27/02;* **B29F** *3/00*
U.S. Cl. 264—51 **9 Claims**



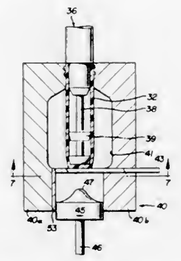
1. A method which includes the steps of extruding a plurality of spaced, continuous generally parallel streams of flowable strand-forming, organic, thermoplastic polymeric material, periodically expanding each of the spaced, extruded streams concomitantly with the continuous extrusion thereof and while the strand-forming material thereof is in a flowable condition to provide at spaced intervals along the length of each such stream bulbous portions which, during the formation thereof, contact and bond with streams which are adjacent thereto, and setting the extruded strand-forming material to solidify the streams into an integral structure.

3,949,032
TEMPERATURE STABLE FERRITE FM TUNING CORE
Arthur M. Hossenlopp, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 381,180, July 20, 1973, abandoned. This application May 8, 1974, Ser. No. 467,930
Int. Cl.² C04B *35/26*
U.S. Cl. 264—61 **1 Claim**



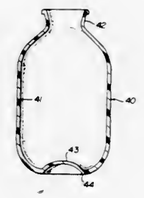
1. A method of producing a nickel-zinc ferrite FM tuning core which is electronically and physically interchangeable with a powdered iron FM tuning core yet which has a substantially lower temperature coefficient of permeability than the powdered iron core, it being less than approximately 0.00364% per degree Fahrenheit over the temperature range between −36°F and +186°F, said method comprising the steps of:
blending together 65–70 mol percent ferric oxide, 25–30 mol percent nickel oxide, and 4.5–5.5 mol percent zinc oxide to form a mixture;
compressing said mixture at a pressure between 10,000–20,000 psi into a solid, elongated body;
heating said body at a rate of 5°–15°F per minute over a time period of 3–5 hours to a maximum temperature of about 2000°–2100°F;
immediately stopping any further heating upon reaching said maximum temperature;
slowly cooling said body at a rate of about 1.5°–2.0°F per minute to a temperature below about 400°F, and
further cooling said body in room air to ambient temperature.

3,949,033
METHOD OF MAKING A BLOWN PLASTIC CONTAINER HAVING A MULTI-AXIALLY STRETCH ORIENTED CONCAVE BOTTOM
Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Nov. 2, 1973, Ser. No. 412,161
Int. Cl.² B29C *17/07*
U.S. Cl. 264—89 **6 Claims**



1. In a method of making a blown thermoplastic article having a multi-axially stretch oriented concave bottom of improved strength, from an axially elongated blowable thermoplastic preform; the steps of enclosing said preform in a blow mold defining an interior cavity conforming to the article but having one open side at a location corresponding to the bottom of the article, closing the open side of the mold cavity with a first movable element having a substantially flat surface exposed to the cavity, blowing said preform to the shape of said cavity with one portion of said preform being blown and formed against said flat surface of said first movable element, removing said first element from said open side of said mold cavity, replacing said first element with a second different movable element of different configuration closing the open side of the cavity and having a convex surface exposed to the cavity, and reforming and stretching said one portion of said blown preform to the configuration of the concave bottom of said final article by joint displacement of said second element and the one blown preform portion into said cavity, said step of reforming and stretching being carried out while said preform portion is at a temperature conducive to stretch orientation.

3,949,034
METHOD OF MAKING BLOWN PLASTIC CONTAINERS
Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Division of Ser. No. 225,449, Feb. 11, 1972, Pat. No. 3,843,005. This application Jan. 30, 1974, Ser. No. 438,080
Int. Cl.² B29C *17/07*
U.S. Cl. 264—89 **2 Claims**



1. In a method of making a blown plastic container or the like, the steps of enclosing a thermoplastic parison in a preform blow mold cavity which includes a peripheral groove in the region corresponding to an end portion of the parison, blow molding the parison interriorly of the blow mold cavity to a pre-form configuration including a convex end circumscribed by a peripheral rib formed by the cavity groove, transferring the pre-form to final blow mold cavity having telescopically movable mold sections, telescopically moving the mold sections to (1) to deform the convex pre-form end to a concave configuration and(2) collapse the rib upon itself beneath the level of the deforming pre-form end, and then blowing the pre-form interiorly of the telescopically moved mold sections to form the blown plastic container.

3,949,035
METHOD OF FORMING A LIGHTWEIGHT AIRLAID WEB OF WOOD FIBERS
Charles E. Dunning, Neenah, and Stanley R. Kellenberger, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Continuation of Ser. No. 145,546, May 20, 1971, and a continuation of Ser. No. 783,877, Dec. 16, 1968, abandoned, and a continuation of Ser. No. 882,257, Dec. 4, 1969, Pat. No. 3,692,622, which is a continuation of Ser. No. 783,877, Dec. 16, 1968, abandoned, and a continuation of Ser. No. 145,452, May 20, 1971, abandoned, which is a continuation of Ser. No. 384,705, Aug. 1, 1973, Pat. No. 3,825,381. This application Sept. 10, 1973, Ser. No. 396,112
Int. Cl.² B29C *17/04*
U.S. Cl. 264—90 **21 Claims**

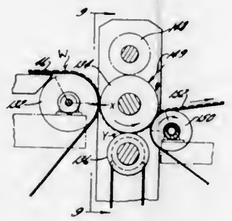
1. A high speed method for production of a continuous airlaid web of wood pulp fibers of a basis weight in the range of about 5–50 lbs. per 2880 ft.² and having a three-dimensional continuum interrupted by a pattern of compacted hydrogen bonded areas, wherein a continuum of such fibers is

transferrable from an airlaying screen to a moving transfer surface at transfer surface speeds in exeecss of 1000 feet per minute, which method comprises:

a. air laying wood pulp fibers on a moving screen to form a three-dimensional continuum within said range of basis weight;

b. applying sufficient water to the outer surface of the continuum which is away from the screen such that between about twenty per cent to about sixty per cent by weight of the wetted continuum is water, free water remains on said outer surface of the continuum and the relative amount of water in the continuum decreases from said outer surface of the continuum to the other surface adjacent the screen so that said other surface is relatively dry in comparison to said outer surface,

c. removing the wetted continuum from the screen by contacting said outer surface of the continuum with a rotating transfer roll presenting a moving transfer surface moving at a surface speed faster than the speed of the screen and separated from the screen by a gap no greater



than about ½ inch at the closest point and thereafter diverging from the screen, said wetted continuum having sufficient free water therein from step (b) so that coherency is imparted, and on said outer surface so that the outer surface adheres to the transfer surface and the relatively dry other surface strips from the screen and the rotating transfer roll draws the continuum across the gap and away from the screen, and

d. bonding the continuum by maintaining the wetted continuum in contact with the surface of the rotating transfer roll and passing the wetted continuum through a nip formed between the rotating transfer roll and a heated rotating bonding roll having a patterned surface, with said bonding roll being held against the transfer roll to provide a temperature and pressure in spaced areas determined by the surface pattern sufficient to compress and hydrogen bond fibers in such areas and provide a self-sustaining web consisting of a three-dimensional continuum of substantially unbonded fibers interrupted by hydrogen bonded areas.

3,949,036

STABLE BLOCKS FORMED OF SHREDDED PAPER-LIKE MATERIAL

Gerald B. Nelson, San Diego, Calif., assignor to Papakube Corporation, San Diego, Calif.

Filed July 26, 1973, Ser. No. 382,817

Int. Cl.² B29J *5/04*

U.S. Cl. 264—109 **20 Claims**

1. A method of making stable blocks from paper comprising:

providing a plurality of moist paper fragments;

compacting the moist paper fragments in the plurality;

dividing into compact groups the compacted and moist paper fragments in the plurality;

roughening the compacted and moist paper fragments in each compact group at the periphery of each such compact group;

compressing the moist and compacted paper fragments in each compact group to form said compact groups of moist and compacted paper fragments into stable blocks.

3,949,037

METHOD OF MAKING A SIMULATED BRICK HAVING A CONFIGURED UNDERCUT FACE AND A REVERSE SURFACE HAVING A SHARP UPSTANDING PERIPHERAL EDGE

Stanley C. Volent, West Boylston, Mass., assignor to Dacor, Incorporated, Worcester, Mass.

Continuation-in-part of Ser. No. 288,681, Sept. 14, 1972, abandoned, which is a continuation of Ser. No. 83,947, Oct. 26, 1970, abandoned, which is a division of Ser. No. 816,162, April 6, 1969, Pat. No. 3,555,757, which is a continuation of Ser. No. 663,648, Aug. 28, 1967, abandoned. This application July 1, 1974, Ser. No. 484,667

Int. Cl.² B29D *9/08*

U.S. Cl. 264—129 **1 Claim**



1. A method for forming a simulated brick having a configured undercut surface comprising the steps of:

a. forming an open-cavity mold of polyvinyl chloride,

b. filling each cavity with a polyester plastic in a liquid condition,

c. passing a rigid, sharp blade over the mold to compress it substantially and carry away sufficient plastic so that less plastic than normal capacity of each cavity remains behind, and

d. permitting the mold to return to its normal condition, so that the general level of the plastic in each cavity is below the upper edge of the cavity, but the plastic around the edges of each cavity is held by surface tension at the said upper edge to form a flange curving from a sharp edge to the said general level of the plastic, at least partially curing said polyester plastic to form a simulated brick, removing said brick from said mold, the rubber-like nature of the mold material permitting the simulated brick to be withdrawn from the mold despite the configured surface,

e. depositing a layer of mastic against a side of said simulated brick opposite said configured undercut surface thereof and in a cavity formed by said side and said flange and leveling said mastic.

3,949,038

BLOWN THERMOPLASTIC BOTTLE AND METHOD FOR MAKING SAME

Charles Edmund McChesney, Monmouth Junction; Robert J. McHenry, Belle Mead, and James Alan Wachtel, Princeton, all of N.J., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 248,495, April 28, 1972. This application Aug. 1, 1973, Ser. No. 384,707

Int. Cl.² B29C *17/07, 23/00;* **B29D** *23/03;* **C08L** *9/02*

U.S. Cl. 264—89 **6 Claims**

1. A method for improving the resistance to creep strain in a container made from a thermoplastic polymeric material comprising a polymer containing moieties derived from a conjugated diene monomer and a polymer containing moieties derived from an alpha, beta-olefinically unsaturated mononitrile having the structure

$$CH_2=\underset{R}{\underset{|}{C}}-CN$$

where R is selected from the group consisting of hydrogen, an alkyl group having from 1 to 4 carbon atoms, and a halogen, said method comprising the steps of forming a parison from said thermoplastic polymeric material, temperature conditioning the parison to bring the thermoplastic polymeric material to within the orientation temperature range wherein the polymeric material is in a leathery state, blow molding the temperature conditioned parison in a mold cavity to form the parison into the desired container shape and to stretch the polymeric material to molecularly orient at least the sidewall of the container to an orientation release stress between 500 and 2500 p.s.i., and removing the oriented container from the mold cavity.

3,949,039

METHOD FOR PELLETIZING SYNTHETIC RESINS HAVING A HIGH MELTING POINT

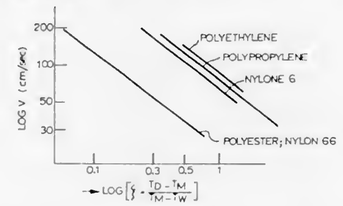
Michiaki Yamamoto, and Tsutomu Hashimoto, both of Hiroshima, Japan, assignors to Japan Steel Works, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 331,875, Feb. 12, 1973, abandoned. This application Nov. 8, 1974, Ser. No. 522,266

Claims priority, application Japan, Apr. 3, 1972, 47-32598

Int. Cl.² B29B *1/03*

U.S. Cl. 264—142 **2 Claims**



1. A method for pelletizing synthetic resins having high melting points, comprising the steps of:

extruding said resins under water through nozzles of a die, each nozzle having a constant diameter of at least 3 mm, said resins being extruded at a velocity of at least 1 m/sec., said water temperature being between 80° and 90°C.; and

cutting said extruded resins into pellets under the water in front of the exits of said nozzles.

3,949,040

METHOD OF MAKING FOOTWEAR HAVING A TWO-COLOR RUBBER SOLE

Edward H. Drab, Naugatuck, Conn., assignor to Uniroyal Inc., New York, N.Y.

Continuation of Ser. No. 863,652, Oct. 3, 1969, abandoned. This application Apr. 25, 1974, Ser. No. 464,264

Int. Cl.² B29H *7/08*

U.S. Cl. 264—161 **4 Claims**

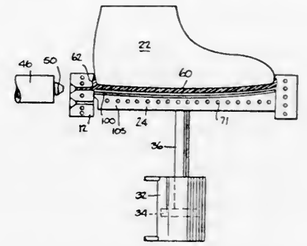
1. In a method of molding rubber onto an article, the steps of:

placing unvulcanized rubber in a mold cavity defined on the one hand by said article and on the other hand by closed side wall means having an adjunct thereof in engagement with said article and by a movable mold member located within the confines of said side wall means opposite said article, said movable mold member having a peripheral lip in sliding contact with said side wall means in the closed condition of the latter and further having a continuous peripherally disposed groove adjacent said lip to the side thereof facing in the direction away from said article;

advancing said movable mold member within said side wall means in the closed condition of the latter toward said article until the rubber is spread against said article, and until rubber escaping between said lip and said side wall means at least partially fills the space defined by said groove so as to define a circumferentially extending bead;

permitting said rubber to at least partially set and become vulcanized to said article with the portion between said lip and said side wall means forming a peripherally extending weakened region connecting the rubber in said cavity and the bead-constituting rubber in said groove;

retracting said movable mold member in said direction away from said article while maintaining said side wall means in the closed condition thereof, said side wall means coacting with said movable mold member during such retracting movement of the latter to positively confine said bead located in said groove against escape from said groove, thereby positively entraining said bead into movement with said movable mold member so as to tear said bead cleanly from the remainder of said rubber along said weakened region;



thereafter, with said bead having been retained in said groove while said movable mold member was being retracted, introducing additional rubber into said cavity after retraction of said movable mold member;

again advancing said movable mold member toward said article with said side wall means still in the closed condition thereof until said additional rubber is spread against the first-named rubber vulcanized to said article; and

permitting said additional rubber to set and become vulcanized to said first-named rubber vulcanized to said article;

said bead serving as a flash-limiting sealing member during the entire second molding operation.

3,949,041

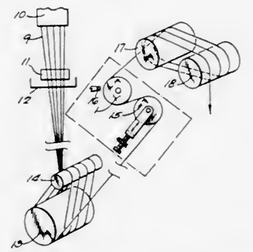
METHOD FOR TEXTURING SYNTHETIC FILAMENT YARN

Eckhard C. A. Schwarz, 115 N. Park Ave., Neenah, Wis. 54956

Filed Jan. 17, 1974, Ser. No. 434,314

Int. Cl.² D01D *5/22*

U.S. Cl. 264—168 **5 Claims**



1. A method of forming latent crimps in synthetic thermoplastic condensation polymer filaments, such as polyethylene terephthalate or polyhexamethylene adipamide, comprising the steps of:

A. heating discrete spaced zones on one side of molecularly orientable filaments, having a tensile elongation at break of at least 30% to a temperature from about 150 to about 310° C for a time in seconds which is equal to X times denier per filament, where X is a value which falls within the range of 0.002 to 0.00002, and wherein the centers of said zones are spaced from 2 to 50 times the filament thickness, said heating of said zones being affected by guiding the filaments about a rotating grooved heated roll having circumferentially spaced lands generally parallel to the roll axes with the lands spaced 2 to 50 times the thickness of the filament;

B. Subsequently subjecting said filaments to molecular orientation by drawing them to a draw ratio of at least 1.10 by guiding the filaments at a first velocity rate over the grooved roll and drawing the filament away from the grooved roll at a faster second rate.

3,949,042

METHOD AND APPARATUS FOR MAKING LAMINAR PLASTIC SHEET MATERIAL

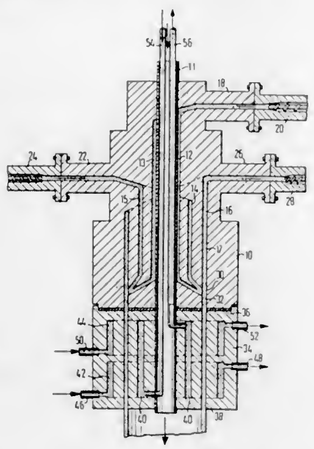
Kastulus Utz, Freising, Germany, assignor to Multifol Patentverwertungs AG, Chur, Switzerland

Continuation-in-part of Ser. No. 254,971, May 19, 1972, abandoned, which is a continuation of Ser. No. 35,841, May 8, 1970. This application Mar. 20, 1974, Ser. No. 452,849

Claims priority, application Germany, May 9, 1969, 1923852

Int. Cl.² B29D *7/24*; **B32B** *27/34*

U.S. Cl. 264—173 **5 Claims**



1. A method of preparing a laminar plastic material which comprises:

a. continuously and simultaneously moving a first elongated web of a first synthetic resin composition, a second elongated web of a second synthetic resin composition, and a third elongated web of a third synthetic resin composition in the direction of elongation thereof to a first zone and thence through a second zone to a third zone,

1. each web having two opposite longitudinal faces,

2. said second composition having a higher melting temperature than the melting temperatures of said first and third compositions,

3. said second composition being capable of being oriented when said second web is stretched longitudinally while in the solid state;

b. superimposing respective longitudinal faces of said first and third webs in said first zone on the longitudinal faces of said second web under a pressure sufficient to combine said webs into a coherent layered structure,

1. said first zone being at a first temperature higher than the melting temperature of said second composition,

2. said structure being moved from said first zone to said second zone at a first linear speed, and being confined in each of said first and second zones under said sufficient pressure;

c. cooling said structure during movement through said second zone from said first temperature to a second temperature lower than the melting temperature of said second composition, but higher than the melting temperatures of said first and third compositions,

1. the rate of movement of said structure through said second zone being slow enough to cause solidification of said second composition in said second zone;

d. applying frictional braking force to said first and third webs in said second zone and transmitting said braking force from said first and third webs to said second web in said second zone;

e. cooling said structure in said third zone below the melting temperature of said first and third compositions;

f. applying longitudinal tension to said cooled structure in said third zone at a rate sufficient to move said structure from said second into said third zone at a second speed substantially greater than said first speed,

1. said braking force being sufficient to prevent failure of said second web in said second zone under the tension applied in said third zone, while permitting stretching of said structure during movement thereof from said second to said third zone under said applied tension, thereby orienting said second composition.

3,949,043

MANUFACTURE OF MONOFILAMENTS

Guenter Jauer, Mannheim; Guenter Boenecke, Ludwigshafen; Wolfgang Schaefer, Neustadt, and Jacobo Zarate, Hochdorf-Assenheim, all of Germany, assignors to BASF Farben & Fasern AG, Ludwigshafen (Rhine), Germany

Filed Aug. 14, 1974, Ser. No. 497,327

Claims priority, application Germany, Sept. 7, 1973, 2345125

Int. Cl.² D01D *5/08*

U.S. Cl. 264—178 F **7 Claims**

1. An improved process for the manufacture of virtually bubble-free monofilaments of polyhexamethylene adipamide having a thickness of more than 0.5 mm, the improvement consisting in that polyhexamethylene adipamide containing from 0.05 to 2% by weight of polystyrene finely dispersed therein is passed in the molten state through a sand filter having a particle size between 100 and 1,500 μm and immediately thereafter is melt-spun at a temperature of from 260° to 350°C into a cooling bath, followed by drawing at a draw ratio of 1:4 to 1:5.5.

3,949,044

PROCESS FOR FORMING DECORATED SHEETS OF ACRYLIC RESIN

Adelchi Varini, Piazzale Stazione 6, Padova, Italy

Filed June 13, 1973, Ser. No. 369,591

Claims priority, application Italy, Oct. 24, 1972, 41684/72

Int. Cl.² B29C *9/00*

U.S. Cl. 264—245 **3 Claims**

1. A process for forming decorated sheets of acrylic resin comprising the steps of applying to at least one of the inner faces of a cell used for forming the sheet a colored paint reproducing the desired inscriptions or decorations, filling the cell with an acrylic prepolymer mixed with a catalyst, partially carrying out polymerization in a temperature controlled environment to effect incorporation of the colored paint layer in the sheet, interrupting the polymerization process after completion of the process of incorporation of the layer of colored paint in the sheet, extracting the sheet while the sheet is still ductile, placing the sheet in a second cell of greater internal dimensions than the first cell with the portion of the sheet which carries the colored paint exposed, filling the interspace between the inner wall of this second cell and the sheet with the same acrylic prepolymer as used previously and finishing the polymerization process by introducing the second cell into a temperature controlled environment.

3,949,045

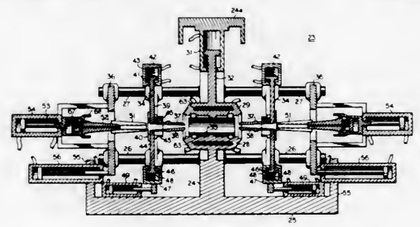
EXTRUDED PIPE COUPLING AND METHOD AND APPARATUS FOR FORMING

William L. Hess, 1327 Plaza De Sonadores, Santa Barbara, Calif. 93108, and Michael B. Steffora, 1507 Live Oak Lane, Santa Barbara, Calif. 93105

Filed Feb. 22, 1974, Ser. No. 444,745

Int. Cl.² B29C *17/00*; **B29D** *23/00*

U.S. Cl. 264—296 **4 Claims**



1. The method of simultaneously forming a pair of back-to-back bells from a single piece of extruded pipe stock to thereby form a coupling, comprising:

a. heating to plasticity an entire section of extruded thermoplastic pipe stock;

b. enclosing the exterior of the entire pipe section in a mold having the shape of the finished coupling bells;

c. simultaneously expanding two end portions of said stock by separating split mandrel elements inserted in both ends of said stock; and

d. simultaneously thickening portions of said stock adjacent two ends thereof by axially compressing the entire section of pipe stock while confining it between said mold and said mandrel elements; thereby forming a coupling having a pair of bells opening outwardly on each end.

3,949,046

METHOD OF MANUFACTURING PLASTIC CONTAINERS

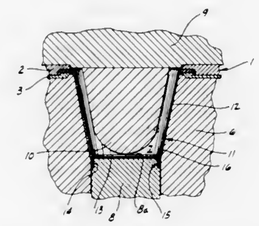
Brian Procter, Stroud, England, assignor to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed May 8, 1974, Ser. No. 468,072

Claims priority, application United Kingdom, June 5, 1973, 26885/73

Int. Cl.² B29C *17/04*

U.S. Cl. 264—296 **1 Claim**



1. The method of making a plastic container with a raised bottom, comprising molding the container with a body and a bottom integral with the body at the bottom edge of the latter, and displacing the bottom inwardly within the body to a raised position relative to the bottom edge of the body, and, in conjunction with said displacement, forming an inwardly folded flange integral with the bottom and the body joining the bottom edge of the body and the periphery of the raised bottom, and pressing said flange laterally outwardly against the surrounding lower portion of said body, sealing the flange to said lower portion via the combined action of friction caused by relative axial movement and by lateral pressure during said displacement, and causing flow of excess plastic to form a bead extending inwardly from the body of the container overlying the margin of said raised bottom.

3,949,047

METHOD OF PRECIPITATING RADIUM TO YIELD HIGH PURITY CALCIUM SULFATE FROM PHOSPHATE ORES

Egon Cherdron, Limburgerhof, Pfalz; Hans-Joachim Förster, Schwetzingen, and Istvan Potencsik, Mannheim, all of Germany, assignors to Gebr. Giulini GmbH, Ludwigshafen, Germany

Filed Apr. 12, 1973, Ser. No. 350,476

Claims priority, application Germany, Apr. 15, 1972, 2218382

Int. Cl. C01f *13/00*, *11/46*

U.S. Cl. 423—2 **17 Claims**

1. In the production of phosphoric acid by the digestion of calcium-containing phosphate ore with phosphoric acid thereby producing a mono-calcium phosphate/phosphoric acid solution and the mono-calcium phosphate in said solution is reacted with sulfuric acid with the formation of phosphoric acid and a precipitate of calcium sulfate, the improvement which comprises treating the mono-calcium phosphate-containing solution with at least one soluble barium compound in the presence of sulfate ions to precipitate therefrom contaminant radium ions which would otherwise be precipitated with said calcium sulfate, removing the resulting precipitate while retaining the mono-calcium phosphate in solution and thereafter adding sulfuric acid to the thus-purified solution to produce phosphoric acid and a precipitate of high-purity calcium sulfate.

3,949,048

SEPARATION BY SOLVENT EXTRACTION

Charles H. Holt, Jr., Kennewick, Wash., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

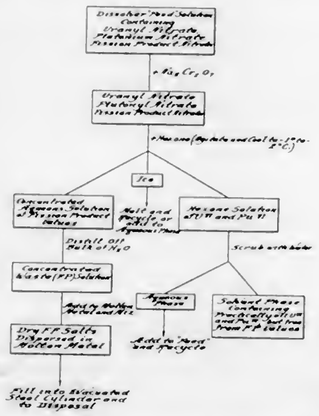
Filed July 24, 1950, Ser. No. 175,543

Int. Cl.² B01D *11/04*

U.S. Cl. 423—8 **20 Claims**

17. A process for separating fission product values from uranium and plutonium values contained in an aqueous solution, comprising adding an oxidizing agent to said solution to secure uranium and plutonium in their hexavalent state; contacting said aqueous solution with a substantially water-immiscible organic solvent while agitating and maintaining the temperature at from −1° to −2° C. until the major part of the water present is frozen; continuously separating a solid ice phase as it is formed; separating a remaining aqueous liquid phase containing fission product values and a solvent phase containing plutonium and uranium values from each other; melting at

least the last obtained part of said ice phase and adding it to said separated liquid phase; and treating the resulting liquid



with a new supply of solvent whereby it is practically depleted of uranium, and plutonium.

3,949,049

METHOD OF STRIPPING PLUTONIUM FROM TRIBUTYL PHOSPHATE SOLUTION WHICH CONTAINS DIBUTYL PHOSPHATE-PLUTONIUM STABLE COMPLEXES

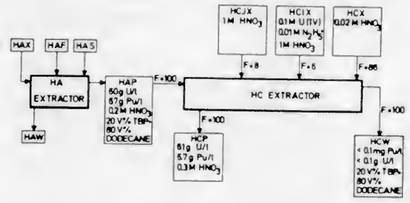
Wilhelm Ochsenfeld, and Helmut Schmieder, both of Karlsruhe, Germany, assignors to Gesellschaft fur Kernforschung m.b.H., Karlsruhe, Germany

Continuation of Ser. No. 806,976, March 13, 1969, abandoned. This application Mar. 10, 1972, Ser. No. 233,822

Claims priority, application Germany, Mar. 13, 1968, 16 7843

Int. Cl. B01d *11/04*; **C22b** *61/04*

U.S. Cl. 423—10 **6 Claims**



1. A method of reprocessing highly irradiated nuclear fuel elements having a burnup of at least 30,000 MWd/t and containing plutonium and fission products, comprising the steps of contacting a first solution containing said plutonium and fission products with an organic solution of tributyl phosphate as extracting agent to extract at least 5 g/l of tetravalent plutonium into said organic solution, said organic solution receiving an irradiation dose of at least 0.85 Wh/l which converts part of the tributyl phosphate to dibutyl phosphate whereupon said dibutyl phosphate forms stable complexes with the tetravalent plutonium, and, following the step of extracting, stripping the plutonium into an aqueous solution by contacting said organic solution with an aqueous tetravalent uranium solution to reduce the tetravalent tolutonium to trivalent plutonium, and to set free the plutonium from its complexed state with said dibutyl phosphate.

2. A method as claimed in claim 1, wherein at least 99.6% of the plutonium is stripped into the aqueous solution in the step of stripping.

3,949,050

METHOD OF ABSORBING UF_6 FROM GASEOUS MIXTURES IN ALKAMINE ABSORBENTS

Robert H. Lafferty; Seymour H. Smiley, both of Oak Ridge, Tenn., and Kenneth J. Radimer, Little Falls, N.J., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Sept. 20, 1948, Ser. No. 50,242

Int. Cl.² C01G *43/06*

U.S. Cl. 423—11 **10 Claims**

1. A method of recovering UF_6 from gaseous mixtures which comprises absorbing said UF_6 in a liquid composition at least one of the components of which is an alkamine having less than three carbon atoms bonded to the same amino-nitrogen thereof, less than two of the carbon atoms other than those bonded to the amino nitrogen of said alkamine being free of the hydroxy radical.

3,949,051

HYDROMETALLURGICAL PROCESS FOR EXTRACTING COPPER FROM CHALCOPYRITE OR BORNITE CONCENTRATES

Franz Pawlek, Viktoriastrasse 14, 1000 Berlin 45, Germany

Filed Jan. 7, 1974, Ser. No. 431,159

Claims priority, application Austria, Feb. 21, 1973, 151673

Int. Cl.² C01G *3/10*

U.S. Cl. 423—28 **5 Claims**

1. A process for the extraction of copper from copper containing minerals such as chalcopyrite and bornite comprising the steps of: comminuting the concentrate, having a particle size of at least 40 μm, in a conventional attrition grinder and in the presence of a liquid dispersing agent, selected from the class consisting of ammonium hydroxide, potassium hydroxide and sodium hydroxide for a period of time ranging from about 5 to 15 minutes so as to form a pulp having particles the size of which range from 3 μm to substantially less than 3 μm, and leaching said pulp in the presence of a silver catalyst and oxygen gas at a pressure of approximately 1 kg/sq.cm. at a temperature of approximately 110°C. and for a period of time of from about 15 minutes to about 30 minutes wherein more than 90 per cent of the copper is brought into solution.

3,949,052

PROCESS FOR THE TREATMENT OF CARBURIZING SALT WASTES

Wolfgang Müller, Mannheim-Rheinau, and Lothar Witzke, Bruhl, both of Germany, assignors to Th. Goldschmidt AG, Germany

Division of Ser. No. 537,448, Dec. 30, 1974. This application Mar. 28, 1975, Ser. No. 563,255

Claims priority, application Germany, Jan. 4, 1974, 2400318

Int. Cl.² C01F *1/00*

U.S. Cl. 423—155 **2 Claims**

1. A process for the treatment of the reaction mass produced by igniting a dry mixture of barium-containing nitrite-/nitrate-bearing carburizing salt wastes and cyanide-/cyanate-bearing wastes at temperatures above about 150°C,

comprising suspending the reaction mass in water to obtain a suspension containing sodium chloride, alkali carbonate including sodium carbonate, and alkali-nitrite/nitrate as dissolved constituents, and barium carbonate as an undissolved constituent, freeing the alkaline suspension obtained from barium carbonate by filtration, neutralizing the filtrate with concentrated nitric acid to a pH value of 7.2 to precipitate sodium bicarbonate, the feed velocity of the acid and conditions of agitation being so selected that the pH value of the suspension will at no time fall below pH 7.2, separating the sodium bicarbonate, concentrating the clear solution obtained to a water content of 10–20% by weight to precipitate sodium chloride, separating the sodium chloride, and evaporating the residual solution to dryness.

3,949,053

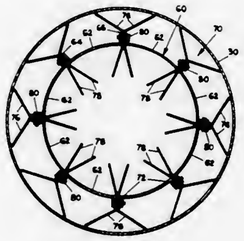
INCINERATION OF COMBUSTIBLE MATERIALS WITH LIQUID FUEL

Charles B. Gentry, Grand Rapids, and William A. Phillips, Comstock Park, both of Mich., assignors to Granco Equipment, Inc., Grand Rapids, Mich.

Filed Sept. 14, 1973, Ser. No. 397,606

Int. Cl.² B01D *53/34*

U.S. Cl. 423—210 **18 Claims**



12. A method for oxidizing combustible fumes in a mixture of said fumes and air, said mixture being heated for oxidation by combustion of a fuel which is a liquid at ordinary temperatures and pressures, said method comprising the steps of:

heating said mixture to a temperature and at a pressure above the vaporization temperature but below the ignition temperature of said liquid fuel in said mixture;

injecting said liquid fuel into said heated mixture in amounts sufficient to raise the temperature of said mixture to the oxidation temperature of said fumes in said mixture whereby said liquid fuel is vaporized as it is injected into said heated mixture;

turbulating said mixture and vaporized fuel so as to admix said liquid fuel with said fumes and air mixture and to provide a substantially homogeneous dispersion of said liquid fuel in said fume and air mixture;

passing said admixture of vaporized liquid fuel, fumes and air to a combustion zone and igniting said liquid fuel in said combustion zone to raise said fumes and air mixture to a temperature sufficient to oxidize said fumes.

3,949,054

METHOD OF COMBUSTION OF GASEOUS FUELS AND FLUE GASES

Svend Borge Johansen, Calle Javier Vilanova 31, San Pedro de Premia, (Barcelona), Spain

Filed Apr. 23, 1974, Ser. No. 463,376

Claims priority, application Denmark, Apr. 27, 1973, 2324/73

Int. Cl.² F23D *7/00*

U.S. Cl. 423—210 **4 Claims**

1. In a method for combustion of gaseous fuels and flue gases, employing excess combustion air and partial transfer of the heat content of the combustion products and the combustion process by heat exchange with combustion air and gas, back to reactants participating in the combustion process, the improvement comprising the steps of rotating about and along a longitudinal axis the combustion gas separately from the combustion air to the extent necessary for said combustion gas to attain an approximately uniform temperature at least at the ignition point of a corresponding gas/air mixture, feeding said gas tangentially into a rotary symmetrical combustion chamber at a point displaced from the axis of symmetry thereof, the gas having free access to flow to said axis of symmetry, feeding said combustion air separately into said combustion chamber and transferring heat escaping from the combustion chamber by conduction through the walls of the combustion chamber to at least one of the reactants to participate in the combustion process prior to introduction thereof into the combustion chamber.

3,949,055

PROCESS FOR OXIDATIVE DESTRUCTION OF GASEOUS OR SMOKE-LIKE SUBSTANCES

Wilhelm Schneider, Ortsstr. 29/30, Heidenrod-Egenrod; Wilhelm Fresenius, Kapellenstr - 13, Wiesbaden; Remigius Fresenius, Gartenfeldstr. 10, Heidenrod-Zorn, and Ludwig Fresenius, Kapellenstr. 13, Wiesbaden, all of Germany

Filed May 16, 1974, Ser. No. 470,464

Claims priority, application Germany, May 16, 1973, 2324625

Int. Cl.² B01D *47/00*

U.S. Cl. 423—210 **7 Claims**

1. In a process for the oxidative destruction of an oxidizable gaseous or smoke-like substance, such substance being an odorous oxidizable gaseous substance of the class contained in gases given off by industrial plants sewage installations, the steps which comprise introducing ozone into an alkaline aqueous medium to form a solution containing about 0.1 – 10 grams of dissolved ozone per cubic meter of solution, and intimately contacting and reacting said substance with said aqueous solution of ozone.

3,949,056

METHOD FOR TREATING AIR CONTAINING ODORIFEROUS SUBSTANCES

Ghassan F. Nakshbendi, 300 Central Park Ave., Hartsdale, N.Y. 10530

Filed June 10, 1974, Ser. No. 477,920

Int. Cl.² B01D *45/00*

U.S. Cl. 423—210 **3 Claims**

1. A method of treating air containing odoriferous substances, comprising the steps of

introducing ozone into contaminated air at a first treatment zone,

diffusing said air and ozone within said first treatment zone to increase contact between said ozone and odoriferous substances and to increase oxidation of said odoriferous substances,

passing the diffused air and ozone through an elongate, undulating path within said first treatment zone to provide a predetermined period of contact between said air and said ozone for allowing sufficient time to oxidize a substantial portion of said odoriferous substances,

diffusing said air and ozone exiting from said first treatment zone after leaving said undulating path to generate turbulence for increasing oxidation of any remaining odoriferous substances,

passing the exiting diffused air and any remaining odoriferous substances and ozone into a second treatment zone,

converting the remaining ozone into oxygen molecules and removing the remaining odoriferous substances from the air by passing the air containing the remaining ozone and odoriferous substances through a bed of activated carbon within said second treatment zone, so that the activated carbon removes the remaining odoriferous substances from the air and acts as a catalyst to accelerate the deterioration of the remaining ozone to stable oxygen molecules, and

removing the air, which is substantially free of the odoriferous substances as well as the ozone, from said second treatment zone.

3,949,057

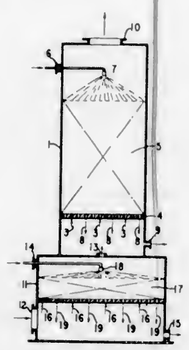
AIR POLLUTION CONTROL OF OXIDES OF NITROGEN

William J. Gilbert, Jr., Manville, N.J., assignor to Croll-Reynolds Company, Inc., Westfield, N.J.

Continuation-in-part of Ser. No. 327,412, Jan. 29, 1973, abandoned. This application Jan. 31, 1975, Ser. No. 545,791

Int. Cl.² B01J 8/00; C01B 21/00

U.S. Cl. 423—239 4 Claims



1. A process for removing nitrogen oxide and nitrogen dioxide from a waste gaseous mixture containing up to 1% by volume of nitrogen oxides, comprising adjusting the oxygen concentration of said waste gaseous mixture to at least 10 times greater than the nitrogen dioxide and nitrogen oxide concentration of said mixture, countercurrently contacting said mixture with a liquid selected from the group consisting of water and dilute aqueous alkaline solutions, said liquid having a flow rate of from 10 to 60 gallons per minute per 1000 cubic feet of said gaseous mixture, in the presence of a knitted wire mesh packing material of stainless steel containing at least 8% Ni and having a diameter of from 0.003 to 0.015 inches, said packing material having from 180 to 800 square feet of surface area per cubic foot of volume, and maintaining a residence time of from 3.5 to 15 seconds for said gaseous mixture in the presence of said packing material.

3,949,058

PRODUCTION OF AMMONIUM POLYPHOSPHATES

Donald C. Young, Fullerton, and Bruce A. Harbolt, Northridge, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Dec. 20, 1973, Ser. No. 426,902

Int. Cl.² C01B 15/16, 25/26

U.S. Cl. 423—313 11 Claims

1. The method of producing ammonium polyphosphates by the adiabatic reaction of ammonia and phosphoric acid including the steps of continuously introducing phosphoric acid having a P_2O_5 content of about 56 to about 70 weight percent into an adiabatic reactor and into admixture with ammonia continuously injected into said reactor at a rate corresponding to about 0.12 to about 0.56 weight parts ammonia per weight part P_2O_5, reacting said acid with said ammonia and partially neutralizing said acid, said acid concentration and ammonia injection rate being sufficient to adiabatically maintain a reaction temperature of about 525° to about 750°F., said reaction temperature being above the gel transition temperature of the polytetrafluoroethylene resin liner hereinafter detailed and sufficient to render said resin ablative in the presence of said acid and ammonia and to evaporate water from said acid, concentrate said acid and form ammonium polyphosphates therein, and carrying out said reaction in a reaction zone comprising a supporting reactor shell internally lined with a polytetrafluoroethylene liner having a weight average molecular weight of about 390,000 to about 9,000,000 and a gel transition temperature below said reaction temperature.

3,949,059

PROCESS FOR PRODUCING FAUJASITIC-TYPE CRYSTALLINE ZEOLITES

Curtis H. Elliott, Jr., Baltimore, Md., assignor to W. R. Grace & Co., Columbia, Md.

Division of Ser. No. 140,249, May 4, 1971, Pat. No. 3,789,107. This application Oct. 10, 1973, Ser. No. 405,218

Int. Cl.² C01B 33/28

U.S. Cl. 423—329 5 Claims

1. A method for producing faujasite zeolite compositions comprising:

a. forming a reactant admixture having essentially the molecular formulation

SiO_2/Al_2O_3	2.4–20
Na_2O/Al_2O_3	2–10
Na_2O/Na_2S	1–5
H_2O/Na_2O	greater than 15

b. aging said formulation at about 15° to 75°C for from 2 to 30 hours,

c. heating said aged formulation at from 40° to 100°C for from 1 to 20 hours to effect crystallization, and

d. recovering faujasite zeolite.

3,949,060

PROCESS FOR THE PRODUCTION OF CYANOGEN CHLORIDE

Friedhelm Geiger; Werner Heimberger, both of Hanau; Hermann Schmitt, Rodenbach, and Gerd Schreyer, Hanau, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Filed Dec. 6, 1974, Ser. No. 530,612

Claims priority, application Germany, Dec. 21, 1973, 2363867

Int. Cl.² C01B 21/18

U.S. Cl. 423—379 11 Claims

1. A process of purifying impure cyanogen chloride gas prepared by the reaction of hydrogen cyanide with chlorine comprising passing the impure cyanogen chloride over gamma aluminum oxide at 20° to 100°C., said gamma aluminum oxide having 0 to 3 weight % of an alkali metal.

3,949,061

PROCESS FOR OXIDIZING HYDROCYANIC ACID TO CYANOGEN

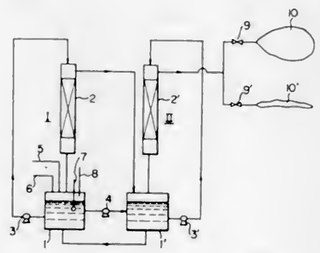
Takeshi Yamashita; Tooru Ide; Sueo Kamada, and Takao Kitamura, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 2, 1973, Ser. No. 412,129

Claims priority, application Japan, Nov. 6, 1972, 47-110233; Feb. 19, 1973, 48-19289

Int. Cl.² C01C 3/00

U.S. Cl. 423—384 9 Claims



1. A process for producing dicyan which comprises reacting hydrocyanic acid with oxygen or oxygen containing inert gas in an aqueous solution of copper nitrate at a pH of from −0.5 to +1.5 adjusted with nitric acid and at a temperature of from 10° to 75°C.

3,949,062

METHOD FOR PRODUCING POLYCRYSTALLINE DIAMOND AGGREGATES OF PREDETERMINED SHAPE

Leonid Fedorovich Vereschagin, Kutuzovsky prospekt, 2/1, kv. 231; Alexandr Yakovlevich Preobrazhensky, Profsojuznaya ulitsa, 52, korpus 5, kv. 21; Vasily Alexandrovich Stepanov, ulitsa Televideniya, 6/2, korpus 2, kv. 32, and Valentin Semenovich Voblikov, ulitsa Novatorov 18, korpus 2, kv. 41, all of Moscow, U.S.S.R.

Filed Dec. 27, 1972, Ser. No. 319,052

Int. Cl.² B01J 3/06; C01B 31/06

U.S. Cl. 423—446 4 Claims

1. A method for producing polycrystalline diamond aggregates of a predetermined shape which comprises surrounding and enclosing a monolithic workpiece made of graphite having a grain size of from 300 to 1000 A and having said predetermined shape and dimensions exceeding those of the polycrystalline diamond aggregate of a predetermined shape by a contraction coefficient value of the graphite during its transformation into a polycrystalline diamond material, in a catalyst in powder form having a particle size of from 1 to 5 μ, subjecting said workpiece to a pressure of at least 80 kb, and heating it to a temperature of at least 1,500°C for a period of 0.1 to 10 seconds sufficient for the formation of said polycrystalline aggregate.

3,949,063

REGENERATION OF A ANTHRAQUINONE WORKING SOLUTION BY CONTINUOUS MULTI-STAGE THIN FILM DISTILLATION

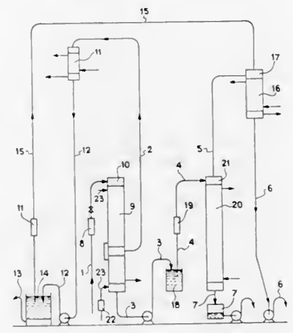
Michel Coingt, Grenoble, and Pierre Thirion, Poisat, both of France, assignors to Oxysynthese, Paris, France

Continuation of Ser. No. 306,423, Nov. 14, 1972, abandoned. This application Nov. 6, 1974, Ser. No. 521,471

Claims priority, application France, Nov. 18, 1971, 71.41313

Int. Cl.² C01B 15/02

U.S. Cl. 423—588 5 Claims



1. In the process for regenerating a working solution used in a cyclic process for the manufacture of hydrogen peroxide operated on the basis of a cycle comprising hydrogenation, in contact with a catalyst, of a working solution comprising anthraquinones dissolved in a solvent to form hydroanthraquinones, oxidation of the hydroanthraquinones formed in the hydrogenation step to produce hydrogen peroxide, extraction to recover substantially all of the hydrogen peroxide from the working solution, thereby producing an exhausted working solution, and recycling the exhausted working solution, and recycling the exhausted working solution to the hydrogenation stage, which regenerating process comprises distilling the exhausted working solution to first recover the solvent and to second recover quinones and monoanthracene light degraded products, the improvement wherein:

said distilling step comprises continuous multistage thin film distillation, wherein a first distillation stage comprises continuously distilling the exhausted working solution by film evaporation under a pressure not greater than atmospheric pressure, separating the solvent as overheads from the working solution in said first distillation stage, and feeding the residual molten extract from the bottoms stream of said first distillation stage to a second distillation stage, and wherein the second distillation stage comprises continuously separating quinones and monoanthracene light degraded products by film evaporation, as overheads, from an undistillable bottoms residue, under a pressure lower than the pressure employed in the first distillation stage, and wherein said distilling step further includes the step of continuously condensing the vapors formed in the second distillation stage on a liquid film of cold solvent which is being constantly renewed and which originates from the vapors condensed in the first distillation stage, the product of said condensing step being used as a new working solution.

3,949,064

METHOD OF DETECTING ANTIGENS OR ANTIBODIES

Irene Bornstein, Skokie, and Andreas A. Kapsalis, Northfield, both of Ill., assignors to Baxter Laboratories, Inc., Greenfield, Ill.

Filed Oct. 26, 1973, Ser. No. 410,066

Int. Cl.² G01T 33/00, 1/16; A61K 43/00

U.S. Cl. 424—1 11 Claims

1. A method for detecting the presence of proteins in samples, wherein said proteins are capable of acting as antigens or antibodies, said method comprising:

a. Coating at least a portion of the surface of a pair of water-insoluble receptacles with a known antigen;

b. Adding sample to said pair of receptacles;

c. Adding labelled antibody to one of the receptacles of said pair;

d. Allowing said pair of receptacles to remain undisturbed for a predetermined period of time;

e. Removing the contents of the other receptacle of said pair and then adding to said other receptacle an amount of labelled antibody equal to that added to said one receptacle in step (c);

f. Allowing said pair of receptacles to remain undisturbed for a predetermined period of time;

g. Removing the unbonded contents of each receptacle of said pair; and

h. Measuring the amount of said labelled antibody in each receptacle, whereby the presence of said proteins can be detected.

3,949,065

COMPOSITION AND METHOD FOR THE DETECTION OF SYPHILIS

Peter Salvatore Forgione, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sept. 11, 1973, Ser. No. 396,168

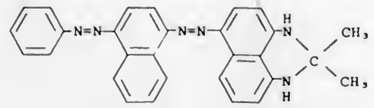
Int. Cl.² G01N 21/04, 31/02, 33/16

U.S. Cl. 424—8 19 Claims

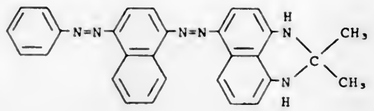
1. An antigen preparation for use in carrying out an agglutination test for syphilis which consists essentially of

I. from about 0.5 to about 25.0%, by weight, based on the total weight of said preparation, of a syphilis antigen reagent,

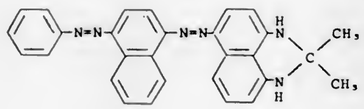
II. from about 0.0001 to about 0.2%, by weight, same basis, of a dye compound having the formula

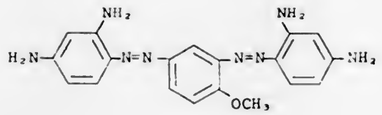
(a) 

or

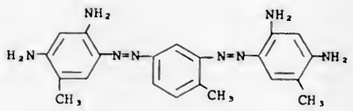


and

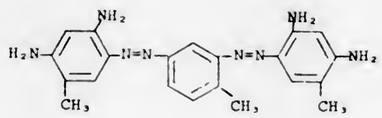


(b) 

and



or

(c)  or

d. mixtures of (*a*) and (*b*) or (*a*) and (*c*) and

III. from about 0.0001% to about 0.05%, by weight, same basis, of a polymeric flocculating agent selected from the group consisting of polyvinylimidazoline, a polyacrylate, an acrylamide polymer and a styrene-maleic anhydride copolymer, the remainder of said preparation being solvent and buffer.

13. An antigen preparation for use in carrying out an agglutination test for syphilis which consists essentially of,

I. from about 0.5 to about 25.0%, by weight, based on the total weight of the preparation, of a syphilis antigen reagent, and

II. from about 0.0001 to about 0.2%, by weight, same basis, of a dye comprising:

a. a mixture of

the ratio of the components of said mixtures ranging from about 9 : 1 to about 1 : 9, respectively, the remainder of said preparation being solvent and buffer.

3,949,066

ANTIPERSPIRANT AND DEODORANT COMPOSITION CONTAINING 2-ETHYL-1,3-HEXANE DIOL

Alan John Clark, Hanworth, England, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 323,007, Jan. 12, 1973, abandoned. This application Sept. 3, 1974, Ser. No. 502,701

Claims priority, application United Kingdom, Jan. 20, 1972, 2840/72

Int. Cl.² A61K *7/36, 7/38*

U.S. Cl. 424—47 **8 Claims**

1. An improved substantially non-staining aerosol antiperspirant or deodorant composition comprising:

a. an active ingredient selected from the group consisting of from about 0.2 to 20% by weight of antiperspirant agent, from about 0.01 to 0.05% by weight germicide and mixtures thereof;

b. sufficient aerosol propellant to produce a pressure of about 15 to about 75 psig in the headspace of the aerosol container;

c. and wherein the improvement comprises from about 0.2 to 25% by weight of 2-ethyl-1,3 hexane diol as an emollient or dispersant; and

the 2-ethyl-1,3 hexane diol being dissolved in the propellant to form a homogenous solution and the active ingredient being dissolved or dispersed in the solution.

3,949,067

SHAVING LUBRICANT

Harold E. Gibbs, 3039 W. 39th St. No. 2017, Indianapolis, Ind. 46208

Filed June 14, 1974, Ser. No. 479,289

Int. Cl.² A61K *7/15*

U.S. Cl. 424—73 **6 Claims**

1. A shaving lubricant consisting essentially of, by volume approximately 3 parts distilled white vinegar and approximately one part lemon juice.

3,949,068

PHARMACEUTICAL COMPOSITIONS

Herbert S. Polin, Veyrier pres Geneve, Switzerland, assignor to University of Alabama in Birmingham Medical and Educational Foundation, Birmingham, Ala.

Division of Ser. No. 346,106, Feb. 20, 1964, Pat. No. 3,538,216. This application Aug. 18, 1970, Ser. No. 64,796

Int. Cl.² A61K *31/74*

U.S. Cl. 424—79 **10 Claims**

1. In an injectable medicament-bearing emulsion for treatment of animal tissue, which tissue contains fluids in which the medicament is soluble, the improvement which is characterized in that the emulsion contains a minor effective amount of a thixotropic agent and a membrane-forming substance having ion-exchange properties wherein the membrane-forming substance is a polymerizable monomer which polymerizes by reaction with a polymerizing agent at the site of injection into said animal tissue to form a longer chain molecule, whereby the medicament may be diffused at a sustained, constant rate into said fluids.

3,949,069

NITROGEN-CONTAINING CARBOHYDRATE

Shun-ichi Hata, Yokohama, Japan, assignor to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1974, Ser. No. 453,988

Claims priority, application Japan, Mar. 26, 1973, 48-33554

Int. Cl.² A61K *35/12, 35/56, 35/40*

U.S. Cl. 424—95 **1 Claim**

1. The nitrogen-containing carbohydrate having the following physicochemical properties:

1. Appearance:
Colorless, powdery
2. Solubility:
Easily soluble in water; Hardly soluble in organic solvents such as methanol, ethanol, acetone and ether
3. Melting point:
230°C (decomposed)
4. Ultraviolet absorption spectrum:
No characteristic absorption
5. Infrared absorption spectrum:
The spectrum is shown in FIG. 5 (KBr disc method); Absorptions: 3400 – 3300, 1650, 1550, 1400, 1070 cm^{-1}
6. Elemental analysis:
C; 34.4%, H; 9.7%, N; 8.2%, O; 38.2%
7. Molecular weight:
Ranges between 10,000 and 30,000
8. Color reaction:

Elson-Morgan's reaction	Positive
Molish reaction	Positive
Anthron reaction	Positive
Diphenylamine-HCl reaction	Positive
Ninhydrin reaction	Negative
Sialic acid reaction with Ehrlich's reagent	Negative

9. Specific rotatory power:
$[\alpha]_D^{20} = -12°$.

3,949,070

ANTIBIOTIC SUBSTANCE, ITS PREPARATION AND ITS USE AS GROWTH PROMOTING AGENTS

Mamoru Arai; Akio Torikata; Hisayoshi Fukatsu; Noritoshi Kitano, and Toshiaki Matsuzawa, all of Hiro, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Division of Ser. No. 480,514, June 18, 1974. This application Jan. 30, 1975, Ser. No. 545,391

Claims priority, application Japan, June 30, 1973, 48-73807

Int. Cl.² A61K *35/00*

U.S. Cl. 424—118 **5 Claims**

1. A method for growth promotion of animals which comprises administering to said animals an amount sufficient to promote growth of an animal of an antibiotic substance pholipomycin, said pholipomycin being a substance of an acidic white powder in a pure form, containing the following elements in the following proportions: C: 50.15%, H: 7.14%, N: 5.48%, P: 2.33%; having an empirical formula $C_{50\sim65}H_{83\sim111}N_{5\sim6}O_{25\sim35}P$; a molecular weight of 5100 by gel filtration; a melting point of 250°C. (with decomposition); a specific rotation in water of +6.0° at 20°C.; ultraviolet absorption spectrum maxima at 257 mμ (H_2O), 245 mμ (0.1N HCl) and 258 mμ (0.1N NaOH)

$E_{1cm}^{1\%}$ = 142 (H_2O), 93 (0.1N HCl) and 144 (0.1N HCl); a pKa of 4.37; the following distinguishable bands in an infrared absorption spectrum (in KBr) of 3500, 2980, 1740, 1650, 1565, 1410, 1390, 1340, 1240, 1080, 1050, 975, 950, 890, 860, 825, 805, 760, 670 cm^{-1}; being easily soluble in water, soluble in methanol and n-butanol, sparingly soluble in acetone, chloroform and ether; positive for Tollens reaction, false positive for Elson-Morgan reaction, negative for ninhydrin, Benedict, biuret, Bial, ferric chloride and anthrone reactions and stable at pH 4 ~ 10; and having Rf valves of 0.74 and 0.25 in cellulose and silica gel thin-layer chromatographies in n-propanol-2NNH_4OH (7:3).

3,949,071

METHOD AND COMPOSITION FOR TREATING BURNS AND SCALDS

Carl Christian Alnor, Haslev, Denmark, assignor to Ferraton Aktieselskab, Denmark

Continuation of Ser. No. 289,641, Sept. 18, 1972, abandoned, which is a continuation-in-part of Ser. No. 876,573, Nov. 13, 1969, abandoned. This application Mar. 5, 1974, Ser. No. 448,179

Int. Cl.² A61K *33/00*

U.S. Cl. 424—127 **3 Claims**

1. A method for counteracting acidosis in the skin resulting from dermal irritation by burns, scalds, abrasions and stings

which comprises applying to the affected areas an effective amount of a physiologically acceptable aqueous buffer solution having a pH value of 8–10 and comprising diethyl ether; eugenol; chlorophyll; an alkali metal carbonate base; an unsaturated fatty acid mixture comprising primarily oleic acid and a physiologically acceptable anionic surface-active agent comprising sodium lauryl ether sulfate; said surface-active agent being present in an amount of about 45–75% by weight, based on the weight of the base, fatty acid and surface-active agent, and the base and the fatty acid being present in such proportions as to provide said solution with a pH value of 8–10, thereby neutralizing said acidosis, also the weight ratio between surface-active agent, oleic acid, alkali metal carbonate and water in the aqueous buffer solution being about 14:2:7:35.

3,949,072
TOPICAL COMPOSITION FOR TREATMENT OF SEBORRHEIC KERATOSIS

Louis T. Tenta, 6007 N. Sheridan Road, Chicago, Ill. 60660

Continuation-in-part of Ser. No. 123,380, March 11, 1971, Pat. No. 3,821,370. This application May 1, 1974, Ser. No. 465,740

The portion of the term of this patent subsequent to June 28, 1991, has been disclaimed.

Int. Cl.² A61K *33/30*

U.S. Cl. 424—145 **10 Claims**

1. A topical composition for application to skin affected by seborrheic keratosis to provide a superficial slough of the epidermis, said composition comprising from 5 to 25 parts by weight of an inhibited phenol calculated as potassium phenate and selected from the group consisting of potassium, sodium and ammonium salts of phenol; one-half to two parts of a salicylate calculated as sodium salicylate and selected from the group consisting of sodium and zinc salicylate; 1 to 5 parts of resorcinol; and 1 to 4 parts of a zinc compound calculated as zinc sulfate selected from the group consisting of zinc salicylate, zinc oxide, and zinc sulfate, the aforementioned inhibited phenol, salicylate, and zinc compound being dissolved in a non-aqueous solvent containing a hydrophilic non-toxic lower aliphatic alochol in an amount sufficient to bring the total to 100 parts by weight said non-aqueous solvent being sufficient to increase the viscosity and to reduce the volatility of the resultant composition.

3,949,073
PROCESS FOR AUGMENTING CONNECTIVE MAMMALIAN TISSUE WITH IN SITU POLYMERIZABLE NATIVE COLLAGEN SOLUTION

John R. Daniels, Menlo Park, and Terry R. Knapp, Santa Clara, both of Calif., assignors to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Nov. 18, 1974, Ser. No. 524,672

Int. Cl.² A61K *37/00;* **A01N** *9/00*

U.S. Cl. 424—177 **21 Claims**

1. Method of augmenting connective tissue in a living mammal comprising administering a solution of solubilized, purified, native, in situ polymerizable collagen to the mammal at the augmentation site which polymerizes at said site into a fibrous mass of tissue.

3,949,074
CARDIOTONIC PHARMACEUTICAL COMPOSITIONS CONTAINING A CARDIAC GLYCOSIDE AND METHOD OF USE

Wolfgang Eberlein, Mettenberg; Joachim Heider, Warthausen-Oberhofen; Willi Diederen, Rissegg, all of Germany, and Walter Kobinger, Vienna, Austria, assignors to Boehringer Ingleheim GmbH, Ingleheim am Rhein, Germany

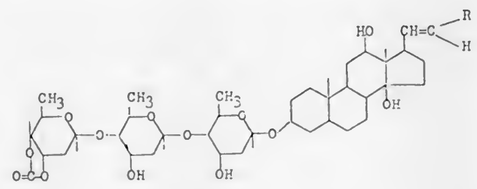
Division of Ser. No. 397,852, Sept. 17, 1973. This application Aug. 4, 1975, Ser. No. 601,500

Claims priority, application Germany, Sept. 18, 1972, 2245726

Int. Cl.² A61K *31/705*

U.S. Cl. 424—182 **8 Claims**

1. A cardiotonic pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective cardiotonic amount of a compound of the formula



wherein R is cyano or carbalkoxy of 2 to 4 carbon atoms.

3,949,075
ANTI-MICROBIAL COMPOUNDS OF 2′, 4′ SUBSTITUTED ANILIDES OF SUBSTITUTED NITROSALICYLIC ACID FOR QUADRUPED ANIMALS

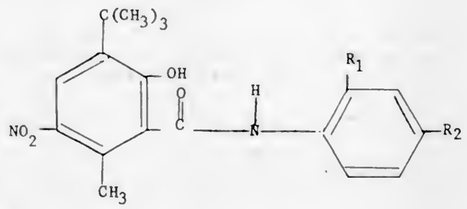
William H. Meek, Northfield, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 277,076, Aug. 1, 1972, Pat. No. 3,839,443, which is a continuation-in-part of Ser. No. 186,514, Oct. 4, 1971, abandoned. This application May 1, 1974, Ser. No. 465,884

Int. Cl.² A61K *31/60*

U.S. Cl. 424—230 **14 Claims**

1. The method for treating a parasite infested or parasite exposed quadruped animal comprising administering orally to said animal an antiparasitically effective but nontoxic quantity of an active ingredient being a 3-tert.-butyl-6-methyl-5-nitrosalicylanilide of the general formula:



in which

R_1 is H, chloro, bromo, iodo, CF_3 or alkyl of 1 to 4 carbon atoms, and

R_2 is chloro, bromo, iodo or CF_3.

3,949,076
N-(HETEROCYCLIC-ALKYL)-9-XANTHENYLAMINES

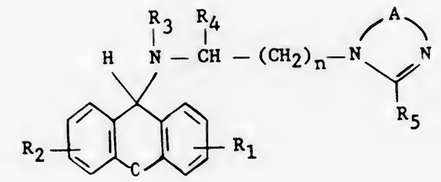
Paul E. Bender, Willingboro, N.J.; Bernard Loev, Broomall, and Carl D. Perchonock, Philadelphia, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed May 29, 1975, Ser. No. 582,055

Int. Cl.² C07D *233/16, 233/60, 239/06*

U.S. Cl. 424—251 **8 Claims**

1. A compound of the formula



in which:

A is —CH=CH— , $-CH_2CH_2-$ or $-CH_2CH_2CH_2-$;

R_1 is hydrogen, halogen, hydroxy, lower alkyl or lower alkoxy;

R_2 is hydrogen, halogen, lower alkyl or lower alkoxy;

R_3, R_4 and R_5 are hydrogen or lower alkyl and n is 1 to 3

or a pharmaceutically acceptable acid addition salt thereof.

3,949,077
SYNERGISTIC ANTIBIOTIC COMPOSITIONS

Árpád Buzna; Gábor Kulcsár; Jenö Soltesz, All of Debrecen, Hungary, and Tibor Valyl Nagy, deceased, late of Debreoen, Hungary, by Flora Valyi Nagy, legal representative, assignors to Chinoin Gyogyszer-es Vegyeszeti Termekek Gyara RT, Budapest, Hungary

Filed Sept. 30, 1970, Ser. No. 76,985

Claims priority, application Hungary, Sept. 30, 1969, BU 503

Int. Cl. A61k *21/00*

U.S. Cl. 424—114 **1 Claim**

1. A composition comprising equal amounts of primycin, neomycin sulfate and oxytetracycline in combination with a pharmaceutically acceptable carrier therefor.

3,949,078
ANTIBIOTIC ACTIVITIES FROM *STREPTOSPORANGIUM VULGARE* ATCC 21906

Carolina Coronelli; Maria Rosa Bardone, and Hermes Pagani, all of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Division of Ser. No. 473,023, May 24, 1974, Pat. No. 3,899,396. This application Jan. 31, 1975, Ser. No. 546,056

Claims priority, application United Kingdom, May 25, 1973, 25160/73

Int. Cl.² A61K *35/00*

U.S. Cl. 424—118 **2 Claims**

1. An antibiotically effective composition of matter identified as fraction A, said fraction A being an organic substance having the following characteristics:

a. Elemental analysis: C = 51.8; H = 6.3; N = 0.9; Cl = 4.3

b. Rf on silica gel plates with a solvent system chloroform: methanol 98:2 = 0.39

c. Molecular weight of about 1500 d. I.R. absorption bands at the following frequencies: 3450(i); 1720(m); 1680(m); 1570(w); 1150-1000(i)

c. Mass spectrum showing ion peaks at the following *m/e* values: 630, 380, 233, 250, 218

said composition of matter being further characterized in that it has glycosidic nature and it gives by acid hydrolysis with 0.1N hydrochloric acid a substance with melting point 145°–8°C, molecular formula $C_{15}H_{17}O_7Cl_2$ and $[\alpha]_D^{20}$ (c=0.9% in pyridine for 24 hours):+30.9 → + 17.6.

3,949,079
ANTIBIOTIC DERIVATIVES

Ernst Brandl; Franz Knauseder, both of Tyrol, and Franz Rembold, Vienna, all of Austria, assignors to Biochemie Ges.m.b.H., Vienna, Austria

Continuation-in-part of Ser. No. 448,882, April 16, 1965, abandoned. This application Aug. 14, 1967, Ser. No. 660,206

Claims priority, application Austria, Apr. 17, 1964, 3403/64

Int. Cl.² A61K *35/00*

U.S. Cl. 424—122 **4 Claims**

1. An animal feed comprising an antibacterially effective amount of pleuromutilin having the following characteristics:

empirical molecular formula: $C_{22}H_{34}O_5$

molecular weight: 378

absorption maxima in the ultra-violet spectrum at 205 and 293 mμ (in ether) or 209 and 290 mμ (in 60% ethanol)

absorption bands in the infra-red spectrum (potassium bromide pressings) at 3400, 3000, 1235 and 1095 and in a methylene chloride solution at 3570, 3610, 1730, 1840 and 1630 cm^{-1}

and a feed carrier.

3,949,080
COMPOSITIONS CONTAINING O,N-ACETAL AND METHOD OF USING SAME

Wolfgang Kramer; Karl Heinz Buchel; Werner Meiser, and Manfred Plempel, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Apr. 30, 1974, Ser. No. 465,617

Claims priority, application Germany, May 15, 1973, 2324424

Int. Cl.² A61K *31/41*

U.S. Cl. 424—269 **39 Claims**

20. A composition according to claim **1** wherein

R^1 is phenyl unsubstituted or substituted by chloro, bromo, or trichloro;

R^2 is hydrogen;

R^3 is hydrogen or methyl;

R^4 is methyl or t-butyl; and

Az is 1,2,4-triazol-1′-yl or 1,2,4-triazol-4′-yl.

3,949,081
4-CARBAMOYL-1-BENZAZEPINES AS ANTIINFLAMMATORY AGENTS

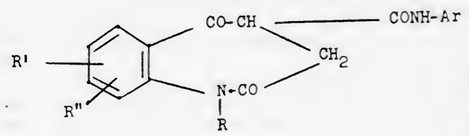
Herman Robert Rodriguez, New York, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 8, 1974, Ser. No. 458,917

Int. Cl.² A61K *31/42, 31/425*

U.S. Cl. 424—270 **4 Claims**

1. An antiinflammatory pharmaceutical composition comprising an antiinflammatory effective amount of a compound corresponding to the formula



wherein R is hydrogen or alkyl with up to 4 carbon atoms, each of R′ and R″ is hydrogen, alkyl, alkanoyl or alkoxy with up to 4 carbon atoms, fluoro, chloro, bromo or trifluoromethyl, and Ar is unsubstituted oxazolyl, thiazolyl, or benzthiazolyl, or said Ar being substituted by one or two alkyl groups with up to 4 carbon atoms, or a therapeutically useful alkali metal or acid addition salt thereof together with a pharmaceutical excipient.

3,949,082

THIADIAZOLES AS ANTI-INFLAMMATORY AGENTS

Tsung-Ying Shen, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed July 24, 1974, Ser. No. 491,445
Int. Cl.² A61K *31/425*
U.S. Cl. 424—270 **3 Claims**

1. A method of treating inflammation which comprises the administration to a patient in need of such treatment of an effective amount of a compound selected from the group consisting of 2,5-bis(ethylamino)-1,3,4-thiadiazole and 2,5-bis-(allylamino)-1,3,4-thiadiazole.

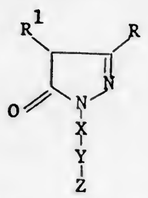
3,949,083

PYRAZOL-5-ONES

Eike Möller; Karl Meng, both of Wuppertal; Egbert Wehinger, Neviges, and Harald Horstmann, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Apr. 9, 1974, Ser. No. 459,407
Claims priority, application Germany, Apr. 17, 1973, 2319281
Int. Cl.² A61K *31/415*
U.S. Cl. 424—273 **28 Claims**

1. A pharmaceutical composition useful for effecting diuresis and saluresis and for treating hypertension in humans and animals which comprises a diuretically effective amount, a saluretically effective amount or an antihypertensive amount of a pyrazol-5-one of the formuala:



or a pharmaceutically acceptable nontoxic salt thereof wherein

R is hydrogen or lower alkyl;

R¹ is lower alkyl, alkenyl of 2 to 4 carbon atoms, phenyl or benzyl unsubstituted or substituted in the phenyl moiety by 1 or 2 of the same or different substituents selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, lower alkenoxy, halogen, nitro, cyano and trifluoromethyl;

X is methylene, ethylene, methylene wherein 1 hydrogen atom is substituted by lower alkyl, or ethylene wherein 1 hydrogen atom on one of the carbon atoms is substituted by lower alkyl or 1 hydrogen atom on each of the two carbon atoms is substituted by lower alkyl;

Y is a direct bond; and

Z is phenyl or naphthyl unsubstituted or nuclear substituted by:

a. 1 to 3 halogens;

b. 1 or 2 of the same or different substituents selected from the group consisting of halogen, trifluoromethyl, lower alkyl, lower alkenyl, lower alkoxy, lower alkenoxy, cycloalkyl of 5 to 7 carbon atoms and cycloalkenyl of 5 to 7 carbon atoms;

c. nitro; or

d. nitro and 1 or 2 of the same or different substituents selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, halogen, and trifluoromethyl;

in combination with a pharmaceutically acceptable nontoxic inert diluent or carrier.

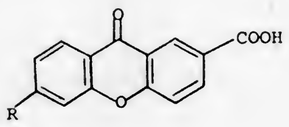
3,949,084

NOVEL SUBSTITUTED XANTHONE CARBOXYLIC ACID COMPOUNDS

Jurg R. Pfister, Los Altos; Ian T. Harrison, and John H. Fried, both of Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 231,756, March 3, 1972, abandoned. This application Jan. 23, 1975, Ser. No. 543,390
Int. Cl.² A61K *31/35*
U.S. Cl. 424—283 **4 Claims**

1. A method for inhibiting the symptoms of the asthmatic condition resulting from an antigen-antibody reaction in a host susceptible to said reaction which comprises administering to said host an effective amount of from about 0.005 to about 100 mg. per kg. of body weight per day sufficient to produce said inhibition of a compound represented by the formula:



(A)

wherein R is the group



wherein R² is hydrogen; lower alkyl; cycloaklyl; or halomethyl; or a pharmaceutically acceptable nontoxic alkyl or glycerol ester, unsubstituted, monoalkyl, dialkyl, dialkylaminoalkyl, alkoxyalkyl or phenethyl substituted amide or salt thereof wherein said alkyl and alkoxy groups each contain 1 to 8 carbon atoms.

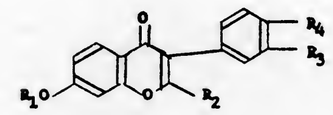
3,949,085

ANABOLIC-WEIGHT-GAIN PROMOTING COMPOSITIONS CONTAINING ISOFLAVONE DERIVATIVES AND METHOD USING SAME

László Feuer; Mihály Nogradi; Agnes Gottsegen; Borbala Vermes; Janos Streliszky; Andreas Wolfner; Lorant Farkas; Sandor Antus, and Maria Kovaks, all of Budapest, Hungary, assignors to Chinoin Gyogyszer-es Vegyeszeti Termakek Gyarart, Budapest, Hungary

Division of Ser. No. 371,560, June 19, 1973, Pat. No. 3,907,830, which is a continuation-in-part of Ser. No. 146,773, May 25, 1971, Pat. No. 3,833,730. This application Aug. 15, 1974, Ser. No. 497,644
Claims priority, application Hungary, May 27, 1970, CI 996
The portion of the term of this patent subsequent to Sept. 3, 1991, has been disclaimed.
Int. Cl.² A61K *31/35*
U.S. Cl. 424—283 **10 Claims**

1. An anabolic treatment method for human patients comprising administering to said patients in a daily dosage of 0.2 to 100 mg/kg of body weight a compound having the formula



wherein R_1 is halosubstituted, nitrosubstituted or unsubstituted propyl, amyl or benzyl, R_2 is hydrogen, methyl or carboxy and R_3 and R_4 are hydrogen or nitro.

3,949,086

ANTIFUNGAL OR ANTIBACTERIAL COMPOSITION AND METHOD

Leonard L. Wolfson, Milwaukee, Wis., assignor to Nalco Chemical Company, Chicago, Ill.

Continuation-in-part of Ser. No. 454,986, May 11, 1965, abandoned, and a continuation-in-part of Ser. No. 770,785, Oct. 25, 1968, abandoned. This application Nov. 2, 1970, Ser. No. 86,366
Int. Cl.² A01N *9/18*
U.S. Cl. 424—302 **10 Claims**

1. An antifungal and antibacterial composition which consists essentially of methylenebisthiocyanate and 2,4,5-trichlorophenol combined in a weight ratio of from 1:0.1 to 1:20.

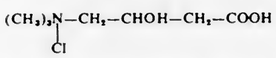
3,949,087

METHOD OF SUPPRESSING SEBORRHEA

Zénon Bacq, Liege, and Fernand Binon, Strombeek-Bever, both of Belgium, assignors to Labaz, Paris, France

Continuation of Ser. No. 269,036, July 5, 1972, abandoned. This application Aug. 5, 1974, Ser. No. 494,523
Claims priority, application France, July 6, 1971, 71.24611
Int. Cl.² A61K *7/06, 31/195*
U.S. Cl. 424—319 **3 Claims**

1. Method of suppressing seborrhoea whereby there is applied to the affected area a composition containing as active principle d,l-carnitine chloride or l-carnitine chloride or a mixture of these two substances, the said active principle corresponding to the formula:



the amount of d,l-carnitine chloride applied being 0.1 mg. to 0.8 mg. per square centimeter and the amount of l-carnitine chloride applied being 0.05 mg. to 0.4 mg. per square centimeter.

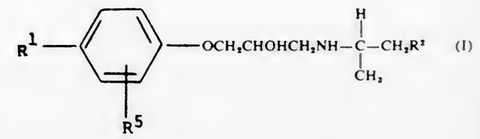
3,949,088

SUBSTITUTED PHENOXY PROPANOL AMINES USED FOR TREATING CARDIOVASCULAR DISEASES

Benny Roger Samuelsson, Tubavagen 1B, S-435 00 Molnlycke, and Gert Christer Strandlund, Ranunkelgatan 7D, S-431 32 Molndal, both of Sweden

Filed Apr. 16, 1974, Ser. No. 461,288
Claims priority, application Sweden, Apr. 18, 1973, 7305502
Int. Cl.² A61K *31/165*
U.S. Cl. 424—324 **28 Claims**

1. A method for blocking adrenergic β-receptor stimulation in the treatment of cardiovascular diseases, comprising administering to a mammal in which a β-receptor blockade is desired an amount, effective to provide antagonism to adrenergic β-receptor stimulation, of a compound of formula I



wherein R^1 is a loweralkylthio loweralkyl, loweralkoxy loweralkoxy, R^2 is a group



wherein R^3 and R^4 are hydrogen or loweralkyl and R^5 is hydrogen, halogen, loweralkyl, loweralkenyl, loweralkinyl, loweralkoxy-methyl, loweralkoxy, loweralkenyloxy or loweralkinyloxy or its therapeutically acceptable acid addition salt.

3,949,089

SUBSTITUTED GUANIDINE COMPOUNDS AS ANTIFIBRILLATORY AGENTS

Robert Arthur Maxwell, Armonk, N.Y., and Eric Walton, Wrotham, England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 48,490, June 22, 1970, abandoned. This application Jan. 14, 1974, Ser. No. 433,413
Claims priority, application United Kingdom, June 23, 1969, 31684/69
Int. Cl.² A61K *31/155*
U.S. Cl. 424—326 **17 Claims**

1. A method of treatment of arrhythmia in a mammal suffering from arrhythmia which comprises administering to said mammal an effective arrhythmia treatment amount of a pharmaceutically acceptable acid addition salt of N-p-methoxybenzyl-N′,N″-dimethylguanidine.

3,949,090

METHODS AND COMPOSITIONS FOR IMPROVING FEED EFFICIENCY IN RUMINANTS USING DITHIOOXAMIDE

William V. Chalupa, Malvern, and Roger C. Parish, King of Prussia, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Aug. 26, 1974, Ser. No. 500,815
Int. Cl.² A61K *31/145*
U.S. Cl. 424—328 **5 Claims**

1. A method of improving the feed efficiency of ruminant animals comprising administering orally to the animal a quantity of dithiooxamie which is sufficient to improve feed efficiency but not toxic to the animal.

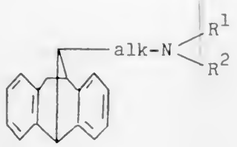
3,949,091

8-SUBSTITUTED DIBENZOBICYCLO[3.2.1]OCTADIENES FOR TREATING DEPRESSION

Walton James Hammar, St. Paul, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Division of Ser. No. 194,056, Oct. 29, 1971, Pat. No. 3,860,652. This application Dec. 9, 1974, Ser. No. 530,669
Int. Cl.² A61K *3/135*
U.S. Cl. 424—330 **5 Claims**

1. Method of treating depression of the mammalian central nervous system which comprises administering to a mammal a compound of the formula



wherein R^1 is hydrogen or lower alkyl, R^2 is lower alkyl, —alk— is methylene, ethylene or methylmethylene, or an acid addition salt thereof in amount effective to combat depression.

3,949,092

HOP EXTRACT CONTAINING POTASSIUM ISOHUMULATE

William Mitchell, Hatfield, England, assignor to Bush Boake Allen Limited, London, United Kingdom

Continuation of Ser. No. 318,699, Dec. 26, 1972, abandoned, which is a continuation of Ser. No. 129,608, March 30, 1971, abandoned, which is a division of Ser. No. 743,586, July 10, 1968, Pat. No. 3,607,300, which is a continuation-in-part of Ser. No. 594,980, Nov. 17, 1966, abandoned. This application July 3, 1974, Ser. No. 485,536

Claims priority, application United Kingdom, Aug. 8, 1967, 36469/67; Nov. 17, 1965, 48866/65

Int. Cl.² C12C *9/02, 11/04, 3/00*

U.S. Cl. 426—16 **4 Claims**

1. A method for the flavouring of beer which comprises adding to fermented beer a hop extract, the said hop extract being an aqueous solution consisting essentialy of water and between about 40% and 60% by weight of potassium isohumulates substantially free from lupulones and fixed and essential oils of hops.

3,949,093

PROCESS FOR IMPROVING QUALITY OF PROTEIN-FORTIFIED BAKED GOODS

Charles L. Mehltretter, Peoria, Ill., and Maura M. Bean, Berkeley, Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 2, 1973, Ser. No. 347,086

Int. Cl.² A21D *2/14, 2/26, 13/06*

U.S. Cl. 426—24 **6 Claims**

1. A process for the preparation of yeast-leavened baked goods of wheat flour fortified with a protein concentrate, comprising

incorporating into the raw dough mixture, prior to baking, an additive which is

an ester of a fatty acid containing 12 to 18 carbon atoms and a polyoxyethylene ether of a propylene glycol glycoside, containing 1 to 2 moles of combined fatty acid per mole thereof, and 5 to 20 moles of combined ethylene oxide per mole thereof,

said additive being incorporated in a concentration of about from 0.1 to 5 parts thereof per 100 parts of flour.

2. A process for the preparation of yeast-leavened baked goods of wheat flour fortified with a protein concentrate, comprising

incorporating into the raw dough mixture, prior to baking, an additive which is

an ester of a fatty acid containing 12 to 18 carbon atoms and a polyoxyethylene ether of a glycerol glycoside, containing 1 to 2 moles of combined fatty acid per mole thereof, and 5 to 20 moles of combined ethylene oxide per mole thereof,

said additive being incorporated in a concentration of about from 0.1 to 5 parts thereof per 100 parts of flour.

3,949,094

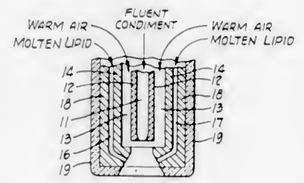
CONDIMENT-TREATING PROCESS AND PRODUCT

Lawrence A. Johnson, Medina, Ohio, and Edgar J. Beyn, Annapolis, Md., assignors to SCM Corporation, New York, N.Y.

Filed July 31, 1974, Ser. No. 493,324

Int. Cl.² A23L *1/22*

U.S. Cl. 426—99 **10 Claims**



1. A process for encapsulation of condiment with normally solid lipoidal material, which comprises:

providing said condiment in liquified form,

spraying the resulting liquified condiment as a spray pattern;

intercepting said spray pattern with a spray of said lipoidal material in a fluent state directed for enveloping said condiment spray pattern;

passing resulting enveloped particles into a chilling zone; and

therein congealing at least their lipoidal exterior.

3,949,095

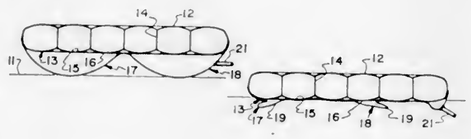
SOLAR ENERGY POOL HEATING APPARATUS

Michael Pelehach, 22 Gina Drive, Centerport, N.Y. 11721; Robert W. Kress, 27 Mill Road, Lloyd Harbor, and Rolf J. Larson, 36 Ryder Ave., Dix Hills, both of N.Y. 11746

Filed July 10, 1974, Ser. No. 487,047

Int. Cl.² F24J *3/02*

U.S. Cl. 126—271 **10 Claims**



9. In a system for heating a pool of water by solar energy, a plurality of inflatable rafts each having a thermally transparent top surface and a bottom surface with a thermally reflective exterior floating on said water,

means on each raft for adjusting the relationship between the bottom surface thereof and the water surface in conjunction with the amount of solar radiation,

whereby each of said rafts lies flat in the water with the bottom surface in thermal conductive relationship therewith during periods of substanial solar radiation,

and whereby at least a portion of said reflective surface is raised above the water into thermal reflective relationship therewith during periods of low solar radiation.

3,949,096

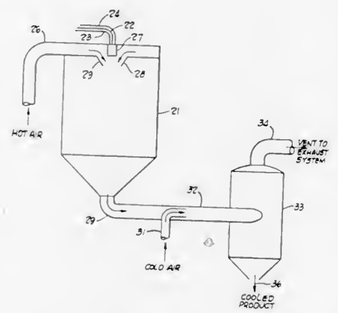
SPRAY DRYING PROCESS FOR ENCAPSULATION OF CONDIMENT PARTICLES

Lawrence A. Johnson, Medina, Ohio, and Edgar J. Beyn, Annapolis, Md., assignors to SCM Corporation, New York, N.Y.

Filed July 31, 1974, Ser. No. 493,327

Int. Cl.² A23L *1/22*

U.S. Cl. 426—302 **2 Claims**



1. In a process for producing condiment particles wherein particles of a first spray containing said condiment are intercepted by and coated with a second spray of edible coating material dispersed in a fugitive carrier, said coating material being convertible by heating into a dry surface coating at a temperature not greater than 400°F, and the resulting composite particles are dried while they are suspended in a current of gas in a heating zone, the improvement which comprises:

flowing cold gas to assist in the atomizing of said first spray, before contacting said first spray with said second spray and then discharging said current of suspended particles from said heating zone;

after said heating mixing said discharged current with a second flow of cold gas while maintaining them in gas-suspended condition; and separating resulting particles from gas entraining same;

said second flow of cold gas being sufficient and cold enough for cooling said suspended particles sufficiently to resist appreciable agglomeration upon their collection.

3,949,097

PROCESS AND APPARATUS FOR COATING FOOD ARTICLES

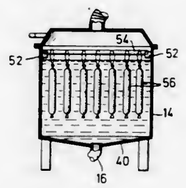
Mathias Stemmler, and Heinz Stemmler, both of Konrad Adenauer Ufer 35, Cologne, Germany

Filed Mar. 11, 1974, Ser. No. 450,253

Claims priority, application Germany, Aug. 25, 1973, 2342985

Int. Cl.² A23B *4/10*

U.S. Cl. 426—310 **5 Claims**



1. In the coating of food wherein a food article is immersed in a tank containing a solution of a coating agent in a solvent, removed from the solution, allowed to drain, and removed from the tank, the improvement which comprises removing the solution from the tank while leaving the food article therein, draining the liquid from said food article and maintaining a substantially liquid free solvent vapor-laden atmosphere within said tank containing said coated food article while said food article drains, drawing off solvent vapors from said tank and thereafter removing said coated article from said tank, draining of said article in said solvent vapor-laden atmosphere within said tank resulting in formation of a level coating prior to setting of said coating upon removal of the solvent therefrom.

2. The process of claim 1, wherein the food article is first placed in said tank while empty, warm air is passed through said tank to remove moisture from said food article, and the solution of coating agent is thereafter introduced into said tank to effect immersion of said food article.

3,949,098

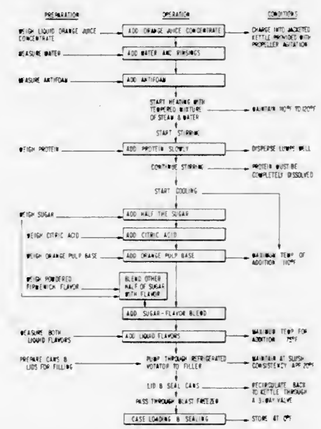
NUTRITIOUS ORANGE DRINK CONCENTRATE, PROCESS AND DRINK RESULTANT THEREFROM

James G. Bangert, Nanuet, N.Y., assignor to Nabisco, Inc., East Hanover, N.J.

Filed June 5, 1974, Ser. No. 476,404

Int. Cl.² A23L *2/02*

U.S. Cl. 426—324 **6 Claims**



1. A process of preparing a nutritious orange drink concentrate having a pH between 3 and 4.5 which comprises (a) admixing from about 23.5 to about 53 percent of water with about 19 to about 40 percent of orange juice concentrate; (b) adding from about 0.0001 to about 0.1 percent of an antifoaming agent to admixture (a); (c) heating admixture (b) to 110° to 120°F., and maintaining the temperature in that temperature range in the following step (d); (d), while agitating admixture (b), adding from about 1 to about 27 percent of a whey protein concentrate to admixture (b), the agitation continuing until the whey protein concentrate is entirely dissolved in admixture (b); (e) cooling admixture (d) to 65° to 110°F., and maintaining the temperature in that range in the following steps (f) to (h); (f) adding a portion of the sugar that will eventually be present in the nutritious orange drink concentrate to admixture (d); (g) adding from about 0.01 to about 3 percent of citric acid to admixture (f); (h) adding from about 0.01 to about 0.5 percent of orange pulp base to admixture (g); and (i) adding a mixture or blend of the remaining sugar and from about 0.1 to about 4 percent of an imitation orange flavoring agent to admixture (h), admixture (h) having a maximum temperature of 75°F. at the start of step (i); from about 0.1 to about 16.1 percent of sugar being used in the nutritious orange drink concentrate, and the whey

protein concentrate providing a protein content of about 0.5 to about 10 percent based on the total composition of the nutritious orange drink concentrate.

3,949,099

METHOD FOR PASTEURIZING A LIQUID

Vern F. Kaufman, Lafayette, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 302,620, Oct. 31, 1972, Pat. No. 3,830,149. This application June 11, 1974, Ser. No. 478,416
Int. Cl.² A23L *3/16*
U.S. Cl. 426—521 **2 Claims**

1. A method for pasteurizing a liquid, which comprises heating the liquid to a pasteurization temperature, pumping the hot liquid into a holding zone, within the holding zone dividing the liquid into a plurality of individual slugs, and positively impelling the slugs through the holding zone at a rate sufficient to achieve desired pasteurization by mechanical action applied to each individual slug.

3,949,100

FLAVORING AGENT

Max Winter, Geneva; Fritz Gautschi, Vaud; Ivon Flament; Max Stoll, both of Geneva, all of Switzerland, and Irving M. Goldman, Niantic, Conn., assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 243,866, April 13, 1972, abandoned, which is a division of Ser. No. 70,560, Sept. 8, 1970, Pat. No. 3,702,253, which is a continuation of Ser. No. 543,069, April 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, April 30, 1965, abandoned. This application June 24, 1974, Ser. No. 482,685
Int. Cl.² A23L *1/234*
U.S. Cl. 426—538 **4 Claims**

1. As a new composition of matter a soluble coffee material to which has been added a minor, but flavor-modifying amount of 4-vinyl-1,2-dimethoxy-benzene.

3,949,101

HIGH PROTEIN PASTA FORMULATION

Paluri Ramachandra Murthy, Hershey, Pa., assignor to Peavey Company, Minneapolis, Minn.

Filed Feb. 8, 1974, Ser. No. 440,839
Int. Cl.² A23L *1/16*
U.S. Cl. 426—557 **7 Claims**

1. High protein pasta formulation consisting of a blend of from about 84% up to about 95% of semolina, with the balance of from 5% to 16% of said pasta formulation being essentially dry whey solids containing about 50% of undenatured whey protein.

3,949,102

FROZEN DESSERT PRODUCT AND PROCESS

James Allen Hellyer, Milford; Richard Gordon Kess, Greenhills, and Paul Seiden, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 30, 1975, Ser. No. 592,008
Int. Cl.² A23G *9/00*
U.S. Cl. 426—566 **15 Claims**

1. A frozen dessert composition comprising:
a. from about 2% to about 7% protein solids;
b. from about 5% to about 25% of an edible triglyceride;
c. from about 0.2% to about 2% of a first emulsifier selected from the group consisting of edible polyglycerol fatty acid esters having an average of from 2 to 10 glycerol units and from 1 to 3 fatty acid groups of from 14 to 18 carbon atoms per polyglycerol moiety and sorbitan fatty acid esters having from 1 to 3 fatty acid groups of from 14 to 18 carbon atoms per sorbitan moiety;
d. from about 0.5% to about 15% by weight of said first emulsifier of a second emulsifier which is an edible anionic surfactant;
e. from about 10% to about 40% of saccharides; and
f. from about 45% to about 65% of water.

3,949,103

NON-AQUEOUS GELLED COMPOSITIONS

Martin Glicksman, Valley Cottage, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 129,182, March 29, 1971, abandoned. This application Nov. 9, 1973, Ser. No. 414,556
Int. Cl.² A23L *1/04, 1/226*
U.S. Cl. 426—573 **9 Claims**

1. A process for preparing an edible non-aqueous water-soluble flavor enhancing gel composition for use in food systems consisting essentially of mixing a flavoring and 0.1–10 parts by weight of an alkyl cellulose selected from the group consisting of methyl cellulose, hydroxy-ethylcellulose, hydroxy-propylmethylcellulose and mixtures thereof with 90–99 parts by weight of an edible polyhydric alcohol selected from the group consisting of propylene glycol, 1,3-butylene glycol and mixtures thereof, which process comprises heating the mixture up to about 190°C until the solids are dissolved and a homogeneous mixture is obtained; cooling the mixture to ambient temperature to form a thick, clear, rigid, water-soluble gel.

3,949,104

STARCH CONTAINING CONCENTRATES

Hsiung Cheng, Decatur, and Carl O. Moore, Rochester, both of Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Jan. 20, 1975, Ser. No. 542,150
Int. Cl.² A23L *1/187, 1/195*
U.S. Cl. 426—578 **32 Claims**

1. A concentrate containing an abeyant starch thickener which upon formulation with additional ingredients is adapted to provide a starch thickened composition, said concentrate comprising:
a. an internal phase of birefringent cold-water swelling starch granules, said starch granules characterized as exhibiting within ten minutes a loss of birefringency when 1% by weight of the cold-water swelling starch is dispersed in water at a temperature of less than 120°F., and
b. a continuous external phase of an aqueous dispersant with said aqueous dispersant comprising water and a starch swelling inhibitor,
said concentrate being further characterized as containing at least one part by weight water for each six parts by weight starch granules with the amount and proportion of water and starch swelling inhibitor in said concentrate being sufficient to inhibit the cold-water swelling starch granules from thickening said concentrate.

3,949,105

MARGARINE FAT

Theophil Wieske, Hamburg; Ingo Witte, Hedendorf, both of Germany; Jacob Hannewijk, Vlaardingen, Netherlands, and Marcel August Guillaume Willems, Borgerhout-Antwerp, Belgium, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 454,523, March 25, 1974, abandoned. This application Apr. 28, 1975, Ser. No. 572,035
Int. Cl.² A23D *3/00*
U.S. Cl. 426—607 **8 Claims**

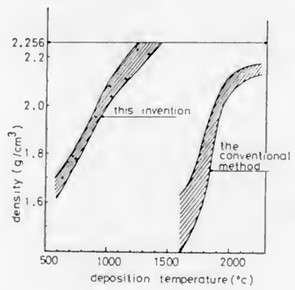
1. Fat blend having dilatation values at 10°C to 20°C of at least 200 and at most 1000 and at 35°C of no more than 75 consisting essentially of 10–95 percent of a co-randomized part and a balance of a non-randomized part, the co-randomized part consisting essentially of 10 to 50 percent of unhydrogenated palm oil 5 to 35 percent of lauric fats, and 10 to 50 percent of hydrogenated trans-containing fats, the non-randomized part containing fats selected from the group consisting of lauric fats, liquid oils, unhydrogenated palm oil and hydrogenated trans-containing fats such that the fat blend contains:
18–50% saturated fatty acids with 16–24 carbon atoms;
3–25% mono-trans unsaturated fatty acids with 16–24 carbon atoms;
3–30 percent saturated fatty acids with 12–14 carbon atoms;
the balance being the remaining fatty acids.

3,949,106

METHOD FOR PRODUCING ISOTROPIC PYROLISIS CARBON COATINGS

Tadashi Araki; Kiro Asano; Jun Yamada, all of Tokyo; Hisao Imaizumi, Urawa, and Takao Awao, Tokyo, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 101,621, Dec. 28, 1970, abandoned. This application Feb. 19, 1974, Ser. No. 443,710
Int. Cl.² C23C *11/10*
U.S. Cl. 427—249 **6 Claims**



1. A process for the production of an article coated with isotropic pyrolytic carbon, which comprises vaporizing a material having a vapor pressure of at least 5 mm Hg at 490°C and at least two condensed rings; and bringing said thus vaporized material into contact with the article heated to a temperature of 600°–1500°C, thereby depositing said carbon as a coating on the article.

3,949,107

METHOD OF POLISHING FLOORS

Daniel Schoenholz, Basking Ridge, N.J., and Herbert Terry, Wilton, Conn., assignors to Liggett & Myers Incorporated, Durham, N.C.

Filed May 31, 1974, Ser. No. 475,300
Int. Cl.² B05D *3/02*
U.S. Cl. 427—316 **10 Claims**

1. The method of forming a bright-drying, long-lasting floor finish which comprises applying to a flooring a polish consisting essentially of an aqueous dispersion of a resin having a glass transition temperature of from about 30° to 80°C, heating at least one of said polish or said flooring to a temperature of from about 40° to 90°C just prior to application of said polish to said flooring and drying said polish to produce said finish.

3,949,108

PROCESS FOR PRODUCING FIRE RESISTANT ORGANIC TEXTILE MATERIALS

Darrell J. Donaldson; Floyd L. Normand; George L. Drake, Jr., and Wilson A. Reeves, all of Metairie, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed June 1, 1973, Ser. No. 365,895
Int. Cl.² C09K *3/28*
U.S. Cl. 427—380 **11 Claims**

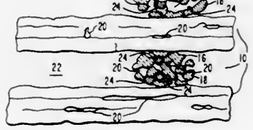
1. A process for preparing flame resistant organic fibrous materials comprising:
a. impregnating an organic textile to a wet pickup of about 50 to 100% by weight with an emulsion consisting essentially of polyvinylbromide at a percentage of 1 to 42% by weight in water,
b. drying the impregnated organic textile (a); and
c. curing the dried organic textile from (b) to produce in the fibrous structure an insoluble flame resistant polymeric material.

3,949,109

SUPPORT STRUCTURES FOR FIXED BED FLOW REACTORS

John Joseph McBride, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 367,725, June 7, 1973, abandoned, which is a continuation-in-part of Ser. No. 351,591, April 16, 1973, abandoned. This application July 26, 1974, Ser. No. 492,228
Int. Cl.² B01J *8/02*; **B32B** *5/12*
U.S. Cl. 428—36 **13 Claims**

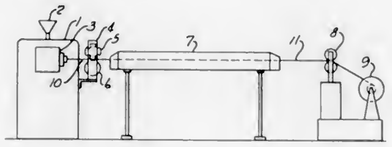


1. A fluid permeable, refractory structure containing no more than 30% cristobalite and comprising:
A. a plurality of layers of porous yarn, each layer having the yarn within it in spaced apart, substantially parallel rows, each layer being arranged in relationship with the neighboring layers such that a plurality of about diamond shaped apertures is defined by the criss-crossing of yarn in the neighboring layers, and each layer in the structure arranged such that the about diamond shaped apertures extend through the structure;
said yarn consisting essentially of siliceous glass-ceramic fibers that are partially sintered and containing at least 60% of stable crystalline phases and comprising between about 20% and 85% of the structure, by weight and having a porosity of 10–70% and
B. from about 15% to about 80% of the structure, by weight, of a ceramic coating of a polycrystalline oxide or oxide compound or mixtures thereof which is affixed and positioned to at least partially surround the fibers but which does not close the diamond shaped apertures; the crystalline phases and ceramic coating having melting points of at least 1400°C.

3,949,110
SPECIALLY FORMED SHRINKABLE TUBE, ITS MANUFACTURING METHOD AND THE ARTICLES USING SUCH TUBE

Toyoshi Nakajima; Keiichi Kojima; Hiroshi Nishitani, and Toshifumi Inui, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 7, 1974, Ser. No. 467,746
Claims priority, application Japan, May 10, 1973, 48-52278; May 30, 1973, 48-60655
Int. Cl.² H02G *15/04;* **F16L** *47/00*
U.S. Cl. 428—36 **6 Claims**

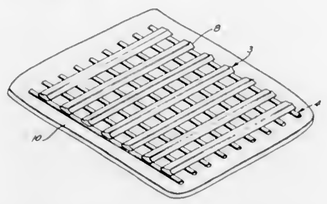


6. A heat shrinkable tube having one portion thereof in the form of a single tube and the remaining portion thereof in the form of plural tubes, said tube manufactured by the process of extruding a thermoplastic tube having a predetermined diameter, longitudinally sealing said tube periodically with pressure while said tube is heated to form predetermined plural tube lengths, subjecting said tube to irradiation, heating said tube to at least the softening temperature of the material of said tube, partially inflating said heated tube, thermosetting said inflated tube by cooling to impart heat shrinkable properties thereto, and periodically cutting the thermoset tube to form a plurality of heat shrinkable tubes having one portion thereof in the form of a single tube and the remaining portion thereof in the form of plural tubes.

3,949,111
FUSION BONDED NON-WOVEN FABRIC

Jacques Pelletier, Le Tremblay, 69810 Albigny-sur-Saone, France

Filed Dec. 3, 1973, Ser. No. 421,168
Claims priority, application France, Dec. 1, 1972, 72.43466
Int. Cl.² B32B *5/12, 5/26;* **D04H** *3/04, 3/14*
U.S. Cl. 428—109 **4 Claims**



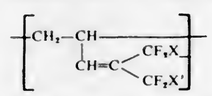
1. A fabric comprising a first plurality of parallel yarns and a second plurality of parallel yarns superimposed upon, and extending transverse to said first plurality of yarns, crossing said first plurality of yarns at a plurality of crossing points, said yarns being formed at least in part from thermoplastic material, the yarns of at least one of said plurality of yarns having longitudinal axes and, at least at said crossing points, lateral portions located laterally of said axes of a thickness smaller than the remaining central portions of said yarns; and autogenously fused joints connecting only said lateral portions of smaller thickness of said one plurality of yarns at said crossing points to said other plurality of yarns, wherein all of said yarns are selected from the group consisting of multi-filament and staple fiber yarns.

3,949,112
TREATMENT OF FIBROUS MATERIALS WITH POLYMERS AND COPOLYMERS OF FLUOROMETHYLATED DIENES

Victor A. Pattison, Clarence Center, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 788,009, Dec. 30, 1968, abandoned. This application Nov. 19, 1973, Ser. No. 416,917
Int. Cl.² D21H *1/40;* **C07C** *21/18, 21/20, 21/22*
U.S. Cl. 428—262 **12 Claims**

1. A method for rendering fibrous materials water and oil resistant which comprises contacting said fibrous material with a polymer or copolymer of 1, 1-bis(halodifluoromethyl)-1, 3-butadiene characterized by the repeating units

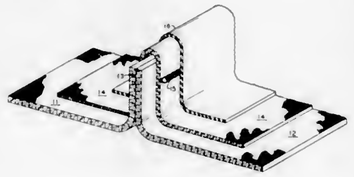


in the skeletal chain wherein said copolymer contains said repeating units in a molar ratio of from about 1:100 to about 100:1 of a copolymerizable monomer, to deposit a water and oil resistant amount of polymer or copolymer thereon, and thereafter drying the thus-treated fibrous material.

3,949,113
LINER FOR RESERVOIR OF LAYERED LIQUIDS

Homer L. Draper, and Lew T. Gray, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 27, 1971, Ser. No. 211,931
Int. Cl.² B32B *7/04*
U.S. Cl. 428—286 **4 Claims**



1. A liner for a reservoir which contains distinct, stratified layers of liquids said liner consisting of (1) a first liner portion comprising a flexible, porous, nonwoven fabric impregnated with a liquid impervious coating of a material which is resistant to chemical reaction with a contained liquid arranged to form an impervious container of sufficient dimensions at least to contain within said first liner portion a distinct volume of said reactive liquid said first material in physical contact with both said reactive liquid and a nonreactive liquid and (2) a second liner portion joined by a fluid impervious seam to said first portion said second portion consisting of a material of construction nonresistant to the reactive liquid that is in contact with said first liner portion and arranged to contain a nonreactive liquid within said second liner portion said second liner portion in physical contact only with the nonreactive liquid.

3,949,114
PACKAGING OF FOODSTUFFS

Giancarlo Viola, Como, and Riccardo Austoni, Monza, both of Italy, assignors to W. R. Grace & Co., Duncan, S.C.

Filed May 6, 1974, Ser. No. 467,546
Claims priority, application United Kingdom, May 10, 1973, 22389/73
Int. Cl.² B32B *15/08, 15/20, 27/08;* **B65B** *29/08*
U.S. Cl. 428—337 **3 Claims**

1. A laminate for use in making packages which may be sterilized in the temperature range of 80° to 130°C (176° to 266°F) and which are suitable for oxygen sensitive foodstuffs comprising:

a. an outermost heat sealable layer which is substantially impermeable to moisture, said layer having a minimum thickness of 0.5 mil (12 microns);

b. an intermediate oxygen barrier layer comprising a copolymer which is obtained by hydrolysis of a copolymer containing 10 to 40 mole percent of units derived from at least one alpha-olefin containing 2 to 4 carbon atoms and 90 to 60 percet of units derived from at least one vinyl ester of a carboxylic acid and in which at least 85 percent of the vinyl ester units are hydrolysed, said oxygen barrier layer having a minimum thickness of 0.1 mil (2.5 microns);

c. a substrate layer comprising a polymer which is substantially impermeable to moisture and resistant to pasteurization and sterilization, said substrate layer having a minimum thickness of 0.5 mil (12 microns); and,

d. an aluminum foil layer having a thickness in the range of 0.25 mil (6 microns) to 0.5 mil (12 microns), said aluminum being between said heat-sealable and substrate layers.

3,949,115
HOLLOW FILAMENTARY STRUCTURES

Yoshio Tamura, and Koichiro Ohtomo, both of Takatsuki, Japan

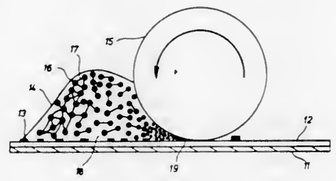
Division of Ser. No. 334,203, Feb. 21, 1973, Pat. No. 3,887,747. This application Feb. 24, 1975, Ser. No. 552,610
Claims priority, application Japan, Feb. 24, 1972, 47-19458; Feb. 26, 1972, 47-19983
Int. Cl.² B32B *9/00;* **D02G** *3/00*
U.S. Cl. 428—367 **7 Claims**

1. A hollow carbon filament having adsorption activity, characterized in that said filament consists essentially of carbon; the hollow structure of the filament continuously extends in the axial direction of the filament; said filament has a degree of hollowness of 10 – 80%; and the surface area of said filament is at least 400 square meters per gram.

3,949,116
METHOD OF DEVELOPING AN ELECTROSTATIC LATENT IMAGE IN WHICH SHEAR STRESS IS EMPLOYED

Terence M. Lawson, Aldgate, and Blair D. Howell, Lockleys, both of Australia, assignors to Research Laboratories of Australia Pty. Limited, Eastwood, Australia

Filed June 10, 1974, Ser. No. 477,924
Claims priority, application Australia, May 1, 1974, 7402/74
Int. Cl.² G03G *13/06, 9/08*
U.S. Cl. 427—17 **7 Claims**



1. The method of developing an electrostatic latent image contained on a surface comprising the steps of

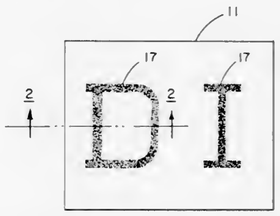
applying to said surface a dispersion in a first state wherein the flow properties of said dispersion are non-Newtonian and wherein said dispersion consists essentially of a liquid phase having a dielectric constant less than 3 and volume resistivity in excess of 10^9 ohm cm, and of a solid phase comprising electroscopic marking particles and a resinous flocculating bonding medium therefore to establish a matrix sufficiently strong to prevent extraction of individual electroscopic marking particles from said matrix by attraction to said electrostatic latent image, and

applying to said dispersion a shear stress of sufficient magnitude to convert said dispersion from said first state to a second state wherein the flow properties of said dispersion become Newtonian and wherein said solid phase is deflocculated in said liquid phase whereby individual electroscopic marking particles are attracted to said electrostatic latent image contained on said surface and deposited thereon.

3,949,117
IMAGE INTENSIFICATION

Alex E. Jvirblis; Walter Roth, and Murray Goodman, all of La Jolla, Calif., assignors to Diagnostic Instruments, Inc., San Diego, Calif.

Continuation of Ser. No. 212,470, Dec. 27, 1971, abandoned. This application Jan. 23, 1974, Ser. No. 435,714
Int. Cl.² B44D *1/094, 1/44;* **C03G** *13/08*
U.S. Cl. 427—22 **16 Claims**



1. A process for enhancing the optical density of human-readable images formed of visible material applied on a substrate comprising:

forming on a shrinkable substrate an image defined by a plurality of powder particles adapted to provide an image having substantially less than an optimum density; and

forming a reduced-size image of substantially improved optical density by shrinking said substrate with said image thereon, said particles being fixed on the substrate.

3,949,118
PROCESS FOR SOLDERING DIFFICULTLY SOLDERABLE MATERIAL HAVING OXIDE SURFACE AND A SOLDER ALLOY THEREFOR

Kentaro Nagano; Kohji Nomaki, and Yoshihito Saoyama, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 273,790, July 21, 1972, abandoned. This application Aug. 9, 1974, Ser. No. 496,162
Int. Cl.² C23C *1/04, 1/06, 1/16*
U.S. Cl. 427—57 **4 Claims**

1. A process for applying a solder to a difficultly solderable material having an oxide surface comprising:

heating a solder spatula to about 250°–450°C,

preheating the oxide surface to about 100°–200°C before the soldering operation,

contacting the difficultly solderable material with a solder consisting essentially of 40–98 wt. % of Pb; 2–50 wt. % of Sn; 1–4 wt. % of at least a metal selected from the rare earth metals; 0–10 wt. % of Zn; 0.05–10 wt. % of Sb; 0–0.01 wt. % of Al; and 0–0.5 wt. % of at least one metal selected from the group consisting of Si, Ti and Be,

contacting the solder with the solder spatula,

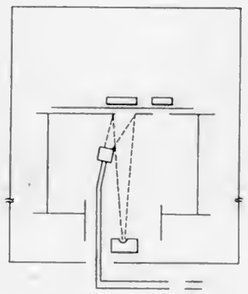
vibrating ultrasonically the solder spatula so that the activity of the oxide surface is improved and a strong bond is formed between the solder and the oxide surface.

3. A process for applying a solder to a difficultly solderable material having an oxide surface comprising:
heating a solder spatula to about 250°–450°C,
preheating the oxide surface to about 100°–200°C before the soldering operation,
contacting the difficultly solderable material with a solder consisting essentially of 20–50 wt. % of Pb; 50–98 wt. % of Sn; 1–4 wt. % of at least a metal selected from the rare earth metals; 0–10 wt. % of Zn; 0.05–10 wt. % of Sb; 0–0.01 wt. % of Al; and 0–0.5 wt. % of at least one metal selected from the group consisting of Si, Ti and Be,
contacting the solder with the solder spatula,
vibrating ultrasonically the solder spatula so that the activity of the oxide surface is improved and a strong bond is formed between the solder and the oxide surface.

3,949,119
METHOD OF GAS DOPING OF VACUUM EVAPORATED EPITAXIAL SILICON FILMS

John Shewchun, Burlington, and Fredrick David King, Hamilton, both of Canada, assignors to Atomic Energy of Canada Limited, Canada

Continuation of Ser. No. 276,926, Aug. 1, 1972, abandoned. This application Oct. 18, 1974, Ser. No. 515,853
Claims priority, application Canada, May 4, 1972, 141298
Int. Cl.² H01L *21/203, 21/205*
U.S. Cl. 427—85 **4 Claims**

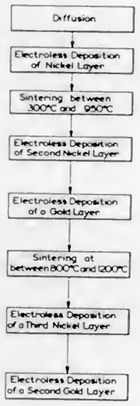


1. A method of forming a semi-conductor junction comprising the steps of:
i. cleaning a polished silicon substrate,
ii. cleaning a silicon evaporation charge,
iii. disposing said substrate and said charge in a high vacuum of 10^{-6} to 10^{-9} mm Hg,
iv. heating said substrate to a deposition temperature in the range of 550° to 850°C.,
v. evaporating said charge onto the surface of said substrate at rates of 3 to 10 angstroms per second to deposit a film thereon, and
vi. directing a decomposable doping gas into said high vacuum onto the substrate surface during the evaporation of said charge thereby causing a partial pressure rise in the overall vacuum, a chemical reaction occurring in which the doping gas decomposes releasing the dopant which is incorporated into said film.

3,949,120
METHOD OF MAKING HIGH SPEED SILICON SWITCHING DIODES

Wolfgang Leibfried, Leonberg; Wolfgang Schynoll, Bietigheim, and Dietrich Wulff, Gerlingen, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Continuation of Ser. No. 196,941, Nov. 9, 1971, abandoned. This application Oct. 19, 1973, Ser. No. 408,093
Claims priority, application Germany, Dec. 2, 1970, 2059175
Int. Cl.² B05D *5/12*
U.S. Cl. 427—89 **6 Claims**



1. Method of making high speed silicon switching diodes comprising the steps of:
electroless applying a nickel layer to the sides of a slice of single crystal silicon material having a long charge carrier lifetime corresponding to a diode reverse recovery time of approximately 10^{-5} seconds, said slice having a *p-n* junction therein intermediately between its sides so as to provide a diode structure (2,2',3);
electroless applying a gold layer (4) over the nickel layer;
and sintering the slice, after applying the gold layer (4) at a temperature of between 800° and 1200°C to reduce the charge carrier lifetime in said wafer by diffusing both nickel and gold into said silicon slice, whereby a composite layer (5) of gold, nickel and silicon is formed on the sides of said silicon slice.

3,949,121
METHOD OF FORMING A HYDROPHOBIC SURFACE

John Thomas Kenney, Lawrence Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 12, 1973, Ser. No. 424,015
Int. Cl.² B44D *5/00;* **H01B** *1/02*
U.S. Cl. 427—98 **5 Claims**

1. A method of forming a conductive pattern on a nonconductive surface, which comprises:
a. coating the surface with a stable aqueous colloidal wetting sol, formed by a hydrolysis and nucleation reaction, comprising insoluble hydrous oxide particles of an element selected from the group consisting of Be, In, Cr, Fe, Co, Ni, Tl, Cu, Zn, Sn and mixtures thereof, said particles having a size within the range of 10A to 10,000A, to form a coated surface of hydrophilic character;
b. selectively exposing said coated hydrophilic surface to a source of ultraviolet radiation having a wavelength ranging from 1,800A to 3,300A to render regions thereof hydrophobic and to delineate an ink retaining surface pattern corresponding to the conductive pattern; and

c. applying a conductive ink to said selectively exposed surface to deposit said conductive ink on said delineated pattern.

4. In an improved method of forming a metallic pattern on a dielectric surface comprising the steps of:
a. sensitizing the surface with an aqueous sensitizer solution;
b. activating the activated surface with an aqueous activating solution; and
c. treating the activated surface with an electroless metal deposition solution to deposit an electroless metal thereon, wherein the improvement comprises:
a¹. prior to step (a) coating a surface with a stable aqueous colloidal wetting sol, comprising insoluble hydrous oxide particles of an element selected from the group consisting of Be, In, Cr, Fe, Co, Ni, Tl, Cu, Zn, Sn and mixtures thereof, said particles having a size within the range of 10A to 10,000A, to form a coated surface of hydrophilic character; and
b¹. prior to step (a) selectively exposing said coated hydrophilic surface to a source of ultraviolet radiation having a wavelength ranging from 1800A to 3300A to render regions thereof hydrophobic and to delineate a hydrophilic surface pattern corresponding to the metallic pattern.

3,949,122
PROCESS FOR MAKING A METALLIC COATING ON SURFACES FORMED OF TITANIUM OR ANOTHER REFRACTORY METAL

Pierre T. Lepetit, Saint-Vrain, and André R. Hivert, Pontoise, both of France, assignors to Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.), Chatillon-sous-Bagneux, France

Filed June 24, 1974, Ser. No. 482,662
Claims priority, application France, June 26, 1973, 73.23295
Int. Cl.² C23C *13/02*
U.S. Cl. 427—229 **12 Claims**

1. A process for producing a resistant metal coating on the surface of a refractory metal member capable of forming at least one volatile refractory metal halide, said refractory metal member being selected from titanium, tantalum, molybdenum, niobium, tungsten and zirconium, comprising the successive steps of applying as a coating onto said surface at least one coating metal halide, said coating metal halide being stable both in the isolated state and when applied to said surface, and being less volatile than said refractory metal halide, and heating the coated surface to a temperature sufficient to react said coating metal halide with said refractory metal member, precipitate the metal of said coating metal onto said surface and volatilize off the refractory metal halide formed.

3,949,123
COATED FABRIC HAVING SUEDE-LIKE SURFACE

Robert N. Steel, Newtown, Conn., assignor to Uniroyal Inc., New York, N.Y.

Filed Dec. 8, 1972, Ser. No. 313,388
Int. Cl.² B32B *3/00, 33/00, 5/18*
U.S. Cl. 428—95 **13 Claims**

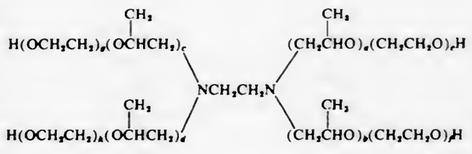
1. A coated fabric having a suede-like surface, comprising a base fabric coated with an expanded surface coating which is a blend of vinyl chloride resin and butadiene-acrylonitrile rubber containing a sulfur or a sulfur-yielding vulcanizing agent for the butadiene-acrylonitrile rubber in amount sufficient to vulcanize the butadiene-acrylonitrile rubber, whereby the said butadiene-acrylonitrile rubber is cured, the surface of said coating being abraded to expose cells of the expanded blend, thereby providing a suede-like surface which is free from objectionable glint by reason of the presence of the cured butadiene-acrylonitrile rubber in the expanded blend.

3,949,124
METHOD FOR TREATING TEXTILE MATERIALS AND TEXTILE MATERIALS TREATED IN SUCH A WAY, AND TEXTILE TREATING COMPOSITIONS

Dara Ardeshir Jilla, Collinsville, Va., assignor to HCA-Martin, Inc., Martinsville, Va.

Filed July 12, 1974, Ser. No. 488,068
Int. Cl.² D03D *27/00;* **D04H** *11/00;* **D05C** *17/00*
U.S. Cl. 428—96 **10 Claims**

1. Carpet yarn or carpet having lasting hydrophilic, soil-repellency and antistatic properties comprising organic textile fibers having a normally solid coating consisting essentially of:
a. at least one phase of an alkylphenol which is insoluble in water and which is dissolved in an alcohol, a ketone, or other organic solvent;
b. at least one phase of a copolymer of dimethyl terephthalate with a tetrol compound having the general formula:



where *a,b,c,d,e,f,g*, and *h* are each integers and the total of *a,b,c*, and *d* is between 8 and 850 and the total of *e,f,g*, and *h* is between 8 and 1,000; which is relatively insoluble in water and which is dissolved in an alcohol, a ketone, or other organic solvent;
c. at least one phase of a reaction product of an organic diisocyanate and polyethylene glycol or other polyalkylene glycol which is relatively insoluble in water and which is dissolved in an alcohol, a ketone or other organic solvent;
d. at least one phase of a fluorochemical compound dispersed in water which is insoluble in water and which contains a fluorinated aliphatic radical with at least three carbon atoms, said compound having at least a main transition temperature in excess of approximately 45° C;
e. at least one phase of an acrylic copolymer dispersed in water which is insoluble in water and which is derived from polymerizable monomers, whereby the acrylic copolymer compound has at least a main transition temperature in excess of approximately 45° C; and
f. at least one phase of a compound dispersed in water which contains a cross-linkable, water-dispersible polyester and an amino resin which cross-link under the influence of applied heat to form a water-insoluble film, said film having at least a main transition temperature in excess of approximately 45° C,
whereby at least one of the said phases is continuous.

3,949,125
MOLDED SOLID PLASTICS ARTICLES AND A METHOD FOR THEIR MANUFACTURE

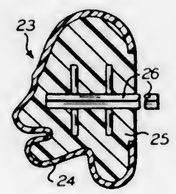
Arthur H. Roberts, 12 Lynnwood Drive, Westbury, N.Y. 11590

Continuation-in-part of Ser. No. 779,837, Nov. 29, 1968, Pat. No. 3,655,861, and a continuation-in-part of Ser. No. 16,537, March 4, 1970, abandoned, which is a continuation-in-part of Ser. Nos. 475,989, July 30, 1965, Pat. No. 3,414,456, and Ser. No. 523,778, Jan. 28, 1966, Pat. No. 3,419,455, and Ser. No. 525,667, Feb. 7, 1966, Pat. No. 3,420,729, and Ser. No. 526,605, Feb. 10, 1966, abandoned, and Ser. No. 760,415, Sept. 18, 1968, abandoned, and Ser. No. 774,230, Sept. 18, 1968, Pat. No. 3,652,748, and Ser. No. 764,272, Oct. 1, 1968, Pat. No. 3,547,747, each is a continuation-in-part of Ser. No. 455,764, said Ser. No. 475,989, and Ser. No. 523,778, and Ser. No. 525,667, and Ser. No. 526,605, each is a continuation-in-part of Ser. No. 22,002, April 13, 1960, abandoned. This application Mar. 8, 1974, Ser. No. 449,350

The portion of the term of this patent subsequent to Oct. 7, 1985, has been disclaimed.

Int. Cl.² B32B *3/06, 3/00*

U.S. Cl. 428—99 **10 Claims**



1. A rigid decorative substantially cavity-free article consisting of a pliable hollow premolded, preset, jointless and one-piece outer layer component formed of a resilient plastics material and a single piece inner structural backing component, said molded outer layer component having an access opening to its cavity and which, when free of the structural backing member, is at least temporarily deformable by hand pressure, the inner structural backing member component being a rigid thermosetting plastics in a thermoset state that is free of a cellular structure, said backing component being in intimate contact with the entire inner surface of said outer layer component while fully filling the latter's cavity.

9. The article of claim 1, wherein an additional decorative component is embedded in the rigid structural backing member component, said decorative component protruding from said article while said backing member component is in contact with the entirety of the outer surface of that portion of the additional decorative component which is not protruding from said article.

3,949,126
MULTIFILAMENT COMPOSITES

James A. Crawford, Jr., Portland, Maine, assignor to Fiber Materials, Inc., Biddeford, Maine

Filed June 17, 1974, Ser. No. 479,868

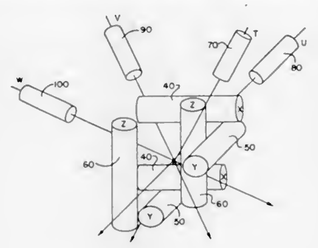
Int. Cl.² B32B *5/12*

U.S. Cl. 428—113 **13 Claims**

1. A composite structure comprising, in combination:

a body, and

a three-dimensional array of flexible reinforcing yarns interwoven together and embedded in said body, said array comprising a plurality of at least four groups of yarns, wherein the yarns within each of said groups are disposed substantially in parallel with respect to one another, the yarns of three of said groups are disposed in a mutually orthogonal relationship, each of the remaining groups of



yarns being disposed diagonally to the yarns of at least two of said three groups.

3,949,127
APERTURED NONWOVEN WEBS

Kurt W. Ostermeier, Menasha, and Michael C. Josephs, Green Bay, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 14, 1973, Ser. No. 359,672

Int. Cl.² B32B *3/10, 27/02;* **D04H** *1/54*

U.S. Cl. 428—137 **8 Claims**

1. A strong, stretchable web having desirable fabric-like attributes comprising randomly arranged, molecularly oriented thermoplastic fibers, said web having intermittent perforations through the thickness thereof with the fibers located in the web areas immediately surrounding and defining the perforations being autogenously attached to one another by surface fusion to provide web strength and with the fibers in the regions of the web between the perforations being substantially unbonded to one another, said perforations having propagated outwardly from a central, intensely fused portion of a bond region containing progressively diminishing bond intensity in the direction of the edges thereof.

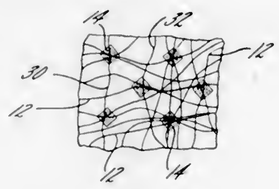
3,949,128
PRODUCT AND PROCESS FOR PRODUCING A STRETCHABLE NONWOVEN MATERIAL FROM A SPOT BONDED CONTINUOUS FILAMENT WEB

Kurt W. Ostermeier, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 22, 1972, Ser. No. 282,684

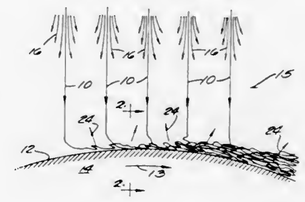
Int. Cl.² B32B *3/00, 5/22;* **D04H** *1/04*

U.S. Cl. 428—152 **9 Claims**



1. A fabric-like, nonwoven material having bi-axial elasticity in the basic plane comprised of substantially continuous and randomly deposited, molecularly oriented filaments of a polyolefin thermoplastic polymer autogenously bonded together at intermittend regularly patterned areas throughout the material with unbonded spans of filaments between the bond areas, said filaments being heat set in undulating configuration with respect to the basic plane of said material to form a series of repeating crests and valleys which flatten into the basic plane on strain induced elongation of the material in the undulating direction and reassume their undulated configuration on strain release to provide substantially complete elastic recovery in the undulating direction up to at least about 10% strain, said material also containing unbonded spans of filaments disposed in non-linear, buckled configuration with respect to a second axial direction in the basic plane at an angle to the undulating direction and heat set therein such that, on strain induced elongation up to at least about 10% in the second axial direction, filaments align in said second axial direction and, on strain release, substantially spontaneously reassume their non-linear, buckled configuration, said regularly patterned areas occupying less than about 50% of the surface area of the material and distributed in a density of about 50–3200/in.² .

ment cross-over points are bonded on the smooth side of the fabric, and less than 50% of the filament cross-over points are bonded on the opposite rougher side of the fabric, and



wherein the fabric density on the smooth side is more than 10% higher than the average fabric density, and the fabric density on said opposite side is more than 10% lower than the average fabric density.

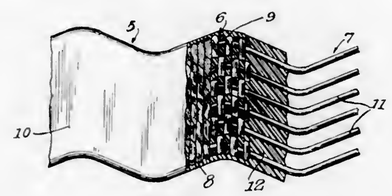
3,949,129
ELASTOMER COATED FABRIC

Albert L. Hubbard, 677 E. Channel Islands Blvd., Oxnard, Calif. 93030

Continuation of Ser. No. 41,290, May 28, 1970, abandoned. This application Nov. 9, 1972, Ser. No. 305,175

Int. Cl. D03d *13/00*

U.S. Cl. 428—190 **9 Claims**



1. A woven fabric tape comprising a laminate consisting of

a. a warp consisting of substantially parallel flexible elongated elements containing ferrous fibers or strands, and

b. a weft formed of yarn elements of resilient non-metallic fibers interwoven with and around the elements of the warp, and defining a tape of predetermined constant width throughout the length thereof,

c. the weft elements being transversely displaced in the plane of the tape, alternately, at longitudinally and uniformly spaced portions to impart to the fabric tape, and hence the warp elements, a wavy or rick-rack shape and the ability to elastically elongate,

d. the tape, including the warp elements, upon the application of tension longitudinally thereto, elongating through a general straightening of the wavy or rick-rack shape thereof, the warp elements limiting the elongation of the tape,

e. and an elastomer coating having its opposite edges extending beyond and in parallel adjacency to the opposite edges of the woven warp and weft elements of the tape.

3,949,130
SPUN BONDED FABRIC, AND ARTICLES MADE THEREFROM

Reinhardt N. Sabee, Appleton, and Eckhard C. Schwarz, Neenah, both of Wis., assignors to Tuff Spun Products, Inc., Appleton, Wis.

Filed Jan. 4, 1974, Ser. No. 430,849

Int. Cl.² B32B *7/04*

U.S. Cl. 428—192 **13 Claims**

1. A spun bonded two sided fabric of substantially continuous filaments, said filaments having a thickness of ½ to 100 microns, said fabric having one smooth side with surface filaments flattened in the plane of the fabric surface for portions of their length, and wherein more than 70% of the fila-

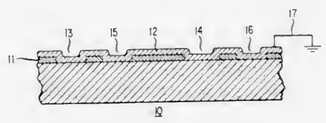
3,949,131
PHOTOMASKS WITH ANTISTATIC CONTROL

David Bruce Fraser, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 19, 1974, Ser. No. 480,618

Int. Cl.² B05D *5/12*

U.S. Cl. 428—201 **6 Claims**



1. A photomask for use in photolithographic processing of semiconductor microcircuits comprising a rigid, transparent plate, a patterned photomask coating on the plate, the coating having void spaces representing a positive or negative image of at least partial features of said microcircuit, a continuous, transparent, electrically conductive film covering the photomask pattern and the void spaces, and electrical contact means for electrically grounding the film.

3,949,132
MARKING BOARDS AND ERASABLE INK COMPOSITIONS THEREFOR

Daniel W. Seregely, Los Angeles, and Bernard G. Kidda, Marina del Rey, both of Calif., assignors to The Gillette Company, Santa Monica, Calif.

Division of Ser. No. 256,818, May 25, 1972, Pat. No. 3,834,823. This application Feb. 25, 1974, Ser. No. 445,597

Int. Cl.² B32B *3/00*

U.S. Cl. 428—207 **3 Claims**

1. A marking board having a smooth, virtually non-porous plastic surface upon which are legible tracings which can easily be erased, said tracings consisting essentially of a film of a liquid release agent and a liquid silicone surface active agent which has an HLB of at least 10, one surface of which is in contact with said plastic surface and the other surface of said film having a layer of water-soluble dye particles not in contact with said plastic surface, said release agent being substantially colorless and having low toxicity and a vapor pressure of less than 0.01mm. of mercury at 25°C. and being selected from the group consisting of a polyester, a polyether, an ester of carboxylic acid having a molecular weight greater than 100, and an aliphatic glycol havingg at least six carbon atoms, said water-soluble dye being insoluble in said release agent.

3,949,133

HIGH PRESSURE ASSEMBLY AND LAMINATE

Pasco R. Santurri, Ballwin; Howard W. Mumm, St. Louis; Robert L. Flowers, Ellisville, and Robert A. Eaton, St. Peters, all of Mo., assignors to The Orchard Corporation of America, St. Louis, Mo.

Filed Jan. 28, 1974, Ser. No. 437,197
Int. Cl.² B32B *7/02, 27/08*
U.S. Cl. 428—211 **18 Claims**

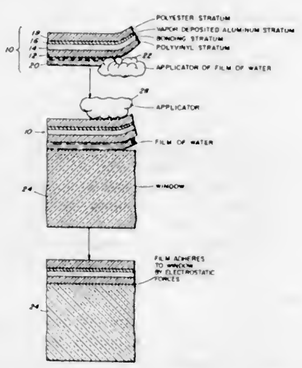
8. A high pressure laminate consisting essentially of an unprinted overlay sheet of cellulosic material, a normally unimpregnated decorative sheet having a printed side and a back side, and being of fibrous cellulosic material having an apparent density of 0.5 to 1.0 grams per cubic cm., a basis weight of 10 to 25 lbs. per 3,000 sq. ft., and a porosity (Gurley Scale) of 1 to 15 seconds per 100 ml., and a core comprised of a multiplicity of superimposed sheets of cellulosic material, the cellulosic material of said overlay sheet and of said core sheets being relatively thicker than that of the decorative sheet, said decorative sheet being presented with its printed side immediately underlying the confronting face of said overlay sheet, an adhesive nonpenetrating surface coating provided on at least one face of said decorative sheet, said adhesive coating consisting essentially of a thermosetting resin from the class consisting of phenol-formaldehyde, phenol-furfural, epoxies, resorcinol-formaldehyde, and polyvinyl butyral, a first fusible resin selected from the class consisting of melamine formaldehyde resins and modified melamine formaldehyde resins securing said decorative sheet to said overlay sheet, a second fusible resin from the class consisting of phenolic resins securing said decorative sheet upon its opposite face to said core.

3,949,134

SOLAR CONTROL FILM FOR USE BY CONSUMERS AND THE LIKE

Michael E. Willdorf, Malden, Mass., assignor to Material Distributors Corporation, Woburn, Mass.

Filed July 18, 1973, Ser. No. 380,485
Int. Cl.² B32B *15/08*; **C09J** *7/02*
U.S. Cl. 428—215 **16 Claims**



1. A flexible solar control film sheet for adherence to a glass window, said solar control film comprising:

a. a polyester self-supporting stratum ranging in thickness from ¼ mil to 6 mils, said polyester self-supporting stratum being optically clear and transparent to visible light;

b. a polyvinyl self-supporting stratum ranging in thickness from ¼ to 6 mils, said polyvinyl self-supporting stratum being optically clear and transparent to visible light;

c. an inner bonding stratum between the adjacent faces of said polyester self-supporting stratum and said polyvinyl self-supporting stratum, said inner bonding stratum being composed of a polymer selected from the class consisting of polyesters acrylic esters, and polyurethanes;

d. a vapor deposited aluminum stratum on the face of said self-supporting polyester stratum, said vapor deposited aluminum stratum having a thickness of no more than 300 angstrom units and a visible light transmission ranging from 5% to 60%; and

e. the outer face of said polyvinyl self-supporting stratum, having an electrostatic charge by which it serves as a bonding stratum;

f. said polyester self-supporting stratum, said polyvinyl self-supporting stratum, said inner bonding stratum, and said vapor deposited aluminum stratum being moisture permeable;

g. at least one of said polyester stratum and said polyvinyl stratum containing an ultraviolet light absorbing material effective in the range of 200 to 380 nanometers;

h. said inner bonding stratum ranging in thickness from 0.0001 to 0.0003 inch.

3,949,135

STRUCTURED FILM

Josef Vercauteren, New Milford, N.J., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed June 24, 1969, Ser. No. 835,944
Int. Cl.² B32B *27/08, 27/28, 27/30*
U.S. Cl. 428—215 **9 Claims**



1. A structured film that comprises (a) an ionomer film having a thickness between about 0.5 and 20 mils, said ionomer being a metal-containing ionic copolymer that is the reaction product obtained by the free radical polymerization of about 50 to 99 molar percent of an alpha-olefin having 2 to 10 carbon atoms and about 1 to 50 molar percent of at least one alpha, beta-ethylenically unsaturated carboxylic acid and the neutralization of at least 10 percent of the carboxylic acid groups of the copolymer with a metal ion having a valence of 1 to 3 or with an organic polyamine having a dissociation constant of at least 1×10^{-6}; (b) an organic non-ionic polymer film having a thickness between about 0.5 mil and 20 mils, said non-ionic polymer being a member selected from the group consisting of vinyl halide homopolymers, vinyl halide copolymers, polyvinyl alcohol, polyolefins, polyesters, polyamides, polystyrene, cellulose esters, polyacrylates, polymethacrylates, polyacetals, and polycarbonates, said non-ionic polymer film being in bonded relationship to said ionomer film; and at the interphase of the polymer films (c) a polyalkyleneimine composed of alkyleneimine units having from 2 to 4 carbon atoms in the amount of about 5 grams to 100 grams per thousand square feet of the bonded film interphase.

3,949,136

FLUORINE-CONTAINING ORGANOPOLYSILOXANES, PROCESS FOR THEIR USE

Hans Deiner, Hainhofen; Franz Mosch, Diedorf; Bernhard Sandner, Biburg, and Willy Bernheim, Diedorf, all of Germany, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 422,821, Dec. 7, 1973, Pat. No. 3,903,123. This application Mar. 24, 1975, Ser. No. 561,511
Claims priority, application Switzerland, Dec. 22, 1972, 18726/72
Int. Cl.² D06M *13/08, 15/66*
U.S. Cl. 428—260 **12 Claims**

1. A method of rendering organic fibre material oil and water repellent, which comprises treating said material with a solution or dispersion of the reaction products of

a. organopolysiloxanes in which hydrogen and either alkyl or aryl groups are bonded to silicon,

b. a perfluoroalkyl compound of the formula

$$R_f\text{—}SO_2\text{—}NH\text{—}CH_2\text{—}CH{=}CH_2$$

wherein R_f represents perfluoroalkyl with 6 to 14 carbon atoms, and optionally

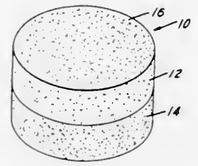
c. a fluorine-free vinyl monomer.

3,949,137

GEL-IMPREGNATED SPONGE

Harold S. Akrongold, and Rochelle Akrongold, both of 39 Cathay Road, East Rockaway, L. I., N.Y.

Filed Sept. 20, 1974, Ser. No. 507,757
Int. Cl.² B32B *3/26*
U.S. Cl. 428—311 **11 Claims**



1. A shaped article comprising a unitary sponge body having a selected porosity, said sponge body being impregnated with a solidified gel material, said gel material extending throughout the interior of the sponge body but being spaced from the exposed surface areas of said sponge body, said exposed surface areas being free of said solidified gel material.

7. A method of making a shaped article which comprises inserting a gel-forming material into a mold at a temperature at which said material is in the liquid state, immersing a sponge into the gel-forming material in the mold while said material is still in the liquid state, removing the sponge, which has been impregnated with the material during immersion, from the mold before solidification of said material has been completed, reversing the impregnated sponge, while maintaining said sponge free from compressive pressure, to permit the material, while still in its liquid state, to collapse inwardly from the immersed surface areas of the sponge, and then allowing the impregnated sponge to cool to complete solidification of said material below said surface areas.

3,949,138

COATINGS CONTAINING PLASTIC POLYMERIC PIGMENTS

Edward J. Heiser, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 268,897, July 3, 1972, Pat. No. 3,853,579, which is a continuation-in-part of Ser. No. 732,100, May 27, 1968, Pat. No. 3,779,800. This application Sept. 19, 1974, Ser. No. 507,519
The portion of the term of this patent subsequent to Dec. 18, 1990, has been disclaimed.
Int. Cl.² B32B *5/16*
U.S. Cl. 428—323 **16 Claims**

1. A coated paper comprising

A. a paper substrate having intimately adhered thereto;

B. an improved coating comprising a binding amount of a binder and an opacifying amount of a pigment, provided that (1) the ratio of binder to pigment is in the range from about 1.3 to about 12 volume parts of binder to about 38.8 volume parts of pigment and (2) at least a portion of said pigment being in the form of discrete, substantially spheroidal, water- and binder-insoluble, non-film forming, polymeric plastic particles having an average diameter of from about 0.3 to about 0.8 micron, said portion of plastic particles constituting at least about 1 volume percent based on total pigment and being sufficient to impart improved coating properties as compared to a coating containing only inorganic pigment; and

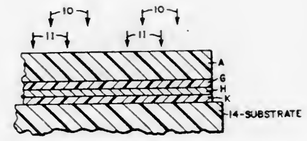
C. printing applied to a side of the resulting coated paper substrate on which said coating has been previously applied.

3,949,139

LAMINAR REFLECTIVE PLATELETS AND COMPOSITIONS AND ARTICLES COMPRISING THEM

Richard E. Dunning, Munster, Ind., and Victor H. Rampelberg, Flossmoor, Ill., assignors to Avery Corporation, San Marino, Calif.

Division of Ser. No. 225,188, Feb. 10, 1972, abandoned. This application Jan. 25, 1974, Ser. No. 436,676
Int. Cl.² B32B *5/16, 15/20*; **C09C** *1/64*
U.S. Cl. 428—328 **9 Claims**



5. A hot stamp tape comprising a carrier sheet, and a highly reflective and corrosion-resistant transferable layer on one side of the carrier sheet, the transferable layer being releasable from the carrier sheet and being adherently attachable to a substrate in response to heat and pressure, the hot stamp tape being characterized by the combination of:

the carrier sheet comprising a heat-resistant, flexible, foldable sheet of synthetic resinous material,

the transferable layer comprising

a. a protective layer of a transparent flexible, ulraviolet-resistant synthetic resinous material coated on the carrier sheet,

b. a reflective layer coated on the protective layer and comprising 50 to 80% by weight of platelets which include a first lamina of synthetic resinous material, a second highly reflective lamina of a metal selected from the group consisting of aluminum, gold, copper, titanium, molybdenum, vanadium, cadmium, zinc, tin, nickel, chromium and indium, the second lamina having a thickness of 0.3 to 3.5 millionths of an inch, each of the platelets having a total thickness of from 0.0003 to 0.002 inch, and

c. a layer of non-platelet opaque pigment coated on the reflective layer.

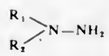
3,949,140

ORGANO SILICON DERIVATIVES COATED ON GLASS FIBERS

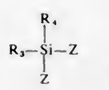
Lawrence P. Biefeld, Toledo; Kevin M. Foley, Hebron, and Frank Paul McCombs, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 6, 1974, Ser. No. 467,311
Int. Cl.² B32B *17/04*; **C07F** *7/18*
U.S. Cl. 428—378 **21 Claims**

1. Glass fibers having a thin size coating thereon, said coating formed from a silicon compound prepared by reaction of (1) a dialkyl hydrazine having the formula

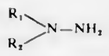


wherein R_1 and R_2 are each alkyl groups containing 1 to 8 carbon atoms with (2) an epoxy silane having the formula

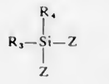


wherein R_3 is an organic group containing an epoxy group and containing 3 to 10 carbon atoms, R_4 is selected from the group consisting of alkyl, hydrogen and lower alkoxy and Z is a lower alkoxy group, with the molar ratio of the dialkyl hydrazine to the epoxy silane being within the range of 0.7 to 1.4.

7. A glass fiber bundle comprising a plurality of glass fibers, each of the individual fibers having a thin size coating on the surfaces thereof, said coating comprising an organo silicon compound prepared by reaction of (1) a dialkyl hydrazine having the formula

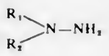


wherein R_1 and R_2 are each alkyl groups containing 1 to 8 carbon atoms with (2) an epoxy silane having the formula

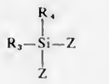


wherein R_3 is an organic group containing an epoxy group and containing 3 to 10 carbon atoms, R_4 is selected from the group consisting of alkyl, hydrogen and lower alkoxy and Z is a lower alkoxy group, with the molar ratio of the dialkyl hydrazine to the epoxy silane being within the range of 0.7 to 1.4, and an impregnant in the bundle, said impregnant comprising a blend of an elastomer and a resorcinol-aldehyde resin.

14. In a glass fiber reinforced product in which an elastomer or a thermosetting or thermoplastic resin constitutes a continuous phase in which the glass fibers are distributed, the improvement in the bonding relationship between the glass fibers and the elastomer or resin comprising a coating on the glass fibers comprising an organo silicon compound prepared by reaction of (1) a dialkyl hydrazine having the formula



wherein R_1 and R_2 are each alkyl groups containing 1 to 8 carbon atoms with (2) an epoxy silane having the formula



wherein R_3 is an organic group containing an epoxy group and containing 3 to 10 carbon atoms, R_4 is selected from the group consisting of alkyl, hydrogen and lower alkoxy and Z is a lower alkoxy group, with the molar ratio of the dialkyl hydrazine to the epoxy silane being within the range of 0.7 to 1.4.

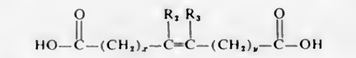
3,949,141

FIBER REINFORCED ELASTOMERS

Alfred Marzocchi, Cumberland, R.I., and Nicholas S. Janetos, Columbus, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 6, 1974, Ser. No. 467,422
Int. Cl.² B32B *17/04, 15/02*
U.S. Cl. 428—378 **34 Claims**

1. Fibers having a thin coating thereon, said coating consisting essentially of the aziridine polyester consisting essentially of the reaction product of ethylene imine and a polyester formed from an acid having the formula



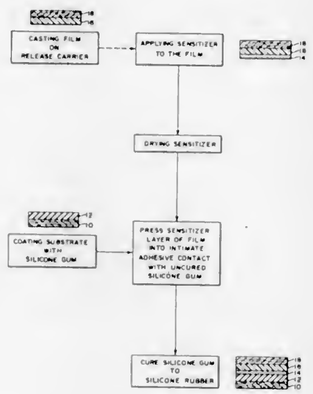
wherein x and y are each 0 or integers from 1 to 10 and R_2 and R_3 are each selected from the group consisting of C_1 to C_5 alkyl and hydrogen, or its corresponding anhydride and an aliphatic polyol containing 2 hydroxy groups per molecule and containing 2 to 30 carbon atoms, said fibers being glass or metal.

3,949,142

DRY PLANOGRAPHIC PLATE

Towers Doggett, Westbrook, Maine, assignor to Scott Paper Company, Philadelphia, Pa.

Continuation of Ser. No. 145,223, May 20, 1971, abandoned, which is a division of Ser. No. 849,800, Aug. 12, 1969, Pat. No. 3,606,922. This application July 31, 1973, Ser. No. 384,342
Int. Cl.² B32B *25/20;* **B41N** *1/00, 1/12*
U.S. Cl. 428—411 **11 Claims**



1. A dry planographic printing plate comprising a substrate, and at least three additional layers disposed in superimposed relation to each other:
   1. a silicone rubber layer adhesively bonded to at least one surface of the substrate,
   2. a photoresponsive sensitizer layer adhesively bonded to the silicone rubber layer, said adhesive bond being formed by curing a layer of silicone gum while it is in physical contact with said substrate and sensitizer layer; and
   3. overlying the sensitizer layer, a polymeric film permeable to the liquid used to develop the exposed plate.

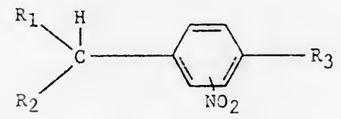
3,949,143

EPOXY RESIN COATINGS CURED WITH PHOTOTROPIC AROMATIC NITRO COMPOUNDS

Sheldon I. Schlesinger, Hightstown, N.J., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 331,179, Feb. 9, 1973, Pat. No. 3,895,952. This application Feb. 26, 1975, Ser. No. 553,261
Int. Cl.² G03C *1/68*
U.S. Cl. 428—413 **8 Claims**

1. A thermoset epoxy resin produced by exposing a monomeric or prepolymeric epoxide material, polymerizable to higher molecular weights by cationic polymerization, selected from the group consisting of glycidyl ethers of bisphenol A, epoxy-cycloalkanes, epoxy-cycloalkenes, epoxy-alkanes, glycidyl alkyl ethers, epoxy-novolacs and allyl glycidyl ether-glycidyl methacrylate copolymer containing as a photoactivatable initiator a phototropic aromatic compound containing at least one nitro radical in a position ortho to an alkyl substituent selected from compounds having the formula:



wherein R_1 and R_2 are selected from the group consisting of hydrogen, alkyl, aryl, carbalkoxy, pyridyl, carbazolyl, N-oxidopyridyl, nitroalkyl, nitroaryl, dinitrophenyl, alkaryl, aralkyl, haloalkyl and haloaryl radicals and R_3 is selected from the group consisting of hydrogen, alkyl, aryl, nitroalkyl, nitroaryl, alkaryl, aralkyl, haloalkyl, haloaryl radicals and electron-withdrawing groups selected from $-NO_2$, —CN, —COOR, —COR, $-NR_3$, —Br, —Cl, —F, —I, —RCOX, $-RX_3$, —NO, RCO— and R_2NCO— wherein X is halogen and R is alkyl;

to sufficient electromagetic or electron beam radiaton to activate said phototropic compound to an acid form effective to initiate polymerization of said epoxide material.

4. As an article of manufacture, a composite sheet comprising a support and in surface contact therewith an adherent, organic solvent-insoluble layer over at least a portion of the surface of said support, said layer being comprised of the thermoset epoxy resin of claim 1.

3,949,144

REINFORCED CONCRETE CONSTRUCTION

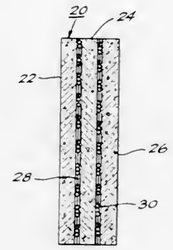
Raymond A. Duff, 1333 S. Baker, Santa Ana, Calif. 92707

Continuation-in-part of Ser. No. 851,960, Aug. 21, 1969, abandoned, and a continuation-in-part of Ser. No. 123,221, March 11, 1971, Pat. No. 3,753,849. This application Dec. 20, 1971, Ser. No. 209,888
Int. Cl.² B32B *17/10, 27/38*
U.S. Cl. 428—414 **15 Claims**

1. A relatively thin, laminated construction comprising a plurality of alternate layers of epoxy resin-containing concrete consisting of a hardened mixture of hydraulic cement, aggregate, epoxy resin, and water in an amount sufficient to harden the cement interspaced with layer of fiber-reinforced epoxy resin integrally bonding together the adjacent layers of said epoxy resin-containing concrete.

8. A construction comprising a relatively thin, laminated cementitious member comprised of a plurality of alternate layers of a hardened cementitious mixture consisting of hydraulic cement, aggregate, epoxy resin, and water in an amount sufficient to cure the cement; adjacent layers of said hardened cementitious mixture being interspaced with a layer of glass fiber-reinforced epoxy resin integrally bonded therewith.

12. A relatively thin construction comprised of a surface layer of polyester or epoxy gel coat and alternate integrally



bonded layers of glass fiber-reinforced epoxy resin and a cementitious material consisting essentially of an admixture in the proportion of 1 to 3 cubic feet of aggregate; ¼ to 3 gallons of epoxy resin; 1 to 6 fluid ounces of a water reducing additive consisting essentially of an admixture of hydroxylated polymer, calcium liqnosulfonate and an organic accelerator; 0.1 to 1 pound of epoxy resin coated glass fibers on a length between about ⅛ to ½ inch; and sufficient water to harden the cement, all per 94 pound sack of hydraulic cement with the layer of glass-fiber reinforced epoxy resin interposed between the gel coat and the cementitious material integrally bonding the same together.

3,949,145

DEGRADABLE STARCH-BASED AGRICULTURAL MULCH FILM

Felix H. Otey, and Arthur M. Mark, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

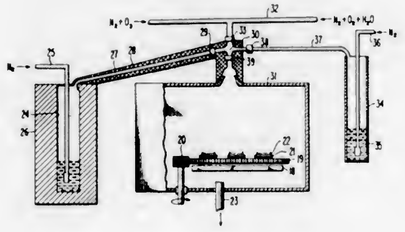
Filed Feb. 27, 1975, Ser. No. 554,058
Int. Cl.² A01G *7/00*
U.S. Cl. 428—423 **24 Claims**

1. A self-supporting, degradable, agricultural mulch film comprising from 1 to 4 parts of polyvinyl alcohol having a degree of hydrolysis of from 85 to 100%, 8 parts of starch, and from 1 to 5 parts of glycerol; said film being completely coated with from 5 to 20% of a water-resistant coating composition comprising a mixture of from 0.1 to 0.2 parts of a polyol-toluene-diisocyanate prepolymer containing free isocyanate groups and 1 part of polyvinylidene chloride-acrylonitrile copolymer or 1 part of polyvinyl chloride resin containing a plasticizing amount of a suitable plasticizer, all parts by weight.

3,949,146
PROCESS FOR DEPOSITING TRANSPARENT ELECTRICALLY CONDUCTIVE TIN OXIDE COATINGS ON A SUBSTRATE

James Kane, Affoltern a/Albis, and Hanspeter Schweizer, Zurich, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed Aug. 24, 1973, Ser. No. 391,359
Int. Cl.² B05D 5/12
U.S. Cl. 428—432 12 Claims



1. A process of depositing a coating of tin oxide on a substrate which comprises:
a. heating the substrate from about 375° to about 500°C.,
b. heating dibutyl tin diacetate in a stream of an inert carrier gas to a temperature from about 100° to about 200°C. to vaporize it, and
c. contacting the carrier gas-dibutyl tin diacetate gas stream with the substrate in an oxidizing atmosphere until a coating of tin oxide has been deposited on the substrate.

8. A process of depositing an antimony-doped tin oxide coating on a substrate which comprises
a. heating the substrate to about 500° to about 575°C.,
b. heating a volatile organotin compound having a vaporization temperature below about 200°C. of the formula $(R)_2Sn(OOCR)_2$ or $(R_2Sn)_2O$ wherein R is a lower alkyl group in a stream of an inert carrier gas to at least its vaporization temperature,
c. admixing the carrier gas-organotin vapor with a carrier gas stream containing vaporized antimony pentachloride, and
d. contacting the organometallic vapors with the heated substrate in an oxidizing atmosphere until a coating of antimony-doped tin oxide has been deposited on the substrate.

11. A process of depositing transparent, uniform, electrically conductive coatings of tin oxide on a vidicon faceplate which comprises:
a. vaporizing dibutyl tin diacetate in a stream of an inert carrier gas at a temperature of from about 100° to about 200°C.,
b. heating the faceplate to a temperature from about 375° to about 450°C., and
c. contacting the heated faceplate with the dibutyl tin diacetate-carrier gas stream in the presence of oxygen for about 5 to about 15 minutes so as to form a coating of tin oxide on the faceplate.

3,949,147
PROTECTION OF TURBINE CASINGS

Peter Frederick Hawthorne, Birmingham, England, assignor to Foseco International Limited, Birmingham, England

Division of Ser. No. 77,348, Oct. 1, 1970, Pat. No. 3,752,683.
This application Jan. 29, 1973, Ser. No. 327,648
Int. Cl.² B32B 9/04; B05D 3/02
U.S. Cl. 428—446 6 Claims

1. A shaped article of refractory heat-insulating material comprising a dry composition consisting essentially of an inorganic refractory fibre and a water soluble inorganic binding agent, said shaped article having said refractory fibre and binding agent present in a homogeneous relationship and said shaped article further having uniform hardness, strength and density across the shaped article and having at least part of its surface faced with a refractory dressing.

3,949,148
TRANSPARENCY FOR MULTI-COLOR ELECTROSTATIC COPYING

Alptekin Akman, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 15, 1973, Ser. No. 416,341
Int. Cl.² B05D 5/12; G03G 7/00, 13/16
U.S. Cl. 428—500 4 Claims

1. A transparency for the formation of an adherent, multicolored electrostatic image thereon comprising a thermoplastic film sheet, said sheet having at least one surface coated with a mixture which consists essentially of an acrylic resin and a vinyl chloride-acetate copolymer resin in a weight ratio of between about 6:4 and 7:3 and a relatively inert particulate material in an amount of between about 1 to 20% by weight of said resins to reduce the static properties of said sheet.

3,949,149
PROCESS FOR THE PRODUCTION OF WOOD MATERIALS HAVING HIGH RESISTANCE TO HOT WATER, SAID MATERIALS CONTAINING PHENOL-ALDEHYDE RESIN AND ALKYLENE CARBONATE HARDENER

Martin Cherubim, Rheinkamp-Eick, and Karl-Heinz Heinemann, Neukirchen-Vluyn, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

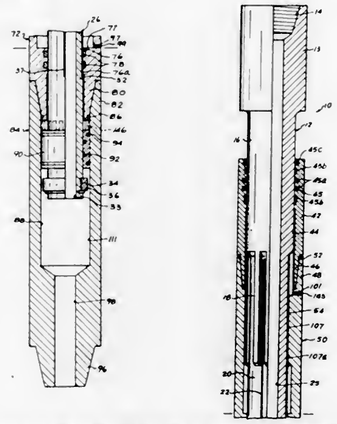
Filed Dec. 19, 1974, Ser. No. 534,656
Claims priority, application Germany, Dec. 21, 1973, 2363782
Int. Cl.² B32B 21/08, 27/42; C08L 1/02
U.S. Cl. 428—529 5 Claims

1. A process for the production of wood materials having high resistance to hot water which comprises
adding (i) a solution containing 30 – 80 wt % of alkylene carbonate in 30%–40% aqueous formaldehyde to (ii) an alkaline condensed phenol-aldehyde resin having an aldehyde: phenol mole ratio of at least about 1.6:1, a viscosity at a solids content of 48 wt % of above 200 cps measured at 20°C in the Hoppler viscosimeter, an alkali hydroxide content of 0.05 – 2 moles per mole of phenol, and a free phenol content of less than 6 wt %, said mixture containing 0.01–1 mole of alkylene carbonate per mole of total phenol; adding said mixture to wood flour, wood chips, wood veneer, or wood paper; and curing to form a wood material characterized by high resistance to hot water.

3,949,150
DRILLING STRING SHOCK-ABSORBING TOOL

Leonard Mason, 9230 - 58 Ave., and Clifford Anderson, 6024 87 St., both of Edmonton, Alberta, Canada

Filed July 11, 1974, Ser. No. 487,564
Int. Cl.² E21B 17/042
U.S. Cl. 175—321 11 Claims

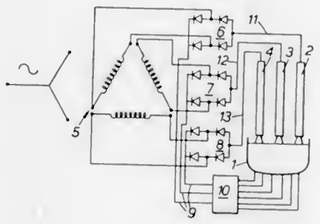


1. A tool for use in a drill string utilizing drilling fluid to drill a well bore and having utility for absorbing shock loading arising from axial displacement of an attached drilling bit, said tool comprising:
telescopically arranged tubular parts comprising an outer barrel and an inner mandrel received in the barrel in spaced relationship therewith so that a space is formed therebetween, said barrel and mandrel being movable longitudinally relative to each other;
means at the outer ends of the parts for threadably connecting them into the drill string;
means carried by said parts for limiting their relative longitudinal movement;
said tubular parts comprising means connecting them for rotation together while permitting telescopic movement;
discrete, resilient, solid, temporarily deformable means disposed in the space, said means having a spring rate of less than 100,000 pounds per inch and being substantially out of contact at all times with the barrel and mandrel side walls;
a pair of opposed compression means, one such means being carried by the mandrel and extending into the space adjacent one end thereof, the other such means being carried by the barrel and extending into the space adjacent the other end thereof, said compression means being adapted to act against the ends of the deformable means;
a body of operating liquid disposed in the space with the deformable means;
substantially liquid tight means, at each end of the space, between the mandrel and barrel, for preventing well bore drilling fluid from mixing with the operating liquid; and
means for pressurizing the operating liquid to substantially equalize it with the hydrostatic bottom hole pressure.

3,949,151
ARC FURNACES

Charles Philip Kerton, Rotherham, England, assignor to British Steel Corporation, London, England

Filed Mar. 4, 1975, Ser. No. 555,240
Claims priority, application United Kingdom, Mar. 12, 1974, 11008/74
Int. Cl.² H05B 7/144
U.S. Cl. 13—12 10 Claims



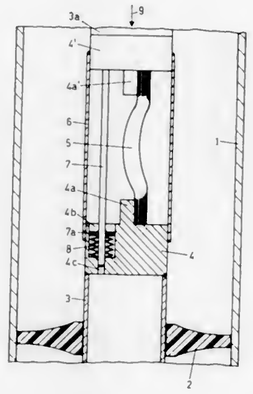
1. A direct arc furnace connected to a source of direct current and comprising
a metal refining vessel having an insulating refractory hearth and side walls,
a plurality of first electrodes of one polarity dependent into the vessel above a charge in the hearth,
a plurality of second electrodes of the opposite polarity, each said second electrode comprising
a local reservoir of the metal located in a well in the hearth and
a refractory-housed conductive rod of said metal extending from said reservoir, and
switching means for selectively connecting any one or more of the second electrodes in the d.c. circuit.

3,949,152
TUBE ENCLOSED PRESSURE GAS INSULATED ELECTRICAL CABLE

Carl Dieter Floessel, Fislisbach, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Oct. 17, 1974, Ser. No. 515,524
Claims priority, application Switzerland, Nov. 21, 1973, 16406/73
Int. Cl.² H01B 5/00
U.S. Cl. 174—13 3 Claims

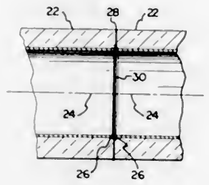
1. A tube enclosed pressure gas insulated electrical cable comprising at least one conductor supported within a tubular enclosure by means of insulators, said conductor being sectionalized into lengths, expansion joints provided between the ends of adjacent sections of said conductor to compensate for thermal expansion of the conductor, each said expansion joint including a flexible conductor strap electrically interconnecting the ends of said adjacent conductor sections, and a protective device interposed between the ends of said adjacent sections at said expansion joint for counteracting the inherent weight of the conductor imposed on said expansion joint and limiting the compressive force applied to said flexible conductor strap when said cable is disposed in other than a horizontal attitude, said protective device comprising a buffer rod located laterally of said conductor strap, one end of said rod being secured to one of said adjacent conductor sections and the opposite end portion thereof bearing against a compression spring located in a recess provided in the other conductor section.



3,949,153
ELECTRIC POWER TRANSMISSION LINE

Perry P. Pirooz, Toledo, Ohio; Anthony P. Schmid, Riga, Mich., and Dennis T. Sturgill, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 14, 1973, Ser. No. 415,919
Int. Cl.² H01B 7/34, 7/18
U.S. Cl. 174—15 C 14 Claims

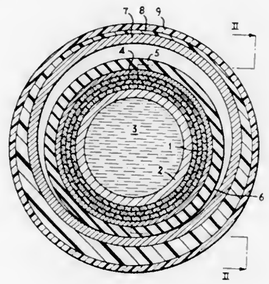


1. A glass insulated electrical power transmission line comprising: a dielectric glass casing having inner and outer surfaces, said casing being made of a plurality of monolithic hollow cylindrical glass tube sections hermetically fused together seriately in an end to end relationship forming a casing capable of electrically insulating a conductor having a power carrying capacity of 50 megawatts, said casing having a length to outside diameter ratio in excess of 200:1, a conductor within said casing extending from one end of said casing to the other end thereof said conductor having a power carrying capacity of 50 megawatts and a semi-conductive material means on the inner surface of said casing for bringing said surface to an electrical potential substantially equal to that of said conductor.

3,949,154
INTERNALLY COOLED HIGH-VOLTAGE HIGH-ENERGY CABLE

Werner Rasquin, Cologne, Germany, assignor to Felten & Guilleaume Kabelwerke AG, Cologne, Germany

Filed Apr. 4, 1974, Ser. No. 457,779
Claims priority, application Germany, Aug. 2, 1973, 2339102
Int. Cl.² H01B 7/34
U.S. Cl. 174—15 C 15 Claims

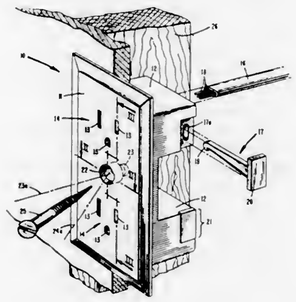


1. A water-cooled high-energy cable, comprising electrically conductive means including an impermeable elongated inner tubular member of a metallic material having a smooth inner surface circumferentially defining a cooling channel having a diameter of at least 60 millimeters for the cooling water, and an outer surface, and a plurality of conductor elements of aluminum arranged about said outer surface of said inner tubular member; an outer tubular member of aluminum pressed on said conductor elements; electrically insulating means surrounding said outer tubular member; and a cable jacket surrounding said electrically insulating means.

3,949,155
UNITARY ELECTRICAL RECEPTACLES

Richard Curtis Bourne, 1609 S. 23rd St., Lincoln, Nebr. 68502

Continuation of Ser. No. 377,094, July 6, 1973, Pat. No. 3,828,113. This application July 17, 1974, Ser. No. 489,424
The portion of the term of this patent subsequent to Aug. 6, 1991, has been disclaimed.
Int. Cl.² H02G 3/18
U.S. Cl. 174—55 10 Claims



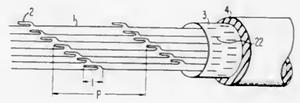
1. A pre-assembled electrical receptacle suitable for installation in light-frame building constructions, comprising:
internal electrical conductors;
a housing portion for said internal electrical conductors;
a cover plate portion whose edges comprise flanges overhanging the sides of said housing portion;
said housing and cover plate portions comprising electrically insulating material substantially surrounding said internal electrical conductors, said cover plate having openings therein to receive the prongs of electrical plugs for contacting said prongs with said internal conductors and said housing portion having means for contacting the wires of an electrical distribution cable to said internal conductors;
and at least one through-hole extending from the front surface of the cover plate portion through said receptacle for attaching said receptacle to a structural member in light-frame building constructions.

9. An electrical terminal such as a receptacle or switch, comprising internal electrical conductors and a housing portion for said internal electrical conductors, said housing comprising electrically insulating material substantially surrounding said internal electrical conductors,
and a wedge-shaped key including a locking tip portion and a corresponding opening for said key in the housing portion of said terminal, said opening intersecting another opening for receiving an end of an electrical distribution cable, for firmly attaching said terminal to an electrical distribution cable.

3,949,156
FLOOR CABLE WITH FOLDED PORTIONS FOR MAKING BRANCH CONNECTIONS AND METHOD OF PRODUCING SAME

Nagato Niimura; Ichiro Kinoshita, both of Tokyo; Yoshiharu Maruyama, Naka; Ryuichi Kurihara, Tokyo; Morito Yoshihara, Tokyo; Toshio Suzuki, Hitachi; Yujiro Hashimoto, Hitachi, and Masahiro Imazawa, Hitachi, all of Japan, assignors to Hitachi Cable Limited and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Filed Dec. 11, 1974, Ser. No. 531,504
Claims priority, application Japan, May 11, 1974, 48-52674
Int. Cl.² H01B 7/00, 13/00
U.S. Cl. 174—72 R 7 Claims



1. A floor cable comprising a cable core formed of a plurality of longitudinally extending insulated wires within a plastic outer cable sheath, the improvement comprising: each of said insulated wires having a plurality of folded portions along the wire length at given intervals.

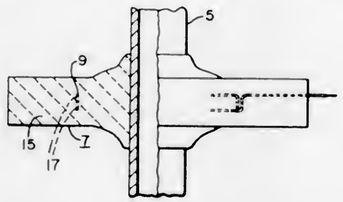
6. A method of producing a floor cable which comprises a plurality of longitudinally extending insulated core wires within a plastic outer sheath with each of the insulated core wires having a plurality of folded portions along the wire length at regular intervals, the improvement comprising: the step of forming a plurality of folded portions along the wire length at given intervals as said core wires are fed longitudinally in the direction of their axes and the step of drawing out of the folded core wire at a velocity which is slower than the feeding velocity of the core wires prior to the production of the folded portions along the wire length.

3,949,157

ELECTROSTATIC METALLIC SHIELD-INSERT ELEMENT FOR INSULATING CASTABLE MEMBERS

John Stannard Billings, Jr., Trafford, and Donald J. Martahus, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 17, 1974, Ser. No. 506,911
Int. Cl.² H02G 15/02
U.S. Cl. 174—73 R 8 Claims



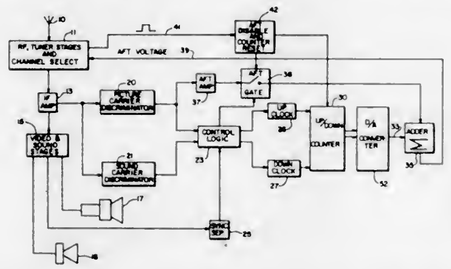
1. In combination, a high-voltage electrical piece of equipment comprising a cast insulating member formed of a suitable resinous casting composition and an interiorly disposed encapsulated helically-arranged metallic rod-element serving as an electrostatic shield element for either a ground tap or potential-measurement purposes.

3,949,158

WIDE BAND AFT CIRCUIT FOR TELEVISION RECEIVER

Theodore S. Rzeszewski, Lombard, and Sotirios Sideris, Des Plaines, both of Ill., assignors to Quasar Electronics Corporation, Franklin Park, Ill.

Filed Dec. 31, 1974, Ser. No. 537,692
Int. Cl.² H04N 5/60
U.S. Cl. 178—5.8 AF 15 Claims



1. A wide-band automatic fine tuning system for a television receiver capable of receiving a composite television signal having at least picture carrier components, sound carrier components, and synchronizing signal components, said system including in combination:

picture carrier sensing means providing an output voltage indicative of the tuning of said receiver to a picture carrier component of said composite signal;

sound carrier sensing means providing an output voltage indicative of the tuning of the receiver to a sound carrier component of the composite signal;

synchronizing signal component sensing means for providing a first predetermined output with synchronizing signal components sensed thereby in proper relationship with the other components of said composite signal, and for providing a second predetermined output when said proper relationship is not present;

reversible ramp generator means for providing a direct current tuner control voltage for use in attaining and maintaining tuning of the television receiver;

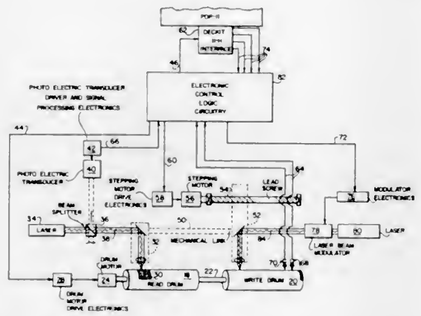
gating circuit means coupled with the outputs of said picture carrier sensing means said sound carrier sensing means and said synchronizing signal component sensing means and further coupled with said reversible ramp generator means for causing said generator means to generate a ramp voltage in one direction when a first relationship between the output voltages of said picture and sound carrier sensing means exists and for causing said ramp generator means to generate a ramp voltage in the opposite direction when a second relationship of the output voltages of said picture and sound carrier sensing means exists at the same time said synchronizing signal sensing means provides said first predetermined output, said gating circuit means causing said ramp generator means to generate a ramp voltage in said one direction whenever said second predetermined output of said synchronizing signal sensing means is present.

3,949,159

COMPOSITE PAGE SETTER

Charles R. Ricards, Emporium, and David M. Reed, Bethlehem, both of Pa., assignors to American Newspaper Publishers Association, Easton, Pa.

Continuation-in-part of Ser. No. 411,852, Nov. 11, 1973, abandoned. This application Feb. 21, 1975, Ser. No. 551,874
Int. Cl.² G03F 7/02
U.S. Cl. 178—6.6 B 14 Claims



1. A composite page setter system for combining illustrative material from hard copy with text data from a computer memory to create a complete page assembly, comprising:

A. an illustrative material storage device for displaying said hard copy, and;

B. a text material storage device comprising a computer further comprising a memory for storing data representing text material in page format and means to output said data, and;

C. scanner means for scanning said hard copy display of said illustrative material and operable to generate a realtime electronic signal therefrom, and;

D. a composite illustrative material and text material recording surface, and;

E. a recorder means operable to record a composite of said illustrative material and said text material on said composite recording surface, and;

F. electronic control logic circuitry means for selectively outputting information either directly from said scanning means for real-time scanning of said hard copy display or from text material within said computer memory, said electronic control logic circuitry means thereby providing to said recorder means a selective combination of said electronic signal from said scanning means of said hard copy display with said text format data output from said computer memory so as to record, on said recording surface, a complete page assembly having both said illustrative copy and said text material recorded in desired location and proper sequence as a final page assembly image.

12. A process for assembling and producing a full composite newspaper, and the like, page image, comprised by both text and illustrative copy, comprising the steps of:

A. generating text material data representing the text, and its position within a complete page format, and storing same as memory in a computer adapted to output a first electronic signal representing said text material data, and;

B. scanning a surface including a hard copy display of illustrative copy with photoelectric transducer means and simultaneously generating a real-time second electronic signal representing the output of said scanning, and;

C. processing said second signal, as it is being generated, with said first signal, which represents said stored text and its position within a complete page format, to provide a third signal, and;

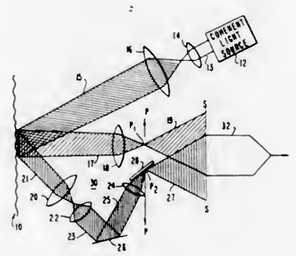
D. recording a full composite page image in response to, and simultaneous with, the generation of said third signal.

3,949,160

ELECTRO-OPTIC READOUT OF THERMOPLASTIC DEFORMATION PATTERNS

John C. Heurtley, Arlington, Va., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1975, Ser. No. 538,534
Int. Cl.² H04N 5/82, 5/30; G03G 16/00
U.S. Cl. 178—6.6 TP 26 Claims



1. A method of projecting an image disposed as a regular periodic surface deformation pattern comprising the steps of:

projecting a first coherent light beam to said deformation pattern;

imaging a first order component of the diffraction pattern received from said deformation pattern onto an image receiving surface to thereby form a light image on said image receiving surface having an intensity that varies as a function of the square of the amplitude of the periodic deformation pattern; and

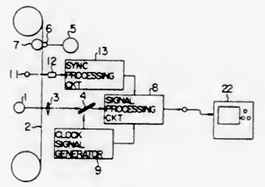
superposing on said image receiving surface a second coherent light beam to form an interference pattern having an intensity that varies as a linear function of the amplitude of the periodic deformation pattern and that appears as image modulated sinusoidal interference fringes.

3,949,161

VIDEO SIGNAL REPRODUCING SYSTEM

Tooru Fujishima; Naoto Nishimura; Kazuyoshi Kuwahara; Shinji Ozaki, and Masahiko Fujita, all of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed July 19, 1974, Ser. No. 490,062
Claims priority, application Japan, July 20, 1973, 48-81472
Int. Cl.² H04N 5/36, 9/11
U.S. Cl. 178—7.1 2 Claims



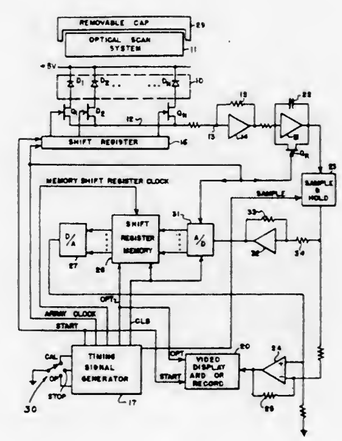
1. A video signal reproducing, wherein said light projecting means comprises illuminating means for directing a narrow stripe of light to said recording medium in a direction perpendicular to the longitudinal direction of said recording medium.

3,949,162

DETECTOR ARRAY FIXED-PATTERN NOISE COMPENSATION

Richard M. Malueg, Glendora, Calif., assignor to Actron Industries, Inc., Monrovia, Calif.

Filed Feb. 25, 1974, Ser. No. 445,802
Int. Cl.² H04N 5/30, 5/21
U.S. Cl. 178—7.1 14 Claims



1. A method for fixed-pattern noise compensation of a system employing an array of detectors, said method comprising the steps of

measuring the output signal level of each detector under a uniformly low level of incident energy,

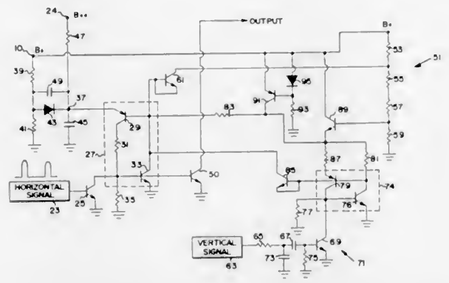
storing the low-level signal value thus measured for each detector, and

during a subsequent normal system operation, subtracting the stored low-level signal of each detector from the signal output of the respective detectors each time the detectors are addressed.

3,949,163
PULSE WIDTH CONTROL AND ADVANCING CIRCUIT

Dong Woo Rhee, Williamsville, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Feb. 27, 1974, Ser. No. 446,496
Int. Cl.² H04N *5/44*; **H03K** *5/20, 1/18*
U.S. Cl. 178—7 R **10 Claims**



1. In a signal receiver having first and second potential sources, first and second signal sources providing first and second signals at first and second frequencies respectively with said second signal having ramp and flyback pulse signal portions, a pulse width control circuit comprising:

first and second charge storage networks having first and second time constants and coupled to said first and second potential sources respectively;

first trigger circuit means coupled to said first signal source and to said first and second charge storage networks, said first trigger circuit providing an output pulse signal at said first frequency with said output pulse signal initiated by said first signal source and terminated upon attainment of a given potential by said first charge storage network;

clamping circuit means coupled to said second signal source and responsive to a given level of said ramp pulse signal portion for effecting an output pulse signal advanced with respect to said flyback pulse signal portion; and

second trigger circuit means coupled to said clamping circuit means and to said first trigger circuit means and responsive to said advanced output pulse signal from said clamping circuit means for initiating an output pulse signal from said first trigger circuit means with said output pulse signal terminated upon attainment of a given potential level by said second charge storage network.

3,949,164
TELEVISION SIGNAL DETECTING CIRCUIT

Shigetoshi Murakami, Tokyo, and Hisao Okada, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 17, 1974, Ser. No. 480,203
Claims priority, application Japan, June 20, 1973, 48-73209[U]
Int. Cl.² H04N *5/44*
U.S. Cl. 178—7.3 R **8 Claims**

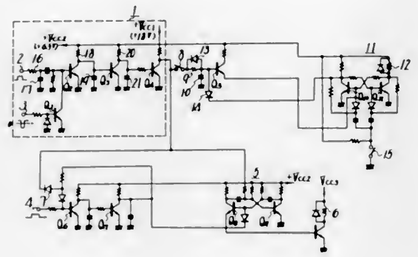
1. A circuit for detecting the presence of a television signal, said circuit comprising:

A. a coincidence circuit responsive to a horizontal synchronizing pulse signal derived from said television signal and to a locally generated pulse signal;

B. switching means having one conductivity condition representing the coincidence of said horizontal synchronizing pulse signal and said locally generated pulse signal and a different conductivity condition when said horizontal synchronizing pulse signal is absent; and

C. connection means connecting said coincidence circuit to said switching means, said connection means comprising:

1. a first timed-signal generating circuit responsive to a succession of a predetermined number of said horizontal synchronizing signals to cause said switching means to assume said one conductivity condition, and

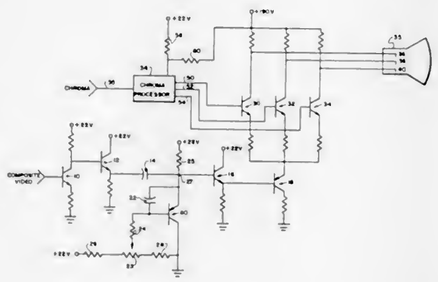


2. a second timed-signal generating circuit to cause said switching means to assume said different conductivity condition after a predetermined interval in which said horizontal synchronizing signals are absent.

3,949,165
NOISE IMMUNE CLAMP CIRCUIT

Edward I. Lynch, Portsmouth, Va., assignor to General Electric Company, Portsmouth, Va.

Filed Nov. 12, 1974, Ser. No. 523,020
Int. Cl.² H04N *5/18*
U.S. Cl. 178—7.3 DC **6 Claims**



1. In a television receiver having a video transfer circuit for applying the detected video signal to the cathode ray tube and including active devices powered by power supply means, a video DC voltage level determining circuit comprising:

transistor means having an emitter-collector circuit connected to said video transfer circuit and a base circuit connected to a source of DC voltage, such that said video signal is clamped by said transistor means to the DC voltage level determined by said source of DC voltage,

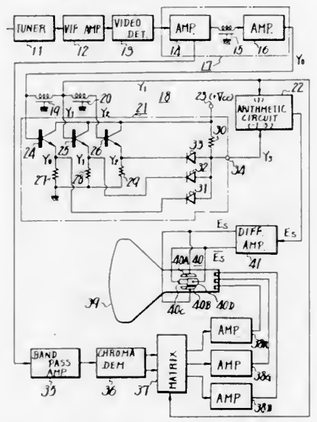
means interconnecting said base circuit with said video transfer circuit to render said transistor means substantially immune to noise and video components having a frequency higher than the sync frequency of said video signal, and

means in circuit with said power supply means to minimize the affect of variations in said power supply means on those active devices in said video transfer circuit responsive to the DC clamped video signal so that the DC level of said video signal as set by said transistor means is maintained.

3,949,166
SYSTEM FOR USE IN TELEVISION RECEIVERS FOR PROVIDING IMPROVED SHARPNESS OF IMAGES

Yuzo Fuse, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 5, 1974, Ser. No. 521,202
Claims priority, application Japan, Nov. 12, 1973, 48-126960
Int. Cl.² H04N *5/44*
U.S. Cl. 178—7.5 R **8 Claims**



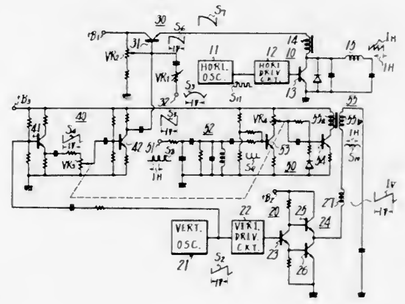
1. In a video signal reproducing device including a cathode ray tube having a phosphor screen, beam generating means disposed in said tube and directing at least one electron beam toward said screen for impingement thereon at a respective beam landing spot, signal supplying means receiving a video signal to be reproduced and being connected with said beam generating means for causing the latter to density-modulate each said beam in accordance with the variations in the level of said video signal, and focusing means producing a focusing field for focusing each said beam at said screen while the beam is made to scan the screen in a line-scanning direction and in a direction perpendicular to said line-scanning direction; the improvement comprising circuit means for producing a control signal which varies in response to transient changes in the level of said video signal being reproduced, and means receiving said control signal to produce a corresponding varying field acting on each said beam for decreasing the size of said beam landing spot in said line-scanning direction relative to the size thereof in said direction perpendicular to the line-scanning direction upon said transient changes in the level of the video signal and for decreasing the size of the beam landing spot in said direction perpendicular to the line-scanning direction relative to the size thereof in said line-scanning direction in the intervals between said transient changes, whereby to improve the sharpness of definition of the margins of bright image portions reproduced from said video signal.

3,949,167
IMAGE-PROJECTION SYSTEM

Kuniyoshi Koyama, Chofu, and Yoji Ishikawa, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 12, 1973, Ser. No. 424,072
Claims priority, application Japan, Dec. 20, 1972, 47-146558
Int. Cl.² H04N *3/16*
U.S. Cl. 178—7.5 D **5 Claims**

1. An image projection system comprising: image reproducing means including a cathode ray tube for producing an image on the screen of said cathode ray tube; projection lens means for projecting the image produced on the screen of said cathode ray tube onto a viewing screen, said viewing screen having a surface concaved at least in the horizontal direction for displaying an image having an inherent trapezoid-shaped distortion and an inherent fan-shaped distortion; horizontal and vertical deflection means producing horizontal and vertical deflecting signals for deflecting electron beams in said cathode ray tube, said horizontal deflection means including first compensating means to modify the horizontal deflection signal at a vertical deflection rate said first compensating means comprises modulating means for modulating a sawtooth-shaped horizontal deflecting current with a substantially sawtooth-shaped correcting signal having a vertical deflection period for controlling the beam deflection horizontally so that said image produced on said cathode ray tube viewing screen

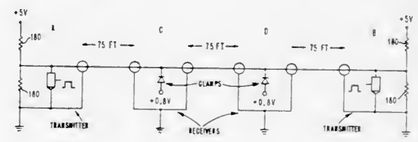


has a trapezoid-shaped distortion which is inversely related to said inherent trapezoid-shaped distortion; and said vertical deflection means including second compensation means to modify the vertical deflection signal at a horizontal deflection rate said second compensating means comprises means for superposing a parabolic-shaped correcting signal having a horizontal deflection period on a vertical deflecting current for controlling the beam deflection vertically so that said image produced on said cathode ray tube viewing screen has a fan-shaped distortion which is inversely related to said inherent fan-shaped distortion, whereby said image produced on said screen of said cathode ray tube is predistorted to compensate for said inherent trapezoid-shaped and fan-shaped distortions in said displayed image projected on said viewing screen.

3,949,168
SELECTIVELY CLAMPED DIGITAL SIGNAL TRANSMISSION SYSTEM

Daniel M. Taub, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 4, 1974, Ser. No. 520,313
Claims priority, application United Kingdom, Dec. 13, 1973, 57885/73
Int. Cl.² H04L *25/08*
U.S. Cl. 178—68 **5 Claims**



1. A digital pulse signal transmission system comprising:

at least one receiver;

at least two transmitters;

a bus having at least two conductors interconnecting said receiver and transmitters;

each of said transmitters including means for applying binary coded electric signals to said bus, said binary coded electric signals representing one binary value by appling a first predetermined voltage to the bus conductors and said other binary value by applying a second predetermined voltage to the conductors,

said receiver including clamping means connected across the bus, circuit means connected to the bus and responsive to the bus voltage for providing a control signal when the voltage on the bus conductors exceeds a predetermined value which is above or equal to one of the said applied predetermined voltages; and not more than twice the said one applied predetermined voltage, and means for applying the said control signal to the said clamping means for operating said clamping means to prevent a signal voltage excursion beyond the said one predetermined value.

3,949,169

DEVICE FOR THE TRANSMISSION OF PUSH-PULL SIGNALS

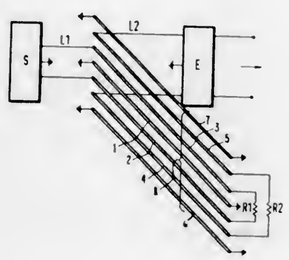
Walter Braeckelmann, Weidach, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Dec. 19, 1974, Ser. No. 534,427

Claims priority, application Germany, Jan. 9, 1974, 2400940

Int. Cl.² H04Q 5/00

U.S. Cl. 178—68 **6 Claims**



1. Apparatus for the transmission of digital push-pull signals, comprising: a push-pull transmitter for emitting driving pulses; a bistable push-pull receiver responsive to coupling pulses to emit push-pull signals to be transmitted; and a push-pull directional coupler interposed between said transmitter and said receiver, said push-pull directional coupler responsive to said driving pulses to produce coupling pulses to set and reset said receiver causing emission of said push-pull signals, said directional coupler comprising at least six parallel conductors which include a first pair of conductors each connected at one end thereof to said transmitter, a second pair of conductors each connected at one end thereof to said receiver, the conductors of said first and second pairs symmetrical about a plane, and a pair of grounded conductors arranged outside of said first and second pairs of conductors and symmetrically about the same plane, each of the grounded conductors having a width that is several times greater than the width of the other conductors, and first and second impedances equal to the surge impedances of the respective first and second pairs of conductors and connected across the other ends of the respective pairs of conductors.

3,949,170

SIGNAL TRANSMITTING SYSTEM INCLUDING A-D AND D-A CONVERTERS

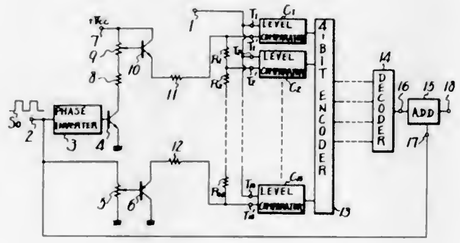
Toshio Shionoya, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 18, 1974, Ser. No. 524,810

Claims priority, application Japan, Nov. 23, 1973, 48-131914

Int. Cl.² H03K 13/02

U.S. Cl. 178—69.5 TV **5 Claims**



1. A signal transmitting system, comprising: quantizing means for receiving an input analog signal and for quantizing said received input analog signal into levels, said quantizing means comprised of plural level comparators to which said input analog signal is applied in common and to which plural different reference levels are applied, respectively, for comparison with said input analog signal, said reference levels differing from each other sequentially by a predetermined increment; reference level varying means responsive to a periodic switching signal applied thereto for periodically varying the reference level applied to each said level comparator by the same predetermined fraction of said increment, such that each reference level varies periodically between a first level and a second, higher level; an encoder coupled to said quantizing means for digitally encoding the quantized analog signal; a decoder for receiving said digitally encoded quantized analog signal to decode same into a corresponding analog signal; and adder means coupled to said decoder for receiving said corresponding analog signal, said adder means being supplied with a switching signal synchronized with said periodic switching signal, said switching signal periodically varying between a predetermined amplitude and an amplitude greater than said predetermined amplitude by said predetermined fraction of said increment, such that said adder means algebraically adds said switching signal to said corresponding analog signal to produce an output analog signal substantially conforming to said input analog signal.

3,949,171

MULTIPLICATIVE MULTIPLEXER

John H. Painter, 1119 Merry Oaks, College Station, Tex. 77840

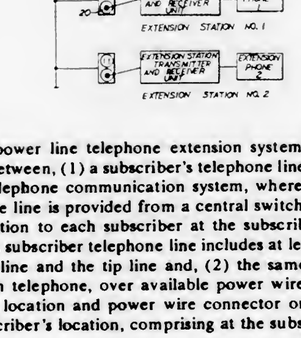
Continuation-in-part of Ser. No. 431,888, Jan. 9, 1974, abandoned. This application July 28, 1975, Ser. No. 599,382

Int. Cl.² H04J 15/00

U.S. Cl. 179—15 R **10 Claims**

10. A method of sending two signals having overlapping spectra over a communications path, comprising the steps of:

a. multiplying the two signals directly together in the absence of a carrier signal to form a product signal for transmission; and



b. transmitting the product signal over the communications path.

3,949,172

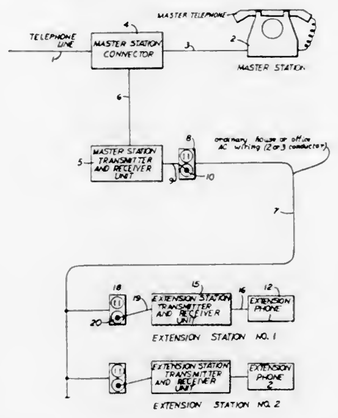
TELEPHONE EXTENSION SYSTEM UTILIZING POWER LINE CARRIER SIGNALS

William M. Brown, 2 Baron Park Lane, Apt. 33, Burlington, Mass. 01803; John M. Ruddy, 42 Pantry Road, Sudbury, Mass. 01776, and Robert T. Dunn, 4 Cedar Ridge Drive, Bedford, Mass. 01730

Filed Feb. 8, 1974, Ser. No. 440,830

Int. Cl.² H04M 11/00

U.S. Cl. 179—2.5 R **18 Claims**



1. A power line telephone extension system for carrying signals between, (1) a subscriber's telephone line of a conventional telephone communication system, wherein a separate telephone line is provided from a central switching system at one location to each subscriber at the subscriber's location and each subscriber telephone line includes at least two wires, the ring line and the tip line and, (2) the same subscriber's extension telephone, over available power wires at the subscriber's location and power wire connector outlets, also at the subscriber's location, comprising at the subscriber's location:

a subscriber master location near said subscriber telephone line and near a power wire connector outlet and

a subscriber extension telephone location near a power wire connector outlet; and

at the subscriber's master location:

a voice signal detector circuit having its input electrically connected to the tip line for detecting voice signals on the subscriber's telephone line,

a ring detector circuit having its input electrically connected to the ring line for detecting ring signals on the subscriber's telephone line, and

a master output electrically reactive coupling device electrically connected between the outputs of said voice signal and ring detector circuits and said power connector outlet near the master location,

whereby the power wires carry the detected telephone line signals from the master location to the extension location thereon; and

at the extension location:

an extension telephone,

receiver means for said extension telephone, and

means for coupling said voice and ring telephone line signals from the extension location to said extension telephone receiver means;

whereby the extension telephone receives the voice and ring signals from the telephone line.

3,949,173

DEVICE FOR THE SUPPRESSION OF A PILOT FREQUENCY IN A MULTIPLEX TRANSMISSION SYSTEM

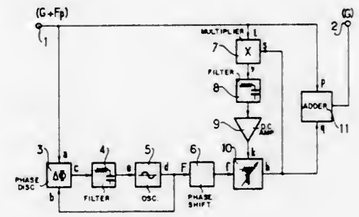
Georges Duval, Boulogne; Robert Bonneton, Charenton, and Christian Poinas, Paris, all of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, France

Filed Oct. 18, 1973, Ser. No. 407,451

Claims priority, application France, Oct. 18, 1972, 72.36925

Int. Cl.² H04J 1/10

U.S. Cl. 179—15 BP **14 Claims**



1. A system for the suppression of a pilot frequency in an incident spectrum of frequencies transmitted in a multiplex transmission system, comprising

a phase discriminator having first and second inputs and an output, said first input being connected to receive said spectrum of frequencies including said pilot frequency,

a voltage controlled oscillator having a control input connected to the output of said phase discriminator and an output connected to said second input of said phase discriminator,

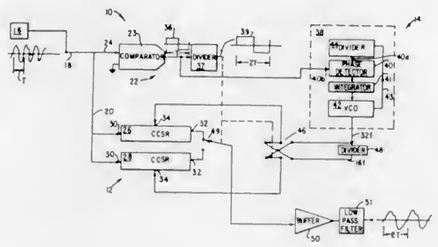
a phase shifter connected to the output of said voltage controlled oscillator,

a voltage controlled attenuator connected to the output of said phase shifter,

adding means for combining the output of said attenuator and said spectrum of frequencies to eliminate said pilot frequency therefrom, and

control means for receiving the output of said attenuator and said spectrum of frequencies including said pilot frequency and for generating therefrom a signal to control said attenuator.

3,949,174
SYNCHRONIZED FREQUENCY TRANSPOSER
John F. Sutton, 4412 Greenwood Road, Beltsville, Md. 20705
Filed Sept. 11, 1974, Ser. No. 505,108
Int. Cl.² H04B *1/66;* **G11B** *15/20*
U.S. Cl. 179—15.55 T **28 Claims**



1. An apparatus for expanding or compressing the time base of an analog signal susceptible to random frequency variations by an integer factor of n, $n>1$, said signal having a frequency f comprising:

analog storage means including m stages for storing and shifting m samples of said signal;

means for loading and unloading said analog storage means with only whole cycles of said signal, including:

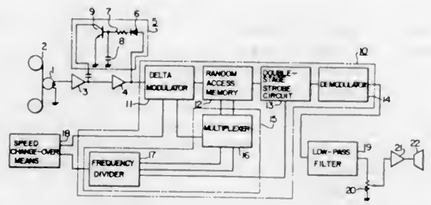
a. means responsive to a recurring portion of said signal for generating a first timing signal having a frequency mf and a second timing signal having a frequency mf/n;

b. means for serially loading said storage means at a first rate corresponding to one of said timing signals; and

c. means for serially unloading said storage means at a second rate corresponding to the other of said timing signals; and

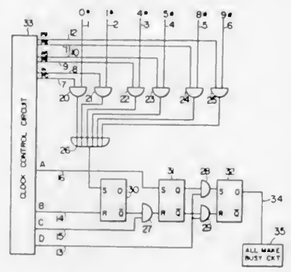
means for reconstructing said unloaded signal to form a processed analog signal having a time base different from that of said analog signal.

3,949,175
AUDIO SIGNAL TIME-DURATION CONVERTER
Toshio Tanizoe, Hitachi, and Takashi Kubota, Katsuta, both of Japan, assignors to Hitachi, Ltd., Japan
Filed Sept. 25, 1974, Ser. No. 509,070
Claims priority, application Japan, Sept. 28, 1973, 48-108400; Sept. 28, 1973, 48-108401
Int. Cl.² G11B *13/00*
U.S. Cl. 179—15.55 T **10 Claims**



1. An audio signal time-duration converter comprising an analog-digital converter means for converting an audio signal into a digital signal, random access memory means connected with said analog-digital converter means for storing the output signal of said analog-digital converter during a predetermined write cycle and for reading out the stored data during a read cycle which is different from said write cycle, a digital-analog converter connected to the output of said memory means for converting the output signal of said memory means to an analog signal, first means for generating write clock pulses and read clock pulses at different rates for controlling said memory means, write address counter means connected to said first means for counting the pulse cycle of said write clock pulses, read address counter means connected to said first means for counting the pulse cycle of said read clock pulses, second means connected to said first means, said write address counter means and said read address counter means, and controlled by said write clock pulses for selecting either one of the output signal from said write counter means and the output signal from said read address counter means to apply the selected output signal to said memory means thereby to designate an address in said memory means, third means connected to said first means for generating select clock pulses associated with said write clock pulses, and fourth means for applying the select clock pulses to said memory means to determine the write mode or read mode of the address of said memory means designated by said second means.

3,949,176
METHOD OF AND APPARATUS FOR ALL BUSY DETECTION
Yoshiro Hayashi, Tokyo; Takeaki Yamagata, Hachioji; Akio Otani, Yokohama; Tadashi Minami, Yokohama, and Kuniomi Aizawa, Yokohama, all of Japan, assignors to Hitachi, Ltd. and Japanese National Railways, both of, Japan
Filed Jan. 29, 1974, Ser. No. 437,679
Claims priority, application Japan, Jan. 31, 1973, 48-11937
Int. Cl.² H04M *3/22*
U.S. Cl. 179—18 AB **11 Claims**



1. A method of detecting an all make busy state of a predetermined number of outgoing circuits comprising the steps of:

forming the predetermined number of outgoing circuits into a plurality of groups;

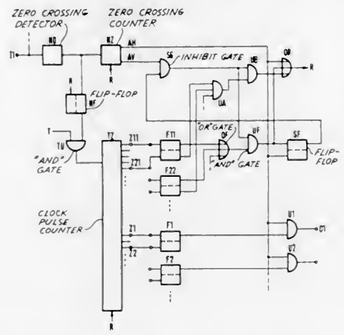
specifying at least one circuit and less than all the circuits of each group as the at least one circuit to be detected as an all make busy indication for each group;

successively scanning the specified circuits for each group with a scanning signal to derive therefrom busy signals existing thereon, the scanning signal having a predetermined period and including phase pulses each of which has a phase which is obtained from dividing said predetermined period by the number of said groups and further dividing the resultant time interval which corresponds to each group by at least the number of specified circuits of the group, and applying the phase pulse to a corresponding specified circuit;

detecting the busy state of each group of the outgoing circuits by detecting the busy signal from the at least one specified circuit in each group; and

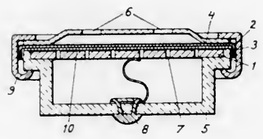
detecting the busy state of all of the groups of the outgoing circuits during one period of the scanning signal as an indication of the all make busy state of the predetermined number of outgoing circuits.

3,949,177
METHOD FOR FREQUENCY-RECOGNITION IN SELECTIVE SIGNAL RECEIVERS FOR USE IN TELECOMMUNICATION, PARTICULARLY TELEPHONE SYSTEMS
Herbert Ball, Stuttgart, and Wolf Ohl, Korntal, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Aug. 15, 1974, Ser. No. 497,707
Claims priority, application Germany, Aug. 16, 1973, 2341224
Int. Cl.² H04M *1/50;* **H04Q** *1/46*
U.S. Cl. 179—84 VF **6 Claims**



1. A method for frequency recognition in selective signal receivers for use in telecommunication, and particularly in telephone systems, wherein the zero crossings of the input voltage are represented as pulses, the pulses are measured at a clock frequency higher than the signal frequency to be determined, and the input voltage is evaluated as a signal only if the measured value of said pulses lies between a lower and an upper count determining the bandwidth, wherein the improvement comprises, for each signal-recognition operation, making a pre-check measurement of one or a few pulses to determine whether the input voltage includes a signal frequency, recommencing consideration of incoming signals when no signal frequency is detected, and when a signal frequency is located, making a main check measurement of a larger number of pulses to more accurately identify said signal frequency.

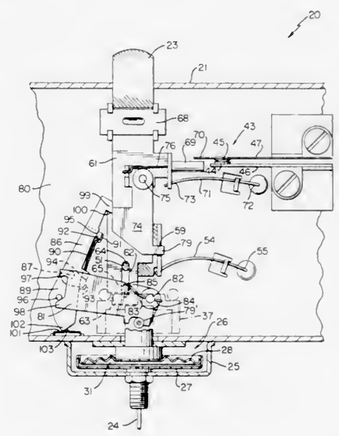
3,949,178
ELECTRET DEVICE HAVING CHARGE MAINTAINED BY RADIOACTIVITY
Sten Hellström, Djurhamn, and Rolf Bertil Göran Jönsson, Tyreso, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Oct. 15, 1974, Ser. No. 514,643
Claims priority, application Sweden, Oct. 24, 1973, 7314422
Int. Cl.² H04R *19/00;* **H01G** *7/02*
U.S. Cl. 179—111 E **8 Claims**



1. Electret device, comprising a dielectric layer containing electret charges and means for maintaining the electret charges stored therein comprising a radioactive layer of essentially the beta radiation type located opposite one of the surfaces of the dielectric layer, said radioactive layer having a radioactivity of between 0.01 and 100 μCi.

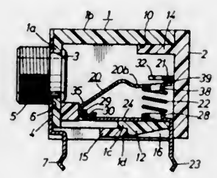
7. An electret microphone comprising a first electrode having a surface with a layer of dielectric material containing electret charges and means for maintaining the electret charges stored therein comprising a second electrode disposed opposite said first electrode, said second electrode having a surface with a layer of radioactive material and facing the surface of said first electrode with the layer of dielectric material, one of said electrodes being movable.

3,949,179
CONTROL DEVICE HAVING IMPROVED RESET MEANS
Werner R. Bauer, Radnor, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Dec. 16, 1974, Ser. No. 533,148
Int. Cl.² H01H *35/34*
U.S. Cl. 200—83 R **9 Claims**



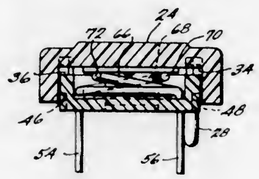
1. In a control device having a condition responsive movable part carried by a housing means and an electrical switch carried by said housing means to be operated by said part, the improvement comprising mechanical latch means carried by said housing means and operatively interconnecting said part to said switch to latch said switch to be in one operating position thereof when said condition is on one side of a certain value and to unlatch said switch so as to be in another operating position thereof when said condition is on the other side of said certain value, said mechanical latch means including reset means for resetting and latching said switch to said one operating position thereof only when said condition is on said one side of said certain value and said switch is in said other operating position, said mechanical latch means including a plunger member defining part of said reset means and a switch actuating member, said members having locking means to lock said members together to move together in a switch resetting direction only when said condition is on said one side of said certain value, one of said locking means being movable relative to the other locking means and being out of locking engagement with said other locking means when said condition is on said other side of said certain value and being moved into locking engagement with said other locking means when said condition is on said one side of said certain value.

3,949,180
JACK
Shin Ojima; Kazuhiko Ohgami, and Kanbun Nakaba, all of Yao, Japan, assignors to Hoshidenki-Seizo Kabushiki Kaisha, Yao, Japan
Filed Aug. 16, 1974, Ser. No. 498,019
Claims priority, application Japan, Sept. 3, 1973, 48-103754[U]
Int. Cl.² H01R 13/70
U.S. Cl. 200—51.1 6 Claims



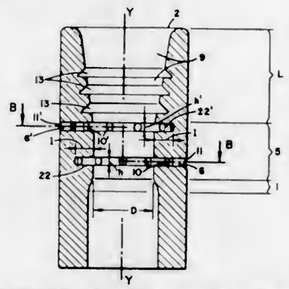
1. A jack comprising a parallelepiped casing fabricated of an insulating material, a plug insertion section mounted in a central opening formed in a front panel of the casing for detachably receiving a plug, a movable contact within said casing, said movable contact comprising an electrically conductive rigid body, one end of which is pivotally mounted in said casing, said movable contact being positioned to be pivoted about its said one end upon insertion and withdrawal of the plug, a fixed contact fixedly mounted in the casing, a metallic stationary plate secured to the interior of said casing on the side of said movable contact opposite to said fixed contact and located in opposing relationship to said movable contact, and a coiled spring disposed between said stationary plate and said movable contact for resiliently urging said movable contact against said fixed contact, said stationary plate having its major surface located contiguous with the inner surface of a bottom plate of the casing which extends at right angles to the front panel, said stationary plate being provided with an annular projection adjacent to one end thereof remote from said plug insertion section, one end of said coiled spring being wound around said annular projection, the other end of said stationary plate being arcuately bent away from the bottom plate of said casing thereby to form a retaining section, an engagement slot formed in said retaining section, said stationary plate being provided with a terminal which extends through the casing to the exterior thereof, said movable contact having a horizontal portion which extends substantially parallel to said stationary plate, a further annular projection in said horizontal portion extending toward said stationary plate, the other end of said spring being wound around said further annular projection to urge said horizontal portion of said movable contact against said fixed contact, said movable contact also having an inclined portion which extends forwardly from said horizontal portion toward said stationary plate, the free end of said inclined portion being bent into an arc which extends around the outer periphery of said retaining section and said free end having an engaging piece which engages said engagement slot, thereby forming a pivotal connection between said movable contact and said stationary plate to pivotally mount said movable contact in said casing, the arrangement being such that upon insertion of a plug, the plug abuts against said inclined portion to cause said movable contact to rotate about the point of engagement between the engaging piece and the engagement slot in a direction away from the fixed contact against the bias of the spring.

3,949,181
LOW PROFILE-LOW BOUNCE ELECTRICAL SWITCH APPARATUS
Dean R. Kempf, 714 Heinel Drive, Roseville, Minn. 55113
Filed Sept. 3, 1974, Ser. No. 502,959
Int. Cl.² H01H 1/18
U.S. Cl. 200—159 R 46 Claims



1. Apparatus for making or breaking electrical contact with low bounce switching characteristics in an electrical circuit, said apparatus comprising:
a first electrical conductor,
a second electrical conductor,
at least one torsion beam member comprising:
a torsion beam having an axis and being restrained from rotation thereabout at a first point, and
an operating beam connected to the torsion beam at a second point spaced from said first point and having an axis oriented at an angle with respect to the axis of said torsion beam such that displacement of said operating beam causes rotation of said torsion beam from its quiescent rotational state thus producing a torsional bias force against said displacement,
at least one of said conductors being operatively associated with said operating beam for displacement therewith,
the remaining electrical conductor being disposed for making or breaking of said electrical contact with said one conductor upon displacement of said operating beam, and
means for displacing said operating beam thereby making or breaking said electrical contact.

3,949,182
BREAKING CHAMBER FOR SELF-BLASTING COMPRESSED GAS ELECTRIC CIRCUIT-BREAKERS
Benito José Calvino y Teijeiro, Bergamo, Italy, assignor to Magrini Galileo S.p.A., Milan, Italy
Filed June 14, 1974, Ser. No. 479,520
Claims priority, application Italy, June 14, 1973, 50788/73
Int. Cl.² H01H 33/82
U.S. Cl. 200—148 R 11 Claims

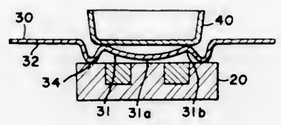


1. In an axial blast breaking chamber for self-blasting compressed gas electric circuit breakers having fixed and movable contacts, a blast nozzle internally shaped to provide, in the outlet direction, a first conical and convergent zone, a second cylindrical zone and a third substantially conical and divergent zone having a length L equal to or greater than

$$\frac{U_n}{3}(1.5) \quad 2,$$

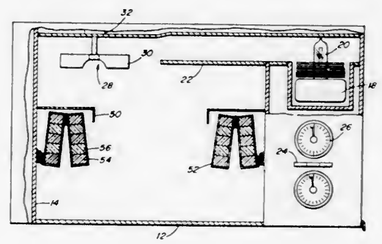
wherein U_n is the rated service voltage of said circuit breaker, said second zone having a cross-sectional area not greater than that of said first and second zones, and said third zone having a plurality of ring-like grooves each of which has a substantially triangular cross-section within a plane passing through the longitudinal axis of the chamber, said ring-like grooves being open toward the outlet orifice of the breaking chamber, wherein the improvement comprises having a first set of lateral outlet holes through the upstream end of the chamber wall corresponding to said second smallest cross-sectioned cylindrical zone, and a second set of lateral outlet holes through the downstream end, with respect to the gas outflow direction, of the chamber wall corresponding to said second smallest cross-sectioned cylindrical zone, the axes of the first set of outlet holes being angularly offset with respect to the axes of the second set of outlet holes; said first set of outlet holes being connected by a first annular feeding groove coaxial to the longitudinal axis of the breaking chamber and the entrances within said breaking chamber of said second set of outlet holes being connected by a second annular feeding groove coaxial to said longitudinal axis, the ratio of the sum of the smallest cross-sectional areas of said first and second sets of outlet holes to the cross-sectional area of said second zone being not less than 0.75.

3,949,183
COVER PLATE FOR INDUCTION HEATING APPARATUS
Kazuo Usami, Itami; Masayuki Miyazaki, Osaka, and Akemi Hizikata, Kawanishi, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 367,898, June 7, 1973, abandoned. This application July 15, 1974, Ser. No. 488,777
Claims priority, application Japan, Oct. 20, 1972, 47-104948; Jan. 23, 1973, 48-9697
Int. Cl.² H05B 5/04
U.S. Cl. 219—10.49 17 Claims



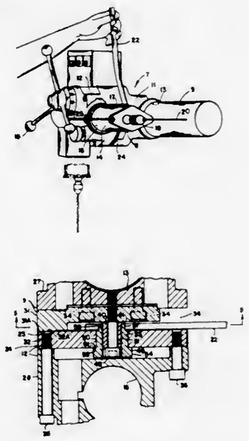
1. Induction heating apparatus comprising:
exciter means for generating an alternating magnetic field for induction heating a heated element,
a cover plate disposed above said exciter means for supporting the heated element at a predetermined distance from said exciter means, said cover plate comprising,
a center part maintained out of contact with said heated element and said exciter means,
a peripheral part maintained out of contact with said heated element and said exciter means surrounding said center part,
thermal absorbing means connecting said center part of said pheripheral part, supporting the heated element and supported by said exciter means, said thermal absorbing means being of sufficient height to maintain said center part and said peripheral part out of contact with the heated element and said exciter means even after thermal deformation of said cover plate to maintain the heated element and said exciter means at a predetermined separation.

3,949,184
FOLDING MICROWAVE SEARING AND BROWNING MEANS
George Freedman, Wayland, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed May 2, 1975, Ser. No. 574,063
Int. Cl.² H05B 9/06
U.S. Cl. 219—10.55 E 2 Claims



1. Microwave oven apparatus comprising:
an enclosure;
means for radiating microwave energy within said enclosure; and
means for heating and supporting an article within said enclosure to provide seared and browned exterior surfaces;
said heating and supporting means comprising a plurality of energy responsive members interconnected to form sections;
said sections being adapted to extend across said enclosure during the heating cycle and to be folded and stored during the nonheating cycle.

3,949,185
ANGLE ADJUSTMENT FOR METAL DISINTEGRATORS
Jere H. Roach, Rocky River, Ohio, assignor to Cammann Manufacturing Co., Inc., Cleveland, Ohio
Filed Jan. 15, 1975, Ser. No. 541,270
Int. Cl.² B23K 9/16; B23C 1/12
U.S. Cl. 219—69 R 13 Claims



1. A unit for mounting a disintegrator head to a support, comprising in combination:

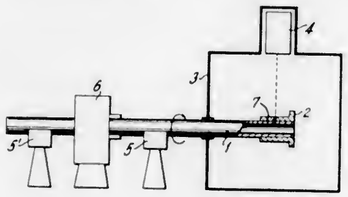
a first housing adapted for mounting to the support and having a first housing surface;
a second housing adapted for receiving the disintegrator head and having a second housing surface;
one of said first and second housings having a housing aperture;
a nut including a nut body with internal nut threads and having an expanded portion;
means for mounting said nut to said one of said housings with said nut body journaling with said housing aperture and with said expanded portion engaging said one of said housings;
a threaded member having member threads located on the outer surface thereof;
means for mounting said threaded member to the other of said first and second housings;
and means for mounting said nut on said threaded member with said nut threads engaging said member threads for producing frictional engagement between said first and second housing surfaces upon rotation of said nut in one direction to prevent relative rotation between said first and second housings and for removing said frictional engagement between said first and second housing surfaces upon rotation of said nut in the opposite direction to enable relative rotation between said first and second housings.

3,949,186

METHOD FOR WELDING BETWEEN METALLIC BODY AND PRECISION TUBE BODY

Masatoki Nakayama; Saburo Shikoh, both of Kisarazu; Hiroshi Nohgata; Yasuo Kimiya, both of Kimitsu; Hiroshi Yada, Munakata; Sin-ichi Nisida, Kitakyushu, and Mikio Ogai, Ichihara, all of Japan, assignors to Nippon Steel Corporation and The Furukawa Electric Co., Ltd., both of Tokyo, Japan

Filed Sept. 27, 1974, Ser. No. 510,028
Claims priority, application Japan, Sept. 28, 1973, 48-109073
Int. Cl.² B23K *15/00*
U.S. Cl. 219—121 EM **14 Claims**



1. A method for welding a metallic body to a precision tube body having an inner face with an allowable strain Δr_a (μ), comprising directing a beam of concentrated energy through the metallic body and across an interface between the metallic body and the tubular body and rotating the beam and bodies relative to each other so as to form a bead peripherally about the precision body, penetrating with the bead so that the beam width W at the interface and the distance h between the bead and the inside surface of the precision tube are defined by

$$o < W \leq (0.015 \times \Delta r_a + 0.1)(h + 1) - 0.2$$

5. A method for welding a metallic body to a precision tubular body along an interface with the tubular body having an inner face with an allowable strain Δr_a (μ), comprising directing a concentrated beam of energy sufficient to melt both the metallic body and the tubular body along the interface so as to form a bead, moving the bodies and the beam relative to each other so as to continue the bead peripherally along the interface, and applying the beam so that the width b of the starting point of penetration lies at the interface and the depth l(mm) of penetration at the interface are related to the thickness of the tubular body in accordance with the relationship

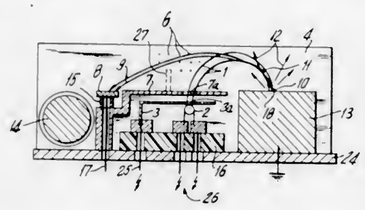
$$o < l \leq (9{,}935 \times \Delta r_a + 0.8)\, t$$

3,949,187

ELECTRON-BEAM EVAPORATION APPARATUS

Günther Wulff, Trubbach, Switzerland, assignor to Balzers Patent und Beteiligungs AG, Liechtenstein

Filed May 17, 1974, Ser. No. 471,134
Claims priority, application Switzerland, May 26, 1973, 7602/73
Int. Cl.² C23C *13/12*
U.S. Cl. 219—121 EB **4 Claims**



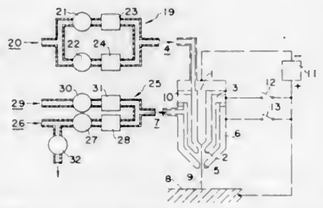
1. A device for electron beam evaporation, comprising a holding structure for the substance to be evaporated, a hot cathode spaced from said holding structure, a focussing and accelerating electrode adjacent said hot cathode acting on electrons emitted by said hot cathode, means for generating a magnetic field in the electron flow path for deviating the electrons to the substance, and an ion-collecting electrode for collecting the ions formed in the vapor beam during evaporation and spaced from said hot cathode on the side thereof opposite to said holding structure side and off the vapor beam and disposed in the magnetic field, the substance to be evaporated, said means for producing the electron beam, and said ion collecting electrode all being arranged in order one after the other in said magnetic field.

3,949,188

METHOD AND APPARATUS FOR OPERATING AN ARC-TRANSFER TYPE TORCH

Haruo Tateno, Kiyose, Japan, assignor to Rikagaku Kenkyusho, Japan

Filed July 16, 1974, Ser. No. 488,943
Claims priority, application Japan, July 20, 1973, 48-82357
Int. Cl.² B23K *5/00*
U.S. Cl. 219—121 P **5 Claims**



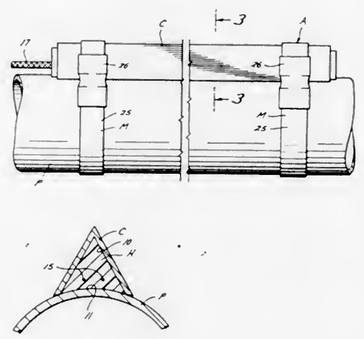
1. In the method of operating an arc-transfer type torch having a cathode rod and first and second coaxially spaced annular bodies, the space between the cathode rod and the first annular body defining a first gas flow channel and the space between the first and second annular bodies defining a second gas flow channel, in which a flow of an inactive gas is supplied to the first channel, a flow of an inactive gas is supplied to the second channel and there is established an arc between the cathode and first annular body, the anode foot of which arc is subsequently transferred to the second annular body and thence to a workpiece; the improvement which comprises the steps of reducing the flow rate of the inactive gas in said first channel to a predetermined value above the minimum required to prevent invasion of gas into the first channel and within a flow rate range which, if the flow rate of inactive gas is increased, the wall electrode potential at said second annular body decreases and the heat loss at said second annular body increases; replacing the flow of inactive gas in said second channel with a flow of an active gas; and increasing the arc current to a predetermined value.

3,949,189

PIPE HEAT TRANSFER ASSEMBLY

James E. Bilbro, and Ben C. Johnson, both of San Marcos, Tex., assignors to Thermon Manufacturing Company, San Marcos, Tex.

Division of Ser. No. 370,396, June 15, 1973, Pat. No. 3,834,458. This application Apr. 22, 1974, Ser. No. 462,660
Int. Cl.² H05B *1/00*; **F28F** *21/00*
U.S. Cl. 219—301 **6 Claims**



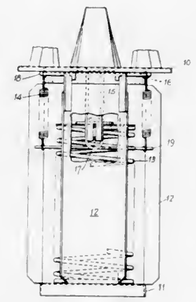
1. A heat transfer assembly adapted to be mounted in heat exchange relation with a heat transfer member, including:
a rigid elongated channel cover member;
a separate elongated preshaped, solid strip of thermoplastic resin heat transfer material having a first surface preshaped to conform closely to the shape of the inner cavity surface of the channel member and a second surface preshaped to conform closely to the shape of the surface of the heat transfer member with which it is to be mounted to eliminate air pockets or gaps between said heat transfer material and the heat transfer member surface, an elongated heat transfer element receiving cavity formed in said strip of heat transfer material adjacent said second surface, said heat transfer material after preshaping remaining solid and flexible without any significant flow within a temperature range of from about 10° F. to about 120° F.; and
an elongated heat transfer element disposed in said heat transfer element cavity of said strip of heat transfer material and substantially conforming to the shape of said heat transfer element cavity, said cover member being secured to said heat transfer member with the elongated strip therebetween and with the second surface of the strip in contact with the surface of the heat transfer member.

3,949,190

HEATED TUBE FOR DROP-IN DISPENSER

Thomas J. Landry, Old Saybrook, Conn., assignor to AMF Incorporated, White Plains, N.Y.

Filed Aug. 28, 1974, Ser. No. 501,335
Int. Cl.² F27D *11/00*
U.S. Cl. 219—385 **1 Claim**



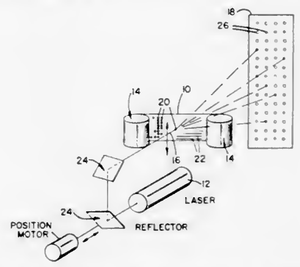
1. In the combination of a dispenser comprising an annular top member, a circular bottom member, a plurality of lengthwise extending and outwardly facing U-shaped upright and circumferentially spaced members interconnecting the two, and a movable table inside said dispenser, and a heated tube for said dispenser, said tube comprising a cylinder, the improvement of a lengthwise extending and outwardly facing channel member on the inside of said cylinder, an annular-shaped sheathed electric heater solely at the bottom of said cylinder, electric controls for said heater mounted inside said channel member, and said dispenser being removably positioned inside said cylinder with said channel member being positioned inside one of said upright members and said heater being positioned between said cylinder and said circular bottom member.

3,949,191

DATA STORAGE AND RETRIEVAL SYSTEM

Ted J. Crowther, Saratoga; Charles F. Jacobson, Cupertino, and Kent K. Sutherlin, Mountain View, all of Calif., assignors to Optical Data Systems, Inc., Mountain View, Calif.

Division of Ser. No. 254,589, May 18, 1972, Pat. No. 3,849,766. This application July 10, 1974, Ser. No. 487,346
Int. Cl.² G06K *7/10*; **G11B** *7/00*; **G01N** *21/30*; **G06K** *19/06*
U.S. Cl. 235—61.7 B **28 Claims**



1. A method for varifying the presence or absence of a unit identified by a unique spot pattern in a subset of a multiplicity of such units all of which belong to a still larger group of such units, the method comprising the steps of assigning each unit in the group to a predetermined unit class of a plurality of unit classes, providing a length of photosensitive film, recording a holograph of the spot pattern of each unit in the subject and in a given class in a longitudinal row over the length of the film so that the number of rows on the film correspond to the

number of classes and each unit from a given class is recorded in the same row, moving the film longitudinally past a reading station, directing a single light beam perpendicularly to the film, deflecting the beam to the row to which the unit is assigned, and searching the reconstructed spot patterns as the film moves past the reading station at least until the unit is found.

3,949,192

AIM CONTROL ARRANGEMENT FOR CONVEYOR INSTALLATIONS

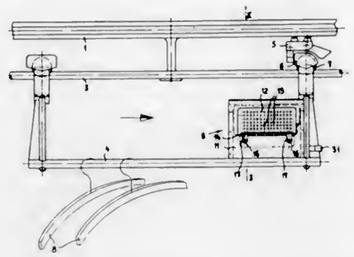
Erich Kuwertz, Pirmasens, Germany, and André Krauth, Bitche, France, assignors to Pfalzstahlbau GmbH, Pirmasens, Pfalz, Germany

Filed Sept. 30, 1974, Ser. No. 510,151

Claims priority, application Germany, Oct. 4, 1973, 2349848

Int. Cl.² G06K *7/10*; **B65G** *43/00*

U.S. Cl. 235—61.11 E **8 Claims**



1. Aim control arrangement for conveyor installations of the type having coding cards coordinated to individual carriages that work together with address questioning stations of the conveyor installation comprising a chain guiding rail, a running rail for said carriages, a pulling chain guided by said chain guiding rail, an address carrier frame for each carriage in which the coding card is received, an adjusting insert in said frame operative to adjust the height of the coding card in the proximity of the address questioning stations for cooperation with corresponding means.

3,949,193

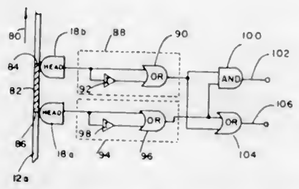
CREDIT CARD READER HAVING TWO MAGNETIC READOUT HEADS

Edward F. Dowdell, Massapequa, N.Y., assignor to Electrospace Corporation, North Bergen, N.J.

Filed Jan. 7, 1974, Ser. No. 431,134

Int. Cl.² G06K *7/08*; **G11B** *5/02*

U.S. Cl. 235—61.11 D **8 Claims**



1. A credit card reader for reading binary coded data recorded along a length of a credit card, the coded data being in the form of uniformly spaced bits of information, comprising two readout means spaced along a predetermined direction for reading the data on the credit card as the data relatively moves past the respective readout means, said readout means being spaced from each other a distance corresponding to approximately one half the distance between two adjacent bits recorded on the credit card, the credit card and said readout means being relatively movable with respect to each other in a manner to maintain the length of the credit card on which the data is recorded proximate to said readout means and in alignment with said predetermined direction; decoding means connected to said readout means for decoding the data read by said readout means and for generating output signals corresponding to the recorded data independently of the relative speed of movement between said readout means and the credit card, the binary data being recorded in two frequency coherent phase recording, said decoding means including coincidence means for generating an output signal when coincidence occurs between signals of one of said readout means and inverted signals of the other of said readout means.

3,949,194

CHECK-OUT TERMINAL

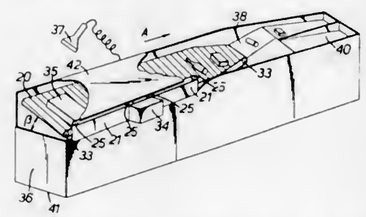
Christopher John Dignet Catto, Cambridge, and Nigel Victor Charman, Wimbourne, both of England, assignors to Plessey Handel und Investments A.G., Beeston, England

Filed Mar. 20, 1974, Ser. No. 453,036

Claims priority, application United Kingdom, Apr. 4, 1973, 16017/73

Int. Cl.² G06K *7/10*; **B65G** *15/14*; **G06K** *13/04*

U.S. Cl. 235—61.11 E **14 Claims**



1. A checkout terminal wherein coded data identifying articles being checked out is carried past an optical code reading system at a substantially constant distance away includes a main conveyor belt and at least two subsidiary conveyor belts arranged along a longitudinal side edge of the main conveyor belt in a manner such that the major surface of each of the subsidiary belts is substantially at right angles to the major surface of the main belt, the main belt being tilted downward on the said longitudinal side edge, the subsidiary belts being arranged so that when relative movement is produced between articles carried by the conveyor belts and the optical code reading system, the coded data identifying the article is exposed to the optical code reading system, and the two subsidiary conveyor belts are spaced-apart along the longitudinal side edge of the main conveyor belt and wherein the optical code reading system has a single scanning slit which is located in the space between the subsidiary belts.

3,949,195

SENSING ROD FOR THE MANUAL SCANNING OF GRAPHIC INFORMATION

Norbert Wefers, Wilhelmshaven; Uwe Unglaube, and Joachim Schwarzkopf, both of Berlin, all of Germany, assignors to Nixdorf Computer AG, Paderborn, Germany

Filed Apr. 22, 1974, Ser. No. 463,042

Claims priority, application Germany, Apr. 25, 1973, 7315714[U]

Int. Cl.² G06K *7/10*; **G08C** *9/06*

U.S. Cl. 235—61.11 E **15 Claims**

1. A sensing rod for the manual scanning of graphic information having a tip which is adapted to emit light and to receive light which is reflected from an information carrier and a light conducting element, comprising the improvement

wherein a hollow shaft has, on the peripheral surface thereof a gripping zone and at least one light-emitting section between



said gripping zone and said tip which is optically coupled with at least one light source arranged in said shaft.

3,949,196

DATA CARRIER FOR USE IN DATA PROCESSING APPARATUS

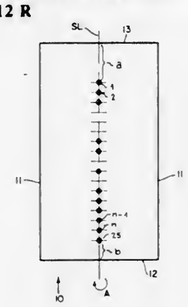
Max Spalti, Mutschellen, and Hans Hirzel, Hombrechtikon, both of Switzerland, assignors to Zuehlke Engineering AG, Schlieren-Zurich, Switzerland

Filed Aug. 9, 1972, Ser. No. 279,169

Claims priority, application Switzerland, Aug. 12, 1971, 11894/71

Int. Cl.² G06K *19/00*

U.S. Cl. 235—61.12 R **1 Claim**



1. A data carrier for use in data processing apparatus, comprising a carrier body having a pair of lateral edges located at opposite sides of and extending in parallelism with a symmetry line of said carrier body and two spaced transverse edges each extending from one to the other of said lateral edges; and discrete indicia representing respective encoded data bits, all of said indicia being located on said symmetry line and defining a single row extending therealong, said row including a pair of terminal indicia representing identical bits of data and located at the respective opposite ends of said row adjacent a respectively associated one of said transverse edges, one of said terminal indicia being spaced from the associated transverse edge by a distance which is greater than the distance by which the other of said terminal indicia is spaced from its associated transverse edge.

3,949,197

METHODS AND APPARATUSES FOR CORRECTING COINCIDENCE COUNT ERRORS IN A PARTICLE ANALYZER HAVING A SENSING ZONE THROUGH WHICH THE PARTICLES FLOW

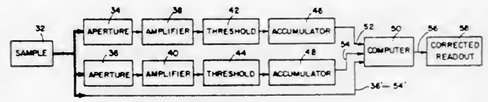
Henri Bader, Miami, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Sept. 26, 1972, Ser. No. 292,421

Int. Cl.² G01N *27/00*; **G06M** *11/00*

U.S. Cl. 235—92 PC **32 Claims**

1. A method for use in the correction of primary and secondary coincident particle count variations in a particle analyzer of the sensing zone type comprising the steps of: generating a plurality of trains of particle pulses by passing at least one portion of a sample of particles through at least one sensing zone type of particle sensing zone arrangement, said step of generating the pulse trains including the step of developing each pulse train relative to the other pulse trains so that each pulse train has a different number of pulses by using at least one of a specific ratio, other than unity, of sample dilutions, sample volumes and sensing zone volumes in such a manner that the number of pulses in each train is in accordance with a coincidence count interrelated mathematic function rela-



tionship with the number of pulses in the other trains of pulses, in which the only unknowns in such relationship are the number of pulses in each train; the number of pulses in each train and said ratios being all of the mathematic factors required in a solving of a specific coincidence correction equation for a resultant coincidence corrected particle count.

3,949,198

METHODS AND APPARATUSES FOR CORRECTING COINCIDENCE COUNT INACCURACIES IN A COULTER TYPE OF PARTICLE ANALYZER

Wallace H. Coulter, Miami Springs, and Walter R. Hogg, Miami Lakes, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Continuation of Ser. No. 238,079, March 27, 1972, abandoned. This application Mar. 26, 1974, Ser. No. 454,793

Int. Cl.² G01N *27/00*; **G06M** *11/00*

U.S. Cl. 235—92 PC **36 Claims**

1. A method for use in the automatic correction of coincident particle count inaccuracies in a particle analyzer of the sensing zone type comprising the steps of: generating a first and a second train of particle pulses by passing at least one portion of a sample of particles through at least one sensing zone type of particle sensing zone arrangement, said step of generating the pulse trains including the step of establishing at least one of them in such a manner to have a different number of pulses than the other by use of a ratio, other than unity, of at least one of sample dilutions, sample volumes, and sensing zone volumes with respect to the establishing of the other pulse train, that the number of pulses in the first train is in accordance with a coincidence count interrelated mathematic function relationship with respect to the number of pulses in the second train, in which the only unknowns in such relationship are the number of pulses in each train; the number of pulses in each train and said ratios being all of the mathematic factors required in the solving of a specific coincidence correction equation for a resultant coincidence corrected particle count.

3,949,199

PULSE WIDTH DECODER

James T. Odom, Huntsville, Ala., assignor to Avco Corporation, Huntsville, Ala.

Filed Sept. 6, 1974, Ser. No. 503,743

Int. Cl.² G06M *3/00*

U.S. Cl. 235—92 DM **2 Claims**

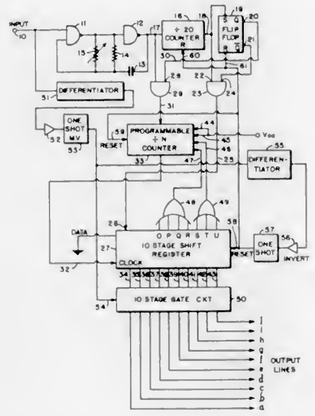
1. A wave form acceptance system for the measurement of the time duration of input signal wave forms with a relatively wide time-duration range comprising:

local pulse-generating means having a wave form input circuit and actuated by input signal wave forms for generating pulses, having a cycle relatively short compared to

the input signal, throughout the duration of said input signal,

means for establishing a series of time bins,

means for coupling the local pulse generating means to the bin establishing means to supply locally generated pulses to be counted, the bin established being a measure of the pulse count and a function of the duration of said input signal,



the coupling means comprising a divider counter having divisor-adjusting means and an input coupled to the local pulse generating means and an output coupled to the bin establishing means,

a feedback coupling between the bin establishing means and the divisor-adjusting means for varying the divisor to vary the number of locally generated pulses required to shift the bin-establishing means to the next bin, and

means for delaying the supply of locally generated pulses to be counted for a time equal to the lower time boundary of the shortest time bin which is established.

3,949,200

SYSTEM FOR SELECTIVE OPERATION OF MONEY DISPENSING MACHINE

Hideto Shigemori, and Akio Ueba, both of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 301,252, Oct. 26, 1972, abandoned. This application Nov. 7, 1974, Ser. No. 521,920
Claims priority, application Japan, Oct. 30, 1971, 46-86394
Int. Cl.² G06M *3/08*
U.S. Cl. 235—92 SB **3 Claims**

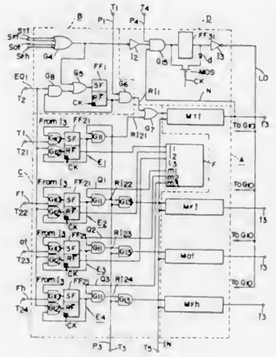
1. In combination with a money dispensing machine of the type which receives data representative of separate amounts of money respectively corresponding to separate monetary denominations desired to be dispensed, and which dispenses money of said desired denominations in accordance with the corresponding separate amounts of money specified, an improvement which comprises:

means for selectively designating denominations of money to be dispensed and for providing denomination input signals indicative thereof;

denomination detecting means for detecting said denomination input signals and for producing denomination output signals indicative of which of said monetary denominations are desired to be dispensed, said denomination detecting means including means for storing said denomination input signals until after said data representative of said separate amounts of money desired to be dispensed of each of said monetary denominations has been specified whereupon detection output signals are produced therefrom;

sequence control means connected to receive said detection output signals from said denomination detecting means for producing sequence signals which specify a predetermined order of money denomination dispensation;

storage means including a plurality of storage circuits, one for each denomination, for storing said data representative of said amount of money of said corresponding denomination desired to be dispensed; and



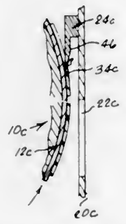
gating means responsive to said denomination output signals and to said sequence signals for producing gating signals which successively gate each of said plurality of storage circuits which correspond to desired monetary denominations to enable said storage circuits to receive the corresponding money amount data therein.

3,949,201

IRREVERSIBLE DIGITAL COUNTER AND ODOMETER

Peter D. Bogart, 2338 Bronson Hill Drive, Hollywood, Calif. 90068

Division of Ser. No. 362,751, May 22, 1973, Pat. No. 3,880,351. This application Apr. 28, 1975, Ser. No. 572,339
Int. Cl.² G01C *22/00*
U.S. Cl. 235—95 R **1 Claim**



1. In combination with a digital counter consisting of two or more movable wheels mounted on a common shaft, rotation of said shaft to effect movement of said wheels with each said wheel being movable at a different ratio of movement with respect to the other of said wheels with there being a single said wheel movable at the slowest ratio, indicia located on the periphery of said slowest moving wheel, an inlined section of said wheels being observable through a viewing window formed within a housing, said wheels being rotatably mounted with respect to said housing, the improvement comprising:

an obliteration means mounted adjacent said slowest moving wheel, said obliteration means to effect obliteration of said indicia upon said slowest moving wheel after said indicia is moved across said viewing window and no longer observable therethrough, wherein said obliteration means comprises; and

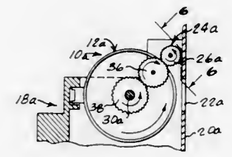
a chisel mounted upon said housing, said chisel having a sharpened forward edge, said forward edge being positioned underneath the outer layer of material located on said slowest moving wheel, whereby as said slowest moving wheel is moved said forward edge of said chisel removes said outer layer of material as such passes said viewing window.

3,949,202

IRREVERSIBLE DIGITAL COUNTER AND ODOMETER

Peter D. Bogart, 2338 Bronson Hill Drive, Hollywood, Calif. 90068

Division of Ser. No. 362,751, May 22, 1973, Pat. No. 3,880,351. This application Apr. 28, 1975, Ser. No. 572,344
Int. Cl.² G01C *22/00*
U.S. Cl. 235—95 R **3 Claims**



1. In combination with a digital counter consisting of two or more movable wheels mounted on a common shaft, rotation of said shaft to effect movement of said wheels with each said wheel being movable at a different ratio of movement with respect to the other of said wheels with there being a single said wheel movable at the slowest ratio, indicia located on the periphery of said slowest moving wheel, an inlined section of said wheels being obervable through a viewing window formed within a housing, said wheels being rotatably mounted with respect to said housing, the improvement comprising:

an obliteration means mounted adjacent said slowest moving wheel, said obliteration means to effect obliteration of said indicia upon said slowest moving wheel after said indicia is moved across said viewing window and no longer observable therethrough, wherein said obliteration means comprises;

a grinding wheel rotatably mounted upon said housing, said grinding wheel having a teethed periphery, said grinding wheel being rotatably driven by at least one coupling gear, said coupling gear being rotatably driven by said common shaft, said teethed periphery being in tight frictional contact with said slowest moving wheel, whereby as said slowest moving wheel is moved said teethed periphery obliterates the portion of said indicia which passes said viewing window.

3,949,203

SELECTION MECHANISM FOR A POSTAGE METER

Arthur J. Malavazos, deceased, late of Hayward, Calif., by Gregory A. Malavazos, administrator, Newark, Calif., assignors to A J M Research Corporation, Hayward, Calif.

Filed Apr. 3, 1974, Ser. No. 457,594
Int. Cl.² G07G *1/00*
U.S. Cl. 235—101 **14 Claims**

1. In a postal meter having:

a. a descending register and an ascending register;

b. a single Thomas-type mutilated drum actuator for each register;

c. a printing head having settable value print wheels; and

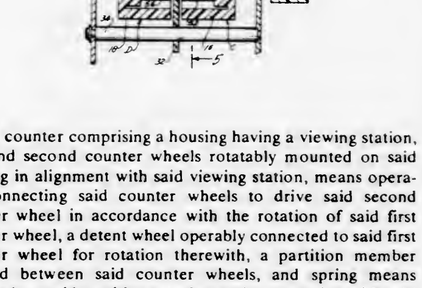
d. a drive shaft for rotating said actuators and mounting said print head;

e. a selection mechanism comprising:

1. a plurality of ordinally arranged register driving gears arranged concentrically around each of said actuators and movable parallel thereto;

2. a manually settable bar for individually setting the ordinally identical ones of said driving gears for both registers in selected value positions;

3. ordinally arranged rack means mounted on the exterior of said drive shaft for setting the value print wheels carried by the printing head;



4. means connecting each settable bar to its ordinally related rack means for causing movement of the latter differentially with the movement of the manual means; and

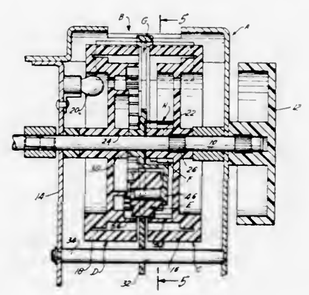
5. means for maintaining the said connecting means in engagement with said rack means and said bar throughout a cycle of operation.

3,949,204

DETENT MECHANISM FOR MECHANICAL COUNTER HAVING PARTITION MEMBER

Chun-Wei Yang, Taipei, China /Taiwan, assignor to General Instrument Corporation, Clifton, N.J.

Filed Jan. 27, 1975, Ser. No. 543,981
Int. Cl.² G06C *27/00*
U.S. Cl. 235—103 **18 Claims**

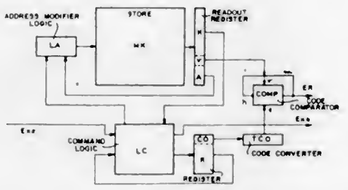


1. A counter comprising a housing having a viewing station, first and second counter wheels rotatably mounted on said housing in alignment with said viewing station, means operably connecting said counter wheels to drive said second counter wheel in accordance with the rotation of said first counter wheel, a detent wheel operably connected to said first counter wheel for rotation therewith, a partition member situated between said counter wheels, and spring means mounted on said partition member and cooperating with said detent wheel to position said first counter wheel relative to said viewing station after each rotation thereof.

3,949,205
AUTOMATIC ADDRESS PROGRESSION SUPERVISING DEVICE

Maurice Hubert, Versailles, and Jean-Louis Fressineau, Les Clayes-sous-Bois, both of France, assignors to Compagnie Internationale pour l'Informatique, Louveciennes, France

Filed Nov. 20, 1974, Ser. No. 525,519
Claims priority, application France, Dec. 4, 1973, 73.43134
Int. Cl.² G06F *11/00*
U.S. Cl. 235—153 AM **8 Claims**



1. An automatic address progression memory system comprising in combination:

a store;

a read-out register for said store;

an automatic address modifier logic for said store, having an input connected to an output of the said read-out register and a further control input;

a command logic having an output connected to the said further input for application thereto of a sequence of commands;

a register in the said command logic for memorizing an operation code defining the sequence of words to be read out from the store and correspondingly controlling the said sequence of commands in the said command logic;

first means connected to an output of the said operation code register and deriving therefrom a further code equally significant of the said sequence of words but of a lesser number of bits with respect to the operation code;

second means connected to an output of said read-out register and deriving therefrom a code of the same number of bits as said further code and significant of the sequence of words of which the read-out word is an item;

means comparing the codes from said first and second means and outputting an error signal when said codes disagree;

decoder means responsive to at least one particular bit configuration in the code derived by the said second means; and

means controlled by the output of the said decoder means to prevent the outputting of a disagree signal by said code comparing means.

3,949,206
FILTERING DEVICE

Thomas R. Edwards, and Hugh W. Zeanah, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 17, 1974, Ser. No. 533,608
Int. Cl.² G06F *15/34*
U.S. Cl. 235—156 **1 Claim**

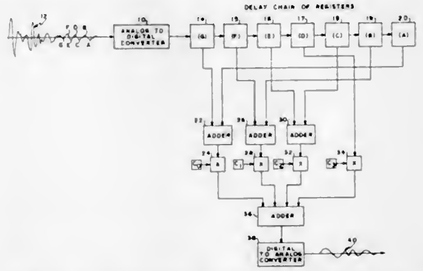
1. A filtering system for removing noise above 3,000 cycles from a continuous audio frequency signal of frequencies in the range of 300 to 3,000 Hertz comprising:

analog-to-digital conversion means responsive to such a said signal for providing as an output a continuous chain of digital signals representative of sampled points on said signal at a rate of at least 10,000 samples per second;

a chain of seven serially-connected shift registers, the input of the first of said shift registers being connected to the output of said analog-to-digital conversion means;

first, second, and third summing means, each having first and second inputs and an output, outputs of the first and last of said chain of said shift registers being connected as said first and second input signals to said first summing means, the outputs of the second and sixth of said chain of shift registers being connected as said first and second inputs of said second summing means, and the outputs of the third and fifth of the chain of said shift registers being connected to said first and second inputs of said third summing means;

first, second, third, and fourth product means, each comprising means for multiplying first and second applied inputs, an output of said first summing means being connected as a first input to first product means, the output of said second summing means being connected as a first input to said second product means, the output of said third summing means being connected as a first input to



said third product means, and the output of the fourth of said chain of shift registers being connected to the first input of said fourth product means;

filter constant means for applying weighted values to said product means, a value of −2 being coupled to said second input of said first product means, a value of 3 being connected to the second input of said second product means, a value of 6 being connected to the second input of said third product means, and a value of 7 being connected to the second input of said fourth product means;

fourth summing means responsive to the outputs of said product means for providing as an output the sum of the outputs of said product means; and

digital-to-analog conversion means responsive to the output of said fourth summing means for reproducing said signal as modified by removal of signal noise content above 3,000 cycles.

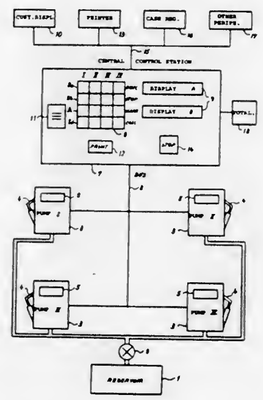
3,949,207
INSTALLATION FOR THE DELIVERY OF LIQUIDS

Antoine Savary, Bougy-Villars; Jacques Mouron, Meinier, and Jacques Lederrey, Begnins, all of Switzerland, assignors to Oxy Metal Industries Corporation, Detroit, Mich.

Filed Apr. 19, 1974, Ser. No. 462,570
Claims priority, application Switzerland, Apr. 19, 1973, 5847/73
Int. Cl.² B67D *5/30*; **G06F** *15/56*
U.S. Cl. 235—151.34 **3 Claims**

1. In an installation for the remote control of a liquid dispenser comprising a main control station, at least one liquid pump having a flow meter and display panel in electrical communication with the main control station and means in electrical communication with said pump for monitoring and controlling the dispensing of liquid, the improvement comprising including a programmable general purpose computer as the monitoring and controlling means wherein the operating program of the computer of the pump is stored in a programmable read only memory (PROM) and wherein said memory comprises in its operating program, for the determination of the volume of liquid and of the sum of money to be paid, two independent sub-routines which cause the central processing

unit (CPU) of the computer to carry out the necessary calculations, in two independent sequences from two independent

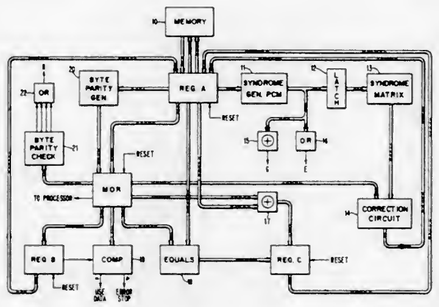


trains of counting a pulses (ϕ) and (1) from the pulse-generator coupled to the flow-meter.

3,949,208
APPARATUS FOR DETECTING AND CORRECTING ERRORS IN AN ENCODED MEMORY WORD

William Caswell Carter, Woodbury, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1974, Ser. No. 537,806
Int. Cl.² G06F *11/12*
U.S. Cl. 235—153 AM **17 Claims**



1. Apparatus for detecting faults in a memory storing a data word consisting of information bits and check bits encoded in an error correcting code, for detecting errors caused by said faults, and for correcting certain of said errors and preventing the miscorrections of others, comprising;

a first and a second correction channel, each of which is operative to receive said data word from memory and to attempt to correct it utilizing different sequences of error-correction operations in each channel;

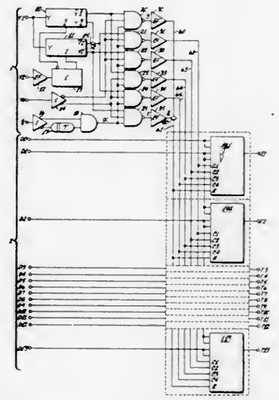
means including registers and a comparator for receiving the attempted-to-be-corrected word from each of said channels and comparing said words as received, to produce an equal or unequal signal; and

means responsive to an equal signal for gating out one of said attemtped-to-be-corrected words from one of said registers for utilization as a valid code word.

3,949,209
MULTIPLE-GENERATING REGISTER

Darrell L. Fett, Scottsdale, Ariz., assignor to Honeywell Information Systems, Inc., Phoenix, Ariz.

Filed Apr. 4, 1975, Ser. No. 565,182
Int. Cl.² G06F *7/52*, *7/39*
U.S. Cl. 235—164 **4 Claims**



1. A multiple-generating register for generating multiples of a first binary number which is input thereto, said register comprising:

a control circuit responsive to a first control signal for generating a second control signal, said second control signal representing one of a plurality of possible multiple-generating commands; and

a plurality of logic circuits, one for each bit of said first binary number, each receiving as a first input a respective bit of said first binary number and receiving as a second input the next lowest order bit of said first binary number, except that said logic circuit which receives as a first input the lowest order bit of said first binary number receives as a second input a zero-valued binary bit, said plurality of logic circuits generating a second binary number which is a multiple of said first binary number in response to said second control signal, each of said logic circuits comprising:

a storage latch having first, second, and third current leads and an output lead;

a current source;

a register current switch, said register current switch being connected between said third current lead of said latch and said current source;

a first pair of upper level current switches each having a signal input lead for receiving said first input to said logic circuit, first and second current input leads, and a current output lead, said first current input lead of a first one of said first pair of upper level current switches being connected to said first current lead of said latch and said first current input lead of the second one of said first pair of upper level current switches being connected to said second current lead of said latch, said second current input lead of said first one of said first pair of upper level current switches being connected to said second current lead of said latch, and said second current input lead of said second one of said first pair of upper level current switches being connected to said first current lead of said latch;

a second pair of upper level current switches each having a signal input lead for receiving said second input to said logic circuit, first and second current input leads, and a current output lead, said first current input lead of a first one of said second pair of upper level current switches being connected to said first current lead of said latch,

said first current input lead of the second one of said second pair of upper level current switches being connected to said second current lead of said latch, said second current input lead of said first one of said second pair of upper level current switches being connected to said second current lead of said latch, and said second current input lead of said second one of said second pair of upper level current switches being connected to said first current lead of said latch; and

four lower level current switches each having a signal input lead responsive to one of said plurality of multiple-generating commands, each of said lower level current switches being connected between said current output lead of a respective one of said upper level current switches and said current source.

3,949,210

SEMICONDUCTOR GAMMA RADIATION DETECTOR

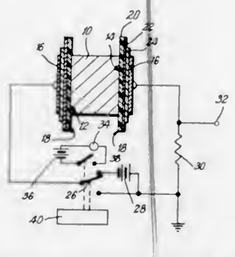
Peter Eichinger, No. 38 Ungererstrasse, 8 Munich 40, and Hartmut Kallmann, No. 13, Elektrastrasse, 8 Munich 81, both of Germany

Filed Dec. 10, 1974, Ser. No. 531,402

Claims priority, application Germany, Dec. 11, 1973, 2361635

Int. Cl.² G01T *1/22*

U.S. Cl. 250—370 **9 Claims**



1. A gamma radiation detector comprising a semiconductor body and two metal electrodes attached to two spaced surface zones of said semiconductor body, characterized by the combination of the following features:

a. The said semiconductor body consists of a uniform semiconductor material of the same conductivity type;

b. Charge carriers of both types are mobile in said semiconductor material and the product of their mobility multiplied by their free drift time (life) exceeds $10^{-9} m^2 V^{-1}$ for each type of carrier;

c. An insulating layer which is thin in relation to the distance separating said two surface zones is interposed between at least one of said electrodes and the surface zone to which it is attached.

3,949,211

LUMINAIRE HAVING BALLAST CIRCUITRY IN PHOTOCONTROL HOUSING

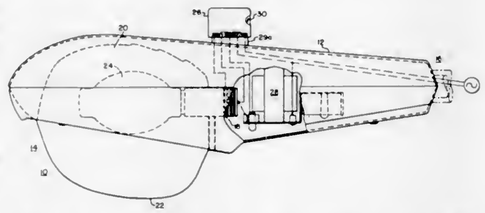
Robert T. Elms, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 21, 1974, Ser. No. 481,931

Int. Cl.² F21S *1/10*

U.S. Cl. 240—25 **3 Claims**

1. In combination with an outdoor lighting fixture for a high-intensity discharge lamp, said fixture having a fixture body adapted to receive and retain a discharge lamp, a current limiting ballast means required for operation of said discharge lamp, said ballast means affixed to said fixture and operable to connect said lamp to the energizing potential therefor, said ballast means including as an operative part thereof solid-state control circuitry, a portion of which tends to heat excessively during operation and also including relatively massive inductor means, said inductor means affixed within said fixture body, a photocontrol means affixed to the exterior surface of said fixture body to control the application of energizing potential to said lamp in accordance with predetermined ambient light conditions, said photocontrol means enclosed in a heat-conducting waterproof housing which is affixed to said fixture body by electrical connector means comprising a plug member extending from said housing and a mating female member affixed to the exterior surface of said fixture body, the improvement which comprises:



a. the solid-state control circuitry portion of said ballast means retained within said photocontrol means housing separate from said fixture body and operationally electrically connected to said inductor means and said lamp by said electrical connector means; and

b. that portion of said solid-state circuitry which is subject to excessive heating during operation thereof being affixed in heat-transfer relationship with said heat-conducting housing to remain relatively cool during operation thereof; whereby operational difficulties encountered with said solid-state control circuitry are readily corrected simply by plugging in a new unit.

3,949,212

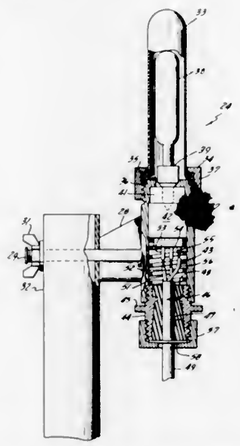
UNDERWATER LIGHTING FOR DEFENSE AGAINST SWIMMER ATTACK

Herbert Larrimore, Lynn Haven, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 10, 1969, Ser. No. 870,557

Int. Cl.² F21V *31/00*

U.S. Cl. 240—26 **8 Claims**



1. A swimmer detection and deterrent system for use in combination with architecture extending into a body of water and supported on the bottom thereof for preventing undetected approach to said architecture by a swimmer beneath the surface of said body of water comprising in combination:

a plurality of tubular support means positioned about said architecture in a predetermined pattern and penetrating vertically into said bottom so as to extend upwardly into said body of water a predetermined distance;

a plurality of body portion means having tubular shapes for providing an enclosed centeral region therewithin;

bracket means extending outwardly at right angles from said body portion means and releasably attached to individual ones of said tubular support means, so as to vertically mount a tubular body portion means on each of said tubular support means;

transparent cover means mounted on and extending upwardly from the upper end of each of said body means and having cylindrically shaped wall portions with the remote end thereof closed by a hemispherically shaped end portion and having the end adjoining said body portion means characterized by an outwardly extending lip means for establishing a mounting surface therefor;

first anular resilient seal means located between the end of said body portion means and said outwardly extending lip means of said transparent cover means for providing a resilient watertight seal therebetween;

first gland means threadably mounted on said body portion means and having an aperture through which the aforementioned hemispherical end portion and the cylindrical wall portions of said transparent cover means extend, with the edges of said aperture engaging said lip means of said transparent cover means to retain said transparent cover means on said body portion means;

second anular resilient seal means located between said gland means and said lip means to provide yielding contact between the aforesaid edges of said aperture and said lip means;

electro-optical transducer means for converting electrical energy supplied thereto into radiant energy in the visible spectrum which radiates therefrom;

upper socket means mounted at the upper end of said body portion means within said enclosed centeral region for supporting said electro-optical transducer means within said transparent cover means;

lower socket means having electrical terminals for engaging the lower portion of said electro-optical transducer in cooperation with said upper socket means;

plug means threadably mounted on the lower end of said body portion means and having an aperture with sloping converging surfaces for closing the lower end of said body portion;

spring means located between said plug means and said lower socket means for urging said lower socket away from said plug means and into contact with the electro-optical transducer means;

electrical conductor means connected to said electrical terminals of said lower socket means and extending through said aperture in said plug means for transmitting electrical power to said electro-optical transducer means;

flange means integrally connected to said plug means and extending outwardly therefrom for providing tool engaging surfaces for facilitating assembly of said plug means and said body portion means;

apertured seal means fitting said aperture within said plug means and surrounding said electrical conductor means for providing a watertight seal therebetween; and

second gland means threadably mounted on said plug means for compressing said apertured seal means in order to improve the water tightness of the fit thereof.

3,949,213

UNDERWATER LIGHT

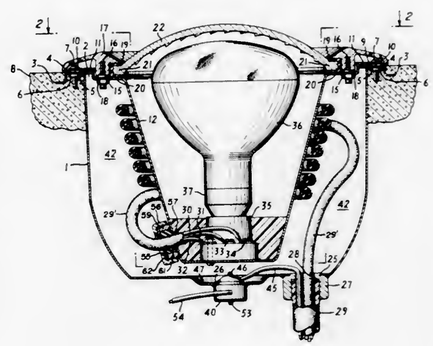
Harold Paitchell, Clifton, N.J., assignor to Hayward Manufacturing Company, Inc., Elizabeth, N.J.

Filed Feb. 11, 1974, Ser. No. 441,197

Int. Cl.² F21V *31/00*

U.S. Cl. 240—26 **10 Claims**

1. An underwater light for a body of water for use with electrical and grounding connections that are totally immersed in water and having fail-safe twin grounding connections to prevent electric grounding through the water in event of failure of one grounding connection, comprising, in combination, a housing; a water-tight receptacle in the housing; an electric light within the receptacle; water-tight non-electrically-conducting conduit means attached in a water-tight seal to the housing for entry of electrical and grounding line connections leading from an electric power source and ground outside the body of water to the electric light within the receptacle; a first grounding connection attached to the inside of the receptacle for grounding attachment thereto of a first grounding line extending to a ground outside the body of water and entering the housing via the conduit means; and a second grounding connection attached to the housing for grounding attachment of a second grounding line extending to a ground outside the body of water.



3,949,214

VEHICLE LAMP ASSEMBLY

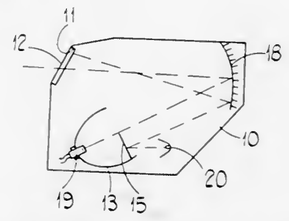
Kenneth James Jones, and Robert Arthur Hargroves, West Midlands, both of England, assignors to The Lucas Electrical Company Limited, Birmingham, England

Filed Feb. 27, 1975, Ser. No. 553,824

Claims priority, application United Kingdom, Mar. 5, 1974, 9752/74

Int. Cl.² F21V *7/00*

U.S. Cl. 240—41.35 C **4 Claims**



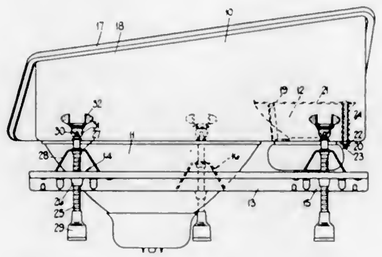
1. A vehicle lamp assembly comprising a housing having a window therein, a first curved reflector and a first bulbholder mounted in the housing, a second curved reflector and second bulbholder also mounted in the housing, a curved mirror mounted in the housing, and a mask disposed between the first

curved reflector and the curved mirror, the arrangement of first curved reflector, first bulbholder, mask and curved mirror being such that, in use, when a bulb is mounted in the bulbholder, part of the light beam from the bulb is directed by the first reflector towards the curved mirror and is masked by the mask, the masked beam being reflected by the curved mirror to leave the housing through the window, said mask hving a reflective layer on a surface thereof which faces away from the first reflector, and said second reflector and second bulbholder being mounted on the opposite side of the mask to the first reflector and being arranged so that, in use, a light beam emanating from a bulb carried by the second bulbholder is directed by the second reflector towards the reflective layer on the mask to be reflected thereby towards the mirror which reflects the beam through the window.

3,949,215
LAMP ASSEMBLY

George Joseph Whitney, Walsall, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Jan. 15, 1975, Ser. No. 541,142
Claims priority, application United Kingdom, Jan. 29, 1974, 3985/74
Int. Cl.² F21V 7/00
U.S. Cl. 240—44.1 **4 Claims**



1. A lamp assembly comprising a hollow body including a lens element, first and second reflectors carried by said body, said lens element overlying both of said first and second reflectors, a support member, first means adjustably mounting the body on the support member, and second means adjustably mounting the second reflector to the body for selective movement in two mutually inclined planes relative to the body.

3,949,216
LIGHT DISPERSING STRUCTURE FOR ELECTRIC LIGHT FIXTURE

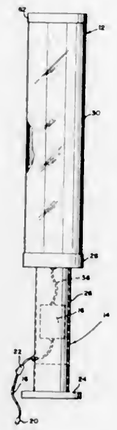
Arnold P. Howe, 2 Saroni Court, Oakland, Calif. 94611

Continuation-in-part of Ser. No. 290,896, Sept. 21, 1972, abandoned. This application Aug. 13, 1973, Ser. No. 387,690
Int. Cl.² H05B 33/02
U.S. Cl. 240—51.11 R **8 Claims**

1. In an electric light fixture of the type employing a lamp base to house the ancillary circuitry and support an elongate light source tube, an improved light diffusing structure therefor to enhance shadow-free 360° illumination about the longitudinal axis of the light source tube comprising:

an inner supporting member at least partly surrounding said light tube, said member fabricated of a relatively thin, light transmitting sheet material and having walls substantially free of any light obstructing material, said member shaped to removably receive through an opening thereof an elongate light source tube and adapted to carry at each end of said supporting member a connection for physical and electrical securement of the elongate light source tube, said supporting member formed to have one end thereof attached to said lamp base, said supporting member formed with a pair of spaced apart grooves parallel to each other and to the longitudinal axis of said tube;

bare wire conductors carried by said supporting member with each of said conductors disposed in a different one of said grooves to convey electrical energy from said ancillary circuitry to the connection for electrical securement of said tube at the end of said member farthermost removed from the base when placed in operative position,



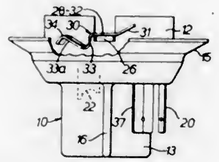
said conductors being positioned relatively close to said light tube to substantially reduce the shadow-casting properties of said conductors, and

an outer light diffusing member circumjacent to said member, said diffusing member being positioned away from said supporting member to substantially eliminate variations in light intensity originating radially inwardly of said diffusing member.

3,949,217
ELECTRIC BULB HOLDER

John Arthur Howe, Tollerton, and Harvey Albert Mole, Heanor, both of England, assignors to TRW Inc., Cleveland, Ohio

Filed Aug. 2, 1974, Ser. No. 494,134
Int. Cl.² F21V 21/08
U.S. Cl. 240—52.1 **9 Claims**

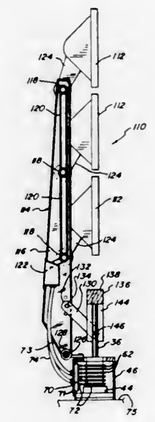


8. An installation comprising: a mounting panel having an aperture formed therethrough and a plurality of radially extending notches spaced about and communicating with said aperture, each of said notches having leading and trailing end edges, and an electric bulb holder including a housing having an open end and a closed end, a locating rim disposed adjacent said open end extending through said panel aperture, a sealing skirt seated against one side of said panel beyond the outer periphery of said notches, and a plurality of mounting wings connected to said housing and disposed about the outer periphery of said locating rim each of said mounting wings having resilient leading end parts extending through said notches and over the leading end edges thereof and overlying the side of said panel opposite that against which said skirt is seated and resilient trailing end parts disposed within said notches and having free ends located opposite said trailing end edges of said notches to inhibit accidental rotation of said bulb holder relative to said panel, said trailing end parts being automatically deflectable out of said notches responsive to deliberate rotation of said holder in a holder-releasing direction relative to said panel to effect intentional removal of said holder from said panel.

3,949,218
LAMP ASSEMBLY

Walter W. Hayward, Loveland, Colo., assignor to Super Vacuum Mfg. Co., Inc., Loveland, Colo.

Filed Apr. 28, 1975, Ser. No. 572,465
Int. Cl.² F21V 21/14
U.S. Cl. 240—67 **22 Claims**



1. A lamp assembly comprising:

an upright raising mechanism;

a shaft included in said mechanism and extendable upwardly beyond the upper end of said mechanism;

a lamp support frame disposed above the upper end of said mechanism;

at least one lamp carried by said frame;

fulcrum means for journaling one margin of said frame effectively from said upper end of said mechanism to permit said frame to be swung between an upright orientation and a horizontal orientation;

a link arm pivotally coupled at its one end to a portion of said frame spaced from said one margin thereof and pivotally coupled at its other end to the upwardly projecting end portion of said shaft;

and means for supplying power to said mechanism to effect longitudinal movement of said shaft and consequent pivoting of said link arm to swing said frame about said fulcrum means.

3,949,219
OPTICAL MICRO-SWITCH

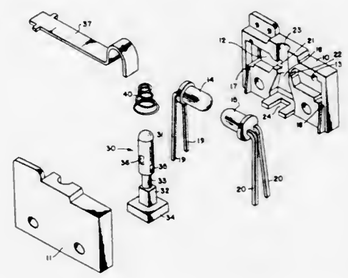
Ronald J. Crouse, Richardson, Tex., assignor to Optron, Inc., Carrollton, Tex.

Filed Jan. 20, 1975, Ser. No. 542,208
Int. Cl.² G01D 5/34
U.S. Cl. 250—229 **3 Claims**

1. A switch comprising:

a. a housing defining first, second and third cavities therein, said first cavity adapted to enclose means for generating photons, said second cavity adapted to enclose means for controlling an electrical circuit when illuminated by said photons, said third cavity extending completely through said housing and located at least partially between said first and second cavities and adapted to mount a reciprocal plunger therein, said housing further defining an optical path from said first cavity to said second cavity through said third cavity;

b. plunger means mounted for reciprocal movement in said third cavity between a first position and a second position, said plunger means comprising an elongated body having varying cross-sectional dimensions and extending completely through said housing, the first end of said plunger being no larger than the central portion thereof, the central portion of said plunger having first and second optical apertures therethrough, said optical apertures passing transversely to the longitudinal axis of said plunger and at right angles to each other, said first optical aperture aligning with said optical path when said plunger is in said first position and said second optical aperture aligning with said optical path when said plunger is in said second position and rotated 90° about its longitudinal



axis, the opposite end of said plunger having an expanded cap which prevents said opposite end from entering said third cavity, the portion of said plunger adjacent said opposite end having rectangular dimensions in cross-section and mating with the opening in said housing adjacent said second end to prevent rotation of said plunger, said plunger further having an intermediate portion between said central portion and said portion having rectangular dimensions in cross-section, the largest cross-sectional dimension of said intermediate portion being less than the smallest cross-sectional dimension of said portion adjacent said end cap, whereby rotation of said plunger is prevented when said plunger is in said first position, said second position, and during transition therebetween, but permitted when said plunger is drawn from said first position past said second position, thereby permitting said switch to be changed from normally open to normally closed and vice versa without disassembling said switch housing, and

c. resilient means for urging said plunger toward said first position.

3,949,220
METHOD FOR DETECTING AND LOCATING SAND PRODUCING ZONES IN FRIABLE, UNCONSOLIDATED SANDSTONE FORMATIONS OF SUBTERRANEAN FORMATIONS

Derry D. Sparlin; Walter H. Fertl, both of Ponca City, Okla., and Gary C. Young, Pinole, Calif., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 4, 1974, Ser. No. 512,828
Int. Cl.² G01V 5/00
U.S. Cl. 250—260 **11 Claims**

1. A method for locating and identifying sand producing zones in friable, unconsolidated sandstone formations of a

subterranean reservoir traversed by a well bore which comprises the sequential steps of:

a. introducing into said reservoir through said well bore, a mixture containing a radioactive material which is preferentially retained in the porous portions of the formation surrounding said well bore;

b. passing a radioactivity detection means through the well bore and recording the measurement of radioactivity of said reservoir;

c. returning the reservoir to production;

d. passing a radioactivity detection means through said well bore and recording the measurement of radioactivity of said formation for a second time; and,

e. correlating the measurements of radioactivity of each measurement with measurement of depth to thus locate sand producing zones in said reservoir.

3,949,221

DOUBLE-FOCUSSING MASS SPECTROMETER

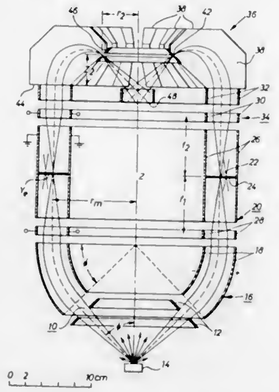
Helmuth Liebl, Eching, Germany, assignor to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Gottingen, Germany

Filed Aug. 6, 1974, Ser. No. 495,248

Claims priority, application Germany, Aug. 9, 1973, 2340372

Int. Cl.² B01D *59/44*

U.S. Cl. 250—281 **10 Claims**



1. A double-focussing mass spectrometer having a large entrance aperture to accept ions emitted by an ion source into a solid angle encompassing an axis, the said ions having various ratios of charge to mass; said mass spectrometer comprising

an entrance diaphragm having an annular opening through which a diverging beam of said ions enters, said beam having a central ray in each radial section in a plane passing through said axis;

an analyzing system to select ions of a predetermined ratio of charge to mass;

an exit diaphragm having an annular opening through which said selected ions pass to ion detecting means,

wherein said annular openings of said entrance and exit diaphragms are essentially coaxial to said axis and said analyzing system includes, along the paths of said ions between said entrance and exit diaphragms in the order named:

a. energy analyzer means for direction focussing ions of equal energy to respective loci corresponding to their respective energies, said energy analyzer means being essentially rotationally symmetrical relative to said axis, further having a predetermined first energy dispersion coefficient, and deflecting the beam of ions entering through said opening of said entrance diaphragm in such a way towards the said axis, that the said central rays of the deflected beam of ions run essentially parallel to said axis;

b. energy diaphragm means, having an annular opening and arranged in the plane of said loci to limit the energy range of the ions transmitted through said annular opening, which opening is essentially coaxial relative to said axis;

c. electrical annular lens means for collimating the ions of equal energies diverging from said loci, said lens being essentially coaxial to said axis and having a predetermined second energy dispersion coefficient; and

d. momentum analyzer means for focussing ions with an equal charge-to-mass ratio, which have passed through said opening of said energy diaphragm means to respective further loci lying in a plane which comprises said exit diaphragm, said momentum analyzer being essentially symmetrically to said axis and having a predetermined third energy dispersion coefficient;

said annular lens having a focal length selected such that the energy dispersion resulting from said first energy dispersion coefficient of said energy analyzer means is opposite and equal to the energy dispersion resulting from the combination of said second and third energy dispersions coefficients of said annular lens and said momentum analyzer means.

3,949,222

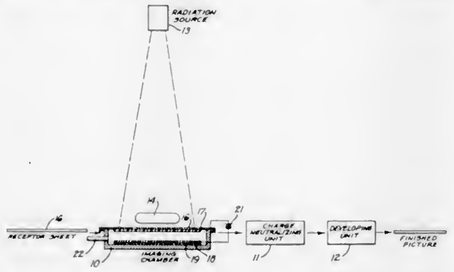
METHOD AND APPARATUS FOR REDUCING THE DENSITY OF BACKGROUND AREAS WITHOUT AFFECTING THE DENSITY OF PICTURE AREAS IN AN ELECTRONRADIOGRAPH

John H. Lewis, Los Angeles, Calif., assignor to Xonics, Inc., Van Nuys, Calif.

Filed Nov. 1, 1974, Ser. No. 519,998

Int. Cl.² G03G *15/044*

U.S. Cl. 250—315 A **10 Claims**



1. In an electronradiography system, the combination of:

an imaging chamber having first and second spacedelectrodes with a gap therebetween and means for positioning a dielectric receptor sheet in the gap at one of said electrodes during an exposure for producing a latent electrostatic image on said sheet with a relatively high charge density in the background area and a relatively low charge density in the picture area;

a charge neutralizing unit having a corona generating unit, a bias conductor, means for positioning said receptor sheet with latent electrostatic charge between said corona unit and bias conductor with the surface of said sheet carrying said charge facing and spaced from said corona unit, and means for connecting a bias voltage source between said corona unit and bias conductor, so that the magnitude of said relatively high charge density is reduced without reducing the magnitude of said relatively low charge density; and

a developer unit for receiving said receptor sheet with reduced charge density and developing said latent electrostatic image into a visual image.

3,949,223

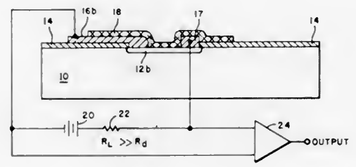
MONOLITHIC PHOTOCONDUCTIVE DETECTOR ARRAY

Joseph L. Schmit, Hopkins, and Ernest L. Stelzer, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 1, 1973, Ser. No. 411,970

Int. Cl.² H01L *27/14*

U.S. Cl. 250—211 J **13 Claims**



2. An electromagnetic radiation detector system of the photoconductive detector type comprising:

a body of semiconductor material of second conductivity type, the body having a first surface and a second surface;

a plurality of photoconductive regions of first conductivity type formed in the semiconductor body, each of the photoconductive regions being exposed at the first surface and each of the photoconductive regions being electrically isolated at least at one end from other photoconductive regions by material of second conductivity type;

first electrode means connected to each of the photoconductive regions at one end of the photoconductive regions;

second electrode means connected to the opposite end of each of the photoconductive regions;

electrical bias means for applying an electrical bias between the first electrode means and the second electrode means for a period greater than the carrier lifetime in the photoconductive region; and

sensing means connected to the first and second electrode means for sensing the change in resistivity of the photoconductive regions in response to incident radiation.

3,949,224

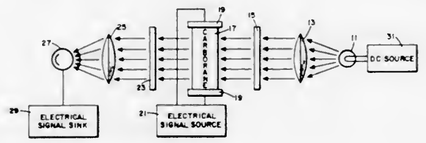
OPTICAL MODULATION SYSTEM AND FREQUENCY DOUBLER USING ORGANO-SUBSTITUTED CARBORANES

Theodore J. Klingen, Oxford, Miss., assignor to The University of Mississippi, University, Miss.

Filed July 17, 1974, Ser. No. 489,111

Int. Cl.² G02F *1/03*

U.S. Cl. 250—216 **22 Claims**



1. An optical modulation device comprising:

a cross polarizer having two substantially parallel polarizing elements; and

an organo-substituted carborane cell sandwiched between said two polarizing elements, said cell having

a pair of spaced-apart transparent windows, said windows being substantially parallel to said two polarizing elements;

a pair of spaced-apart electrodes sandwiched between said pair of windows; and

an organo-substituted carborane material contained within a volume bounded on two ends by said pair of electrodes and on two sides by said pair of windows.

3,949,225

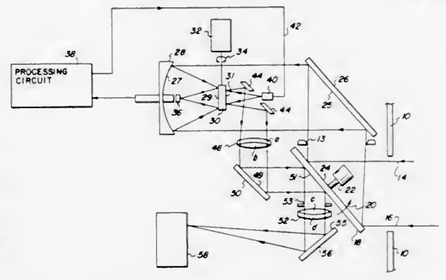
INFRARED IMAGING APPARATUS

Robert A. Aguilera, Pasadena, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 23, 1974, Ser. No. 508,387

Int. Cl.² H01J *31/50*

U.S. Cl. 250—334 **18 Claims**



1. Apparatus for producing a light output pattern which corresponds to infrared radiation received from the field of view of the apparatus comprising:

first scanning means having first and second reflective surfaces, said first scanning means scanning the received infrared radiation incident on said first reflective surface from said field of view in a first direction,

first means for optically coupling the scanned infrared radiation reflected from the first surface of said first scanning means to second scanning means having first and second reflective surfaces, said second scanning means scanning said field of view in a second direction,

second means for optically coupling the infrared radiation reflected from the first surface of said second scaning means to an infrared detector array, said infrared detector array producing electrical signals in accordance with the infrared radiation received from the field of view of said apparatus, and

means for coupling said electrical signals to an array of light emitting elements, the light output pattern therefrom corresponding to said received infrared radiation.

3,949,226

AUTOMATIC LIGHT INTENSITY CONTROLLER FOR CRT LIGHTHOUSE

James A. Dugan, Lake Forest, and Yong S. Park, Hanover Park, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed May 26, 1972, Ser. No. 257,122

Int. Cl.² G01M *21/38;* **G01J** *1/32;* **G03C** *5/00*

U.S. Cl. 250—354 **12 Claims**

1. In a lighthouse station employed for exposing an actinic energy sensitive coating deposited upon the target surface of a cathode ray tube face panel, apparatus for automatically maintaining the output of a source of actinic energy at a predetermined level, said apparatus comprising:

a chamber for supporting said face panel;

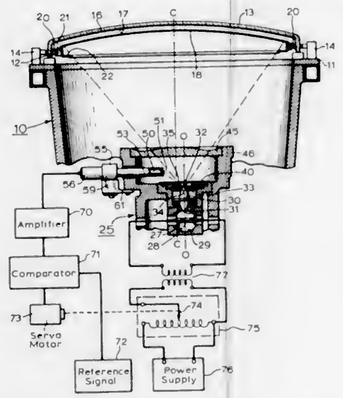
a source of actinic energy located in said chamber and disposed in a confronting relation to said target surface for irradiating the coating deposited thereon;

means, includng an adjustable controller, for energizing, said source;

light energy translating means disposed adjacent said energy source, substantially between said source and said target

surface but outside the path of irradiation from said source to said target surface;

means coupled to said light energy translating means and responsive to the energy translated therethrough for



deriving a control signal representative of the instantaneous energy level of said source;

and means responsive to said control signal for actuating said controller to maintain the output of said energy source at said predetermined level.

3,949,227

DEVICE FOR THE PANORAMIC RADIOGRAPHY OF WELDINGS IN METAL PIPINGS

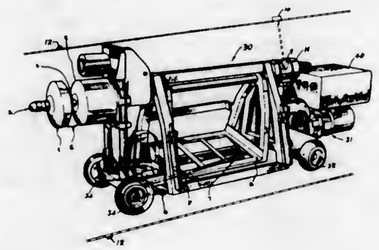
Arnaldo Gambini, and Giuseppe Cianci, both of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Continuation of Ser. No. 303,684, Nov. 6, 1972, abandoned, and a continuation of Ser. No. 163,503, July 16, 1971, abandoned, and a continuation of Ser. No. 18,564, March 11, 1970, abandoned. This application Mar. 25, 1974, Ser. No. 454,455

Claims priority, application Italy, Mar. 11, 1969, 13916/69

Int. Cl.² G01N *23/00*

U.S. Cl. 250—358 P **4 Claims**



1. Apparatus for radiographing welds from the inside of a pipeline comprising: (a) carriage means including a two wheel drive system arranged to propel the carriage means inside the pipeline; two wheel means for steering and maintaining the travel of the carriage on the bottom of the pipeline; (b) a radiography source; a safety, radiation impervious housing for said radiography source including first and second shield diaphragms defining a 360° panoramic exposition zone transversely to the pipeline; a spring loaded electromagnet for reciprocally moving the radiography source axially between said diaphragms for exposition and the safety housing, the spring loaded electromagnet normally biasing the source to a safety position within the safety housing; (c) means mounted on said carriage means for selectively stopping the carriage at a location to be radiographed including a GM counter positioned to receive radiation from a source located outside the pipeline at said location; circuit means operatively coupled to the GM counter to receive a signal input therefrom including a programmer for energizing said source electromagnet, said circuit means including means for terminating power to said drive means to stop the carriage, and energizing the programmer, said programmer being operatively coupled to energize a pulsating acoustical alarm for a predetermined period prior to energizing said source electromagnet.

3,949,228

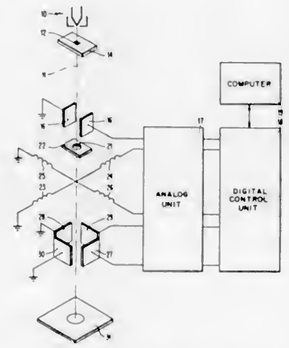
METHOD FOR CONTROLLING AN ELECTRON BEAM

Philip M. Ryan, Hopewell Junction, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Division of Ser. No. 398,734, Sept. 19, 1973, Pat. No. 3,866,013. This application Sept. 9, 1974, Ser. No. 504,618

Int. Cl.² G21K *1/08*

U.S. Cl. 250—396 R **2 Claims**



1. A method of controlling the exposure of a beam of charged particles at each of a plurality of predetermined positions to which the beam is moved and at which the beam is disposed for a time period including selecting whether the beam is turned on for the entire time period during which the beam is at the predetermined position, the beam is turned on for a selected portion of the time period during which the beam is at the predetermined position, or the beam is turned off for the entire time period during which the beam is at the predetermined position.

3,949,229

X-RAY SCANNING METHOD AND APPARATUS

Richard D. Albert, 317 Hartford Road, Danville, Calif. 94526

Filed June 24, 1974, Ser. No. 481,954

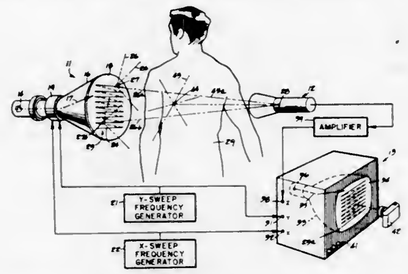
Int. Cl.² H05G *1/30*

U.S. Cl. 250—401 **32 Claims**

1. In an X-ray scanning system, the combination comprising:

X-ray source means for sweeping a charged particle beam in a predetermined raster pattern on a target plate to produce X-rays successively at different small areas of said plate, and

at least one X-ray detector spaced apart from said target plate to receive X-rays transmitted through a subject situated between said target plate and said detector, said detector having a radiation sensitive area substantially smaller than the area of said raster pattern on said target plate and having means for producing an electrical output signal indicative of X-rays impinging on said sensitive area of said detector, the radiation sensitive area of said detector being sufficiently small in relation to the size of said raster pattern to cause said output signal to vary in accordance with variations of radiation transmissiveness



at different regions of said subject as said charge particle beam of said source is swept in said raster pattern.

3,949,230

ION BEAM SOURCE

Hans Bach, Armsheim, Germany, assignor to Jenear Glaswerk Schott & Gen., Mainz, Germany

Filed Mar. 19, 1975, Ser. No. 559,827

Claims priority, application Germany, Mar. 25, 1974, 7410342

Int. Cl.² H01J *37/34*

U.S. Cl. 250—423 **22 Claims**

1. An ion-beam-source of the Penning type in which the ions of a Penning-glow-discharge are obtained by means of a simple extraction system whereby for the extraction and simultaneous ion-beam-generation a combination of (a) an electrostatic tube lens, and (b) an ion-immersion-lens formed of ions from the plasma-boundary to the field of extraction-potential, and (c) a conical screen is provided, characterized in that the combination is comprised of the following components:

A. a housing whose top is an upper pole piece (1) and whose bottom is a lower pole piece (2), and between these pole pieces is provided an outer cylinder cover (3) which describes an interior space and in which interior space of the housing is supported the Penning-glow-discharge, and outside of this cylinder cover an electromagnet is arranged,

B. an anode-cathode system of a glow discharge is provided within the interior space of the housing and consists of an upper side-cathode (4), a lower side-cathode (5) and an anode-cage (6), placed between both cathodes, said anode cage consisting of an inner cylinder cover (7) and an insert (8) and said insert is made of three coaxial rings (9), (10), and (11) which are made from a continuous piece and

C. an electrostatic tube lens (12) which is screwed directly into the lower side-cathode (5) by means of a groove in the lower pole piece (2) and this electrostatic tube lens consists in its upper section of a tube piece (13) with flange (14), in its middle section of an extraction screen (15) and in its lower section of a tube piece (17), said tube piece (17) is in a permanent holder (18), and said holder is vertically adjustable and is screwed to the lower pole piece (2).

3,949,231

INFRARED RADIATING UNIT FOR INFRARED ANALYZERS

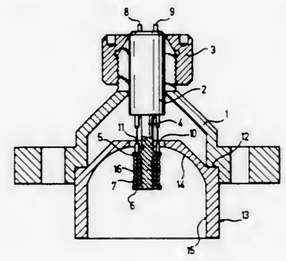
Otto Blunck, Hamburg; Heinz Delin, Wedel, Holst; Rudolf Müller, Hamburg, and Werner Voss, Hamburg, all of Germany, assignors to H. Maihak A.G., Hamburg, Germany

Filed Apr. 10, 1975, Ser. No. 567,112

Claims priority, application Germany, Apr. 27, 1974, 2420545

Int. Cl.² G21H *3/00*

U.S. Cl. 250—493 **11 Claims**



1. An infrared radiating unit for infrared analyzers, comprising a cylindrically shaped source of infrared radiation; and a reflector partly surrounding said source and comprising a curved reflector section having a reflecting surface shaped to resemble an axially bisected rotationally symmetrical paraboloid, and a cylindrical reflector section extending from an open side of said curved reflector section, the focal points of the reflecting surface being located on a circle which coincides with the outer circumference of said cylindrically shaped source.

3,949,232

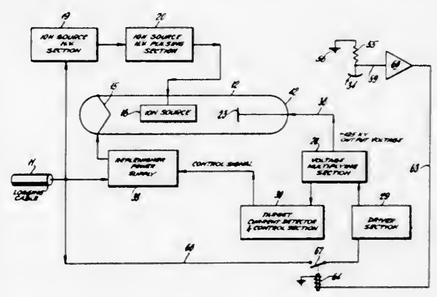
HIGH-VOLTAGE ARC DETECTOR

Obie M. Langford, and Harold E. Peelman, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 30, 1974, Ser. No. 510,661

Int. Cl.² G21G *4/02*

U.S. Cl. 250—501 **6 Claims**



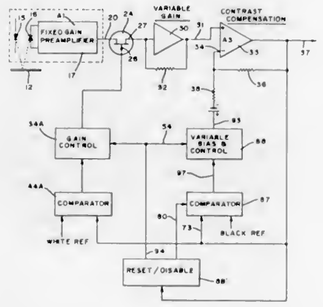
1. High-voltage arc detector for protecting against breakdown of well-logging equipment having a high-voltage supply and a neutron generator tube connected to said high-voltage supply, comprising in combination:

a high-voltage connector for carrying said high voltage from said supply to said tube,
insulation surrounding said connector,
capacitance means associated with said connector for producing a signal when an arc occurs, and
means controlled by said signal for deenergizing said high-voltage supply.

3,949,233
HAND HELD BAR CODE READER WITH CONSTANT LINEAR AMPLIFIER OUTPUT

Julius Gluck, Stamford, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Aug. 15, 1974, Ser. No. 497,538
Int. Cl.² G06K 7/10
U.S. Cl. 250—555 **9 Claims**



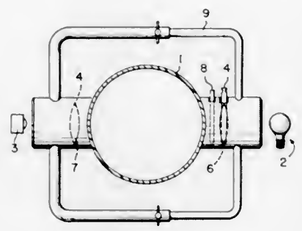
9. A circuit to identify two conditions of contrasting illumination intensities for enabling gain control circuits when a hand-held photo sensitive scanner senses the non-black background on which relatively dark code bars are imprinted and disabling said circuits when said scanner is lifted and senses no reflection comprising, a scanner for registering the illumination and producing an initial signal that is related to the intensity of the illumination, a variable gain amplifier output signal that characterizes one of said illumination intensity conditions is a predetermined value, a contrast compensation amplifier having two input terminals, one of said input terminals is coupled to said variable gain amplifier output signal and the other of said input terminals is biased to said predetermined value and an output terminal for indicating that the circuit has switched into one of the two predetermined states, a feedback circuit for applying a variable bias to the other of said input terminals in response to the other of said illumination intensity conditions, and further feedback circuit means for regulating the gain of said variable gain amplifier in accordance with the output state at said output terminal.

3,949,234
SMOKE DETECTOR DEVICE

James R. Vandermark, Agincourt, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Aug. 26, 1974, Ser. No. 500,522
Int. Cl.² G01N 21/12
U.S. Cl. 250—573 **9 Claims**

1. A smoke detector device for detecting density of smoke in various size smoke passages which is easily removable and circumferentially attachable to the various size smoke passages, comprised of:
a. a light source;
b. a photocell;
c. a means for focusing a beam of light emitted from the light source across the smoke passage onto the photocell;
d. a circuit means coupled to the photocell and arranged to produce a signal when the smoke density in the smoke passage is above a specific smoke density level;

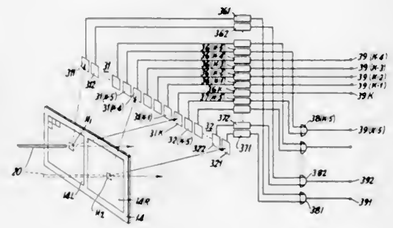


e. a means for testing the signal; and
f. an adjustable means for detachably and circumferentially mounting the means for focusing and the means for testing the signal on the various size smoke passages wherein the mounting means is adjustable for mounting on various size smoke passages.

3,949,235
LARGE HOLOGRAPHIC MEMORY WITH PLURAL OVERLAPPING DETECTOR ARRAYS

Suehiro Miyazaki, Yokohama; Itsuo Matsubara, Fujisawa; Masahiro Moriwaki, Tokyo; Mitsuhito Sakaguchi, Tokyo, and Nobuo Nishida, Tokyo, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation and Nippon Electric Company Limited, both of Tokyo, Japan

Filed Mar. 12, 1974, Ser. No. 450,398
Claims priority, application Japan, Mar. 14, 1973, 48-28963; Mar. 14, 1973, 48-28965
Int. Cl.² G03H 1/30
U.S. Cl. 250—578 **5 Claims**

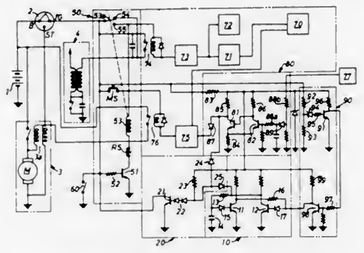


1. In combination, a holographic storage plate with plural mini-holograms recorded thereon, said mini-holograms being grouped into plural sections occupying different spacial areas on said storage plate, each of said mini-holograms storing plural information digits, and a plurality of photodiode arrays each associated with a different one of said holographic storage plate sections, each of said diode arrays being spaced from said plate for receiving from said associated plate section a plural digit light pattern when any mini-hologram in the associated plate section is interrogated, wherein a subset of the photodiodes in plural of said photodiode arrays are common.

3,949,236
ENGINE AUTOMATIC CONTROL SYSTEM FOR VEHICLES

Masaaki Kurii; Kiyoshi Kobari, both of Kasugai, and Osamu Yanagi, Tokai, all of Japan, assignors to Nippondenso Co., Ltd., Kariya; Toyota Jidosha Hanbai Kabushiki Kaisha, Nagoya and Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai, all of, Japan

Filed Oct. 18, 1974, Ser. No. 516,022
Claims priority, application Japan, Oct. 24, 1973, 48-123398[U]
Int. Cl.² H02P 9/04
U.S. Cl. 290—38 R **10 Claims**



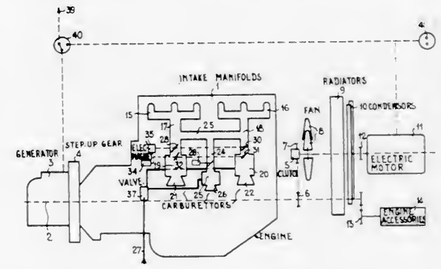
1. In an engine automatic control system for a vehicle having an ignition switch for selectively connecting an electric source in the form of a battery with an engine starter and an engine ignition circuit comprising switch means to be closed by disengaging operation of clutch means of the vehicle, a starter conducting circuit for connecting said electric source with said starter in response to the closing operation of said switch means, a starter cut-off circuit for detecting the start of engine rotation caused by said starter and cutting off current supply to said starter, speed detecting means for detecting the movement of the vehicle, and an engine rotation holding/arresting circuit controlled by said switch means for connecting said electric source with said ignition circuit in response to the closing operation of said switch means and controlled by said speed detecting means for maintaining said engine ignition circuit conductive while the vehicle runs and for making said ignition circuit nonconductive when the vehicle is arrested,
the improvement comprising setting means interposed between said ignition switch and said ignition circuit for selectively setting said engine control system to its operative condition and cancelling means coupled with said setting means for automatically cancelling the operative condition of said engine control system when the stored voltage of said battery is lowered to or below a predetermined low value.

3,949,237
POWER SUPPLY SYSTEM FOR SELECTIVELY PROPELLING A VEHICLE AND FOR DRIVING EQUIPMENT ON BOARD THE VEHICLE

Lucien Neuers, Paris, France, assignor to Thomson-CSF, Paris, France

Division of Ser. No. 250,685, May 5, 1972, abandoned. This application Mar. 4, 1974, Ser. No. 448,012
Claims priority, application France, May 7, 1971, 71.16549
Int. Cl.² H02P 9/04
U.S. Cl. 290—40 B **2 Claims**

1. A power supply system for supplying power to separately propel a vehicle and drive equipment on board said vehicle, the system comprising:
a. an internal combustion engine having a fuel intake manifold;
b. an electric generator driven by said engine for energizing separately the propelling of said vehicle and said equipment;
c. two independent fuel supply systems, each having:
i. at least one carburetor;
ii. conduit means connecting the carburetor to the intake manifold of said engine; and
iii. control means for the controlling the fuel supply through said conduit means; with
iv. said control means of one of said fuel supply systems including a pair of valves spaced in series within its respective conduit means and a pair of electromagnets one for each of said valves for controlling the relative position of its respective valve; and with

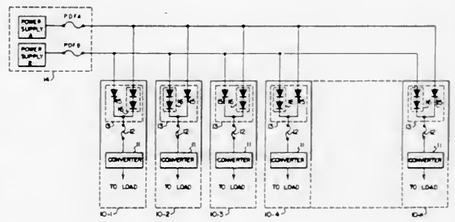


v. each of said valves having two relative positions which for one of said valves corresponds to an open position and a closed position and for the other of said valves corresponds to an open position and a position which results in setting the engine at a speed preparatory to supplying power to said equipment;
d. a solenoid valve for controlling the fuel supplied to the carburetors of said fuel supply systems; and
e. an electrical switch connected to said electromagnets and to said solenoid valve for selectively energizing either of said electromagnets and for energizing said solenoid valve to cause fuel to flow to either of the carburetors of said fuel supply systems.

3,949,238
DISTRIBUTED POWER SWITCH FOR MODULAR SYSTEMS

Barry Edward Brookes, Ottawa, Canada, assignor to Northern Electric Company, Limited, Montreal, Canada

Filed Jan. 13, 1975, Ser. No. 540,600
Int. Cl.² H02H 3/28
U.S. Cl. 307—64 **5 Claims**



1. In a power distribution system having a pair of input terminals for connection to respective sources of power, and a plurality of output terminals for connection to respective ones of a plurality of circuit loads, a distributed power switch for connecting said input terminals to said output terminals, comprising: a plurality of switch means each one being associated with a respective one of said output terminals for connecting it to one of said input terminals in a primary manner and to the other of said input terminals in a secondary manner,

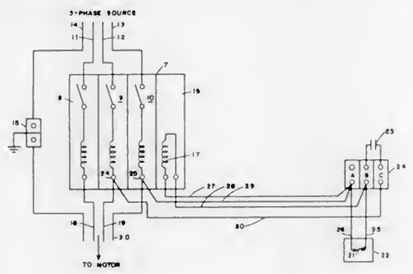
each of said switch means being effective, upon the failure of its primary source of power, for automatically connecting its associated output terminal to its secondary source of power, each of said switch means comprising, a first impedance element having a first predetermined value, said first element being connected between one of said input terminals and the output terminal associated with the switch means, and a second impedance element having a second predetermined value greater than said first value, said second element being connected between the other of said input terminals and said output terminal associated with the switch means.

3,949,239

CIRCUIT FOR ACTUATING A MONOSTABLE OR BISTABLE INDUCTIVE DEVICE

Henry W. T. Dutton, Danbury, Conn., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed June 24, 1974, Ser. No. 482,042
Int. Cl.² H01H *47/02, 51/34*
U.S. Cl. 307—98 **3 Claims**



1. A circuit for controlling the administration of power to an AC motor wherein there is provided in the stator of said motor at least one normally-closed thermal switch having first and second terminals comprising:

a source of AC power;

a first inductively controlled means coupled between said source and said motor for interrupting power to said motor;

second inductive means for controlling said first inductively controlled means and coupled across said first and second terminals of said at least one normally-closed thermal switch resulting in a parallel combination;

a capacitor coupled between said parallel combination and said first inductively controlled means.

3,949,240

SWITCHING CIRCUIT FOR POWER SUPPLY TO ELECTRONIC APPARATUS

Takahiko Saito, Kamakura; Takeshi Murata, Yokohama, and Satoshi Mimura, Chigasaki, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 19, 1973, Ser. No. 417,415
Claims priority, application Japan, Nov. 24, 1972, 47-117777
Int. Cl.² H01H *7/00, 43/00*
U.S. Cl. 307—141 **3 Claims**

1. A switching circuit for applying power from a power supply to an electronic audio apparatus in accordance with the settings of a change of mode switch, a sleep time switch, and an awakening clock switch, comprising:

a. a first switching means connected between the power supply and said electronic apparatus;

b. a first bistable means connected to said first switching means for controlling the same;

c. a change of mode switch connected to the first bistable means for triggering said first bistable means to turn the apparatus on and off in response to actuation of the change of mode switch;

d. a sleep time circuit switch means connected to the first bistable means for triggering said bistable means in response to its setting;

e. awakening circuit clock switch means connected to the first bistable means for triggering said bistable means in response to its setting;

f. a change over switch connected to said awakening clock switch means;

g. a fifth switch means connected to the change over switch for supplying power to the awakening circuit clock switch means and connected to said power supply and to said first switching means;

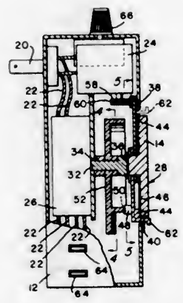
h. a second bistable means connected to said fifth switch means to control it and said second bistable means connected to awakening circuit clock switch means and said change of mode switch.

3,949,241

CONTROL APPARATUS FOR ELECTRICAL DEVICES

Charles J. Maute, 89 Hanover Road, Mountain Lakes, N.J. 07046

Filed May 15, 1974, Ser. No. 470,002
Int. Cl.² H01H *7/00, 43/00*
U.S. Cl. 307—141 **8 Claims**



1. Control apparatus for continuous automatic control of illuminating means for a life environment such as an aquarium, terrarium or the like comprising:

first means for passing electrical energy therethrough, said first means having inlet means for admitting electrical energy thereto, and outlet means for conducting electrical energy therefrom for energization of said illuminating means for said light environment said first means including control means for cyclically and repetitively attenuating and increasing electrical energy passed therethrough, said control means of said first means comprising a potentiometer, said potentiometer having a voltage regulating control knob extending therefrom;

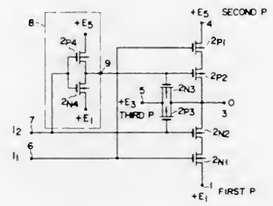
second means coupled to said control means and to said inlet means and cooperative with said control means so as to automatically manipulate said control means to cause said control means to attenuate and increase said electrical energy, cyclically and repetitively, over separate time spaced sequences of selected duration said second means comprising a motor means, said motor means having an output rotational shaft and actuator means, said actuator means comprising a limb means coupled to said output shaft of said motor means for rotation thereon, said limb means including radial elements disposed thereon for effecting contacting engagement with said voltage regulating control knob.

3,949,242

LOGICAL CIRCUIT FOR GENERATING AN OUTPUT HAVING THREE VOLTAGE LEVELS

Masataka Hirasawa, and Akira Hashimoto, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed May 6, 1975, Ser. No. 575,065
Claims priority, application Japan, May 9, 1974, 49-51452
Int. Cl.² H03K *19/08;* **G08B** *5/36*
U.S. Cl. 307—205 **2 Claims**



1. A logical circuit comprising at least one unit logical circuit including means for connecting through series-connected first and second insulated gate field effect transistors of one conductivity type to an output terminal a first terminal maintained at a first potential level; means for connecting through series-connected first and second insulated gate field effect transistors of the other conductivity type to said output terminal a second terminal maintained at a second potential level different from said first potential level; means for connecting through at least one of two third insulated gate field effect transistors to said output terminal a third terminal maintained at a third potential level different from said first and second potential levels, one of said two third insulated gate field effect transistors being of said one conductivity type and having a gate electrode connected to a gate electrode of said second insulated gate field effect transistor of said other conductivity type and the other being of said other conductivity type and having a gate electrode connected to a gate electrode of said second insulated gate field effect transistor of said one conductivity type; means for supplying to each gate electrode of said first insulated gate field effect transistor of said one conductivity type and said first insulated gate field effect transistor of said other conductivity type a first logical signal having said first and second potential levels to cause one of said two first insulated gate field effect transistors to be turned ON and the other to be turned OFF; means for supplying to said second insulated gate field effect transistor of said one conductivity type a second logical signal having said first and second potential levels to cause said transistor to be turned ON and OFF; and means for supplying a third logical signal to the gate electrode of said second insulated gate field effect transistor of said other conductivity type to cause said transistor to be turned ON and OFF, said third logical signal being opposite in polarity to said second logical signal and having said first and second potential levels; said unit logical circuit being so constructed that only one current path is always created between said output terminal and any one of said first, second and third terminals.

3,949,243

BIPOLAR MEMORY CIRCUIT

Wendell B. Sander, Cupertino, and Michael P. Anthony, San Carlos, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Continuation of Ser. No. 407,710, Oct. 18, 1973, Pat. No. 3,898,483. This application Feb. 3, 1975, Ser. No. 546,583
Int. Cl.² G11C *11/40*
U.S. Cl. 307—238 **4 Claims**

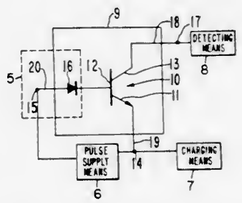
1. A memory circuit comprising:

a. a storage cell including a single bipolar transistor having emitter, base and collector electrodes;

b. a collector-base junction between said base and said collector which acts to provide a capacitor for capacitive charge storage;

c. a first terminal means for coupling a charging means to one of the emitter and collector electrodes of said transistor for charging said collector-base capacitor, the charged condition of said capacitor being indicative of a first state of said memory storage cell;

d. a second terminal means for coupling a pulse supply means to said transistor for applying a sensing pulse of a predetermined magnitude and polarity of one of said emitter and collector electrodes of said single bipolar transistor; said second terminal means comprising a first word line for addressing said cell;



e. a discharging means including at least one PN junction in series with the base-collector junction of said transistor and with said second terminal means for discharging the charge stored in said collector-base junction without need for avalanching said transistor, the discharged condition of said capacitor being indicative of a second state of said memory storage cell; said discharge means comprising a second word line for addressing said cell; and

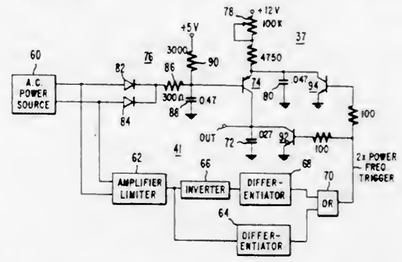
f. a third terminal means comprising a bit line for coupling a detecting means to said transistor for detecting the degree of forward bias on the emitter-base junction through one of said collector and emitter electrodes simultaneously with the application of sensing pulse, for determining what state the cell is in.

3,949,244

REFERENCE SIGNAL GENERATOR FOR TAPE TENSION SERVOMECHANISM

Arthur Marvin Goldschmidt, Moorestown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 12, 1975, Ser. No. 557,533
Claims priority, application United Kingdom, Mar. 14, 1974, 11433/74
Int. Cl.² H03K *1/18, 4/08*
U.S. Cl. 307—265 **6 Claims**



1. In a tape tension control system for a video tape recorder wherein at least a first motor is coupled to a first tape reel, means are provided for producing an electrical signal representative of the diameter of tape on said reel, and a controllable energizing supply responsive to an alternating voltage source is coupled to said motor for varying torque supplied by

said motor as a function of said diameter of tape, a reference sawtooth waveform signal generator comprising:

a first capacitor,

a source of charging current for said capacitor, and

switching means for coupling said first capacitor to said source, said switching means comprising a first transistor having an output terminal coupled to said first capacitor and first and second input terminals, a second capacitor coupled to said current source and to said first input terminal and responsive to said charging current for biasing said transistor into conduction after a predetermined time delay, a biasing supply coupled to said alternating voltage source and to said second input terminal for varying said time delay in response to variations in said alternating voltage, and switching means coupled to said first and second capacitors for periodically discharging said capacitors in synchronism with said alternating voltage.

3,949,245

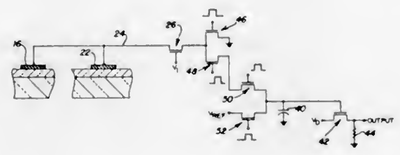
METHOD AND SYSTEM FOR SENSING CHARGES AT DISTRIBUTED POINTS ON A CHARGE COUPLED DEVICE

Stephen Perry Emmons, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 24, 1974, Ser. No. 517,566

Int. Cl.² H03K *5/18*; **H01L** *27/00, 31/00*; **G11C** *19/00*

U.S. Cl. 307—304 **7 Claims**



1. A circuit for sensing charge stored adjacent phase electrodes in a charge transfer device comprising:

a storage capacitor having a capacitance not greater than the combined capacitances of said phase electrodes;

means for selectively applying a reference voltage to said storage capacitor during a first clock period thereby to charge said capacitor to said reference voltage level;

an impedance transformation insulated gate field effect transistor having a channel connected to said phase electrodes to suppress voltage fluctuations, said transistor having a gate bias voltage substantially less than said reference voltage level;

means for connecting the channel of said field effect transistor to a predetermined voltage level during a first clock period to cause conduction of said transistor in a non-saturated mode, thereby discharging said phase electrodes to said predetermined voltage level;

means for connecting said charged capacitor to the channel of said transistor during a second clock period thereby applying a clock voltage level to said phase electrodes determined by said gate bias voltage, wherein said capacitor discharges during said second clock period by an amount determined by the charge stored adjacent said phase electrodes; and

output circuit means for detecting the amount of discharge of said capacitor.

3,949,246

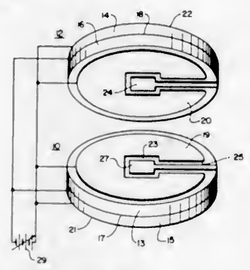
PIEZOELECTRIC BIMORPH CONTROLLED VARIABLE CAPACITOR

Dieter R. Lohrmann, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 23, 1974, Ser. No. 535,239

Int. Cl. H01l *41/08*

U.S. Cl. 310—8.6 **2 Claims**



1. A variable capacitor comprising:

first and second disc-shaped bimorph elements, each having opposed parallel surfaces;

each said bimorph element having a capacitor electrode mounted on one of said surface;

each said capacitor electrode including a broad section mounted at the center of said one surface and a narrow section extending from said broad section to the periphery of said one surface;

each said bimorph element having a conductor mounted on and extending over said one surface in the same plane as said capacitor electrode and spaced from said capacitor electrode;

a conductor mounted on and extending over the other of said surface of each said bimorph element;

mounting means for connecting the periphery of said bimorph elements to each other with each said one surface superimposed and adjacent;

means for insulating said capacitor electrodes from each other; and

each said bimorph element being polarized in a direction such that a voltage will cause said bimorph elements to flex away from each other at the centers thereof.

3,949,247

MOUNTING ARRANGEMENT FOR A PIEZOELECTRIC ELEMENT

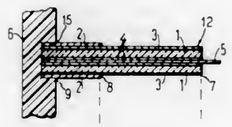
Erich Fenner, Gauting, and Max Guntersdorfer, Zorneding, both of Germany, assignors to Siemens Aktiengesellschaft, Germany

Continuation of Ser. No. 336,448, Feb. 28, 1973. This application Apr. 26, 1974, Ser. No. 464,306

Claims priority, application Germany, Mar. 10, 1972, 2211751

Int. Cl.² H01L *41/04*

U.S. Cl. 310—8.6 **10 Claims**



1. An arrangement for mounting one end of a piezoelectric element operating in a bending mode for generating essentially linear movement on a part of a moving component operatively attached to the other end of the element, the arrangement having means for engaging a pair of surfaces of the element of the one end at a point of engagement for fixedly mounting the one end of the element so that the element bends about the point during a bending operation, the element comprising a carrier strip having at least one side in contact with a ceramic strip disposed therealong and means including a metallized layer electrode disposed on an outer surface of each of the ceramic strips for applying an electrical current to the ceramic strip to cause bending of the element, the improvement comprising an elastic metal support strip disposed between each of the pair of surfaces of the one end of the element and the engagement means, each metal support strip being prestressed to continually bear against the surface of the element, each support strip having a length extending along the element from the point of engagement to a free end spaced from the point, each support strip having a thickness to partially resist bending of the element thereagainst as the support strip yields to maintain the level of bending stresses applied to the ceramic strip below a level which would cause damage to the ceramic strip with the maximum level of stresses being applied to the ceramic strip at a point removed from the point of engagement and the level of stresses applied to the element decreasing as the distance to the point of engagement decreases.

3,949,248

PIEZOELECTRIC IGNITER USING RESILIENT HOUSING

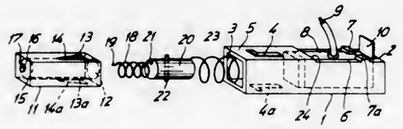
Konrad Duffner, Nurnberg, and Horst Schäfer, Friedrichsdorf, both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 8, 1974, Ser. No. 486,627

Claims priority, application Germany, July 10, 1973, 2335058

Int. Cl.² H01L *41/04*

U.S. Cl. 310—8.7 **1 Claim**



1. A piezoelectric igniter mechanism intended particularly for lighters, including a housing of oblong configuration accomodating a piezoelectric transducer at one end, an actuating hammer and an energy storing spring therefor at the other end, a pin transverse to said hammer extending from within said housing; a pair of oppositely placed L-shaped guide slots, each having a lateral portion and an axially extending portion in opposite walls of said housing, said slots engaging said pin, an actuating cap made of plastics material and slidably positioned over said housing having a pair of oppositely placed triangularly-shaped cutouts engaging said pin whereby, upon axial movement of said cap, said spring is compressed and said pin is constrained to move along the lateral portion of said guide slots and, upon reaching said axially extending portion, said hammer is freed to impinge upon said transducer by the energy released from said spring, said housing being of elastic material having resiliency in the axial direction of said hammer, thereby contributing to the effective action thereof, a resilient electrode plate arranged between the piezoelectric transducer and the bottom of the housing, the bottom of said housing being shaped convex to the inside of said housing, said housing having near its bottom and in its side wall an aperture adapted for inserting the piezoelectric transducer, and holding tabs for the transducer mounted on said housing adjacent the lower region of said aperture.

3,949,249

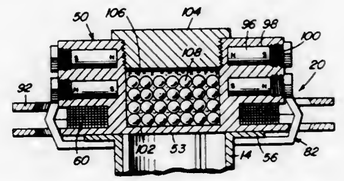
ELECTRO-MAGNETIC RECIPROCATING MOTOR

Kenneth Wiseley, c/o Pat Walker, 214½ S. 17th St., and Elton M. Botts, 2817 Western Ave., both of Mattoon, Ill. 61938, assignors to L. Z. Reece, et al

Filed Aug. 2, 1974, Ser. No. 494,368

Int. Cl.² H02K *33/06*

U.S. Cl. 310—17 **7 Claims**



1. In a magnetic motor having a tubular housing slidably mounting a magnetic piston and a pair of electro-magnetic devices mounted on the housing adjacent opposite axial ends for inducing reciprocation of the piston, at least one of said electro-magnetic devices including a core having a flux emitting face closing one axial end of the tubular housing and a winding mounted on the core, and flux concentrating means mounted on said core for confining the magnetic field to the tubular housing, said flux concentrating means including sector-shaped magnets mounted on said core in circumferentially spaced relation to each other and in radially embracing relation to the magnetic field producing winding, angularly adjacent ones of the sector-shaped magnets being of opposite polarity, and a plurality of axially spaced magnets of opposite polarity mounted on the core in axially spaced relation to the winding remote from the flux emitting face.

3,949,250

ROTARY ACTUATORS

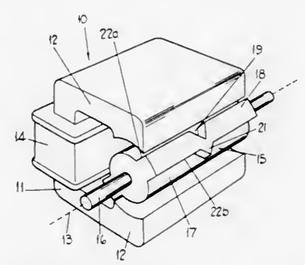
Michael Edward Walker, Redditch, and Peter Frank Scott, Kingston-upon-Thames, both of England, assignors to C.A.V. Limited, Birmingham, England

Filed Mar. 11, 1974, Ser. No. 450,110

Claims priority, application United Kingdom, Mar. 21, 1973, 13570/73

Int. Cl.² H02K *33/00*

U.S. Cl. 310—36 **11 Claims**



1. A rotary actuator comprising in combination a stator structure defining a pair of diametrically opposed magnetisable pole pieces each having a pole face, an angularly movable rotor structure formed from magnetisable material, the rotor structure defining a pair of substantially diametrically opposed pole elements each having a pole face, the pole pieces and pole elements forming part of a magnetic circuit, a winding surrounding a portion of the magnetic circuit and through which electric current can be passed, the rotor structure being moved angularly by the magnetic field in a direction to reduce the reluctance of the magnetic circuit of the actuator, one of

said pole faces of each pair which are presented to each other being provided with a slot extending along at least part of the circumferential length of the face, said slot defining means for obtaining a desired torque/angle characteristic, said desired torque/angle characteristic being substantially constant as said rotor moves to reduce the reluctance of said magnetic circuit, said slot being of substantially uniform depth and having maximum width at minimum overlap of its respective pole element and said pole piece and tapering to provide minimum width when said pole element and said pole piece are aligned.

3,949,251

STEPPING MOTOR FOR A TIMEPIECE

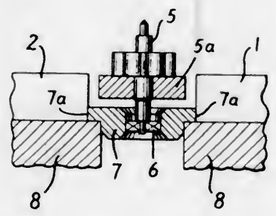
Tatsuo Takatsuki, Matsudo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Sept. 4, 1974, Ser. No. 503,480

Claims priority, application Japan, Sept. 5, 1973, 48-104000[U]

Int. Cl.² H02K *37/00*

U.S. Cl. 310—49 R **7 Claims**



1. In a stepping motor for a timepiece of the type having a rotor including a permanent magnet and a rotor shaft and being rotationally driven during use in a stepwise manner between successive rotor stop positions: a plurality of stator pieces having respective end faces disposed circumferentially about and spaced from said rotor in predetermined positions and jointly defining therewith predetermined rotor stop positions; positioning means in direct engagement with said end faces for accurately positioning and maintaining said end faces in said predetermined positions thereby defining said predetermined rotor stop positions; and bearing means on said positioning means for rotatably bearing said rotor shaft.

3,949,252

VEHICLE WHEEL ROTATION SPEED MEASURING SYSTEM

Klaus-Otto Riesenberg, Ludwigsburg-Ottweil, and Walter Teegen, Hohenacker, both of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Filed Mar. 10, 1975, Ser. No. 557,014

Claims priority, application Germany, Apr. 8, 1974, 2417030

Int. Cl.² H02K *19/20*

U.S. Cl. 310—168 **7 Claims**

1. Vehicle wheel rotational speed measuring system, in which a wheel hub (12) is journalled on a shaft (10) and a hub cap (14) is provided, connected to the hub (12) to rotate with the wheel, said system comprising

a magnet pole means (21) located inside the hub cap;

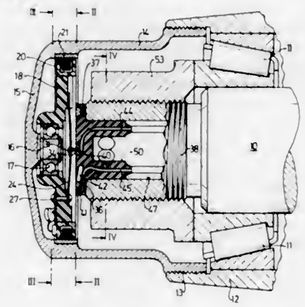
a pick-up (20) located inside the hub cap and journalled therein to permit relative rotation of the hub cap with respect to the pick-up (20), said pick-up being in electromagnetic inductive relationship to said pole means; and comprising

a disk-shaped element (20) having induction coil means located thereon, said disk-shaped element (20) being centrally journalled within the hub cap (14);

first contact means carried by said pick-up and extending towards the shaft (10);

second contact means carried by the shaft, said contact means being in engagement, and at least one of said contact means being resilient;

said contact means (30, 31, 32, 33, 34, 35) comprising interengaging means mechanically securing said disk-shaped element (20) against rotation with respect to the hub cap (14);



wherein one of said contact means comprises a contact concentric with the axis of rotation of said disk, and the other contact means comprises at least one additional contact eccentric with respect to said center of rotation;

and wherein the contact means carried by said shaft comprises a contact block (36) having a metallic insert (41) formed with a depression (33, 35) in which said eccentrically located contact is engageable.

3,949,253

ELECTRIC MOTORS

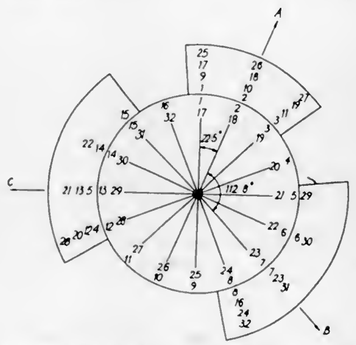
Alexander Richard William Broadway; William Fong, and Gordon Hindle Rawcliffe, all of Bristol, England, assignors to National Research Development Corporation, England

Filed June 24, 1974, Ser. No. 482,500

Claims priority, application United Kingdom, July 5, 1973, 31974/73

Int. Cl.² H02K *3/00*

U.S. Cl. 310—184 **9 Claims**



1. A 3-phase alternating current rotary electric machine with three phase-windings defining a pole-number and wound on a stator having a number of slots not divisible by 3; wherein two of the phase-windings each have a first number of coils and the third phase-winding has a second number of coils different from said first number; wherein the positive-sequence distribution factor of the windings is high, the negative-sequence distribution factor is low and whatever zero-sequence distribution arises is accepted; and wherein the three phase-windings are star-connected together.

3,949,254

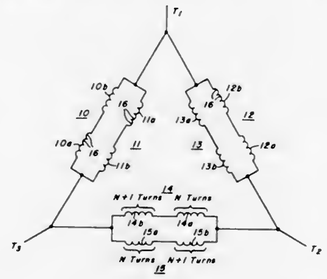
WINDING FOR DYNAMOELECTRIC MACHINE

Richard F. Woll, and Clifford P. Willby, both of Williamsville, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 25, 1974, Ser. No. 446,037

Int. Cl.² H02K *3/00*

U.S. Cl. 310—198 **5 Claims**



1. A winding for a dynamoelectric machine comprising a plurality of pole groups disposed to form a polyphase winding, each of said pole groups including a plurality of multi-turn coils positioned adjacent each other to form one pole of one phase of the winding, the coils of each pole group being divided into two subgroups, and the coils of one subgroup of each pole group having one more turn than the coils of the other subgroup, each coil of both subgroups having an integral number of turns.

3,949,255

DYNAMO-ELECTRIC MACHINES

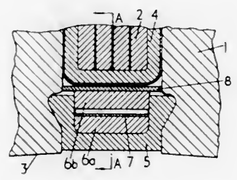
Robert Smith Brown, Winlaton, and Robert Hawley, Killingworth Village, both of England, assignors to Reyrolle Parsons Limited, England

Filed May 7, 1973, Ser. No. 357,708

Claims priority, application United Kingdom, July 11, 1972, 32340/72

Int. Cl.² H02K *3/43*

U.S. Cl. 310—214 **1 Claim**



1. A dynamo-electric machine provided with retention means for conductors disposed in a core slot, comprising in combination at least one composite wedge arrangement consisting of a first tapered wedge having a wedge-shaped surface thereof extending longitudinally of the slot, and a second tapered wedge similar to said first wedge and having a wedge-shaped surface thereof extending longitudinally of the slot but disposed with its direction of taper opposed to that of said first wedge, a spring member cooperating with said composite wedge arrangement, said spring member extending longitudinally of the slot and having its deformation dependent upon the relative longitudinal displacement in the slot of said first and second wedges, and wherein said composite wedge and said spring member are disposed in a U-section closure member running along the mouth of the slot.

3,949,256

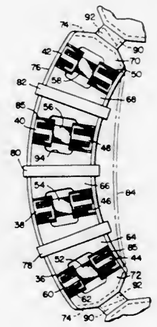
SUPPORT ARRANGEMENT FOR TURBINE GENERATOR STATOR COILS

Glenn D. Cooper, North Huntingdon, and Franklin J. Murphy, Jr., Delmont, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 24, 1975, Ser. No. 543,738

Int. Cl.² H02K *3/46*

U.S. Cl. 310—260 **10 Claims**



1. An electromechanical device comprising:

a rotor;

a stator magnetic structure;

stator coils which extend from slots in the stator magnetic structure, said coils including a top conductor and a bottom conductor which are electrically connected together at the ends of the coils by stator coil connections which extend radially between the top and bottom conductors at the connecting region of the stator coils;

separating blocks which are constructed of an insulating material and which are located tangentially between connecting regions to separate adjacent stator coil connections;

a band disposed around a group of coil connections for providing a tangential force which firmly holds the connections and blocks together; and

cross-bands disposed around at least some of the separating blocks and around the band which is disposed around the group of coil connections.

3,949,257

END WINDING CONDUCTOR SECURING ARRANGEMENT

Glenn D. Cooper, North Huntingdon, and John D. Pharr, Jr., Wilkinsburg, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 23, 1975, Ser. No. 543,378

Int. Cl.² H02K *3/46*

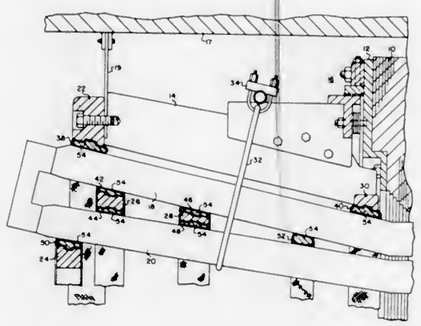
U.S. Cl. 310—260 **8 Claims**

1. An end winding conductor securing arrangement comprising;

a circular support ring disposed around a plurality of end winding conductors; and

a resin filled hose located between the support ring and at

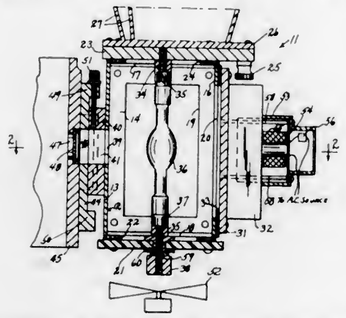
least two winding conductors, with the cross-sectional shape of the hose being more circular in the region between adjacent conductors than in the region immediately between the conductors and the support ring.



3,949,258
METHOD AND MEANS FOR SUPPRESSING OZONE GENERATED BY ARC LAMPS

Charles Soodak, Silver Spring, Md., assignor to Baxter Laboratories, Inc., Deerfield, Ill.

Filed Dec. 5, 1974, Ser. No. 530,052
Int. Cl.² H01J *61/52*
U.S. Cl. 313—25 **11 Claims**



1. In combination, an apparatus including a lamp having a light output which generates ozone, and ozone-suppressing means comprising a substantially sealed enclosure containing oxygen surrounding said lamp and having a transparent exit window arranged to transmit light from the lamp to another portion of the apparatus, the enclosure being sufficiently large relative to the lamp so that ozone generated by said light output in the enclosure is circulated in the enclosure and is converted to stable oxygen by the heat of the lamp, and means for cooling the enclosure.

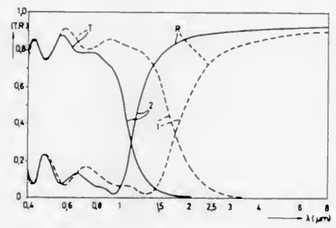
3,949,259
LIGHT-TRANSMITTING, THERMAL-RADIATION REFLECTING FILTER

Heiner Kostlin, Brand, and Rüdiger Jost, Aachen-Kornelimunster, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 9, 1974, Ser. No. 496,143
Claims priority, application Germany, Aug. 17, 1973, 2341647
Int. Cl.² H01J *61/40;* **H01K** *1/26*
U.S. Cl. 313—112 **11 Claims**

1. In a light-transmitting, thermal-radiation reflecting filter of the type comprising a light-transmitting support which is coated with tin-doped indium oxide, the improvement wherein the indium oxide contains more than 7 atomic per cent of tin, calculated with respect to the number of indium atoms, has a free-electron density between 10^{21} and 3 times 10^{21} per cm^3 and a plasma wavelength of less than 1.2 μm.

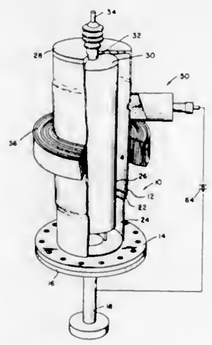
3. A method of manufacturing a light-transmitting, heat-radiation reflecting filter comprising coating a light-transmitting support with indium oxide doped with more than 7 atomic per cent of tin, calculated with respect to the number of indium atoms, heating the coated support in a gas containing an oxygen partial pressure of less than 10^{7} atmosphere and at a temperature between 300°C and the softening temperature of the support, whereby a heat filter having a plasma wavelength of less than 1.2 μm and a free-electron density between 10^{21} and 3 times 10^{21} per cm^3 on the support is obtained.



3,949,260
CONTINUOUS IONIZATION INJECTOR FOR LOW PRESSURE GAS DISCHARGE DEVICE

John R. Bayless, Malibu, and Robin J. Harvey, Thousand Oaks, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 14, 1975, Ser. No. 567,975
Int. Cl.² H01J *23/10*
U.S. Cl. 313—157 **6 Claims**



6. A low pressure gas discharge device having an igniter, said gas discharge device comprising:

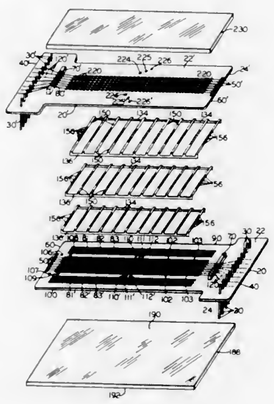
a housing for maintaining a gas at sub-atmospheric pressure within said housing, a main anode and a main cathode spaced from each other within said housing for defining an interelectrode main discharge space, means on said housing for connecting at least an electric potential between said main anode and said main cathode for causing a low pressure ionized plasma discharge between said main anode and said main cathode in said main discharge space, said igniter comprising:

a cold cathode plasma discharge chamber having an ignitor cathode surface, a thin wire anode mounted within said discharge chamber and spaced from said ignitor cathode, means for connecting an electric potential between said ignitor cathode surface and said thin wire anode, and an opening between said discharge chamber and said interelectrode space so that gas at sub-atmospheric pressure in said interelectrode space is in said discharge chamber so that, upon application of discharge voltage between said ignitor cathode surface and said thin wire anode, a plasma discharge is ignited in said plasma discharge chamber so that electrons and ions from the plasma discharge pass through the opening into the interelectrode space to ignite initial ionization therein so that, upon connection of low pressure gas discharge conditions, a plasma discharge in said main discharge space is ignited.

3,949,261
DISPLAY PANEL

Edgar L. Harvey, Old Bridge, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 24, 1975, Ser. No. 552,577
Int. Cl.² H01J *61/30*
U.S. Cl. 313—188 **7 Claims**



1. A display panel comprising

a gas-filled envelope comprising a base plate and a face plate having a viewing window including

a first insulating plate having a plurality of parallel slots extending along its length,

a plurality of first contact pins secured to said first plate and extending transversely adjacent to an edge thereof, said pins lying outside said envelope,

a plurality of first electrodes secured between each of said pins and the opposite end of said first plate,

each such electrode extending along one of said slots, said electrodes lying between the lower surface of said plate and the base plate of said envelope,

a plurality of second strip-like electrodes disposed parallel to each other on the top surface of said first plate and oriented at 90° to said first electrodes, each of said second electrodes including an array of holes extending along its length, with each hole overlying one of said slots in said first plate, each crossing of a second electrode and a first electrode defining a priming cell,

a second insulating plate having an array of rows and columns of display apertures overlying said second electrodes and said first plate, with each aperture therein generally aligned with a hole in a second electrode,

a plurality of second contact pins secured to said second plate and extending transversely adjacent to an edge thereof, said pins lying outside said envelope, said first and second pins being positioned at opposite ends of said envelope, and

a plurality of third electrodes secured between each of said second pins and the opposite end of said second plate, and extending across the top surface of said second plate and spaced from said second electrodes by said second plate, each third electrode being parallel to a corresponding first electrode positioned beneath it and aligned with a row of said apertures,

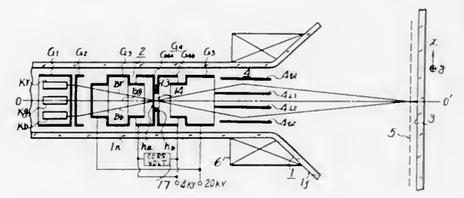
each third electrode crossing said second electrodes at 90° and each such crossing forming a display cell,

said face plate overlying said second insulating plate and said third electrodes and hermetically sealed to said base plate and said first and second insulating plates.

3,949,262
CATHODE RAY TUBE WITH COMPENSATION FOR BEAM LANDING SPOT DISTORTION DUE TO WIDE-ANGLE BEAM DEFLECTION

Akio Ohkoshi, Tokyo; Takeo Kaji, Tokyo, and Tsunenari Saito, Mitaka, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 21, 1975, Ser. No. 579,581
Claims priority, application Japan, May 23, 1974, 49-58079
Int. Cl.² H01J *29/02, 29/50, 29/51*
U.S. Cl. 313—412 **11 Claims**

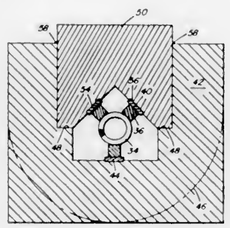


1. In a cathode ray tube comprising a tube envelope having a phosphor screen; an electron gun in said tube envelope including beam producing means directing at least one electron beam along the axis of said tube envelope toward said screen for impingement on the latter, and main electron lens means disposed between said beam producing means and said screen for focusing each said beam at said screen, said main electron lens means having at least two tubular electrodes arranged coaxially is succession along said axis of the tube envelope for the passage of each said beam through said electrodes with a relatively low potential being applied to one of said electrodes and a relatively high potential being applied to the other of said electrodes for producing an electrical field which effects said focusing of each said beam; and deflection yoke means on said tube envelope between said main electron lens means and said screen for angularly deflecting each said beam from said axis so as to scan said screen in line-scanning and vertical directions, respectively: the improvement of said one tubular electrode which is maintained at said relatively low potential consisting of first and second axially divided tubular electrode portions having respective end plates extending across their adjacent ends, said end plates of said first and second electrode portions having first and second apertures, respectively, which are aligned with each other for the passage therethrough of each said beam during the focusing of the latter, a first pair of diametrically opposed flanges projecting from the periphery of said first aperture in the axial direction toward said second aperture, and a second pair of diametrically opposed flanges projecting from the periphery of said second aperture in the axial direction toward said first aperture and being orthogonally disposed in relation to said first pair of flanges so as to be interfitted between the latter, so that the application across said first and second electrode portions of a correction voltage which varies with the angle of deflection of each said beam from said axis is effective to provide a varying electric field for obtaining a uniform shape of the landing spot of each said beam on said screen.

3,949,263
DIAMOND BRAZING METHOD FOR SLOW WAVE ENERGY PROPAGATING STRUCTURES

Robert Harper, Concord, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 20, 1974, Ser. No. 535,009
Int. Cl.² H01J *25/34*
U.S. Cl. 315—3.5 **6 Claims**

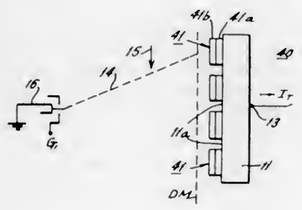


1. A slow wave electromagnetic energy propagating structure for traveling wave devices comprising:
- a plurality of interconnected periodically spaced elements;
- means for positioning said elements within an envelope and dissipating thermal energy including diamond heat sink members;
- said diamond members having one surface contacting said spaced elements and being thermally bonded by a metal alloy interface to a noncontacting surface and a support member;
- said r etal alloy interface comprising predominately an inactive metal selected from group including copper, silver or gold and a carbide forming metal including titanium, zirconium or niobium and being heated to a temperature at or above its melting point.

3,949,264
ELECTRONIC STORAGE TUBE TARGET STRUCTURE AND METHOD OF OPERATION

Steven R. Hofstein, Princeton, N.J., assignor to Princeton Electronics Products, Inc., North Brunswick, N.J.

Filed Mar. 8, 1974, Ser. No. 448,614
Int. Cl.² H01J *29/41*
U.S. Cl. 315—12 R **40 Claims**

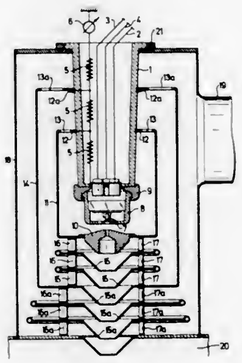


1. An electronic storage tube including a target comprised of a pattern of substantially coplanar conducting areas and insulating charge storage areas, the tube comprising:
- means including electron beam generating means and beam modulating means for developing a desired stored potential distribution on the surface of the insulating charge storage areas of the target representative of the image to be stored;
- means for detecting the desired stored potential distribution on the target;
- said conducting areas being exposed to said beam and being electrically connected to each other and wherein one surface of each of the insulating areas are exposed to said beam each area being composed of at least two layers of insulating materials where at least one insulating layer is capable of conducting charge at an increased rate in the presence of ionizing radiation, and at least one of the remaining insulating layers is resistant to such effects of ionizing radiation; one of said layers being deposited upon the remaining one of said layers; and
- further including conditioning means for causing electronic charge to be redistributed within the layers of the insulating charge storage areas.

3,949,265
MULTISTAGE CHARGED PARTICLE ACCELERATOR, WITH HIGH-VACUUM INSULATION

Peter Holl, Tubingen, Germany, assignor to Polymer-Physik GmbH, Germany

Filed Dec. 20, 1973, Ser. No. 426,571
Claims priority, application Germany, Jan. 22, 1973, 2302938
Int. Cl.² H01J *29/46, 29/58*
U.S. Cl. 315—15 **8 Claims**

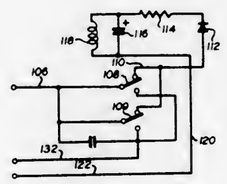


1. A multistage charged-particle accelerator for operating with accelerating voltages higher than 150 kV comprising, in combination, a vacuum vessel; a relatively elongated high voltage insulator disengageably mounted on said vacuum vessel to extend thereinto; a Wehnelt cylinder and a source for producing charged particles mounted on the inner end of said high voltage insulator; an anode; means in said vacuum vessel supporting said anode in spaced relation to said source; said Wehnelt cylinder and said source constituting parts carrying the high voltages; a post-accelerating tube, containing stackwise positioned post-accelerating electrodes, extending from said anode in said vacuum vessel; means, including a high voltage cable, supplying the operating potentials for said parts carrying the high voltage, said anode and said electrodes; said vacuum vessel having means for connection to a source of high vacuum for providing a high vacuum in said vessel to constitute the insulating medium for the parts carrying the high voltage; and at least one cylindrical screen in said vessel surrounding the parts carrying the high voltage and interposed between these parts and the vacuum vessel; said vacuum vessel functioning as a cylindrical screen.

3,949,266
CIRCUIT MEANS FOR AUTOMATICALLY ESTABLISHING AN ARC IN A PLASMA FLAME SPRAYING GUN

William A. Vogts, Middle Village, N.Y., and Horace S. Daley, Clifton, N.J., assignors to Metco, Inc., Westbury, N.Y.

Division of Ser. No. 259,987, June 5, 1972, abandoned. This application Sept. 5, 1974, Ser. No. 503,415
Int. Cl.² H05H *1/26*
U.S. Cl. 315—111.2 **2 Claims**

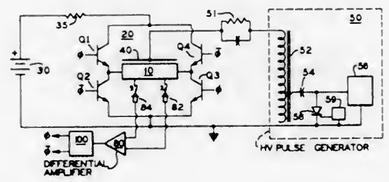


1. A device for insuring that initial establishment of the arc in the circuit of a plasma flame spraying gun is established automatically which comprises a means for breaking a current into pulses of high frequency and means for feeding the resultant pulsed high frequency current through the circuit containing the arc disposed in said gun for a time sufficient to establish an electric arc between electrodes in said circuit.

3,949,267
PROTECTIVE STARTING CIRCUIT FOR INVERTER OPERATED GASEOUS DISCHARGE LAMPS

James R. Collins, Fort Wayne, Ind., assignor to General Electric Company, Carmel, Ind.

Filed Apr. 15, 1975, Ser. No. 568,177
Int. Cl.² H05B *37/00, 41/26, 37/02*
U.S. Cl. 315—203 **17 Claims**

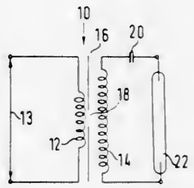


1. In an electrical circuit having a semiconductor switching inverter for operating a gaseous discharge lamp from a DC energy source, a circuit arrangement for starting the lamp while in the inverter circuit, comprising:
- a trigger electrode mounted in close proximity to the lamp for capacitively coupling pulsed high voltage to the lamp;
- a high voltage energy source connected to the trigger electrode for supplying pulsed high voltage to the lamp; and
- means for locking the inverter in a constantly conductive, single polarity output mode until the lamp starts.

3,949,268
BALLAST UNIT FOR GAS DISCHARGE LAMPS SUCH AS FLUORESCENT TUBES OR THE LIKE

Burkhard von Mangoldt, Eupener Str. 217, 51 Aachen, Germany

Continuation of Ser. No. 225,251, Feb. 10, 1972, abandoned. This application Mar. 14, 1974, Ser. No. 451,162
Claims priority, application Germany, Feb. 11, 1971, 2106576; Aug. 30, 1971, 2143268
Int. Cl.² H05B *41/16*
U.S. Cl. 315—239 **12 Claims**



1. A ballast unit for supplying a burning voltage and a substantially constant burning current to a secondary circuit including a gas discharge lamp, said ballast unit comprising:
- a core of magnetic material having a defined air gap therein;
- transformer windings carried by said core, said transformer windings including a primary and secondary winding both surrounding said core, said windings and said core with said defined air gap together forming a transformer, the total value of leakage inductance of said transformer being such that with an input voltage applied to said primary winding, the voltage drop across the leakage inductance is between approximately 15 and 30 percent of said input voltage; and,
- at least one capacitor connected in series between said secondary winding and said gas discharge lamp, said at least one capacitor having a capacitance substantially equal to the ratio of the burning current of the gas discharge lamp to the product of the angular frequency of the input voltage multiplied by a secondary no-load voltage supplied to the secondary circuit, said transformer having said leakage inductance and said capacitor having said capacitance being cooperable to define means automatically operable to supply said burning current to said gas discharge lamp at a substantially constant value substantially independently of fluctuations in said burning voltage.

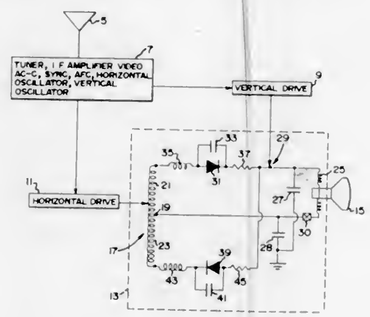
3,949,269
RASTER DISTORTION CORRECTION CIRCUITRY

Robert Charles Wheeler, Genesee, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Sept. 6, 1974, Ser. No. 503,675
Int. Cl.² H01J *29/70*
U.S. Cl. 315—371 **14 Claims**

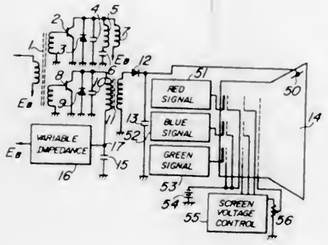
1. In display apparatus employing a cathode ray tube, a top-bottom pincushion correction circuit comprising:
- a source of drive signals having a frequency *fv*;
- a deflection winding directly coupled to said source of drive signals at a frequency *fv* for effecting unidirectional deflection of said electron beam of said cathode ray tube;
- a phasing capacitor shunting said deflection winding;
- a source of signals at a frequency *fh*, said source including a transformer winding having first and second portions with a center tap connected to one end of said deflection winding; and
- circuit means including oppositely-poled switching means

directly coupling each one of said first and second portions of said transformer winding to the opposite end of



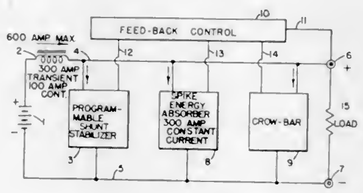
said deflection winding to provide a circuit parallel resonant at a frequency *fh*.

3,949,270
HIGH VOLTAGE REGULATING CIRCUIT
Mitsuharu Akatsu, Yokohama, and Gentaro Miyazaki, Fujisawa, both of Japan, assignors to Hitachi, Ltd., Japan
Filed Jan. 28, 1971, Ser. No. 110,707
Claims priority, application Japan, Feb. 4, 1970, 45-9813
Int. Cl.² H01J *29/70*
U.S. Cl. 315—411 **14 Claims**



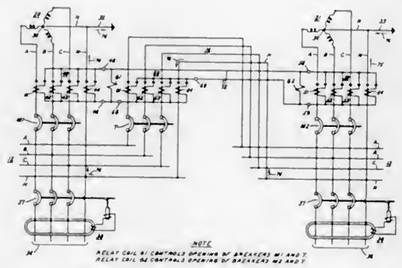
8. A high voltage regulating circuit for use in a television receiver comprising:
- a detector means for detecting a beam current supplied from a power source, one terminal of said detector means being connected to said power source,
- a flyback transformer including a secondary winding having hot and cold terminals, the hot terminal thereof being connected to the anode of a cathode ray tube of said receiver and the cold terminal thereof being connected to the other terminal of said detector means,
- a horizontal deflection output transistor for generating a sawtooth current in a horizontal deflection coil,
- a high voltage output transistor, and
- a control circuit including a control transistor connected in series in an energizing circuit from said power source to said high voltage output transistor, for controlling voltage to be applied to said high voltage output transistor, said control circuit being controlled by the output of said detector means.

3,949,271
TRANSIENT ABSORBER CIRCUIT FOR REGULATED POWER SUPPLIES
Sarkis Nercessian, Long Island, N.Y., assignor to Forbro Design Corporation, New York, N.Y.
Filed Sept. 24, 1974, Ser. No. 508,920
Int. Cl.² H02H *3/20*
U.S. Cl. 317—16 **7 Claims**



1. In a shunt stabilized regulated power supply, the combination of;
- a source of unregulated voltage including series connected inductance;
- a pair of load terminals for connecting a load in shunt with said source;
- programmable shunt stabilizing means connected in shunt with said load terminals for regulating the voltage across said load terminals or the current to said load terminals;
- spike energy absorbing means connected in shunt with said load terminals;
- means responsive to a transient energy spike across the output terminals for activating said absorbing means;
- crow-bar means connected across said load terminals;
- means for sensing unabsorbed spike energy existing after a predetermined period of time;
- and means responsive to sensed unabsorbed spike energy existing after said predetermined period of time for activating said crow-bar means.

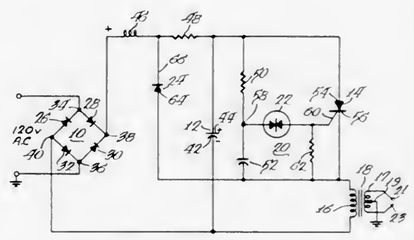
3,949,272
GROUND-FAULT PROTECTIVE SCHEME FOR MULTIPLE-SOURCE ELECTRIC DISTRIBUTION SYSTEM
Eugene M. Smith, West Chester, Pa., assignor to General Electric Company, New York, N.Y.
Filed Nov. 19, 1974, Ser. No. 525,150
Int. Cl.² H02H *3/28*
U.S. Cl. 317—18 D **9 Claims**



1. Ground fault protective means for an electrical distribution system that comprises: (i) two polyphase sources, each including a plurality of phase conductors and a neutral point, (ii) a neutral conductor electrically interconnecting said neutral points, (iii) a first polyphase bus and a first polyphase main circuit breaker electrically connected between the phase conductors of said first source and said first bus, (iv) a second polyphase bus and a second polyphase main circuit breaker electrically connected between the phase conductors of said second source and said second bus, (v) a plurality of ground connections respectively connected between said neutral points and ground at a location between said first source and said first main circuit breaker and at another location between said second source and said second main circuit breaker, (vi) a polyphase tie bus comprising phase conductors connected between said two buses, (vii) a tie circuit breaker connected in said tie bus for opening and closing said tie bus, and (viii) feeder circuits respectively connected to said buses for supplying power therefrom to loads on said feeder circuits; said protective means comprising:
- a. a first current sensor having a pair of output terminals and located adjacent said first main circuit breaker for generating a current through said output terminals that varies directly with the vector sum of the currents through the phase conductors and the neutral conductor at the location of said first current sensor,
- b. a second current sensor having a pair of output terminals and located adjacent said second main circuit breaker for generating a current through its output terminals that varies directly with the vector sum of the currents through the phase conductors and the neutral conductor at the location of said second current sensor,
- c. a third current sensor having a pair of output terminals and located adjacent said tie circuit breaker for generating a current through its output terminals that varies directly with the vector sum of the currents through the phase conductors of said tie bus and the neutral conductor at the location of said third current sensor,
- d. a first ground-fault responsive relay having an operating component connected across the output terminals of said first current sensor and operable upon effective energization of said operating component to produce opening of said first main circuit breaker if closed and of said tie breaker if closed,
- e. a second ground fault responsive relay having an operating component connected across the output terminals of said second current sensor and operable upon effective energization of its operating component to produce opening of said second main circuit breaker if closed and of said tie breaker if closed,
- f. a differential circuit in which the output terminals of said first, second, and third current sensors are connected in series with each other,
- g. the polarity of said third current sensor being so arranged with respect to the polarity of said first and second sensors that in response to a ground fault on one of said buses, said differential circuit produces effective energization of the operating component of the ground-fault responsive relay that is operable to produce opening of the main circuit breaker that is located at the same side of the tie bus as said fault.

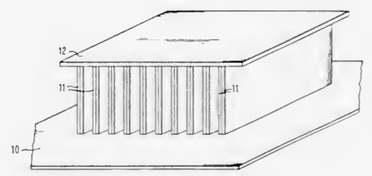
3,949,273
BURNER IGNITION SYSTEM
Eugenio Espiritu Santo, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Filed June 20, 1974, Ser. No. 481,351
Int. Cl.² F23Q *3/00*
U.S. Cl. 317—96 **4 Claims**

1. In a burner ignition circuit having a capacitor and a controlled switch connected therewith for repetitively discharging the capacitor through a primary winding of a transformer to generate electrical sparks between a pair of spaced electrodes respectively connected to opposite sides of a secondary winding of the transformer and in which undesirable residual energy is stored in the LC circuit formed by the inductance of the primary winding and the capacitor at the end of each discharge cycle, an improved charging circuit for the capacitor, comprising:
- a source of substantially continuous DC power;
- means including a current limiting resistor connected between the source of DC power and the capacitor for conducting charging current from the source of DC power to the capacitor to charge the capacitor in a selected polarity direction; and
- means for removing the undesirable residual energy from the LC circuit of the primary winding and the discharge capacitor, including a unidirectional conducting device



connected between the primary winding and the capacitor through said resistor, said unidirectional conducting device providing additional charging current to the capacitor through the resistor from said undesirable stored residual energy to further charge said capacitor in the desired polarity direction.

3,949,274
PACKAGING AND INTERCONNECTION FOR SUPERCONDUCTIVE CIRCUITRY
Wilhelm Anacker, Kotanah, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 30, 1974, Ser. No. 474,639
Int. Cl.² H01L *19/00*
U.S. Cl. 317—101 A **19 Claims**



1. A three-dimensional micro-electronic module of superconductive circuitry packaged for reduced signal propagation delay times comprising:
- a plurality of superconductive integrated circuit chips, having length, width and depth, each of said chips having superconductive circuitry on at least one surface thereof and having contact lands in the vicinity of at least one of the edges of said surface interconnected to said circuitry,
- at least one supporting means having length, width and depth supporting said chips at said edges of said chips,
- said supporting means including means interconnecting said superconductive circuitry of different ones of said chips to one another via said contact lands,
- said one surface of each of said chips lying in a plane different from the plane of any other said one surface of any other of said chips.

3,949,275

ELECTRIC THIN-FILM CIRCUIT AND METHOD FOR ITS PRODUCTION

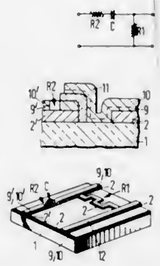
Wolf-Dieter Müenz, Unterhaching, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed June 19, 1974, Ser. No. 480,826

Claims priority, application Germany, June 20, 1973, 2331586

Int. Cl.² H02B *1/04;* **B05D** *5/12;* **H01L** *27/12*

U.S. Cl. 317—101 A **6 Claims**



1. In an electric thin-film device,
at least one conductor path and at least one capacitor,
a substrate base member consisting of an insulating material,
a first tantalum-aluminum-alloy layer with a tantalum content above 30 atomic percent, formed upon said substrate base member and forming a first pattern,
a second tantalum-aluminum-alloy layer with a tantalum content of 2 through 20 atomic percent and covering said first tantalum-aluminum-alloy layer in a predetermined area and forming a second pattern,
a tantalum-aluminum-oxide layer formed upon at least one of said layers to constitute a dielectric and form a third pattern,
a layer of conductive material forming a fourth pattern and disposed on at least one of said layers in certain areas,
said capacitor being formed from said first and second layers as an electrode and from the third layer as a dielectric, from the fourth layer as a counter-electrode and having a predetermined area on the substrate, and
a resistor formed from the first layer and having a certain area on the substrate,
the fourth layer forming a conductor path that can connect switching element connections in an integrated circuit.

3,949,276

PLUG-IN TYPE RELAY

Hans-Werner Reuting, Peine, Germany, assignor to Elmeg Elektro-Mechanik GmbH, Peine, Germany

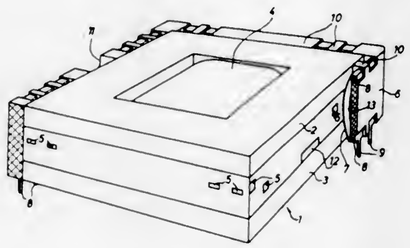
Continuation-in-part of Ser. No. 485,322, July 3, 1974. This application Feb. 10, 1975, Ser. No. 548,360

Claims priority, application Germany, Feb. 15, 1974, 2407185

Int. Cl.² H02B *1/02, 1/18*

U.S. Cl. 317—113 **8 Claims**

1. A socket and a relay, the relay having contacts provided laterally on the periphery thereof, the periphery having a particular height, said socket comprising a frame circumscribing the relay about the periphery thereof and being open above and below, the frame having a height not exceeding said height; and springs mounted on the inside of the frame bearing against said relay and making contact with the contacts of the relay, the contacts of the relay remain inside of the frame



without projecting from the frame, the springs being connected to soldering terminals, the terminals projecting downwards from the frame.

3,949,277

ELECTRIC POWER DISTRIBUTION CABINET COMMANDED BY A PROGRAMMABLE CONTROLLER

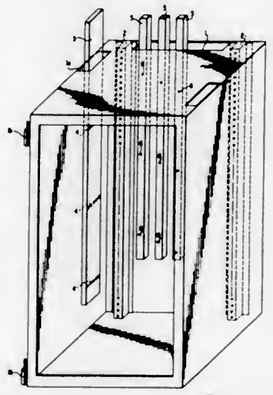
Paul Yosset, Velizy, France, assignor to Regie Nationale des Usines Renault, Hauts-de-Seine, France

Filed July 9, 1974, Ser. No. 486,812

Claims priority, application France, July 18, 1973, 73.26313

Int. Cl.² H02B *1/10, 1/20*

U.S. Cl. 317—120 **1 Claim**



1. Apparatus for providing an interface between a programmable controller and a plurality of units controlled by the programmable controller comprising:
a housing,
a plurality of frames rigidly attached to the housing,
a plurality of modular elements slidably disposed within the plurality of frames,
each modular element comprising:
first, second and third vertically disposed power plugs disposed at one end of the modular element,
a vertically disposed modular element multibus connector disposed at one end of the modular element,
a plurality of output terminals disposed at another end of the modular element,
each frame comprising:

first, second and third horizontally disposed frame supply buses,
the first frame supply bus being aligned with and connected to the first power plug of each modular element within the frame,
the second frame supply bus being aligned with and connected to the second power plug of each modular element within the frame,
the third frame supply bus being aligned with and connected to the third power plug of each modular element with the frame,
a frame multibus connector horizontally disposed adjacent to the first, second and third frame buses and being so positioned that it is aligned with and is connected to each modular element multibus connector disposed in the frame,
a frame connector connected to the frame multibus connector,
the housing comprising:
a vertically disposed housing multibus aligned with and connected to each frame connector thereby providing a connection to each frame multibus connector,
first, second and third vertically disposed housing power buses,
the first housing power bus being aligned with and connected to each first frame supply bus,
the second housing power bus being aligned with and connected to each second frame supply bus,
the third housing power bus being aligned with and connected to each third frame supply bus,
the housing multibus being connected to the programmable controller,
the plurality of output terminals of the modular elements being connected to the plurality of units controlled by the programmable controller.

3,949,278

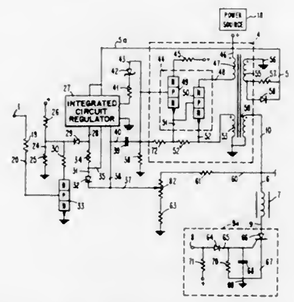
DOCUMENT TRANSFER DEVICE DRIVE

J. Rothe Kinnard, Austin, and Errol Ray Williams, Jr., Leander, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1974, Ser. No. 537,731

Int. Cl.² H03H *9/00*

U.S. Cl. 317—137 **9 Claims**



1. A circuit for providing cyclical power from a power source to an overall varying effective inductive load with the voltage applied to the load remaining substantially constant as the load varies, said circuit comprising:
a power driver connected to said power source,
a plurality of individual inductive loads making up said varying inductive load connected to said power driver,
a voltage regulator for controlling the output voltage level of said power driver,
means for cyclically driving said voltage regulator to cause said power driver to cyclically apply a predetermine voltage of a first plurality to said individual inductive loads, and
means for rapidly dissipating power in said individual inductive loads following each application of said predetermine voltage thereto including means for producing a substantially greater voltage of opposite polarity from said individual inductive loads while applying said such produced voltage to said power source.

3,949,279

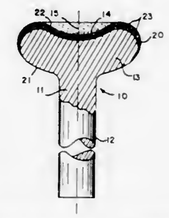
RECESSED ANODE WITH PARTICULATE METAL DEPOSIT

William Fredrick Vierow, West Acton, Mass., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 198,306, Nov. 12, 1971, abandoned. This application June 6, 1973, Ser. No. 367,324

Int. Cl.² H01G *9/00*

U.S. Cl. 317—230 **9 Claims**



1. An anode assembly capable of performing an electrical function comprising support means of an electrically conducting metal capable of having a dielectric oxide film formed over its surface, the support means including an enlarged portion and an elongated portion, the density of the support means is substantially theoretical density, the enlarged portion including a recessed section, the opening of the recessed section facing away from the elongated portion in a direction substantially parallel to the central longitudinal axis of the elongated portion, and a porous deposit of particulate electrically conducting metal capable of having a dielectric oxide film formed over its surfaces over the recessed section, the porous deposit is of the same metal as the support means and is capable of acting as an anode, the metal of the support means and of the deposit selected from the group of Al, Ta, Nb, Hf and Ti.

3,949,280

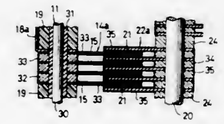
MINIATURE VARIABLE CAPACITOR AND METHOD OF MANUFACTURE

Shigeyoshi Odagiri, Machida; Michio Nuka, Tokyo; Norikatsu Shinba; Mikito Baba, both of Machida, and Yoshikatsu Iizuka, Tama, all of Japan, assignors to Mitsumi Electric Co., Ltd., Chofu, Japan

Filed Feb. 18, 1975, Ser. No. 550,766

Int. Cl.² H01G *5/06*

U.S. Cl. 317—253 **11 Claims**



1. A miniature variable capacitor comprising:
a stator plate group comprising a plurality of stator plates fixedly held in mutually spaced-apart state with a specific

spacing therebetween determined by spacers interposed between mutually adjacent stator plates;

a rotor plate group comprising a plurality of rotor plates integrally and rotatably held in mutually spaced-apart state with a specific spacing therebetween determined by spacers interposed between mutually adjacent rotor plates and, moreover, in a freely rotatable state of interposition thereof respectively between said stator plates; and

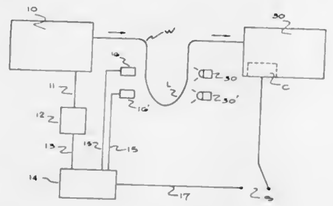
a thin film of dielectric material deposited and formed simultaneously and integrally on the entire exposed outer surfaces of all plates and spacers of at least one group of said stator plate group and said rotor plate group.

3,949,281

CONTROL SYSTEM

William O. Young, Jr., 116 Marlin Drive, Spartanburg, S.C. 29302

Filed Oct. 22, 1974, Ser. No. 517,011
Int. Cl. H02p *7/28*
U.S. Cl. 318—77 **20 Claims**



1. Apparatus for synchronizing the speeds of a master machine and a slave machine having a material passing therebetween comprising:

a. signal generator means connectable to said master machine and to a variable speed control of said slave, said signal generator means receiving an operational characteristic input from said master and generating a signal responsive thereto, the magnitude of said signal generated being at least in excess of an amount needed to operate said slave at an approximate maximum of a normal operating range for same;

b. signal adjustment means electrically associated with said signal generator on the output side, said adjustment means being preset to reduce the signal a predetermined amount; and

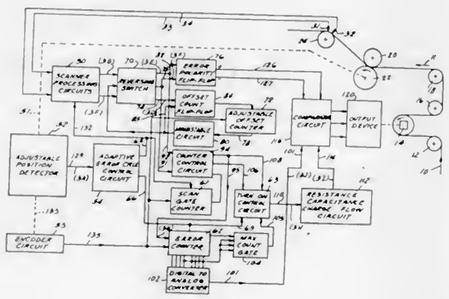
c. a plurality of material detectors located between said master and slave machines and being electrically associated with a portion of the signal adjustment means, said detectors monitoring said material and influencing said signal when necessary due to detection of a material change.

3,949,282

REGISTER CONTROL SYSTEM AND METHOD

Daniel A. Coberley, Danville, Ill., assignor to Hurletron Altair, Danville, Ill.

Filed May 28, 1974, Ser. No. 473,706
Int. Cl.² H02P *5/00*
U.S. Cl. 318—85 **3 Claims**



1. In a register control system for operating an output device so as to tend to maintain a register condition between successive repeat lengths of a moving web and a cyclically operating work applying means operating thereon,

an error sensing control comprising an encoder for generating encoder pulses as a function of successive increments of web movement, and comprising position detector means responsive to web movement to define a succession of inspection zone intervals synchronized with successive repeat lengths on the web during which error counting cycles are permitted,

an error counter connected with said encoder and operable for counting encoder pulses in successive error counting cycles within the respective inspection zone intervals,

a counter control circuit connected with said error counter for controlling the counting of encoder pulses thereby, and responsive to a timing error between the cyclically operating work applying means and the moving web to enable an error counting cycle of the error counter for the duration of the timing error, and to produce successive error counts in accordance with the magnitudes of such timing errors,

a digital to analog converter connected to the error counter and operable for generating an analog error signal in accordance with the error count in said error counter, and

an error responsive control connected with said error sensing control and being responsive to operation thereof to define successive error correction enabling intervals at the termination of respective error counting cycles, said error responsive control comprising a comparator having first and second inputs and having an output for controlling the output device and being operable to maintain an ouput enabling condition at said output so long as the signals at the respective inputs have a predetermined comparison relationship,

said first input of said comparator being connected with said digital to analog converter to receive a signal amplitude generally in accordance with the magnitude of said analog error signal, and

a resistance-capacitance charge flow circuit connected with said second input of said comparator to provide a progressively changing signal amplitude as a function of time at said second input during a resistance-capacitance controlled charge flow cycle,

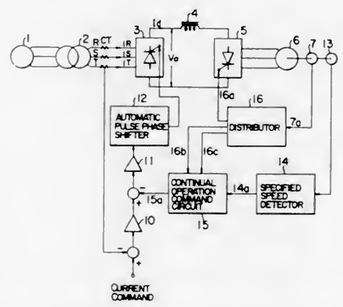
and said error responsive control being operable for initiating a resistance-capacitance-controlled charge flow cycle during the error correction enabling intervals and for supplying a driving signal to the output device for a time duration corresponding to the time required for the signal amplitude applied to said second input of said comparator to attain a comparison relationship different from said predetermined comparison relationship to the signal amplitude at said first input of said comparator during each such error correction enabling interval.

3,949,283

CONTROL SYSTEM FOR BRUSHLESS MOTOR

Toshiaki Okuyama; Hiroyuki Okamoto, both of Hitachi; Takamasa Hori; Hiroshi Hayashida, both of Ibaraki, and Mitsuyuki Honbu, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 15, 1974, Ser. No. 443,141
Claims priority, application Japan, Feb. 16, 1973, 48-18264
Int. Cl.² H02K *29/00*
U.S. Cl. 318—138 **5 Claims**



1. A control system for a brushless motor comprising:

a motor having a polyphase armature winding and a field winding;

an inverter circuit, connected with the armature winding, comprising a plurality of thyristors and operating as a static commutator;

a controllable rectifier circuit, connected with an A.C. power supply, for supplying D.C. current to said inverter circuit;

first means for detecting position signals representing the rotational positions of said motor;

second means for controlling the firing of said inverter circuit in accordance with said position signals;

third means for controlling the firing phase of said rectifier circuit in accordance with a current command signal instructing the value of the D.C. output current of said rectifier circuit;

fourth means for detecting that the speed of the motor is lower than a predetermined speed;

fifth means for producing delay signals by delaying said position signals with respective different delay times when the motor speed is lower than said predetermined speed; and

sixth means for reducing to zero the D.C. output current of said rectifier circuit in accordance with the output of said fifth means.

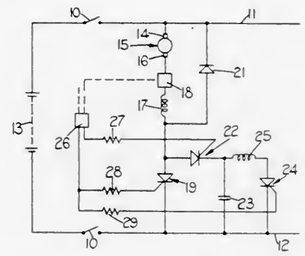
3,949,284

CONTROL CIRCUITS FOR ELECTRICALLY DRIVEN VEHICLES

Maurice James Wright, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 14, 1974, Ser. No. 479,553
Claims priority, application United Kingdom, June 30, 1973, 31307/73; June 30, 1973, 31306/73
Int. Cl.² H02P *5/06*
U.S. Cl. 318—257 **7 Claims**

1. A control circuit for an electrically driven vehicle, comprising a traction motor for driving the vehicle, a regulator in circuit with the motor armature for controlling the armature current, switch means having forward and reverse positions in which the motor operates to drive the vehicle forwardly and rearwardly respectively, and an off position, the switch means also controlling the power supply to the circuit and so serving to de-energise the circuit when in its off position, delay means being provided for maintaining energisation of the circuit for



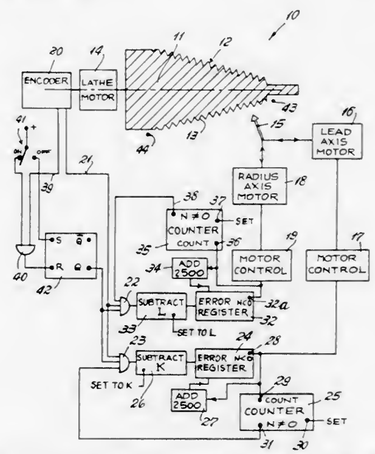
a period of time when the switch means is moved to the off position.

3,949,285

TAPERED THREAD NUMERICAL CONTROL SYSTEM FOR A LATHE

Hermann Rosshirt, Bristol, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Oct. 15, 1974, Ser. No. 514,845
Int. Cl.² G05B *19/24*
U.S. Cl. 318—571 **4 Claims**



1. A numerical control system for use with a lathe to produce a tapered thread on a workpiece mounted for rotational movement comprising means for supporting a thread cutting tool for movement along a first axis for setting the lead of a thread and a second axis for setting the taper of the thread, means for receiving a command for the extent of movement along the first axis for each revolution and the extent of movement along the second axis for each revolution, motor means connected to each axis for producing an incremental movement on each axis essentially simultaneously with receipt of a command pulse, means for producing a fixed number of encoder pulses for each rotation of the workpiece, first means for receiving the encoder pulses and producing command pulses numerically equal to the extent commanded to the first axis for each fixed number of encoder pulses, second means for receiving encoder pulses and producing command pulses numerically equal to the extent commanded to the second axis for each fixed number of encoder pulses, means for causing both the first and second means to receive encoder pulses simultaneously and in which the first means and the second means each includes an error register having a terminal for indicating one direction of its count with each appearance of

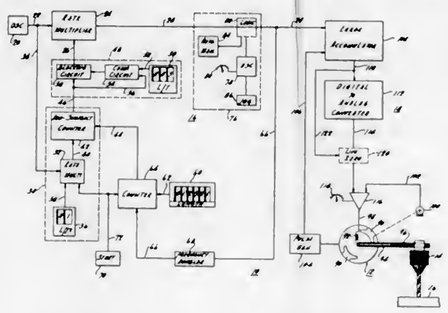
the indication producing a command pulse, means for changing the error register count in its one direction a number equal to the extent commanded for its axis for each encoder pulse and means for changing the count of the error register in the other direction a number equal to the fixed number of encoder pulses for each command pulse.

3,949,286

DIGITAL POSITION CONTROL

James W. Appelgren, Highland Park, Ill., assignor to Dynapar Corporation, Gurnee, Ill.

Filed Nov. 5, 1974, Ser. No. 521,061
Int. Cl.² G05B *19/20*
U.S. Cl. 318—571 **22 Claims**



1. A digital position control for energizing a drive motor, coupled to and controlling the movement and position of apparatus, said control comprising:

a command signal generating control loop including:

pulse generating means providing a first pulse train signal at its output, each pulse of which represents a preselected increment of movement of said apparatus, said pulse generating means altering the frequency of the pulse train signal proportional to a bicondition input signal thereto;

acceleration control means coupled to said pulse generating means and applying an input signal thereto for causing said pulse generating means to serially provide at least a first and a second alteration in the frequency of the pulse train signal in accordance with preselected acceleration characteristics desired of the apparatus, said acceleration control apparatus including means providing a second digital pulse train signal, the frequency of which corresponds to desired acceleration characteristics of the apparatus, and totalizing means for receiving said second digital pulse train signal and for providing a bi-condition varying signal to said pulse generating means;

pulse counting means coupled to the output of said pulse generating means and to said acceleration control means for switching the varying signal provided by said totalizing means between conditions responsive to the number of pulses generated in the pulse train signal; and

a motor operative condition control loop including:

a pulse transducer coupled to the motor for providing a pulse train signal responsive to the incremental movement of the motor and apparatus;

error accumulator means coupled to said pulse generating means and to said pulse transducer for ascertaining the difference in pulses received in said signals and for providing a signal corresponding to said difference;

a digital-to-analog converter coupled to said error accumulator circuit for providing an analog output signal proportional to the difference signal;

a speed feedback means coupled to the motor for providing a speed feedback signal proportional to actual motor speed; and

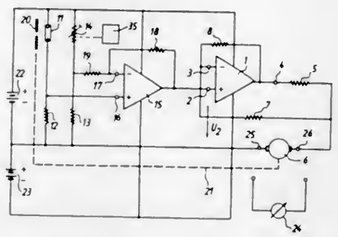
motor driver means coupled to said digital-to-analog converter for receiving said analog signal as a reference signal and to said feedback means for receiving said speed feedback signal, the output of said driver means being couplable to the motor for providing an output signal for energizing the motor and moving the apparatus.

3,949,287

POSITION-CONTROL SERVO SYSTEM WITH SPEED-DEPENDENT DAMPING ACTION

Eduard Wagensonner, Aschheim, and Volkmar Stenzenberger, Unterhaching, both of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Division of Ser. No. 258,032, May 30, 1972, Pat. No. 3,808,482. This application Oct. 17, 1973, Ser. No. 407,068
Claims priority, application Germany, May 28, 1971, 2126548
Int. Cl.² G05B *1/06*
U.S. Cl. 318—640 **13 Claims**



1. A regulating arrangement, comprising, in combination, subtracting amplifier means comprising a differential amplifier having an inverting input, a non-inverting input and an output, and operative for producing at said output a voltage proportional of the difference between the voltages at said inverting and non-inverting inputs; a motor circuit connected across said output of said differential amplifier and comprising a motor, and impedance means connected with said motor and with said output for carrying at least part of the motor current and for enforcing a voltage drop across said motor of magnitude differing from the voltage magnitude across said output by at least the magnitude of the voltage drop across said impedance means and which increases in magnitude with decreasing motor current and accordingly with increasing motor speed; command means for applying to said non-inverting input a voltage effecting desired motion of said motor; and feedback means, connected to said motor and to said inverting input, for applying to the latter a feedback voltage varying substantially in proportion to the total voltage drop across said motor, said command means comprising a component movable to any of a plurality of positions, selecting means for selecting a position for said component, and transducer means for applying to said non-inverting input a first voltage indicative of the difference between the selected and actual positions of said movable component.

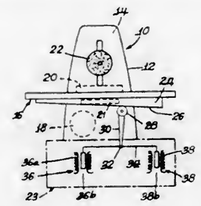
3,949,288

MOVEMENT CONTROL

Arthur K. Littwin, 6555 N. Le Mai, Lincolnwood, Ill. 62656

Filed Aug. 18, 1967, Ser. No. 661,571
Int. Cl.² H01H *47/24*; H02P *1/00*
U.S. Cl. 318—127 **9 Claims**

1. In combination, a reciprocably movable member having a predetermined maximum range of movement, induction responsive reversal means for reciprocably driving the movable member, an induction device associated with each direction of movement of the movable member, and the movable member being operable for producing induction in the induction devices in the respective directions of movement, a group of induction control units associated with each induction device, circuit means for establishing connection between the induction control unit in each group with the associated induction device, and each when so connected being operative for opposing the induction produced in the associated control device and thereby effecting reversal of the driving means, the



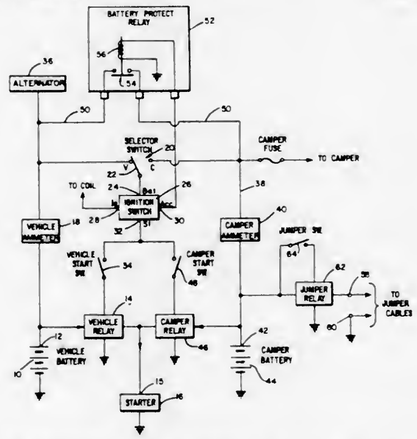
induction control units being individually pre-settable to adjustably predetermine the extent of opposition to the induction whereby to adjustably predetermine the position of the movable member relative to its said range of movement at which the driving means is reversed, and programming means operable in response to a single program setting for successively connecting the induction control units in the groups with the associated induction devices.

3,949,289

DUAL BATTERY IGNITION AND START SYSTEM FOR A VEHICLE

Oliver E. Day, 13601 Woodend Road, R.R. 1, Box 414, Bonner Springs, Kans. 66012

Filed July 25, 1974, Ser. No. 491,959
Int. Cl.² H02J *7/14*
U.S. Cl. 320—6 **3 Claims**



1. An electrical circuit arrangement for a vehicle which permits the starting voltage and/or the ignition voltage for the vehicle engine to be derived from the vehicle battery or from an attached camper battery comprising in combination:

a vehicle battery having one terminal connected to ground;

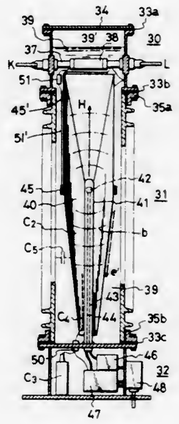
a vehicle starter relay a starter motor having one terminal connected to ground and its other terminal connected via the controlled current path of said vehicle starter relay to the other terminal of said battery; a conventional vehicle ignition switch having a battery voltage input terminal and at least an ignition voltage output terminal which is connected to the ignition coil, and a starter control voltage output terminal; a first switch connecting said starter control voltage output terminal of said ignition switch to the control terminal of said vehicle starter relay; a camper battery having one terminal connected to ground; circuit means, including the controlled current path of a further starter relay, for connecting the other terminal of said camper battery to said other terminal of said starter motor; a second switch connecting said starter control voltage terminal of said ignition switch to the control terminal of said further starter relay; and a single pole double throw switch means, having its movable contact connected to said battery voltage input terminal of said ignition switch, for selectively connecting said battery voltage input terminal to said other terminal of said vehicle battery or said other terminal of said camper battery, whereby the position of said switch means determines which of the battery supplies the voltage for the vehicle motor ignition coil and for control of said starter relays and the closure of one or both of said first and second switches determines which one or both of the batteries supplies the starter voltage.

3,949,290

INSTRUMENT TRANSFORMER WITH CONE-SHAPED INSULATING LAYER

Tomoyoshi Ochiai; Shinichi Kuze, and Ikuro Hirano, all of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha and The Tokyo Electric Power Co., Ltd., both of Tokyo, Japan

Filed Dec. 3, 1974, Ser. No. 529,131
Claims priority, application Japan, Dec. 7, 1973, 48-138936; Jan. 30, 1974, 49-12626; Feb. 25, 1974, 49-22493
Int. Cl.² G05F *7/00*
U.S. Cl. 323—44 R **16 Claims**



1. A current transformer with primary circuit in which current in the primary circuit is transformed for measurement, comprising:

magnetic field developing means for developing a magnetic field dependent on the primary current;

a magnetism to voltage converter for generating a voltage in response to the magnetic field developed by said magnetic field developing means;

tubular shield means for supporting and enclosing said converter; and

a cone-shaped insulating layer enclosing said tubular shield means and laid between said magnetic field developing means and said tubular shield means.

3,949,291
SHORT HVDC TRANSMISSION SYSTEM WITH POWER FACTOR CONTROL

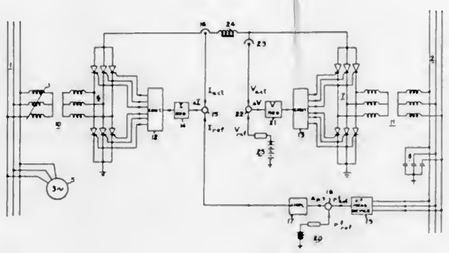
Karl-Werner Kanngiesser, Viernheim, and Dietrich Kluge, Mannheim-Rheinau, both of Germany, assignors to BBC Aktiengesellschaft Brown, Boveri & Cie., Baden, Switzerland

Continuation of Ser. No. 95,556, Dec. 7, 1970. This application Nov. 13, 1974, Ser. No. 523,524

Claims priority, application Germany, Dec. 11, 1969, 1962042

Int. Cl.[2] G05F *1/68*

U.S. Cl. 323—105 **3 Claims**



1. The method for regulating the power factor of a first 3-phase network fed with power from a second 3-phase network via a short high-voltage direct current transmission link interconnecting the two networks and wherein power is supplied to said first network by rectification of the alternating current from said second network at a rectifier station located at one end of said direct current link and inversion of the direct current to alternating current at an inverter station located at the other end of said direct current link and operable with a leading power factor, which comprises the steps of:

measuring the actual power factor of said first network,

comparing the measured power factor with a constant reference power factor to produce a first control quantity variable with the difference therebetween,

regulating the direct current at one of said stations in accordance with said first control quantity,

measuring the direct current voltage on said interconnecting link,

comparing said measured voltage with a constant reference voltage to produce a second control quantity variable with the difference therebetween, and

regulating the voltage at the other station in accordance with said second control quantity

whereby the amount of leading reactive power delivered by said inverter station is determined by the respective magnitudes of said reference power factor and reference voltage.

3,949,292
PIPELINE INSPECTION DEVICE WITH PIVOTAL SUPPORT STRUCTURE

Ruby C. Beaver, Houston, Tex.; Theodor Clasen, Wienhausen; Wolfgang Henning, Celle, both of Germany, and Emil S. Johnson, Houston, Tex., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.

Division of Ser. No. 451,505, Mar. 15, 1974, Pat. No. 3,899,734, which is a continuation-in-part of Ser. No. 360,161, May 14, 1973, abandoned. This application Jan. 8, 1975, Ser. No. 539,326

Int. Cl.[2] G01R *33/12*

U.S. Cl. 324—37 **3 Claims**

1. A mounting assembly for pipeline inspection device, comprising:

a support;

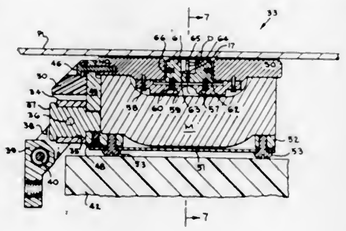
a housing for containing said inspection device;

a pivot block having a central bore and two coaxial pins whose axis are substantially perpendicular to the axis of said bore and orthogonal to the axis of the pipeline;

a pivot pin extending through said bore having means for securing said pivot block to one end of said housing;

a support pin;

a pair of spaced arms, each of which is pivotally connected at one end to one of said pivot block pins and pivotally connected at the other end to said support by said support pin;



said pivot block pins and said support pin allowing said housing containing said inspection device to pivot about axes which are parallel to each other and which are perpendicular to the axis of the pipeline;

said pivot pin allowing said housing containing said inspection device to pivot about an axis which is normally parallel to the axis of said pipeline and perpendicular to the axes of said pivot block pins and said support pin, but also allowing said device to pivot about an axis which is flexibly located in a plane to which said pivot block pins and said support pin are perpendicular,

thereby providing a housing containing an inspection device which can move flexibly and having several degrees of freedom.

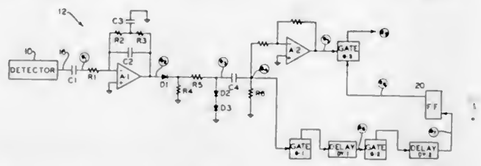
3,949,293
APPARATUS AND METHOD FOR DETECTING A MOVING METAL MASS INCLUDING MEANS TO DISCRIMINATE SIGNALS HAVING A PARTICULAR PERIOD

Robert S. Enabnit, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 28, 1974, Ser. No. 473,643

Int. Cl.[2] G01R *33/00, 33/12*

U.S. Cl. 324—41 **15 Claims**



1. In combination with an electronic detector adapted to provide output detection signals indicative of a variation of an electromagnetic field, the variation effected by a material mass moving at a predetermined and substantially constant relative velocity through a detection aperture as defined by the detector field geometry, and an indicator for indicating the occurrence of the field variation detected, apparatus intercoupling the detector and indicator for improving detected signal discrimination comprising:

A. signal conditioning means coupled and responsive to the detector output signal to provide a conditioned detection pulse signal having a period indicative of the transit duration as defined by a particular mass velocity and detector aperture length, said pulse period being substantially the same for all detectable materials irrespective of the material mass; and

B. circuit means to compare the conditioned pulse signal with a threshold indicative of a particular predetermined reference period to provide an activation signal to said indicator.

3,949,294
LEVEL INDICATING SYSTEM

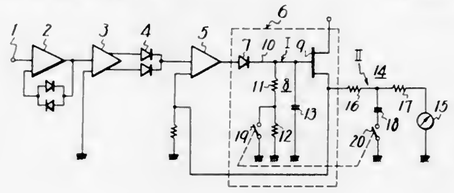
Shigeru Imura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 23, 1974, Ser. No. 508,219

Claims priority, application Japan, Sept. 28, 1973, 48-112489[U]

Int. Cl.[2] G01R *19/16, 19/22*

U.S. Cl. 324—103 P **12 Claims**



1. A signal level indicating system, comprising:

an amplifier for receiving a signal whose level is to be indicated;

a first time constant circuit coupled to the output of said amplifier by a rectifier, said first time constant circuit having a changeable discharge time constant;

a second time constant circuit coupled to the output of said first time constant circuit by an active element, said second time constant circuit having a changeable charge time constant;

an indicator connected to the output of said second time constant for providing an indication of the level of the signal supplied thereto through said first and second time constant circuits; and

means coupled to each of said time constant circuits for changing the respective time constants thereof.

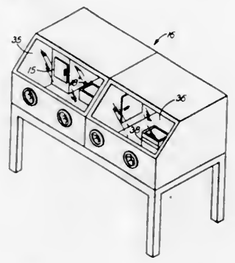
3,949,295
APPARATUS FOR RETAINING ARTICLES IN AN ARRAY FOR TESTING

George G. Moorshead, Warrensburg, Mo., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 20, 1974, Ser. No. 453,124

Int. Cl.[2] G01R *31/02*; **B25B** *11/00*

U.S. Cl. 324—158 F **3 Claims**



1. An apparatus for electrically testing a plurality of articles under controlled humidity conditions, which comprises:

an enclosure for controlling humidity conditions of an atmosphere within the confines of the enclosure;

a device for retaining a plurality of the articles in an array, the device being positioned within the enclosure and including a conductive base having a plurality of apertures in a surface thereof, the apertures being positioned to correspond to the array, and an insulating sheet covering the apertured surface of the base, the sheet having a plurality of apertures located coaxially with respect to the apertures in the base, each of the apertures in the sheet being of a size so as to accept one of the articles to permit a surface of the article to cover the respective aperture in the base;

means for producing a vacuum, connected through the base to each of the apertures, whereby the articles loaded into the apertures of the insulating sheet are brought into contact with the conductive base; and

means for contacting the top surfaces of the articles in contact with the base with an electronic test probe to complete a test circuit through the articles whereby the articles are tested while being located in the array within the enclosure under controlled humidity conditions.

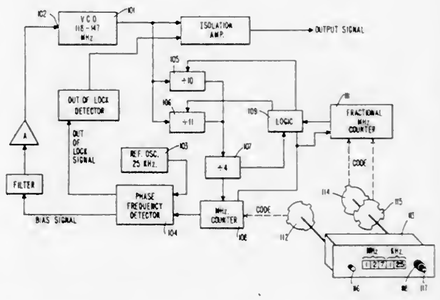
3,949,296
CODE AND GENERATING MEANS FOR AVIONICS COMMUNICATION SYNTHESIZER

Boyd M. McClaskey, Flourtown, and John F. Smith, Warminster, both of Pa., assignors to Narco Scientific Industries, Inc., Fort Washington, Pa.

Filed Jan. 23, 1975, Ser. No. 543,540

Int. Cl.[2] H04B *1/38*

U.S. Cl. 325—17 **4 Claims**



1. In an avionics transceiver having transmission channels arrayed in the frequency range 118 through 135 MHz and respectively corresponding reception channels arrayed in the frequency range 130 through 147MHz, pulse frequency division apparatus operable in accordance with the MHz components of a selected transmit-receive channel pair comprising:

a shift register having eight sequentially connected stages, the pulse signal to be divided clocking shifts of said register;

a first exclusive OR gate responsive to the output states of the first and third ones of said stages;

a second exlusive OR gate responsive to the output states of the fifth and eighth ones of said stages;

a third exclusive OR gate responsive to said first and second gates;

means for inverting the logical output signal of said third gate, and for applying the inverted logical signal to the input of the first of said stages in clocked relationship with the shifting of data between successive sequential stages;

means for presetting the output states of each of said stages of said register in accordance with the selected transmit-receive channel pair as follows

TRANS	RECEIVE	STAGES 1 through 8
135	147	00010111
134	146	00001011
133	145	10000101
132	144	11000010
131	143	01100001
130	142	10110000
129	141	11011000
128	140	11101100
127	139	01110110
126	138	00111011
125	137	00011101
124	136	10001110
123	135	11000111
122	134	11100011
121	133	01110001
120	132	10111000
119	131	01011100
118	130	00101110;

and means for producing an output pulse upon occurrence of logical states in said register of **11110000** for transmission and **11101111** for reception.

3,949,297

INFORMATION SIGNAL TRANSMITTING SYSTEM

Yasuhiro Hideshima, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed July 10, 1974, Ser. No. 487,284
Claims priority, application Japan, July 19, 1973, 48-85022
Int. Cl.² H04B *11/00;* **H03K** *7/08;* **H03B** *3/18*
U.S. Cl. 325—37 **11 Claims**

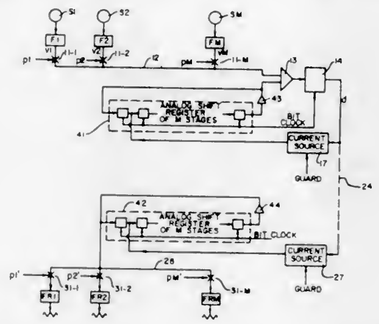
1. A pulse duration transmission system for transmitting intelligence comprising, means for selectively transmitting at least one of a plurality of available pulse signals of different discrete pulse durations such that the ratio of pulse durations between one pulse to another pulse is A^n where A is a fixed number and n is a parameter, and means for receiving said at least one signal and detecting said intelligence as determined by said pulse durations, and wherein said receiving means comprises a detector receiving said transmitted pulses and producing corresponding pulses having the same time duration as said transmitted pulses, a reference pulse generator receiving the output pulses of said detector and producing a pulse train for a period equal to the duration of the detector output for each transmitted pulse, a counter receiving said pulse trains from said reference pulse generator to count the number of pulses therein, a decoder connected to said counter and having a plurality of output terminals to decode said count, a plurality of AND gates each connected to one of the output terminals of said decoder, a gate generator receiving the output pulses of said detector and producing a pulse output at the trailing edge of each of said output pulses of said detector and supplying said gate generator pulse outputs to each of said plurality of AND gates.

3,949,298

TIME SHARED DELTA MODULATION SYSTEM

Frank S. Boxall, 380 Eleanor Drive, Woodside, Calif. 94062

Filed Feb. 22, 1974, Ser. No. 444,822
Int. Cl.² H03K *13/22*
U.S. Cl. 325—38 B **20 Claims**



1. A multi-channel delta modulation encoder for converting a plurality of analog signals to frames of binary digits with the binary digits corresponding to each analog signal being a delta modulation encoding of the corresponding analog signal; comprising, sampling means for periodically sequentially sampling said analog signals to form recurring frames of analog signal samples each frame including one signal sample for each analog signal, accumulating means serving to store an approximating signal for each analog signal, means connected to said accumulator means forming recurring frames of said approximating signal samples each frame including one approximating signal for each analog signal, comparison means serving to receive the frames of analog signal samples and approximating signal samples and generate output signals indicative of the algebraic sign of the difference between each analog signal sample and the corresponding approximating signal sample, means responsive to the output signal from the comparison means for producing said frames of binary digits, and incrementing means responsive to said frames of binary digits for incrementing by increasing or decreasing the approximating signal samples for each channel durinng each frame in accordance therewith, said incrementing means serving to increment the approximating signal sample for each channel while the comparison means is operating on the next channel.

3,949,299

SIGNAL CODING FOR TELEPHONE COMMUNICATION SYSTEM

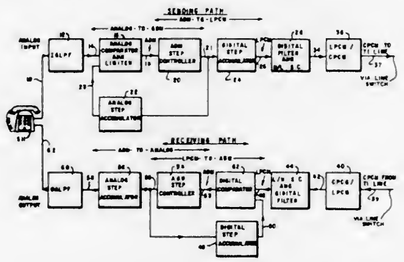
Ching-Long Song, Columbus, Ohio, assignor to North Electric Company, Galion, Ohio

Filed Nov. 5, 1974, Ser. No. 520,977
Int. Cl.² H03K *13/22*
U.S. Cl. 325—38 B **29 Claims**

1. In a telephone communication system having a plurality of transmission lines over which voice signals are transmitted in digital form using pulse code modulation; sending means comprising analog input means over which analog signals are received, adaptive delta modulation means connected to said analog input means and operative to convert said analog signals to adaptive-delta-modulated pulse signals, and sending digital converter means coupled to said adaptive delta modulation means and operative to convert said adaptive delta modulation pulse signals to pulse code modulation signals;

receiving means comprising digital input means over which digital signals which are pulse code modulated are received, receiving digital converter means coupled to said digital input means to convert said digital signals to adaptive-delta-modulated pulse signals, and adaptive-delta-modulation to analog converter means coupled to said receiving digital converter and operative to convert said adaptive-delta-modulated pulse signals to analog output signals;

said sending means and said receiving means each including step controller means, each of said step controller means being operative to derive pulse coded step size signals



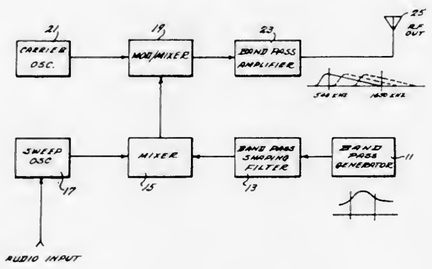
having sign and magnitude related respectively to the sign and pattern of the adaptive-delta-modulation pulse signals, said step controller means of the sending means having an output connected common to said adaptive delta modulation means and said sending digital converter means, said step controller means of the receiving means having output means connected common to said receiving digital converter means and said adaptive-delta-modulation to analog converter means.

3,949,300

EMERGENCY RADIO FREQUENCY WARNING DEVICE

William S. Sadler, 2000 Fernwood Ave., St. Paul, Minn. 55113

Filed July 3, 1974, Ser. No. 485,761
Int. Cl.² H04K *3/00*
U.S. Cl. 325—31 **10 Claims**



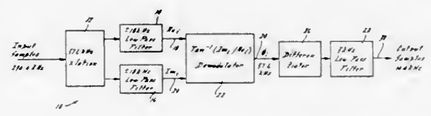
2. A radio frequency device comprising means for generating a signal having a broad frequency band, means for generating an RF signal, means responsive to an audio frequency signal for sweeping said RF signal generating means through a predetermined band at an audio rate, means for modulating said broad band signal with said RF signal, means for generating a carrier signal, and means for modulating said carrier signal with said modulated broad band signal to thereby generate a broad band radio interference signal which generates an audio signal when received by an audio receiver.

3,949,301

DIGITAL CLICK REMOVAL AND SQUELCH CONTROL CIRCUIT FOR AN FM RECEIVER

Anthony Mattei, Philadelphia, Pa., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 27, 1975, Ser. No. 591,223
Int. Cl.² H04B *1/10*
U.S. Cl. 325—348 **10 Claims**



1. In combination with an FM receiver that includes circuit means for generating a series of binary number electrical signals, occurring at equally-spaced time intervals, each of which is representative of the instantaneous phase angle of a received frequency-modulated electrical signal or signal derived therefrom, a click removal circuit for removing those of said binary number electrical signals determined to represent electrical noise, said click removal circuit comprising:

first circuit means, supplied with said binary number electrical signals, for generating a rate of change binary number electrical signal proportional to the time rate of change of said binary number electrical signals; and

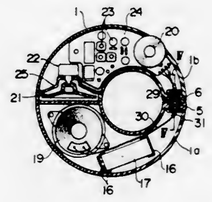
second circuit means, controlled by said rate of change binary number electrical signal, for removing or discarding said rate of change binary number electrical signal if the magnitude of said rate of change binary number electrical signal exceeds a predetermined threshold level.

3,949,302

RADIO RECEIVER

Daisuke Kajiwara, and Mitsuru Ishimaru, both of Fukuoka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 321,791, Jan. 8, 1973, abandoned. This application Jan. 29, 1975, Ser. No. 544,887
Int. Cl.² H04B *1/08*
U.S. Cl. 325—352 **4 Claims**



1. A radio receiver assembly comprising:

a radio receiver,

a cabinet consisting of a pair of cabinet sections, each cabinet section containing at least some of the components of said radio receiver and having an integral transversal wall at one end portion thereof in which an opening is formed, said opening being arranged so as to be aligned with a corresponding opening of the adjacent cabinet section,

a tubular coupling member for joining said cabinet sections inserted into said openings formed in said two adjacent integral transversal walls, and

a pair of spring members mounted on said tubular coupling member against said two transversal walls respectively, said spring members exerting a clamping force through said coupling member thereby securely joining said cabinet sections and enabling said cabinet sections to rotate

with respect to each other about the axis of said tubular coupling member.

3,949,303

TIME CONTROLLED SWITCHING ARRANGEMENT FOR TWO TIMER RADIO RECEIVER

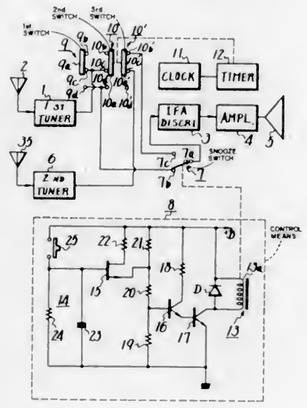
Yoshinori Nishimura, Tanashi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 9, 1974, Ser. No. 513,382

Claims priority, application Japan, Oct. 12, 1973, 48-18675

Int. Cl.² H04B *1/06*

U.S. Cl. 325—396 **7 Claims**



2. A radio receiver comprising:

a. a first tuner for receiving a plurality of broadcasting signals and for tuning in a desired broadcasting signal;

b. a preset tuner for tuning in a predetermined broadcasting signal;

c. switch means for selecting the output signal derived from one of said tuners, said switch means normally being connected to said first tuner so as to derive the output signal of said first tuner;

d. an amplifier connected to said switch means for amplifying an output signal passing through said switch means;

e. a timing means; and

f. control means for connecting said switch means to said preset tuner for a predetermined period of time as determined by said timing means, after disconnecting said first tuner.

3,949,304

FRACTIONAL MEGAHERTZ COUNTER FOR IMPROVED DIGITAL SYNTHESIZER

Boyd M. McClaskey, Flourtown, Pa., assignor to Narco Scientific Industries, Inc., Fort Washington, Pa.

Filed Jan. 23, 1975, Ser. No. 543,539

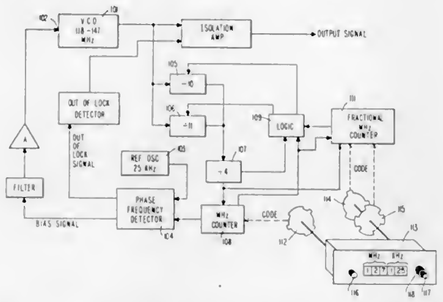
Int. Cl.² H03B *3/08*

U.S. Cl. 325—421 **11 Claims**

1. In a communication channel synthesizer employing a phase locked loop which utilizes first and second alternate division rates during each phase comparison epoch, apparatus for controlling the duration of utilization of each of said rates in response to mechanical channel selection means, comprising:

means, responsive to said selection means, for developing a digitally coded representation of the frequency of the selected channel;

counting means, functional in correspondence with a fractional segment of the channel range of said synthesizer, increments of said counting means being associated with channels within said fractional segment, said counting means being incremented, by pulses from said loop, between said coded representation and a predetermined set point associated with an extremity of said fractional segment; and



logic means, responsive to said loop and to said counting means, for selectively actuating said alternate rates for respective complementary time periods during each epoch, a first rate being energized while said counting means is incrementing between said representation and said set point, and a second rate being energized during the remainder of the epoch.

3,949,305

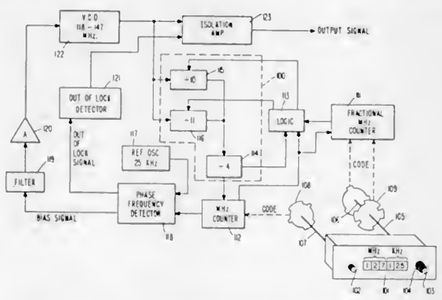
DIGITAL SYNTHESIZER

Boyd M. McClaskey, Flourtown, and John F. Smith, Warminster, both of Pa., assignors to Narco Scientific Industries, Inc., Fort Washington, Pa.

Filed Jan. 23, 1975, Ser. No. 543,538

Int. Cl.² H03B *3/08*

U.S. Cl. 325—421 **6 Claims**



1. A synthesizer of signals corresponding to a plurality of channels within a specified frequency band at predetermined fractional parts of predetermined frequency intervals, comprising:

means for selecting a channel for synthesis as one of said intervals and one of said fractional parts thereof;

means for generating an output signal having a frequency in said band in correspondence with one of the channels in response to a biasing signal;

first means for frequency dividing said output signal by respective first or second division factors;

second means, responsive to said means for selecting, for further dividing the once divided output signal by a third factor corresponding to said one of said intervals;

means for generating a reference signal having a frequency equal to the bandwidth of said fractional parts;

means for detecting phase difference between said reference signal and said further divided output signal, and for producing said biasing signal in response to the detected phase difference;

first logic means, responsive to the selected interval component from said means for selecting, and to further divided signals from said second means for dividing, for developing alternate control states corresponding to said first and second factors during respective complementary portions of each cycle of said second means for dividing; and

second logic means, responsive to said states from said first logic means and to prior signals from said first means for frequency dividing, for controlling said first means to divide by said first and second factors for respective complementary predetermined periods of time.

3,949,306

HIGH FREQUENCY AMPLIFIER WITH FREQUENCY CONVERSION

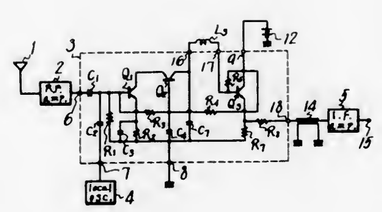
Seiichi Watanabe, Machida, and Takashi Yoshikawa, Fujisawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 407,604, Oct. 18, 1973, Pat. No. 3,886,467. This application Jan. 30, 1975, Ser. No. 545,755

Claims priority, application Japan, Nov. 2, 1972, 47-127021

Int. Cl.² H04B *1/28*

U.S. Cl. 325—451 **2 Claims**



1. A high frequency amplifier comprising:

a. an amplifying circuit having an input terminal and and intermediate output terminal;

b. a transistor having collector, emitter and base electrodes connected in the emitter follower configuration;

c. a power supply terminal connected to the collector electrode of said transistor;

d. a first resistor connected between said power supply terminal and the base electrode of said transistor;

e. a second resistor connected between the emitter electrode of said transistor and a ground;

f. an output terminal connected to the emitter electrode of said transistor;

g. a third resistor connected between said emitter electrode of said transistor and said output terminal;

h. an impedance matching circuit including a first condenser connected between said intermediate output terminal of said amplifying circuit and said ground and a coil connected between said intermediate output terminal of said amplifying circuit and the base electrode of said transistor, whereby said amplifying circuit and said transistor are connected to each other with proper impedance matching and an operation voltage for said amplifying circuit is supplied from said power supply terminal through said first resistor and said coil;

i. an RF amplifier providing an RF signal; and

j. a local oscillator providing an output which, with said RF signal, is supplied to said input terminal of said amplifying circuit so that the latter acts as a frequency converter.

3,949,307

CIRCUIT ARRANGEMENT FOR DIGITAL FREQUENCY INDICATION IN A RADIO RECEIVER

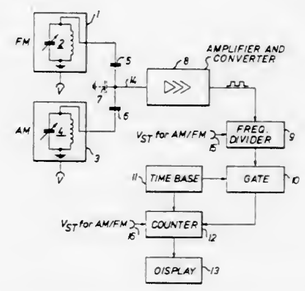
Otto Klank, Arpke, and Dieter Rottmann, Misburg, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Nov. 21, 1974, Ser. No. 526,052

Claims priority, application Germany, Nov. 24, 1973, 2358673

Int. Cl.² H04B *1/06*

U.S. Cl. 325—455 **10 Claims**



1. In a circuit arrangement for digitally indicating the frequency to which a radio receiver having both an AM tuning oscillator and an FM tuning oscillator is tuned, said circuit arrangement including amplifying means, means for coupling the output signals from said AM and FM oscillator to the input of said amplifying means, means for converting the amplified output signals from said oscillators into rectangular signals, electronic counting means for counting the frequency of the rectangular signals and means responsive to the output signals from said counting means for providing a digital indication of the frequency to which the particular tuning oscillator is tuned, the improvement wherein said amplifying means comprises a common broadband amplifier having a bandwidth which is sufficiently broad so as to pass and amplify signal frequencies from both the AM and FM tuning oscillators; and wherein said coupling means comprises means for sufficiently loosely coupling the output signals of said AM tuning oscillator and of said FM tuning oscillator to the common input of said broadband amplifier so that said tuning oscillators are not noticeably detuned by changes in capacity in said broadband amplifier.

3,949,308

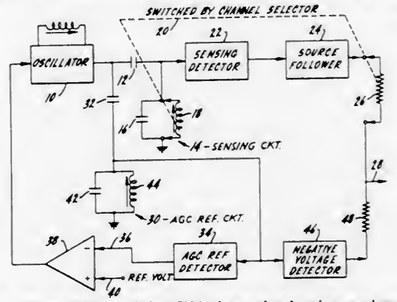
VARACTOR CONTROL UNIT USING Q VARIABLE INDUCTANCES

Patrick R. J. Court, Los Angeles, Calif., assignor to Oak Industries, Inc., Crystal Lake, Ill.

Filed Nov. 26, 1974, Ser. No. 527,488

Int. Cl.² H04B *1/16*

U.S. Cl. 325—465 **20 Claims**



1. A circuit for providing TV channel selection and tuning voltages, including a voltage source, a plurality of fixed resis-

tive means and switch means for connecting predetermined resistive means to said source for providing channel selection voltages,

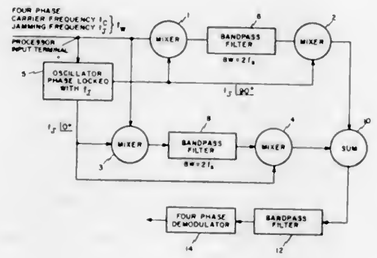
a generally constant frequency oscillator, sensing circuit means coupled to said oscillator and including a plurality of Q variable inductances each having a coil and an adjustable core, switch means for connecting predetermined inductances into said sensing circuit,

and detecting means connected to said sensing circuit means for rectifying the output from said sensing circuit means for providing a tuning voltage, the output from said detecting means being connected to said resistive means.

3,949,309
NON-LINEAR PROCESSOR FOR ANTI-JAM OPERATION

Joseph A. Pecar, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 9, 1971, Ser. No. 196,930
Int. Cl.² G01S 7/36; H04B 1/10
U.S. Cl. 325—473 **3 Claims**



1. In a nonlinear processor for discriminating against CW interference, the improvement comprising:

a processor input terminal adapted to receive a signal including a jamming frequency,

a first channel comprising a first mixer, a second mixer, and a first bandpass filter,

means connecting said first bandpass filter in series between said first mixer and said second mixer,

a second channel comprising a third mixer, a fourth mixer, and a second bandpass filter,

means connecting said second bandpass filter in series between said third mixer and said fourth mixer,

means connecting said processor input terminal to an input of said first and third mixers,

a phase locked oscillator having an input terminal, means connecting said processor input terminal to said oscillator input terminal to provide a signal to lock said oscillator to said jamming frequency, a first output connected to respective inputs of said first and second mixers, and a second output connected to respective inputs of said third and fourth mixers,

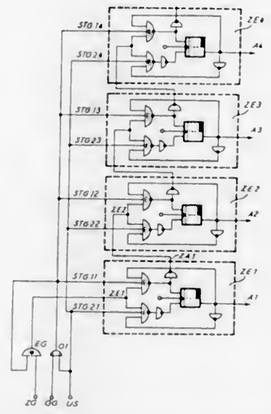
a summing circuit connected to sum the outputs of said second and fourth mixers, and

a third bandpass filter connected to filter the output of said summing circuit.

3,949,310
COUNTING ELEMENT FOR THE STRUCTURE OF SYNCHRONOUS MODULO-N OR 2^m COUNTERS

Heinz-Juergen Lohmann, Braunschweig, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 24, 1975, Ser. No. 543,665
Claims priority, application Germany, Mar. 18, 1974, 2412906
Int. Cl.² H03K 21/00, 23/06
U.S. Cl. 328—41 **4 Claims**



1. A counter element for modulo-n and modulo-2^m counters, comprising:

a storage member including a master-slave flip-flop having a set input, a reset input and an output Q, an inverter connected to said reset input, and a first circuit for performing a majority decision of two variables in conjunction with the output of the slave having an output for inverted signals which is connected to said set input and to said inverter and three inputs, one of said three inputs connected to said output Q and the other two inputs S and R for receiving respective digital variable signals such that the storage member operates in accordance with the truth table

S	R	Qto	Qtl
L	O	O	O
L	L	O	L
O	L	L	L
O	O	L	O
L	O	L	L
L	L	L	L
O	L	O	O
O	O	O	O

which satisfies the Boolean equation

$$Qtl = S \cdot R + Qto \cdot (S + R)$$

in which Qto is the state at the output Q prior to information transfer from master to slave;

a second majority decision circuit having three inputs, and an output for inverted signals connected to one of said other inputs of said first majority decision circuit;

a first inverter and a second inverter;

a third majority decision circuit having three inputs, and an output for inverted signals connected to the remaining input of said first majority decision circuit via said first inverter,

a first of said inputs of said second majority decision circuit and a first of said inputs of said third majority decision circuit connected together to serve as an information input,

a second of said inputs of said second majority decision circuit connected to said output of said master-slave flip-flop, and a second of said inputs of said third majority decision circuit connected to said output of said master flip-flop via said second inverter;

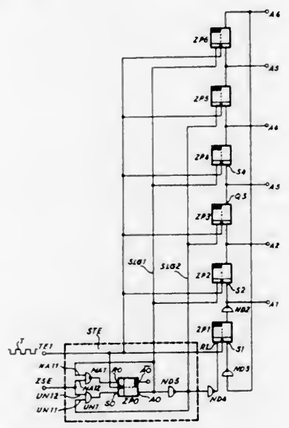
the third inputs of said second and third majority decision circuits adapted to receive logic control signals which cause those circuits to respond to their input signals in accordance with predetermined logic functions; and

a third inverter connected to the output of said second majority decision circuit to serve as an information output for said counter element.

3,949,311
RING COUNTERS WITH SYNCHRONOUSLY CONTROLLED COUNTING FLIP-FLOPS

Heinz-Juergen Lohmann, Braunschweig, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 20, 1975, Ser. No. 542,358
Claims priority, application Germany, Feb. 27, 1974, 2409392
Int. Cl.² H03K 21/02, 23/04
U.S. Cl. 328—43 **5 Claims**



1. A ring counter comprising:

an even numbered plurality of master-slave counter flip-flops connected in a counting ring and each including a set input S, a reset input R, a timing input and an output Q and operable to filfill the truth table

S	R	Qto	Qtl
L	O	O	O
L	L	O	L
O	L	L	L
O	O	L	O
L	O	L	L
L	L	L	L
O	L	O	O
O	O	O	O

which complies with the Boolean equation

$$Qt1 = S \cdot R + Q\,to \cdot (S + R)$$

where Qto is the logical condition of the output Q prior to new information transfer in a counter flip-flop and Qt1 is the logical condition resulting after such information transfer,

the output of a counter flip-flop connected to the set input of the next following counter flip-flop of the counting ring;

first and second control lines respectively connected to the reset input of alternate ones of said counter flip-flops;

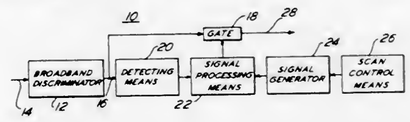
a timing pulse line for receiving periodic timing pulses, said timing pulse line connected to said timing inputs of said counter flip-flops;

a control stage including a binary divider, a counting pulse input for receiving counting pulses a timing pulse input connected to said timing pulse line, and first and second outputs and operable in response to the counting pulses to provide a divided count pulses to said first output and inverted divided count pulses to said second output.

3,949,312
FREQUENCY SCANNING MEANS AND METHOD

Raymond S. Markowitz, Wyncote, Pa., assignor to American Electronic Laboratories, Inc., Lansdale, Pa.

Filed Sept. 16, 1974, Ser. No. 506,029
Int. Cl.² H03D 7/16; G01R 23/00
U.S. Cl. 328—137 **21 Claims**

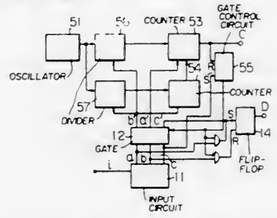


1. A frequency scanning means comprising a broadband signal discriminator means for receiving and delivering signals within its frequency band, detecting means receiving signals delivered by the discriminator means and providing output signals related to the frequencies of the received signals, signal generating means selectively providing output signals corresponding to the frequencies of signals within the band of said discriminator means, and signal processing means receiving the output signals from said detecting means and said generating means and delivering an output signal for each signal delivered by said discriminator means having a frequency with a predetermined correspondence to the frequency selected by said generating means, and gating means delivering signals from said discriminator means upon the occurrence of output signals from said processing means.

3,949,313
DEMODULATION SYSTEM FOR DIGITAL INFORMATION

Tomoo Tamada, Tama, and Takeshi Kato, Funabashi, both of Japan, assignors to Tokyo Magnetic Printing Company Ltd., Tokyo, Japan

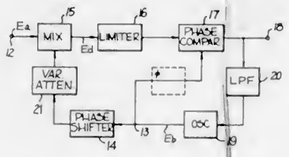
Filed May 28, 1974, Ser. No. 473,450
Claims priority, application Japan, Nov. 27, 1973, 48-132137
Int. Cl.² H03K 9/08
U.S. Cl. 329—106 **3 Claims**



1. A method for demodulating digital information recorded by one system selected from an FM system or PM system, comprising the steps of storing a member of timing pulses in a first counter during the preceding bit frame, transferring the content of said first counter to a second counter at the initial time of the present bit frame, counting the number of said

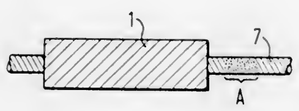
timing pulses by said second counter in order to provide a clock output signal having a significant information when said second counter overflows, and demodulating a data output signal by masking the signal to be demodulated by said clock output pulse.

3,949,314
PHASE DEMODULATOR
Yukihiko Machida, Mitaku, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 29, 1974, Ser. No. 519,028
Claims priority, application Japan, Nov. 6, 1973, 48-124766
Int. Cl.² H03K 9/04
U.S. Cl. 329—107 **5 Claims**



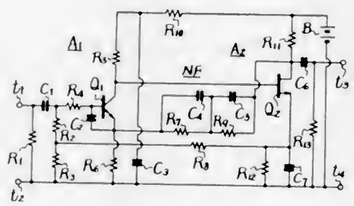
1. A phase demodulator comprising:
A. a first input terminal to receive a phase demodulated signal;
B. a second input terminal to receive a first reference carrier signal;
C. a phase shifter connected to said second input terminal to shift the phase of said reference carrier signal by a predetermined angular amount to produce a second reference carrier signal;
D. a mixer comprising a first input circuit connected to said first input terminal to receive said phase modulated signal, and a second input circuit connected to said phase shifter to receive said second reference carrier signal to be combined with said phase modulated signal; and
E. a phase comparator connected to said mixer and to said second input terminal to receive said first reference carrier signal to compare the phase of the output signal of said mixer with the phase of said other reference carrier signal.

3,949,315
OPTICAL INTERMEDIATE AMPLIFIER FOR A COMMUNICATION SYSTEM
Günter Zeidler, Weidenstrasse 25, 8034 Unterpfaffenhofen, Germany
Filed Sept. 21, 1973, Ser. No. 399,633
Claims priority, application Germany, Oct. 3, 1972, 2248371
Int. Cl.² H01S 3/05, 3/09
U.S. Cl. 330—4.3 **1 Claim**



1. An intermediate amplifier for an optical transmission system having optical wave guides, comprising an optical amplifier which amplifies light waves according to the laser principle, an incoming wave guide connected to said optical amplifier, and an outgoing wave guide connected to said optical amplifier, said outgoing wave guide including a zone having an absorption characteristic for frequencies outside of the frequency band of light pulses which are to be transmitted through the intermediate amplifier.

3,949,316
CASCADE-CONNECTED TRANSISTOR AMPLIFIER
Katsuaki Tsurushima, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 1, 1975, Ser. No. 564,118
Claims priority, application Japan, Apr. 5, 1974, 49-38581
Int. Cl.² H03F 3/16
U.S. Cl. 330—24 **10 Claims**

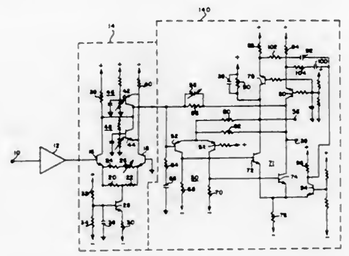


1. A cascade-connected transistor amplifier comprising a bipolar transistor including a first semiconductor region of a first conductivity type, a second semiconductor region of a second conductivity type disposed adjacent said first semiconductor region, a third semiconductor region of said first conductivity type disposed adjacent said second semiconductor region, and a potential barrier positioned within said first semiconductor region spaced from and opposite the junction defined by said first and second semiconductor regions, said potential barrier being spaced from said junction by a distance smaller than the diffusion distance of minority carriers injected into said first semiconductor region, said semiconductor regions being provided with first, second and third electrodes, respectively; a field effect transistor having triode-type dynamic characteristics; the gate electrode of said field effect transistor being connected directly to one of said first and third electrodes of said bipolar transistor; first load impedance means connected to said one electrode of said bipolar transistor; second load impedance means connected in series with the drain-source circuit of said field effect transistor; means for supplying an input signal to said second electrode of said bipolar transistor; and means for supplying an operating voltage through said first and second load impedance means to said bipolar and field effect transistors, respectively.

3,949,317
FAST RECOVERY LIMITING AND PHASE INVERTING AMPLIFIER
Philip Stephen Crosby, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Sept. 16, 1974, Ser. No. 506,382
Int. Cl.² H03F 3/45
U.S. Cl. 330—30 D **4 Claims**

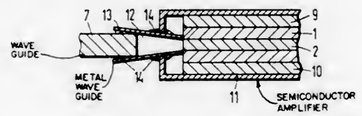
1. A fast recovery signal limiting amplifier, comprising:
a paraphase amplifier;
a current source for providing current to said paraphase amplifier; and

means for limiting the output of said paraphase amplifier, said means for limiting defining a pair of opposite con-



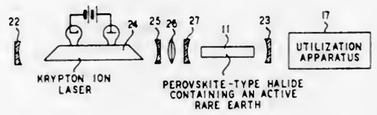
ductivity transistors connected in common base configuration.

3,949,318
OPTICAL INTERMEDIATE AMPLIFIER FOR A COMMUNICATIONS SYSTEM
Günter Zeidler, Unterpfaffenhofen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Sept. 21, 1973, Ser. No. 399,636
Claims priority, application Germany, Oct. 3, 1972, 2248369
Int. Cl.² H01S 3/10; G02B 5/14
U.S. Cl. 330—4.3 **1 Claim**



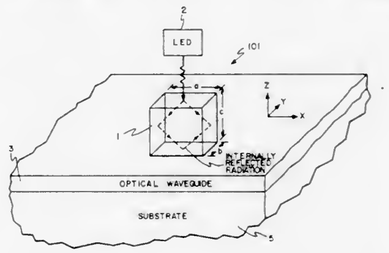
1. An intermediate amplifier for a communications transmission system for the transmission of communications by means of light waves in optical wave guides, comprising an optical wave guide; an optical amplifier for amplifying light waves according to the laser principle, said optical amplifier including a semiconductor amplifier; and a short hollow wave guide having a continually changing cross sectional area from one end thereof to the other, the end of said short wave guide having the smallest cross sectional area in direct contact with said semiconductor amplifier and the other end of said short hollow wave guide receiving the first-mentioned wave guide therein as a plug-in connection.

3,949,319
HIGH ENERGY STORAGE LASERS EMPLOYING PEROVSKITES CONTAINING RARE EARTHS
Bruce Cedric Tofield, Eatontown, and Heinz Paul Weber, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 12, 1974, Ser. No. 505,206
Int. Cl.² H01S 3/16
U.S. Cl. 331—94.5 F **13 Claims**



1. A laser of the type comprising a crystal including the active ion as a chemical constituent of the compound forming the crystal means for optically pumping the crystal to produce a population inversion between energy states, and means for resonating radiation associated with transitions between said energy states, characterized in that the crystal comprises a hexahalide crystal having a perovskite structure including two groups of atoms ordered on octahedral sites, one of the two groups containing elements including at least the active ion, said elements being selected from the set of elements consisting of the rare earths and yttrium, at least a portion of said one group being the active ion.

3,949,320
MINIATURE CRYSTALLINE LASER
Donald E. Castleberry, Cambridge; Hans P. Jenssen, Belmont, and Arthur Linz, Winchester, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Nov. 29, 1974, Ser. No. 528,308
Int. Cl.² H01S 3/16
U.S. Cl. 331—94.5 F **19 Claims**

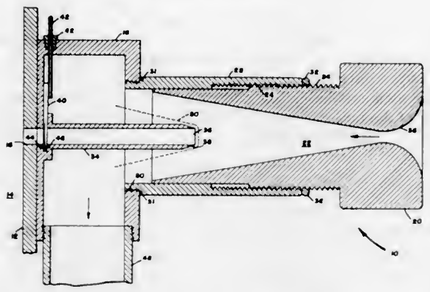


1. An optically pumped crystalline laser system that comprises: a polygonal cylindrical section of an insulating single crystal laser material, the dimensions of the cylindrical section and the index of refraction of the laser material and the medium surrounding the crystalline section being such that there is provided a dielectric resonator that is substantially totally internally reflective for a small number of modes, the laser material of which the crystal section is composed being one that is capable of being made optically thick for pump light in thin sections to effect lasing therein; an optical transmission element in close proximity to the crystal section to permit coupling by virtue of an evanescent field that arises from lasing action in the dielectric resonator; and means for optically pumping said laser material to effect lasing therein.

3,949,321
CONICAL NOZZLE AERODYNAMIC WINDOW
Ronald E. Lee, Beltsville, and Robert Voisinet, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 26, 1974, Ser. No. 536,507
Int. Cl.² H01S 3/22
U.S. Cl. 331—94.5 D **13 Claims**

1. An apparatus for providing an aerodynamic window between regions of different pressure comprising:
a convergent-divergent nozzle;
support means positionable on a partition separating the regions of different pressure to enclose an opening in the partition, said support means supporting said nozzle in line with the opening;
an open-ended conduit means positioned adjacent to and in line with the opening and extending toward said nozzle to provide a flow passage from the opening;
flow control means to regulate fluid flow in said conduit means;
flow producing means coupled to said support means to produce a high-velocity fluid flow through said nozzle and

said support means for producing a shock wave about the open end of said conduit means; and



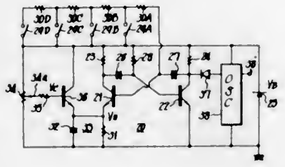
means for adjusting the stagnation pressure recovery across the shock wave to balance the pressure in the opening and in the conduit means.

3,949,322

STABLE PULSE WIDTH CONTROL FOR ASTABLE MULTIVIBRATORS AND THE LIKE

Koji Morita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 24, 1975, Ser. No. 561,219
Claims priority, application Japan, Apr. 4, 1974, 49-38467
Int. Cl.² H03K *3/283*
U.S. Cl. 331—113 R **7 Claims**



4. A pulse generator comprising an astable multivibrator circuit comprised of cross-coupled transistors, each coupled to a source of operating voltage; means coupled to said source of operating voltage for deriving a fraction of said operating voltage; emitter-follower means interconnected between said fraction deriving means and the emitter of one of said cross-coupled transistors to supply a proportion of said derived fraction to said one cross-coupled transistor; and a capacitor coupled to the emitter of said emitter-follower means for receiving said proportion of said derived fraction of said operating potential.

3,949,323

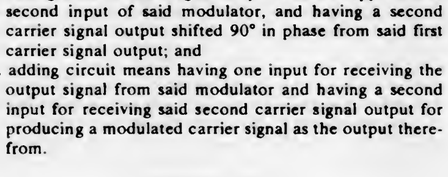
CRYSTALS OF (K, Rb, Tl, NH_4)TiO $(P,As)O_4$ AND THEIR USE IN ELECTROOPTIC DEVICES

John David Bierlein, Wilmington, Del., and Thurman Eugene Gier, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Mar. 14, 1974, Ser. No. 451,120
Int. Cl.² H01S *3/00*; G02B *5/23*; C04B *35/00*
U.S. Cl. 332—7.51 **4 Claims**

1. In a nonlinear optical device comprising means to direct at least one incident beam of electromagnetic radiation into a crystal having nonlinear optical properties whereby electromagnetic radiation emerging from said crystal contains at least one frequency different from the frequency of any incident beam of radiation, wherein the improvement comprises a crystal consisting of a compound having the formula

$MTiO(XO_4)$



wherein M is at least one K, Rb, Tl or NH_4 and X is at least one of P or As and wherein X is P when M is NH_4 as said crystal having nonlinear optical properties.

3,949,324

SURFACE WAVE DEVICE ANGLE MODULATOR

Benjamin L. Lowe, Huntsville, Ala., and Jerry D. Holmes, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 11, 1974, Ser. No. 522,554
Int. Cl.² H03C *3/28*
U.S. Cl. 332—26 **14 Claims**

1. An angular modulation system, which comprises:
a. a balanced modulator having a first input for receiving an information signal to be modulated;
b. a local oscillator including surface wave device means having a first carrier signal output which is applied to a second input of said modulator, and having a second carrier signal output shifted 90° in phase from said first carrier signal output; and
c. adding circuit means having one input for receiving the output signal from said modulator and having a second input for receiving said second carrier signal output for producing a modulated carrier signal as the output therefrom.

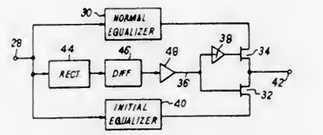
3,949,325

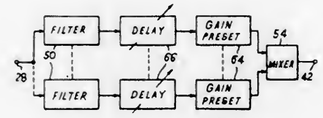
AUDIO EQUALIZERS FOR LARGE ROOMS

Robert A. Berkovitz, Lexington, Mass., assignor to Dolby Laboratories, Inc., New York, N.Y.

Filed Dec. 10, 1974, Ser. No. 531,320
Claims priority, application United Kingdom, Dec. 22, 1973, 59692/73
Int. Cl.² H03H *7/14*
U.S. Cl. 333—28 R **8 Claims**

1. An audio equalization system operative on a source signal to produce an equalized signal, comprising equalizing means having a normal state in which said means establishes a predetermined equalization characteristic, and further means operative at an attack in the source signal to delay operation of the equalizing means in the normal state so that an initial state





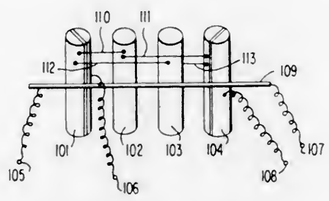
obtains in which there is a reduced degree of equalization and from which a transition to the normal state takes place.

3,949,326

ELECTROMECHANICAL FILTER

Takeshi Yano; Takehiro Futami; Seiichiro Kanazawa, and Tetsuo Hayashi, all of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed Feb. 27, 1975, Ser. No. 553,711
Claims priority, application Japan, Feb. 28, 1974, 49-24538
Int. Cl.² H03H *9/04*, *9/26*, *9/32*
U.S. Cl. 333—71 **7 Claims**



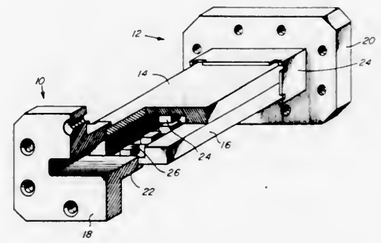
1. An electromechanical filter comprising:
a. a first resonator disposed on the input side of the filter;
b. a second resonator disposed on the output side of the filter;
c. an input coupling means and an output coupling means for coupling said first resonator to an input-side circuit and said second resonator to an output-side circuit, respectively; and
d. a plurality of third resonators, at least two in number, disposed between said first and second resonators, wherein said third resonators are coupled mechanically in parallel with respect to each other and each of said third resonators are mechanically coupled to said first and second resonators by a plurality of input-side and output-side coupler pairs so that one of said first and second resonators is in a reverse phase relationship with a predetermined one of said third resonators, and wherein more than five percent difference in coupling coefficient is given between at least one of said input-side and output-side coupler pairs.

3,949,327

WAVEGUIDE LOW PASS FILTER

Harry F. Chapell, Maynard, Mass., assignor to Sage Laboratories, Inc., Natick, Mass.

Filed Aug. 1, 1974, Ser. No. 493,698
Int. Cl.² H01P *1/20*, *3/12*, *5/08*
U.S. Cl. 333—73 W **4 Claims**



1. A waveguide low pass filter structure comprising sequential ridged waveguide capacitive and inductive sections wherein a shunt capacitance is associated with each ridge and a series inductance exists between ridges, said series inductances being selected for operation in the evanescent mode for the desired passband, and said shunt capacitance selected to support only one mode in both the passband and primary stop band.

3,949,328

VARIABLE-REFLECTIVITY DEVICE FOR VARYING OUTPUT POWER OF MICROWAVE GENERATOR

Claude Levaillant, Paris, France, assignor to C.G.R.-MeV, France

Filed Mar. 20, 1975, Ser. No. 560,239
Claims priority, application France, Mar. 22, 1974, 74.09848
Int. Cl.² H01P *1/22*
U.S. Cl. 333—81 B **8 Claims**

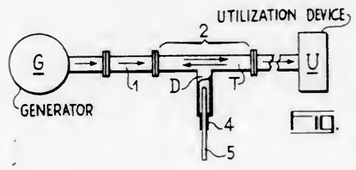
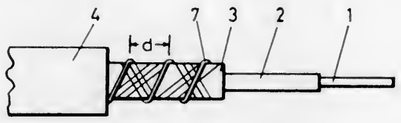


FIG. 10.

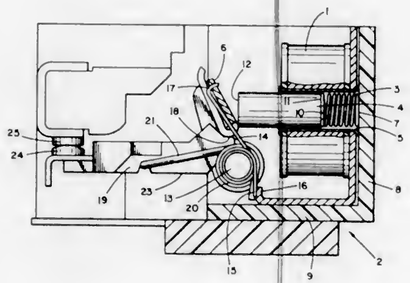
1. A microwave reflector device which makes it possible to deliver a predetermined quantity of the power produced by a microwave generator, comprising a unidirectional transmission element and a reflector system, said reflector system comprising a first waveguide of rectangular section, tapped into one of the sides of a waveguide arranged at the output of said unidirectional element, said first waveguide being terminated by a terminal metal plate to which there is fixed, perpendicularly thereto, at least one cylindrical metal sleeve in which there can slide, parallel to the axis of said waveguide, a piston made of a dielectric material, the internal diameter of said sleeve being such that at the operating frequency of the generator the sleeve acts as a circular cut-off waveguide.

3,949,329
RADIATING TRANSMISSION LINES
David James Reginald Martin, Leatherhead, England, assignor to Coal Industry (Patents) Ltd., London, England
Filed Jan. 22, 1974, Ser. No. 435,415
Claims priority, application United Kingdom, Feb. 13, 1973, 06938/73
Int. Cl.² H01Q 13/28
U.S. Cl. 333—84 L 6 Claims



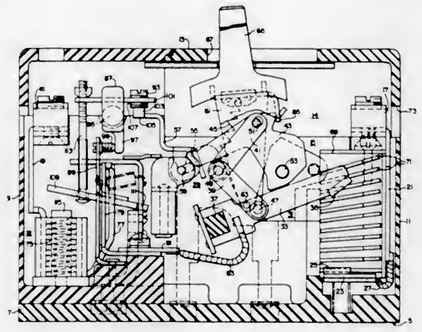
1. A coaxial cable leaky feeder radiating transmission line comprising an inner conductor, a dielectric surrounding the inner conductor, a perforate symmetrical outer conductor surrounding the dielectric, and including helical inductance means added to the outer conductor and wound in spaced convolutions in one helical direction for increasing inductance of the outer conductor decreasing velocity of a surface wave propagated along the outer conductor.

3,949,330
COIL AND TRIP MECHANISM
John M. Winter, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.
Filed Dec. 23, 1974, Ser. No. 535,903
Int. Cl.² H01H 83/06; H01F 7/08
U.S. Cl. 335—20 12 Claims



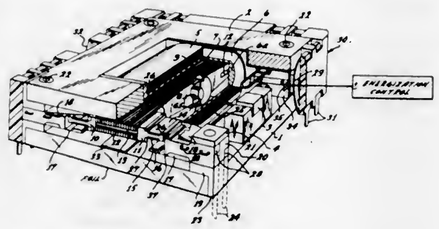
1. A coil and trip mechanism to interrupt an electrical circuit, including a coil, armature means comprising dual armatures both electromagnetically and operatively associated with said coil for movement between a latched position and a tripped position, and auxiliary stored energy means operable on energization of said coil to supplementally urge said armature means in the same direction of movement as does the electromagnetic force of said coil when energized, said stored energy means including first and second biasing means each of which is associated with a respective one of said dual armatures and oppositely biased toward each other, one of said biasing means being dominant and biasing said oppositely biased dual armatures when said coil is de-energized in the same direction opposite to said direction of movement when said coil is energized.

3,949,331
CIRCUIT BREAKER WITH ADJUSTABLE THERMAL TRIP UNIT
Albert R. Cellerini, Beaver, and John P. Majcher, Beaver Falls, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 15, 1974, Ser. No. 470,107
Int. Cl.² H01H 75/12
U.S. Cl. 335—45 4 Claims



1. A circuit interrupter trip unit comprising a circuit breaker mechanism having separable contacts adapted to be connected as part of a distribution system, the circuit breaker mechanism comprising a releasable member movable when released from a latched position to effect opening of the contacts, a trip bar movable to a tripped position to effect release of the releasable member and being biased in the latched position, a stationary magnetic structure of each conductor of the distribution system and comprising a coil and core assembly and movable in response to excessive overload currents, a lever armature associated with each stationary magnetic structure and operatively connected to the trip bar for moving the trip bar to the unlatched position, an elongated bimetal movable in response to overload currents to effect movement of the trip bar to the unlatched position, and adjustable means on the trip bar for increasing and decreasing the amount of movement of the trip bar required for releasing the releasable member.

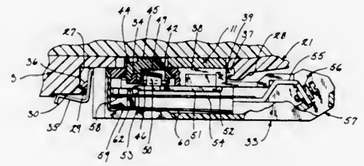
3,949,332
RAPID ACTION RELAY
Hans-Werner Reuting, Peine, Germany, assignor to Elmeg Elektro-Mechanik GmbH, Peine, Germany
Filed July 3, 1974, Ser. No. 485,322
Claims priority, application Germany, July 9, 1973, 2334838; Aug. 29, 1973, 2343444
Int. Cl.² H01H 51/22
U.S. Cl. 335—81 19 Claims



1. In an electromagnetic relay having an armature, an energizing coil, a yoke structure for completing a magnetic circuit,

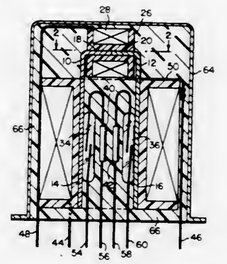
which includes a working air gap between the yoke structure and the armature and a premagnetization comprising
the magnetic circuit having a magnetic reluctance which is very small in relation to the reluctance of the working air gap, the magnetic circuit being further constructed for a non-linear premagnetization characteristics in dependance upon the position of the armature in the air gap with flat characteristics in a median position of the armature of non-abutment with the yoke structure and steep increase of the premagnetization characteristics close to such abutment; and
means for controlling the energization of the coil for at least almost completely offsetting the attraction of the armature as resulting from the premagnetization in the abutment position of the armature, with increasing energization for positions of the armature off the armature tending to move the armature further away from the previously held abutment position.

3,949,333
AUXILIARY SWITCH FOR ELECTROMAGNETIC CONTACTOR
Lawrence F. Freitag, Bayside; Joseph E. Koziczkowski; Donald V. Zunft, both of Greendale, and Glenn W. Schwantes, Sussex, all of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.
Filed July 12, 1974, Ser. No. 487,975
Int. Cl.² H01H 67/02
U.S. Cl. 335—132 7 Claims



1. An electromagnetically operated switch the combination comprising:
a base having posts which extend forward from a guideway;
a contact enclosure connected to the base and extending forward therefrom at one of its ends, said enclosure including a set of stationary contacts;
an electromagnet supported by said base and including a stationary yoke and a movable armature;
an actuator connected to said armature and mounted to slide in said guideway along an actuator axis when said electromagnet is operated;
movable contacts connected to said actuator for movement along said actuator axis between an opened position and a closed position in which they engage stationary contacts;
a cover fastened to said posts and disposed forward of said actuator; and
an auxiliary contact cartridge mounted to said base and cover alongside said movable actuator, said cartridge including an auxiliary movable contact and a cam member which is slidably mounted to said auxiliary contact cartridge and which operates in combination witht a cam follower to translate the sliding motion of said actuator along said actuator axis to a motion which is substantially perpendicular thereto and to thereby operate said auxiliary movable contact.

3,949,334
COMPACT REED SWITCH RELAY
Larry L. Launt, Livonia, N.Y., assignor to Cunningham Corporation, Honeoye Falls, N.Y.
Filed Apr. 21, 1975, Ser. No. 569,913
Int. Cl.² H01H 51/27
U.S. Cl. 335—153 13 Claims



1. An electromagnetic relay comprising:
a U-shaped core of remanent magnetic material in the form of two legs interconnected by a bight;
a first energizing coil encircling the bight of said core;
a second energizing coil encircling both legs of said core; and
a reed switch disposed in proximity to at least one of said legs with its magnetic axis substantially parallel thereto.

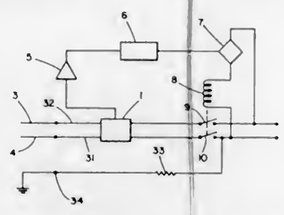
3,949,335
REED SWITCH CONSTRUCTION
David W. Morgan, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Apr. 21, 1975, Ser. No. 569,861
Int. Cl.² C03C 3/08; E05C 7/06; H01H 1/66
U.S. Cl. 335—154 5 Claims

1. A reed switch embodying reeds composed of a magnetic, cobalt-iron-vanadium alloy having a thermal coefficient of expansion within the range of 95–105 × 10^{-7} (25°–300°C.), and a tubular glass envelope having an expansion coefficient matching that of the alloy below the glass setting point and being hermetically sealed to the reeds, the envelope being drawn from a glass having a working temperature below 950°C. and being composed essentially of, in percent by weight as calculated from the glass batch on an oxide bases, 46–54% SiO_2, 2–8% B_2O_3, 0–4% Li_2O, 0–12% Na_2O, 0–10% K_2O, the total content of $Li_2O + Na_2O + K_2O$ being 8–13%, 0–6% CaO, 13–20% BaO, 5–10% ZnO, the total content of CaO + BaO + ZnO being 25–35%, 0–2% TiO_2, 0–4% ZrO_2, and 0.5–5.0% Fe_2O_3.

3,949,336
SEQUENTIAL RESETTING CIRCUIT INTERRUPTER
Robert E. Dietz, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.
Filed Jan. 8, 1975, Ser. No. 539,365
Int. Cl.² H01H 9/20
U.S. Cl. 335—166 11 Claims

1. A sequential resetting circuit interrupter for an electrical device, including a first pair of contacts comprising first and second contacts to interrupt a neutral current path in which they are connected, a second pair of contacts comprising third and fourth contacts to interrupt an electrified current path in which they are connected, said first and third contacts comprising a third contact pair connected on the line side of said interrupter to respective neutral and electrified line conductors, said second and fourth contacts comprising a fourth contact pair connected on the load side of said interrupter to respective neutral and electrified conductors leading to a load, at least one of said third and fourth contact pairs being movable relative to the other between a contact open and a

contact closed position, contact carrier means to carry said one pair of movable contacts between a contact open and a contact closed position, and sequential resetting means asso-



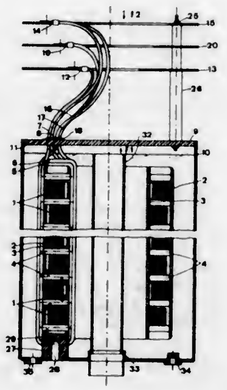
ciated with said contacts and said carrier to close said first pair of contacts first when resetting and said second pair of contacts thereafter.

3,949,337

SELF-INDUCTION DEVICE FOR GENERATING HARMONICS

Joseph Trine, Oupeye, Belgium, assignor to Elphiac, Charleroi, Belgium

Filed Nov. 25, 1974, Ser. No. 526,948
Claims priority, application Belgium, Nov. 28, 1973, 5536
Int. Cl.² H01F *27/10*
U.S. Cl. 336—60 **6 Claims**



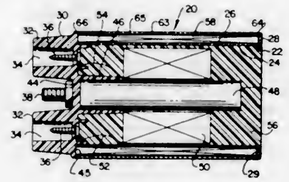
1. A self-induction device capable of steep saturation when the instantaneous value of a current flowing therethrough goes beyond a given threshold value, comprising an annular magnetic core including a plurality of toroid coils of magnetic material, each of said toroid coils having the same radial width, two concentric tubes of insulating material, one of said tubes being at the inside and the other of said tubes being at the outside of said core, each second toroid coil having an internal diameter equal to the external diameter of the internal tube, each other second coil having an external diameter equal to the internal diameter of the external tube, insulating radial spacers inserted between said tubes for supporting said toroid coils and for defining a space through which flows a refrigerating fluid, said fluid flowing alternately along the external and internal sides of the toroid coils and through the space provided between the horizontal sides of said toroid coils by said spacers, at least one insulated conductor coil embracing said annular magnetic core, a tank enclosing said magnetic core and said conductor coil, said tank being provided with at least one input conduit for feeding said refrigerating fluid to said space and at least one output conduit for said fluid.

3,949,338

IGNITION COIL

Bob O. Burson, East Longmeadow, Mass., assignor to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Filed June 10, 1974, Ser. No. 477,965
Int. Cl.² H01F *27/02*
U.S. Cl. 336—92 **1 Claim**



1. An ignition coil comprising a tubular shell open at both of its ends and having coaxial generally cylindrical inner and outer surfaces, an elongated core received in said shell and arranged generally parallel to the longitudinal axis of said shell, a secondary winding positioned on said core and also received in said shell, a coil head located adjacent and closing one end of said shell, said coil head having a longitudinally extending recess which receives one end of said core, a potting material filling the otherwise empty space inside said shell and restraining said shell, said core, said secondary winding and said coil head against axial movement relative to one another, and a primary winding received on said outer generally cylindrical surface of said shell, said coil head including two high tension towers extending outwardly from the remainder thereof and each having a recess for receiving an end portion of a high tension lead, two high tension terminals carried by and passing through said coil head, each of said high tension terminals having an outer portion located in the recess of a respectively associated one of said high tension towers and adapted to make electrical connection with an end portion of a high tension lead inserted in such associated recess, each of said high tension terminals also having an inner portion exposed to the cylindrical chamber defined by said inner surface of said shell, two low tension terminals carried by and passing through said coil head, each of said low tension terminals having an outer portion located on the outer side of said coil head and adapted for electrical connection to an external lead and each of said low tension terminals also having an inner portion exposed to said cylindrical chamber, means connecting the opposite ends of said primary winding to respective ones of said two low tension terminals, and means connecting the opposite ends of said secondary winding respectively to said inner portions of said two high tension terminals.

3,949,339

ANGULAR POSITION TRANSDUCER

Charles J. Kennedy, Pasadena, Calif., assignor to C. J. Kennedy Company, Altadena, Calif.

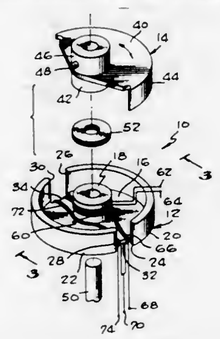
Filed Nov. 18, 1974, Ser. No. 524,635
Int. Cl.² H01F *21/06*
U.S. Cl. 336—135 **7 Claims**

1. An angular position transducer comprising the combination of:

a core element having a central hub portion, a pair of generally circular outer rim portions disposed on opposite sides of and spaced apart from the central hub portion and means coupling the outer rim portions to the hub portion;

an armature element having a central hub portion disposed adjacent the central hub portion of the core element, a generally circular outer rim portion spaced apart from the central hub portion on only one side of the central hub portion and means coupling the outer rim portion to the hub portion, the armature element being rotatable relative to the core element about an axis of rotation extending through the central hub portion to vary the position of the outer rim portion relative to the outer rim portions of the core element;

means at least partially surrounding the hub portion of the core element for providing magnetic flux therein, the magnetic flux flowing through the central hub portion of the armature element and the means coupling of the



armature element and into the outer rim portion of the armature element;

first means for sensing magnetic flux, said first means being coupled to the core element adjacent one of the pair of outer rim portions of the core element; and

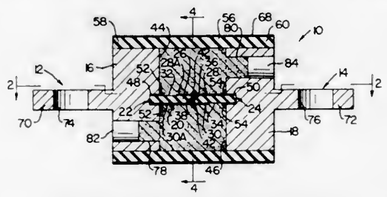
second means for sensing magnetic flux, said second means being coupled to the core element adjacent the other one of the pair of outer rim portions of the core element.

3,949,340

FUSE CONSTRUCTION

Robert B. Humphreys, Kettering, Ohio, assignor to Micro Devices Corporation, Dayton, Ohio

Filed May 22, 1970, Ser. No. 39,710
Int. Cl.² H01H *85/04*
U.S. Cl. 337—159 **10 Claims**



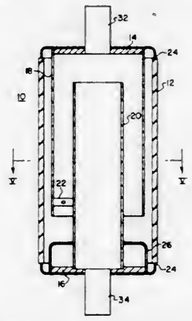
1. A construction comprising, two opposed, spaced electrical conductors with opposite, inwardly directed conductor ends, a rigid fuse plate member having opposite plate edges secured to said conductor ends, said fuse plate having an inner insulative sheet with opposite outer conductive sheet faces, said outer conductive sheet faces each having its peripheral edge inwardly spaced from the peripheral edge of said inner insulative sheet throughout the entire peripheral edge of said inner insulative sheet, one of said sheet faces having an electric current breaking open band adjacent one of said conductors and the other of said sheet faces having another electric current breaking open band adjacent the other of said conductors, a fuse pin passing through a center part of said insulative sheet with its fuse pin ends secured to said conductive faces between said open bands, so that said bands cannot break the electric current passing between said conductors while said fuse pin does not blow, and said bands break said electric current when said fuse pin blows, each said conductor ends having a groove therein defining a bottom wall of said groove and receiving an opposite plate edge in such a manner that only said insulative sheet engages said bottom wall of said groove because said conductive sheet faces at that plate edge are inwardly spaced from the peripheral edge of said insulative sheet, said open bands being respectively adjacent said conductor ends and slightly spaced therefrom so that conductive parts of said plate can be secured to each conductor end on both sides of said plate, said open bands being offset relative to each other and to said opposite plate edges so that opposite sides of said fuse plate are substantially identical to each other except that the same are turned approximately 180° relative to each other whereby each side of said plate has a major conductive sheet face portion extending from one conductor end almost to the other conductor end to provide a relatively rigid bending resistance to said plate.

3,949,341

POWER VACUUM FUSE USING COAXIAL CYLINDERS

Sidney J. Cherry, Elmira, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 3, 1975, Ser. No. 546,844
Int. Cl.² H01H *85/04*
U.S. Cl. 337—161 **13 Claims**



1. A vacuum fuse comprising:

a highly evacuated elongated insulating envelope;

a pair of end plates attached in sealing relationship to the ends of said highly evacuated insulating envelope rendering it vacuum tight;

a first hollow cylindrical electrode, electrically and mechanically connected to one of said end plates, extending longitudinally within said highly evacuated elongated insulating envelope;

a second electrode, electrically and mechanically connected to said end plate opposite the end plate to which said first electrode is connectedm extending longitudinally within said highly evacuated elongated insulating envelope and partially within said first hollow cylindrical electrode; and,

a fuse link disposed generally radially with respect to said highly evacuated insulating envelope electrically connecting said first hollow cylindrical electrode and said second electrode.

3,949,342

ELECTRIC FUSE FOR ELEVATED CIRCUIT VOLTAGES

Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed Apr. 7, 1975, Ser. No. 565,368
Int. Cl.² H01H *85/04*
U.S. Cl. 337—161 **7 Claims**

1. An electric fuse for elevated circuit voltages including

a. a tubular casing of electric insulating material;

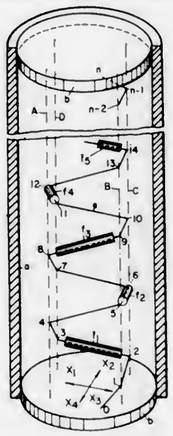
b. a pair of terminal elements arranged at the ends of said casing and closing said casing;

c. a pulverulent arc-quenching filler inside said casing;

d. a fusible element embedded in said filler conductively interconnecting said pair of terminal elements, said fusible element being wound in quarter turn sections of

substantially constant pitch around the lateral sides of a space in the form of a four sided prism; and

e. a plurality of beads of a gas-evolving material supported by said fusible element, positioned on all four sides of said space and substantially equally distributed among said



four sides thereof, said beads being mounted periodically on said quarter turn sections of said fusible element in such a way that bead-bearing quarter turn sections of said fusible element alternate with equal numbers of non-bead-bearing quarter turn sections thereof.

3,949,343

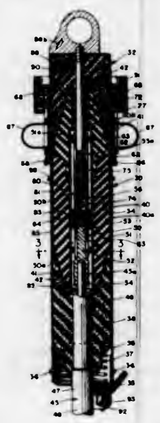
GROUNDED SURFACE DISTRIBUTION APPARATUS

Edward H. Yonkers, Wilmette, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Division of Ser. No. 4,396, Jan. 20, 1970, Continuation of Ser. No. 660,748, Aug. 15, 1967, abandoned. This application Aug. 3, 1971, Ser. No. 168,716

Int. Cl.² H01H *85/02*; **H01R** *13/52*

U.S. Cl. 337—192 **8 Claims**



1. A totally enclosed electrical component for readily removable installation in a run of medium-voltage cable between a source and a principal load, comprising

a circuit element to be enclosed,

a defined body of high dielectric strength material enclosing said circuit element from the exterior environment, first connector elements permanently and hermetically attached to said component and electrically communicating with said circuit element, and second connector elements adapted for sealed connection to the cable and formed of shape complementary to said first connector elements to mate with said first connector elements to form an hermetically sealed releasable and reconnectable joint of low leakage under high potential stress between the cable and the component, all electrical conductors passing from the exterior environment to the interior of said defined body being covered exteriorly of said defined body by fluid-impervious insulating material of thickness and dielectric strength sufficient to maintain electrical integrity of said connector elements in hostile environments under the voltage levels imposed thereon, whereby the component may be totally enclosed when installed in a hostile environment without need of enclosure for protection against that environment beyond that normally provided for the cable itself.

3,949,344

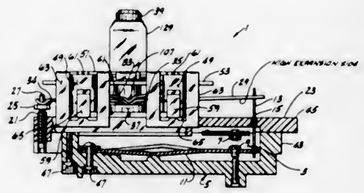
THERMOSTATIC CONTROL APPARATUS

John T. Hancock, Versailles, Ky.; James B. Allen, Richardson, Tex.; Glen C. Shepherd, Garland, Tex., and Joe W. Crawford, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 9, 1974, Ser. No. 530,629

Int. Cl.² H01H *37/12*

U.S. Cl. 337—347 **16 Claims**



1. A thermostatic control apparatus comprising:

a switch;

a switch body housing said switch;

an actuator arm extending from said switch body, said arm being movable relative to said switch body between first and second positions for opening and closing said switch;

a support extending from said switch body;

a thermostatic strip of bimetal material spaced from said said switch body, one end of said strip being supported by said support and the other end of said strip being mechanically linked to said arm;

selectively operable adjustment means engageable with said strip between its ends on one face thereof adjacent said switch body, said adjustment means being operable for adjusting said strip to open and close said switch at various preselected temperatures; and

spring means for biasing said strip into engagement with said adjustment means whereby changes in temperature of said strip cause said arm to move between its first and second positions thereby to open and close said switch, and whereby under extreme ambient temperature conditions said thermostatic strip is not unduly stressed but may flex against the bias of said spring means.

3,949,345

MULTIPLE MAGNETORESISTANCE ELEMENT

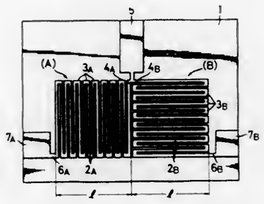
Yoshimi Makino, Fujisawa; Akihisa Narimatsu, Naka, and Masao Horie, Tachikawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 13, 1974, Ser. No. 523,339

Claims priority, application Japan, Nov. 17, 1973, 48-129616

Int. Cl.² H01C *7/16*

U.S. Cl. 338—32 R **7 Claims**



1. A multiple magnetoresistance element comprising:

a. first and second magnetoresistance stripe groups aligned in different directions formed of ferromagnetic material having an anistropic effect of magnetoresistance, connected electrically in series with each other and spaced from each other by a predetermined distance, said first and second magnetoresistance stripe groups comprising a plurality of magnetoresistance stripes having main current path portions, connected electrically in series with each other and spaced from each other by a predetermined distance;

b. an output terminal connected to a connecting point of said first and second magnetoresistance stripe groups;

c. current supply terminals connected to ends of said first and second magnetoresistance stripe groups; and

d. a power source connected to said current supply terminals.

3,949,346

MAGNETORESISTIVE ELEMENT

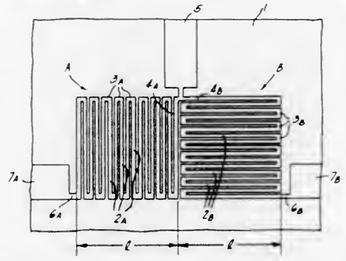
Yoshimi Makino, Fujisawa; Hideo Hara, Yokohama, and Yoshimoto Ohmura, Mitaka, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 13, 1974, Ser. No. 523,365

Claims priority, application Japan, Nov. 17, 1973, 48-129614; Nov. 17, 1973, 48-129615

Int. Cl.² H01C *7/16*

U.S. Cl. 338—32 R **6 Claims**



1. A magnetoresistive element for detecting spaced alternating magnetic fields comprising:

first and second ferromagnetic strips, each having an anisotropic effect of magnetoresistance and having a main current path portion,

means for electrically connecting said strips in series,

said strips being spaced from each other by a distance equal to ¼ *n* λ, where n is an integer, and where λ is the wave length of the alternating magnetic field to be detected,

input terminals connected to the opposed ends of said strips, and

an output terminal connected to the junction between said strips.

3,949,347

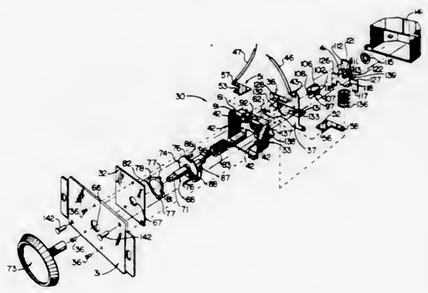
SWITCHING POTENTIOMETER CONTROL UNIT

Benjamin F. Gilbreath, Richardson, Tex., assignor to Hunt Electronics Co., Dallas, Tex.

Filed Apr. 25, 1975, Ser. No. 571,575

Int. Cl.² H01C *5/02*

U.S. Cl. 338—172 **13 Claims**



1. A switching potentiometer which comprises:

a planar base having a resistive strip formed thereon;

a shaft;

means mounting said shaft with its axis normal to said base for axial reciprocating movement and for rotational movement about said axis;

a wiper contact;

means mounting said wiper contact on said shaft;

resilient means for urging said shaft in a first axial direction to urge said wiper contact into engagement with said resistive strip; and

switching means responsive to the movement of said shaft in a second axial direction against the urging of said resilient means for a predetermined distance sufficient to disengage said wiper contact from said resistive strip.

3,949,348

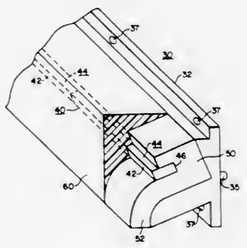
SONAR APPARATUS

John A. Dorr, Crofton, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 15, 1970, Ser. No. 80,988

Int. Cl.² H04B *13/00*

U.S. Cl. 340—8 R **4 Claims**



1. Transducer apparatus comprising:

a. transducing means having an active surface for transmitting and/or receiving acoustic energy;

b. said transducing means having associated therewith a certain beam pattern having a direction of maximum acoustic response and wherein acoustic response diminishes relative to said maximum as the angular displacement from said maximum is increased positively or negatively, and in accordance with said beam pattern; and

c. acoustic absorbing material having an acoustic impedance substantially equal to that of the medium in which said apparatus operates and positioned relative to said active surface to absorb a portion of forwardly projected and/or received acoustic energy to modify said beam pattern to reduce the response over a predetermined zone forward of said active surface and angularly displaced from said direction of maximum response.

3,949,349

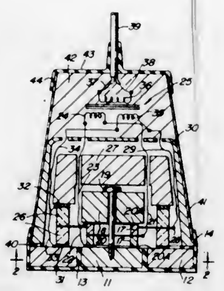
DUAL ELECTROACOUSTIC TRANSDUCERS

Frank Massa, and Donald P. Massa, both of Cohasset, Mass., assignors to Fred M. Dellorfano, Jr. and Donald P. Massa, both of Cohasset, Mass., Trustees of the Stoneleigh Trust u/d/t December 4, 1973

Continuation of Ser. No. 243,694, April 13, 1972, abandoned. This application Feb. 13, 1974, Ser. No. 442,214

Int. Cl.² H04B *13/00*

U.S. Cl. 340—10 **6 Claims**



1. In a composite directional electroacoustic transducer having an axis of symmetry and characterized in that the region of maximum sensitivity occurs in a circular zone subtending a conical angle whose apex is at the intersection of the axis of symmetry of the transducer with the transducer surface, a first electromechanical transducer means driving an annular plate with an opening through its center, a second electromechanical transducer means driving a piston located coaxially within said opening, said piston being spaced peripherally within the opening in said annular plate, the vibratile surfaces of said piston and said annular plate are both perpendicular to said axis of symmetry of the transducer, a first electrical connection means attached to said first electromechanical transducer means, a second electrical connection means attached to said second electromechanical transducer means, a third electrical connection means providing common external terminals for operating said composite transducer from a single source of electrical power, and means associated with at least one of said first and second electrical connection means for modifying the relative phase of the common electrical signal which appears across said external terminals such that the signal appearing across said first electromechanical transducer means is different in phase compared to the signal appearing across said second electromechanical transducer means.

3,949,350

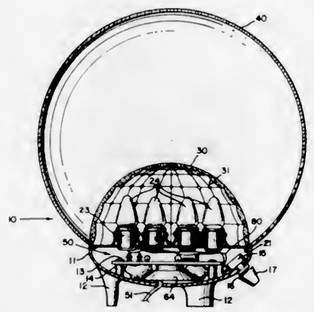
ORNAMENTAL LIGHTING DEVICE

Richard D. Smith, 1416 Hermosa Ave., Hermosa Beach, Calif. 90254

Filed Aug. 7, 1974, Ser. No. 495,321

Int. Cl.² F21P *1/02*

U.S. Cl. 240—10 R **5 Claims**



1. An ornamental lighting apparatus, comprising:

base structure;

circuit means mounted within said base structure and responsive to an audio signal for generating first and second output signals corresponding, respectively, to the bass and treble tones of the audio signal to which said circuit means is responding;

first and second differently colored lamp means mounted on said base structure and connected to said circuit means, said first lamp means being responsive to said first output signal to illuminate as a function thereof and said second lamp means being responsive to said second output signal to illuminute as a function thereof;

first light transmitting enclosure means mounted on said base structure to enclose said first and second lamp means whereby the colored light radiated from said lamp means is transmitted by said first enclosure means to generate an ornamental display of colored light, said first enclosure means being a domeshaped prismatic lens means, second light transmitting enclosure means mounted on said base structure enclosing said first enclosure means, said second enclosure means being translucent and being in the form of a globe providing a display surface for light transmitted from said lens means, said lens means having a plurality of lens surfaces which are flat on their outer sides and convex on their inwardly facing sides, the prismatic lens means being positioned to extend into the first enclosure means.

3,949,351

VARIABLE DELAY LINE

Arthur E. Clark, Adelphi, and Howard T. Savage, Greenbelt, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

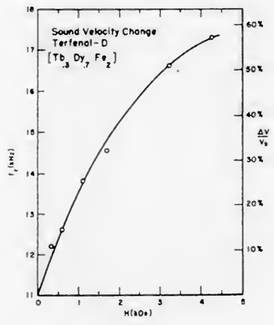
Filed June 3, 1974, Ser. No. 476,119

Int. Cl.² H04B *11/00*

U.S. Cl. 340—15 **39 Claims**

1. A device for varying the velocity of sound waves comprising:

a sound wave transmission element composed of a material selected from the group consisting of alloys and true chemical compounds, said material being of the formula $RxFe_{1-x}$ wherein R is a rare earth selected from the group consisting of Sm, Tb, Dy, Ho, Er, Tm, and mixtures thereof and wherein $0.1 < x < 0.9$; and



means for generating a magnetic field of adjustable strength in the transmission element.

3,949,352

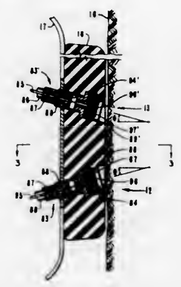
VELOCITY LOGGER FOR LOGGING INTERVALS

Charles B. Vogel, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 520,021, Dec. 13, 1965, Pat. No. 3,585,580, which is a continuation of Ser. No. 128,167, July 31, 1961, abandoned. This application Jan. 17, 1969, Ser. No. 792,091

Int. Cl.² G01V *1/40*

U.S. Cl. 340—15.5 BH **5 Claims**



1. Apparatus for examining a formation through which a borehole extends, comprising

means for transmitting a beam of pulses of ultrasonic acoustic energy from the borehole into the formation to propagate substantially all of the acoustic energy in the formation as shear waves,

the transmitting means including transducer means mounted in a housing of acoustic energy absorbing material, the housing being so formed that acoustic energy is transmitted from the transducer means in a beam into the formation so disposed with respect to the borehole wall that compression waves are substantially totally reflected from the borehole wall and are substantially totally absorbed by the acoustic energy absorbing material,

receiving means in spaced relation to the transmitting means for generating an electrical signal in response to the acoustic energy received in the borehole from substantially only the shear wave acoustic energy in the formation, and

means responsive to the transmitting means and to the electrical signal for determining the transmission time of the shear wave acoustic energy between the transmitting means and the receiving means.

3,949,353

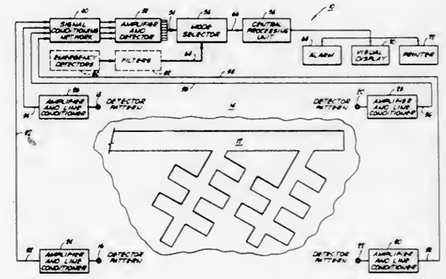
UNDERGROUND MINE SURVEILLANCE SYSTEM

Kenneth H. Waters, and James C. Fowler, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation of Ser. No. 423,279, Dec. 10, 1973, abandoned. This application June 23, 1975, Ser. No. 589,569

Int. Cl.² G01V *1/16, 1/22*

U.S. Cl. 340—15.5 MC **8 Claims**



1. A system for continual surveillance of an underground mine location having a tunnel system, said system comprising:

plural patterns of radially arrayed seismic energy receivers disposed in spaced locations of the earth's surface above said underground mine in predetermined relationship with respect to said tunnel system of said mine, wherein said radial arrays of receivers each consists of plural lines of equi-spaced geophones with the lines extending outward at selected equi-angular disposition from a selected point at the respective location;

means receiving and amplifying received signals from each of the plural radially arrayed receivers from each pattern to provide plural seismic signal outputs;

means receiving and time-orienting said plural seismic signal outputs to determine the character of seismic energy and directionality of received seismic signals; and

means indicating said character of seismic energy and respective origin of said seismic energy within said underground mine location and the tunnel system thereof.

3,949,354

APPARATUS FOR TRANSMITTING WELL BORE DATA

Jackson R. Claycomb, Lafayette, La., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 15, 1974, Ser. No. 470,081

Int. Cl.² G01V *1/40*

U.S. Cl. 340—18 LD **33 Claims**

1. Apparatus adapted for producing signals at the surface representative of at least one downhole condition occurring while drilling a borehole and comprising:

a body adapted to be tandemly coupled into a tubular drill string and defining a fluid passage for carrying drilling fluids being circulated to a borehole-drilling device dependently coupled therebelow;

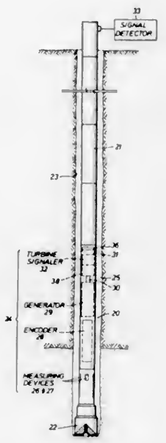
data-signaling means on said body and including circuit means for producing digitally-encoded electrical data signals;

power-supply means on said body and including an electrical generator adapted to be rotatively driven for producing electrical power for said circuit means;

impeller means coupled to said generator and cooperatively arranged in said fluid passage for rotatively driving said generator upon flow of drilling fluids through said fluid passage and said impeller means; and

signal-producing means cooperatively arranged on said impeller means and adapted for partially obstructing the

flow of drilling fluids through said impeller means in response to said electrical data signals to selectively produce correspondingly-encoded acoustic signals in drilling fluids circulating through said body.

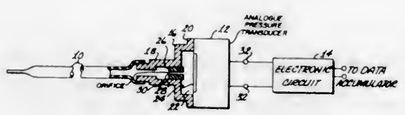


3,949,355

SENSOR FOR VEHICULAR TRAFFIC DATA ACCUMULATING SYSTEMS

Reed A. Newmeyer, AMF Box 22207, Salt Lake City, Utah 84122

Continuation of Ser. No. 402,170, Oct. 1, 1973. This application Feb. 7, 1975, Ser. No. 547,927
Int. Cl.² G08G *1/00*
U.S. Cl. 340—38 R **6 Claims**



1. A sensor mechanism for use in a vehicular traffic data accumulating system comprising:

a. a pneumatic road tube having at least one open end, said tube producing multipulse pressure waves within the hollow bore thereof when contacted by the wheels of one axle of the vehicle;

b. means connected to the open end of said pneumatic road tube for reducing the dynamic amplitude range of the pressure waves passing therethrough;

c. a pressure sensitive transducer coupled to receive the pressure waves from said means for reducing the dynamic amplitude range of the pressure waves and generating analog electric signals in response thereto, the generated analog electric signals having characteristics determined by the characteristics of the pressure waves; and

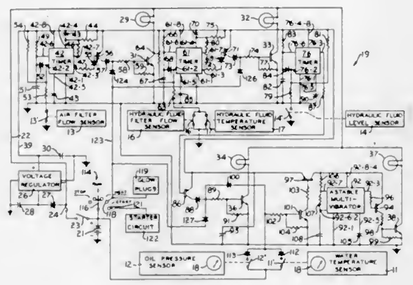
d. an electronic circuit coupled to receive the analog electric signals from said pressure sensitive transducer and produce a single pulse output signal for the pressure waves produced by the one axle of the vehicle.

3,949,356

VEHICLE SYSTEMS MONITOR DISCRIMINATING BETWEEN EMERGENCY CONDITIONS AND DEFERRABLE MAINTENANCE NEEDS

Joe E. Fuzzell, Peoria, and Allan L. Freedy, Aurora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 359,853, May 14, 1973. This application July 5, 1974, Ser. No. 485,796
Int. Cl.² B60Q *1/00*
U.S. Cl. 340—52 F **4 Claims**



1. A monitor system for signalling the existence of any of a plurality of undesirable operating conditions in a motorized vehicle which has a battery and a first electrical switch coupled thereto for starting and shutting down said motorized vehicle comprising:

at least one first sensor device for actuating a first sensor switch in response to an undesirable operating condition of a non-emergency kind which does not require immediate correction,

at least one second sensor device for actuating a second sensor switch in response to a different undesirable operating condition which is of an emergency kind requiring substantially immediate correction,

a first indicator device having means for signalling an operator and a second indicator device having distinguishably different means for signalling an operator,

first circuit means connected between said first sensor switch and said first indicator device for initiating operation of said first indicator device in response to actuation of said first sensor switch,

latching means coupled to said first indicator device for continuing said operation of said first indicator device following said initiation of operation thereof and which continues said operation of said first indicator device after said motorized vehicle is shut down,

second circuit means connected between said second sensor switch and said second indicator device for operating said second indicator device in response to actuation of said sensor switich and having means for terminating said operation of said second indicator device in response to deactuation of said second sensor switch, and

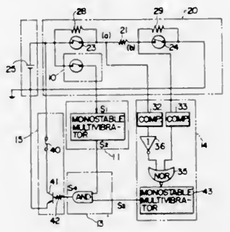
a manually operable monitor system control switch connected between said battery and said first and second circuit means for energizing said first and second circuit means to activate said monitor system and for selectively de-energizing said first and second circuit means to stop operation of said first indicator device after said first indicator device has been latched in the operated condition and said vehicle has been shut down said control switch being connected between said battery and said first circuit means independently of said first switch.

3,949,357

OPERATION RECORDER FOR MOTOR VEHICLE SAFETY DEVICE

Akio Hosaka, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 463,836, April 24, 1974, abandoned, which is a continuation-in-part of Ser. No. 314,526, Dec. 13, 1972, abandoned. This application July 30, 1974, Ser. No. 493,133
Claims priority, application Japan, Feb. 9, 1972, 47-14119
Int. Cl.² G08B *21/00*
U.S. Cl. 340—52 H **4 Claims**



1. In a motor vehicle having a collision sensor adapted to provide an output upon a collision of the motor vehicle, and a safety device adapted to be actuated by a trigger mechanism which includes an electrically actuable detonation element, having a relatively small resistance, a DC power source, first and second normally open collision responsive switch means connected to opposite sides of said electrically actuable detonation element and to said DC source, and first and second resistor means connected across first and second switch means:

an operation recorder to record a mulfunction of said safety device comprising;

first means connected to said collision sensor to receive the output thereof, said first means being operable response to the output of said collision sensor to provide a logical zero output having a predetermined time duration;

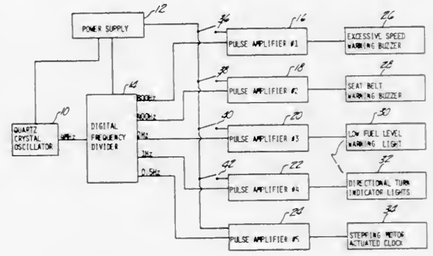
second means including a first comparator gate means responsive to a voltage at a junction between said first normally open responsive switch means and said electrically detonation element for providing a logical one output when the voltage at said junction exceeds a first predetermined reference voltage; inverter means connected to said first comparator gate means to receive the output thereof for providing a logical zero output responsive to the logical one output of said first comparator gate means; a second comparator gate means responsive to a voltage at a junction between said electrically actuable detonation element and said second normally open collision responsive switch means for providing a logical zero output when the voltage at said last mentioned junction is below a second predetermined reference voltage which is set to be relatively smaller than said predetermined first reference voltage of said first comparator gate means; an NOR logical function gate means connected to said inverter means and to said second comparator gate means to receive the outputs thereof and responsive to logical zero outputs of said inverter means and said second comparator gate means for providing a logical one output; a monostable-multivibrator connected to said NOR logical function gate to receive the output thereof to provide a logical one output having a predetermined time duration shorter than that of the output of said first means when the output of said NOR gate switches to a logical one; and AND logical function gate means connected to said first means to receive the output thereof and to said monostable-multivibrator to receive the output thereof, said AND logical function gate means being responsive to the logical one outputs of said first means and said monostable-multivibrator means for providing a logical one output; a memory means; and means, in circuitry with said memory means and AND logical function gate means, responsive to the logical one output of said AND logical function gate means for energizing said memory means.

3,949,358

SIGNALLING APPARATUS FOR AUTOMOTIVE VEHICLES

Manabu Higashi, Yamato, Japan, assignor to Niles Parts Company Limited, Tokyo, Japan

Filed Jan. 10, 1975, Ser. No. 540,216
Int. Cl.² G08B *19/00*
U.S. Cl. 340—52 F **5 Claims**



1. An electronic control apparatus for use in combination with an automotive vehicle comprising:

a common ultra-high frequency signal source;

frequency dividing means having a plurality of output lines and having its input line connected to said source for splitting said ultra-high frequency signal to a plurality of differing lesser frequency signals so that a differing frequency signal is present on each of said output lines;

signal processing means connected to each of said output lines of said frequency dividing means for individually amplifying and shaping each differing lesser frequency signal;

a plurality of electronically actuated signalling devices, each device having an input connected to the output line of one of said signal processing means so that the output from said signal processing means powers said signalling device, and

means for selectively actuating said signal processing means.

3,949,359

DIGITAL SPEED CONTROL

Morris Sorkin, Santa Monica, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 33,186, April 30, 1970. This application Apr. 9, 1973, Ser. No. 348,954
Int. Cl.² B60Q *1/54*
U.S. Cl. 340—54 **9 Claims**

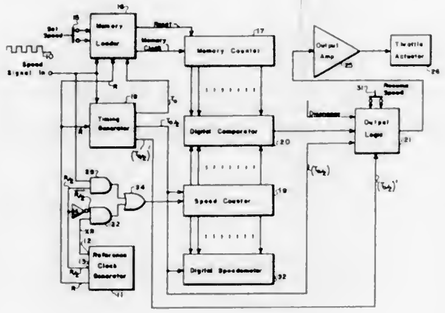
1. In a digital speed control for maintaining a vehicle at a preselected speed and for exhibiting the actual speed, the combination comprising:

a. a digital speed counter for storing a digital number representative of the actual speed of the vehicle;

b. means coupled to said speed counter for generating pulses having a pulse repetition rate proportional to the actual speed of the vehicle;

c. clock means coupled to said speed counter for controlling said speed counter for a predetermined period of time; and

d. a digital speedometer coupled to said speed counter and to said clock means for decoding the digital signal stored



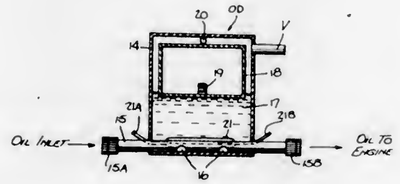
in said speed counter and for exhibiting a digital number representative of the actual speed of the vehicle.

3,949,360

OIL LEVEL DETECTOR AND INDICATOR

Richard Pignata, 63 Peter Ave., Staten Island, N.Y. 10306, and Salvadore Martocci, 275 Brich St., Emerson, N.J. 07630

Filed July 23, 1974, Ser. No. 491,469
Int. Cl.² G08B *21/00*; **H01H** *36/02*
U.S. Cl. 340—59 **6 Claims**



1. An apparatus to indicate the level of oil in a supply tank which is coupled through a gravity feed line to a motor, said apparatus comprising:

A. a detector disposed at a level below that of said supply tank and provided with a cylindrical chamber having a pipe section extending horizontally therethrough and adapted to be interposed in said line, said section being disposed adjacent a bottom wall of said chamber and having openings whereby oil leaking into said chamber creates an oil pool therein, said chamber having an air vent at the upper end thereof, a float disposed in said chamber and rising and falling with said pool, said chamber having a stop at a top wall thereof to maintain an air space between the upper end of said float and said top wall to prevent blocking said air vent, said float incorporating a permanent magnet, and a magnetically-actuatable reed switch disposed at the bottom of said chamber and actuated only when the float magnet is in proximity thereto as a result of a low oil level condition; and

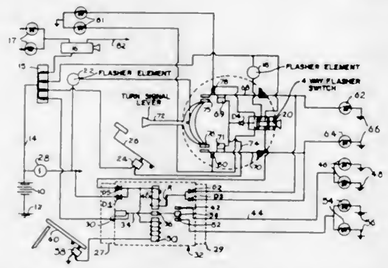
B. means connected to said switch to indicate said condition.

3,949,361

SIGNAL SYSTEM FOR AUTOMOTIVE VEHICLE

Daniel C. Replogle, 406 Spang St., Roaring Spring, Pa. 16673

Filed Mar. 4, 1974, Ser. No. 447,485
Int. Cl.² B60Q *1/26*
U.S. Cl. 340—66 **10 Claims**



1. In a signal system for a vehicle having a source of electric power with first and second terminals, an accelerator pedal, a brake pedal and a stop switch actuated thereby, a turn signal switch, stop and turn signal lamp means, the stop and turn signal lamp means being connected to said first terminal, said stop switch and turn signal switch being connected in parallel between said stop and turn signal lamp means and said second terminal; second and third signal lamp means each connected to said first terminal and first and second relay contacts connected to said second and third lamp means respectively, a movable contact connected to said second terminal, a first relay coil energizable to move said movable contact into engagement with said first contact and connected to said second terminal, a normally conductive control mans connecting said first coil to said first terminal, a second coil connected to said second terminal and energizable to move said movable contact into engagement with said second contact regardless of the condition of energization of said first coil, a normally open accelerator pedal actuated switch connected between said second coil and said first terminal and closing in response to actuation of the accelerator pedal, and means operable in response to the energization of said stop and turn signal lamp means for making said control means go to non-conduction.

3,949,362

MOTOR VEHICLE STOPPING DISTANCE WARNING APPARATUS AND METHOD

Earl N. Doyle, 1737 Campbell Road, and Xavier Garza, 2301 Wirt Road, both of Houston, Tex. 77055

Filed June 6, 1974, Ser. No. 477,032
Int. Cl.² B60K *27/00*; **B60Q** *1/00*
U.S. Cl. 340—104 **9 Claims**



3. A vehicle visual warning apparatus for visually indicating a safe stopping distance between vehicles traveling forwardly in tandem on a roadway, said visual warning apparatus comprising:

lamp means on a first vehicle for generating a beam of visible light and including means for inclinedly directing said light beam rearwardly from said first vehicle toward a roadway portion to establish a visible light pattern on the roadway surface behind said first vehicle at a point which defines a safe stopping distance between said first vehicle and a second vehicle which may be traveling forwardly in tandem relative thereto, thereby providing a visual indication of such safe stopping distance to the driver of said second vehicle; and

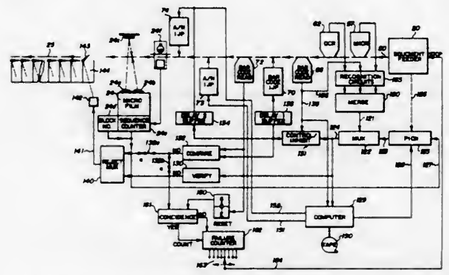
control means operably connected to said beam directing means and being responsive to changes in the speed of said first vehicle for displacing said visible beam directing means in accordance with changes in speed of said first vehicle to alter the inclination of the light beam so as to define a new safe stopping distance between said vehicles so that the driver of said second vehicle may know, by observing said light pattern, whether the distance between said vehicles is ample for safe stopping.

3,949,363

BAR-CODE/MICR/OCR MERGE

Larry E. Holm, Dallas, Tex., assignor to Recognition Equipment, Incorporated, Irving, Tex.

Filed June 28, 1974, Ser. No. 484,073
Int. Cl.² G06K *9/18*
U.S. Cl. 340—146.3 D **29 Claims**



1. A method of machine processing MICR encoded documents which are optically and magnetically read to produce independent interpretations of data in the MICR field and wherein the independent interpretations are merged to form a single output data stream which may contain ambiguities, which comprises:

a. sensing a bar-coded version of the data in said MICR field imprinted on said document;

b. generating a recognition signal indicative of characters thus bar-coded;

c. generating a final identification signal for each of said characters from said data stream and from said recognition signal;

d. inhibiting the recognition signal from the final identification signal if the data stream does not contain ambiguities; and

e. processing the MICR encoded documents in accordance with the final identification signal.

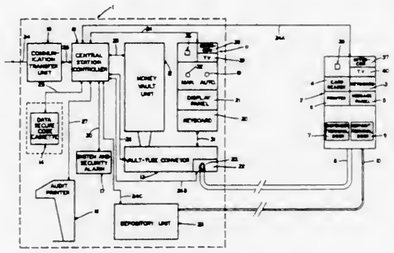
3,949,364

AUTOMATIC REMOTE BANKING SYSTEM AND EQUIPMENT

Robert W. Clark, Canton; Robert P. Barone, and Donald E. Kinker, both of North Canton, all of Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Continuation-in-part of Ser. No. 269,868, July 7, 1972, abandoned. This application Aug. 2, 1974, Ser. No. 494,231
Int. Cl.² H04Q *9/00*; **G06R** *7/01*
U.S. Cl. 340—147 A **6 Claims**

5. The method of protecting currency dispensed at an unmanned customer station in remote banking equipment of a type in which a customer station is served from a remote central control facility station; the steps of providing keyboard, card reader and message panel means at a customer station; connecting the customer and central control stations with pneumatic tube means having a terminal at each station; providing a supply of currency at the control station; enclosing the control station currency supply within vault means; locating the pneumatic tube control terminal within the vault means; delivering a selected amount of currency from the currency supply in the control station vault means to the pneumatic tube control terminal and through the pneumatic tube means to the customer station; and initiating the delivery



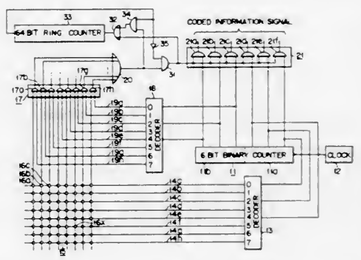
of currency from the currency supply to the customer station by entering identification and transaction data into the keyboard and card reader means and verifying such customer identity at the control station.

3,949,365

INFORMATION INPUT DEVICE

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Higashiyamato, Japan

Filed Feb. 21, 1974, Ser. No. 444,358
Claims priority, application Japan, Feb. 26, 1973, 48-22206; Feb. 26, 1973, 48-22207
Int. Cl.² H04Q *9/00*; **G08C** *1/00*
U.S. Cl. 340—168 R **2 Claims**

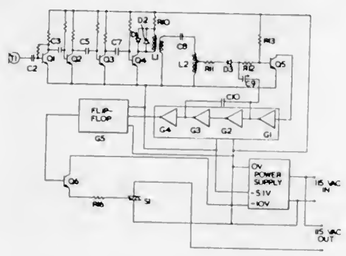


1. In a data input device comprising a matrix circuit in which the intersections between row and column lines are connected selectively by operation of a plurality of information input keys: a first counting means sequentially driven by clock pulses so as to effect a cyclical counting and adapted to supply outputs corresponding to its count value to the corresponding row line of the matrix circuit; a second counting means connected in series with the first counting means so as to effect a cyclical counting; means for providing a selected synchronizing signal corresponding to a selected intersection upon receipt of the output from the first counting means through the row and column lines defining the intersection selected by the operation of the information input keys and of the output from the second counting means; a memory means for storing the timing at which the selected synchronizing signal is to be produced; a logic circuit adapted to detect either of the coincidence and non-coincidence between the timing at which the selected synchronizing signal is produced and the timing stored in the memory means and to control the transfer of the selected synchronizing signal in accordance with the detection; and means for providing a coded information signal upon receipt of the selected synchronizing signal from the logic circuit and of the count value output of the first and second counting means.

3,949,366
REMOTE CONTROL SYSTEM FOR ELECTRICAL POWER OUTLET

Frank Spillar, and George Paclik, both of 3812 Wyewood Road, Mississauga, Ontario, Canada

Filed Sept. 9, 1974, Ser. No. 504,250
Claims priority, application Canada, Feb. 22, 1974, 193200
Int. Cl.² H04Q *1/18*; H01H *35/24*
U.S. Cl. 340—171 R **11 Claims**



1. A remote control system including a remote control receiver responsive to a predetermined sonic frequency wherein the receiver is disposed inside a housing, the surface of said housing being provided with plug means suitable for being plugged into a regular household power socket to hold said box substantially fixed with respect to said socket, the surface of said box means further comprising socket means of a type suitable for receiving a regular household appliance power cord plug, whereby said receiver can be operatively connected with an appliance in a position wherein the receiver is located between the power inlet cord of the appliance and its associated household power socket, the receiver comprising:

a. sound receiving means for conversion of sound waves into alternating electrical voltage;

b. amplifier means connected to the sound receiving means for amplifying said alternating electrical voltage;

c. amplitude limiting means operatively connected to said amplifier means;

d. impedance transformation means connected to said amplitude limiting means;

e. Frequency selecting means for selecting a predetermined frequency of said alternating electrical voltage connected to the impedance transformation means;

f. switch actuating means including a flip-flop operated in response to the receipt of a signal of said predetermined frequency; and

g. switch means connected to the switch actuating means.

3,949,367
DRUM PRINTER CONTROL

Michael J. Cochran, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

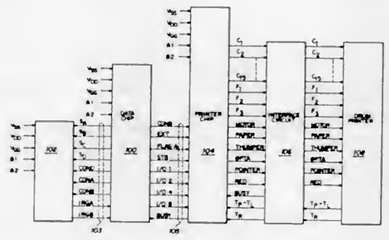
Filed Dec. 28, 1973, Ser. No. 429,239
Int. Cl.² G06F *3/12*
U.S. Cl. 340—172.5 **10 Claims**

1. A printing system for printing rows of numerals using at least one semiconductor chip where drum row pulses are generated in predetermined time relation to movement of each drum character row past a print station and wherein a plurality of hammers cooperate with a like plurality of drum disks to print selected drum symbols, comprising:

a. a storage means to store a set of multi bit data words representing a set of numerals to be printed on a given line, means for inputting data to the storage means least significant digit first,

b. clock means to circulate said set of words in said storage means at a high rate compared with the rate of rotation of said drum cyclically to enable shift register output lines, the clock means circulating the words in a direction most significant digit first,

c. an output buffer store selectively connected at its input to said output lines to receive and store a state for each symbol to be printed at a designated column postion and to be connected at its outputs to drivers for said hammers, and

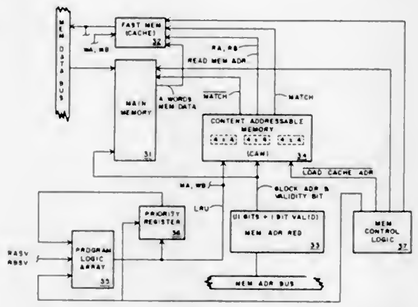


d. means responsive to rotational positions of said drum for loading and gating out the contents of said output buffer store thereby to enable printing of said characters, such means being operative to suppress leading zero numerals until a non-zero numeral is reached.

3,949,368
AUTOMATIC DATA PRIORITY TECHNIQUE

Joseph Thomas West, Boxboro, Mass., assignor to Data General Corporation, Southboro, Mass.

Filed Jan. 23, 1974, Ser. No. 436,022
Int. Cl.² G06F *13/00*
U.S. Cl. 340—172.5 **7 Claims**



1. A system for automatically maintaining a record for an order of priority of segments of data each segment stored in a separately identifiable location of a high speed memory means and comparing each segment stored in the locations with a newly received data segment to be stored in the high speed memory to generate a comparison output denoting whether or not the newly received segment is already stored in one of said locations, and where the order of priority of segments stored in the high speed memory means is based on usage of the segments, the improvement comprising

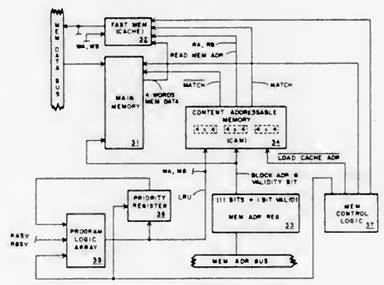
read only memory means having a bit configuration representing an algorithm, responsive to both said comparison output and a storage means output representing an existing order of segment priority, to provide a first output representing the least recently used location of the high speed memory means and a second output representing for a subsequent machine cycle the new order of priority for the segments stored in high speed memory locations, and;

storage means connected with said first and second outputs and connected for feed back during a subsequent machine cycle the new order of segment priority to an input of said read only memory means.

3,949,369
MEMORY ACCESS TECHNIQUE

William Philip Churchill, Jr., Carlisle, Mass., assignor to Data General Corporation, Southboro, Mass.

Filed Jan. 23, 1974, Ser. No. 436,023
Int. Cl.² G06F *13/00*
U.S. Cl. 340—172.5 **7 Claims**



1. In a digital computer system having a main memory means operable at a first speed, a high speed buffer means operating at a second and higher speed for temporarily storing selected portions of the main memory means, and associative memory means for temporarily storing selected main memory addresses and comparing the stored addresses with a newly received address in a read/write operation to generate comparison data, the improvement comprising

read only memory means having a bit configuration representing an algorithm and connected to said associative memory means and responsive in a read operation to both said comparison data and data representative of a previous order of priority for said stored address, to provide an output representing a new order of priority for the memory addresses stored in the associative memory means, and;

storage means connected from said read only memory means for storing said output and connected for subsequent feed back to said read only memory means as the previous order of priority.

3,949,370
PROGRAMMABLE LOGIC ARRAY CONTROL SECTION FOR DATA PROCESSING SYSTEM

George F. Reyling, Jr., Sunnyvale, and William H. Beall, Palo Alto, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed June 6, 1974, Ser. No. 477,053
Int. Cl.² G06F *9/00*
U.S. Cl. 340—172.5 **7 Claims**

1. A data processing system comprising

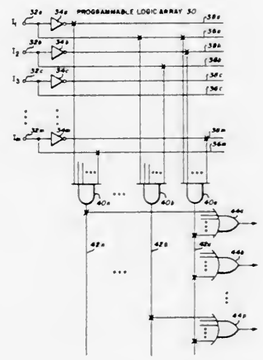
first means for storing a plurality of instructions which are of a first level and each including an operation code;

first programmed means for storing a plurality of instructions which are of a second level;

storage means for storing data information to be processed;

operation means connected to said storage means and to said first programmed means for performing controlled operations on information supplied thereto from said storage means in accordance with instructions supplied from said first programmed means; and

second programmed means connected to said first means and to said first programmed means for generating address information in accordance with the operation codes of instructions selected from said first means and supplying said address information to said first programmed means for selecting instructions to be supplied to said operation means,



one of said programmed means including a first plurality of input terminals, a first programmable addressing portion including first addressable means for generating a plurality of outputs which are each a product term and are each the equivalent of an AND function of selected inputs on said input terminals, and a programmable data portion including first data means for selectively combining said product terms to form a plurality of outputs corresponding to output data.

3,949,371
INPUT-OUTPUT SYSTEM HAVING CYCLICAL SCANNING OF INTERRUPT REQUESTS

Renzo Pederzini, Melegnano(Milan), Italy, assignor to Honeywell Information Systems, Inc., Phoenix, Ariz.

Filed Aug. 7, 1974, Ser. No. 495,362
Claims priority, application Italy, Aug. 22, 1973, 28082/73
Int. Cl.² G06F *3/04*, *9/18*; G05B *13/02*; G08B *11/00*
U.S. Cl. 340—172.5 **10 Claims**

1. In an electronic computer having a plurality of input/output channels for connection of a corresponding plurality of peripheral control units to a central processor, a system for acknowledging input/output interrupt requests sent by said peripheral control units to the central processor comprising:

a first ordered plurality of interrupt wires, each for transmitting first level interrupt request signals from a corresponding one of said peripheral control units to said central processor;

a second ordered plurality of interrupt wires, each for transmitting second level interrupt request signals from a corresponding one of said peripheral control units to said central processor;

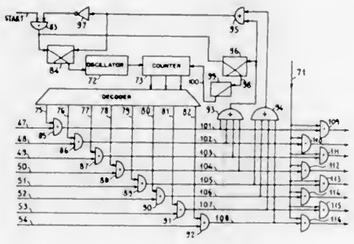
a plurality of gates, one for each of said interrupt wires, for gating the signal flow over said wires;

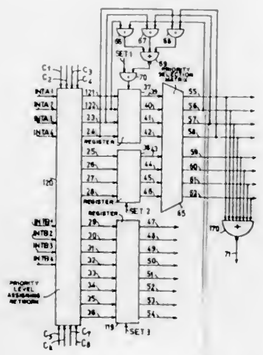
scanning means coupled to said gates for enabling in sequence, one at a time, said gates;

first control means coupled to said scanning means and responsive to said gates for stopping said scanning means when an interrupt request signal is passed through one of said gates;

second control means for resetting said scanning means in a predetermined status following an interrupt request passed through one of said gates on said first plurality of interrupt wires and for activating said scanning means

from said predetermined status in response to the falling off of said interrupt request passed through said one of said gates; and





third control means for activating said scanning means in response to the falling off of an interrupt request passed through one of said gates on said second plurality of interrupt wires.

3,949,373

APPARATUS FOR FREQUENCY STUDIES EQUIPPED WITH IMPULSE GENERATOR AND STORAGE MEANS

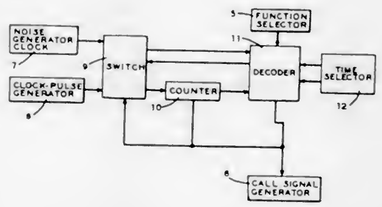
Hans Hindersson, Taby, Sweden, assignor to System Frekvensor AB, Linkoping, Sweden

Filed Feb. 27, 1974, Ser. No. 446,328

Claims priority, application Sweden, Mar. 12, 1973, 7303393

Int. Cl.² G01R *23/02*

U.S. Cl. 340—172.5 **12 Claims**



1. Apparatus for frequency studies comprising: impulse generating means generating impulse signals occurring at random times and impulse signals occurring at periodically recurring times; a call signal generator means connected to said impulse generating means for generating call signals in response to the impulse signals; a character generator means for generating characters in response to said call signal generaor means; a transfer means connected to said impulse generating means and said call signal generator means for converting received impulse signals to recording signals and converting received characters to coded combinations or recording signals; and storage means connected to said transfer means for storing the recording signals as reproducible indicia.

3,949,372

SYSTEM FOR EXTENDING THE INTERIOR DECOR OF A MICROPROGRAMMED COMPUTER

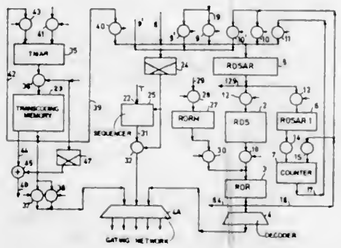
Antonio Brioschi, Arcore, Milan, Italy, assignor to Honeywell Information Systems, Inc., Phoenix, Ariz.

Filed Oct. 2, 1974, Ser. No. 511,135

Claims priority, application Italy, Oct. 10, 1973, 29930/73

Int. Cl.² G06F *9/16, 13/00*

U.S. Cl. 340—172.5 **10 Claims**



6. In a microprogrammed computer, a system for extending so-called interior decor which comprises:

a working memory for recording machine instructions with operating codes and for recording additional microprograms for carrying out so-called additional machine instructions; and

a microprogrammed control unit which includes:

a microprogrammed memory for recording a first set of microprograms for carrying out so-called "allowed" machine instructions and a second set of microprograms for carrying out exception routines;

first means coupled to said working memory for receiving and decoding said additional microprograms and coupled to said microprogramming memory for receiving and decoding said first set of microprograms;

second means coupled to said working memory for receiving said operating codes and for classifying said operating codes as "allowed" or "forbidden";

said second means also coupled to said control unit for initiating the execution of said first set of microprograms in response to said "allowed" operating codes, and for initiating the execution of said second set of microprograms in response to said "forbidden" operating codes; and

said control unit also coupled to said working memory for determining if working memory contains said additional microprograms corresponding to said "forbidden" operating codes and, if such a determination is made for causing the transmission of said additional microprograms to said first means.

3,949,374

ARRANGEMENT FOR SUPPLYING INPUT SIGNALS TO CENTRAL PROCESSING UNITS WITHOUT INTERRUPTION OF PROGRAMS

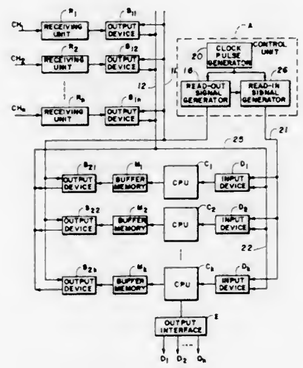
Toshio Takagi; Shiro Seki, and Akihiro Ito, all of Tokyo, Japan, assignors to Tokyo Denryoku Kabushiki Kaisha and Kabushiki Kaisha Meidensha, both of Tokyo, Japan

Filed June 24, 1974, Ser. No. 482,501

Claims priority, application Japan, June 28, 1973, 48-73150; June 28, 1973, 48-73151

Int. Cl.² G06F *3/00*

U.S. Cl. 340—172.5 **12 Claims**



1. A signal supplying arrangement for supplying data signals to an electronic data processing system, the data processing system comprising a plurality of sources of first data signals and a plurality of central processing units coupled to said plurality of sources of first data signals, each of said central processing units including means for selecting predetermined data signals from input data signals and carrying out predetermined data processing operations on said selected predetermined data signals for producing second data signals,

said signal supplying arrangement supplying said first and second data signals to said central processing units as the input data signals, and comprising:

a plurality of buffer memories adapted to be connected to respective ones of said central processing units of said data processing system for storing the second data signals produced by said respective central processing units,

read-out bus means,

read-out signal producing means connected to said read-out bus means for producing read-out signals, said read-out bus means thereby transmitting said read-out signals,

a plurality of output devices coupling respective buffer memories to said read-out bus means, said output devices being further adapted to be connected to said signal sources for coupling said first and second data signals to said read-out bus means in response to said read-out signals, said read-out bus means thereby further transmitting said first and second data signals,

read-in bus means adapted to be connected to said central processing units, and

coupling means coupled to said read-out and read-in bus means for transferring said first and second data signals from said read-out bus means to said read-in bus means, said read-in bus means thereby transmitting said first and second data signals to said central processing units as said input data signals.

3,949,375

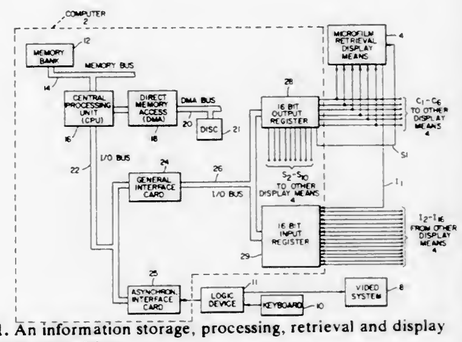
COMPUTER AUTOMATED INFORMATION SYSTEM

Louis A. Clarlo, Wyckoff, N.J., assignor to DMA Data Industries, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 332,515, Feb. 14, 1973, abandoned. This application Oct. 9, 1974, Ser. No. 513,316

Int. Cl.² G06F *3/14, 15/40, 3/04;* **G03B** *23/12*

U.S. Cl. 340—172.5 **10 Claims**



1. An information storage, processing, retrieval and display system comprising:

information storage and processing means;

first and second interfacing means connected to the storage and processing means;

user operated keyboard means connected to the first interfacing means for transmitting information requests through said interfacing means to the storage and processing means;

output register means connected to the second interfacing means for receiving information through said interfacing means from the storage and processing means in accordance with the information requests;

information retrieval and display means connected to the output register means and driven thereby for retrieving and displaying information in accordance with the information requests;

printing means associated with the information retrieval and display means for printing the retrieved and displayed information;

the printing means including a print request actuator operated by the user for providing a print request output, a printer connected to the print request actuator and actuated by the output therefrom, a supply of paper and means connected to the print request actuator and to the supply of paper and responsive to the print request output for actuating the supply of paper into cooperative relation with the printer whereupon the printer prints the retrieved and displayed information;

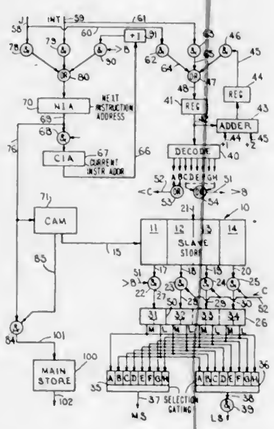
said means for actuating the supply of paper including a flip-flop, print interfacing means connected through a normally open switch to the flip-flop, control means connected to the supply of paper and to the print interfacing means, logic means connected to the print request actuator and responsive to the print request output for operating a relay to close the normally open switch, the output of the flip-flop in one state being applied through the closed switch to the print interfacing means, and effective for driving said means to activate the control means for actuating the supply of paper into cooperative relation with the printer to print the retrieved and displayed information; and

input register means connected to the retrieval and display means and to the second interfacing means for applying an interrupt from the retrieval and display means through said interfacing means to the storage and processing means when a retrieval and display sequence has been completed.

3,949,376
DATA PROCESSING APPARATUS HAVING HIGH SPEED SLAVE STORE AND MULTI-WORD INSTRUCTION BUFFER

Roger James Ball, Cheadle Hulme, and Andrew Gibson Williams, Heald Green, both of England, assignors to International Computers Limited, London, England

Filed July 12, 1974, Ser. No. 488,200
Claims priority, application United Kingdom, July 19, 1973, 34429/73
Int. Cl.² G06F 9/06
U.S. Cl. 340—172.5 **4 Claims**



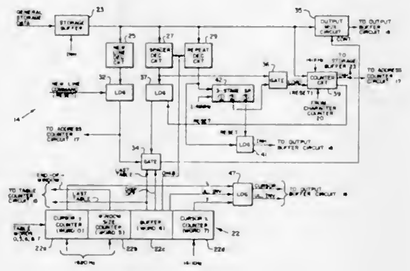
1. Data processing apparatus comprising:
main store means for holding a plurality of multi-word blocks of instruction;
slave store means for holding a smaller plurality of multi-word blocks of instructions and having a faster access time than the main store means;
means for reading a selected multi-word block from the main store means and writing it into the slave store means;
means for reading a selected multi-word block from the slave store means;
an instruction buffer holding one multi-word block and comprising two sections of unequal size;
means for alternately scanning the larger and smaller sections of the buffer to read an output sequence of instructions therefrom;
means operative during scanning of the larger section of the buffer to gate into the smaller section of the buffer a corresponding portion of said block which is read out of the slave store means; and
means operative during scanning of the smaller section of the buffer to gate into the larger section of the buffer a corresponding portion of said block which is read out of the slave store means.

3,949,377
DATA STORAGE AND PROCESSING APPARATUS INCLUDING PROCESSING OF SPACER CHARACTERS

Joseph L. O'Neill, Jr., Haddonfield, N.J., assignor to Ultronic Systems Corporation, Moorestown, N.J.

Filed Sept. 3, 1974, Ser. No. 502,986
Int. Cl.² G06F 3/14, 7/00
U.S. Cl. 340—172.5 **10 Claims**

1. Data storage and processing apparatus for storing and processing data for use by a display device, said display device displaying data characters in a plurality of display lines, said data storage and processing apparatus comprising:
storage means having an output and arranged to store in successive storage locations therein coded data characters including coded spacer characters, each of said coded spacer characters including information specifying a spacing operation and a particular number of times that spaces are to be provided consecutively in a display line of the display device;
readout means operative to cause coded data characters stored in the storage means to be read out therefrom in succession and to be applied in succession to the output of the storage means;
first circuit means coupled to the output of the storage means and operative to detect each coded spacer character applied to the output of the storage means;
second circuit means coupled to the first circuit means and to the readout means and operative in response to each detection by the first circuit means of a coded spacer character to receive and retain therein the number as specified by the information in the coded spacer character detected by the first circuit means and in response to the receipt and retention therein of the aforesaid number to inhibit the readout means from causing the further readout of coded data characters from the storage means;
third circuit means coupled to the first circuit means and having an output, said third circuit means being operative in response to each detection by the first circuit means of a coded spacer character to produce a special coded data character at its output;

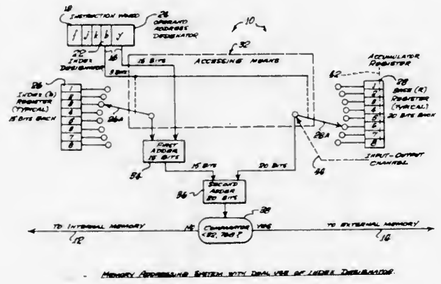


receiving means coupled to the output of the third circuit means and operative to receive each special coded data character produced at the output of the third circuit means and having an output;
fourth circuit means coupled to the receiving means and operative to cause each special coded data character received by the receiving means to be applied repeatedly to the output of the receiving means until the termination of the special coded data character at the output of the third circuit means; and
fifth circuit means coupled to the second circuit means and operative to reduce the number retained in the second circuit means, by successive counts, to a predetermined value;
said second circuit means also being coupled to the third circuit means and operative when the number in said second circuit means has been reduced to the predetermined value by the fifth circuit means to cause the third circuit means to terminate the special coded character at its output, whereby the special coded data character is applied to the output of the receiving means for a total number of times determined by the number initially applied to the second circuit means, and further operative when the number in the second circuit means has been reduced to the predetermined value to enable the readout means to permit the readout from the storage means of additional data characters.

3,949,378
COMPUTER MEMORY ADDRESSING EMPLOYING BASE AND INDEX REGISTERS

Robert P. Crabb, San Diego; Robert A. Unger, El Cajon, and Jim A. Gilbreath, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 9, 1974, Ser. No. 531,016
Int. Cl.² G06F 13/00
U.S. Cl. 340—172.5 **3 Claims**



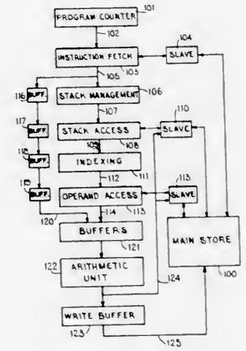
1. A system for computer memory addressing which permits accessing to an original, internal, memory of a computer whose capacity in words is no longer adequate as well as to an additional, external, memory which extends the capacity to an adequate level, the system comprising:
means for accessing an instruction word generated by the internal memory, the word including an M-bit index designator and an N-bit operand address designator;
an index register, each of whose cells have the capability of containing N bits;
a base register, each of whose cells have the capability of containing N + K bits, for offsetting all addresses in a given class by a given amount;
means connected to the accessing means to receive the index designator for simultaneously accessing corresponding cells in the index and base registers;
a first adder, coupled to receive the operand address designator and the accessed signal of the index register;
a second adder, coupled to receive the output signal of the first adder and the accessed signal of the base register; and;
a comparator, whose input is the output of the second adder, which compares the magnitude of the address of the instruction word with the magnitude of a word generated within the comparator representing the capacity of the original internal memory, and generates an output signal which is alternatively directed to
1. the internal memory if the magnitude of the address of the instruction word is at least equal to the capacity of the internal memory; and
2. to the external memory if the magnitude of the address of the instruction word is greater than the capacity of the internal memory.

3,949,379
PIPELINE DATA PROCESSING APPARATUS WITH HIGH SPEED SLAVE STORE

Roger James Ball, Cheadle Hulme, England, assignor to International Computers Limited, England

Filed July 12, 1974, Ser. No. 488,202
Claims priority, application United Kingdom, July 19, 1973, 34427/73
Int. Cl.² G06F 9/06, 9/20
U.S. Cl. 340—172.5 **3 Claims**

1. Data processing apparatus comprising:
instruction sequencing means for providing a sequence of instructions for execution;
slave store means having a plurality of locations for holding operands in current use by the apparatus;
means responsive to an instruction in said sequence to produce an address signal specifying one of the locations in the slave store means;
a register;

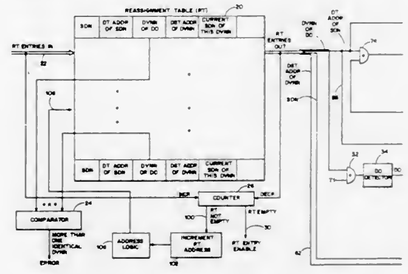


means for gating said address signal into the register;
means for selecting either said address signal or the contents of said register for application to the slave store means to access a location therein;
arithmetic means responsive to an instruction in said sequence to perform arithmetic operations on an operand to produce a result signal;
means for gating an operand from the accessed location of the slave store means to the arithmetic means; and
means for gating said result signal from the arithmetic means into the accessed location of the slave store means.

3,949,380
PERIPHERAL DEVICE REASSIGNMENT CONTROL TECHNIQUE

Kenneth R. Barbour, Burlington, and Henry J. Evans, Harvard, both of Mass., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Apr. 22, 1974, Ser. No. 463,018
Int. Cl.² G06F 3/00
U.S. Cl. 340—172.5 **12 Claims**



1. A data processing system including a data processor having a multiprocessing capability, said data processor coupled for communication with a plurality of peripheral devices, each of said peripheral devices having associated therewith a physical address, and each of the processes in said data processor capable of coupling to said physical addresses and accordingly said peripheral devices by means of logical addresses, said system including reassignment means for assign-

ing the coupling between said logical addresses and said physical addresses, said reassignment means comprising:

A. a plurality of first tables, each of said first tables associated with one peripheral device and each of said first tables including peripheral device specific information intended to assist in the control of the respective peripheral devices, each of said first tables having a unique physical address;

B. at least one second table, said second table including a plurality of first locations, each of said first locations corresponding to a unique logical address, each said first location including a first sublocation capable of including a first pointer to one of said first tables, each of said first locations further comprising a second sublocation capable of including status information respecting the associated one of said peripheral devices;

C. wherein each of said first tables comprises

1. a second location for a second pointer to the address of the one of said first locations in said second table which is associated with the respective first table,
2. a third location for the logical address with which said first table and accordingly said physical address is coupled, and
3. specific information related to the peripheral device with which the first table is associated, said specific information intended to assist in the control of the operation of the associated peripheral device;

D. means for receiving a reassignment command; and

E. means, responsive to said reassignment command, for coupling said second table and at least one of said first tables, said means for coupling including

1. means for loading one of said first locations in said second table with a said first pointer to the one of said first tables whose associated physical address is being reassigned, and
2. means for loading the second location of the said one of said first tables, whose associated physical address is being reassigned, with a said second pointer to the one of said first locations of said second table whose associated logical address is being reassigned.

3,949,381

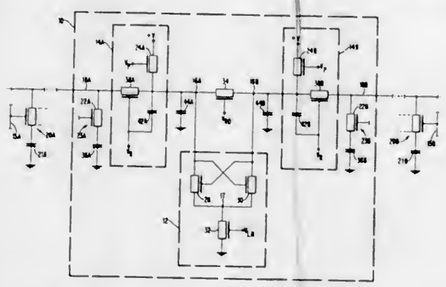
DIFFERENTIAL CHARGE TRANSFER SENSE AMPLIFIER

Robert H. Dennard, Croton-on-Hudson, and Dominic P. Spampinato, Ozone Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 23, 1974, Ser. No. 491,023

Int. Cl.² G11C 7/06, 11/24

U.S. Cl. 340—173 CA **7 Claims**



1. A charge transfer sensing circuit for sensing information in the form of stored charge comprising,

a sense amplifier having first and second input connections, and

a pair of bit line elements having bit line capacitance respectively electrically coupled to said first and second input connections, said bit line elements being adapted to be responsive to memory cells of a stored charge memory array,

said sense amplifier including a dynamic latching circuit incorporating an array of first, second and third actuable devices for setting said latching circuit in a first or a second output voltage state for sensing information on said bit lines, and a pair of preamplification means respectively including one of fourth and fifth actuable devices, each of said preamplification means respectively connected to said first and to said second actuable devices at either side of said dynamic latching means and also respectively connected to said bit line elements, each of said preamplification means including charge storing capacitance devices for cooperating with said bit line capacitance for producing a charge transfer function for conditioning said latching circuit to be set in said first or second output voltage state wherein one of said first and second actuable devices of said latching circuit are on and the other is off, means for producing a precharge signal having a given duration, said precharge signal means being connected to said forth and fifth actuable devices of said preamplification means by turning on said fourth and fifth actuable devices, said fourth and fifth actuable devices turning off after said precharge transfer function ceases, a sixth actuable device connected to said first and second actuable devices of said latching circuit and said fourth and fifth actuable devices of said pair of preamplification means, a seventh end eighth actuable device respectively included in said pair of preamplification means, said seventh and eight actuable devices being responsive to and turned on by said precharge signal and remaining on after said bit lines have been sensed,

and a voltage signal source connected to said sixth actuable device for turning said sixth actuable device on after said bit lines have been sensed.

3,949,382

MISFET CIRCUIT FOR READING THE STATE OF CHARGE

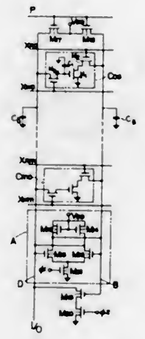
Tokumasa Yasui, Kodaira, Japan, assignor to Hitachi, Ltd., Japan

Filed Oct. 16, 1974, Ser. No. 515,412

Claims priority, application Japan, Dec. 10, 1973, 48-136787

Int. Cl.² G11C 7/06, 11/24, 11/40

U.S. Cl. 340—173 R **5 Claims**



1. An MIS type semiconductor memory device comprising:

at least one memory cell each containing an information storage device therein;

first and second parasitic capacitors connected to said memory cell, the state of charge of at least one of which is representative of information stored in said at least one memory cell;

first means for individually addressing each of said cells for effecting the read-out of information stored therein;

second means for precharging said parasitic capacitors to a prescribed voltage level prior to addressing said cells for reading-out the information stored therein;

third means, connected to each of said first and second parasitic capacitors, for discharging said first and second parasitic capacitors in response to the charge accumulated on said second and first parasitic capacitors respectively, said third means comprising

a first inverter circuit, responsive to the quantity of charge on said second parasitic capacitor, for providing a discharge path for said first parasitic capacitor,

a second inverter circuit, responsive to the quantity of charge of said first parasitic capacitor, for providing a discharge path for said second parasitic capacitor, and

a controlled switching device, connected in series with each of said first and second inverter circuits, for providing a common discharge path for each of said first and second parasitic capacitors; and

a transfer circuit including

a first switching circuit having a first control terminal connected to said second parasitic capacitor, an input terminal connected to said first parasitic capacitor, and an output terminal, for providing an additional discharge path for said first parasitic capacitor, and

a second switching circuit having an input terminal connected to the output terminal of said first switching circuit, an output terminal connected to a source of reference potential, and a second control terminal; and wherein

a first control signal is applied to said controlled switching device and a second control signal is applied to said second control terminal, said first control signal having a timing relationship relative to said second control signal such that said controlled switching device is rendered conductive prior to said second switching circuit during read-out of said at least one memory cell.

3,949,383

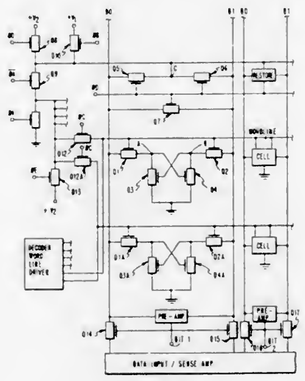
D.C. STABLE SEMICONDUCTOR MEMORY CELL

Haluk O. Askin, Stanfordville; Edward C. Jacobson, Poughkeepsie; James M. Lee, Poughkeepsie, and George Sonoda, Poughkeepsie, all of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,875

Int. Cl.² G11C 7/02, 11/24

U.S. Cl. 340—173 DR **7 Claims**



1. An array of semiconductor memory cells formed in a semiconductor substrate each one of said memory cells including four devices, the first and second of the four devices being cross-coupled while the third and fourth devices form loads for the cross-coupled pair, said array further comprising:

a plurality of word lines arranged in parallel with each other each connected to a plurality of said cells arranged in a row;

a plurality of bit lines, parallel to each other, arranged orthogonally to said word lines, a pair of said bit lines being operatively associated with each cell in a column of cells;

means for selecting one of said plurality of word lines and a pair of said bit lines;

means for applying first and second fixed potentials to one row of said cells while simultaneously applying only said second fixed potential to all other cells in said array when said one row of cells is desired to be accessed; and

bias means for applying a third potential to all of said cells in said array when none of said cells are desired to be accessed, said third potential being intermediate in value between said first and second fixed potentials,

said bias means including means for regulating said third potential to minimize power dissipation.

3,949,384

SYNCHRONOUS SHIFT REGISTER WITH SERIES AND PARALLEL DATA INPUT AND BASIC POSITION INPUT

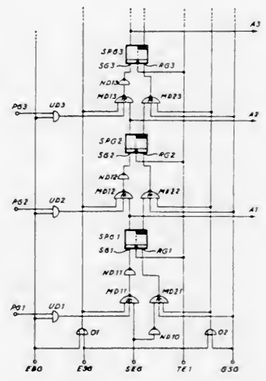
Heinz-Juergen Lohmann, Braunschweig, Germany, assignor to Siemens Aktiengesellschaft, Germany

Filed Feb. 10, 1975, Ser. No. 549,017

Claims priority, application Germany, Mar. 27, 1974, 2414874

Int. Cl.² G11C 13/00

U.S. Cl. 340—173 FF **2 Claims**



1. A synchronous shift register comprising:

a plurality of storage elements, each of said storage elements including

a master-slave flip-flop comprising a master stage having a pair of inputs and a pair of outputs, a slave stage having a pair of inputs connected to respective outputs of said master stage and a pair of outputs which constitutes an output Q of an output $\overline{Q}$ of said storage element, said master stage and said slave stage each having a timing input,

a first inverter,

a timing pulse input for receiving periodic timing pulses,

said timing pulse input connected to said timing input of said master stage and via said inverter to said timing input of said slave stage,

a second inverter, and

a majority decision circuit including an output connected to that input of said master stage which is opposite to the said output Q and via said second inverter to the other of said inputs of said master stage, a first input constituting a set input S of said storage element, a second input constituting a reset input R of said storage element and a third input connected to said output Q so that said storage element fulfills the truth table

S	R	Qto	Qtl
L	O	O	O
L	L	O	L
O	L	L	L
O	O	L	O
L	O	L	L
L	L	L	L
O	L	O	O
O	O	O	O

which corresponds to the Boolean equation

$$QT1 = S \cdot R + Qto \cdot (S + R)$$

where Qtl is a new logic state which is dependent on the applied logic values of S and R and Qto is the stored logic state of the slave stage;

a plurality of third inverters connected to respective ones of said set inputs S;

a plurality of second majority decision circuits, each of said second majority decision circuits including an output connected to a set input S of a storage element by way of a respective one of said third inverters, a first input connected to said output Q of the preceding storage element of the chain to receive serial pulses with said first input associated with the first storage element of the chain constituting a serial input for the shift register, a second input and a third input;

a switch-on input for receiving a potential to permit data shifting;

an order input for receiving an order signal indicating parallel data input;

a plurality of AND gates each including an output connected to a respective third input of said second majority decision circuits, a first input connected to said order input, and a second input for receiving parallel information;

a fourth inverter having an input connected to said serial input, and an output;

a basic position input for receiving an input pulse to set said shift register to a predetermined basic position;

a plurality of third majority decision circuits, each of said third majority decision circuits including an output connected to said reset input R of a respective storage element, a first input connected to the output Q of the preceding storage element with the first input of the majority decision circuit associated with the first storage element of the chain connected to said output of said fourth inverter, a second input, and a third input connected to said basic position input;

a first OR gate including an output connected to said second input of each of said second majority decision circuits, a first input connected to said switch-on input and a second input connected to said order input; and

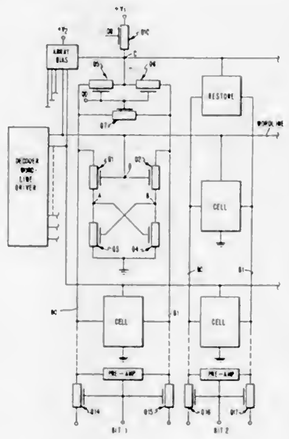
a second OR gate including an output connected to said second input of each of said third majority decision circuits, a first input connected to said switch-on input, and a second input connected to said basic position input.

3,949,385

D.C. STABLE SEMICONDUCTOR MEMORY CELL

George Sonoda, Poughkeepsie, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,464
Int. Cl.² G11C *7/00, 8/00, 11/40*
U.S. Cl. 340—173 FF **18 Claims**



1. An array of semiconductor memory cells formed in a semiconductor substrate each one of said memory cells including four devices, the first and second of the four devices being cross-coupled while the third and fourth devices form loads for the cross coupled pair, said array further comprising:

a plurality of word lines arranged in parallel with each other each connected to a plurality of said cells arranged in a row;

a plurality of bit lines, parallel to each other, arranged orthogonally to said word lines, a pair of said bit lines being operatively associated with each cell in a column of cells;

means for selecting one of said plurality of word lines and a pair of said bit lines;

means for applying first and second fixed potentials to one row of said cells while simultaneously applying only said second fixed potential to all other cells in said array when said one row of cells is desired to be accessed; and

means for applying a third potential to all of said cells in said array when none of said cells are desired to be accessed, said third potential being intermediate in value between said first and second fixed potentials.

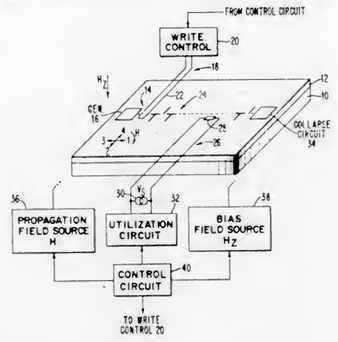
3,949,386

BUBBLE DOMAIN DEVICES USING GARNET MATERIALS WITH SINGLE RARE EARTH ION ON ALL DODECAHEDRAL SITES

Erik Klokholm, Stamford, Conn., and Thomas S. Plaskett, Katonah, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 12, 1973, Ser. No. 415,456
Int. Cl.² G11C *11/14*
U.S. Cl. 340—174 TF **25 Claims**

1. A magnetic bubble domain device comprised of a magnetic medium of thickness less than about two microns capable of supporting magnetic bubble domains therein, and means adjacent thereto for manipulating said domains in said medium, said medium having a garnet structure with a lattice comprised of dodecahedral sites, tetrahedral sites, and octahedral sites wherein all of said dodecahedral sites are occupied by the same rare earth ion, and all of said tetrahedral and octahedral sites are occupied by a single magnetic ion, said medium having a growth induced uniaxial anisotropy of sufficient magnitude to support stable magnetic bubble domains therein over room temperature range.

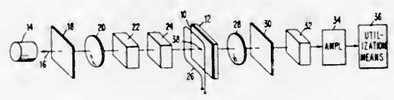


3,949,387

BEAM ADDRESSABLE FILM USING AMORPHOUS MAGNETIC MATERIAL

Praveen Chaudhari, Briarcliff Manor; Jerome J. Cuomo, Bronx; Richard J. Gambino, and Thomas R. McGuire, both of Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 29, 1972, Ser. No. 284,512
Int. Cl.² G11C *11/14, 13/06*
U.S. Cl. 340—174 YC **39 Claims**



1. A magnetic system, comprising;

a magnetic medium exhibiting an amorphous structure without long range atomic ordering, said medium having long range magnetic ordering and a perpendicular magnetic uniaxial anisotropy which is not due to long range atomic ordering and crystalline structure,

writing means for changing the magnetic state of said amorphous medium,

said writing means being comprised of beam generating means for directing electromagnetic energy at said amorphous magnetic medium and magnetic field producing means for providing a magnetic field in said amorphous medium, and

reading means for detecting the magnetic state of said amorphous medium.

3,949,388

PHYSIOLOGICAL SENSOR AND TRANSMITTER

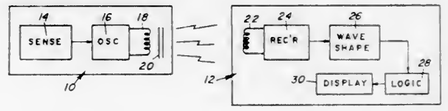
Charles H. Fuller, Carson, Calif., assignor to Monitron Industries, Inc., Santa Ana, Calif.

Continuation of Ser. No. 306,097, Nov. 13, 1972, abandoned, which is a continuation-in-part of Ser. No. 199,847, Nov. 18, 1971, abandoned, and a continuation-in-part of Ser. No. 199,979, Nov. 18, 1971, abandoned, and a continuation-in-part of Ser. No. 199,675, Nov. 17, 1971, abandoned. This application Mar. 26, 1975, Ser. No. 562,083
Int. Cl.² G08C *19/26*
U.S. Cl. 340—189 M **57 Claims**

1. In a blocking oscillator for generating a sequence of bursts of oscillations, said blocking oscillator having an amplifying device that has a control element,

a resonant circuit including an inductor and a tuning capacitor operatively connected to said amplifying device, said oscillator also including a blocking capacitor connected to said resonant circuit for developing a control bias;

means for applying said control bias to said control element to quench said oscillations when the bias attains one value and to initiate said oscillations when said bias attains another value, said control capacitor charging in one direction while said oscillator is oscillating and in the other direction when said oscillator is quiescent to change said bias;



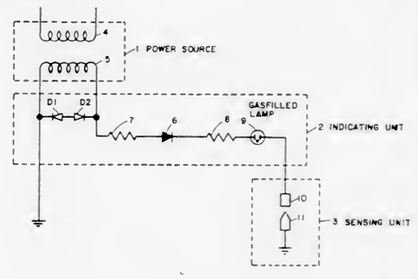
an isolation impedence connecting said blocking capacitor between said resonant circuit and said control element, whereby intermittent switching of the amplifying element on and off precludes intermittent direct connection and disconnection of said blocking capacitor across said resonant circuit, thereby concentrating the oscillations to a narrow band of frequencies determined by said tuning capacitor and said inductor substantially independently of said blocking capacitor.

3,949,389

MOISTURE DETECTOR

Kenneth A. Monk, Ormstown, and Robert C. Braithwaite, Beaconsfield, both of Canada, assignors to ITT Industries, Inc., New York, N.Y.

Filed Oct. 2, 1974, Ser. No. 510,953
Claims priority, application Sweden, Feb. 28, 1974, 7402657
Int. Cl.² G08B *21/00*
U.S. Cl. 340—235 **13 Claims**



1. An apparatus for detecting the presence of a specific concentration of a conducting medium in an insulating medium wherein the conducting/insulating medium mixture is in the form of an emulsion containing discrete droplets of said conducting medium, comprising:

a source of pulsating dc voltage;

a first electrode having a substantially flat surface, said first electrode immersed in said emulsion and having applied thereto said pulsating dc voltage whereby a static electrical charge is formed on said first electrode which repels said insulating medium while having no effect on said conducting medium, causing droplets of said conducting medium to migrate towards, said accumulate in, the area around said first electrode;

a second cone-shaped electrode having a vertex directed at said flat surface, said flat surface in a plane substantially perpendicular to the longitudinal axis of said second electrode, said second electrode coupled to ground and

immersed in said emulsion, said second electrode positioned in close proximity to said first electrode such that a static electrical discharge occurs when a sufficient number of droplets of said conducting medium accumulates between said first and second electrodes to form a conductive path; and

means for generating an alarm when said conductive path is formed.

3,949,390

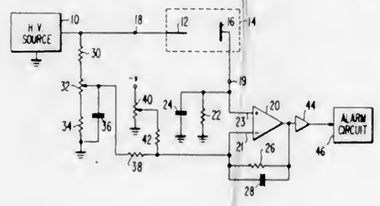
HIGH VOLTAGE AEROSOL DETECTOR

Martin Rayl, Trenton; Harold Duane Hanson, East Brunswick, both of N.J., and Billy Wesley Beyers, Jr., Greenfield, Ind., assignors to RCA Corporation, New York, N.Y.

Filed June 5, 1974, Ser. No. 476,445

Int. Cl.² G08B *17/10*

U.S. Cl. 340—237 S **6 Claims**



1. Apparatus for detecting smoke in a cabinet enclosed television receiver having a high voltage power supply for providing an accelerating potential to an electron beam in an associated image display device comprising:

means for providing a continuous corona discharge coupled to said high voltage power supply;

a receiving means spaced a predetermined distance from said discharge means for receiving charged particles provided by said corona discharge;

a perforated housing for enclosing said discharge means and said receiving means, arranged within said television enclosure; and

sensing means coupled to said receiving means for providing an alarm signal in response to a predetermined decrease in current flow between said discharge means and said receiving means.

3,949,391

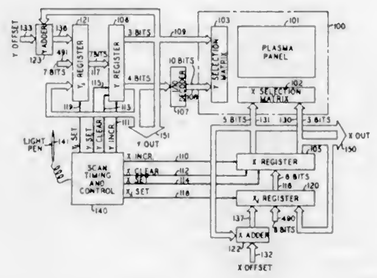
PLASMA PANEL LIGHT PEN TRACKING USING ADAPTIVE TRACKING SCAN

O'Connell Julien Benjamin, Brooklyn, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 21, 1974, Ser. No. 472,058

Int. Cl.² G06F *3/14*

U.S. Cl. 340—324 M **10 Claims**



1. Apparatus for detecting a moving light sensor over a plasma panel display surface having a plurality of plasma cells located at respective display sites, selected ones of said plurality of cells being periodically activated, thereby to emit light pulses at periodic intervals and at a fixed time in each such interval, comprising

first means for sequentially activating at least selected ones of said plurality of plasma cells at times different from said fixed times,

second means for sequentially activating at least selected ones of a subset of said plurality of plasma cells at times other than said fixed times, the position of said subset having a predetermined relationship to the position of said light sensor at the time said sensor last detected a light pulse at one of said plurality of plasma cells at other than said fixed time,

first control means responsive to the light pulse generated by said first means for causng following sequential activating to be accomplished by said second means,

output means responsive to said light sensor for generating signals indicating the positions at which said sensor detects light pulses at other than said fixed times, and

second control means responsive to the removal of said sensor from said display surface for causing the immediately following sequential activating of plasma cells to be accomplished by said first means.

3,949,392

MULTI-ELEMENT DISPLAY APPARATUS FOR DISPLAYING DIFFERENT PATTERNS OR INFORMATION

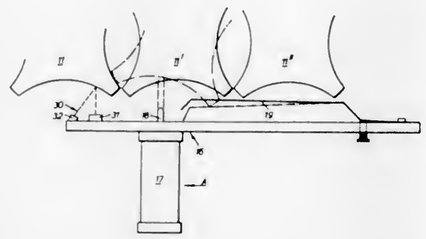
Peter Caritato, Athens, Greece, assignor to Caritato Limited, Athens, Greece

Filed Oct. 29, 1974, Ser. No. 518,751

Claims priority, application United Kingdom, Oct. 26, 1973, 50009/73

Int. Cl.² G09F *9/32*

U.S. Cl. 340—336 **24 Claims**



1. Display apparatus comprising a plurality of vertically mounted parallel shafts, a plurality of elements rotatably mounted on each of said shafts, an array of contiguous elements arranged in a formation of intersecting rows and columns to form a display surface, each element having a rectangular vertical cross-section, the horizontal cross-section being that of a regular four-sided figure with concave sides to form four display surfaces each lying in a plane parallel to said column axes and each display surface being cylindrically concave in the direction of said axes, each pair of opposite display surfaces presenting a visual effect which is contrastingly different from that presented by the other pair of opposite surfaces lying in planes parallel to said column axes, actuating means for rotating a given element to position a selected surface of said given element so as to contribute to said display surface, indexing means for retaining said given element in a rotated position, and drive means for moving said actuating means with respect to the array of elements to enable sequential rotation of selected elements.

3,949,393

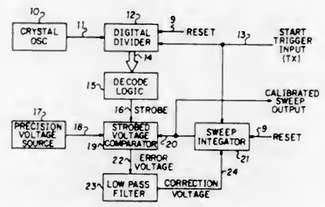
ANALOG SWEEP CALIBRATOR

Gary L. Bjornsen, Marion, and Kenneth R. Rutherford, Cedar Rapids, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 16, 1974, Ser. No. 497,964

Int. Cl.² H03K *13/00*

U.S. Cl. 340—347 CC **4 Claims**



1. Means for calibrating a repetitive analog sweep voltage waveform to maintain a desired voltage-time analog, comprising a precision voltage source the magnitude of which corresponds to that defined by a desired sweep voltage-time analog at a predetermined time after initiation of said sweep voltage; digital clock controlled timing means generating a strobe pulse at a time after initiation of said sweep voltage corresponding to said predetermined time, said clock controlled timing means comprising a source of clock pulses, a binary counter, means responsive to successive initiations of said sweep voltage to enable said counter, and logic means responsive to a predetermined count in said counter equivalent to a time measurement equal that of said predetermined time to generate said strobe pulse; means for comparing the amplitude of said sweep voltage with said precision voltage source at the time occurrence of said strobe pulse; means responsive to a discrepancy in amplitude between said sweep voltage and said reference voltage source at the time of said strobe pulse to generate a correction signal, said means to generate said correction signal comprising a voltage comparator receiving said precision voltage source and said sweep voltage as respective inputs thereto, control voltage development means comprising a J-K flip-flop, receiving the output of said voltage comparator and said strobe pulses as respective inputs thereto, said development means generating oppositely sensed and like amplitude DC voltage output control signals in response to successive magnitudes of said sweep voltage respectively exceeding annd being less than the magnitude of said precision voltage source at the time occurrence of said strobe pulses and holding that voltage magnitude and sense at least until the time occurrence of a next succeeding one of said strobe pulses; signal averaging means receiving said DC output control signals, the output of said signal averaging means comprising said correction signal, and control means responsive to said correction signal to alter the slope of said sweep voltage to cause the sweep voltage to equal said precision voltage source at the time occurrence of said strobe pulses.

3,949,394

READ AMPLIFIER HAVING RETRIGGERABLE, VARIABLE DUTY CYCLE INHIBIT PULSE GENERATOR

Charles J. Kennedy, Pasadena, Calif., assignor to C. J. Kennedy Company, Altadena, Calif.

Filed Apr. 8, 1974, Ser. No. 458,895

Int. Cl.² H03K *5/00*; **G11B** *5/09*

U.S. Cl. 340—347 DD **3 Claims**

1. An arrangement for reading information carried by the transitions of a data signal comprising the combination of:

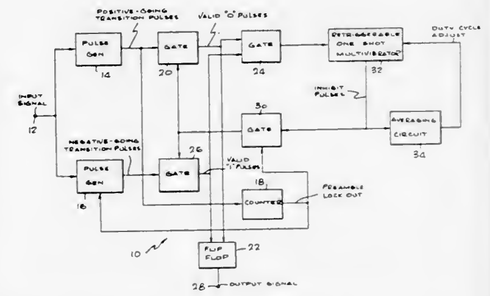
pulse generating means responsive to the data signal for generating a pulse in response to each transition of the data signal, the pulse generating means comprising a first pulse generator for generating a pulse in response to each transition of given polarity of the data signal and a second pulse generator for generating a pulse in response to each transition of polarity opposite said given polarity of the data signal;

output means;

gating means coupling the output means to the pulse generating means; and

means coupled to the gating means for generating an inhibit pulse in response to each pulse provided thereto, the gating means inhibiting passage of pulses therethrough during the occurrence of each inhibit pulse, and passing pulses to the output means and to the inhibit pulse generating means whenever an inhibit pulse is not occurring;

said gating means comprising a pair of gates, each being coupled between one of the pulse generators, the inhibit pulse generating means and the output means; and



the means for generating an inhibit pulse including a retriggerable one-shot multivibrator coupled to generate an inhibit pulse in response to each pulse and means for adjusting the width of the inhibit pulses in accordance with the rate of occurrence of the data signal including means coupled to the first pulse generator for counting pulses produced by the first pulse generator, means coupled to the second pulse generator and responsive to the counting means for preventing the second pulse generator from generating pulses until the counting means has counted a predetermined number of pulses, and means coupled between the inhibit pulse generating means and the pair of gates and responsive to the counting means for preventing the inhibit pulses from being applied to the pair of gates until the counting means has counted said predetermined number of pulses.

3,949,395

SUCCESSIVE-APPROXIMATION ANALOG-TO-DIGITAL CONVERTER USING JOSEPHSON DEVICES

Melvin Klein, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 28, 1974, Ser. No. 501,121

Int. Cl.² H03K *13/02*

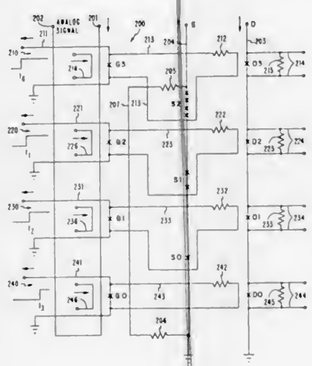
U.S. Cl. 340—347 AD **7 Claims**

1. A successive-approximation analog-to-digital converter for an analog input signal, comprising:

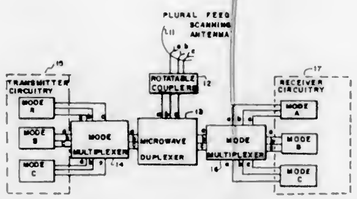
comparison means having a plurality of Josephson junctions adapted to switch to a voltage-drop state at predetermined control-signal levels for producing comparison signals, and control means for applying said input signal and a subtraction signal for controlling certain of said junctions,

subtraction means having a plurality of further Josephson junctions disposed in groups, and further control means for applying said comparison signals to respective ones of said groups for producing said subtraction signal as a function of the number of said further junctions in said

voltage-drop state, and
output means coupled to said comparison means for producing digital signals representing the magnitude of said analog input signal.

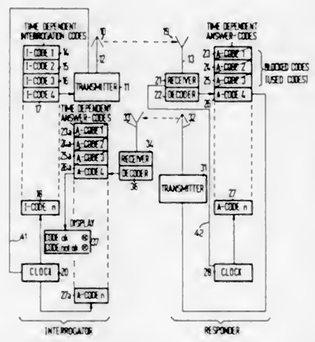


3,949,396
FAST SCAN MULTIMODE RADAR
Ben H. Cantrell, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 25, 1975, Ser. No. 552,895
Int. Cl.² G01S 9/02
U.S. Cl. 343—5 R **9 Claims**



1. An improved radar system comprising:
a radar antenna means having plural feed elements for transmitting and receiving radar beams;
a plurality of mode transmitting means for generating radar frequencies in different radar modes, each of said transmitting means being constructed to generate plural radar frequencies in a given mode;
a plurality of mode receiving means for receiving and processing radar frequencies in radar modes corresponding to said transmitting modes, each of said receiving means being constructed to receive said plural radar frequencies within each mode;
means for coupling corresponding mode transmitting and receiving means to said antenna means during the same time period such that in each mode said plural radar frequencies are transmitted and received by said plural feed elements.

3,949,397
IDENTIFICATION - FRIEND OR FOE SYSTEM AND METHOD
Gerhard Wagner, Schaftlach, and Otto Albersdoerfer, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Continuation of Ser. No. 338,267, March 5, 1973, abandoned, which is a continuation-in-part of Ser. No. 107,653, Jan. 19, 1971, abandoned. This application Oct. 21, 1974, Ser. No. 516,822
Claims priority, application Germany, Feb. 6, 1970, 2005471
Int. Cl.² G01S 7/36, 9/56
U.S. Cl. 343—6.5 R **9 Claims**

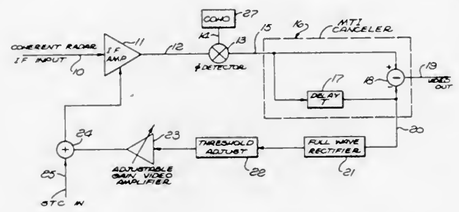


1. An interrogation and responding system for time-dependently differing interrogation codes which are transmitted successively in time by an interrogation device and received by one or more answering units which know the time-dependent program of the interrogation device and which use a plurality of different time-dependent answering codes having a predetermined relationship to the interrogation codes, time standards in said interrogation device and in said answering units to provide a time standard for the control of the code sequence, means in said answering units for blocking answering codes which have been used during a predetermined time interval for a certain time so that they may not be transmitted and cannot be used more than once unless all available codes have been utilized and means in said answering units transmitting an answering code upon the next interrogation which has not been blocked since it has not been used for said certain time and said interrogation device including means for accepting as correct only a single answering code from an answering unit which has not been previously used within a predetermined time interval and not accepting as correct an answering code which has been previously used within a predetermined time period so as to assure that if the same answering codes are received said interrogating device only accepts the first one received as correct and does not accept the second answering code as correct.

3,949,398
MTI PERFORMANCE ENHANCEMENT DEVICE WITH INSTANTANEOUS AUTOMATIC GAIN CONTROL
Thomas H. Donahue, Los Angeles, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Dec. 16, 1974, Ser. No. 532,842
Int. Cl.² G01S 9/42
U.S. Cl. 343—7.7 **5 Claims**

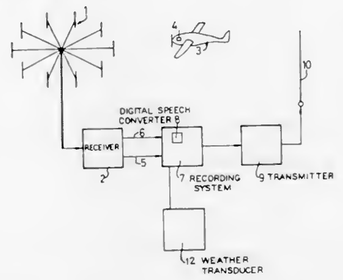
1. A device for reducing the effects of signal overloading in the receiver of a coherent radar system, said system including radio frequency pulse transmitting means and said receiver for detecting target echoes corresponding to said pulses, comprising:

a gain controllable intermediate frequency amplifier within said receiver having signal and gain controlling input terminals;
a coherent oscillator;
a phase detector having as its inputs the outputs of said oscillator and said intermediate frequency amplifier, the output of said phase detector comprising a train of bi-polar echo video signals each amplitude modulated at the Doppler frequency corresponding to the velocity of a corresponding target;



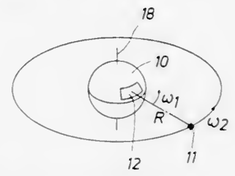
an MTI canceller for delaying phase detector output signals by one pulse repetition interval, and for extracting the difference of delayed and undelayed signal trains, said canceller thereby providing an output comprising substantially only bi-polar video signals corresponding to moving targets;
rectifying means responsive to said delayed phase detector signals to produce a train of uni-polar pulses comprising all signals from said phase detector output;
and means for applying said uni-polar pulse train to said intermediate frequency amplifier as an inverse feedback gain-controlling signal on a pulse-to-pulse basis within said uni-polar pulse train.

3,949,399
AUTOMATIC DIRECTION FINDING EQUIPMENT FOR AIRPLANES
Franz R. Huber, Assling, and A. Mattes, Munich, both of Germany, assignors to Rohde & Schwarz, Munich, Germany
Filed May 22, 1974, Ser. No. 472,414
Claims priority, application Germany, May 24, 1973, 2326521
Int. Cl.² H04B 7/00
U.S. Cl. 343—100 CS **7 Claims**



1. A system for automatically obtaining the line of position of an airplane relative to ground station wherein said airplane carries radio telephone equipment on board and said ground station having a direction finder on the ground operating automatically when a signal is received from said airplane within the frequency range of said radio telephone equipment comprising, a recording device connected to said direction finder for automatically storing the line of position of said airplane, a ground transmitter operating at the frequency of said radio telephone device connected to said recording device, and at least a part of the stored message content including said line of position of said airplane automatically transmitted from said ground transmitter to said airplane and detected by said radio telephone equipment on said airplane.

3,949,400
POSITION DETERMINATION SYSTEMS
Paul W. Shores, Houston, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Nov. 28, 1973, Ser. No. 419,747
Int. Cl.² H04B 7/19
U.S. Cl. 343—100 ST **2 Claims**



1. A method for systematically surveying an area on a celestial body for locating a radio beacon thereon comprising the steps of:
a. placing a satellite antenna means, employing a plurality of receive-only scanning beams, in a known synchronous orbit with said celestial body, each of said scanning beams being capable of viewing and receiving radio signals from a unique portion of said area to be surveyed and wherein said scanning beams together completely cover said area to be surveyed;
b. continuously and repetitively scanning each of said unique portions of said area to be surveyed with said plurality of scanning beams;
c. detecting at the antenna means with one of said scanning beams, the occurrence of radiant wave energy from said radio beacon; and,
d. determining the azimuth of said radio beacon with respect to the scanning beam which detected the energy radiated from said radio beacon.

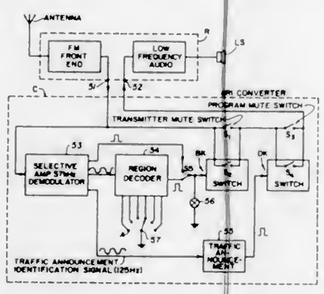
3,949,401
FREQUENCY IDENTIFICATION CIRCUIT FOR BROADCAST TRAFFIC INFORMATION RECEPTION SYSTEMS
Wilhelm Hegeler; Lambert Maschmeyer, and Hans Rasehorn, all of Hildesheim, Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Germany
Filed Feb. 21, 1975, Ser. No. 551,689
Claims priority, application Germany, Feb. 25, 1974, 2408947
Int. Cl.² H04B 7/00
U.S. Cl. 343—200 **7 Claims**

1. Circuit arrangement for frequency identification in the field of broadcast traffic information reception in which the identification is effected in identification cycles comprising
a frequency identification circuit (1) responding to, recognizing and identifying signals (BK, DK) of different, predetermined frequencies including a region identification frequency (BK) and a traffic announcement identification frequency (DK), and providing a binary output signal indicative of the presence or absence of a selected, predetermined frequency to be identified;
a first pulse shaper (2) which has a short response time (t_1) and a long storage time (t_1) of such duration that several frequency identification cycles can be performed within the storage time period, said pulse shaper being connected to the frequency identification circuit (1) and providing, at its output (B) terminal (8) information concerning the presence of the region identification frequency (BK);

an AND-gate (4), the output (B) terminal (8) of the pulse shaper (2) being connected to one of the inputs of the AND-gate (4) and the output of the frequency identification circuit (1) being connected to a second input of the AND-gate (4);

a second pulse shaper (5) having a relatively short response delay time (t_2) and a storage time (t_2) which is short with respect to the storage time (t_1) of the first pulse shaper (2), and having its input connected to the output of the AND-gate (4);

a third pulse shaper (6) having its input connected to the output of the second pulse shaper (5), said third pulse shaper having a response delay time (t_3) which is longer than the storage time (t_2) of the second pulse shaper (5) and providing at its output (G) terminal (9) information



concerning the presence of the traffic announcement identification frequency (DK),

and a frequency control circuit (7) connected to the output of said second pulse shaper (5), said frequency control circuit (7) being connected to control the recognition, or identification frequency response of said frequency identification circuit (1) to respond to, identify, and provide an output upon presence of the region identification frequency (BK) if the frequency control circuit (7) does not receive an output from the second pulse shaper (5) and to control said frequency identification circuit (7) to change its response range to identify the traffic announcement identification frequency (DK) when energized from said second pulse shaper (5); whereby

1. absence of the region identification frequency (BK) will result in no output from the identification circuit (1) and hence continuous control by the frequency control circuit (7) to continue the state of the frequency identification circuit to select and identify said regional frequency (BK), and
2. if the region identification frequency (BK) is identified, energization of the second pulse shaper (5) will cause change in the state of the frequency control circuit (7) and hence command the frequency identification circuit (1) to change to select for identification the traffic announcement frequency (DK), energization of the output terminal (8) of the first pulse shaper (2) continuing due to the long storage time (t_1) thereof and, upon non-detection of a traffic announcement frequency (DK), reversion of the state of the frequency control circuit (7) to control the frequency identification circuit (1) to again select the region identification frequency (BK), and thus extend the storage time (t_1) of the first pulse shaper; and,
3. if the traffic announcement identification frequency (DK) is detected, the system will be held in the state in which the frequency control circuit (7) continues to command the frequency identification circuit (1) to select and identify the traffic announcement identification frequency (DK) and simultaneously continue to energize said first pulse shaper (2), thus continuously extending the storage time (t_1) thereof.

3,949,402

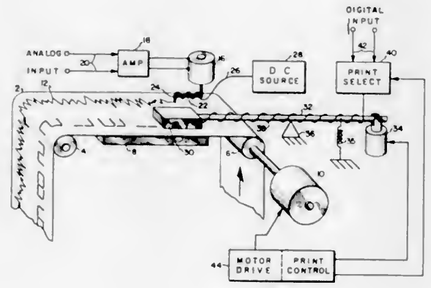
ANALOG AND DIGITAL RECORDING APPARATUS

Thomas P. Kelley, Cornwells Heights, and Charles E. Lane, III, Meadowbrook, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 417,625, Nov. 20, 1973, abandoned. This application Feb. 3, 1975, Ser. No. 546,322

Int. Cl.² G01D *9/28, 15/10*

U.S. Cl. 346—61 **7 Claims**



1. A recorder for recording on a recording medium comprising

a print head including selectively energizable means for producing a character representative pattern for affecting the recording medium,

stepping motor means for intermittently driving the recording medium past said print head, said intermittent drive producing incremental steps of the recording medium with each incremental step being less than the length along the recording medium of a character to be printed by said print head,

print means connected to said print head and responsive to an input signal and an energization signal for selectively energizing said selectively energizable means to produce said pattern for printing on the recording medium,

control means connected to said motor means for intermittently energizing said motor means and to said print means and responsive to said energization of said motor means to produce said energization signal to control the energization of said print means between the intermittent operations of said motor means whereby each character is printed over a plurality of intermittent operations of said motor means, and

analog recording means continuously in contact with the recording medium and arranged to be energized by an analog input signal to record the analog input signal on the recording medium.

3,949,403

REMOTE POWER CONTROL APPARATUS

Susumu Yoshida, Tokyo, and Hisao Okada, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 23, 1975, Ser. No. 543,341

Claims priority, application Japan, Jan. 29, 1974, 49-12574[U]

Int. Cl.² H04Q *7/00*

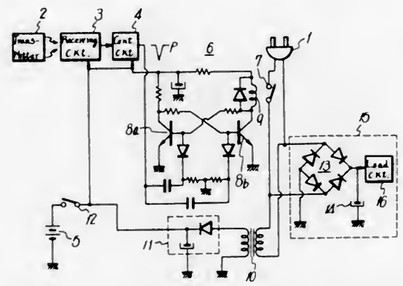
U.S. Cl. 343—225 **5 Claims**

1. A remote power control apparatus comprising:

a. a remote control signal processing means comprising a remote control signal receiving circuit, a switch to connect said apparatus to an external power source only when said switch is closed, and a control circuit actuated by signals from said receiving circuit to close said switch;

b. a battery connected to said remote control signal processing means for supplying an operating voltage to said remote control signal processing means;

c. a power supply circuit for said remote control signal processing means, said power supply circuit comprising an input section connected to said switch to be energized from said external power source, and a rectifier section



connected to said remote control signal processing means to supply operating power thereto when said switch is closed; and

d. an electronic instrument comprising a power supply connected to said switch to be energized from said external power source through said switch controlled by said remote control signal processing means.

3,949,404

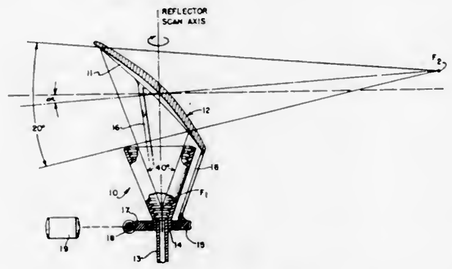
HIGHLY EFFICIENT ANTENNA SYSTEM USING A CORRUGATED HORN AND SCANNING HYPERBOLIC REFLECTOR

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Kenneth A. Green, Andover, Mass.

Filed Dec. 19, 1974, Ser. No. 534,265

Int. Cl.² H01Q *13/02, 15/16*

U.S. Cl. 343—761 **10 Claims**



1. An antenna system for producing a narrow beam of a desired cone angle with a spherical aperture phase front and a far-field beam with low sidelobes and high efficiency, said system comprising a reflector having a concave reflecting surface that is a section of a hyperboloid for reflecting a spherical expanding wave into another spherical expanding wave of an included cone angle equal to said desired cone angle of the desired narrow beam and means for illuminating said reflecting surface with a beam having a circularly symmetric spherical expanding wave of an included angle about twice the cone angle of said desired narrow beam with its phase center at a focus of said hyperbolic reflecting surface, whereby an antenna system is provided with a high beam efficiency greater than 95%.

3,949,405

VERTICALLY POLARISED OMNIDIRECTIONAL ANTENNA

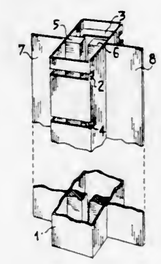
Jacques Roquencourt, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 17, 1974, Ser. No. 533,709

Claims priority, application France, Dec. 21, 1973, 73.46035

Int. Cl.² H01Q *13/12*

U.S. Cl. 343—771 **1 Claim**



1. An omnidirectional antenna for radiating a vertically polarised wave, comprising: a waveguide with an oblong cross-section and a longitudinal plane of symmetry which cuts said cross-section in the direction of the smaller dimension thereof, said waveguide having a wall provided with two arrays of slots located opposite one another and arranged symmetrically in relation to said plane of symmetry; a device located inside said waveguide for increasing the cut-off frequency thereof; and two identical metal plates, attached to the exterior of said waveguide and extending over the whole length thereof, said plates being located in said plane of symmetry.

3,949,406

HORN FOR RADIOELECTRIC ANTENNAS

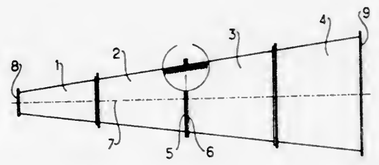
Marcel Yvard, Arpajon, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Feb. 28, 1975, Ser. No. 554,213

Claims priority, application France, Mar. 8, 1974, 74.08013

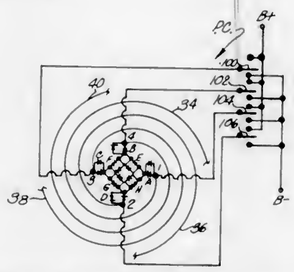
Int. Cl.² H01Q *13/02*

U.S. Cl. 343—786 **7 Claims**



1. A horn for radioelectric antennas comprising an outside sheet metal support having inner and outer surfaces, a plurality of juxtaposed rings extending inwardly into said support at the inner surface thereof, and means assembling said rings to said support, each ring comprising a base portion and a projecting portion, said projecting portion being narrower than the base portion, said rings bearing against one another and against said inner surface of the sheet metal support at said base portions, the projecting portions of adjacent rings defining a corrugation space therebetween.

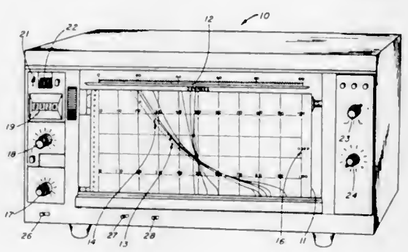
3,949,407
DIRECT FED SPIRAL ANTENNA
Kenneth M. Jagdmann, Melbourne; Harry Richard Phelan, Indialantic, both of Fla., assignors to Harris Corporation, Cleveland, Ohio
Filed Mar. 6, 1975, Ser. No. 555,796
Int. Cl.² H01Q 1/36
U.S. Cl. 343—895 **10 Claims**



1. An element antenna comprising:
A plurality of electrically conductive spiral arms spaced from each other and having a common axis of rotation, each said arm having inner and outer ends, said inner ends being rotational displaced about said axis relative to each other by a given angle to achieve a given rotational phase progression about said common axis;
each of said arms being of a length sufficient that each arm intersects an annular active region essentially coaxial about said common axis and at which electromagnetic energy is efficiently radiated from the antenna element by currents flowing in the respective arms in the same direction and in-phase as they arrive at the active region;
phase control means for effectively electrically rotating said spiral arms about said axis to control the phase relationship of electromagnetic energy to be radiated from said element antenna comprising means for interconnecting at least one pair of inner arm ends together to effectively obtain a short circuit therebetween so that electrical signals in the respectively interconnected pair of arms are interchanged from one arm to the other with a relative phase change dependent upon the rotational phase relationship between the interconnected inner arm ends; and,
feed means directly connected only to the outer arm ends of said arms for feeding radio frequency energy from a feed source to each arm to cause current to flow in each arm from the outer end thereof toward the inner end thereof, said feed means including means for feeding energy to said outer arm ends such that the currents in said respective arm ends initially flow from the outer arm ends toward the inner arm ends with a phase progression relative to each other so that as the respective inwardly flowing currents enter the active region they are out of phase, preventing efficient radiation from the antenna element.

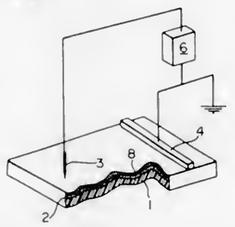
3,949,408
MULTIPOINT GRAPH AND CHARACTER PRINT APPARATUS
Charles F. Mason, and Merle C. Cox, both of Indianapolis, Ind., assignors to Esterline Corporation, New York, N.Y.
Filed May 16, 1975, Ser. No. 578,090
Int. Cl.² G01D 9/32
U.S. Cl. 346—62 **13 Claims**

1. A graph printing apparatus comprising:
a chassis;
a print head moveably mounted on the chassis and having an array of selectively activatable elements;
drive means for advancing a strip of markable recording medium past and adjacent to the array of elements of the print head;
activation means for selectively activating elements of the array to mark the advancing medium in response to marking commands;
analog means for positioning the print head along a direction transverse to the direction of advance of the medium in response to a data input to the apparatus;



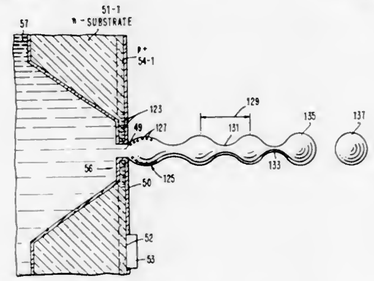
means for generating an alpha-numeric character marking command and an alternative point marking command and for coupling one of said commands to the activation means; and
offset means for positioning the print head a preset distance, along a direction transverse to the direction of advance of the medium, from a first position during printing of certain characters of multi-character alpha-numeric markings on the strip of markable recording medium.

3,949,409
METHOD FOR FORMING IMAGES USING AN ELECTROLYTIC LAYER IN REDOX RECORDING
Shigenobu Sobajima; Hiroshi Okaniwa; Hiyoshi Chiba, all of Tokyo, and Norio Takagi, Ogaki, all of Japan, assignors to Teijin Limited, Osaka, Japan
Division of Ser. No. 378,241, July 11, 1973, Pat. No. 3,902,180. This application Jan. 17, 1975, Ser. No. 542,041
Claims priority, application Japan, July 12, 1972, 47-69039; July 17, 1972, 47-70726; Sept. 4, 1972, 47-87902; Dec. 27, 1972, 48-2232; Dec. 25, 1972, 48-368; May 4, 1973, 48-49014
Int. Cl.² G03G 17/02; H01S 3/00
U.S. Cl. 346—74 E **30 Claims**



1. A method for forming images wherein in order to successively oxidize and/or reduce, responsive to electrical signals, an electric conductive coating composed of at least one of the group of indium, tin, titanium, and zirconium which has a substantially transparent highly-oxidized first state and a substantially opaque second state which is at least more reduced than said first state, a recording electrode is contacted with said coating via an electrolytic layer, an electrical signal applied across said recording electrode and said coating, in order that said coating selectively undergoes electrolytic change responsive to said electrical signal to form images on said base material.

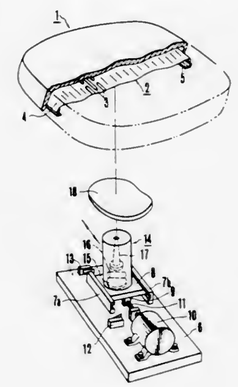
3,949,410
JET NOZZLE STRUCTURE FOR ELECTROHYDRODYNAMIC DROPLET FORMATION AND INK JET PRINTING SYSTEM THEREWITH
Ernest Bassous, Riverdale; Lawrence Kuhn, Ossining, and Howard H. Taub, Mount Kisco, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 23, 1975, Ser. No. 543,569
Int. Cl.² G01D 15/18
U.S. Cl. 346—75 **50 Claims**



1. A monolithic structure for electrohydrodynamically controlling the formation of droplets in a liquid jet stream exiting from a jet nozzle orifice of at least one jet nozzle structure comprising:
a jet nozzle design for said jet nozzle structure in a single crystalline semiconductor block;
an electrode structure integrally incorporated with said jet nozzle design for establishing an electric field proximate to said orifice of said jet nozzle structure; and
electrical circuit means connected to said electrode structure and having integral and operational relationship to said semiconductor block, for applying a time varying electrical signal to said electrode structure for establishing a time varying electric field proximate to said orifice of said jet nozzle structure, which electrohydrodynamically perturbs a liqud jet stream exiting from said jet nozzle orifice for controllably achieving temporal and spatial formation of droplets in said jet stream.

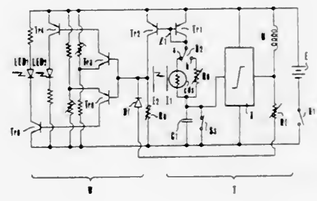
3,949,411
EXPOSURE APPARATUS
Fumiaki Yonai; Masaaki Yamauchi; Takashi Fujimura, all of Mobara, and Akira Kotoyori, Ichimiya, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 4, 1974, Ser. No. 439,215
Claims priority, application Japan, Feb. 9, 1973, 48-15637
Int. Cl.² G03B 41/00
U.S. Cl. 354—1 **7 Claims**

1. In the manufacture of the phosphor screen of a color television picture tube, said tube having a face plate panel with an inner surface on which said screen is to be formed as a series of stripes extending in parallel across one dimension of said panel and a slot type color selection electrode mounted in operative position relative to said panel, exposure apparatus comprising:
a support for mounting the panel and color selection electrode on the apparatus;
a carriage within said apparatus and spaced from said support, said carriage being mounted for translational movement in a direction generally parallel to the direction of the longitudinal dimension of the slots in the electrode when the electrode is mounted on said support;
a point light source mounted on said carriage and movable therewith in an exposure plane for irradiating the inner surface of the panel with light projected through the slots in the electrode when the panel is mounted on said support;
a correction lens interposed between said point light source and said support, and



means operatively connected to said carriage for driving said carriage in said generally parallel direction and to move said point source in said exposure plane at a substantially constant speed.

3,949,412
CAMERA WITH AN EXPOSURE INDICATING AND CONTROL DEVICE
Tetsuya Taguchi, Kawasaki; Mutsunobu Yazaki, and Noriaki Sanada, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Japan
Filed Dec. 4, 1974, Ser. No. 529,532
Claims priority, application Japan, Dec. 6, 1973, 48-138374; Sept. 26, 1974, 49-111300; Sept. 26, 1974, 49-111301
Int. Cl.² G03B 7/08; G01J 1/44; G03B 17/18
U.S. Cl. 354—23 R **9 Claims**



1. A camera including an exposure control apparatus having a light sensitive means for generating a control signal comprising, in combination, a first transistor connected to said light sensitive means for compressing the output signal of said light sensitive means by means of a diode connection, said first transistor having a base electrode; a regenerating circuit comprising a second transistor with a base electrode connected with the base electrode of said first transistor for enlarging the output signal of said first transistor, said second transistor including an output terminal; and an indicating means connected to the output terminal of said second transistor and operable to indicate the exposure quantity in accordance with the output of said second transistor.

3,949,413

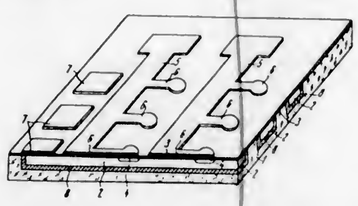
SEMICONDUCTOR DIODE MATRIX

Stanislav Alexandrovich Garyalnov, K-482, korpus 328, kv. 75; Veniamin Gavrilovich Rzhanov, K-460, korpus 212, kv. 57; Evgeny Nikolaevich Khrenov, K-482, korpus 323, kv. 30, and Evdokia Kirillovna Shergold, K-489, korpus 616, kv. 104, all of Moscow, U.S.S.R.

Continuation of Ser. No. 221,613, Dec. 23, 1971, abandoned. This application Mar. 25, 1974, Ser. No. 454,379

Int. Cl.² H01L 27/10, 27/02, 29/06, 23/48

U.S. Cl. 357—45 7 Claims



1. A semiconductor diode matrix consisting of: a dielectric base layer having a plurality of longitudinal cavities therein which are transversely spaced apart from one another, said cavities being open at one of the faces of said base layer and having side walls formed by said layer; a strip bus constituted of a single layer of monocrystal semiconductor material disposed in each cavity in said dielectric base layer and having a surface flush with said one face of the base layer; said semiconductor material and the dielectric base layer having substantially equal coefficients of thermal expansion, a plurality of longitudinally spaced semiconductor diodes embedded in the body of said strip bus and having one of the regions thereof formed by the semiconductor material of said strip bus; a single distinct layer of material in each cavity surrounding a respective said strip bus of semiconductor material to completely isolate the same from the side walls and bottom of each cavity of the dielectric base layer, said layer having a higher degree of conductivity than the semiconductor material of said strip bus; a first group of metal conductor buses and said one face of the base layer selectively joining said diodes into columns of the matrix; said diodes being connected into lines in the matrix by said strip buses of semiconductor material and said layers surrounding the strips, said strips and layers thus forming a second group of conductor buses.

3,949,414

GAIN CONTROL DEVICE OF VIDEO SIGNAL REPRODUCING APPARATUS

Hiroyuki Hayashi, Hon, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed June 4, 1974, Ser. No. 476,277

Claims priority, application Japan, June 8, 1973, 48-64578

Int. Cl.² H04N 5/76, 9/535

U.S. Cl. 358—8 4 Claims

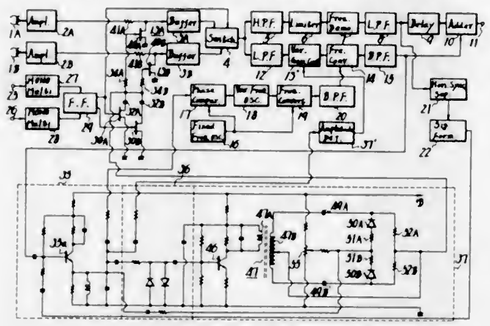
1. A gain control circuit for a video signal reproducing apparatus comprising a plurality of transducers to reproduce recorded video signals, said circuit comprising:

A. a plurality of variable gain circuits each connected to a respective one of said transducers to receive reproduced video signals therefrom;

B. means to separate a predetermined signal from the reproduced video signals;

C. an amplitude detector circuit connected to the signal separating means; and

D. a plurality of series circuits corresponding in number to the number of said transducers and each comprising a capacitor and a switching element connected in series, all of the series circuits being connected in parallel to a common junction to form a parallel circuit, said common junction being connected to the output of the amplitude detector circuit to have the output voltage of the detector circuit impressed across the parallel circuit, said common junction being further connected to all of the variable gain circuits to simultaneously suppply said detector circuit output to all of said variable gain circuits to control the gains thereof, and means for selectively energizing each switching element in each of the series circuits to cause each of the series circuits to be conductive only when a reproduced video signal from the respective transducer corresponding to the series circuit is applied to the respective variable gain circuit so that the voltage at said common junction is substantially the same during transition intervals between respective transducer outputs.



3,949,415

METHOD AND APPARATUS FOR COUPLING TO A STUDIO SYNCHRONIZER A RECORDED COLOR TV SIGNAL CONTAINING A FREQUENCY-TRANSLATED MODULATED CHROMINANCE SUBCARRIER

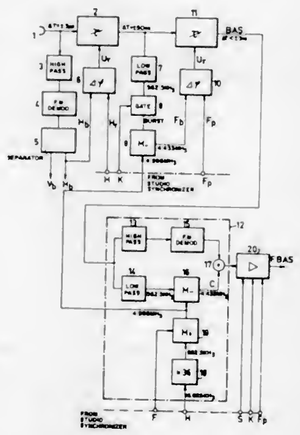
Hubert Foerster, Darmstadt, and Andreas Ilmer, Braunschweig, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed June 26, 1974, Ser. No. 483,438

Claims priority, application Germany, June 29, 1973, 2333148

Int. Cl.² H04N 5/76, 5/78

U.S. Cl. 358—8 12 Claims



1. In a method of reproducing a color TV picture from a color TV signal recorded on an information carrier, when the color TV signal recorded on the information carrier includes a luminance component which occupies a predetermined luminance frequency range and furthermore includes a modulated chrominance subcarrier which instead of a first chrominance frequency range having a first or conventional location relative to the luminance frequency range occupies a different second chrominance frequency range having a different location relative to said luminance frequency range in order to facilitate recording of the modulated chrominance subcarrier, comprising the steps of deriving a color TV signal from the information carrier, producing a synchronizing signal from a studio synchronizer, introducing into the color TV signal derived from the information carrier a corrective phase shift for bringing the color TV signal into synchronism with the signal from the studio synchronizer, said step of introducing the corrective phase shift into the color TV signal derived from the information carrier being performed while said luminance component and said modulated chrominance subcarrier still occupy said predetermined luminance frequency range and said second chrominance frequency range, respectively, and only thereafter effecting a frequency translation of the modulated chrominance subcarrier from said second to said first chrominance frequency range to form a color TV signal comprised of a luminance component occupying said predetermined luminance frequency range and a modulated chrominance subcarrier occupying said first chrominance frequency range.

3,949,416

DROP OUT COMPENSATION SYSTEM

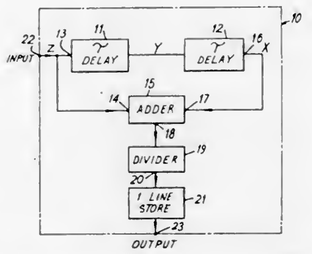
Anthony Donald Stalley, Camberley, and John Albert Coffey, Newbury, both of England, assignors to Quantel Limited, England

Filed Sept. 5, 1974, Ser. No. 503,586

Claims priority, application United Kingdom, Sept. 11, 1973, 42761/73

Int. Cl.² H04N 5/76; G11B 5/09

U.S. Cl. 358—8 17 Claims



1. A drop-out compensation system for use with a composite colour television signal when the chrominance components are not separated from the luminance components, comprising:

a. input means for accepting a colour or monochrome picture information signal;

b. output means;

c. a drop-out compensating signal generator;

d. switch means for effecting connection of said input means to said compensating signal generator and for effecting connection between said compensating signal generator and said output means, and

e. a drop-out detector for effecting switching of said switch means, said compensating signal generator including delay means for delaying the information signal entering the delay means by a period substantially equal to two thirds the subcarrier period of the picture information signal;

f. adder means for summing the information arriving simultaneously at the delay means and said delayed output;

g. means for reducing the level of the signal from the compensating signal generator so that the low frequency luminance level of said resulting compensating signal at said output means has a value the same as that in the colour picture information signal at the input means, and

h. storage means for effecting a delay within the compensating signal generator equal to at least one scanning line time, wherein said resulting compensating signal on the occurrence of a drop-out is fed into the picture line being scanned at the correct time and in the correct phase relationship.

3,949,417

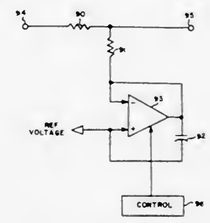
SEQUENTIAL COLOR AND MEMORY DECODER

Larry Allan Nelson, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sept. 16, 1974, Ser. No. 506,381

Int. Cl.² H04N 9/40, 9/535

U.S. Cl. 358—14 5 Claims



1. An improved SECAM decoder including separation means for separating a composite video signal into luminance and chrominance components, digital means for digitizing the chrominance components, demodulation means for demodulating the digitized chrominance components, and image means for displaying the luminance and demodulated chrominance components, wherein the improvement comprises:

de-emphasis means for selectively de-emphasizing the demodulated chrominance components connected between the demodulation means and images means; and

means for controlling said de-emphasis means during a syncrhonization interval.

3,949,418

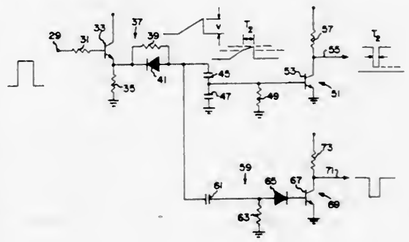
BURST GATE AND BACKPORCH CLAMPING CIRCUITRY

Gopal Krishna Srivastava, Schaumburg, Ill., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jan. 27, 1975, Ser. No. 544,278

Int. Cl.² H04N 9/46, 9/535

U.S. Cl. 358—20 14 Claims



1. In a color television signal receiver utilizing a video signal having blanking signals with a backporch portion and a color burst signal on the backporch portion, burst gate and backporch clamping circuitry comprising:

means for providing pulse signals in time coincidence with said blanking signals;

means coupled to said means for providing pulse signals for gating said color burst signals including a first impedance coupled to a potential reference level, series connected charge storage means and clamping means coupled to said means for providing pulse signals and said first impedance, a second impedance coupling said charge storage means and clamping means to a potential reference level, and a third impedance coupling said clamping means to a potential source for producing an output signal in response to current flow through said clamping means; and

means coupled to said means for gating said color burst signals for clamping said backporch portion of said video signal including series connected charge storage means and clamping means with a fourth impedance coupling the junction of the charge storage and clamping means to a potential reference level and a fifth impedance coupling said clamping means to a potential source for producing an output signal in response to current flow through said clamping means.

3,949,419

MAGNETIC RECORDING APPARATUS

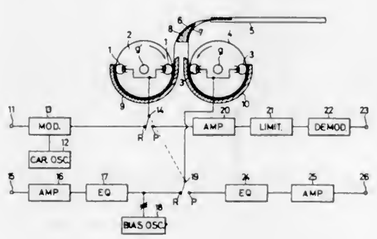
Keisuke Machida, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 16, 1974, Ser. No. 505,993

Claims priority, application Japan, Sept. 21, 1973, 48-110920[U]

Int. Cl.² G11B *15/14*

U.S. Cl. 360—64 **10 Claims**



1. Magnetic recording apparatus for recording an input signal on a magnetic recording medium, comprising:

a plurality of magnetic recording heads connected in parallel circuits to an input terminal of said input signal to be supplied with said input signal for recording same on said recording medium;

bias current generating means for generating a recording bias current determinative of the recording level of said magnetic recording heads;

means coupled to said bias current generating means and said heads for superimposing said bias current on said input signal supplied to said magnetic recording heads; and

control means connected to said heads for selectively controlling the amount of bias current superimposed on said input signal so that a selected one of said magnetic recording heads at a time is provided with a recording level sufficient to record said input signal on said recording medium.

3,949,420

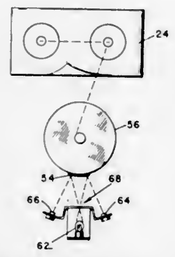
TAPE PROGRAM LOCATION METHOD AND MEANS

R. Robert Older, 2413 S. Broadway St., Santa Ana, Calif. 92707

Filed May 28, 1974, Ser. No. 473,808

Int. Cl.² G11B *15/18*

U.S. Cl. 360—72 **8 Claims**



1. In a control system for a tape reader having a reading hed and having a transporting mechanism which provides transport of a tape in the forward and reverse directions and further includes a rotatable member of the kind that rotates in a forward motion when the tape is transported forwardly past said head and that rotates in the reverse direction when the tape is transported in the reverse said direction past said head and that does not rotate when the tape is not being transported past said head, the improvement which comprises:

means responsive to rotation of said rotatable member in both directions for developing an algebraic count indicative of the resultant number of times that said rotatable member has revolved in one direction;

means for comparing a reference count with said algebraic count and for providing a difference signal which indicates whether the counts are equal, whether the algebraic count is greater than the reference count, and whether the algebraic count is less than the reference count; and

means responsive to said difference signal for causing said transporting mechanism to transport said tape until said difference signal indicates that said counts are equal.

3,949,421

CASSETTE TAPE RECORDER WITH HEADS MOUNTED ON A SLIDE FOR ADJUSTMENT

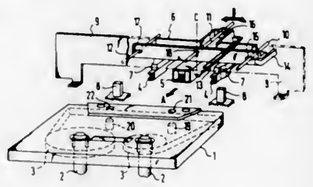
Karl Herleth, Munich, and Herbert Drexler, Neuesting, both of Germany, assignors to Uher Werke Munchen GmbH & Co., Munich, Germany

Filed Apr. 18, 1974, Ser. No. 462,102

Claims priority, application Germany, Apr. 18, 1973, 7314874[U]

Int. Cl.² G11B *5/48, 5/54, 23/04*

U.S. Cl. 360—96 **12 Claims**



1. A tape recorder of cassette type having means for positioning a cassette in an operative position with the cassette having a tape side for presenting the tape to the heads of the recorder comprising, in combination, a slide having side edges and a front edge with the the recorder heads mounted on said slide front edge, means for supporting said slide on the recorder for sliding movement towards and away from the tape side of a cassette positioned on the recorder in a horizontal plane substantially parallel to the plane of the cassette and for swiveling movement in said horizontal plane about a vertical axis extending intermediate said slide edges, means for yieldingly urging said slide towards said cassette tape side and stop means on said slide front edge engageable with said cassette tape side to position said heads in an accurately aligned, operative position with respect to said cassette.

3,949,422

TAPE RECORDER WITH PIVOTAL ERASE HEAD BEARING

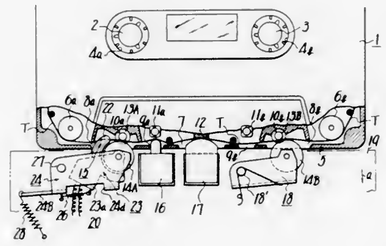
Shoji Sato, Sendai; Kenji Yoshida, Tokyo, and Kiyoshi Kikuchi, Togajo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 16, 1974, Ser. No. 470,653

Claims priority, application Japan, May 21, 1973, 48-59591[U]

Int. Cl.² G11B *5/10, 5/54, 21/20*

U.S. Cl. 360—96 **5 Claims**



1. Magnetic erasing head apparatus for use in a magnetic tape cassette recorder of the type which is operable with a magnetic tape cassette formed of a housing for magnetic tape and having a plurality of windows through which said tape is accessible, comprising:

a bearing member for supporting a pinch roller, said pinch roller being rotatably journaled in said bearing member;

a magnetic erasing head having at least a portion thereof mounted in and supported by said bearing member and having another portion thereof extending outwardly from said bearing member, said magnetic erasing head having a tape contact portion positioned at said another portion for slidably contacting said magnetic tape, said magnetic erasing head further having tape guide flanges positioned adjacent said tape contact portion for guiding said magnetic tape into slidable contact with said tape contact portion, said magnetic erasing head being mounted in said bearing member in juxtaposition with said pinch roller;

a pinch lever pivotally mounted in said recorder for pivotally supporting said bearing member and said erasing head mounted in said bearing member such that when said pinch lever is pivoted into an operative position with respect to said magnetic tape, said pinch roller and said erasing head are urged through one of said cassette housing windows into contact with said magnetic tape, said pinch roller advancing said tape past said tape guide flanges and in slidable contact with said erasing head; and

means for pivotally mounting said bearing member on said pinch lever to thereby define a first pivot axis about which said bearing member pivots with respect to said pinch lever.

3,949,423

CASSETTE LOCATING AND HOLDING DEVICES IN A CASSETTE TAPE RECORDING AND/OR REPRODUCING APPARATUS

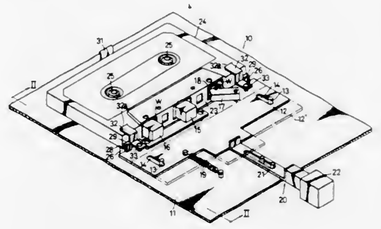
Hiromitsu Katada, and Yoshikazu Ishimatsu, both of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 11, 1974, Ser. No. 514,235

Claims priority, application Japan, Oct. 31, 1973, 48-126342[U]

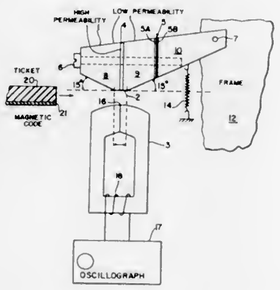
Int. Cl.² G11B *5/54, 21/22*

U.S. Cl. 360—96 **7 Claims**



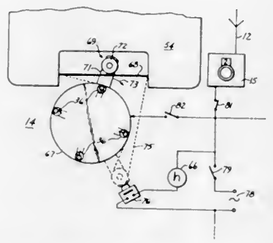
1. A cassette tape recording and/or reproducing apparatus comprising: a chassis; a carriage having at least one head thereon; means mounting said carriage on said chassis for movement of said carriage relative to the latter parallel to the chassis between an inactive position, in which said head is spaced from a tape cassette in an operative position, and an active positive, in which said head is engaged through a first edge portion of a cassette in said operative position with the tape in said casette; supporting means fixed on said chassis for supporting and locating a tape cassette in said operative position on said chassis, said supporting means includes a pair of support members fixed on said chassis and having shouldered portions each defining a first surface facing away from said chassis for engaging the undersurface of the tape cassette near said first edge portion of the latter which is adjacent said head in said active position of the carriage so as to hold the tape in the cassette at a predetermined level in respect to said head when the latter engages the tape and a second surface normal to said first surface for engagement by said first edge portion of the cassette so as to establish the engaging pressure of said head, in said active position of the carriage, against the tape in the cassette in said operative position of the latter; resilient means acting against the edge portion of the cassette which is opposite said first edge portion in said operative position of the cassette for urging said first edge portion against said second surface of each said shouldered portion of the supporting means; a pair of holding members movably mounted on said chassis for movement in respect to the latter between respective cassette holding positions, in which said holding members engage a tape cassette in said operative position from above adjacent said first edge portion of the cassette for securely holding the tape cassette in engagement with each said first surface of the supporting means, and respective cassette releasing positions, in which said holding members are spaced from a tape cassette in said operative position, each of said holding members, in moving from said cassette releasing position to said cassette holding position, moving over the upper surface of a cassette along a path having a component directed toward said first edge portion of the cassette in said operative position so as to also urge said first edge portion against said second surface of each of said shouldered portions of the supporting means; and actuating means for moving said holding members to said cassette holding and releasing positions upon movement of said carriage to said active and inactive positions, respectively.

3,949,424
GUIDE MEMBER FOR USE WITH A MAGNETIC HEAD OF A TICKET ISSUING MACHINE
Martin Frank Jollyman, Uxbridge, England, assignor to Bell Punch Company Limited, Uxbridge, England
Filed June 17, 1974, Ser. No. 480,262
Claims priority, application United Kingdom, June 19, 1973, 28985/73
Int. Cl.² G11B *15/60, 25/04, 19/00*
U.S. Cl. 360—130 **5 Claims**



1. A guide member for use with a reading and/or recording head having a magnetic gap therein to expedite reading of a ticket with a magnetic message thereon by said head, the guide member being made of material of low permeability and having an intermediate portion made of material of high permeability, means positioning the guide member adjacent the head so that the said intermediate portion is opposite said gap in the head, and means resiliently urging said head and guide member together for receiving said ticket adjacent said gap.

3,949,425
VIDEO SYSTEMS
Ludwig A. Perret, La Canada, and Thomas C. Soran, West Covina, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.
Filed Apr. 29, 1974, Ser. No. 465,030
Int. Cl.² G11B *5/008, 23/04*
U.S. Cl. 360—137 **6 Claims**



1. In apparatus for transducing information relative to an information carrier having a rest position, and for processing transmitted information, the improvement comprising in combination:
means including a transducing device for transducing information relative to said information carrier;
means for totaling and indicating operating hours of said transducing device;
means for positioning said information carrier in an active position at said transducing device; and
means operatively associated with said totaling and indicating means and said positioning means for activating said totaling and indicating means only upon said positioning of the information carrier in said active position whereby only operating hours during which the information carrier is in said active position are totaled and indicated.

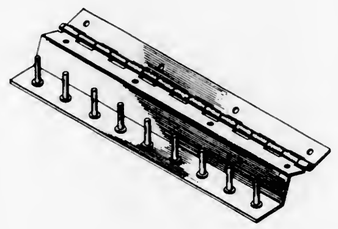
DESIGNS

APRIL 6, 1976

239,420
SOCK
Edward M. Clark, Greensboro, N.C., assignor to Kiddie Tot Hosiery Mills, Inc.
Filed Nov. 6, 1974, Ser. No. 521,350
Term of patent 14 years
Int. Cl. D2— *04*
U.S. Cl. D2—334



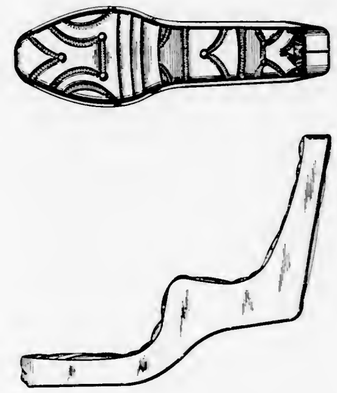
239,421
COMBINED HINGE AND BOBBIN HOLDER
Vernon A. Searer, Elkhart, Ind., assignor to Elkhart Rivet & Register Co., Inc., Elkhart, Ind.
Filed Aug. 22, 1974, Ser. No. 499,536
Term of patent 14 years
Int. Cl. D3— *99*
U.S. Cl. D3—19 D



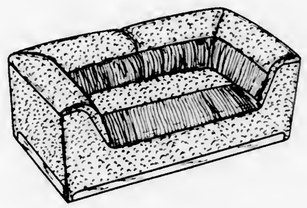
239,422
CONVERTIBLE SEAT OR SIMILAR ARTICLE OF FURNITURE
Frank W. Petersilie, Boone, N.C., assignor to Investments and Innovative Concepts, Inc., Boone, N.C.
Filed Aug. 29, 1974, Ser. No. 501,625
Term of patent 14 years
Int. Cl. D6— *01*
U.S. Cl. D6—37



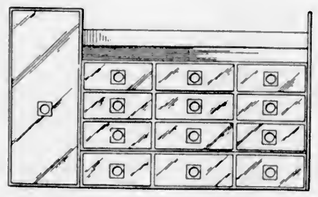
239,423
MOTORCYCLE SEAT
Michael W. Hanagan, Somers, Conn., assignor to Corbin Gentry, Inc., Somersville, Conn.
Filed Sept. 23, 1974, Ser. No. 508,411
Term of patent 14 years
Int. Cl. D12— *11*
U.S. Cl. D6—48.1



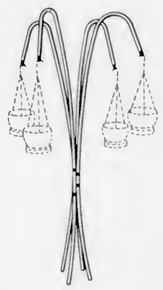
239,424
SEAT
Giovanni Offredi, Milan, Italy, assignor to Fratelli Saporiti, Besnate, Varese, Italy
Filed Mar. 18, 1974, Ser. No. 452,411
Term of patent 14 years
Int. Cl. D6— *01*
U.S. Cl. D6—63



239,425
COMBINED BED AND STORAGE UNIT
Michael A. Mendlin, Springfield, N.J., assignor to Bunk Trunk Distributors, Paramus, N.J.
Original design application Apr. 16, 1973, Ser. No. 351,633, now Patent No. 238,131, which is a division of design application Ser. No. 160,237, July 6, 1971, now Patent No. 227,724. Divided and this application July 14, 1975, Ser. No. 595,734
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—80



239,426
STAND FOR POTTED PLANTS
William D. Bailey, Box 26, Woodleaf, N.C. 27054
Filed Nov. 6, 1974, Ser. No. 521,411
Term of patent 14 years
Int. Cl. D6—*06;* D11—*02*
U.S. Cl. D6—85



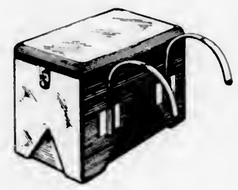
239,427
COMBINED SALT SHAKER, PEPPER SHAKER, AND STAND THEREFOR
Benjamin W. Price, 8131 Atlantic Blvd., Jacksonville, Fla. 32216
Filed Aug. 22, 1974, Ser. No. 499,444
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—55



239,428
PITCHER
John S. Cummings, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.
Filed Sept. 30, 1974, Ser. No. 510,773
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—64



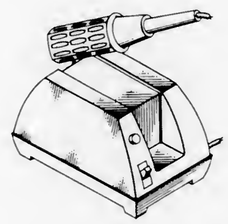
239,429
PORTABLE INSULATED CHEST
Dean W. Billingsley, Santa Ana, Calif. (12001 Tacalene, Garden Grove, Calif. 92640)
Filed Sept. 13, 1974, Ser. No. 505,673
Term of patent 3½ years
Int. Cl. D7—*07*
U.S. Cl. D7—77



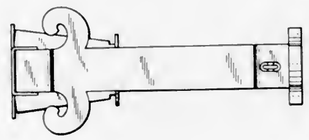
239,430
TIRE REPAIR TOOLS
Alec W. Niconchuk, 267 Lowell St., Peabody, Mass. 01960
Filed Apr. 8, 1974, Ser. No. 458,894
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—31



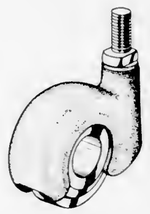
239,431
COMBINED SOLDERING IRON AND STAND
Richard O. Spencer, South Laguna, Calif., assignor to Eldon Industries, Inc., Hawthorne, Calif.
Filed Dec. 19, 1974, Ser. No. 534,362
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—71



239,432
TIEBACK HOLDING HARDWARE FOR DRAPERIES
John R. Hedger, 4958 E. Carmen, Fresno, Calif. 93727
Filed Jan. 27, 1975, Ser. No. 544,489
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—214



239,433
CASTOR
Michio Sugasawara, 133 Wakamatsu-cho, Shinjuku-ku, Tokyo, Japan
Filed June 25, 1975, Ser. No. 590,400
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—226



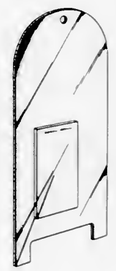
239,434
WIG BLOCK HOLDER
Stanley Linn, Flushing, N.Y., assignor to Pearlduck, Inc., Garden City, N.Y.
Filed Mar. 28, 1975, Ser. No. 563,226
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—246



239,435
DRAPERY SLIDE FOR A CURTAIN ROD
Samuel Galietti, 1360 NE. 204th Terrace, North Miami Beach, Fla. 33162
Filed Aug. 6, 1975, Ser. No. 602,330
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—248



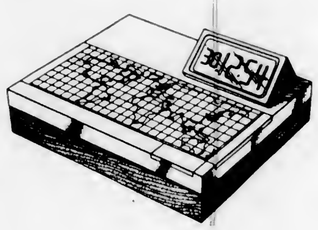
239,436
COMBINED DISPLAY CARD AND STAMP PACKAGE
Eurith Dickerson Williams, Box 110, Atlanta, Ga. 30301
Filed Sept. 23, 1974, Ser. No. 508,034
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—191



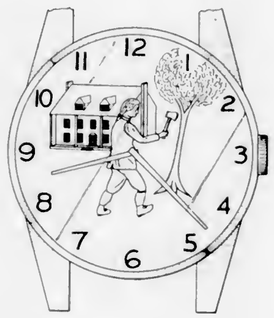
239,437
OVERCAP FOR A CONTAINER
Stanley W. Boduch, Ludlow, Mass., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Nov. 7, 1974, Ser. No. 522,084
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—267



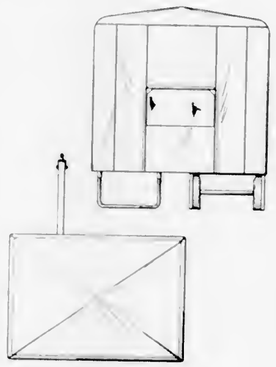
239,438
DIGITAL CLOCK
Takeyoshi Kawano, Kyoto, and Kikuo Ohta, Katano, Osaka, Japan, assignors to Matsushita Electric Industrial Company, Ltd., Kadoma, Osaka, Japan
Filed Oct. 30, 1974, Ser. No. 519,174
Claims priority, application Japan June 25, 1974
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



239,439
WRISTWATCH
Harriet R. Davis, 2408 California St. NW., Washington, D.C. 20008
Filed June 17, 1974, Ser. No. 480,015
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39



239,440
CAMPING TRAILER
Michael H. Griggs and Keith R. Snelson, Elkhart, Ind., assignors to Time Out Corporation, Elkhart, Ind.
Filed Jan. 7, 1975, Ser. No. 539,051
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—103



239,441
TIRE
Mitsuhisa Yahagi, Tokyo, and Shigeo Makino, Tokorozawa, Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan
Filed Sept. 13, 1974, Ser. No. 505,564
Claims priority, application Japan Mar. 29, 1974
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—142



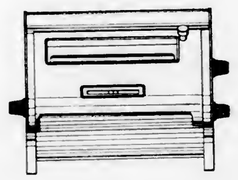
239,442
ANCHOR
Paul Gunnar Watterback, Stockholm, Sweden, assignor to Arbman Development AB, Stockholm, Sweden
Filed Jan. 3, 1975, Ser. No. 538,480
Claims priority, application Sweden July 7, 1974
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—215



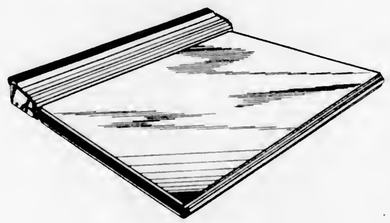
239,443
HOLDER FOR AN ELECTRIC ERASER
Thomas P. Connoy, 6312 Baldwin Lake Road, New Brighton, Minn. 55112
Filed Oct. 23, 1974, Ser. No. 517,083
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—54



239,444
READING TRAINER
Russell H. Dymond, 4150 Chippewa St., St. Louis, Mo. 63116
Filed Mar. 23, 1973, Ser. No. 344,345
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—64

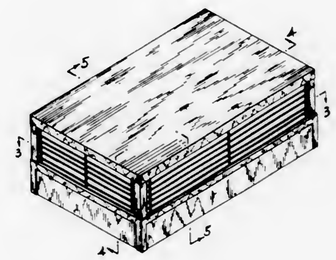


239,445
HOLDER FOR LEDGER SHEETS OR THE LIKE
Allen L. Dixon, Portage, Mich., assignor to Master-Craft Corporation, Kalamazoo, Mich.
Original design application Sept. 20, 1971, Ser. No. 182,299, now Patent No. 230,645. Divided and this application Nov. 28, 1973, Ser. No. 419,676
Term of patent 14 years
Int. Cl. D19—*03*
U.S. Cl. D19—88





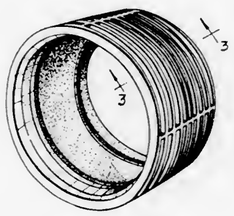
239,446
LIGHT ATTRACTING INSECT TRAP
Donald E. Gilbert, Box 2188, Jonesboro, Ark. 72401
Filed Apr. 14, 1975, Ser. No. 567,947
Term of patent 7 years
Int. Cl. D22—*06*
U.S. Cl. D22—19



239,447
FISH LURE
Wes L. Radcliff, Universal City, Tex., assignor to Quadratics Corporation, San Antonio, Tex.
Filed Sept. 19, 1974, Ser. No. 507,271
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



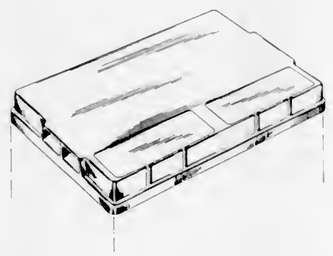
239,448
FITTING
Henry Joseph Kazienko and John Earl McCorkle, Littleton, Colo., and Alma Porter Moser, Logan, Utah, assignors to Johns-Manville Corporation, Denver, Colo.
Filed Dec. 16, 1974, Ser. No. 533,426
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40



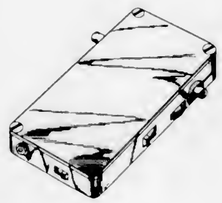
239,449
COMBINED PRIMARY CONTROL AND IGNITER FOR OIL BURNER
Frederick T. Bauer, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Jan. 13, 1975, Ser. No. 540,688
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—126



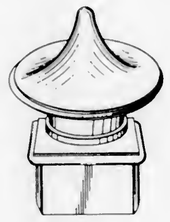
239,450
BATTERY COVER
Roy Erving Hennen, Mequon, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.
Filed Jan. 22, 1975, Ser. No. 542,952
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—6



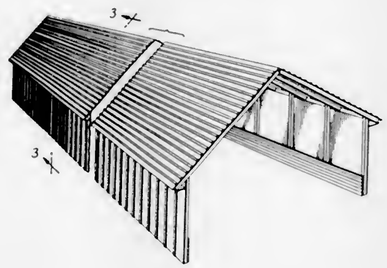
239,451
DIRECTIONAL RECEIVER
James E. Scott, Austell, Ga., assignor to Field Operations Bureau of the Federal Communications Commission
Filed Apr. 1, 1975, Ser. No. 564,144
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—14 K



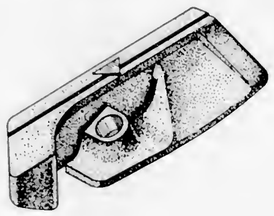
239,452
CAP FOR USE WITH A LINK CHAIN SUPPORT POST
Michael T. Russo, Bloomfield Hills, Mich. (1805 Larchwood St., Troy, Mich. 48084)
Filed May 20, 1974, Ser. No. 471,403
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D28—1 C



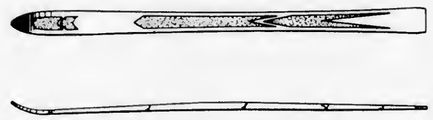
239,453
A-FRAME HOUSING FOR POULTRY CAGE SYSTEMS
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Continuation-in-part of design application Ser. No. 404,727, Oct. 9, 1973. This application June 20, 1974, Ser. No. 481,392
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D30—1



239,454
PUTTER HEAD
James D. Giambazi, 12 Abbott St., Cumberland, R.I. 02864
Filed July 24, 1974, Ser. No. 491,541
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



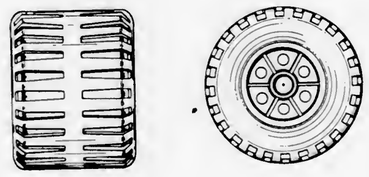
239,455
SKI
Rudolf Ferch, Salzburg, Austria, assignor to Kastle G.m.b.H., Ried im Innkreis, Austria
Filed Apr. 23, 1974, Ser. No. 463,375
Claims priority, application Austria Oct. 24, 1973
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 D



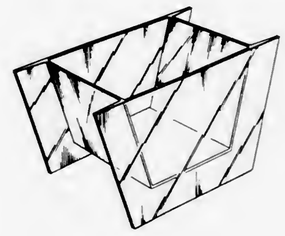
239,456
TOY BEAR
William J. Maloney II, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 18, 1973, Ser. No. 425,705
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 B



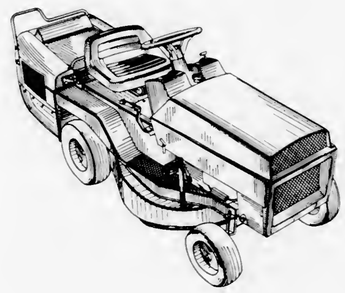
239,457
TOY WHEEL
Richard S. Chesler, Orchard Park, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed July 25, 1974, Ser. No. 491,638
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



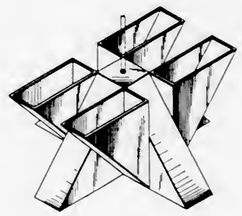
239,458
PLANTER
Edward A. Wagschal, 21 E. 62nd St., New York, N.Y. 10021
Filed Aug. 15, 1974, Ser. No. 497,517
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A



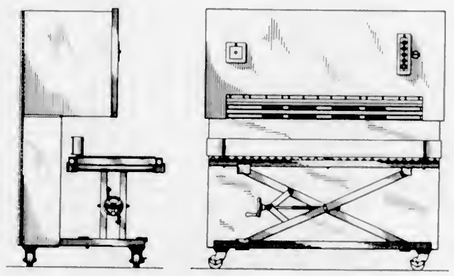
239,459
LAWN MOWER
Alexander B. Musichuk, Parma, Ohio, assignor to MTD Products Inc.
Filed Apr. 18, 1975, Ser. No. 569,545
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 D



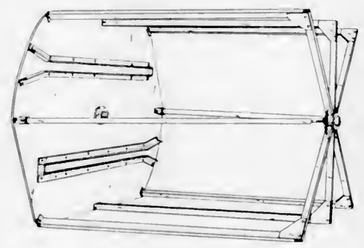
239,460
LIGHTING FIXTURE
Arthur Schacht, East Hills, N.Y., assignor to Crystal Mart, Inc., Deer Park, N.Y.
Filed Oct. 30, 1974, Ser. No. 519,281
Term of patent 14 years
Int. Cl. D11—*02*; D26—*05*
U.S. Cl. D48—23 R



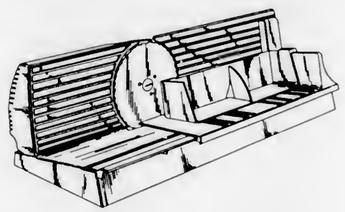
239,461
PACKAGING MACHINE
Larry W. Heavner, Glen Ellyn, and Kenneth L. Gidewall, Clarendon Hills, Ill., assignors to Coronet Container Corporation
Filed July 19, 1973, Ser. No. 380,671
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 C



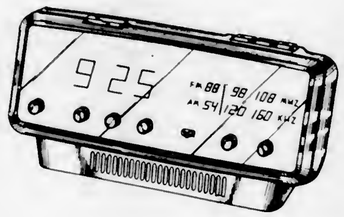
239,463
INSERT FOR BAKING OVEN
Nils Eliasson and Leif Andersson, Fristad, Sweden, assignors to AB Svenska Bakugensfabriken, Fristad, Sweden
Filed Sept. 16, 1974, Ser. No. 506,024
Claims priority, application Sweden Mar. 15, 1974
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D55—1 E



239,462
ELECTRIC FOOD SLICER
Ralph D. Gourley, Santa Barbara, Calif., assignor to Rival Manufacturing Company, Kansas City, Mo.
Filed Jan. 28, 1974, Ser. No. 437,059
Term of patent 14 years
Int. Cl. D7—*04;* D15—*08*
U.S. Cl. D55—1 A



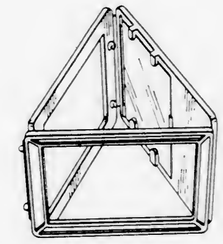
239,464
CLOCK RADIO
Shogo Imai, Osaka, Japan, assignor to Sharp Kabushiki Kaisha (Sharp Corporation), Osaka, Japan
Filed Dec. 26, 1973, Ser. No. 427,661
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



239,465
RADIO RECEIVER
Ken Kawamura, Katano, and Masanori Hamada, Moriguchi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Oct. 15, 1974, Ser. No. 515,037
Claims priority, application Japan Apr. 19, 1974
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



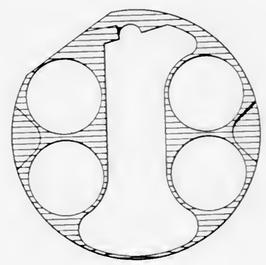
239,467
PICTURE VIEWER
Alfons Adriaan den Ouden, Antwerp, Belgium, assignor to Brabo Corporation Naamloze Vennootschap, Antwerp, Belgium
Filed Aug. 9, 1974, Ser. No. 496,352
Claims priority, application Great Britain Feb. 15, 1974
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 N



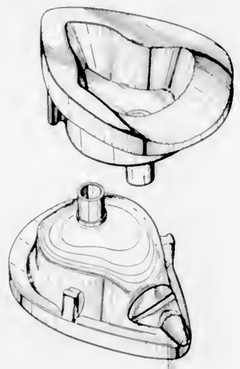
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Masami Ueda, Nara, and Toshio Igo, Katano, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Oct. 15, 1974, Ser. No. 515,038
Claims priority, application Japan Apr. 19, 1974
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



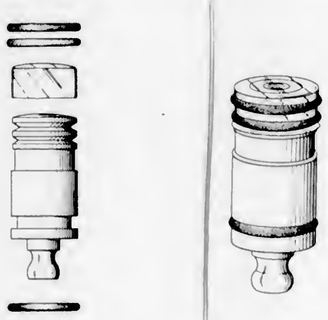
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Howard J. Thompson, New Richmond, Wis., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Apr. 26, 1974, Ser. No. 464,485
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D83—1 F



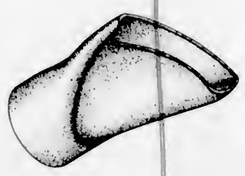
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Matts A. B. Halldin, Lindingo, and Rune N. G. Andreasson, Stockholm, Sweden, assignors to Gnosjoplast AB
Filed June 14, 1974, Ser. No. 479,565
Claims priority, application Sweden Dec. 19, 1973
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 K



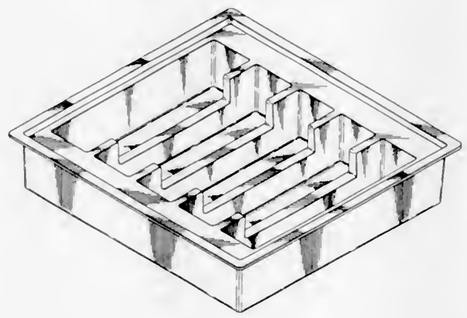
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Harry Dudley Wright, Manoir de Bonvent, 1245 Collonge Bellerive, Geneva, Switzerland, and Kurt Halfar and Willy Hofer, Geneva, Switzerland; said Halfar and Hofer assignors to said Wright
Filed June 20, 1974, Ser. No. 481,258
Term of patent 7 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 F



239,471
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Frank E. Gonzales, 7842 Santa Monica Ave., Stanton, Calif. 90680
Filed Jan. 30, 1975, Ser. No. 545,364
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



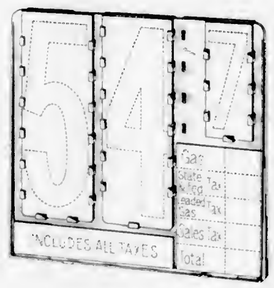
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Robert A. Clowe, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Sept. 26, 1974, Ser. No. 509,365
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Int. Cl. D3—*99*
U.S. Cl. D87—1 R



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Maarten Willem van Lelyveld, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 27, 1973, Ser. No. 391,800
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



239,474
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Peter De Korte, 329 Calvin Court, Wyckoff, N.J. 07481
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U.S. Cl. D96—12 R



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CLASSIFICATION OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM

DATE PUBLISHED APRIL 6, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
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1E	B 407,205	C	Mar. 16, 1976
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482	B 525,809	M	Feb. 24, 1976
527	B 470,170	M	Jan. 13, 1976
546	B 518,999	M	Feb. 3, 1976
765	B 500,945	M	Feb. 24, 1976
Class 75			
.5BA	B 385,631	C	Jan. 27, 1976
84.1R	B 538,491	C	Feb. 17, 1976
101BE	B 452,938	C	Feb. 17, 1976
135	B 525,961	C	Jan. 13, 1976
156.5	B 411,471	C	Feb. 17, 1976
165	B 483,256	C	Feb. 10, 1976
Class 83			
61	B 570,862	M	Feb. 24, 1976
425	B 545,935	M	Jan. 27, 1976
Class 84			
1.1	B 476,568	E	Mar. 16, 1976
1.16	B 556,897	M	Feb. 3, 1976
275	B 504,169	M	Jan. 13, 1976
Class 86			
1R	B 356,187	M	Jan. 20, 1976
Class 89			
142	B 470,853	M	Mar. 23, 1976
Class 91			
40	B 410,694	M	Mar. 23, 1976
Class 92			
163	B 425,193	M	Mar. 23, 1976
Class 93			
58.3	B 548,978	M	Mar. 9, 1976
Class 96			
1R	B 423,883	C	Jan. 27, 1976
1.4	B 200,759	C	Feb. 3, 1976
33	B 437,894	C	Mar. 2, 1976
35	B 524,026	C	Feb. 10, 1976
35.1	B 420,176	C	Mar. 16, 1976
	B 462,893	C	Feb. 24, 1976
	B 530,873	C	Feb. 17, 1976
36.1	B 359,901	C	Jan. 13, 1976
45	B 455,759	C	Feb. 24, 1976
50PT	B 481,190	E	Mar. 30, 1976
54	B 367,305	C	Mar. 2, 1976
66.3	B 417,498	C	Mar. 23, 1976
78	B 503,029	C	Jan. 27, 1976
Class 99			
162B	B 432,991	M	Mar. 2, 1976
335	B 557,299	M	Feb. 3, 1976
485	B 311,450	M	Mar. 9, 1976
Class 100			
35	B 561,165	M	Mar. 30, 1976
48	B 561,166	M	Mar. 30, 1976
Class 101			
19	B 402,328	M	Apr. 6, 1976
93.13	B 496,999	M	Jan. 27, 1976
93.14	B 481,600	M	Jan. 27, 1976
115	B 395,554	M	Mar. 9, 1976
129	B 416,589	M	Jan. 27, 1976
401.3	B 494,234	M	Feb. 10, 1976
Class 102			
32	B 405,726	M	Jan. 13, 1976
38	B 279,415	M	Mar. 16, 1976
39	B 417,349	M	Mar. 9, 1976
42R	B 443,163	M	Feb. 3, 1976
69	B 412,068	M	Jan. 13, 1976
Class 106			
1	B 466,419	C	Mar. 23, 1976
27	B 452,883	C	Jan. 27, 1976
47R	B 581,564	C	Mar. 23, 1976
57	B 502,773	C	Jan. 13, 1976
58	B 480,287	C	Mar. 30, 1976
	B 750,679	C	Mar. 23, 1976
213	B 432,265	C	Mar. 23, 1976
288	B 564,255	C	Mar. 30, 1976
309	B 311,779	C	Feb. 10, 1976
316	B 503,776	C	Mar. 23, 1976
Class 109			
1SB	B 358,427	E	Feb. 3, 1976
Class 110			
8R	B 512,324	M	Feb. 17, 1976
Class 114			
.5A	B 472,591	M	Apr. 6, 1976
16.6	B 546,922	M	Mar. 16, 1976
67A	B 489,550	M	Mar. 16, 1976
144R	B 529,659	M	Feb. 24, 1976
230	B 484,769	M	Mar. 16, 1976
	B 503,456	M	Mar. 23, 1976
235B	B 532,679	M	Apr. 6, 1976
Class 116			
124L	B 469,228	M	Feb. 17, 1976
124.4	B 467,412	M	Jan. 13, 1976
Class 118			
637	B 563,301	M	Feb. 17, 1976
Class 123			
8.45	B 570,172	M	Feb. 3, 1976
25R	B 447,440	M	Feb. 17, 1976
32SP	B 467,486	M	Mar. 16, 1976
75B	B 563,780	M	Feb. 3, 1976
119A	B 405,899	M	Mar. 23, 1976
122AC	B 498,951	M	Mar. 2, 1976
139AW	B 480,251	M	Mar. 23, 1976
148E	B 480,473	M	Mar. 2, 1976
182	B 558,251	M	Jan. 13, 1976
191S	B 466,906	M	Mar. 16, 1976
325T	B 425,588	M	Jan. 13, 1976
Class 126			
271	B 512,745	M	Jan. 13, 1976
350A	B 537,903	M	Jan. 20, 1976
Class 128			
2.6R	B 534,574	M	Feb. 24, 1976
260	B 520,277	M	Feb. 17, 1976

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		CAT.	PUB. DATE
	B 524,121	M	Feb. 3, 1976
419P	B 535,466	M	Jan. 27, 1976
419PG	B 533,259	M	Feb. 24, 1976
Class 131			
144	B 586,387	M	Feb. 3, 1976
514.4	B 586,380	M	Mar. 2, 1976
Class 132			
7	B 464,491	M	Mar. 30, 1976
Class 136			
6LF	B 512,818	C	Apr. 6, 1976
26	B 511,665	C	Mar. 2, 1976
86R	B 505,126	C	Feb. 10, 1976
	B 574,128	C	Feb. 17, 1976
89	B 510,677	C	Feb. 24, 1976
148	B 524,464	C	Feb. 10, 1976
202	B 378,513	C	Jan. 27, 1976
205	B 399,632	C	Mar. 9, 1976
Class 137			
220	B 554,833	M	Mar. 30, 1976
255	B 508,940	M	Feb. 17, 1976
596.12	B 514,687	M	Jan. 27, 1976
608	B 490,623	M	Mar. 2, 1976
614.11	B 530,605	M	Feb. 3, 1976
625.46	B 528,756	M	Feb. 3, 1976
627.5	B 432,594	M	Mar. 30, 1976
798	B 430,172	M	Jan. 13, 1976
Class 138			
177	B 530,263	C	Mar. 30, 1976
Class 139			
122R	B 527,171	M	Mar. 9, 1976
Class 140			
92.1	B 590,158	M	Feb. 10, 1976
	B 590,159	M	Feb. 3, 1976
Class 141			
294	B 473,813	M	Mar. 9, 1976
Class 144			
32R	B 484,332	M	Mar. 2, 1976
34R	B 521,793	M	Feb. 24, 1976
241	B 545,630	M	Jan. 27, 1976
Class 148			
1.5	B 518,226	C	Feb. 10, 1976
23	B 527,972	C	Mar. 9, 1976
36	B 459,381	C	Mar. 9, 1976
174	B 561,405	C	Mar. 30, 1976
175	B 105,006	C	Mar. 23, 1976
187	B 554,164	C	Mar. 9, 1976
Class 150			
3	B 461,250	M	Mar. 16, 1976
8	B 459,190	M	Mar. 30, 1976
52R	B 513,134	M	Mar. 23, 1976
Class 152			
213R	B 445,690	M	Feb. 3, 1976
379S	B 522,537	M	Mar. 30, 1976
Class 156			
3	B 453,031	C	Mar. 16, 1976
	B 563,722	C	Jan. 13, 1976
66	B 497,584	C	Feb. 24, 1976
71	B 456,148	C	Jan. 13, 1976
73.6	B 414,481	C	Jan. 20, 1976
143	B 462,386	C	Jan. 13, 1976
159	B 339,446	C	Feb. 24, 1976
167	B 452,293	C	Mar. 30, 1976
220	B 480,591	C	Mar. 30, 1976
435	B 475,385	C	Mar. 9, 1976
446	B 515,368	C	Apr. 6, 1976
461	B 288,757	C	Mar. 30, 1976
608	B 584,997	C	Mar. 9, 1976
Class 160			
229R	B 505,813	M	Jan. 13, 1976
Class 162			
5	B 491,673	C	Feb. 17, 1976
133	B 431,072	C	Jan. 20, 1976
198	B 150,142	C	Jan. 27, 1976
	B 552,629	C	Mar. 23, 1976
274	B 468,421	C	Mar. 30, 1976
290	B 478,739	C	Feb. 17, 1976
Class 164			
4	B 546,677	M	Apr. 6, 1976
26	B 499,227	M	Jan. 27, 1976
57	B 488,756	M	Mar. 16, 1976
60	B 511,885	M	Jan. 27, 1976
282	B 396,916	M	Mar. 2, 1976
330	B 522,038	M	Feb. 3, 1976
Class 165			
4	B 328,116	M	Mar. 9, 1976
13	B 543,078	M	Feb. 17, 1976
32	B 529,194	C	Mar. 23, 1976
162	B 488,836	M	Mar. 30, 1976
Class 166			
224	B 492,120	M	Feb. 24, 1976
272	B 569,519	M	Feb. 3, 1976
273	B 562,519	M	Mar. 30, 1976
303	B 529,836	M	Feb. 3, 1976
311	B 511,156	M	Jan. 27, 1976
Class 172			
719	B 97,259	M	Mar. 9, 1976
Class 173			
104	B 537,709	M	Jan. 13, 1976
170	B 567,058	M	Jan. 13, 1976
Class 174			
52R	B 492,902	E	Feb. 24, 1976
68.5	B 509,772	E	Mar. 16, 1976
Class 176			
20R	B 384,330	C	Jan. 27, 1976
36R	B 367,621	C	Feb. 3, 1976
68	B 396,164	C	Feb. 3, 1976
Class 178			
6	B 520,227	E	Mar. 30, 1976
	B 546,426	E	Jan. 27, 1976
7.1	B 468,100	E	Mar. 9, 1976
	B 519,979	E	Feb. 3, 1976
7.3D	B 442,970	E	Feb. 3, 1976
7.3DC	B 561,770	E	Mar. 16, 1976
7.5R	B 508,817	E	Feb. 3, 1976
58R	B 399,908	C	Jan. 13, 1976
66R	B 498,775	E	Mar. 2, 1976
70R	B 559,631	E	Mar. 23, 1976
88	B 561,764	E	Jan. 27, 1976
Class 179			
1A	B 513,756	E	Feb. 3, 1976
1CN	B 475,681	E	Jan. 20, 1976
1SM	B 476,577	E	Jan. 20, 1976
1G	B 554,594	E	Jan. 20, 1976
1.5FS	B 504,899	E	Mar. 9, 1976
2DP	B 462,030	E	Mar. 23, 1976
7.1R	B 545,050	E	Jan. 20, 1976
15AL	B 496,500	E	Feb. 3, 1976
15BA	B 497,293	E	Mar. 30, 1976
81R	B 472,284	E	Jan. 13, 1976
90K	B 432,049	E	Mar. 23, 1976
111E	B 557,274	E	Mar. 23, 1976
170D	B 541,415	E	Feb. 3, 1976
Class 180			
5R	B 499,171	M	Jan. 27, 1976
44F	B 432,969	M	Mar. 2, 1976
49	B 433,094	M	Jan. 27, 1976
53R	B 551,527	M	Jan. 13, 1976
79.2R	B 533,968	M	Jan. 27, 1976
103	B 490,647	M	Feb. 24, 1976
108	B 511,907	M	Mar. 30, 1976
Class 187			
1R	B 436,724	M	Feb. 24, 1976
Class 188			
71.1	B 535,411	M	Feb. 24, 1976
73.6	B 533,056	M	Jan. 13, 1976
165	B 567,435	M	Feb. 3, 1976
218XL	B 562,698	M	Jan. 13, 1976
Class 192			
3.57	B 548,719	M	Feb. 17, 1976
4A	B 531,267	M	Feb. 24, 1976
46	B 522,080	M	Mar. 16, 1976
Class 193			
35A	B 580,379	M	Apr. 6, 1976
Class 195			
1.8	B 530,255	E	Mar. 2, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
	B 514,839	C	Mar. 2, 1976
29	B 418,489	C	Jan. 13, 1976
31R	B 493,463	C	Mar. 23, 1976
65	B 566,585	C	Mar. 2, 1976
	B 592,146	C	Mar. 2, 1976
68	B 395,975	C	Mar. 2, 1976
	B 430,213	C	Mar. 30, 1976
80R	B 527,040	C	Mar. 23, 1976
103.5R	B 452,879	C	Mar. 16, 1976
Class 196			
14.52	B 520,384	M	Jan. 27, 1976
Class 197			
17	B 501,122	M	Feb. 17, 1976
18	B 535,391	M	Jan. 27, 1976
Class 198			
25	B 452,944	M	Mar. 30, 1976
38	B 495,402	M	Feb. 17, 1976
129	B 503,521	M	Mar. 16, 1976
	B 569,646	M	Jan. 13, 1976
179	B 424,989	M	Feb. 3, 1976
202	B 499,352	M	Jan. 27, 1976
Class 200			
5R	B 579,104	E	Jan. 27, 1976
11TC	B 531,425	E	Feb. 3, 1976
16C	B 480,740	E	Mar. 2, 1976
38FA	B 494,383	E	Feb. 3, 1976
61.41	B 506,286	E	Jan. 20, 1976
67D	B 585,247	E	Feb. 3, 1976
83SA	B 428,877	E	Jan. 27, 1976
84C	B 453,533	E	Feb. 17, 1976
309	B 470,899	E	Mar. 2, 1976
339	B 466,390	E	Feb. 24, 1976
Class 202			
185A	B 328,065	C	Mar. 30, 1976
227	B 513,280	C	Jan. 20, 1976
Class 203			
1	B 361,954	C	Apr. 6, 1976
59	B 466,304	C	Mar. 23, 1976
73	B 441,543	C	Mar. 23, 1976
Class 204			
9	B 462,424	C	Feb. 24, 1976
15	B 542,135	C	Feb. 10, 1976
158HA	B 550,744	C	Feb. 17, 1976
159.16	B 476,776	C	Mar. 23, 1976
159.18	B 498,205	C	Feb. 10, 1976
159.22	B 423,404	C	Mar. 2, 1976
162R	B 354,222	C	Mar. 23, 1976
163R	B 526,447	C	Feb. 24, 1976
181	B 167,470	C	Mar. 2, 1976
186	B 589,179	C	Mar. 23, 1976
192	B 231,416	C	Mar. 30, 1976
	B 433,892	C	Apr. 6, 1976
195P	B 511,002	C	Mar. 2, 1976
195S	B 843,038	C	Feb. 3, 1976
224M	B 534,314	C	Feb. 10, 1976
252	B 542,258	C	Mar. 23, 1976
Class 206			
1.5	B 536,923	M	Mar. 30, 1976
451	B 371,912	M	Mar. 2, 1976
455	B 490,067	M	Jan. 27, 1976
Class 208			
15	B 437,596	C	Jan. 27, 1976
33	B 516,625	C	Mar. 30, 1976
59	B 508,118	C	Feb. 17, 1976
78	B 467,250	C	Feb. 3, 1976
93	B 499,370	C	Mar. 30, 1976
208R	B 508,119	C	Feb. 17, 1976
210	B 501,317	C	Jan. 13, 1976
253	B 438,916	C	Jan. 13, 1976
323	B 476,542	C	Mar. 30, 1976
Class 210			
22R	B 525,204	C	Mar. 16, 1976
23H	B 364,797	C	Feb. 17, 1976
	B 524,806	C	Mar. 2, 1976
24	B 452,501	C	Mar. 16, 1976
84	B 356,470	C	Mar. 23, 1976
114	B 401,221	C	Apr. 6, 1976
130	B 532,901	C	Jan. 13, 1976
168	B 449,989	C	Mar. 30, 1976
189	B 492,716	C	Mar. 2, 1976
199	B 449,988	C	Mar. 30, 1976
321A	B 470,601	C	Mar. 9, 1976
500M	B 433,930	C	Mar. 23, 1976
	B 493,474	C	Mar. 23, 1976
512R	B 330,719	C	Mar. 16, 1976
Class 214			
1C	B 453,238	M	Mar. 2, 1976
18N	B 373,344	M	Feb. 3, 1976
58	B 555,772	M	Jan. 13, 1976
90R	B 536,403	M	Mar. 23, 1976
152	B 480,604	M	Jan. 13, 1976
Class 215			
216	B 541,015	M	Jan. 27, 1976
347	B 337,023	M	Mar. 30, 1976
Class 219			
69M	B 426,227	E	Mar. 2, 1976
121EM	B 479,502	E	Mar. 16, 1976
201	B 451,248	E	Mar. 2, 1976
233	B 463,388	E	Feb. 10, 1976
273	B 403,507	E	Feb. 10, 1976
553	B 513,027	E	Feb. 17, 1976
Class 220			
23.83	B 529,156	M	Jan. 13, 1976
66	B 223,678	M	Mar. 9, 1976
288	B 516,032	M	Jan. 27, 1976
337	B 578,447	M	Jan. 20, 1976
Class 221			
75	B 510,281	M	Mar. 9, 1976
Class 222			
43	B 497,853	M	Feb. 17, 1976
56	B 559,697	M	Mar. 16, 1976
67	B 521,480	M	Jan. 13, 1976
136	B 487,260	M	Jan. 27, 1976
181	B 562,601	M	Mar. 16, 1976
306	B 559,954	M	Feb. 3, 1976
325	B 515,303	M	Jan. 20, 1976
512	B 532,976	M	Mar. 23, 1976
Class 226			
1	B 506,624	M	Mar. 9, 1976
21	B 504,778	M	Feb. 24, 1976
68	B 506,926	M	Feb. 17, 1976
Class 228			
190	B 473,972	M	Jan. 13, 1976
Class 229			
2.5	B 537,990	M	Jan. 13, 1976
17R	B 461,257	M	Jan. 13, 1976
62.5	B 429,157	M	Jan. 27, 1976
Class 235			
61.11E	B 477,892	E	Mar. 30, 1976
151	B 491,650	E	Mar. 9, 1976
151.1	B 520,063	E	Mar. 2, 1976
	B 520,075	E	Feb. 24, 1976
	B 520,076	E	Mar. 2, 1976
	B 520,082	E	Mar. 23, 1976
	B 535,268	C	Mar. 30, 1976
151.11	B 540,767	E	Mar. 16, 1976
151.12	B 504,156	E	Mar. 23, 1976
151.34	B 492,946	E	Jan. 27, 1976
152	B 484,121	E	Mar. 16, 1976
	B 559,737	E	Jan. 20, 1976
153AK	B 563,419	E	Mar. 23, 1976
153AM	B 587,936	E	Mar. 23, 1976
154	B 534,016	E	Feb. 3, 1976
156	B 536,009	E	Jan. 27, 1976
175	B 560,488	E	Mar. 16, 1976
181	B 520,924	E	Jan. 27, 1976
Class 236			
13	B 502,652	M	Feb. 24, 1976
15A	B 558,813	M	Feb. 3, 1976
Class 239			
265.39	B 567,892	M	Mar. 16, 1976
424	B 580,921	M	Jan. 13, 1976
	B 586,215	M	Jan. 20, 1976
652	B 520,534	M	Feb. 17, 1976
Class 240			
41.35R	B 454,283	E	Feb. 3, 1976
Class 241			
46.11	B 462,828	M	Mar. 9, 1976
81	B 425,462	M	Mar. 9, 1976
Class 242			
25A	B 420,321	M	Mar. 30, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
36	B 492,373	M	Mar. 30, 1976
43R	B 521,600	M	Jan. 27, 1976
56R	B 535,448	M	Mar. 16, 1976
107.4A	B 487,427	M	Mar. 2, 1976
129.8	B 506,167	M	Feb. 10, 1976
Class 244			
3.27	B 510,521	M	Mar. 2, 1976
134R	B 535,928	M	Jan. 13, 1976
140	B 419,173	M	Mar. 9, 1976
169	B 423,441	M	Feb. 17, 1976
	B 511,346	M	Jan. 27, 1976
Class 248			
49	B 398,488	M	Feb. 24, 1976
73	B 494,806	M	Feb. 3, 1976
205R	B 520,952	M	Mar. 16, 1976
309R	B 527,333	M	Mar. 23, 1976
Class 249			
135	B 548,155	M	Jan. 13, 1976
Class 250			
210	B 515,908	E	Jan. 20, 1976
227	B 522,577	E	Jan. 27, 1976
	B 560,765	E	Feb. 3, 1976
231SE	B 503,618	E	Mar. 9, 1976
291	B 500,981	E	Jan. 27, 1976
303	B 536,082	E	Mar. 16, 1976
310	B 485,926	E	Mar. 23, 1976
328	B 71,613	E	Mar. 16, 1976
345	B 374,553	E	Mar. 30, 1976
364	B 526,190	E	Feb. 17, 1976
397	B 569,293	E	Mar. 30, 1976
402	B 451,534	E	Jan. 13, 1976
445T	B 574,616	E	Mar. 2, 1976
564	B 566,572	E	Mar. 16, 1976
577	B 507,396	E	Feb. 10, 1976
Class 251			
1B	B 541,710	M	Feb. 24, 1976
28	B 480,384	M	Mar. 23, 1976
58	B 429,434	M	Feb. 17, 1976
129	B 534,333	M	Feb. 17, 1976
319	B 490,589	M	Feb. 3, 1976
Class 252			
12	B 559,142	C	Mar. 2, 1976
12.2	B 380,137	C	Mar. 23, 1976
25	B 468,603	C	Mar. 23, 1976
33.6	B 441,723	C	Mar. 16, 1976
62.1L	B 376,749	E	Mar. 30, 1976
105	B 479,969	C	Mar. 9, 1976
106	B 530,303	C	Mar. 23, 1976
156	B 520,546	C	Mar. 2, 1976
182	B 471,405	C	Feb. 10, 1976
301.1W	B 548,058	C	Feb. 17, 1976
301.2W	B 528,297	C	Mar. 16, 1976
301.4S	B 535,813	C	Jan. 27, 1976
364	B 370,309	C	Jan. 20, 1976
404	B 569,125	C	Feb. 24, 1976
408R	B 544,476	C	Feb. 24, 1976
429R	B 457,850	C	Feb. 10, 1976
432	B 509,640	C	Feb. 17, 1976
454	B 450,967	C	Jan. 13, 1976
455R	B 390,979	C	Mar. 23, 1976
500	B 479,242	C	Feb. 17, 1976
514	B 553,421	C	Mar. 23, 1976
518	B 585,731	C	Feb. 3, 1976
543	B 403,766	C	Feb. 10, 1976
544	B 433,707	C	Mar. 23, 1976
Class 254			
186R	B 511,407	M	Feb. 10, 1976
188	B 437,559	M	Feb. 3, 1976
190R	B 489,685	M	Feb. 24, 1976
Class 259			
4	B 486,614	N	Feb. 17, 1976
8	B 547,016	M	Mar. 23, 1976
191	B 397,674	M	Mar. 16, 1976
	B 556,057	M	Jan. 13, 1976
Class 260			
2.5AC	B 497,194	C	Feb. 3, 1976
	B 537,102	C	Jan. 13, 1976
2.5AJ	B 557,856	C	Feb. 10, 1976
2.5AM	B 422,063	C	Feb. 3, 1976
2.5AR	B 483,606	C	Jan. 27, 1976
	B 502,589	C	Jan. 27, 1976
2.5AV	B 460,441	C	Jan. 13, 1976
2.5AW	B 483,762	C	Feb. 10, 1976
	B 486,828	C	Mar. 2, 1976
2.5B	B 554,380	C	Mar. 9, 1976
2.5R	B 471,579	C	Jan. 13, 1976
17R	B 510,998	C	Feb. 10, 1976
	B 519,487	C	Feb. 17, 1976
17.4ST	B 530,580	C	Mar. 2, 1976
18TN	B 528,303	C	Feb. 10, 1976
23H	B 54,859	C	Feb. 17, 1976
23XA	B 483,865	C	Jan. 13, 1976
28P	B 489,331	C	Feb. 17, 1976
28R	B 507,456	C	Mar. 9, 1976
28.5AS	B 501,540	C	Jan. 13, 1976
29.2EP	B 455,686	C	Mar. 2, 1976
	B 522,629	C	Mar. 16, 1976
	B 526,997	C	Jan. 13, 1976
29.2TN	B 414,266	C	Feb. 10, 1976
29.6F	B 567,076	C	Mar. 23, 1976
29.6N	B 494,440	C	Feb. 17, 1976
29.6TA	B 494,450	C	Feb. 17, 1976
29.7PT	B 358,260	C	Mar. 30, 1976
29.7T	B 573,114	C	Apr. 6, 1976
30.4R	B 485,060	C	Feb. 17, 1976
31.8N	B 592,658	C	Mar. 23, 1976
32.6R	B 596,692	C	Feb. 17, 1976
33.6AQ	B 520,658	C	Mar. 9, 1976
	B 657,438	C	Jan. 20, 1976
33.6R	B 479,175	C	Feb. 17, 1976
33.6UA	B 559,441	C	Mar. 23, 1976
33.8UA	B 497,780	C	Feb. 24, 1976
	B 570,721	C	Mar. 23, 1976
37EP	B 423,365	C	Feb. 17, 1976
	B 441,605	C	Feb. 3, 1976
37R	B 465,955	C	Feb. 3, 1976
37PC	B 520,878	C	Apr. 6, 1976
40P	B 485,188	C	Mar. 16, 1976
40R	B 590,502	C	Mar. 23, 1976
42.15	B 257,143	C	Mar. 16, 1976
	B 415,122	C	Feb. 10, 1976
42.18	B 519,095	C	Feb. 24, 1976
45.75H	B 487,529	C	Mar. 30, 1976
45.75W	B 561,387	C	Feb. 10, 1976
45.8N	B 506,648	C	Feb. 3, 1976
45.8R	B 479,556	C	Mar. 23, 1976
45.85R	B 236,342	C	Feb. 10, 1976
46.5UA	B 528,962	C	Feb. 24, 1976
	B 528,966	C	Feb. 24, 1976
47EP	B 440,633	C	Feb. 10, 1976
47EQ	B 444,078	C	Mar. 23, 1976
47UP	B 493,537	C	Mar. 23, 1976
63UY	B 470,576	C	Feb. 24, 1976
75N	B 521,125	C	Feb. 10, 1976
	B 521,126	C	Feb. 10, 1976
	B 521,127	C	Feb. 17, 1976
	B 521,128	C	Feb. 10, 1976
	B 552,489	C	Feb. 10, 1976
	B 559,700	C	Mar. 23, 1976
	B 559,701	C	Mar. 23, 1976
75R	B 236,266	C	Mar. 23, 1976
77.5AN	B 474,645	C	Mar. 2, 1976
77.5CR	B 306,668	C	Feb. 3, 1976
78S	B 451,308	C	Feb. 17, 1976
78.5R	B 437,209	C	Feb. 3, 1976
78UA	B 497,490	C	Mar. 23, 1976
79.5P	B 546,149	C	Mar. 2, 1976
80M	B 522,446	C	Mar. 30, 1976
80.73	B 505,221	C	Mar. 30, 1976
80.78	B 271,743	C	Mar. 16, 1976
82.1	B 443,563	C	Feb. 24, 1976
88.2B	B 456,384	C	Apr. 6, 1976
88.2C	B 417,014	C	Jan. 13, 1976
88.2F	B 632,416	C	Mar. 9, 1976
93.5A	B 530,174	C	Feb. 24, 1976
112.5R	B 471,617	C	Feb. 10, 1976
	B 485,972	C	Mar. 23, 1976
	B 503,817	C	Jan. 13, 1976
	B 520,514	C	Mar. 9, 1976
117	B 333,247	C	Mar. 16, 1976
140R	B 503,579	C	Feb. 10, 1976
143	B 419,582	C	Mar. 2, 1976
147	B 383,697	C	Feb. 17, 1976
156	B 411,624	C	Mar. 16, 1976
157	B 476,267	C	Apr. 6, 1976
	B 591,141	C	Mar. 23, 1976
167	B 444,294	C	Mar. 30, 1976
210AB	B 554,291	C	Mar. 9, 1976
220B	B 326,211	C	Mar. 23, 1976
239A	B 349,370	C	Jan. 27, 1976
239B	B 470,900	C	Mar. 2, 1976
239BC	B 403,326	C	Mar. 23, 1976
239D	B 382,120	C	Mar. 23, 1976
	B 487,423	C	Mar. 2, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
	B 520,256	C	Jan. 13, 1976
	B 536,935	C	Jan. 13, 1976
239.1	B 371,095	C	Mar. 23, 1976
	B 372,016	C	Mar. 9, 1976
	B 538,753	C	Feb. 10, 1976
	B 547,208	C	Feb. 24, 1976
239.3A	B 506,148	C	Feb. 3, 1976
240A	B 484,067	C	Feb. 17, 1976
240G	B 482,709	C	Feb. 24, 1976
240R	B 491,711	C	Mar. 23, 1976
243C	B 442,810	C	Feb. 24, 1976
	B 473,039	C	Feb. 10, 1976
	B 473,040	C	Feb. 10, 1976
	B 516,047	C	Feb. 10, 1976
	B 516,296	C	Feb. 3, 1976
	B 526,096	C	Feb. 3, 1976
244R	B 348,433	C	Feb. 3, 1976
247.1R	B 457,931	C	Mar. 16, 1976
247.7T	B 468,052	C	Feb. 10, 1976
248AS	B 514,259	C	Mar. 23, 1976
248NS	B 537,711	C	Jan. 13, 1976
248.5	B 332,442	C	Mar. 30, 1976
249.6	B 344,669	C	Mar. 16, 1976
250BC	B 491,883	C	Feb. 3, 1976
250P	B 498,288	C	Mar. 23, 1976
251A	B 480,625	C	Feb. 24, 1976
256.4C	B 435,617	C	Mar. 16, 1976
256.4Q	B 503,345	C	Feb. 24, 1976
256.5R	B 531,096	C	Feb. 10, 1976
268BF	B 490,946	C	Feb. 17, 1976
268TR	B 539,374	C	Mar. 9, 1976
	B 563,070	C	Mar. 9, 1976
274SA	B 494,944	C	Feb. 17, 1976
283CN	B 461,685	C	Mar. 30, 1976
285.5	B 530,318	C	Jan. 13, 1976
287C	B 492,039	C	Feb. 24, 1976
287D	B 571,638	C	Mar. 9, 1976
288CF	B 402,657	C	Apr. 6, 1976
288R	B 402,162	C	Mar. 2, 1976
290HL	B 537,053	C	Mar. 23, 1976
290R	B 445,493	C	Mar. 2, 1976
293.52	B 552,508	C	Mar. 16, 1976
293.54	B 545,464	C	Feb. 10, 1976
293.56	B 447,000	C	Feb. 3, 1976
293.57	B 426,802	C	Feb. 17, 1976
293.79	B 403,243	C	Mar. 30, 1976
294.8D	B 526,510	C	Jan. 20, 1976
294.8G	B 445,166	C	Mar. 2, 1976
294.9	B 494,339	C	Mar. 16, 1976
295.5A	B 515,642	C	Feb. 24, 1976
	B 545,299	C	Feb. 24, 1976
295.5B	B 458,617	C	Feb. 3, 1976
296R	B 429,027	C	Mar. 23, 1976
	B 477,252	C	Jan. 13, 1976
306.7C	B 385,024	C	Feb. 10, 1976
307D	B 486,280	C	Feb. 3, 1976
307G	B 568,405	C	Mar. 30, 1976
307H	B 471,836	C	Feb. 24, 1976
	B 554,848	C	Feb. 24, 1976
308A	B 488,111	C	Jan. 13, 1976
308D	B 532,005	C	Feb. 24, 1976
308R	B 471,494	C	Mar. 16, 1976
309.2	B 407,014	C	Mar. 16, 1976
	B 522,567	C	Feb. 17, 1976
	B 542,158	C	Jan. 13, 1976
309.6	B 521,025	C	Mar. 23, 1976
310R	B 535,437	C	Feb. 24, 1976
314.5	B 426,266	C	Mar. 2, 1976
325PH	B 440,548	C	Mar. 16, 1976
325R	B 427,946	C	Mar. 23, 1976
326HL	B 536,322	C	Mar. 23, 1976
326R	B 486,678	C	Mar. 2, 1976
	B 398,084	C	Feb. 3, 1976
326.5B	B 276,026	C	Feb. 3, 1976
	B 490,812	C	Mar. 30, 1976
326.5FN	B 484,269	C	Feb. 10, 1976
326.9	B 477,481	C	Feb. 3, 1976
326.12R	B 446,107	C	Mar. 9, 1976
326.13R	B 456,869	C	Mar. 9, 1976
327C	B 480,452	C	Feb. 10, 1976
330.5	B 552,498	C	Jan. 13, 1976
	B 574,996	C	Feb. 17, 1976
340.5	B 504,877	C	Feb. 24, 1976
340.9	B 476,372	C	Feb. 24, 1976
	B 521,643	C	Mar. 2, 1976
343.2R	B 491,032	C	Feb. 10, 1976
343.3	B 536,675	C	Jan. 20, 1976
343.3R	B 495,550	C	Feb. 3, 1976
	B 495,554	C	Feb. 3, 1976
345.9	B 450,701	C	Mar. 16, 1976
	B 450,708	C	Mar. 9, 1976
346.2M	B 440,858	C	Feb. 3, 1976
	B 302,160	C	Feb. 3, 1976
346.3	B 392,798	C	Mar. 30, 1976
346.4	B 485,051	C	Feb. 17, 1976
346.8R	B 369,373	C	Mar. 23, 1976
347.3	B 359,768	C	Mar. 30, 1976
348.5L	B 521,324	C	Jan. 27, 1976
348.6	B 546,295	C	Jan. 20, 1976
378	B 431,713	C	Feb. 10, 1976
397.4	B 450,693	C	Mar. 9, 1976
	B 484,068	C	Mar. 2, 1976
408	B 442,953	C	Mar. 23, 1976
429.7	B 464,587	C	Feb. 3, 1976
429.9	B 455,481	C	Feb. 24, 1976
438.1	B 518,656	C	Feb. 17, 1976
448R	B 495,781	C	Mar. 23, 1976
448.2H	B 390,408	C	Feb. 3, 1976
448.2N	B 412,830	C	Mar. 30, 1976
	B 551,463	C	Feb. 17, 1976
449M	B 521,985	C	Mar. 23, 1976
449R	B 526,942	C	Mar. 30, 1976
453PH	B 518,076	C	Mar. 30, 1976
456NS	B 484,419	C	Mar. 9, 1976
465H	B 573,991	C	Mar. 30, 1976
465.3	B 159,570	C	Mar. 23, 1976
465.5R	B 747,785	C	Feb. 10, 1976
465.7	B 564,252	C	Mar. 2, 1976
465.9	B 456,900	C	Feb. 3, 1976
	B 530,925	C	Feb. 24, 1976
471R	B 385,483	C	Feb. 17, 1976
	B 388,521	C	Jan. 13, 1976
472	B 472,256	C	Jan. 13, 1976
	B 491,052	C	Mar. 2, 1976
473S	B 532,140	C	Mar. 2, 1976
479C	B 483,746	C	Mar. 23, 1976
483	B 410,074	C	Feb. 24, 1976
493	B 351,455	C	Feb. 24, 1976
501.12	B 544,899	C	Feb. 17, 1976
513R	B 494,669	C	Feb. 3, 1976
514D	B 494,138	C	Mar. 23, 1976
514J	B 442,431	C	Mar. 23, 1976
515A	B 390,031	C	Jan. 13, 1976
516	B 386,828	C	Feb. 3, 1976
527R	B 467,328	C	Mar. 9, 1976
534R	B 301,143	C	Jan. 27, 1976
535P	B 426,157	C	Mar. 23, 1976
543F	B 504,582	C	Mar. 30, 1976
544C	B 471,116	C	Feb. 17, 1976
545R	B 357,526	C	Mar. 23, 1976
553R	B 391,473	C	Mar. 2, 1976
554	B 529,974	C	Feb. 17, 1976
557R	B 386,257	C	Feb. 3, 1976
561R	B 513,781	C	Feb. 24, 1976
562B	B 413,379	C	Mar. 9, 1976
563R	B 391,828	C	Apr. 6, 1976
565	B 533,652	C	Mar. 23, 1976
566A	B 513,014	C	Feb. 10, 1976
566R	B 421,373	C	Mar. 23, 1976
567.6M	B 480,114	C	Mar. 2, 1976
568	B 529,974	C	Feb. 17, 1976
578	B 449,837	C	Mar. 2, 1976
580	B 503,742	C	Feb. 17, 1976
586C	B 438,484	C	Feb. 17, 1976
591	B 416,257	C	Mar. 16, 1976
593R	B 468,350	C	Jan. 13, 1976
598	B 465,202	C	Feb. 24, 1976
	B 524,849	C	Mar. 23, 1976
601R	B 208,916	C	Jan. 13, 1976
604HF	B 472,241	C	Feb. 17, 1976
606.5P	B 518,326	C	Mar. 23, 1976
609E	B 474,573	C	Jan. 20, 1976
610A	B 845,044	C	Mar. 30, 1976
615A	B 409,310	C	Mar. 23, 1976
621H	B 501,128	C	Feb. 24, 1976
621K	B 470,348	C	Jan. 13, 1976
632R	B 553,584	C	Feb. 17, 1976
637R	B 519,446	C	Feb. 24, 1976
643R	B 480,662	C	Mar. 2, 1976
647	B 394,248	C	Jan. 27, 1976
648F	B 330,736	C	Feb. 3, 1976
665R	B 460,846	C	Feb. 24, 1976
668D	B 430,157	C	Feb. 17, 1976
674SA	B 426,274	C	Jan. 20, 1976
683.15D	B 428,103	C	Feb. 10, 1976
683.48	B 526,027	C	Feb. 17, 1976
859R	B 519,485	C	Feb. 10, 1976
873	B 388,675	C	Mar. 30, 1976
	B 465,688	C	Jan. 27, 1976
	B 519,486	C	Feb. 17, 1976
876B	B 575,851	C	Feb. 10, 1976
876R	B 589,966	C	Feb. 17, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
	B 461,184	C	Feb. 17, 1976
	B 580,826	C	Feb. 17, 1976
	B 589,966	C	Feb. 17, 1976
878R	B 469,468	C	Mar. 16, 1976
880B	B 510,458	C	Feb. 10, 1976
884	B 456,579	C	Feb. 10, 1976
890	B 495,408	C	Feb. 3, 1976
900	B 564,902	C	Mar. 23, 1976
927N	B 369,221	C	Feb. 24, 1976
	B 484,437	C	Mar. 30, 1976
929	B 502,993	C	Feb. 17, 1976
937	B 512,373	C	Feb. 10, 1976
940	B 496,430	C	Feb. 10, 1976
942	B 386,673	C	Feb. 3, 1976
948	B 534,591	C	Feb. 17, 1976
984	B 455,486	C	Mar. 16, 1976
Class 261			
39A	B 562,462	C	Jan. 13, 1976
98	B 480,702	C	Jan. 27, 1976
Class 264			
11	B 335,783	C	Mar. 30, 1976
36	B 308,659	C	Jan. 27, 1976
37	B 579,153	C	Mar. 30, 1976
49	B 417,164	C	Mar. 2, 1976
51	B 506,144	C	Feb. 10, 1976
	B 508,369	C	Jan. 13, 1976
140	B 214,925	C	Mar. 9, 1976
150	B 455,806	C	Mar. 23, 1976
161	B 555,437	C	Feb. 3, 1976
225	B 453,759	C	Jan. 27, 1976
315	B 485,169	C	Mar. 16, 1976
Class 270			
62	B 516,609	M	Feb. 24, 1976
Class 271			
180	B 435,481	M	Mar. 9, 1976
Class 274			
37	B 526,388	M	Feb. 3, 1976
Class 277			
27	B 519,623	M	Apr. 6, 1976
	B 544,034	M	Feb. 17, 1976
34.6	B 430,326	M	Mar. 23, 1976
81P	B 515,216	M	Feb. 17, 1976
184	B 426,819	M	Feb. 17, 1976
Class 280			
11.35R	B 435,570	M	Mar. 16, 1976
124F	B 471,706	M	Mar. 16, 1976
	B 550,810	M	Mar. 23, 1976
150AB	B 520,341	M	Mar. 16, 1976
150SB	B 363,565	M	Mar. 30, 1976
150.5	B 583,051	M	Feb. 3, 1976
236	B 572,642	M	Feb. 10, 1976
Class 281			
25R	B 491,618	M	Mar. 16, 1976
Class 285			
110	B 313,280	M	Apr. 6, 1976
Class 290			
17	B 477,597	E	Feb. 17, 1976
Class 292			
254	B 549,964	M	Feb. 24, 1976
Class 293			
71P	B 552,932	M	Feb. 3, 1976
Class 296			
35R	B 443,647	M	Feb. 17, 1976
	B 463,671	M	Jan. 13, 1976
137A	B 452,034	M	Mar. 23, 1976
Class 297			
304	B 597,410	M	Mar. 30, 1976
Class 298			
35M	B 510,588	M	Jan. 27, 1976
Class 299			
31	B 499,209	M	Feb. 24, 1976
Class 303			
21BE	B 575,583	M	Mar. 16, 1976
71	B 545,856	M	Mar. 30, 1976
Class 305			
27	B 506,566	M	Jan. 20, 1976
Class 307			
88.3	B 540,872	E	Jan. 20, 1976
137	B 466,444	E	Jan. 20, 1976
205	B 444,437	E	Mar. 9, 1976
	B 513,368	E	Feb. 3, 1976
232	B 540,078	E	Jan. 13, 1976
251	B 503,371	E	Mar. 30, 1976
	B 506,840	E	Mar. 23, 1976
	B 548,302	E	Feb. 17, 1976
252B	B 523,226	E	Mar. 23, 1976
255	B 492,688	E	Jan. 20, 1976
262	B 525,133	E	Mar. 23, 1976
270	B 497,960	E	Jan. 20, 1976
293	B 519,932	E	Feb. 3, 1976
296	B 512,849	E	Feb. 3, 1976
300	B 530,285	E	Apr. 6, 1976
Class 308			
9	B 391,797	M	Mar. 9, 1976
36.3	B 562,413	M	Mar. 16, 1976
207R	B 507,661	M	Mar. 2, 1976
Class 310			
4R	B 539,746	E	Feb. 17, 1976
9.6	B 501,482	E	Jan. 13, 1976
41	B 561,784	E	Jan. 27, 1976
90	B 458,500	E	Feb. 24, 1976
155	B 592,143	C	Jan. 27, 1976
168	B 526,289	E	Feb. 24, 1976
254	B 521,045	E	Feb. 24, 1976
	B 521,046	E	Feb. 24, 1976
259	B 521,044	E	Feb. 24, 1976
Class 313			
42	B 534,443	E	Jan. 27, 1976
60	B 513,706	M	Jan. 13, 1976
94	B 517,762	E	Mar. 16, 1976
99	B 518,859	E	Feb. 3, 1976
273	B 531,929	E	Jan. 20, 1976
330	B 504,056	C	Feb. 24, 1976
	B 520,884	E	Mar. 16, 1976
366	B 515,455	E	Jan. 27, 1976
404	B 523,696	E	Jan. 13, 1976
452	B 160,045	E	Jan. 13, 1976
477	B 279,969	E	Jan. 13, 1976
Class 315			
169TV	B 463,322	E	Jan. 20, 1976
	B 520,613	E	Mar. 16, 1976
241P	B 501,503	E	Mar. 2, 1976
371	B 483,615	E	Jan. 27, 1976
379	B 422,156	E	Mar. 23, 1976
388	B 516,002	E	Jan. 13, 1976
399	B 467,971	E	Jan. 13, 1976
408	B 516,564	E	Feb. 17, 1976
Class 317			
9R	B 488,634	E	Jan. 20, 1976
18D	B 340,170	E	Mar. 30, 1976
	B 534,915	E	Mar. 23, 1976
36TD	B 504,404	E	Feb. 24, 1976
100	B 508,639	E	Mar. 23, 1976
101A	B 420,472	E	Feb. 24, 1976
120	B 527,187	E	Feb. 17, 1976
	B 531,566	M	Mar. 16, 1976
124	B 509,606	E	Feb. 3, 1976
259	B 506,461	E	Jan. 20, 1976
Class 318			
98	B 475,801	E	Mar. 30, 1976
119	B 505,582	E	Mar. 23, 1976
139	B 475,236	E	Feb. 3, 1976
231	B 511,886	E	Feb. 3, 1976
257	B 502,973	E	Jan. 27, 1976
467	B 452,915	E	Mar. 30, 1976
574	B 412,023	E	Apr. 6, 1976
593	B 476,967	E	Mar. 9, 1976
Class 321			
2	B 533,734	E	Jan. 27, 1976
7	B 509,185	E	Feb. 3, 1976
61	B 495,759	E	Feb. 3, 1976
Class 322			
25	B 466,318	E	Mar. 9, 1976
Class 323			
1	B 430,276	E	Jan. 20, 1976
17	B 459,811	E	Jan. 20, 1976
	B 583,089	E	Jan. 27, 1976
22T	B 501,181	E	Feb. 10, 1976

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		CAT.	PUB. DATE
Class 324			
13	B 79,099	E	Jan. 13, 1976
15	B 495,331	E	Mar. 16, 1976
51	B 534,767	E	Feb. 3, 1976
60C	B 540,218	E	Feb. 10, 1976
62	B 465,393	E	Jan. 27, 1976
83D	B 458,010	E	Mar. 16, 1976
158R	B 483,268	E	Mar. 9, 1976
Class 325			
38A	B 478,234	E	Mar. 30, 1976
40	B 558,220	E	Jan. 27, 1976
468	B 544,961	E	Jan. 13, 1976
Class 328			
129	B 78,315	E	Feb. 10, 1976
155	B 550,693	E	Jan. 20, 1976
167	B 532,326	E	Mar. 23, 1976
168	B 573,033	E	Mar. 23, 1976
Class 330			
15	B 530,813	E	Feb. 17, 1976
17	B 531,686	E	Mar. 23, 1976
33	B 439,542	E	Jan. 27, 1976
110	B 381,006	E	Apr. 6, 1976
207P	B 553,460	E	Feb. 3, 1976
Class 331			
44ST	B 527,669	E	Jan. 13, 1976
51	B 538,686	E	Jan. 13, 1976
94.5C	B 549,931	E	Jan. 20, 1976
94.5G	B 442,295	E	Mar. 16, 1976
94.5L	B 506,916	E	Feb. 3, 1976
94.5M	B 384,654	E	Feb. 24, 1976
94.5P	B 394,350	E	Jan. 13, 1976
116R	B 527,693	E	Feb. 3, 1976
117R	B 571,219	E	Feb. 24, 1976
Class 332			
9R	B 507,087	E	Feb. 17, 1976
Class 333			
10	B 535,256	E	Mar. 23, 1976
30R	B 453,616	E	Jan. 27, 1976
31A	B 568,770	E	Feb. 10, 1976
72	B 534,991	E	Jan. 27, 1976
73W	B 339,194	E	Feb. 3, 1976
81A	B 493,370	E	Mar. 16, 1976
Class 335			
7	B 509,165	E	Mar. 2, 1976
186	B 526,654	E	Mar. 23, 1976
210	B 541,517	E	Jan. 13, 1976
253	B 515,452	E	Feb. 10, 1976
Class 336			
65	B 523,952	E	Mar. 23, 1976
Class 338			
166	B 489,526	E	Feb. 3, 1976
202	B 528,761	E	Feb. 10, 1976
Class 339			
5M	B 566,556	C	Mar. 23, 1976
Class 340			
8L	B 270,274	E	Feb. 17, 1976
146.1AB	B 428,408	E	Mar. 2, 1976
167B	B 568,226	E	Feb. 24, 1976
171R	B 529,925	E	Mar. 30, 1976
172.5	B 391,844	E	Mar. 16, 1976
	B 428,271	E	Mar. 23, 1976
	B 432,140	E	Mar. 23, 1976
	B 452,138	E	Mar. 23, 1976
	B 461,336	E	Feb. 3, 1976
	B 482,907	E	Jan. 20, 1976
	B 485,575	E	Feb. 24, 1976
	B 503,780	E	Mar. 16, 1976
	B 506,839	E	Mar. 23, 1976
	B 533,454	E	Mar. 2, 1976
173FF	B 495,185	E	Mar. 9, 1976
173LM	B 453,067	E	Mar. 23, 1976
173R	B 545,945	M	Jan. 27, 1976
174DC	B 443,712	E	Jan. 27, 1976
174TF	B 429,018	C	Feb. 10, 1976
	B 455,425	E	Feb. 3, 1976
	B 472,276	E	Mar. 9, 1976
	B 476,681	E	Jan. 13, 1976
	B 499,718	E	Jan. 27, 1976
198	B 546,665	E	Jan. 20, 1976
347AD	B 507,647	E	Jan. 27, 1976
	B 526,106	E	Jan. 27, 1976
347CC	B 498,500	E	Jan. 20, 1976
347SY	B 270,351	E	Mar. 30, 1976
Class 343			
7A	B 248,240	E	Jan. 13, 1976
7.7	B 484,029	E	Feb. 10, 1976
8	B 497,702	E	Mar. 2, 1976
100LE	B 488,395	E	Jan. 27, 1976
	B 496,502	E	Jan. 20, 1976
786	B 547,994	E	Jan. 20, 1976
815	B 563,244	E	Jan. 27, 1976
840	B 494,691	E	Mar. 16, 1976
Class 346			
35	B 545,344	E	Mar. 30, 1976
75	B 450,413	E	Mar. 23, 1976
	B 512,964	E	Feb. 10, 1976
139C	B 560,261	E	Mar. 16, 1976
Class 350			
7	B 469,036	M	Mar. 16, 1976
96WG	B 381,985	M	Feb. 3, 1976
	B 537,722	M	Feb. 3, 1976
103	B 586,663	M	Feb. 3, 1976
150	B 384,225	M	Mar. 16, 1976
160LC	B 527,054	M	Feb. 17, 1976
173	B 469,947	M	Jan. 20, 1976
310	B 520,543	M	Jan. 27, 1976
320	B 548,440	M	Feb. 3, 1976
Class 354			
23D	B 492,774	E	Mar. 9, 1976
46	B 515,135	E	Feb. 17, 1976
70	B 533,580	E	Feb. 3, 1976
156	B 507,131	E	Mar. 2, 1976
174	B 502,161	E	Mar. 2, 1976
288	B 559,111	E	Feb. 24, 1976
298	B 489,328	E	Jan. 20, 1976
Class 355			
8	B 509,474	M	Feb. 17, 1976
11	B 500,171	M	Mar. 30, 1976
16	B 481,048	M	Mar. 16, 1976
17	B 493,501	M	Feb. 3, 1976
Class 356			
103	B 517,504	M	Mar. 9, 1976
110	B 492,093	M	Mar. 23, 1976
201	B 450,521	M	Feb. 17, 1976
239	B 530,569	M	Mar. 16, 1976
Class 357			
15	B 281,162	E	Mar. 23, 1976
16	B 496,487	E	Jan. 20, 1976
22	B 480,749	E	Mar. 9, 1976
	B 504,503	E	Mar. 9, 1976
23	B 516,060	E	Feb. 17, 1976
36	B 508,961	E	Feb. 3, 1976
52	B 520,115	E	Mar. 23, 1976
55	B 480,292	E	Mar. 16, 1976
59	B 535,209	E	Mar. 16, 1976
65	B 470,798	E	Jan. 20, 1976
72	B 481,930	E	Feb. 24, 1976
Class 358			
8	B 554,939	E	Feb. 10, 1976
28	B 73,017	E	Mar. 9, 1976
41	B 502,289	E	Jan. 13, 1976
Class 360			
1	B 484,365	E	Jan. 27, 1976
15	B 283,941	E	Feb. 3, 1976
17	B 461,874	E	Jan. 27, 1976
27	B 427,883	E	Jan. 20, 1976
35	B 347,661	E	Mar. 16, 1976
49	B 516,069	E	Mar. 16, 1976
60	B 453,432	E	Mar. 16, 1976
	B 491,111	E	Feb. 17, 1976
78	B 487,411	E	Feb. 24, 1976
80	B 403,477	E	Feb. 3, 1976
81	B 500,176	E	Feb. 3, 1976
85	B 501,253	E	Feb. 3, 1976
98	B 484,482	E	Mar. 23, 1976
102	B 458,964	E	Mar. 2, 1976
125	B 59,512	E	Mar. 16, 1976
130	B 579,806	E	Feb. 3, 1976
137	B 449,892	E	Mar. 23, 1976
	B 470,305	M	Apr. 6, 1976
Class 401			
219	B 557,621	M	Feb. 3, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 403			
107	B 513,789	M	Feb. 3, 1976
318	B 540,632	M	Jan. 13, 1976
341	B 510,278	M	Mar. 30, 1976
Class 404			
71	B 452,672	M	Jan. 13, 1976
77	B 434,206	M	Feb. 3, 1976
Class 408			
124	B 501,993	M	Jan. 13, 1976
146	B 521,986	M	Feb. 3, 1976
Class 415			
14	B 471,735	M	Feb. 3, 1976
115	B 561,712	C	Feb. 17, 1976
136	B 563,412	M	Feb. 24, 1976
213R	B 512,547	M	Jan. 13, 1976
214	B 552,006	M	Feb. 3, 1976
Class 416			
61	B 549,394	M	Jan. 27, 1976
145	B 567,158	M	Mar. 23, 1976
157B	B 513,346	M	Mar. 9, 1976
Class 417			
274	B 570,615	M	Mar. 23, 1976
Class 423			
15	B 372,722	C	Mar. 9, 1976
27	B 369,379	C	Mar. 30, 1976
238	B 485,401	C	Jan. 27, 1976
242	B 66,272	C	Feb. 24, 1976
244	B 499,324	C	Mar. 16, 1976
249	B 402,553	C	Feb. 17, 1976
	B 428,386	C	Mar. 23, 1976
283	B 521,984	C	Feb. 17, 1976
315	B 471,221	C	Jan. 13, 1976
390	B 549,198	C	Jan. 13, 1976
393	B 491,455	C	Feb. 3, 1976
406	B 111,130	C	Mar. 16, 1976
448	B 414,028	C	Feb. 17, 1976
462	B 336,754	C	Mar. 16, 1976
471	B 521,612	C	Mar. 9, 1976
573G	B 481,778	C	Mar. 30, 1976
580	B 379,177	C	Jan. 27, 1976
Class 424			
9	B 426,424	C	Feb. 3, 1976
45	B 181,208	C	Mar. 9, 1976
62	B 464,593	C	Mar. 9, 1976
70	B 438,048	C	Mar. 23, 1976
115	B 482,660	C	Feb. 10, 1976
118	B 542,226	C	Feb. 24, 1976
122	B 482,058	C	Mar. 2, 1976
	B 524,179	C	Jan. 13, 1976
129	B 848,336	C	Mar. 30, 1976
177	B 490,995	C	Feb. 3, 1976
203	B 576,903	C	Feb. 3, 1976
219	B 510,836	C	Mar. 23, 1976
230	B 487,133	C	Jan. 27, 1976
243	B 337,823	C	Mar. 23, 1976
245	B 493,955	C	Mar. 9, 1976
246	B 399,098	C	Feb. 24, 1976
251	B 450,870	C	Mar. 16, 1976
257	B 374,588	C	Jan. 27, 1976
258	B 426,639	C	Feb. 3, 1976
263	B 466,929	C	Jan. 27, 1976
267	B 307,698	C	Feb. 3, 1976
	B 407,737	C	Feb. 3, 1976
270	B 521,711	C	Feb. 10, 1976
273	B 459,408	C	Mar. 23, 1976
274	B 566,464	C	Feb. 3, 1976
	B 496,431	C	Jan. 13, 1976
	B 547,547	C	Feb. 24, 1976
281	B 587,786	C	Feb. 17, 1976
311	B 457,862	C	Jan. 27, 1976
317	B 510,850	C	Feb. 3, 1976
321	B 516,804	C	Mar. 23, 1976
326	B 510,957	C	Mar. 30, 1976
362	B 495,489	C	Feb. 3, 1976
Class 425			
222	B 163,463	M	Jan. 27, 1976
237	B 431,334	M	Mar. 16, 1976
339	B 555,456	M	Mar. 30, 1976
384	B 562,813	C	Feb. 3, 1976
521	B 411,765	M	Feb. 24, 1976
	B 548,688	M	Mar. 9, 1976
Class 426			
3	B 583,712	C	Feb. 10, 1976
73	B 493,950	C	Mar. 2, 1976
239	B 572,726	C	Feb. 24, 1976
276	B 535,944	C	Jan. 13, 1976
281	B 48,560	C	Mar. 30, 1976
	B 481,989	C	Mar. 23, 1976
	B 493,686	C	Mar. 23, 1976
332	B 441,789	C	Mar. 30, 1976
535	B 560,717	C	Feb. 10, 1976
548	B 439,778	C	Feb. 3, 1976
561	B 389,605	C	Mar. 23, 1976
594	B 333,838	C	Mar. 23, 1976
	B 431,797	C	Mar. 30, 1976
656	B 478,759	C	Mar. 16, 1976
	B 480,987	C	Mar. 30, 1976
Class 427			
39	B 476,837	C	Jan. 20, 1976
54	B 421,608	C	Mar. 23, 1976
70	B 381,709	C	Jan. 13, 1976
93	B 371,635	C	Mar. 23, 1976
123	B 552,709	C	Mar. 23, 1976
145	B 457,547	C	Feb. 17, 1976
186	B 537,085	C	Feb. 17, 1976
207	B 501,415	C	Jan. 13, 1976
343	B 160,099	C	Jan. 13, 1976
372	B 409,848	C	Jan. 27, 1976
389	B 519,377	C	Jan. 27, 1976
Class 428			
73	B 481,737	C	Jan. 13, 1976
132	B 333,110	C	Mar. 16, 1976
175	B 468,330	M	Mar. 16, 1976
224	B 378,760	C	Mar. 9, 1976
289	B 402,929	C	Feb. 3, 1976
315	B 373,354	C	Jan. 27, 1976
341	B 450,196	C	Feb. 10, 1976
378	B 415,590	C	Mar. 23, 1976
412	B 501,379	C	Mar. 30, 1976
428	B 554,655	C	Feb. 24, 1976
434	B 457,886	C	Jan. 13, 1976
447	B 456,069	C	Mar. 9, 1976
469	B 403,883	C	Mar. 23, 1976
515	B 474,747	C	Feb. 24, 1976
523	B 463,591	C	Mar. 30, 1976
537	B 459,821	C	Mar. 30, 1976
Class 431			
1	B 412,124	M	Mar. 23, 1976
175	B 534,313	M	Jan. 27, 1976
264	B 398,220	M	Feb. 3, 1976
Class 432			
49	B 536,511	M	Mar. 9, 1976

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF APRIL, 1976

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A. E. Staley Manufacturing Company: *See*—
Cheng, Hsiung; and Moore, Carl O., 3,949,104.

A J M Research Corporation: *See*—
Malavazos, Arthur J., deceased; and Malavazos, Gregory A., administrator, 3,949,203.

A. O. Smith Corporation: *See*—
Heeger, Robert B., 3,948,439.

A/S Alto: *See*—
Arisland, Kjell Oystein, 3,948,290.

AB Bahco Ventilation: *See*—
Persson, Holger Alexis, 3,948,291.

Abbott Laboratories: *See*—
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Whipperman, Ronald Lee; Gross, James Robert; and Miller, Theodore Albert, Jr., 3,948,260.

Abbott Machine Co., Inc.: *See*—
Abbott, Samuel L., 3,948,453.

Abbott, Samuel L., to Abbott Machine Co., Inc. Ribbon breaking machine. 3,948,453, Cl. 242-35.50R.

Abeta, Sadaharu: *See*—
Okaniwa, Tetsuo; and Abeta, Sadaharu, 3,948,598.

AboDagga, Faisal: *See*—
Cherubim, Martin; and AboDagga, Faisal, 3,948,993.

Abthoff, Jorg; Kirsch, Reinhard; Ohlendorf, Rolf; and Ruf, Franz, to Daimler-Benz Aktiengesellschaft. Manifold structure for a four-cycle internal combustion engine. 3,948,229, Cl. 123-52.00M.

Acheson Industries, Inc.: *See*—
Clary, Jerome Francis; Wiley, Robert Emerson; and Bowns, Richard Earl, 3,948,811.

ACHS: *See*—
Suggs, Charles W., 3,948,553.

Actron Industries, Inc.: *See*—
Malueg, Richard M., 3,949,162.

Adachi, Keiichi: *See*—
Yamaguchi, Seiya; Shimamura, Isao; Adachi, Keiichi; and Sera, Hidefumi, 3,948,659.

Adams, Alayne A.: *See*—
Barger, Hugh J., Jr.; and Adams, Alayne A., 3,948,681.

Adams, Charles L., to Pressure Vessels, Inc. Apparatus and method for beading tubes. 3,947,950, Cl. 29-523.000.

Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, to Boots Company, The. Thiazanthenyl semicarbazides. 3,948,947, Cl. 260-328.000.

AEG-Isolier-und Kunststoff GmbH: *See*—
Fasbender, Helmut; and Hirschfeld, Horst, 3,948,701.

Aga, Toshio: *See*—
Kurita, Yoshio; Takahashi, Katsumi; and Aga, Toshio, 3,948,097.

Agar, Robert Stanley: *See*—
Price, Reginald Stanley; Agar, Robert Stanley; and Thorsell, Stanley Elden, 3,948,011.

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Shiraishi, Kenji, 3,948,087.

AGFA-Gevaert, A.G.: *See*—
Deml, Reinhold; and Greis, Ulrich, 3,948,660.
Feneberg, Paul; and Schatz, Anton, 3,948,007.
Hujer, Friedrich; and Schaner, Ferdinand, 3,948,125.
Pfeifer, Josef; Eppe, Rudolf; and Schnall, Gunther, 3,948,218.
Wagensonner, Eduard; and Stenzenberger, Volkmar, 3,949,287.

Agouri, Elias; Mornet, Philippe; Parlant, Claude; and Rideau, Jacques, to Societe Nationale des Petroles d'Aquitaine. Method for copolymerizing monomers of different types and polymer blends contain the copolymer. 3,949,016, Cl. 260-876.00B.

Agouri, Elias; Mornet, Philippe; Parlant, Claude; and Rideau, Jacques, to Societe Nationale des Petroles d'Aquitaine. New Process for grafting of plastics materials. 3,949,017, Cl. 260-878.00R.

Agouri, Elias; Laputte, Robert; and Rideau, Jacques, to Aquitaine Total Organico. Preparation of polyolefins with peroxide end-groups and their use in the synthesis of block copolymers. 3,949,018, Cl. 260-878.00B.

Aguilera, Robert A., to Xerox Corporation. Infrared imaging apparatus. 3,949,225, Cl. 250-334.000.

Aguirregomezcorta, Enrique. Simulated space flight and capsule recovery game. 3,948,527, Cl. 273-134.0AD.

Aichinger, Gerd; Haberkorn, Axel; Kolling, Heinrich; Kranz, Eckart; and Reisdorff, Josef, to Bayer Aktiengesellschaft. 1-Phenyl-substituted 1,3,5-triazines. 3,948,893, Cl. 260-248.0NS.

Aida Engineering Limited: *See*—
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Airco, Inc.: *See*—
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Miller, Henry A., 3,948,496.

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Aitken, Roxburgh Richmond; and Brown, James Peter, to Imperial Chemical Industries Limited. Process for the manufacture of polymer solutions. 3,948,847, Cl. 260-34.200.

Aizawa, Kuniomi: *See*—
Hayashi, Yoshiro; Yamagata, Takeaki; Otani, Akio; Minami, Tadashi; and Aizawa, Kuniomi, 3,949,176.

Aizawa, Tatsuo: *See*—
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Akamatsu, Akira; Matsushita, Katsunobu; and Koizumi, Sadao, to Ajinomoto Co., Inc. Solid, water-insoluble polypeptides having ionizable side chains. 3,948,863, Cl. 260-78.00A.

Akatsu, Mitsuharu; and Miyazaki, Gentaro, to Hitachi, Ltd. High voltage regulating circuit. 3,949,270, Cl. 315-411.000.

Akerman, Jean. Automatic hair brush. 3,947,910, Cl. 15-27.000.

Akhnazariants, Levon Khachaturovich: *See*—
Yatsenko, Sergei Vasilievich; Kononenko, Vadim Grigorievich; Komnatny, Igor Pavlovich; Stelmakh, Viktor Alexeevich; Schekochikhin, Serafim Vasilievich; Maznichenko, Stanislav Anisimovich; Silichev, Mikhail Karpovich; Lobanov, Vladimir Vladimirovich; Fedchenko, Alexei Ivanovich; Babich, Leonid Petrovich; Akhnazariants, Levon Khachaturovich; Saveliev, Anatoly Semenovich; Merezhro, Vladimir Feofanovich; Vestman, Alexandr Alexandrovich; Strizhenko, Vitaly Evgenievich; Pravdin, Viktor Sergeevich; Fulmakht, Veniamin Veniaminovich; Fitilev, Boris Vasilievich; Evteev, Dmitry Petrovich; Salenek, Alexandr Grigorievich; Dadykin, Georgy Fedotovich; Onuchko, Ivan Savelievich; Golodov, Nikolai Nikitovich; and Kamensky, Jury Alexandrovich, 3,948,131.

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Akiyama, Taichiro. Drain for the eardrum and apparatus for introducing the same. 3,948,271, Cl. 128-350.00R.

Akman, Alptekin, to Xerox Corporation. Transparency for multi-color electrostatic copying. 3,949,148, Cl. 428-500.000.

Akrongold, Harold S.; and Akrongold, Rochelle. Gel-impregnated sponge. 3,949,137, Cl. 428-311.000.

Akrongold, Rochelle: *See*—
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Aktiebolaget Astra: *See*—
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Al Ani, Safwat Daoud. Medicated applicator. 3,948,265, Cl. 128-267.000.

Albersdoerfer, Otto: *See*—
Wagner, Gerhard; and Albersdoerfer, Otto, 3,949,397.

Albert, Richard D. X-ray scanning method and apparatus. 3,949,229, Cl. 250-401.000.

Alburger, James R. Method of recovering and re-cycling water-washable inspection penetrants. 3,948,092, Cl. 73-104.000.

Alcan Research and Development Limited: *See*—
Claydon, Derek George Wilson; and Hill, Gilbert George, 3,948,427.

Alexander, Ernest John; and Mooradian, Aram, to Sterling Drug Inc. 9-Acyl-1,2,3,4-tetrahydrocarbazole-3 and 4-carboxylic acids. 3,948,939, Cl. 260-315.000.

Alfa-Laval AB: *See*—
Palmqvist, Fredrik Teodor Emanuel, 3,948,874.

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Berman, Irwin; Nash, Charles F.; Henschel, Robert; Schroeder, Joseph W.; Mack, Anthony M.; and Alfano, Bernardino M., 3,948,090.

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Allen, David Thomas; and Behrens, Robert Nick, to Deere & Company. Implement position control system. 3,948,024, Cl. 56-11.200.
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Allen, Robert E., to Bemiss-Jason Corporation. Rotatable poster display unit. 3,947,987, Cl. 40-68.000.
Allgeier, Hans; and Gagneux, Andre, to Ciba-Geigy Corporation. Triazolo benzodiazepine-1-carboxamides. 3,948,931, Cl. 260-308.00R.
Allied Chemical Corporation: *See—*
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Alpert, Seymour B.: *See—*
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Alston, William W., Jr.; Driscoll, John J.; and Wareham, Richard R., to Polaroid Corporation. Method of processing film unit with processing solution wave front modifying means. 3,948,662, Cl. 96-63.000.
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Arai, Mamoru; Torikata, Akio; Fukatsu, Hisayoshi; Kitano, Noritoshi; and Matsuzawa, Toshiaki, to Sankyo Company Limited. New antibiotic substance, its preparation and its use as growth promoting agents. 3,949,070, Cl. 424-118.000.
Araki, Tadashi; Asano, Kiro; Yamada, Jun; Imaizumi, Hisao; and Awao, Takao, to Toyo Boseki Kabushiki Kaisha. Method for producing isotropic pyrolisis carbon coatings. 3,949,106, Cl. 427-249.000.
Aramaki, Keiichi, to Nippon Kokan Kabushiki Kaisha. Prestressed universal rolling mill. 3,948,072, Cl. 72-225.000.
Arasim, Stanley, Jr.: *See—*
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Arctic Enterprises, Inc.: *See—*
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Arisland, Kjell Oystein, to A/S Alto. Means for connecting an elastomeric tubing to a member. 3,948,290, Cl. 138-89.000.
Arlinger, Tord Lennart, to LKB-Produkter AB. Apparatus for isotachophoretical separation. 3,948,753, Cl. 204-299.00R.
Armaturenfabrik Hermann Voss: *See—*
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Armbruster, Joseph M. Motorcycle wheel balancing assembly. 3,948,106, Cl. 73-457.000.
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Raabe, Francis O.; and Yossa, Frank A., 3,948,595.
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Armstrong, William A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Oxygen electrode and process for making the same. 3,948,684, Cl. 136-120.0FC.
Arnaboldi, Cesare. Dispenser, notably for containers. 3,948,418, Cl. 221-251.000.
Arsenault, Alvin R.: *See—*
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Artisan Industries Inc.: *See—*
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Asakai, Masaru; Masuko, Kaoru; and Takeuchi, Kazuo, to Nissan Motor Co., Ltd. Air circulation system. 3,948,154, Cl. 98-2.000.
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Asinger, Friedrich; Offermanns, Heribert; and Ghyczy, Miklos, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process of making penicillamine. 3,948,984, Cl. 260-534.00S.
Askin, Haluk O.; Jacobson, Edward C.; Lee, James M.; and Sonoda, George, to International Business Machines Corporation. D. C. Stable semiconductor memory cell. 3,949,383, Cl. 340-173.0DR.
Asmar, Romeal F.; and Morris, Harold D., to Systron Donner Corporation. Velocity transducer. 3,948,107, Cl. 73-503.000.
Atkey, Richard E., to Dover Corporation. Elevator rail mounting bracket. 3,948,358, Cl. 187-95.000.
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Hudgin, Donald E., 3,948,832.
Hudgin, Donald E., 3,948,850.
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Atwood, John G.; Ducret, Lucien C.; and De Mey II, Charles F., to Perkin-Elmer Corporation, The. Diluter for a kinetic analysis apparatus. 3,948,605, Cl. 23-259.000.
Atwood, John G.; Ducret, Lucien C.; and Marshall, Hamilton W., Jr., to Perkin-Elmer Corporation, The. Transfer system for use in analysis apparatus. 3,948,607, Cl. 23-259.000.
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Augustine, Frank B. Method for making cone spray nozzle. 3,947,940, Cl. 29-157.00C.
Ausnit, Steven. Method for making multiple plastic bags with reclosable fasteners thereon. 3,948,705, Cl. 156-73.400.
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Auth, Franz; and Spahn, Walter, to Messer Greisheim GmbH. Transportation device for chilling goods in cooling tunnels. 3,948,384, Cl. 198-229.000.
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Aviron Violet, Paul, to Rhone-Poulenc S.A. Asymmetric diphosphines, their preparation and their use. 3,949,000, Cl. 260-606.50P.
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Ayers, Orval E.; and Patrick, Roy E., to United States of America, Army. Method for producing high temperature hydrogen. 3,948,700, Cl. 149-109.200.
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Baba, Tomokiyo. Lea making apparatus. 3,947,935, Cl. 28-21.000.
Babayan, Eduard P., to Hitco. Strippable, thin, protective coating. 3,948,829, Cl. 260-18.0TN.
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Bacq, Zenon; and Binon, Fernand, to Labaz. Method of suppressing seborrhea. 3,949,087, Cl. 424-319.000.
Bader, Erich; and Haschke, Heinz, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for polymerizing acrylic acid with inhibitor and retarder present and the use of resultant polyacrylic acids. 3,948,867, Cl. 260-80.00M.
Bader, Henri, to Coulter Electronics, Inc. Methods and apparatuses for correcting coincidence count errors in a particle analyzer having a sensing zone through which the particles flow. 3,949,197, Cl. 235-92.0PC.
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Baker, Eugene E., to Halliburton Company. Multiple stage cementing tool with inflation packer and methods of use. 3,948,322, Cl. 166-289.000.
Baker, James Albert; Gray, Antony; and Benford, John Francis. Esterification of nitrobenzoic acids. 3,948,972, Cl. 260-471.00R.
Baker, Wallace J., Jr.: *See—*
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Baldi, Alfonso L., to Alloy Surfaces Company, Inc. High temperature resistant diffusion coating. 3,948,687, Cl. 148-6.160.
Baldi, Alfonso L., to Alloy Surfaces Company, Inc. Chromic-phosphoric acid coated aluminized steel. 3,948,689, Cl. 148-31.500.
Ball, Herbert; and Ohl, Wolf, to International Standard Electric Corporation. Method for frequency-recognition in selective signal receivers for use in telecommunication, particularly telephone systems. 3,949,177, Cl. 179-84.0VF.
Ball, Roger James; and Williams, Andrew Gibson, to International Computers Limited. Data processing apparatus having high speed slave store and multi-word instruction buffer. 3,949,376, Cl. 340-172.500.
Ball, Roger James, to International Computers Limited. Pipeline data processing apparatus with high speed slave store. 3,949,379, Cl. 340-172.500.
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Bangert, James G., to Nabisco, Inc. Nutritious orange drink concentrate, process and drink resultant therefrom. 3,949,098, Cl. 426-324.000.
Banks, Bruce A., to United States of America, National Aeronautics and Space Administration. Method of constructing dished ion thruster grids to provide hole array spacing compensation. 3,947,933, Cl. 29-25.180.
Bantick, John Raymond: *See—*
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Barasch, Kenneth S., to Sibar Industries. Marking assembly. 3,948,173, Cl. 101-333.000.
Barbee, Jesse J. Sun shield. 3,948,554, Cl. 296-97.00C.
Barbour, Kenneth R.; and Evans, Henry J., to Honeywell Information Systems, Inc. Peripheral device reassignment control technique. 3,949,380, Cl. 340-172.500.
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Barecki, Chester J., to American Seating Company. Fastening system for removable seat insert. 3,948,557, Cl. 297-283.000.
Barfurth, Dieter; Dittrich, Werner; and Nestler, Heinz, to Dynamit Nobel Aktiengesellschaft. Stabilization of partially hydrolyzed silicic acid esters. 3,948,964, Cl. 260-448.80R.
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Bargain, Michel; and Pasquini, Zeno, to Rhone-Poulenc S.A. Partially crosslinked silalactone polymers, their preparation and their use. 3,948,864, Cl. 260-78.30R.
Barger, Hugh J., Jr.; and Adams, Alayne A., to United States of America, Army. Fuel cell utilizing direct hydrocarbon oxidation. 3,948,681, Cl. 136-86.00D.
Barie, Walter P., Jr., to Gulf Research & Development Company. Adhesive compositions. 3,948,849, Cl. 260-37.0EP.
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Barlow, Charles Brian; and White, Brian Graham, to Imperial Chemical Industries Limited. Chemical compounds and compositions. 3,948,990, Cl. 260-576.000.
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Bartholomew, Roger F.; Campbell, Larry E.; Lewek, Stanley S.; Pierson, Joseph E.; and Stookey, Stanley D., to Corning Glass Works. Hydration of silicate glasses in aqueous solutions. 3,948,629, Cl. 65-30.00R.

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Basista, Heinrich; and Sonnenberg, Bernhard, to Carl Zeiss-Stiftung, Carl Zeiss. High speed lens having short back focus and compact rear member. 3,948,584, Cl. 350-214.000.

Bassous, Ernest; Kuhn, Lawrence; and Taub, Howard H., to International Business Machines Corporation. Jet nozzle structure for electrohydrodynamic droplet formation and ink jet printing system therewith. 3,949,410, Cl. 346-75.000.

Bastian, Lehyman John, to Scott Paper Company. Dispenser for multiple rolls of sheet material. 3,948,454, Cl. 242-55.300.

Bauer, Henry, to Levey, John. Fabric softener and dispenser. 3,947,971, Cl. 34-60.000.

Bauer, Werner R., to Robertshaw Controls Company. Control device having improved reset means. 3,949,179, Cl. 200-83.00R.

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Baumann, Rene, to Wiba AG. Catching device for a free-falling body. 3,948,351, Cl. 182-139.000.

Baxter, Bobby G., to Binkley Company, The. Roller pad for use in a module moving system. 3,948,400, Cl. 214-1.00H.

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Schwarz, Hans-Helmut; and Immel, Otto, 3,948,888.
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Bayless, John R.; and Harvey, Robin J., to Hughes Aircraft Company. Continuous ionization injector for low pressure gas discharge device. 3,949,260, Cl. 313-157.000.

Baylor, John M., to J. I. Case Company. Crawler tractor track chain drive assembly. 3,948,573, Cl. 305-57.000.

Baylor, John M., to J. I. Case Company. Joint with a combined seal and bushing. 3,948,574, Cl. 305-58.0PC.

BBC Aktiengesellschaft Brown, Boveri & Cie.: *See—*
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Beardsley, James D.; and Shipley, John D., to United States of America, Navy. System for controlling the nozzle throat area of a rocket motor. 3,948,042, Cl. 60-242.000.

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Beaucamp, Klaus: *See—*
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Beaver, Ruby C.; Clasen, Theodor; Henning, Wolfgang; and Johnson, Emil S., to Vetco Offshore Industries, Inc. Pipeline inspection device with pivotal support structure. 3,949,292, Cl. 324-37.000.

Beck, Christian; Esser, Wilhelm; Kraft, Wilhelm; and Scholtis, Kurt, to Felten & Guilleaume Carlswerk Aktiengesellschaft. Reel for elongated convolutable objects. 3,948,458, Cl. 242-118.700.

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Beck, Walter; and Kim, David Y., to Stepan Chemical Company. Phosphite esters of hindered bis and tris phenols. 3,949,024, Cl. 260-949.000.

Becker, Carl; and Wegmann, Jacques, to Ciba-Geigy Corporation. Liquid to pasty dyestuff preparations. 3,948,828, Cl. 260-13.000.

Becker, Willi, to Heidelberger Druckmaschinen Aktiengesellschaft. Control device for the lateral stop on the feed table of sheet feeds for feeding individual sheets. 3,948,509, Cl. 271-239.000.

Beckham, Robert R., to Libbey-Owens-Ford Company. Mirror mount applying method and apparatus. 3,948,719, Cl. 156-556.000.

Becton, Dickinson and Company: *See—*
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Bell Punch Company Limited: *See—*
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Bender, Paul E.; Loev, Bernard; and Perchonock, Carl D., to Smith-Kline Corporation. N-(Heterocycl ic-alkyl)-9-xanthenylamines. 3,949,076, Cl. 424-251.000.

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Benjamin, O'Connell Julien, to Bell Telephone Laboratories, Incorporated. Plasma panel light pen tracking using adaptive tracking scan. 3,949,391, Cl. 340-324.00M.

Bennes Marrel: *See—*
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Bennett, Robert B., to Dow Chemical Company, The. Insulation of steel tanks. 3,948,412, Cl. 220-9.00A.

Benson, Elliot Warren, to Foster Wheeler Energy Corporation. Serially fired steam generator. 3,948,223, Cl. 122-240.00A.

Berchtold, Jean. Process of manufacturing ferrite materials with improved magnetic and mechanical properties. 3,948,785, Cl. 252-62.620.

Berger, Herbert; Gall, Rudi; Stach, Kurt; Vomel, Wolfgang; and Hoffmann, Rita, to Boehringer Mannheim G.m.b.H. Nitroimidazolyl-triazolo-pyridazine compounds and therapeutic compositions. 3,948,912, Cl. 260-250.0AC.

Bergstrom, John J., to Chamberlain Manufacturing Corporation. Shaped charge. 3,948,181, Cl. 102-56.0SC.

Bergwerksverband GmbH: *See—*
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Berk, Zeki, to Massachusetts Institute of Technology. Apparatus for cleaning marine animals of the mollusk type. 3,947,921, Cl. 17-71.000.

Berkovitz, Robert A., to Dolby Laboratories, Inc. Audio equalizers for large rooms. 3,949,325, Cl. 333-28.00R.

Berman, Irwin; Nash, Charles F.; Henschel, Robert; Schroeder, Joseph W.; Mack, Anthony M.; and Alfano, Bernardino M., to Foster Wheeler Energy Corporation. Method of measuring dimensional variations in a workpiece. 3,948,090, Cl. 73-89.000.

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Besaw, Joseph W. Portable rifle rest. 3,947,988, Cl. 42-94.000.

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Best, John S., to Dow Chemical Company, The. Arrangement to control heat flow between a member and its environment. 3,948,313, Cl. 165-45.000.

Beyers, Billy Wesley, Jr.: *See—*
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BHS-Bayerische Berg-Hutten-und Salzwerke Aktiengesellschaft: *See—*
Mosburger, Hans, 3,948,718.

Bianchi, Giuseppe; De Nora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, to Oronzio de Nora Impianti Elettrochimici S.p.A. Valve metal electrode with valve metal oxide semi-conductive face. 3,948,751, Cl. 204-290.00F.

BICC Limited: *See—*
Martin, David Joseph, 3,948,582.

Biefeld, Lawrence P.; Foley, Kevin M.; and McCombs, Frank Paul, to Owens-Corning Fiberglas Corporation. Organo silicon derivatives coated on glass fibers. 3,949,140, Cl. 428-378.000.

Bielefeldt, Ernst-August, to Messerschmitt-Bolkow-Blohm GmbH. Method and apparatus for separating suspended matter from a fluid by centrifugal force. 3,948,771, Cl. 210-84.000.

Bierlein, John David; and Gier, Thurman Eugene, to Du Pont de Nemours, E. I., and Company. Crystals of $(K, Rb, NH_4)TiO(P, As)O_4$ and their use in electrooptic devices. 3,949,323, Cl. 332-7.510.

Bieu, Earl C., Sr., to Baker, Wallace J., Jr. Device for preventing malfunction of ink pick-up rollers in offset printing presses. 3,948,174, Cl. 101-350.000.

Bilbro, James E.; and Johnson, Ben C., to Thermon Manufacturing Company. Pipe heat transfer assembly. 3,949,189, Cl. 219-301.000.

Bilich, Chester J.: *See—*
Fox, James C.; and Bilich, Chester J., 3,947,924.

Billings, John Stannard, Jr.; and Martahus, Donald J., to Westinghouse Electric Corporation. Electrostatic metallic shield-insert element for insulating castable members. 3,949,157, Cl. 174-73.00R.

Billings, Ronald P.: *See—*
Bonacci, John C.; and Billings, Ronald P., 3,948,758.

Binkley Company, The: *See—*
Baxter, Bobby G., 3,948,400.

Binon, Fernand: *See—*
Bacq, Zenon; and Binon, Fernand, 3,949,087.

Bio-Rad Laboratories: *See—*
Monthony, James F.; and Siebert, Christopher J., 3,948,743.

Biochemie Ges.m.b.H.: *See—*
Brandl, Ernst; Knauseder, Franz; and Rembold, Franz, 3,949,079.

Bishop, Leroy J., to Lawrence Peska Associates, Inc., a part interest. Pencil holder device. 3,947,977, Cl. 35-36.000.

Bixby, Ezra Lovell, to Goodall Rubber Company. Hose construction and utilization. 3,948,293, Cl. 138-126.000.

Bjornsen, Gary L.; and Rutherford, Kenneth R., to Rockwell International Corporation. Analog sweep calibrator. 3,949,393, Cl. 340-347.0CC.

Black Clawson Company, The: *See—*
Seifert, Peter, 3,948,165.

Black, Michael Arthur, to Brooks & Perkins, Incorporated. Hand truck. 3,948,537, Cl. 280-36.00C.

Blackwell, Jennings P.: *See—*
Brady, Donnie G.; and Blackwell, Jennings P., 3,948,865.

Blair, James K.: *See—*
McKay, Thomas L.; Blair, James K.; and Howard, Harold R., 3,948,142.

Blanchet, Pierre; Gasparini, Guy; and Dodard, Serge, to Societe Europeenne des Produits Refractaires. Vault for furnaces. 3,948,193, Cl. 110-99.00R.

Blaupunkt-Werke GmbH: *See—*
Hegeler, Wilhelm; Maschmeyer, Lambert; and Rasehorn, Hans, 3,949,401.

Blaut, Ernst: *See—*
Pollinger, Hans; Wosegien, Bernd; Gmelch, Xaver; Freund, Georg; and Blaut, Ernst, 3,948,360.

Bleyl, Donald L., to Brown & Root, Inc. Apparatus for burning fluid at a burner mounted on a floating vessel subject to wave action. 3,948,196, Cl. 114-.50D.

Blocker, William C. Seal for LP gas cylinder valve and method and tool for installation of same. 3,947,942, Cl. 29-157.10R.

Blomeyer, Walter: *See—*
Schad, Walter; and Blomeyer, Walter, 3,948,592.

Blumbergs, John H.; McCarthy, Michael J.; Finley, Joseph H.; and Polkowski, John M., to FMC Corporation. Method of producing carboxymethyloxysuccinic acid. 3,948,985, Cl. 260-535.00P.

Blunck, Otto; Delin, Heinz; Muller, Rudolf; and Voss, Werner, to H. Maihak A.G. Infrared radiating unit for infrared analyzers. 3,949,231, Cl. 250-493.000.

Boehringer Ingelheim GmbH: *See—*
Eberhardt, Hans; and Brickl, Rolf Stefan, 3,948,943.
Eberlein, Wolfgang; Heider, Joachim; Diederen, Willi; and Kobinger, Walter, 3,949,074.
Kutter, Eberhard; Austel, Volkard; Eberlein, Wolfgang; and Heider, Joachim, 3,948,898.

Boehringer Mannheim G.m.b.H.: *See—*
Berger, Herbert; Gall, Rudi; Stach, Kurt; Vomel, Wolfgang; and Hoffmann, Rita, 3,948,912.
Roeschlau, Peter; Lang, Gunter; Beaucamp, Klaus; and Bernt, Erich, 3,948,728.

Boeing Company, The: *See—*
Brown, Robert B., 3,948,469.
Fraser, Sheila J.; Gillette, Roger B.; and Olson, Richard L., 3,948,601.

Boenecke, Guenter: *See—*
Jauer, Guenter; Boenecke, Guenter; Schaefer, Wolfgang; and Zarate, Jacobo, 3,949,043.

Boesenberg, Heinz: *See—*
Rosinger, Sigurd; Boesenberg, Heinz; and Gaube, Adolf, 3,948,742.

Bogart, Peter D. Irreversible digital counter and odometer. 3,949,201, Cl. 235-95.00R.

Bogart, Peter D. Irreversible digital counter and odometer. 3,949,202, Cl. 235-95.00R.

Boitsov, Alexandr Ivanovich: *See—*
Illin, Mikhail Ivanovich; Chudakov, Gennady Mikhailovich; Trofimov, Valery Alexandrovich; Boitsov, Alexandr Ivanovich; and Danilin, Serafim Vladimirovich, 3,948,780.

Bolduc, Lee R.; and Dickhudt, Eugene A., to Population Research Incorporated. Dispensing instrument. 3,948,259, Cl. 128-235.000.

Boliden Aktiebolag: *See—*
Elvander, Hans Ivar; Edenwall, Ingvar Anton Olof; Gorling, Karl Goran; and Ekman, Douglas Sewerin, 3,948,640.
Elvander, Hans Ivar; Edenwall, Ingvar Anton Olof; Gorling, Karl Goran; and Ekman, Douglas Sewerin, 3,948,645.

Boms, Manfred: *See—*
Korner, Otto; Boms, Manfred; and Spies, Klaus, 3,948,572.

Bonacci, John C.; and Billings, Ronald P., to Mobil Oil Corporation. Production of alkyl aromatic hydrocarbons. 3,948,758, Cl. 208-92.000.

Bonaval-Werke GmbH: *See—*
Lochner, Karl-Heinz; and Lenzen, Johann, 3,948,686.

Bonds, James Vaull, to McEvoy Oilfield Equipment Co. Mechanically operated breech block. 3,948,545, Cl. 285-4.000.

Bonin, Werner: *See—*
Horlein, Gerhard; Salbeck, Gerhard; Emmel, Ludwig; and Bonin, Werner, 3,948,945.

Bonneton, Robert: *See—*
Duval, Georges; Bonneton, Robert; and Poinas, Christian, 3,949,173.

Bonomo, Franco; and Caldarelli, Fernando, to Centro Sperimentale Metallurgico S.p.A. Device for cooling welds. 3,948,428, Cl. 228-46.000.

Boots Company, The: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, 3,948,947.

Bordina, Ninel Mineevna; Zadde, Vitaly Viktorovich; Zaitseva, Aita Konstantinovna; Landsman, Arkady Pavlovich; Strebkov, Dmitry Semenovich; Streltsova, Valentina Ivanovna; and Unishkov, Vadim Alexeevich. Semiconductor photoelectric generator. 3,948,682, Cl. 136-89.000.

Borg-Warner Corporation: *See—*
Gyory, Emeric J., 3,948,530.
Hoppesch, Joseph P., 3,948,604.
Washington, Richard C., 3,947,944.

Borisov, Dmitry Pavlovich: *See—*
Griboedov, July Nikolaevich; Junts, Boris Ivanovich; Malaniin, Igor Ivanovich; Kharitonovich, Dmitry Eduardovich; Zherdev, Lev Alexandrovich; and Borisov, Dmitry Pavlovich, 3,948,211.

Borjesson, Knut Vilhelm. Chain construction. 3,948,041, Cl. 59-78.100.

Bornstein, Irene; and Kapsalis, Andreas A., to Baxter Laboratories, Inc. Method of detecting antigens or antibodies. 3,949,064, Cl. 424-1.000.

Borsuk, Alvin; and Johnson, Charles H., to Oscar Mayer & Co. Inc. Multiple-stage gang-type plug pushing assembly. 3,948,158, Cl. 99-355.000.

Bossak, William Stephen. Vulvar deodorant system. 3,948,257, Cl. 128-285.000.

Bossert, Friedrich: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,948,923.

Bothe, Werner, to Maschinenfabrik Hasenclever GmbH. Forging press with independent hammer-position adjustment and overload protector. 3,948,077, Cl. 72-432.000.

Botts, Elton M.: *See—*
Wiseley, Kenneth; and Botts, Elton M., 3,949,249.

Bourne, Richard Curtis. Unitary electrical receptacles. 3,949,155, Cl. 174-55.000.

Bowers, William A., to Precision Paper Tube Company. Electrical fitting preparation. 3,947,958, Cl. 29-629.000.

Bowman, Robert S., to St. Joe Minerals Corporation. Bicharge photoconductive zinc oxides containing iodine. 3,948,658, Cl. 96-1.800.

Bowns, Richard Earl: *See—*
Clary, Jerome Francis; Wiley, Robert Emerson; and Bowns, Richard Earl, 3,948,811.

Box, E. O., Jr.; and Farha, Floyd, Jr., to Phillips Petroleum Company. Zinc aluminate catalyst compositions. 3,948,808, Cl. 252-462.000.

Boxall, Frank S. Time shared delta modulation system. 3,949,298, Cl. 325-38.00B.

Boyd, Patrick L., to United States of America, Transportation. Apparatus for testing the traction properties of pneumatic tires. 3,948,080, Cl. 73-9.000.

BP Chemicals International Limited: *See*—
Fry, David Philip, 3,948,716.

Braddon, David V.; and Falkehag, Sten I., to Westvaco Corporation. Stabilizer composition of phosphite and lignin. 3,948,801, Cl. 252-400.00A.

Braden, Denver, to Illinois Tool Works Inc. Automatic lead straightening of axial leaded components. 3,948,298, Cl. 140-147.000.

Brady, Donnie G.; and Blackwell, Jennings P., to Phillips Petroleum Company. Chemical treatment of arylene sulfide polymers. 3,948,865, Cl. 260-79.000.

Brady, Stephen F.: *See*—
Veber, Daniel F.; and Brady, Stephen F., 3,948,971.

Braeckelmann, Walter, to Siemens Aktiengesellschaft. Device for the transmission of push-pull signals. 3,949,169, Cl. 178-68.000.

Bragg, Kenneth R., to Parker-Hannifin Corporation. Refueling equipment for aircraft fuel tanks and the like. 3,948,626, Cl. 55-160.000.

Braithwaite, Robert C.: *See*—
Monk, Kenneth A.; and Braithwaite, Robert C., 3,949,389.

Brandenstein, Manfred: *See*—
Ernst, Horst; Brandenstein, Manfred; and Olschewski, Armin, 3,948,370.

Brandl, Ernst; Knauseder, Franz; and Rembold, Franz, to Biochemie Ges.m.b.H. Antibiotic derivatives. 3,949,079, Cl. 424-122.000.

Braun Aktiengesellschaft: *See*—
Duffner, Konrad; and Schafer, Horst, 3,949,248.

Breitschwerdt, Werner, to Daimler-Benz Aktiengesellschaft. Soundproofing means for motor vehicles. 3,948,340, Cl. 180-89.00R.

Brickl, Rolf Stefan: *See*—
Eberhardt, Hans; and Brickl, Rolf Stefan, 3,948,943.

Bridgestone Liquefied Gas Company, Ltd.: *See*—
Yamamoto, Katsuro; Sato, Toru; and Ogino, Kenzi, 3,948,198.

Bridgestone Tire Company Limited: *See*—
Suzuki, Masayoshi; and Ozaki, Kazuo, 3,948,717.

Bridle, Trevor R.; Godfrey, Christopher S. M.; and Riley, David C., to Du Pont of Canada, Ltd. String-up and cut-down device for a ring twister. 3,948,029, Cl. 57-34.0TT.

Bringer, Heinz, to Etat Francais. Devices for controlling pneumatic actuators. 3,948,148, Cl. 91-461.000.

Brioschi, Antonio, to Honeywell Information Systems, Inc. System for extending the interior decor of a microprogrammed computer. 3,949,372, Cl. 340-172.500.

Bristow, Norman William: *See*—
Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, 3,948,947.

British Steel Corporation: *See*—
Kerton, Charles Philip, 3,949,151.

Broadway, Alexander Richard William; Fong, William; and Rawcliffe, Gordon Hindle, to National Research Development Corporation. Electric motors. 3,949,253, Cl. 310-184.000.

Brock, John O.; Davis, Marmion Dean; and Wray, James Robert, to Interstate Industries, Inc. Apparatus for pivotally mounting an outboard motor on a fishing boat. 3,948,204, Cl. 115-18.00E.

Brockelsby, Norman D., to Dutton-Lainson Company. Mounting means for power anchor winch. 3,948,488, Cl. 254-186.00R.

Brockhaus, Rudolf: *See*—
Hachmann, Klaus; Gaube, Johann; Brockhaus, Rudolf; and Langheim, Franz, 3,948,983.

Broisman, Raymond, to American Cyanamid Company. Triallyl cyanurate with high ringbound chlorine content. 3,948,796, Cl. 252-187.00C.

Broken Hill Proprietary Co., Ltd., The: *See*—
Debenham, Michael, 3,948,415.

Brookes, Barry Edward, to Northern Electric Company, Limited. Distributed power switch for modular systems. 3,949,238, Cl. 307-64.000.

Brooks & Perkins, Incorporated: *See*—
Black, Michael Arthur, 3,948,537.

Brooks, William T., to Dow Corning Corporation. Electrical devices containing improved dielectric fluids. 3,948,789, Cl. 252-65.000.

Brophy, Carl R. Camper jacks. 3,948,482, Cl. 254-4.00R.

Brown Fintube Company: *See*—
Powell, John R., 3,948,315.

Brown, James Peter: *See*—
Aitken, Roxburgh Richmond; and Brown, James Peter, 3,948,847.

Brown, Robert B., to Boeing Company, The. Engine mounting and boundary layer control fluid supply apparatus. 3,948,469, Cl. 244-54.000.

Brown, Robert Smith; and Hawley, Robert, to Reyrolle Parsons Limited. Dynamo-electric machines. 3,949,255, Cl. 310-214.000.

Brown & Root, Inc.: *See*—
Bleyl, Donald L., 3,948,196.

Brown, William M.; Ruddy, John M.; and Dunn, Robert T. Telephone extension system utilizing power line carrier signals. 3,949,172, Cl. 179-2.50R.

Brown & Williamson Tobacco Corporation: *See*—
Sanford, Robert A., 3,948,275.

Browning-Ferris Industries, Inc.: *See*—
Edwards, Tommy Ray, 3,948,764.

Brugger, Max: *See*—
Rittel, Werner; Brugger, Max; and Riniker, Bernhard, 3,948,876.

Brun, Robert; and Pages, Michel, to Rhone-Poulenc-Textile. Selectively permeable membrane on hollow cord. 3,948,781, Cl. 210-500.00M.

Brunette, Jerome J. Resistant tag structure. 3,947,983, Cl. 40-27.000.

Brunner, Mathias: *See*—
Zumbach, Bruno; Nopper, Peter; and Brunner, Mathias, 3,948,082.

Brussmann, Otto; Miksovsky, Felix; Fikentscher, Rolf; and Diefenbach, Horst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Powder coating agents. 3,948,834, Cl. 260-27.00R.

Brydges, William T., III; and Smith, Dennis W., to Corning Glass Works. Glasses and glass-ceramics containing rutile fibers. 3,948,669, Cl. 106-39.800.

Brytczuk, Walter L.: *See*—
Cordiano, Joseph J.; and Brytczuk, Walter L., 3,948,747.

Buchel, Karl Heinz: *See*—
Kramer, Wolfgang; Buchel, Karl Heinz; Meiser, Werner; and Plempel, Manfred, 3,949,080.

Buck, George S., Jr.; and Russell, Roger, to Cotton Incorporated. Cotton packaging method and apparatus. 3,948,021, Cl. 53-124.00D.

Buckler, Robert Thomas; Hartzler, Harold Eugene; Hayao, Shin; and Nichols, Gust, to Miles Laboratories, Inc. Phenyl-and (substituted)-phenyl-1,2,3-triazole-alkanoic and- alkenoic acids. 3,948,929, Cl. 260-308.00A.

Buckler, Robert Thomas; Hartzler, Harold Eugene; Hayao, Shin; and Nichols, Gust, to Miles Laboratories, Inc. Phenyl-and (substituted)-phenyl-1,2,3-triazole-alkanoic and- alkenoic acids. 3,948,930, Cl. 260-308.00A.

Buckler, Robert Thomas; Hartzler, Harold Eugene; Hayao, Shin; and Nichols, Gust, to Miles Laboratories, Inc. Phenyl- and (substituted)-phenyl-1,2,3-triazole-alkanoic and -alkenoic acids. 3,948,932, Cl. 260-308.00A.

Bucklisch, Ludwig, to Dynamit Nobel Aktiengesellschaft. Warhead. 3,948,175, Cl. 102-5.000.

Budinski, John A.; Fannin, Wayne V.; and Flora, Raymond A., to General Motors Corporation. Air control valve. 3,948,045, Cl. 60-290.000.

Buffalo Forge Company: *See*—
Meier, Henry A., Jr., 3,948,135.

Bugaut, Andree: *See*—
Kalopissis, Gregoire; and Bugaut, Andree, 3,948,596.

Burgett, Donald K.; Rice, James E.; and Touchette, John W., to Goodyear Tire & Rubber Company, The. Force variation testing of tires. 3,948,095, Cl. 73-146.000.

Burk, George A.: *See*—
Goralski, Christian T.; Pews, R. Garth; and Burk, George A., 3,948,948.

Burke, Murray G. Orthopedic shoe. 3,948,253, Cl. 128-80.00J.

Burke, Oliver W., Jr.; Kizer, Joseph Austin A.; and Davis, Pauls. Processes for preparing polymers. 3,948,960, Cl. 260-407.000.

Burkett, Harold J.: *See*—
Kasselmann, John T.; Dorsett, Henry; and Burkett, Harold J., 3,948,567.

Burkholder, Lester M.: *See*—
Hess, James R.; Burkholder, Lester M.; and Rettew, Richard L., 3,947,947.

Burlington Industries, Inc.: *See*—
Hinton, Everett H., Jr.; and Avery, Larry E., 3,948,838.

Burns, Alan Robert, to Ruapehu Pty. Ltd. Rotary engine provided with first and secondary rotatably mounted rotors. 3,948,230, Cl. 123-55.00R.

Burns, James R.: *See*—
Silvia, Denis A.; Wishard, William N.; and Burns, James R., 3,948,180.

Buro Patent AG: *See*—
Pircher, Herbert; and Hambuch, Johannes, 3,948,342.

Burroughs Corporation: *See*—
Harvey, Edgar L., 3,949,261.

Burroughs, Franklin Penn, Sr.: *See*—
Miller, Christian Paul; and Burroughs, Franklin Penn, Sr., 3,948,505.

Burroughs Wellcome Co.: *See*—
Maxwell, Robert Arthur; and Walton, Eric, 3,949,089.

Burson, Bob O., to R. E. Phelon Company, Inc. Ignition coil. 3,949,338, Cl. 336-92.000.

Burtis, Eric F.: *See*—
Hafel, William R., 3,947,976.

Burysek, Frantisek; Mares, Milos; and Havel, Josef, to Vyzkumny Ustav Bavlnarsky. Open-end spinning machine and method of operating the same. 3,948,452, Cl. 242-18.00A.

Bush Boake Allen Limited: *See*—
Mitchell, William, 3,949,092.

Butterfield, George H., Jr.; Butterfield, George H., Sr., deceased; and by Gordon, David, executor, to George H. Butterfield and Son. Composition for hard type contact lens with wettable surface. 3,948,871, Cl. 260-86.10E.

Butterfield, George H., Sr., deceased: *See*—
Butterfield, George H., Jr.; Butterfield, George H., Sr., deceased; and Gordon, David, executor, 3,948,871.

Buzna, Arpad; Kulcsar, Gabor; Soltesz, Jeno; and Valyl Nagy, Tibor, deceased (by Nagy, Flora Valyi, legal representative), to Chinoin Gyogyszer-es Vegyeszeti Termekek Gyara RT. Synergistic antibiotic compositions. 3,949,077, Cl. 424-114.000.

Bychinsky, Wilffed A., to General Motors Corporation. Wave interference silencer construction. 3,948,348, Cl. 181-44.000.

Bychinsky, Wilfred A., to General Motors Corporation. Wave interference silencer. 3,948,349, Cl. 181-44.000.

C.A.V. Limited: *See*—
Walker, Michael Edward; and Scott, Peter Frank, 3,949,250.
Williams, Malcolm; Jones, Christopher Robin; and Crookes, Richard William, 3,948,237.

C. Conradty, Firma: *See*—
Koziol, Konrad; Sieberer, Karl-Heinz; and Rathjen, Hans-Carl, 3,948,752.

C.G.R.-MeV: *See*—
Levaillant, Claude, 3,949,328.

C. Hager & Sons Hinge Manufacturing Company: *See*—
Peterson, Francis C., 3,948,067.

C. J. Kennedy Company: *See*—
Kennedy, Charles J., 3,949,339.
Kennedy, Charles J., 3,949,394.

C. L. Frost & Son, Inc.: *See*—
Esch, Richard E., 3,948,331.

Cairns, Hugh; and Rogers, Norman Harold, to Fisons Limited. Bischromone-tetrazole/hydroxamic/carboxylic acids. 3,948,954, Cl. 260-345.200.

Calcagno, Benedetto: *See*—
Cocuzza, Gioacchino; Calcagno, Benedetto; and Torreggiani, Gianni, 3,948,621.

Caldarelli, Fernando: *See*—
Bonomo, Franco; and Caldarelli, Fernando, 3,948,428.

Calgon Corporation: *See*—
Szabo, Miklos Tamas; Guilbault, Lawrence James; and Sherwood, Nancy Spicer, 3,948,783.

Calvino y Teijeiro, Benito Jose, to Magrini Galileo S.p.A. Breaking chamber for self-blasting compressed gas electric circuit-breakers. 3,949,182, Cl. 200-148.00R.

Cammann Manufacturing Co., Inc.: *See*—
Roach, Jere H., 3,949,185.

Camp, Clarence W., to Edlund Company, Inc. Slicing device. 3,948,132, Cl. 83-425.300.

Campagnuolo, Carl J.: *See*—
Fisher, Evan D.; Campagnuolo, Carl J.; and Gehman, Stacy E., 3,948,183.

Campbell, Larry E.: *See*—
Bartholomew, Roger F.; Campbell, Larry E.; Lewek, Stanley S.; Pierson, Joseph E.; and Stookey, Stanley D., 3,948,629.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Armstrong, William A., 3,948,684.

Canadian Ingersoll-Rand Company Ltd.: *See*—
Young, Douglas L. G., 3,948,300.

Canadian Valley Meat Company: *See*—
Lavarnway, Jerry L., 3,948,580.

Cannady, Daniel L., Jr., to Westinghouse Electric Corporation. Process for embossing high pressure decorative laminates. 3,948,713, Cl. 156-220.000.

Canon Kabushiki Kaisha: *See*—
Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, 3,948,586.
Taguchi, Tetsuya; Yazaki, Mutsunobu; and Sanada, Noriaki, 3,949,412.
Yoshikawa, Hideo; Tosaka, Umi; Matsuo, Takehiko; and Negishi, Hirokazu, 3,948,657.

Cantrell, Ben H., to United States of America, Navy. Fast scan multimode radar. 3,949,396, Cl. 343-5.00R.

Carborundum Company, The: *See*—
Murata, Yorihiro, 3,949,030.

Caritato Limited: *See*—
Caritato, Peter, 3,949,392.

Caritato, Peter, to Caritato Limited. Multi-element display apparatus for displaying different patterns or information. 3,949,392, Cl. 340-336.000.

Carl Zeiss-Stiftung, Carl Zeiss: *See*—
Basista, Heinrich; and Sonnenberg, Bernhard, 3,948,584.

Carlone, Eugene R. Wrist position-actuatable switch. 3,948,037, Cl. 58-50.00R.

Carlson, Alden J.: *See*—
Melcher, Byron; and Carlson, Alden J., 3,948,139.

Carlson, John A., to Arctic Enterprises, Inc. Parking brake mechanism. 3,948,361, Cl. 188-24.000.

Carmel Energy, Inc.: *See*—
Sperry, John S.; Krajicek, Richard W.; and South, Dudley P., Jr., 3,948,323.

Carmichael, Lee T.: *See*—
Hyde, Richard E.; and Carmichael, Lee T., 3,948,556.

Carney, Robert L., to Zoecon Corporation. Catalyst. 3,948,803, Cl. 252-429.00R.

Carter, William Caswell, to International Business Machines Corporation. Apparatus for detecting and correcting errors in an encoded memory word. 3,949,208, Cl. 235-153.0AM.

Cartwright, William John, to Continental Can Company, Inc. Thermal isolation mounting for drawn and wall ironing ram. 3,948,078, Cl. 72-456.000.

Carver, Julius C.: *See*—
Winston, Fred F.; and Carver, Julius C., 3,948,325.

Casio Computer Co., Ltd.: *See*—
Kashio, Toshio, 3,949,365.

Castleberry, Donald E.; Jenssen, Hans P.; and Linz, Arthur, to Massachusetts Institute of Technology. Miniature crystalline laser. 3,949,320, Cl. 331-94.50F.

Castro, Jose: *See*—
Conde, John; and Castro, Jose, 3,947,902.

Caterpillar Tractor Co.: *See*—
Fuzzell, Joe E.; and Freedy, Allan L., 3,949,356.
Grawley, Charles E.; Untz, Robert W.; and Beyers, Marvin E., 3,948,707.
Ohms, Edward J.; and Peterson, Wayne A., 3,948,049.

Catto, Christopher John Dignet; and Charman, Nigel Victor, to Plessey Handel und Investments A.G. Check-out terminal. 3,949,194, Cl. 235-61.11E.

Cavaterra, Enrico; Petrini, Guido; Covini, Romano; and Moreschini, Luciano, to Montedison S.p.A. Process for preparing alpha, beta unsaturated acids by catalytic oxidation of corresponding saturated acids in the gas phase. 3,948,959, Cl. 260-405.500.

Cawse, James N., to Union Carbide Corporation. Catalytic process for polyhydric alcohols and derivatives. 3,948,965, Cl. 260-449.00R.

Celanese Corporation: *See*—
Stackman, Robert W., 3,948,856.

Cellerini, Albert R.; and Majcher, John P., to Westinghouse Electric Corporation. Circuit breaker with adjustable thermal trip unit. 3,949,331, Cl. 335-45.000.

Centre de Recherches Metallurgiques - Centrum voor Research in de Metallurgie: *See*—
Voll, Hubert Paul, 3,948,091.

Centre d'Etude de l'Energie Nucleaire: *See*—
Flipot, Alfred-Jean; and Smolders, Armand, 3,949,027.

Centre for Industrial Research (CIR) Ltd.: *See*—
Kacir, Lior; and Narkis, Moshe, 3,948,833.

Centro Sperimentale Metallurgico S.p.A.: *See*—
Bonomo, Franco; and Caldarelli, Fernando, 3,948,428.

Ceskoslovenska akademie ved: *See*—
Stoy, Vladimir; Stoy, Artur; Prokop, Jaroslav; Urbanova, Renata; and Kucera, Josef, 3,948,870.

Chalupa, William V.; and Parish, Roger C., to SmithKline Corporation. Methods and compositions for improving feed efficiency in ruminants using dithiooxamide. 3,949,090, Cl. 424-328.000.

Chamberlain Manufacturing Corporation: *See*—
Bergstrom, John J., 3,948,181.

Chapell, Harry F., to Sage Laboratories, Inc. Waveguide low pass filter. 3,949,327, Cl. 333-73.00W.

Chapman, Willis F. Method and apparatus for separating oil from aqueous liquids. 3,948,767, Cl. 210-20.000.

Chapman, Willis F. Method and apparatus for separating oil from aqueous liquids. 3,948,768, Cl. 210-20.000.

Charman, Nigel Victor: *See*—
Catto, Christopher John Dignet; and Charman, Nigel Victor, 3,949,194.

Chase, Kenneth P.; and Stassen, William N., to Owens-Corning Fiberglas Corporation. Water soluble sizing for glass fibers and glass fibers sized therewith. 3,948,673, Cl. 106-99.000.

Chase-Shawmut Company, The: *See*—
Kozacka, Frederick J., 3,949,342.

Chaudhari, Dinkar; Haring, Ernst; Dobbelstein, Arnold; and Hoselmann, Wilfried, to BASF Farben & Fasern AG. Coating compositions hardenable by ionization beams. 3,948,739, Cl. 204-159.220.

Chaudhari, Praveen; Cuomo, Jerome J.; Gambino, Richard J.; and McGuire, Thomas R., to International Business Machines Corporation. Beam addressable film using amorphous magnetic material. 3,949,387, Cl. 340-174.0YC.

Chauvel, Bernard: *See*—
Saint-Pierre, Francoise; and Chauvel, Bernard, 3,948,843.

Chemische Industrie AKU-Goodrich B.V.: *See*—
Wietsma, Popke, 3,948,822.

Chemische Werke Huls Aktiengesellschaft: *See*—
Hachmann, Klaus; Gaube, Johann; Brockhaus, Rudolf; and Langheim, Franz, 3,948,983.
Rassaerts, Heinz; Sticken, Gerhard; and Knepper, Wilhelm, 3,949,009.

Cheng, Hsiung; and Moore, Carl O., to A. E. Staley Manufacturing Company. Starch containing concentrates. 3,949,104, Cl. 426-578.000.

Cherdron, Egon; Forster, Hans-Joachim; and Potencsik, Istvan, to Gebr. Giulini GmbH. Method of precipitating radium to yield high purity calcium sulfate from phosphate ores. 3,949,047, Cl. 423-2.000.

Cherednichenko, Vladimir Semenovich; Orlov, Gennady Ivanovich; and Naryshkin, Jury Anatolievich. Apparatus for continuous vacuum-refining of metals. 3,948,495, Cl. 266-16.000.

Cherny, Anatoly Alexeevich; Grachev, Vladimir Alexandrovich; Kirin, Evgeny Mikhailovich; and Gorelov, Nikolai Andreevich. Method of melting solid iron in a gas cupola. 3,948,647, Cl. 75-43.000.

Cherry, Sidney J., to Westinghouse Electric Corporation. Power vacuum fuse using coaxial cylinders. 3,949,341, Cl. 337-161.000.

Cherubim, Martin; and AboDagga, Faisal, to Deutsche Texaco Aktiengesellschaft. Process for production of 3-hydroxy-cyclohexene-2-ones. 3,948,993, Cl. 260-586.00C.

Cherubim, Martin; and Heinemann, Karl-Heinz, to Deutsche Texaco Aktiengesellschaft. Process for the production of wood materials having high resistance to hot water, said materials containing phenol-aldehyde resin and alkylene carbonate hardener. 3,949,149, Cl. 428-529.000.

Chevron Research Company: *See*—
Kobzina, John W., 3,948,633.

Kray, Louis R., 3,948,974.
Suzuki, Shigeto, 3,948,977.
Suzuki, Shigeto, 3,948,986.

Chiba, Hiyoshi: *See—*
Sobajima, Shigenobu; Okaniwa, Hiroshi; Chiba, Hiyoshi; and Takagi, Norio, 3,949,409.

Chinoin Gyogyszer-es Vegyeszeti Termekek Gyara RT: *See—*
Feuer, Laszlo; Nogradi, Mihaly; Gottsegen, Agnes; Vermes, Borbala; Streliszky, Janos; Wolfner, Andreas; Farkas, Lorant; Antus, Sandor; and Kovaks, Maria, 3,949,085.

Chinoin Gyogyszer-es Vegyeszeti Termekek Gyara RT: *See—*
Buzna, Arpad; Kulcsar, Gabor; Soltesz, Jeno; and Valyl Nagy, Tibor, deceased, 3,949,077.

Choi, Dai S.; and Parsons, Roger C., to Continental Oil Company. Method for controlling stress and increasing the strength of support members in coal mines. 3,948,055, Cl. 61-36.00R.

Chouinard, Yvon; and Frost, Thomas M. Irregular, polygonal mountaineering chock. 3,948,485, Cl. 254-135.00R.

Christensen, Donald E., to Gladhart, David, a part interest. Self-locking log skidding carriage. 3,948,398, Cl. 212-122.000.

Christman, Robert D.; and Metzger, Kirk J., to Gulf Research & Development Company. Sulfiding process for desulfurization catalysts. 3,948,763, Cl. 208-216.000.

Chudakov, Gennady Mikhailovich: *See—*
Ilin, Mikhail Ivanovich; Chudakov, Gennady Mikhailovich; Trofimov, Valery Alexandrovich; Boitsov, Alexandr Ivanovich; and Danilin, Serafim Vladimirovich, 3,948,780.

Chudner, Joseph. Sheet-material feeding unit. 3,948,195, Cl. 112-214.000.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Hata, Shun-ichi, 3,949,069.

Chun, Sun W.; Massoth, Franklin E.; and McIlvried, Howard G., to Gulf Research & Development Company. Cyclic aldol condensation process and catalyst regeneration procedure. 3,948,991, Cl. 260-586.00E.

Churchill, William Philip, Jr., to Data General Corporation. Memory access technique. 3,949,369, Cl. 340-172.500.

Cianci, Giuseppe: *See—*
Gambini, Arnaldo; and Cianci, Giuseppe, 3,949,227.

Ciarlo, Louis A., to DMA Data Industries, Inc. Computer automated information system. 3,949,375, Cl. 340-172.500.

Ciba-Geigy AG: *See—*
Deiner, Hans; Mosch, Franz; Sandner, Bernhard; and Bernheim, Willy, 3,949,136.
Porret, Daniel; Habermeier, Jurgen; Fatzer, Willy; and Baumann, Dieter, 3,948,916.

Ciba-Geigy Corporation: *See—*
Allgeier, Hans; and Gagneux, Andre, 3,948,931.
Becker, Carl; and Wegmann, Jacques, 3,948,828.
Drabek, Jozef, 3,948,940.
Fischer, Hanspeter, 3,948,914.
Greber, Gerd; Darms, Roland; and Lohmann, Dieter, 3,948,835.
Howarth, Graham Arton; and Gainer, James, 3,948,913.
Irmiger, Ulrich; and Koci, Zdenek, 3,948,599.
Kristiansen, Odd, 3,948,921.
Rasberger, Michael; Rody, Jean; Moser, Paul; and Muller, Helmut, 3,948,852.
Rittel, Werner; Brugger, Max; and Riniker, Bernhard, 3,948,876.
Rodriguez, Herman Robert, 3,949,081.
Rosenberger, Siegfried; and Schwarzenbach, Kurt, 3,948,854.

Citizen Watch Co., Ltd.: *See—*
Morokawa, Shigeru, 3,948,036.

Clark, Alan John, to Lever Brothers Company. Antiperspirant and deodorant composition containing 2-ethyl-1,3-hexane diol. 3,949,066, Cl. 424-47.000.

Clark, Alfred J., to Motorola, Inc. Guide and key assembly for a push-button radio receiver. 3,948,108, Cl. 74-10.330.

Clark, Arthur E.; and Savage, Howard T., to United States of America, Navy. Variable delay line. 3,949,351, Cl. 340-15.000.

Clark, Joel P., to Texas Instruments Incorporated. Martensitic alloy conditioning. 3,948,688, Cl. 148-11.50R.

Clark, Neil M.; and Messmer, Douglas A., to Techpower, Inc. Educational learning device. 3,947,978, Cl. 35-48.00R.

Clark, Robert W.; Barone, Robert P.; and Kinker, Donald E., to Diebold, Incorporated. Automatic remote banking system and equipment. 3,949,364, Cl. 340-147.00A.

Clark, Wesley D.; and Hollenbeck, Keith E. Needleless hypodermic injector. 3,948,266, Cl. 128-272.000.

Clarke, Douglas Alfred: *See—*
Howe, Brian Keith; Hardy, Francis Robert Frederick; and Clarke, Douglas Alfred, 3,948,997.

Clary, Jerome Francis; Wiley, Robert Emerson; and Bowns, Richard Earl, to Acheson Industries, Inc. Electrically conductive sheet composition. 3,948,811, Cl. 252-512.000.

Clasen, Theodor: *See—*
Beaver, Ruby C.; Clasen, Theodor; Henning, Wolfgang; and Johnson, Emil S., 3,949,292.

Claycomb, Jackson R., to Schlumberger Technology Corporation. Apparatus for transmitting well bore data. 3,949,354, Cl. 340-18.0LD.

Claydon, Derek George Wilson; and Hill, Gilbert George, to Alcan Research and Development Limited. Apparatus for driving a length of wire, rod or other elongated body through a workpiece for example for riveting. 3,948,427, Cl. 227-97.000.

Clearman, Jack F.: *See—*
Sauer, Leo H.; and Clearman, Jack F., 3,948,064.

Clevepak Corporation: *See—*
Palmer, Willard, 3,948,435.

Cluett, Peabody & Co., Inc.: *See—*
Troope, Walter S., 3,948,490.

Coaker, Antony W. M.; and Cowell, Elmer E., to Monsanto Company. Lubricated thermoplastic resin compositions. 3,948,674, Cl. 106-178.000.

Coal Industry (Patents) Ltd.: *See—*
Martin, David James Reginald, 3,949,329.

Coberley, Daniel A., to Hurletron Altair. Register control system and method. 3,949,282, Cl. 318-85.000.

Cochran, Michael J., to Texas Instruments Incorporated. Drum printer control. 3,949,367, Cl. 340-172.500.

Cocuzza, Gioacchino; Calcagno, Benedetto; and Torreggiani, Gianni, to Societa' Italiana Resine S.p.A. Process for the simultaneous separation of ethylene oxide and carbon dioxide from the gaseous mixtures obtained in the direct oxidation of ethylene with oxygen. 3,948,621, Cl. 55-29.000.

Coda, Severina: *See—*
Suchowsky, Giselbert Karl, deceased; Bernardi, Luigi; Coda, Severina; and Pegrassi, Lorenzo, 3,948,890.

Coffey, John Albert: *See—*
Stalley, Anthony Donald; and Coffey, John Albert, 3,949,416.

Cohen, Stanley; and Savage, C. Richard, Jr. Process for the preparation of epidermal growth factor and new derivative using cross-linked polyacrylamide gel at a pH of 1-3. 3,948,875, Cl. 260-112.00R.

Cohn, Gerald, to Goodyear Tire & Rubber Company, The. Dyeability of polyester textile fiber. 3,948,831, Cl. 260-22.00R.

Coingt, Michel; and Thirion, Pierre, to Oxysynthese. Regeneration of a anthraquinone working solution by continuous multi-stage thin film distillation. 3,949,063, Cl. 423-588.000.

Coispeau, Gerard Emile Edgard, to Produits Chimiques Ugine Kuhlmann. Pyrazolium-azo-phenyl compounds. 3,948,878, Cl. 260-147.000.

Cole, Jean R., to Weber Marking Systems, Inc. Coaxially mounted stencil drum and rubber mat roller segments. 3,948,169, Cl. 101-116.000.

Coler, Myron A.: *See—*
Corren, Sidney A.; and Coler, Myron A., 3,948,812.

Colgate-Palmolive Company: *See—*
Karami, Hamzeh, 3,948,258.
Karami, Hamzeh, 3,948,267.
Karami, Hamzeh, 3,948,268.
Nalbach, John C., 3,948,386.

Collins, Guy Hathaway; and Young, Harlan Stuart, to Du Pont de Nemours, E. I., and Company. Composite package for containing pressurized fluids. 3,948,404, Cl. 215-1.00C.

Collins, James R., to General Electric Company. Protective starting circuit for inverter operated gaseous discharge lamps. 3,949,267, Cl. 315-203.000.

Combustion Engineering, Inc.: *See—*
Andrea, Christo; and Siegel, Edward Arnold, 3,948,723.

Commissariat a l'Energie Atomique: *See—*
Devillard, Jacques, 3,949,026.
Paris, Marcel; and Poinsot, Serge, 3,948,100.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Duval, Georges; Bonneton, Robert; and Poinas, Christian, 3,949,173.
Yvard, Marcel, 3,949,406.

Compagnie Internationale pour l'Informatique: *See—*
Hubert, Maurice; and Fressineau, Jean-Louis, 3,949,205.

Cona Limited: *See—*
Smith, Edwin Wilson, 3,948,156.

Concession Service Corporation: *See—*
Polster, Louis S., 3,948,419.

Conde, John; and Castro, Jose, to Mobilizer Medical Products, Inc. Apron and drive mechanism for object transferring apparatus. 3,947,902, Cl. 5-81.00R.

Conkerton, Edith J., to United States of America, Agriculture. New simplified protein hydrolysis apparatus. 3,948,733, Cl. 195-142.000.

Conte, Rolland R., to Beatrice Foods Co. Liquefied gas container. 3,948,411, Cl. 220-9.0LG.

Continental Can Company, Inc.: *See—*
Cartwright, William John, 3,948,078.

Continental Oil Company: *See—*
Choi, Dai S.; and Parsons, Roger C., 3,948,055.
Sparlin, Derry D.; Fertl, Walter H.; and Young, Gary C., 3,949,220.
Waters, Kenneth H.; and Fowler, James C., 3,949,353.

Control Data Corporation: *See—*
Miller, Christian Paul; and Burroughs, Franklin Penn, Sr., 3,948,505.

Cook, Edward H., Jr.; Emery, Alvin T.; and Schoepfle, Blaine O., to Hooker Chemicals & Plastics Corporation. Process for electrolysis of brine. 3,948,737, Cl. 204-98.000.

Cook, Edward H., Jr.: *See—*
Figueras, Wilfredo E.; and Cook, Edward H., Jr., 3,948,750.

Cook, James M., III; and Tazzia, Edward K., to Oakland Plastics Corporation. Industrial load-carrying pallet. 3,948,190, Cl. 108-53.000.

Coon, Grant W., to United States of America, National Aeronautics and Space Administration. Trielectrode capacitive pressure transducer. 3,948,102, Cl. 73-398.00C.

Cooper, Glenn D.; and Murphy, Franklin J., Jr., to Westinghouse Electric Corporation. Support arrangement for turbine generator stator coils. 3,949,256, Cl. 310-260.000.

Cooper, Glenn D.; and Pharr, John D., Jr., to Westinghouse Electric Corporation. End winding conductor securing arrangement. 3,949,257, Cl. 310-260.000.

Copperloy Corporation: *See—*
Sargent, Arthur F., 3,948,749.

Corbier, Bernard Pierre; and Teisseire, Paul Jose. Perfume compositions. 3,948,815, Cl. 252-522.000.

Cordiano, Joseph J.; and Brytczuk, Walter L., to Amax Inc. Elimination or control of acid mists over electrolytic cells. 3,948,747, Cl. 204-242.000.

Cordone, Leonard G.; and Telang, Yeshwant P., to Ford Motor Company. Composite rotor housing with wear-resistant coating. 3,948,309, Cl. 164-98.000.

Corino, Edward R.: *See—*
Goodrich, Robert R.; and Corino, Edward R., 3,948,770.

Corlok Corporation: *See—*
McKay, Thomas L.; Blair, James K.; and Howard, Harold R., 3,948,142.

Corning Glass Works: *See—*
Bartholomew, Roger F.; Campbell, Larry E.; Lewek, Stanley S.; Pierson, Joseph E.; and Stookey, Stanley D., 3,948,629.
Brydges, William T., III; and Smith, Dennis W., 3,948,669.
Guile, Donald L.; and Smith, Robert K., 3,948,671.
Morgan, David W., 3,949,335.

Coronelli, Carolina; Bardone, Maria Rosa; and Pagani, Hermes, to Gruppo Lepetit S.p.A. Antibiotic activities from streptosporangium vulgare ATCC 21906. 3,949,078, Cl. 424-118.000.

Corral Industries, Incorporated: *See—*
Wiuniski, Emil L., 3,948,221.

Corren, Sidney A.; and Coler, Myron A., to Coler, Myron A. Conductive compositions and processes therefor. 3,948,812, Cl. 252-512.000.

Cotton Incorporated: *See—*
Buck, George S., Jr.; and Russell, Roger, 3,948,021.

Cotts, Ronald F., to IU Conversion Systems, Inc. Roll-pelletizer and rolls therefor for making uniform particle size pellets. 3,947,938, Cl. 29-127.000.

Coulter Electronics, Inc.: *See—*
Bader, Henri, 3,949,197.
Coulter, Wallace H.; and Hogg, Walter R., 3,949,198.

Coulter, Wallace H.; and Hogg, Walter R., to Coulter Electronics, Inc. Methods and apparatuses for correcting coincidence count inaccuracies in a coulter type of particle analyzer. 3,949,198, Cl. 235-92.0PC.

Court, Patrick R. J., to Oak Industries, Inc. Varactor control unit using Q variable inductances. 3,949,308, Cl. 325-465.000.

Covini, Romano: *See—*
Cavaterra, Enrico; Petrini, Guido; Covini, Romano; and Moreschini, Luciano, 3,948,959.

Cowan, Toby J.: *See—*
Pearce, Peter J.; Cowan, Toby J.; and Jurey, Mark E., 3,948,471.

Cowell, Elmer E.: *See—*
Coaker, Antony W. M.; and Cowell, Elmer E., 3,948,674.

Cox, Merle C.: *See—*
Mason, Charles F.; and Cox, Merle C., 3,949,408.

Crabb, Robert P.; Unger, Robert A.; and Gilbreath, Jim A., to United States of America, Navy. Computer memory addressing employing base and index registers. 3,949,378, Cl. 340-172.500.

Crane Packing Company: *See—*
Mitrani, Joseph W., 3,948,531.
Novosad, Eugene W., 3,948,533.

Crawford, James A., Jr., to Fiber Materials, Inc. Multifilament composites. 3,949,126, Cl. 428-113.000.

Crawford, Joe W.: *See—*
Hancock, John T.; Allen, James B.; Shepherd, Glen C.; and Crawford, Joe W., 3,949,344.

Creswick, William E.; and Rounthwaite, Cyril F. T., to Isothermic Systems Ltd. Thermodynamically integrated buildings. 3,948,314, Cl. 165-48.000.

Crimmins, William M.; and Petterec, Robert E., to Xerox Corporation. Tuned card weight. 3,948,506, Cl. 271-165.000.

Croix, Louise S., to Airco, Inc. Hexafluoro-t-butyl-difluoromethyl ether as an inhalation anesthetic. 3,949,005, Cl. 260-614.00F.

Croll-Reynolds Company, Inc.: *See—*
Gilbert, William J., Jr., 3,949,057.

Crookes, Richard William: *See—*
Williams, Malcolm; Jones, Christopher Robin; and Crookes, Richard William, 3,948,237.

Crosby, Philip Stephen, to Tektronix, Inc. Fast recovery limiting and phase inverting amplifier. 3,949,317, Cl. 330-30.00D.

Cross, Barrington; Grasso, Charles Paul; and Walworth, Bryant Leonidas, to American Cyanamid Company. Novel pyrazolidines useful as herbicides. 3,948,936, Cl. 260-310.00D.

Crouse, Ronald J., to Optron, Inc. Optical micro-switch. 3,949,219, Cl. 250-229.000.

Crowther, Ted J.; Jacobson, Charles F.; and Sutherlin, Kent K., to Optical Data Systems, Inc. Data storage and retrieval system. 3,949,191, Cl. 235-61.70B.

Cummings, Ernest W. Apparatus for effecting ground penetration of a ground engaging member. 3,948,329, Cl. 173-49.000.

Cunningham Corporation: *See—*
Launt, Larry L., 3,949,334.

Cunningham, James W.: *See—*
Pavlik, Norman M.; and Cunningham, James W., 3,948,690.

Cuomo, Jerome J.: *See—*
Chaudhari, Praveen; Cuomo, Jerome J.; Gambino, Richard J.; and McGuire, Thomas R., 3,949,387.

Curington, Alfred R.; and Roscoe, Theodore J., Jr., to Bakerdrill, Inc. Swivel for core drilling. 3,948,588, Cl. 417-405.000.

Curtis, H. Leslie, to Scott and Williams, Inc. Pattern mechanism. 3,948,063, Cl. 66-50.00R.

Cushing, Ralph H., to Northern Natural Gas Company. Flush mounted corrosion electrode. 3,948,744, Cl. 204-195.00C.

Dacor, Incorporated: *See—*
Volent, Stanley C., 3,949,037.

Dadykin, Georgy Fedotovich: *See—*
Yatsenko, Sergei Vasilievich; Kononenko, Vadim Grigorievich; Komnatny, Igor Pavlovich; Stelmakh, Viktor Alexeevich; Schekochikhin, Serafim Vasilievich; Maznichenko, Stanislav Anisimovich; Silichev, Mikhail Karpovich; Lobanov, Vladimir Vladimirovich; Fedchenko, Alexei Ivanovich; Babich, Leonid Petrovich; Akhnazariants, Levon Khachaturovich; Saveliev, Anatoly Semenovich; Merezhro, Vladimir Feofanovich; Vestman, Alexandr Alexandrovich; Strizhenko, Vitaly Evgenievich; Pravdin, Viktor Sergeevich; Fulmakht, Veniamin Veniaminovich; Fitilev, Boris Vasilievich; Evteev, Dmitry Petrovich; Salenek, Alexandr Grigorievich; Dadykin, Georgy Fedotovich; Onuchko, Ivan Savelievich; Golodov, Nikolai Nikitovich; and Kamensky, Jury Alexandrovich, 3,948,131.

Dahl, Lars Gunnar; and Landaeus, Kjell Gustav, to Scan Coin AB. Coin lifting device having a flexible rotor disc. 3,948,280, Cl. 133-1.00R.

Dai Nippon Printing Company Limited: *See—*
Noshiro, Atsumi; and Inoue, Yoshio, 3,948,827.

Daido Seiko Kabushiki Kaisha: *See—*
Takahashi, Tetsuo; and Yanagida, Minoru, 3,948,649.

Daiichi Seiyaku, Co., Ltd.: *See—*
Hirayama, Tadamasa; Kamada, Masahiro; and Tsurumi, Hideaki, 3,948,915.

D'Aillon, Francois-Gros: *See—*
Gagnon, Marcel; Baril, Michel; D'Aillon, Francois-Gros; and Savoie, Claude, 3,948,730.

Daimler-Benz Aktiengesellschaft: *See—*
Abthoff, Jorg; Kirsch, Reinhard; Ohlendorf, Rolf; and Ruf, Franz, 3,948,229.
Breitschwerdt, Werner, 3,948,340.
Grabner, Christian; Weber, Ludwig; and Niethammer, Kurt, 3,948,562.
Merkle, Roland; Rapp, Wolfgang; and Noltemeyer, Friedrich, 3,948,052.
Worner, Gunter, 3,948,373.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Nishimura, Haruki; Shimizu, Masanao; Uno, Hitoshi; Hirooka, Tetsuo; Masuda, Yoshinobu; and Kurokawa, Mikio, 3,948,928.

Daley, Horace S.: *See—*
Vogts, William A.; and Daley, Horace S., 3,949,266.

Dams, Reinhard; Heineccius, Rolf; and Ultwer, Alvin. Upper support for turning machines. 3,948,123, Cl. 82-24.00R.

Daniel Industries, Inc.: *See—*
Geisow, Bernard H., 3,948,099.

Daniels, John R.; and Knapp, Terry R., to Leland Stanford Junior University, The Board of Trustees of. Process for augmenting connective mammalian tissue with in situ polymerizable native collagen solution. 3,949,073, Cl. 424-177.000.

Danielson, Charles R.; and Schoenberger, Ernest, to Ford Motor Company. Tandem rear suspension for a motor vehicle. 3,948,334, Cl. 180-24.130.

Danilin, Serafim Vladimirovich: *See—*
Ilin, Mikhail Ivanovich; Chudakov, Gennady Mikhailovich; Trofimov, Valery Alexandrovich; Boitsov, Alexandr Ivanovich; and Danilin, Serafim Vladimirovich, 3,948,780.

Darms, Roland: *See—*
Greber, Gerd; Darms, Roland; and Lohmann, Dieter, 3,948,835.

Data General Corporation: *See—*
Churchill, William Philip, Jr., 3,949,369.
Godbout, Joseph Charles, 3,948,463.
West, Joseph Thomas, 3,949,368.

Davidson, George L., to Seyferth, Don F. Anti-pollution device for treating exhaust from internal combustion engines. 3,948,046, Cl. 60-298.000.

Davidson, Kenneth L. Apparatus for endotracheal and esophageal intubation. 3,948,255, Cl. 128-145.500.

Davies, Robert W.; and Ellington, Thomas S., IV, to Western Electric Company, Inc. Apparatus for thermocompression bonding. 3,948,429, Cl. 228-44.10A.

Davies, Robert William: *See—*
Molins, Desmond Walter; and Davies, Robert William, 3,948,389.

Davis, Marmion Dean: *See—*
Brock, John O.; Davis, Marmion Dean; and Wray, James Robert, 3,948,204.

Davis, Pauls: *See—*
Burke, Oliver W., Jr.; Kizer, Joseph Austin A.; and Davis, Pauls, 3,948,960.

Day, Oliver E. Dual battery ignition and start system for a vehicle. 3,949,289, Cl. 320-6.000.

De Vlieg Machine Company: *See—*
Jerue, Richard A., 3,947,951.

Debenham, Michael, to Broken Hill Proprietary Co., Ltd., The. Easy-opening closures. 3,948,415, Cl. 220-268.000.

deBenneville, Peter L., to Rohm and Haas Company. Solid amino acid products for polypeptide synthesis and method of manufacture thereof. 3,948,821, Cl. 260-2.50B.
Debourge, Jean-Claude; Gaulliard, Jean-Michel; Pillon, Daniel; and Trinh, Stephane, to PEPRO, Societe pour le Development et la Vente de Specialities Chimiques. N-phenyl maleic imides. 3,948,942, Cl. 260-326.5FM.
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Allen, David Thomas; and Behrens, Robert Nick, 3,948,024.
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De Feudis, Sergio, to Aktiebolaget Svenska Flaktfabriken. Arrangement at central suction installations for suction conveyance of refuse and waste. 3,948,167, Cl. 100-215.000.
DeFusco, Ernest L.; and Swetka, John B., to General Motors Corporation. Vehicle suspension system. 3,948,336, Cl. 180-43.00R.
Deiner, Hans; Mosch, Franz; Sandner, Bernhard; and Bernheim, Willy, to Ciba-Geigy AG. Fluorine-containing organopolysiloxanes, process for their use. 3,949,136, Cl. 428-260.000.
De Jong, Eduard: *See*—
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de Leaumont, Jean Marie Charles Roger Gonzagues, to Le Ciment Arme Demay Freres. Sliding shuttering raising device for the continuous production of partitions and shuttering fitted with this device. 3,948,483, Cl. 254-106.000.
Delin, Heinz: *See*—
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De Mey II, Charles F.: *See*—
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Deml, Reinhold; and Greis, Ulrich, to AGFA-Gevaert, A.G. Method for the manufacture of fresnel lenses using light-sensitive materials. 3,948,660, Cl. 96-38.300.
De Mott, Dale H.: *See*—
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DeMott Electronics Company: *See*—
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Dennard, Robert H.; and Spampinato, Dominic P., to International Business Machines Corporation. Differential charge transfer sense amplifier. 3,949,381, Cl. 340-173.0CA.
Dennis, William H., Jr.: *See*—
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Derderian, Edward J. Case sealer for sealing the bottom flaps of erected and squared cases. 3,948,151, Cl. 93-36.300.
de Rijke, David, to Naarden International, N.V. Acetaldehyde ethyl linalyl acetal perfume compositions. 3,948,814, Cl. 252-522.000.
de Rooij, Abraham H., to Stamicarbon, B.V. Cyclic process for preparing and working up a hydroxylammonium salt solution. 3,948,988, Cl. 260-566.00A.
de Rosa, Daniel, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Head rest mounting. 3,948,561, Cl. 297-391.000.
Deschapelles, Jorge B., to Kaiser Aluminum & Chemical Corporation. Bottom block for D.C. casting of aluminum rolling ingots. 3,948,310, Cl. 164-274.000.
Dettmeier, Udo; and Kleiner, Hans-Jerg, to Hoechst Aktiengesellschaft. Tertiary phosphine. 3,948,980, Cl. 260-488.00J.
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Deutsch, Reinhard; Rudolph, Manfred; Pawelko, Karl-Heinz; and Rudszinat, Willy, to Hauni-Werke Korber & Co. KG. Apparatus for manipulating sheet-like blanks in packing machines for cigarettes or the like. 3,948,020, Cl. 53-64.000.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
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Devillard, Jacques, to Commissariat a l'Energie Atomique. Method of fabrication of fuel elements for nuclear reactors. 3,949,026, Cl. 264-.500.
deVries, Edward R., to Unifilm Corporation. Flatting agents. 3,948,839, Cl. 260-29.40R.
Dewey, Gordon C., to Hedco, Inc. Apparatus and method for making snow with uniform drop size. 3,948,442, Cl. 239-2.00S.
Dezzani, John. Solder iron dressing system having a teflon packing. 3,948,678, Cl. 134-6.000.
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Diehm, Kenneth F.; and Gruber, Lawrence H., to Trim-Master Corporation. Rotary blade cutting assembly. 3,948,133, Cl. 83-556.000.
Dietz, Robert E., to Square D Company. Sequential resetting circuit interrupter. 3,949,336, Cl. 335-166.000.
Disperens, Pierre. Sliding door assembly. 3,947,999, Cl. 49-217.000.
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Dobbs, Richard A., to United States of America, Environmental Protection Agency. Ligand exchange process for removal of ammonia. 3,948,769, Cl. 210-32.000.
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Dodd, Ned Thurston. Synchronous coupling. 3,948,369, Cl. 192-67.00R.
Doerer, Richard P., to Van Dresser Corporation. Method of forming a panel. 3,948,708, Cl. 156-196.000.
Doggett, Towers, to Scott Paper Company. Dry planographic plate. 3,949,142, Cl. 428-411.000.
Dolby Laboratories, Inc.: *See*—
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Dombrowski, Frank R.; Kuzan, Frank R.; and Larson, Raymond L., to General Electric Company. Apparatus and method for severing stator end turns. 3,948,124, Cl. 83-34.000.
Donahue, Thomas H., to International Telephone and Telegraph Corporation. MTI performance enhancement device with instantaneous automatic gain control. 3,949,398, Cl. 343-7.700.
Donald, Dennis S., to Du Pont de Nemours, E. I., and Company. Synthesis of 3,5-diaminopyrazinoic acid from 3,5-diamino-2,6-dicyanopyrazine and intermediates. 3,948,895, Cl. 260-250.0BN.
Donaldson, Darrell J.; Normand, Floyd L.; Drake, George L., Jr.; and Reeves, Wilson A., to United States of America, Agriculture. Process for producing fire resistant organic textile materials. 3,949,108, Cl. 427-380.000.
Donnelly, James H.; and McGuigan, William D., to Donnelly, James H., a part interest. Pozzolanic material-based coating and structural composition and method for forming. 3,948,830, Cl. 260-18.0PN.
Donovan, James, to Artisan Industries Inc. Apparatus and system for generating a protective coating in a rotary concentrator for abrasive solids-containing fluids. 3,948,776, Cl. 210-320.000.
Dore, Jacky, to Sandoz Ltd. Phenylazonaphtholsulfonic acids having a substituted anilino group in the 6-position of the naphthalane ring. 3,948,879, Cl. 260-198.000.
Doriguzzi, Mario, to Officine Doriguzzi S.a.s. Device for operating the weft needles in shuttle-less textile looms. 3,948,297, Cl. 139-123.000.

Doring, Werner; and Raderschad, Paul, to Siegrheinische Registrierwaagenfabrik "FIX" Peter Steimel KG. Apparatus for the fully automatic production of filled, gusseted bags of plastic. 3,948,019, Cl. 53-63.000.
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Dowdell, Edward F., to Electrospace Corporation. Credit card reader having two magnetic readout heads. 3,949,193, Cl. 235-61.11D.
Doyle, Earl N.; and Garza, Xavier. Motor vehicle stopping distance warning apparatus and method. 3,949,362, Cl. 340-104.000.
Drab, Edward H., to Uniroyal Inc. Method of making footwear having a two-color rubber sole. 3,949,040, Cl. 264-161.000.
Drabek, Jozef, to Ciba-Geigy Corporation. Pesticidal phthalimido phosphorous ester compounds. 3,948,940, Cl. 260-326.00E.
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Draper, Homer L.; and Gray, Lew T., to Phillips Petroleum Company. Liner for reservoir of layered liquids. 3,949,113, Cl. 428-286.000.
Dreher, Karl D.; and Gogarty, William B., to Marathon Oil Company. Drilling with low viscosity fluids. 3,948,782, Cl. 252-8.50P.
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Duffner, Konrad; and Schafer, Horst, to Braun Aktiengesellschaft. Piezoelectric igniter using resilient housing. 3,949,248, Cl. 310-8.700.
Dugan, James A.; and Park, Yong S., to Zenith Radio Corporation. Automatic light intensity controller for CRT lighthouse. 3,949,226, Cl. 250-354.000.
Duke, James I. Combination commode construction. 3,947,900, Cl. 4-11.000.
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Dunn, Gerald Raymond. Navigation teaching aid. 3,947,973, Cl. 35-10.200.
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Dunning, Charles E.; and Kellenberger, Stanley R., to Kimberly-Clark Corporation. Method of forming a lightweight airlaid web of wood fibers. 3,949,035, Cl. 264-90.000.
Dunning, Richard E.; and Rampelberg, Victor H., to Avery Corporation. Laminar reflective platelets and compositions and articles comprising them. 3,949,139, Cl. 428-328.000.
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DuRocher, Gideon A., to Essex International, Inc. Method of making an electrical connector. 3,947,959, Cl. 29-629.000.
Dusek, Karel. Process for producing transparent gels with improved mechanical and sorption properties from copolymers of 2-hydroxyethyl methacrylate and amides of acrylic or methacrylic acid. 3,948,841, Cl. 260-29.6TA.
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Eberhardt, Hans; and Brickl, Rolf Stefan, to Boehringer Ingelheim GmbH. Aminocarboxylic acid higher alkylamides. 3,948,943, Cl. 260-326.450.
Eberlein, Wolfgang; Heider, Joachim; Diederen, Willi; and Kobinger, Walter, to Boehringer Ingelheim GmbH. Cardiotonic pharmaceutical compositions containing a cardiac glycoside and method of use. 3,949,074, Cl. 424-182.000.
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Edwards, Thomas R.; and Zeanah, Hugh W., to United States of America, National Aeronautics and Space Administration. Filtering device. 3,949,206, Cl. 235-156.000.

Edwards, Tommy Ray, to Browning-Ferris Industries, Inc. Catalyst screening unit. 3,948,764, Cl. 209-30.000.

Efficiency Tool Company, Inc.: *See*—
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Eichinger, Peter; and Kallmann, Hartmut. Semiconductor gamma radiation detector. 3,949,210, Cl. 250-370.000.

Eitel, Hans-Georg; Morlock, Waldemar; and Ruf, Dieter, to Eitel KG., Werkzeugmaschinenfabrik. Automatic process and aligning apparatus having a plurality of aligning stations. 3,948,076, Cl. 72-384.000.

Eitel KG., Werkzeugmaschinenfabrik: *See*—
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Ekdahl, per Anders Gosta. Plant for the recovery of slaughtered animal blood. 3,947,919, Cl. 17-1.00C.

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Elliott, Allen, to Ruddle, Kenneth; Rathbone, Clive; and Truslove, Anthony. English/metric indicator unit. 3,948,208, Cl. 116-115.500.

Elliott, Curtis H., Jr., to W. R. Grace & Co. Process for producing faujasitic-type crystalline zeolites. 3,949,059, Cl. 423-329.000.

Ellner, Sidney. Split stream ultraviolet purification device. 3,948,772, Cl. 210-96.00R.

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Reuting, Hans-Werner, 3,949,332.

Elms, Robert T., to Westinghouse Electric Corporation. Luminaire having ballast circuitry in photocontrol housing. 3,949,211, Cl. 240-25.000.

Elonen, Kunto, to Rauma-Repola Oy. Vibratory screening apparatus. 3,948,109, Cl. 74-61.000.

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Elrick, Donald E.; and Gilbert, Harry, to Hercules Incorporated. Solid propellant compositions having epoxy cured, carboxy-terminated rubber binder. 3,948,698, Cl. 149-19.600.

Elvander, Hans Ivar; Edenwall, Ingvar Anton Olof; Gorling, Karl Goran; and Ekman, Douglas Sewerin, to Boliden Aktiebolag. Method of carrying out heat-requiring chemical and/or physical processes. 3,948,640, Cl. 75-11.000.

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Ely, William Edwin, to B. F. Goodrich Company, The. Friction member assembly. 3,948,363, Cl. 188-71.100.

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Emmel, Ludwig: *See*—
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Emmons, Stephen Perry, to Texas Instruments Incorporated. Method and system for sensing charges at distributed points on a charge coupled device. 3,949,245, Cl. 307-304.000.

Enabnit, Robert S., to Goodyear Tire & Rubber Company, The. Apparatus and method for detecting a moving metal mass including means to discriminate signals having a particular period. 3,949,293, Cl. 324-41.000.

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Englert, Robert Dixon; Armstrong, Kenneth Ronald; and Berriman, Lester Porter, to Dresser Industries, Inc. Variable throat venturi apparatus for mixing and modulating liquid fuel and intake air to an internal combustion engine. 3,949,025, Cl. 261-62.000.

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Erickson, Clifford W., to Honeywell Inc. Acoustic resonant cavity. 3,948,350, Cl. 181-175.000.

Ericsson, Sylve Jack Donald. Arrangement in silkscreen printing machine. 3,948,170, Cl. 101-124.000.

Erlitz, Frank E. Valve-less pump for liquid manure. 3,948,450, Cl. 241-46.00R.

Ermilova, Margarita Meerovna: *See*—
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Ernst, Horst; Brandenstein, Manfred; and Olschewski, Armin, to SKF Industrial Trading and Development Company, B.V. Friction clutch and bearing assembly. 3,948,370, Cl. 192-98.000.

Esch, Richard E., to C. L. Frost & Son, Inc. Track assembly for snowmobiles. 3,948,331, Cl. 180-5.00R.

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Facey, Stanley R. Foldable storm window and screen. 3,948,308, Cl. 160-369.000.

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Favre, Lucien Henri. Door closer. 3,947,918, Cl. 16-72.000.

Feasey, Ronald George; Nield, Eric; and Rose, John Brewster, to Imperial Chemical Industries Limited. Process for preparing aromatic polysulphones. 3,948,857, Cl. 260-49.000.

Feasey, Ronald George; and Rose, John Brewster, to Imperial Chemical Industries Limited. Process for producing sulfone containing thiophenols. 3,949,002, Cl. 260-609.00D.

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Fisher, Evan D.; Campagnuolo, Carl J.; and Gehman, Stacy E., to United States of America, Army. Fluidic capacitance device. 3,948,183, Cl. 102-70.20P.

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Flipot, Alfred-Jean; and Smolders, Armand, to Belgonucleaire; and Centre d'Etude de l'Energie Nucleaire. Manufacturing process for improved nuclear fuel tablets. 3,949,027, Cl. 264-.500.

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Fredriksson, Bengt; and Uggla, Jan, to Allmanna Svenska Elektriska Aktiebolaget. Method for refining steel. 3,948,643, Cl. 75-13.000.
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Gambini, Arnaldo; and Cianci, Giuseppe, to Snam Progetti S.p.A. Device for the panoramic radiography of weldings in metal pipings. 3,949,227, Cl. 250-358.00P.
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Gamell, Joseph A., to Joseph Gamell Industries, Incorporated. System for utilizing waste heat of an internal combustion engine. 3,948,235, Cl. 123-119.00C.
Gamet, Louis Jean Marie, to La Precision Industrielle. Spindle assemblies for machine tools. 3,948,577, Cl. 308-207.00A.
Gante, Joachim; Kurmeier, Hans-Adolf; Wild, Albrecht; and Mehrhof, Werner, to Merck Patent Gesellschaft mit beschrankter. Xanthene derivatives and process for the preparation thereof. 3,948,949, Cl. 260-335.000.
Garaty, John Francis, to Australian Iron & Steel Pty. Limited. Fluid control mechanism. 3,948,145, Cl. 91-61.000.
Garbin, Carlo Zucchetti, to Industria Napoletna Costruzione Autoveicoli Alfa Romeo Alfasud S.p.A. Safety steering wheel for motor vehicles. 3,948,118, Cl. 74-552.000.
Garcin, Maurice M. Electric generators particularly dry cell batteries. 3,948,683, Cl. 136-107.000.
Gardlund, Zachariah G.: *See—*
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Garyainov, Stanislav Alexandrovich; Rzhanov, Veniamin Gavrilovich; Khrenov, Evgeny Nikolaevich; and Shergold, Evdokia Kirillovna. Semiconductor diode matrix. 3,949,413, Cl. 357-45.000.
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Gazzara, Matthew R., Sr. Bow string drawing and releasing device. 3,948,243, Cl. 124-35.00A.
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Gillette Company, The: *See—*
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Glory Kogyo Kabushiki Kaisha: *See—*
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Gluck, Julius, to Pitney-Bowes, Inc. Hand held bar code reader with constant linear amplifier output. 3,949,233, Cl. 250-555.000.

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Gmelch, Xaver: *See—*
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Godbout, Joseph Charles, to Data General Corporation. Web transport load and unload system. 3,948,463, Cl. 242-182.000.

Godfrey, Christopher S. M.: *See—*
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Goetz, Werner. Prefabricated structural element, especially balcony element. 3,948,008, Cl. 52-73.000.

Gogarty, William B.: *See—*
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Goldman, Irving M.: *See—*
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Golubev, Lev Vasilievich; Korneev, Evgeny Fedorovich; and Shmartsev, Jury Vasilievich. Method of preparing multi-layer semiconductor hetero-structures on the basis of compounds $A^{III}B^{V}$ where A^{III} is a metal of group three and B^{V} is a non-metal of group five. 3,948,692, Cl. 148-171.000.

Gonzalez Martinez, Carlos. Drawing instruments. 3,947,969, Cl. 33-174.00B.

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Gosden, Raymond George, to Imperial Chemical Industries Limited. False twisting filamentary yarns. 3,948,034, Cl. 57-157.0TS.

Goto, Toshiho; Nishino, Yoshinori; and Yamashita, Yasukazu, to Hitachi Shipbuilding and Engineering Co., Ltd. Laminated composite pipe. 3,948,292, Cl. 138-113.000.

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Gregg, James S.; Miller, Robert W.; Mobley, Lawrence R.; Scott, Charles J.; and Woodburn, Joseph A., to Samsonite Corporation. Mobile luggage case. 3,948,365, Cl. 190-18.00A.

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Guenther, William D. Stratified charge engine. 3,948,227, Cl. 123-32.0SP.

Guibor, Pierre, to Procedure Medical Products, Inc. Reconstruction device for lacrimal drainage ducts. 3,948,272, Cl. 128-350.00R.

Guilbault, George G.; and Lubrano, Glenn J., to United States of America, Health, Education and Welfare. Enzyme electrode. 3,948,745, Cl. 204-195.00B.

Guilbault, Lawrence James: *See—*
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Guile, Donald L.; and Smith, Robert K., to Corning Glass Works. Size-graded quaternary batch for bonded basic refractory shapes. 3,948,671, Cl. 106-58.000.

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Christman, Robert D.; and Metzger, Kirk J., 3,948,763.
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Gulistan, Bulent, to Deutsch Fastener Corporation. Arrangement for removal of captive fastener. 3,947,945, Cl. 29-235.000.

Gumhold, Guenther: *See—*
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Gunn, Gary J.; Hodges, Richard B.; and Schmidt, Leonard A. Vibrating string-modulated electronic musical instrument. 3,948,138, Cl. 84-1.070.

Gunold, Heinz. Sewing machine accessory apparatus. 3,948,194, Cl. 112-131.000.

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Guseinov, Nazim Museib Ogly; and Aliev, Vageb Safarovich. Reaction apparatus. 3,948,609, Cl. 23-288.00K.

Gutierrez, Richard: *See—*
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Gutowski, Antoni P.; and Ryan, Donald P., to Stanley Works, The. Mitre box with improved indexing means. 3,948,136, Cl. 83-767.000.

Gyory, Emeric J., to Borg-Warner Corporation. Externally adjustable mechanical seal. 3,948,530, Cl. 277-3.000.

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Hachmann, Klaus; Gaube, Johann; Brockhaus, Rudolf; and Langheim, Franz, to Chemische Werke Huls Aktiengesellschaft. Process for the preparation of acetic acid by catalytic gas-phase oxidation of butenes. 3,948,983, Cl. 260-533.00R.

Hack, Helmuth: *See—*
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Haddad, Ihsan A.; and Arsenault, Alvin R., to Instrumentation Laboratory, Inc. Cell culture assembly. 3,948,732, Cl. 195-127.000.

Haertle, Richard J., to Kleen Test Products, Inc. Fabric package for a vaporizable anti-static and fabric softening bar. 3,948,387, Cl. 206-84.000.

Hafel, William R., to Burtis, Eric F. Mathematical problem and number generating systems. 3,947,976, Cl. 35-31.00C.

Hager, Robert Bonner; and Toukan, Sameeh Said, to Pennwalt Corporation. Fluorine and sulfur-containing compositions. 3,948,887, Cl. 260-239.00E.

Hagerty, Sydney E., to Bendix Corporation, The. Master cylinder diaphragm. 3,948,414, Cl. 220-203.000.

Hain, Larry A.; and Webb, Ronald C., to Dentsply Research & Development Corporation. Adjustable chair. 3,948,559, Cl. 297-330.000.

Haker, Gerd, to Vita Zahnfabrik H. Rauter KG. Artificial teeth and method of manufacturing a denture. 3,947,963, Cl. 32-2.000.

Halasa, Adel Farhan; and Gutierrez, Richard, to Firestone Tire & Rubber Company, The. Process for polymerizing conjugated dienes. 3,948,869, Cl. 260-85.30R.

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Hammar, Walton James, to Riker Laboratories, Inc. 8-Substituted dibenzobicyclo[3.2.1]octadienes for treating depression. 3,949,091, Cl. 424-330.000.

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Hancock, John T.; Allen, James B.; Shepherd, Glen C.; and Crawford, Joe W., to Texas Instruments Incorporated. Thermostatic control apparatus. 3,949,344, Cl. 337-347.000.

Hancock, Paul D. Wrench. 3,948,120, Cl. 81-165.000.

Handa, Susumu: *See—*
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Hata, Koichi, to American Videonetics Corporation. Bi-directional tape transport apparatus. 3,948,464, Cl. 242-192.000.
Hata, Shun-ichi, to Chugai Seiyaku Kabushiki Kaisha. Nitrogen-containing carbohydrate. 3,949,069, Cl. 424-95.000.
Hathaway, David J. Auxiliary gun sling. 3,948,423, Cl. 224-1.00A.
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Hayashi, Yukichi; Yokoda, Yutaka; Tamura, Masayuki; Kobayashi, Shinichi; Akai, Kazuyuki; and Sakai, Seiu, to Nippon Coinco Co., Ltd. Coin handling apparatus for a vending machine. 3,948,377, Cl. 194-1.00C.
Hayashida, Hiroshi: *See—*
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Hayden, John A.; and Plock, Carl E., to United States of America, Energy Research and Development Administration. Concentration and purification of plutonium or thorium. 3,948,735, Cl. 204-1.500.
Hayek, Mason; and Moody, Richard J., to Du Pont de Nemours, E. I., and Company. Fluorocarbon-containing printing ink and process for image printing. 3,948,668, Cl. 106-22.000.
Hayes, John C., to Universal Oil Products Company. Hydrocarbon conversion with an acidic multimetallic catalytic composite. 3,948,762, Cl. 208-139.000.
Hayes, William H., to Efficiency Tool Company, Inc. Electricans' combination tool. 3,947,904, Cl. 7-3.00A.
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Hefter, Erik; and Pollinger, Hans, to Knorr-Bremse GmbH. Valve for controlling pressure medium actuated brakes for railway and other vehicles. 3,948,571, Cl. 303-22.00R.
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Helman, Philip L.; Kanegis, Gary W.; and Kanegis, Meryl E. Knockdown furniture assemblies. 3,948,581, Cl. 312-198.000.
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Hervert, George L., to Universal Oil Products Company. Monolithic catalyst support member. 3,948,810, Cl. 252-477.00R.
Hess, James R.; Burkholder, Lester M.; and Rettew, Richard L., to Penn Berks Corporation. Conduit making machine, and method of making an article made thereby. 3,947,947, Cl. 29-411.000.
Hess, William L.; and Steffora, Michael B. Extruded pipe coupling and method and apparatus for forming. 3,949,045, Cl. 264-296.000.
Heurtley, John C., to Xerox Corporation. Electro-optic readout of thermoplastic deformation patterns. 3,949,160, Cl. 178-6.6TP.
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Hiraoka, Masaaki; and Terada, Hiromu, to Nippon Pneumatic Manufacturing Co., Ltd. Pneumatic impact wrench with torque responsive control. 3,948,328, Cl. 173-12.000.
Hirasawa, Masataka; and Hashimoto, Akira, to Tokyo Shibaura Electric Co., Ltd. Logical circuit for generating an output having three voltage levels. 3,949,242, Cl. 307-205.000.
Hirayama, Tadamasa; Kamada, Masahiro; and Tsurumi, Hideaki, to Daiichi Seiyaku, Co., Ltd. 2-Halopyrimidine derivatives and a method for their preparation. 3,948,915, Cl. 260-256.40C.
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Irmiger, Ulrich; and Koci, Zdenek, to Ciba-Geigy Corporation. Noncaking, readily soluble dyestuff granulates of anionic dyestuffs. 3,948,599, Cl. 8-79.000.

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Iwanaga, Kazuyoshi, to Nissan Motor Co., Ltd. Transmission locking device. 3,948,339, Cl. 180-82.00C.

Iwasyk, John M., to Du Pont de Nemours, E. I., and Company. Continuous process for preparing aliphatic polycarbonamides. 3,948,862, Cl. 260-78.00R.

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Jacob, Hermann. Process and arrangement for the regeneration of foundry sand. 3,948,447, Cl. 241-5.000.

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Jamieson, Frederick T. Stressing mechanism for a piezoelectric ignition system. 3,948,238, Cl. 123-148.0BA.

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Jilla, Dara Ardeshir, to HCA-Martin, Inc. Method for treating textile materials and textile materials treated in such a way, and textile treating compositions. 3,949,124, Cl. 428-96.000.

Johansen, Svend Borge. Method of combustion of gaseous fuels and flue gases. 3,949,054, Cl. 423-210.000.

Johansson, Anders, to Salen Interdevelop AB. Device adapted to facilitate the simultaneous transportation of a number of standardized load units. 3,948,403, Cl. 214-512.000.

Johnson, Alexander Lawrence; and Sweetser, Philip Bliss, to Du Pont de Nemours, E. I., and Company. Pyrazole plant growth regulants. 3,948,937, Cl. 260-311.000.
Johnson, Ben C.: *See*—
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Johnson, Charles H.: *See*—
Borsuk, Alvin; and Johnson, Charles H., 3,948,158.
Johnson, Derrold D. Programmed test tube rack for manually performing medical diagnostic assays. 3,948,606, Cl. 23-259.000.
Johnson, Donald K. Submersible float. 3,947,990, Cl. 43-44.900.
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Johnson, Emil S.: *See*—
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Johnson, Lawrence A.; and Beyn, Edgar J., to SCM Corporation. Condiment-treating process and product. 3,949,094, Cl. 426-99.000.
Johnson, Lawrence A.; and Beyn, Edgar J., to SCM Corporation. Spray drying process for encapsulation of condiment particles. 3,949,096, Cl. 426-302.000.
Johnson, Lowell W.: *See*—
Hoyer, William A.; and Johnson, Lowell W., 3,948,213.
Johnson, Raynor A.; and Fletcher, William D. Low cost planar air pallet material handling system. 3,948,344, Cl. 180-124.000.
Johnson, Todd M.: *See*—
Hunn, John L.; and Johnson, Todd M., 3,948,424.
Johnston, Howard; and Gulbenk, Alin H., to Dow Chemical Company, The. Aminohalopyridine-N-oxides. 3,948,910, Cl. 260-247.50G.
Johnston Laboratories, Inc.: *See*—
Middlebrook, Gardner; and Tigertt, W. D., 3,948,729.
Jollyman, Martin Frank, to Bell Punch Company Limited. Guide member for use with a magnetic head of a ticket issuing machine. 3,949,424, Cl. 360-130.000.
Jonas Woodhead Limited: *See*—
Eckersley, John Stanley; and Noble, Peter, 3,948,499.
Jones, Bobby Gene, to Allied Chemical Corporation. Method of wrapping bales of staple fiber. 3,948,016, Cl. 53-24.000.
Jones, Christopher Robin: *See*—
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Jones, Donald J.: *See*—
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Jones, Kenneth James; and Hargroves, Robert Arthur, to Lucas Electrical Company Limited, The. Vehicle lamp assembly. 3,949,214, Cl. 240-41.35C.
Jones, Oscar: *See*—
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Jones, Ronald W. Headlight mounting bracket. 3,948,475, Cl. 248-226.00R.
Jones, Walter Raymond: *See*—
Henstock, Arthur Robert; Jones, Walter Raymond; and Wilding, Frank, 3,948,033.
Jones, Willie G., Sr. Basketball rim and net structure. 3,948,516, Cl. 273-1.50R.
Jonsson, Rolf Bertil Goran: *See*—
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Jouffret, Michel, to Rhone-Poulenc-Textile. Process for converting alkylaromatic hydroperoxides into phenolic products and carbonyl products. 3,948,995, Cl. 260-592.000.
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Junek, Hans; and Fischer-Colbrie, Herwig, to Lonza Ltd. 4-Hydroxyphenyl-1,3-dioxo-2-indenylidene acetonitriles. 3,948,969, Cl. 260-465.00F.
Junts, Boris Ivanovich: *See*—
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Kacir, Lior; and Narkis, Moshe, to Centre for Industrial Research (CIR) Ltd.; and Palram Plastic Works, Kevutzat Poalim Ltd. Compositions for rigid asbestos - reinforced polyvinyl chloride. 3,948,833, Cl. 260-23.0XA.
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Kalopissis, Gregoire; and Bugaut, Andree, to Societe Anonyme dite: L'Oreal. Oxidation dye for keratinic fibers containing 2-halo-5-acetaminophenol as a coupler. 3,948,596, Cl. 8-10.200.
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Kane, James; and Schweizer, Hanspeter, to RCA Corporation. Process for depositing transparent electrically conductive tin oxide coatings on a substrate. 3,949,146, Cl. 428-432.000.
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Kano, Saburo; Nomura, Osami; Asada, Mitsuo; Ando, Meiki; Matsuda, Michihiko; Yamada, Tomio; Watanabe, Hitoshi; and Taniguchi, Takuzo. O,O-Diethyl-2-(5-ethyl-6-bromothiazolo[3,2-b]-s-triazolyl)thionophosphate. 3,948,926, Cl. 260-306.70E.
Kanzaki, Toshihiko; Fujisawa, Yukio; and Suide, Haruo, to Takeda Chemical Industries, Ltd. Production of cephalosporin C. 3,948,726, Cl. 195-36.00C.
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Karami, Hamzeh, to Colgate-Palmolive Company. Tape fastener for disposable diaper. 3,948,268, Cl. 128-287.000.
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Katsuragawa, Tomokazu: *See*—
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Kawai, Takashi, to Hitachi Metals, Ltd. Pouring ladle and pouring platform car for use therewith. 3,948,189, Cl. 105-271.000.
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Kennedy, Charles J., to C. J. Kennedy Company. Read amplifier having retriggerable, variable duty cycle inhibit pulse generator. 3,949,394, Cl. 340-347.0DD.
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Koch, Bernhard R., to Grob & Co. Aktiengesellschaft. Frame stave for heald frame of weaving machine. 3,948,296, Cl. 139-91.000.

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Kohls, Richard S. Foldable ski cover. 3,948,302, Cl. 150-52.00R.

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Koinzan, Walter J. Drive chain with slack take-up springs. 3,948,114, Cl. 74-242.11C.

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Kojima, Keiichi: *See—*
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Kokubo, Takamasa; Sakai, Mikio; Inada, Tomohide; Nakanishi, Takashi; Seki, Hiroshi; Yaegashi, Hazime; Izumi, Kouji; Matsumura, Morio; Nomura, Takao; and Kato, Hisakazu, to Nippon Electric Company Limited. Cable harness forming machine comprising wire feed-out means in harness laying head. 3,947,943, Cl. 29-203.0MW.

Kokusan Denki Co., Ltd.: *See—*
Katsumata, Mitsuo, 3,948,239.

Kolling, Heinrich: *See—*
Aichinger, Gerd; Haberkorn, Axel; Kolling, Heinrich; Kranz, Eckart; and Reisdorff, Josef, 3,948,893.

Kollmeyer, Willy D.: *See—*
Tieman, Charles H.; Kollmeyer, Willy D.; and Roman, Steven A., 3,948,934.

Komiyama, Yoshiro: *See—*
Niimi, Itaru; Kaneko, Yasuhisa; Komiyama, Yoshiro; Hashimoto, Masaoki; and Ogawa, Hitoshi, 3,948,431.

Komnatny, Igor Pavlovich: *See—*
Yatsenko, Sergei Vasilievich; Kononenko, Vadim Grigorievich; Komnatny, Igor Pavlovich; Stelmakh, Viktor Alexeevich; Schekochikhin, Serafim Vasilievich; Maznichenko, Stanislav Anisimovich; Silichev, Mikhail Karpovich; Lobanov, Vladimir Vladimirovich; Fedchenko, Alexei Ivanovich; Babich, Leonid Petrovich; Akhnazariants, Levon Khachaturovich; Saveliev, Anatoly Semenovich; Merezhro, Vladimir Feofanovich; Vestman, Alexandr Alexandrovich; Strizhenko, Vitaly Evgenievich; Pravdin, Viktor Sergeevich; Fulmakht, Veniamin Veniaminovich; Fitilev, Boris Vasilievich; Evteev, Dmitry Petrovich; Salenek, Alexandr Grigorievich; Dadykin, Georgy Fedotovich; Onuchko, Ivan Savelievich; Golodov, Nikolai Nikitovich; and Kamensky, Jury Alexandrovich, 3,948,131.

Komori, Shigehiro; Sakamaki, Hisashi; Hattori, Hiroyuki; Iida, Toshihide; Miyamoto, Koichi; and Umezawa, Kazumi, to Canon Kabushiki Kaisha. Jam detecting device in a copying machine. 3,948,586, Cl. 355-14.000.

Koncos, Robert: *See—*
Yoo, Jin Sun; and Koncos, Robert, 3,949,013.

Kondziola, Joseph D., to General Motors Corporation. Pendulum support for a seat belt retractor. 3,948,460, Cl. 242-107.40A.

Konig, Eberhard, to USM Corporation. Adhesive compositions containing a cyanoacrylate and itaconic anhydride. 3,948,794, Cl. 252-182.000.

Kononenko, Vadim Grigorievich: *See—*
Yatsenko, Sergei Vasilievich; Kononenko, Vadim Grigorievich; Komnatny, Igor Pavlovich; Stelmakh, Viktor Alexeevich; Schekochikhin, Serafim Vasilievich; Maznichenko, Stanislav Anisimovich; Silichev, Mikhail Karpovich; Lobanov, Vladimir Vladimirovich; Fedchenko, Alexei Ivanovich; Babich, Leonid Petrovich; Akhnazariants, Levon Khachaturovich; Saveliev, Anatoly Semenovich; Merezhro, Vladimir Feofanovich; Vestman, Alexandr Alexandrovich; Strizhenko, Vitaly Evgenievich; Pravdin, Viktor Sergeevich; Fulmakht, Veniamin Veniaminovich; Fitilev, Boris Vasilievich; Evteev, Dmitry Petrovich; Salenek, Alexandr Grigorievich; Dadykin, Georgy Fedotovich; Onuchko, Ivan Savelievich; Golodov, Nikolai Nikitovich; and Kamensky, Jury Alexandrovich, 3,948,131.

Konrad, Reinhard. Snow vehicle. 3,948,536, Cl. 280-18.000.

Koomen, Nelis N., to Talley-Frac Corporation. Mechanical initiator for detonation of explosives. 3,948,176, Cl. 102-20.000.

Korbuly, Gergely; and Hamel, Denis, to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes. Shock absorbers for mooring guards. 3,948,500, Cl. 267-140.000.

Korneev, Evgeny Fedorovich: *See—*
Golubev, Lev Vasilievich; Korneev, Evgeny Fedorovich; and Shmartsev, Jury Vasilievich, 3,948,692.

Korner, Otto; Boms, Manfred; and Spies, Klaus, to DIEHL. Twin track laying chain. 3,948,572, Cl. 305-57.000.

Korten, Chauncy F., to Ridge Associates. Directional finial indicator. 3,948,205, Cl. 116-35.00R.

Kosmos, Peter: *See—*
Tesk, John Aloysius; Dudek, Ronald Peter; and Kosmos, Peter, 3,948,653.

Kostlin, Heiner; and Jost, Rudiger, to U.S. Philips Corporation. Light-transmitting, thermal-radiation reflecting filter. 3,949,259, Cl. 313-112.000.

Kotoyori, Akira: *See—*
Yonai, Fumiaki; Yamauchi, Masaaki; Fujimura, Takashi; and Kotoyori, Akira, 3,949,411.

Kovaks, Maria: *See—*
Feuer, Laszlo; Nogradi, Mihaly; Gottsegen, Agnes; Vermes, Borbala; Streliszky, Janos; Wolfner, Andreas; Farkas, Lorant; Antus, Sandor; and Kovaks, Maria, 3,949,085.

Koyama, Kuniyoshi; and Ishikawa, Yoji, to Sony Corporation. Image-projection system. 3,949,167, Cl. 178-7.50D.

Kozacka, Frederick J., to Chase-Shawmut Company, The. Electric fuse for elevated circuit voltages. 3,949,342, Cl. 337-161.000.

Kozao, Shigeki: *See—*
Fujiyama, Susumu; Takahashi, Takehiko; Kozao, Shigeki; and Kasahara, Toyomi, 3,948,998.

Koziczkowski, Joseph E.: *See—*
Freitag, Lawrence F.; Koziczkowski, Joseph E.; Zunft, Donald V.; and Schwantes, Glenn W., 3,949,333.

Koziol, Konrad; Sieberer, Karl-Heinz; and Rathjen, Hans-Carl, to C. Conradty, Firma. Electrode for electrochemical process. 3,948,752, Cl. 204-290.00F.

Kraft, Paul; and Altscher, Siegfried, to Stauffer Chemical Company. Fire retardant polymeric additives of vinylidene halides with bis(hydrocarbyl) vinyl phosphonates and C_1–C_{30} alkylesters of acrylic and methacrylic acids. 3,948,842, Cl. 260-29.6TA.

Kraft, Wilhelm: *See—*
Beck, Christian; Esser, Wilhelm; Kraft, Wilhelm; and Scholtis, Kurt, 3,948,458.

Kraftco Corporation: *See—*
Piatek, Robert J., 3,948,711.

Krajicek, Richard W.: *See—*
Sperry, John S.; Krajicek, Richard W.; and South, Dudley P., Jr., 3,948,323.

Krall & Roth Weberei, KG: *See—*
Theissen, Hans, 3,948,702.

Kramer, Wolfgang; Buchel, Karl Heinz; Meiser, Werner; and Plempel, Manfred, to Bayer Aktiengesellschaft. Compositions containing O,N-acetal and method of using same. 3,949,080, Cl. 424-269.000.

Kranz, Eckart: *See—*
Aichinger, Gerd; Haberkorn, Axel; Kolling, Heinrich; Kranz, Eckart; and Reisdorff, Josef, 3,948,893.

Krapcho, John; and Turk, Chester Frank, to E. R. Squibb & Sons, Inc. 5-[(Substituted amino)alkyl]-2-aryl-3-halo-1,5-benzothiazepin-4(5H)-ones. 3,948,889, Cl. 260-239.30B.

Kratochvil, Egon; and Pech, Gunther, to Semperit Aktiengesellschaft. Apparatus for the bellowless vulcanization of tire blanks. 3,948,591, Cl. 425-32.000.

Krauth, Andre: *See—*
Kuwertz, Erich; and Krauth, Andre, 3,949,192.

Kray, Louis R., to Chevron Research Company. Esterification of orthophthalic acid with olefin. 3,948,974, Cl. 260-475.00R.

Krebs, Robert E.: *See—*
Pobuda, Eckhard T.; and Krebs, Robert E., 3,948,164.

Krenzer, John; and Richter, Sidney B., to Velsicol Chemical Corporation. Aryl urea carbonates. 3,948,967, Cl. 260-463.000.

Krenzer, John: *See—*
Richter, Sidney B.; and Krenzer, John, 3,948,950.

Kress, Robert W.: *See—*
Pelehach, Michael; Kress, Robert W.; and Larson, Rolf J., 3,949,095.

Krillic, Hobart M.; and Leary, Edward F., to Nalco Chemical Company. Treatment of industrial grinding and cutting lubricants. 3,948,784, Cl. 252-26.000.

Kristiansen, Odd, to Ciba-Geigy Corporation. O-ethyl-S-(propyl, butyl or propargyl)-S-[2,6-dichloropicolyl-(3)]-dithiophosphates. 3,948,921, Cl. 260-294.80K.

Kroll, Florence. Steel wool pads and holder therefor. 3,947,915, Cl. 15-209.00D.

Krusius, Jochen, to Dornier GmbH. Device for position stabilization. 3,948,467, Cl. 244-116.000.

Kubica, Henryk: *See—*
Jozwicki, Ryszard Karol; Kubica, Henryk; and Piatkowska, Marianna Teresa, 3,948,031.

Kubota, Takashi: *See—*
Tanizoe, Toshio; and Kubota, Takashi, 3,949,175.

Kucera, Josef: *See—*
Stoy, Vladimir; Stoy, Artur; Prokop, Jaroslav; Urbanova, Renata; and Kucera, Josef, 3,948,870.

Kuehne, Robert S., to Vance, Willison K., a part interest. Digital printer. 3,948,168, Cl. 101-93.050.

Kuhlthau, Hans-Peter, to Bayer Aktiengesellschaft. Basic benzothiazolyl-azo-quinolinyl dyestuffs. 3,948,877, Cl. 260-146.00R.

Kuhn, Lawrence: *See—*
Bassous, Ernest; Kuhn, Lawrence; and Taub, Howard H., 3,949,410.

Kulcsar, Gabor: *See—*
Buzna, Arpad; Kulcsar, Gabor; Soltesz, Jeno; and Valyl Nagy, Tibor, deceased, 3,949,077.

Kullman, Russell M. H.: *See—*
Reinhardt, Robert M.; and Kullman, Russell M. H., 3,948,600.

Kunitomo, Tetsunosuke; Kenjo, Hideki; Nagaoka, Syoji; Yoshioka, Takeshi; and Tanzawa, Hiroshi, to Toray Industries, Inc. Cross-linked n-vinyl pyrrolidone polymer composition suitable for contact lenses. 3,949,021, Cl. 260-895.000.

Kuniyosi, Shiniti. Detachable music stand for use in conjunction with a stringed instrument. 3,948,476, Cl. 248-443.000.

Kuo, Ming-Chuan. Power-driven kitchen utility tool. 3,947,909, Cl. 15-23.000.

Kuraray Co., Ltd.: *See—*
Fuchigami, Yoshio; and Arima, Yusaku, 3,948,807.

Kurihara, Ryuichi: *See—*
Niimura, Nagato; Kinoshita, Ichiro; Maruyama, Yoshiharu; Kurihara, Ryuichi; Yoshihara, Morito; Suzuki, Toshio; Hashimoto, Yujiro; and Imazawa, Masahiro, 3,949,156.

Kurii, Masaaki; Kobari, Kiyoshi; and Yanagi, Osamu, to Nippondenso Co., Ltd.; Toyota Jidosha Hanbai Kabushiki Kaisha; and Kabushiki Kaisha Tokai Rika Denki Seisakusho. Engine automatic control system for vehicles. 3,949,236, Cl. 290-38.00R.

Kurita, Yoshio; Takahashi, Katsumi; and Aga, Toshio, to Yokogawa Electric Works, Ltd. Flow velocity measuring device. 3,948,097, Cl. 73-194.0VS.

Kurmeier, Hans-Adolf: *See—*
Gante, Joachim; Kurmeier, Hans-Adolf; Wild, Albrecht; and Mehrhof, Werner, 3,948,949.

Kurokawa, Mikio: *See—*
Nishimura, Haruki; Shimizu, Masanao; Uno, Hitoshi; Hirooka, Tetsuo; Masuda, Yoshinobu; and Kurokawa, Mikio, 3,948,928.

Kurpekova, Era Grigorievna, administrator: *See—*
Shaumian, Grigor Arutjunovich, deceased; Strizhova, Alexandra Gavrilovna, administrator; Shaumian, Sergei Grigorievich, administrator; Kurpekova, Era Grigorievna, administrator; and Shaumian, Grinteza Grigorievna, administrator, 3,948,121.

Kushibe, Kazuyoshi, to Tokai Denka Kogyo Kabushiki Kaisha. Method of chemically polishing copper and copper alloy. 3,948,703, Cl. 156-20.000.

Kusumoto, Yasuo, to Kabushiki Kaisha Daini Seikosha. Time indication setting circuit. 3,948,035, Cl. 58-23.00R.

Kutter, Eberhard; Austel, Volkard; Eberlein, Wolfgang; and Heider, Joachim, to Boehringer Ingelheim GmbH. 1,3-Dioxo-2-aminoalkyl-4,4-dimethyl-isoquinolines and salts thereof. 3,948,898, Cl. 260-268.0BQ.

Kuwahara, Kazuyoshi: *See—*
Fujishima, Tooru; Nishimura, Naoto; Kuwahara, Kazuyoshi; Ozaki, Shinji; and Fujita, Masahiko, 3,949,161.

Kuwertz, Erich; and Krauth, Andre, to Pfalzstahlbau GmbH. Aim control arrangement for conveyor installations. 3,949,192, Cl. 235-61.11E.

Kuzan, Frank R.: *See—*
Dombrowski, Frank R.; Kuzan, Frank R.; and Larson, Raymond L., 3,948,124.

Kuze, Shinichi: *See—*
Ochiai, Tomoyoshi; Kuze, Shinichi; and Hirano, Ikuro, 3,949,290.

L. Schuler GmbH: *See—*
Finsterwalder, Kurt; and Philipp, Karl-Heinz, 3,948,075.

L. Z. Reece, et al: *See—*
Wiseley, Kenneth; and Botts, Elton M., 3,949,249.

La Precision Industrielle: *See—*
Gamet, Louis Jean Marie, 3,948,577.

Labaz: *See—*
Bacq, Zenon; and Binon, Fernand, 3,949,087.

Lacefield, William B., to Eli Lilly and Company. 3-Amino-5,6-diaryl-1,2,4-triazines. 3,948,894, Cl. 260-249.500.

Ladd, Robert B.; and Finizia, Harold F., to Ladd, Robert B. Game apparatus. 3,948,524, Cl. 273-135.00R.

Lafferty, Robert H.; Smiley, Seymour H.; and Radimer, Kenneth J., to United States of America, Energy Research and Development Administration. Method of absorbing UF_6 from gaseous mixtures in alkamine absorbents. 3,949,050, Cl. 423-11.000.

Laforge, Leo Paul; and Laforge, Robert. Tree delimbing apparatus. 3,948,299, Cl. 144-2.00Z.

Laforge, Robert: *See—*
Laforge, Leo Paul; and Laforge, Robert, 3,948,299.

Laitram Corporation, The: *See—*
Fowler, John T., 3,948,437.

Lamboley, Gilbert. Tubular metal mast for the rigging of a sailing boat. 3,948,199, Cl. 114-90.000.

Lamparsky, Dietmar: *See—*
Helmlinger, Daniel; Lamparsky, Dietmar; Schudel, Peter; Sigg-Grutter, Trudi; and Wild, Jost, 3,948,816.

Lample, Esteban Torres, to United States Surgical Corporation. Screw clamp for flexible tubing. 3,948,477, Cl. 251-8.000.

Landaeus, Kjell Gustav: *See—*
Dahl, Lars Gunnar; and Landaeus, Kjell Gustav, 3,948,280.

Landry, Thomas J., to AMF Incorporated. Heated tube for drop-in dispenser. 3,949,190, Cl. 219-385.000.

Landsman, Arkady Pavlovich: *See—*
Bordina, Ninel Mineevna; Zadde, Vitaly Viktorovich; Zaitseva, Aita Konstantinovna; Landsman, Arkady Pavlovich; Strebkov, Dmitry Semenovich; Streltsova, Valentina Ivanovna; and Unishkov, Vadim Alexeevich, 3,948,682.

Lane, Charles E., III: *See—*
Kelley, Thomas P.; and Lane, Charles E., III, 3,949,402.

Lane, George D.: *See—*
Leroux, Adrien; Kocsis, Alexandre; and Lane, George D., 3,947,956.

Lane, John G. Extension ladder. 3,948,353, Cl. 182-206.000.

Lang, Gunter: *See—*
Roeschlau, Peter; Lang, Gunter; Beaucamp, Klaus; and Bernt, Erich, 3,948,728.

Langford, James Wilson, Jr., to Dresser Industries, Inc. Vacuum, vacuum-pressure, or pressure reverse circulation bit. 3,948,330, Cl. 175-339.000.

Langford, Obie M.; and Peelman, Harold E., to Texaco Inc. High-voltage arc detector. 3,949,232, Cl. 250-501.000.

Langhammer, Hans-Jurgen, to Klockner-Werke AG. Apparatus for the continuous production of steel from ore. 3,948,641, Cl. 75-11.000.

Langheim, Franz: *See—*
Hachmann, Klaus; Gaube, Johann; Brockhaus, Rudolf; and Langheim, Franz, 3,948,983.

Lanz Medical Products Corporation: *See—*
Zeldman, Maurice I.; and McGinnis, Gerald E., 3,948,274.

La Pointe, Gabriel M., to Parker Manufacturing Co. Fastener driver with safety device. 3,948,426, Cl. 227-8.000.

Laporte Industries Limited: *See—*
Howe, Brian Keith; Hardy, Francis Robert Frederick; and Clarke, Douglas Alfred, 3,948,997.

Laputte, Robert: *See—*
Agouri, Elias; Laputte, Robert; and Rideau, Jacques, 3,949,018.

Lardi, Francesco; and Jones, Donald J., to Westinghouse Electric Corporation. Steam turbine blade protection system and method especially for electric power plants. 3,948,054, Cl. 60-660.000.

Larrimore, Herbert, to United States of America, Navy. Underwater lighting for defense against swimmer attack. 3,949,212, Cl. 240-26.000.

Larson, Clayton E.; and Lemp, Edwin H., to White Metal Rolling & Stamping Corporation. Extension ladder with ladder leveler means. 3,948,352, Cl. 182-204.000.

Larson, Raymond L.: *See—*
Dombrowski, Frank R.; Kuzan, Frank R.; and Larson, Raymond L., 3,948,124.

Larson, Rolf J.: *See—*
Pelehach, Michael; Kress, Robert W.; and Larson, Rolf J., 3,949,095.

Lassanske, George G., to Outboard Marine Corporation. Endless cleated track. 3,948,110, Cl. 74-229.000.

Laufer, Siegmar, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for preparing hydrophobic particles. 3,948,676, Cl. 106-309.000.

Launt, Larry L., to Cunningham Corporation. Compact reed switch relay. 3,949,334, Cl. 335-153.000.

Lavarnway, Jerry L., to Canadian Valley Meat Company. Foods display shelf. 3,948,580, Cl. 312-116.000.

Laverty, John J.; and Gardlund, Zachariah G., to General Motors Corporation. Internally plasticized poly(vinyl chloride). 3,949,015, Cl. 260-873.000.

Lawrence Peska Associates, Inc.: *See—*
Bishop, Leroy J., 3,947,977.
Lifka, Elmer, 3,948,048.
Longshore, Frederic; and Kissling, Claude H., 3,948,222.
Lukacik, George J., 3,948,526.
Maldonado, Blanca, 3,947,928.
Vandermark, James R., 3,949,234.

Lawson, Terence M.; and Howell, Blair D., to Research Laboratories of Australia Pty. Limited. Method of developing an electrostatic latent image in which shear stress is employed. 3,949,116, Cl. 427-17.000.

Layre, John C., to Refreshment Machinery Incorporated. Brew cup filter. 3,948,157, Cl. 99-289.00R.

Lazaridis, Lazaros J.; Searight, Edward F.; and Shefsiek, Paul K., to Thermo Electron Corporation. Vapor transfer oven. 3,948,244, Cl. 126-19.00R.

Le Ciment Arme Demay Freres: *See—*
de Leaumont, Jean Marie Charles Roger Gonzagues, 3,948,483.

Leary, Edward F.: *See—*
Krillic, Hobart M.; and Leary, Edward F., 3,948,784.

Lederrey, Jacques: *See—*
Savary, Antoine; Mouron, Jacques; and Lederrey, Jacques, 3,949,207.

Lee, James M.: *See—*
Askin, Haluk O.; Jacobson, Edward C.; Lee, James M.; and Sonoda, George, 3,949,383.

Lee, Lester T. C.; and Liu, Kang-Jen, to Allied Chemical Corporation. Method of making permselective interpolymer membranes. 3,948,823, Cl. 260-2.50M.

Lee, Robert L. Jaw movement record member. 3,947,964, Cl. 32-19.000.

Lee, Ronald E.; and Voisinet, Robert, to United States of America, Navy. Conical nozzle aerodynamic window. 3,949,321, Cl. 331-94.50D.

Lee, Thomas Brian; Hardern, David Norman; and Bantick, John Raymond, to Fisons Limited. 4'-Carboxy-flavone. 3,948,955, Cl. 260-345.200.

Leeds and Micallef: *See—*
Micallef, Lewis A., 3,948,422.

Leger, Andre: *See—*
Jeanmart, Claude; Leger, Andre; and Messer, Mayer Naoum, 3,948,917.

Lehmkuhl, Frank A.: *See—*
Witkowski, Joseph T.; Robins, Roland K.; and Lehmkuhl, Frank A., 3,948,885.

Leiber, Heinz, to Teldix GmbH. Arrangement for auto checking a hydraulic system. 3,948,568, Cl. 303-21.0AF.

Leibfried, Wolfgang; Schynoll, Wolfgang; and Wulff, Dietrich, to Robert Bosch G.m.b.H. Method of making high speed silicon switching diodes. 3,949,120, Cl. 427-89.000.

Leland Stanford Junior University, The Board of Trustees of: *See—*
Daniels, John R.; and Knapp, Terry R., 3,949,073.

Lemelson, Jerome H. Molding toy. 3,947,992, Cl. 46-17.000.

Lemont, Harold E.; and Miller, Robert C., to Summa Corporation. Insulation system. 3,948,295, Cl. 138-147.000.

Lemp, Edwin H.: *See—*
Larson, Clayton E.; and Lemp, Edwin H., 3,948,352.

Lennox Industries Inc.: *See—*
Vlasak, Robert C., 3,948,438.

Lenzen, Johann: *See—*
Lochner, Karl-Heinz; and Lenzen, Johann, 3,948,686.

Lepetit, Pierre T.; and Hivert, Andre R., to Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.). Process for making a metallic coating on surfaces formed of titanium or another refractory metal. 3,949,122, Cl. 427-229.000.

Lerner, Bernard, to Automated Packaging Systems, Inc. Packaging system. 3,948,015, Cl. 53-22.00B.

Leroux, Adrien; Kocsis, Alexandre; and Lane, George D., to University of Sherbrooke, The. Multilayer thick-film hybrid circuits method and process for constructing same. 3,947,956, Cl. 29-625.000.

Lesser, Bertram; and Hart, Frank J., to Duralite Company, Inc. Glider. 3,948,555, Cl. 297-39.000.

Lester, William M. Rotary internal combustion engine with parallel coextensive rotors. 3,948,225, Cl. 123-8.430.

Lesure, John B., to Appleton Mills. Roll alignment gauge. 3,947,970, Cl. 33-182.000.

Levaillant, Claude, to C.G.R.-MeV. Variable-reflectivity device for varying output power of microwave generator. 3,949,328, Cl. 333-81.00B.

Lever Brothers Company: *See—*
Clark, Alan John, 3,949,066.
Wieske, Theophil; Witte, Ingo; Hannewijk, Jacob; and Willems, Marcel August Guillaume, 3,949,105.

Leveraus, James E., to Allis-Chalmers Corporation. Hour meter operated responsive to tachometer signal. 3,948,039, Cl. 58-146.000.

Levey, John: *See—*
Bauer, Henry, 3,947,971.

Lewek, Stanley S.: *See—*
Bartholomew, Roger F.; Campbell, Larry E.; Lewek, Stanley S.; Pierson, Joseph E.; and Stookey, Stanley D., 3,948,629.

Lewi, William, to Solo Products Corporation. Display package. 3,948,393, Cl. 206-462.000.

Lewis, George W., to Halliburton Company. Cleaning liquid systems including controlled heating and cooling of the liquid. 3,948,679, Cl. 134-10.000.

Lewis, John H., to Xonics, Inc. Method and apparatus for reducing the density of background areas without affecting the density of picture areas in an electronradiograph. 3,949,222, Cl. 250-315.00A.

Libbey-Owens-Ford Company: *See—*
Beckham, Robert R., 3,948,719.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Klank, Otto; and Rottmann, Dieter, 3,949,307.

Lichtgarn, Fred: *See—*
Gorrell, John E.; and Lichtgarn, Fred, 3,948,413.

Liddell, Harold G., to Dow Chemical Company, The. Composition and method for maintaining a constant concentration of agents and amount of solvent in a wood treating process. 3,948,802, Cl. 252-404.000.

Lieb, Nathaniel H.; Kerfoot, Franklin W., Jr.; and Wallace, Richard A., to Star Dental Manufacturing Co., Inc. Dental handpiece and wrench therefor. 3,947,966, Cl. 32-27.000.

Lieberman, Robert L.; and De Mott, Dale H., to DeMott Electronics Company. Tension control for stretch-forming machine. 3,948,071, Cl. 72-21.000.

Liebl, Helmuth, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Double-focussing mass spectrometer. 3,949,221, Cl. 250-281.000.

Lifka, Elmer, to Lawrence Peska Associates, Inc., a part interest. Coaxial cylindrical fluid drive. 3,948,048, Cl. 60-330.000.

Liggett & Myers Incorporated: *See—*
Schoenholz, Daniel; and Terry, Herbert, 3,949,107.

Ligh, David R., to Piezo Engineering Company. Refuse compactor. 3,948,163, Cl. 100-53.000.

Linden, Ulf. Brace arrangement for a thermometer. 3,948,101, Cl. 73-376.000.

Linder, Ernst: *See—*
Wessel, Wolf; Linder, Ernst; Maurer, Helmut; and Neidhard, Horst, 3,948,081.

Lindman, William Edward, to Environment Improvement, Inc. Water purification process and apparatus. 3,948,774, Cl. 210-192.000.

Link, Helmut; and Gumhold, Guenther, to Index-Werke KG Hahn & Tessky. Automatic programmed profile lathes. 3,948,122, Cl. 82-14.00C.

Linz, Arthur: *See—*
Castleberry, Donald E.; Jenssen, Hans P.; and Linz, Arthur, 3,949,320.

Lion Fat & Oil Co., Ltd.: *See—*
Tomiyama, Shinichi; and Iimori, Masahide, 3,948,818.

Lion Services, Inc.: *See—*
Stalzer, Leo Henry, 3,948,074.

Littwin, Arthur K. Movement control. 3,949,288, Cl. 318-127.000.

Liu, Kang-Jen: *See—*
Lee, Lester T. C.; and Liu, Kang-Jen, 3,948,823.

LKB-Produkter AB: *See—*
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Lo, George A.: *See—*
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Yatsenko, Sergei Vasilievich; Kononenko, Vadim Grigorievich; Komnatny, Igor Pavlovich; Stelmakh, Viktor Alexeevich; Schekochikhin, Serafim Vasilievich; Maznichenko, Stanislav Anisimovich; Silichev, Mikhail Karpovich; Lobanov, Vladimir Vladimirovich; Fedchenko, Alexei Ivanovich; Babich, Leonid Petrovich; Akhnazariants, Levon Khachaturovich; Saveliev, Anatoly Semenovich; Merezhro, Vladimir Feofanovich; Vestman, Alexandr Alexandrovich; Strizhenko, Vitaly Evgenievich; Pravdin, Viktor Sergeevich; Fulmakht, Veniamin Veniaminovich; Fitilev, Boris Vasilievich; Evteev, Dmitry Petrovich; Salenek, Alexandr Grigorievich; Dadykin, Georgy Fedotovich; Onuchko, Ivan Savelievich; Golodov, Nikolai Nikitovich; and Kamensky, Jury Alexandrovich, 3,948,131.

Lobaugh, Lawrence E.; and Gallo, Thomas S. Cold forged steel grating. 3,948,013, Cl. 52-669.000.

Lochner, Karl-Heinz; and Lenzen, Johann, to Bonaval-Werke GmbH. Zinc dust primer systems for metal sheets deformable by noncutting processes. 3,948,686, Cl. 148-6.15R.

Lodge & Shipley Company, The: *See—*
Rowekamp, Edward F., 3,948,018.

Loev, Bernard, to SmithKline Corporation. 2-Alkoxy(and 2-amino)-3-amino-2-heterocyclic-thiopropanamides. 3,948,892, Cl. 260-247.10M.

Loev, Bernard: *See—*
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Logan, Kenneth C.; and Luhde, Friedrich O. B. Apparatus for the treatment of lignocellulosic material. 3,948,449, Cl. 241-41.000.

Lohmann, Dieter: *See—*
Greber, Gerd; Darms, Roland; and Lohmann, Dieter, 3,948,835.

Lohmann, Heinz-Juergen, to Siemens Aktiengesellschaft. Counting element for the structure of synchronous modulo-n or 2m counters. 3,949,310, Cl. 328-41.000.

Lohmann, Heinz-Juergen, to Siemens Aktiengesellschaft. Ring counters with synchronously controlled counting flip-flops. 3,949,311, Cl. 328-43.000.

Lohmann, Heinz-Juergen, to Siemens Aktiengesellschaft. Synchronous shift register with series and parallel data input and basic position input. 3,949,384, Cl. 340-173.0FF.

Lohrmann, Dieter R., to United States of America, Army. Piezoelectric bimorph controlled variable capacitor. 3,949,246, Cl. 310-8.600.

Long, Alan Gibson: *See—*
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Longshore, Frederic; and Kissling, Claude H., to Lawrence Peska Associates, Inc., a part interest. Animal safety harness. 3,948,222, Cl. 119-96.000.

Lonne, Klaus, to SKF Industrial Trading and Development Company, B.V. Self centering clutch release bearing. 3,948,371, Cl. 192-98.000.

Lonza Ltd.: *See—*
Junek, Hans; and Fischer-Colbrie, Herwig, 3,948,969.

Lord Corporation: *See—*
Schwemmer, Leonard J., 3,948,501.

Lorraine, Jack Richardson: *See—*
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Lovell, Robert. Apparatus and method of metal forming. 3,948,073, Cl. 72-256.000.

Lovitt, Thomas J.: *See—*
Lovitt, Thomas L.; Lovitt, Thomas J.; Wight, George W., Jr.; Zapponi, Paschal P.; and Wagner, John C., 3,948,497.

Lovitt, Thomas L.; Lovitt, Thomas J.; Wight, George W., Jr.; Zapponi, Paschal P.; and Wagner, John C., to Gould Inc. Energy absorber. 3,948,497, Cl. 267-9.00B.

Lowe, Benjamin L.; and Holmes, Jerry D., to Texas Instruments Incorporated. Surface wave device angle modulator. 3,949,324, Cl. 332-26.000.

Lowe, Orville G. Oxidation of thiols and disulfides to sulfonic acids. 3,948,922, Cl. 260-294.80F.

Lowey, Francis J., deceased (by Old Phoenix National Bank, executor), to Friction Products Co. Single mixture metallic brake or clutch plate. 3,948,364, Cl. 188-251.00R.

Lubrano, Glenn J.: *See—*
Guilbault, George G.; and Lubrano, Glenn J., 3,948,745.

Lubrizol Corporation, The: *See—*
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Lucas Electrical Company Limited, The: *See—*
Jones, Kenneth James; and Hargroves, Robert Arthur, 3,949,214.
Whitney, George Joseph, 3,949,215.

Luchaco, David George, to Bendix Corporation, The. Exhaust gas sensor operational detection system. 3,948,228, Cl. 123-32.0EA.

Ludwig, George: *See—*
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Luhde, Friedrich O. B.: *See—*
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Lukacik, George J., to Lawrence Peska Associates, Inc., a part interest. Game apparatus for a game of hangman. 3,948,526, Cl. 273-136.00B.

Lukich, Aleksander. Bicycle with auxiliary seat drive. 3,948,542, Cl. 280-226.00R.

Lummus Company, The: *See—*
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Tsao, Utah, 3,948,622.

Lundin, Charles E. Alloys of aluminum-lead-copper. 3,948,651, Cl. 75-138.000.

Lunkenheimer Company, The: *See—*
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Luther, Hans Werner; and Prochnow, Jurgen, to Rheinmetall G.m.b.H. Propellent-charge cartridge case. 3,948,178, Cl. 102-43.00R.

Luttmer, Willem, to International Computers Limited. Mounting integrated circuit elements. 3,947,957, Cl. 29-626.000.

Lybarger, James H., to Shell Oil Company. Process for chemically and mechanically limited reservoir acidization. 3,948,324, Cl. 166-307.000.

Lynch, Edward I., to General Electric Company. Noise immune clamp circuit. 3,949,165, Cl. 178-7.3DC.

Macdonald, Charles J.: *See—*
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Macdonald, John M.; and Macdonald, Charles J. Motorcycle suspension system. 3,948,543, Cl. 280-284.000.

Machida, Keisuke, to Sony Corporation. Magnetic recording apparatus. 3,949,419, Cl. 360-64.000.

Machida, Yukihiko, to Sony Corporation. Phase demodulator. 3,949,314, Cl. 329-107.000.

Mack, Anthony M.: *See—*
Berman, Irwin; Nash, Charles F.; Henschel, Robert; Schroeder, Joseph W.; Mack, Anthony M.; and Alfano, Bernardino M., 3,948,090.

Magarian, Gerald M.; and Thompson, Robert A., to Ameron, Inc. Impact-protective coating for plastic pipe. 3,948,294, Cl. 138-141.000.

Magdesian, Arkady Lukyanovich: *See—*
Ovchinnikov, Viktor Sergeevich; Grigorov, Eduard Ivanovich; Magdesian, Arkady Lukyanovich; Bermishev, Andrei Vasilievich; Gorelikov, Vladimir Ivanovich; Utkin, Alexandr Stepanovich; Fedotov, Viktor Konstantinovich; and Volkov, Vladimir Yakovlevich, 3,948,409.

Magrini Galileo S.p.A.: *See—*
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Maillefer, Charles, to Maillefer S.A. Cable-winding machine. 3,948,462, Cl. 242-158.00R.

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Maki, Tatsuo; Hori, Setsuo; Sakamoto, Yuji; Yoshimoto, Minoru; and Manabe, Tsuneo, to Showa High Polymer Co., Ltd. Binder. 3,949,014, Cl. 260-836.000.

Makino, Yoshimi; Narimatsu, Akihisa; and Horie, Masao, to Sony Corporation. Multiple magnetoresistance element. 3,949,345, Cl. 338-32.00R.

Makino, Yoshimi; Hara, Hideo; and Ohmura, Yoshimoto, to Sony Corporation. Magnetoresistive element. 3,949,346, Cl. 338-32.00R.

Malaniin, Igor Ivanovich: *See—*
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Malavazos, Arthur J., deceased; and by Malavazos, Gregory A., administrator, to A J M Research Corporation. Selection mechanism for a postage meter. 3,949,203, Cl. 235-101.000.

Malavazos, Gregory A., administrator: *See—*
Malavazos, Arthur J., deceased; and Malavazos, Gregory A., administrator, 3,949,203.

Malcolm, Joseph. Constant supply of vacuum or pressure for vacuum or pressure operated or assisted systems in vehicles. 3,948,343, Cl. 180-103.00R.

Maldonado, Blanca, to Lawrence Peska Associates, Inc., a part interest. Snap-on shoe lace. 3,947,928, Cl. 24-143.00R.

Malte, Ashok M.: *See—*
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Malueg, Richard M., to Actron Industries, Inc. Detector array fixed-pattern noise compensation. 3,949,162, Cl. 178-7.100.

Manabe, Tsuneo: *See—*
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Manigault, Edward L., to NL Industries, Inc. Alumina-chrome refractory. 3,948,670, Cl. 106-57.000.

Mannesmannrohren-Werke AG: *See—*
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Mantovani, Tomaso. Structure for connecting teeth to the digging edge of a bucket. 3,947,982, Cl. 37-141.00R.

Mao, George W.; and Sabation, Anthony, to Gould Inc. Lead-acid storage battery capable of activation by the addition of electrolyte. 3,948,680, Cl. 136-26.000.

Maranci, Arutun: *See—*
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Marathon Oil Company: *See—*
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Duke, Roy B., 3,948,968.

Marchadour, Jean C. Feed mechanism for feeding a product to a gauging device of a gauging and canning machine. 3,948,421, Cl. 222-240.000.

Mares, Milos: *See—*
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Marine and Industrial Developments Limited: *See—*
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Mark, Arthur M.: *See—*
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Mark, Victor, to General Electric Company. Flame retardant polycarbonate composition. 3,948,851, Cl. 260-45.8RW.

Markowitz, Raymond S., to American Electronic Laboratories, Inc. Frequency scanning means and method. 3,949,312, Cl. 328-137.000.

Marks, Alfred F., to Diamond Shamrock Corporation. Flowable aqueous composition of water-insoluble pesticide. 3,948,636, Cl. 71-112.000.

Marshall, Don J. Fluid pressure amplifier. 3,948,051, Cl. 60-542.000.

Marshall, Don J. Tire removing tool. 3,948,306, Cl. 157-1.260.

Marshall, Hamilton W., Jr.: *See—*
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Martahus, Donald J.: *See—*
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Martens, Henry J.; and Vandebult, Jan, to I. D. Engineering, Inc. Anti-theft fastening device and tool for releasing same. 3,947,930, Cl. 24-155.0BR.

Martikainen, Kaarlo, to Oy Wartsila AB. Cylinder lock. 3,948,065, Cl. 70-1.500.

Martin, Daniel B.: *See—*
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Martin, David James Reginald, to Coal Industry (Patents) Ltd. Radiating transmission lines. 3,949,329, Cl. 333-84.00L.

Martin, David Joseph, to BICC Limited. Optical fibre connector. 3,948,582, Cl. 350-96.00C.

Martin, Jacques Lucien Joseph, to Societe Anonyme dite: R.K.S. Bearings. 3,948,578, Cl. 308-214.000.

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Martz, Lyle F., to Westinghouse Electric Corporation. Combined cycle electric power plant and a gas turbine and afterburner having coordinated fuel transfer. 3,948,043, Cl. 60-243.000.

Marubishi Yuka Kogyo Kabushiki Kaisha: *See—*
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Maruyama, Yoshiharu: *See—*
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Marx, John W.; and Short, James N., to Phillips Petroleum Company. Opalescent polymer compositions. 3,948,845, Cl. 260-31.2MR.

Marzocchi, Alfred; and Janetos, Nicholas S., to Owens-Corning Fiberglas Corporation. Fiber reinforced elastomers. 3,949,141, Cl. 428-378.000.

Masanek, Juergen: *See—*
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Maschinenfabrik Hasenclever GmbH: *See—*
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Maschmeyer, Lambert: *See—*
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Maslenikow, Andrey. Life-saving appliance. 3,947,908, Cl. 9-318.000.
Mason, Charles F.; and Cox, Merle C., to Esterline Corporation. Multi-point graph and character print apparatus. 3,949,408, Cl. 346-62.000.
Mason, John R., to Dracon Industries. Universal cable rack. 3,948,473, Cl. 248-49.000.
Mason, Leonard; and Anderson, Clifford. Drilling string shock-absorbing tool. 3,949,150, Cl. 175-321.000.
Massa, Donald P.: *See—*
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Massa, Frank; and Massa, Donald P., to Dellorfano, Fred M., Jr.; and Massa, Donald P., Trustees of the Stoneleigh Trust u/d/t December 4, 1973. Dual electroacoustic transducers. 3,949,349, Cl. 340-10.000.
Massachusetts Institute of Technology: *See—*
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Flemings, Merton C.; Mehrabian, Robert; and Spencer, David B., 3,948,650.
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Matsubara, Isamu, to Yoshida Kogyo Kabushiki Kaisha. Dual sash window assembly with weathertight sealing means. 3,947,998, Cl. 49-209.000.
Matsubara, Itsuo: *See—*
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Matsushita, Izumi; Sugiyama, Takayasu; Sumimoto, Masakatsu; and Honjo, Osamu, to Nippon Steel Corporation. Method for manufacturing cold rolled, non-directional electrical steel sheets and strips having a high magnetic flux density. 3,948,691, Cl. 148-112.000.
Matsushita, Katsunobu: *See—*
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Matsuzawa, Toshiaki: *See—*
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Mattei, Anthony, to Ford Motor Company. Digital click removal and squelch control circuit for an FM receiver. 3,949,301, Cl. 325-348.000.
Mattes, A.: *See—*
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Matthews, Joseph E. Multiple point securing cleat. 3,948,203, Cl. 114-218.000.
Matthews, Walter Sidney, III: *See—*
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Maurer, Gerhard; and Geiger, Fritz, to Zahnradfabrik Friedrichshafen AG. Control system for hydraulic coupling. 3,948,146, Cl. 91-411.00A.
Maurer, Helmut: *See—*
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Maurice, Harvey W.; and Pearce, Jai K., to Pennsylvania Engineering Corporation. Steel making vessel with dust recycling method and means. 3,948,644, Cl. 75-25.000.
Maute, Charles J. Control apparatus for electrical devices. 3,949,241, Cl. 307-141.000.
Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See—*
Liebl, Helmuth, 3,949,221.
Maxwell, Kenneth H., to Xerox Corporation. Method for the preparation of photoconductive CdSSe. 3,948,656, Cl. 96-1.500.
Maxwell, Robert Arthur; and Walton, Eric, to Burroughs Wellcome Co. Substituted guanidine compounds as antifibrillatory agents. 3,949,089, Cl. 424-326.000.
Mayer, James R., to Gardner-Denver Company. Hydraulic accumulator. 3,948,288, Cl. 138-30.000.
Mayer, Rolf, to Robert Bosch G.m.b.H. Coating apparatus. 3,948,212, Cl. 118-50.000.
Maynard, John T.; and Young, Christopher, to Armor Elevator Company, Inc. Transportation system with decelerating control. 3,948,357, Cl. 187-29.00R.
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McBride, John Joseph, to Du Pont de Nemours, E. I., and Company. Support structures for fixed bed flow reactors. 3,949,109, Cl. 428-36.000.
McCain, Lou M. Hair roller dispenser. 3,948,417, Cl. 221-135.000.
McCarthy, Michael J.: *See—*
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McCaul, Edward W., to Jervis B. Webb Company. Overhead power and free conveyor system. 3,948,186, Cl. 104-172.00S.
McChesney, Charles Edmund; McHenry, Robert J.; and Wachtel, James Alan, to American Can Company. Blown thermoplastic bottle and method for making same. 3,949,038, Cl. 264-89.000.
McClaskey, Boyd M.; and Smith, John F., to Narco Scientific Industries, Inc. Code and generating means for avionics communciations synthesizer. 3,949,296, Cl. 325-17.000.
McClaskey, Boyd M., to Narco Scientific Industries, Inc. Fractional megahertz counter for improved digital synthesizer. 3,949,304, Cl. 325-421.000.
McClaskey, Boyd M.; and Smith, John F., to Narco Scientific Industries, Inc. Digital synthesizer. 3,949,305, Cl. 325-421.000.
McCollum, John D.; and Quick, Leonard M., to Standard Oil Company. Process for recovering and upgrading hydrocarbons from oil shale and tar sands. 3,948,754, Cl. 208-11.0LE.
McCollum, John D.; and Quick, Leonard M., to Standard Oil Company. Process for recovering and upgrading hydrocarbons from oil shale and tar sands. 3,948,755, Cl. 208-11.0LE.
McCombs, Frank Paul: *See—*
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McCoy, David R., to Texaco Inc. Liquid phase chlorination of normal paraffins. 3,948,741, Cl. 204-163.00R.
McCoy, David R., to Texaco Inc. Dioxolane derivatives having surfactant properties. 3,948,953, Cl. 260-340.900.
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McDaniel, Robert F.; and Schaefer, John O., to International Business Machines Corporation. Printer with non return to home rack shift selection mechanism. 3,948,381, Cl. 197-18.000.
McDonnell Douglas Corporation: *See—*
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McDowell, James A. Disposable ash receptacle. 3,948,278, Cl. 131-235.00R.
McEvoy Oilfield Equipment Co.: *See—*
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McFarland, James W., to Pfizer Inc. Substituted quinoxaline-2-carboxamide 1,4-dioxides. 3,948,911, Cl. 260-250.0QN.
McGinnis, Gerald E.: *See—*
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McGuire, Thomas R.: *See—*
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McKay, Thomas L.; Blair, James K.; and Howard, Harold R., to Corlok Corporation. One-piece blind nut assembly. 3,948,142, Cl. 85-70.000.
McLane, Merle. Swimming equipment. 3,947,906, Cl. 9-301.000.

McMahon, Matthew A., to Texaco Inc. Oxidation of hydrocarbons in the presence of synergistic combination of initiators. 3,948,992, Cl. 260-586.00P.
McNeil, Harold L., to Temple Baptist Church, a part interest. Round trampoline. 3,948,515, Cl. 272-65.000.
Meacham, George B. K., to Eaton Corporation. Controlled flow fluid supply for occupant restraint systems. 3,948,540, Cl. 280-150.0AB.
Mead Johnson & Company: *See—*
Wilke, George A.; Henderson, Norman C.; Stansell, Stanley M.; and McCrady, Paul E., 3,948,264.
Means, James E.; and Anderson, Matthew E., to United States of America, Navy. Semi-active electro-optical bomblet fuze. 3,948,182, Cl. 102-70.20P.
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Meek, William H., to Ferro Corporation. Anti-microbial compounds of 2', 4' substituted anilides of substituted nitrosalicylic acid for quadruped animals. 3,949,075, Cl. 424-230.000.
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Meier, Henry A., Jr., to Buffalo Forge Company. Machine tool. 3,948,135, Cl. 83-572.000.
Meinhardt, Norman Anthony, to Lubrizol Corporation, The. Dispersant compositions. 3,948,800, Cl. 252-356.000.
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Melcher, Byron; and Carlson, Alden J., to Warwick Electronics Inc. Electronic synthesizer with variable/preset voice control. 3,948,139, Cl. 84-1.190.
Melchior, Frederick C. Lubricating and sealing system for internal combustion engines. 3,948,241, Cl. 123-190.00C.
Meng, Karl: *See—*
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Merkle, Roland; Rapp, Wolfgang; and Noltemeyer, Friedrich, to Daimler-Benz Aktiengesellschaft. Installation of an exhaust gas turbo-charger at an internal combustion engine. 3,948,052, Cl. 60-605.000.
Messer Greisheim GmbH: *See—*
Auth, Franz; and Spahn, Walter, 3,948,384.
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Metabowerke KG Closs, Rauch & Schnizler: *See—*
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Metcalf, Silas L., to Outboard Marine Corporation. Mounting arrangement for small outboard motors. 3,948,472, Cl. 248-4.000.
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Meyer, Gerald, to U.S. Philips Corporation. Shaving head for dry-shavers. 3,947,961, Cl. 30-41.000.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. Pentahydroqunolizine derivatives. 3,948,923, Cl. 260-294.900.
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Meyers, Cal Yale; Matthews, Walter Sidney, III; and Malte, Ashok M., to Southern Illinois University Foundation. Process for producing aryl alpha-haloalkyl sulfones. 3,949,001, Cl. 260-607.00A.
Micallef, Lewis A., to Leeds and Micallef. Closure with integral cover for lateral spout. 3,948,422, Cl. 222-517.000.
Michael, Henry G. Lighted rotating flying body. 3,948,523, Cl. 273-106.00B.
Michaels, Abraham. Manually operated sweeper. 3,947,912, Cl. 15-79.00R.
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Michalczyk, Georg; and Gluzek, Karl-Heinz, to Deutsche Texaco Aktiengesellschaft. Catalysts for converting maleic anhydride to alpha-butyrolactone. 3,948,805, Cl. 252-447.000.
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Miller, Christian Paul; and Burroughs, Franklin Penn, Sr., to Control Data Corporation. Document turn-around sorter/stacker. 3,948,505, Cl. 271-64.000.
Miller, Harry, to Sperry Rand Corporation. Apparatus for computing the acceleration of an aircraft along its flight path. 3,948,096, Cl. 73-178.00R.
Miller, Henry A., to Airco, Inc. Oxygen-fuel cutting torch. 3,948,496, Cl. 266-23.00P.
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Miller, Thomas Samuel; and White, Malcolm Lunt, to Bell Telephone Laboratories, Incorporated. Method of encapsulating beam lead semiconductor devices. 3,947,952, Cl. 29-578.000.
Mills, B. David, III, to Motorola, Inc. Self-aligned method for integrated circuit manufacture. 3,948,694, Cl. 148-187.000.
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Miselem Asfura, Abraham C.; and Miselem Alfonsa, Abraham A. Rotary syphon. 3,948,283, Cl. 137-152.000.

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Mitchell, Harold. Trowel for masonry steps. 3,947,916, Cl. 15-235.800.

Mitchell, William, to Bush Boake Allen Limited. Hop extract containing potassium isohumulate. 3,949,092, Cl. 426-16.000.

Mitrani, Joseph W., to Crane Packing Company. Bulkhead seal. 3,948,531, Cl. 277-9.000.

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Miyazawa, Shinichi; Miyasaka, Kaneyoshi; and Takeyama, Hidehiko, to Agency of Industrial Science & Technology. Curved surface grinding machine. 3,948,001, Cl. 51-137.000.

Mobil Oil Corporation: *See—*
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Molins Limited: *See—*
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Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, to Bayer Aktiengesellschaft. Pyrazol-5-ones. 3,949,083, Cl. 424-273.000.

Molnar, Richard: *See—*
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Montagne, Jean-Baptiste. Apparatus for hydrotherapeutic treatment. 3,948,252, Cl. 128-66.000.

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Montgomery, William M.: *See—*
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Monthony, James F.; and Siebert, Christopher J., to Bio-Rad Laboratories. Method for gel electrophoresis. 3,948,743, Cl. 204-180.00G.

Moody, Richard J.: *See—*
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Mooradian, Aram: *See—*
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Moore, Carl O.: *See—*
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Moore, Gary Lee, to Owens-Illinois, Inc. Structural reinforced glass-ceramic matrix products and method. 3,948,317, Cl. 165-165.000.

Moore, Guy R., to Welland Forge Limited. Power and free conveyor system. 3,948,187, Cl. 104-250.000.

Moore, Lewis Frank; and Price, George McNair, to Frymaster Corporation. Combustion method using gas flow interaction and heat reflection. 3,948,593, Cl. 431-8.000.

Moorshead, George G., to Western Electric Company, Inc. Apparatus for retaining articles in an array for testing. 3,949,295, Cl. 324-158.00F.

Morcom, Paul J. Fishing tackle container. 3,947,991, Cl. 43-54.50R.

Moreschini, Luciano: *See—*
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Morgenstein, Maurice E.: *See—*
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Mori, Masunori. Machine tool driving apparatus. 3,948,134, Cl. 83-625.000.

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Morita, Koji, to Sony Corporation. Stable pulse width control for astable multivibrators and the like. 3,949,322, Cl. 331-113.00R.

Moriwaki, Masahiro: *See—*
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Morokawa, Shigeru, to Citizen Watch Co., Ltd. Electronic timepiece. 3,948,036, Cl. 58-23.00R.

Morozowich, Walter, to Upjohn Company, The. Substituted tolyl esters of PGA_1. 3,948,970, Cl. 260-468.00D.

Morris, Donald E.; and Tinker, Harold Burnham, to Monsanto Company. Iridium carbonyl complexes. 3,948,962, Cl. 260-429.00R.

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Mosler Safe Company: *See—*
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Moss, Philip Hotchkiss, to Jefferson Chemical Company, Inc. Preparation of 1-methylpiperazine and 1,4-dimethylpiperazine as co-products. 3,948,900, Cl. 260-268.0SY.

Motoda, Kenro. Control lever mechanism in lifting apparatus. 3,948,487, Cl. 254-173.00R.

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Muenz, Wolf-Dieter, to Siemens Aktiengesellschaft. Electric thin-film circuit and method for its production. 3,949,275, Cl. 317-101.00A.

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Muller, Hans. Filter apparatus. 3,948,778, Cl. 210-330.000.

Muller, Helmut: *See—*
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Muller, Robert, to Dr. Ing. H.c.F. Porsche Aktiengesellschaft. Slotted and resilient correcting ring preferably for synchronizing devices in change-speed gears of motor vehicles. 3,948,368, Cl. 192-53.00C.

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Mumma, Harold J., to FMC Corporation. Egg carton conveyor. 3,948,023, Cl. 53-160.000.

Munch, Ralph H., to Monsanto Company. Capacitor and dielectric impregnant composition therefor. 3,948,787, Cl. 252-63.700.

Munch, Ralph H., to Monsanto Company. Dielectric composition for impregnating electrical capacitors. 3,948,788, Cl. 252-63.700.

Murakami, Shigetoshi; and Okada, Hisao, to Sony Corporation. Television signal detecting circuit. 3,949,164, Cl. 178-7.30R.

Murakami, Shinji; and Okuse, Kazuo, to Eiwa Chemical Industrial Co., Ltd. Method of making cellular polymeric shaped articles having relief patterns. 3,949,028, Cl. 264-22.000.

Murase, Genyo; Mineda, Hisahal; and Yamaguchi, Yozo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Energy absorbing steering assembly. 3,948,539, Cl. 280-87.00R.

Murata, Kazuo; and Ashida, Katsuzi, to Yuasa Battery Company Limited. Solution separating and recovering equipment. 3,948,777, Cl. 210-321.00R.

Murata, Takeshi: *See—*
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Murata, Yorihiro, to Carborundum Company, The. Method for production of cellular fused silica. 3,949,030, Cl. 264-43.000.

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Mursula, Arvo. Coupled window with two casings and three panes. 3,947,997, Cl. 49-62.000.

Murthy, Paluri Ramachandra, to Peavey Company. High protein pasta formulation. 3,949,101, Cl. 426-557.000.

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Naarden International, N.V.: *See—*
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Nabih, Ibrahim Mohamed, to Aktiebolaget Astra. New anti-malarial agents. 3,948,920, Cl. 260-288.00A.

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Nagano, Kentaro; Nomaki, Kohji; and Saoyama, Yoshihito, to Asahi Glass Company, Ltd. Process for soldering difficultly solderable material having oxide surface and a solder alloy therefor. 3,949,118, Cl. 427-57.000.

Nagano, Masaaki, to Yutaka Seimitsu Kogyo Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Peritrochoid curved surface generating apparatus. 3,948,144, Cl. 90-20.000.

Nagaoka, Syoji: *See—*
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Nakajima, Toyoshi; Kojima, Keiichi; Nishitani, Hiroshi; and Inui, Toshifumi, to Sumitomo Electric Industries, Ltd. Specially formed shrinkable tube, its manufacturing method and the articles using such tube. 3,949,110, Cl. 428-36.000.

Nakanishi, Susumu, to Pfizer Inc. 2-Hydroxymethyl-3-hydroxy-6-(1-hydroxy-2-t-butylaminoethyl)pyridine preparation and intermediate compounds. 3,948,919, Cl. 260-296.00R.

Nakanishi, Takashi: *See—*
Kokubo, Takamasa; Sakai, Mikio; Inada, Tomohide; Nakanishi, Takashi; Seki, Hiroshi; Yaegashi, Hazime; Izumi, Kouji; Matsumura, Morio; Nomura, Takao; and Kato, Hisakazu, 3,947,943.

Nakayama, Masatoki; Shikoh, Saburo; Nohgata, Hiroshi; Kimiya, Yasuo; Yada, Hiroshi; Nisida, Sin-ichi; and Ogai, Mikio, to Nippon Steel Corporation; and Furukawa Electric Co., Ltd., The. Method for welding between metallic body and precision tube body. 3,949,186, Cl. 219-121.0EM.

Nakshbendi, Ghassan F. Method for treating air containing odoriferous substances. 3,949,056, Cl. 423-210.000.

Nalbach, John C., to Colgate-Palmolive Company. Apparatus for orienting and feeding articles. 3,948,386, Cl. 198-287.000.

Nalco Chemical Company: *See—*
Krillic, Hobart M.; and Leary, Edward F., 3,948,784.
Schaefer, David P.; and Pluta, Linda J., 3,948,799.
Watsen, Robert G.; and Troscinski, Edwin S., 3,948,792.
Wolfson, Leonard L., 3,949,086.

Namiki, Ryoichi, to Ricoh Co., Ltd. Fixing toner images in electrophotography. 3,948,215, Cl. 118-60.000.

Narco Scientific Industries, Inc.: *See—*
McClaskey, Boyd M.; and Smith, John F., 3,949,296.
McClaskey, Boyd M., 3,949,304.
McClaskey, Boyd M.; and Smith, John F., 3,949,305.

Narimatsu, Akihisa: *See—*
Makino, Yoshimi; Narimatsu, Akihisa; and Horie, Masao, 3,949,345.

Narkis, Moshe: *See—*
Kacir, Lior; and Narkis, Moshe, 3,948,833.

Nartowski, Andre; and Henault, Claude, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Method of regulating the fuel supply of internal combustion engines. 3,948,236, Cl. 123-124.00R.

Narushima, Uraji; Nishimoto, Kazuhiko; and Sasakuma, Shinji, to Nippon Paint Co., Ltd. Surface treatment composition for metal working. 3,948,836, Cl. 260-28.50A.

Naryshkin, Jury Anatolievich: *See—*
Cherednichenko, Vladimir Semenovich; Orlov, Gennady Ivanovich; and Naryshkin, Jury Anatolievich, 3,948,495.

Nash, Charles F.: *See—*
Berman, Irwin; Nash, Charles F.; Henschel, Robert; Schroeder, Joseph W.; Mack, Anthony M.; and Alfano, Bernardino M., 3,948,090.

National Can Corporation: *See—*
O'Connell, Richard E., 3,948,171.

National Research Development Corporation: *See—*
Broadway, Alexander Richard William; Fong, William; and Rawcliffe, Gordon Hindle, 3,949,253.

National Semiconductor Corporation: *See—*
Reyling, George F., Jr.; and Beall, William H., 3,949,370.

Needle Industries Limited: *See—*
Beaman, Roger John, 3,948,391.

Neff, Ted. Multi-purpose electrical wiring tools. 3,947,905, Cl. 7-5.600.

Negi, Takafusa, to Nippon Gakki Seizo Kabushiki Kaisha. Ski-equipped crutch. 3,948,535, Cl. 280-11.37B.

Negishi, Hirokazu: *See—*
Yoshikawa, Hideo; Tosaka, Umi; Matsuo, Takehiko; and Negishi, Hirokazu, 3,948,657.

Neidhard, Horst: *See—*
Wessel, Wolf; Linder, Ernst; Maurer, Helmut; and Neidhard, Horst, 3,948,081.

Nelson, Ethelyn B. Combines mop or broom and scraper. 3,947,913, Cl. 15-111.000.

Nelson, Gerald B., to Papakube Corporation. Stable blocks formed of shredded paper-like material. 3,949,036, Cl. 264-109.000.

Nelson, James P.: *See—*
Knobloch, James O.; Nelson, James P.; and Harkness, John B. L., 3,948,982.

Nelson, Larry Allan, to Tektronix, Inc. Sequential color and memory decoder. 3,949,417, Cl. 358-14.000.

Nercessian, Sarkis, to Forbro Design Corporation. Transient absorber circuit for regulated power supplies. 3,949,271, Cl. 317-16.000.

Nereinigte Osterreichische Eisen- und Stahlwerk - Alpine Montan Aktiengesellschaft: *See—*
Riegler, Ernst; and Schmidt, Manfred, 3,948,576.

Nermes, Esko Olavi; and Talonen, Timo Tapani, to Outokumpu Oy. Process and device for flash smelting sulphide ores and concentrates. 3,948,639, Cl. 75-9.000.

Nesbitt, Dale D.; and Teagarden, LeRoy O., to Singer Company, The. Data terminal printing assembly. 3,948,382, Cl. 197-165.000.

Nesbitt, Stephen J.: *See—*
Knapp, Edward M.; and Nesbitt, Stephen J., 3,948,224.

Nestler, Heinz: *See—*
Barfurth, Dieter; Dittrich, Werner; and Nestler, Heinz, 3,948,964.

Neuers, Lucien, to Thomson-CSF. Power supply system for selectively propelling a vehicle and for driving equipment on board the vehicle. 3,949,237, Cl. 290-40.00B.

Neumunstersche Maschinen-und Apparatebau GmbH: *See—*
Vehling, Ernst; and Paulsen, Rolf, 3,948,127.

Newmeyer, Reed A. Sensor for vehicular traffic data accumulating systems. 3,949,355, Cl. 340-38.00R.

NHK Spring Co., Ltd.: *See—*
Hirano, Takeshi, 3,948,498.

Nichols, Gust: *See—*
Buckler, Robert Thomas; Hartzler, Harold Eugene; Hayao, Shin; and Nichols, Gust, 3,948,929.
Buckler, Robert Thomas; Hartzler, Harold Eugene; Hayao, Shin; and Nichols, Gust, 3,948,930.
Buckler, Robert Thomas; Hartzler, Harold Eugene; Hayao, Shin; and Nichols, Gust, 3,948,932.

Nidola, Antonio: *See—*
Bianchi, Giuseppe; De Nora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, 3,948,751.

Niebylski, Leonard M., to Ethyl Corporation. Fuel compositions containing glycerides for reducing the plugging of exhaust gas catalysts. 3,948,618, Cl. 44-66.000.

Nield, Eric: *See—*
Feasey, Ronald George; Nield, Eric; and Rose, John Brewster, 3,948,857.

Niethammer, Kurt: *See—*
Grabner, Christian; Weber, Ludwig; and Niethammer, Kurt, 3,948,562.

Nihyakumen, Kouzi; Yokoyama, Taizo; Ueda, Yasuo; Kamezawa, Yasuteki; and Aizawa, Tatsuo, to Mita Industrial Company Ltd. Process for diazo-type multicolor reproduction. 3,948,661, Cl. 96-49.000.

Niimi, Itaru; Kaneko, Yasuhisa; Komiyama, Yoshiro; Hashimoto, Masaoki; and Ogawa, Hitoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Manufacturing method of metallic honeycomb structures. 3,948,431, Cl. 228-173.000.

Niimura, Nagato; Kinoshita, Ichiro; Maruyama, Yoshiharu; Kurihara, Ryuichi; Yoshihara, Morito; Suzuki, Toshio; Hashimoto, Yujiro; and Imazawa, Masahiro, to Hitachi Cable Limited; and Nippon Telegraph & Telephone Public Corporation. Floor cable with folded portions for making branch connections and method of producing same. 3,949,156, Cl. 174-72.00R.

Niinomi, Naoyuki, to Nippon Gakki Seizo Kabushiki Kaisha. Pitch determining voltage signal generating circuit for a voltage controlled type electronic musical instrument. 3,948,137, Cl. 84-1.010.

Niles Parts Company Limited: *See—*
Higashi, Manabu, 3,949,358.

Nippon Chemiphar Co., Ltd.: *See—*
Sakai, Katsumi; Iwaki, Riitiro; Taoka, Katsuki; Nakajima, Hiroshi; and Yamada, Yasuo, 3,948,899.

Nippon Coinco Co., Ltd.: *See—*
Hayashi, Yukichi; Yokoda, Yutaka; Tamura, Masayuki; Kobayashi, Shinichi; Akai, Kazuyuki; and Sakai, Seiu, 3,948,377.

Nippon Electric Company Limited: *See—*
Kokubo, Takamasa; Sakai, Mikio; Inada, Tomohide; Nakanishi, Takashi; Seki, Hiroshi; Yaegashi, Hazime; Izumi, Kouji; Matsumura, Morio; Nomura, Takao; and Kato, Hisakazu, 3,947,943.
Miyazaki, Suehiro; Matsubara, Itsuo; Moriwaki, Masahiro; Sakaguchi, Mitsuhito; and Nishida, Nobuo, 3,949,235.
Yano, Takeshi; Futami, Takehiro; Kanazawa, Seiichiro; and Hayashi, Tetsuo, 3,949,326.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Negi, Takafusa, 3,948,535.
Niinomi, Naoyuki, 3,948,137.

Nippon Kogaku K.K.: *See—*
Shimizu, Terushige, 3,948,456.

Nippon Kokan Kabushiki Kaisha: *See—*
Aramaki, Keiichi, 3,948,072.

Nippon Paint Co., Ltd.: *See—*
Narushima, Uraji; Nishimoto, Kazuhiko; and Sasakuma, Shinji, 3,948,836.

Nippon Pneumatic Manufacturing Co., Ltd.: *See—*
Hiraoka, Masaaki; and Terada, Hiromu, 3,948,328.

Nippon Steel Corporation: *See—*
Matsushita, Izumi; Sugiyama, Takayasu; Sumimoto, Masakatsu; and Honjo, Osamu, 3,948,691.
Nakayama, Masatoki; Shikoh, Saburo; Nohgata, Hiroshi; Kimiya, Yasuo; Yada, Hiroshi; Nisida, Sin-ichi; and Ogai, Mikio, 3,949,186.

Nippon Telegraph & Telephone Public Corporation: *See—*
Miyazaki, Suehiro; Matsubara, Itsuo; Moriwaki, Masahiro; Sakaguchi, Mitsuhito; and Nishida, Nobuo, 3,949,235.
Niimura, Nagato; Kinoshita, Ichiro; Maruyama, Yoshiharu; Kurihara, Ryuichi; Yoshihara, Morito; Suzuki, Toshio; Hashimoto, Yujiro; and Imazawa, Masahiro, 3,949,156.

Nippondenso Co., Ltd.: *See—*
Kurii, Masaaki; Kobari, Kiyoshi; and Yanagi, Osamu, 3,949,236.

Nisbet, Arthur Robert, to Delanair Limited. Ventilation and/or air temperature control apparatus. 3,948,312, Cl. 165-16.000.

Nishibata, Atsushi: *See—*
Inamoto, Yoshiaki; Kitano, Hisao; Tanaka, Yoshiaki; Tanimoto, Fumio; Nishibata, Atsushi; and Handa, Susumu, 3,948,966.

Nishida, Nobuo: *See—*
Miyazaki, Suehiro; Matsubara, Itsuo; Moriwaki, Masahiro; Sakaguchi, Mitsuhito; and Nishida, Nobuo, 3,949,235.

Nishimoto, Kazuhiko: *See—*
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Nishimura, Haruki; Shimizu, Masanao; Uno, Hitoshi; Hirooka, Tetsuo; Masuda, Yoshinobu; and Kurokawa, Mikio, to Dainippon Pharmaceutical Co., Ltd. 3-Substituted-1,2-benzisoxazoles and pharmaceutically acceptable acid addition salts thereof. 3,948,928, Cl. 260-307.0DA.

Nishimura, Naoto: *See—*
Fujishima, Tooru; Nishimura, Naoto; Kuwahara, Kazuyoshi; Ozaki, Shinji; and Fujita, Masahiko, 3,949,161.

Nishimura, Yoshinori, to Sony Corporation. Time controlled switching arrangement for two timer radio receiver. 3,949,303, Cl. 325-396.000.

Nishino, Yoshinori: *See—*
Goto, Toshiho; Nishino, Yoshinori; and Yamashita, Yasukazu, 3,948,292.

Nishitani, Hiroshi: *See—*
Nakajima, Toyoshi; Kojima, Keiichi; Nishitani, Hiroshi; and Inui, Toshifumi, 3,949,110.

Nisida, Sin-ichi: *See—*
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Nissan Motor Co., Ltd.: *See—*
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Fukumori, Yukitsugu; and Katsumata, Masaaki, 3,948,570.
Hosaka, Akio, 3,949,357.
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Nitto Electric Industrial Co., Ltd.: *See—*
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Nixdorf Computer AG: *See—*
Wefers, Norbert; Unglaube, Uwe; and Schwarzkopf, Joachim, 3,949,195.

NL Industries, Inc.: *See—*
Manigault, Edward L., 3,948,670.

Noble, Peter: *See—*
Eckersley, John Stanley; and Noble, Peter, 3,948,499.

Nogradi, Mihaly: *See—*
Feuer, Laszlo; Nogradi, Mihaly; Gottsegen, Agnes; Vermes, Borbala; Streliszky, Janos; Wolfner, Andreas; Farkas, Lorant; Antus, Sandor; and Kovaks, Maria, 3,949,085.

Noguchi, Koichi: *See—*
Iwamoto, Minoru; and Noguchi, Koichi, 3,948,510.

Noguchi, Yoshio: *See—*
Otani, Seiya; Umemoto, Takeshi; Kanaoka, Masazumi; Akita, Shoichi; Ogawa, Koji; Noguchi, Yoshio; and Fujita, Hiroshi, 3,948,775.

Nohgata, Hiroshi: *See—*
Nakayama, Masatoki; Shikoh, Saburo; Nohgata, Hiroshi; Kimiya, Yasuo; Yada, Hiroshi; Nisida, Sin-ichi; and Ogai, Mikio, 3,949,186.

Nolan, James Anthony; and Tonge, Howard, to Baron, Charles. Carton manufacture. 3,948,152, Cl. 93-49.00M.

Noltemeyer, Friedrich: *See—*
Merkle, Roland; Rapp, Wolfgang; and Noltemeyer, Friedrich, 3,948,052.

Nomaki, Kohji: *See—*
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Nomura, Takao: *See—*
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Nomura, Toshio: *See—*
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Nongbri, Govanon: *See—*
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Nonnenmacher, Gerhard: *See—*
Fricke, Hans-Jurgen; Nonnenmacher, Gerhard; Robeller, Walter; and Kersten, Gunter, 3,948,149.

Nopper, Peter: *See—*
Zumbach, Bruno; Nopper, Peter; and Brunner, Mathias, 3,948,082.

Norman, Joseph Rangott; and Wood, David Graham, to Unisearch Limited. Absorbent and the process for producing it. 3,948,809, Cl. 252-463.000.

Normand, Floyd L.: *See—*
Donaldson, Darrell J.; Normand, Floyd L.; Drake, George L., Jr.; and Reeves, Wilson A., 3,949,108.

Norsk Hydro a.s: *See—*
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North Electric Company: *See—*
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Northern Electric Company, Limited: *See—*
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Northern Natural Gas Company: *See—*
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Noshiro, Atsumi; and Inoue, Yoshio, to Dai Nippon Printing Company Limited. Dry planographic printing ink composition. 3,948,827, Cl. 260-3.300.

Novosad, Eugene W., to Crane Packing Company. Composite ring made of press fitted parts and method of assembling. 3,948,533, Cl. 277-81.00R.

Nuka, Michio: *See—*
Odagiri, Shigeyoshi; Nuka, Michio; Shinba, Norikatsu; Baba, Mikito; and Iizuka, Yoshikatsu, 3,949,280.

Numba, Munehiro, to Aida Engineering Limited. Press line system. 3,948,162, Cl. 100-45.000.

Nurnberg, Richard K.: *See—*
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Oak Industries, Inc.: *See—*
Court, Patrick R. J., 3,949,308.

Oakland Plastics Corporation: *See—*
Cook, James M., III; and Tazzia, Edward K., 3,948,190.

Obermeier, Albert Anthony; and Thompson, James Edward, to Deere & Company. Seat backrest having an adjustable lumbar support. 3,948,558, Cl. 297-284.000.

Obermeier, Albert Anthony; and Thompson, James Edward, to Deere & Company. Seat having an adjustable back. 3,948,560, Cl. 297-355.000.

Ochiai, Tomoyoshi; Kuze, Shinichi; and Hirano, Ikuro, to Kabushiki Kaisha Meidensha; and Tokyo Electric Power Co., Ltd., The. Instrument transformer with cone-shaped insulating layer. 3,949,290, Cl. 323-44.00R.

Ochsenfeld, Wilhelm; and Schmieder, Helmut, to Gesellschaft fur Kernforschung m.b.H. Method of stripping plutonium from tributyl phosphate solution which contains dibutyl phosphate-plutonium stable complexes. 3,949,049, Cl. 423-10.000.

O'Connell, Richard E., to National Can Corporation. Method for printing multicolor halftone images on cylindrical objects. 3,948,171, Cl. 101-211.000.

O'Connor, Joseph M.; and Pasternak, Stephen F., to Peerless of America, Incorporated. Method of making a heat exchanger. 3,947,941, Cl. 29-157.30B.

O'Connor, Thomas J. Method of making cutting master for erosion machining. 3,948,620, Cl. 51-298.00A.

Odagiri, Shigeyoshi; Nuka, Michio; Shinba, Norikatsu; Baba, Mikito; and Iizuka, Yoshikatsu, to Mitsumi Electric Co., Ltd. Miniature variable capacitor and method of manufacture. 3,949,280, Cl. 317-253.000.

Odom, James T., to Avco Corporation. Pulse width decoder. 3,949,199, Cl. 235-92.0DM.

Offermanns, Heribert: *See—*
Asinger, Friedrich; Offermanns, Heribert; and Ghyczy, Miklos, 3,948,984.

Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.): *See—*
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Ogai, Mikio: *See—*
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Ogawa, Hitoshi: *See—*
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Ogawa, Koji: *See—*
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Ogawa, Yoshikatsu; Hisada, Haruhiko; Kasahara, Takeshi; and Kizaki, Fumihiko, to Marubishi Yuka Kogyo Kabushiki Kaisha. Process for the production of flame-retardant polyurethanes. 3,948,860, Cl. 260-77.5AR.

Ogino, Kenzi: *See—*
Yamamoto, Katsuro; Sato, Toru; and Ogino, Kenzi, 3,948,198.

Ohgami, Kazuhiko: *See—*
Ojima, Shin; Ohgami, Kazuhiko; and Nakaba, Kanbun, 3,949,180.

Ohkoshi, Akio; Kaji, Takeo; and Saito, Tsunenari, to Sony Corporation. Cathode ray tube with compensation for beam landing spot distortion due to wide-angle beam deflection. 3,949,262, Cl. 313-412.000.

Ohl, Wolf: *See—*
Ball, Herbert; and Ohl, Wolf, 3,949,177.

Ohlendorf, Rolf: *See—*
Abthoff, Jorg; Kirsch, Reinhard; Ohlendorf, Rolf; and Ruf, Franz, 3,948,229.

Ohms, Edward J.; and Peterson, Wayne A., to Caterpillar Tractor Co. Dual motor hydrostatic drive system. 3,948,049, Cl. 60-426.000.

Ohmura, Yoshimoto: *See—*
Makino, Yoshimi; Hara, Hideo; and Ohmura, Yoshimoto, 3,949,346.

Ohno, Isao: *See—*
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Ohtomo, Koichiro: *See—*
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Oji Yuka Goseishi Kabushiki Kaisha: *See—*
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Ojima, Shin; Ohgami, Kazuhiko; and Nakaba, Kanbun, to Hoshidenki-Seizo Kabushiki Kaisha. Jack. 3,949,180, Cl. 200-51.100.

Okada, Hisao: *See—*
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Yoshida, Susumu; and Okada, Hisao, 3,949,403.

Okada, Takeshi; Sonoda, Sanenobu; Yamamoto, Katsumi; and Fujimori, Masahiro, to Nitto Electric Industrial Co., Ltd. Method of making plastic sealed cavity molded type semi-conductor devices. 3,947,953, Cl. 29-588.000.

Okamoto, Hiroyuki: *See—*
Okuyama, Toshiaki; Okamoto, Hiroyuki; Hori, Takamasa; Hayashida, Hiroshi; and Honbu, Mitsuyuki, 3,949,283.

Okamoto, Nobukazu, to Toa Nenryo Kogyo Kabushiki Kaisha. Ashless detergent dispersant for hydrocarbon oils. 3,948,909, Cl. 260-247.20A.

Okaniwa, Hiroshi: *See—*
Sobajima, Shigenobu; Okaniwa, Hiroshi; Chiba, Hiyoshi; and Takagi, Norio, 3,949,409.

Okaniwa, Tetsuo; and Abeta, Sadaharu, to Sumitomo Chemical Co., Ltd. Black-dyeing process of basic dyeable polyester fibers. 3,948,598, Cl. 8-41.00C.

Okuda, Kinnosuke: *See—*
Tominaga, Mitsuharu; Mimori, Mamoru; and Okuda, Kinnosuke, 3,948,791.

Okuse, Kazuo: *See—*
Murakami, Shinji; and Okuse, Kazuo, 3,949,028.

Okuyama, Hiroshi; Kobayashi, Teruo; and Hibino, Noburo, to Fuji Photo Film Co., Ltd. Polyethylene terephthalate film for use as support for radiographic film. 3,948,664, Cl. 96-84.00R.

Okuyama, Toshiaki; Okamoto, Hiroyuki; Hori, Takamasa; Hayashida, Hiroshi; and Honbu, Mitsuyuki, to Hitachi, Ltd. Control system for brushless motor. 3,949,283, Cl. 318-138.000.

Old Phoenix National Bank, executor: *See—*
Lowey, Francis J., deceased, 3,948,364.

Older, R. Robert. Tape program location method and means. 3,949,420, Cl. 360-72.000.

Olin Corporation: *See—*
Pryor, Michael J.; Shapiro, Stanley; Tyler, Derek E.; and Shabarack, John, 3,948,432.

Olschewski, Armin: *See—*
Ernst, Horst; Brandenstein, Manfred; and Olschewski, Armin, 3,948,370.

Olsen, Charles R. Electropyrotechnic link. 3,948,143, Cl. 89-1.00B.

Olson, Larry Alan, to RCA Corporation. Method of tuning a tunable microelectronic LC circuit. 3,947,934, Cl. 29-25.420.

Olson, Richard L.: *See—*
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Olympus Optical Co., Ltd.: *See—*
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Omdal, Bjarne; and Skaadel, Johs., to Norsk Hydro a.s. Method and apparatus for spreading granular material, especially fertilizer. 3,948,443, Cl. 239-8.000.

Omori, Shigenori; and Yoshida, Makoto, to Yoshida Kogyo Kabushiki Kaisha. Method and apparatus for coupling two single rows of continuous elements for a slide fastener. 3,947,946, Cl. 29-408.000.

O'Neill, Joseph L., Jr., to Ultronic Systems Corporation. Data storage and processing apparatus including processing of spacer characters. 3,949,377, Cl. 340-172.500.

Onuchko, Ivan Savelievich: *See—*
Yatsenko, Sergei Vasilievich; Kononenko, Vadim Grigorievich; Komnatny, Igor Pavlovich; Stelmakh, Viktor Alexeevich; Schekochikhin, Serafim Vasilievich; Maznichenko, Stanislav Anisimovich; Silichev, Mikhail Karpovich; Lobanov, Vladimir Vladimirovich; Fedchenko, Alexei Ivanovich; Babich, Leonid Petrovich; Akhnazariants, Levon Khachaturovich; Saveliev, Anatoly Semenovich; Merezhro, Vladimir Feofanovich; Vestman, Alexandr Alexandrovich; Strizhenko, Vitaly Evgenievich; Pravdin, Viktor Sergeevich; Fulmakht, Veniamin Veniaminovich; Fitilev, Boris Vasilievich; Evteev, Dmitry Petrovich; Salenek, Alexandr Grigorievich; Dadykin, Georgy Fedotovich; Onuchko, Ivan Savelievich; Golodov, Nikolai Nikitovich; and Kamensky, Jury Alexandrovich, 3,948,131.

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Optron, Inc.: *See—*
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Orchard Corporation of America, The: *See—*
Santurri, Pasco R.; Mumm, Howard W.; Flowers, Robert L.; and Eaton, Robert A., 3,949,133.

Orekhova, Natalya Vsevolodovna: *See—*
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Orlov, Gennady Ivanovich: *See—*
Cherednichenko, Vladimir Semenovich; Orlov, Gennady Ivanovich; and Naryshkin, Jury Anatolievich, 3,948,495.

Oronzio de Nora Impianti Elettrochimici S.p.A.: *See—*
Bianchi, Giuseppe; De Nora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, 3,948,751.
Messner, Georg; and De Nora, Vittorio, 3,948,748.

Oroshnik, William, to SCM Corporation. Synthesis of vitamin A, intermediates and conversion thereof to vitamin A. 3,949,006, Cl. 260-617.00A.

Oscar Mayer & Co. Inc.: *See—*
Borsuk, Alvin; and Johnson, Charles H., 3,948,158.

Ostermeier, Kurt W.; and Josephs, Michael C., to Kimberly-Clark Corporation. Apertured nonwoven webs. 3,949,127, Cl. 428-137.000.

Ostermeier, Kurt W., to Kimberly-Clark Corporation. Product and process for producing a stretchable nonwoven material from a spot bonded continuous filament web. 3,949,128, Cl. 428-152.000.

Otani, Akio: *See—*
Hayashi, Yoshiro; Yamagata, Takeaki; Otani, Akio; Minami, Tadashi; and Aizawa, Kuniomi, 3,949,176.

Otani, Seiya; Umemoto, Takeshi; Kanaoka, Masazumi; Akita, Shoichi; Ogawa, Koji; Noguchi, Yoshio; and Fujita, Hiroshi, to Toray Industries, Inc. Horizontal packed column consisting of multiple chambers with fluid distributors. 3,948,775, Cl. 210-264.000.

Ostby, Donald H.; and Smith, Joseph H. High Temperature Air Filtration System and Method for Foundries. 3,948,623, Cl. 55-96.

Otey, Felix H.; and Mark, Arthur M., to United States of America, Agriculture. Degradable starch-based agricultural mulch film. 3,949,145, Cl. 428-423.000.

Outboard Marine Corporation: *See—*
DuBois, Chester G., 3,948,589.
Lassanske, George G., 3,948,110.
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Nermes, Esko Olavi; and Talonen, Timo Tapani, 3,948,639.

Ovchinnikov, Viktor Sergeevich; Grigorov, Eduard Ivanovich; Magdesian, Arkady Lukyanovich; Bermishev, Andrei Vasilievich; Gorelikov, Vladimir Ivanovich; Utkin, Alexandr Stepanovich; Fedotov, Viktor Konstantinovich; and Volkov, Vladimir Yakovlevich. Cryostat. 3,948,409, Cl. 220-9.00C.

Owen, Harrold D.; Roper, Robert Lee; Smith, J. C.; and Young, James Douglas, to Gearhart-Owen Industries, Inc. Liner and reinforcing swage for conduit in a wellbore and method and apparatus for setting same. 3,948,321, Cl. 166-277.000.

Owens-Corning Fiberglas Corporation: *See—*
Biefeld, Lawrence P.; Foley, Kevin M.; and McCombs, Frank Paul, 3,949,140.
Chase, Kenneth P.; and Stassen, William N., 3,948,673.
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Owens-Illinois, Inc.: *See—*
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Pirooz, Perry P.; Schmid, Anthony P.; and Sturgill, Dennis T., 3,949,153.
Uhlig, Albert R., 3,949,033.
Uhlig, Albert R., 3,949,034.

Owens, Lester J. Apparatus for connecting a prosthesis to a bone. 3,947,897, Cl. 3-2.000.

Oxy Metal Industries Corporation: *See—*
Savary, Antoine; Mouron, Jacques; and Lederrey, Jacques, 3,949,207.

Oxysynthese: *See—*
Coingt, Michel; and Thirion, Pierre, 3,949,063.

Oy Wartsila AB: *See—*
Martikainen, Kaarlo, 3,948,065.

Ozaki, Kazuo: *See—*
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Ozaki, Shinji: *See—*
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Packaging Industries, Inc.: *See—*
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Paclik, George: *See—*
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Pagani, Hermes: *See—*
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Page, Bernard F.: *See—*
Smith, Vernon J.; Smith, Howard M.; and Page, Bernard F., 3,948,511.

Page, Charles M. Advertising and emergency sign. 3,947,986, Cl. 40-67.000.

Page, John S., Jr. Flow controlling safety valve. 3,948,318, Cl. 166-224.00A.

Pages, Michel: *See—*
Brun, Robert; and Pages, Michel, 3,948,781.

Painter, John H. Multiplicative multiplexer. 3,949,171, Cl. 179-15.00R.

Paitchell, Harold, to Hayward Manufacturing Company, Inc. Underwater light. 3,949,213, Cl. 240-26.000.

Palitex Project-Company G.m.b.H.: *See—*
Quast, Christoph, 3,948,032.

Palmer, Willard, to Clevepak Corporation. Dimensionally fixed container divider. 3,948,435, Cl. 229-15.000.

Palmers, Gerard, to Glaverbel-Mecaniver. Process for the manufacture of a glazing unit. 3,948,433, Cl. 228-230.000.

Palmqvist, Fredrik Teodor Emanuel, to Alfa-Laval AB. Method for removing lignin from tall oil. 3,948,874, Cl. 260-97.700.

Palram Plastic Works, Kevutzat Poalim Ltd.: *See—*
Kacir, Lior; and Narkis, Moshe, 3,948,833.

Pantke, Heinz-Dieter; and Pohl, Ulrich, to Thyssen Niederrhein AG Hutten- und Walzwerke. Method of direct reduction of iron ores. 3,948,646, Cl. 75-34.000.

Papakube Corporation: *See—*
Nelson, Gerald B., 3,949,036.

Papanicolaou, John Paul; and Galatis, Telemachus Nicolas, to Marine and Industrial Developments Limited. Storage tanks, particularly for liquified gases. 3,948,406, Cl. 220-9.00F.

Papayoti, Hristo V. Space frame support system. 3,948,012, Cl. 52-263.000.

Paptzun, George J.; and Monnig, Anthony B., to Lunkenheimer Company, The. Rotary ball valve. 3,948,480, Cl. 251-315.000.

Paris, Marcel; and Poinsot, Serge, to Commissariat a l'Energie Atomique. Probe for measuring the level of a liquid. 3,948,100, Cl. 73-290.00R.

Parish, Roger C.: *See—*
Chalupa, William V.; and Parish, Roger C., 3,949,090.

Park, Yong S.: *See—*
Dugan, James A.; and Park, Yong S., 3,949,226.

Parke, Davis & Company: *See—*
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Parker-Hannifin Corporation: *See—*
Bragg, Kenneth R., 3,948,626.

Parker, Jimmy Jay; and Honnold, Darrel Lee, to Deere & Company. Wingfold configuration. 3,948,327, Cl. 172-311.000.

Parker Manufacturing Co.: *See—*
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Parlant, Claude: *See—*
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Agouri, Elias; Mornet, Philippe; Parlant, Claude; and Rideau, Jacques, 3,949,017.

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Pashkurov, Nikolai Grigorievich: *See—*
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Pasquini, Zeno: *See—*
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Pasternak, Israel S.: *See—*
King, Laurence F.; Gaspar, Noel J.; and Pasternak, Israel S., 3,948,759.

Pasternak, Stephen F.: *See—*
O'Connor, Joseph M.; and Pasternak, Stephen F., 3,947,941.

Patchornik, Abraham; and Haviv, Fortuna, to Yeda Research & Development Co. Ltd. Isothiourea substituted cephalosporin derivatives. 3,948,904, Cl. 260-243.00C.

Patrick, Ernest G. Replaceable resilient tire. 3,948,303, Cl. 152-327.000.

Patrick, Roy E.: *See—*
Ayers, Orval E.; and Patrick, Roy E., 3,948,699.
Ayers, Orval E.; and Patrick, Roy E., 3,948,700.

Patterson, Darrell G.: *See—*
Gordon, Michael S.; and Patterson, Darrell G., 3,947,974.

Patterson, Kendall W., to Hercules Incorporated. Process for synthesis of crystalline 2-methacryloyloxyethyltrimethylammonium chloride. 3,948,979, Cl. 260-486.00R.

Pattison, Victor A., to Hooker Chemicals & Plastics Corporation. Treatment of fibrous materials with polymers and copolymers of fluoromethylated dienes. 3,949,112, Cl. 428-262.000.

Patton, Samuel E. Metered parking stall. 3,948,378, Cl. 194-1.00R.

Patton, Tad L., to Exxon Research and Engineering Company. Preparation of imides using CN^- catalysts. 3,948,941, Cl. 260-326.00N.

Paul, Fred R., Jr.: *See—*
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Paulsen, Rolf: *See—*
Vehling, Ernst; and Paulsen, Rolf, 3,948,127.

Pavlik, Norman M.; and Cunningham, James W., to Westinghouse Electric Corporation. Molded magnetic cores utilizing cut steel particles. 3,948,690, Cl. 148-31.550.

Pawelko, Karl-Heinz: *See—*
Deutsch, Reinhard; Rudolph, Manfred; Pawelko, Karl-Heinz; and Rudszinat, Willy, 3,948,020.

Pawlek, Franz. Hydrometallurgical process for extracting copper from chalcopyrite or bornite concentrates. 3,949,051, Cl. 423-28.000.

Pearce, Jai K.: *See—*
Maurice, Harvey W.; and Pearce, Jai K., 3,948,644.

Pearce, Peter J.; Cowan, Toby J.; and Jurey, Mark E., to Synestructics, Inc. Modular kite system. 3,948,471, Cl. 244-153.00R.

Peavey Company: *See—*
Murthy, Paluri Ramachandra, 3,949,101.

Pecar, Joseph A., to United States of America, Navy. Non-linear processor for anti-jam operation. 3,949,309, Cl. 325-473.000.

Pech, Gunther: *See—*
Kratochvil, Egon; and Pech, Gunther, 3,948,591.

Pecis, Egidio. Machine for the working of cereals for the nourishment of cattle. 3,948,451, Cl. 241-154.000.

Pedersen, Pauli Dennis, to Ingenjorsfirman Besam Aktiebolag. Hydraulic door openers. 3,948,000, Cl. 49-340.000.

Pederzini, Renzo, to Honeywell Information Systems, Inc. Input-output system having cyclical scanning of interrupt requests. 3,949,371, Cl. 340-172.500.

Peelman, Harold E.: *See—*
Langford, Obie M.; and Peelman, Harold E., 3,949,232.

Peerless of America, Incorporated: *See—*
O'Connor, Joseph M.; and Pasternak, Stephen F., 3,947,941.

Pegrassi, Lorenzo: *See—*
Suchowsky, Giselbert Karl, deceased; Bernardi, Luigi; Coda, Severina; and Pegrassi, Lorenzo, 3,948,890.

Pelehach, Michael; Kress, Robert W.; and Larson, Rolf J. Solar energy pool heating apparatus. 3,949,095, Cl. 126-271.000.

Pelletier, Jacques. Fusion bonded non-woven fabric. 3,949,111, Cl. 428-109.000.

Penn Berks Corporation: *See—*
Hess, James R.; Burkholder, Lester M.; and Rettew, Richard L., 3,947,947.

Pennewiss, Horst; Knoell, Helmut; and Masanek, Juergen, to Rohm GmbH. Polymerization with the aid of macromolecule having both a monomer soluble portion and suspension soluble portion. 3,948,866, Cl. 260-79.3MU.

Pennsylvania Engineering Corporation: *See—*
Maurice, Harvey W.; and Pearce, Jai K., 3,948,644.

Pennwalt Corporation: *See—*
Hager, Robert Bonner; and Toukan, Sameeh Said, 3,948,887.

PEPRO, Societe pour le Development et la Vente de Specialities Chimiques: *See—*
Debourge, Jean-Claude; Gaulliard, Jean-Michel; Pillon, Daniel; and Trinh, Stephane, 3,948,942.

Perchonock, Carl D.: *See—*
Bender, Paul E.; Loev, Bernard; and Perchonock, Carl D., 3,949,076.

Perkin-Elmer Corporation, The: *See—*
Atwood, John G.; Ducret, Lucien C.; and De Mey II, Charles F., 3,948,605.
Atwood, John G.; Ducret, Lucien C.; and Marshall, Hamilton W., Jr., 3,948,607.

Perkins, Charles H.; Nurnberg, Richard K.; and Goodhouse, Carl J., to Robertshaw Controls Company. Time variable thermostat. 3,948,441, Cl. 236-46.00R.

Perkins, Harold, to United States of America, National Aeronautics and Space Administration. System for imposing directional stability on a rocket-propelled vehicle. 3,948,470, Cl. 244-3.220.

Perret, Ludwig A.; and Soran, Thomas C., to Bell & Howell Company. Video systems. 3,949,425, Cl. 360-137.000.

Perronnet, Jacques; and Taliani, Laurent, to Roussel-UCLAF. Novel thiazole derivatives. 3,948,925, Cl. 260-302.00E.

Perry, William O., to Dow Chemical Company, The. Process for reacting a phenol with a vicinal epoxy compound in the presence of phosphorus or carbon containing acid, ester or acid ester. 3,948,855, Cl. 260-47.0EP.

Persson, Holger Alexis, to AB Bahco Ventilation. Stiffening device. 3,948,291, Cl. 138-103.000.

Perstorp AB: *See—*
Karlsson, Kjell G. I., 3,948,491.

Peterson, Francis C., to C. Hager & Sons Hinge Manufacturing Company. Locking system for two or more doors leading to an enclosed area. 3,948,067, Cl. 70-263.000.

Peterson, Wayne A.: *See—*
Ohms, Edward J.; and Peterson, Wayne A., 3,948,049.

Petrini, Guido: *See—*
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Petterec, Robert E.: *See—*
Crimmins, William M.; and Petterec, Robert E., 3,948,506.

Pews, R. Garth: *See—*
Goralski, Christian T.; Pews, R. Garth; and Burk, George A., 3,948,948.

Pfalzstahlbau GmbH: *See—*
Kuwertz, Erich; and Krauth, Andre, 3,949,192.

Pfeifer, Josef; Eppe, Rudolf; and Schnall, Gunther, to AGFA-Gevaert, A.G. Electrostatic copier device. 3,948,218, Cl. 118-637.000.

Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., to Syntex (U.S.A.) Inc. Novel substituted xanthone carboxylic acid compounds. 3,949,084, Cl. 424-283.000.

Pfizer Inc.: *See—*
McFarland, James W., 3,948,911.
Nakanishi, Susumu, 3,948,919.

Pfotenhauer, James Michael. Apparatus for polymetrically developing musculature and maintaining physical fitness. 3,948,513, Cl. 272-58.000.

Phalangas, Charalambos J., to Hercules Incorporated. Polymerization of water soluble monomers with radiation and chemical initiator. 3,948,740, Cl. 204-159.230.

Pharr, John D., Jr.: *See—*
Cooper, Glenn D.; and Pharr, John D., Jr., 3,949,257.

Phelan, Harry Richard: *See—*
Jagdmann, Kenneth M.; and Phelan, Harry Richard, 3,949,407.

Philipp, Karl-Heinz: *See—*
Finsterwalder, Kurt; and Philipp, Karl-Heinz, 3,948,075.

Phillips, Donald K., to Sterling Drug Inc. Halocyclopropyl substituted phenoxyalkanoic acids. 3,948,973, Cl. 260-473.00G.

Phillips Petroleum Company: *See—*
Box, E. O., Jr.; and Farha, Floyd, Jr., 3,948,808.
Brady, Donnie G.; and Blackwell, Jennings P., 3,948,865.
Drake, Charles A., 3,948,989.
Draper, Homer L.; and Gray, Lew T., 3,949,113.
Marx, John W.; and Short, James N., 3,948,845.
Solomon, Paul W., 3,948,994.
Trepka, William J.; and Farrar, Ralph C., 3,948,872.
Witt, Donald R., 3,948,806.

Phillips, William A.: *See—*
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Piatek, Robert J., to Kraftco Corporation. Method and apparatus for making dispensers. 3,948,711, Cl. 156-215.000.

Piatkowska, Marianna Teresa: *See—*
Jozwicki, Ryszard Karol; Kubica, Henryk; and Piatkowska, Marianna Teresa, 3,948,031.

Pickering & Company, Inc.: *See—*
Wittenberg, Roland C., 3,948,529.

Pierre, Bernard; and Sabin, Claude, to Etat Francais. Sub-calibre projectile shells. 3,948,184, Cl. 102-93.000.

Pierson, Joseph E.: *See—*
Bartholomew, Roger F.; Campbell, Larry E.; Lewek, Stanley S.; Pierson, Joseph E.; and Stookey, Stanley D., 3,948,629.

Pietsch, Wolfgang, to Hutt GmbH. Method for the press granulation of industrial dusts separated in dust removal systems. 3,948,638, Cl. 75-3.000.

Piezo Engineering Company: *See—*
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Pignata, Richard; and Martocci, Salvadore. Oil level detector and indicator. 3,949,360, Cl. 340-59.000.

Pike, John E.; and Schneider, William P., to Upjohn Company, The. Process for producing PGE_2 from PGA_2. 3,948,981, Cl. 260-514.00D.

Pillon, Daniel: *See—*
Debourge, Jean-Claude; Gaulliard, Jean-Michel; Pillon, Daniel; and Trinh, Stephane, 3,948,942.

Pircher, Herbert; and Hambuch, Johannes, to Buro Patent AG. Automatic railless ground conveyor installation. 3,948,342, Cl. 180-98.000.

Pirooz, Perry P.; Schmid, Anthony P.; and Sturgill, Dennis T., to Owens-Illinois, Inc. Electric power transmission line. 3,949,153, Cl. 174-15.00C.

Pitney-Bowes, Inc.: *See—*
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Reid, Robert R.; and Montagnino, James G., 3,948,216.

Plaskett, Thomas S.: *See—*
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Plastics, Inc.: *See—*
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Plate Bonn Gesellschaft mit beschrankter Haftung: *See—*
Raabe, Fritz; and De Jong, Eduard, 3,948,844.

Plazanet, Jacques: *See—*
Rat, Roger Maurice; Pollozec, Francois Ange; and Plazanet, Jacques, 3,948,675.

Plegat, Alain Edouard, to Societe Anonyme des Usines Chausson. Press incorporating a device for quick interchange of tools. 3,948,129, Cl. 83-157.000.

Plempel, Manfred: *See—*
Kramer, Wolfgang; Buchel, Karl Heinz; Meiser, Werner; and Plempel, Manfred, 3,949,080.

Plessey Handel und Investments A.G.: *See—*
Catto, Christopher John Dignet; and Charman, Nigel Victor, 3,949,194.

Pletscher, Oskar, to Gebrueder Pletscher. Apparatus for the treatment of workpiece surfaces. 3,948,003, Cl. 51-164.000.

Plock, Carl E.: *See—*
Hayden, John A.; and Plock, Carl E., 3,948,735.

Ploschadny, Viktor Yakovlevich: *See—*
Tanov, Evgeny Ivanovich; and Ploschadny, Viktor Yakovlevich, 3,948,058.

Pluta, Linda J.: *See—*
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Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See—*
Korbuly, Gergely; and Hamel, Denis, 3,948,500.

Pobuda, Eckhard T.; and Krebs, Robert E. Can flattening apparatus. 3,948,164, Cl. 100-98.00R.

Pohl, Ulrich: *See—*
Pantke, Heinz-Dieter; and Pohl, Ulrich, 3,948,646.

Poinas, Christian: *See—*
Duval, Georges; Bonneton, Robert; and Poinas, Christian, 3,949,173.

Poinsot, Serge: *See—*
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Polaroid Corporation: *See—*
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Polin, Herbert S., to University of Alabama in Birmingham Medical and Educational Foundation. Pharmaceutical compositions. 3,949,068, Cl. 424-79.000.

Polkowski, John M.: *See—*
Blumbergs, John H.; McCarthy, Michael J.; Finley, Joseph H.; and Polkowski, John M., 3,948,985.

Pollinger, Hans; Wosegien, Bernd; Gmelch, Xaver; Freund, Georg; and Blaut, Ernst, to Knorr-Bremse GmbH. Wear indicator for disk brakes on a vehicle. 3,948,360, Cl. 188-1.00A.

Pollinger, Hans: *See—*
Hefter, Erik; and Pollinger, Hans, 3,948,571.

Pollock, Barry R., to Weatherhead Company, The. Draincock for automotive cooling system. 3,948,481, Cl. 251-351.000.

Pollozec, Francois Ange: *See—*
Rat, Roger Maurice; Pollozec, Francois Ange; and Plazanet, Jacques, 3,948,675.

Polster, Louis S., to Concession Service Corporation. Beverage fluid flow controller. 3,948,419, Cl. 222-61.000.

Polymer-Physik GmbH: *See—*
Holl, Peter, 3,949,265.

Polypump Limited: *See—*
Humphrey, Frederick Harold, 3,948,420.

Pompa, John R., to J. I. Case Company. Cable plow chute multi-lay cables. 3,948,059, Cl. 61-72.600.

Pomroy, James F., to Plastics, Inc. Device for collecting and storing tumblers, litter and the like. 3,948,474, Cl. 248-99.000.

Poole, Robert L., to Fischer & Porter Co. Dissolved oxygen probe. 3,948,746, Cl. 204-195.00P.

Population Research Incorporated: *See—*
Bolduc, Lee R.; and Dickhudt, Eugene A., 3,948,259.

Porcelli, Joseph J.: *See—*
Siskin, Michael; and Porcelli, Joseph J., 3,948,761.

Porret, Daniel; Habermeier, Jurgen; Fatzer, Willy; and Baumann, Dieter, to Ciba-Geigy AG. Diglycidyl compounds of N-heterocyclic compounds. 3,948,916, Cl. 260-260.000.

Portasilo Research Limited: *See—*
Shepherd, Bryan Oliver, 3,948,088.

Portz, William E.; and Kanne, John T., to True Temper Corporation. Handgrip for game racket. 3,948,519, Cl. 273-73.00J.

Potencsik, Istvan: *See—*
Cherdron, Egon; Forster, Hans-Joachim; and Potencsik, Istvan, 3,949,047.

Potter Instrument Co., Inc.: *See—*
Schoeneman, Robert E., 3,948,459.
Powell, John R., to Brown Fintube Company. Closure for heat exchanger. 3,948,315, Cl. 165-70.000.
Powers, Kenneth W., to Exxon Research and Engineering Company. Homogeneous styrene/isoolefin copolymers. 3,948,868, Cl. 260-80.700.
PPG Industries, Inc.: *See—*
Sieja, Jon S., 3,948,630.
Prandini, Dante, to AMF Incorporated. System for feeding pairs of cigarettes with an interposed double length filter plug, directly from a maker to a packer. 3,948,276, Cl. 131-25.000.
Pravdin, Viktor Sergeevich: *See—*
Yatsenko, Sergei Vasilievich; Kononenko, Vadim Grigorievich; Komnatny, Igor Pavlovich; Stelmakh, Viktor Alexeevich; Shekochikhin, Serafim Vasilievich; Maznichenko, Stanislav Anisimovich; Silichev, Mikhail Karpovich; Lobanov, Vladimir Vladimirovich; Fedchenko, Alexei Ivanovich; Babich, Leonid Petrovich; Akhnazariants, Levon Khachaturovich; Saveliev, Anatoly Semenovich; Merezhro, Vladimir Feofanovich; Vestman, Alexandr Alexandrovich; Strizhenko, Vitaly Evgenievich; Pravdin, Viktor Sergeevich; Fulmakht, Veniamin Veniaminovich; Fitilev, Boris Vasilievich; Evteev, Dmitry Petrovich; Salenek, Alexandr Grigorievich; Dadykin, Georgy Fedotovich; Onuchko, Ivan Savelievich; Golodov, Nikolai Nikitovich; and Kamensky, Jury Alexandrovich, 3,948,131.
Pray, Edward R., to BASF Wyandotte Corporation. Curing agent for use in making cellular polyurethane compositions. 3,948,825, Cl. 260-2.5AQ.
Precision Fukuhara Works, Inc.: *See—*
Sumitomo, Norishige, 3,948,062.
Precision Paper Tube Company: *See—*
Bowers, William A., 3,947,958.
Preobrazhensky, Alexandr Yakovlevich: *See—*
Vereschagin, Leonid Fedorovich; Preobrazhensky, Alexandr Yakovlevich; Stepanov, Vasily Alexandrovich; and Voblikov, Valentin Semenovich, 3,949,062.
Presley, Rex Wallace; and Lorraine, Jack Richardson, to Bendix Corporation, The. Surge brake combination vehicle stabilizer. 3,948,544, Cl. 280-446.00B.
Pressure Vessels, Inc.: *See—*
Adams, Charles L., 3,947,950.
Price, George McNair: *See—*
Moore, Lewis Frank; and Price, George McNair, 3,948,593.
Price, Reginald Stanley; Agar, Robert Stanley; and Thorsell, Stanley Elden. Partition system for a building. 3,948,011, Cl. 52-241.000.
Priddy, Duane B., to Dow Chemical Company, The. Heterocyclic peroxides. 3,948,891, Cl. 260-247.000.
Priddy, Duane B., to Dow Chemical Company, The. Heterocyclic peroxides. 3,948,907, Cl. 260-246.00B.
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Pritchett, William C., to Atlantic Richfield Company. Method and apparatus for producing fluid by varying current flow through subterranean source formation. 3,948,319, Cl. 166-248.000.
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Hellyer, James Allen; Kess, Richard Gordon; and Seiden, Paul, 3,949,102.
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Propper Manufacturing Company, Inc.: *See—*
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Pryor, Michael J.; Shapiro, Stanley; Tyler, Derek E.; and Shabarack, John, to Olin Corporation. Brazing preforms and method of brazing. 3,948,432, Cl. 228-223.000.
Puterbaugh, Richard L., to Franklin Manufacturing Company. Refrigerated cabinet construction. 3,948,407, Cl. 220-4.00R.
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Quast, Christoph, to Palitex Project-Company G.m.b.H. Anti-friction balloon restrainer in a textile yarn processing machine. 3,948,032, Cl. 57-108.000.
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McCollum, John D.; and Quick, Leonard M., 3,948,755.
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Raabe, Francis O.; and Yossa, Frank A., to Armco Steel Corporation. Apparatus for the high temperature annealing of metallic coils. 3,948,595, Cl. 432-260.000.
Raabe, Fritz; and De Jong, Eduard, to Plate Bonn Gesellschaft mit beschrankter Haftung. Copolyamides containing caprolactam, laurilactam and 11-aminoundecanoic acid. 3,948,844, Cl. 260-30.80R.
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Rasberger, Michael; Rody, Jean; Moser, Paul; and Muller, Helmut, to Ciba-Geigy Corporation. Nickel stabilisers for synthetic polymers. 3,948,852, Cl. 260-45.75N.
Rasehorn, Hans: *See—*
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Rassaerts, Heinz; Sticken, Gerhard; and Knepper, Wilhelm, to Chemische Werke Huls Aktiengesellschaft. Process for preparing trichloroethylene. 3,949,009, Cl. 260-654.00H.
Rat, Roger Maurice; Pollozec, Francois Ange; and Plazanet, Jacques, to Societe Nationale des Poudres et Explosifs. Production of particulate plasticised nitrocellulose. 3,948,675, Cl. 106-195.000.
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Reber, Walter. Hay-making machine. 3,948,028, Cl. 56-365.000.
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Reil, Wilhelm, to Altstaedter Verpackungs-Vertriebs GmbH. Welding jaw. 3,948,720, Cl. 156-583.000.
Reiner, Joseph: *See—*
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Reinhardt, Robert M.; and Kullman, Russell M. H., to United States of America, Agriculture, Secretary of. Selected ammonium sulfonate catalysts for an improved process utilizing mild curing conditions in durable press finishing of cellulose-containing fabrics. 3,948,600, Cl. 8-182.000.
Reisdorff, Josef: *See—*
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Reist, Walter. Clamp and product handling equipment provided therewith. 3,948,551, Cl. 294-16.000.
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Replogle, Daniel C. Signal system for automotive vehicle. 3,949,361, Cl. 340-66.000.
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Reuting, Hans-Werner, to Elmeg Elektro-Mechanik GmbH. Rapid action relay. 3,949,332, Cl. 335-81.000.
Reyling, George F., Jr.; and Beall, William H., to National Semiconductor Corporation. Programmable logic array control section for data processing system. 3,949,370, Cl. 340-172.500.
Reynard, Kennard A.; and Rose, Selwyn H., to Horizons Incorporated. Curable polyphosphazene copolymers and terpolymers. 3,948,820, Cl. 260-2.00P.
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Rhee, Dong Woo, to GTE Sylvania Incorporated. Pulse width control and advancing circuit. 3,949,163, Cl. 178-7.00R.
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Richardson, John A.; and Wheatley, Donald G., to Ford Motor Company. Independent front suspension for front wheel drive. 3,948,337, Cl. 180-43.00R.
Richter, Peter; Stutz, Herbert; Metzinger, Lothar; Volkert, Otto; Werther, Heinz-Ulrich; and Wigger, August, to BASF Aktiengesellschaft. Laminates for the manufacture of flexographic printing plates comprising photocrosslinkable reaction product of saturated polyester glycol, diisocyanate, and diol. 3,948,665, Cl. 96-86.00P.
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Riesenberg, Klaus-Otto; and Teegen, Walter, to Robert Bosch G.m.b.H. Vehicle wheel rotation speed measuring system. 3,949,252, Cl. 310-168.000.
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Rosaz, Guy Francois, to Scovill Manufacturing Company. Calibration of dialed measuring instruments. 3,948,103, Cl. 73-419.000.

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Rosenberger, Michael; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Aryl ketals of 1-chloro-4-oxo-pentane. 3,948,951, Cl. 260-340.500.

Rosenberger, Siegfried; and Schwarzenbach, Kurt, to Ciba-Geigy Corporation. Salicylic acid hydrazide stabilizers for polymers. 3,948,854, Cl. 260-45.85A.

Rosenblatt, David H.; and Dennis, William H., Jr., to United States of America, Army. Purification of crude dinitrotoluene by extraction with C_3-C_4 alkanes. 3,949,008, Cl. 260-645.000.

Rosencwaig, Allan. Methods and means for analyzing substances. 3,948,345, Cl. 181-.500.

Rosenheck, Danny. Device for drawing ellipses. 3,947,968, Cl. 33-30.00E.

Rosenthal, Allen M. Ski tie. 3,947,927, Cl. 24-81.0SK.

Rosinger, Sigurd; Boesenberg, Heinz; and Gaube, Adolf, to Hoechst Aktiengesellschaft. Preparation of polychlorcyclopentane and hexachlorcyclopentadiene. 3,948,742, Cl. 204-163.0HE.

Rosser, Eugene P. Drill pipe and drill collar containing molded casing protector and method of protecting casing therewith. 3,948,575, Cl. 308-4.00A.

Rosshirt, Hermann, to Superior Electric Company, The. Tapered thread numerical control system for a lathe. 3,949,285, Cl. 318-571.000.

Rossmy, Gerd, to Th. Goldschmidt AG. Equilibrated mixtures of organopolysiloxanes containing sulfonic acid groups and process for the preparation of such organopolysiloxanes. 3,948,963, Cl. 260-448.20N.

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Rothfuss, Helmut, to Interatom Internationale Atomreaktorbau GmbH. Device traveling in nuclear reactor rotary cover for handling rod-shaped members in the reactor. 3,948,724, Cl. 176-30.000.

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Ryugo, Noboru; Inaniwa, Keizo; and Takei, Ichiro, to Hitachi, Ltd. Method of diffusing an impurity into semiconductor wafers. 3,948,695, Cl. 148-189.000.

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Sadler, William S. Emergency radio frequency warning device. 3,949,300, Cl. 325-31.000.

Sage Laboratories, Inc.: *See—*
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St. Joe Minerals Corporation: *See—*
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St. Paul, Roy, to Raymond K. Goode Co., Inc. Output air supply hazard annunciator. 3,948,207, Cl. 116-65.000.

Saint-Pierre, Francoise; and Chauvel, Bernard, to Rhone-Progil. Additives for oils. 3,948,843, Cl. 260-30.40A.

Saipem S.p.A.: *See—*
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Saito, Takahiko; Murata, Takeshi; and Mimura, Satoshi, to Sony Corporation. Switching circuit for power supply to electronic apparatus. 3,949,240, Cl. 307-141.000.

Saito, Tsunenari: *See—*
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Sakai, Katsumi; Iwaki, Riitiro; Taoka, Katsuki; Nakajima, Hiroshi; and Yamada, Yasuo, to Fuji Chemical Industry Co., Ltd.; and Nippon Chemiphar Co., Ltd. α-Cyanobenzylpiperazines and a process for producing the same. 3,948,899, Cl. 260-268.00C.

Sakai, Mikio: *See—*
Kokubo, Takamasa; Sakai, Mikio; Inada, Tomohide; Nakanishi, Takashi; Seki, Hiroshi; Yaegashi, Hazime; Izumi, Kouji; Matsumura, Morio; Nomura, Takao; and Kato, Hisakazu, 3,947,943.

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Sakaoka, Hiroshi, to Hayashi Chemical Industry Co., Ltd. Duplex multicolor printed cloth and method for the production of the same. 3,948,597, Cl. 8-14.000.

Salam, William T., to Stromberg-Hydramite Corporation. Trailer brake system. 3,948,566, Cl. 303-7.000.

Salbeck, Gerhard: *See—*
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Pravdin, Viktor Sergeevich; Fulmakht, Veniamin Veniaminovich; Fitilev, Boris Vasilievich; Evteev, Dmitry Petrovich; Salenek, Alexandr Grigorievich; Dadykin, Georgy Fedotovich; Onuchko, Ivan Savelievich; Golodov, Nikolai Nikitovich; and Kamensky, Jury Alexandrovich, 3,948,131.

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Samuelsson, Benny Roger; and Strandlund, Gert Christer. Substituted phenoxy propanol amines used for treating cardiovascular diseases. 3,949,088, Cl. 424-324.000.

Sanada, Noriaki: *See—*
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Sander, Wendell B.; and Anthony, Michael P., to Fairchild Camera and Instrument Corporation. Bipolar memory circuit. 3,949,243, Cl. 307-238.000.

Sanders, David H., to Medical Engineering Corporation. Endotracheal tube having a non-sticking inner surface. 3,948,273, Cl. 128-351.000.

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Sandoz Ltd., (Sandoz AG): *See—*
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Sanford, Robert A., to Brown & Williamson Tobacco Corporation. Reinforcement of tobacco structure. 3,948,275, Cl. 131-17.00R.

Sankyo Company Limited: *See—*
Arai, Mamoru; Torikata, Akio; Fukatsu, Hisayoshi; Kitano, Noritoshi; and Matsuzawa, Toshiaki, 3,949,070.

Santo, Eugenio Espiritu, to Sundstrand Corporation. Burner ignition system. 3,949,273, Cl. 317-96.000.

Santurri, Pasco R.; Mumm, Howard W.; Flowers, Robert L.; and Eaton, Robert A., to Orchard Corporation of America, The. High pressure assembly and laminate. 3,949,133, Cl. 428-211.000.

Saoyama, Yoshihito: *See—*
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Sargent, Arthur F., to Copperloy Corporation. Aluminum potline shield. 3,948,749, Cl. 204-279.000.

Sasaki, Mitsuru; Ohno, Isao; Takeda, Hisami; Satomi, Takeo; and Mukai, Kunio, to Sumitomo Chemical Co., Ltd. Novel oximino -phosphorothiolate derivatives. 3,949,023, Cl. 260-944.000.

Sasakuma, Shinji: *See—*
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Satake, Yoshimasa. Root canal model for use in practical dental art training. 3,947,967, Cl. 32-71.000.

Sato, Shoji; Yoshida, Kenji; and Kikuchi, Kiyoshi, to Sony Corporation. Tape recorder with pivotal erase head bearing. 3,949,422, Cl. 360-96.000.

Sato, Toru: *See—*
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Sauer, Ivan; and Rasper, Manfred, to Robert Bosch G.m.b.H. Hydraulic system with air-venting arrangement. 3,948,147, Cl. 91-442.000.

Sauer, Leo H.; and Clearman, Jack F., to Whirlpool Corporation. Single-tub automatic washer. 3,948,064, Cl. 68-23.400.

Sauli, Michel, to Rhone-Poulenc S.A. Pyrazoline derivatives. 3,948,935, Cl. 260-310.00D.

Saupe, Wolfram: *See—*
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Savoie, Claude: *See—*
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Sawyer, Harold T. In-line mixer for fluids. 3,948,489, Cl. 259-2.000.

Scan Coin AB: *See—*
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Scapa-Porritt Limited: *See—*
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Schad, Walter; and Blomeyer, Walter, to Zimmer Aktiengesellschaft. Spinning unit for melt spinning high polymers. 3,948,592, Cl. 425-192.00S.

Schaefer, David P.; and Pluta, Linda J., to Nalco Chemical Company. Process for preparing silica organosols. 3,948,799, Cl. 252-309.000.

Schaefer, John O.: *See—*
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Schaefer, Wolfgang: *See—*
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Schindler, Guenter M., to McDonnell Douglas Corporation. Multilayered acoustic liner. 3,948,346, Cl. 181-33.00G.

Schirmann, Jean Pierre; and Weiss, Francis, to Produits Chimiques Ugine Kuhlmann. Method for preparing azines. 3,948,902, Cl. 260-240.00G.

Schirmer, Roy E. Tackle box with improved tray structures. 3,948,579, Cl. 312-111.000.

Schlachet, Hugo: *See—*
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Schlapp, Albert, to Rockwell-Golde G.m.b.H. Device for limiting the number of revolutions of a shaft or the like, especially for sliding roof drives in automobiles. 3,948,119, Cl. 74-805.000.

Schlesinger, Sheldon I., to American Can Company. Epoxy resin coatings cured with phototropic aromatic nitro compounds. 3,949,143, Cl. 428-413.000.

Schlumberger Technology Corporation: *See—*
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Schmeckenbecher, Arnold Friedrich, to International Business Machines Corporation. Method for metallizing ceramic green sheets. 3,948,706, Cl. 156-89.000.

Schmelow, Harald Martin: *See—*
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Schmitt, Hermann: *See—*
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Schmitt, Karl; Disteldorf, Josef; and Flakus, Werner, to Veba-Chemie AG. Stable polyurethane dispersions and method therefor. 3,948,837, Cl. 260-29.2TN.

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Schneider, William P.: *See—*
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Schnizler, Albrecht, Jr.; and Hilburger, Walter, to Metabowerke KG Closs, Rauch & Schnizler. Chuck for hammerdrills and the like. 3,948,534, Cl. 279-62.000.

Schoenberger, Ernest: *See—*
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Schoeneman, Robert E., to Potter Instrument Co., Inc. Folded vacuum tanks for high speed magnetic tape recorders. 3,948,459, Cl. 242-182.000.

Schoenfield, Palmer J.: *See—*
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Schoepfle, Blaine O.: *See—*
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Scholer, Alfred, to Vorwerk & Sohn. Pleater tape for drapes or curtains or the like. 3,948,307, Cl. 160-348.000.
Scholtis, Kurt: *See—*
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Schott, Charles Mandeville, Jr. Bag opening and emptying. 3,948,402, Cl. 214-305.000.
Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, to Bayer Aktiengesellschaft. Phosphoro-amido-thioates. 3,948,631, Cl. 71-87.000.
Schreiner, Horst; and Hassler, Heinrich, to Siemens Aktiengesellschaft. Contact material for high-power vacuum circuit breakers. 3,948,652, Cl. 75-170.000.
Schreyer, Gerd: *See—*
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Schroeder, Joseph W.: *See—*
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Schroter, Herbert, to Hoechst Aktiengesellschaft. Device for controlling the feed of copying material in copying machines. 3,948,130, Cl. 83-203.000.
Schudel, Peter: *See—*
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Schulman, Marvin, to United States of America, Navy. Inflatable body and head restraint. 3,948,541, Cl. 280-150.0AB.
Schulten-Baumer, Uwe. Pig for manufacturing cast iron. 3,948,612, Cl. 29-187.500.
Schultz, Mortimer A., to Environmental Master Systems, Inc. Irradiation and electrostatic separator. 3,948,625, Cl. 55-102.000.
Schumacher, Heinz: *See—*
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Schwartzstein, Marvin; and Molnar, Richard, to York Luggage Corporation. Runners and attachable casters for luggage cases and the like. 3,947,917, Cl. 16-30.000.
Schwarz, Eckhard C.: *See—*
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Schwarz, Eckhard C. A. Method for texturing synthetic filament yarn. 3,949,041, Cl. 264-168.000.
Schwarz, Gerald L.; and Schlachet, Hugo, to Bessam Manufacturing, Inc. Liquid sprayer. 3,948,627, Cl. 55-230.000.
Schwarz, Hans-Helmut; and Immel, Otto, to Bayer Aktiengesellschaft. Process for removing boric acid from lactams. 3,948,888, Cl. 260-239.30A.
Schwarzenbach, Kurt: *See—*
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Scodino, Ambrogio; and Ziliani, Germano, to Saipem S.p.A. Ball launching head for testing a pipeline laid on a submerged bed. 3,948,085, Cl. 73-49.800.
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Scott, Joseph J. Variable retracting device. 3,948,355, Cl. 185-39.000.
Scott Paper Company: *See—*
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Scusa, Paul A. Fishing reel construction. 3,948,465, Cl. 242-219.000.
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Selby, Clark L., Jr. Self-enforcing parking system. 3,948,375, Cl. 194-1.00R.
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Seragnoli, Enzo, to G. D. Societa per Azioni. Transmission system for a high speed cigarette packeting machine. 3,948,115, Cl. 74-421.00R.
Seregely, Daniel W.; and Kidda, Bernard G., to Gillette Company, The. Marking boards and erasable ink compositions therefor. 3,949,132, Cl. 428-207.000.
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Shaw, Bevil J.; and deKlerk, John, to Westinghouse Electric Corporation. Strain gauge apparatus. 3,948,089, Cl. 73-88.50R.
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Shen, Tsung-Ying, to Merck & Co., Inc. Thiadiazoles as anti-inflammatory agents. 3,949,082, Cl. 424-270.000.
Shepherd, Bryan Oliver, to Portasilo Research Limited. Measuring apparatus. 3,948,088, Cl. 73-88.00R.
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Shewchun, John; and King, Fredrick David, to Atomic Energy of Canada Limited. Method of gas doping of vacuum evaporated epitaxial silicon films. 3,949,119, Cl. 427-85.000.
Shiba, Keisuke; Naito, Hideki; Yamamoto, Nobuo; and Yoneyama, Masakazu, to Fuji Photo Film Co., Ltd. Multi-layer color photographic light-sensitive material. 3,948,663, Cl. 96-67.000.

Shigemori, Hideto; and Ueba, Akio, to Glory Kogyo Kabushiki Kaisha. System for selective operation of money dispensing machine. 3,949,200, Cl. 235-92.0SB.
Shikoh, Saburo: *See—*
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Suggitt, Robert M.; Gates, Walter C., Jr.; and Hudson, Ralph B., Jr., to Texaco Inc. Hydrocarbon upgrading process. 3,949,012, Cl. 260-683.900.
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Tesinsky, William J. Transfer case assembly removal tool. 3,948,484, Cl. 254-134.000.
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Folchi, George Arthur; Shelton, Glenmore Lorraine, Jr.; and Wang, Sherman Sheau-Ming, 3,948,093.

Wareham, Richard R.: *See*—
Alston, William W., Jr.; Driscoll, John J.; and Wareham, Richard R., 3,948,662.

Warner, Harry J. Vibrating chair. 3,948,379, Cl. 194-9.00T.

Warren, John E. C. Ball game and apparatus. 3,948,521, Cl. 273-95.00R.

Warwick Electronics Inc.: *See*—
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Washington, Richard C., to Borg-Warner Corporation. Shaft seal unitized transfer fixture. 3,947,944, Cl. 29-235.000.

Watanabe, Hitoshi: *See*—
Kano, Saburo; Nomura, Osami; Asada, Mitsuo; Ando, Meiki; Matsuda, Michihiko; Yamada, Tomio; Watanabe, Hitoshi, and Taniguchi, Takuzo, 3,948,926.

Watanabe, Seiichi; and Yoshikawa, Takashi, to Sony Corporation. High frequency amplifier with frequency conversion. 3,949,306, Cl. 325-451.000.

Waters, Julian Alfred, to Imperial Chemical Industries Limited. Polymeric dispersion. 3,948,846, Cl. 260-33.6UA.

Waters, Kenneth H.; and Fowler, James C., to Continental Oil Company. Underground mine surveillance system. 3,949,353, Cl. 340-15.5MC.

Watsen, Robert G.; and Troscinski, Edwin S., to Nalco Chemical Company. Corrosion and scale softening composition. 3,948,792, Cl. 252-181.000.

Watts, George T., to Goodyear Tire & Rubber Company, The. Tire bead retainer and method of installation. 3,948,305, Cl. 157-1.000.

Watts, Harry, to Dow Chemical Company, The. Method of coating seeds to control germination and the resultant coated seeds. 3,947,996, Cl. 47-57.600.

Weatherhead Company, The: *See*—
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Weaver, James C., to Massachusetts Institute of Technology. Method and apparatus for measuring reactant concentrations and quantities. 3,948,731, Cl. 195-103.50R.

Webb, Ronald C.: *See*—
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Weber, Adolph Carl, to Midwestern Joists, Inc. Clamp for formwork system. 3,948,503, Cl. 269-243.000.

Weber, Heinz Paul: *See*—
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Weber, Ludwig: *See*—
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Weber Marking Systems, Inc.: *See*—
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Wefers, Norbert; Unglaube, Uwe; and Schwarzkopf, Joachim, to Nixdorf Computer AG. Sensing rod for the manual scanning of graphic information. 3,949,195, Cl. 235-61.11E.

Wegmann, Jacques: *See*—
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Wehinger, Egbert: *See*—
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Wehren, Peter; and Meder, Heinz, to Kloeckner-Humboldt-Deutz Aktiengesellschaft. Method for the fine comminution of solid materials with a rolling mill and comminution device for carrying out the method. 3,948,448, Cl. 241-18.000.

Weiler, Harry H. Method of affixing and securing a radio to a motorcycle. 3,947,954, Cl. 29-592.000.

Weill, Theodore C. Process for applying a protective wear surface to a wear part. 3,948,613, Cl. 29-191.000.

Weinrich, Hellmut; and Dick, Heinrich, to Voith Getriebe KG. Cluth responsive to torque of torque convertor. 3,948,367, Cl. 192-3.330.

Weir, Alexander, Jr. Apparatus for treating stack gases. 3,948,608, Cl. 23-284.000.

Weisman, Sumner, to Becton, Dickinson and Company. Physiological information display. 3,948,250, Cl. 128-2.06F.

Weiss, Francis: *See*—
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Welch, Kathleen J., executrix: *See*—
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Welch, Kenneth, deceased: *See*—
Welsby, Joseph A.; and Welch, Kenneth, deceased, 3,948,546.

Welland Forge Limited: *See*—
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Wells, John B., to Xerox Corporation. Electrostatographic process for preparing gravure printing member. 3,948,655, Cl. 96-1.00R.

Welshy, Joseph A.; and Welch, Kenneth, deceased (by Welch, Kathleen J., executrix), to Goodyear Tire & Rubber Company, The. Molded structures. 3,948,546, Cl. 285-239.000.

Weman, Per Olaf; and Schmelow, Harald Martin, to Allied Chemical Corporation. Tipping vehicle sensitive retractor. 3,948,461, Cl. 242-107.40B.

Wenzel, Reinhard, to Kleinewefers Industrie Companie GmbH. Device for separating the rollers of a calender. 3,948,166, Cl. 100-163.00R.

Werther, Heinz-Ulrich: *See*—
Richter, Peter; Stutz, Herbert; Metzinger, Lothar; Volkert, Otto; Werther, Heinz-Ulrich; and Wigger, August, 3,948,665.

Werych, Ewald R., to Sola Basic Industries, Inc. Walking beam furnace. 3,948,494, Cl. 266-5.00H.

Wessel, Wolf; Linder, Ernst; Maurer, Helmut; and Neidhard, Horst, to Robert Bosch G.m.b.H. Exhaust gas operated apparatus for continuously measuring air number of engine intake mixture. 3,948,081, Cl. 73-23.000.

West, Joseph Thomas, to Data General Corporation. Automatic data priority technique. 3,949,368, Cl. 340-172.500.

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Western Company of North America, The: *See*—
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Western Electric Company, Inc.: *See*—
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Weyrich, Claus; and Winstel, Guenter, to Siemens Aktiengesellschaft. Process for the production of yellow glowing gallium phosphide diodes. 3,948,693, Cl. 148-171.000.

Wheadon, Ellis G., to General Motors Corporation. Coining expanded metal positive lead-acid battery grids. 3,947,936, Cl. 29-2.000.

Wheatley, Donald G.: *See*—
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Wheeldon, John Brian; and Gill, David, to Scapa-Porritt Limited. Warp knitted paper maker's felt and method for the production thereof 3,948,722, Cl. 162-289.000.

Wheeler, Robert Charles, to GTE Sylvania Incorporated. Raster distortion correction circuitry. 3,949,269, Cl. 315-371.000.

Whipperman, Ronald Lee; Gross, James Robert; and Miller, Theodore Albert, Jr., to Abbott Laboratories. Closure means for syringe. 3,948,260, Cl. 128-247.000.

Whirlpool Corporation: *See*—
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White, Malcolm Lunt: *See*—
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Whitney, George Joseph, to Lucas Electrical Company Limited, The. Lamp assembly. 3,949,215, Cl. 240-44.100.

Whitsett, Jack W. Ceiling grinding apparatus. 3,948,005, Cl. 51-180.000.

Whyte, Alan Malcolm, to Xerox Corporation. Clutches. 3,948,374, Cl. 193-33.000.

Wiba AG: *See*—
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Wickham, David John, to Westinghouse Brake & Signal Company Limited. Fluid pressure apparatus. 3,948,083, Cl. 73-39.000.

Wiersum, Ulfert Elle, to Akzo N.V. Polymerization of ethylenically unsaturated compounds. 3,948,858, Cl. 260-75.0UA.

Wieske, Theophil; Witte, Ingo; Hannewijk, Jacob; and Willems, Marcel August Guillaume, to Lever Brothers Company. Margarine fat. 3,949,105, Cl. 426-607.000.

Wietsma, Popke, to Chemische Industrie AKU-Goodrich B.V. Latex for forming non-gelling vulcanizable solid foam. 3,948,822, Cl. 260-2.50L.

Wigger, August: *See*—
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Willert, August W., to Irwin-Willert Company. Hanger for toilet bowl deodorant. 3,947,901, Cl. 4-231.000.

Wm. Wrigley, Jr. Company: *See*—
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Williams, Malcolm; Jones, Christopher Robin; and Crookes, Richard William, to C.A.V. Limited. Fuel supply systems for engines. 3,948,237, Cl. 123-139.00E.

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Winheim, Karl H. Method and apparatus for wetting the web in paper making machines. 3,948,721, Cl. 162-207.000.

Winrow, Donald, to Ferranti-Packard Limited. Support for display elements. 3,947,984, Cl. 40-28.00R.

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Winston, Fred F.; and Carver, Julius C., to Western Company of North America, The. Fracturing of subsurface formations with Bingham plastic fluids. 3,948,325, Cl. 166-308.000.

Winter, John M., to Square D Company. Coil and trip mechanism. 3,949,330, Cl. 335-20.000.

Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., to Firmenich & Cie. Flavoring agent. 3,949,100, Cl. 426-538.000.

Wiseley, Kenneth; and Botts, Elton M., to L. Z. Reece, et al. Electromagnetic reciprocating motor. 3,949,249, Cl. 310-17.000.

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Witkowski, Joseph T.; Robins, Roland K.; and Lehmkuhl, Frank A., to ICN Pharmaceuticals, Inc. 5-Hydroxyl-1,2,3-triazole-4-carboxamide nucleoside. 3,948,885, Cl. 260-211.50R.

Witt, Donald R., to Phillips Petroleum Company. Large pore silica and polymerization catalyst. 3,948,806, Cl. 252-451.000.

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Wieske, Theophil; Witte, Ingo; Hannewijk, Jacob; and Willems, Marcel August Guillaume, 3,949,105.

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Wiuniski, Emil L., to Corral Industries, Incorporated. Livestock watering trough. 3,948,221, Cl. 119-78.000.

Wochnowski, Waldemar; Forster, Hans; Koehn, Jurgen; and Hohm, Reinhard, to Hauni-Werke Korber & Co. KG. Method and apparatus for changing the moisture content of tobacco. 3,948,277, Cl. 131-135.000.

Woessner, Richard; and Dreyer, Herman A., to Motter Printing Press Co. Method and apparatus for forming and collating printed signatures. 3,948,504, Cl. 270-21.000.

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Wolfberg, Larry B.; and Harper, John, to Service Business Forms, Inc. Cross perforating of continuously moving, superimposed leaves. 3,948,126, Cl. 83-37.000.

Wolfe, Saul, to Queen's University. 2,2-Dimethyl-3R-carboxy-6S-amino-1-oxa-4-aza-5R-bicyclo-[3,2,0]heptan-7-one. 3,948,927, Cl. 260-307.0FA.

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Wolfson, Leonard L., to Nalco Chemical Company. Antifungal or antibacterial composition and method. 3,949,086, Cl. 424-302.000.

Wolk, Ronald H.; Nongbri, Govanon; and Alpert, Seymour B., to Hydrocarbon Research, Inc. Pentane insoluble asphaltene removal. 3,948,756, Cl. 208-57.000.

Woll, Richard F.; and Willby, Clifford P., to Westinghouse Electric Corporation. Winding for dynamoelectric machine. 3,949,254, Cl. 310-198.000.

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Worrel, Calvin J., to Ethyl Corporation. Gasoline composition. 3,948,619, Cl. 44-58.000.

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Yano, Masatoshi, to Yano Giken Co., Ltd. Method and device for attaching shut-off control valve to distributing water pipe such as service pipe without stopping passage of water therethrough. 3,948,282, Cl. 137-15.000.
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Zimmer, Hildebrand, to Dragerwerk Aktiengesellschaft. Cryomedical device. 3,948,269, Cl. 128-303.100.
Zimmer, Peter. Printing blanket needle for securing a fabric to a printing blanket. 3,947,929, Cl. 24-150.00R.
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Zuckerman, Joel L.; and Grossman, Harry J. Method of measuring ocular pulse. 3,948,248, Cl. 128-2.00T.
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DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 24,017	3,914,140	Oct. 21, 1975	B 288,638	3,925,132	Dec. 9, 1975
B 24,018	3,914,206	Oct. 21, 1975	B 289,175	3,924,309	Dec. 9, 1975
B 64,868	3,914,141	Oct. 21, 1975	B 289,471	3,917,184	Nov. 4, 1975
B 78,331	3,914,142	Oct. 21, 1975	B 289,523	3,921,166	Nov. 18, 1975
B 112,422	3,913,484	Oct. 21, 1975	B 289,883	3,925,063	Dec. 9, 1975
B 150,560	3,913,654	Oct. 21, 1975	B 290,328	3,924,838	Dec. 9, 1975
B 176,995	3,915,773	Oct. 28, 1975	B 291,104	3,925,007	Dec. 9, 1975
B 178,475	3,944,602	Mar. 16, 1976	B 291,694	3,925,339	Dec. 9, 1975
B 189,772	3,925,367	Dec. 9, 1975	B 292,054	3,915,877	Oct. 28, 1975
B 189,773	3,925,405	Dec. 9, 1975	B 292,126	3,914,465	Oct. 21, 1975
B 190,679	3,925,346	Dec. 9, 1975	B 292,140	3,914,340	Oct. 21, 1975
B 198,810	3,916,043	Oct. 28, 1975	B 292,300	3,927,167	Dec. 16, 1975
B 204,161	3,924,605	Dec. 9, 1975	B 292,563	3,923,653	Dec. 2, 1975
B 207,272	3,914,123	Oct. 21, 1975	B 293,378	3,923,725	Dec. 2, 1975
B 211,786	3,914,300	Oct. 21, 1975	B 293,437	3,913,414	Oct. 21, 1975
B 213,211	3,925,269	Dec. 9, 1975	B 294,103	3,924,396	Dec. 9, 1975
B 220,683	3,914,471	Oct. 21, 1975	B 294,579	3,916,737	Nov. 4, 1975
B 222,188	3,914,739	Oct. 21, 1975	B 294,673	3,916,023	Oct. 28, 1975
B 223,621	3,925,526	Dec. 9, 1975	B 295,481	3,921,593	Nov. 25, 1975
B 224,323	3,925,476	Dec. 9, 1975	B 295,674	3,916,107	Oct. 28, 1975
B 233,383	3,925,424	Dec. 9, 1975	B 295,860	3,923,880	Dec. 2, 1975
B 233,741	3,925,326	Dec. 9, 1975	B 299,267	3,917,106	Nov. 4, 1975
B 235,011	3,925,086	Dec. 9, 1975	B 300,353	3,921,734	Nov. 25, 1975
B 235,925	3,924,949	Dec. 9, 1975	B 302,271	3,929,130	Dec. 30, 1975
B 236,609	3,925,187	Dec. 9, 1975	B 302,692	3,924,598	Dec. 9, 1975
B 237,953	3,924,051	Dec. 2, 1975	B 302,836	3,923,573	Dec. 2, 1975
B 239,289	3,922,711	Nov. 25, 1975	B 302,998	3,928,233	Dec. 23, 1975
B 241,433	3,923,711	Dec. 2, 1975	B 303,011	3,930,188	Dec. 30, 1975
B 245,194	3,919,179	Nov. 11, 1975	B 303,655	3,924,642	Dec. 9, 1975
B 248,916	3,920,862	Nov. 18, 1975	B 303,702	3,914,131	Oct. 21, 1975
B 251,109	3,914,148	Oct. 21, 1975	B 304,687	3,924,783	Dec. 9, 1975
B 251,635	3,914,149	Oct. 21, 1975	B 305,417	3,915,882	Oct. 28, 1975
B 252,947	3,923,803	Dec. 2, 1975	B 305,868	3,921,463	Nov. 25, 1975
B 254,211	3,917,677	Nov. 4, 1975	B 305,881	3,923,478	Dec. 2, 1975
B 254,708	3,923,878	Dec. 2, 1975	B 306,829	3,925,411	Dec. 9, 1975
B 255,756	3,923,781	Dec. 2, 1975	B 306,938	3,916,050	Oct. 28, 1975
B 256,334	3,924,988	Dec. 9, 1975	B 307,677	3,915,276	Oct. 28, 1975
B 256,936	3,925,513	Dec. 9, 1975	B 308,661	3,924,349	Dec. 9, 1975
B 258,687	3,914,221	Oct. 21, 1975	B 308,892	3,919,624	Nov. 11, 1975
B 259,236	3,924,874	Dec. 9, 1975	B 309,207	3,914,743	Oct. 21, 1975
B 259,274	3,928,688	Dec. 23, 1975	B 309,499	3,922,002	Nov. 25, 1975
B 260,455	3,925,634	Dec. 9, 1975	B 309,681	3,927,374	Dec. 16, 1975
B 260,945	3,925,250	Dec. 9, 1975	B 309,755	3,919,468	Nov. 11, 1975
B 261,378	3,913,468	Oct. 21, 1975	B 309,756	3,914,136	Oct. 21, 1975
B 261,828	3,925,551	Dec. 9, 1975	B 309,860	3,922,485	Nov. 25, 1975
B 262,241	3,925,528	Dec. 9, 1975	B 310,149	3,924,705	Dec. 9, 1975
B 262,287	3,921,209	Nov. 18, 1975	B 310,271	3,923,689	Dec. 2, 1975
B 262,378	3,914,410	Oct. 21, 1975	B 311,313	3,925,142	Dec. 9, 1975
B 264,257	3,928,665	Dec. 23, 1975	B 311,317	3,918,975	Nov. 11, 1975
B 264,833	3,923,566	Dec. 2, 1975	B 311,413	3,925,515	Dec. 9, 1975
B 265,369	3,925,245	Dec. 9, 1975	B 311,910	3,924,357	Dec. 9, 1975
B 265,727	3,914,479	Oct. 21, 1975	B 311,911	3,925,233	Dec. 9, 1975
B 265,862	3,915,915	Oct. 28, 1975	B 312,139	3,925,530	Dec. 9, 1975
B 266,195	3,923,599	Dec. 2, 1975	B 312,477	3,923,714	Dec. 2, 1975
B 269,673	3,914,377	Oct. 21, 1975	B 313,098	3,925,045	Dec. 9, 1975
B 270,089	3,923,875	Dec. 2, 1975	B 313,531	3,925,548	Dec. 9, 1975
B 271,104	3,925,400	Dec. 9, 1975	B 313,594	3,924,626	Dec. 9, 1975
B 274,945	3,924,992	Dec. 9, 1975	B 313,900	3,915,932	Oct. 28, 1975
B 275,426	3,925,168	Dec. 9, 1975	B 314,049	3,920,588	Nov. 18, 1975
B 276,271	3,916,028	Oct. 28, 1975	B 314,255	3,923,764	Dec. 2, 1975
B 276,560	3,916,030	Oct. 28, 1975	B 314,271	3,921,845	Nov. 25, 1975
B 276,993	3,948,823	Apr. 6, 1976	B 314,489	3,925,016	Dec. 9, 1975
B 277,449	3,924,048	Dec. 2, 1975	B 314,800	3,930,087	Dec. 30, 1975
B 278,491	3,921,170	Nov. 18, 1975	B 314,977	3,923,459	Dec. 2, 1975
B 278,991	3,914,469	Oct. 21, 1975	B 315,363	3,920,673	Nov. 18, 1975
B 279,583	3,923,749	Dec. 2, 1975	B 315,397	3,923,963	Dec. 2, 1975
B 280,015	3,925,378	Dec. 9, 1975	B 315,731	3,914,108	Oct. 21, 1975
B 280,395	3,919,604	Nov. 11, 1975	B 316,014	3,920,861	Nov. 18, 1975
B 281,341	3,920,643	Nov. 18, 1975	B 316,239	3,913,546	Oct. 21, 1975
B 281,943	3,924,013	Dec. 2, 1975	B 316,917	3,925,494	Dec. 9, 1975
B 282,081	3,913,483	Oct. 21, 1975	B 317,080	3,925,324	Dec. 9, 1975
B 282,252	3,924,997	Dec. 9, 1975	B 317,347	3,923,552	Dec. 2, 1975
B 283,124	3,923,512	Dec. 2, 1975	B 317,624	3,925,167	Dec. 9, 1975
B 283,300	3,925,011	Dec. 9, 1975	B 318,195	3,915,699	Oct. 28, 1975
B 284,297	3,913,722	Oct. 21, 1975	B 318,618	3,915,365	Oct. 28, 1975
B 285,200	3,923,680	Dec. 2, 1975	B 318,640	3,925,186	Dec. 9, 1975
B 285,796	3,914,303	Oct. 21, 1975	B 318,745	3,916,571	Nov. 4, 1975
B 286,499	3,914,129	Oct. 21, 1975	B 319,226	3,925,082	Dec. 9, 1975
B 286,614	3,924,696	Dec. 9, 1975	B 319,339	3,916,056	Oct. 28, 1975
B 286,913	3,928,696	Dec. 23, 1975	B 319,402	3,919,568	Nov. 11, 1975
B 287,164	3,914,139	Oct. 21, 1975	B 319,414	3,928,666	Dec. 23, 1975
B 287,270	3,924,825	Dec. 9, 1975	B 320,261	3,924,033	Dec. 2, 1975
B 287,275	3,925,141	Dec. 9, 1975	B 320,452	3,925,083	Dec. 9, 1975
B 287,373	3,918,568	Nov. 11, 1975	B 320,603	3,915,571	Oct. 28, 1975
B 288,018	3,925,239	Dec. 9, 1975	B 321,018	3,921,623	Nov. 25, 1975
B 288,627	3,916,179	Oct. 28, 1975	B 321,101	3,917,163	Nov. 4, 1975

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B 321,938	3,923,889	Dec. 2, 1975	B 346,487	3,927,406	Dec. 16, 1975
B 322,182	3,925,390	Dec. 9, 1975	B 346,585	3,913,820	Oct. 21, 1975
B 322,239	3,920,973	Nov. 18, 1975	B 346,613	3,923,545	Dec. 2, 1975
B 322,564	3,914,373	Oct. 21, 1975	B 346,901	3,915,583	Oct. 28, 1975
B 322,611	3,920,863	Nov. 18, 1975	B 348,083	3,923,774	Dec. 2, 1975
B 322,777	3,924,382	Dec. 9, 1975	B 348,383	3,923,452	Dec. 2, 1975
B 323,127	3,923,967	Dec. 2, 1975	B 348,495	3,914,654	Oct. 21, 1975
B 323,191	3,914,566	Oct. 21, 1975	B 348,558	3,914,109	Oct. 21, 1975
B 323,203	3,916,165	Oct. 28, 1975	B 349,141	3,915,363	Oct. 28, 1975
B 323,568	3,920,536	Nov. 18, 1975	B 349,177	3,914,033	Oct. 21, 1975
B 323,666	3,924,568	Dec. 9, 1975	B 349,231	3,915,831	Oct. 28, 1975
B 324,495	3,928,664	Dec. 23, 1975	B 349,321	3,916,103	Oct. 28, 1975
B 324,503	3,928,524	Dec. 23, 1975	B 349,948	3,914,557	Oct. 21, 1975
B 324,505	3,925,294	Dec. 9, 1975	B 350,025	3,927,415	Dec. 16, 1975
B 324,739	3,924,990	Dec. 9, 1975	B 350,143	3,924,419	Dec. 9, 1975
B 324,879	3,923,538	Dec. 2, 1975	B 350,219	3,917,802	Nov. 4, 1975
B 325,102	3,924,355	Dec. 9, 1975	B 350,245	3,914,331	Oct. 21, 1975
B 325,262	3,921,304	Nov. 25, 1975	B 350,523	3,924,726	Dec. 9, 1975
B 326,514	3,925,080	Dec. 9, 1975	B 350,589	3,927,419	Dec. 16, 1975
B 327,109	3,925,350	Dec. 9, 1975	B 350,708	3,923,871	Dec. 2, 1975
B 327,363	3,923,504	Dec. 2, 1975	B 350,843	3,915,461	Oct. 28, 1975
B 327,612	3,925,620	Dec. 9, 1975	B 351,055	3,914,074	Oct. 21, 1975
B 327,674	3,918,540	Nov. 11, 1975	B 351,218	3,914,186	Oct. 21, 1975
B 327,899	3,925,674	Dec. 9, 1975	B 351,222	3,921,179	Nov. 18, 1975
B 328,164	3,914,703	Oct. 21, 1975	B 351,348	3,923,563	Dec. 2, 1975
B 328,200	3,916,031	Oct. 28, 1975	B 351,421	3,914,733	Oct. 21, 1975
B 328,205	3,914,106	Oct. 21, 1975	B 351,493	3,914,758	Oct. 21, 1975
B 328,210	3,914,275	Oct. 21, 1975	B 351,535	3,915,239	Oct. 28, 1975
B 328,870	3,916,486	Nov. 4, 1975	B 351,665	3,919,701	Nov. 11, 1975
B 329,115	3,924,727	Dec. 9, 1975	B 351,672	3,914,000	Oct. 21, 1975
B 329,476	3,920,562	Nov. 18, 1975	B 351,735	3,913,385	Oct. 21, 1975
B 329,612	3,925,128	Dec. 9, 1975	B 351,863	3,914,700	Oct. 21, 1975
B 329,787	3,920,688	Nov. 18, 1975	B 351,883	3,924,657	Dec. 9, 1975
B 329,816	3,923,947	Dec. 2, 1975	B 351,926	3,914,133	Oct. 21, 1975
B 330,536	3,925,452	Dec. 9, 1975	B 351,939	3,913,480	Oct. 21, 1975
B 330,828	3,913,589	Oct. 21, 1975	B 352,445	3,928,746	Dec. 23, 1975
B 331,417	3,914,157	Oct. 21, 1975	B 352,934	3,913,692	Oct. 21, 1975
B 331,557	3,916,577	Nov. 4, 1975	B 352,950	3,922,590	Nov. 25, 1975
B 331,895	3,916,403	Oct. 28, 1975	B 352,965	3,921,926	Nov. 25, 1975
B 332,527	3,924,017	Dec. 2, 1975	B 353,317	3,916,446	Nov. 4, 1975
B 332,811	3,924,359	Dec. 9, 1975	B 353,387	3,924,404	Dec. 9, 1975
B 333,876	3,921,208	Nov. 18, 1975	B 353,546	3,913,273	Oct. 21, 1975
B 333,928	3,927,172	Dec. 16, 1975	B 354,008	3,925,081	Dec. 9, 1975
B 334,251	3,924,719	Dec. 9, 1975	B 354,098	3,925,547	Dec. 9, 1975
B 334,868	3,919,469	Nov. 11, 1975	B 354,145	3,927,279	Dec. 16, 1975
B 334,985	3,923,912	Dec. 2, 1975	B 354,296	3,914,580	Oct. 21, 1975
B 335,670	3,928,686	Dec. 23, 1975	B 354,510	3,928,658	Dec. 23, 1975
B 335,741	3,925,615	Dec. 9, 1975	B 354,889	3,913,204	Oct. 21, 1975
B 335,773	3,920,953	Nov. 18, 1975	B 354,979	3,914,251	Oct. 21, 1975
B 336,129	3,923,606	Dec. 2, 1975	B 355,095	3,925,656	Dec. 9, 1975
B 336,243	3,925,422	Dec. 9, 1975	B 355,269	3,914,561	Oct. 21, 1975
B 336,345	3,925,179	Dec. 9, 1975	B 355,510	3,913,704	Oct. 21, 1975
B 336,652	3,914,211	Oct. 21, 1975	B 355,595	3,925,649	Dec. 9, 1975
B 336,902	3,918,897	Nov. 11, 1975	B 355,876	3,925,685	Dec. 9, 1975
B 336,946	3,919,425	Nov. 11, 1975	B 356,032	3,928,636	Dec. 23, 1975
B 336,978	3,923,968	Dec. 2, 1975	B 356,253	3,925,025	Dec. 9, 1975
B 337,235	3,919,386	Nov. 11, 1975	B 356,602	3,927,393	Dec. 16, 1975
B 337,409	3,925,258	Dec. 9, 1975	B 356,724	3,924,586	Dec. 9, 1975
B 337,442	3,913,658	Oct. 21, 1975	B 357,039	3,924,406	Dec. 9, 1975
B 337,703	3,914,690	Oct. 21, 1975	B 357,057	3,913,738	Oct. 21, 1975
B 337,787	3,923,506	Dec. 2, 1975	B 357,131	3,924,453	Dec. 9, 1975
B 339,057	3,924,822	Dec. 9, 1975	B 357,402	3,914,180	Oct. 21, 1975
B 339,218	3,925,121	Dec. 9, 1975	B 357,682	3,924,973	Dec. 9, 1975
B 339,699	3,933,527	Jan. 20, 1976	B 357,803	3,919,470	Nov. 11, 1975
B 339,838	3,930,221	Dec. 30, 1975	B 358,174	3,924,958	Dec. 9, 1975
B 340,212	3,922,645	Nov. 25, 1975	B 358,244	3,913,411	Oct. 21, 1975
B 340,833	3,925,208	Dec. 9, 1975	B 358,311	3,923,561	Dec. 2, 1975
B 341,579	3,913,363	Oct. 21, 1975	B 358,939	3,924,713	Dec. 9, 1975
B 342,084	3,928,694	Dec. 23, 1975	B 359,174	3,914,117	Oct. 21, 1975
B 342,423	3,925,334	Dec. 9, 1975	B 359,187	3,924,525	Dec. 9, 1975
B 342,886	3,923,507	Dec. 2, 1975	B 359,540	3,915,235	Oct. 28, 1975
B 343,136	3,919,453	Nov. 11, 1975	B 359,740	3,936,212	Feb. 3, 1976
B 343,240	3,925,693	Dec. 9, 1975	B 359,791	3,929,430	Dec. 30, 1975
B 343,506	3,916,021	Oct. 28, 1975	B 359,825	3,921,344	Nov. 25, 1975
B 343,577	3,921,165	Nov. 18, 1975	B 359,946	3,914,132	Oct. 21, 1975
B 344,203	3,928,719	Dec. 23, 1975	B 359,947	3,914,653	Oct. 21, 1975
B 344,479	3,924,042	Dec. 2, 1975	B 360,208	3,923,750	Dec. 2, 1975
B 345,060	3,916,018	Oct. 28, 1975	B 360,296	3,916,720	Nov. 4, 1975
B 345,384	3,916,146	Oct. 28, 1975	B 360,719	3,915,715	Oct. 28, 1975
B 345,390	3,940,343	Feb. 24, 1976	B 360,910	3,925,696	Dec. 9, 1975
B 345,422	3,914,392	Oct. 21, 1975	B 361,265	3,923,569	Dec. 2, 1975
B 345,527	3,927,365	Dec. 16, 1975	B 361,443	3,927,405	Dec. 16, 1975
B 345,567	3,913,985	Oct. 21, 1975	B 361,569	3,914,554	Oct. 21, 1975
B 346,165	3,913,293	Oct. 21, 1975	B 361,604	3,922,702	Nov. 25, 1975
B 346,210	3,916,142	Oct. 28, 1975	B 361,734	3,915,764	Oct. 28, 1975
B 346,350	3,915,824	Oct. 28, 1975	B 362,589	3,914,012	Oct. 21, 1975

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER TRIAL VOLUNTARY PROTEST PROGRAM

JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 363,205	3,923,744	Dec. 2, 1975	B 387,331	3,913,701	Oct. 21, 1975
B 363,337	3,928,639	Dec. 23, 1975	B 387,363	3,927,378	Dec. 16, 1975
B 363,457	3,922,595	Nov. 25, 1975	B 387,687	3,918,151	Nov. 11, 1975
B 363,674	3,929,716	Dec. 30, 1975	B 387,761	3,914,245	Oct. 21, 1975
B 363,892	3,913,395	Oct. 21, 1975	B 387,790	3,925,380	Dec. 9, 1975
B 363,962	3,921,826	Nov. 25, 1975	B 387,818	3,918,935	Nov. 11, 1975
B 364,022	3,913,499	Oct. 21, 1975	B 388,580	3,923,712	Dec. 2, 1975
B 364,163	3,916,092	Oct. 28, 1975	B 389,070	3,914,171	Oct. 21, 1975
B 364,241	3,916,668	Nov. 4, 1975	B 389,285	3,914,631	Oct. 21, 1975
B 364,334	3,924,670	Dec. 9, 1975	B 389,327	3,924,504	Dec. 9, 1975
B 364,528	3,919,510	Nov. 11, 1975	B 389,639	3,914,626	Oct. 21, 1975
B 364,786	3,921,673	Nov. 25, 1975	B 389,726	3,921,010	Nov. 18, 1975
B 364,910	3,925,335	Dec. 9, 1975	B 389,807	3,922,623	Nov. 25, 1975
B 365,490	3,918,527	Nov. 11, 1975	B 389,932	3,913,268	Oct. 21, 1975
B 365,834	3,914,702	Oct. 21, 1975	B 389,933	3,913,267	Oct. 21, 1975
B 365,841	3,925,628	Dec. 9, 1975	B 390,679	3,913,668	Oct. 21, 1975
B 365,855	3,917,258	Nov. 4, 1975	B 390,732	3,913,878	Oct. 21, 1975
B 366,287	3,924,946	Dec. 9, 1975	B 391,184	3,914,214	Oct. 21, 1975
B 366,402	3,928,053	Dec. 23, 1975	B 391,210	3,914,220	Oct. 21, 1975
B 366,589	3,914,719	Oct. 21, 1975	B 391,437	3,915,416	Oct. 28, 1975
B 367,021	3,914,752	Oct. 21, 1975	B 391,509	3,925,175	Dec. 9, 1975
B 367,040	3,924,775	Dec. 9, 1975	B 391,675	3,916,017	Oct. 28, 1975
B 367,661	3,914,158	Oct. 21, 1975	B 392,154	3,923,809	Dec. 2, 1975
B 367,739	3,923,648	Dec. 2, 1975	B 392,242	3,926,636	Dec. 16, 1975
B 367,812	3,924,789	Dec. 9, 1975	B 392,696	3,916,175	Oct. 28, 1975
B 368,081	3,924,691	Dec. 9, 1975	B 392,732	3,914,903	Oct. 21, 1975
B 368,387	3,924,923	Dec. 9, 1975	B 392,753	3,916,341	Oct. 28, 1975
B 368,392	3,913,812	Oct. 21, 1975	B 392,894	3,914,763	Oct. 21, 1975
B 368,397	3,914,677	Oct. 21, 1975	B 393,163	3,914,535	Oct. 21, 1975
B 368,862	3,925,549	Dec. 9, 1975	B 393,970	3,914,638	Oct. 21, 1975
B 369,563	3,924,449	Dec. 9, 1975	B 394,088	3,914,740	Oct. 21, 1975
B 369,607	3,923,786	Dec. 2, 1975	B 394,188	3,924,591	Dec. 9, 1975
B 369,997	3,913,533	Oct. 21, 1975	B 394,300	3,914,159	Oct. 21, 1975
B 370,706	3,925,242	Dec. 9, 1975	B 394,712	3,916,306	Oct. 28, 1975
B 371,073	3,930,135	Dec. 30, 1975	B 395,478	3,922,577	Nov. 25, 1975
B 371,085	3,923,783	Dec. 2, 1975	B 395,496	3,919,435	Nov. 11, 1975
B 371,787	3,921,217	Nov. 18, 1975	B 395,671	3,920,418	Nov. 18, 1975
B 371,805	3,914,433	Oct. 21, 1975	B 395,889	3,913,190	Oct. 21, 1975
B 371,836	3,923,541	Dec. 2, 1975	B 396,025	3,913,869	Oct. 21, 1975
B 372,823	3,924,660	Dec. 9, 1975	B 396,551	3,921,929	Nov. 25, 1975
B 373,297	3,924,436	Dec. 9, 1975	B 397,027	3,923,736	Dec. 2, 1975
B 373,326	3,920,433	Nov. 18, 1975	B 397,527	3,913,488	Oct. 21, 1975
B 373,428	3,915,511	Oct. 28, 1975	B 397,990	3,914,848	Oct. 28, 1975
B 375,220	3,920,417	Nov. 18, 1975	B 398,262	3,913,481	Oct. 21, 1975
B 375,652	3,921,303	Nov. 25, 1975	B 398,551	3,924,924	Dec. 9, 1975
B 376,504	3,914,570	Oct. 21, 1975	B 398,597	3,913,743	Oct. 21, 1975
B 376,654	3,922,513	Nov. 25, 1975	B 398,625	3,920,996	Nov. 18, 1975
B 376,742	3,924,392	Dec. 9, 1975	B 399,292	3,914,810	Oct. 28, 1975
B 376,799	3,913,955	Oct. 21, 1975	B 399,304	3,919,567	Nov. 11, 1975
B 377,172	3,918,255	Nov. 11, 1975	B 399,349	3,925,694	Dec. 9, 1975
B 377,683	3,924,433	Dec. 9, 1975	B 399,766	3,915,667	Oct. 28, 1975
B 377,833	3,913,884	Oct. 21, 1975	B 400,080	3,925,163	Dec. 9, 1975
B 377,869	3,917,002	Nov. 4, 1975	B 400,293	3,923,719	Dec. 2, 1975
B 378,621	3,923,840	Dec. 2, 1975	B 400,310	3,915,507	Oct. 28, 1975
B 379,038	3,923,994	Dec. 2, 1975	B 401,133	3,924,443	Dec. 9, 1975
B 379,172	3,914,379	Oct. 21, 1975	B 401,992	3,924,898	Dec. 9, 1975
B 379,282	3,913,462	Oct. 21, 1975	B 402,065	3,925,413	Dec. 9, 1975
B 379,955	3,913,157	Oct. 21, 1975	B 402,555	3,914,688	Oct. 21, 1975
B 380,014	3,921,915	Nov. 25, 1975	B 403,140	3,913,486	Oct. 21, 1975
B 380,141	3,925,161	Dec. 9, 1975	B 403,355	3,913,352	Oct. 21, 1975
B 380,310	3,921,048	Nov. 18, 1975	B 403,990	3,914,684	Oct. 21, 1975
B 380,312	3,913,953	Oct. 21, 1975	B 403,996	3,916,016	Oct. 28, 1975
B 380,338	3,924,873	Dec. 9, 1975	B 404,290	3,924,918	Dec. 9, 1975
B 380,446	3,923,836	Dec. 2, 1975	B 404,437	3,915,200	Oct. 28, 1975
B 380,900	3,913,307	Oct. 21, 1975	B 405,136	3,915,565	Oct. 28, 1975
B 380,926	3,925,095	Dec. 9, 1975	B 405,137	3,915,566	Oct. 28, 1975
B 381,074	3,919,583	Nov. 11, 1975	B 405,160	3,924,821	Dec. 9, 1975
B 381,632	3,914,732	Oct. 21, 1975	B 405,248	3,926,294	Dec. 16, 1975
B 381,847	3,921,152	Nov. 18, 1975	B 405,305	3,922,111	Nov. 25, 1975
B 382,018	3,929,742	Dec. 30, 1975	B 405,360	3,913,403	Oct. 21, 1975
B 382,021	3,913,212	Oct. 21, 1975	B 405,495	3,924,577	Dec. 9, 1975
B 382,261	3,914,991	Oct. 28, 1975	B 405,938	3,920,109	Nov. 18, 1975
B 382,290	3,924,717	Dec. 9, 1975	B 406,065	3,914,199	Oct. 21, 1975
B 382,783	3,919,527	Nov. 11, 1975	B 406,357	3,924,529	Dec. 9, 1975
B 382,798	3,924,435	Dec. 9, 1975	B 407,736	3,924,463	Dec. 9, 1975
B 382,840	3,922,007	Nov. 25, 1975	B 407,357	3,924,614	Dec. 9, 1975
B 383,465	3,927,412	Dec. 16, 1975	B 407,728	3,925,240	Dec. 9, 1975
B 383,532	3,914,246	Oct. 21, 1975	B 408,487	3,924,046	Dec. 2, 1975
B 383,581	3,925,318	Dec. 9, 1975	B 408,749	3,914,116	Oct. 21, 1975
B 384,499	3,925,135	Dec. 9, 1975	B 409,026	3,925,497	Dec. 9, 1975
B 384,658	3,913,452	Oct. 21, 1975	B 409,220	3,915,648	Oct. 28, 1975
B 384,773	3,915,416	Oct. 28, 1975	B 409,251	3,922,620	Nov. 25, 1975
B 385,210	3,913,406	Oct. 21, 1975	B 409,657	3,927,362	Dec. 16, 1975
B 386,403	3,924,895	Dec. 9, 1975	B 409,816	3,921,317	Nov. 25, 1975
B 386,592	3,925,305	Dec. 9, 1975	B 410,062	3,923,855	Dec. 2, 1975
B 387,039	3,924,510	Dec. 9, 1975	B 410,168	3,914,717	Oct. 21, 1975

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER TRIAL VOLUNTARY PROTEST PROGRAM

JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 411,145	3,914,168	Oct. 21, 1975	B 425,470	3,923,796	Dec. 2, 1975
B 411,356	3,919,649	Nov. 11, 1975	B 425,539	3,916,742	Nov. 4, 1975
B 411,483	3,925,196	Dec. 9, 1975	B 425,541	3,914,051	Oct. 21, 1975
B 411,633	3,914,741	Oct. 21, 1975	B 425,572	3,923,822	Dec. 2, 1975
B 412,516	3,927,417	Dec. 16, 1975	B 427,631	3,921,433	Nov. 25, 1975
B 412,619	3,925,292	Dec. 9, 1975	B 428,177	3,914,624	Oct. 21, 1975
B 412,867	3,924,587	Dec. 9, 1975	B 428,795	3,921,056	Nov. 18, 1975
B 413,006	3,914,850	Oct. 28, 1975	B 429,442	3,923,485	Dec. 2, 1975
B 413,546	3,924,314	Dec. 9, 1975	B 430,106	3,918,941	Nov. 11, 1975
B 414,129	3,925,484	Dec. 9, 1975	B 430,140	3,922,084	Nov. 25, 1975
B 414,288	3,925,537	Dec. 9, 1975	B 430,798	3,918,204	Nov. 11, 1975
B 415,113	3,915,717	Oct. 28, 1975	B 430,944	3,922,096	Nov. 25, 1975
B 415,124	3,915,944	Oct. 28, 1975	B 432,373	3,919,670	Nov. 11, 1975
B 415,845	3,925,076	Dec. 9, 1975	B 433,587	3,914,567	Oct. 21, 1975
B 415,847	3,914,208	Oct. 21, 1975	B 435,343	3,919,244	Nov. 11, 1975
B 415,957	3,925,635	Dec. 9, 1975	B 435,844	3,925,170	Dec. 9, 1975
B 415,977	3,927,359	Dec. 16, 1975	B 437,173	3,924,627	Dec. 9, 1975
B 416,598	3,923,473	Dec. 2, 1975	B 437,172	3,913,251	Oct. 21, 1975
B 416,832	3,924,975	Dec. 9, 1975	B 437,195	3,914,618	Oct. 21, 1975
B 416,710	3,923,746	Dec. 2, 1975	B 437,450	3,922,479	Nov. 25, 1975
B 416,933	3,924,968	Dec. 9, 1975	B 438,053	3,916,013	Oct. 28, 1975
B 417,299	3,918,235	Nov. 11, 1975	B 438,706	3,925,050	Dec. 9, 1975
B 418,121	3,925,023	Dec. 9, 1975	B 439,168	3,919,676	Nov. 11, 1975
B 418,153	3,925,251	Dec. 9, 1975	B 439,669	3,921,499	Nov. 25, 1975
B 418,302	3,913,252	Oct. 21, 1975	B 440,898	3,921,789	Nov. 25, 1975
B 419,327	3,921,197	Nov. 18, 1975	B 441,024	3,913,629	Oct. 21, 1975
B 419,481	3,924,970	Dec. 9, 1975	B 441,416	3,913,851	Oct. 21, 1975
B 420,016	3,914,572	Oct. 21, 1975	B 442,280	3,914,054	Oct. 21, 1975
B 420,148	3,927,414	Dec. 16, 1975	B 442,859	3,918,570	Nov. 11, 1975
B 420,514	3,923,929	Dec. 2, 1975	B 442,919	3,925,483	Dec. 9, 1975
B 420,568	3,925,069	Dec. 9, 1975	B 444,614	3,927,996	Dec. 23, 1975
B 421,026	3,914,785	Oct. 21, 1975	B 445,471	3,914,711	Oct. 21, 1975
B 421,362	3,924,817	Dec. 9, 1975	B 445,740	3,923,612	Dec. 2, 1975
B 421,383	3,925,047	Dec. 9, 1975	B 448,571	3,924,760	Dec. 9, 1975
B 421,797	3,914,023	Oct. 21, 1975	B 449,647	3,916,797	Nov. 4, 1975
B 422,399	3,928,656	Dec. 23, 1975	B 450,499	3,920,526	Nov. 18, 1975
B 422,467	3,924,804	Dec. 9, 1975	B 450,546	3,924,417	Dec. 9, 1975
B 422,949	3,921,873	Nov. 25, 1975	B 450,927	3,913,844	Oct. 21, 1975
B 424,415	3,919,458	Nov. 11, 1975	B 455,520	3,922,543	Nov. 25, 1975
B 424,462	3,920,522	Nov. 18, 1975	B 455,775	3,914,356	Oct. 21, 1975
B 424,572	3,924,979	Dec. 9, 1975	B 456,346	3,914,531	Oct. 21, 1975
B 424,748	3,924,395	Dec. 9, 1975	B 459,425	3,928,773	Dec. 23, 1975
B 425,035	3,914,025	Oct. 21, 1975	B 461,872	3,919,586	Nov. 11, 1975
B 425,345	3,922,015	Nov. 25, 1975	B 467,684	3,915,119	Oct. 28, 1975
			B 468,198	3,925,340	Dec. 9, 1975

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 6TH DAY OF APRIL, 1976

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687.

Carr, Walter J., Jr. Superconductive winding for an iron core rotor of a dynamoelectric machine. T945,003, 4–6–76, Cl. 310—40.

Carr, Walter J., Jr., and D. W. Dels, to Westinghouse Electric Corp. Superconductive winding. T945,002, 4–6–76, Cl. 310—40.

Continental Oil Co.: *See*—
Lindberg, Carl E. T945,007.

Deards, Henry C., to Imperial Chemical Industries, Ltd. Carrier-bag packing unit. T945,010, 4–6–76, Cl. 221—63.

Dels, Daniel W.: *See*—
Carr, Walter J., Jr., and Dels. T945,002.

Dexter, Martin. Stabilized polyolefin compositions. T945,001, 4–6–76, Cl. 260—45.9.

Fleck, George J., R. H. Sitko, and D. G. Selberlich, to Whirlpool Corp. Freezer cabinet construction. T945,009, 4–6–76, Cl. 312—236.

General Electric Co.: *See*—
Russillo, Joseph G. T945,005.

Harwood, Harold J.: *See*—
Valaitis, Joseph K., and Harwood. T945,004.

Imperial Chemical Industries, Ltd.: *See*—
Deards, Henry C. T945,010.

Lindberg, Carl E., to Continental Oil Co. Stabilized pilot mill. T945,007, 4–6–76, Cl. 166—298.

Mangus, James D. Nuclear reactor coolant transport system. T945,008, 4–6–76, Cl. 176—50.

Russillo, Joseph G., to General Electric Co. Conversion relays. T945,005, 4–6–76, Cl. 317—157.

Selberlich, Donald G.: *See*—
Fleck, George J., Sitko, and Selberlich. T945,009.

Sitko, Robert H.: *See*—
Fleck, George J., Sitko, and Selberlich. T945,009.

Speck, Owen S., and L. E. West. System for magnifying, inspecting, and analyzing components. T945,006, 4–6–76, Cl. 178—6.8.

Valaitis, Joseph K., and H. J. Harwood. Polyamines and their production. T945,004, 4–6–76, Cl. 260—2.

West, L. Elwood: *See*—
Speck, Owen S., and West. T945,006.

Westinghouse Electric Corp.: *See*—
Carr, Walter J., Jr., and Dels. T945,002.

Whirlpool Corp.: *See*—
Fleck, George J., Sitko, and Selberlich. T945,009.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF APRIL, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Burroughs, Robert K.: *See*—
Hentz, Thomas E.; and Burroughs, Robert K., Re. 28,761.

Bystrianyk, Wasyl; and Sarkozy, Francis A., to Emhart Corporation. Molten glass gob distribution system. Re. 28,759, Cl. 65-207.000.

Cassimally, Khalil Ahmad Ibrahim. Trolley case. Re. 28,757, Cl. 280-37.000.

Decker, William R. Method and apparatus used for book binding. Re. 28,758, Cl. 281-21.000.

Eastman Kodak Company: *See*—
Marchant, John C.; and Motter, Robert F., Re. 28,760.

Emhart Corporation: *See*—
Bystrianyk, Wasyl; and Sarkozy, Francis A., Re. 28,759.

Fork, Frank W., to H.H. Robertson Company. Connecting means for trench cover plates. Re. 28,756, Cl. 138-92.000.

H.H. Robertson Company: *See*—
Fork, Frank W., Re. 28,756.

Hege, Sanford L. Sealed silo filling lid. Re. 28,755, Cl. 52-192.000.

Hentz, Thomas E.; and Burroughs, Robert K., to LeBlond Incorporated. Manual control system for numerically controlled machine. Re. 28,761, Cl. 318-571.000.

LeBlond Incorporated: *See*—
Hentz, Thomas E.; and Burroughs, Robert K., Re. 28,761.

Marchant, John C.; and Motter, Robert F., to Eastman Kodak Company. Photographic element including superimposed silver halide layers of different speeds. Re. 28,760, Cl. 96-74.000.

Motter, Robert F.: *See*—
Marchant, John C.; and Motter, Robert F., Re. 28,760.

Sarkozy, Francis A.: *See*—
Bystrianyk, Wasyl; and Sarkozy, Francis A., Re. 28,759.

Toman, Donald J., to Tull Aviation Corporation. Radio navigational aid with separate standard frequency signal. Re. 28,762, Cl. 343-108.00M.

Tull Aviation Corporation: *See*—
Toman, Donald J., Re. 28,762.

LIST OF PLANT PATENTEES

Conard-Pyle Co., The: *See*—
Meilland, Marie-Louise, A. A., and Richardier, 3,857.

Danielson, Robert E., to Pan-American Plant Co. Chrysanthemum plant named Golden St. Moritz, 3,859, 4–6–76, Cl. 78.

Grob, Adolf, to Mikkelsens, Inc. Kalanchoe plant. 3,856, 4–6–76, Cl. 68.

Jeffries, Phillip N.: *See*—
Weinberger, John H. 3,858.

Meilland, Alain A.: *See*—
Meilland, Marie-Louis, A. A., and Richardier, 3,857.

Meilland, Marie-Louise, A. A., and M. M. Richardier, to The Conrad-Pyle Co. Rose plant-meibrico variety. 3,857, 4–6–76, Cl. 18.

Mikkelsens, Inc.: *See*—
Grob, Adolf, 3,856.

Pan-American Plant Co.: *See*—
Danielson, Robert E. 3,859.

Richardier, Michele M.: *See*—
Meilland, Marie-Louise, A. A., and Richardier, 3,857.

Weinberger, John H., to Phillip N. Jeffries. Almond tree. 3,858, 4–6–76, Cl. 30.

Williams, Ernest D. Rose plant. 3,860, 4–6–76, Cl. 7.

INDEX OF DESIGN APPLICANTS AND ASSIGNEES

OF

DESIGN APPLICATIONS PUBLISHED ON THE 6TH DAY OF APRIL 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Note that these entries will not be in numerical order by document (publication) number throughout the section as for patents; numerical ordering is possible only within subclass.

Blankenship, Arthur C., to Uniroyal, Inc. Pneumatic tire tread and buttress. B 522,568, 4–6–76, Cl. D12—147.

Breger, Carl-Arne, to Telefonaktiebolaget L M Ericsson. Telephone accessory. B 497,896, 4–6–76, Cl. D26—14.

Dunlop Ltd.: *See*—
Hart, Claude A., Holmes, and Gebert. B 490,551.

DuPont, S. T.: *See*—
Grinberg, Michel. B 477,584.

Gebert, Karl.: *See*—
Hart, Claude A., Holmes, and Gebert. B 490,551.

General Electric Co.: *See*—
Shalvoy, John C. B 443,446.

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215	3,949,134	311	3,949,137	378	3,949,140	423	3,949,145			260	3,948,595

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	3,948,700		3,948,262		3,948,958	9 :	Re.28,759		3,948,369		3,948,653
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5 :	239,446	9 :	239,423		239,440	27 :	239,443		239,458	44 :	239,454
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8 :	239,448	18 :	239,421		239,453		239,457	39 :	239,459		

PLANT PATENTS

6 :	3,858	17 :	3,859	48 :	3,860						

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

21 :	T945,006	27 :	T945,009	36 :	T945,001	42 :	T945,002		T945,003		T945,008
22 :	T945,007	33 :	T945,005	39 :	T945,004						

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

April 13, 1976

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DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

April 13, 1976 Volume 945 Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Second Trial Voluntary Protest Program

A Second Trial Voluntary Protest Program will be conducted during the coming months. It will be increased in scale and somewhat modified in procedure from the first such program. Announcement of and description of the rules for the first program appeared in 923 O.G. 2 on June 4, 1974.

As before, the objective is to gain experience in carrying out such a program and to determine the extent of interest by the public in participating and in supplying pertinent references. To the extent there is participation, the program should be beneficial by bringing new art to the attention of the Office, preventing inadvertent issuance of invalid patents, and increasing confidence in the strength of those patents which survive the protest proceedings.

The first Trial Voluntary Protest Program showed a considerable interest by applicants and the public in taking part in protest proceedings. A summary of the results will be published soon in this Gazette. The second Trial Voluntary Protest Program is designed to gain additional information as to public participation and also to follow more closely the procedures which would be required in a continuing, permanent protest program.

Applications Involved

In the second Trial Voluntary Protest Program, a Request to Participate and Waiver of Confidentiality form (PTOL–224 Temp.) will be sent to each applicant to whom a Notice of Allowance is mailed during a selected three week period, probably in October, 1975. The total number of requests mailed will be about 4,500. Applications for plant patents will be excluded from the program. The reason for this exclusion is the high cost of printing colored drawings and the relatively limited prior art available. No other applications will be excluded from the trial program, regardless of subject matter, type of application or earlier proceedings.

Waiver of Confidentiality

Two copies of the form letter requesting voluntary waiver of confidentiality (form PTOL–224 Temp.) will be mailed in the same envelope along with the Notice of Allowance. An additional copy of the form letter will be made of record in each application at the time of mailing. The applicant will have three months from the notice of allowance date in which to either (1) elect to participate in the Trial Voluntary Protest Program by filing a signed waiver of confidentiality, or (2) elect not to participate in the program by paying the issue fee. If he does neither, the application will become abandoned, as provided in 37 C.F.R. 1.316. The waiver of confidentiality is a part of form PTOL–224 Temp. This procedure will avoid any increase in pendency time for those applications in which an election is made not to participate in the program. An early filing of a waiver of confidentiality by the applicant will result in early publication of the application.

Publication

If the applicant decides not to participate in the protest program and payment of the issue fee is timely made, the patent will issue routinely without delay.

If the applicant elects to participate in the protest program and a signed waiver of confidentiality is filed in the Office within 3 months of the notice of allowance date, the Notice of Allowance will be vacated. In such a case the issue fee should not be filed, as it will not be accepted and applied if filed with a signed waiver of confidentiality. An additional Notice of Allowance will be issued after the protest proceedings have been completed if only allowable claims remain in the application.

After a signed waiver has been filed, the application will be printed in the form of a patent and be available for sale as in the first Trial Voluntary Protest Program. At least one claim and a drawing figure, if any, will be printed in the OFFICIAL GAZETTE. These published applications will appear in about 6 to 9 issues of the OFFICIAL GAZETTE early in 1976. Advance notice will be given in the OFFICIAL GAZETTE of the dates on which applications will be published under this program.

Inspection of Files

The Patent and Trademark Office files of the published applications will be available for inspection by the public for a period of three months after publication. The application files will be retained in a single location in the Patent Issue Division during the protest period. This single location will be staffed with personnel to process papers directed to these files, supervise inspection of the files by the public, provide copies of file contents when ordered, and perform other related duties. A coin operated copying machine will also be available at this location.

Filing of Protests

Protests relating to the patentability of any published application must be filed in writing in the Patent and Trademark Office no later than three months after publication of the application. No extension of the three month protest period will be granted. Each protest must be filed in duplicate (one copy will be forwarded to the applicant and the other copy will be placed in the application file) and must indicate the grounds for protesting the allowance of any claim contained in the published application. If the protest involves prior art not of record in the application, two copies of the alleged prior art, together with an explanation of the relevance of such prior art to the allowed claims, should be included. The protester may also comment on the prior art record in the application and the manner in which it was applied.

In those applications where prima facie evidence of prior public use or sale the claimed invention is presented in accordance with 37 C.F.R. 1.292, public use proceedings will give the protester an opportunity to present evidence.

Should claims be copied from a published application for interference purposes, the applicant copying claims must also file a notice of such copying in the file of the published application to avoid the possibility of inadvertent issuance of the published application as a patent before conclusion of any interference proceedings.

For easy identification, all protests should be headed, "Protest Under Trial Voluntary Protest Program" and be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

The protester should fully identify himself and include his mailing address so that communications may be addressed to him. In view of administrative problems encountered in the first Trial Voluntary Protest Program in protecting the confidentiality of the identity of protesters, no attempt will be made by the Office to maintain the confidentiality of any protester under the new program.

If no protests are received during the protest period, the application file will be rerouted for the mailing of a new Notice of Allowance. The file will not be returned to the examining group except for consideration of matters which normally require return of an allowed file.

If one or more protests are filed in an application, the application file and the protest(s) will be returned to the examining group for consideration.

Consideration of Protest

The examining group will acknowledge receipt of all protests. The authority for deciding whether or not the evidence submitted constitutes a prima facie showing of unpatentability of any allowed claim will reside with the Group Director. If the Group Director decides that no such showing has been made, the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. Protesters will be notified in such cases that prosecution has not been reopened, and the applicant will be sent a duplicate copy of all protests. The decision of the Group Director will be final and will not be subject to petition by a protester.

If the Group Director decides that the submitted evidence constitutes a prima facie showing of unpatentability of any

allowed claim, prosecution of the application will be reopened. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim considered unpatentable. The duplicate copy of each protest will be mailed to the applicant with the Office action. Protesters who submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

Response by the Applicant to Subsequent Office Actions

During this period, the applicant may present amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters who submitted evidence on which a rejection in the Office action is based to participate in later prosecution and to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response filed, including any appeal brief. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

Comment on Applicant's Response by the Protester

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent and Trademark Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

Any appeal by the applicant to the Board of Appeals in a protested application will be made special and will be taken up out of order.

Conclusion of Prosecution

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified and the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. A decision of the primary examiner to allow an application will not be subject to petition or appeal by any protester.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Sept. 16, 1975.

[938 O.G. 945]

PATENT NOTICES

Certificates of Correction for the Week of Apr. 13, 1976

P.P. 3,794	3,851,036	3,891,895	3,903,479	3,912,854	3,917,999	3,924,937	3,931,086
Re. 28,318	3,857,385	3,892,165	3,904,333	3,913,016	3,918,762	3,924,966	3,931,152
Re. 28,506	3,861,309	3,892,809	3,904,542	3,913,163	3,918,799	3,924,981	3,931,162
D. 233,030	3,861,916	3,892,821	3,904,544	3,913,380	3,919,227	3,925,119	3,931,645
D. 236,848	3,862,975	3,892,894	3,904,877	3,913,669	3,919,392	3,925,141	3,931,824
D. 237,711	3,863,060	3,893,307	3,904,976	3,913,793	3,919,658	3,925,472	3,931,847
D. 237,884	3,864,694	3,894,181	3,905,984	3,914,041	3,919,800	3,925,491	3,932,543
D. 237,892	3,868,580	3,894,493	3,907,163	3,914,235	3,920,029	3,925,718	3,933,022
D. 237,893	3,873,483	3,894,874	3,907,642	3,914,268	3,920,493	3,926,246	3,933,072
D. 238,280	3,874,304	3,894,993	3,907,643	3,914,313	3,920,596	3,926,858	3,933,094
3,619,028	3,876,236	3,895,672	3,908,165	3,914,648	3,920,635	3,926,945	3,933,362
3,642,575	3,876,972	3,896,245	3,908,544	3,914,836	3,921,095	3,927,952	3,933,439
3,732,245	3,877,064	3,896,443	3,908,596	3,914,916	3,921,112	3,927,966	3,933,656
3,753,461	3,877,929	3,896,571	3,908,808	3,915,057	3,921,283	3,928,011	3,934,022
3,762,038	3,878,214	3,897,043	3,909,289	3,915,757	3,921,495	3,928,219	3,934,122
3,763,922	3,878,290	3,897,198	3,909,603	3,915,838	3,921,707	3,929,052	3,934,294
3,768,979	3,878,450	3,897,401	3,910,254	3,915,917	3,922,427	3,929,286	3,934,338
3,778,458	3,879,198	3,897,408	3,910,268	3,916,082	3,922,441	3,929,378	3,934,347
3,786,099	3,879,346	3,897,424	3,910,317	3,916,144	3,923,332	3,929,438	3,934,409
3,793,074	3,881,772	3,898,073	3,910,520	3,916,193	3,923,381	3,929,495	3,934,710
3,799,274	3,884,793	3,898,239	3,910,764	3,916,228	3,923,683	3,929,503	3,934,746
3,803,810	3,884,880	3,899,335	3,910,863	3,916,365	3,923,846	3,929,574	3,934,860
3,804,228	3,885,524	3,900,062	3,911,118	3,916,600	3,924,046	3,929,914	3,934,867
3,809,461	3,886,216	3,900,430	3,911,212	3,916,912	3,924,065	3,929,977	3,934,884
3,810,099	3,887,372	3,900,720	3,912,297	3,917,258	3,924,260	3,930,025	3,934,981
3,826,886	3,888,395	3,900,854	3,912,454	3,917,482	3,924,340	3,930,708	3,935,715
3,833,465	3,889,351	3,901,682	3,912,481	3,917,636	3,924,484	3,930,923	3,935,911
3,843,572	3,889,744	3,901,910	3,912,509	3,917,639	3,924,552	3,930,994	3,936,087
3,843,607	3,890,284	3,902,281	3,912,570	3,917,929	3,924,569	3,930,998	3,936,294
3,847,045	3,890,459	3,902,449	3,912,657	3,917,932	3,924,728	3,931,001	
3,849,653	3,890,757	3,908,371	3,912,692				

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 13, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-30-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Sterolds; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	2-12-75
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-13-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-5-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-9-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	2-10-75
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-24-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-9-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	9-15-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-5-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-8-75
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	4-1-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	7-9-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-11-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-10-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-11-75

Expiration of patents: The patents within the range of numbers indicated below expire during March 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,875,445 to 2,880,418 inclusive
Plant Patents..... Numbers 1,814 to 1,824 inclusive

PATENT APPLICATIONS

PUBLISHED APRIL 13, 1976
UNDER THE SECOND TRIAL VOLUNTARY PROTEST PROGRAM

NOTE- A copy of the notice setting forth the details of the Second Trial Voluntary Protest Program may be found in the Patent and Trademark Notices section of this issue.

Any protests relating to the patentability of these published applications must be filed in writing before July 13, 1976. These applications are available for inspection in the Allowed Files Branch, Crystal Plaza, Room 2-10C28. All correspondence should be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

Printed copies of the published applications may be purchased from the Patent and Trademark Office at 50 cents each.

An "Index of Applicants and Assignees of Published Applications" and a concordance entitled "Classification of Published Patent Applications" are located in the back of this issue.

GENERAL AND MECHANICAL APPLICATIONS

B 471,681

SIGHTING DEVICES FOR FIREARMS

Paul E. Tellié, St.-Etienne, France, assignor to Etat Francais, Paris, France

Filed May 20, 1974, Ser. No. 471,681

Claims priority, application France, June 1, 1973, 73.19955

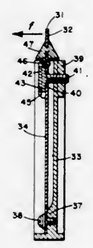
Int. Cl.² F41G *1/02*

U.S. Cl. 33—252 **11 Claims**

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UNITED STATES PATENTS

800,195	9/1905	Windridge	33/252
1,523,319	1/1925	Vosmek	33/258
1,908,019	5/1933	Howard	33/252
2,132,490	10/1938	Mossberg	33/257



1. A firearm comprising a rear sight and a front sight, each of said rear sight and said front sight being mounted on an associated support having a fixed position with respect to the firearm, means for adjusting each of said sights, said adjusting means for one of said sights comprising a flexible, substantially vertically extending metal flat blade having a first end fastened to said support of said one sight and a second end firmly connected to said one sight, said one sight being an extension of said second end of said b.ade, and control means for varying the distance between an area of said blade and said support of said one sight so that the varying of this distance causes a displacement of the one sight.

B 506,760

METHOD OF FORMING A DUAL IN-LINE PACKAGE

Charles W. Wallick, York, Pa., assignor to E. I. Du Pont de Nemours and Co., Wilmington, Del.

Filed Sept. 17, 1974, Ser. No. 506,760

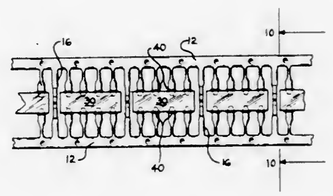
Int. Cl.² H01L *21/28*

U.S. Cl. 29—591 **7 Claims**

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UNITED STATES PATENTS

3,280,378	10/1966	Brady et al.	317/101
3,689,684	9/1972	Cox et al.	174/68.5
3,689,991	9/1972	Aird	29/577
3,691,629	9/1972	Schierz	29/588
3,724,068	4/1973	Galli	29/471.1
3,750,252	8/1973	Landman	29/191.6
3,793,714	2/1974	Bylander	29/589
3,832,480	8/1974	Bunker	29/576 S
3,838,984	10/1974	Crane et al.	29/193.5



1. The method of forming a dual in-line package from a unitary lead frame having spaced parallel carrier strips with groups of leads extending toward each other from the strips and rungs joining the strips between opposed groups of leads and a circuit module having opposed contact surfaces comprising the steps of:

A. Freely positioning a circuit module between adjacent rungs on the lead frame with the contact surfaces of the module adjacent the ends of the leads on the carrier strips;

B. Moving the carrier strips toward the circuit module to foreshortened the adjacent rungs and seat the ends of the leads on both carrier strips against the contact surfces on the circuit module, and then;

C. Forming bonded electrical connections between the lead ends and the contact surfaces on the circuit module.

B 510,026

TWO WIRE CURRENT TRANSMITTER RESPONSIVE TO A RESISTIVE TEMPERATURE SENSOR INPUT SIGNAL

Earl A. Grindheim, Minneapolis, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Division of Ser. No. 14,748, Feb. 24, 1970, Pat. No. 3,859,594, which is a continuation-in-part of Ser. No. 661,988, Aug. 21, 1967, abandoned. This application Sept. 27, 1974, Ser. No. 510,026

Int. Cl.² G01K *7/24*

U.S. Cl. 73—362 AR **11 Claims**

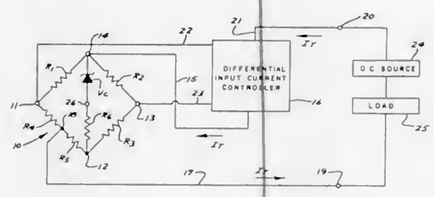
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3,503,261	3/1970	Riester et al.	73/362 AR
3,517,556	6/1970	Barker	73/362 AR

OTHER PUBLICATIONS

Collins, J. A. et al., Pressure Sensor Electronic Converter, In IBM Tech. Disclosure Bull., Vol. 9, No. 3, Aug. 1966, pp. 333–334.



1. A resistance-to-current converter system comprising:

a. a sensing resistor responsive to a variable physical condition to be indicated,

b. a bridge including said resistor, said bridge having input and output junctions and being balanced only when said resistor has a predetermined value, whereby the bridge voltage developed at said output junctions is a function of the deviation of the resistor from said predetermined value as a result of a change in said physical condition,

c. a D-C amplifier whose input circuit is connected to the output junctions of said bridge whereby the impedance in the output circuit of the amplifier varies as a function of said bridge voltage,

d. a direct-voltage source providing an operating voltage both for said bridge and said amplifier,

e. a load connected in series with said source and having an output current flow therethrough resulting from variations in said resistor and hence indicative of said condition,

f. a voltage regulator,

g. a pair of wires connecting said series-connected source and load through said regulator across both the output circuit of said amplifier and the input junctions of said bridge, whereby the operating voltage of said amplifier is stabilized despite variations in said output current flow through said load resulting from variations in the value of said resistor,

h. a feedback resistor connected in series with said load to produce a feedback voltage, and

i. means to feed said feedback voltage into the arm of said bridge containing said sensing resistor in series opposition to the voltage produced by the sensing resistor to rebalance the bridge, whereby the output current is accurately proportional to changes in said resistor.

B 523,129

FENCE SYSTEM

Rudolph E. Parisien, 891 Rainbow St., Ottawa, Canada

Continuation-in-part of Ser. No. 382,116, July 24, 1973, abandoned. This application Nov. 12, 1974, Ser. No. 523,129

Claims priority, application Canada, Nov. 19, 1973, 186172; June 14, 1973, 174105; Feb. 21, 1974, 193180

Int. Cl.² E04H *17/14*

U.S. Cl. 256—65 **6 Claims**

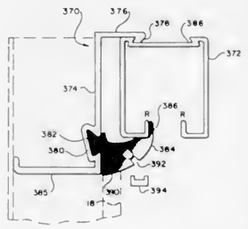
References Cited

UNITED STATES PATENTS

2,905,445	9/1959	Blum	256/65
3,071,350	1/1963	Opie	256/65
3,842,564	10/1974	Brown	256/59

FOREIGN PATENTS OR APPLICATIONS

1,248,270	8/1967	Germany	256/65
1,913,316	9/1970	Germany	256/59
273,893	6/1951	Switzerland	256/59



1. In a fence including line posts and top rails in the form of channel members, a top rail bracket for use on an upper end of said line post for securing said top rail to the side of the post, said bracket having a side wall adapted to be received in an open upper end of said line post, a top wall one edge of which terminates in a downwardly and inwardly extending flange adapted to engage a dove tail shaped groove on said top rail and a projection on said side wall adapted to extend through an opening in said channel type post to support said top rail and terminating in an upwardly extending projection extending into a channel in the underside of said top rail.

B 526,279

EMERGENCY STEERING SYSTEM

James R. McBurnett, Corinth, Miss., assignor to Tyrone Hydraulics, Inc., Corinth, Miss.

Filed Nov. 22, 1974, Ser. No. 526,279

Int. Cl.² B62D *5/06*

U.S. Cl. 180—79.2 R **9 Claims**

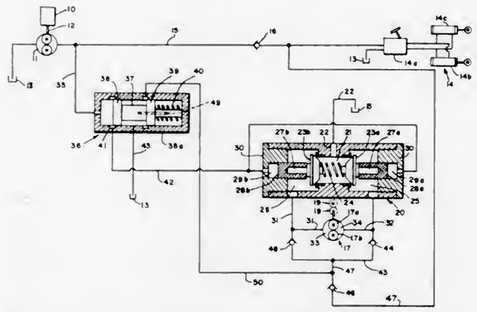
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2,370,526	2/1945	Doran	60/425
2,528,764	11/1950	Leonard	417/315 X
3,631,937	1/1972	Joyce	180/79.2 B
3,696,613	10/1972	Goodale	60/404

1. An emergency control system for use in a reversibly operable vehicle having a hydraulically operated steering system, including reservoir means for a supply of operating fluid for said steering system and a first pump adapted to be operated by the vehicle prime mover for supplying the steering system with operating fluid when the prime mover is in operation, said emergency control system comprising; a second pump adapted to be reversibly operated according to the direction of operation of the vehicle, first and second chambers at opposite sides of said second pump serving alternately as suction and discharge chambers according to the direction of operation of said second pump, valve means for interconnecting said reservoir with said chambers comprising first and second passageways for supply of fluid from said reservoir

means to said first and second chambers respectively, a valve member in each of said passageways, said valve members each being movable between a position in which flow from the reservoir to its chamber is blocked and a position in which flow is permitted, control means responsive to operation of said first pump for holding said valve members in the flow



blocking position so that no operating fluid is delivered to the second pump when the first pump is operating, said control means being operative to open the valve member blocking flow to the chamber serving as suction chamber when the first pump is not in operation and the vehicle is in motion whereby operating fluid is delivered by said second pump to said steering system when the first pump is not operating.

B 540,703

ADJUSTABLE OUTWARD CLINCH ANVIL ASSEMBLY

Walter G. Lemos, East Providence, R.I., assignor to Textron, Inc., Providence, R.I.

Filed Jan. 13, 1975, Ser. No. 540,703

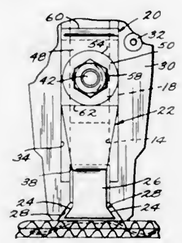
Int. Cl.² B27F *7/16*

U.S. Cl. 227—83 **10 Claims**

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UNITED STATES PATENTS

1,309,613	7/1919	Dearsley	269/235
3,152,335	10/1964	Wandel et al.	227/83
3,417,908	12/1968	Treatman	227/83



1. A stapling device comprising a housing defining a drive track, a staple magazine for receiving a supply of staples in stick formation and feeding successive leading staples laterally into the drive track, a staple driving element slidably mounted in said drive track through a drive stroke to drive a leading staple within said drive track outwardly thereof into a workpiece and a return stroke, the outer end of said drive track being defined by outwardly diverging side wall surfaces, said housing including a keyway formed in the exterior thereof parallel with said drive track, a spring metal anvil member having a fixed end portion slidably mounted within said keyway, said anvil member including a free end portion normally extending within the outward end of said drive track, the free end portion of said anvil member having a pair of outwardly diverging side wall surfaces cooperating with said diverging drive track side wall surfaces for deflecting the legs of a staple outwardly during the driving movement thereof and a cam surface engageable during the last portion of the staple driving element drive stroke to cam said free end portion outwardly of said drive track and enable the staple crown to move thereby during the last part of the driving movement of the staple, and means for fixedly securing the fixed end portion of said anvil member in any one of a multiplicity of adjusted positions within said keyway comprising:

a threaded stud extending from said housing outwardly through said keyway, the fixed end portion of said anvil member having a cam follower opening formed therein through which said stud extends,

a generally rectangular plate having an opening therein through which said stud extends, said plate being disposed in backing relation to the fixed end portion of said anvil member and including an inwardly bent end portion extending beyond said anvil member within said keyway throughout the width thereof and an opposite end portion extending throughout the width of said anvil member providing a flexure surface therefor,

an adjusting member rotatably mounted on said stud, said adjusting member including an inner cam portion disposed within the cam follower opening of said anvil member of a shape relative thereto such as to effect a displacement of said anvil member along said keyway in response to the rotational displacement of said adjusting member, an outer knob portion for manually effecting rotational displacement of said adjusting member, and an intermediate portion disposed within the opening in said plate, and

a locking nut threadedly engaged on the outer end of said stud for maintaining said adjusting member in any position of rotational displacement and said anvil member in a fixed position within said keyway corresponding thereto.

B 541,501

INJECTORS FOR THE FUEL INJECTION SYSTEMS OF INTERNAL COMBUSTION ENGINES

Henry Edwin Woodward, Bourne End, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 368,991, June 11, 1973, abandoned. This application Jan. 16, 1975, Ser. No. 541,501

Claims priority, application United Kingdom, June 12, 1972, 27449/72

Int. Cl.² B05B *1/30*

U.S. Cl. 239—533 **9 Claims**

References Cited

UNITED STATES PATENTS

3,521,819	7/1970	Johnston	239/533
3,610,529	10/1971	Huber	239/533
3,640,466	2/1972	Steiger	239/533
3,669,354	6/1972	Helyer	239/533
3,680,782	8/1972	Monpetit	239/533

FOREIGN PATENTS OR APPLICATIONS

640,653	7/1950	United Kingdom	

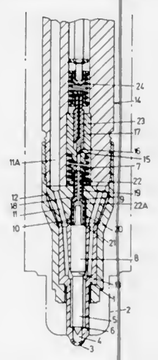
1. An injector including a fuel supply passage for a fuel injection system of an internal combustion engine which comprises:

a. a nozzle body formed with a compartment and including a valve seat;

b. a nozzle needle positioned within said compartment of said nozzle body and cooperating with said valve seat to form an injection valve;

c. guide means for guiding said nozzle needle within said nozzle body, one end of said guide means forming a first chamber including part at least of said compartment, the other end of said guide means forming a second chamber within said injector, said first and second chambers being in fluid communication with said fuel supply passage, the cross-sectional area bounded by the other edge of contact

between said nozzle needle and said valve seat being smaller than the cross-sectional area of said guide means;
d. spring means for biasing said nozzle needle against said valve seat; and
e. trigger valve means for opening said second chamber at a first predetermined pressure within said second chamber and for closing said second chamber at a second lower predetermined pressure within said second chamber whereby (i) an increase in fuel supply pressure causes said trigger valve means to open when the pressure in said

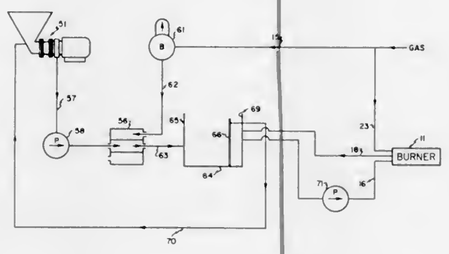


second chamber reaches a value substantially equal to or greater than said first predetermined pressure, thereby relieving the pressure in said second chamber so that the resultant force on said nozzle needle causes the nozzle needle to lift from said valve seat for the injection of fuel and (ii) said trigger valve means recloses said second chamber when the pressure in said second chamber reduces to a value substantially equal to or lower than said second predetermined pressure, said nozzle needle being returned into contact with said valve seat under the influence of said spring means.

B 567,207
WASTE GREASE-BURNING SYSTEM
Ulf F. Rinecker, San Francisco, Calif., assignor to Envirotech Corporation, Menlo Park, Calif.
Division of Ser. No. 352,139, April 18, 1973, Pat. No. 3,894,833. This application Apr. 11, 1975, Ser. No. 567,207
Int. Cl.² F23G *5/02*
U.S. Cl. 110—8 P **6 Claims**

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UNITED STATES PATENTS

1,892,681	1/1933	Rankin	110/8 P
2,230,385	2/1941	Pecker	110/8 P
3,766,867	10/1973	De Angelis	110/8 R

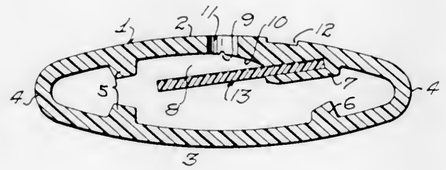


1. A system for conditioning and burning materials such as aqueous mixtures containing organic solids that constitute skimmed floatage from waste-water treatment operations, comprising:
a. Grinder means for first receiving and grinding such materials;
b. A settling device for receiving the ground materials and permitting the same to settle; said settling means including a settling zone, means for receiving a decanted overflow from the settling zone, and a zone for containing said overflow;
c. A burner assembly which receives a flow of material from said overflow containing zone and emits a fraction thereof as a spray which is subsequently burned, said burner assembly including return means for returning a fraction of the flow for subsequent recycling.

B 570,382
IRRIGATION EMITTER TUBE
Lloyd Spencer, 220 Patrician Way, Pasadena, Calif. 91105
Filed Apr. 22, 1975, Ser. No. 570,382
Int. Cl.² B05B *1/28, 15/00;* **A01M** *25/00;* **F16K** *21/04*
U.S. Cl. 239—288.3 **16 Claims**

References Cited
UNITED STATES PATENTS

2,112,229	3/1938	Davis	43/124 UX
3,333,422	8/1967	Neyland	239/547 X
3,567,134	3/1971	Smith	239/547
3,874,598	4/1975	Havens	239/542
3,899,136	8/1975	Harmony	239/542 X



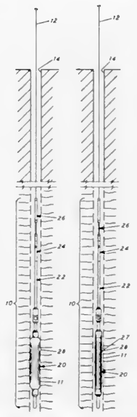
1. An irrigation emitter tube, comprising:
a. a continuous flexible tube normally of oval configuration forming opposed side walls of major radius connected by opposed edge walls of minor radius; the tube being responsive, as internal pressure increases, to assume an increasingly cylindrical configuration; the tube having, along one of its sides of greater radius, a row of spaced emitter ports;
b. a continuous strip within the tube, having a margin secured to the interior of the tube, the remaining portion forming a flap positioned to clear the emitter ported side wall of the tube, when the tube is in its normal configuration, to permit flush flow through the emitter ports;
c. the flap movable into contact with the emitter ported side wall when the tube assumes a predetermined configuration between its normal oval position and its near cylindrical position;
d. and means operable, when the flap is in contact with the emitter ported side wall, to restrict flow from the emitter ports to trickle flow.

B 575,761
HYDRAULICALLY ACTUATED WIRE LINE APPARATUS
Neal L. Mitchell, Taft, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Division of Ser. No. 510,260, Sept. 30, 1974. This application May 8, 1975, Ser. No. 575,761
Int. Cl.² E21B *47/00, 47/10*
U.S. Cl. 166—250 **1 Claim**

References Cited
UNITED STATES PATENTS

2,416,441	2/1947	Grant et al.	73/151
2,645,289	7/1953	Leas	166/64
2,653,474	9/1953	Santiago	73/151
3,046,601	7/1962	Hubbert et al.	166/250 X
3,049,752	8/1962	Jorda et al.	73/151 X
3,364,993	1/1968	Skipper	166/250
3,855,854	12/1974	Hutchison et al.	73/151
3,855,855	12/1974	Hutchison et al.	73/151
3,855,856	12/1974	Hutchison et al.	73/151

1. The method of obtaining impression information from a well comprising:
flowing a noncompressible liquid through an orifice,
running into a well a wire line packer having an impression sleeve connected to the outside of an inflatable sleeve of said packer,
lowering said inflatable packer down said well before the elapse of a predetermined time as determined by flow of said liquid through said orifice to position the impression sleeve at a predetermined depth in said well,
inflating said inflatable sleeve of said packer in response to said flow of liquid through said orifice to press said impression sleeve against the wall of said well,
maintaining said inflatable sleeve in inflated condition for a predetermined time while continuing to flow said liquid through said orifice,



then in response to said flow of said liquid deflating the inflatable sleeve of said packer to remove said impression sleeve from said well wall, and
removing said inflatable packer from said well.

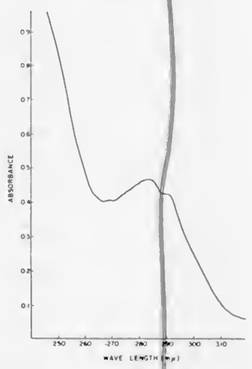
B 328,077
PLASMINOSTREPTIN (ENZYME INHIBITOR) AND METHOD FOR PRODUCING IT FROM STREPTOMYCES

Atsushi Kakinuma, Kyoto; Hiromu Sugino, Toyonaka; Norihiko Moriya, Ikeda, and Masao Isono, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jan. 30, 1973, Ser. No. 328,077
Claims priority, application Japan, Feb. 8, 1972, 47-14132
Int. Cl.² C12D *13/06*; **C07G** *7/00*
U.S. Cl. 260—112 R **4 Claims**

References Cited
UNITED STATES PATENTS

3,740,319	6/1973	Umezawa et al.	195/80 R



1. Plasminostreptin, capable of inhibiting the proteolytic activity of plasmin and trypsin, characterized by the following properties:

a. a molecular weight of 26,000 ± 2,000 as determined in 0.1 M sodium chloride by Archibald's ultracentrifugal method, and 25,000 ± 2,000 as determined in 0.05 M Tris-HCl buffer-0.1 M potassium chloride by Andrews' gel filtration method,

b. sedimentation constant ($S_{20,w}$), by ultracentrifugation, of 2.5 ± 0.3 S in 0.1 M sodium chloride and 1.2 ± 0.3 S in 4 M guanidine hydrochloride,

c. elemental analysis indicating C, 51.48 ± 2.0%; H, 6.96 ± 0.5%; N, 16.63 ± 1.0%; and S, 1.84 ± 0.5%,

d. specific rotation $[\alpha]_D^{23}$ of about −90° (C=1, in a weakly alkaline solution),

e. isoelectric point of about 6.3 as determined by the isoelectric focussing method,

f. 0.05% solution thereof in 0.1 M sodium chloride gives a maximum absorption at 283 mμ, a minimum absorption at 267 mμ and a shoulder at 288 to 291 mμ,

g. significant infrared absorption bands at wave numbers (cm^{-1}) 3280, 3070, 2960, 1670, 1640, 1530, 1400, 1240 and 1160.

h. contains alanine, valine, glycine, threonine, aspartic acid, glutamic acid, leucine, phenylalanine, arginine, proline, serine, cystine or cysteine, lysine, tyrosine, histidine, methionine and tryptophan, and does not contain isoleucine,

i. positive to hypochlorite reagent and Folin-Ciocalteu reagent,

j. soluble in water and aqueous ammonia; slightly soluble in pyridine; sparingly soluble in glacial acetic acid, alcohols, acetone, chloroform, ether and hexane; substantially completely precipitated by ammonium sulfate at 60% saturation and solubility dropping in the neighborhood of pH 6,

k. more than 50% of the initial activity thereof remains intact after treatment for 30 minutes at pH 4–9 and 100°C, and

l. dialytic behavior indicating substantially all the activity thereof remains in the internal solution, when dissolved in water having a pH of 8.0 to a concentration of 10 mg./ml and dialyzed in a cellophane bag against ten times as much volume of water having a pH of 8.0 to 4°C for 24 hours.

B 367,092
N-CINNAMYLCARBAMIC ACID ESTERS

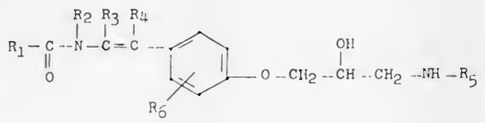
Knut Alfred Jaeggi, Basel; Franz Ostermayer, Riehen, and Herbert Schroter, Fullinsdorf, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 4, 1973, Ser. No. 367,092
Claims priority, application Switzerland, June 8, 1972, 8505/72; Apr. 18, 1973, 5634/73
Int. Cl.² C07C *125/06*
U.S. Cl. 260—471 C **13 Claims**

References Cited
UNITED STATES PATENTS

3,712,927	1/1973	Howe et al.	260/471 C
3,864,398	2/1975	Suzuki et al.	260/471 C

1. Amines of the formula I



(I)

wherein R_1 is lower alkoxy, R_2 is hydrogen or lower alkyl, R_3 is hydrogen, lower alkyl, carboxyl or lower alkoxycarbonyl, R_4 is hydrogen or lower alkyl, R_5 is lower alkyl, phenyl optionally substituted by lower alkyl, lower alkoxy, halo or trifluoromethyl, carboxy-lower alkyl esterified with an aliphatic alcohol, carbamoyl-lower alkyl, N-mono-lower alkyl carbamoyl-lower alkyl, or N,N-di-lower alkyl carbamoyl-lower alkyl, and R_6 denotes halogen, trifluoromethyl, lower alkyl, lower alkenyl, lower alkoxy, lower alkenyloxy, nitro, lower alkoxymethyl, carbamoyl, N-lower alkylcarbamoyl, lower alkinyloxy or hydrogen, and therapeutically acceptable acid addition salts thereof.

B 394,742
METHOD FOR PRODUCING CHAMPAGNE

James E. Spooner, Rte. 1 Box 45A, Rolla, Mo. 65401

Filed Sept. 6, 1973, Ser. No. 394,742
Int. Cl.² C12G *1/06*
U.S. Cl. 426—8 **3 Claims**

References Cited
UNITED STATES PATENTS

2,694,641	11/1964	Atwood et al.	426/8
2,728,672	12/1955	Young et al.	426/77 X
2,758,932	8/1956	Scott	426/8
3,425,839	2/1969	Pinnigan	426/16
3,545,978	12/1970	Agabaliants et al.	426/11

1. A fermentation process for producing champagne which comprises placing a fermentable liquid in a pressure sealable receptacle and introducing in said receptacle a yeast held within a container having a porous wall membrane, said container being out of contact with said liquid, causing said fermentable liquid to contact the contained yeast and thereby causing fermentation to take place, said porous wall membrane having openings of a mean pore size sufficient to retain the yeast cells having a diameter greater than the pores in the membrane while permitting the interchange of the liquid components and passage therethrough in the membrane and small enough to bar the passage of any solid yeast and solid fermentation byproducts, and removing the container and retained solids after the fermentation has been effected to the desired stage, the fermentable liquid being a wine and sugar solution, and a secondary fermentation process being carried out under secondary fermentation conditions of temperature and for a period of time sufficient to produce champagne.

B 408,123
SUBSTITUTED PIPERIDIN-4-OLS

Donald Richard Randell, Stockport; Brian Holt, Royton, and Alan Geoffrey Virgin, Swinton, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 19, 1973, Ser. No. 408,123
Claims priority, application United Kingdom, Oct. 21, 1972, 48601/72
Int. Cl.² C07D *211/46*
U.S. Cl. 260—293.84 **7 Claims**

References Cited
UNITED STATES PATENTS

3,120,540	2/1964	Meltzer et al.	260/294.3
3,534,048	10/1970	Murayama et al.	260/293
3,733,326	5/1973	Murayama et al.	260/290 V
3,759,926	9/1973	Chalmers et al.	260/293.9

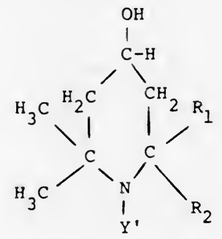
FOREIGN PATENTS OR APPLICATIONS

2,040,983	3/1971	Germany	

OTHER PUBLICATIONS

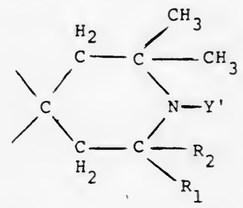
Fankhauser et al., Helv. Chim. Acta 49 (1), pp. 690–695 (1966); Chem. Abstracts 64: 14163d.

1. A compound of the formula

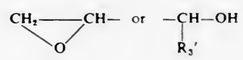


[II]

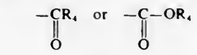
wherein R_1 and R_2 are the same or different and each is a straight- or branched alkyl residue having from 1 to 12 carbon atoms, or R_1 and R_2, together with the carbon atom to which they are attached, form a cycloalkyl residue having from 5 to 12 carbon atoms, or the group:



wherein R_1 and R_2 are as defined above and Y′ is a straight- or branched alkyl having from 5 to 20 carbon atoms, an alkenyl or alkynyl having from 3 to 20 carbon atoms, an aralkyl selected from benzyl, α-methylbenzyl, p-methyl- α-methylbenzyl and α-naphthylmethyl or the group $-CH_2X'$ wherein X′ is the group



wherein R_3' is hydrogen or a methyl residue, or X is the group



wherein R_4 is alkyl residue having from 1 to 20 carbon atoms.

B 425,285
WATER TREATMENT FOR CONTROLLING THE GROWTH OF ALGAE EMPLOYING BIGUANIDES

Graham Carter, and Anthony John Hinton, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 17, 1973, Ser. No. 425,285
Claims priority, application United Kingdom, Dec. 18, 1972, 58289/72
Int. Cl.² A01N *9/20*
U.S. Cl. 71—67. **3 Claims**

References Cited
UNITED STATES PATENTS

2,336,605	12/1943	Ernsberger et al.	424/326
2,643,232	6/1953	Rose et al.	424/326

FOREIGN PATENTS OR APPLICATIONS

254,255	3/1970	U.S.S.R.	71/67

OTHER PUBLICATIONS

Keane et al., Chem Abst. (1970), Vol. 73 16630y.

1. A method for controlling the growth of algae in the water of swimming pools which comprises adding to the water poly(-hexamethylene biguanide) hydrochloride, in an amount to provide a concentration of from 1 to 200 parts per million.

B 440,632
PROCESS FOR THE MANUFACTURE OF POLYETHERS CONTAINING IONIC BONDS

Alfred Renner, Munchenstein, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 7, 1974, Ser. No. 440,632

Claims priority, application Switzerland, Feb. 14, 1973, 2087/73

Int. Cl.² C08G *45/08*

U.S. Cl. 260—831 **18 Claims**

References Cited

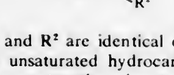
UNITED STATES PATENTS

3,436,373	4/1969	Cox et al.	260/47 X R
3,462,382	8/1969	Kolka et al.	260/51.5
3,625,684	12/1971	Poot et al.	260/2 A
3,790,606	2/1974	Sellet	260/401

FOREIGN PATENTS OR APPLICATIONS

652,830	5/1951	United Kingdom	

1. A process for the manufacture of crosslinked macromolecular polyethers containing ionic bonds, wherein polyhydric mononuclear or polynuclear phenols which contain as substituents, in the o- or p-positions to the OH groups, at least 2 radicals of the formula I



(1)

in which R^1 and R^2 are identical or different and denote a saturated or unsaturated hydrocarbon radical with 1 to 4 carbon atoms or together denote the morpholino radical (Mannich bases) are subjected, optionally in the presence of water or organic solvents, at temperatures of 20° to 200°C

A. on the one hand, to a polyaddition, in a manner which is in itself known, with compounds containing an average of more than one 1,2-epoxide group, the epoxide groups reacting with the phenol groups, and

B. on the other hand, to a polyquaternization, in a manner which is in itself known, with organic compounds containing at least 2 chlorine, bromine or iodine atoms.

B 446,956
METHOD FOR THE ELECTROLYTIC POLISHING OF THE INSIDE SURFACE HOLLOW NIOBIUM BODIES

Arthur Roth, and Otto Schmidt, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 28, 1974, Ser. No. 446,956

Claims priority, application Germany, Mar. 15, 1973, 2313026

Int. Cl.² C25F *3/30, 7/00*

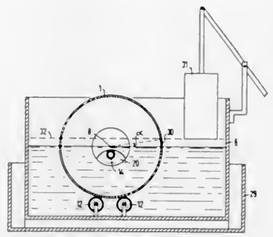
U.S. Cl. 204—129.43 **9 Claims**

References Cited

UNITED STATES PATENTS

2,861,937	11/1958	Jumer	204/212
3,616,341	10/1971	Jumer	204/129.6
3,689,388	9/1972	Diepers et al.	204/129.7 X

1. A method for the electrolytic polishing of the inside surface of a hollow niobium body, having at least one opening, in which method the hollow niobium body is partially immersed in an electrolyte, containing H_2SO_4, HF and H_2O, the niobium body being the anode in the electrolyte and supported for rotation about an axis of rotation extending through the opening such that for any position of the hollow niobium body, a coherent empty space in communication with the outside environment through the opening is present, said empty space being formed between the surface level of the electrolyte and all parts of the inside surface of the hollow niobium body located above the electrolyte level, in which method a cathode is introduced through the opening in the hollow niobium body and arranged in electrolyte relative to the hollow niobium body such that in the region of the electrolyte in which gases formed at the cathode during the flow of current are free to rise to the surface of the electrolyte and escape from the inside surface of the hollow niobium body without contacting any parts of the inside surface of the hollow niobium body immersed in the electrolyte, the steps of polishing including applying a constant electric voltage between the hollow niobium and the cathode such as to obtain damped oscillations imposed on the electrolyte current, switching off the voltage no later than at the point of complete decay of the current oscillations, maintaining the niobium body at rest until the oxide layer built up during the current oscillations is dissolved, rotating the niobium body and repeating these steps with the individual parts of the inside surface



successively immersed in the electrolyte but such that no part of the inside surface remains continuously in the electrolyte, wherein the improvement comprises slowly rotating the hollow niobium body during a period of constant voltage application of approximately 0.7 to 4 minutes about its axis of rotation at a speed which is sufficiently low so that the width of the zone of the inside surface which has emerged by the time the voltage is switched off is is at most 5 mm so as to not disturb the development of the damped oscillations, and raising the level of the electrolyte after the voltage is switched off to cover at least the zone which has emerged during application of voltage whereby the full oxide layer formed will be dissolved.

B 453,960
PROCESS OF MAKING DIAZO-SENSITISED FILM PRODUCTS USING HALOGEN CONTAINING PHENOLS AS COATING AID

Margaret Loudon Clachan; David Rankine Kennedy, both of Manningtree, England; Basil Robert Shephard, deceased, late of Manningtree, England, by Doreen Shephard, executrix, Colchester, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 307,529, Nov. 17, 1972, abandoned, which is a continuation of Ser. No. 647,642, June 21, 1967, abandoned. This application Mar. 22, 1974, Ser. No. 453,960

Claims priority, application United Kingdom, June 27, 1966, 28738/66; Sept. 8, 1966, 40209/66

Int. Cl.² G03C *1/80, 1/52*

U.S. Cl. 96—75 **5 Claims**

References Cited

UNITED STATES PATENTS

2,893,896	7/1959	Beeber et al.	117/118
2,984,569	5/1961	Huys et al.	96/87 R
3,072,482	1/1963	Beeber et al.	96/75
3,506,445	4/1970	Abbott et al.	96/87 R

FOREIGN PATENTS OR APPLICATIONS

966,258	8/1964	United Kingdom	96/75

OTHER PUBLICATIONS

Van der Grinter Bulletin, No. 78, 12/1964, pp. 1–8.

1. A process for the production of a diazo-sensitised film product, which comprises the successive steps of:

I. treating a self-supporting film of synthetic linear polyester by applying to at least one surface thereof a solution consisting of:

i. a liquid solvent which is volatile in the temperature range 30°–120°C, and

ii. 0.5–20% by weight of halogen-containing phenolic substance in solution therein, the molecules of the said substance containing one benzenoid ring and one or two hydroxyl groups and one or more chlorine or bromine atoms all of which are attached directly to carbon atoms belonging to the benzenoid ring;

II. heating the treated film for 1–15 minutes at 30°–120°C to remove the volatile solvent;

III. superimposing on a treated surface of the film a layer consisting essentially of one of the following:

1. a vinyl chloride-vinyl acetate copolymer or partially hydrolysed vinyl chloride-vinyl acetate copolymer,

2. a vinylidene chloride-acrylonitrile copolymer or a copolymer of vinylidene chloride with an acrylic or methacrylic ester,

3. a polymer of acrylic or methacrylic acid or ester, or a copolymer of these acids or esters with other vinyl unsaturated monomers;

IV. and thereafter applying over the said layer (1), (2), or 3 (4) one of the following:

A. a layer of cellulose acetate, cellulose acetate butyrate, polyvinylacetal, polyvinyl acetate or partially hydrolysed polyvinyl acetate which layer comprises a light-sensitive diazonium compound,

B. a layer of cellulose acetate, cellulose acetate butyrate, polyvinylacetal, polyvinyl acetate or partially hydrolysed polyvinyl acetate followed by impregnation of the said layer with a light-sensitive diazonium compound, or

C. a layer of cellulose acetate or cellulose acetate butyrate, followed by surface hydrolysis of said layer and impregnation of said hydrolysed surface with a light-sensitive diazonium compound.

B 458,819
LIQUID CLEANING COMPOSITION CONTAINING STABILIZED ENZYMES

Meyer Michael Weber, Milwaukee, Wis., assignor to Midwest Biochemical Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 211,755, Dec. 23, 1971, abandoned, which is a continuation-in-part of Ser. No. 852,079, Aug. 21, 1969, abandoned. This application Apr. 8, 1974, Ser. No. 458,819

Int. Cl.² C11D *7/42*

U.S. Cl. 252—545 **16 Claims**

References Cited

UNITED STATES PATENTS

3,519,570	7/1970	McCarty	252/DIG. 12
3,557,002	1/1971	McCarty	252/89
3,697,451	10/1972	Mausner et al.	252/545

1. An aqueous cleaning composition containing stabilized enzymes enabling the composition to be stored for extended periods without appreciable deactivation of the enzymes, comprising an aqueous solution containing at least 50% by weight of water and having a pH in the range of 8.0 to 11.0 and consisting essentially by weight of (a) 2% to 25% of an ionic detergent builder selected from the group consisting of water soluble inorganic phosphates, nitrilotriacetic acid, water soluble alkali metal salts of nitrilotriacetic acid, ethylene diamine tetra acetic acid, water soluble alkali metal salts of ethylene diamine tetra acetic acid, and the combination of an alkali metal metalsilicate and an alkali metal carbonate, (b) 5% to 30% by weight of a water-soluble surface active agent selected from the group consisting of an alkali metal alkyl sulfate where the alkyl group contains from 10 to 18 carbon atoms, an alkali metal alkylol sarcosinate where the alkylol group contains from 11 to 18 carbon atoms, an acetylenic glycol, an alkyl aryl sulfonate where the alkyl group contains from 8 to 15 carbon atoms, a fatty acid alkanolamide where the acyl radical has from 10 to 18 carbon atoms, and mixtures thereof, (c) 0.1% to 5% by weight of a water-soluble alkaline protease, (d) 5% to 40% by weight of an enzyme stabilizing agent selected from the group consisting of alkali metal sulfates, alkali metal chlorides, glycerol and alkylene glycols having from 2 to 8 carbon atoms in the alkylene group, and (e) the balance water.

7. A cold water wash composition, having a pH of about 7.0 and consisting essentially by weight of: 1% of the sodium salt of ethylene diamine tetraacetic acid, 6% of sodium lauryl sulfate, 6% sodium lauryl ether sulfate, 1.5% alkylamide sulfo succinate amid salt, 2% soluble alkaline protease having an activity from about 4000 to about 6000 Delft units/gm., 20% propylene glycol, 1.5% cocoaamido propyl dimethyl amine oxide, 0.5% polypeptides, 1.5% of an additive selected from the group consisting of perfume, sodium chloride, and citric acid, and 60% water, said composition having a cleaning performance differential up to 65.

B 465,376
CURED EPOXY POLYMER HAVING IMPROVED ADHESIVE PROPERTIES

Charles Allen McPherson, Easthampton Township, Burlington County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 443,648, Feb. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 369,038, June 11, 1973, abandoned. This application May 1, 1974, Ser. No. 465,376

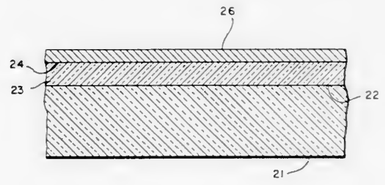
Int. Cl.² B32B *15/08*

U.S. Cl. 428—418 **7 Claims**

References Cited

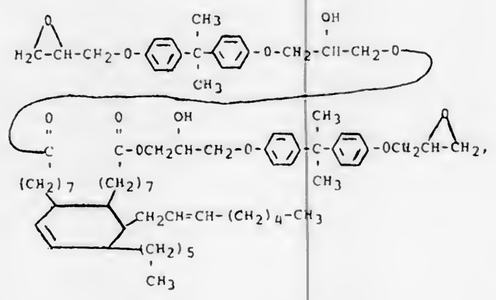
UNITED STATES PATENTS

2,920,990	1/1960	Been et al.	161/184
2,970,983	2/1961	Newey	260/18 EP
3,219,603	11/1965	Scheibli	260/18 EP
3,280,056	10/1966	Masters	260/18 EP
3,305,460	2/1967	Lacy	117/71 R
3,808,028	4/1974	Lando	117/47 A

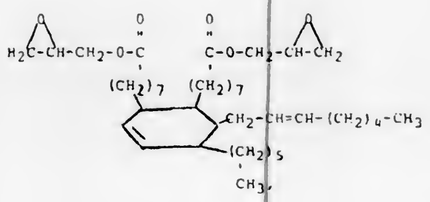


1. An article which comprises:
a first layer comprising a cured epoxy polymer resulting

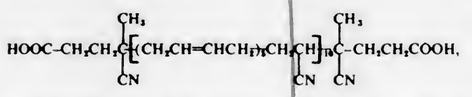
from curing a mixture of (1) a resin component comprising, (a) about 25 to about 95 parts by weight per 100 parts by weight of said resin component of a diglycidyl ether based upon linoleic dimer acid selected from the group consisting of (a^1) an adduct of two moles of the diglycidyl ether of bisphenol A and one mole of linoleic dimer acid having a structural formula of



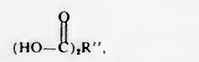
and an epoxide equivalent weight of 650 to 750, (b^1) a diglycidyl ether of linoleic dimer acid having a structural formula of



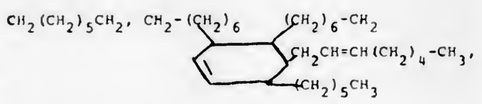
and an epoxide equivalent weight of 400 to 420, and (c^1) a mixture thereof; (b) about 5 to about 50 parts by weight per 100 parts by weight of the resin component of an elastomerically modified epoxy resin blend comprising the reaction product of about 40 weight percent of a carboxyl terminated acrylonitrile/butadiene random copolymer having a structural formula of

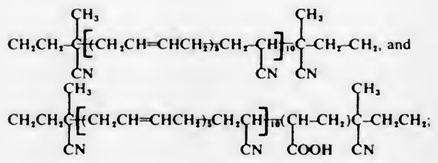


containing 2.37 percent carboxyl groups, 18 to 19 percent bound acrylonitrile and having a number average molecular weight of 3200, combined with about 60 weight percent of a diglycidyl ether selected from the group consisting of bisphenol A having an epoxide equivalent weight of 180 to 195 and bisphenol F having an epoxide equivalent weight of 152 to 167, and (c) a remainder of the resin component of a suitable diglycidyl ether selected from the group consisting of a diglycidyl ether of bisphenol A, a diglycidyl ether of bisphenol F and a mixture thereof; and (2) a suitable curing agent selected from the group consisting of (a) an acid anhydride percent in an amount ranging from about 16 to about 60 parts by weight per 100 parts by weight of the resin component, (b) a suitable polyamine present in an equal mole-to-mole ratio with the resin component, (c) a mixture comprising said polyamine in (b) above combined with at least 5 parts by weight per 100 parts by weight of the resin component of a suitable acid anhydride and (d) a mixture comprising said acid anhydride in (a) above combined with up to about 30 parts by weight per 100 parts by weight of the resin component of a carboxylic acid selected from the group consisting of a dicarboxylic acid having a structural formula of



where R'' is an organic radical selected from the group consisting of





and a trimer acid having a stoichiometry of $C_{54}H_{96}O_6$, and a mixture thereof, and (e) a mixture of the foregoing; and a metal layer deposited on at least a portion of said first epoxy layer.

B 470,945
NON-HARDENING HIGH MOLECULAR WEIGHT TRANS-POLYPENTENAMERS

Friedrich Haas, Cologne-Buchheim; Karl Nutzel, Opladen, and Hans-Joachim Jahn, Cologne-Flittard, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Continuation of Ser. No. 330,641, Feb. 8, 1973, abandoned, which is a continuation of Ser. No. 164,137, July 19, 1971, abandoned, which is a continuation of Ser. No. 813,688, April 4, 1969, abandoned. This application May 17, 1974, Ser. No. 470,945

Claims priority, application Germany, Apr. 11, 1968, 1769149

Int. Cl.² C08F *32/04*; **C08K** *5/01*

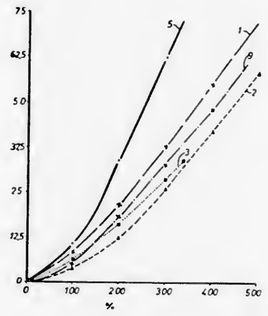
U.S. Cl. 260—33.6 AQ **6 Claims**

References Cited
UNITED STATES PATENTS

2,935,485	5/1960	Reynolds	260/33.6 AQ
2,964,083	12/1960	Pfau et al.	260/33.6 AQ
3,458,489	7/1969	Natta et al.	260/93.1

OTHER PUBLICATIONS

Nelson—Petroleum Refinery Engineering (4th ed.) (McGraw-Hill) (N.Y.) (1958), pp. 173–178.
Bruins—Plasticizer Technology (Vol. 1) (Reinhold) (N.Y.) (1965), pp. 26–31.



1. A composition of matter consisting essentially of (a) a high molecular weight polypentenamer having more than 50% of its double bonds in the trans-configuration obtained by ring-opening polymerization of cyclopentene and having a Mooney viscosity ML 4' (100°C.) of from 50 to 200 and (b) from 20 to 100 parts by weight of a plasticizer per 100 parts by weight of said polypentenamer, said plasticizer being a paraffinic, naphthenic or aromatic hydrocarbon having a molecular weight of from 200 to 1500.

B 472,760
AMINO ETHANOL-INDANE AND TETRAHYDRONAPHTHALENE DERIVATIVES

Adrian Charles Ward Curran, Reading, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

Filed May 23, 1974, Ser. No. 472,760

Claims priority, application United Kingdom, June 7, 1973, 27123/73

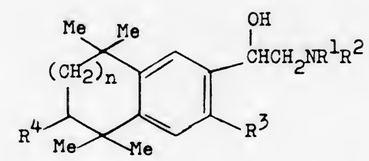
Int. Cl.² C07C *91/22*

U.S. Cl. 260—570.6 **4 Claims**

References Cited
UNITED STATES PATENTS

3,255,249	6/1966	Howe et al.	260/570.6 X

1. A compound having the formula:



(I)

wherein R^1 represents hydrogen or lower alkyl; R^2 represents lower alkyl; R^3 and R^4 independently represent hydrogen or lower alkyl; and *n* is the integer 1 or zero; or a pharmaceutically acceptable acid addition salt thereof.

B 487,467
IONIC POLYMER PLASTICIZED WITH PREFERENTIAL PLASTICIZERS

Robert D. Lundberg, 4 Brian Drive, Somerville, N.J. 08876; Henry S. Makowski, 2045 Winding Brook Way, Scotch Plains, N.J. 07076, and Lowell Westerman, 223 Pin Oak Drive, Baytown, Tex. 77520

Filed July 11, 1974, Ser. No. 487,467

Int. Cl.² C08K *5/05, 5/20, 5/43, 5/49*

U.S. Cl. 260—33.4 R **18 Claims**

References Cited
UNITED STATES PATENTS

3,264,272	8/1966	Rees	260/88.1 R
3,361,702	1/1968	Wartman et al.	260/30.6 R
3,847,854	11/1974	Canter et al.	260/31.8 R

1. A composition of matter comprising an ionically crosslinked polymer in combination with from about 0.2 to 50 parts per hundred parts ionically crosslinked polymer of a preferential plasticizer wherein said plasticizer is a normally liquid, non-volatile compound having a solubility parameter of at least nine, a boiling point of at least 150°C, and containing functional groups exhibiting a bond moment of at least 0.6 Debye, wherein the ionically crosslinked polymer is a sulfonated polymer.

B 494,439
ABSORBENT ARTICLES MADE FROM CARBOXYLIC SYNTHETIC POLYELECTROLYTES HAVING COPOLYMERIZED N-SUBSTITUTED ACRYLAMIDE CROSSLINKER

James R. Gross, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 5, 1974, Ser. No. 494,439

Int. Cl.² C08F *220/34*

U.S. Cl. 260—29.6 HN **6 Claims**

References Cited
UNITED STATES PATENTS

3,117,108	1/1964	Calvete et al.	260/80.73
3,245,933	4/1966	Muskrat	260/29.6 HN
3,514,419	5/1970	Darlow et al.	260/29.6 HN
3,669,103	6/1972	Horpe et al.	128/156
3,763,071	10/1973	Kutzer et al.	260/33.4 R
3,810,468	5/1974	Harper et al.	128/156
3,812,070	5/1974	Kelley	260/29.6 TA
3,821,175	6/1974	Daniels	260/80.73
3,843,580	10/1974	Andersen	260/29.6 TA

1. A solution useful to form water swellable articles of a carboxylic synthetic polyelectrolyte upon curing which comprises

1. a solvent selected from the group consisting of water, lower alcohols and mixtures thereof,
2. about 5 to about 60 percent by weight based on (1) of a crosslinkable carboxylic copolymer which contains in the copolymer

A. about 25 to about 98 percent by weight based on the total weight of the copolymer of units derived from an alkali metal salt of an olefinically unsaturated monosulfonic or monocarboxylic acid;
B. about 2 to about 50 percent by weight of an olefinically unsaturated monocarboxylic acid; and
C. about 0.1 to about 5.0 percent by weight of an N-substituted acrylamide or methacrylamide wherein the substituent group is a hydroxy methylene or an alkoxymethylene group having 1–8 carbons.

B 498,208
ENCAPSULATION PROCESS UTILIZING MICROORGANISMS AND PRODUCTS PRODUCED THEREBY

Joseph L. Shank, Matteson, Ill., assignor to Swift and Company Limited, Chicago, Ill.

Filed Aug. 16, 1974, Ser. No. 498,208
Int. Cl.² B41M *5/02;* **C12D** *13/08*
U.S. Cl. 428—411 **20 Claims**

References Cited
UNITED STATES PATENTS

2,346,011	4/1944	Damm	195/81
3,137,631	6/1964	Soloway	426/98
3,151,038	9/1964	Gray	195/81
3,418,250	12/1968	Vassiliades	252/316
3,681,199	8/1972	Rokitansky	195/98
3,743,579	7/1973	Zilberblat	195/104
3,779,869	12/1973	Zienty	195/56
3,834,991	9/1974	Megraw et al.	195/59
3,860,490	1/1975	Guttag	195/56

OTHER PUBLICATIONS
Microbiology, by Pelczar et al., p. 151, McGraw-Hill Book Co., 1958.

1. An encapsulation process comprising the steps of: growing a fungus under conditions that produce a fungus having a fat content of about 40 to 60% by weight, passing a fat-soluble substance into the fat within the grown fungus by placing said fungus into contiguous contact with said substance to thereby encapsulate said substance, said fat-soluble substance being passively retained within said fat and not being a natural constituent of the fungus; and harvesting said encapsulated substance.

5. The process of claim 4, wherein the casting is accomplished with an adhesive, the web is treated with an acidified clay, and the substance is a leuco dye that is initially colorless and exhibits a color when the pH thereof is lowered upon coming into contact with said acidified clay.

B 500,959
STABILIZED POLYMERIC COMPOSITION AND PRODUCT USING SAME

Ray Lawson Hartless, Lopatcong Township, Warren County, and Anthony Marion Trozzolo, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 27, 1974, Ser. No. 500,959
Int. Cl.² C08K *5/00*
U.S. Cl. 260—45.8 NZ **7 Claims**

References Cited
UNITED STATES PATENTS

3,357,944	12/1967	Dexter	260/45.9 NC
3,440,210	4/1969	Blount	260/45.9 NC

1. Article including at least one metallic portion in intimate contact with a plastic portion, said metallic portion including at least one element which accelerates the oxidative degradation of at least a component of the said plastic portion, the said plastic portion including a polymeric composition which is at least 90 percent by weight polymer, exclusive of filler, the said plastic portion containing a metal deactivator to lessen the acceleration of oxidative degradation due to the said metallic portion; characterized in that the said metal deactivator may be produced as the condensation product of two reactants: oxalyl dihydrazide and a furyl carbonyl compound selected from the group consisting of substituted and unsubstituted furyl aldehydes and furyl ketones.

B 507,166
SIFTING DRUM PAPER MACHINE WHEREIN THE DILUENT WATER IS CONTROLLED

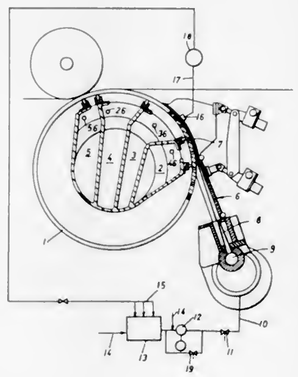
Klaus Prechtel, Heidenheim, Germany, assignor to J. M. Voith GmbH, Heidenheim (Brenz), Germany

Filed Sept. 18, 1974, Ser. No. 507,166
Claims priority, application Germany, Sept. 20, 1973, 2347369
Int. Cl.² D21F *1/06, 1/08*
U.S. Cl. 162—258 **2 Claims**

References Cited
UNITED STATES PATENTS

3,455,780	7/1969	Hazard, Jr. et al.	162/364
3,631,982	1/1974	Lejeune	162/340 X
3,741,865	6/1973	Lejeune	162/317

OTHER PUBLICATIONS
Armstrong; "New Cylinder Former Designs–Necessary for Survival"; *Paper Trade Journal;* 3–15–65, pp. 43–47, 162–317.



1. A sifting drum paper machine having a sifting drum with a pulp material inlet located at the outside thereof and suction chambers disposed in the interior thereof and with means for measuring pressure in vicinity of a paper web-forming part on the surface of the drum, said pressure measuring means operatively connected with means controlling the quantity of dilu-ent water to the supply of pulp material to said pulp material inlet in accordance with said measured pressure.

B 509,819
CATHODE-DEPOLARIZER MIX CONTAINING A POLYACRYLAMIDE BINDER

Richard J. Bryndal, Russell Twp. Cuyahoga, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Sept. 27, 1974, Ser. No. 509,819
Int. Cl.² H01M *6/00, 10/00*
U.S. Cl. 136—138 **11 Claims**

References Cited
UNITED STATES PATENTS

2,491,640	12/1949	Blake et al.	136/136
3,009,980	11/1961	Corren et al.	136/24
3,060,254	10/1962	Urry	136/138
3,113,050	12/1963	Kordesch et al.	136/123
3,600,231	8/1971	Dawson	136/138
3,655,449	4/1972	Yamamoto et al.	136/107
3,784,413	1/1974	Watanabe et al.	136/131

1. A galvanic cell having an anode; a cathode-depolarizer mix containing manganese dioxide, a carbonaceous conductive material and an electrolyte; and a separator interposed between said anode and said cathode-depolarizer mix and also containing a portion of the electrolyte; the improvement comprising discrete particles of polyacrylamide in said cathod-depolarizer mix in an amount ranging between about 0.1% to about 1.5% based on the weight of the cathode-depolarizer mix.

B 512,779
PROCESS FOR PREPARING CYCLICDICARBOXIMIDO-SUBSTITUTED PHOSPHONOTHIOATES

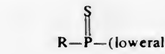
Ian McLachlan, King's Lynn, England, assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 7, 1974, Ser. No. 512,779
Claims priority, application United Kingdom, Oct. 23, 1973, 49325/73
Int. Cl.² C07D *209/48*
U.S. Cl. 260—326 E **6 Claims**

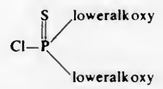
References Cited
UNITED STATES PATENTS

3,336,188	8/1967	Tolkmith et al.	260/326 E
3,803,167	4/1974	Senkbeil	260/326 E
3,853,909	12/1974	Senkbeil	260/326 E

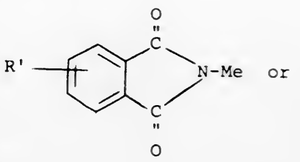
1. A process for preparing cyclicdicarboximido phosphonothioates corresponding to the formula



wherein R represents phthalimido, mono-methyl phthalimido, 4-cyclohexene-1,2-dicarboximido or mono-methyl-4-cyclohexene-1,2-carboximido which comprises reacting a phosphorochloridothioate corresponding to the formula



with an N-alkali-metal cyclicdicarboximide corresponding to the formula



wherein R' represents hydrogen or methyl and Me represents sodium or potassium at a temperature of from about 0° to about 100°C. in the presence of an inert tertiary alcohol solvent and a catalytic amount of a 1-(loweralkyl)imidazole.

B 519,355
FLAME RESISTANT FIBER BLENDS

Bennett Ray Baird, Camden, S.C., and Leander Adair Sherbeck, Waynesboro, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 30, 1974, Ser. No. 519,355
Int. Cl.² C08L *1/02*
U.S. Cl. 260—17.2 **9 Claims**

References Cited
UNITED STATES PATENTS

3,063,966	11/1962	Kwolek	260/78
3,480,582	11/1969	Brooks	260/45.75
3,692,867	9/1972	Mayer et al.	260/857 PE
3,738,804	6/1973	Snider	8/15

OTHER PUBLICATIONS
Chem. Absts. 79:20257y, "Flame–Retardant—quanidines," Nachbur.
Chem. Absts. 79:20256x, "Flame–Retardant—products," Nachbur.
Chem. Absts. 71:22869h, "Flame–Resistant—compounds," Evans.

1. A flame-resistant blend of textile fibers comprising (a) from about 20 to 40% by weight of a normally flammable textile fiber aesthetically suitable for wearing apparel and (b) from about 60 to 80% by weight of poly(metaphenylene isophthalamide) fiber containing distributed substantially throughout its whole interior a finely divided cross-linked reaction product of a tetrakis hydroxymethyl phosphonium compound selected from the group consisting of tetrakis hydroxymethyl phosphonium chloride, tetrakis hydroxymethyl phosphonium oxide and reactive derivatives thereof and a resin containing active hydrogen selected from the group of melamine formaldehyde, phenolformaldehyde and hexamethylol melamine, the phosphonium compound being present in an amount of from 5–20% of weight (unreacted basis) of the poly(metaphenylene isophthalamide) fiber.

B 530,437

FLUORINATED OILY SOIL RELEASE AGENTS

Ronald W. Schmoyer, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Dec. 6, 1974, Ser. No. 530,437
Int. Cl.² C08G 9/36
U.S. Cl. 260—67.6 R **4 Claims**

References Cited
UNITED STATES PATENTS

3,128,272	4/1964	Wear et al.	260/249.6
3,296,264	11/1967	Gagliardi	260/249.6
3,488,310	1/1970	McCombs	260/849
3,503,915	5/1970	Peterson	260/849
3,510,455	5/1970	Olson	260/67.6 R
3,894,992	7/1975	Raynolds	260/67.6 R

FOREIGN PATENTS OR APPLICATIONS

1,233,970	6/1971	United Kingdom

1. An adduct prepared by condensing, in the presence of an acid catalyst and under temperature and pressure conditions that result in the removal of alcohol formed by the condensation of

A. an alcohol of the formula

1 $R_f(CH_2)_nOH$ wherein R_f is perfluoroalkyl of from 4 through 16 carbon atoms, and n is an integer from 1 through about 16;

B. ethylene glycol;

C. a polyalkylene glycol of the formula

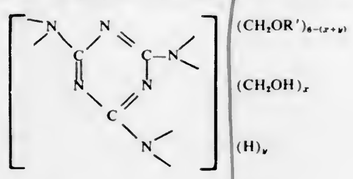
2 $HO(CH_2\text{-}CHR\text{-}O)_mH$

wherein R is hydrogen or methyl;

and m is an integer of about from 4 to 450;

and having a molecular weight of about from 200 to 20,000; and

D. at least one poly(alkoxymethyl)melamine of the formula



wherein

R′ is alkyl of 1 to 5 carbon atoms;

x has a value of 0 to 2; and

y has a value of 0 to 3 with the limitation that $x + y$ cannot exceed a value of 3; **wherein the equivalents ratio of A to B + C** is about from 1/20 to 20/1, the equivalents ratio of A + B + C to D is about from 0.5/1 to 1.5/1, and the equivalents ratio of B to C is about from 10/1 to 1/10.

B 532,477

METHOD FOR SYNTHESIS OF OPTICALLY ACTIVE THIOLACTONES

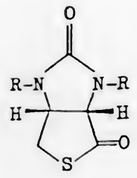
Yasuhiko Aoki, Toyonaka; Hiroyuki Suzuki, Takarazuka; Hisao Akiyama, Nishinomiya, and Shigeru Okano, Kawanishi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 372,606, June 22, 1973, Pat. No. 3,876,656. This application Dec. 13, 1974, Ser. No. 532,477
Claims priority, application Japan, June 22, 1972, 47-63032; Mar. 23, 1973, 48-33912
Int. Cl.² C07D 49/34
U.S. Cl. 260—309.7 **8 Claims**

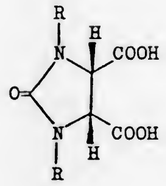
References Cited
UNITED STATES PATENTS

2,417,326	3/1947	Schnider et al.	260/309.7
2,489,232	11/1949	Goldberg et al.	260/309.7 X

1. A process for producing an optically active (+)-thiolactone of the formula:



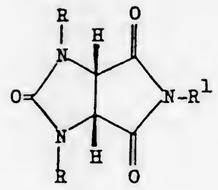
wherein R is a benzyl group, which comprises reacting a dicarboxylic acid of the formula:



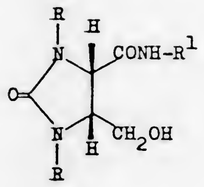
wherein R is as defined above or the acid anhydride, ester or halide thereof with an optically active primary amine of the formula:

$R^1 - NH_2$

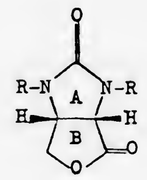
where R^1 is an optically active primary amine residue, reducing the resultant trione of the formula:



wherein R and R^1 are each as defined above, hydrolyzing the resulting amide-alcohol of the formula:



wherein R and R^1 are each defined above and treating the thus obtained lactone of the formula:



wherein R is as defined above with an alkali metal hydrosulfide and carbon disulfide or phosphorus pentasulfide and imidazole.

B 561,365

DITHIOKETAL DERIVATIVES OF 13-POLYCARBONALKYLGON-4-EN-3-ONES

Gordon Alan Hughes, Haverford, and Herchel Smith, Wayne, both of Pa., assignors to Herchel Smith, Bryn Mawr, Pa.

Continuation-in-part of Ser. Nos. 228,384, Oct. 4, 1962, Pat. No. 3,850,911, Ser. No. 337,823, Jan. 15, 1964, and Ser. No. 388,820, Aug. 11, 1964. This application June 29, 1966, Ser. No. 561,365
Int. Cl.² C07J 33/00
U.S. Cl. 260—239.5 **5 Claims**

References Cited
UNITED STATES PATENTS

3,850,911	11/1974	Hughes et al.	260/397.4

1. The composition of matter selected from the group consisting of 17-ethynyl-17β-hydroxy-gon-4-en-3-thioketal having an alkyl group containing 2 to 4 carbons at the 13-position, 17-chloroethynyl-17β-hydroxy-gon-4-en-3-thioketal having an alkyl group containing 2 to 4 carbons at the 13-position, and the acetate esters thereof.

B 451,396

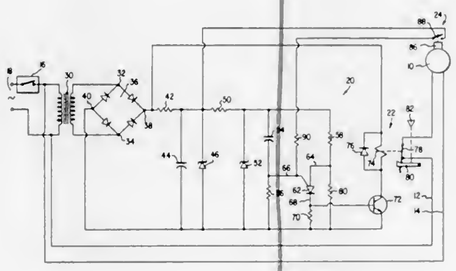
LUBRICANT PRESSURE RESPONSIVE CONTROL CIRCUIT

Richard K. Nurnberg, 512 N. Park Ave., Norristown, Pa. 19401

Filed Mar. 15, 1974, Ser. No. 451,396
Int. Cl.² F25B *43/02*; G05B *13/00*
U.S. Cl. 318—481 **11 Claims**

References Cited
UNITED STATES PATENTS

3,673,811	7/1972	Adams et al.	62/158
3,716,756	2/1973	Runge	318/484 X
3,796,061	3/1974	Weihl	318/484 X
3,801,889	4/1974	Quinn	318/481



1. A motor control circuit comprising
means responsive to energization of the control circuit for supplying a unipolarity voltage across a pair of nodes,
a timing resistance,
a timing capacitance,
said timing resistance and said timing capacitance being connected in a series circuit across the pair of nodes,
switch means having first and second terminals and being responsive to a predetermined lubricating fluid pressure for opening and closing a conductive path between the first and second terminals,
said first and second terminals and said timing capacitance being connected in a closed loop circuit excluding the timing resistance,
sensing means including a voltage responsive semiconductor device connected to the timing capacitance for sensing a predetermined charge condition of the capacitance, and
means capable of terminating operation of a motor in response to the sensing means including a magnetic latching relay having a winding energized in response to the sensing means, a pair of contacts which are opened when the winding is energized, means for maintaining the pair of contacts open after the winding is deenergized, and means for allowing the manual reclosing of the pair of contacts.

B 483,247

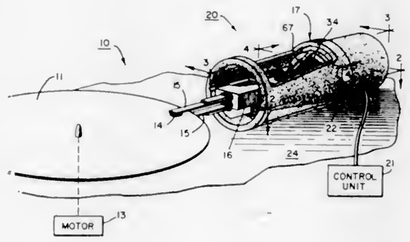
MOVING CARRIAGE FOR DISK HEAD POSITIONER

Guenter E. Schneider, Concord, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 295,370, Oct. 5, 1972, abandoned. This application June 26, 1974, Ser. No. 483,247
Int. Cl.² G11B *25/04*, *5/54*, *17/00*; H02K *41/02*
U.S. Cl. 360—104 **10 Claims**

References Cited
UNITED STATES PATENTS

3,505,544	4/1970	Helms	310/13
3,544,980	12/1970	Applequist et al.	360/98
3,665,433	5/1972	Gillum et al.	360/106
3,666,977	5/1972	Helms et al.	310/13
3,735,163	5/1973	Dijkstra et al.	310/13
3,743,794	7/1973	Miller	360/106



1. In a rotating disk memory including a disk, means for rotating the disk and support means for the rotating means, the improvement of means for writing data onto and reading data from the disk, said means comprising:
A. a carriage adapted for linear motion along an axis, said carriage including a central frame unit and, connected to opposite ends thereof, a reading and writing head unit and a coil unit, all said units being formed integrally along the axis with said head unit being operatively associated with the disk,
B. an integral housing mounted to the support means adjacent the disk, said housing having guides parallel to the axis for confining carriage motion, and
C. said carriage additionally including coplanar engaging means for coacting with said guides and supporting said carriage for linear motion along the axis, said reading and writing head unit and said coil unit each having portions extending above and below the plane of said coplanar engaging means, the carriage center of gravity thereby being midway between said guides and coplanar with said engaging means.

B 504,405

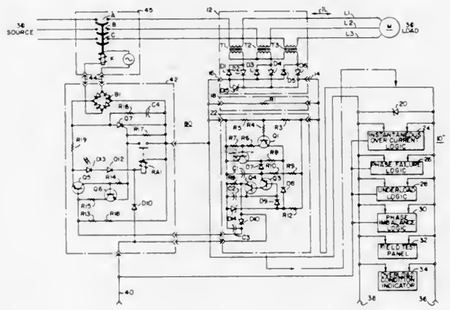
CURRENT SENSITIVE CIRCUIT PROTECTION SYSTEM

Donald S. Kimmel, Monroeville; Wardell Gary, and Glenn R. Taylor, both of Beaver, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 9, 1974, Ser. No. 504,405
Int. Cl.² H02H *3/08*, *7/08*
U.S. Cl. 317—36 TD **11 Claims**

References Cited
UNITED STATES PATENTS

3,248,610	4/1966	Faglie	317/47
3,296,495	1/1967	Paddison	317/47
3,327,170	6/1967	Sonnemann	317/47
3,363,185	1/1968	Sanderson et al.	340/40
3,562,595	2/1971	Swanson	317/141 S
3,602,783	8/1971	Engel	317/36 TD
3,611,037	10/1971	Watson	317/36 TD
3,713,005	1/1973	Engel	317/36 TD
3,784,846	1/1974	Krick	307/293
3,818,275	6/1974	Shimp	317/36 TD
R27,393	6/1972	Aselman, Jr.	317/36 TD



1. An electrical circuit protecting device, comprising:
sensor means for sensing circuit current in an electrical circuit, said sensor means having an output for providing an output current related to said circuit current;
replaceable load resistor means connected to said output of said sensor means for converting said output current into a voltage the value of which is variable within a predetermined voltage range for a predetermined range of said circuit current;
a replaceable module connected in parallel circuit relationship with said load resistor means, said module being capable of initiating a circuit breaker trip function, said module being operable over said predetermined range of said voltage; and
circuit breaker trip means connected to said module for opening said electrical circuit when said trip function occurs in said module.

B 565,717

DETECTOR FOR AM-FM SIGNALS

William Peil, North Syracuse, and Robert J. McFadyen, Syracuse, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

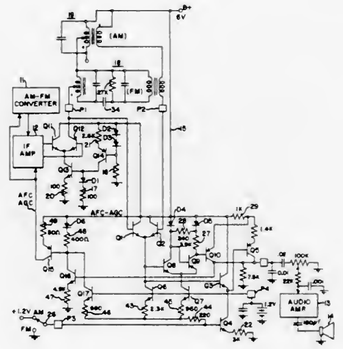
Continuation-in-part of Ser. No. 457,908, April 4, 1974, abandoned. This application Apr. 7, 1975, Ser. No. 565,717
Int. Cl.² H03D *3/22*, *5/00*
U.S. Cl. 329—2 **25 Claims**

References Cited
UNITED STATES PATENTS

3,022,461	2/1962	Wilcox, Jr.	329/103
3,519,944	7/1970	Avins	329/103

FOREIGN PATENTS OR APPLICATIONS

18,162	6/1970	Japan	325/315



8. An AM-FM detector comprising:
a. a source selectively providing either frequency modulated signals of a first predetermined center frequency or amplitude modulated signals of a second predetermined center frequency,
b. phase shift means which for frequency modulated signals produces a substantially linear change of phase with frequency through a range lying to either side of an odd multiple of 90° and which for amplitude modulated signals produces a phase inversion,
c. a differentially connected emitter follower pair comprising a pair of transistors, the collectors of both transistors being jointly coupled to a bias source; the emitters of both transistors being jointly coupled to ground through a load impedance, and the base of one transistor being coupled to said source without phase shift and the base of the other transistor being coupled to said source through said phase shift means to produce at the joined emitters an output waveform representing the greater of the two input waveforms and having zero crossing widths proportional to the phase separation of the input wave;
whereby for FM operation an output wave-form is provided having a portion of one polarity which is broad and double peaked while having a portion of the other polarity which is narrow and single peaked, and whereby for AM operation full wave rectification is achieved; and
d. integrating means coupled to said load impedance which for FM operation converts said variable width portions of said other polarity to a time averaged waveform whose amplitude is proportional to said frequency deviation to obtain the original signal modulation and which for AM operation derives the average amplitude of said full wave rectified signal to obtain the original signal modulation.

13. A frequency modulation detector responsive to frequency modulated signals of predetermined center frequency, comprising:

a. a pair of unidirectionally conducting semiconductor means each having at least a first and a second electrode, the first electrodes being joined together and connected to a load impedance,
b. first input means for applying said frequency modulated signals to the second electrode of one of said semiconductor means, said frequency modulated signals being in the form of a first input waveform,
c. second input means for applying said frequency modulated signals that have been shifted in phase so as to exhibit a substantially linear change of phase as a function of frequency through a range lying to either side of an odd multiple of 90° to the second electrode of the other of said semiconductor means, the phase shifted frequency modulated signals being in the form of a second input waveform, said first and second semiconductor means conducting in accordance with the predominant one of said first and second input waveforms so as to generate an output waveform at said load impedance which represents the predominant one of the two input waveforms and which intersects an established reference level with reference level crossing widths that are a function of the relative phase of said two input waveforms, and
d. integrating means coupled to said load impedance for converting the output waveform to a time averaged waveform whose amplitude is proportionl to said relative phase and therefore the frequency deviation of said signals.

B 571,659

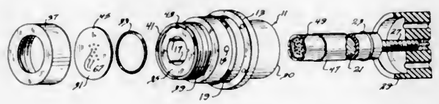
ION-PLASMA GUN FOR ION-MILLING MACHINE

Manfred S. Kaminsky, 906 S. Park Ave., Hinsdale, Ill. 60521, and Thomas J. Campana, Jr., 3836 W. 86th Place, Chicago, Ill. 60652

Filed Apr. 25, 1975, Ser. No. 571,659
Int. Cl.² H01J 17/04; H05H 1/00
U.S. Cl. 313—231.4 **5 Claims**

References Cited
UNITED STATES PATENTS

3,097,292	7/1963	Kugler et al.	219/121 P
3,347,698	10/1967	Ingham, Jr.	315/111.2
3,579,028	5/1971	Cheng	315/111.2



1. A plasma gun for use within a ion-milling machine comprising an elongated, hollow housing; a first elongated electrode positioned lengthwise within said housing, said electrode including a hollow end portion with a perforated closed end to define a first plasma chamber; a second electrode comprising a point source mounted within and in electrical contact with said first electrode extending longitudinally within said first plasma chamber; an insulating sleeve disposed about said first electrode along the length thereof and outwardly from said perforated closed end; a third flat electrode mounted essentially parallel to and outwardly from said perforated closed end of said first electrode in sealing engagement with the inner surfaces of said housing to define a second plasma chamber; means for providing an ionizable gas about said insulating sleeve and within said first and second plasma chamber; and means for applying a voltage between said third electrode and said combined first and second electrodes to ionize said gas and provide a plasma.

DESIGN APPLICATIONS

PUBLISHED APRIL 13, 1976
UNDER THE SECOND TRIAL VOLUNTARY PROTEST PROGRAM

NOTE.—A copy of the notice setting forth the details of the Second Trial Voluntary Protest Program may be found in the Patent and Trademark Notices section of this issue.

Any protests relating to the patentability of these published design applications must be filed in writing before July 13, 1976. These applications are available for inspection in the Allowed Files Branch, Crystal Plaza, Room 2–10C28. All correspondence should be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

Printed copies of the published design applications may be purchased from the Patent and Trademark Office at 20 cents each. An "Index of Design Applicants and Assignees of Design Applications" and a concordance entitled "Classification of Published Design Patent Applications" are located in the back of this issue.

B 489,485
TOY LOADER

Jack L. Breneman, Orchard Park, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

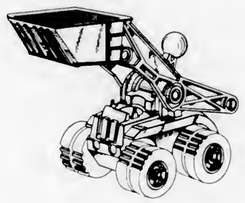
Filed July 18, 1974, Ser. No. 489,485
Int. Cl. D21—01
U.S. Cl. D34—15 AJ

References Cited
UNITED STATES PATENTS

D. 184,241	1/1959	Painter	D40—5 R
D. 217,661	5/1970	McCawley	D40—5 R
D. 231,482	4/1974	Bauer	D40—5 R

OTHER REFERENCES

Playthings, June 1971, p. 64, toy loader at top right corner of page.



B 493,254
TOY DIGGER

Jack L. Breneman, Orchard Park, and Jeffrey T. Samson, East Aurora, N.Y., assignors to The Quaker Oats Company, Chicago, Ill.

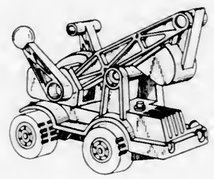
Filed July 31, 1974, Ser. No. 493,254
Int. Cl. D21—01
U.S. Cl. D34—15 AJ

References Cited
UNITED STATES PATENTS

3,807,586	4/1974	Holopainen	D40—5 R

OTHER REFERENCES

Ertl, 1970 catalog, p. 14, #426 "Payloader" at bottom of page.
Ward, 1973 Xmas Catalog, p. 295, tractor second from top of page.



B 545,265
CORD CONNECTOR
George J. Lawrence, North Kingstown, and Lawrence P. Mellyn, Glocester, R.I., assignors to General Electric Co., Providence, R.I.
Filed Jan. 30, 1975, Ser. No. 545,265
Int. Cl. D13—*03*
U.S. Cl. D26—1 B

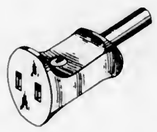
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2,284,392	5/1942	Heiser.	
2,814,789	11/1957	Herman et al.	339—103 R
3,039,075	6/1962	Stollman	339—195 R

FOREIGN PATENTS

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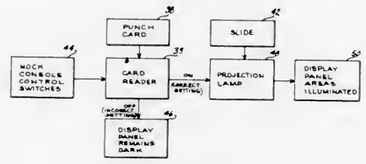


REISSUES

APRIL 13, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,763
COMPUTER TEACHING MACHINE
Alan Epstein, Monroe, N.Y., assignor to Integrated Electronics Corporation, Dover, N.J.
Original No. 3,601,905, dated Aug. 31, 1971, Ser. No. 5,585, Jan. 26, 1970. Application for reissue May 16, 1973, Ser. No. 360,663
Int. Cl.² G09B *25/02*
U.S. Cl. 35—13 **7 Claims**



1. A teaching machine for teaching the operation of an electronic device of the type provided with a plurality of adjustable control elements and a control panel display which includes a plurality of lights adapted to illuminate in a predetermined pattern in response to a particular setting of said control switches, said machine comprising:

a. a support structure;

b. a mock control panel display supported on said structure, said mock display having an overall configuration and appearance substantially identical to the electronic device display;

c. a plurality of areas on said mock display, each of said areas occupying a position corresponding to the position of one of said lights on said electronic display;

d. a plurality of switches equal in like and kind to said adjustable control elements mounted on said support structure;

e. means for projecting an image on said mock display areas; and

f. circuit means interconnecting said switches and said projecting means, whereby when said teaching machine switches are set in a pattern identical to a predetermined setting of said control elements, said projecting means is actuated to project an image on said mock display areas to cause said mock display areas to resemble the predetermined pattern of illuminated lights of said electronic device.

Re. 28,764
ADJUSTABLE RAKE
Gale H. Durkee, 4301 Stafford, S.W., Wyoming, Mich. 49509
Original No. 3,701,243, dated Oct. 31, 1972, Ser. No. 165,483, July 26, 1971. Application for reissue Oct. 12, 1973, Ser. No. 405,742
Int. Cl.² A01D *7/00*
U.S. Cl. 56—400.15 **13 Claims**

1. An adjustable hand rake comprising:

a handle having a longitudinal extent;

a guide member secured to one end of said handle, said guide member having a plurality of laterally spaced apart holes;

a tine retainer slidably mounted on said handle, said retainer including a transversely extending one piece cage and a one piece transversely extending support plate, said cage having an axial bore through which said handle extends;

said support plate having a transversely extending slot and a transversely extending indentation angularly extending from said transversely extending slot to a bottom edge of said support plate;

a plurality of tines extending through said guide member holes, the upper ends of said tines being bent outwardly, the upper portion of said tines being positioned in said indentation with said upper bent ends extending into said transversely extending slot;

said cage having a transversely extending wide base flange covering said tines upper portion;



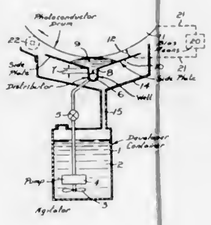
said support plate and said cage wide base flange having transversely extending portions extending longitudinally of said slot and parallel to said tines in clamping engagement therewith longitudinally of said outwardly bent portions; and

means rigidly clamping said support plate to said cage wide base flange for rigidly retaining said tines in said indentation for movement laterally within said indentation but otherwise preventing said tines from movement in said indentation, said rigidly clamped tines maintaining said tine retainer in a fixed angular position on said handle with respect to said guide member.

Re. 28,765
LIQUID TONER APPLICATOR
Josef Matkan, Malvern, Australia, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Original No. 3,752,119, dated Aug. 14, 1973, Ser. No. 151,483, June 10, 1971. Application for reissue Aug. 13, 1975, Sec. No. 604,191
Claims priority, application Australia, June 11, 1970, 1483
Int. Cl.² G03G *15/10*
U.S. Cl. 118—637 **12 Claims**

6. Apparatus for developing electrostatic latent images comprising, in combination, a drum having a surface thereon for carrying an electrostatic latent image to be developed, a container for containing a liquid dispersed toner, agitation means mounted for maintaining said toner in suspension in said container, a pair of side plates mounted relative to said drum, means defining an elongated well extending along and interconnecting the said side plates and opening between said side plates, an elongated distributor mounted to extend along said elongated well and having openings therealong

opening into said well, pump means, means connecting said pump means between said container and said distributor to supply liquid dispersed toner from said container to said



distributor, said side plates and said elongated well being mounted to coact to form a pool of liquid dispersed toner having a top surface which touches the surface of said drum.

Re. 28,766

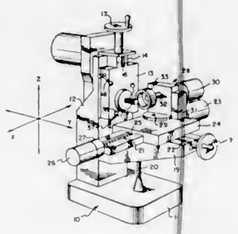
APPARATUS FOR MILLING CAMS AND THE LIKE, AS FOR SWISS-TYPE SCREW MACHINE CAMS

John A. Villano, Cam-Apt 17 Brown St., Waterbury, Conn. 06702

Original No. 3,714,865, dated Feb. 6, 1973, Ser. No. 104,662, Jan. 7, 1971. Application for reissue Oct. 23, 1974, Ser. No. 517,397

Int. Cl.² B23C *1/18*

U.S. Cl. 90—13 C **5 Claims**



1. An N/C controlled system for cutting involute and/or corrected involute cam profiles for Swiss-type screw machine control cams, which comprises,

a. a [milling] machine having a cutting head and a work supporting slide,

b. said slide having at least one linear axis of movement,

c. a work-holding rotary table mounted on said slide,

d. said cutting head mounting a [milling] cutter engageable with a cam blank on said rotary table,

e. N/C controlled motors driving said rotary table through rotary movements and said slide through linear movements, and

f. an N/C program control, including a linear-to-linear continuous path interpolator, connected to said table driving motor and said slide driving motor to effect integrated linear and rotary movements of a cam blank relative to said cutter.

Re. 28,767

DRAWING TABLE

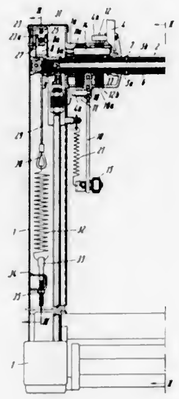
Franz Kuhlmann; Arnold Gundlach, and Horst Seiffert, all of Wilhelmshaven, Germany, assignors to Franz Kuhlmann KG, Wilhelmshaven, Germany

Original No. 3,826,204, dated July 30, 1974, Ser. No. 296,586, Oct. 11, 1972. Application for reissue June 19, 1975, Ser. No. 588,185

Claims priority, application Germany, Oct. 11, 1971, 2150633

Int. Cl.² A47F *5/12*

U.S. Cl. 108—2 **10 Claims**



1. A drawing table including a stand, a board, a horizontal spindle constituting an axis rotatably mounted in the stand, a first arm mounted on the spindle adjacent each end thereof, a second arm pivotally mounted on the spindle adjacent each end thereof, each of said first arms being pivotally attached to said board, a link arm pivotally attached to each of said second arms and to said board, a compensating member having a peripheral spiral groove rotatably mounted adjacent each end of said spindle, a cable having first and second ends, said cable being attached at the first end to the compensating member and located in the spiral groove, a counterbalancing means adjustably connected to the stand, and the second end of the cable being attached to the counterbalancing means, the attachment of the cable to the compensating member in the spiral groove enabling the point of action of the counterbalancing means to vary with respect to the pivot axis during rotation of the compensating member with respect to the pivot axis, the arrangement being such that the first and second arms and the link arms connecting the board to the horizontal spindle allow the board to be adjusted in position and in which the weight of the board creates a first moment about the axis and the counterbalancing means creates a second moment about the axis, with said compensating member varying the second moment to compensate for variations in the first moment due to changes in the position of the board whereby the board is balanced in any position thereof.

Re. 28,768

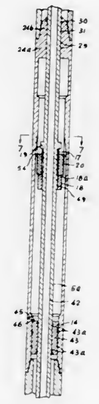
JARRING AND BUMPING TOOL FOR USE IN OILFIELD DRILLING STRINGS

Leonard Mason, Edmonton, Canada, assignor to Lee-Mason Tools Ltd., Edmonton, Canada

Original No. 3,804,185, dated Apr. 16, 1974, Ser. No. 171,063, Aug. 12, 1971. Application for reissue Dec. 30, 1974, Ser. No. 537,573

Int. Cl.² E21B *1/10*

U.S. Cl. 175—297 **23 Claims**



1. A hydraulic tool for use in a drill string, which comprises:

telescopically arranged tubular parts comprising an outer barrel and an inner mandrel received in the barrel in spaced relationship therewith so that an annular space is defined therebetween, said mandrel being longitudinally movable between a collapsed bumping position and an extended jarring position;

a spline assembly comprising a tubular male spline member connected at its lower end to the upper end of the mandrel, said member having means at its upper end for threadably connecting it into a drill string, and a female spline member slidably receiving the male spline member and connected at its lower end to the upper end of the barrel, said female spline member having ports in the lower end of its wall to permit of the escape of material trapped between the spline members;

said spline members having interlocking splines which lock them together with reference to rotational movement but permit of relative longitudinal movement;

fixed upper and floating lower packing elements sealing off the ends of the annular space to form a chamber for retaining a body of operating liquid;

a [bumper] *bottom* sub connected at its upper end to the lower end of the barrel and adapted to be connected into the drill string at its lower end, said sub having a counterbore to accommodate the lower end of the mandrel when it is in the collapsed bumping position;

said barrel having a floating packing section, a bumper free-stroke section of relatively large effective inside diameter, a valve-fitting section of relatively reduced inside diameter, and a jar free-stroke section of relatively large effective inside diameter, said bumper free-stroke section being of substantially greater length than the jar free-stroke section, said bumper free-stroke and jar free-stroke sections combining with the mandrel to define a bumper chamber and a jar chamber respectively;

stop means, protruding inwardly from the barrel wall at the upper end of the floating packing section, adapted to limit upward movement of the floating lower packing element;

valve means carried by one or both of the parts and comprising, when passing through the valve-fitting section,

first duct means, connecting the chambers, through which operating liquid may relatively slowly pass,

second duct means connecting the chambers,

and means arranged to close the second duct means when the valve means is passing through the valve-fitting section toward the jar chamber,

said second duct means being sized to permit operating liquid to pass from the bumper chamber to the jar chamber, as the valve means is passing through the valve-fitting section toward the bumper chamber, at a sufficiently rapid rate whereby the mandrel may move freely through the valve-fitting section;

said bumper chamber and jar chamber being adapted, due to their relatively large effective inside diameter to permit operating liquid to quickly bypass around the valve means when it is passing therethrough; and

impact faces, carried by the tubular parts, arranged to contact to limit the movement of the tubular parts to the collapsed bumping position and extended jarring position.

16. A hydraulic tool for use in a drill string which comprises:

telescopically arranged tubular parts comprising an outer barrel means and an inner mandrel slidably received in the barrel means in spaced relationship therewith between its ends so that liquid-holding space is defined therebetween, said barrel means and mandrel being movable longitudinally relative to each other between a collapsed bumping position and an extended jarring position;

upper and lower packing elements sealing off the ends of the liquid-holding space so that it is adapted to retain a body of operating liquid;

first and second means connecting the mandrel and barrel means and preventing relative rotational movement of the parts but permitting relative longitudinal movement thereof, said first means and the mandrel forming a first unit, said second means and the barrel means forming a second unit;

means at each end of the tool for threadably connecting it into the drill string;

said barrel means having a bumper free-stroke section, a valve-fitting section, and a jar free-stroke section, said bumper free-stroke section and jar free-stroke section combining with the mandrel to form bumper and jar free-stroke chambers;

valve means carried by the mandrel and providing, when in the valve-fitting section,

first duct means, connecting the bumper free-stroke and jar free-stroke chambers, through which operating liquid may relatively slowly pass at a controlled rate so as to effect retardation of the relative movement of the tubular parts,

second duct means connecting the bumper free-stroke and jar free-stroke chambers,

and means arranged to close the second duct means when the valve means is passing through the valve-fitting section toward the jar free-stroke section,

said second duct means being sized to permit operating liquid to pass at a relatively rapid rate from the bumper free-stroke chamber to the jar free-stroke chamber, as the valve means is passing through the valve-fitting section toward the bumper free-stroke section;

said bumper free-stroke and jar free-stroke sections each forming a passage, when the valve means is passing therethrough, which permits operating liquid to relatively freely bypass around the valve means;

said valve-fitting section having a relatively close fit around the valve means whereby, when the valve means is passing therethrough toward the jar free-stroke section, the operating liquid is prevented from freely bypassing said valve means;

a pair of first impact faces, one such impact face being carried by each unit and arranged to contact the other to limit the longitudinal movement of the units relative to each other to

the extended jarring position; and

a pair of second impact faces, one such second impact face being carried by each unit and arranged to contact the other to limit the longitudinal movement of the units relative to each other to the collapsed bumping position;

said impact faces and barrel sections being arranged to ensure that the effective jar stroke, being the distance moved by one tabular part relative to the other from the time the valve means leaves the valve-fitting section on the jarring stroke, thereby permitting relatively free bypass of operating liquid, until the impact faces limiting the jarring stroke contact, is substantially shorter than the effective bumping stroke, being the distance moved by one tubular part relative to the other from the time the valve means leaves the portion of the valve-fitting section, effective to cause retardation on the jarring stroke, until the impact faces limiting the bumping stroke contact.

Re. 28,769

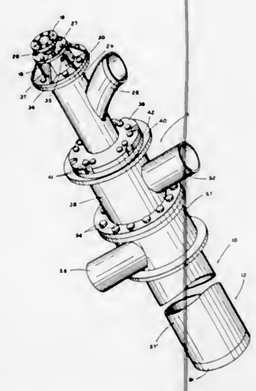
NOZZLE FOR FUEL AND OXYGEN LANCE ASSEMBLY

Nicholas M. Rymarchyk, Pittsburgh, and Leo L. Meinert, Baden, both of Pa., assignors to Berry Metal Company, Harmony, Pa.

Original No. 3,823,929, dated July 16, 1974, Ser. No. 396,912, Sept. 13, 1973. Application for reissue Dec. 9, 1974, Ser. No. 531,005

Int. Cl.² F27D *23/00*

U.S. Cl. 266—34 L **8 Claims**



1. For a lance adapted for mixing oxygen and fuel and including,

a first central fuel pipe,

a second pipe concentric with said first pipe and providing an insulating space around said fuel pipe,

a third pipe concentric with and providing an oxygen conveying space around said second pipe,

fourth and fifth pipes concentric with each other and said other pipes providing concentric coolant circulating spaces;

a nozzle head,

a first lower closure wall connected at its peripheral edge to said fifth pipe,

at least one cylindrical passage means opening outwardly of said first closure wall to provide an oxygen and fuel discharge orifice,

an extension of said fourth pipe providing at a lower portion of said nozzle head a coolant chamber surrounding said cylindrical passage and communicating with said coolant circulating spaces,

a second closure wall on said third pipe above said first closure wall,

a third closure wall on said second pipe enclosing said insulating space and being disposed above said second closure wall,

a fourth closure wall on said first pipe disposed above said third closure wall, and

a tube connected to said fourth closure wall and communicating with said first fuel pipe,

said tube being connected to and extending through said third closure wall, and

said tube having a discharge end [terminating] within said cylindrical passage. [in spaced relation relative to said oxygen and fuel discharge orifice]

Re. 28,770

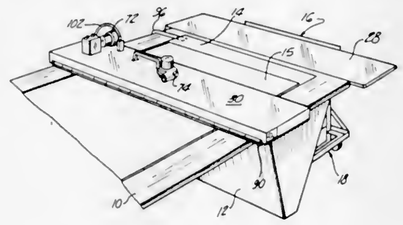
PHOTOGRAPHIC EXPOSURE APPARATUS

Barthel Zeunen, Clarkston; Rex C. Grace, Troy, and Alvie R. Dunn, Madison Heights, all of Mich., assignors to Capitol Reproductions, Inc., Madison Heights, Mich.

Original No. 3,723,001, dated Mar. 27, 1973, Ser. No. 69,404, Sept. 3, 1970. Application for reissue Nov. 15, 1974, Ser. No. 524,000

Int. Cl.² G03B *27/10*

U.S. Cl. 355—84 **14 Claims**



7. Exposure apparatus for making a photographic reproduction of a loft drawing or the like supportably overlying a horizontal drawing table surface, comprising a box-like unit having an open bottom and containing a light source, a set of wheels on said unit on which it is movable over a sheet of light sensitive exposure film covering the drawing to be reproduced, a means for applying a downward force proximate the leading edge of said exposure unit and adapted to apply such force toward said film and drawing to cause the film horizontally and smoothly to adhere to the drawing as said exposure unit moves thereover to expose said film, and a motor for driving said wheels to propel said exposure unit over said film.

Re. 28,771

TRANSLATOR FOR MEASURING AMOUNT OF COLOR CORRECTION FOR COLOR

Mitsuo Aimi, and Kiyoshi Seigenji, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Original No. 3,819,275, dated June 25, 1974, Ser. No. 337,232, Feb. 26, 1973. Application for reissue Jan. 23, 1975, Ser. No. 543,570

Claims priority, application Japan, Feb. 29, 1972, 47-20774

Int. Cl.² G01J *3/50*

U.S. Cl. 356—175 **9 Claims**

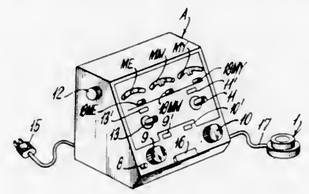
1. A translator for measuring the amount of color correction for color printing comprising:

a light receiving unit including three kinds of photocells having spectral sensitivities corresponding to red, green and blue colors respectively for measuring light from the optical projecting system of an enlarger equipped with color correction filters,

arithmetic means for calculating ratios between the outputs of the light receiving unit responsive to the respective

colors by taking one of the outputs as denominators and the other two outputs as numerators respectively, an amplifier for amplifying the output taken as the denominator,

reference voltage generating means for setting three comparison outputs for the three outputs of the arithmetic means respectively, the reference voltage generating



means memorizing the comparison outputs previously set, and

comparison means for comparing the outputs of the arithmetic means with the outputs of the comparison output setting means in corresponding relation thereto, the comparison means having indicators for indicating the differences between the outputs of the arithmetic means and the corresponding set comparison outputs respectively.

Re. 28,772

HIGH STRENGTH CORROSION-RESISTANT STAINLESS STEEL

Elbert E. Denhard, Jr., Towson, Md.; D. Cameron Perry, Middletown, Ohio, and Robert R. Gaugh, Lutherville, Md., assignors to Armco Steel Corporation, Middletown, Ohio

Original No. 3,592,634, dated July 13, 1971, Ser. No. 725,516, Apr. 30, 1968. Application for reissue Mar. 8, 1974, Ser. No. 449,516

Int. Cl.² C22C *38/44, 38/46, 38/58*

U.S. Cl. 75—128 A **3 Claims**

[1. Alloy steel of improved resistance to intergranular corrosion having a tensile strength exceeding some 100,000 p.s.i. at room temperature together with an elongation in 2" of at least about 30% and essentially consisting of about 20.5% to about 25% chromium, about 6% to about 17% nickel, about 3.5% to about 7% manganese, about .15% to about .50% nitrogen, at least two ingredients selected from the group consisting of molybdenum, columbium and vanadium wherein molybdenum is about .5% to about 4%, columbium about .1% to about .7% and vanadium about .05% to about .5%, with carbon less than .08%, silicon not exceeding about .7% and remainder substantially all iron.]

Re. 28,773

CHARGE IMAGE STORAGE METHOD AND APPARATUS

Charles B. Gibson, Jr., Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Original No. 3,426,238, dated Feb. 4, 1969, Ser. No. 599,933, Dec. 7, 1966. Continuation of Ser. No. 106,613, Jan. 14, 1971, abandoned. Application for reissue Apr. 9, 1973, Ser. No. 349,210

Int. Cl.² H01J *31/48*

U.S. Cl. 315—11 **27 Claims**

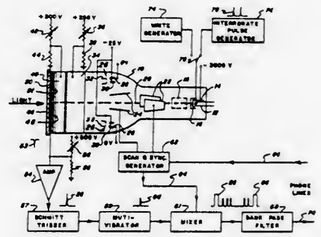
1. Charge image storage apparatus comprising:

a storage target having capacitance for storing a charge pattern,

first means for bombarding such storage target with a first beam of electrons capable of causing secondary emission from selected areas from said storage target upon which said beam is directed for changing the voltage at such selected areas to store information,

second 2 means for bombarding the storage target with a lower velocity flood beam of electrons acting to drive areas of said target towards one of two stable potentials depending upon information stored thereon by said first means for the purpose of holding such information on the target,

means for modulating said first beam to read out stored potential information located at a selected area of said target at which the first beam is then directed including means for *independently* pulsing said first beam, wherein



each pulsation thereof has a duration less than necessary to change such selected area from one said stable potential to another, the said flood beam driving said area back to its stable potential during the time between pulsations in order to retain such stable potential of such area, [and] *means for systematically scanning said first beam of electrons, during read-out, over areas of the target where information is stored, and*

means coupled to said target for detecting a read-out signal.

Re. 28,774

WHITE BALANCE CONTROL SYSTEM

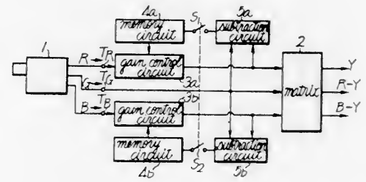
Yasuharu Kubota, Chigasaki, and Takashi Shiono, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Original No. 3,627,911, dated Dec. 14, 1971, Ser. No. 12,070, Feb. 17, 1970. Application for reissue Feb. 14, 1965, Ser. No. 332,278

Claims priority, application Japan, Jan. 17, 1970, 44-13409

Int. Cl.² H04N *9/00*

U.S. Cl. 358—29 **7 Claims**



1. A white balance control system comprising a first gain control circuit [,] *and* means for applying a first color video signal to the first gain control circuit [,] ; a second gain control circuit [,] *and* means for applying a second color video signal to the second gain control circuit [, means for applying a third color video signal, means for producing a first color difference signal,] ; means for producing [a] first *and second* color difference [signal between the first color video

signal as received from the first gain control circuit and the third color video signal, means for producing a second color difference signal between the second color video signal as received from the second gain control circuit and the third color video signal,] *video signals and means for applying a third color video signal to said last-named means, said first and second gain control circuits being connected to said last-named means;* a first memory circuit connected to said first gain control circuit for controlling the first gain control circuit[,]; a second memory circuit *connected to said second gain control circuit* for controlling the second gain control circuit, *said first and second memory circuits respectively comprising first and second capacitors connected to have signals derived from said first and second color difference signals, respectively, applied thereto, and field effect transistors having gate electrodes connected to said capacitors to memorize the signals applied to said capacitors;* and means for selectively applying the first and second color difference *video* signals to the first and second memory circuits, respectively, the first and second memory circuits storing the color difference signals applied thereto for maintaining constant the gains of the first and second gain control circuits.

6. A white balance control system [as claimed in claim 4 which is provided with] *comprising a first gain control circuit and means for applying a first color video signal to the first gain control circuit; a second gain control circuit and means for applying a second color video signal to the second gain control circuit;* a matrix circuit for producing R–Y and B–Y *color difference* signals [,] *and means for applying a third color video signal to said matrix circuit, said first and second gain control circuits being connected to said matrix circuit; a first memory circuit connected to said first gain control circuit for controlling the first gain control circuit; a second memory circuit connected to said second gain control circuit for controlling the second gain control circuit; and means for selectively applying* the R–Y and B–Y signals [being supplied] to the first and second memory circuits, *respectively, the first and second memory circuits storing the color difference signals applied thereto for maintaining constant the gains of the first and second control circuits.*

PLANT PATENTS

GRANTED APRIL 13, 1976

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,861
KALANCHOE PLANT
Adolf Grob, St. Gallen, Switzerland, assignor to Mikkelsens Inc., Ashtabula, Ohio
Filed Sept. 25, 1974, Ser. No. 509,145
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Kalanchoe characterized particularly by its ability to flower continuously for several months and flower again after revegetation under proper environmental conditions; by its excellent branching habit and relatively small foliage, and its ease of handling for wrapping and shipping.

3,862
PRUNE TREE
Georges H. Odier, Lot-et-Garonne, France, assignor to Dave Wilson Nursery, Hughson, Calif.
Filed Dec. 23, 1974, Ser. No. 535,991
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of prune tree, substantially as illustrated and described, which is large, medium vigorous, upright, dense, vase-formed, hardy, foliated with an above average number per spur of medium size, ovate, abruptly pointed, thick, rugose leaves, and a regular and very productive bearer of early ripening, medium size, symmetrical, oblong, clingstone fruit having dark blue skin and yellow flesh; the variety, in comparison with the normal Agen prune tree (e.g., Ente 707), being more compact and more upright in tree growth, and the fruit ripening about eight to ten days earlier with no fruit fall before the harvest, almost all fruit being harvested at the same time, and the fruit having a smaller stone and a higher sugar content.

3,863
CHRYSANTHEMUM PLANT
Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Feb. 21, 1975, Ser. No. 551,838
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant particularly characterized as to uniqueness by the combined features of daisy inflorescence type and flat inflorescence form which does not reflex; inflorescence diameter up to three inches at maturity; medium yellow ray floret color devoid of bronze tinging with minimal color oxidation; medium green disc floret color at immature, unopened stage; minimal pollen development; uniform nine week response period; durable flowers and foliage; and adaptability to a wide range of pot sizes under a controlled environment.

3,864
APPLE TREE
Athol G. Staniforth, Naramata, British Columbia, Canada, assignor to Columbia & Okanogan Nursery Co., Inc., Wenatchee, Wash.
Filed Mar. 13, 1975, Ser. No. 558,141
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—35 **1 Claim**

1. A new and distinct variety of apple tree, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a more columnar habit of growth than the parent variety "Royal Red Delicious," with a much greater number of fruit spurs per unit length of wood; more vigorous and lush foliage which is deeper green in color; fruit which closely resembles that of "Royal Red Delicious" in shape, size, flesh and skin colors, including its distinctive bright cherry-red skin color and early coloring habit as an overall blush without stripes; and a later fruit-maturing habit ranging from a week to 10 days later than the fruit of "Royal Red Delicious."

3,865
CARNATION PLANT ENTITLED LUCY CARRIER
Leonard E. Carrier, 1911 Sheridan Road, Encinitas, Calif. 92024
Filed Apr. 7, 1975, Ser. No. 565,622
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—71 **1 Claim**

1. A new and distinct cultivar of carnation plant, Lucy Carrier, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a very vigorous and free-breaking plant habit, with strong and straight stems, superior resistance to soil-borne diseases such as *Fusarium oxysporium* and *roseum* and other root-rots such as damping off, water molds, and the like, large, serrated flowers which open fully without bursting the calyx and causing "splits," a distinctive and attractive pink flower color which fades evenly and beautifully, a distinctive and pleasing delicate fragrance, and good heat tolerance which is superior to that of the parent lines and the so-called "Sim."

PATENTS

GRANTED APRIL 13, 1976

ERRATA

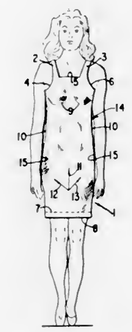
For CLASS	See PATENT NO.
073-019	3,949,590
102-089	3,949,682
283-007	3,950,015
296-028	3,950,023
428-311	3,950,197
264-156	3,950,208
235-133 R	3,950,633
235-145 R	3,950,634

PATENTS

GRANTED APRIL 13, 1976

GENERAL AND MECHANICAL

3,949,426
CONFORMING LADIES GARMENTS HAVING SMOOTH LINES
Georgia A. George, 404 E. 55th St., New York, N.Y. 10022
Filed July 23, 1974, Ser. No. 491,120
Int. Cl.² A41B *9/16*
U.S. Cl. 2—73 **7 Claims**



1. A tubular torso conforming ladies garment having smooth lines made from a one-piece substantially rectangular bias cut piece of fabric, said piece of fabric including on one shorter side four substantially equal projections extending beyond the boundary line of the substantially rectangular shape, said projections being grouped into two pairs, each pair of which contains between them an indentation cut into the piece of fabric beyond the boundary line of the substantially rectangular shape; said piece of fabric being assembled into a tubular torso conforming ladies slip undergarment which substantially conforms to the shape of the feminine body from the area of the hips to the axilla when it is worn around the feminine body, said garment being constructed so that the bias of said single piece of fabric is substantially parallel to the axis of symmetry of said feminine body, said garment having shoulder suspending means, said garment having three assembly seams, the first being located on the torso portion of the garment parallel to the axis of symmetry of said feminine body, approximately centered on the rear torso portion of the garment, the second and third seams being located so that said shoulder suspending means are fastened together to form shoulder straps.

3,949,427
GARMENT WITH DROP SEAT
Gladys LeBlanc Sampey, R.F.D. Box 59, Lockport, La. 70374
Filed May 28, 1974, Ser. No. 473,993
Int. Cl.² A41D *13/02*
U.S. Cl. 2—79 **18 Claims**

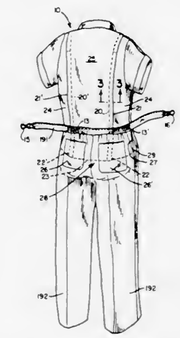
1. In a unitary body garment that includes an improved drop seat design covering an opening in the derriere region of the garment, wherein the unitary body garment is to cover at least the upper and central torso of the body of the wearer including the shoulders, back, derriere, and upper thighs, the improved drop seat design comprising:

a drop seat flap of generally rectangular configuration for covering the opening in the derriere region of the unitary body garment fixedly connected along its bottom edge to the main body of the garment;

dual belting means for supporting the drop seat flap in the raised or closed position attached to the opposite, upper, side edges of said drop seat flap;

attachment means, a portion of which is on said belting means, for securing said belting means along the side or the front of the garment at two places, one on each side of the garment, when desired by the wearer of the unitary body garment;

elastic means for supporting the drop seat flap in the raised position; said drop seat flap being located between the main body of the unitary body garment and said belting means with said drop seat flap being connected to the unitary body garment along the bottom edge of said drop seat flap and with said drop seat flap being connected to said belting means along the top edge of said drop seat flap; said belting means extending past the side edges of said drop seat flap and attachment means with said belting means being connected to said attachment means



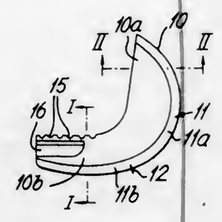
when said drop seat flap is in the raised position and being completely free from said unitary body garment when said drop seat flap is in the lowered position; said attachment means being located between the garment and said belting means with said attachment means being connected to the waist side or front portions of the unitary body garment at two places, one on each side of the unitary body garment, and said attachment means being connected to said belting means when said drop seat flap is in the raised position; and said elastic means being included integrally as a part of said belting means in the back portion of the unitary body garment and extending along a substantial length of said belting means and being secured against the back of the unitary body garment when said drop seat flap is in the raised position.

3,949,428
PROSTHETIC BONE JOINT DEVICES
Michael Edward Cavendish, and John Thomas Matthew Wright, both of Merseyside, England, assignors to National Research Development Corporation, London, England
Filed Sept. 3, 1974, Ser. No. 502,961
Claims priority, application United Kingdom, Sept. 7, 1973, 42303/73
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1.911 **9 Claims**

1. An endoprosthetic knee joint device, comprising:

at least one femoral component of elongated overall form having a longitudinally curved convex bearing surface extending therealong, and a fixation surface wholly of substantially L-shape with first and second L-arms longitudinally coextensive with and transversely opposed to different end portions of said convex bearing surface;

and at least one tibial component of elongate form, but lesser longitudinal extent that said femoral component, having a longitudinally curved concave bearing surface in

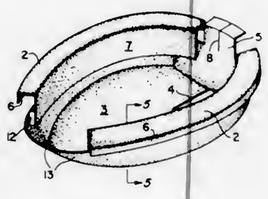


articulatory engagement with said convex bearing surface, and a longitudinally convergently tapered fixation surface extending therealong remotely from said concave bearing surface.

3,949,429
ANIMAL COMMODE

John O. Hall, 4210 Centre Ave., Pittsburgh, Pa. 15213

Filed Aug. 16, 1973, Ser. No. 388,936
Int. Cl.² A47K *13/00, 13/02*
U.S. Cl. 4—10 **9 Claims**



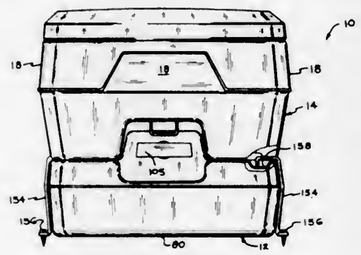
1. A toilet facility for use by both humans and animals comprising:
- a human toilet facility provided with a bowl terminating upwardly in a rim, and a seat;
- an animal toilet facility provided with a seat, at least one perforation within said seat, said seat further being provided with a sidewall extending upwardly so as to engage said bowl of said human toilet facility in the vicinity of said rim;
- a support member resting on said rim of said human toilet facility and having a portion extending downwardly therefrom;
- a compressible back position adjacent the rear of said sidewall of said seat of said animal toilet facility, said back being provided with both vertical and horizontal portions, an axial slit in said vertical portion and a radial slit in said horizontal portion; and
- a plurality of fins connecting said support member and said sidewall of said seat of said animal toilet facility.

3,949,430
PORTABLE TOILET

Marshall W. Miller; Arthur W. Henke, and John M. Antos, all of Ann Arbor, Mich., assignors to Thetford Corporation, Ann Arbor, Mich.

Filed Jan. 20, 1975, Ser. No. 542,430
Int. Cl.² E03D *7/00, 11/10;* **A47K** *11/02;* **E03D** *11/11*
U.S. Cl. 4—76 **19 Claims**

1. A portable toilet comprising a portable lower holding tank section and a portable upper seat section removably supported thereon, said seat section having top, side and bottom walls with an outlet port in its bottom wall and defining a bowl extending between said top and bottom walls and opening at the bottom to said outlet port, said holding tank section having a top wall and side and bottom walls forming a closed receptacle with an inlet port in its top wall in registry with said outlet port, and a flat slide valve assembly mounted on said holding tank section and defining said inlet port, said

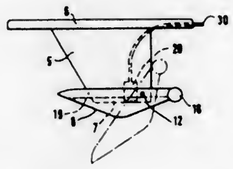


slide valve assembly including an annular valve body located within said holding tank section and having therein vertically spaced guide surfaces, a flat blade supported between said guide surfaces within the confines of the holding tank section for movement in a plane perpendicular to the axis of said inlet port for closing said inlet port and sealing the interior of said tank section from the environment.

3,949,431
LATRINES

Peter Roger Morgan, Salisbury, Rhodesia, assignor to Technical Innovation Company for Commerce and Industry (TICCI), Luxembourg, Luxemburg

Filed Nov. 7, 1974, Ser. No. 521,815
Claims priority, application Rhodesia, Nov. 9, 1973, 433/73
Int. Cl.² E03D *11/10*
U.S. Cl. 4—85 **6 Claims**

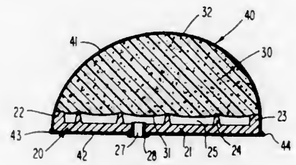


1. A non-flushing device adapted to seal a lavatory arrangement from escape of odors, and ingress of insects, comprising a 'seat' defining an inlet opening, a chute positioned below the 'seat' and defining a passageway which is directed substantially downwardly from said inlet opening and terminates at its lower end in an outlet opening, and a tippable pan mounted at the lower end of the chute and arranged to tip downwardly from a normal or substantially horizontal position towards a substantially vertical discharge position, the pan having a rim which surrounds the lower end of the chute above the outlet opening when the pan is in its normal position yet permits the contents of the pan to discharge downwardly from the pan when the pan tips towards its discharge position, and the device also comprising valve means for admitting water to the pan, and level-sensitive means which act on the valve means to discontinue admission of water to the pan when the level of water in the pan reaches a preselected level above said outlet opening, the pan being arranged and adapted to remain in its normal position when it contains water up to said preselected level but to tip towards its discharge position upon addition of further material to the pan.

3,949,432
CUSHIONED TOILET SEAT

Milton Ginsburg, Bala Cynwyd, Pa., assignor to Ginsey Industries, Inc., Lester, Pa.

Filed May 30, 1974, Ser. No. 474,520
Int. Cl.² A47K *13/00, 13/02*
U.S. Cl. 4—237 **2 Claims**

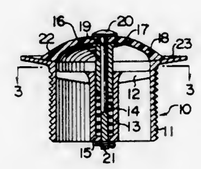


1. A cushioned toilet seat comprising:
- a. an annular base of molded plastic material having a flat under surface and an upper surface having upstanding inner and outer peripheral flanges and upstanding narrow ribs at spaced apart locations extending between said inner and outer flanges forming, on each side of the center line, at least one wide deep channel therebetween, the width of said channels being at least several times greater than said ribs;
- b. an annular foam plastic cushion supported on said ribs and peripheral flanges, said cushion having a normally substantially flat bottom and a convex top surface, said bottom when said cushion is depressed tending to push down into said channels but without filling said channels leaving substantial space therein for air passage therethrough;
- c. a plastic film tightly encasing said base and cushion, said film having fused seals near the inner and outer edges of said annular base;
- d. vent holes extending through said base and film encasement into said channels at locations in the forward half only of said seat near to but spaced from the bumper locations for providing air communication between said channels and atmosphere.

3,949,433
DRAIN CLOSURE ASSEMBLY

Shu-Lien Liou, Taipei, China /Taiwan, assignor to Chin-Chih Chuang, Taipei, Taiwan, China /Taiwan, a part interest

Continuation of Ser. No. 421,353, Dec. 3, 1973, abandoned, which is a continuation-in-part of Ser. No. 189,209, Oct. 14, 1971, abandoned. This application June 17, 1975, Ser. No. 587,672
Int. Cl.² A47K *1/14*
U.S. Cl. 4—295 **12 Claims**

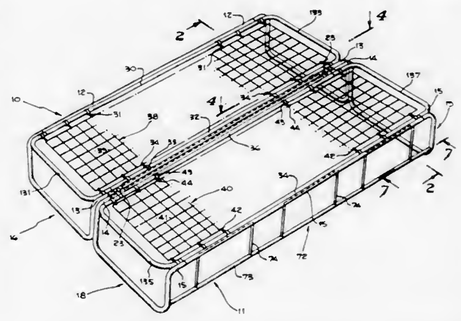


1. A drain closure assembly comprising:
- a socket member adapted to extend at least partially within the drain to be closed and defining a through opening for permitting a liquid to flow into said drain, said socket member including a sealing surface;
- a stopper member of a flexible material and having a substantially dome-shaped configuration substantially entirely across the entire surface thereof, an edge of said stopper member engaging the sealing surface of said socket member in a sealing relationship to inhibit a flow of liquid into said drain when said stopper member is in a closed position;
- means, including a support member secured to said stopper member and slideable relative to said socket member, for supporting said stopper member in cooperation with said socket member in a position extending over said opening and in engagement with said socket member to seal said opening;
- said stopper member being structurally adapted to flex to an inverted position out of engagement with said sealing surface of said socket member in response to an external force acting on said stopper member to release said seal and to flex from said inverted position back to said substantially dome-shaped configuration in response to an additional external force acting therein without accompanying axial movement of said support means;
- means for urging said stopper member in a direction away from said socket member when said external force is released; and
- means for limiting the movement of said support member when said stopper means is urged from said socket member.

3,949,434
DUAL PURPOSE SOFA BED

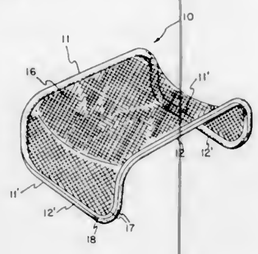
Charles D. Anacker, 502 Frenchman St., New Orleans, La. 70116

Filed Nov. 27, 1974, Ser. No. 527,814
Int. Cl.² A47C *17/14*
U.S. Cl. 5—12 R **8 Claims**



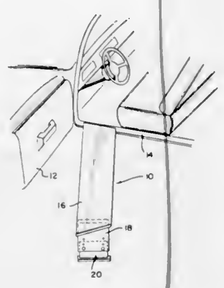
1. In a dual purpose sofa bed, the combination comprising
- a. first and second longitudinally elongated frame sections including longitudinally elongated, parallel tubular stretches two of which associated with the respective sections extend in adjacent relation,
- b. and hinge means interconnecting said two stretches to accommodate pivoting of the sections between collapsed and extended condition, one section overlying the other to form a sofa framework in said collapsed condition, and said sections extending at the same level to form a bed framework in said extended condition,
- c. said hinge means including longitudinally extending integral parallel sleeves respectively in alignment with said two stretches, and hinge pins received within said sleeves and stretches,
- d. the longitudinal tubular stretches of the first section directly overlying the longitudinal tubular stretches of the second section in said collapsed condition of the sections, the hinge means then resisting relative horizontal displacement of the first section relative to the second section.

3,949,435
SUPPORT FOR USE WITH BED RIDDEN PATIENTS
David James Dionne, Pittsboro, N.C., assignor to Terry Roberts, Albemarle, N.C., a part interest
Filed Apr. 10, 1974, Ser. No. 459,607
Int. Cl.² A47C 21/00
U.S. Cl. 5—327 R 6 Claims



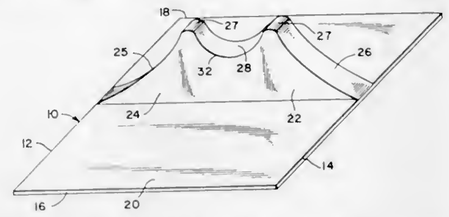
1. A device for the cure and prevention of ulcerated tissue on the body of a patient who is bed ridden for a prolonged period of time comprising: an extensively adjustable, endless frame means adapted to be disposed on the surface of the bed of the patient, said frame having at least one raised portion disposed in spaced relationship to said bed; and a body supportable, stretchable, air permeable fabric removably secured completely about said endless frame in such a manner as to support the body of the patient in spaced relation to said bed surface whereby the weight of the patient is evenly distributed over a large body area and ambient air is allowed to circulate therearound.

3,949,436
TORSO SUPPORT
Edward Fawess, Fresh Meadows, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Feb. 12, 1975, Ser. No. 549,342
Int. Cl.² A47C 21/00
U.S. Cl. 5—327 R 4 Claims



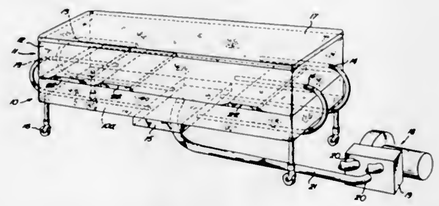
1. A torso support device comprising a substantially flat elongated main support means substantially in the shape of a trapezoid, for easy access to the side of an automobile a pair of leg support means, means pivotally mounting each of said leg support means at a location adjacent to each of the opposite ends of said device whereby each of said leg support means are adapted to be deployed in a folded and unfolded position to support said device, said leg support means including a telescopic portion whereby the length thereof may be adjusted such that opposite ends of said device can engage a surface at different elevation.

3,949,437
HAIR-DO PROTECTING HEAD REST
Franz S. Gritsch, Staten Island, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Mar. 18, 1974, Ser. No. 451,957
Int. Cl.² A47G 9/00
U.S. Cl. 5—338 1 Claim



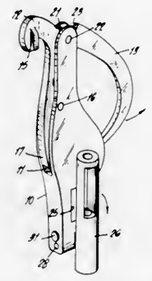
1. A head rest and support device comprising a main body board portion means with front and rear edges intersecting with left and right edges to form a wide and broad main upper surface upon which the user reclines, head support means on and molded integrally with said board portion means, and downwardly curved head engaging portion means on and molded integrally with said head support means for resting of the user's head thereon, said head support means comprising left and right shoulder portions carried by and molded integrally with said main upper board portion means, said shoulder portions sloping gradually inwardly upwardly from said left and right edges of said board portion means to connect at their upper ends with the upper edges of said downwardly curved head engaging portion means, so that the lowermost portion of said head engaging means is elevated somewhat above the main board portion upper surface, said head support means and said main body portion board means being formed of similar lightweight substantially thick materials and molded integrally with each other by molding them together as a single unit for furnishing the desired head and neck support.

3,949,438
INFLATABLE SUPPORT APPLIANCE
John Tracey Scales, 17, Brockley Ave., Stanmore, Middlesex, HA7 4LX, England
Filed Nov. 18, 1974, Ser. No. 524,871
Claims priority, application United Kingdom, Nov. 20, 1973, 53797/73
Int. Cl.² A47C 27/08, 29/00
U.S. Cl. 5—348 R 17 Claims



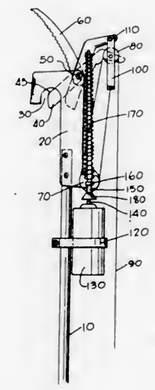
1. A support appliance comprising a body of resilient foamed material having continuous interconnected air transmitting cells and which body has sufficient dimensions and density to provide support for a user, a portion of the surface area of the body, on which a user is intended to be supported, providing an impedance to gas flow but being capable of transmitting water vapour on the outside of said portion of the surface area to within the body of foam, and the remainder of the surface area of the body of foam being rendered substantially gas-tight, and means for providing a flow of gas under pressure through the body of foam to inflate the body and to remove water vapour transmitted through said portion of the surface area of the body.

3,949,439
FIREMAN'S COMPOSITE TOOL
Alfred J. Ardis, Cantiague Lane, Westbury, N.Y. 11590
Filed June 18, 1975, Ser. No. 587,853
Int. Cl.² B25F 1/04
U.S. Cl. 7—1 G 8 Claims



1. A composite tool for a variety of fire fighting purposes comprising:
a. a main body having an elongated median slot at one end thereof;
b. a pull-handle rockably secured to the unslotted end of the main body for manual operation;
c. a metal hook rotably coupled at one end to the body within the slot for convenient folding to a position where the outer end of the hook lies within the slot;
d. a spanner wrench positioned in said median slot for operating pipe couplings;
e. a pawl and recess combination on the spanner wrench and hook for retaining the hook in its extended operating position, the recess formed in the hook and the pawl resiliently engaged; and
f. socket wrench means in the tool body.

3,949,440
COMBINED TREE SAW, PRUNER AND PAINT SPRAYER
Delio A. Guerra, Alpine, N.J., assignor to The Raymond Lee Organization, Inc., a part interest
Filed Jan. 6, 1975, Ser. No. 538,511
Int. Cl.² B25F 1/02; B27B 23/00
U.S. Cl. 7—13 R 2 Claims

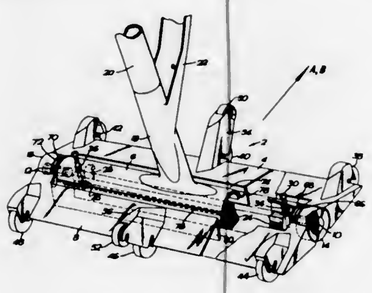


1. In combination:
a vertically elongated handle;
a fixed pruner anvil attached to the top of the handle;
a fixed saw attached to the anvil;
a movable pruner blade attached to the anvil in a manner that the upward movement of the pruner blade towards the anvil will cut a tree limb interposed between the blade and anvil;
a vertically extending flexible cord;
first means for moving the pruner blade upwardly towards the anvil in response to a downward pull upon the cord, the first means being characterized by a fixed pulley attached to the anvil and a movable pulley attached to the blade and moving therewith, the cord passing over both the pulleys; and
second means for spraying paint in response to a downward pull upon the cord, said second means including:
a pressurized vessel attached to the handle and containing a suspension of paint and propellant, the vessel having a conventional depressable dispenser nipple on its top which permits the ejection of a jet of paint and propellant when depressed; and
a solid elongated vertically disposed rod slidably attached to the anvil and placed above the nipple, the lower end of the rod being attached to the blade and sliding downwardly towards the can as the blade moves upwardly towards the handle and depressing the nipple after the blade has reached the anvil and continues to be upwardly moved, causing paint and propellant to be sprayed.

3,949,441
SHALLOW WATER MOORED BUOY
Harry R. Menzel, Hatboro, and Joseph F. Belzer, Southampton, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed July 23, 1975, Ser. No. 598,495
Int. Cl.² B63B 21/52
U.S. Cl. 9—8 R 10 Claims

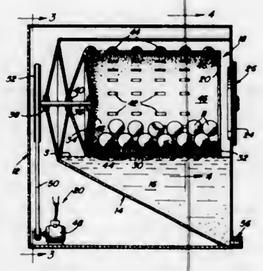
1. An automatically deployable moored buoy comprising, in combination:
floatable housing means having mounted therein a float material;
an antenna attached to one side of said housing means;
an anchor releasably attached to another side of said housing means opposite to said one side thereof;
cable means having one end attached to said other side of said housing means, the other end attached to said anchor, and formed to be wound about the outer periphery of said housing means when said anchor is attached thereto; and
release means including a spring-loaded release pin having an eyehole at one end thereof and connected to engage the shank of said anchor with said housing means, said release pin being urged to disengage from said anchor and said housing means by the spring, a retaining pin having one end inserted into said eyehole for holding said release pin in an engaged position with said anchor and said housing means and having an eyelet formed at the other end thereof, spring means connected at one end to said housing means and torsionally connected at the other end to said eyelet so as to urge said retaining pin from said release pin eyehole and trigger means pivotally connected to said housing means and frictionally connected to engage said other end of said spring means and for disengaging from said spring means upon water impact;
whereby said trigger means disengagement releases said spring means which pulls said retaining pin from said release pin thereby releasing said anchor from said housing means and causing said cable to unwind therefrom.

3,949,442
VACUUM CLEANER HEADS
Michael John Chandler, Springfields, Tuddenham Lane, Witnesham, Ipswich, Suffolk, England
Filed Dec. 26, 1974, Ser. No. 536,370
Claims priority, application France, Dec. 26, 1973, 73.47188; Apr. 30, 1974, 74.15825
Int. Cl.² E04H 3/20
U.S. Cl. 15—1.7 7 Claims



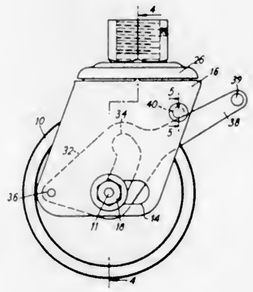
1. A vacuum cleaner head adapted to clean the floor and walls of a swimming pool, said head comprising
a first head section having a vacuum pipe connected thereto between the ends of said first head section, said first head section being adapted to move over the bottom of a swimming pool in a primary travel direction, and
a second head section connected to said first said section along a first hinge axis disposed transverse to said primary travel direction, said first hinged connection being along the leading edge of said first head section relative to said primary travel direction, and said second head section being pivotable upward along said first hinge axis to ride up the side wall of said swimming pool as said vacuum cleaner head meets the floor and wall corner of said swimming pool when moving in said primary travel direction, thereby permitting said first head section and vacuum pipe to be positioned in optimum proximity to said corner for cleaning of same as said vacuum cleaner head moves between the bottom and the side wall when moving in said primary travel direction.

3,949,443
COIN CONTROLLED GOLF BALL WASHER
John B. Edgar, 6119 Glenwood Drive, Baton Rouge, La. 70806
Filed Dec. 2, 1974, Ser. No. 528,931
Int. Cl.² A63B 47/04
U.S. Cl. 15—21 A 4 Claims



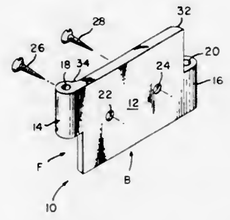
1. A golf ball washer, comprising, in combination: a liquid-tight enclosure arranged for containing a bath of a cleaning solution; a drum provided with an opening arranged for permitting ball placement into and withdrawal from the drum, with the drum being rotatably mounted and arranged immediately adjacent the bath; carrier means for transferring solution from the bath to the drum; actuator means for rotating the drum, the drum including a hollow cylinder having one open end, forming the opening in the drum, and one closed end, and a shaft journaled on the enclosure and affixed to the hollow cylinder for supporting same, and the hollow cylinder is provided with a plurality of slots arranged evenly spaced around the cylinder in at least four rows, and with scoops arranged on an outer surface of the hollow cylinder and associated one with each slot, the hollow cylinder arranged relative to a surface of the bath for permitting the scoops to pick up solution from the bath as the cylinder rotates and to guide the solution through the slots and into the cylinder, the scoops and slots forming the carrier means.

3,949,444
CASTORS
Frederick Mattinson, Andover, England, assignor to Martin-Thomas Limited, Andover, England
Filed Aug. 23, 1974, Ser. No. 500,185
Claims priority, application United Kingdom, Sept. 4, 1973, 41536/73
Int. Cl.² B60B 33/00
U.S. Cl. 16—35 R 4 Claims



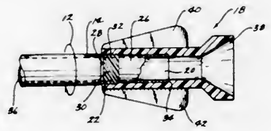
1. A castor comprising a wheel carrying device including an upright spindle, wheel carrying plates spaced apart from each other and carried by the lower end of the spindle, a wheel having an axle, said axle extending horizontally through horizontally elongated openings in the plates, a wheel braking surface carried by said device between said plates, a pivot having a fixed axis extending through the axle-carrying plates and said axis being parallel with the axle to one side thereof, and cam plates pivoted on said pivot, said cam plates having elongated cam slots extending at a substantial angle to the elongated openings, said slots being engaged by the wheel axle and of such shape as to move the wheel axle along the elongated openings during pivoting of said cam plates, said axle moving from a position where the wheel is spaced from the braking surface to a position where the wheel is engaged by said braking surface, said openings being made of constant depth so that the axle has substantially no vertical play, and the cam slots being shaped in such a manner that movement of the cam plates by the user to the brake-on position causes the braking surface and the wheel to be engaged firmly even when not loaded, the said elongated openings stopping short of passing beneath said braking surface whereby the load is shared by the axle and the surface.

3,949,445
CONNECTOR LEAF AND LEAF ASSEMBLY
John R. Stevens, Seattle, Wash., assignor to Harlan B. Dean, Seattle, Wash.
Filed May 27, 1975, Ser. No. 580,670
Int. Cl.² E05D 9/00, 15/00
U.S. Cl. 16—128 R 11 Claims



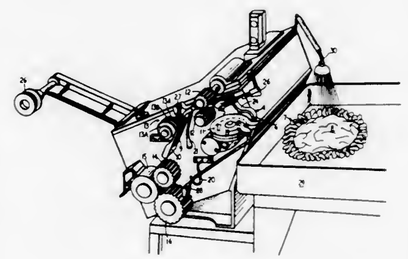
1. A leaf for connecting structures, comprising:
a relatively thin body having front and back planar faces, opposite ends, and a center line located between opposite lengthwise edges extending between said opposite ends,
securing means for fastening said body against a structure with the back planar face abutting the structure, and
a pair of longitudinally bored, parallel knuckles secured to said opposite ends of said body, each of said knuckles terminating adjacent the center line of the body, being flush with said back face, and extending forwardly of the front face such that a pair of said leaves are adapted to be nested front face to front face with the knuckles aligned and their confronting ends abutting each other.

3,949,446
STUFFING HORN
David W. Smith, West Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa
Filed Apr. 19, 1974, Ser. No. 462,244
Int. Cl.² A42C 11/02
U.S. Cl. 17—41 2 Claims



1. In combination with a meat encasing apparatus including a rotatable stuffing tube having a discharge end comprising,
a fin head threadably mounted on the discharge end of said stuffing tube, said fin head having rearward and discharge ends, said fin head having an interior bore extending therethrough between its discharge end and its rearward end,
said interior bore being defined by rearward and discharge bore portions, said rearward bore portion having a greater diameter than said discharge bore portion thereby creating a shoulder therebetween,
said stuffing tube having an exterior threaded portion positioned rearwardly of its discharge end and spaced therefrom,
said fin head having an interior threaded portion at its rearward end for engagement with said exterior threaded portion of said stuffing tube,
said shoulder receiving the forward discharge end of said stuffing tube whereby a smooth continuous bore extends from said stuffing tube into said fin head to allow product flow without impeding turbulence and drag.

3,949,447
SEPARATION OF ANIMAL INTESTINES
Roy James Evers, Cronulla, and Darcy Glen Perrett, Peakhurst, both of Australia, assignors to Cyanamid Australia Pty. Limited, St. Leonards, Australia
Filed Oct. 29, 1974, Ser. No. 518,823
Claims priority, application Australia, Nov. 1, 1973, 5486/73
Int. Cl.² A22C 17/14
U.S. Cl. 17—61 6 Claims

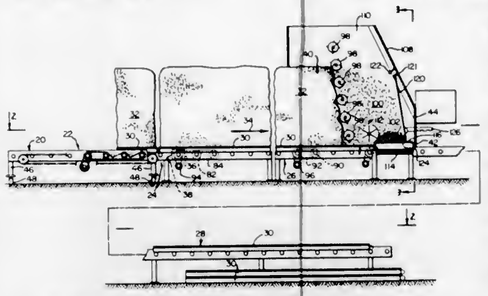


1. Apparatus for the separation of animal intestines comprising a horn member the leading end of which is solid and curved and the initial portion of which is adapted to receive therearound a portion of small intestine tube which has been initially severed from the stomach of a beast, said horn diverging after the solid leading end thereof into a trailing end comprising a plurality of rods, said rods being terminated and joined at their terminal points to a fixed bar, a rotary cutting device being positioned in relation to the curved solid leading end of said horn so as to sever the small intestine tube from the stomach portion of the beast as the tube is fed along the horn, there being a pair of pulling rollers positioned on either side of the solid portion of the horn adjacent the point where the horn diverges into plurality of rods, said pulling rollers being adapted to engage the small intestine tube as it is fed over the solid portion of the horn and to pull the tube over said solid horn portion, the rods of said horn being adapted so that the portion of intestine tube fed thereover is expanded beyond its normal cross-sectional area, there being provided adjacent the terminal points of the rods a plurality of rotary cutting members located so that the outermost rotary cutting members effect an initial severing of the expanded small intestine tube so to isolate therefrom that part of the tube containing the gold beater strand of the serosa membrane and the inner rotary cutting member or members sever the separated portion of tube containing the gold beater strand into a plurality of threads, two or more co-operating further rollers through which the severed threads may be fed so that the threads may be beaten between said co-operating rollers and the gold beater strand contained in each thread thus processed for collection, and guide means being placed relative to the cutting members which effect longitudinal severing of the small intestine tube itself so that that part of the small intestine tube which is not threaded by the innermost of said cutting members may be conducted away from the moving parts of said apparatus for collection, wherein said guide means comprise a weighted rod privotally secured to the solid portion of said horn and a hook-shaped member disposed beneath said weighted rod.

3,949,448
AIR MANIFOLD FOR AUTOMATIC GIN FEEDER

M. Herbert Willcutt, Cary, and Joseph K. Jones, Raleigh, both of N.C., assignors to Cotton Incorporated, New York, N.Y.

Filed Apr. 16, 1975, Ser. No. 568,553
Int. Cl.² D01G 7/10
U.S. Cl. 19—80 R 23 Claims



1. In apparatus for removing fibers stacked on a pallet, the apparatus having means for supporting and translating a pallet, breaker means for loosening fibers stacked on the pallet, and discharge means for conveying loosened fibers to subsequent fiber handling apparatus, an improved pallet sweeping means for removing fibers escaping engagement by the breaker means, comprising:

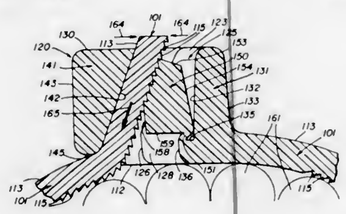
rotatable sweeper means positioned between the breaker means and discharge means, spaced above the means for supporting and translating such that the pallet freely passes therebetween, operable to move fibers adjacent the pallet to the discharge means; and

gas blast means positioned adjacent the sweeper means and the discharge means and being operable to direct a gaseous current toward the pallet surface as the pallet passes between the sweeper means and the means for supporting and translating.

3,949,449
INTEGRAL ONE-PIECE CABLE TIE

Jack E. Caveney, Chicago, and Roy A. Moody, Flossmoor, both of Ill., assignors to Panduit Corporation, Tinley Park, Ill.

Filed Apr. 9, 1969, Ser. No. 814,694
Int. Cl.² B65D 63/00
U.S. Cl. 24—16 PB 30 Claims

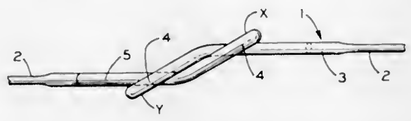


1. An integral one-piece cable tie to be tensioned about a bundle of wires and the like, said cable tie comprising an elongated flexible strap, a row of abutments disposed on one longitudinal surface of said strap and arranged transversely with respect thereto, a frame integral with one end of said strap and including an end wall and an abutment wall, said frame having an entry surface and an exit surface and a strap-receiving opening extending therethrough, a rigid ledge on said end wall extending longitudinally therefrom toward said abutment wall, a pawl disposed within said frame in said strap-receiving opening, flexible hinge means extending from said ledge toward said exit surface and pivotally interconnecting said ledge and said pawl, said hinge means normally spacing said pawl from said end wall and being collapsible toward said ledge to lock the strap in a tensioned condition about a bundle of wires, said abutment wall having a strap-bearing surface disposed toward said pawl and defining therewith a strap-receiving throat, and a tooth on said pawl arranged transversely with respect thereto and disposed toward said abutment wall and shaped to engage said row of abutments on said strap, said strap being deformable into a loop encircling a bundle of wires with the free end of said strap extending into said strap-receiving throat and through the opening in said frame and therebeyond, said tooth being disposed toward said row of abutments as said strap is tensioned about the bundle of wires to a tensioned condition and release of said strap causing at least one of said abutments firmly to engage said tooth, any force tending to withdraw said strap from within said strap-receiving throat in a strap-loosening direction serving to collapse said hinge means to enable a portion of said pawl to abut said end wall and to enable said pawl to pivot about said hinge to move said tooth into more firm engagement with the engaged ones of said row of abutments firmly to grip said strap between said strap-bearing surface and said pawl, whereby to prevent inadvertent withdrawal of said strap from said frame and thus to lock said strap in its tensioned condition about the bundle of wires.

3,949,450
WIRE BALE TIRE AND METHOD OF MAKING THE SAME

Brian Charles Bailey, Birmingham, England, assignor to F. A. Power Limited, Birmingham, England

Filed Dec. 19, 1974, Ser. No. 534,370
Int. Cl.² B21B 1/00; B21F 1/06; B65D 63/10
U.S. Cl. 24—27 13 Claims



7. A wire tie comprising a length of wire of uniform composition throughout and of a ductility such that it can be bent about a short radius without fracture, said wire having each of its opposite end portions in the form of a loop with a free leg at one end of the loop extending endwise generally alongside and in the general direction of a straight portion of the wire at the other end of the loop, and said wire having an intermediate portion extending from one of said straight portions to the other and being long relative to said end portions, said loops being arranged to be loosely interengageable by movement of the loops toward each other transversely of their free end portions and to be drawable into a knot by pulling the end portions in opposite directions by predetermined tension forces applied by, and endwise of, the intermediate portion to the end portions adjacent the loops, respectively;

characterized in that said intermediate portion has a smaller cross section that each of said end portions and has different physical characteristics than the end portions, and the load capacity of the intermediate portion when the tie is subjected to direct tensile pull is greater than that of the resulting knot, but more closely approaches that of the knot than do the portions of the tie between the intermediate portion and the loops.

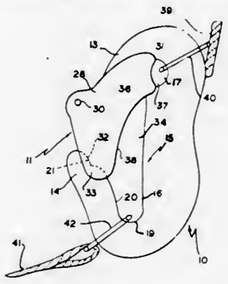
3,949,451
SAFETY SNAP HOOK ASSEMBLY

Hugh Bunn, Box 236, Snow Lake, Manitoba, Canada

Filed June 7, 1974, Ser. No. 477,548
Int. Cl.² A44B 13/00; A47L 3/04
U.S. Cl. 24—241 CH 2 Claims

1. A safety snap hook assembly for use in mines or the like in conjunction with a D-ring permanently secured to a miners

web belt and a safety ring permanently secured to one end of a safety rope or the like; said assembly including in combination a main body portion and a snap component permanently secured to said body portion adjacent one end thereof, a compression spring co-operating between said one end of said body portion and said snap component normally biassing said snap component to a closed position relative to the other end of said main body portion, first ring engaging means formed in said main body portion and second ring engaging means also formed in said body portion, said snap component normally closing off said first ring engaging means from said second ring engaging means, said main body portion being substantially C-shaped and including an inner wall surface and a pair of jaw portions one at each end of said body portion, said snap component being pivotally secured to one of said

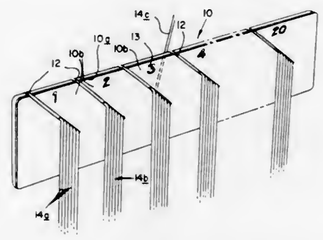


jaw portions and normally engaging the other of said jaw portions internally and adapted to be moved inwardly from said second jaw portion against the pressure of said spring means, said snap component including a pair of spaced and parallel plate portions engaged by one end of said plate portions engaging externally one upon each side of said one end of said body portion and being pivotally secured thereto, said one end of said plate portions extending and closing off said first ring engaging means when said snap component is in the closed position, and means between said plate portions remote from said one end thereof engageable with the inner surface of said other end of said body portion to prevent further outward movement of said snap component from said body portion, said plate portions remote from said one end thereof also being situated externally of said body portion.

3,949,452
YARN SORTING DEVICE

Margaret Y. Henderson, Mystic, Conn., assignor to New Venture Engineering, Inc., Manchester, Mass.

Filed Aug. 1, 1974, Ser. No. 493,771
Int. Cl.² D02H 13/16
U.S. Cl. 28—1 R 8 Claims



1. A yarn sorter for segregating different groups of yarn strands comprising an elongated, planar member including a plurality of slot portions formed therein for retaining yarn strand groups, said slot portions:

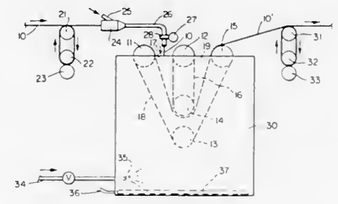
A. being spaced along the length of said planar member and extending into and opening to a long edge of said planar member, and

B. each said slot portion being formed by spaced side portions of said planar member, adjacent side portions being substantially uniformly spaced apart by a width which is narrower than the diameter of a yarn strand and having a depth which is a plurality of times greater than a diameter of a yarn strand, said side portions remaining in a substantially planar configuration when yarn strands are inserted thereby to form slot portions which can grip a plurality of yarn strands in a side-by-side relation and permit the withdrawal of any strand in the group without disturbing other strands in said sorter.

3,949,453
STRAND TREATMENT

Ralph W. List, East Lansdowne; Malcolm F. Irwin, West Chester, and Robert K. Stanley, Media, all of Pa., assignors to Textured Yarn Co., Inc., Kennett Square, Pa.

Division of Ser. No. 461,976, April 18, 1974, abandoned. This application Jan. 20, 1975, Ser. No. 542,182
Int. Cl.² D02J 1/12
U.S. Cl. 28—72 HR 11 Claims



1. Method of treating textile strands, comprising injecting a strand into a gorelike progressing region of diminishing extent, accumulating the strand therein between adjacent movable conveying surfaces and passing it therethrough and into a gorelike progressing region of expanding extent, and withdrawing the strand from the latter region, and including heating the strand.

3,949,454
TREATMENT OF TEXTILE FILM STRANDS

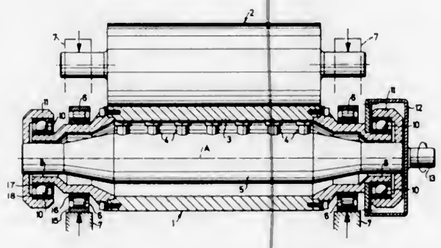
Malcolm F. Irwin, West Chester, Pa., assignor to Textured Yarn Co., Inc., Kennett Square, Pa.

Continuation-in-part of Ser. No. 109,203, Jan. 25, 1971, abandoned. This application June 13, 1972, Ser. No. 262,218
Int. Cl.² D02G 1/12
U.S. Cl. 28—72.14 1 Claim



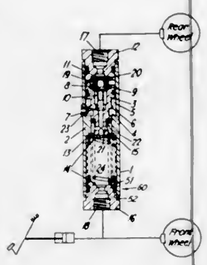
1. Process of textile strand treatment comprising wetting a scored film strand, drawing the wet strand to increased length, rewetting the strand, laterally and longitudinally compressing the drawn wet strand and thereby fibrillating and crimping it.

3,949,455
FLEXURE-COMPENSATING ROLL
Mario Biondetti, Schio, Italy, assignor to Escher Wyss Limited, Zurich, Switzerland
Filed Apr. 3, 1975, Ser. No. 564,758
Claims priority, application Switzerland, Apr. 10, 1974, 5048/74
Int. Cl.² B21B 13/02
U.S. Cl. 29—116 AD 5 Claims



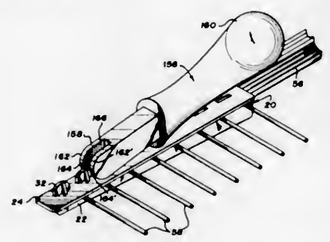
1. A controlled deflection roll comprising a beam, an annular roll shell engaged over the beam, two first bearings disposed at spaced locations lengthwise of the shell for support of the shell, two second bearings supporting the beam from the shell, said second bearings being each on the side of a separate one of said first bearings remote from the other of said first bearings, said second bearings including inner and outer annular elements of which the inner element is affixed to the shell and the outer element is affixed to the beam, and at least one hydraulically actuated support element disposed between the beam and shell at a position lengthwise of the shell between said first bearings.

3,949,456
BRAKE FORCE DISTRIBUTOR VALVE
Heinrich Oberthur, Offenbach-Rumpenheim, Germany, assignor to ITT Industries, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 299,481, Oct. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,166, Sept. 10, 1970, abandoned. This application Sept. 9, 1974, Ser. No. 504,627
Claims priority, application Germany, Sept. 16, 1969, 1946773
Int. Cl.² B21D 53/00; B23P 11/00
U.S. Cl. 29—157.1 R 3 Claims



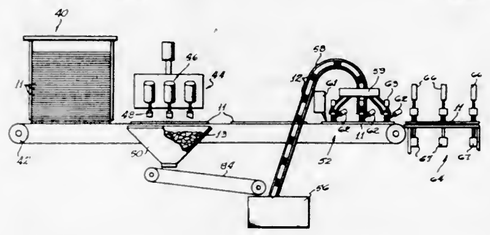
1. In assembling a brake force distributor valve including a housing and a prestressed spring having a predetermined force disposed within and coaxial of said housing acting between an abutment member fixed with respect to said housing and an axially movable valve body disposed within and coaxial of said housing, said predetermined force of said spring determining the point of response of said valve body, the method of connecting said housing to said abutment member comprising the steps of:
- forming a peripheral groove in one of said housing and said abutment member;
- placing a sealing ring of rubber-like material in said peripheral groove;
- assembling said housing and said abutment member in a telescoping manner with said spring disposed between said abutment member and said valve body, said one of said housing and said abutment member being disposed within the other of said housing and abutment member;
- applying a given axial force to said abutment member relative to said housing to provide said spring with said predetermined force;
- shearing the material of said other of said housing and abutment member completely through at selected spaced locations about the periphery thereof corresponding to said peripheral groove before said given axial force is released; and
- forcing said sheared material adjacent both sides of said peripheral groove equally into said peripheral groove against said sealing ring to provide a high pressure seal between said housing and said abutment just prior to release of said given axial force to connect said housing to said abutment member and to provide an exact location of said abutment member relative to said housing to maintain said predetermined force of said spring after said connection is made and said given axial force is released.

3,949,457
MEANS AND METHOD FOR BRANCHING WIRE BUNDLES
William A. Fortsch, 28 West Lawn Ave., Livingston, N.J. 07039
Filed Mar. 20, 1975, Ser. No. 560,382
Int. Cl.² H01R 43/00
U.S. Cl. 29—203 MW 12 Claims



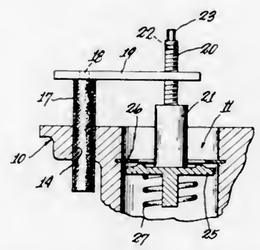
1. Apparatus for selectively branching and enclosing individual wires of a wire bundle comprising, in combination: a deformable strip comprising a first elongate member having a series of discrete spaced tongue portions along one edge, said tongue portions being spaced from one another by wire receiving slots, a second elongate member having a series of openings, one for each of said tongue portions and arranged to coincide and interlock with a respective one of said tongue portions, and flexible web portions interconnecting said first and said second members to one another to permit a wire bundle to be engaged within the elongate loop formed by deforming said strip about a wire bundle and interlocking said second member to said first member; and a reusable strip support adapted to be attached to a wiring board, said strip support comprising an elongate member having a series of spaced transverse slots extending across the width thereof and arranged to provide a guide for wires branched out of a wire bundle, said strip support further comprising a channel portion extending along one longitudinal side thereof for releasably receiving said first member therein to temporarily locate and hold said strip in a convenient portion during the wire branching operation, said strip support transverse slots being spaced so as to coincide with said wire receiving slots located between said tongue portions of said strip first member.

3,949,458
METHOD OF FORMING PALLET STRUCTURE
William R. Saidel, 3427 Vollmer Road, Flossmoor, Ill. 60422
Continuation-in-part of Ser. No. 408,615, Oct. 23, 1973, Pat. No. 3,867,887, which is a continuation-in-part of Ser. No. 239,682, March 30, 1972, abandoned. This application Feb. 20, 1975, Ser. No. 551,426
Int. Cl.² B23P 17/00
U.S. Cl. 29—416 13 Claims



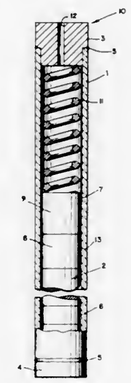
1. A method of making a plurality of pallet constructions comprising the steps of successively advancing a plurality of support members along a predetermined path of travel to a first work station, successively severing each of said support members when located at said first work station and thereby simultaneously forming a plurality of struck out portions from each of said support members while at said first work station and thereby forming apertures in each support member upon removal of the struck out portions in a first predetermined pattern, subsequently successively advancing each of the support members from said first work station along said path of travel and successively positioning each of said support members at a second work station, gathering struck out portions removed from the support members at said first work station, directing said struck out portions toward successive support members at said second work station, successively placing groups of said struck out portions on successive support members at said second work station in a second predetermined pattern relative to the support members to provide legs on the support members, and thereafter securing the legs to the support members.

3,949,459
TRANSMISSION TOOLS
John A. Marenchin, 2639 Longview Road, Sharon, Pa. 16146
Filed July 22, 1974, Ser. No. 490,488
Int. Cl.² B23P 19/02
U.S. Cl. 29—427 6 Claims



1. The method of removing a snap ring lock from seating relation in a groove at the open end of a bore in the housing of an automatic transmission, said housing having a hole adjacent to said bore and a servo within said bore and including a spring retainer forced against said snap ring lock by a kick-down spring, said method including the steps of:
- inserting a rigid stem having a roughened peripheral surface into said housing hole and disposing a rigid plate which is connected to said stem over the open end of said bore,
- forcing a plug which is interposed between said plate and said spring retainer inwardly of said housing bore and against said spring retainer to displace the latter inwardly of said bore to compress said spring and move said spring retainer from abutting relation with said snap ring lock, whereby the latter may be removed from the groove in which it is seated, and canting said stem to cause it to bind in said housing hole to provide a rigid backup for the forcing action of said plug.

3,949,460
METHOD OF MANUFACTURING NUCLEAR FUEL ELEMENTS
Paolo della Porta; Tiziano Anselmo Giorgi, and Livio Rosai, all of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy
Filed Apr. 30, 1974, Ser. No. 465,724
Claims priority, application Italy, June 13, 1973, 25355/73
Int. Cl.² B21D 39/03
U.S. Cl. 29—428 19 Claims

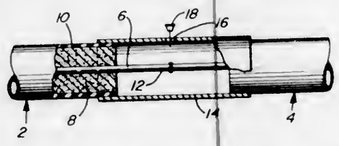


1. A method of manufacturing a nuclear fuel element comprising a metallic container having walls forming a fuel containing chamber and a plenum chamber, a body of fissionable material within the fuel containing chamber comprising the steps of
- A. pumping the fuel element to sub-atmospheric pressure
- B. inserting a non-evaporable activated getter material into the plenum chamber
- C. heating the fuel element and getter material to a temperature below that at which the fuel element walls commence to sorb gas
- D. filling the fuel element with helium to super atmospheric pressure.

3,949,461
METHODS FOR JOINING INSULATED PIPE LENGTHS
Ove Thastrup, Fredericia, Denmark, assignor to A/S E. Rasmussen, Denmark
Filed Oct. 26, 1972, Ser. No. 301,065
Claims priority, application United Kingdom, Oct. 28, 1971, 50231/71
Int. Cl.² F16L 59/16
U.S. Cl. 29—460 11 Claims

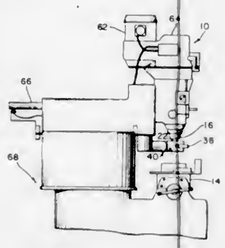
1. A method of providing insulated joints between consecutive lengths of insulated pipes, each length consisting of at least one fluid conducting pipe surrounded by a layer of heat

insulating material and an outer protective tube from which the respective ends of the at least one fluid conducting pipe project, the method including joining the projecting fluid conducting pipe ends of two aligned and adjacent pipe ends by welding or the like, mounting a tube casing sealed against the end portions of the outer protective tube around the space between adjacent ends of the layer of heat insulating material, introducing a foam producing substance into an upper hole in the tube casing, permitting the foam producing substance to foam up inside the tube casing until the foam flows out through the upper hole in the tube casing, and closing the upper hole in the tube casing by means of a stopper, the



improvement comprising: providing a stopper having a selectively actuable closure means having at least an open position and a sealing position, mounting the stopper in the upper hole of the tube casing before the foam appears therein with the closure means in the open position to partially close the upper hole of the tube casing, and actuating said closure means to the sealed position to completely and permanently seal the upper hole of the tube casing after the foam appears at the outside of the partially closed upper hole of the tube casing, the amount of foam producing substance introduced into the tube casing being sufficient to produce, after actuation of said closure means to the sealed position, an over pressure of at least 1 atm. inside the tube casing.

3,949,462
REMOVABLE ATTACHMENT FOR AUTOMATING MILLING MACHINES
David Edward deCaussin, Van Nuys, Calif., assignor to Fadel Engineering Company, Inc., N. Hollywood, Calif.
Filed Feb. 2, 1973, Ser. No. 329,111
Int. Cl.² B23Q *3/157*
U.S. Cl. 29—568 **13 Claims**



13. A portable and removable bracket assembly adapted to be movably attached to the spindle carriage assembly of a numerically controlled milling machine having a tool spindle located in said spindle carriage, said assembly comprising

an indexing device located on said bracket and adapted to hold a plurality of individual tool holders in an ordered relationship,

means for incrementally and sequentially indexing said device to present said tool holders to an interchange position

an L shaped transfer arm comprising a vertical portion, a horizontal portion and articulated jaws at the end of said horizontal portion, said arm being movable along and pivotable about said vertical portion, said jaws being rotatable about the longitudinal axis of said horizontal portion whereby said jaws are adapted to grasp a tool holder at the interchange station and present it to the tool spindle in an inverted orientation and

means for sequentially operating said indexing device and said transfer arm whereby individual tool holders are sequentially moved from the indexing device to the spindle and returned to the indexing device.

3,949,463
METHOD OF APPLYING AN ANTI-REFLECTIVE COATING TO A SOLAR CELL
Joseph Lindmayer, Bethesda, and James F. Allison, Silver Springs, both of Md., assignors to Communications Satellite Corporation (Comsat), Washington, D.C.
Filed Feb. 13, 1973, Ser. No. 331,739
Int. Cl. B44d *1/18;* **H01l** *15/02*
U.S. Cl. 29—572 **14 Claims**

1. The method of applying to a surface of a silicon wafer, adapted for use as a solar cell, an anti-reflective coating and a desired pattern of a metal electrode for current collection, comprising the steps of:

a. coating said surface with a first metal layer of the type which can be oxidized to form said anti-reflective coating,

b. forming on top of said coating a metal electrode having said desired pattern, said first metal layer having parts thereof exposed which are not covered by said metal electrode pattern, and

c. oxidizing the said exposed parts of said first metal layer to convert said exposed parts into a metal oxide anti-reflective coating.

2. The method of claim 1 wherein the step of forming a metal electrode comprises:

a. forming on said first metal layer a photoresist mask having openings therein corresponding to said desired pattern,

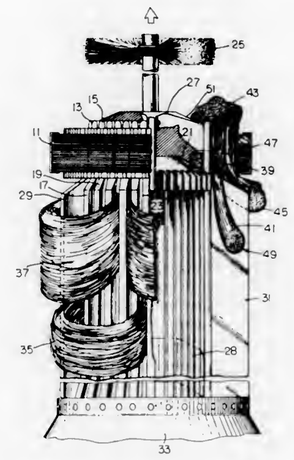
b. coating said photoresist mask and the parts of said first metal layer not covered by said photoresist mask, with a second layer of metal suitable for use as an electrode for said solar cell, and

c. lifting off and removing said photoresist mask and the portions of said second layer of metal overlying said photoresist mask.

3. The method of claim 2 wherein the step of forming a photoresist mask comprises the ordered steps of placing a photoresist material on said first metal layer, exposing the photoresist material to light through a mask means having a pattern identical to said desired pattern, developing said photoresist material previously exposed to light and removing said developed photoresist.

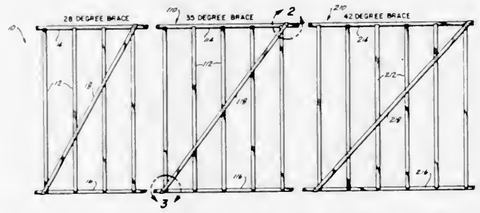
3,949,464
CONTEMPORANEOUS INSERTION OF OVERLAPPING COILS
Robert G. Walker, Ossian, Ind., assignor to Industra Products, Inc., Fort Wayne, Ind.
Filed Jan. 13, 1975, Ser. No. 540,675
Int. Cl.² H02K *15/085*
U.S. Cl. 29—596 **19 Claims**

1. In a machine for inserting coils of wire into slots of a dynamoelectric machine stator core having a plurality of elongated members upstanding about the circumference of a circle for supporting the coils, and a stripper movable axially through the stator bore to push the coils through the bore and outwardly into the core slots, an improvement for the contemporaneous insertion of at least a leading coil and an overlapping following coil, each of said coils having a leading and a trailing end turn, comprising means movable through the bore ahead of the stripper for urging the leading coil through the bore somewhat ahead of the following coil, and radially extending means for engaging and urging the trailing end turn of



the leading coil radially outwardly to aid in providing clearance for the following coil.

3,949,465
METHOD OF BRACING STUDS IN FRAMED WALL SECTIONS
Charles E. Wirch, 1366 E. Palm, Altadena, Calif. 91001
Continuation-in-part of Ser. No. 376,819, July 5, 1973, Pat. No. 3,851,372, which is a division of Ser. No. 199,959, Nov. 18, 1971, Pat. No. 3,744,540. This application Apr. 18, 1974, Ser. No. 461,958
Int. Cl.² B23P *11/00*
U.S. Cl. 29—432 **17 Claims**



1. A method of making a rigid building wall panel of framed construction comprising the steps of:

attaching a series of spaced apart and substantially parallel studs between a top plate and a bottom plate to form a framed wall panel in which the top plate, bottom plate, and studs each have a front face lying in the plane of the wall panel and a depth extending perpendicular to the plane of the wall panel,

placing an elongated saw guide diagonally across the face of the studs,

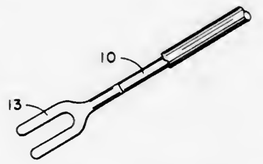
running a saw along the saw guide to form a series of diagonally aligned saw cuts extending into the depth of the studs,

removing the saw guide from the studs,

placing a rigid brace member into the saw cuts and against the front faces of the studs, and

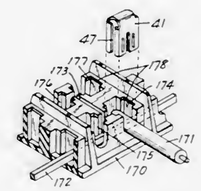
fastening the brace member in a fixed position relative to the studs to hold the bracing member in a rigid position on the wall panel.

3,949,466
PROCESS FOR FORMING AN ALUMINUM ELECTRICAL CONDUCTING WIRE JUNCTION END PIECE
John L. O'Brien, Winchester; Philip C. Johnson, Carlisle, and D. William Lee, Concord, all of Mass., assignors to Arthur D. Little Inc., Cambridge, Mass.
Filed May 28, 1974, Ser. No. 473,516
Int. Cl.² H01R *43/00*
U.S. Cl. 29—628 **11 Claims**



1. A process for affixing to the terminal end of a solid aluminum electrical conductor wire a junction end piece whereby said aluminum wire is connectable to an electrical terminal through said junction end piece, comprising the step of effecting a direct solid state bond solely between said terminal end of said solid aluminum wire and said junction end piece, the surface area of said bond being appreciably greater than the cross sectional area of said wire normal to the wire axis and extending over a bonding section of finite length while maintaining the cross sectional area of said junction end piece throughout said bonding section substantially equal to the cross sectional area of said aluminum wire.

3,949,467
SOLDERLESS ELECTRICAL CONNECTOR ELEMENT APPLICATION METHOD AND APPARATUS
Arne H. Mayala, Stillwater, and Thomas J. Antolak, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 494,773, Aug. 5, 1974, abandoned, which is a continuation of Ser. No. 329,108, Feb. 2, 1973. This application June 26, 1975, Ser. No. 590,600
Int. Cl.² H01R *43/00*
U.S. Cl. 29—628 **4 Claims**



1. A method for rapidly making a series of electrical connections in the assembling of electrical apparatus, comprising the steps of:

providing an electrical apparatus with a conductor support base formed to support an electrical conductor across a contact element receiving slot therein,

feeding a plurality of spring compression reserve contact elements appressed together in tandem seriatim to an application position in a contact element applicator,

aligning the application position of the applicator with the contact element receiving slot in the conductor support base,

rapidly forcing the spring compression reserve contact element at the application position over a conductor and into the contact element receiving slot to form spring compression reserve contact with the conductor, and

repeating said steps with additional conductors and contact elements.

3. A system for rapidly making a series of electrical connections in the assembling of electrical apparatus, comprising:

an electrical apparatus having a conductor support base formed to support an electrical conductor across a contact element receiving slot therein,

a contact element applicator for rapidly forcing a spring compression reserve contact element at an application position therein over a conductor and into said contact element receiving slot to form spring compression reserve contact with the conductor,

means for feeding a plurality of spring compression reserve contact elements appressed together in tandem seriatim to said application position in said applicator, and

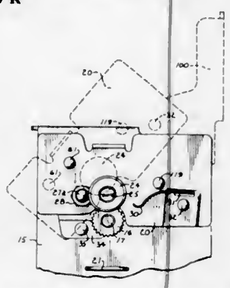
means for aligning said application position in said applicator with said contact element receiving slot in said conductor support base.

3,949,468

COMPACT POWER OPERATED CAN OPENER WITH COMPOUND PIERCING LEVER, POWER PIERCE, AND REMOVABLE CUTTER MOUNTING PLATE

Robert E. McLean, Raytown, Mo.; Leo F. Aberer, Shawnee Mission, Kans., and James B. Aberer, Greenwood, Mo., assignors to Rival Manufacturing Company, Kansas City, Mo.

Filed Jan. 30, 1975, Ser. No. 545,597
Int. Cl.² B67B 7/38
U.S. Cl. 30—4 R **11 Claims**



1. A power operated can opener having an upright frame with a plurality of apertures defined therein, a rotary can feed wheel and motor means for rotating said can feed wheel, the combination therewith of:

a compound piercing hand lever assembly, said assembly including a removable cutter mounting plate having a cutter element mounted thereon, said plate having a first and second pin member extending therefrom, said first pin member being received within a first bearing aperture on said frame to thereby pivot said mounting plate with respect to said frame,

a hand lever having a pin member extending therefrom, said pin member received within a second bearing aperture on said frame to thereby attach said hand lever to said frame and facilitate pivotal rotation of said hand lever with respect to said frame, said hand lever having an elongate slot defined therein for receiving said cutter mounting plate second pin member to thereby effect the rotation of said cutter mounting plate in response to movement of said hand lever, said slot extending inwardly into said hand lever from the periphery thereof, said cutter mounting plate second pin member being longitudinally movable in said slot;

said can opener further having a means for releasably mounting said cutter mounting plate to said can opener frame, said cutter mounting plate being retained on said frame by said releasable mounting means for a substantial portion of the pivot arc of said cutter mounting plate, said cutter mounting plate being separable from said can opener frame in response to rotation of said cutter mounting plate to a predetermined angular position; and

means for actuating said motor means in response to predetermined movement of said hand lever.

3,949,469

ELECTRIC SHAVER COMPRISING A ROTATABLE CYLINDRICAL SHEARING FOIL

Helmut Balthasar Brauss, Kronberg, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany

Filed Feb. 19, 1974, Ser. No. 443,859
Claims priority, application Austria, Feb. 16, 1973, 1385/73
Int. Cl.² B26B 19/02
U.S. Cl. 30—43.91 **5 Claims**

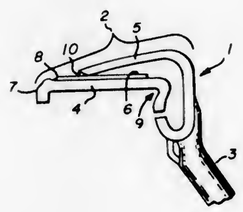
1. An electric shaver including a cylindrical shearing foil, a first support for rotatably supporting said foil, a blade head arranged inside of said shearing foil and extending over a portion of the circumference thereof, a second support arranged inside said shearing foil, a pressure exerting means acting between said cutting head and said second support means, and contact means arranged over a part of the circumference of said second support means facing said shearing foil providing contact areas against which the inside of said shearing foil abuts, and bearing means between said second support and said blade head for reciprocal movement of said head with respect to said second support.

3,949,470

SAFETY RAZOR

Charles L. Hall, 532 Serpentine Drive, Del Mar, Calif. 92014

Continuation of Ser. No. 307,393, Nov. 17, 1972, abandoned.
This application Feb. 3, 1975, Ser. No. 546,413
Int. Cl.² B26B 21/22
U.S. Cl. 30—50 **4 Claims**



1. In a safety razor:

blade holder means for holding a replaceable razor blade with the cutting edge of the blade presented for shaving whiskers, said blade holder means having a handle for gripping by the operator;

said blade holder means including a second cutting edge formed on a portion of said blade holder means, said second cutting edge being made of a more durable material in shaving use than the cutting edge of the replaceable razor blade and said second cutting edge being disposed to track with the cutting edge of the razor blade to form a dual cutting edge razor such that one of said cutting edges simultaneously tracks behind the other in cutting relation to cut whiskers missed by the other cutting edge.

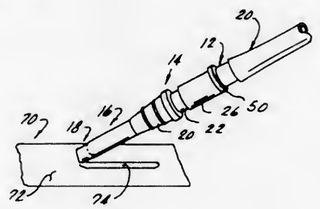
4. The apparatus of claim 1 wherein said blade holder means is the holder of a double edged razor blade, and wherein said blade holder means includes a pair of pivoted arched blade cover plates, and wherein said second cutting edge is formed on said pair of cover plates.

3,949,471

PROCESS AND MEANS FOR GEL CUTTING

Leo P. Cawley, P.O. Box 8152, Wichita, Kans. 67208

Continuation-in-part of Ser. No. 294,696, Oct. 3, 1972, abandoned. This application May 28, 1974, Ser. No. 473,585
Int. Cl.² B26B 27/00
U.S. Cl. 30—123.3 **4 Claims**



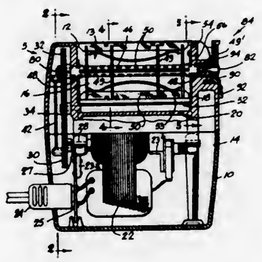
1. A gel cutting apparatus comprising a hollow substantially cylindrical body having an inlet and an outlet to provide fluid communication therethrough, a cutter portion attached to said inlet, a vacuum pressure source connected to said outlet, said cutter portion including a structure defining an essentially elongated conduit having a flattened end and having an edge portion defining a substantially elliptical structure sharpened on its periphery, said elongated conduit including an internal diameter smaller than the internal diameter of said hollow body to provide greater suction force in said elongated cutter portion, said flattened end facilitates directing said apparatus in an essentially linear path over a gel surface and includes an areal opening smaller than the internal areal opening of said elongated conduit of said cutter portion to provide a greater suction force at said opening of said flattened end for easy removal of said gel and said gel cutting apparatus traverses a generally linear path over said gel surface, said cutter portion is essentially longer than said hollow body, said hollow body comprises a first conduit section having a second outlet end and said inlet and a second conduit section including a second inlet end and said outlet, said second outlet end removably lodges within said second inlet end, said inlet and said outlet generally comprise approximately identical diameters such that said inlet may be attached to said vacuum pressure source and said outlet may be connected to said cutter portion.

3,949,472

SELF CLEANING DRY-SHAVER

Carl E. Meyerhoefer, 264-30 60th Ave., Little Neck, N.Y. 11362

Filed Feb. 18, 1975, Ser. No. 550,185
Int. Cl.² B26B 19/44
U.S. Cl. 30—41.5 **9 Claims**



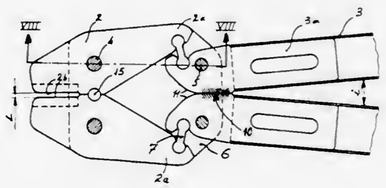
1. A dry shaver including in combination, a casing assembly formed with a zone of openings therethrough and with air inlet and outlet openings, a primary motor driven shaft within said casing, an annular series of blades connected to said shaft to rotate therewith and shear hair extending through the zone openings into said assembly, said blades having solely unidirectional rotation to create a flow of air through said assembly to discharge air through the outlet opening of said casing when its openings are open and a movable cover mounted on said casing assembly for closing the air inlet and outlet openings, thereby interrupting said flow.

3,949,473

BOLT CUTTER

Michel Blanc, Saint Etienne, France, assignor to Forges Stephanoises, Saint-Etienne, France

Filed Feb. 14, 1975, Ser. No. 550,022
Claims priority, application France, Feb. 18, 1974, 74.06037
Int. Cl.² B26B 17/02
U.S. Cl. 30—191 **5 Claims**



1. A cutting tool comprising:

a flat support;

a pair of blades pivoted to said support by a first pair of fulcra on opposite sides of a centerline, said blades having coacting jaws forwardly of said first pair of fulcra and rearwardly extending shanks;

a pair of handles with front extremities bracketed by said shanks and pivoted to said support by a second pair of fulcra on opposite sides of said centerline rearwardly of said first pair of fulcra; and

a pair of thrust members articulated to said shanks and to said front extremities at points forwardly of said second pair of fulcra, the points of articulation of each of said members lying on a line generally perpendicular to said centerline in both an open and a closed position of said jaws.

3,949,474

CUTTING IMPLEMENT

Dennis Ronald Sandbrook, and Harry Melling, both of Sheffield, England, assignors to John Cooper and Sons Limited, Sheffield, England

Filed Apr. 4, 1975, Ser. No. 565,100
Int. Cl.² B26B 13/04
U.S. Cl. 30—260 **10 Claims**

10. A cutting implement comprising in combination:

a. a first handle;

b. a second handle formed of sheet metal stock;

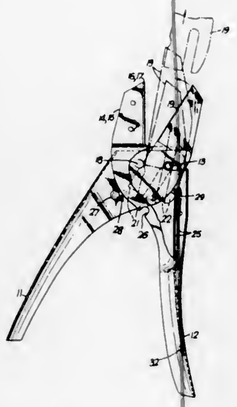
c. a pivot connecting said handles for relative pivotal movement between an open position and a closed position;

d. a blade mounted on said first handle;

e. two adjacent portions of said sheet metal second handle being secured together in face to face relation in a plane substantially perpendicular to said pivot; and

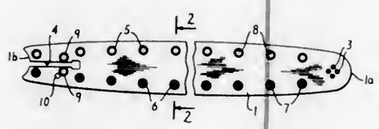
f. two bent out portions of said adjacent portions, one bent

out from each adjacent portion, so that they extend in opposite directions and both lie in a plane substantially



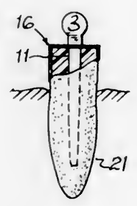
perpendicular to said blade effective to form an anvil in one piece with said second handle.

3,949,475
CHAIN SAW GUIDE BAR
Joseph Tokarz, Byram, Conn., assignor to Textron, Inc., Providence, R.I.
Filed Mar. 18, 1975, Ser. No. 559,639
Int. Cl.² B27B *17/04*
U.S. Cl. 30—387 **6 Claims**



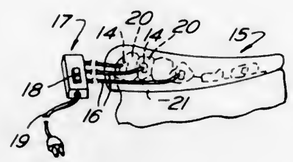
1. A chain saw guide bar for supporting and guiding a cutting chain having supporting edges and tangs of selected thickness projecting a selected length beyond said supporting edges, said guide bar comprising two elongate sheet metal plates of uniform thickness and of like size and shape, each of said plates having an inner face and an outer face and having local areas displaced from the plane of the plate to form protuberances on the inner face of the plate and corresponding recesses in the outer face of the plate, said protuberances being spaced from one another both laterally and longitudinally of the plate and comprising rows of protuberances which are spaced inwardly from opposite lateral edges of the plate a distance greater than the length of said tangs of the chain and less than twice the length of the tangs, said plates being superposed on one another with said protuberances of one plate engaging matching protuberances of the other plate, one of the protuberances of a pair of matching protuberances having an integral tubular projection extending through a hole in the matching protuberance and riveted over in the corresponding recess to unite said plates in a unitary structure, said plates being spaced apart from one another by said protuberances except in the local areas of the protuberances, the spacing of at least the peripheral portions of the plates outside said rows of protuberances being slightly greater than the thickness of said tangs to accommodate said tangs between said peripheral portions of the plate with working clearance.

3,949,476
DEVICE USEFUL IN DENTAL CROWN PROCEDURES AND METHOD OF USING THE SAME
Henry Kahn, 366 Dell, Highland Park, Ill. 60035
Filed Mar. 25, 1974, Ser. No. 454,154
Int. Cl.² A61C *5/08*
U.S. Cl. 32—12 **18 Claims**



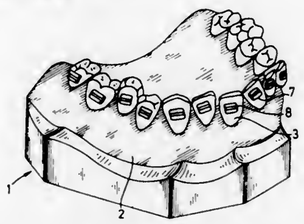
1. A form for the preparation of the core for a crown in the restoration of a broken or otherwise degraded tooth wherein said core is to be secured to at least one post in the stub of the tooth, said form being cup shaped with an end wall which lies at least parallel to the normal occlusal plane of the tooth, a continuous side wall extending from the periphery of the end wall, the cup having transverse interior dimensions to define a space to accommodate the stub and surrounding the same, the space being adapted to receive a core casting material to be placed around the post, the edge of said side wall opposite said end wall being shaped to conform to the irregular surface of said stub, at least said side wall comprising a readily machinable, relatively rigid material, the form further having a handle protruding from said end wall.

3,949,477
ORTHODONTIC METHOD AND APPARATUS
Morton Cohen, Fox Pavilion, Suite 604, Jenkintown, Pa., and Elliott Silverman, 4829 Atlantic Ave., Ventnor, N.J.
Filed Nov. 18, 1974, Ser. No. 524,470
Int. Cl.² A61C *7/00*
U.S. Cl. 32—14 A **13 Claims**



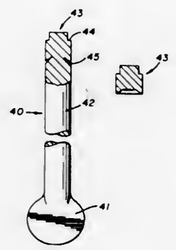
1. In an orthodontic method, the steps which comprise: making a dental cast of the patient, selectively positioning and detachably applying brackets to the dental cast positioned as desired on the patient's teeth, applying a molding material into conforming engagement with the dental cast and brackets to define a mold which assumes the configuration of the dental cast and captures the brackets, removing the mold and captured brackets from the dental cast, applying said mold and brackets to the patient's teeth with selectively activatable adhesive interposed between the brackets and teeth, activating the adhesive by passing activating energy through the mold to secure the positioned brackets to the teeth, and removing the mold from the teeth while leaving the brackets secured.

3,949,478
PROCESS AND APPARATUS FOR FITTING ORTHODONTIC BRACKETS TO TEETH
Karl Schinhammer, Letmathe, Germany, assignor to Firma Scheu-Dental, Inhaber Rudolf Scheu Herstellung und Vertrieb von Dentalbedarf, Letmathe, Germany
Filed Dec. 27, 1974, Ser. No. 536,984
Int. Cl.² A61C *7/00*
U.S. Cl. 32—14 A **11 Claims**



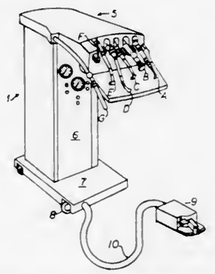
1. A process for attaching orthodontic brackets to teeth to be orthodontically treated comprising the steps of forming a first positive jaw model as a replica of a jaw containing said teeth to be treated, said first jaw model being formed with replaceably removable model teeth which are replicas of said teeth to be treated, transferring said model teeth to a second jaw model composed of pliable material capable of enabling adjustable positioning of said model teeth therein, adjusting the positions of said model teeth in said second jaw model to effect a desired orientation thereof, said desired orientation being a replica of the tooth orientation ultimately desired for said teeth to be orthodontically treated, attaching to said model teeth orthodontic brackets while said model teeth are in said desired orientation, replacing said model teeth with said brackets attached thereto within said first positive jaw model, and transferring said brackets from said model teeth to said teeth to be orthodontically treated by utilizing said first jaw model to form a negative mold of said model teeth and brackets and subsequently utilizing said negative mold as a transfer mold to attach said brackets to said teeth to be orthodontically treated.

3,949,479
ENDODONTIC OPERATING AND SEALING METHOD AND APPARATUS THEREFOR
Oscar Malmin, 127 E. Wayne Ave., Akron, Ohio 44301
Continuation of Ser. No. 305,973, Nov. 13, 1972, Pat. No. 3,855,702. This application Aug. 1, 1974, Ser. No. 493,509
Int. Cl.² A61K *5/02*
U.S. Cl. 32—15 **2 Claims**



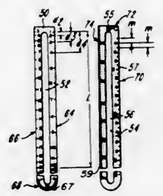
1. A substantially compressible gutta percha endodontic sealing member for use in root canals comprising; an elongate removable handle portion; gripping means disposed on one end of said handle portion; an integral elongate body portion projecting from the opposed end of said handle; the projecting end of said body terminating in a reduced diameter portion to form an offset annular shoulder thereon and having a length dimension substantially shorter than the length dimension of said root canal; and said body portion having a circumferential weakening slot adjacent to said projecting end whereby said projecting end may be separated from said body following insertion of said sealing member into said root canal.

3,949,480
MOBILE DENTAL CONSOLE
Richard W. Page, Box 258B, Chatham, Mass. 02633
Filed Feb. 26, 1971, Ser. No. 119,097
Int. Cl.² A61C *19/02*
U.S. Cl. 32—22 **7 Claims**



1. A mobile dental unit comprising a cabinet and a cantilever console arm pivotally carried thereby for up and down adjustment of its end, a panel carried by the arm at its end, and means associated with said panel for holding a row of instruments when not in use, said means comprising apertures in said panel for accommodating the instrument hoses, a row of clips positioned respectively in back of a plurality of said apertures and operable to receive and hold the hoses of said instruments when pulled out for use, each said clip being disengaged with the hose of its associated instrument when such instrument is held by the first said means in its not in use position, said arm comprising a housing which is substantially at least as wide as said panel and forms a substantially rigid cantilever support member therefor, a thrust member extending across said housing adjacent said panel and supporting the said clips, and support means and hose guide means fixed to said housing adjacent the cabinet.

3,949,481
LAYOUT INSTRUMENT FOR SHEET-MATERIAL FABRICATION
Marcus E. Campbell, Cincinnati, Ohio, assignor to Joseph L. Kresser, Newtown, Ohio, a part interest
Filed Sept. 30, 1974, Ser. No. 510,447
Int. Cl.² B43L *7/06*
U.S. Cl. 33—75 R **7 Claims**



1. A device for constructing the two-dimensional sheet pattern of a cylindrical article having a plurality of circumferentially spaced, longitudinal elements *n* each having opposite ends which terminate in a first plane normal to the axis of the cylinder and a second, oblique plane which intersects the first plane at an acute angle, wherein each element *n* is parallel to said axis and defines therewith an axial plane which intersects a diameter D of the cylinder at an angle a_n, and wherein the

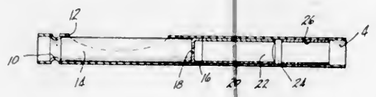
longest and shortest of said elements *n* are of predetermined, ascertainable lengths, the device comprising: a calibrated layout scale bar of length L having a series of points thereon each spaced a distance d_n from one end thereof defining that end of the corresponding element *n* which is in the second, oblique plane, wherein:

$$d_n = \tfrac{1}{2}L(1+\cos a_n).$$

3,949,482
GUN SIGHT AND METHOD OF MAKING THE SAME

Cecil Jack Ross, El Paso, Tex., assignor to W. R. Weaver Company, El Paso, Tex.

Filed Aug. 25, 1975, Ser. No. 607,089
Int. Cl.² F41G 1/32; G02B 27/32
U.S. Cl. 33—241 **4 Claims**



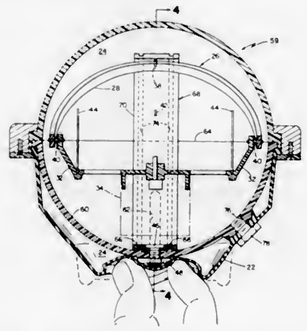
1. A gun sight adapted to be mounted on the muzzle end of a gun, said sight comprising:
a. a single opaque tubular housing having a through bore of predetermined diameter;
b. a slot through a side wall of said housing forming a window for the passage of ambient light therethrough;
c. first means forming a localized reduction in the diameter of said through bore adjacent to one end of said housing;
d. a stack of internal components contained within said housing bore with each of said components having a generally circular outer wall of a diameter which is less than the diameter of said housing through bore to permit free passage of each of said components through said through bore, said components comprising in series:
i. a cylindrical rod of fluorescent plastic material serving as a reticle illuminator and underlying said window;
ii. reticle-forming means adjacent to said rod and abutting one end wall thereof and including a light transmitting passage forming a reticle for the sight and positioned to transmit fluorescent light from said rod;
iii. at least one spacer sleeve adjacent to said reticle-forming means and abutting one end wall thereof; and
iv. collimating lens means adjacent said spacer sleeve and abutting one end wall thereof to provide a collimated image of said reticle; and
e. a retaining ring press-fitted into the end of said housing bore remote from said first means, said first means engaging one end of said stack to hold said components against passage through said one end of said housing bore, and said retaining ring engaging the other end of said stack to hold said components against passage through the other end of said housing bore.

3,949,483
COMPASS

Wilfrid Gordon White, Dover, Mass., assignor to Optimum Inc., Dover, Mass.

Filed Sept. 9, 1974, Ser. No. 504,165
Int. Cl.² G01C 17/08
U.S. Cl. 33—364 **12 Claims**

1. In a spherical compass having, positioned in a horizontal plane within a pair of hemispherical bowls joined together parallel to a compass mounting plane, double axis gimball means having lubber lines and a rotatably mounted compass card supported therein,
support means for adjustably positioning said double axis gimball means into its horizontal plane within said bowls for selective mounting of said gimball means with its compsss mounting plane oriented at an angle between the horizontal and vertical,
said support means comprising:
a movable double axis grimball means support unit mounted within said bowls and

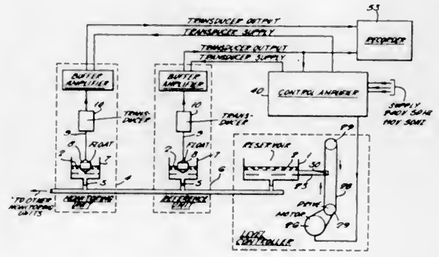


adjustment means for adjustably, selectively positioning said support unit relative to said bowls thereby orienting said gimball means, lubber lines and compass card to a horizontal plane.

3,949,484
VERTICAL MOVEMENT DETECTION SYSTEMS

Edward Samuel Cluley, Leicester, and Christopher Heaps, Oadby, both of England, assignors to The English Electric Company Limited, London, England

Filed May 22, 1974, Ser. No. 472,287
Int. Cl.² G01C 5/04
U.S. Cl. 33—367 **15 Claims**



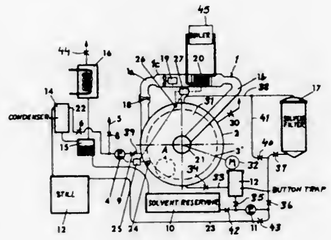
1. A vertical movement detection system comprising:
a. a multi-limbed manometer having one limb mounted in a reference location substantially free from movement and other limbs mounted in locations to be monitored for vertical movement;
b. a float in said one limb;
c. an electro-mechanical transducer associated with and coupled to said float in said one limb arranged to produce a reference signal indicative of the level of the liquid in said one limb;
d. floats in each of said other limbs;
e. a different electro-mechanical transducer associated with and coupled to the float in each of said other limbs, each arranged to provide a monitoring signal indicative of the level of the liquid in that limb;
f. recording means arranged to produce a record of the reference signal and each of the monitoring signals;
g. a head of liquid connected to the manometer;
h. means for changing the pressure of the head of liquid;

j. means for providing a signal indicative of a desired datum level of the liquid in the said one limb;
k. means for comparing the reference signal and the signal indicative of the desired datum level and deriving a difference signal;
m. means for changing the pressure of the head of liquid in response to the difference signal and thus maintaining the level of the liquid in said one limb at the desired datum level; and
n. means for adjusting the signal indicative of the desired datum level to one or more alternative values so that the level of the liquid in the said one limb can be changed to a corresponding alternative datum level, thus causing the transducers associated with the floats in said other limbs of the manometer to respond and provide a check that these floats and transducers are functioning.

3,949,485
METHOD OF AND APPARATUS FOR DRYING ARTICLES IN CONTACT WITH AN ORGANIC SOLVENT

Heinrich Führing, Augsburg, and Johannes Helmut Sieber, Aystetten, both of Germany, assignors to Firma Bowe, Brohler & Weber KG, Augsburg, Germany

Filed Aug. 28, 1973, Ser. No. 392,336
Claims priority, application Germany, Aug. 30, 1972, 2242632
Int. Cl.² F26B 5/04
U.S. Cl. 34—15 **15 Claims**



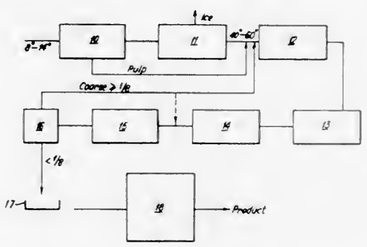
1. A method of drying an object wetted with a vaporizable liquid solvent comprising the steps of:
enclosing said object in a substantially gastight chamber and evacuating air therefrom;
passing air-free gas in the form of vapor of said solvent in said chamber over a heater to heat the gas and evaporate the liquid on said object;
simultaneously withdrawing gas and evaporated solvent from said chamber at a rate to maintain a substantially constant gas pressure in said chamber;
recovering solvent from said gas; and
recirculating said gas to said chamber to entrain additional evaporated solvent therein.

3,949,486
ORANGE JUICE

Neophytos Ganiaris, Riverdale, N.Y., assignor to Struthers Scientific and International Corporation, New York, N.Y.

Filed Mar. 10, 1975, Ser. No. 556,833
Claims priority, application United Kingdom, Mar. 8, 1974, 10476/74
Int. Cl.² F26B 5/06
U.S. Cl. 34—5 **10 Claims**

1. A process for the freeze concentration of a comestible product, comprising the steps of:
i completely freezing an aqueous extract of a comestible product to form a hard frozen mass thereof,
ii alternately raising and lowering the temperature to convert the hard frozen mass firstly into a soft frozen mass and then into another hard frozen mass,

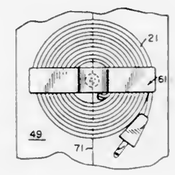


iii granulating the another hard frozen mass to obtain particles, and
iv drying the particles obtained under vacuum.

3,949,487
HAIR DRYER

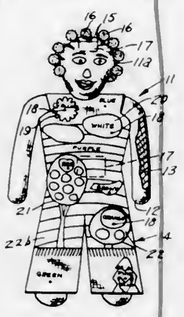
Nial C. Bartram, Wilmington, Del., and William J. Scheid, Leola, Pa., assignors to Schick Incorporated, Lancaster, Pa.

Continuation of Ser. No. 253,634, May 15, 1972, abandoned. This application Sept. 5, 1973, Ser. No. 394,462
Int. Cl.² A45D 20/24
U.S. Cl. 34—99 **4 Claims**



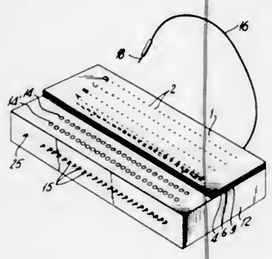
1. In a portable hair dryer of the type having a base; a head assembly including a dome-shaped head receiving recess for receiving a portion of the head of a user; and a head assembly support including a housing pivotably attached at one end to said base and at its other end to said head assembly for supporting said head assembly in an operating configuration above said base, or in a collapsed storage configuration wherein said head support lies within said head receiving recess, the front surface of said support facing the dome-shaped surface of said recess to define a free space of limited dimensions therebetween, a blower and a heating element being contained within said head support housing for supplying a heated air stream to said head assembly; and a power cord extending through said housing for supplying operating power to said blower and said heating element; storage means for said power cord comprising, in combination:
an elongated retaining member having a center base portion contoured to lie flat against said front surface of said head support, and further having winged end portions whereby the ends of said retaining member are spaced apart from said front surface to form in cooperation therewith a reel assembly for receiving said power cord; and
means for mounting said center base portion of said retaining member to said front surface of said head support whereby said power cord is contained within said free space between said front surface of said head support and said dome-shaped surface of said recess when said head assembly is in said storage configuration.

3,949,488
EDUCATIONAL ASSOCIATIVITY DOLL
Venus Lorraine Welch, 3041 Brighton St., Baltimore, Md. 21216
Filed Jan. 13, 1975, Ser. No. 540,658
Int. Cl.² G09B *5/06; A63H 3/28*
U.S. Cl. 35—8 A **10 Claims**



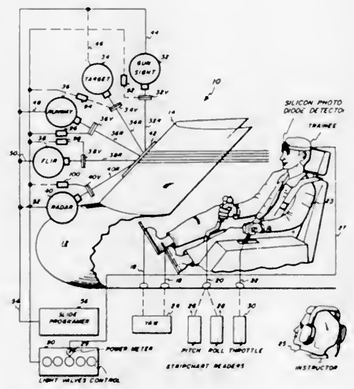
1. An educational associativity doll comprising:
a stuffed body having head, trunk and limb portions;
a garment on said body having front and back sides;
said garment having a plurality of design areas on one of said sides bearing preselected different colors, and an equal plurality of similar design areas on the other of said sides bearing preselected different numbers, each of said color areas corresponding with a particular number area to establish a color-number correspondence;
an audio playback means secured within said body;
said audio playback means having a plurality of recorded messages equal to said plurality of color areas and therefore also equal to said plurality of number areas, each message relating a particular color to its corresponding number; and
a plurality of activating means on said body for activating the playback means, each activating means causing the playback of a different recorded message;
each activating means also being associated with the color area and corresponding number area whose relationship is played back when that activating means is activated;
whereby a child will learn to associate numbers and colors by operating said activating means.

3,949,489
PSYCHOLOGICAL TEACHING APPARATUS
Frank Gallucci, 22 Maple Ave., Holbrook, N.Y. 11741
Filed Sept. 23, 1974, Ser. No. 508,085
Int. Cl.² G09B *7/06*
U.S. Cl. 35—9 C **4 Claims**



1. A psychological teaching apparatus having a base supporting a series of overlying layers comprising:
a A cover plate provided with multiplicity of holes arranged in lines and at least two columns for indicating a succession of answers to successive questions;
b An item analysis sheet of paper spaced beneath said cover plate and containing indicia thereon, contiguous thereto and adapted to be punctured by a probe passing through said cover plate;
c A spacer beneath said item analysis sheet provided with a series of holes therethrough corresponding to and in vertical alignment with said holes in said cover plate;
d An answer key plate beneath said spacer plate provided with holes corresponding to answers to successive questions programmed thereon;
e A series of electrical contacts beneath said answer key plate in alignment with each of said holes corresponding to the succession of answers programmed on said answer key plate;
f A probe connected to a source of power and at least one source of light for penetrating the holes of said cover plate, item analysis sheet, spacer plate, and answer key plate to make contact with said electrical contacts upon selection of the answers to the respective questions on said item analysis sheet and programmed on said answer key plate; and
g Two sources of light on the top of said base in parallel alignment with each successive line of holes corresponding to programmed answers, the first source of light being provided for each line of holes in said cover plate for illumination each time said probe contacts said electrical contacts corresponding to said line and the second source of light for each line of said holes being controlled by an individual switch for permitting activation of each second source of light, said individual switches being located on a side of said base.

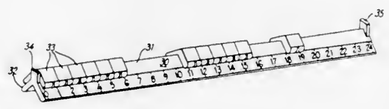
3,949,490
SIMULATOR INCLUDING IMPROVED HOLOGRAPHIC HEADS UP DISPLAY SYSTEM
George Derderian, Maitland, and Windell Neil Mohon, Winter Park, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 25, 1974, Ser. No. 518,000
Int. Cl.² G09B *9/08*
U.S. Cl. 35—12 N **4 Claims**



1. A simulator including an improved multichannel heads up display for viewing from an observer point comprising
a. a multichannel holograhic lens means,
b. a plurality of multi-slide projectors for passing a plurality of images on light ray paths through said holographic lens means to an observer point,
c. adjustable polarizing light ray valves positioned one in each light ray path, each including one rotatably adjustable polarizing element means for passing, interrupting and varying in light intensity its associated light ray,

d. drive means for selectively manually adjusting each of said rotatable element means of said light ray valves to selectively present to said viewer at simulated infinity position and at desired light level one or more of said light ray images, and
e. programming means for exposing selected slides of said projectors as desired in a selected training exercise.

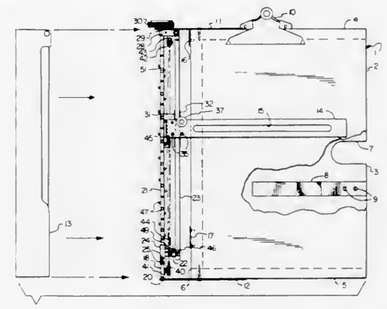
3,949,491
MATHEMATICAL TEACHING AID
James Richard Harte, 10 W. Concord, Kansas City, Mo. 64112
Filed Oct. 11, 1973, Ser. No. 405,473
Int. Cl.² G09B *19/02*
U.S. Cl. 35—31 R **6 Claims**



1. A mathematical teaching aid comprising:
an elongated beam member having a longitudinally extending upper surface presenting the top thereof,
said member being provided with a series of equally longitudinally spaced marks thereon and associated numbers adjacent the marks, the numbers progressing from 0 at one end to n at the other end of the member; and
a plurality of units overlying said surface and being slidable longitudinally therealong and freely removable from said surface by grasping and lifting said units,
each of said units having a pair of opposed, laterally spaced, depending legs and a dimension longitudinally of the member which bears a predetermined mathematical relationship to the space between a pair of adjacent marks,
each unit straddling said member with its legs disposed on opposite sides of the member, and having a bottom presented at least in part by said legs which defines a downwardly facing cavity configured to complementally receive said surface and partially embrace the member to preclude transverse shifting of the unit without interfering with separation of the member and the unit by upward lifting movement of the latter,
each unit being retained on the member solely by gravity and the complemental reception of said surface within said cavity,
each unit being of sufficient height to project above said surface and expose the unit for easy grasping and manipulation.

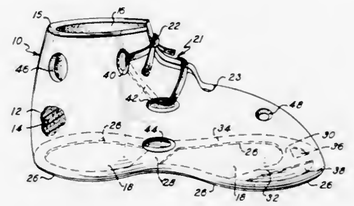
3,949,492
WRITING GUIDE
Albert J. Less, 3615 W. 90th Place, Westminster, Colo. 80030
Filed Apr. 18, 1975, Ser. No. 569,362
Int. Cl.² G09B *21/00*
U.S. Cl. 35—38 **18 Claims**

1. A writing guide for the blind comprising the combination of
means for defining a writing support surface having top and bottom edges and side edges;
means for retaining material to be written on on said surface;
an elongated writing guide strip having an elongated slot therein to define a zone within which a writing implement can be used; and
means for supporting said writing guide strip adjacent to said surface with said slot extending substantially perpendicular to said side edges and for moving said writing guide strip parallel to itself in predetermined increments from a location near said top edge toward a location near said bottom edge, said means comprising
spring means for continuously urging said writing guide strip toward said bottom edge;
a plurality of stops;
abutment means carried by and movable with said strip for contacting said stops; and



manually rotatable means for successively moving said stops into the path of travel of said abutment means as said rotatable means is rotated, each stop moved into said path of travel for contact with said abutment means being longitudinally spaced from the preceding stop by a distance equal to the desired space between writing lines on the material retained on said surface.

3,949,493
PROTECTIVE SHOE
Jhoon Goo Rhee, 2525 N. Ridgeview Road, Arlington, Va. 22207
Filed Aug. 4, 1975, Ser. No. 601,440
Int. Cl.² A41D *17/00*
U.S. Cl. 36—2 R **6 Claims**

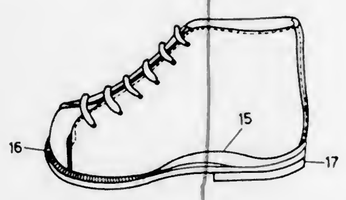


1. A protective shoe device for use in the art of karate and the like comprising casing means adapted to fit over the top of the foot, an open top portion, a slit portion extending forwardly from said top portion, and an open bottom having a peripheral rim, said casing being tough and pliable and containing resilient means, peripheral retaining means secured to said peripheral rim and comprising a cross medial portion and an adjacent pair of hole means adapted to receive the toes of the wearer of said shoe device, and securing strap means disposed through hole means on both sides of said slit portion.

3,949,494
CHILDREN'S SHOE
Ilvio Giannoni, 156 Via XX Settembre, 06100 Perugia, Italy
Filed Mar. 27, 1974, Ser. No. 455,331
Claims priority, application Italy, Oct. 12, 1973, 53080/73
Int. Cl.² A43B *00/00*
U.S. Cl. 36—2.5 F **1 Claim**

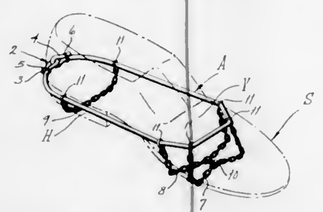
1. A children's shoe incorporating an arch support, comprising:

an upper having a base provided with a perforate front portion and an unperforate middle and rear portion, the instep side of said middle portion having a recess;
a heel piece applied to the upper, the instep side of its rim following the contour of said recess;
a cover strip applied by its top margin to the unperforate portion of said base, part of said top margin forming a curve complementary to said recessed base and being fastened to it;



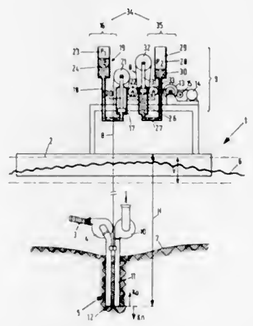
an insole having a perforate front portion fastened to the front portion of said upper and an unperforate front portion fastened to said unperforate base portion;
an arch support fastened beneath the middle and rear insole portion, said arch support having its raised part fastened to the underside of the instep portion of said insole and a peripheral groove registering with the remaining imperforate base of the upper; and
a sole applied over said front portion of the insole and over the arch support.

3,949,495
ANTI-SKIDDING DEVICE FOR SHOES
Arthur E. Hollmann, 5021 Frankfort, St. Louis, Mo. 63123
Filed Oct. 8, 1974, Ser. No. 513,042
Int. Cl.² A43C *15/00*
U.S. Cl. 36—62 **6 Claims**



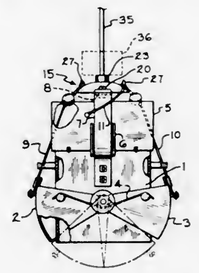
1. In an anti-skidding device for use in cooperating with the shoe vamp and its sole and heel part for preventing the user from slipping on the ground during inclement weather, comprising, chain means providing for embracing the underside of the sole and useful for abrasively contacting the ground, said chain means comprising a pair of chain segments, an elastic means encircling the upper shoe vamp and being biased upwardly due to the inclined taper of said shoe vamp, the ends of each chain segment being attached to the elastic means at a position approximately laterally of the shoe vamp, a link attaching the pair of chain segments together at a location proximate the underside of the shoe sole, another chain segment attaching to the elastic means approximately laterally of the upper shoe and for embracing the underside of the shoe heel, and the upward bias of said elastic means upon said shoe vamp effecting a constant draw of the chain segments to sustain their contiguous embracement against the underside of the shoe.

3,949,496
WAVE COMPENSATING SYSTEM FOR SUCTION DREDGERS
Jan de Konig, 20, Soetendaal, Amsterdam; Romke van der Veen, 21, Prof. Dr. Hesselaan, Jutphaas, and Tjako Aaldrik Wolters, 53, Kastanjelaan, Vianen, all of Netherlands
Continuation of Ser. No. 327,307, Jan. 29, 1973, abandoned. This application Sept. 23, 1974, Ser. No. 508,621
Claims priority, application Netherlands, Jan. 28, 1972, 7201215
Int. Cl.² E02F *3/88*
U.S. Cl. 37—58 **5 Claims**



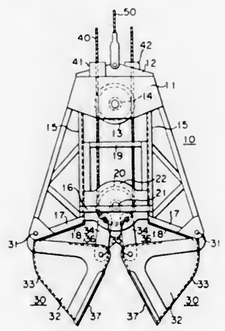
1. A suction dredger comprising, in combination:
a buoyant hull and a suction dredging system associated therewith, said suction dredging system including a nozzle adapted to be inserted into the bottom below the hull, and flexible conduit means connected to said nozzle for conveying dredger spoil to a discharge region;
winch means on said hull for supporting said nozzle and including at least one cable connected to said nozzle and a motor to operate the winch means for hauling in and paying out said cable whereby to locate said nozzle at a desired depth below said hull;
a first piston/cylinder device one member of whose piston and cylinder members is connected with said cable to reciprocate as said hull rises and falls while said nozzle remains at said desired depth, a first fluid pressure accumulator chamber connected with said device and acting on said one member continuously to urge it in that direction required to haul in said cable whereby to maintain tension of at least a minimum value on said cable even when said hull falls to the lowermost point in the trough of a wave and to exert an increasing tension on the cable as said hull thereafter rises, the pressure in said first fluid pressure accumulator being such that when said one member approaches its end of stroke position responsive to rising of said hull, the tension on said cable is less than a predetermined maximum value; and
a second piston/cylinder device one member of whose piston and cylinder members is connected with said cable to reciprocate as said hull rises and falls, a second fluid pressure accumulator chamber connected with said second device and acting on said one member thereof continuously to urge it in that direction required to haul in said cable, the pressure in said second fluid pressure accumulator being such that said second device is operable only in response to tension in said cable which exceeds that value prevailing when said one member of the first device reaches said end of stroke position, and the stroke of said one member of the second device being such that at its end of stroke position the tension on said cable is still less than said predetermined maximum value.

3,949,497
RELEASABLE LATCHING APPARATUS FOR A BENTHIC GRAB
Ben L. Crump, Freeland, Mich., assignor to Trippensee Corporation, Saginaw, Mich.
Filed Aug. 23, 1974, Ser. No. 500,065
Int. Cl.² G01N *1/12*; **E02F** *3/44*
U.S. Cl. 37—71 **9 Claims**



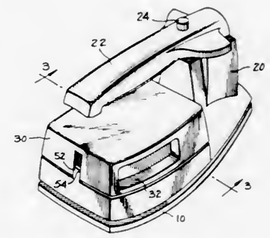
1. Releasable latching apparatus for a benthic grab or the like comprising a body having therein a cavity, at least one opening substantially parallel to and spaced from said cavity, and a channel establishing communications between said cavity and said opening; a plunger member accommodated in said cavity for movement inwardly of said body from a normal position projecting beyond one end of said cavity; a latch member having a free end accommodated in said opening for movement inwardly of said body from a normal latching position in which said free end protrudes beyond said body to an unlatching position; means accommodated in said channel spanning the distance between said plunger member and said latch member at the opposite end of the latter and coupling said members for conjoint movement; and yieldable means acting on at least one of said members and yieldably biasing the latter to its normal position.

3,949,498
GRAB BUCKET FOR DREDGING SLUDGE
Hisao Iwata; Gentaro Hasewaga, and Kameichi Shimizu, all of Chiba, Japan, assignors to Mitsubishi Seiko Kabushiki Kaisha, Japan
Filed Oct. 30, 1974, Ser. No. 519,120
Int. Cl.² E02F *3/44*
U.S. Cl. 37—187 **5 Claims**



1. A grab bucket for dredging sludge comprising frame means including spaced vertical guide members within which block means is in contact with and vertically shiftable between upper and lower locations on said vertical guide members;
support means attached to each said vertical guide member at said lower location and extending outwardly therefrom;
a pair of bucket shells each formed by spaced, generally triangularly-shaped side walls connected by a bottom plate member;
hinge means located at outer extensions of said support means, and link means connected to said block means;
said triangularly-shaped side walls of each said bucket shell having one corner thereof connected with said hinge means and further having a spaced adjacent corner connected with said link means whereby vertical movement of said block means and connected link means moves said bucket shells between open and closed positions;
a pair of cover plates, one each mounted on said support means and extending therealong from said vertical guide member attachment to said hinge means location; and
a pair of reinforcement plates, one each extending between and mounted along top portions of said spaced side walls of each said bucket shell, each said reinforcement plate extending outwardly from at least said corners connected with said link means to an intermediate distance, each said reinforcement plate positioned in overlapping relation with each said respective cover plate when said bucket shells are in the closed position.

3,949,499
REMOVABLE TANK IRON
Robert L. Schaeffer, Leroy, N.Y., and Charles A. Balchunas, Alta Loma, Calif., assignors to General Electric Company, Bridgeport, Conn.
Filed Dec. 19, 1974, Ser. No. 534,215
Int. Cl.² D06F *75/06*
U.S. Cl. 38—77.3 **12 Claims**



1. An electric flatiron with a handle, soleplate and with fluid handling means having a removable tank assembly comprising:
a tank support on said iron, conduit means from said fluid handling means extending into said tank when disposed on said support,
means to fill said tank when removed, and pliable plug means in said tank split to accept said conduit therethrough in sealing relation for fluid flow from said tank to the handling means, whereby said conduit pierces the pliable plug in a fluid tight seal when the tank is connected and the plug seals itself when the conduit and tank are separated.

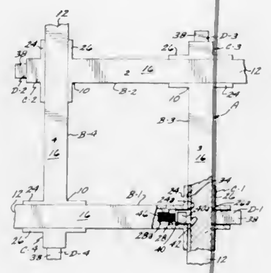
3,949,500
ADJUSTABLE NEEDLEPOINT HOLDING FRAME
Dorothy Connors, 3900 Silverleaf Ave., Orange, Calif. 92669
Filed Aug. 27, 1975, Ser. No. 608,050
Int. Cl.² D06C *3/08*
U.S. Cl. 38—102.5 **4 Claims**

1. A frame that may be manually adjusted to a desired length and width to removably hold a sheet of material on which needlepoint work is being performed within the confines thereof, said frame comprising:
a. first, second, third and fourth elongate members having first and second ends, each of said members having first and second side surfaces, and first and second edge sur-

faces, each of said first surfaces having an elongate tooth defining rack thereon,

b. first, second, third and fourth heads on first ends of said first, second, third and fourth members, each of said heads including a transverse channel-shaped member defined by an elongate web normal to said first side surface most adjacent thereto and first and second parallel laterally spaced flanges that project from said web towards said second side surface most adjacent thereto, first and second openings in said first and second flanges that are longitudinally aligned with an elongate cavity in said first end of said elongate member most adjacent therein;

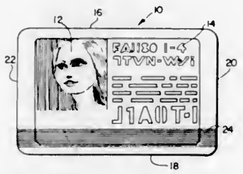
c. first, second, third and fourth locking members disposed on said first, second, third and fourth webs and slidably movable in said first and second openings and cavity most adjacent thereto, each of said locking members including a rectangular strip having first and second ends, a positioning button on said first end of said strip and a block on said second end of said strip, said block having a plurality of spaced teeth defined on the surface thereof most adjacent said button on said strip;



d. first, second, third and fourth compressed springs in said first, second, third and fourth cavities that abut against said blocks on said first, second, third and fourth locking members that tend at all times to move said first, second, third and fourth locking members outward where said buttons thereof project outwardly from said first, second, third and fourth heads; and

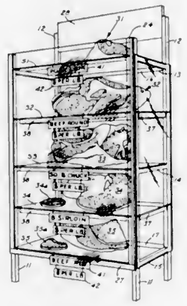
e. first means for removably holding the edges of said sheet on said first side surfaces of said first, second, third and fourth elongate members, when said first and second elongate members are disposed in parallel, laterally spaced relationship to define a first pair thereof and said third and fourth elongate members are disposed in parallel, laterally spaced relationship to define a second pair thereof, said first and second heads having the channel-shaped members thereof engaging said third and fourth members and being removably held in engagement therewith by said teeth on said blocks of said first and second locking members being forced by said springs associated therewith into interlocking engagement with said tooth defining racks on said third and fourth members, and said heads on said third and fourth members similarly engaging said second and first members to define said frame and of such size that said sheet is held in a taut position thereon.

3,949,501
NOVEL IDENTIFICATION CARD
Paul A. Andrews, Belmont, and Richard M. Raia, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of Ser. No. 295,201, Oct. 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 866,875, Oct. 16, 1969, abandoned. This application Dec. 7, 1973, Ser. No. 422,662
Int. Cl.² G09F *3/02*
U.S. Cl. 40—2.2 **5 Claims**



1. An I.D. credit card which comprises an information-bearing medium encased within a laminated envelope said envelope comprising first and second plastomeric sheets at least one of which has an adherent capability, the first sheet being transparent and having a magnetic encoding capability provided by a layer of magnetic material in the form of a stripe over a predetermined area of the outermost surface of the transparent sheet; a frame positioned between the sheets providing a rectangular opening which can accommodate the information-bearing medium, the thickness of the frame being substantially the same as the thickness of the information-bearing medium accommodated thereby so that when the information-bearing medium is accommodated by the frame and the first sheet is superposed thereon for lamination, substantially all portions of the stripe can be supported by a substantially flat surface provided by the frame and the medium accomodated therein.

3,949,502
SALES DISPLAY AND METHOD FOR SELLING SELECTED MEAT CUTS
James E. Carr, 6038 S. Prince, Littleton, Colo. 80120
Filed Sept. 3, 1974, Ser. No. 502,818
Int. Cl.² G09F *19/00*
U.S. Cl. 40—126 R **3 Claims**



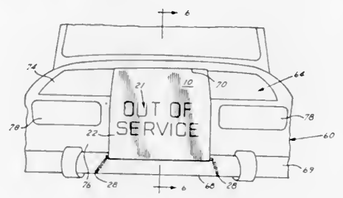
1. In a display for use in merchandising selected primal cuts of meat, the combination comprising:

a plurality of three-dimensional, relatively lightweight, non-perishable replicas of primal cuts of meat including beef round, beef sirloin, beef rib, beef chuck and pork loin, each of said replicas being made of a fiber glass material formed as a hollow, generally thin-walled body that is of substantially less total weight than a corresponding cut of meat, each of said replicas being painted to represent alternately fat and meat to closely simulate the actual cut of meat;

support means for displaying the replicas, said support means being in the form of a display case having a plurality of vertically spaced transparent shelves with a different replica being supported on each shelf, a sub-cut replica of a construction corresponding with that of said primal cut replicas on at least one of said shelves representing a smaller cut of meat taken from the associated primal cut replica supported on an associated shelf, said display case being closed across the front, sides and rear with a transparent closure to enclose all of said replicas except the one on the uppermost of said shelves; and

indicia means in the form of at least one sign associated with each shelf identifying each of the primal cut replicas and the price per pound of actual cuts of meat corresponding to said primal cut replicas.

3,949,503
EMERGENCY WARNING DEVICE
Edward T. Waress, 6196 Estes St., Arvada, Colo. 80004
Continuation-in-part of Ser. No. 397,939, Sept. 17, 1973, abandoned. This application Aug. 5, 1974, Ser. No. 494,535
Int. Cl.² G09F *21/04*
U.S. Cl. 40—129 C **13 Claims**



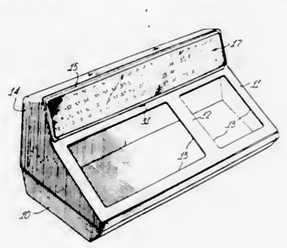
1. An emergency warning device for an automotive vehicle wherein the vehicle includes a trunk lid hinged along its upper edge to form a space between the trunk lid and body of the motor vehicle when the trunk lid is open and has a lower edge terminating directly above the rear bumper of the motor vehicle, the improvement comprising:

a curtain support member having releasable mounting means at opposite ends thereof releasably attachable to the inner surface of said trunk lid,

a curtain of brightly colored, flexible material having top and bottom ends, front and reverse surfaces, a message or symbol on said front surface indicating danger or caution at least a portion of which is visibly discernable within the bottom one-third of the length of said curtain nearest said bottom end, and means fixing the upper end of said curtain to said curtain support member such that rotation of said curtain support member will cause said curtain to be wound onto said curtain support member, said curtain being of a length such that when said releasable mounting means is attached to the inner surface of said trunk lid said curtain will extend alternately downwardly for visibly displaying said message or symbol rearwardly of the vehicle when the trunk lid is open, or forwardly through the space between said trunk lid and the body of the motor vehicle and rearwardly along the length of said trunk lid and beyond the lower edge thereof for visibly displaying said message or symbol discernable portion rearwardly of the vehicle when the trunk lid is closed, and

lower connecting means at the bottom end of said curtain for releasably attaching said bottom end to a portion of the vehicle thereby holding said curtain in a substantially extended condition.

3,949,504
LIGHTED DISPLAY FOR A CONSOLE
Wesley Nelson Willis, Mossley, and Graham Stirling Laing, London, both of Canada, assignors to Northern Electric Company, Limited, Montreal, Canada
Filed Oct. 9, 1974, Ser. No. 513,230
Int. Cl.² G09F *13/04*
U.S. Cl. 40—132 D **3 Claims**



1. A console for a telecommunications unit including a housing base and a housing top, said base and top cooperating to form an enclosure for telecommunications apparatus, said housing top including a forward part having an upwardly facing surface with at least one aperture therein for the mounting of apparatus items, and a rear part having an upwardly extending portion, the upwardly extending portion having a forwardly facing surface with an aperture therein extending for the major part of the forwardly facing surface and having top and bottom edges; and

a lighted display positioned in said aperture of said forwardly facing surface and extending into said upwardly extending portion, said lighted display comprising:

a front cover of dark colored translucent material positioned in said aperture in said forwardly facing surface said front cover having a planar front surface and top and bottom flanges;

a light indicator assembly mounted behind said front cover, said light indicator assembly including at least one lampholder unit mounted in said upwardly extending portion and having a plurality of lamps therein; an indicator sheet of dark opaque material having a plurality of transparent indicator characters thereon spaced in a predetermined pattern with a character in front of each lamp; and an apertured plate releasably attached to said lamp unit and including a plurality of apertures therein, an aperture aligned with each lamp, the indicator sheet portioned between said plate and said lampholder unit and held in close contact with said lampholder unit by said plate, the indicator sheet also positioned in close proximity to said planar front surface of said front cover; and

interengaging formations on said top and bottom edges of said aperture in said forwardly facing surface and on said top and bottom flanges of said front cover, said interengaging formations releasably attaching said front cover to said forwardly facing surface with said front cover positioned in said aperture.

3,949,505
QUICKLY INTERCHANGEABLE SLIDE MOUNTS
Bunichi Kato, 9-25, Osu 1-chome, Naka, Nagoya, Japan
Filed Jan. 4, 1974, Ser. No. 430,785
Int. Cl.² G09F *1/12*
U.S. Cl. 40—152 **2 Claims**

1. A slide mount for framing a transparency into a slide, said transparency carrying a picture thereon for projection in a projector, said slide mount comprising:

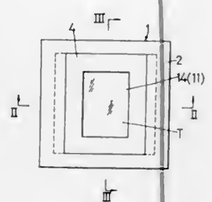
a planar main frame having an upper surface, a lower surface, and two pairs of opposite side walls;

a concavity formed in said upper surface of said main frame in the center thereof and adapted to stationarily receive

said transparency therein, said concavity having a bottom spaced below said upper surface of said main frame and being substantially equal in size to the transparency, said concavity being defined by a pair of spaced-apart, opposite walls extending substantially perpendicular to said upper surface and a pair of spaced-apart, opposite walls angularly inclined with respect to said upper surface, said walls defining an inlet into said concavity having a smaller cross-sectional area than said bottom thereof;

a first opening formed in the center of said concavity and communicating between said bottom of said concavity and said lower surface of said main frame, said first opening being substantially of the same size as said picture and located in such a position that upon insertion of said transparency into said concavity said picture may be correctly aligned with said first opening;

a flexible planar fitting frame having an upper surface, a lower surface, and two pairs of opposite side walls, one of said pairs of side walls being equally angularly inclined as the angularly inclined side walls of the main frame to



engage same, the other pair of side walls being substantially perpendicular to the upper surface of said fitting frame and adapted to be removably inserted into said concavity to hold said transparency against said bottom of said concavity, said fitting frame including means formed on the upper surface thereof to facilitate removal from said concavity;

a second opening formed in the center of said fitting frame and communicating between said upper and lower surfaces of said fitting frame, said second opening being substantially of the same size as said first opening and alignable with said opening upon insertion of said fitting frame into said concavity; and

said means for facilitating removal comprising a pair of recesses formed in said upper surface of said fitting frame opposite to each other, each of said recesses being located adjacent to the top of one of said pairs of opposite side walls of said fitting frame, the recesses being located adjacent the top of said angularly inclined opposite side walls of said fitting frame.

3,949,506

PLAQUE WITH REPOSITIONABLE ORNAMENTAL TEAM UNITS

John Benkowski, 4322 N. Leavitt St., Chicago, Ill. 60618

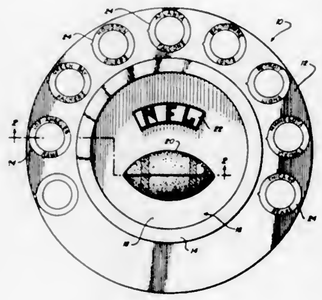
Filed June 12, 1974, Ser. No. 478,697
Int. Cl.² G09F *1/12*
U.S. Cl. 40—160 **10 Claims**

1. an ornamental team plaque, including

a plastic body having a face side and an opposite side,

a plurality of like fixed mounting means molded with the plastic body on the face of said plastic body,

a plurality of molded, oranmental team units, each of said units having a raised obverse side depicting characteristic ornamentation representative of a team, and a reverse side having like mounting means interchangeably engageable with any of said plastic body fixed mounting means so that each of said ornamental team units is repositionably mountable on any of said plastic body fixed mounting means, and



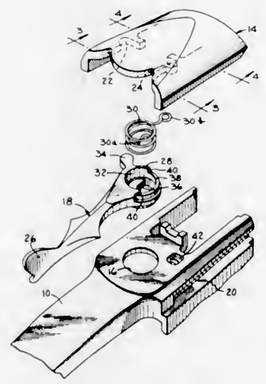
indicia on the face of said plastic body to indicate league grouping of said plurality of ornamental team units.

3,949,507

TOP LOCK MECHANISM FOR BREAK-OPEN FIREARM

James Cameron Hutton, and Merle Francis Carter, both of Mohawk, N.Y., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed July 22, 1974, Ser. No. 490,514
Int. Cl.² F41C *11/08*
U.S. Cl. 42—44 **20 Claims**



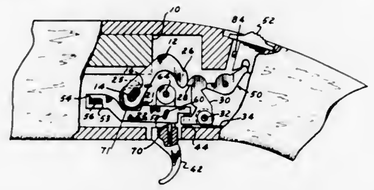
1. In a break-open firearm having a frame and a barrel assembly, a locking device to secure the frame and barrel assembly when the firearm is in the closed firing position and which is actuatable to an open position to permit the frame and barrel assembly to break open and pivot relative to one another, said locking device comprising a top lock, means slidably mounting said top lock on said frame to engage and secure said barrel assembly to said frame when the top lock means is in the forwardmost position and to permit pivoting of said frame and barrel assembly when the top lock is in the rear position, and torsion means biasing said top lock away from said frame into frictional engagement therewith and also biasing said top lock forwardly into securing relationship with said barrel assembly.

3,949,508

FIRING MECHANISM

Louis Elkas, Agawam, Mass., assignor to Emhart Corporation, Farmington, Conn.

Filed June 10, 1974, Ser. No. 478,083
Int. Cl.² F41C *19/00, 17/00*
U.S. Cl. 42—69 B **6 Claims**



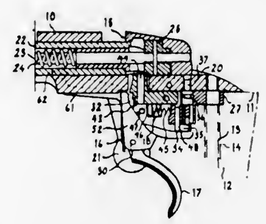
1. Firing mechanism for a gun comprising a receiver, a trigger, a pivotal hammer, a sear releasably engageable with said hammer for retaining the same in cocked position and for releasing said hammer for firing the gun in response to trigger actuation, a safety movable to and from a position for blocking firing movement of said sear, said hammer being pivotable so that its sear engaging portion moves along an arc having a given radius of curvature, said hammer being rectilinearly movable to reduce said radius when the hammer being cocked engages said sear which is blocked by said safety, whereby the hammer may be swung into cocked engagement with the sear when the safety is positioned to block movement of said sear.

3,949,509

FIRING MECHANISM WITH ADJUSTABLE TRIGGER-SEAR OVERLAP AND SAFETY MECHANISM

Sven Gunnar Olof Larsson, Huskvarna, Sweden, assignor to Forenade Fabriksverken, Eskilstuna, Sweden

Filed Aug. 29, 1968, Ser. No. 756,159
Claims priority, application Sweden, Sept. 1, 1967, 12147/67
The portion of the term of this patent subsequent to Sept. 13, 1991, has been disclaimed.
Int. Cl. F41c *17/00*
U.S. Cl. 42—70 R **1 Claim**



1. A rifle with a cylinder lock comprising in combination: a receiver, a rectilinearly movable and retractable breech bolt having a firing member, a firing spring and a trigger mechanism, including a trigger, a sear and a sear spring pressing on said sear toward operative holding position, a locking lug on said sear for releasably holding said firing member in a cocked position, a locking shoulder provided on said sear and a cooperating locking shoulder provided on said trigger for releasably holding said sear shoulder in the sear operative holding position by engaging and overlapping said sear locking shoulder and said trigger shoulder being withdrawable from said locking shoulder on said sear upon pulling of said trigger, said sear being depressed by said firing member into a non-holding position against the pressure of said sear spring when the rifle is discharged, said sear shoulder being disposed at the forward end of said sear, said receiver including an upwardly open rear portion having an opening therein, said locking lug of said sear passing through said opening to cooperate with said firing member, a separate assembly yoke positioned below said receiver, said sear being pivoted at its rear portion in said assembly yoke and the remainder of said trigger mechanism also being pivoted in said assembly yoke, and a movable safety mechanism pivotally supported in said assembly yoke to be movable between an on and an off position, and a ledge on said sear with which said safety mechanism cooperates to lock said sear when said safety mechanism is in its on position in either one of said operative holding or non-holding positions, according to whether the firing mechanism is in locked or released condition; and an element on said trigger to turn said sear and its locking lug out of engagement with said firing member by an extended trigger motion.

3,949,510

DEVICE FOR RETRIEVING MINNOWS

Kenneth J. Johnson, 8917 Woestboul, East St. Louis, Ill. 62203

Filed Dec. 30, 1974, Ser. No. 537,789
Int. Cl.² A01K *77/00*
U.S. Cl. 43—4 **10 Claims**

1. In a minnow bucket containing water and minnows in the water, a device for retrieving the minnow individually from the water in the bucket, said device comprising: a handle long enough to extend from the bottom of the bucket completely through the water and to project above the upper surface of the water so that it can be grasped without getting one's hands wet; and a tubular trap pivotally connected to one end of the handle so that it will rest horizontally on the bottom of the bucket, the trap having a hollow interior sized to accommodate a single minnow, the trap further having its one end open so that a minnow can swim into the hollow interior and its other end closed so that the minnow cannot escape by merely swimming through the trap.

3,949,511

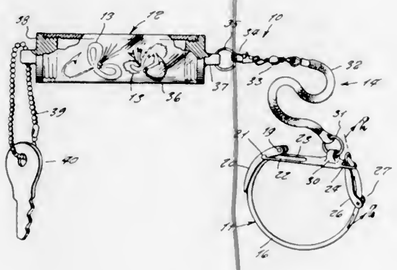
KEY HOLDERS FOR INSTANT FISHING

Morris Goldhaft, 8100 Shorefront Parkway, Rockaway Beach, N.Y. 11693

Filed Jan. 22, 1975, Ser. No. 543,021
Int. Cl.² A01K *83/00, 97/06*
U.S. Cl. 43—20 **3 Claims**

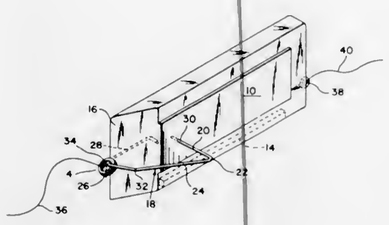
1. In a key holder for instant fishing, the combination of a key ring attached to one end of a leash and the other end of said leash being connected to a case for storing fishing lures and flies, and said key ring incorporating means for being converted into a fish hook, wherein said key ring comprises an arcuate rod, a first end of said rod being tapered to a point, a barb formed near said point, and an opposite end of said

arcuate rod having a lever pivotally attached thereto, said lever being pivotally attached to one end of a bar, an opposite



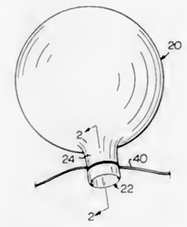
end of said bar being engageable in a notch near said first end of said rod.

3,949,512
FISHING DEVICE
Kenneth Stegemeyer, 1818 N. 8th St., Sheboygan, Wis. 53081
Filed Mar. 6, 1975, Ser. No. 555,753
Int. Cl.² A01K *91/00*
U.S. Cl. 43—43.13 **8 Claims**



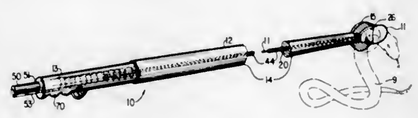
1. A trolling device, comprising; a generally flat, elongated body means adapted to float in water, having a front edge generally tapering rearwardly and from one surface plane of said body to the other and a bottom edge heavier than the top edge to maintain said body in a generally vertical position when disposed in said water; yoke means mounted on said body adjacent said front edge thereof having a generally-triangular configuration, said triangle having a first side extending outwardly from said plane of said body having said tapered form and rearwardly therefrom, a second side extending from the rearward end of said first side downwardly toward said body and generally perpendicular to said plane of said body having said tapered form to form a first angle between said first side and said plane of said body having said tapered form and a second angle between said first and second sides of said triangle, and bent upwardly toward said top edge of said body at intermediate points along said first and second sides of said triangle; and slide means slidably mounted on said yoke to normally engage said yoke at said second angle and draw said body through said water at a first predetermined attitude and to slide to and engage said yoke at said first angle and draw said body through said water at a second predetermined attitude when a pulling force is exerted on the rear edge of said body.

3,949,513
FISHING FLOAT
Walter Dmytriw, 65 Southport St., 404, Toronto, Ontario, Canada
Filed Nov. 5, 1974, Ser. No. 521,440
Int. Cl.² A01K *93/00*
U.S. Cl. 43—44.93 **4 Claims**



1. A fishing float comprising:
a buoyant float body formed with an opening; and,
a fishing line attachment member which extends about a longitudinal axis, and which includes: a first portion adapted to be fitted into said opening in the float body to couple the member and the body and close said opening; and, a second portion disposed axially adjacent said first portion and arranged to protrude from the body when the member and body are coupled together, so that the second portion can be gripped for the purpose of separating the member and the body;
said first portion of the member being formed with a peripheral rib, and the portion of the float body defining said opening being formed with a complimentary groove to receive the rib and retain the first portion in the opening in the float body in use, at least one of the body and the member being resiliently deformable to permit the rib to engage in and disengage from the groove;
said first portion of the member also being formed with a slit which is disposed parallel to said axis of the member and is dimensioned to receive and frictionally retain a fishing line, the slit opening into the end of the member remote from said second portion and extending from said end substantially to the position of said second portion;
said second portion of the member being of greater diameter than the first portion and defining around said first portion an inner face positioned to engage a fishing line frictionally retained in said slit so that the line is trapped between the float body and said inner face when the fishing line attachment member and float body are coupled together in use.

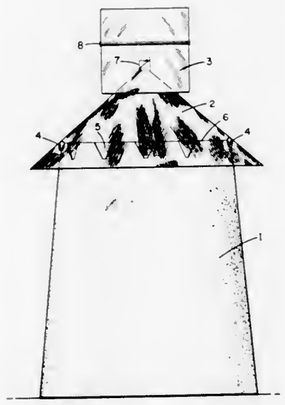
3,949,514
SNARE
Frank J. Ramsey, P.O. Box 394, Stephenville, Tex. 76401
Filed July 1, 1975, Ser. No. 592,330
Int. Cl.² A01M *23/34*
U.S. Cl. 43—87 **7 Claims**



1. A snare for catching fish, frogs, snakes and other small animals comprising an elongated pole having a head section at one end and a handle section at its other end, a bore extending longitudinally through the pole, a snare wire extending through the bore having one end affixed in said head section,

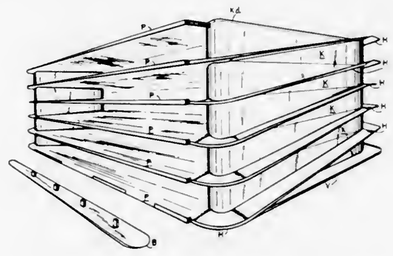
grooved guide block means detachably mounted in said head section for guiding said wire to form an expanded loop outwardly of said head section when said wire is pushed through said central bore in the direction of said head section, said handle section having a piston chamber therein in alignment with and opening into said bore, said piston chamber having a forward end in the direction of said head section and an opposite rear end, a piston extension receiving chamber extending rearwardly of said piston chamber through said handle section, a piston reciprocally mounted within said piston chamber from a normal rear uncocked position to a forward cocked position, a rear piston extension reciprocal within said piston extension receiving chamber, means securing the other end of said snare wire to said piston for reciprocating said wire through said bore upon reciprocation of said piston to expand and contract said loop, spring means within said piston chamber for biasing said piston in a direction opposite said head section to contract said loop, trigger means for holding said piston in its cocked position, said piston being normally biased by said spring means to its uncocked condition toward the rear end of said piston chamber with said piston extension projecting outside of said handle, said snare being cocked by pushing said piston extension toward the head section until said piston is held in said cocked position by said trigger means and said loop is expanded.

3,949,515
IN-FIELD BOLL WEEVIL TRAP
Earl B. Mitchell, Louisville; Dicky D. Hardee, and Theodore B. Davich, both of Starkville, all of Miss., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed July 23, 1975, Ser. No. 598,493
Int. Cl.² A01M *1/10*
U.S. Cl. 43—121 **9 Claims**



1. An apparatus for capturing boll weevils comprising in combination:
a. a base comprising an open bottom, cylindrical vertical sides, and a horizontal circular top affixed at its edge to the tip edge of the cylindrical vertical sides thus substantially forming an inverted cylinder with an open bottom allowing for movement of boll weevils up the sides due to,
b. a grandlure attractant and
c. a plurality of openings spaced around the top edge of said inverted cylinder to allow boll weevil entry into
d. an inverted funnel attached to the top of the cylindrical base so that the edge of the inverted funnel overlaps the outer edge of the cylindrical base, said funnel affixed to the top edge of said cylindrical base, thus substantially forming a guide for the boll weevils up and through the funnel throat, said funnel throat end inserted into a
e. clear capture chamber which is affixed to overlap the funnel throat end said clear capture chamber affixed and sealed to overlap the funnel throat end so that when the boll weevils enter the capture chamber they cannot return due to their nature to crawl upward.

3,949,516
TOY BUILDING ASSEMBLY
Ronald Gronert, 76 Willem de Rijkelaan, Hillegom, Netherlands
Filed Aug. 6, 1974, Ser. No. 495,170
Claims priority, application Netherlands, Aug. 27, 1973, 7311744
Int. Cl.² A63H *33/06*
U.S. Cl. 46—17 **4 Claims**

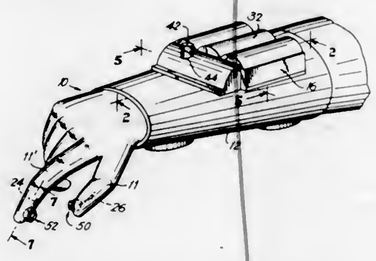


1. A toy parking garage comprising:
a plurality of ramps each having an inclined plane portion and a support flange which extends upwardly from one side of the inclined plane portion and has a horizontal upper edge;
a plurality of horizontal floor elements each provided with upstanding support flanges extending along opposed edges thereof; and
a plurality of stackable column elements for supporting the ramps and floor elements, each said column element including means for detachably connecting it in stacked relation with others of said column elements and for detachably attaching said floor elements and ramps to said column elements, said means comprising an upper edge recess surrounding the upper surface of said column element providing a support ledge for said support flanges, and a jacket at the bottom of said column element of a size to fit over the upper edge of a lower column element while leaving a vertical clearance between said jacket and the upper edge of said lower column element to retain the support flange of a floor element or ramp supported on the support ledge of said lower column element.

3,949,517
POWER SUPPLY TOY AND MOTORIZED VEHICLE
Lawrence L. Reiner, Woodbury, N.Y., and John P. McNett, Short Hills, N.J., assignors to Lawrence L. Reiner, Woodbury, N.Y.
Filed Oct. 4, 1974, Ser. No. 512,087
Int. Cl.² A63H *33/27*
U.S. Cl. 46—45 **11 Claims**

1. An electrically energized toy for use in combination with a portable power supply having a pair of output contact elements, comprising: a housing forming generally the body of said toy and having a pair of input contact elements adopted to be co-operatively associated with said output contact elements, said input contact elements having terminal elements for providing positive electrical contact with the output

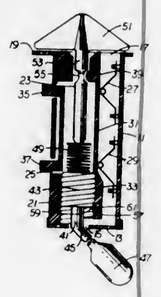
contact elements, electrically actuated means in said toy, and conductive paths extending between said input contact elements and said means for energizing same, thereby operating said toy.



3,949,518
MISSILE LAUNCHING TOY

Vincent V. Lenza, 90 Montgomery Ave., Staten Island, N.Y. 10301

Filed July 21, 1975, Ser. No. 597,581
Int. Cl.² A63H 27/00
U.S. Cl. 46—74 B 8 Claims



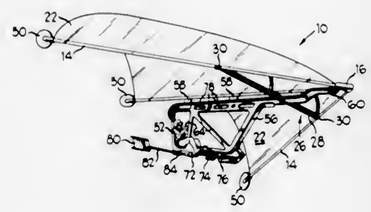
1. A missile launching toy comprising a body adapted to be held and twirled in a hand and having a cylindrical cavity, a rotatable member mounted in one end of said cavity, a counterweight integrally attached to but extending out of said cavity from and off-center to said rotatable member whereby twirling of said body in said hand will rotate said counterweight and said rotatable member, a longitudinally movable member mounted in said cavity above, and movable by, said rotating member, means for releasably mounting a missile in said other cavity end, means contacting said missile for storing energy created by movement of said movable member, and means for simultaneously releasing said missile and said stored energy whereby said missile is launched from said body.

3,949,519
TOY GLIDER

Burton C. Meyer, Downers Grove, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 14, 1975, Ser. No. 550,032
Int. Cl.² A63H 27/00
U.S. Cl. 46—79 17 Claims

1. A toy flexible wing glider, comprising:
a frame including a longitudinal keel member and at least two resilient leading edge spar members disposed one at each side of said keel member;
means connecting said leading edge spar members near the front of said keel member with the spar members diverging rearwardly therefrom;
a diaphragm of substantially air impervious, flexible material secured to said frame forming two semiconical wing portions when in flight;
a payload support connected to said keel and including means for supporting a figure toy for aerodynamically transporting the figure toy through the air; and

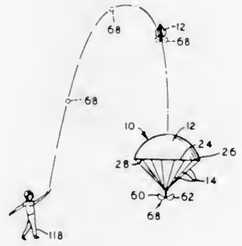


selectively adjustable flight direction control means on the frame for varying the relative sizes of the two semi-conical wing portions to change the predetermined path of flight of the glider.

3,949,520
PARACHUTE TOY

Steven Allen Lebensfeld, 82-56 213th St., Queens Village L.I., N.Y. 11427

Filed Dec. 19, 1974, Ser. No. 534,369
Int. Cl.² A63H 33/20
U.S. Cl. 46—86 R 6 Claims

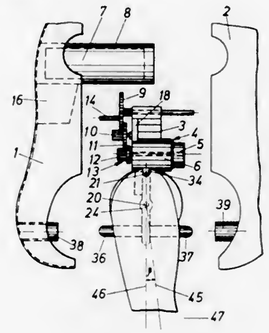


1. A parachute toy comprising a parachute canopy, a plurality of shroud lines each attached at a first end to said canopy, a hollow container sized to receive and contain said canopy in compressed condition therein, said container comprising a first hollow hemispherical shell, a second hollow hemispherical shell, and hinge means connecting said first and second hollow hemispherical shells, and means connecting the second, opposite ends of said shroud lines to the interior of said hollow container, said hinge means comprising a first pair of projecting portions integrally formed on said first hollow semispherical shell and a second pair of projecting portions integrally formed on said second hollow hemispherical shell with said first pair of projecting portions interengaging said second pair of projecting portions and with each of said projecting portions including an inwardly tapered slot and a hole disposed at the base of said slots and with said inwardly tapered slots and said holes in said projecting portions in alignment, and further comprising a hinge pin rotatably disposed passing through said holes in said projecting portions.

3,949,521
WALKING DOLL WITH SITTING CAPABILITY

Horst Heerlein, Dorfles, Germany, assignor to Puppenfabrik Hans Gotz, Rodental, Germany

Continuation of Ser. No. 277,561, Aug. 3, 1972, abandoned.
This application Apr. 15, 1974, Ser. No. 460,973
Int. Cl.² A63H 29/22
U.S. Cl. 46—247 5 Claims

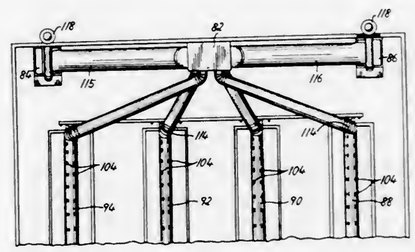


1. A walking doll comprising in combination:
an elongate hollow trunk;
a support member mounted within said trunk;
a bearing member on said support member and journaling said trunk to be pivotal thereabout;
an axle secured to said support member and extending from opposite sides thereof;
a pair of first discs, each rotatably seated on said axle on opposite sides of said support member;
a pair of legs each secured to one side of one of said first discs for angular movement in unison therewith;
a pair of second discs each rotatable and axially slidable on said axle and disposed in juxtaposition to the other side of the respective one of said first discs, each of said second discs having a recess in its periphery;
cooperating coupling means on said first and second discs and on said axle releasably coupling each of said second discs with the respective first coupling disc thereby providing for angular movements of each leg and the first and second coupling disc associated therewith as a leg unit;
a bar secured to said support member extending therefrom on opposite sides, each end of said bar being engaged with one of said peripheral recesses thereby limiting the angular movements of the respective leg unit to the circumferential width of the respective recess; and
activating means for effecting alternate pendular movements to the legs secured to said first discs, said activating means including drive means and transmission means coupled to said drive means and having an output member coacting with the trunk so as to impart to the same lateral pendular movements about said bearing means, each of said legs being balanced and correlated so as to assume a position substantially parallel to the lengthwise axis of the trunk when the weight of the doll is supported by it, said position constituting the standing position of the leg and to swing into a position defining an acute angle with the lengthwise axis of the trunk when the leg is relieved of the weight of the doll, said angular position of the leg constituting the step position thereof, successive pivotal movements of each leg from the standing position into the step position and back into the standing position being caused by shifting the weight of the doll to alternate legs thereby effecting walking of the doll;
release of said coupling means freeing said first discs and the legs secured thereto for rotation about said axle independent of said second discs and of the circumferential widths of said peripheral recesses in the second discs thereby permitting turning of the legs into angular positions for sitting of the doll.

3,949,522
GREENHOUSE

Donald K. Kehl, and Eugene A. Crist, both of 1501 Mulberry Ave., Panama City, Fla. 32401

Filed July 26, 1974, Ser. No. 492,014
Int. Cl.² A01G 9/24
U.S. Cl. 47—17 19 Claims

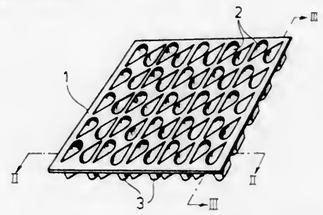


1. In combination with a greenhouse, an air distribution system, said greenhouse including a plurality of troughs extending longitudinally in and supported on the floor of said greenhouse,
said air distribution system comprising a plurality of lower tubular ducts, respective ones of said lower tubular ducts being placed on respective ones of said troughs, each of said lower tubular ducts comprising spaced apart air distribution apertures for directing air flow along the length of the trough toward the plant growing in said trough,
blower means connected to said plurality of lower tubular ducts to cause said distribution of air through said apertures;
said spaced apart air distribution apertures enabling distribution of insecticides and fungicides in said greenhouse by the force of said blower means, and
upper tubular duct means elevated above said plurality of lower tubular ducts, said upper tubular duct means being connected to said blower means and extending longitudinally in said greenhouse.

3,949,523
CELL STRUCTURE FOR THE RAISING OF SEEDLINGS

Tauno Lehtipuu, Helsinki, Finland, assignor to Enso-Gutzeit Osakeyitio, Helsinki, Finland

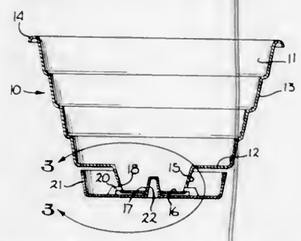
Filed Nov. 1, 1974, Ser. No. 520,133
Claims priority, application Finland, Jan. 9, 1974, 5874/74
Int. Cl.² A01G 9/02; A01C 11/00
U.S. Cl. 47—34.13 7 Claims



1. Improvement in a cell structure for raising seedlings comprising a planar plate, wherein the improvement comprises a plurality of laterally spaced cells formed from and extending from one side of said plate with each said cell having an open mouth in the plane of said plate, each of said cells

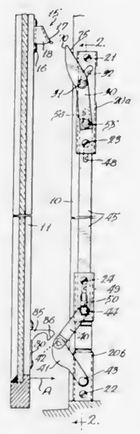
comprising a closed tear-shaped wall comprising two portions meeting at one end in an integral bend forming an acute angle with an archlike third portion connecting the two portions at their ends opposite the acute angle and a bottom joining the edges of said closed tearshaped wall spaced outwardly from said plate, said bottom forming a closure for said cell opposite and spaced from the open mouth of said cell, the integral bend formed by the two portions of said wall extending between said plate and the bottom of said cell, said two portions and said third portion of said wall tapering inwardly relative to one another as they extend outwardly from said plate toward said bottom so that the area of said bottom of each said cell is smaller than the area of its open mouth thereby a plurality of the cell structures can be fitted one into the other in a stacked arrangement, and the bottom of said cells being permeable to water.

3,949,524
PLANTER
Richard C. Mickelson, 623 F. W. Stocker, Glendale, Calif. 91202
Filed Feb. 25, 1975, Ser. No. 552,925
Int. Cl.² A01G *9/02, 9/04*
U.S. Cl. 47—34 R **1 Claim**



1. A plant carrier for holding a growing plant and its life supporting soil comprising:
an enclosure having a circular bottom of a given diameter and an integral sidewall projecting upward and outward from the peripheral edge of said circular bottom;
said sidewall terminating at its free end in a reverse curled lip having a rounded peripheral edge defining a central opening leading into the interior of said enclosure;
said bottom having an integrally formed, downwardly depending cup-like portion including an annular wall and a flat bottom of smaller diameter than said given diameter of said enclosure circular bottom;
a dish-like tray removably carried on said annular wall of said cup-like portion;
said tray having a predetermined diameter intermediate said diameters of said enclosure bottom and said cup-like portion bottom so that a uniform upwardly tapering sidewall of said enclosure is maintained;
fluid communicating means interposed between said cup-like portion and said tray whereby fluid may travel therebetween;
snap-lock means releasably coupling said tray to said cup-like portion;
said snap-lock means includes a plurality of openings provided in said annular wall in fixed spaced-apart relationship with respect to each other;
a plurality of projections upwardly and inwardly extending from the bottom of said tray and of lesser diameter than said plurality of openings so that a snap-lock relationship exists when said projections are mated and in registry with said openings;
said fluid communication means comprises said openings in said annular wall;
said openings being of larger size than the size of said projections snap-locking with said cup-like portion and said tray for aligning said projections with respect to said openings;
locator means cooperating between said cup-like portion and said tray for aligning said projections with respect to said snap-lock and drainage openings;
said locator means includes a center frustro-conical projection extending upwardly from the bottom of said tray; and
a hole provided in said cup-like portion bottom for insertably receiving said tray upward porjection whereby said tray can be rotated relative to said cup-like portion about said projection inserted in said hole for locating said snap-lock projections with respect to cooperating ones of said snap-lock and drainage openings.

3,949,525
WINDOW LOCK STRUCTURE
Wayne C. Bates, and Wilbert C. Wallin, both of Owatonna, Minn., assignors to Truth Incorporated, Owatonna, Minn.
Filed Feb. 28, 1973, Ser. No. 336,632
Int. Cl.² E05C *9/02*
U.S. Cl. 49—395 **10 Claims**

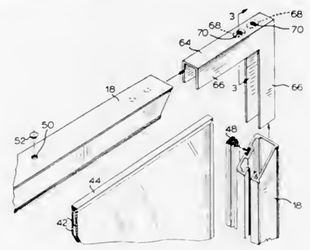


1. A lock structure for a window having a frame and a pivotally-mounted sash comprising, a keeper mounted on one of said frame and sash, a locking shoe carried by the other of said frame and sash for locking engagement with said keeper when the window is closed, said locking shoe being offset from the keeper when the window is open, means mounting said locking shoe for both bodily elevation and rotation to move into engagement with the keeper and draw the sash to closed position as the window closes, the means actuable by the window as the window closes to operate said locking shoe.

3,949,526
DOOR CONSTRUCTION
Russell J. W. Sherlock, and James Gordon Maynard, both of Toronto, Canada, assignors to H. A. Brown Limited, Markham, Canada
Filed July 31, 1974, Ser. No. 493,409
Int. Cl.² E06B *3/16*
U.S. Cl. 49—501 **10 Claims**

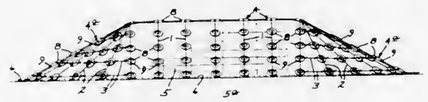
1. An insulated panel assembly comprising
a. a frame consisting of a plurality of hollow plastic molding elements having a longitudinally extending chamber formed therein which is open at either end, said elements being arranged in an end to end abutting relationship with the chambers thereof opening into one another at said abutting ends, and passage means extending longitudinally of one side of each of said plastic molding elements and opening outwardly from said chamber,

b. panel means mounted in said frame and having marginal edge portions extending through said passage means of said molding elements into said chambers, and
c. a body of foamed plastic material filling said chambers and extending continuously between abutting ends of said molding elements to secure said elements with respect to one another in the required frame configuration with said panel means mounted therein,



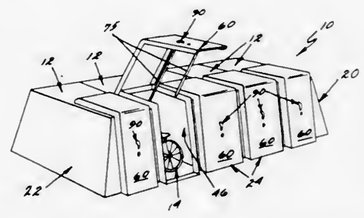
d. said plastic molding elements each having a pair of side edges disposed one on either side of said longitudinal passage, and flange means projecting inwardly of said chamber from each of said side edges and engaging opposite faces of said marginal portion of said panel, said flange means being urged towards said panel by said body of foamed plastic material to lock said panel therein.

3,949,527
MATERIAL SUPPORTED COVER AND METHOD FOR SECURING SAID COVER TO THE GROUND
Paul B. Double, and Clayton M. Bryson, both of Winona, Minn., assignors to Canamer Leasing Services Inc., Winona, Minn.
Filed Aug. 9, 1974, Ser. No. 495,952
Int. Cl.² E04D *1/34*
U.S. Cl. 52—4 **8 Claims**



1. Apparatus for covering and securing a stack of materials to the ground, comprising:
a. a flexible cover sheet for placement over the entire surface of a stack of material extending to the ground on which the stack rests, said cover sheet including a rim portion which can be extended over the ground adjacent the base of the stack over which said cover sheet is to be laid;
b. particulate ballast material for overlaying the top surface of the rim portion of said cover sheet, the weight of said particulate ballast material forcing it to assume the contour of the ground surface over which said cover sheet is applied thereby forcing substantially all of the rim portion of said cover sheet into abutting engagement with the ground surface to prevent the influx of wind or moisture beneath said cover sheet;
c. a plurality of securing cables for overlaying said cover sheet each of said securing cables having first and second ends to be positioned on opposite sides of a stack of material over which said cover sheet and said securing cables may be laid;
d. a plurality of elongated members, each of said elongated members having a top end fixedly attachable to one end of one of said securing cables, and a bottom end, and each of said elongated members being definable in part by an elongated axis;
e. anchor means attachable to said elongated members to hold said securing cables taught over said cover sheet, said anchor means including:
i. a plurality of anchor plates, each of said anchor plates having a broad surface with a top portion and a bottom portion, said plate being driveable into a portion of ground material adjacent to that which may support a stack of material in a direction generally parallel to said plate board surface, with the top portion of said plate being positionable at one ground strata and the bottom portion being positionable at a second ground strata below the first strata;
ii. said anchor plates each containing pivot connector means for pivotally connecting the bottom end of one of said elongated members to said anchor plate, said pivot connector means being located on said anchor plate such that when tension is exerted on said elongated member the bottom portion of said anchor plate is urged upwardly toward the first ground strata in which the anchor plate top portion is located thereby tending to reorient said anchor plate with its broad surface generally perpendicular to the longitudinal axis of said elongated member;
f. load distribution means including a plurality of load-distributing footings, each of said footings having a base area and being fixedly positionable on said securing cables with the base area abutting said cover sheet for distributing compressive forces which may be built up within said cables over the footing base area to prevent the securing cables from becoming embedded in the cover sheet;
g. footing securing means for attaching and positioning said footings to said securing cables with the footing base area being generally positional beneath said securing cables and with the footings spaced generally along the length of the securing cables to distribute compressive loads which may be developed in the cables therealong; and
h. a webbing of lines attached to at least two of said securing cables to overlay the portion of said cover sheet which may be positioned over the end of a stack of material, portions of said webbing of lines being selectively removable from said cover sheet to allow a portion of said cover sheet to be removed from therebeneath from one end of a material stack over which the webbing of lines lies while allowing the other portions of said flexible cover sheets to be held in place by the remaining cables.

3,949,528
STORAGE ENCLOSURE FOR BICYCLES, MOTORCYCLES, OR THE LIKE
Richard W. Hartger, and John M. Perry, II, both of Grand Rapids, Mich., assignors to Harold V. Hartger, Grand Rapids, Mich., a part interest
Continuation of Ser. No. 323,657, Jan. 15, 1973, abandoned. This application July 3, 1974, Ser. No. 485,608
Int. Cl.² E04G *1/12;* **E04B** *7/16;* **E04H** *6/08*
U.S. Cl. 52—79 **17 Claims**



1. A storage enclosure for bicycles, motorcycles and the like including a roof, front and rear edges, side walls and a fixed

end wall depending downwardly from said roof, and means defining an end aperture opposite said fixed rear end wall; said side and fixed end walls having generally coplanar lower edges adapted to support said enclosure on a generally planar supporting surface; said enclosure having an overall length between said front and rear edges slightly greater than the length of a bicycle or motorcycle to be stored therein and a height measured from said lower edges of said fixed end and side walls slightly greater than the height of the highest portion of said bicycle or motorcycle but less than the height of an average adult person straddling or walking adjacent such a bicycle or motorcycle; said end aperture having a width slightly greater than the width of the widest portion of such a bicycle or motorcycle; said end aperture extending into said roof a distance sufficient to allow a person to guide a bicycle or motorcycle entirely into said enclosure for storage therein through said end aperture while straddling or walking adjacent the middle of said bicycle or motorcycle without encountering obstruction from said roof; a closure mounted on said enclosure and movable to expose said end aperture, said closure including first and second closure portions for covering and closing of said end aperture including the portion extending into said roof, said first closure portion extending upwardly and said second closure portion extending outwardly over said aperture when said closure is opened to cover a person standing within said aperture; interlocking flange means outlining said closure and aperture for locating and sealing said closure over said aperture when said closure is closed; and locking means for securing said closure in its closed position over said end aperture.

3,949,529

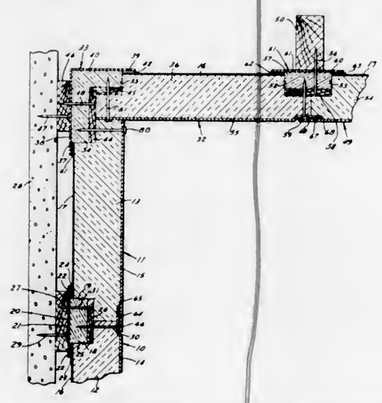
INSULATING STRUCTURAL ASSEMBLY AND STUD MEMBER FOR FORMING SAME

William H. Porter, Holland, Mich., assignor to W. H. Porter, Inc., Holland, Mich.

Continuation of Ser. No. 344,569, March 26, 1973, Pat. No. 3,881,290. This application Jan. 29, 1975, Ser. No. 544,878

Int. Cl.² E04C *3/30*

U.S. Cl. 52—281 **8 Claims**



1. An insulating stud assembly comprising a stud member adapted to join a pair of abutting insulating panels each having undercut edges which, when the panels are abutted, form a complementary panel to receive said stud member and a sheetform moisture-impervious layer affixed to one surface of said stud member having margins extending beyond the edges of said stud member adapted to underlie said panels and to provide sealing flanges for holding a sealing material in contact with said panels, said stud member comprising an insulating slab layer laminated to a fastening means layer of a material substantially harder than said slab layer adapted to receive elongated metal fastening means and to hold the same tightly.

3,949,530

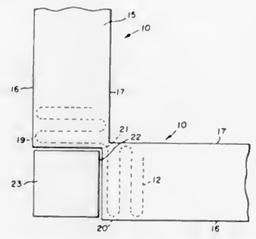
CORNER FORMATION FOR ARCHITECTURAL GLAZING STRIP

Fred Williams, Pittsford, and Charles Yackiw, Fairport, both of N.Y., assignors to Schlegel Corporation, Rochester, N.Y.

Filed Sept. 16, 1974, Ser. No. 506,115

Int. Cl.² E04B *1/66;* **E04C** *2/22*

U.S. Cl. 52—288 **5 Claims**



1. A corner formation for an architectural glazing strip having a spring material formed of a resilient wire element in a transverse pattern of zig-zag loops encased in an elastomeric cover to have an anchorage edge region and a glass-engaging edge region, said wire loops extending from said anchorage edge region into said glass engaging edge region, said corner formation comprising:

a. the pair of said wire loops occurring at said corner and said elastomeric cover over said pair of loops being spread apart about 90° to open a substantially square space at said corner with an unbroken length of said wire extending around the inside of said corner between said pair of loops in the region of said glass-engagind edge;

b. a substantially square, resilient element having approximately the transverse cross-sectional shape of said spring material being positioned in said square space between said spread-apart loops; and

c. elastomeric material encasing said resilient element and secured to said strip around said corner.

3,949,531

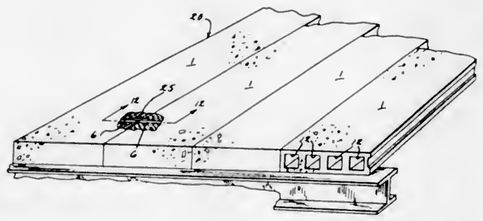
HOLLOW CORED CONCRETE SLAB AND METHOD OF MAKING THE SAME

James L. Fanson, W230 S2421 Morningside Drive, Waukesha, Wis. 53186

Filed Apr. 18, 1974, Ser. No. 461,996

Int. Cl.² E04B *1/16;* **B28B** *1/16*

U.S. Cl. 52—380 **4 Claims**



3. In a concrete slab adapted to be formed in a generally rectangular mold having recesses therein, a relatively thin base layer of concrete cast in the bottom portion of the mold, an assembly of transversely spaced, longitudinally extending, precast concrete channel members disposed in the mold on the freshly cast base layer with the flanges of said members in contact with the base layer and the web of said members in

spaced relation from the base layer, transversely extending rigid metal connecting rods embedded within the webs of the channel members to secure the members in a given position relative to each other and reinforce the slab to better resist laterally imposed stresses, said rods having the opposed end portions thereof projecting beyond the outermost of the channel members for positioning engagement with said recesses defined in the mold, the flanges of the channel members of the assembly projecting downwardly into the base layer a given distance whereby the channel members are keyed relative to the base layer, and an upper layer of concrete cast upon the base layer and around the spaced channel members of the assembly to fill the mold, said upper layer being struck generally level at a given distance above the channel members to cover the webs thereof to a given depth and which upon curing is bonded integrally to the base layer to form the slab, said channel member assembly being secured as a structural part within the slab to provide a plurality of transversely spaced, generally rectangular hollow cores extending longitudinally of the slab.

3,949,532

SANDWICH-TYPE BUILDING PANEL AND MOUNTING ASSEMBLY THEREFOR

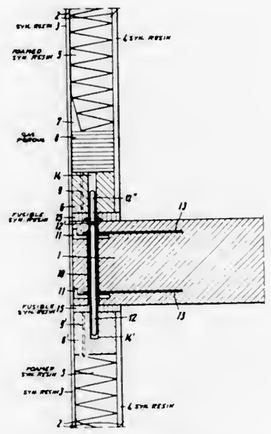
Olov Jonsson, Olivedalsgatan 14b, S-413-10 Goteborg, and Edward Milaszewski, Framgangen 210-81, S-412-80 Goteborg, both of Sweden

Filed Sept. 30, 1974, Ser. No. 510,739

Claims priority, application Sweden, Sept. 28, 1973, 7313214

Int. Cl.² E04B *1/74;* **E04H** *9/06*

U.S. Cl. 52—404 **8 Claims**



1. A construction assembly comprising:

a pair of parallel skins of fireproof and rupture-proof synthetic-resin material;

a foamed synthetic-resin mass between said skins;

a gas-porous body between said skins generally under said mass and defining therewith an empty cavity between said skins;

a rigid edge stiffener between said skins generally under said mass and said cavity and formed with a throughgoing passage for gas flow between said cavity and the exterior, whereby said skins, said mass, said body, said stiffener form a building panel; and

means for securing said building panel in a generally upright position between a pair of vertically spaced slabs, said edge stiffener having a portion extending along the upper edge of said panel and a portion extending along the lower edge of said panel, said portion being formed with outwardly open bores, said means including a plurality of pins extending vertically from said slabs into said bores.

3,949,533

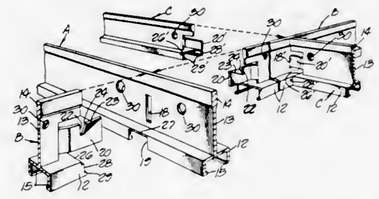
MODULAR CEILING SYSTEM

William H. Spencer, La Canada; John O. Dorius, Hacienda Heights, both of Calif., and James D. Brown, Grants Pass, Oreg., assignors to Trend Ceiling Systems, Co., Los Angeles, Calif.

Filed Jan. 27, 1972, Ser. No. 221,143

Int. Cl.² F16B *21/08;* **E04B** *1/38*

U.S. Cl. 52—758 A **19 Claims**



1. A stringer for use in forming a suspended ceiling grid assembly comprising a continuous lightweight aluminum extrusion of general T-shape in cross section and characterized by a channel shaped T-head having an open side facing away from and lying in a plane normal to the T-stem portion thereof, said T-stem portion having a rectangular opening therethrough with its longer dimension extending normal to the web of said channel shaped T-head and its shorter dimension corresponding to the thickness of said T-stem portion, and one sidewall of said T-head being notched opposite the adjacent end of said rectangular opening to a depth flush with the interior bottom surface of the web of said T-head and to a width corresponding to the distance between the exterior sidewall surfaces of said T-head.

3,949,534

INTERKEYED PANEL EDGE CORNER JOINT

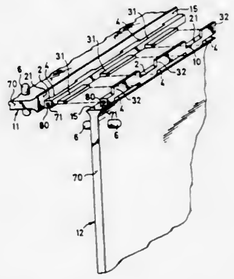
Peter Severin Croy, Dobrastrasse 112, A 2344 Maria-Enzersdorf-Suedstadt, and Rudolf Zelenka, Iglaseegasse 56, A 1190 Vienna, both of Austria

Filed Mar. 7, 1975, Ser. No. 556,416

Claims priority, application Austria, Mar. 14, 1974, 2114/74

Int. Cl.² F16B *5/07*

U.S. Cl. 52—753 D **10 Claims**

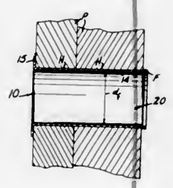


1. A furniture joint comprising:

a plurality of boards, each said board having an end face, each said end face having extending therefrom a raised portion, each said raised portion having integral therewith and extending therefrom a plurality of projections, each said raised portion having therein a plurality of recesses having a configuration complementary to that of

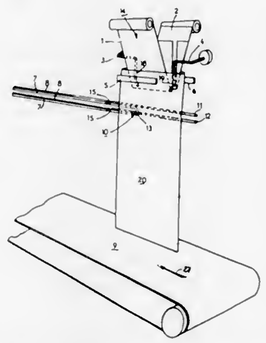
said projections, each said recess being aligned with and extending transverse to a respective said projection; and said plurality of boards being arranged at right angles to each other, with said projections of each said board being extended into and received by said recesses of the next adjacent said board.

3,949,535
COLDWORKED JOINT HELD BY SEAMLESS TUBULAR MEMBER
John O. King, Jr., 3990 N. Ivy Road, Atlanta, Ga. 30342
Continuation-in-part of Ser. No. 324,485, Jan. 17, 1973, Pat. No. 3,835,688, which is a continuation-in-part of Ser. No. 268,478, July 3, 1972, Pat. No. 3,835,615, which is a continuation-in-part of Ser. No. 33,281, April 30, 1970, abandoned, which is a continuation-in-part of Ser. No. 711,368, March 7, 1968, abandoned. This application Aug. 29, 1974, Ser. No. 501,487
Int. Cl.² F16B *5/00*
U.S. Cl. 52—758 D 7 Claims



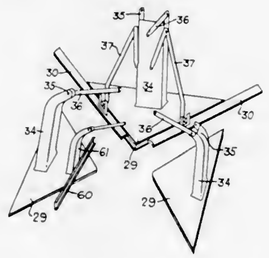
1. A joint construction including:
a plurality of work pieces defining holes therethrough generally axially aligned; and,
a tubular member within said holes, said tubular member including a seamless cylindrical side wall defining a common central passage therethrough having a substantially constant diameter along its length, said side wall further comprising a major section and a minor section positioned end-to-end with said major section, said major section having a substantially constant major outside diameter along the length of said major section and said minor section having a substantially constant minor outside diameter along the length of said minor section, said minor diameter being a final prescribed amount smaller than said major diameter, said tubular member having less rebound upon enlargement than the material of said work pieces, and said side wall having been enlarged a substantially constant enlarged amount along its length to cause said major and minor sections to be enlarged into contact with said work pieces within said holes and enlarge said holes from an initial substantially constant hole diameter along the length of said holes to said major outside diameter and said minor outside diameter where said major section has been enlarged said prescribed enlarged amount from a first initial outside diameter smaller than said initial hole diameter to said major outside diameter and where said minor section has been enlarged said prescribed enlarged amount from a second initial outside diameter smaller than said first initial outside diameter of said major section by said final prescribed amount to said minor outside diameter larger than said initial hole diameter so that the portion of said holes aligned with said major section is enlarged more than the portion of the holes aligned with said minor section by said final prescribed amount.

3,949,536
GUIDING DEVICE FOR AN AUTOMATIC BAG-FILLING MACHINE
Marcel Chevalier, Uriage (Isere), France, assignor to Etablissements M. Chapuis, France
Filed Dec. 26, 1974, Ser. No. 536,458
Int. Cl.² B65B *3/16*
U.S. Cl. 53—187 10 Claims



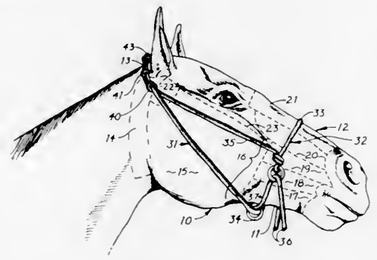
1. A guiding device for facilitating the automatic filling of containers, comprising, in combination:
first means for filling said containers;
a conveyor for receiving said containers when filled;
second means for guiding said containers moving on said conveyor; and
third means for gripping at least a portion of a filled container and for guiding the filled container to engage with said second means as said conveyor moves the filled container.

3,949,537
APPARATUS FOR PACKAGING
Henry Jason, and Christopher Richard Eddison, both of Watford, England, assignors to Hayssen Manufacturing Company, Sheboygan, Wis.
Division of Ser. No. 314,908, Dec. 14, 1972, Pat. No. 3,861,114. This application Nov. 26, 1974, Ser. No. 527,287
Claims priority, application United Kingdom, May 3, 1972, 20594/72
Int. Cl.² B65B *11/02*
U.S. Cl. 53—226 6 Claims



1. Apparatus for wrapping articles with foil and comprising foil feed means, clamp means for locating a length of foil fed from said feed means in a position adjacent an article to be wrapped, an article lift located below said clamp means for moving the article relative to the clamped foil so that the foil is draped around the article and, located above said clamp means, a first set of folding blades disposed vertically above the lift, said blades being radially movable from an open position to a closed position in which they at least almost mate to form a closed surface, the mating lines being in the form of a cross to thereby fold the draped foil under the article and leaving pleats of foil hanging through cruciform gaps between the blades, and a second set of folding blades each movable radially from an open position in which each blade is adjacent and just above one of the mating lines between two adjacent blades of the first set to a closed position to thereby bunch the foil pleats.

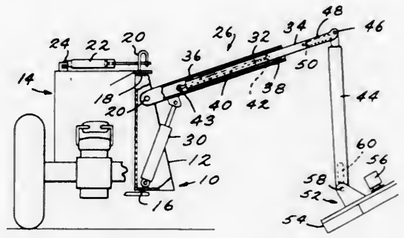
3,949,538
ANIMAL TRAINING HALTER
Dale K. Woodruff, Rte. 1, Box 171 E, Spokane, Wash. 99204
Filed Dec. 23, 1974, Ser. No. 535,565
Int. Cl.² B68B *1/02*
U.S. Cl. 54—24 19 Claims



10. An animal training halter for automatic expansion and contraction about the head and nose of an animal in response to external tension applied to the halter, comprising:
a noseband portion for extending transversely over the bridge of the nose;
control means interconnected to the nose band on one side of the nose for extending therefrom ventrally toward the ventral surface of the mandibular subregion, transversely across the chin groove, dorsally and posteriorally along the opposite side of the nose, across the masseteric region and parotid region to the poll, transversely over the poll and thence ventrally and anteriorally along the one side of the head across the parotid and masseteric regions toward the ventral surface of the mandibular subregion, then on transversely to crisscross with itself on the ventral surface of the mandibular subregion adjacent the chin groove, and subsequently dorsally again to interconnect with the nose band on the opposite side of the nose,
rein means integral with the control means and leading from the interconnections of the nose band and control means for enabling selective circumferential contraction and expansion of the halter about the head through application of tension to the halter through the interconnections of the control means and nose band.

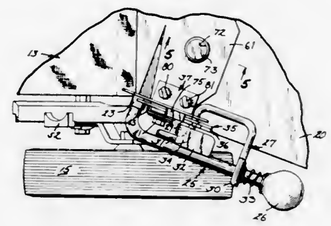
3,949,539
HYDRAULIC MOWER ATTACHMENT
Jack O. Cartner, 1005 N. 8th St., Cambridge, Ohio 43725
Continuation of Ser. No. 211,051, Dec. 22, 1971, abandoned. This application June 27, 1974, Ser. No. 483,781
Int. Cl.² A01D *75/18*
U.S. Cl. 56—10.4 3 Claims

2. In a mowing attachment for a tractor of the like: a boom assembly having an inner end and an outer end; means mounting the inner end of the boom assembly for swinging movement about a horizontal axis and a vertical axis; hydraulic means for adjusting the angular position of the boom assembly relative to the vertical axis, said hydraulic means including a double-acting hydraulic ram, a control valve and hydraulic circuit for operating said ram in either direction and for hydraulically locking said ram in desired positions by blocking hydraulic flow to and from said ram, said circuit including first and second hydraulic pressure lines connecting said valve to opposite ends of said ram and a hydraulic reservoir, and means permitting operation of the locked ram in either direction when an external force of substantial magnitude is applied to said ram and when hydraulic flow is blocked by said control valve, said means including first and second pressure relief



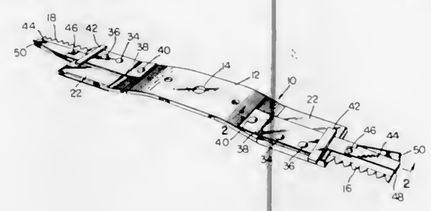
valves connected in said first and second hydraulic pressure lines respectively for relieving pressure to said reservoir, and first and second check valves connected between said hydraulic reservoir and said first and second pressure lines, respectively, at locations intermediate said relief valves and said ram, said check valves passing hydraulic fluid only into said ram.

3,949,540
MOWER DISCHARGE INTERLOCK APPARATUS
Herman P. Christopherson, Burnsville; Robert H. Witt, and Dennis J. Pavlik, both of Bloomington, all of Minn., assignors to The Toro Company, Minneapolis, Minn.
Filed Aug. 2, 1974, Ser. No. 494,330
Int. Cl.² A01D *35/22*
U.S. Cl. 56—202 9 Claims



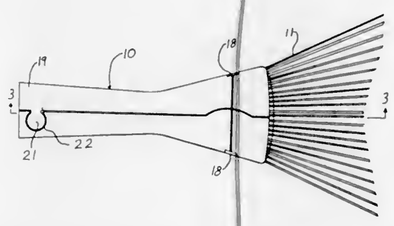
1. In combination:
a rotary lawn mower including a housing, configured to define the walls of a recessed rear discharge passage, and handle means extending rearwardly and upwardly from said housing;
closure means pivotally mounted in said housing at said discharge passage for movement between a first position, in which it occludes said passage, and a second position, in which it is withdrawn into the recess of said passage to fully open said passage;
a removable grass catching bag for said mover having a closed end for support by said handle means and a mouth end larger than said discharge passage;
frame means, for the mouth end of said bag, including means securing said bag to said housing at said discharge passage;
and means carried in part by said housing and in part by said frame means, and interlocked with said closure means, for normally preventing opening of said passage unless said bag is secured to said mower.

3,949,541
ROTARY MOWER BLADE WITH DETACHABLE END MEMBERS
Keith V. Henry, Box 12, Harlan, Ind. 46743
Filed Nov. 14, 1974, Ser. No. 523,913
Int. Cl.² A01D *55/18*
U.S. Cl. 56—295 8 Claims



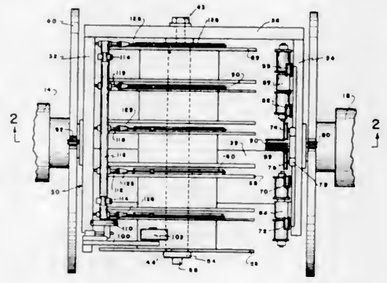
1. A blade for a rotary mower comprising; a central section including means for connection thereof to the mower output shaft, and blade members detachably mounted on the ends of said central section, each blade member having aperture means therein adapted to register with aperture means in the respective end of said central section, a spring element including mounted pin means on said central section adapted for being received in said aperture means thereby to engage said blade members and lock the blade members to the central section, and a hook element movably mounted on each said spring element and engageable over the radially outer end of the respective blade member when the blade member is in the proper position on the said central section.

3,949,542
PROCESS FOR MAKING A LEAF RAKE AND THE LIKE
John B. Wood, 325 N. Carson Road (Pinson), Birmingham, Ala. 35126
Filed Jan. 2, 1975, Ser. No. 537,961
Int. Cl.² A01D *7/00*
U.S. Cl. 56—400.17 1 Claim



1. In a leaf rake or the like of the kind having a plurality of tines and a hollow sheet metal holder for the inner side-by-side ends of the tines, said tines having notches in the sides thereof which are transversely aligned in a row within the holder, said hollow holder being defined by parallel walls lying adjacent the sides of the inner ends of the side-by-side tines and side walls joining said parallel walls, the improvement comprising:
a. a transversely extending in-formed indentation in the parallel wall lying adjacent said notches extending transversely across the entire row of said notches, said indentation lying inwardly of the tops of the side walls which join the parallel wall containing said indentation, and
b. there being cut-outs in the said side walls of the holder located at each end of said indentation so that the indentation stops short of the side walls but interfits the entire row of notches thereby positively securing all of the tines in the holder.

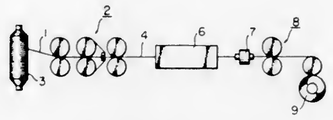
3,949,543
STRANDED WIRE FORMING METHOD AND APPARATUS
Jesse Clarence Bittman, Cuyahoga Falls, Ohio, assignor to Wean United, Inc., Pittsburgh, Pa.
Filed Nov. 15, 1974, Ser. No. 524,168
Int. Cl.² D07B *3/00*
U.S. Cl. 57—34 R 14 Claims



1. A means of forming wire cord and similar articles of manufacture, comprising:
support means, (44) for supporting at least two spools of individual wire strands
a gathering station including gathering means,
flyer means,
rotating means for supporting said flyer means arranged with respect to the axis of said support means (44) radially outward therefrom and from said gathering means,
means for supporting said rotating means in a manner that said rotating means rotates relative to said support means (44) and said gathering means,
said means for supporting said rotating means including means arranged to support to said rotating means about an axis arranged parallel to the axis of the gathered strands in said gathering station,
power means for rotating said rotating means,
said flyer means being arranged so that said strands are fed from said gathering means to said flyer means and then to a discharge station arranged on the same side of a means adapted to pull the wire under tension through the machine at a given rate of speed,
the construction and arrangement of elements being such that the individual strands of wire are caused to be formed into a wire cord in which the number of twists per unit length thereof is a function of said speed of travel of the wire and the revolutions per minute of the rotating means.

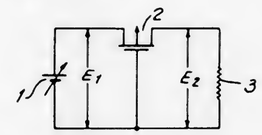
3,949,544
PROCESS FOR PRODUCING HIGH BULKY YARN BY FALSE-TWISTING SYSTEM
Shin-ich Kitazawa, Kyoto; Takao Negishi, and Kozo Susami, both of Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Continuation of Ser. No. 239,462, March 30, 1972, abandoned. This application Oct. 15, 1974, Ser. No. 514,552
Claims priority, application Japan, June 17, 1971, 46-42974
Int. Cl.² D02G *1/02, 3/04*
U.S. Cl. 57—157 TS 4 Claims

1. A process for producing spun-like yarns by a false-twisting system, comprising, in combination, forming a fibrous strand from at least two kinds of fibers having different melting point temperatures, said fibrous strand containing at least some short fibers, subjecting said strand simultaneously to false-twisting and ballooning vibration with the balloon having a diameter of two to twenty millimeters whereby a twisting zone is created, and heating said strand in said twisting zone to temperatures between the highest and lowest melting point temperatures of said fibers without directly contacting said



strand with any heating element, and keeping said strand to reach a temperature above the lowest melting point of said fibers while said strand is in said twisting zone.

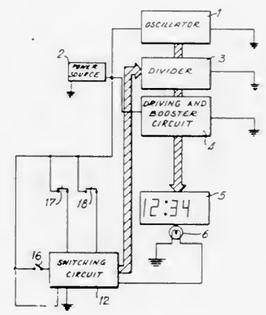
3,949,545
QUARTZ CRYSTAL TIMEPIECE
Hiroyuki Chihara, Okaya, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Apr. 24, 1975, Ser. No. 571,125
Claims priority, application Japan, Apr. 24, 1974, 49-46248; July 15, 1974, 49-80932
Int. Cl.² G04C *3/00*; G04B *47/06*
U.S. Cl. 58—23 BA 30 Claims



1. An electronic timepiece comprising driving circuit means for producing timekeeping signals; display means operatively coupled to said timekeeping circuit means for the visual display of time in response to said timekeeping signal; a battery power source operatively coupled to said driving circuit means for powering same; and battery failure detecting circuit means coupled to said battery for producing a signal representative of impending battery failure when the voltage of said battery falls below a predetermined level, said battery-voltage detecting circuit means including a field-effect transistor and means coupling said field-effect transistor to said battery whereby said predetermined voltage level is detected by the threshold voltage of said field-effect transistor.

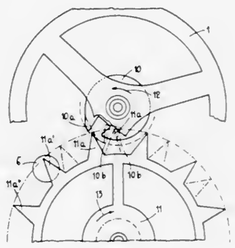
3,949,546
ILLUMINATING DEVICE FOR DIGITAL DISPLAY WRISTWATCHES
Toshiaki Saito, Chino, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Mar. 13, 1974, Ser. No. 450,706
Claims priority, application Japan, Mar. 13, 1973, 48-28509
Int. Cl.² G04B *19/34*
U.S. Cl. 58—50 R 7 Claims

1. An electronic timepiece comprising quartz crystal oscillator means producing a high frequency time standard signal; divider circuit means for producing a low frequency time signals in response to said high frequency time standard signals; liquid crystal display means for digital display of time; driving circuit means intermediate said divider circuit means and said liquid crystal display means for applying driving signals to said display means in response to said time signals applied thereto; a light source disposed proximate to said liquid crystal display means for illuminating same; a single power source for energizing said oscillator means, said divider means, said driving circuit means, and said light source; manually operable time correcting switches disposed externally to said electronic timepiece; switching circuit means adapted to selectively connect said time correcting switches to said divider circuit means when said switching circuit means is in a first mode for the selective correction of digital display of time by said time correcting switches, said switching circuit means being adapted to selectively connect at least one of said time correcting switches to said light source when said switching



means is in a second mode for the selective actuation of said light source by said correcting switches; and control switch means connected to said switching circuit means for selecting one of said first and second modes.

3,949,547
ESCAPEMENT OR COUNTING MECHANISM FOR A TIMEPIECE HAVING A BALANCE-WHEEL
Ali Schneiter, Neuchatel, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland
Filed Oct. 21, 1974, Ser. No. 516,721
Claims priority, application Switzerland, Oct. 31, 1973, 15334/73
Int. Cl.² G04B *15/00*
U.S. Cl. 58—116 R 3 Claims



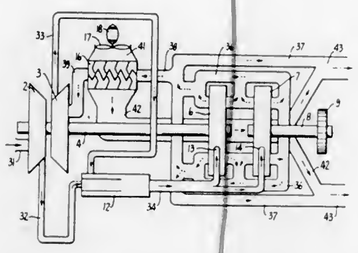
1. A mechanism for operating a timepiece having a balance-wheel, said mechanism comprising, a toothed mechanism wheel movable between several rest positions, stabilizing means associated with the mechanism wheel and acting thereon for ensuring the stability of the several rest positions of the mechanism wheel, the balance-wheel carrying first and second abutting members adapted to cooperate successively with the teeth of said mechanism wheel, said first abutting member operable on one tooth of the mechanism wheel to cause the mechanism wheel to leave a first rest position against the action of said stabilizing means, and said tooth of the mechanism wheel being operable on said second abutting member under the effect of a thrust exerted on the mechanism wheel by said stabilizing means to provide driving energy to the balance-wheel.

3,949,548

GAS TURBINE REGENERATION SYSTEM

Hanford N. Lockwood, Jr., 801 N. Humboldt St., San Mateo, Calif. 94401

Filed June 13, 1974, Ser. No. 478,921
Int. Cl.² F02C 7/08, 7/02
U.S. Cl. 60—39.15 11 Claims



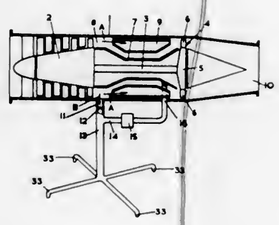
2. A gas turbine, comprising: a combustion chamber; a power output shaft; a power turbine mounted on the power output shaft; a compressor drive shaft; an ambient air compressor mounted on the compressor drive shaft; an exhaust gas compressor mounted on the compressor drive shaft; a compressor drive turbine mounted on the compressor drive shaft to drive the ambient air and exhaust gas compressors; means connected between the combustion chamber and the turbines to supply products of combustion thereto to drive the turbines; exhaust manifold means connected in common with the turbines to collect the exhaust gases therefrom; and exhaust gas cooling means connected to receive at least a portion of the collected exhaust gases to cool the exhaust gases prior to supply of the exhaust gases to the exhaust gas compressor, said cooling means including means for circulating ambient cooling fluid under pressure in heat exchange relationship with the exhaust gas at a substantially constant rate at all speeds of the turbines.

3,949,549

AIRCRAFT GAS TURBINE ENGINE TURBINE BLADE COOLING

Raymond Holl, Farnham, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 8, 1974, Ser. No. 522,275
Claims priority, application United Kingdom, Nov. 9, 1973, 52236/73
Int. Cl.² F02K 3/02; F02C 3/06, 7/18
U.S. Cl. 60—226 R 5 Claims



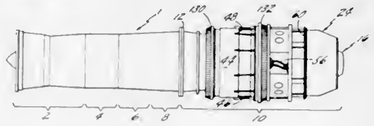
1. An axial flow gas turbine engine for use in a V/STOL aircraft having aircraft stabilisation jets comprising, compressor means driveen by turbine means, the turbine means having at least one row of turbine blades mounted on a turbine disc; at least one combustion chamber situated between the compressor means and the turbine means; an exhaust nozzle; a tapping downstream of the compressor means and upstream of the combustion chamber; outlet means for permitting gas from the tapping to flow to the aircraft stabilisation jets; means for supplying gas from the tapping to at least one row of turbine blades; and a valve movable between a closed position in which it prevents flow of gas through the tapping, a first open position in which it allows flow of gas to the turbine blades only, and a second open position in which it allows flow of gas to both the turbine blades and to the aircraft stabilisation jets.

3,949,550

ENGINE EXHAUST FLOW DIVERTER

Harry A. Albrecht, Hobe Sound; Michael Diver, North Palm Beach; Norman F. Fowle, North Palm Beach, and Edwin E. Knight, North Palm Beach, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 5, 1975, Ser. No. 555,647
Int. Cl.² F02K 1/20
U.S. Cl. 60—229 9 Claims



1. An engine exhaust diverter including a duct having an open forward end for receiving exhaust and having a closed rearward end, first exit means in said duct for directing exhaust therefrom, second exit means in said duct for directing exhaust therefrom, an annular door mounted on said duct for axial movement to control the flow through one of said exit means, an annular nozzle shroud mounted on said duct for axial movement to control the flow through the other of said exit means, actuating means for moving said annular door and said annular nozzle shroud into one position where said annular door permits flow through its associated exit means and the annular nozzle prevents flow through its associated exit means and a second position where said annular door prevents flow through its associated exit means and the annular nozzle shroud permits flow through its associated exit means.

3,949,551

METHOD AND SYSTEM FOR REDUCING NOXIOUS COMPONENTS IN THE EXHAUST EMISSION OF INTERNAL COMBUSTION ENGINE SYSTEMS AND PARTICULARLY DURING THE WARM-UP PHASE OF THE ENGINE

Dieter Eichler, Hochberg; Walter Remmele, Stuttgart, and Günter Rosenzopf, Ludwigsburg, all of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Continuation of Ser. No. 282,848, Aug. 22, 1972, abandoned. This application Mar. 19, 1974, Ser. No. 453,015
Claims priority, application Germany, Jan. 29, 1972, 2204292
Int. Cl.² F02B 75/10
U.S. Cl. 60—274 19 Claims

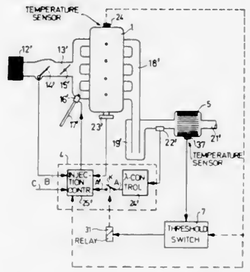
1. Method to reduce noxious components in the exhaust emission of an internal combustion engine system having an exhaust composition sensing means (22') and a reactor (5) in the exhaust system of the internal combustion engine system during the warm-up period of the engine and of the reactor and thereafter when temperature equilibrium has been reached and wherein the engine system comprises a fuel-air mixture control device (4), comprising the steps of

enriching the air-fuel mixture supplied by the fuel-air mixture control device (4) immediately after starting of the engine;

deriving a reactor temperature signal representative of temperature of the reactor (5);

disabling control of the fuel-air mixture control device by said exhaust composition sensing means (22') when the sensed temperature is below a predetermined temperature;

controlling the fuel-air mixture control device (4) to feed a leaner mixture of fuel and air to the engine by reducing the enrichment of the mixture after starting until the engine system has warmed up and the sensed temperature has reached said predetermined temperature level as determined by sensing a characteristic of the reactor temperature signal;



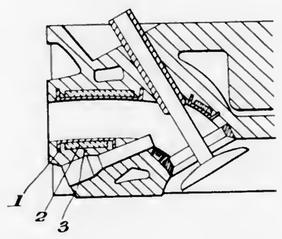
and activating control of said exhaust composition sensing means (22') for said fuel-air mixture control device (4) to control the air number of the air-fuel mixture to about unity when a temperature at or above said predetermined temperature has been sensed.

3,949,552

HEAT INSULATING CASTINGS

Yasuhisa Kaneko; Akiyoshi Morita; Yasuo Nemoto, and Junichi Nagataki, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Dec. 13, 1973, Ser. No. 427,017
Claims priority, application Japan, July 9, 1973, 48-77218
Int. Cl.² F01N 3/10, 7/18
U.S. Cl. 60—282 7 Claims



1. A heat insulating casting of triple structure comprising a heat and corrosion resistant metal sheet with a heat insulating refractory material covering a significant portion of the sheet to thereby form a double structure, a cast metal enveloping the thus formed double structure whereby the refractory material is completely sandwiched between the metal sheet and the cast metal and does not appear on the surface of the casting, and a fringe area at the end of the metal sheet enveloped with the cast metal, the fringe area including an upturned portion spaced from the refractory material and completely enveloped with the cast material.

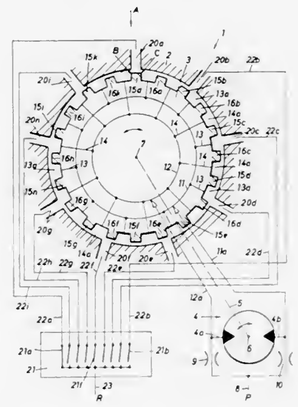
6. An exhaust port in a cylinder head of an internal combustion engine comprising the heat insulating casting of claim 1.

3,949,553

HYDRAULIC STEP-MOTOR

Wolf Giselher Schneider, Hondelage, Germany, assignor to Feinmechanische Werke Mainz GmbH, Mainz-Mombach, Germany

Filed Sept. 5, 1974, Ser. No. 503,293
Claims priority, application Germany, Sept. 7, 1973, 2345146
Int. Cl.² F15B 11/12
U.S. Cl. 60—325 17 Claims



1. Apparatus for controlling a hydraulic motor having a drive member comprising a servo-valve having a housing and a slide member movable therein, means for connecting said drive member of said hydraulic motor and said slide member of said servo-valve for conjoint movement, a pair of fluid manifolds located in said slide member, and means for connecting each of said manifolds and said hydraulic motor with a source of fluid under pressure, a plurality of positioning webs spaced uniformly about the surface of said slide member, said positioning webs having opposed frontal faces, separating webs respectively interposed between adjacent ones of said positioning webs to form gaps adjacent each frontal face of said positioning webs, means for connecting the gaps adjacent one frontal face of each of said positioning webs to one of said manifolds, and the gaps adjacent the other frontal face of each of said positioning webs to the other of said manifolds, said housing having a plurality of channels distributed uniformly therein with respect to said slide member and at a distance from each other different then the distance between said positioning webs, conduit means connecting said channel means for recovery of said fluid, and valve means interposed in each of said conduits for selectively controlling the flow of fluid therethrough, the number of channels in said housing being less than the number of said positioning webs, fluid being caused to flow on selection of one of said channels through said hydraulic motor, one of said manifolds and ones of said gaps and the selected channels, said fluid acting on the frontal face of the positioning web associated with the corresponding gap through which fluid flows to move said slide member until said associated positioning web blocks the selected channel causing the cessation of fluid flow.

3,949,554

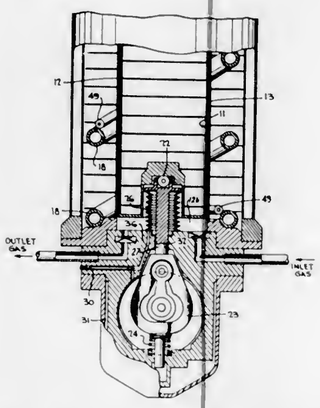
HEAT ENGINE

Jack E. Noble; Peter Riggle, both of Benton City; Stuart G. Emigh, and William R. Martini, both of Richland, all of Wash., assignors to The United States of America as represented by the United States National Institute of Health, Washington, D.C.

Division of Ser. No. 328,075, Jan. 30, 1973, Pat. No. 3,855,795. This application Oct. 10, 1974, Ser. No. 513,872

Int. Cl.² F01B 29/10

U.S. Cl. 60—521 **3 Claims**



1. In a heat engine operating on a regenerative cycle and having a cylinder, a displacer piston reciprocably mounted within said cylinder to form a lower cold chamber and an upper hot chamber, a crankcase adjacent the cylinder, means for controlling the reciprocating motion of said displacer piston disposed within said crankcase, and drive piston means connecting said displacer piston and said control means, said crankcase being in communication with said cylinder in order to allow said drive piston to transmit motion from said control means to said displacer piston, the improvement comprising a bellows seal attached at one end thereof to the lower end of said displacer piston and at the other end thereof to the inner wall of said lower end of said cylinder around the opening through which said crankcase communicates with said cylinder and through which said drive piston means passes, said bellows seal being effective to seal off said crankcase from said cylinder.

3,949,555

INTERNAL COMBUSTION ENGINES EQUIPPED WITH A TURBOCOMPRESSOR UNIT WITH HEATING UPSTREAM OF THE TURBINE AND METHODS OF STARTING UP THEIR TURBOCOMPRESSOR UNITS

Jean Melchior, Paris, France, assignor to Etat Francais, Paris, France

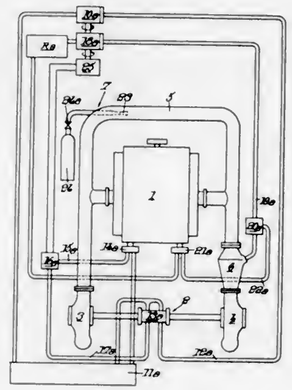
Filed Jan. 25, 1974, Ser. No. 436,728

Claims priority, application France, Feb. 22, 1973, 73.06202

Int. Cl.² F02B 33/44, 33/32

U.S. Cl. 60—606 **12 Claims**

1. In a supercharged internal combustion engine of the expansible chamber type having a turbocompressor unit including at least one compressor having an inlet open to draw in fresh air from the outside atmosphere and at least one turbine for driving said compressor, said engine having a combustion chamber system connected between said compressor and said turbine adapted to be supercharged by said turbocompressor unit, a bypass duct communicating with the outlet of said compressor and with the turbine inlet in parallel air flow relation with said engine combustion chamber system, an auxiliary combustion chamber having an inlet communicating with the compressor via said bypass duct and an outlet communicating with said turbine inlet, said compressor, turbine, bypass duct and auxiliary combustion chamber providing an open airway for said fresh air to flow therein from the compressor inlet to the turbine outlet via said bypass duct and said auxiliary combustion chamber, the combination therewith of a starting device for starting said turbocompressor comprising air moving means located within said open airway upstream of said turbine inlet and operable to develop a motive pressure difference for causing a flow of air in said airway, said flow comprising at least in part a flow of said fresh air from the outside atmosphere into said compressor inlet and through said open airway to said turbine outlet while said



compressor, turbine and engine are initially stationary, said flow of air being sufficient to enable operation of said auxiliary combustion chamber to be initiated, and thereafter said air moving means also being operable to maintain said pressure difference once said compressor begins being rotated by said turbine such that said air moving means contributes to an increased circulation of said fresh air from said compressor to said turbine via said airway resulting from the conjoint operation of said air moving means, said auxiliary combustion chamber and said turbine-driven compressor, said air moving means being positioned in said bypass duct, said air moving means comprising an ejector disposed in said open airway and supplied with air under pressure and generating a flow by the effect of induction.

3,949,556

MODULAR ENGINE ASSEMBLY

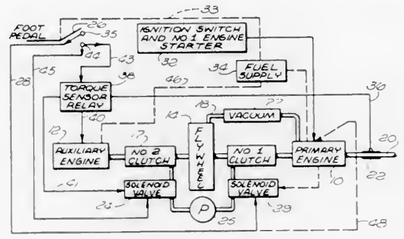
Marvin E. Wallis, 5535 Longfellow Road, Santa Barbara, Calif. 93111

Filed Mar. 12, 1975, Ser. No. 557,746

Int. Cl.² F01B 21/00

U.S. Cl. 60—709 **15 Claims**

1. A modular engine assembly for connection to a transmission driven thereby, said assembly comprising:
   - a primary engine;
   - means for starting said primary engine;
   - a flywheel;
   - first clutch means for engagement of said flywheel with said primary engine for cooperation thereof;
   - an auxiliary engine;
   - means for supplying fuel to said primary and auxiliary engines for operation thereof
   - second clutch means for selective engagement of said flywheel with said auxiliary engine for starting of said auxiliary engine, and for rotating said flywheel by operation of said auxiliary engine whereby to aid in driving said transmission; and



   - means for actuating said second clutch means to effect said engagement.

3,949,557

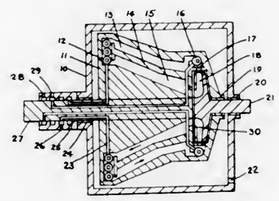
TURBINE

Michael Eskeli, 7994-41 Locke Lee, Houston, Tex. 77042

Continuation-in-part of Ser. No. 405,628, Oct. 11, 1973, abandoned. This application Apr. 9, 1975, Ser. No. 566,373

Int. Cl.² F01K 25/02

U.S. Cl. 60—682 **3 Claims**



1. In a turbine for generating power wherein a shaft is mounted for rotation and a rotor is mounted on said shaft so as to rotate in unison therewith, with said rotor having a first outward extending passage and a second outward extending passage with a passage means for connecting said outward extending passages for circulation of a first fluid, said first fluid being compressed within said first outward extending passage by centrifugal force and said first fluid being expanded within said second outward extending passages, said rotor having nozzles for accelerating said first fluid, said rotor having a heat addition heat exchanger for adding heat into said first fluid located upstream of said nozzles, the improvement comprising:
   a. a working fluid heat exchanger with a first passage for said first fluid and connecting with said first outward extending passage for removal of heat from said first fluid during its compression, a second passage for said first fluid and connecting with said second outward extending passage for adding heat into said first fluid, with the heat being removed within said first passage being the heat that is being added within said second passage.

3,949,558

POWER UNIT

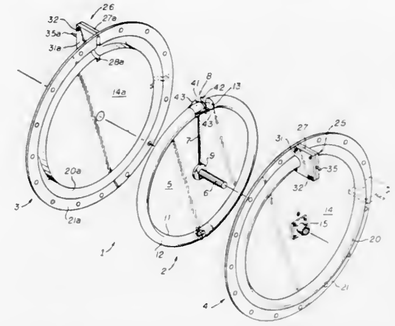
Bobby Lane Ross, 14122 Bonhom, Houston, Tex. 77015

Filed Apr. 25, 1975, Ser. No. 571,797

Int. Cl.² F03B 17/00; F03G 7/00

U.S. Cl. 60—721 **18 Claims**

1. A power unit including:
   - a receptacle for holding a body of fluid;
   - a drive wheel means mounted for rotation in said body of fluid about a drive shaft;
   - said drive wheel means including a power means mounted on said drive wheel means and radially spaced from said drive shaft for rotational movement through said fluid body in said receptacle;



   - said power means including a propelling means which acts against said fluid body to provide a driving reaction force to rotate the drive wheel about the drive shaft.

3,949,559

PROCESS FOR ISOLATING AQUEOUS BRINE LAYERS IN UNDERGROUND GAS-STORAGE CAVERNS

Frank Meyer, Essen, Germany, assignor to Bergwerksverband GmbH, Essen, Germany

Filed Sept. 12, 1974, Ser. No. 505,380

Claims priority, application Germany, Sept. 17, 1974, 2346740

Int. Cl.² B65G 5/00; E21F 17/16

U.S. Cl. 61—.5 **12 Claims**

1. A process for isolating a residual aqueous brine layer in an underground gas-storage cavern which comprises injecting into the said cavern a liquid polyurethane-resin-forming composition that is hardenable by reaction with water, the composition being injected in such an amount as to form a continuous layer over the entire floor surface of the cavern and above the brine layers so that the liquid resin-forming composition, after reaction with the water in the aqueous brine layer with which it is in contact, forms an essentially continuous unitary layer of a foamed polyurethane resin that is essentially impervious to water vapor between the residual brine layer and the gas-storage space thereabove.

3,949,560

METHOD AND COMPOSITION FOR PREVENTING WATER CONTAMINATED WITH INDUSTRIAL WASTE FROM SEEPING THROUGH SOIL CONTAINING SAID WATER

Arthur G. Clem, Des Plaines, Ill., assignor to American Colloid Company, Skokie, Ill.

Continuation-in-part of Ser. No. 330,200, Feb. 7, 1973, abandoned. This application May 23, 1974, Ser. No. 472,668

Int. Cl.² E02D 3/12

U.S. Cl. 61—36 R **10 Claims**

1. A method for containing water having dissolved there water-soluble industrial waste salts which comprises:
   - dry mixing soil and a soil sealant composition consisting essentially of (A) bentonite; (B) a water-soluble soluble dispersing agent selected from the group consisting of a water-soluble salt of phosphoric acid, a water-soluble sulfate of the formula $ROSO_3X$ where R is hydrocarbon of from 8 to 32 carbon atoms and X is a member selected from the group consisting of an alkaline metal or ammonium, and a water-soulble salt of leonardite; and (C) a water-soluble polymer selected from the group consisting of polyacrylic acid, water-soluble salts of polyacrylic acid,

hydrolyzed poly-acrylonitrile, polyvinyl acetate, polyvinyl alcohol, copolymers of the foregoing, and a copolymer of acrylic acid and maleic anhydride, the amount of water-soluble polymer in said soil sealant composition being from 0.1% to 3.0%, by weight, and the amount of water-soluble dispersent in said soil sealant composition being from 0.1% to 3.0%, by weight, the weight ratio of water-soluble dispersent to water-soluble polymer being from 6:1–36;

forming a water-containing enclosure from said mixture of said sealant composition and soil;

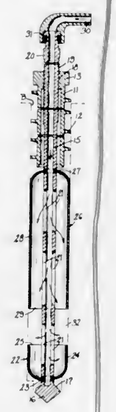
contacting said enclosure with water-containing substantially no water-soluble industrial waste salts thereby hydrating the bentonite;

and contacting said enclosure with the water contaminated with water-soluble industrial waste salts.

3,949,561
SOIL GROUTING APPARATUS

Roger S. Chapman, 93 Mohawk Drive, Wallingford, Conn. 06492

Filed June 27, 1974, Ser. No. 483,655
Int. Cl.² E02D *3/12*
U.S. Cl. 61—36 R **12 Claims**

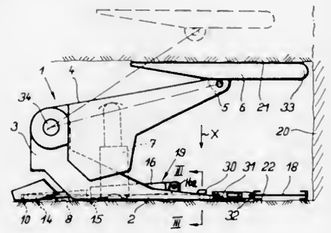


1. Apparatus for grouting the soil adjacent to a borehole comprising, means for forming a borehole having a borehole wall with a first diameter, tubular means in said first named means for conveying grout from a source outside the borehole to a delivery aperture in the tubular means and within the borehole, said aperture being spaced from the lower end of said tubular means, said tubular means having a diameter substantially less than said first diameter, separate upper and lower expansible sealing means affixed to said tubular means at positions above and below said delivery aperture, means for confining said sealing means when the apparatus is in borehole forming mode, means for moving said confining means vertically relative to the tubular means to release the sealing means, and means for causing said sealing means to close the space between said tubular means and said borehole wall above and below said delivery aperture, whereby a zone to be grouted is defined.

3,949,562
APPARATUS FOR PREVENTING CAVE-INS OF EXCAVATIONS

Günter Blumenthal, Westerholt, and Ernst Gebehart, Bochum, both of Germany, assignors to Bochumer Eisenhutte Heintzmann & Co., Bochum, Germany

Filed June 6, 1974, Ser. No. 477,084
Claims priority, application Germany, June 20, 1973, 2331309
Int. Cl.² E21D *15/44*
U.S. Cl. 61—45 D **11 Claims**



1. In an apparatus for supporting a roof of an underground excavation, a combination comprising floor-engaging means; conveyor means closer to the face of the excavation than said floor-engaging means; means for alternately advancing said floor-engaging means and said conveyor means toward said face, as the same recedes exposing portions of the floor and the roof of the excavation, in steps of a predetermined length; roof-engaging means mounted on said floor-engaging means for pivoting about a substantially horizontal axis and extending above said conveyor means toward said face, said roof-engaging means having a front portion adjacent said face and spaced therefrom by a distance which depends on the inclination of said roof-engaging means; and means for minimizing said distance so as to prevent the roof above said conveyor means for caving in, said minimizing means including a carriage section mounted on said floor-engaging means for shifting relatively thereto toward and away from said face and having an end facing the latter, an extension section in the region of said end and connected to said conveyor means, one of said sections being mounted on the other section for telescopic movement with respect thereto whereby the spacing between said floor-engaging means and said conveyor means is adjusted so as to minimize said distance independently of said advancement, and means for arresting said one section in a plurality of positions relative to said other section so as to form a unit therewith during said advancement of said floor-engaging and conveyor means.

3,949,563
MINE ROOF SHIELD

Wilhelm Wertelewski, and Jorg Schade, both of Datteln, Germany, assignors to Becorit Grubenausbau GmbH, Germany

Filed Feb. 28, 1975, Ser. No. 554,026
Claims priority, application Germany, Apr. 4, 1974, 2416306
Int. Cl.² E21D *15/44*
U.S. Cl. 61—45 D **5 Claims**

1. A shield support structure for underground mining operations comprising

a ground-engaging structure;

an inclined caving shield pivotally supported at its lower rearward end from said ground-engaging structure;

a roof bar pivotally attached to the upper forward end of said caving shield and projecting forwardly thereof;

first laterally extensible L-section aperture-sealing plates each having one limb of the L-shape extending along one side of said roof bar to the rearward edge thereof and the other limb extending over a portion of said roof bar; and

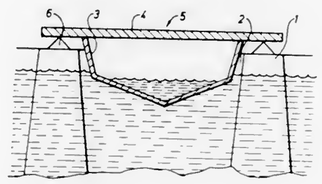
second laterally extensible L-section aperture-sealing plates each having one limb of the L-shape extending along one side of said caving shield and the other limb extending over said caving shield;

said second plates extending no further forward than the arc described by the rearward edges of said first plates upon pivoting of said roof bar relative to said caving shield.

3,949,564
FLOATING PLATFORMS WITH A WHARF BELONGING THERETO

Bernt Ivar Nord, Vastra Frolunda, Sweden, assignor to Ingenjorsfirma B. Nord AB, Goteborg, Sweden

Filed Oct. 29, 1974, Ser. No. 518,960
Claims priority, application Sweden, Nov. 1, 1973, 7314865
Int. Cl.² E02D *17/00;* **B63B** *3/02*
U.S. Cl. 61—46 **3 Claims**

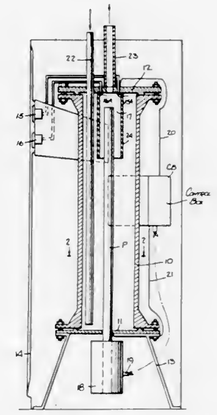


1. In combination: supporting means provided with a number of spaced supporting elements above water level; and a floating platform arrangement having a hull, and a portion above said hull and projecting laterally beyond said hull, the underside of said projecting portion being provided with a number of spaced supporting surfaces corresponding in number and spacing from each other to the supporting elements, said hull being dimensioned such that at a first load and water level at said supporting means said platform arrangement occupies a first position with said supporting surfaces placed above and vertically spaced from said corresponding supporting elements, and such that at a second load and water level at said supporting means said platform occupies a second position with said supporting surfaces placed in contact with said supporting elements, and pumping means for selectively introducing water into said hull to bring said platform arrangement into said second position and for removing water from said hull to bring said platform arrangement into said first position.

3,949,565
LIQUIFIED GAS EVAPORATOR

Robert N. Roop, Warminster, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Filed Aug. 9, 1974, Ser. No. 496,194
Int. Cl.² F17C *7/02*
U.S. Cl. 62—52 **8 Claims**



1. An evaporator for converting a liquified gas into a heated gas to be supplied to a gas dispensing system, said evaporator comprising:

A. a pressure vessel provided at its lower end with a base plate and at its upper end with a top plate, said vessel having an unimpeded inlet pipe adapted to be coupled to a source of liquified gas to feed liquified gas into the vessel to form a pool therein, from which pool gas is evaporated to fill the space thereabove in said vessel to create gas pressure therein, said inlet pipe passing through said top plate and terminating near said base plate, and an outlet pipe to supply the gas evaporated from said pool to said system in accordance with the demand thereof, said outlet pipe being coupled to said top plate and communicating with an opening therein,

B. a heat pipe vertically mounted in said vessel and in contact with said pool, the lower end of said pipe extending through said base plate below the bottom of said vessel to expose the evaporator section of the pipe, and

C. means to apply heat to said evaporator section whereby said heat is transferred to the section of said pipe within said vessel in contact with said pool to boil said liquified gas and to convert it into a heated gas to be supplied to said system, said pool reaching an equilibrium level in said pressure vessel at which the rate of liquified gas being converted into gas equals the rate at which liquified gas enters the vessel through said inlet pipe, after which further evaporation of said gas from said pool results in an increase in gas pressure in said vessel forcing the liquified gas to flow back out of said vessel through said inlet pipe to said source.

3,949,566
PURGE ARRANGEMENT FOR ABSORPTION REFRIGERATION SYSTEMS

Neil E. Hopkins, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

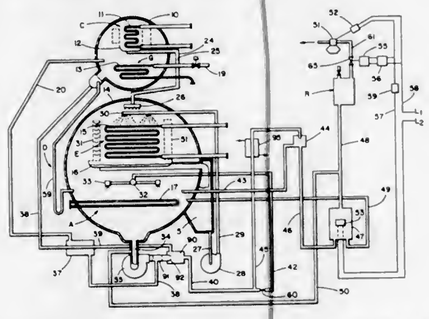
Filed Aug. 1, 1974, Ser. No. 493,579
Int. Cl.² F25B *43/00*
U.S. Cl. 62—475 **10 Claims**

1. In an absorption refrigeration machine including a generator, a condenser, an evaporator, and an absorber interconnected to form a closed system containing an absorbent solu-

tion, a refrigerant, and an undissolved liquid fraction of an additive effective to increase the refrigeration capacity of the machine, liquid passage means connected to said absorber and providing a closed circuit for flow of absorbent solution and additive through said machine, and vapor passage means for flow of noncondensible vapor from the absorber, and a purge arrangement for exhausting noncondensible vapors from the machine, said purge arrangement comprising:

means defining a chamber for separating noncondensible vapors from said solution, said chamber being adapted to separate said additive from said solution, said additive being relatively volatile and having a lower specific gravity than said absorbent solution and tending to accumulate above the solution in the chamber;

first conduit means having a first section connecting said liquid passage means to said chamber for diverting a portion of the solution flowing in said liquid passage means to said chamber and a second section connecting said chamber to said absorber;



means for expelling separated noncondensible vapors from said system and including a receiver disposed above said chamber for receiving and holding said separated vapors prior to removal from said machine; second conduit means connecting said chamber to said receiver for flow of separated vapors therebetween, said second conduit means being adapted to conatin liquid additive separated from said solution in said chamber;

means inducing flow of noncondensible vapor through said vapor passage means to said separation chamber by flow of solution through said first conduit means and entrainment of the vapor with the flowing solution; and

third conduit means connecting said second conduit means to said liquid passage means to pass liquid additive, collecting in said second conduit means, directly to said liquid passage means thereby to inhibit collection of liquid additive in said compartment.

3,949,567

CENTRIFUGAL PUMP ASSEMBLY

Peter Stech, Platjenwerbe near Bremen, Germany, assignor to K S B Kernkraftwerkspumpen GmbH, Frankenthal, Pfalz, Germany

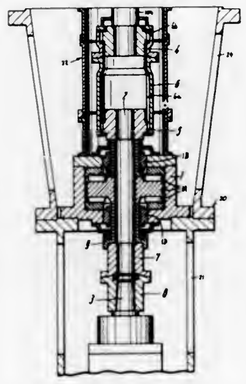
Filed Jan. 10, 1974, Ser. No. 432,343

Claims priority, application Germany, Jan. 16, 1973, 2301961

Int. Cl. F16d *3/18*

U.S. Cl. 64—9 R **10 Claims**

1. In a centrifugal pump assembly, particularly in an upright centrifugal pump assembly for use in nuclear reactor plants, a combination comprising a motor shaft; a pump shaft coaxial with and spaced apart from said motor shaft; a stationary housing intermediate said shafts; an intermediate shaft coaxial with said first mentioned shafts and rotatable in said housing; bearing means provided in said housing for said intermediate shaft; a first coupling between said motor shaft and said intermediate shaft; and a second coupling between said pump shaft and said intermediate shaft, said intermediate shaft being movable axially in said housing relative to said motor shaft and



said pump shaft between first and second positions in which said second coupling is respectively engaged and disengaged.

3,949,568

BOUQUET RING

Helen H. Gallagher, 57 Bald Cypress Lane, Levittown, Pa. 19054

Filed Aug. 9, 1971, Ser. No. 170,204

Int. Cl.² A44C *9/00*

U.S. Cl. 63—1 A **1 Claim**



1. A bouquet ring for fresh flowers or an artificial nosegay comprising a support base, bendable grasping prongs extending from said support base and adapted to be bent to grasp fresh or artificial flowers, a wet or dry synthetic foam-plastic flower support block, a flower water tube, and the like; a ring band adapted to be placed on a finger; and connecting means connecting the ring band to the support base; including a synthetic foam plastic flower-support block grasped by said prongs; flowers inserted into and supported by said block; and wherein said ring band is provided with overlapping ends so as to permit expansion and contraction of the ring band to accommodate fingers of various sizes; and wherein said connecting means comprises a rivet joining the ring band to the center of the support base; said support base being wider than said ring band; said prongs including a first pair of prongs extending outwardly from the support base in opposite directions; said prongs also including a second pair of prongs extending outwardly from the support in opposite directions; said prongs further being provided with crease lines that divide the prongs into tip portions, intermediate portions, and bottom portions; with said tip portions being imbedded in the sides of said synthetic foam plastic flower-support block.

3,949,569

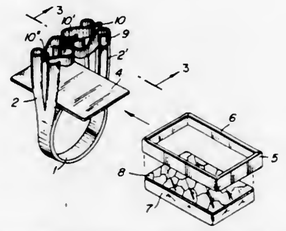
RING WITH BEZEL SECURED BY THE DECORATIVE MEMBER IT SURROUNDS

Jack Gutschneider, White Plains, N.Y., assignor to Jack Gutschneider Jewelry Co., Inc., New York, N.Y.

Filed Aug. 16, 1974, Ser. No. 497,855

Int. Cl.² A44C *9/00*

U.S. Cl. 63—15 **7 Claims**



1. A ring which comprises a continuous circular member through which a person's finger fits; two substantially parallel side members, one extending upwardly from each side of the circular member; a top portion extending between and secured to the outer ends of said side members so that the side members, top portion and the portion of the circular member extending between the side members form a defined space; a plate member having an upper surface and a lower surface; a support member, one end of which is secured to the top of the circular member and the other end of which is secured to the plate member so that the plate is fixed in said space with the upper surface of said plate member spaced from the lower surface of said top portion and said top portion extending over at least a part of the plate member; a bezel and a decorative member disposed within said bezel, said decorative member being secured to said plate member, said bezel laterally surrounding said decorative member, said bezel and said decorative member being thereby securely held in place between the upper surface of said plate and the lower surface of said top portion.

3,949,570

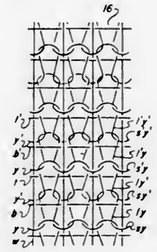
METHOD AND MEANS FOR FORMING KNIT FABRIC INCORPORATING A WEFT STITCH WEAVE

Kurt W. Niederer, Charlotte, N.C., assignor to W. Schlafhorst & Co., Monchengladbach, Germany

Division of Ser. No. 423,487, Dec. 10, 1973, Pat. No. 3,884,053. This application Jan. 6, 1975, Ser. No. 538,970

Int. Cl.² D04B *9/16*

U.S. Cl. 66—10 **4 Claims**



1. In the formation of knit fabric simulating a woven structure which involves the steps of feeding spaced warp ends to weft knitting means while laying filling ends at opposite sides of the fed warp, the improvement which comprises causing needle loops of weft knit courses to form wales at the spaces between the warp ends and to execute a shedding motion in relation to said warp in the course of such wale formation so that filling ends are disposed between the needle loops and the warp at both faces of the resulting fabric as it is formed.

3,949,571

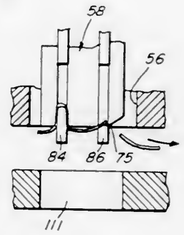
ELASTIC YARN BINDER AND CUTTER

Harry J. Hinkle, Spruce Pine; Mack E. Wilson, Bakersville, and Jack H. Wade, Spruce Pine, all of N.C., assignors to Hampshire-Designers, Inc., Manchester, N.H.

Filed Nov. 29, 1974, Ser. No. 528,153

Int. Cl.² D04B *35/00, 15/50*

U.S. Cl. 66—140 S **7 Claims**



7. A device for use in a circular knitting machine to severe an end portion of a length of yarn and to hold the remaining portion of the yarn comprising:

a body member;

a first jaw and a second jaw, both mounted for movement in unison toward and away from the body member and between an extended position in which a length of yarn may be located between the jaws and the body member and a clamping position in which the first jaw grips the yarn in cooperation with the body member;

both of said jaws having yarn engaging surfaces which are free of sharp edges capable of cutting the yarn;

a cutting member mounted to the body member, the cutting member having a sharp edge and being disposed to cooperate with the second jaw to cut the yarn;

said jaws, body member and cutting member being constructed and arranged to delay cutting of the yarn until after the yarn has been clamped between said first jaw and the body member.

3,949,572

HIGH IMPACT KNITTING NEEDLE

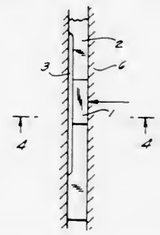
Jaroslav Kopal, Liberec; Milos Jansa, Brno, and Jaroslav Deiss, Tisnov, all of Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Continuation-in-part of Ser. No. 102,333, Dec. 29, 1970, abandoned. This application July 29, 1974, Ser. No. 492,691

Claims priority, application Czechoslovakia, Dec. 29, 1969, 8557-69

Int. Cl.² D04B *35/02*

U.S. Cl. 66—115 **5 Claims**



1. In a circular knitting machine having needles with elongated shanks slidably mounted in tricks in a needle carrier that is rotatable in a first angular direction, each of said needles having an outwardly protruding integral butt for engagement with needle sliding cams on the machine, an improved arrangement for reducing the impact forces in the needles when the associated butts engage one of said cams, wherein the needle carrier exhibits a plurality of relieved unobstructed zones individually defined between the trailing side of each

needle relative to the first angular direction and the confronting side wall of the associated trick, each relieved zone being aligned and at least coextensive with the butt of the associated needle, whereby to provide an increased clearance between the trailing side of the needle and the confronting trick side wall and thus to permit unobstructed bending of the needle shank into said relieved zone when the butt engages one of said cams.

3,949,573

THREAD DELIVERY DEVICE FOR TEXTILE MACHINES

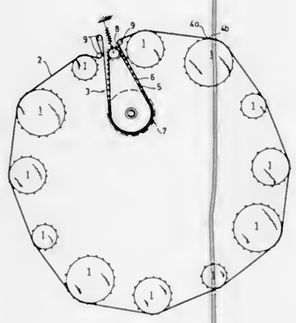
Kurt Arne Gunnar Jacobsson, Ulricehamn, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

Filed Mar. 10, 1975, Ser. No. 557,118

Claims priority, application Germany, Mar. 12, 1974, 2411876

Int. Cl.² D04B *15/48*

U.S. Cl. 66—132 T **8 Claims**



1. In a thread delivery device for a textile machine, in which a member associated with a thread delivery arrangement is driven by a driving belt which in turn is driven by a driving wheel whose effective diameter can be varied to vary the speed of said driving belt, said driving belt being engaged with a running surface associated with said driving wheel, comprising the improvement wherein said driving belt is provided with holes therein, and wherein the running surface of the driving wheel is formed by a second driving belt with pins on its outer face which engage in the holes of said first-mentioned driving belt to provide a slip-free connection therebetween, the second driving belt being engaged with and extending between said driving wheel and a further wheel.

3,949,574

SUBLIMATIC PRINTING MACHINE

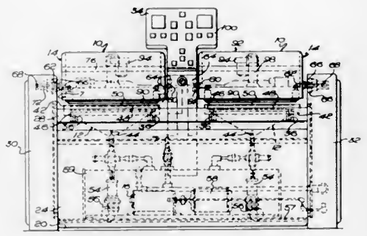
Richard Donovan Glover, Ings Mills, Dale St., Ossett, Yorkshire, England

Continuation-in-part of Ser. No. 381,202, July 20, 1973, abandoned. This application May 29, 1974, Ser. No. 474,460

Int. Cl.² D06B *1/10;* **B41M** *5/02;* **D06F** *71/34*

U.S. Cl. 68—5 C **1 Claim**

1. A transfer printing press comprising a press platen in the form of an air permeable, sintered metal plate, an air permeable support platen means located in face-to-face relationship with the press platen, pressure means adapted to press a sandwich comprising an air permeable sheet structure to be printed and a sublimatic printing foil between the sintered metal plate and the support platen means, heating means for heating the sublimatic printing foil through the sintered metal plate to release the dyestuff from the printing foil, and means for creating a flow of air through the sintered metal plate, the sandwich of foil and sheet structure, and the support platen



means when the dyestuff has been released from the printing foil.

3,949,575

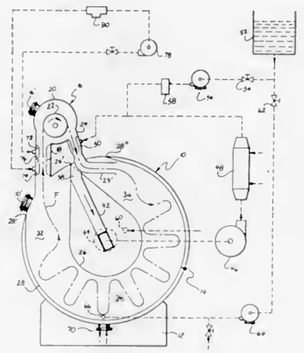
JET MACHINE AND PROCESSING METHOD

James Keith Turner, Lincolnton; William Cleere Sturkey, Charlotte, both of N.C., and Christopher W. Aurich, Clemson, S.C., assignors to Gaston County Dyeing Machine Company, Mount Holly, N.C.

Filed July 17, 1974, Ser. No. 489,403

Int. Cl.² D06B *3/28*

U.S. Cl. 68—5 C **11 Claims**



1. Apparatus for wet processing textile fabric in continuous loop form of the type that includes means for recirculating said fabric loop free of nip constraint and under an aspiration influence induced with an inert gas, together with an enclosure housing a chamber of J-box configuration capable of containing liquid and arranged for storing a major portion of said fabric loop while the loop is progressively withdrawn from and returned to said chamber during recirculation under said aspiration influence, and in which said chamber is additionally arranged with a throat adjacent the entrance to the J-box leg at which the fabric loop is returned and means is connected at said throat for drawing off the discharge from said aspiration influence and delivering the drawn off discharge for inducing said aspiration influence, said connecting means providing the only path of communication between said chamber and the housing enclosure therefor.

3,949,576

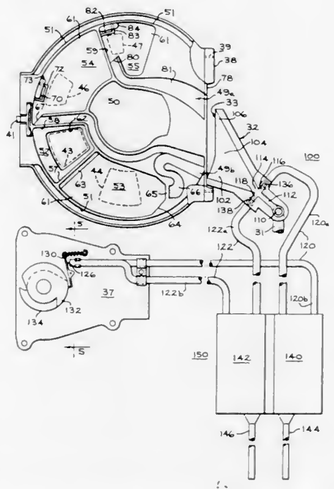
LIQUID FLOW DIVERSION ARRANGEMENT

Richard A. Waugh, and Ved P. Gakhar, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Division of Ser. No. 406,535, Oct. 15, 1973, Pat. No. 3,897,806. This application Apr. 21, 1975, Ser. No. 569,984

Int. Cl.² D06F *39/02*

U.S. Cl. 68—12 R **5 Claims**



1. In an automatic washer having a cycle control timer and an additive dispensing system including a multi-compartmented dispenser, a liquid flow diversion arrangement having a liquid diverter for selectively diverting liquid into preselected dispenser compartments for flushing the additives into the washer at predetermined times during a cycle of the washer, the liquid diverter having a main inlet for liquid to enter, a liquid outlet providing a plurality of exit paths for the liquid, and at least two control ports respectively coupled to ambient, the arrangement further including means responsive to the timer for selectively closing each of the control ports respectively from ambient at predetermined times for determining through which exit path and thereby into which dispenser compartment liquid entering the main inlet will emerge, and a chamber coupled respectively between each control port and its respective closing means for accumulating liquid emerging from the control ports, the chambers being dimensioned for preventing audible sonic oscillations in the liquid flow diversion arrangement, wherein the improvement comprises:

a hose associated respectively with each chamber for draining liquid accumulating therein, the hose being dimensioned to act as a closed valve with respect to the control port, while allowing liquid to drain automatically from the chamber when a sufficient head has been built up therein.

3,949,577

APPARATUS FOR THE CONTINUOUS STEAMING OF TEXTILE MATERIAL OF MAN-MADE FIBER MATERIAL

Hans Fleissner, Riehen, Basel, Switzerland, assignor to Vepa AG, Switzerland

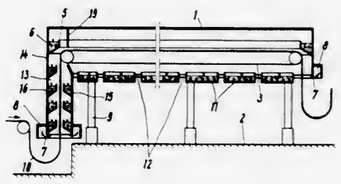
Filed Feb. 4, 1974, Ser. No. 439,049

Claims priority, application Germany, Feb. 2, 1973, 2305154; Feb. 2, 1973, 2305155; Mar. 1, 1973, 2310195; June 9, 1973, 2329687

Int. Cl.² D06B *3/02*

U.S. Cl. 68—5 D **22 Claims**

1. An apparatus for the continuous steaming of textile material or man-made fiber material, endless material and synthetic fibers which comprises at least one bell-shaped steam housing providing a treatment chamber closed all around by side walls and at least partly open at the bottom, said housing comprising a steamer hood that is arranged and supported on level-adjustable support means placed on a base surface, means for supplying steam into said chamber, at least one conveying means for transporting the material within said steamer hood whereby the material extends from below and into the steamer hood and extends out of the steamer hood at



the bottom thereof, and said support means including lifting means for effecting vertical movement between the steamer hood and said conveying means whereby a steam atmosphere within said hood can be maintained while said conveying means is made accessible, said lifting means including telescopically extensible pistons for lifting the steamer hood away from said conveying means.

3,949,578

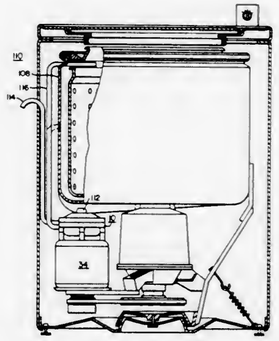
PUMP WITH SELF-CLEANING LINT FILTER

Robert L. Heldreth, Mansfield, Ohio, assignor to White-Westinghouse Corporation, Cleveland, Ohio

Division of Ser. No. 273,257, July 19, 1972, Pat. No. 3,836,001. This application May 16, 1974, Ser. No. 470,497

Int. Cl.² B01D *35/22*

U.S. Cl. 68—18 F **2 Claims**



1. In an automatic washing machine having an outer generally stationary water containing tub; a rotatable foraminous clothes tub; reversible drive means for selectively driving said machine through various modes of operation including a washing mode and a spin dry mode of operation; and, a reversible centrifugal pump, said pump including a housing providing a pump chamber bounded by the internal wall structure of said housing and including a rotatable impeller enclosed within said chamber, said pump having an inlet port connected to said water containing tub and first and second outlet ports respectively connected to a drain hose and a recirculate hose, said pump operatively connected to said reversible drive means in a manner that drives said pump to discharge through said second outlet port during said washing mode and through said first outlet port during said spin dry mode of operation; wherein the improvement comprises:

a stationarily mounted screen filter disposed within said pump chamber spaced between said impeller and said internal wall structure, said filter positioned between said inlet port and said second outlet port and between said second outlet port and said first outlet port; whereby,

operation of said drive means to impart said washing mode also drives said pump in a recirculate mode wherein said impeller rotates in one direction causing water to flow from said pump inlet, through said filter and out said second outlet port such that filter removed particles are retained within the pump chamber, reversal of said drive means to impart said spin dry mode also drives the pump in a drain mode wherein said impeller rotates in the other direction causing water to flow from said inlet port to said first outlet port, such that a turbulent flow path is developed between said inlet port and said first outlet port, said flow path flushing any filter removed particles retained in the pump chamber out of said first outlet port.

3,949,579

APPARATUS FOR FABRIC PROCESSING

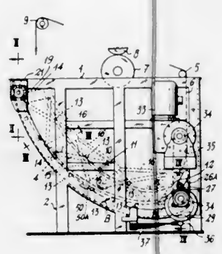
Attilio Bertoldi, Via Luzzago 27, Manerbio (Brescia), Italy

Filed Jan. 25, 1974, Ser. No. 436,471

Claims priority, application Italy, Feb. 13, 1973, 20325/73; Sept. 17, 1973, 28964/73

Int. Cl.² D06B *3/10, 17/02*

U.S. Cl. 68—152 **10 Claims**



1. In an apparatus for processing fabric or the like, tank means for containing a processing liquid and having a bottom wall, elongated hollow channel means in said tank means, means for directing fabric through said channel means, said channel means having an entrance end for receiving fabric and an opposite exit end through which the fabric leaves said channel means, and said channel means being situated in said tank means for submersion in the processing liquid therein, moving means operatively connected with said channel means for moving said channel means toward and away from said bottom wall of said tank means, said channel means having an upper elongated portion distant from said bottom wall of said tank means and a lower elongated portion nearer to said bottom wall of said tank means than said upper portion thereof, and both of said portions of said channel means being formed with a plurality of openings through which the processing liquid can freely pass, said elongated channel means having opposed side walls, a pair of opposed impervious baffles fixed to said channel means and extending downwardly from said lower portion thereof and extending along said side walls, and means carried by said bottom wall of said tank means and cooperating with said baffles for confining between said baffles processing liquid which thus is prevented from escaping laterally.

3,949,580

APPARATUS FOR THE WET TREATMENT OF CLOTHS

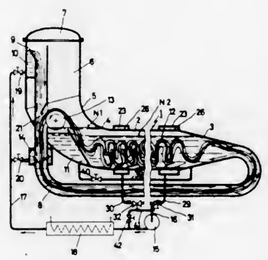
Isidro Folch Trullás, Tarrasa, Spain, assignor to Argelich Termes Y CIA., Sociedad Anonima, Tarrasa, Spain

Filed Mar. 24, 1975, Ser. No. 561,509

Claims priority, application Spain, Mar. 27, 1974, 424689

Int. Cl.² D06B *3/24, 3/28*

U.S. Cl. 68—177 **9 Claims**



1. In an apparatus for the wet treatment of cloths, wherein the cloth, in endless rope form, is moved through a closed, pressurised or non-pressurised circuit by the treatment liquid itself, the cloth moving at a high speed through a transport duct portion and at a slow speed through a storage vessel portion where a major portion of the cloth accumulates, the improvements which consist in providing a closed vessel comprising in combination:

a. an elongate tubular center portion acting as a storage chamber for the treatment liquid and cloth to be treated, said elongate tubular center portion having an entrance end and an exit end;

b. a tubular end portion attached to the entrance end of the center portion for receiving the liquid and cloth in their path towards the storage chamber, said tubular end portion having an entrance end and an exit end, said entrance end being of smaller cross section than its exit end;

c. an upwardly directed elbow portion attached to the exit end of the center portion and forming part of the storage chamber;

d. a transition portion, attached to the elbow portion, having an entrance end and an exit end, said exit end having a larger cross sectional area than its entrance end;

e. an upper portion, attached to the transition portion, having a larger cross sectional area than the center portion, said upper portion having a loading and unloading cover;

f. a transport duct having an upper section housed in said upper portion and a lower section running below the storage chamber, said transport duct communicating the upper portion with the end portion to complete the vessel's closed circuit, said transport duct further having an inlet port;

g. drive means consisting of a horizontal winch, driven by a variable speed motor, said winch having a periphery on which the cloth rests for delivery to the transport duct through said inlet port, an overflow chamber and a jet chamber adjacent said transport duct, said overflow and jet chambers cooperating with said inlet port for drawing the cloth into said transport duct through said inlet port; and

h. a circulation pump having a suction pipe in communication with the storage chamber to draw liquid therefrom and a discharge pipe in communication with the overflow and jet chambers through a heat exchanger, said pipes having branches, said pipes and branches having adjustable liquid flow valves for controlling the movement of the liquid and the cloth through the apparatus.

3,949,581

STEERING LOCK ASSEMBLY FOR DIESEL MOTOR VEHICLES

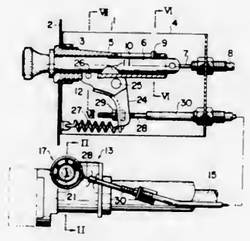
Shigeo Toyama, Okazaki, and Yutaka Tomizu, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed June 14, 1974, Ser. No. 479,450

Claims priority, application Japan, Sept. 14, 1973, 48-103187

Int. Cl.² B60R *25/04, 25/02*

U.S. Cl. 70—239 **3 Claims**



1. A steering lock assembly for a diesel motor vehicle having a steering shaft, said steering lock assembly comprising:

first locking means movable into a plurality of positions,

means operable in response to movement of said first locking means for locking the steering shaft when said locking means is in one of said plurality of positions,

an engagement member displaceable with said first locking means,

engine shutdown means axially displaceable into a position for shutting down the engine, said engine shutdown means being rotatable in the engine shutting down position,

means defining a recess in said engine shutdown means,

second locking means engageable with said recess for axially locking said engine shutdown means,

wire means connected with said second locking means to be movable therewith, said wire means being operatively related to said engagement member,

means defining a slot in said engagement member for selectively engaging said wire means, and slot being configured to engage said wire means to prevent movement of said first locking means into said one position for locking the steering shaft when the engine is operating,

said engagement member being configured to engage said wire means to prevent movement of said engine shutdown means out of the position for shutting down the engine when the first locking means is in said one position for locking the steering shaft, and

said recess being configured to disengage said second locking means from said recess to release said engine shutdown means from its axially locked position when said engine shutdown means is rotated.

3,949,582

POSITIONING SERVO AND CONTROLLED MECHANISM

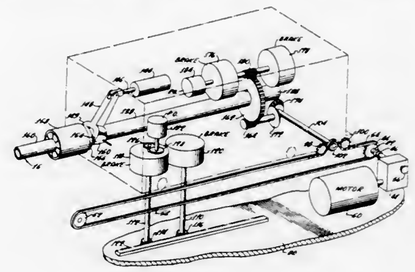
Homer L. Eaton, Balboa, and Walter F. Felber, Newport Beach, both of Calif., assignors to Eaton-Leonard Corporation, Santa Ana, Calif.

Filed Apr. 11, 1975, Ser. No. 567,287

Int. Cl.² B21D *9/05*

U.S. Cl. 72—8 **28 Claims**

1. Positioning apparatus for a movable device comprising command means for generating a position error signal indicative of the distance between a position to which said device is to be moved and the actual position of said device, velocity means for generating a velocity signal indicative of the actual velocity of said device, and means responsive to said velocity means and to said command means for applying to said device a braking force



substantially proportional to the difference between said velocity signal and said position error signal.

3,949,583

PRESS CONTAINING A PRESSURE CELL WITH A FLEXIBLE DIAPHRAGM AND A FORMING PAD INFLUENCED BY SAID DIAPHRAGM

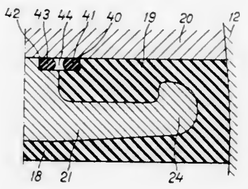
Pertti Syvakari, Helsingborg, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Dec. 5, 1974, Ser. No. 529,891

Claims priority, application Sweden, June 18, 1974, 7407992

Int. Cl.² B21D *22/12*

U.S. Cl. 72—63 **2 Claims**



1. Hydraulic press comprising a pressure cell with a diaphragm of flexible material having an opening and an annular bead, which includes around the opening first and second disc-shaped attachment members for the diaphragm which form between them a first annular groove fitting the bead member, and a pad of flexible material influenced by the pressure cell, for forming plates which are placed on forming pieces in a working space below the pad, the bead member and the first attachment member having opposed annular recesses therein opening at the outer surfaces of said members and the second attachment member having a surface facing said recesses to form therewith an annular channel, and a sealing means in such channel engaging the second attachment member and one of the first attachment members and the bead member.

3,949,584

BENDING APPARATUS HAVING A ROLLER SUPPORT UNIT FOR E.M.T., CONDUIT AND THIN WALL TUBING

Vernon W. Pearson, and Larry G. Adleman, both of Rockford, Ill., assignors to Greenlee Bros. & Co., Rockford, Ill.

Filed Dec. 23, 1974, Ser. No. 535,873

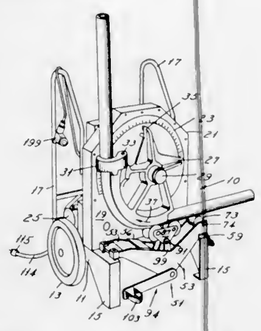
Int. Cl.² B21D *7/024*

U.S. Cl. 72—149 **14 Claims**

1. In a portable conduit bending apparatus having a frame, a bending shoe mounted on a rotatable shaft, and means to rotate said bending shoe, the improvement comprising a roller

support unit mounted on said frame, said roller support unit comprising:

1. a pair of parallel frame members (53) extending under said bending shoe (27) normal to said rotatable shaft (29);
2. spacing means (55, 56, 57, 59) connecting said parallel frame members to provide spacing therebetween;
3. a first pivot means (97) at the approximate mid-length of said parallel frame members having an axis parallel to said rotatable shaft (29);



4. arm means (99) connected to said first pivot means (97) at one end thereof;
5. a second pivot means (91) mounted at the other end of said arm means;
6. roller means rotatably supported on said second pivot means (91); and
7. stop means mounted on said parallel frame members;

wherein said roller means is adapted to be positioned between an operative and an inoperative position.

3,949,585

PROCESS FOR COOLING ROLLED WIRE

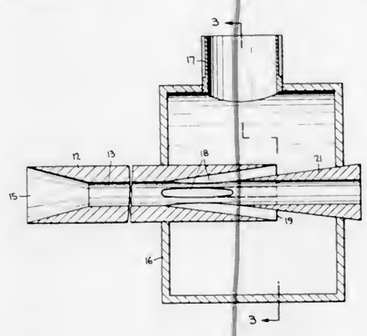
Manfred Wagner, Elstorf, Germany, assignor to Hamburger Stahlwerke GmbH, Hamburg, Germany

Filed Apr. 22, 1975, Ser. No. 570,992

Claims priority, application Germany, Apr. 22, 1974, 2419345

Int. Cl.² B21B *27/10, 45/02*

U.S. Cl. 72—201 **4 Claims**



1. Process for the cooling of grooved rollers and wire rolled from wire stock by the rollers, wherein an open-ended hollow cooling tube is mounted directly behind the grooved rollers, comprising, providing an elongated coolant inlet for the tube at a spaced distance from the rollers, providing coolant supply bores evenly distributed along the periphery of the tube and directed toward the rollers and in communication with the inlet, disposing the coolant supply bores at an angle to the longitudinal axis of the tube of between 5° to 9°, and introducing coolant at a pressure of more than 5 atmospheres through the bores in a direction toward the rollers and opposite the direction of movement of the wire through the tube whereby the rolled wire is cooled and the coolant issuing from the tube serves to cool the rollers.

3,949,586

ROLLING MILL FRAME, IN PARTICULAR A UNIVERSAL ROLLING MILL FRAME

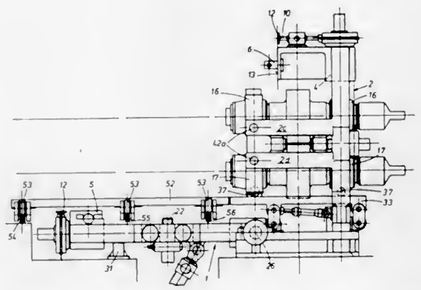
Klaus Neumann, Am Klosterhang 15, 667 St. Ingberg, Saar, Germany

Filed Oct. 24, 1974, Ser. No. 517,514

Claims priority, application Germany, Oct. 26, 1973, 2353731

Int. Cl.² B21B *31/08*

U.S. Cl. 72—238 **10 Claims**



1. A rolling mill frame comprising two stands disposed on opposite sides of said frame, each stand having a window opening therein, chocks mounted in said window openings, rolls supported in said chocks, said window openings being smaller than the diameters of said rolls, drive means located adjacent one of said stands on one side of said frame, said other stand on said opposite side of said frame arranged for pivotal movement relatively to said chocks, means for temporarily supporting said rolls to permit said other stand to be pivoted into a position clear of said chocks, and means for removing said rolls from said frame in the axial direction of the rolls while said other stand is in said pivoted position.

3,949,587

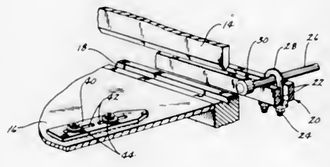
FRONT AND REAR MAGNETIC GAUGES FOR A PRESS BRAKE AND THE METHOD OF OPERATING SAME

Roscoe H. Simmons, Sr., 1817 Larnard Drive, Des Moines, Iowa 50317

Filed Sept. 23, 1974, Ser. No. 508,615

Int. Cl.² B21D *11/22*

U.S. Cl. 72—379 **9 Claims**



1. The method of shaping a flat sheet metal work piece on a brake press wherein the brake press includes gauges on either side of said punch and said gauge includes magnets in their inner opposing ends so that an operator being positioned on one side only can work without placing his hands between said punch and gauge as the work piece is held by said gauges, including the steps of,

positioning a front gauge at a distance from the centerline of said punch corresponding to the length of the desired completed work piece,

positioning one end of the work piece under said punch and against and held by a back gauge with the other end of the work piece extending over the front gauge,

operating said punch to make a fold in said work piece,

turning the work piece 180° and positioning the outer surface of said fold against said front gauge with the other end of said work piece under said punch, and

operating the punch to make a second fold in said work piece with the distance between folds being equal to the length of the desired completed work piece.

3,949,588

STRAIGHTENING PRESS FOR ROD-LIKE WORKPIECE

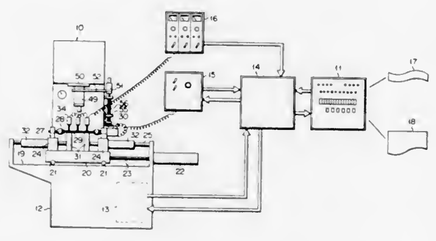
Naonori Seo, Nagoya, Japan, assignor to Towo Seiki Co. Ltd., Nagoya, Japan

Filed Dec. 9, 1974, Ser. No. 531,034

Claims priority, application Japan, Dec. 28, 1973, 49-590; Dec. 28, 1973, 49-1198[U]

Int. Cl.² B21D *3/10*

U.S. Cl. 72—389 **12 Claims**



1. A straightening machine for rod-like workpiece comprising a machine frame, a stationary base table provided on said machine frame, a carrier longitudinally rollable on said stationary table, means for supporting the workpiece on said carrier, workpiece strain detection unit transversely movable on the carrier, said detection unit including a sensing element allowed to contact the workpiece for sensing the degree of workpiece strain, and power-driving means for permitting the detection unit to be moved, only at the time of detecting the degree of workpiece strain, from a retirement position at which said sensing element is out of contact with the workpiece to a detection position at which said sensing element contacts the workpiece.

3,949,589

REMOVABLE SUBDIE

Robert R. Johnson, Ludlow; Robert E. Jones, Clarendon, and John A. Zwald, Warren, all of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Feb. 5, 1975, Ser. No. 547,190

Int. Cl.² B21D *37/02, 37/14;* **B21J** *13/02, 13/04*

U.S. Cl. 72—413 **11 Claims**

1. A removable subdie assembly for performing a specified operation on a workpiece within a larger die apparatus adapted for performing a series of operations on said workpiece, wherein said die apparatus includes an upper ram member and a lower base member, said subdie assembly comprising:

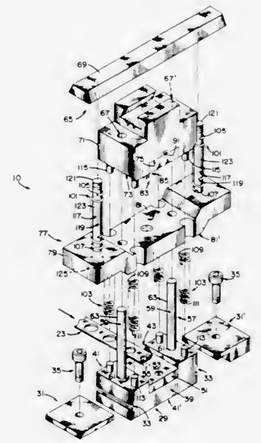
die retention means affixed to said lower base member of said die apparatus and adapted for being removed therefrom;

die means securedly positioned within said die retention means for having said workpiece positioned thereon;

guide means having a first portion affixed to said die retention means and a second portion extending therefrom;

tool retention means unattached to said upper ram member of said die apparatus and movably oriented on said extending second portion of said guide means for aligned movement toward and away from said die retention means during performance of said specified operation on said workpiece and for being engaged by said upper ram member of said die apparatus during actuation of said ram member;

workpiece engaging means movably oriented on said extending second portion of said guide means between said die retention means and said tool retention means for aligned movement toward and away from said die reten-



tion means during performance of said specified operation on said workpiece and for engaing said workpiece positioned on said die means;

tool means securedly positioned within said tool retention means and having a working portion extending therefrom for passing through said workpiece engaging means to perform said specified operation on said workpiece during movement of said tool retention means toward said die retention means;

first resilient spacing means positioned between said tool retention means and said workpiece engaging means for maintaining said tool retention means and said workpiece engaging means in spaced relationship; and

second resilient spacing means positioned between said tool retention means and said die retention means for maintaining said tool retention means and said die retention means in spaced relationship.

3,949,590

METHOD AND APPARATUS FOR MEASURING GASES IN A METAL SAMPLE

Pierre Boillot, Le Pecq, France, assignor to Institut de Recherches de la Siderurgie Francaise (IRSID), Saint Germain en Laye, France

Filed Aug. 7, 1972, Ser. No. 278,560

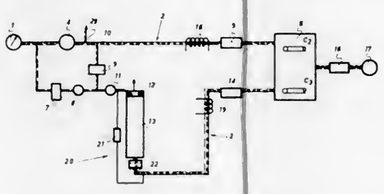
Claims priority, application France, Aug. 12, 1971, 71.29506

Int. Cl.² G01N *7/16*

U.S. Cl. 73—19 **5 Claims**

1. An apparatus for determining the quantity of a gaseous element in a metal sample, comprising: a source of carrier gas including means for controlling the rate of flow of carrier gas from the source, and means for controlling a positive pressure

on the carrier gas slightly above atmospheric pressure; a reference circuit; a detection circuit, and a third circuit; said reference circuit and said detection circuit being connected in parallel between the source of carrier gas and said third circuit; said third circuit including a suction means and a first flow control means, the reference circuit including a second flow control means and a first cell of a catharometer, the detection circuit including a first valve means, a degassing



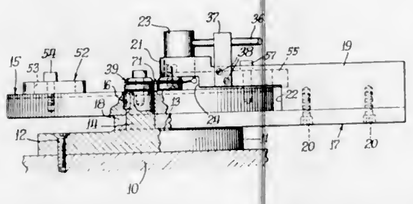
chamber, and a third flow control means and a second cell of the catharometer, the degassing chamber being provided with means for heating the sample therein and further having means for introducing and removing the sample; a complementary circuit connected to said source of carrier gas including a second valve means and means for forming a gaseous curtain for isolating the degassing chamber from the atmosphere during introduction and removal of the sample.

3,949,591

BENDER FOR DIE CUTTERS AND PERFORATORS FOR THE PRINTING INDUSTRY

Clyde G. Gregoire, Bensenville, Ill., assignor to Gregg Engineering Corporation, Lyons, Ill.

Filed Nov. 11, 1974, Ser. No. 522,892
Int. Cl.² B21D *5/04*
U.S. Cl. 72—310 **4 Claims**



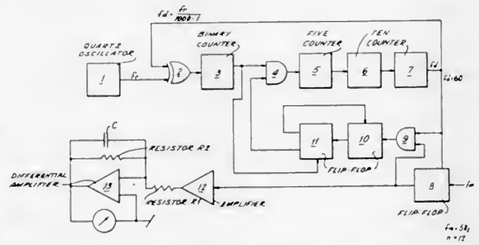
1. A bender for horizontal flanged strips of prefabricated die cutters and perforators for the printing industry comprising a generally stationary horizontal table, an arm pivotally mounted for movement in a horizontal plane relative to said table about a vertical axis, a stationary wheel mounted on said table directly on said vertical axis, means on said stationary wheel for gripping the upper and lower surfaces of a flange of the strips of die cutters and perforators, a cooperative circular bending wheel mounted on said arm, an eccentric mounted on said arm and having the bending wheel carried thereby, means rotating said eccentric to move said bending wheel toward or away from said stationary wheel, means on said bending wheel for gripping the upper and lower surfaces of a flange of the strips of die cutters and perforators opposite the flange engaged by said stationary wheel, said gripping means of the stationary wheel and the bending wheel lying in the same plane, said table including a plurality of threaded holes in the surface thereof, a flange clamping member removably mounted to said table by screw means threadedly engaging any one of the plurality of threaded holes, said clamping member having a generally longitudinally disposed slit extending inwardly from one end thereof and dividing the clamp into upper and lower portions at that end, and adjustable screw means to tighten or loosen the upper and lower portions to thereby grip or release a flange disposed in said slit.

3,949,592

APPARATUS FOR MEASURING THE RUNNING OF WATCHES

Jean Claude Berney, Chemin des Croix-Rouges 3, Lausanne, Switzerland

Filed Jan. 30, 1975, Ser. No. 545,709
Claims priority, application Switzerland, Jan. 31, 1974, 1315/74
Int. Cl.² G04D *7/12*
U.S. Cl. 73—6 **8 Claims**



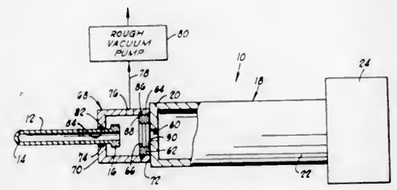
1. Apparatus for measuring the running of watches comprising oscillator means for delivering a precise frequency *fr*, divider means coupled to said oscillator for dividing *fr* by X and delivering a reference frequency *fd*, comparator means receiving a signal *fm* from the watch to be measured and to be compared with *fd*, said comparator means being connected to the output of the divider means for receiving *fd*, means operated by said comparator means and coupled to said divider means to switch the rate of division of the divider to a value X − Y when *fm* is ahead of *fd* and to X + Y when *fm* is behind *fd*, said comparator means delivering a voltage +V when *fm* is ahead of *fd* and a voltage −V when *fm* is behind *fd*, and output means coupled to said comparator means to obtain a mean value of voltage output of said comparator means which is proportional to the relative error in the watch signal compared to the reference signal *fd*.

3,949,593

DIFFUSION MONITORING APPARATUS

Donald H. Oertle, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Mar. 7, 1975, Ser. No. 556,237
Int. Cl.² G01N *7/10*
U.S. Cl. 73—19 **13 Claims**



1. In a monitoring apparatus which includes an evacuated elongated hollow probe member through which components to be monitored diffuse, an evacuated collector chamber sealingly connected to the rearward end of said probe member and an ion pump means connected to said chamber for providing an electrical current output in proportion to the rate of diffusion of said components, the improvement which comprises:

said collector chamber including a port for communicating the interior thereof with the interior of said hollow probe member;

a cylindrical connection member sealingly attached to said chamber around said port, said connection member having threads disposed around the outside peripheral surfaces thereof and within the interior surfaces thereof;

the rearward end of said probe member being of a size and including threads disposed thereon for threadedly engaging the threads within the interior of said connection member;

a housing having a forward end and a rearward end, the rearward end including a first threaded opening adapted to threadedly engage the threads disposed around the outside peripheral surfaces of said connection member and the forward end including a second opening therein through which said elongated probe member is slideably disposed, said housing further including a third opening therein for connection to vacuum pump means so that the interiors of said housing, said chamber and said probe member can be evacuated with said probe member disconnected from said connection member, said probe member then threadedly connected to said connection member from the exterior of said housing while maintaining said evacuation and said housing subsequently removed from said connection member and said probe member; and

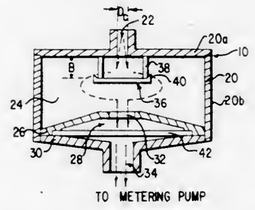
means disposed in said second opening in said housing for providing a sliding seal between said housing and the outside peripheral surfaces of said probe member.

3,949,594

TWO-STAGE DISPOSABLE PARTICLE SAMPLING HEAD

Harry N. Treaftis, and Thomas F. Tomb, both of Pittsburgh, Pa., assignors to The United States of America as represented by the Secretary of Interior, Washington, D.C.

Filed Sept. 25, 1974, Ser. No. 509,153
Int. Cl.² G01N *15/06*
U.S. Cl. 73—28 **2 Claims**



1. An integral, two stage, disposable personal dust sampling head whereof a housing contains a first stage chamber arranged contiguous to a second stage chamber, and is adapted to have an aerosol sample of dust drawn therethrough between inlet and outlet ends thereof, and wherein

said housing comprises an overall enclosure having as integral parts thereof at said inlet and outlet ends of said housing a first cover element including an aerosol inlet means and a second cover element including an aerosol outlet means, respectively,

a particle filter is operatively maintained by a filter holder element having a central opening therein, said filter holder element being affixed within said housing in peripheral contact with said second cover element to constitute said second chamber therebetween in which said particle filter is situated between said outlet means and said central opening so as to partition said second chamber,

an integrally formed, impermeable collector impaction plate is operatively maintained by suspension from said first cover element such that said filter holder element, said enclosure and said first cover element constitute said second chamber about said impaction plate spatially positioned therein between said inlet means and said central opening, and

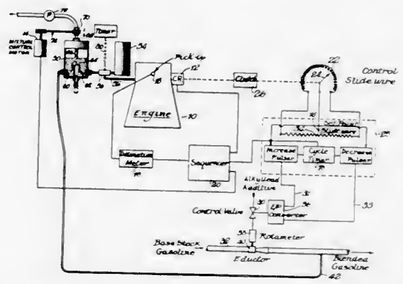
upon operation of a pumping means connected to said outlet means said aerosol sample is received in said first and second chambers where non-respirable contaminant particles suspended in said aerosol sample which have an aerodynamic equivalent diameter of greater than 10 μm in size are removed and collected by said impaction plate, and respirable contaminant particles suspended in said aerosol sample which have an aerodynamic equivalent diameter of less than 10 μm in size are removed and collected by said particle filter, respectively.

3,949,595

AUTOMATIC ANTIKNOCK ADJUSTMENT

John T. Jones, Ardsley; William C. Ludt, Yonkers, and Hudson W. Kellogg, Dobbs Ferry, all of N.Y., assignors to Ethyl Corporation, New York, N.Y.

Continuation-in-part of Ser. Nos. 299,583, Aug. 2, 1963, abandoned, and Ser. No. 205,015, June 25, 9162, Pat. No. 3,383,904. This application June 23, 1964, Ser. No. 377,192
Int. Cl.² G01L *23/00*
U.S. Cl. 73—35 **10 Claims**



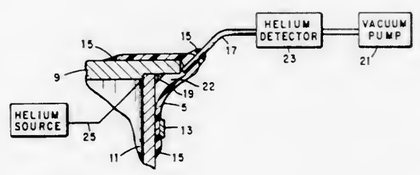
1. In an apparatus for sampling a liquid for test purposes and providing the sample at a predetermined elevation, a relatively small upright container having means for continuously supplying it with the liquid being sampled at a rate greater than required for testing, an outlet in its lower portion for connection to a testing means, and a suction tube projecting into the interior of the container from its upper portion for sucking out excess liquid and thereby defining a level for the liquid in the container.

3,949,596

LEAK TEST FIXTURE AND METHOD FOR USING SAME

Lawrence S. Hawk, Knoxville, Tenn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Dec. 11, 1974, Ser. No. 531,587
Int. Cl.² G01M *3/20*
U.S. Cl. 73—40.7 **4 Claims**



1. A method for leak testing a seam in an article, comprising the steps of:

covering said seam and the surfaces adjacent thereto with an impervious, flexible membrane readily conformable to said surfaces adjacent said seam;

sealing the outer edges of said membrane to said surfaces;

evacuating the volume between said membrane and said surfaces to collapse said membrane into a conforming contact with said surfaces and to concentrate at a small space between said surface and said membrane at said seam a pressure differential only across said seam; and

checking to detect the passage of a gas through said seam into the evacuated volume between said membrane and said seam when a leak is present in said seam.

3,949,597

GYROSCOPIC DEVICE FOR LOCATING THE GEODETIC POINT OF ROUTE

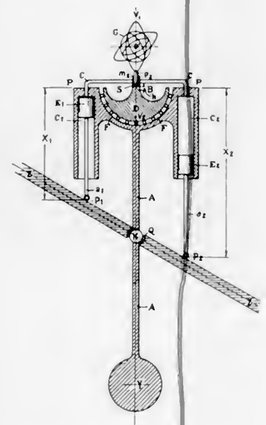
Luigi Antonio Cozzolino, Via Ciociaria 16/2, Rome, Italy

Filed Jan. 23, 1974, Ser. No. 435,996

Claims priority, application Italy, Feb. 6, 1973, 48086/73

Int. Cl.² G01C *21/00*

U.S. Cl. 73—178 R **8 Claims**



1. A navigation device for use on a moving carrier, comprising gyroscopic means maintaining its position in the celestial space; support means mounting said gyroscopic means on said carrier with three degrees of freedom of movement with respect to the latter, and having an upright axis the position of which can deviate from a vertical position as a result of movement of said carrier; and means for maintaining said upright axis in said vertical position at any location on said carrier to thereby change the position of said support means with respect to said gyroscopic means whereby the extent of such change in position of said support means indicates the change in the position of said carrier with respect to the celestial space.

3,949,598

METHOD AND MEANS FOR INDICATING A LEAKAGE THROUGH THE WALL OF A VESSEL

Gunnar Magnus Bergstrand, Stangholmsbacken 56, S-127 40 Skarholmen, Sweden

Filed Oct. 7, 1974, Ser. No. 512,890

Claims priority, application Sweden, Oct. 10, 1973, 7313782

Int. Cl.² G01M *3/04*

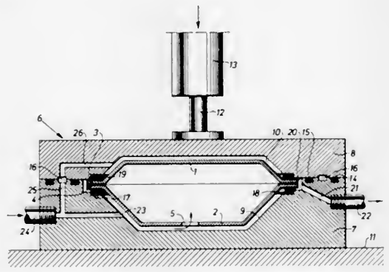
U.S. Cl. 73—49.2 **3 Claims**

1. An apparatus for indicating leakage through a seam extending around the wall of a vessel of the type having at least one opening remote from said seam, said apparatus comprising:

a receptacle formed by two rigid dismountable parts cooperating to form a recess dimensioned to receive therein, with a slight clearance only, a vessel to be tested;

two sealing rings mounted on inner portions of respective of said receptacle parts and forming means, when a vessel to be tested is positioned in said recess, for sealingly engaging against such vessel at positions closely adjacent to and on opposite sides of the seam thereof;

said two sealing rings and adjacent inner portions of respective of said receptacle parts, when said two sealing rings are sealingly engaged against a vessel to be tested, delimiting a narrow annular space around the seam of such vessel;



there being, when a vessel to be tested is positioned within said recess and engaged by said two sealing rings, separate chambers defined by inner faces of respective of said receptacle parts and opposed walls of said vessel, at least one of said chambers being in communication with the interior of said vessel through the at least one opening therein;

a first channel means extending from said narrow annular space through one of said receptacle parts for connecting said narrow annular space to a pressure measuring device; and

plural additional channel means extending from said separate chambers through both of said receptacle parts for connecting said separate chambers and the interior of said vessel to a source of pressurized fluid.

3,949,599

METHOD OF AND APPARATUS FOR QUANTITATIVE ANALYSIS

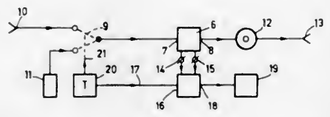
Johan Christiaan Willem Kruishoop, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 17, 1974, Ser. No. 515,701

Claims priority, application Netherlands, Oct. 27, 1973, 7314801

Int. Cl.² G01N *27/50*

U.S. Cl. 73—61.1 R **16 Claims**



11. Apparatus for continuously determining the quantity of one or more constituents of a measuring fluid comprising, a measuring cell having an exponential response characteristic and adapted to measure the quantity of the constituents present in the measuring fluid, means for alternately supplying the measuring fluid and a reference fluid containing a known amount of the constituents to be measured to the measuring cell in successive equal time periods T each of which is short relative to the period of the cell exponential response characteristic, the cell producing a sawtooth waveform measuring signal in response to the successive receipt of the measuring and reference fluids, timing means for controlling the operation of the means for alternately supplying the measuring fluid and reference fluid, and electronic processing and filtering means responsive to the sawtooth measuring signal of the measuring cell for providing an indication of the amount of said constituents in the measuring fluid in a time period shorter than the period of the cell exponential response characteristic.

3,949,600

LOAD APPLICATION MECHANISM OF ROCKWELL HARDNESS TESTER

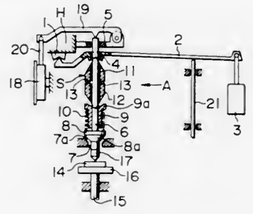
Shozo Iwasaki, Ebina, Japan, assignor to Kabushiki Kaisha Akashi Seisakusho, Japan

Filed Dec. 12, 1974, Ser. No. 531,977

Claims priority, application Japan, Dec. 20, 1973, 48-143272

Int. Cl.² G01N *3/44*

U.S. Cl. 73—83 **3 Claims**



1. In a Rockwell hardness tester: a load application lever swingably mounted, and having a guide hole, an indenter shaft having an upper portion inserted in said guide hole formed in said lever and a lower portion in a stopper hole, stopper means defining said stopper hole, said indenter shaft having an expanded portion which limits axial travel of said indenter shaft by engagement with said stopper means, a spring support cylinder circumferentially of said indenter shaft loosely fitted thereabout, an initial spare load spring resiliently supporting said spring support cylinder on said indenter shaft in the absence of an initial load and interposed between said expanded portion of said indenter shaft for engagement with said stopper hole and said spring support cylinder, a load application mechanism comprising a load transfer unit disposed between a lower edge of said guide hole and the upper end of said spring support cylinder, said load transfer unit comprising an upper transfer member and a lower transfer member cylindrically shaped disposed circumferentially relatively loosely about said indenter shaft, a knife edge at a lower end of said guide hole, a knife edge along an upper end of said upper transfer member supporting said knife edge support at the lower end of said guide hole, and a pair of balls between said upper and lower transfer members held in contact therewith, and said pair of balls being horizontally arranged in a direction perpendicular to said knife edge, therebetween.

3,949,601

OPEN-LOOP WATER-WASHABLE INSPECTION PENETRANT PROCESS

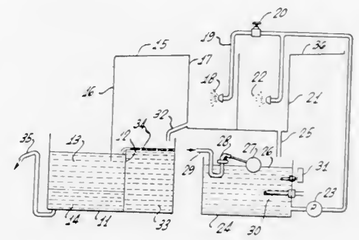
James R. Alburger, 5007 Hillard Ave., La Canada, Calif. 91011

Continuation-in-part of Ser. No. 432,752, Jan. 11, 1974. This application Oct. 8, 1974, Ser. No. 513,105

Int. Cl.² G01N *21/16*

U.S. Cl. 73—104 **3 Claims**

1. In a water-washable inspection penetrant process in which a water-removable dye liquid penetrant is applied to a test surface and excess surface penetrant is removed by washing said test surface with water, leaving entrapments of said penetrant in any crack defects which are present, the improvement which permits recovery and re-use of said penetrant and the clarification of said wash water to a low level of penetrant contamination acceptable for discharge into sewage systems, wherein said penetrant is a non-surfactant-type low-solubility water-washable composition, and wherein said penetrant is utilized in the following sequential steps: (1) apply said penetrant to test surfaces from a holding-tank reservoir containing said penetrant floating on a layer of wash water, (2) spray-



wash said test surfaces with water under controlled conditions of wash-water temperature and wash time, (3) return the mixture of wash water and partly dissolved penetrant which drains from said test surfaces to said holding-tank reservoir, allowing it to separate by flotation into layers of re-usable penetrant and clarified wash water containing a relatively low concentration of dissolved penetrant, and (4) discharge said used wash water from said holding-tank reservoir while retaining said penetrant for re-use, said penetrant being soluble in water to a concentration within the range of from about 0.001% to about 3%.

3,949,602

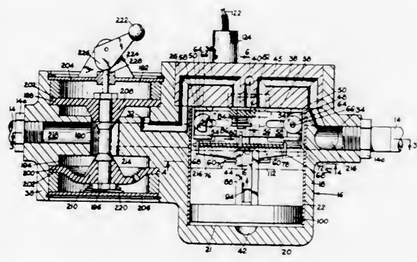
FUEL USE RATE METER FOR ENGINES

Curtis L. Erwin, Jr., 5805 SE. Gladstone, Portland, Oreg. 97206

Division of Ser. No. 214,913, Jan. 3, 1972, Pat. No. 3,805,602. This application Mar. 29, 1974, Ser. No. 456,264

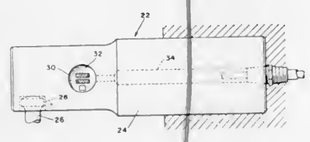
Int. Cl.² G01M *15/00*

U.S. Cl. 73—114 **29 Claims**



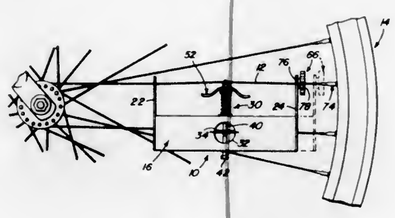
11. A fluid fuel system arranged for use with an engine having fuel feed means, a positive seal, positive displacement fluid flow meter operated by the engine fuel feed means, indicating means driven by said meter comprising a direct reading of the rate of fuel being consumed by the engine, and temperature control means arranged for use with the fuel system to control the temperature of fuel therein.

3,949,603
STRAIN GAGE TRANSDUCER
Eric Laimins, Belmont, Mass., assignor to Hottinger Baldwin Measurements, Natick, Mass.
Filed July 1, 1974, Ser. No. 484,702
Int. Cl.² G01L 1/22
U.S. Cl. 73—141 A 14 Claims



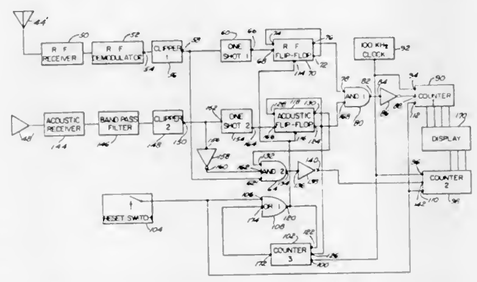
1. A strain gage force measuring transducer comprising a beam-like structure having a shear strain surface, means for supporting said structure and for applying a force to be measured thereto at any one of various load points randomly located longitudinally thereof; variable resistance strain gage means affixed to said surface for measuring changes in actual shear strain experienced thereby, said strain gage means being located and oriented on said surface to have the electrical resistance thereof changed by changes in apparent shear strain and by changes in bending strain, with the net resistance changes of said gage means being substantially responsive in substantially directly proportion to changes in actual shear strain; and an electrical circuit coupled to said gage means and being responsive to said net resistance changes to indicate substantially the value of said force to be measured when said force is applied at any one of said various load points.

3,949,604
BICYCLE SPOKE TENSION GAUGE AND ADJUSTER
Columbus B. Key, Jr., 212 Orange St., SE., Apt. 2, Washington, D.C. 20032, and Vincent M. Spaulding, 2914 W St., SE., Washington, D.C. 20020
Filed Feb. 18, 1975, Ser. No. 550,586
Int. Cl.² G01L 5/06
U.S. Cl. 73—144 9 Claims



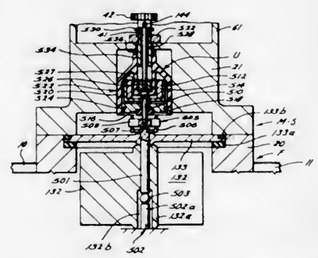
5. A bicycle spoke tension gauge, comprising, in combination:
a frame having a pair of spaced ends;
arms extending co-directionally from the ends of the frame and terminating in hooks engageable with a spoke whose tension is to be gauged; and
indicator means interposed between the arms for providing an indication of the tension on the spoke being gauged, and a wrench is mounted on one of the arms adjacent the hook thereof for tightening and loosening tension on a spoke being gauged.

3,949,605
ACOUSTIC CURRENT/FLOW MEASURING SYSTEM
Lewis A. Stallworth, East Lyme, and Robert R. Hartley, Niantic, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed July 2, 1974, Ser. No. 485,195
Int. Cl.² G01F 1/66
U.S. Cl. 73—194 A 6 Claims



1. A flowmeter for measuring the flow of a fluid comprising:
a least three identical transmitting and receiving modules for transmitting and receiving simultaneously generated acoustic and electrical signals from and by any of the modules thereof, each of said modules being located at a separate point in the fluid, the three points thus selected forming a generally right angled triangle in a horizontal plane with the right angle formed at one of said selected points, and means for using said simultaneously generated electrical and acoustic signals to determine time durations for the acoustic signals to travel back and forth from the selected point having the right angle formed thereon to the remaining two said selected points to compute the flow of the fluid by using said simultaneously generated electrical signals to initiate the measurement of said time durations upon arrival thereof at one of said remaining two selected points and to stop the measurement of said time durations upon arrival of said acoustic signals at said point of said remaining two selected points.

3,949,606
FLUID METER AND ADAPTER UNITS THEREFOR
Joe H. Blancett, 4729 Jacksboro Highway, Wichita Falls, Tex. 76302
Continuation-in-part of Ser. No. 396,002, Sept. 10, 1973, abandoned, which is a continuation of Ser. No. 154,341, June 18, 1971, abandoned. This application Sept. 13, 1974, Ser. No. 505,839
Int. Cl.² G01F 1/115, 3/12
U.S. Cl. 73—229 8 Claims

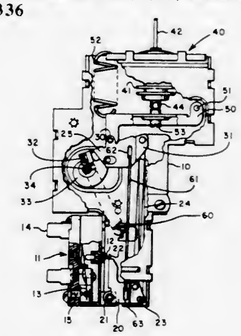


1. A fluid meter for measuring the amount of fluid flowing through a conduit, comprising:

fluid chamber means for receiving incoming fluid from the conduit, said fluid chamber means having an outlet for outgoing fluid, said fluid chamber means being formed between a lower body member and an upper body member, said upper body member having a counterbore formed therein adjacent said fluid chamber means;
rotatable means rotating about an axis transverse to flow of fluid in said fluid chamber means for sensing the flow of the fluid;
drive means responsive to said rotatable means, said drive means having a single driving gear mounted therewith;
magnetic means responsive to said rotatable means for propelling said drive means, said magnetic means comprising:
a driving magnet moving in response to rotation of said rotatable means;
a driven magnet moving in response to said driving magnet;
a fluid-tight capsule for enclosing said driven magnet and said driving magnet, said capsule comprising:
an enclosure member having an upwardly opening cup formed in an upper portion thereof for receiving said driven magnet therein;
a sleeve member formed at a lower portion of said enclosure member and defining, in conjunction with said cup, a chamber for said driving magnet;
said cup further being of a magnetically permeable material and serving as a guide for said driving magnet during movement thereof;
a closure plate mounted at a lower end of said sleeve member for closing said chamber for said driving magnet;
means for forming a seal between said closure plate and said sleeve member;
a mounting sleeve extending upwardly for mounting said capsule in said counterbore in said upper body member;
means for sealing between said mounting sleeve and said upper body member; and
means for engaging said mounting sleeve for mounting said capsule in said counterbore in said upper body member; and
register means responsive to said drive means for indicating the amount of flow of the fluid, said register means having a single external gear engaging said single driving gear of said drive means, wherein the complexity and size of the fluid meter is reduced.

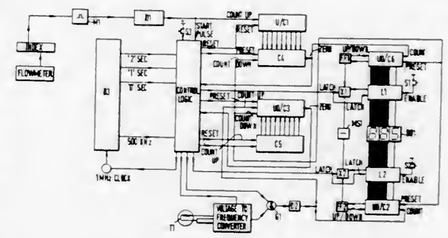
7. An adapter unit for replacing mechanical gears in a fluid meter counterbore which interconnect a flow sensor and a flow indicating register, comprising:
a driving magnet moving in response to rotation of the flow sensor in the fluid meter;
a driven magnet moving in response to said driving magnet and driving the flow indicating register;
a capsule for enclosing said driving magnet and said driven magnet said capsule comprising:
an enclosure member having an upwardly opening cup formed in an upper portion thereof for receiving said driven magnet therein;
a sleeve member formed at a lower portion of said enclosure member and defining, in conjunction with said cup, a chamber for said driving magnet;
said cup further being of a magnetically permeable material and serving as a guide for said driving magnet during movement thereof;
a closure plate mounted at a lower end of said sleeve member for closing said chamber for said driving magnet;
means for forming a seal between said closure plate and said sleeve member;
a mounting sleeve extending upwardly for mounting said capsule in said counterbore in said upper body member;
means for sealing between said mounting sleeve and said upper body member; and
means for engaging said mounting sleeve for mounting said capsule in the fluid meter counterbore.

3,949,607
ENTHALPY CONTROL APPARATUS FOR AIR CONDITIONING
Keith M. Nodolf, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 3, 1974, Ser. No. 511,870
Int. Cl.² G01W 1/06, 1/17; G05D 27/02
U.S. Cl. 73—336 5 Claims



1. An improvement in control apparatus having humidity responsive means responsive to the humidity of air for controlling an output means and temperature responsive means responsive to the temperature of air connected to override the humidity responsive means to change the output means to provide an output indicative of a thermodynamic property of the air, the improvement comprising
means connected to said humidity responsive means for rendering said humidity responsive means inoperative at high humidity levels so that at high humidity levels said output means provides an output indicative of only temperature.

3,949,608
ELECTRONIC DEVICE FOR DETERMINING THE AVERAGE TEMPERATURE OF A FLOW OF GAS
Antony F. Abbey, Narborough, and James Hatfield, Coalville, both of England, assignors to British Gas Corporation, London, England
Filed Aug. 5, 1975, Ser. No. 602,086
Claims priority, application United Kingdom, Aug. 14, 1974, 35785/74
Int. Cl.² G01K 3/02, 7/24
U.S. Cl. 73—344 6 Claims



1. A device for use with a gas flowmeter for automatically averaging the temperature of the gas flow with respect to its volume, the device comprising a temperature sensing device for sensing the temperature of the gas flow through the flowmeter, means responsive to the output of the temperature sensing device for deriving an output signal representing the temperature recorded by the device at any instant, first summing means having an input which, in use, is coupled to the flowmeter such that successive flow signals from the flowmeter each representing the flow of a predetermined volume of

gas are totalled in the first summing means, second summing means, means for entering the derived output signal from the temperature sensing device into the second summing means whenever a flow signal is entered into the first summing means such that the second summing means totals successive temperature signals, means for automatically dividing the total stored in the second summing means by the total stored in the first summing means whenever the totals are updated, the output from the dividing means thereby representing the average temperature of the total volume of gas which has flowed, and means responsive to the average temperature signal for indicating the average temperature.

3,949,609

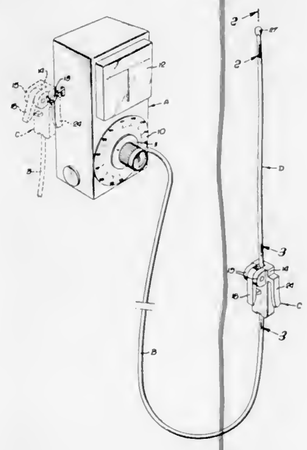
RESISTANCE THERMOMETER AND DISPOSABLE PROBE

Julius G. Hammerslag, 1626 Galaxy Drive, Newport Beach, Calif. 92660

Continuation of Ser. No. 222,264, Jan. 31, 1972, abandoned. This application Apr. 28, 1975, Ser. No. 572,117

Int. Cl.² G01K 7/24

U.S. Cl. 73—362 AR **10 Claims**



1. An electrical thermometer comprising: a conductor probe having a thermister, a null meter, a resistance bridge circuit connecting said thermistor to said meter, a dial, and a variable potentiometer in said bridge circuit operable by said dial to null the meter, connector means releasably connecting said probe in said bridge circuit, said probe having leads connected with said thermistor and encased in an insulating sheath, and said connector means having contact means for piercing said sheath, said contact means being connected to said bridge circuit.

2. A thermally responsive probe for electrical thermometers, comprising: an insulating sheath having a pair of conductor wires, said wires having adjacent ends extending from said sheath, a thermistor chip between said wire ends, and pressure applying means maintaining said wire ends in conductive contact with said chip by pressure only.

3,949,610

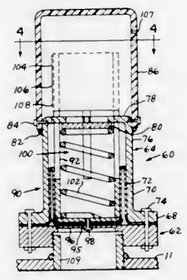
PRESSURE INDICATOR FOR RAILWAY CARS

Ervin I. Pietsch, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Division of Ser. No. 388,295, Aug. 14, 1973. This application Aug. 26, 1974, Ser. No. 500,791

Int. Cl.² G01L 7/08

U.S. Cl. 73—406 **4 Claims**



1. A pressure indicator for a railway car comprising: a fixed assembly having an opening therein in communication with a portion of a railway car adapted to be pressurized;

said fixed assembly comprising a fixed cylinder having a plurality of inwardly extending ribs holding a disk in place, which disk cooperates with a movable assembly to hold within said fixed cylinder and within a portion of said movable assembly a resilient means;

a movable assembly comprising a movable cylinder mounted within said fixed assembly and externally of said resilient means, having a plurality of circumferentially spaced slots aligned with said ribs, said movable assembly comprising a viewable portion viewable from the side of the car;

a flexible diaphragm held in place by said fixed assembly and engaging said movable assembly and adapted to move in response to pressure changes in said railway car whereby an increase in pressure will move said movable assembly against the bias of said resilient means relative to said fixed assembly and indicate pressure change in said car.

3,949,611

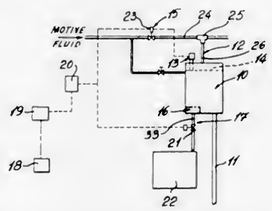
SAMPLE COLLECTING SYSTEM

Donald M. Watt, 420 Bourke St., Apt. 1E, Dorval, Quebec, Canada

Filed Jan. 20, 1975, Ser. No. 542,273

Int. Cl.² G01N 1/14

U.S. Cl. 73—421 B **8 Claims**



1. A sample collecting system comprising a main sealed enclosure having a bottom wall, a conduit opening into said bottom wall for inflow and outflow of said liquid to be sampled, sensing means for detecting a predetermined level of said liquid to be sampled in said main enclosure, said sensing means being connected to control means to shut-off said liquid flow means to cause a first volume of said liquid to be sampled to flow out of said main enclosure, a sample collecting container in said main enclosure for receiving and containing a predetermined volume of said liquid to be sampled, said sample collecting container including a sidewall defining a containing area for said second volume and extending from said bottom wall, said collecting container having an open upper end positioned below said predetermined level, whereby said containing area is filled with said liquid within said main enclosure, and gravity means to remove said second volume of liquid to be sampled from said collecting container for analysis prior to introduction of further liquid into said main enclosure.

3,949,612

LIQUID SAMPLING

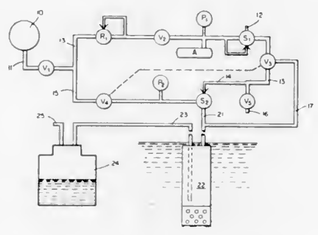
Richard R. Thompson, and Malcolm F. Irwin, both of West Chester, Pa., assignors to Pro-Tech Inc., Malvern, Pa.

Continuation of Ser. No. 412,278, Nov. 2, 1973, Pat. No. 3,862,575. This application Jan. 27, 1975, Ser. No. 544,417

The portion of the term of this patent subsequent to Jan. 28, 1992, has been disclaimed.

Int. Cl.² G01N 1/14

U.S. Cl. 73—421 B **6 Claims**



1. Liquid-sampling procedure operable from a source of propellant fluid under high pressure to collect samples of liquid from a body thereof, wherein such fluid is utilized as both a sample propellant and as a timing medium for controlling the interval of time between successive samples, and convertible between low-pressure and high-pressure propulsion of samples, comprising establishing a low-pressure path and a high-pressure path from the source of pressurized fluid, accumulating fluid temporarily in the first path for timing intervals between successive samplings, and releasing the accumulated fluid during each sampling at the end of each such interval; releasing the accumulated fluid to propel samples from the body of liquid therewith during low-pressure operation, alternatively releasing fluid directly from the propellant source to propel samples from the body of liquid therewith during high-pressure operation, and exhausting the accumulated fluid at low pressure to the atmosphere during high-pressure propulsion of samples.

3,949,613

LIQUID SAMPLING

Malcolm F. Irwin, West Chester, Pa., assignor to Pro-Tech Inc., Malvern, Pa.

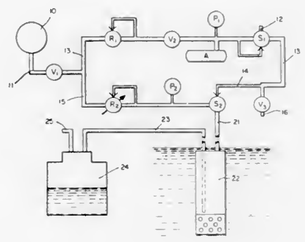
Division of Ser. No. 412,275, Nov. 2, 1973, Pat. No. 3,869,921. This application Feb. 3, 1975, Ser. No. 546,346

The portion of the term of this patent subsequent to Mar. 11, 1992, has been disclaimed.

Int. Cl.² G01N 1/14

U.S. Cl. 73—421 B **5 Claims**

1. In liquid sampling procedure operable from a source of propellant fluid under high pressure to collect samples of liquid from a body thereof, wherein such fluid is utilized as both a sample propellant and as a timing medium for controlling the interval of time between successive samples and the duration of time for collecting each sample, the improvement comprising establishing a low-pressure timing path from the fluid source to the atmosphere and establishing a high-pressure propulsion path from the fluid source to the body of liquid and on to a sample collection location, normally closing off the propulsion path to the body of liquid from the pressurized fluid source and opening such propulsion path intermittently at timed intervals to admit such fluid under relatively high pressure to propel a sample therefrom.



3,949,614

AUTOMATIC VOLUMETRIC DEVICE FOR TAKING SAMPLES OF FLUID MATERIAL

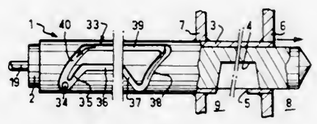
Jean Abonnenc, 42, rue Laugier, 75017 Paris, France

Filed Nov. 21, 1974, Ser. No. 526,049

Claims priority, application France, Nov. 29, 1973, 73.42631; May 16, 1974, 74.17116; Oct 17, 1974, 74.34956

Int. Cl.² G01N 1/20

U.S. Cl. 73—422 TC **8 Claims**

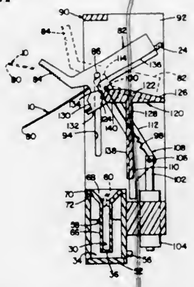


1. Automatic volumetric apparatus for taking representative samples of granular material comprising a horizontal cyclindrical probe having a recess of trapezoidal section which has an open lateral face forming the larger base of the trapezoid to permit the taking of a sample of pre-determined volume of material, a fixed obturator sleeve slidably and rotatably receiving said probe, said sleeve having an opening facing downwards of a size greater than the recess in the probe and constituting a discharge outlet for the sample of material, sealing means including rectangular seal elements at the edges of said sleeve bounding said opening and in contact with said probe at the outer surface thereof, drive means for axially displacing the probe, and guide means for guiding the movement of the probe under the action of the drive means to cause the probe to move between a retracted position in which the recess in the probe is in a discharge zone and an extended position in which the probe is in a sampling zone, said recess in the probe being in registry with the opening the sleeve only at the time of discharge, and means associated with said probe at the front of said recess for preventing breakage of particles between said probe and said obturator sleeve as the probe moves to said retracted position and transport of broken particles to said discharge outlet.

3,949,615
ANALYSIS APPARATUS

Bernard Stein, Andover, and Gustav H. Dreier, Acton, both of Mass., assignors to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed May 13, 1974, Ser. No. 469,080
Int. Cl.² G01N *1/14*
U.S. Cl. 73—423 A **24 Claims**

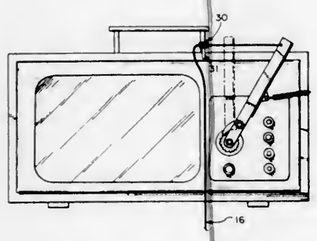


1. In an analysis system of the type that has an elongated sample passage open at one end to define a sample entrance and a sensor communicating with said sample passage for sensing a constituent of a sample in said sample passage, cleaning apparatus comprising a reservoir for cleaning liquid, a flush chamber having an open upper end and a restricted opening in communication with said reservoir for replenishing cleaning liquid in said flush chamber as used, support means for guiding the movement of said sample entrance between a first position with said sample entrance in said flush chamber and a second position with said sample entrance removed from said flush chamber for receiving a liquid sample, and a pump for drawing cleaning liquid from said flush chamber through said sample passage more rapidly than said flush chamber may be replenished with cleaning liquid from said reservoir by flow through said restricted opening, thereby causing, after an initial continuous flow of cleaning liquid through said sample entrance, the entrainment of air bubbles in the cleaning liquid entering said sample entrance for flow through said sample passage, said entrained air bubbles producing a scrubbing action as said cleaning liquid flows through said sample passage.

3,949,616
MECHANICAL REMOTE CONTROL DEVICE FOR OPERATING THE CHANNEL SELECTOR OF A TELEVISION RECEIVER

Manuel Cilloniz Oberti, P.O. Box 554, Lima, Peru

Filed Oct. 8, 1974, Ser. No. 513,162
Int. Cl.² F16H *38/18*
U.S. Cl. 74—10 A **20 Claims**

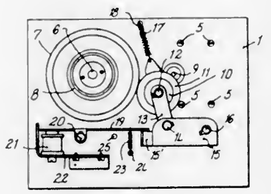


1. A mechanical remote control device for rotating the control shaft of the channel selector of a television receiver, said device comprising:
- a ratchet gear adapted to be fixedly attached to said channel selector for rotating said control shaft thereof, said ratchet gear having a rotational axis colinear with the axis of said control shaft;
- a second class lever having a fulcrum adjacent a first end thereof and spaced from a second end thereof, said lever being freely rotatably mounted about said ratchet gear with said fulcrum coaxial with said rotational axis of said ratchet gear;
- power applying means comprising a cord attached to said lever at a position adjacent said second end thereof for rotating said lever about said fulcrum;
- motive means comprising a pawl freely mounted on said lever at a position thereof between said fulcrum and said second end and having a hook end engageable with said ratchet gear for transmitting rotary movement of said lever into rotary movement of said ratchet gear, and to thereby rotate said control shaft; and
- the length of said lever from the attachment of said cord to said fulcrum forming a power lever, and the length of said lever from the attachment of said pawl to said fulcrum forming a resistance lever, the length of said power lever being at least twice the length of said resistance lever.

3,949,617
ELECTROMECHANICAL SPEED VARIATOR

Carlo Baldoni, Via Musone, 76, Loreto (Ancona), Italy

Filed Mar. 20, 1974, Ser. No. 453,162
Claims priority, application Italy, Mar. 21, 1973, 21905/73
Int. Cl.² F16H *13/02, 13/00, 13/12*
U.S. Cl. 74—206 **7 Claims**

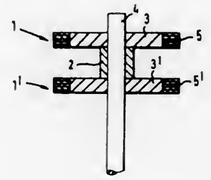


1. Apparatus for varying the speed of a drive wheel comprising:
- first electric drive motor means having a first drive shaft connected to said drive wheel for rotating said drive wheel at a first speed,
- second electric drive motor means having a second drive shaft for rotating said drive wheel at a second speed,
- a friction wheel,
- movable support means connected to support said friction wheel,
- means for moving said movable support means to a first inoperative position and a second operative position,
- said friction wheel removed from contacting said drive wheel in said first inoperative position, thereby allowing said first electric drive motor means to rotate said drive shaft at said first speed,
- said friction wheel contacting said drive wheel and said second drive shaft in said second operative position thereby rotating said drive wheel at said second speed, and electric circuit means for deactuating said first electric drive motor means substantially simultaneously with the actuation of said second electric drive motor means.

3,949,618
FRICTION DISC FOR DRIVING TWIST TUBES ROTATING AT HIGH REVOLUTION SPEEDS

Josef Raschle, Buetschwil, Switzerland, assignor to Heberlein & Co., Wattwil, Switzerland

Filed Mar. 19, 1975, Ser. No. 559,772
Claims priority, application Switzerland, Apr. 1, 1974, 4484/74
Int. Cl.² F16H *55/34*; B21B *27/00*
U.S. Cl. 74—215 **4 Claims**

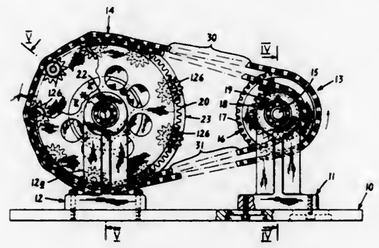


1. A friction disc for driving twist tubes rotating at high revolution speeds for use in a false-twist device for texturing synthetic filaments, comprising a non-resilient support flange presenting a circular cylindrical circumferential surface and consisting of a metal alloy having a specific electrical resistance of between 1 and 2 Ω/mm²/m inclusive so as to reduce eddy current losses when utilized in a magnetic field, a modulus of elasticity of at least 6500 kg/mm² and an ultimate tensile strength of at least 25 kg/mm², and a friction ring of resilient synthetic material presenting an internal circular cylindrical surface and an external circular cylindrical surface for frictionally driving a twist tube, said internal circular cylindrical surface being rigidly fixed to said circumferential surface of said support flange.

3,949,619
RESIDUAL GEARING TRANSMISSION INCLUDING SATELLITE CARRIER PROVIDED WITH INVERTED CONTINUOUS CHAIN LOOP

Guenther L. Kuehl, Peekskill, N.Y., assignor to Resid-Trans., Inc., Buchanan, N.Y.

Filed Oct. 7, 1974, Ser. No. 512,536
Int. Cl.² F16H *7/00, 3/74*
U.S. Cl. 74—225 **7 Claims**

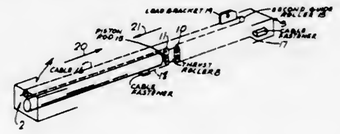


1. Residual gearing transmission comprising
1. a rotary planetary satellite carrier rotatably carrying an annular array of a plurality of angularly spaced satellite gear units for driven rotation about the axes of the latter independently of rotation of said carrier;
2. an output gear rotatably mounted coaxially with respect to said carrier and rotatable independently of the latter;
3. a continuous inverted drive chain loop having an outer run lapped over the outer sides of said satellite gear units and radially inward between an adjacent pair of the latter, and an inner run extending to connection to said outer run between said pair of satellite gear units with said inner run lapped about said output gear for rotary drive of the latter;
4. first input drive means drivably connected to said plurality of satellite gear units simultaneously to rotate the latter; and
5. second input drive means to rotate said planetary satellite carrier.

3,949,620
CABLE CYLINDER DEVICE

Paul Zehnder, Birmenstorf, Switzerland, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Oct. 4, 1974, Ser. No. 512,029
Int. Cl.² F16H *7/04*
U.S. Cl. 74—225 **8 Claims**



1. A cable cylinder device, comprising
- a substantially elongated housing having opposite end walls at the opposite ends of its length and a plurality of elongated side walls extending along its length between the end walls;
- a thrust roller in the housing and having a support plate and first roller means rotatably mounted on the plate and second roller means rotatably mounted on the plate in spaced relation with the first roller means;
- first guide roller means in the housing rotatably affixed to one of the end walls;
- second guide roller means in the housing rotatably affixed to the other of the end walls;
- a cylinder in the housing affixed to one end wall of the housing and extending in the direction of length of the housing;
- a piston rod coaxially movably mounted in the cylinder and affixed at one end to the support plate of the thrust roller;
- cable means in the housing affixed at one end to an end wall, passing over the first roller means of the thrust roller, the first guide roller means, the second guide roller means, the second roller means of the thrust roller and affixed at the other end to a side wall; and
- load bracket means affixed to the cable means in the area thereof between the first and second guide roller means whereby when the piston rod moves out of the cylinder in a predetermined direction the thrust roller moves with it and the load bracket moves with the cable means in the opposite direction and when the piston rod moves into the cylinder in the opposite direction the thrust roller moves with it and the load bracket moves with the cable means in the predetermined direction.

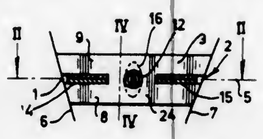
3,949,621
ENDLESS BELT WITH TRAPEZOIDAL SECTION CONSTITUTED BY SUPPORTING MEMBERS

Bernard Joseph Beusink, deceased, late of Veldhoven-Oerle, Netherlands (by Johanna Margaretha Maria Beusink, heiress); Marinus Hubertus Cuypers, and Alexandre Horowitz, both of Eindhoven, Netherlands, assignors to Varitrac AG, Zug, Switzerland

Filed Sept. 3, 1974, Ser. No. 502,495
Int. Cl.² F16G *1/00, 5/00*
U.S. Cl. 74—231 M **20 Claims**

1. An endless driving belt with a trapezoidal cross section which is shaped by a series of metal plates in close contact with one another transversely mounted on a metallic pull band

as an uninterrupted row over the entire length thereof, each of said transverse members having a cross section which tapers inwards from the endless metallic band, said metal plates being provided in an uninterrupted row along the whole length of said pull band, the total thickness of all of said transverse



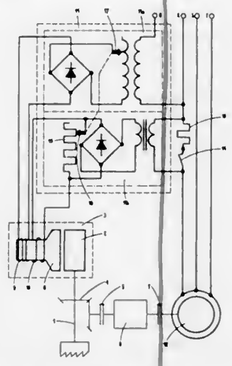
metal plates as measured in the plane of the said pull band exceeding the length of said pull band in its original unstressed condition to such an extent as to obtain an intensity of tensile stress in said endless band wherein, in any operative position thereof, said transverse plates are pressed against each other.

3,949,622

SYSTEM FOR ELIMINATION OF CONSEQUENCES OF ANGULAR CLEARANCES IN DRIVING GEARS, ESPECIALLY FOR MACHINE TOOL DRIVING GEARS

Boleslaw Czabański, Jarocin, Poland, assignor to Jarocinska Fabryka Obrabiarek Przedsiebiorstwo Panstwowe, Jarocin, Poland

Filed July 26, 1974, Ser. No. 492,973
Claims priority, application Poland July 27, 1973, 164343
Int. Cl.² F16H *55/18, 57/10*
U.S. Cl. 74—409 **4 Claims**



1. A system for elimination of the consequences of angular clearances in driving gears having a kinematic chain member adapted for being braked, said system comprising an electromagnetic brake for said driving gears, said brake being an inductively operated dynamic brake, said brake including exciter means coupled to the power means and including windings supplied by the power means and automatically controlling the excitation of said brake according to conditions of work of the driving gears.

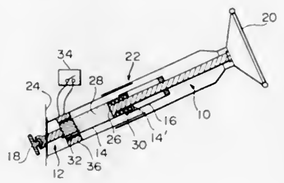
3,949,623

STEERING COLUMN ASSEMBLY

Yasuhiko Fujiwara, and Kenzo Hirashima, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Feb. 19, 1974, Ser. No. 443,201
Claims priority, application Japan, Feb. 22, 1973, 48-21637
Int. Cl.² G01P *15/04*
U.S. Cl. 74—492 **8 Claims**

1. A steering column assembly, in a motor vehicle having a collision sensor which provides a collision signal in the event of a collision of the vehicle, comprising: a steering rod having a lower part and an upper part, the upper part having attached thereto a steering wheel; means mounting said upper part for free axial movement relative to said lower part from a normal operative position to a retracted safe position; means normally stopping said upper part in the axial movement relative to said lower part in said normal operative position and operatively responsive to the collision signal for driving said upper part toward said retracted safe position; said stopping and driving means comprising a piston secured coaxially to said upper part, said lower part having a cylinder bore formed therein within which said piston is slidable; a compression spring



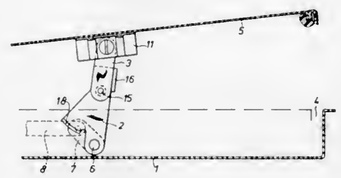
yieldably biasing said upper part toward said retracted safe position; a gas chamber defined by said piston in the cylinder bore, said gas chamber being filled with a pressurized gas to bias said piston against said compression spring to hold said upper part in said normal operative position; and a valve means responsive to the collision signal for releasing the pressurized gas from said gas chamber to permit movement of said upper part to said retracted safe position under the influence of said compression spring.

3,949,624

LIFTING LINKAGE FOR ROOF VENT PANELS OF AUTOMOBILES

Horst Bienert, Gauting, Germany, assignor to Webasto-Werk W. Baier KG, Stockdorf, Munich, Germany

Filed Aug. 6, 1974, Ser. No. 495,244
Claims priority, application Germany, Aug. 16, 1973, 2341203
Int. Cl.² G05G *1/04*
U.S. Cl. 74—520 **19 Claims**



1. A linkage for lifting and lowering a vent panel in relation to an opening in the roof structure of an automobile, in which a downwardly recessed roof frame with a vertical frame wall portion surrounds at least a major portion of the roof opening, the linkage comprising in combination:

an upper knee lever pivotably attached at one end to the vent panel;

a lower knee lever pivotably attached at one end to the roof frame;

a knee joint between the two knee levers so as to define a knee linkage connection between their attachment points and the intermediate knee joint; and

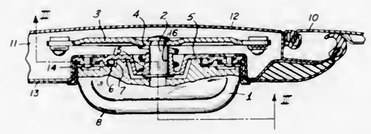
an actuating member operatively connected to the lower knee lever so as to move the linkage between a stretched position in which the vent panel is fully open, and a collapsed position in which the vent panel is closed against the roof opening.

3,949,625

ACTUATING MECHANISM FOR OPENABLE AUTOMOBILE ROOF PANEL

Horst Bienert, Gauting, Germany, assignor to Webasto-Werk W. Baier KG, Stockdorf, Munich, Germany

Filed July 16, 1974, Ser. No. 488,965
Claims priority, application Germany, July 18, 1973, 2336519
Int. Cl. G05g *1/10*
U.S. Cl. 74—543 **8 Claims**



1. In a mechanism for manually actuating an openable roof panel of an automobile roof structure, such as, for example, an upwardly pivotable roof vent panel which is pivotable between a closed position and an open position, by such linkage means as a centrally located rotatable double-arm lever, or the like, with transversely reciprocatable actuating rods attached thereto, for example, the novel combination comprising:

a retaining flange fixedly attached to the stationary roof portion;

a shaft extending through a bearing bore in the retaining flange, the shaft carrying on one end thereof said lever;

a twist handle attached to the other end of the shaft, so as to form a rotatable assembly with said lever;

means for biasing the shaft in the axial direction so that the twist handle normally abuts against the retaining flange; and

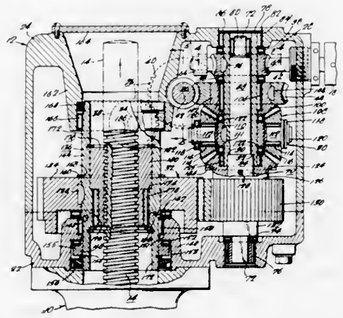
means defined by the twist handle and the retaining flange for angularly locking the twist handle against the retaining flange in their abutted position and for allowing rotation of the rotatable assembly, when the twist handle is moved axially against said biasing means, away from the retaining flange.

3,949,626

DIFFERENTIAL GEAR SYSTEM AND ACTUATOR ASSEMBLY

Bernard E. Berlinger, Jr., Meadowbrook, and Harry Sulzer, Warminster, both of Pa., assignors to Quaker City Gear Works, Inc., Huntingdon Valley, Pa.

Filed July 24, 1974, Ser. No. 491,616
Int. Cl.² F16H *1/18, 37/06, 57/02*
U.S. Cl. 74—626 **22 Claims**



1. A differential gear system for transmitting power from either of two alternate power sources to an output system, said differential gear system comprising an input gear means rotatable about a sleeve member, spider gear means fixed to said sleeve member and being in engagement with said input gear means, and output gear means rotatable about said sleeve member and being in engagement with said spider gear means, said input gear means being operative to drive said output gear means through said spider gear means while said sleeve member is stationary, said sleeve member being operative to drive said output gear means through said spider gear means while said input gear means is stationary.

5. An actuator assembly adapted to be selectively driven from alternative power sources, said assembly comprising first input gear means and second input gear means, each of said input gear means being adapted to be driven by a separate power source, output gear means adapted to transmit power to an associated apparatus, and differential gear means interposed between said input gear means and said output gear means, said differential gear means including differential input gear means rotatable about a sleeve member, spider gear means fixed to said sleeve member, and differential output gear means rotatable about said sleeve member, said first input gear means being in driving relationship with said differential input gear means for driving said spider gear means and said second input gear means being in driving relationship with said sleeve member for driving said spider gear means.

21. An actuator assembly including an output drive means for controlling an associated device, said output drive means being rotatably mounted in a boss, said boss being formed with a radial lip and said output drive means being fixed to said boss by a retaining ring, bearing means mounted about said output drive means intermediate said radial lip and said retaining ring whereby thrust in said output drive means is taken up by said boss or said retaining ring.

22. An actuator assembly adapted to be selectively driven from alternative power sources, said assembly comprising first and second input gear means, each of said input gear means being adapted to be driven by a separate power source, output gear means adapted to transmit power to an associated apparatus, and differential gear means for transmitting power from either of said input gear means to said output gear means, said differential gear means including differential input gear means rotatable about a sleeve member and differential output gear means rotatable about said sleeve member and being in driving relationship with said output gear means, said differential gear means further including spider gear means in meshing relationship with said differential input and output gear means and being carried on a spider member keyed to said sleeve member, said first input gear means being in driving relationship with said differential input gear means and said second input gear means being in driving relationship with said sleeve member, rotation of said first input gear means driving said differential input gear means and said spider gear means while said second input gear means holds said sleeve member and said spider member against rotation whereby said spider gear means drives said differential output gear means and said output gear means, rotation of said second input gear means driving said sleeve member and said spider member while said first input gear means holds said differential input gear means against rotation whereby said spider gear means drives said differential output gear means and said output gear means.

3,949,627

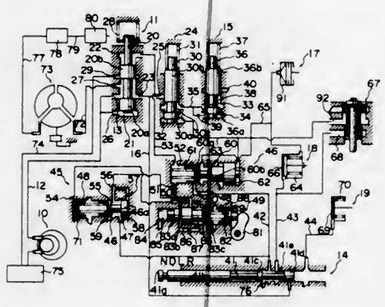
FLUID PRESSURE CONTROL SYSTEM FOR AUTOMATIC FLUID TRANSMISSIONS

Noboru Murakami, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed Apr. 25, 1974, Ser. No. 464,159
Claims priority, application Japan, Apr. 25, 1973, 48-47391; May 10, 1973, 48-52277
Int. Cl.² B60K *21/12*
U.S. Cl. 74—867 **7 Claims**

1. A fluid pressure control system for automatic fluid transmissions, comprising:

a fluid pressure source;
a fluid pressure regulating vaive for regulating the hydraulic fluid from said fluid pressure source to a particular line pressure;
a plurality of frictional engaging means actuated by said line pressure from said fluid pressure regulating valve for attaining a particular gear ratio within the gear trains of said transmission interposed between an input shaft and an output shaft;
a governor valve for generating a governor pressure which is increased or decreased in response to the rotational speed of said input shaft;

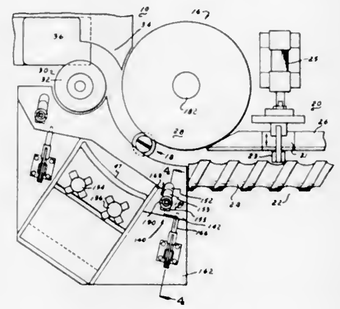


a manual shift valve operatively connected to said fluid pressure regulating valve for supplying said line pressure to said plurality of frictional engaging means;
a throttle valve fluidically connected to said manual shift valve for generating a throttle pressure responsive to an engine throttle valve;
a shift valve actuated in response to said governor pressure and said throttle pressure for automatically selectively actuating said plurality of frictional engaging means; and
a reducing valve interposed between said throttle valve and said manual shift valve for regulating said line pressure to said throttle valve to a value slightly greater than said throttle pressure and lower than said line pressure as said throttle pressure is varied by means of said throttle valve.

3,949,628
METHOD AND APPARATUS IMPROVEMENTS FOR TRIMMING PLASTIC ARTICLES
Joseph R. Reilly, Naugatuck, and Lars G. Schon, Bloomfield, both of Conn., assignors to Monsanto Company, St. Louis, Mo.
Filed May 23, 1974, Ser. No. 472,638
Int. Cl.² B23B *1/00, 5/14*
U.S. Cl. 82—48 **20 Claims**

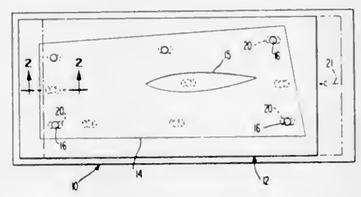
1. In apparatus for trimming moils from plastic articles as they move along a path of travel, which comprises knife means including a blade for said trimming, stationary guide means including a non-rotative anvil member and movable guide means, said stationary and moveable guide means extending along and defining a path closed on each side between them for engagement of each article to transport such articles along said path while in cutting engagement with the blade, the improvement which comprises moil discharge means downstream of the knife means for directing severed moils and untrimmed articles exiting said path toward a recovery system and means for reciprocating the knife means with respect to the guide means to move the blade into and out of operative cutting position, thereby permitting articles to be moved through the path by the stationary and movable guide means either while in or out of engagement with the blade.

18. In apparatus for trimming moils from the necks of plastic articles as they move along a path of travel which includes knife means to accomplish said trimming, stationary guide means and movable guide means extending along said path for engagement between them of the moil of each article to transport them along said path while in cutting engagement with the knife means the improvement which comprises:



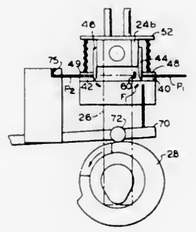
A. means for automatically moving the knife means away from said path in response to a stopped condition of the movable guide means; and
B. means for shifting the stationary guide means toward and away from said path independent of the means for automatically moving the knife means.

3,949,629
METHOD OF CUTTING AND STORING GARMENT-PATTERN SHAPED PIECES OF TEXTILE MATERIAL
Betty Johnson, 1928 Annin St., Philadelphia, Pa. 19145
Filed Jan. 24, 1975, Ser. No. 543,776
Int. Cl.² B26D *7/06*
U.S. Cl. 83—27 **3 Claims**



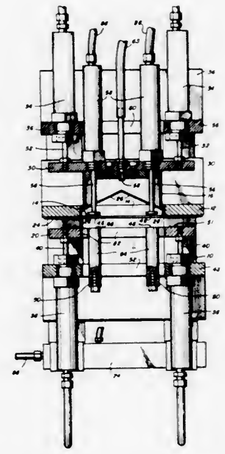
1. A method of cutting textile material into garment pattern shaped pieces using thin paper pattern pieces having a cutting line inscribed thereon which conforms to the desired pieces to be cut comprising the steps of:
a. placing at least four distinct substantially planar magnetically attractable objects on a substantially horizontal planar cutting surface;
b. placing textile material over said magnetically attractable objects;
c. positioning and placing a thin paper sheet pattern piece directly over said material above the location of said magnetically attractable objects;
d. successively placing a plurality of magnetic objects, at least one for each magnetically attractable object, on the surface of said thin paper sheet pattern piece, each step of placing one of said magnetic objects including first juxtaposing said one magnetic object axially above an associated attractable object at a distance of at least one inch from said associated magnetically attractable object, and then releasing said one magnetic object, thereby allowing said one magnetic object to re-orient itself during the gravitationally induced movement towards its associated magnetically attractable object, such that said magnetically attractable objects and said magnetic objects are attracted to each other and grip both the textile material and thin paper sheet pattern piece therebetween;
e. simultaneously gripping said textile and exerting a substantially planar divergent force on said pattern piece thereby displacing said pattern piece along said textile to a desired cutting location;
f. slightly lifting said textile material and said thin paper sheet pattern piece away from said cutting surface while moving, re-arranging, and exactly re-positioning said magnetically attractable objects to said location, said step of moving, re-arranging, and re-positioning including observing the concurrent movement of said magnetic objects along the upper surface of said thin paper sheet pattern piece while displacing said attractable objects therebelow, said moving and re-arranging bringing each of the magnetically attractable objects and the magnetic objects attracted thereto to within at least two inches but no less than one inch from the interior of said cutting line;
g. cutting said textile material and said thin paper sheet pattern piece along said cutting line to form composite pattern pieces; and
h. removing said magnetic objects and lifting said thin paper sheet pattern piece from said material, thereby producing a garment-pattern shaped piece of textile material.

3,949,630
METHOD AND APPARATUS FOR TRIMMING BATTERY GRID PLATES
Herbert C. Winkel, 6225 U.S. Highway 301, Bradenton, Fla. 33507
Filed Oct. 21, 1974, Ser. No. 516,427
Int. Cl.² B26D *7/16*
U.S. Cl. 83—39 **23 Claims**



1. A method of trimming flashing from battery grid plate castings each having a leading end and a trailing end, comprising the steps:
moving a grid plate along a path of travel and abutting the untrimmed leading end of said plate against a first stop in said path,
trimming the flashing from said leading end with a first trim blade while said end abuts said first stop,
removing said first stop from said path and conveying said plate beyond said first stop to a second stop in said path and abutting the trimmed said leading end against said second stop,
and with said leading end abutting said second stop, trimming the flashing from said trailing end with a second trim blade spaced downstream along said path from said first blade.

3,949,631
PUNCHING HOLES IN THIN SHEET MATERIAL
Rubin Goldman, Newton Highlands, and Morris Meyerkopf, West Roxbury, both of Mass., assignors to Rubin Goldman, Brockton, Mass.
Filed Oct. 3, 1974, Ser. No. 511,719
Int. Cl.² B26D *7/02, 7/06*
U.S. Cl. 83—98 **10 Claims**

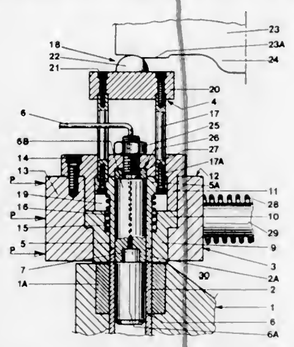


1. A device for forming an enlarged hole in sheet material comprising:
first clamping means for clamping said sheet material about a region where said hole is to be formed, said first clamping means having an opening formed therethrough at said region;
slug clamping means for clamping said sheet within said region thereof which is disposed within said opening defined by said first clamping means; and
punch means mounted for movement through said opening and about said slug clamping means for severing a slug of said sheet material from within said region of said sheet material.

3,949,632
TUBE CUT-OFF MACHINE
Hendrikus Jan Kapaan, Jutphaas, Netherlands, assignor to SKF Industrial Trading and Development Company, B.V., Jutphaas, Netherlands
Filed June 25, 1974, Ser. No. 482,909
Claims priority, application Netherlands, June 27, 1973, 7308911
Int. Cl.² B26D *3/16;* **B23D** *21/00*
U.S. Cl. 83—188 **11 Claims**

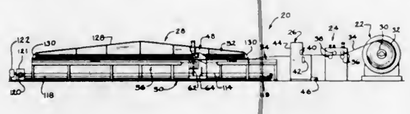
1. In an apparatus for cropping material of the type comprising a cropping member having a recess, a feeding member for feeding material to be cropped into said recess, said cropping member being slidable with respect to said feeding member for shearing said material, means in said cropping member for limiting the depth of insertion of said material therein, and a mandrel for continuously internally supporting said material; the improvement wherein said mandrel comprises a first mandrel member fixedly held in said cropping member and a second mandrel member in said feeding member, means for holding said first and second mandrel members together with proportionally decreasing force as said cropping member slides with respect to said feeding member to shear said material, and further comprising means dependent upon the relative positions of said cropping means and feeding means for

moving said limiting means into said recess for ejecting cropped material in said recess when said recess is moved out



of alignment with respect to said material held in said feeding means.

3,949,633
SLITTER LINE
Ford B. Cauffiel, 1400 Hasting St., Toledo, Ohio 43607
Filed Aug. 19, 1974, Ser. No. 498,600
Int. Cl.² B26D *5/38*
U.S. Cl. 83—210 **8 Claims**



1. A line for slitting sheets into desired sizes and shapes, said line comprising a source of sheet material, means for moving a sheet of the material along a path, means for shearing the sheet to desired lengths, and a slitter assembly for slitting the sheared sheet along a line having a component of direction transverse to the sheared ends of the sheet, said slitter assembly comprising a slitter, guide means for guiding said slitter along a path having a length at least equal to the distance between the sheared ends of the sheet, hold-down means extending along one side of said guide means for holding said sheet while it is being slit by said slitter, a supporting table located adjacent said hold-down means on the side thereof opposite said slitter, at least two gauge heads, and means for mounting said gauge heads for movement transverse to the path of said slitter.

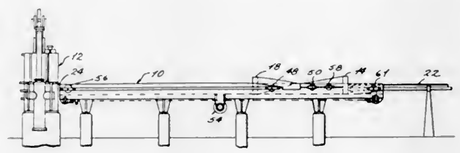
3,949,634
APPARATUS FOR CHARGING A SCRAP METAL SHEAR
Wallace M. Thompson, Cordele, Ga., assignor to Harris Press & Shear Corporation, Cordele, Ga.
Division of Ser. No. 426,186, Dec. 19, 1973, abandoned. This application Apr. 11, 1975, Ser. No. 567,075
Int. Cl.² B26D *5/20;* **B23Q** *5/22*
U.S. Cl. 83—278 **9 Claims**

1. Apparatus for substantially continuously feeding compressed blocks of scrap material into a shearing means, comprising:

a charging box having a bottom wall and two side walls defining a generally U-shaped cross section and longitudinally alignable with said shearing means in operative relation thereto, said charging box having an opening therein for inserting a block of compressed scrap into said box from a position parallel thereto and remote from said shearing means;

a first ramming means mounted within said charging box for moving said scrap forward through a portion of the distance to said shearing means;

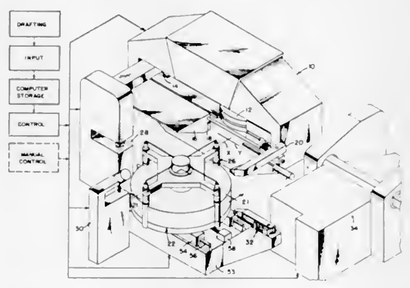
a second ramming means mounted on said charging box for (1) moving said scrap into said shearing means and (2) movement from a first position adjacent said shearing



means to a second position rearward of the forward most position of said first ramming means with the path of movement out of the path of movement of another block of scrap as it is being moved forward in said charging box by said first ramming means; and

power means for causing said movement of said first and second ramming means.

3,949,635
PUNCHING, CONTOURING, HANDLING APPARATUSES AND METHOD
Dennis Daniels, Bellevue, Wash., assignor to U.S. Amada, Ltd., City of Industry, Calif.
Continuation-in-part of Ser. No. 359,983, May 14, 1973. This application Aug. 6, 1973, Ser. No. 386,064
Int. Cl.² B26B *9/00*
U.S. Cl. 83—405 **7 Claims**



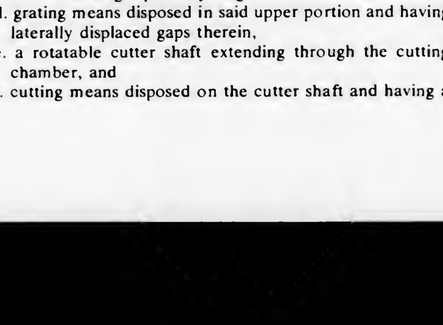
1. Apparatus for separating parts from larger worksheets in a punch press and transferring the parts to a subsequent apparatus comprising a punch press, means on the punch press for positioning a large worksheet in both the X and Y axes beneath a punching station, means for punching the part free of said worksheet, and means for transferring the cut part to said subsequent apparatus, said means for punching the part including a rotary turret, a plurality of tools on said turret positionable at said punching station, means on said turret for holding a part separate from the worksheet, and means for rotating said turret to a part discharge station while holding the part.

3,949,636
SAW GUARD
Kirby L. Ball, Thomasville; J. Clyde Darr, Lexington, and Theodore F. Harrison, Jr., Thomasville, all of N.C., assignors to Armstrong Cork Company, Lancaster, Pa.
Filed Feb. 21, 1975, Ser. No. 551,616
Int. Cl.² B27G *19/02;* **B23D** *59/00*
U.S. Cl. 83—478 **3 Claims**

1. A saw guard assembly for use in combination with a conventional rotary saw table wherein said saw guard assembly comprises:

a. a saw guard subassembly of generally box shape,
1. with an open front and a transparent top,
2. said transparent top functions as a means to permit one to view the saw when the guard is in its saw guarding position,
3. said open side is on the side of the saw guard subassembly in the direction from which material to be cut is fed, said open side functions as the open side through which the saw passes when the saw guard subassembly is moved to its saw non-guarding position,

b. a slide means being connected to said guard subassembly, said slide means permits the guard subassembly to move between its guarding and non-guarding positions rapidly, wherein said slide means comprises:



1. a lower slide member fixedly positioned on the saw table,
2. an upper slide member engaging the lower slide member and fixedly positioned to the guard subassembly, and
3. said slide members reciprocating relative to each other to guide the movement of the guard subassembly, and

c. counterweight means counterbalancing the mass of the guard subassembly so that the guard subassembly may be easy to move from its guarding to its non-guarding position and so that the guard subassembly will automatically move back to its guarding position from its non-guarding position when pressure is removed from the guard subassembly.

3,949,637
ONION SLICER
Gabi Funke, nee Honsel, Sundern, Germany, assignor to Gebr. Funke Metallwarenfabrik, Sundern, Germany
Filed Mar. 21, 1974, Ser. No. 453,471
Claims priority, application Germany, Mar. 29, 1973, 2315728
Int. Cl.² B26D *5/14*
U.S. Cl. 83—570 **10 Claims**

1. An onion slicer comprising:

a. a bottom base portion,

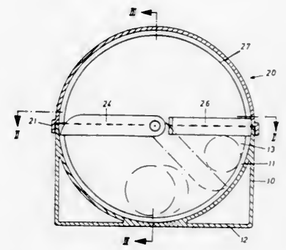
b. an upper portion removably disposed on the base portion to form a cutting chamber,

c. said cutting chamber including a cylindrical internal surface having a plurality of grooves,

d. grating means disposed in said upper portion and having laterally displaced gaps therein,

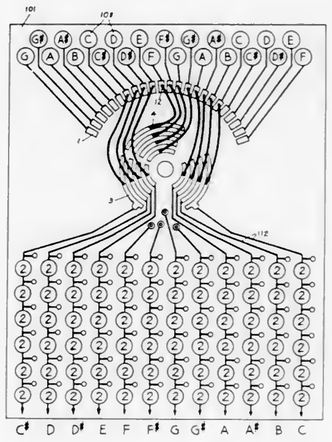
e. a rotatable cutter shaft extending through the cutting chamber, and

f. cutting means disposed on the cutter shaft and having a plurality of knife blades adapted to pass through the gaps of the grating means when the cutter shaft is rotated,



g. said knife blades having a length sufficient for the tips of the blades to extend into said grooves.

3,949,638
ELECTRONIC MUSICAL INSTRUMENT
Donald K. Coles, 2505 Capitol Ave., Fort Wayne, Ind. 46806
Filed Oct. 18, 1974, Ser. No. 515,969
Int. Cl.² G01H *1/00;* **G10H** *5/02*
U.S. Cl. 84—1.01 **4 Claims**



1. In a musical instrument, an absolute pitch selector apparatus comprising:

a plurality of tone generator circuits respectively arranged in a sequence having tones proceeding from low to high with a constant musical interval between adjacent tones of M semitones, where M is an integer in the range one to two inclusive,

a set of N electrical output leads where N is a number smaller than the number of said tone generator circuits, said output leads providing apparatus outputs of N separate musical tones of selected pitch, wherein the improvement comprises:

a stationary circuit board having first and second parallel sides,

an insulating rotor mounted on said first side of said stationary circuit board, rotatable about a fixed axis perpendicular to said first side, having a plurality of P switch positions corresponding to the number of absolute pitch selections, said switch positions separated by an indexing angle of C°, where C is a number included in the range two to 60 inclusive,

a linear array of N+P−1 stationary input contacts mounted on said first side of said stationary circuit board, arranged in the arc of a single circle, said single circle parallel to said first side of said stationary circuit board, centered on said axis, the center-to-center spacing between adjacent members of said linear array of stationary input contacts being C°, successive individual members of said linear array of stationary input contacts permanently connected to individual members of said sequence of tone generator circuits in order of increasing pitch,

a set of N elongated stationary output contacts mounted on said first side of said stationary circuit board, each said elongated stationary output contact shaped like the arc of a circle, said circle parallel to said first side of said stationary circuit board, centered on said axis, each said arc of a circle subtending at said axis an angle at least as large as the product of said indexing angle C multiplied by P, the number of switch positions, individual members of said set of stationary output contacts connected to individual members of said electrical output leads,

a linear array of N movable input spring contacts mounted on said insulating rotor, said N movable input spring contacts arranged in the arc of a single circle coaxial with said rotor, the center-to-center spacing between adjacent members of said linear array of movable input spring contacts being C degrees, said linear array of movable input spring contacts sliding along said linear array of stationary input contacts,

a set of N movable output spring contacts mounted on said insulating rotor, each movable output spring contact remaining in contact with its respective one of said elongated stationary output contacts in all of said switch positions,

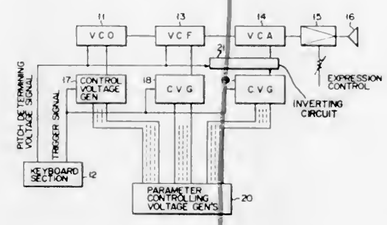
a set of N electrical conductors mounted on said insulating rotor, each electrical conductor connecting a different member of said linear array of movable input spring contacts to its corresponding member of said set of movable output spring contacts.

3,949,639

VOLTAGE CONTROLLED TYPE ELECTRONIC MUSICAL INSTRUMENT

Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 30, 1974, Ser. No. 537,201
Claims priority, application Japan, Jan. 10, 1974, 49-6468[U]
Int. Cl.² G10H *1/02, 5/02*
U.S. Cl. 84—1.27 **5 Claims**



1. An electronic musical instrument comprising:

a keyboard section including keys and means for generating in response to key operation a pitch determining voltage signal having a voltage representing a note of the operated key;

voltage controlled tone signal generating means for generating in response to the pitch determining voltage signal from said keyboard section a tone signal having a frequency determined by said pitch determining voltage signal;

sound reproducing means coupled to the output of said voltage controlled tone signal generating means; and

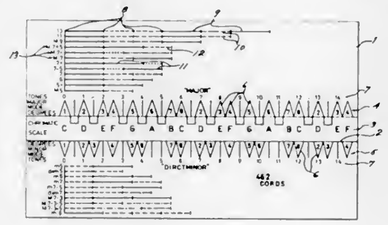
means coupled between said voltage controlled tone signal generating means and said sound reproducing means and responsive to the pitch determining voltage signal from said keyboard section for controlling the amplitude of the tone signal from said voltage controlled tone signal generating means in such a manner that the amplitude of a tone signal of a higher pitch frequency becomes smaller than that of a tone signal of a lower pitch frequency.

3,949,640

MUSICAL CHORDS TEACHING AND INDICATING DEVICES

Georges A. Cournoyer, 480 Chapman St., St. Bruno, Quebec, Canada

Filed Dec. 9, 1974, Ser. No. 531,195
Int. Cl.² G09B *15/02*
U.S. Cl. 84—473 **8 Claims**



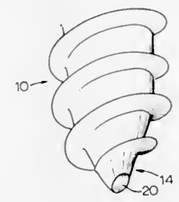
1. A musical chords teaching and indicating device comprising a first and a second member slidably connected one to the other, a chromatic scale having the musical notes marked on one face of said second member and arranged for endwise displacement relative to said first member, one diatonic scale marked on said first member laterally adjacent to said chromatic scale, chord indicators marked on said first member laterally adjacent said diatonic scale and including pointers of distinctive notes of said chords pointing toward said diatonic scale and said chromatic scale and forming dividers located at the specific degrees of the ends of the component thirds of the chords, with a qualification code distinctively identifying the qualification of each of said component thirds as a diminished, augmented, major, or minor.

3,949,641

SELF-DRILLING SCREW

George K. Masuda, Hamilton, Canada, assignor to The Steel Company of Canada, Limited, Hamilton, Canada

Filed Nov. 4, 1974, Ser. No. 520,723
Int. Cl.² F16B *25/00*
U.S. Cl. 85—41 **6 Claims**



1. A self-drilling screw comprising:

a shank tapering to a substantial point at one end,

a head on the other end of the shank,

at least one spiral thread on said shank,

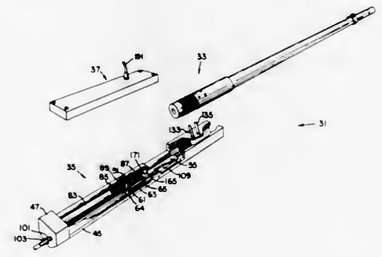
and a flat facet on said substantial point, the facet being at an angle to the axis of the screw, and having a largest dimension which is less than about 150% of the thread depth.

3,949,642

MODULAR LIQUID PROPELLANT GUN

Thomas M. Broxholm, Palo Alto, and Lester C. Elmore, Portola Valley, both of Calif., assignors to Pulsepower Systems, Inc., San Carlos, Calif.

Division of Ser. No. 104,610, Jan. 7, 1971, Pat. No. 3,800,657.
This application Dec. 17, 1973, Ser. No. 425,069
Int. Cl.² F41D *9/02*
U.S. Cl. 89—7 **6 Claims**



1. A method of operating a rapid firing liquid propellant gun of the kind having a barrel, a receiver, a bolt, a combustion chamber having wall structure of substantial mass subjected to heat soak produced during the rapid firing of a burst of projectiles from the combustion chamber, and liquid propellant injection mechanism for injecting a liquid propellant into the combustion chamber, said method comprising,

positioning the injection mechanism at a first, injection position in which the injection mechanism is physically connected to the combustion chamber,

injecting liquid propellant into the combustion chamber with the injection mechanism in said first, injection position,

igniting the liquid propellant in the combustion chamber to fire a projectile from the gun, and

moving the injection mechanism and the liquid propellant contained within the injection mechanism to a second, isolated position in which the injection mechanism and the liquid propellant are physically separated from the wall structure of the combustion chamber to provide a thermal barrier to heat flow from the hot combustion chamber wall structure to the propellant after firing.

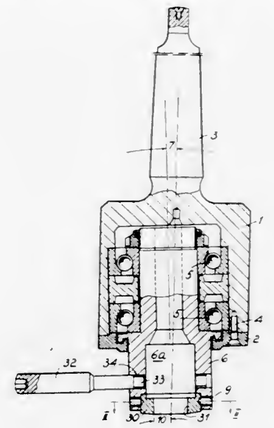
3,949,643

PROFILING DEVICE

Rinaldo Mucci, Via Foppa 22, and Paolo Bremi, Largo Domodossola 2, both of Milan, Italy

Filed Apr. 26, 1974, Ser. No. 464,985
Claims priority, application Italy, May 14, 1973, 24029/73
Int. Cl.² B23D *9/00*
U.S. Cl. 90—24 R **2 Claims**

1. A profiling device, comprising a sleeve, a conical portion extending from one end of said sleeve for attaching it to a machine tool, a flange detachably connected to the other end of said sleeve, a hollow tool carrier shaft rotatably mounted in said sleeve and having a longitudinal axis extending at an acute angle to the longitudinal axis of said sleeve, said flange supporting said shaft, sliding thrust ball bearings supporting said tool carrier shaft within said sleeve, whereby the tool carrier shaft describes an oscillating movement relatively to the sleeve when it or the sleeve are relatively rotated, a portion of said shaft extending beyond said sleeve, a positioning rod extending transversely to said shaft and having an end



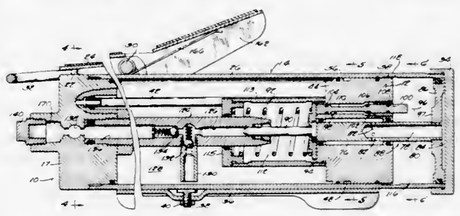
screwed to said portion of the shaft, and a shaped tool screwed to the end of said portion of the shaft.

3,949,644

PNEUMATIC-HYDRAULIC PUMPING DEVICE

William G. Suechting, Okauchee Lake, Wis., assignor to Hein-Werner Corporation, Waukesha, Wis.

Filed Jan. 11, 1974, Ser. No. 432,751
Int. Cl.² F01L *25/06*
U.S. Cl. 91—304 **17 Claims**



1. A fluid motor comprising:

a jacket having an air head sealed thereto and a cap member sealed thereto with the space between said air head and cap member defining a piston chamber;

a piston means including a piston head and a piston rod fastened thereto mounted for reciprocal movement in said chamber, said piston head having a power face and an exhaust face on opposite sides thereof;

fluid pressure means including a conduit means for communicating a source of fluid pressure with the power face of said piston head to cause said piston means to be moved in a power stroke direction;

return means for moving said piston means in an exhaust stroke direction;

valve means mounted in said air head for connecting said piston power face with a source of fluid pressure when said piston means reaches the end of its exhaust stroke, and for cutting off said power face from the source of fluid pressure when said piston means reaches the end of its power stroke, said valve means being further operative to connect the portion of said piston chamber adjacent said piston power face with the portion of said piston chamber adjacent said piston exhaust face when said piston means reaches the end of its power stroke; and

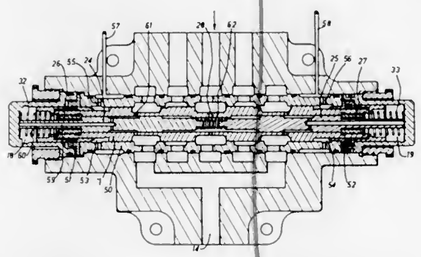
vent means for venting the portion of said piston chamber adjacent said piston power face as said piston means reaches the end of its power stroke.

3,949,645

DISTRIBUTING UNIT FOR A DUAL ACTION HYDRAULIC ELECTRO-DISTRIBUTOR

Jean Masclet, Paris, France, assignor to Messier Hispano, Paris, France

Filed July 2, 1974, Ser. No. 485,313
Claims priority, application France, July 3, 1973, 73.24456
Int. Cl.² F15B *13/043;* **F16K** *31/42*
U.S. Cl. 91—459 **8 Claims**



1. A distributing unit for a dual-action hydraulic electro-distributor of the type comprising, firstly, a distribution stage including a casing provided with a bore and closed at its opposite ends, a slide mounted in said bore so as to slide between two end positions, said bore defining end chambers at the ends of said slide, spring means in said end chambers acting on said slide to return the slide to a central or neutral position and, secondly, a piloting stage with valves controlled selectively by solenoids, each of the said valves being adapted, when actuated, to communicate the feed pressure to a corresponding end of the slide and, when not actuated, to set the corresponding end to return to a tank, wherein untimely displacement of the slide is avoided by the provision wherein the slide comprises a tubular element with two push rods mounted to slide in an axial direction with a seal at its ends, the two push rods being held in abutment with shoulders formed at the ends of the slide by the action of the feed pressure which is exerted on the surfaces of the push rods facing towards one another, through an orifice formed in the central portion of the slide, the opposed surfaces of the push rods projecting out of the slide into said end chambers and being kept applied to the end walls of the bore when the solenoids ae not energized, the control pressure coming from the piloting stage being communicated to two symmetrical annular chambers defined in the bore of the casing, two bearing surfaces of small diameter formed at the ends of the slide, and bearings in which the said ends of the slide are mounted for sliding movement, the said annular chambers having a section S which has a value relative to the section S of the push rods so that $s<S<2s$, said push rods having passage means connecting the end chambers to return to the tank.

3,949,646

CONTROL DEVICE FOR AIR CYLINDER UNIT

George W. B. Taylor, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

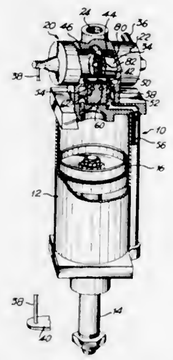
Filed July 26, 1974, Ser. No. 492,156
Int. Cl.² F15B *11/15, 13/043;* **F16K** *11/06*
U.S. Cl. 91—461 **6 Claims**

1. In a double acting air cylinder unit including a cylinder, a rod and piston assembly movable in said cylinder between retracted and extended positions,

a separate air passage means associated with each of the extension and retraction operations of said rod and piston assembly for conveying air under pressure to opposite sides of said piston and exhausting air therefrom, each of said air passage means having a port at the point of entry thereto, exhaust means and a inlet-exhaust slide valve member movable between each of two port covering positions to close off the air passage means associated therewith to flow of air under pressure and permitting exhaust therefrom to said exhaust means during the respective extension and retraction operations of said rod and piston assembly, and

a control device operative to move said slide valve member between said two port covering positions, said control device comprising

an elongated casing having a pressurized fluid supply opening in a side wall thereof and exhaust vents at opposite



end walls of said casing, and means for opening and closing said vents,

a control piston disposed in said housing for sliding reciprocating movement therein between two extreme operating positions, one position being associated with retraction operation of said rod and piston assembly and the other being associated with extension operation of said rod and piston assembly, said control piston including

a central head portion and skirts projecting axially in opposite directions from said central head portion, the space enclosed by each said skirt being in fluid communication with an associated exhaust vent, said control piston central head portion having passage means for communicating fluid under pressure from said supply opening to said inlet-exhaust slide valve member and fluid conveyance means therein for communicating fluid under pressure from said fluid supply opening to opposite sides of said central head portion, one of said opposite sides facing the extreme operating position of said central piston associated with the retraction operation of said rod and piston assembly and the other of said opposite sides facing the extreme operating position of said control piston associated with the extension operation of said rod and piston assembly,

said control piston being caused to slide between its respective rod and piston assembly retraction and extension operation associated positions in said casing by a fluid pressure differential across the opposite sides of said central head portion produced when one of said exhaust vents is opened,

the improvement in said control device for automatically moving said control piston to its rod and piston assembly retraction operation associated position if all fluid pressure be released from said unit during the time said rod and piston assembly is extending, characterized in that said fluid conveyance means comprises a

first passage in said control piston central head portion having inlet thereto in communication with said casing fluid supply opening and outlet therefrom at only the side

of said control piston central head portion open to the next means associated with said rod and piston assembly extension operation position, and

a second restrictive flow passage solely extending entirely through said control piston central head portion interconnecting the opposite sides thereof, said first passage being of greater effective cross-sectional area than said second passage,

whereby upon reimposition of fluid pressure at said casing fluid supply opening pressurized fluid will flow in said control unit so as to produce a higher fluid pressure at the side of said control piston central head portion associated with said extension operation position than at the other side, said pressure differential causing said control piston to slide toward its rod and piston assembly retraction operation associated position.

3,949,647

HYDRAULIC MECHANISM, SUCH AS A MOTOR OR A PUMP, HAVING RADIAL PISTONS ADAPTED TO PERFORM A PLURALITY OF STROKES PER REVOLUTION

Louis E. Martin, Senlis, France, assignor to Societe Anonyme: Poclain, Le Plessis Belleville, France

Filed Oct. 2, 1974, Ser. No. 511,107
Claims priority, application France, Oct. 8, 1973, 73.35907
Int. Cl.² F01B *13/06*
U.S. Cl. 91—485 **7 Claims**

1. A hydraulic mechanism, such as a motor or pump, having radial pistons adapted to perform a plurality of strokes per revolution, comprising:

an enclosed housing;

a stator mounted in said housing;

a rotor rotatably mounted in said housing for rotary movement with respect to said stator;

said rotor having a plane face thereon through which fluid is supplied and exhausted to reciprocate said pistons;

a stationary fluid-distributor slide valve on said stator having a plane face opposite the plane face on said rotor, and defining an interface therebetween said stator and said rotor defining therebetween an enclosed balancing chamber in communication with the periphery of said interface between the rotor and slide valve;

said housing defining a substantially pressure-free enclosure surrounding said rotor, said distributor slide valve being located within said balancing chamber; and

means for providing communication between said balancing chamber and said pressure-free enclosure and for maintaining pressure in said enclosure;

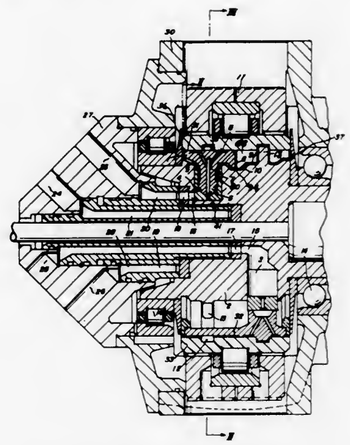
whereby the effect of pressure of fluid in said balancing chamber on said distributor slide valve will oppose the effect of pressure of fluid acting on said slide valve in the regon of said interface to substantially balance this effect.

3,949,648

ROTARY RADIAL PISTON MACHINE WITH RADIAL EXTENSION ON THE PISTON SHOE ENDS

Karl Eickmann, 2420 Isshiki, Hayama, Kanagawa, Japan

Filed May 2, 1974, Ser. No. 466,246
Claims priority, application Austria, May 4, 1973, 3967/73
Int. Cl.² F01B *1/06, 13/06;* **F16J** *1/14*
U.S. Cl. 91—492 **11 Claims**



1. In a radial-piston fluid-handling machine, a combination comprising a housing; a rotor rotatably mounted in said housing and formed with at least two groups of radially oriented working chambers; fluid passages communicating with said working chambers; at least two groups of pistons, each piston being reciprocably received in a working chamber of one of said groups; a common actuator means for said pistons; a piston shoe for each of said pistons in engagement with said actuator means, each piston shoe having in axial direction of said rotor an outer end and an inner end, said inner ends of the piston shoes of one group of pistons being located adjacent the inner ends of the piston shoes of the other groups of pistons; guide means for retaining said outer ends of said piston shoes; and radial extensions on said inner ends and each located adjacent an inner end of a piston shoe of the respective other group of piston.

3,949,649

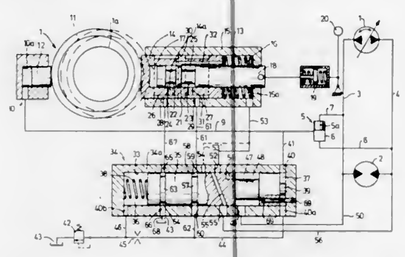
ADJUSTING APPARATUS FOR HYDRAULIC PUMPS OR MOTORS

Paul Bosch, Ludwigsburg, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Apr. 11, 1974, Ser. No. 460,069
Claims priority, application Germany, Apr. 14, 1973, 2318915
Int. Cl.² F04B *1/06*
U.S. Cl. 91—506 **11 Claims**

1. Apparatus for adjusting a fluid flow regulating member in a hydraulic machine which can operate as a pump or motor, wherein the adjustments of said regulating member effect changes in the rate of fluid flow through the machine, and wherein said machine has working chambers, an inlet for admission of fluid to said working chamber at a first pressure and an outlet for evacuation of fluid from said working chamber at a different second pressure, comprising at least one adjusting device having a cylinder and a first valve member movable in said cylinder to thereby adjust said regulating

member, said cylinder and said valve member defining a fluid-filled chamber wherein the fluid urges said valve member against said regulating member; means for monitoring the fluid pressure at the outlet of said machine; and control valve means for controlling the flow of fluid into and from said fluid-filled chamber in response to deviations of fluid pressure at said outlet from a predetermined range, including a body,



first conduit means normally connecting said body with said cylinder, second conduit means connecting said outlet with said body, third conduit means connecting said body with said fluid-filled chamber, and a second valve member movable in said body in response to said deviations to thereby seal said first conduit means prior to connecting said second conduit means with said third conduit means.

3,949,650

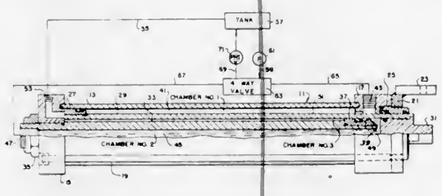
EQUAL AREA DISPLACEMENT HYDRAULIC CYLINDER

Leland F. Blatt, Grosse Pointe Shores, Mich. 48236, and Gordon J. Fox, Clinton Township, Mich. 49236

Filed Jan. 16, 1975, Ser. No. 541,601

Int. Cl.² F01B *31/04*

U.S. Cl. 92—108 **1 Claim**



1. In an equal area displacement hydraulic cylinder having an outer tube; blind end and rod end caps receiving and secured to opposite ends of said tube; and a gland in said rod end cap;

a hollow piston rod within said tube along its length projecting through said gland, and defining with said tube a first chamber;

a rod end secured within the outer end of said piston rod adapted for connection to a device for effecting reciprocal movements thereof;

a reciprocal piston in said first chamber secured to said piston rod;

a stationary open-ended inner tube within said piston rod along its length and at one end anchored to said blind end cap and extending therethrough, terminating in a first port; said port communicating with a second chamber in said inner tube;

said stationary tube being spaced from the wall of said piston rod, defining a third chamber;

a stationary piston upon the other end of said stationary tube engageable with the bore of the piston rod and said closing off third chamber;

said second chamber communicating with a fourth chamber upon the far side of said stationary piston, closed by said rod end;

there being a second port in said rod end cap communicating with said first chamber; whereby on pressurizing said second port, said movable piston and piston rod are retracted; alternately pressurizing said first port and second chamber, advancing said piston rod with respect to the stationary piston;

the effective working area of the piston in the first chamber being equal to the effective working area of the rod end closing the fourth chamber, whereby equal rod force is delivered to said reciprocal piston rod in both directions; forward movement of the reciprocal piston and piston rod within said first chamber causing relative movement of said piston rod with respect to the stationary piston, said third chamber being vented through said blind end cap;

a retainer assembly including an apertured retainer plate secured upon said rod end cap receiving said gland and rod end;

a pair of spaced apertured anchor plates secured to and projecting forwardly of said retainer plate; and

the volumetric capacity of the first and fourth chambers when extended being equal.

3,949,651

METHOD OF MAKING FILTER MEDIA

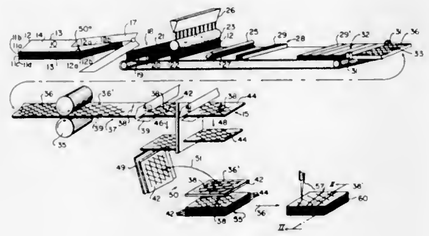
Victor Vernon Spencer, P.O. Box 368, Tillsonburg, Ontario, Canada

Division of Ser. No. 430,739, Jan. 4, 1974, Pat. No. 3,909,224. This application June 18, 1975, Ser. No. 588,043

Claims priority, application Canada, Feb. 5, 1973, 162925

Int. Cl.² B31D *3/02*

U.S. Cl. 93—1 H **6 Claims**



1. A method of manufacturing filter media having a plurality of stacked, crushed honeycomb sections in relative juxtaposition comprising the steps of:

a. selecting a honeycomb section having the axis of its cells disposed at an oblique angle relative to the media plane of the section;

b. extending the honeycomb of step (a) until the cells thereof are in open configuration;

c. crushing the cells of the extended honeycomb of step (b) into the plane of the honeycomb to dispose the axis of the cells more obliquely to the plane;

d. plying sections of the crushed honeycomb to form a filter media.

3,949,652

DEVICE FOR MANUFACTURING A FLAP BOX

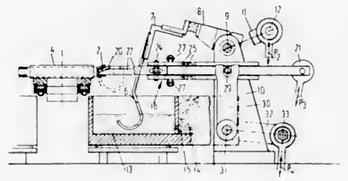
Marten Geert Aalpoel, Nuenen, Netherlands, assignor to Arenco-P.M.B. B.V., Best, Netherlands

Filed May 1, 1974, Ser. No. 466,014

Claims priority, application Netherlands, May 10, 1973, 7306565

Int. Cl.² B31B *1/36*

U.S. Cl. 93—36 MM **13 Claims**



9. Apparatus for applying glue and folding box ends comprising, in combination:

conveyor means for traveling a series of box forms along a path in step-by-step fashion, said conveyor means including a plurality of holders which retain the box forms horizontally in rectangular, tubular form to present top and bottom flaps and opposite side flaps at one end of each box form, said holders being spaced apart by the distance of the step-by-step movement of the conveyor means;

a first glue-applying station adjacent said conveyor means and including a pair of upwardly swingable members which wipe across said bottom flap to apply two stripes of glue thereto, a bottom flap folder upwardly swingable between said glue-applying members to fold said bottom flap across the box form end, and a pair of end flap folders between which said upwardly swingable members swing and including means for moving said end flap folders toward each other to fold said end flaps onto said bottom flap to engage the respective glue stripes;

a second glue-applying station disposed beyond said first station and including a second pair of upwardly swingable members which engage the underside of said top flap to apply rectangular glue spots thereto; and

a fixed member disposed beyond said second glue-applying station to fold said top flap down against said folded side flaps as said conveyor means advances a box form beyond said second glue-applying station.

3,949,653

APPARATUS FOR BREAKING OUT SCRAP PIECES FROM DIE-CUT OR PUNCHED SHEETS

Friedrich Schroter, Am Waldchen 8, 3004 Isernhagen NB-Sud, Germany

Filed Apr. 10, 1974, Ser. No. 459,701

Int. Cl.² B26F *3/02*

U.S. Cl. 93—36 A **4 Claims**

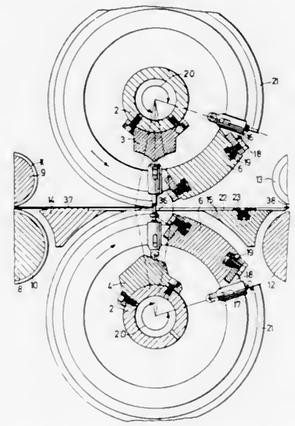
1. In an apparatus for stripping or breaking out scrap pieces from a continuously moving sheet of material having a pattern previously cut or punched therein, and including a frame, means for continuously advancing said sheet of material through said apparatus, and a first cylindrical element and a second cylindrical element both rotatably mounted to said frame in opposed relation for passage of said sheet of material therebetween, the improvement comprising:

cam means adjustably mounted to said frame for selective positioning in predetermined fixed and stationary positions proximate said first cylindrical element;

at least one break out tool assembly mounted to said first cylindrical element for engagement with and guiding by said cam means upon rotation of said first cylindrical element, said tool assembly being adapted for radial movement of a portion thereof into engagement with a scrap piece of said sheet of material when guided by said cam means during rotation of said first cylindrical element;

cam means adjustably mounted to said frame for selective positioning in predetermined fixed and stationary positions proximate said second cylindrical element; and

at least one tool assembly mounted to said second cylindrical element for engagement with and guiding by said cam means mounted proximate said second cylindrical element upon rotation thereof, said tool assembly on said



second cylindrical element being adapted to engage a side of said scrap piece opposite the side engaged by said portion of said tool assembly on said first cylindrical element during rotation of said second cylindrical element to cooperatively grip said scrap piece between said portion of said tool assembly on said first cylindrical element and said portion of said tool assembly on said second cylindrical element, both the tool assemblies further being guided by said cam means for gripped movement of said scrap piece by the portions of the tool assemblies in a direction causing separation of said scrap piece from said sheet of material during further rotation of the cylindrical elements.

3,949,654

ASSEMBLY FOR USE IN A MACHINE FOR PROCESSING SHEET OR SIMILAR MATERIAL

Hubert Stehlin, Caluire, France, assignor to S. A. Martin, Saint-Priest, France

Filed Apr. 25, 1975, Ser. No. 571,747

Claims priority, application France, June 21, 1974, 74.21657

Int. Cl.² B31B *1/14*; B23D *19/04*

U.S. Cl. 93—58.2 R **3 Claims**

1. An assembly for use in a machine for processing sheet or similar material, comprising:

a rotatable tool;

an associated opposing part between which and said rotatable tool sheet material is fed;

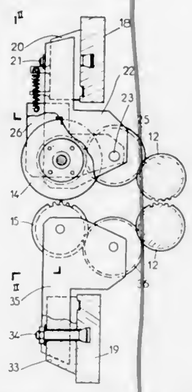
a block in respect of each of said tool and said opposing part;

means for mounting said tool and said opposing part on the said respective block for adjustment in a direction to vary the spacing between said tool and said opposing part;

means for mounting said blocks for movement transversely to the direction of sheet material feed;

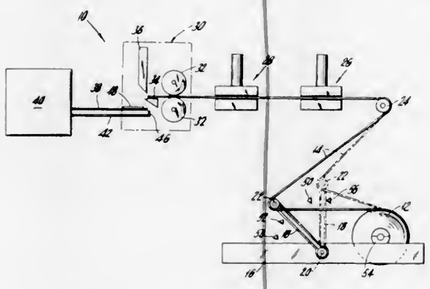
drive means in respect of each of said tool and said opposing part and each comprising a pinion mounted on the said

respective block and a toothed shaft extending transversely of the direction of sheet material feed and with which said pinion meshes;



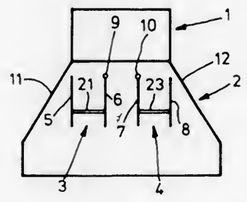
wherein said toothed shafts are so positioned and arranged as to operate as feed rollers for feeding sheet material to said tool and said opposing part.

3,949,655
SYNCHRONIZATION APPARATUS FOR BOX MAKING MACHINE
Ramon D. Gold, Livingston, N.J., assignor to United States Box Corporation, Newark, N.J.
Filed Oct. 5, 1973, Ser. No. 404,108
Int. Cl.² H02P *5/50*
U.S. Cl. 93—49 AC **12 Claims**



1. A box making machine comprising
supply means for supplying a continuous web of material out of which boxes are to be formed;
die press means for punching out portions of the web at predetermined locations on the latter;
cutter means for cutting the web into blanks suitable to be formed into boxes, said cutter means including first drive means for actuating said cutter means and for advancing the web;
box forming means for operating on the blanks and for forming the same into boxes, said box forming means including second drive means for actuating said box forming means;
synchronizing means for synchronizing said box forming means with said cutter means to overcome fluctuations in speed of the operation of said first and second drive means, said synchronizing means including a plurality of detection means each cooperating with one of said cutter and box forming means for detecting at least one portion of each cycle of one of said cutter and box forming means and at least two portions of each cycle of the other of said cutter and box forming means and for causing synchronization only upon detection by said plurality of detection means in a predetermined sequence; and
circuit means for maintaining the operation of said cutter means upon continued detection by said detection means in said predetermined sequence and for terminating the operation of said cutter means when detection is other than in said predetermined sequence.

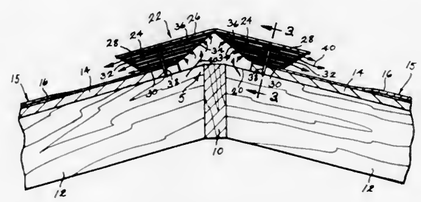
3,949,656
AIR OUTLET GRILL FOR VENTILATING THE PASSENGER COMPARTMENT OF A MOTOR VEHICLE
Otto Schäfer Löhmann, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed May 31, 1974, Ser. No. 475,294
Claims priority, application Germany, June 8, 1973, 2329244
Int. Cl.² F24F *7/00, 13/08*
U.S. Cl. 98—40 VM **11 Claims**



1. A ventilating grill with air flow comprising
a housing having an air inlet and a longitudinally spaced air outlet, an input section extending from said inlet towards said outlet, and an air flowing adjusting section extending from said input section to said outlet and having an interior cross-section which diverges in direction from said input section to said outlet;
two groups of said vane-shaped air guiding elements in said adjusting section and each composed of a plurality of mutually parallel ones of said air guiding elements;
means spacing said air guiding elements of each group apart so as to maintain a mutual parallelism and constant air flow area regardless of the pivotal position of said air guiding elements;
means connecting said air guiding elements of each group for joint movement; and
common pivot means mounting said air guiding elements of each group for pivotal movement in mutual parallelism about pivot axes located in a common plane extending substantially normal to said direction so that the direction and speed of air flowing through said outlet can be changed by pivoting of said groups of air guiding elements without thereby changing the quantity of air flowing through said outlet since the crosssectional area for passage of the air between adjacent ones of said air guiding elements remains substantially constant during such pivoting.

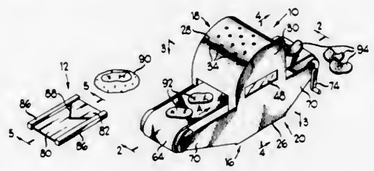
3,949,657
VENTILATED CAP FOR THE RIDGE OF A ROOF
Gary L. Sells, 16250 Petro Drive, Mishawaka, Ind. 46544
Filed Apr. 22, 1974, Ser. No. 462,716
Int. Cl.² F24F *7/02*
U.S. Cl. 98—42 A **4 Claims**

3. A ventilated cap for the ridge of a roof, said roof having opposed sides tapering upwardly to said ridge, said ridge having a longitudinal opening therein, said cap comprising a pair of elongated vent parts, each vent part having upper and lower surfaces and inner and outer side edges which extend between said surfaces along the longitudinal dimension of the part, said side edges of each vent part being beveled and tapering from the upper surface to the lower surface of the part, a plurality of vent openings extending transversely through each vent part from the inner side edge to the outer side edge thereof, each vent part being of a corrugated cardboard construction coated with a moisture impervious substance, said vent openings being flutes defined by the corrugations in the cardboard, a said vent part located on each side



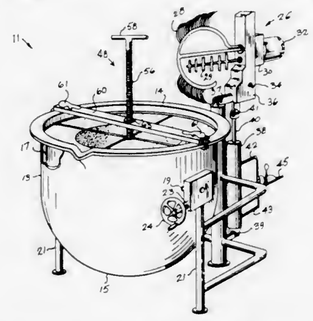
of said ridge opening and having the lower surface thereof in contact with a roof side with the vent part generally paralleling said ridge, said inner side edges of the vent parts positioned adjacent to each other at the upper surfaces of the parts and overlying said ridge opening, other shingles overlying the upper surfaces of said vent parts and extending thereacross from one said outer side edge to the other said outer side edge of the parts and terminating spacedly above said roof sides.

3,949,658
POTATO CHIP MAKER
Howard J. Morrison, Deerfield, and Robert K. Allen, Frankfort, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed July 24, 1974, Ser. No. 491,355
Int. Cl.² A47J *37/08*
U.S. Cl. 99—341 **1 Claim**



1. A potato chip producing device comprising, in combination:
a frame having a generally convex upper housing portion, a lower housing portion, horizontal passage means through opposite sides of the housing between said upper and lower housing portions, a pair of flanges protruding outwardly from said opposite sides of the housing exteriorly thereof providing for a pair of journal supports,
a pair of relatively low wattage incandescent lamps, one mounted in the upper housing portion and the other mounted in the lower housing portion;
a pair of generally convex reflectors, one in the upper housing portion between the upper lamp and the housing, the other in the lower housing portion between the lower lamp and the housing, providing a heating chamber within the housing in communication with said passage means, and a plurality of apertures in the top of the upper housing portion above the upper reflector to permit the escapement of heated air from within the housing;
an endless screen encircled about a pair of rollers rotatably mounted in said journal supports exteriorly of said housing and having upper and lower runs passing through said passage means and through said heating chamber;
guide means on said lower housing portion for contacting the lower run of said endless screen to reduce the distance between the upper run and the lower run of the screen within the heating chamber to an amount substantially less than the diameter of said rollers;
an aperture in the upper housing portion having a transparent, heat-resistant shield therein to provide means for viewing into the heating chamber; and
a manually rotatable hand crank secured to one of said rollers to permit selective manual movement of said screen through the housing and the heating chamber whereby slices of potatoes may be positioned within the heating chamber for a sufficient amount of time to be cooked to form potato chips.

3,949,659
APPARATUS FOR PROCESSING MEAT
David F. Hunt, 2429 Poplar Lane, Lafayette, Ind. 47905
Filed June 4, 1973, Ser. No. 366,349
Int. Cl.² A47J *27/18*
U.S. Cl. 99—348 **10 Claims**

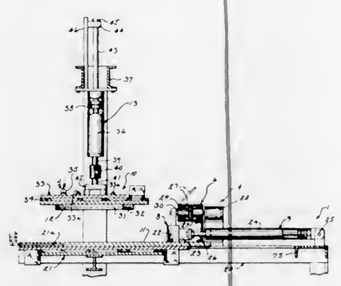


1. Apparatus for processing meat, said apparatus comprising: an upright cooking receptacle for receiving meat to be cooked; means for causing said meat to be cooked in said cooking receptacle to form a mixture of cooked meat and fat; and separating means within said cooking receptacle to separate said cooked meat from said fat whereby said meat is retained below said separating means and whereby said fat is above said separating means and can thereafter be removed from said cooking receptacle while said meat below said separating means is retained separated from said fat above said separating means in said cooking receptacle.

3,949,660
APPARATUS FOR FORMING SHELLS OF DOUGH
Harvey G. Kuhlman, N56 W21466 Silver Spring Road, Menomonee Falls, Wis. 53051
Filed Jan. 21, 1974, Ser. No. 435,164
Int. Cl.² A47J *37/01*
U.S. Cl. 99—352 **11 Claims**

1. A food dough forming apparatus comprising a pair of die members, one of said die members including a lip and the other having a flat surface defining a forming cavity, controlled heating means associated with both of said die members for raising the temperature of both die members with the lip and with the flat surface to heat and bake the dough within the cavity, means to hold the die members in a closed position with an essentially fluid tight cavity, said baking generating gases within the die members of sufficient magnitude to disrupt the dough upon release, means to substantially reduce the holding force of said holding means without permitting significant separation of the die members to release said gases while confining of the baked dough within said cavity, means to separate said die members and permit removal of the baked dough from the cavity, reciprocating fluid positioning means for establishing a confining lip pressure generally in excess of

1,000 psi on said lip in the closed forming position, die positioning means including means to release said confining lip pressure for a selected period before raising of said die member from said supporting surface, a vacuum operated pickup means movable into overlying covering relationship to said shell with an opposing vacuum chamber coupled to said shell, said pickup means having a plurality of piercing means for



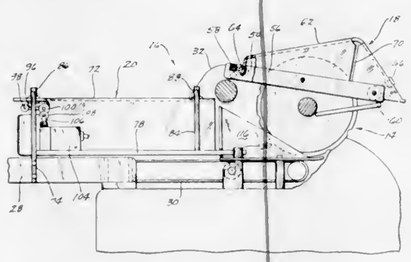
piercing at least the surface of said shell, a transfer position means to place dough within the die and including a control means coupled to actuate said transfer positioning means, said die positioning means and said pickup means and having response means responsive to the actuation of each of said positioning means to control the cyclical actuation of said positioning means.

3,949,661

SAFETY MEANS FOR A SKINNING AND/OR SLASHING MACHINE

Charles Austin Greider, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed Apr. 24, 1974, Ser. No. 463,537
Int. Cl.[2] A22B *5/16*
U.S. Cl. 99—589 17 Claims



1. In combination with a skinning machine comprising a frame means having rearward and forward ends, a feed conveyor means at the forward end of said frame means, a skinning blade means at the rearward end of said feed conveyor means, and power means for operating said feed conveyor means, comprising,

a housing means operatively secured to said frame means and extending over said feed conveyor means in a spaced relationship with respect thereto,

a safety bar means operatively movably secured to said frame means at the forward end of said housing means,

a first normally closed electrical switch means operatively mechanically connected to said safety bar means and electrically connected to said power means for deactivating said power means when said safety bar means is moved a predetermined amount relative to said housing means,

said frame means comprising first and second spaced-apart frame members positioned at opposite ends of said feed conveyor means,

said housing means comprising an inverted substantially U-shaped channel member having opposite sides positioned adjacent said frame members and a top portion extending between said opposite sides, and rearward and forward ends; said channel member being secured to said frame members,

a first switch actuator operatively secured to said safety bar means, said switch means being operatively secured to one of said frame members and having a switch arm in operative engagement with said switch actuator whereby vertical movement in a predetermined amount of said safety bar means will cause said switch actuator to open said first switch means, means mounting the rearward end of said U-shaped channel member to said first frame member,

means mounting the forward end of said U-shaped channel member to said second frame member, and

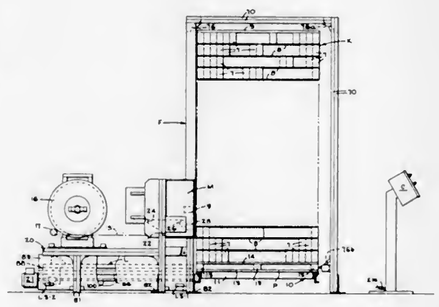
said first switch means being operatively secured to said U-shaped member.

3,949,662

PALLET STRAPPER WITH PROJECTABLE LANCE

William H. Woomer, Glen Riddle, Pa., assignor to FMC Corporation, San Jose, Calif.

Filed Apr. 29, 1975, Ser. No. 572,791
Int. Cl.[2] B65B *13/04*
U.S. Cl. 100—4 3 Claims



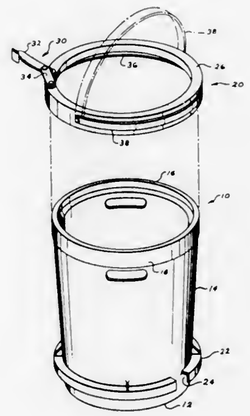
1. Apparatus for strapping a load to the deck of a pallet supported on a conveyor said apparatus having a strap guide frame for surrounding the load, mechanism on said frame for performing a strap feeding and tensioning cycle, a strap guiding lance advanceable below the pallet deck for receiving a strap end from said guide frame and directing the strap back to said guide frame, a dock for the free end of the lance, a reversible air motor for feeding strap, a reversible motor for extending the lance to said dock for retracting said lance and an electropneumatic control circuit for said motors; the improvement in said apparatus wherein said reversible motor for extending and retracting said lance is an electric motor, lance extend and retract relays in said electric control circuit having contacts for driving said electric motor in either direction, and contacts in said electric control circuit controlled by said pneumatic control circuit for operating said relays.

3,949,663

MOUNTING MEANS FOR COMPACTOR REFUSE RECEPTACLE

William A. Eckerle, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed June 5, 1974, Ser. No. 476,528
Int. Cl.[2] B30B *15/00*
U.S. Cl. 100—229 A 4 Claims



1. In a refuse compactor comprising a frame having first and second spaced sides and an open front defining a refuse compacting chamber;

a door mounted for movement between positions opening and closing the open front;

means for holding an open-topped container within the chamber; and

means for vertically reciprocating a pressure plate into and out of the container for compressing refuse therein;

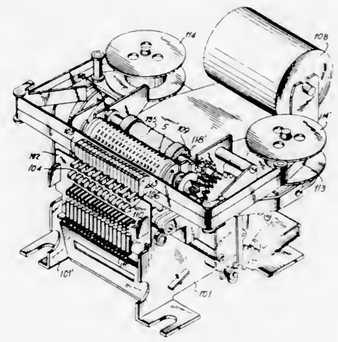
the improvement being that said means for holding said open-topped container within the chamber includes clamp means, encircling said open-topped container, said clamp means having: (a) a ring including an expansion gap and an inturned flange portion configured to interlock with a corresponding receiving means on said container to prevent said clamp means from being pulled off of said container during lifting thereof, (b) a bail attached to said ring for carrying the container, (c) an overcenter latch mechanism including an elongate handle pivotally mounted to said ring on one side of said gap and a link connected to the other side of said gap and pivotally connected to said handle thus spanning said gap such that rotation of said handle opens and closes said gap to thereby release or secure the clamp with respect to said container, and (d) a mounting member integrally attached to said ring and receivable by corresponding means on the door of said compactor, thereby providing means for mounting said container to said door, said clamp means providing support for said container against downward and twisting movement during the compacting cycle of said compactor, providing increased circumferential strength for said container adjacent the open top thereof and providing a bail means for lifting said container out of load receiving position on said compactor door.

3,949,664

COMPACT FLYING PRINTER

Tadayoshi Shimodaira, Suwa, and Yoshifumi Gomi, Chino, both of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shinshu Seiki Kabushiki Kaisha, Suwa, both of, Japan

Continuation of Ser. No. 248,368, April 28, 1972, Pat. No. 3,835,770, which is a division of Ser. No. 118,427, Feb. 24, 1971, Pat. No. 3,795,185. This application Feb. 25, 1974, Ser. No. 445,420
Claims priority, application Japan, Feb. 27, 1970, 45-16451
The portion of the term of this patent subsequent to Sept. 17, 1991, has been disclaimed.
Int. Cl.[2] B41J *11/00*
U.S. Cl. 101—93.31 11 Claims



1. In a printing device having printing means, drive means for said printing means, and means for incrementally, longitudinally advancing an inked ribbon relative to said printing means, the improvement in said ribbon advancing means which comprises a continuously rotating member driven by said drive means; a transmitting member displaceable between a first rest position and a second position; first coupling means selectively operably engaging said transmitting member and said rotating member for the selective displacement of said transmitting member between said first and second positions in response to the rotation of said rotating member; spring means coupled to said transmitting member for the storage of energy during the displacement thereof between said first and second positions; means disengaging said transmitting member and said rotating member at said second position to release said transmitting member for return to said first position in response to the energy stored in said spring means; ribbon engaging means; and second coupling means operably engaging said transmitting means and said ribbon engaging means during said displacement of said transmitting member for operative displacement of said ribbon advancing means.

3,949,665

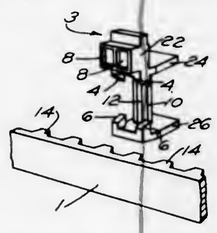
BELT AND CARRIER FOR HIGH SPEED PRINTER

Richard Anthony Perry, Attleboro, Mass., assignor to ODEC Computer Systems, Inc., Warwick, R.I.

Filed Dec. 4, 1970, Ser. No. 95,099
Int. Cl.[2] B41J *1/20*
U.S. Cl. 101—111 4 Claims

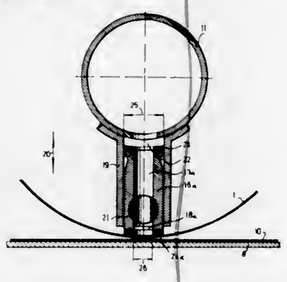
1. In a chain type printer, the combination of an endless belt having a plurality of evenly spaced teeth formed along the inner surface and a plurality of one piece print character carriers, each of said carriers comprising a character head for holding at least one print character, an upper platform integrally formed with and extending rearwardly from said head, (an anvil engaging) a face on the rear surface of the character head, a lower platform, a vertical post (having one end integrally formed with said character head and the other end integrally formed with said lower platform), integrally formed

with said lower platform and upper platform, a groove in said vertical post to engage one of said plurality of evenly spaced



teeth on said inner surface, said endless belt being located between said upper platform and said lower platform, and means for detachably securing said carrier on said belt.

3,949,666
YIELDABLE DYESTUFF APPLICATOR FOR SCREEN PRINTER
Peter Zimmer, Untere Sparchen 54, A 6330 Kufstein, Austria
Filed Dec. 20, 1973, Ser. No. 426,909
Claims priority, application Austria, Dec. 21, 1972, 10941/72
Int. Cl.² B41F *15/42, 15/46*
U.S. Cl. 101—119 **16 Claims**



1. In a device for treating selected portions of a substrate, in combination:

an apertured screen overlying a substrate to be treated along a contact area, said screen and said substrate being movable in a predetermined direction;

a horizontal supply tube with an axis in a plane perpendicular to said predetermined direction, said tube being connected to a source of treatment liquid and spacedly disposed above said contact area; and

an applicator for said liquid including a guide structure secured to the underside of said tube and an elongate distributing member vertically movable within said guide structure in an axial plane of said tube, said distributing member forming an outlet for said liquid along a narrow zone of said contact area centered on said axial plane, said applicator forming a multiplicity of passages transverse to said axis connecting the interior of said tube with said outlet, said member resting on said screen in said contact area, said guide structure including conduit means communicating with said passages and with the interior of said tube.

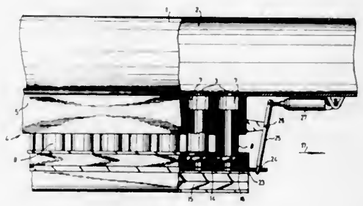
3,949,667
DYESTUFF APPLICATOR FOR SCREEN PRINTER
Peter Zimmer, Untere Sparcher 54, A6330 Kufstein, Austria
Filed Jan. 31, 1974, Ser. No. 438,261
Claims priority, application Austria, Feb. 9, 1973, 1207/73
Int. Cl.² B41F *15/40;* **B05C** *3/20*
U.S. Cl. 101—119 **4 Claims**

1. In a printing machine, in combination:

an apertured screen overlying a substrate to be imprinted along a contact area, said screen and said substrate being movable in a predetermined direction;

a horizontal supply tube with an axis in a plane perpendicular to said predetermined direction, said tube being connected to a source of dyestuff and spacedly disposed above said contact area;

a dyestuff applicator including a guide structure secured to the underside of said tube and an elongate distributing member vertically movable within said guide structure in an axial plane of said tube, said distributing member forming an outlet for said liquid along a narrow zone of said contact area centered on said axial plane, said applicator forming a multiplicity of passages transverse to said

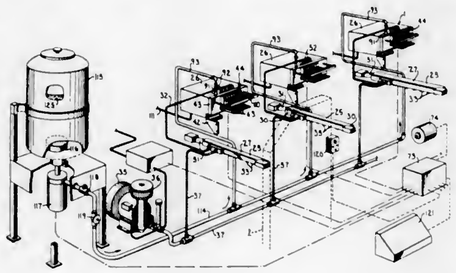


axis connecting the interior of said tube with said outlet and terminating within said member in a common distributing channel paralleling said outlet and communicating therewith, said member resting on said screen in said contact area;

an elongate shutter common to all said passages extending parallel to said axis in said member between said passages and said channel; and

actuating means for selectively displacing said shutter between a flow-blocking and an unblocking position, said actuating means comprising a control element mounted on said tube and an articulated link connecting said control element with said shutter while enabling vertical movement of said member with reference to said tube.

3,949,668
LIQUID FEED FOR OFFSET PRESS DAMPENING SYSTEM
Roy R. Smith, Jr., Leawood, Kans., assignor to Smith R.P.M. Corporation, Lenexa, Kans.
Filed Oct. 17, 1974, Ser. No. 515,688
Int. Cl.² B41F *7/30*
U.S. Cl. 101—148 **5 Claims**



1. For use in combination with an offset printing press, a lithographic dampener system, said dampener system comprising:

a. a spray member having a plurality of dampening liquid atomizing spray nozzles, individual dampening liquid output conduit means connected at one end thereof to said nozzles,

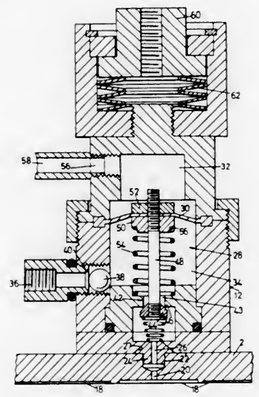
b. a pump member having a plurality of individual, bubble sensitive, reciprocal metering pumps respectively including an input portion containing a loaded input valve and an output portion containing a loaded output valve loaded to a substantially greater opening pressure than said input valve and a pump pathway extending between said input and output valves,

c. said output conduit means being connected at the other end thereof to said respective metering pump output portions, reciprocating metering pump means communicating with said pump pathway between said input and output valves and alternately increasing and decreasing the dampening liquid volume of said pump pathway,

d. a source of dampening liquid suseptible to bubble formation therein, input conduit means connected between said liquid source and said respective input portions, a feed pump operably located in said input conduit means, and

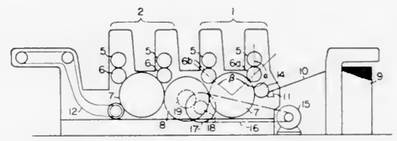
e. pressure regulator means associated with said feed pump and together controlling the feed pressure of said dampening liquid into said respective input portions to a point substantially above atmospheric pressure and greater than that required to open said loaded input valve but less than the sum of the opening pressures of said input plus output valve, thereby causing said dampening liquid to be maintained substantially above atmospheric pressure during flow from said feed pump and through said metering pumps, whereby bubbles tending to form in said dampening liquid are urged to remain in solution permitting accurate metering by said respective reciprocal metering pumps.

3,949,669
PROCESS AND METHOD IN PRINTING
Harold Frederick Farrow, Hitchin, and William Henry Chudley, Henlow, both of England, assignors to Encoline (Process) Limited, England
Filed Mar. 8, 1974, Ser. No. 449,501
Claims priority, application United Kingdom, Mar. 9, 1973, 11536/73
Int. Cl.² B41F *1/40*
U.S. Cl. 101—151 **15 Claims**



6. A printing apparatus comprising surface means for at least partially defining a chamber, a movable member within said chamber and dividing said chamber into first and second sections, said movable member being disposed in sealing engagement with said surface means to block fluid flow between said first and second sections of said chamber, said movable member being movable relative to said surface means from a first position to a second position to increase the size of said first section of said chamber and decrease the size of said second section of said chamber, first conduit means for connecting said fluid outlet in fluid communication with a printing plate, a valve member movable between a closed condition blocking fluid flow through said outlet and an open condition enabling fluid to flow from said second section of said chamber through said outlet and first conduit means to the printing plate, connector means fixedly connected to said valve member and said movable member for effecting movement of said valve member from the closed condition to the open condition upon movement of said movable member from said first position toward said second position and for effecting movement of said valve member from the open condition to the closed condition upon movement of said movable member from said second position to said first position, second conduit means for conducting printing fluid to said second section of said chamber, and third conduit means for conducting fluid under pressure to said first section of said chamber to thereby effect movement of said movable member from said first position to said second position.

3,949,670
MULTICOLOUR OFFSET PRESS
Akiyama Katsuji, 16-22, Nishi-Arai 6 chome, Adachi, Tokyo, Japan (123)
Filed Feb. 21, 1975, Ser. No. 551,679
Int. Cl.² B41F *7/10*
U.S. Cl. 101—177 **2 Claims**



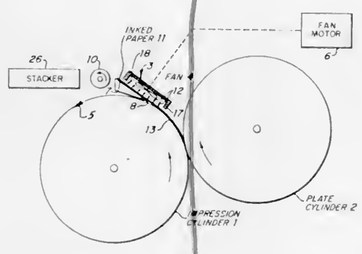
1. A multicolor offset press including at least two printing units, each of the printing units comprising two sets of plate cylinders and blanket cylinders as well as a common impression cylinder which bears against the both blanket cylinders, said impression cylinder having a diameter which is equal to 3 times that of the blanket cylinders, said blanket cylinders of a printing unit being spaced apart from each other by a distance along the circumference of the impression cylinder which is greater than the length of the transfer surface of the blanket cylinders, the press further including a transfer cylinder interposed between the printing units, said transfer cylinder bearing against the respective impression cylinder of the printing units and having a diameter which is equal to that of the impression cylinder, impression cylinder and transfer cylinder each including means located at positions on the peripheral surface thereof which divide the circumference of the cylinders into three equal lengths whereby three sheets can be printed for each revolution of the impression and transfer cylinder, said transfer cylinder being located below a plane on which the impression cylinders of the printing unit are located, the blanket cylinders of the printing unit being disposed in a single plane with an equal spacing between adjacent blanket cylinders.

3,949,671
SYSTEM FOR TRANSPORTING INKED PAPER FROM A PRINTING STATION TO A STACKER STATION BY MEANS OF PRESSURIZED AIR
Thomas M. Madigan, Pittsford, N.Y., assignor to ITEK Corporation, Lexington, Mass.
Filed Dec. 27, 1974, Ser. No. 537,018
Int. Cl.² B65H *29/54, 29/70*
U.S. Cl. 101—232 **1 Claim**

1. In a duplicating device, a paper transport system for transporting bleed edge inked paper from a printing station to a stacking station, said printing station including a plate cylin-

der and an impression cylinder, said paper being driven over a portion of said impression cylinder comprising:

a. air applicator means which causes air to be directed downwardly over said paper in the neighbor of said impression cylinder, and additionally in the direction of travel of said paper, to cause said paper to be pressed against said portion of said impression cylinder and to be driven thereby;



b. paper guide means for causing said paper to leave the surface of said impression cylinder; and

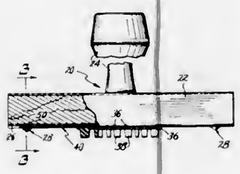
c. drive means adjacent said paper guide means and including a pair of beveled rollers positioned upon a common drive shaft for allowing said paper to bow and thereby be stiffened in a direction perpendicular to the width thereof to facilitate transportation of said paper to said stacking station inked side up to prevent physical roller contact.

3,949,672

DEVICE FOR MOUNTING INTERCHANGEABLE TYPE

Harold Cadmus, Jr., 533 Merriman's Lane, Winchester, Va. 22601

Filed Aug. 30, 1973, Ser. No. 393,173
Int. Cl.² B41F *27/04, 27/06*
U.S. Cl. 101—368 **21 Claims**



1. A device for mounting interchangeable type comprising:

a. a backing member;

b. a body portion upon which said backing member is mounted;

c. a pair of spaced, resilient retainer members disposed on said backing member, each retainer member having a neck portion and a head portion, said head portion defining a shoulder between said neck and head portions;

d. an elongated band having a pair of openings therein, said openings being spaced the same distance as said resilient retainer members to receive the head portions of said resilient retainer members with one side of said band in contact with said shoulder, said elongated band being thin relative to its width, the ratio of the width of said band to the thickness thereof being at least 5:1;

e. a base disposed between said backing member and each of said retainer members, each base protruding from said backing member so as to contact said band on the side of said band opposite to the side that contacts said shoulder;

f. a plurality of printing members, each printing member having a character formed thereon and each having a slot through which said band may be passed, each printing member having a rear side disposed opposite said character, the distance between said rear side of each printing member and a rearwardmost side of each slot being approximately equal to the distance said base protrudes from said backing member.

3,949,673

SEMI-RIGID SINUOUS BLASTING CHARGE AND BOREHOLE LOADING METHOD

William Marcelle Lyerly, Hagerstown, Md., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Apr. 16, 1974, Ser. No. 461,359
Int. Cl.² F42B *3/00*
U.S. Cl. 102—24 R **11 Claims**



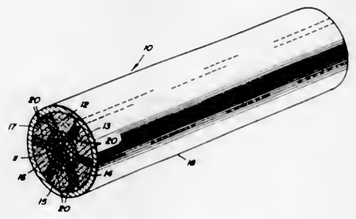
1. A blasting charge comprising an elongated sinuous length of tubing laden with and supporting a substantially continuous column of explosive, the flexural modulus of the tubing material and the wall thickness and diameter of the tubing being such that when the tubing in compactly coiled form is unwound and fed into a borehole having a diameter which is smaller than the outer diameter of the coil, the tubing retains a degree of curvature and exerts pressure against the wall of the borehole.

3,949,674

OPERATION OF FRAGMENT CORE WARHEAD

James C. Talley, Dahlgren, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 22, 1965, Ser. No. 502,711
Int. Cl.² F42B *13/48*
U.S. Cl. 102—67 **8 Claims**



1. A warhead for a guided missile comprising

a fragmentation core;

a radially segmented burst charge surrounding said fragmentation core, each segment of said segmented burst charge being adapted to be folded outwardly from said core; and

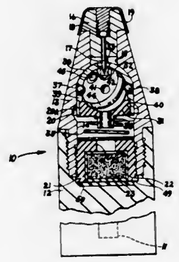
means for folding a predetermined pair of adjacent segments of said segmented burst charge outwardly from said core, whereby upon the folding outwardly of said predetermined pair of adjacent segments, the subsequent explosion of the remaining segments of said segmented burst charge will cause said fragmentation core to be propelled through the space vacated by said predetermined pair of adjacent segments.

3,949,675

PROJECTILE

Frank A. Luke, Feasterville, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 3, 1974, Ser. No. 485,477
Int. Cl.² F42C *1/04, 9/16*
U.S. Cl. 102—80 **4 Claims**



1. In a point detonating projectile having a conically shaped nose member secured to a high explosive ammunition round and a nose cap secured to said nose and carrying a rearwardly directed firing pin,

a self destruct fuze mounted in said nose and having a rotor housing slidably mounted within a forward portion of said nose, a base member containing a lead charge and secured to a rearward portion of said nose, a compression spring intermediate said base member and said rotor housing for normally biasing said rotor housing forwardly towards said firing pin, and a ball rotor in said rotor housing and having a peripheral recess for normally receiving a tip of said firing pin and a detonator in its periphery offset from said recess,

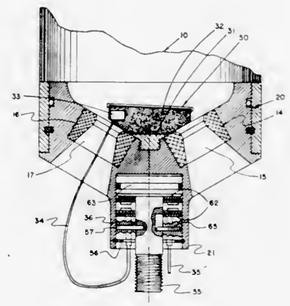
said fuze having means carried by said rotor housing for normally locking said ball rotor in an unarmed position prior to receiving projectile launching set-back forces, for preventing forward motion of the retracted rotor housing during a projectile spin period in which a predetermined amount of centrifugal force is imparted thereto, and for locking said ball rotor in an armed position and enabling the armed rotor and its housing to move forward in said nose when said centrifugal force is substantially reduced, so that the fuze self destructs should the projectile fail to strike a target.

3,949,676

LOAD ACTUATED ELECTRO-IGNITION CIRCUIT SWITCH

Joseph A. Schmidt, Ridgecrest, and W. James Stone, China Lake, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 10, 1974, Ser. No. 478,008
Int. Cl.² F42B *13/56*
U.S. Cl. 102—89 **6 Claims**



1. A propellant ignition mechanism for a rocket motor utilized to tow a load by means of a tow cable fastened concentric with the center of the rocket motor and rearward of its nozzles comprising;

a cylindrical rocket motor housing having a nozzle portion formed with a rearward extending boss closing the rear word end of said housing;

a chamber formed by an axially disposed bore that is concentric with said rocket motor housing and which extends a substantial distance into the boss;

piston means in said chamber attached to a tow line and operative to move linearly rearwardly of the rocket motor after a predetermined force is exerted on said tow line;

electrical contact means operative to close after a predetermined rearward linear travel of said piston means; and

power supply means electrically coupled to said electrical contact means to supply a current for igniting a rocket motor for powered flight.

3,949,677

SMALL CALIBER PROJECTILE WITH AN ASYMMETRICAL POINT

Gunther Voss, Madrid, Spain, assignor to Centro de Estudios Tecnicos de Materiales Especiales-Instituto Nacional de Industria, Madrid, Spain

Filed Mar. 19, 1974, Ser. No. 452,556
Claims priority, application Spain, Jan. 19, 1974, 199626
Int. Cl.² F42B *11/00*
U.S. Cl. 102—92.1 **5 Claims**

1. A small-caliber projectile with an asymmetrical tip, of the type stabilized by rotation, and whose tip is provided with an asymmetry which exerts its effects upon penetration of the projectile in a target, characterized that in the tip of the pro-

jectile there are two diametrically located recesses which are unequal with respect to each other, said recesses having the



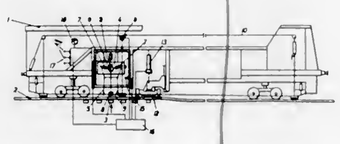
effect of increasing the rate of spin of the projectile during its penetration into a target.

3,949,678

METHOD FOR TAMPING AND LEVELING TRACK

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Division of Ser. No. 458,580, April 8, 1974, Pat. No. 3,895,583. This application Dec. 19, 1974, Ser. No. 534,182
Claims priority, application Austria, May 25, 1973, 4627/73
Int. Cl.² E01B *27/17*
U.S. Cl. 104—12 **1 Claim**



1. In a method of obtaining a controlled degree of ballast compaction in the tamping and leveling of a track consisting of rails mounted on ties, wherein the ballast is tamped under each one of the ties and the track is leveled in relation to a reference system, the improvement of controlling the degree of compaction of the ballast under each tie in proportion to a maximum track level error at said tie, holding the track at a desired level determined by the reference system, and continuing the tamping to press the track upwardly while being held at the desired level so that zones of ballast compaction proportional to the track level error at each tie are continuously produced along a long track section.

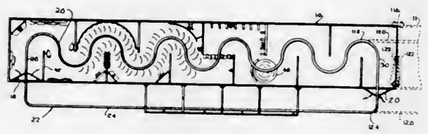
3,949,679

AMUSEMENT RIDE

Gerald L. Barber, Greenville, S.C., assignor to Venture Ride Mfg., Inc., Greer, S.C.

Filed Oct. 4, 1974, Ser. No. 512,105
Int. Cl.² A63G *1/24, 1/34*
U.S. Cl. 104—63 **9 Claims**

1. In an amusement ride device; enclosed trailer vehicle means, endless track means comprising a first reach extending longitudinally through the trailer means and a second reach extending outside the trailer means, and end sections joining said reaches, passenger cabs supported by said track means, and a motor on each of said cabs for propelling the cabs along said track means, said trailer vehicle means comprising a pair of trailer vehicles in end to end abutment, communicating door means in the abutting ends of said vehicles, said first reach of said track means extending through both of said vehicles and including separable connector means in the region of abutment of the vehicles, said second reach of said



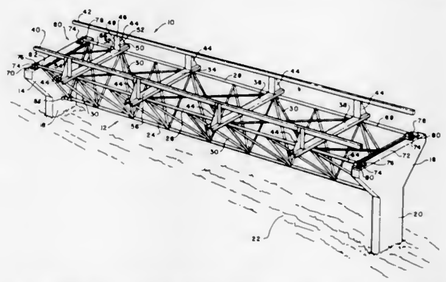
track means extending along the outside of said vehicles, said end sections of said track means being adjacent the ends of the vehicles which are remote from one another.

3,949,680

VEHICLE TRACK AND VEHICLE

Howard E. Doughty, 529 Charlotte Ave., Fort Wayne, Ind. 46805

Filed Jan. 22, 1975, Ser. No. 543,146
Int. Cl.² A63G *21/04;* **E01B** *25/22*
U.S. Cl. 104—124 **12 Claims**



1. A vehicle and vehicle track, the combination comprising an elongated track having a terminal end and a starting end elevated therefrom, a rigid supporting frame selectively elevating said track above the ground, said frame including a plurality of stanchion member means and a plurality of space frames each including a plurality of fixedly joined frame members, each of said space frames extending between adjacent stanchion member means, a pair of generally parallel, spaced-apart rails, means securing said rails to said space frame in a vertically spaced-apart relationship thereto, said space frame and rails defining therebetween an alongated channel, a vehicle including an enclosure dimensioned to accomodate at least one person, said enclosure having a bottom, said vehicle being received in said channel, a plurality of wheels rotatably mounted to said vehicle and being in rolling engagement with said rails, the axles of said wheels being secured to said vehicle at points above the bottom of said vehicle enclosure, and keeper means coupled to said vehicle for maintaining same in engagement with said rails.

3,949,681

MOTOR ACTUATED RAILWAY HOPPER CAR DOOR MECHANISM

Roy W. Miller, Highland, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Apr. 25, 1975, Ser. No. 571,831
Int. Cl.² B61D *7/04, 7/06, 7/18, 7/28*
U.S. Cl. 105—284 **7 Claims**

1. A bottom discharge arrangement for discharging a load from a vehicle having a hopper structure including horizontally spaced longitudinally extending frame members,

downwardly and inwardly extending slope sheets supported on said frame members having lower end portions terminating in laterally spaced relation to provide a discharge opening, the improvement comprising:

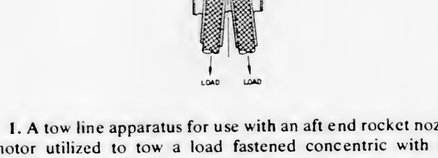
first and second doors positioned to close said opening and arranged to swing relatively downwardly and laterally outwardly to an open position,

first and second links respectively pivotally connected to bracket means disposed below said slope sheets,

means pivotally connecting outer end portions of said first end second doors to said first and second links,

an actuating lever pivotally supported on one of said frame members,

a third link pivotally connected to said actuating lever and projecting inwardly over said second door,



a bell crank lever pivotally supported on said hopper,

a fourth link pivotally connected to said bell crank lever and to an outer end portion of said second door,

means pivotally connecting said third link relative to said bell crank lever and said fourth link,

thrust connector means pivotally connected to said bell crank and said first door,

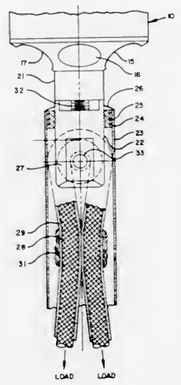
first and second hanger arms pivotally supported on said hopper and having lower portions thereof respectively pivotally connected adjacent to inner portions of said first and second doors, whereupon pivotal movement of said bell crank in response to actuation by said actuating lever provides for opening movement of said doors whereupon said outer portions of said door are moved outwardly underneath said slope sheets.

3,949,682

TOWLINE THERMAL PROTECTION SYSTEM

W. James Stone; Michael J. Ripley, both of China Lake, and Leroy M. Stayton, Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 10, 1974, Ser. No. 478,011
Int. Cl.² B64D *25/08*
U.S. Cl. 102—89 **5 Claims**



1. A tow line apparatus for use with an aft end rocket nozzle motor utilized to tow a load fastened concentric with the center of the rocket motor and rearward of its nozzles comprising:

shackle means attached with its center concentric with the longitudinal axis and to the rear of a rocket motor;

heat resistant covered tow line passing through said shackle means for forming a double tow line to be attached to a load at its free ends, said heat resistant covered tow line is coated with an exterior layer of ablative material; and

lashing means binding said tow line at a point adjacent said shackle means positioned between said shackle means and said load for forming said tow line in a loop about said shackle means;

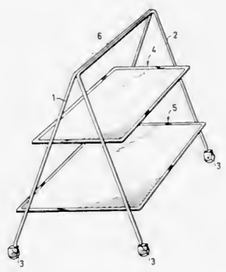
whereby exhaust gases produced during powered flight of the rocket motor can not damage the tow line.

3,949,683

COLLAPSIBLE SHELF ARRANGEMENT

Walther Zarges, Murnau, Oberbayern, and Frank Zarges, Socking, Oberbayern, both of Germany, assignors to Walther Zarges, Germany

Filed July 12, 1974, Ser. No. 488,210
Claims priority, application Germany, July 12, 1973, 2335381
Int. Cl.² A47B *3/00*
U.S. Cl. 108—111 **38 Claims**



1. A collapsible shelf arrangement comprising: at least two frame means for supporting the shelf arrangement, means for mounting said frame means to be pivotable with respect to each other, at least two supporting panel means, means for pivotally mounting each of said supporting panel means to said frame means, said supporting panel means being pivotable between collapsed and opened positions, a first locking means provided on one of said supporting panel means for automatically locking the same when said supporting panel means is pivoted to its opened position, a second locking means provided on the other of said supporting panel means for locking the same in the open position, said first and second locking means being operatively connected whereby said second locking means is releasable only once said supporting panel means associated with said first locking means has been pivoted toward the collapsed position.

3,949,684

METHOD FOR OXIDATION OF SULFUR-CONTAINING SUBSTANCES

George G. Copeland, Western Springs, Ill., assignor to Copeland Systems, Inc., Oak Brook, Ill.

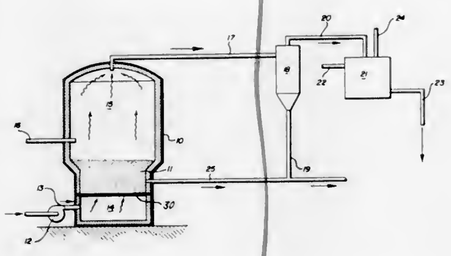
Continuation-in-part of Ser. No. 392,638, Aug. 29, 1973, abandoned. This application Feb. 11, 1975, Ser. No. 548,918
Int. Cl.² F23J *1/00;* **C01B** *17/14*
U.S. Cl. 110—1 J **9 Claims**

1. A method for oxidation of a sulfur-containing carbonaceous substance wherein the sulfur oxide content of the gaseous effluent of such oxidation is reduced, said method comprising:

introducing said sulfur-containing substance to be oxidized into a reactor particle bed fluidized by a gas containing

oxygen in stoichiometric excess of that required to oxidize said substance;

said particle bed containing particles of an alumina-containing non-refractory clay in a quantity sufficient to provide an amount of alumina in stoichiometric excess of that required to react to form aluminum sulfate from sulfur oxides formed during oxidation of said sulfur-containing substances; and



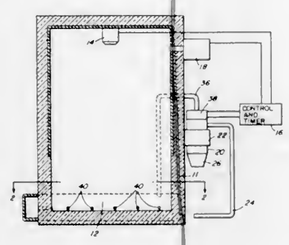
maintaining the temperature in said fluidized particle bed at from about 1200°F. to about 1400°F. whereby said sulfur-containing substances are oxidized and sulfur oxides formed in the course of such oxidation react within the reactor particle bed with the alumina to form aluminum sulfate.

3,949,685

AUTOMATIC VACUUM SYSTEM

Douglas L. Replogle, Arlington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 2, 1975, Ser. No. 564,240
Int. Cl.² F23J *1/00*
U.S. Cl. 110—165 A **8 Claims**



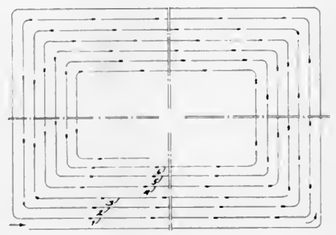
1. Apparatus of the character described comprising a compartment having walls defining an area for containing material to be removed, and means for removing said material from the area comprising filter means, and air circulating means for directing a plurality of streams of air through the area to pick up material therein, said air circulation means comprising a plenum disposed on two adjoining walls, a plurality of jets disposed to direct respective streams of air from the plenum through said area, and suction means for receiving said streams of air and directing same to the filter means for removal of said material said suction means comprising a single outlet pipe having open end disposed in the corner of the compartment opposite the two walls carrying the plenum, and said jets extend through said walls and are all disposed to direct their respective air streams toward said corner containing the open end of the suction pipe.

3,949,686

GRAIN FIELD MARKER

LeRoy E. Johnson, P.O. Box 6, Stanley, N. Dak. 58784

Continuation of Ser. No. 339,353, March 8, 1973, abandoned.
This application June 16, 1975, Ser. No. 586,853
Int. Cl.² A01C *5/00*
U.S. Cl. 111—1 **8 Claims**



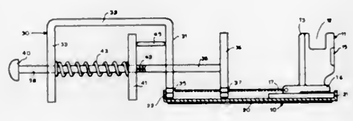
1. A method of so marking a field in which seed is planted in closely spaced rows as to provide visible marking for spraying or the like after plants have emerged, comprising the steps of planting seeds in the field in rows with a standard drill having a plurality of closely spaced seeding units by making passes over the field with the drill in a predetermined pattern, and simultaneously planting, during at least selected passes over the field, spaced portions of one row of seed with increased amounts of seed sufficient to establish thicker growth in said portions of said row to provide a visible, distinctive repetitive, and uneven growth pattern in said one row when the plants emerge.

3,949,687

DEVICE FOR USE WITH BUTTONHOLE ATTACHMENT

Howard B. Julien, P.O. Box 3456, Eureka, Calif. 95501

Filed June 16, 1975, Ser. No. 587,094
Int. Cl.² D05B *3/12*
U.S. Cl. 112—77 **5 Claims**



1. A device to limit the travel of a buttonhole attachment for a sewing machine, said attachment including an element that is not movable relative to the fabric being worked on, which unmovable element has side rails, and an element movable with respect to the fabric being worked on, said movable element being movable along said side rails, said device comprising:

a. a bracket having a front wall adapted to be fixed in said side rails and a rear wall,

b. a limit element extending beyond said front wall and adapted to be movable between said side rails,

c. a shaft movably attached to said front wall and said rear wall and fixed to said limit element,

d. a stop fixed to said shaft between said front wall and said rear wall,

e. means biasing said shaft to drive said limit element away from said front wall, and

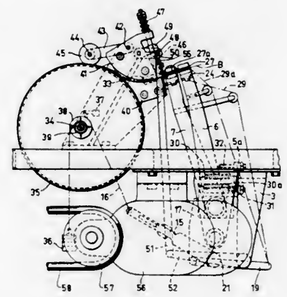
f. an opening in said bracket to receive a button between said front wall and said stop element.

3,949,688

APPARATUS FOR AUTOMATICALLY MANUFACTURING AN ANNULAR RIBBON

Sven Gerhard Andersson, Ljungskile, Sweden

Continuation of Ser. No. 864,311, Oct. 7, 1969, abandoned.
This application Jan. 20, 1972, Ser. No. 219,581
Claims priority, application United Kingdom, Oct. 7, 1968, 47451/68
Int. Cl.² D05B *35/00*
U.S. Cl. 112—121.26 **2 Claims**



1. Apparatus for the automatic manufacture of an annular ribbon of predetermined size from a continuous stock of such ribbon comprising in combination,

a pair of ribbon grip members being rotatable but fixed in translation,

grip actuating means for selectively opening and closing said grip members,

means for feeding the free end of the ribbon from the reel while said grip opening means holds both said grip members open,

loop forming means effective when said grip actuating means holds open only the one said grip member which governs the feed of ribbon from the stock to feed said ribbon through said one grip member so as to form a loop therein of preselected size,

means for cutting the ribbon between said one grip member and the reel after the formation of the loop in said ribbon,

means for moving the grip actuating means out of engagement with first one and then the other of the grip members to thereby catch the free end of the ribbon and then the free end obtained after cutting,

means for rotating both said grip members to thereby overlap the two free ends of the ribbon,

and means for joining the two free ends of the ribbon to form a closed loop.

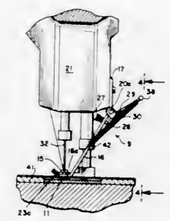
3,949,689

SEWING MACHINE FABRIC EDGE FLIP-UP GUIDE

William Galya, Rte. No. 2 Merriden Drive, Brewster, N.Y. 10509, and Jack E. Shuffield, 29 Carpenter Ave., Norwood, N.J. 07648

Filed May 31, 1974, Ser. No. 475,039
Int. Cl.² D05B *35/10*
U.S. Cl. 112—151 **7 Claims**

1. A sewing machine fabric edge-guide device comprising in combination: a sewing machine foot support structure; a mounting arm support means for the mounting thereof at higher and lower positions on said sewing machine foot support structure and having a distal end thereof spaced from the sewing machine structure, and for mounting of a substantially laterally-extending shaft; a shaft structure means for axially, adjustably, and variably mounting thereof in position and for locking thereof into a fixed state relative to the sewing machine foot support; roller fabric-guide support pivot means for mounting a proximal end onto the shaft structure means pivotably for upward and downward pivoting motion on a distal end of said shaft structure means; said roller fabric-guide support pivot means including at its distal end a substantially round roller structure mounted revolvably in a substantially horizontal plane when the roller fabric-guide support pivot means is flipped downwardly and adapted when flipped downwardly to place the round roller structure above and adjacent to a sewing machine work plate, adjacent a lateral side of the sewing machine foot and adapted such that an edge of a fabric is guidable thereby; and toggle spring means for mounting thereof fixedly relative to said laterally-extending shaft structure and for connecting to said roller fabric-guide support pivoting means for pivotably retaining the roller fabric-guide support pivoting means alternately in each of the flipped upwardly and flipped downwardly positions respectively.

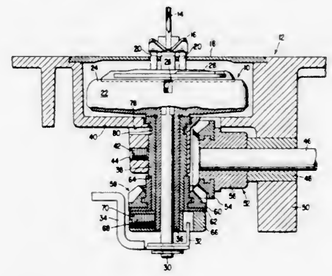


3,949,690

INTERPOSER HOOK DRIVE FOR SEWING MACHINES

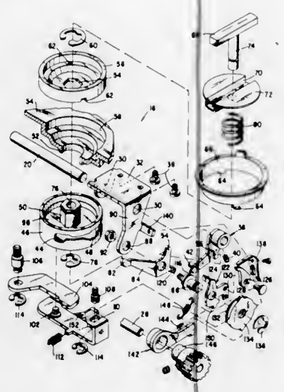
William Weisz, Rockaway, N.J., assignor to The Singer Company, New York, N.Y.

Filed Sept. 12, 1975, Ser. No. 612,816
Int. Cl.² D05B *57/14*
U.S. Cl. 112—184 **7 Claims**



1. A hook mechanism for a sewing machine having a rotary driven hook including a shaft for supporting said hook for rotation about the axis of said shaft, a bushing for supporting said shaft in a frame, a bore through said bushing with the axis of said bore being eccentric to the axis of said bushing, said shaft being supported in said bore for rotation relative to said bushing, drive means for driving said hook including a first drive member operably connected to a drive shaft for driving said first drive member, an interposer member drivingly connected to said first drive member in timed relationship therewith and operably connected to said shaft for transmitting driving motion to said shaft, said interposer member being supported co-axially with axis of said hook, and means for adjusting the relative radial position of said shaft without changing the relative driving relationship between said interposer member and said first drive member such that adjustment of the relative radial position of said shaft has no effect on the timing between said drive means and said hook.

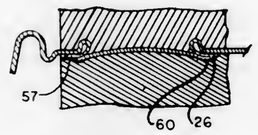
3,949,691
AUTOMATIC BACK-TACK MECHANISM
Kenneth Douglas Adams, Madison, N.J., assignor to The Singer Company, New York, N.Y.
Filed Apr. 25, 1975, Ser. No. 571,678
Int. Cl.² D05B 27/22
U.S. Cl. 112—210 5 Claims



1. In a sewing machine having a frame and a work supporting surface,
a work feed system for moving work fabric transversely across said work supporting surface including a feed regulator shaft rotatably mounted in said frame and adapted to influence the movement imparted to the work fabric,
a feed control mechanism operatively connected to said feed regulator shaft for controlling the angular position of the same and thus determining the incremental distances and direction which said work fabric is moved by said work feed system,
said feed control mechanism comprising;
a stitch length control camming member including a cam track,
means for selectively positioning said camming member so as to position said cam track to establish said incremental distances and thereby the stitch length as well as the direction said work fabric is moved,
a cam follower and a rock arm responsive to the position of said cam track,
said rock arm being operatively connected to said feed regulator shaft to move the latter angularly,
means manually operable to move said rock arm thereby moving said feed regulating shaft to cause the reversal of movement of said work from the direction of movement established by said stitch length camming members,
latching means responsive to said manually operable means to lock said rock arm and feed regulating shaft in said reverse position, and
means for releasing said latch means after said work has been transported a predetermined number of incremental distances.

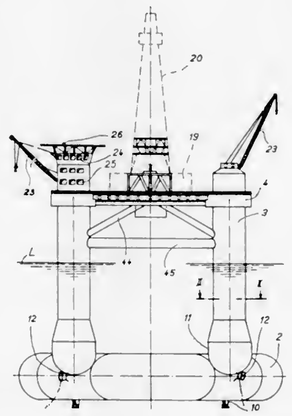
3,949,692
CONTAINER LID AND METHOD OF MANUFACTURE
John W. DeLine, Denver, and Nobel N. Ida, Boulder, both of Colo., assignors to Entech Corporation, Denver, Colo.
Division of Ser. No. 241,642, April 6, 1972, Pat. No. 3,794,206. This application Feb. 25, 1974, Ser. No. 445,608
Int. Cl.² B21D 51/38
U.S. Cl. 113—121 C 5 Claims

1. The method of forming a tear strip in a container lid which comprises the steps of:
depressing a section of a blank of metal away from its original plane to form a lid with a depressed section therein;
reversing the outer surrounding edge between the lid and the depressed section whereby the lower terminal end of the reversed edge extends outwardly, substantially parallel to and beneath the surface of the lid; and



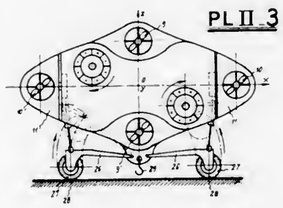
thereafter coining the outer peripheral edge of the depressed section beneath the lid to reduce its cross-sectional thickness and form a weakened area of separation between the lid and the depressed section whereby the depressed section defines a tear strip.

3,949,693
PARTIALLY SUBMERGED FLOATING PLATFORM
Peter Bauer, Bremen, and Rudolf Klimek, Ganderkesse, both of Germany, assignors to ERNO Raumfahrttechnik GmbH, Bremen, Germany
Filed Oct. 25, 1974, Ser. No. 517,884
Claims priority, application Germany, May 2, 1974, 2421150
Int. Cl.² B63B 35/44
U.S. Cl. 114—.5 D 5 Claims



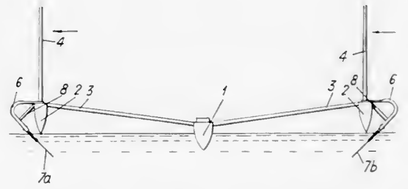
1. Partially submerged floating platform having a plurality of vertical columns constructed from concentric pipes with compartmentization of the space between respective inner and outer pipes;
a frame interconnecting the columns above the sea level and providing for and establishing a working area of the platform, the improvement comprising:
a submerged main floating body of near rotational symmetry and having predominantly horizontal extension, the body being constructed from sections of concentric pipes which extend around a vertical axis in near-annular fashion, the space between respective inner and outer pipe sections being compartmentized, the columns being connected and extending upright from the main body but projecting above sea level;
the inner pipe of the body being hollow and constructed as passage way for moving of loads;
individual ballast bodies movably disposed in the inner pipe and moving along the passage way to change the effective ballast in relation to the center axis of the platform;
the inner pipe of at least one column constructed for transporting loads from the submerged body to the frame.

3,949,694
SPECIAL SUBMARINE DEVICES USING A NOVEL INTEGRATED LIFT, PROPULSION AND STEERING SYSTEM
Paul Bastide, 108, rue de Rennes, 75006 Paris, France
Division of Ser. No. 354,791, April 26, 1973, Pat. No. 3,865,060. This application Oct. 16, 1974, Ser. No. 515,684
Claims priority, application France, Apr. 26, 1972, 72.14768
Int. Cl.² B63G 8/16
U.S. Cl. 114—16 R 8 Claims



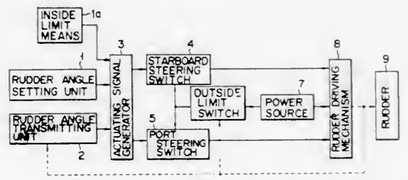
1. A submarine device capable of perpendicular translation relative to its longitudinal axis inclusive of purely upward and downward movements using an integrated system of lift, propulsion and steering, said submarine device comprising a hull with a center of symmetry and vertical and horizontal planes of symmetry passing through said center, said integrated system comprising four cycloidal propellers grouped in pairs, one pair being forward on said hull and one pair aft on said hull, each cycloidal propeller having a horizontal axis of rotation and including a flat circular rim carrying at its periphery a circular array of identical horizontal blades each rotatable about a horizontal axis perpendicular to the said rim, means for rotating the blades about their axes including a jointed connecting rod for each blade extending parallel to the plane of said rim, a master control head coupled to said rods and capable of being staggered relative to the axis of rotation of said propeller, said two pairs of cycloidal propellers being symmetrically arranged relative to said center symmetry of the hull, the forward pair being lower and the aft pair higher, the two propellers of each pair being coaxial and symmetrical relative to the longitudinal vertical plane of symmetry of the hull, the directions of rotation of the propellers on each side of the hull being the same, four auxiliary screws suspended from said hull and having rotatable and reversible blades with axes of rotation perpendicular to the longitudinal vertical plane of symmetry, two of said auxiliary screws being on the longitudinal horizontal axis of symmetry one forward and one aft and two on the transverse vertical axis of symmetry one above and the other below the horizontal plane of symmetry, the two screws on the longitudinal axes each being able to turn through 90° around the longitudinal horizontal axis to produce vertical thrust to assist in purely vertical displacement of the submarine device.

3,949,695
MULTI-HULL SAILING VESSELS
John H. Pless, 58 Tite St., London, S.W.3, England
Filed Sept. 4, 1974, Ser. No. 503,113
Claims priority, application United Kingdom, Sept. 5, 1973, 41789/73
Int. Cl.² B63B 1/28
U.S. Cl. 114—66.5 H 4 Claims



1. A sailing vessel including at least a pair of opposing hydrofoils having their longitudinal axes inclined inwardly toward one another beneath the vessel at a fixed angle to the horizontal, each hydrofoil being freely rotatable through a predetermined angle about an axis parallel to, but offset from, its longitudinal axis such that the angle of attack of each hydrofoil varies independently according to the forces acting on the hydrofoils when the vessel is sailing, the offset axis of each hydrofoil being positioned aft of the longitudinal axis such that the reactive forces on each hydrofoil which resist sideways movement of the vessel rotate the hydrofoils in opposite senses to increase the angle of attack of the leeward hydrofoil relative to that of the windward hydrofoil.

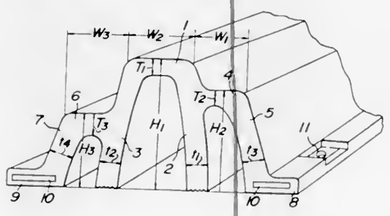
3,949,696
MARINE STEERING ARRANGEMENT
Kazutoshi Onishi; Tsuneo Awano, both of Yokohama, and Isao Masuzawa, Kuki, all of Japan, assignors to Tokyo Keiki Company Limited, Tokyo, Japan
Continuation of Ser. No. 371,041, June 18, 1973, abandoned. This application Sept. 23, 1974, Ser. No. 508,282
Claims priority, application Japan, June 21, 1972, 47-62054
Int. Cl.² B63H 25/24
U.S. Cl. 114—144 E 6 Claims



1. A marine steering arrangement comprising an order rudder angle setting unit for generating an order signal of rudder angle; a rudder angle transmitting unit for producing an actual signal of rudder angle; an actuating signal generator for producing temporarily either a starboard or port actuating signal when said order signal and said actual signal do not cancel out; a starboard steering switch closed by a starboard actuating signal; a port steering switch closed by a port actuating signal; an inside angle limit switch means for normally maintaining the rudder within a starboard and a port inside angle limit; a power source; and a rudder driving mechanism driven by power supplied from said power source through said closed steering switches so as to rotate the rudder to the order rudder angle, and further comprising outside angle limit switch means disposed for discontinuing supply of power from said power source to said rudder driving mechanism, said

outside angle limit switch means being normally closed and being opened to cut off said power to the rudder driving mechanism when the rudder moves beyond the inside limit angles of said limit angles of said inside angle limit switch means due to malfunction of said steering switches, whereby the rudder will not rotate to reach the mechanical limit of rudder movement and thus will prevent damage to said steering switches and said rudder driving mechanism, while maintaining the reliability of the steering arrangement.

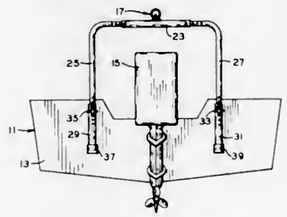
3,949,697
MARINE FENDER ASSEMBLY HAVING A MULTISTAGE SHOCK-ABSORBING PERFORMANCE
Shigeo Ueda, Yokohama, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Dec. 27, 1974, Ser. No. 536,780
Claims priority, application Japan, Dec. 28, 1973, 49-1363
Int. Cl.² B63B *59/02*
U.S. Cl. 114—219 **3 Claims**



1. A marine fender assembly having a multistage shock-absorbing performance for mounting on a stationary object such as a quay wall, comprising a first shock-receiving member having a substantially flat face in a plane substantially parallel to said wall and facing a side board of a vessel; a pair of first supporting members integrally formed with said first shock-receiving member, said first supporting members extending from said first shock-receiving member toward said quay wall while slightly diverging from each other and forming an inverted U-shape cross-section with said first shock-receiving member; second and third shock-receiving members extending outwardly from said first supporting members at different levels, respectively, each of said levels substantially parallel to said wall; and second and third supporting members integrally formed with said second and third shock-receiving members, said second and third supporting members extending from said second and third shock-receiving members toward said quay wall while slightly diverging from each other, respectively, all of said supporting members being in contact with said quay wall and each of said second and third supporting members being provided at its end with a mounting flange for securing said marine fender assembly to said quay wall.

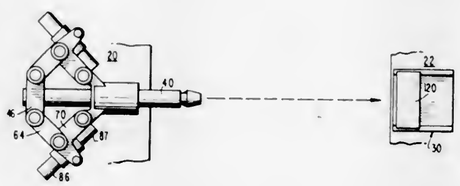
3,949,698
ADJUSTABLE SKI HITCH
James F. Sell, R.R. 3, Box 157, Muncie, Ind. 47302
Filed Oct. 9, 1974, Ser. No. 513,267
Int. Cl.² B63B *21/56*
U.S. Cl. 114—235 WS **4 Claims**

1. An accessory for attachment to a power boat for providing a relatively high, easy release tow rope attachment point above the general level of the boat stern comprising:
a sleeve;
a ring, and a stud adjacent the ring whereby a tow rope bight may be passed through the ring and over the stud with the ring preventing inadvertent detachment of the tow rope from the stud, the ring and stud being connected to the sleeve;
a pair of generally L-shaped structures each telescopingly engaging the sleeve from opposite ends thereof;
a pair of tubular members telescopingly engaging the respective ends of the L-shaped members remote from the sleeve, the tubular members and L-shaped structures having alignable apertures in the vicinity of their respective telescoping engagement;



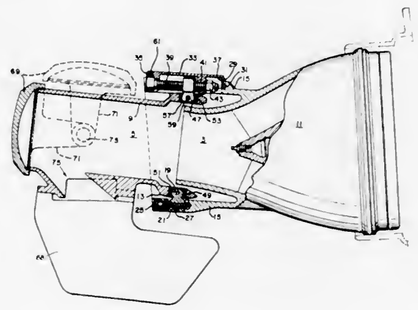
a pair of means for locking the respective L-shaped structures and tubular members together each including at least one protrusion for extending through the aligned apertures; and
means for simultaneously securing the accessory to a boat and retaining the protrusion in position through the aligned apertures.

3,949,699
METHOD AND APPARATUS FOR CONNECTING A TUG WITH A BARGE
William E. Heese, Wadsworth, Ohio, and John R. Sutton, Beaumont, Tex., assignors to HydraPower Inc., Wadsworth, Ohio and Offshore Equipment Development Co., Beaumont, Tex.
Filed Nov. 13, 1974, Ser. No. 523,506
Int. Cl.² B63B *21/62*
U.S. Cl. 114—235 A **17 Claims**



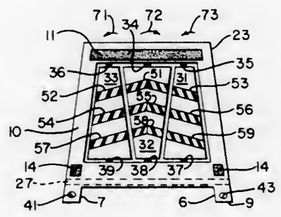
6. An active member of a coupling system used to connect a first vessel with a second vessel to form a composite vessel, the active member comprising:
a base having a generally horizontal bore extending therethrough and a bottom that is suitable for mounting on the deck of a waterborne vessel;
a shaft having a first end, a second end, a cross-sectional shape conforming with the cross-sectional shape of said bore and being reciprocably mounted within said bore; and
a powered linkage means having a first link connected to said base and a second link pivotally connected to said first link and the shaft, said linkage means being operable to reciprocate said shaft relative to said base.

3,949,700
TRIM ADJUSTMENT FOR A JET BOAT
Anas J. Baroody, No. 8 Nobview Circle, Little Rock, Ark. 72201
Filed May 13, 1971, Ser. No. 143,064
Int. Cl.² B63H *11/10*
U.S. Cl. 115—12 R **10 Claims**



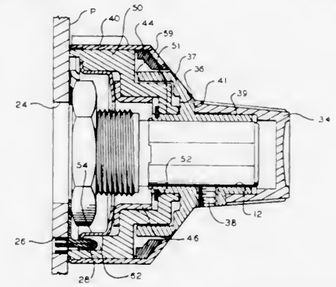
1. A jet boat control for a jet boat powered by a power plant having means for producing a jet stream, and terminating in a jet nozzle, said jet boat control comprising a single unit substantially tubular deflector component, means pivotally supporting said single unit tubular deflector component at one end about an axis in substantially the plane of the discharge end of said jet nozzle for steering purposes, said single unit deflector component having an opening, and means for tilting said pivotal supporting means and axis in a substantially vertical plane, for adjusting said single unit tubular deflector component in a substantially vertical plane for trimming said boat.

3,949,701
SAFETY MARKER
Jean Marc Teixeira, 141 Winthrop St., Brockton, Mass. 01506
Filed Oct. 18, 1974, Ser. No. 515,829
Int. Cl.² E01F *9/10*
U.S. Cl. 116—63 P **5 Claims**



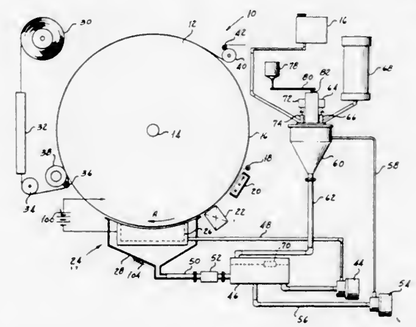
1. A safety marker comprising,
a first flat frame,
a second flat frame,
means for movably joining said frames at one end to form a triangle stance in use and a flat profile in storage,
means for holding the bases of said frames apart when in use,
means for holding said frames separatably together for storage in a flat profile,
means for separatably affixing said frames with cooperating means ridgidly affixed to a selected surface or other safety marker having corresponding affixing means,
blade means rotatably mounted within said frames whereby attention is drawn to the moving blades by motorists approaching said safety marker.

3,949,702
INDICATING DEVICE
Robert J. DeLong, Temple City, Calif., assignor to Spectrol Electronics Corporation, City of Industry, Calif.
Filed June 19, 1974, Ser. No. 480,763
Int. Cl.² G09F *9/00*
U.S. Cl. 116—124 A **3 Claims**



1. In a device for indicating the angular position of a rotatable shaft of a type adapted for mounting on a panel having a first hole provided therethrough for passage of said shaft, said indicating device including a portion having means defining a slot formed therein, the improvement comprising:
a bracket for mounting the indicating device on said panel, said bracket including a first member having side walls and adapted for insertion into said slot of said indicating device, said slot defining means including resilient means having inner surfaces extending parallel to and radially outward from the longitudinal axis of said slot, said first member being inserted into said slot to force said resilient means radially outward to generate a return spring force acting between the inner surfaces of said resilient means and the side walls of said first member to prevent relative movement between said bracket and said indicating device; and
means to prevent any relative movement between said bracket and said panel, to thereby prevent any relative movement between said indicating device and said panel.

3,949,703
SELF-CLEANING DEVELOPER APPLICATOR
Ian Edward Smith, Lockleys; Dennis I. Scroggs, Para Hills, and Peter J. Hastwell, Elizabeth Grove, all of Australia, assignors to Savin Business Machines Corporation, Valhalla, N.Y.
Filed Dec. 30, 1971, Ser. No. 213,885
Int. Cl.² G03G *15/10*
U.S. Cl. 118—637 **14 Claims**



1. Apparatus for developing a latent electrostatic image comprising background areas of residual potential and image areas of relatively greater potential on a photoconductive

layer carried by a conductive substrate moved past a developing station including in combination a developer unit at said station for applying developer comprising toner and a carrier to said photoconductive layer, said developer unit comprising a tray for holding a supply of said developer and a conductive applicator member for applying said developer to said layer, a source of biasing potential, means for applying said biasing potential to said applicator member to counteract the effect of said residual potential and means for insulating said tray from ground to inhibit deposition of toner thereon under the influence of said biasing potential.

3,949,704

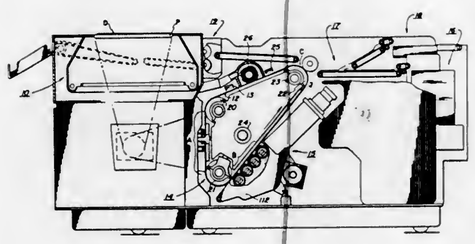
MAGNETIC BRUSH DEVELOPING APPARATUS

Terrence D. Charland, Pittsford, and Stanley D. Klett, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 442,036, Feb. 13, 1974, Pat. No. 3,906,898, which is a continuation-in-part of Ser. No. 255,721, May 22, 1972, abandoned. This application Mar. 3, 1975, Ser. No. 554,900

Int. Cl.² G03G *13/09*

U.S. Cl. 118—637 **2 Claims**



1. In a magnetic brush developing apparatus for applying developing materials to a photoconductive surface including an electrostatic latent image in an electrostatic printing machine having a housing defining a sump zone, and wherein a transport means is provided therein to transport developing material to the proximate roller of said magnetic brush developing apparatus, a trimming bar assembly extending the width of said housing, which comprises:

an insulated trimming bar mounting means affixed to the housing;

a trimming bar positioned within said mounting means, said trimming bar being formed with a flat surface disposed substantially tangential to the proximate roller of said magnetic brush developing apparatus, said trimming bar having a knife edge extending towards said transport means;

said knife edge being formed by the terminus of the plane of said flat surface with a concave longitudinally extending inner surface formed in said trimming bar, said concave inner surface minimizing caking of said developing material; and

said trimming bar flat surface being arranged to converge toward the periphery of said magnetic brush developing apparatus roller whereby said trimming bar flat surface and said roller cooperate to compact the developing material following trimming thereof.

3,949,705

MANUALLY OPERABLE VACUUM MILKING SYSTEM

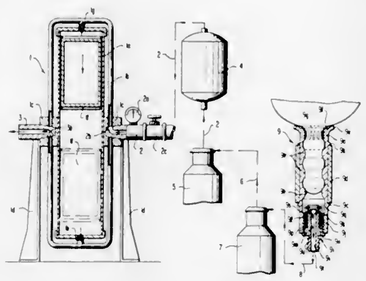
Mariano Gaston Rousseau Portalis, Mariano Moreno 457, La Lucila - Pcia. Buenos Aires, Argentina

Filed Dec. 11, 1974, Ser. No. 531,763

Claims priority, application France, Mar. 29, 1974, 74.11405

Int. Cl.² A01J *5/04*

U.S. Cl. 119—14.43 **10 Claims**



1. In a continuous flow vacuum milking system comprising a manually operable vacuum pump means, vacuum reserve tank means, at least one milk tank connected with said reserve tank means, and a plurality of teat cups connected with said milk tank, said vacuum pump means comprising a cylinder containing a piston which is freely displaceable between opposite ends of said cylinder in response to selective reversible vertical positioning of said cylinder, mounting means for said cylinder comprising trunnion and bushing means for supporting the cylinder for rotation about a horizontal transverse axis, valve means in said trunnion and bushing means, first conduit means communicating between opposite ends of the cylinder and said valve means and second conduit means communicating between said valve means and said vacuum reserve tank, said valve means being responsive to rotation of said cylinder to selectively connect the uppermost end of said cylinder with the reserve tank and concurrently to connect the lower end of the cylinder with the atmosphere, whereby vacuum is produced and maintained in said milking system by alternatively positioning the opposite ends of the cylinder in uppermost position, each of said teat cups including automatically operable unidirectional valve means to prevent a loss of vacuum in the system when the teat cup is not in operative position.

3,949,706

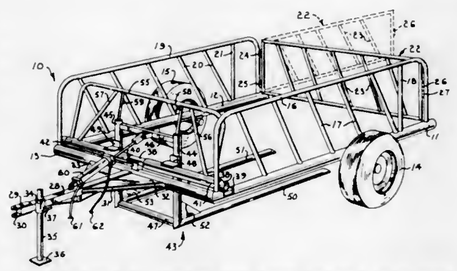
COMBINED HAY CARRIER AND FEEDER

William G. Coon, Jr., P.O. Box 196, Spickard, Mo. 64679

Filed Nov. 15, 1974, Ser. No. 524,042

Int. Cl.² A01K *5/00*

U.S. Cl. 119—60 **4 Claims**



1. Apparatus for loading and transporting a large mass of hay and for feeding animals from said hay mass, said apparatus comprising:

a frame open at the bottom and having a greater size than said hay mass;

a ground engaging wheel assembly supporting said frame above the ground;

means adapted to couple said frame to a vehicle for towing thereby;

a plurality of panels supported on said frame, said panels including a plurality of bars spaced apart to permit the heads of animals to fit therebetween;

a gate supported on said frame and cooperating with said panels to define an enclosure for confining said hay mass, said gate being selectively movable to present an opening in said enclosure of a size to receive said hay mass;

a lift supported for pivotal movement on said frame and located within said enclosure at a position to supportively receive said hay mass, said lift being pivotal upwardly to raise said hay mass from the ground and support said hay mass above the ground for transport, one of said panels being connected to said lift and supported for pivotal movement therewith to assist in supporting said hay mass above the ground; and

power means for moving said lift to raise said hay mass from the ground to an elevated position and to lower same to the ground from the elevated position.

3,949,707

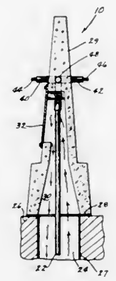
LIVESTOCK WATERING SYSTEM

William R. Armstrong, and Gerald L. Kounkel, both of Eldora, Iowa, assignors to Confinement Livestock Systems, Inc., Eldora, Iowa

Filed Oct. 23, 1974, Ser. No. 517,433

Int. Cl.² A01K *7/00*

U.S. Cl. 119—73 **6 Claims**



1. A livestock watering system comprising,

a concrete waterer housing having a lower end and an upper end, said housing having formed therein a hollow compartment with an open end at said lower end of said housing;

a pipe circuit having a portion thereof embedded in said housing, said pipe circuit having first and second terminal ends extending within said compartment and an animal water outlet extending exteriorly of said housing at a point spaced above the ground;

said outlet having a valve therein which is movable between open and closed positions and which is biased towards its closed position, said valve being yieldably movable to its open position in response to pressure from the livestock being watered.

a source of water above freezing temperature;

a first pipe connected to said source and extending from below the frost line of the ground upwardly into said compartment where it is connected to said first terminal end of said pipe circuit,

a second pipe connected to said second terminal end and extending downwardly therefrom below the frost line of the ground;

vertical underground pipe housing means in communication with said open end of said compartment and extending downwardly below the frost line of the ground; said housing means surrounding said first and second pipes;

pump means for providing continuous flow of water from said source through said first pipe, said pipe circuit, and said second pipe whereby heat energy in said circulating water will deter freezing of water in said water lines.

3,949,708

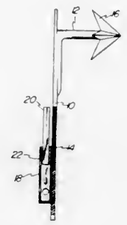
EAR TAG FOR CONTROLLING HOG LOUSE

David L. Meeks, P.O. Box 42, Farwell, Tex. 79325

Filed Sept. 30, 1974, Ser. No. 510,747

Int. Cl.² A01K *13/00, 29/00*

U.S. Cl. 119—156 **3 Claims**



1. An ear tag for animals comprising:

a. a planer surface adapted for having an indicium placed thereon,

b. a spike on the tag having the planer surface for inserting through the ear of the animal,

c. retainer flaps on the spike for retaining the spike through the ear and thus the tag on the ear,

d. an insecticide attached to the tag;

e. a pocket on the opposite side of the tag from the surface adapted to receive indicium,

f. the surface adapted to receive the indicium being larger than the pocket, and

g. said insecticide is in said pocket.

3,949,709

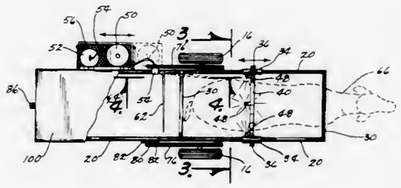
ANIMAL SPRAY MACHINE

John A. Myers, Rte. 1, Hardy, Iowa 50545

Filed Mar. 27, 1974, Ser. No. 455,186

Int. Cl.² A01K *13/00*

U.S. Cl. 119—159 **10 Claims**



1. A system for self spraying cattle comprising,

a walk-through spray machine adapted to be located in a passageway connecting a feeding area with a watering area and said passageway being the only opening connecting said two areas otherwise separated by fencing whereby said cattle in the course of feeding and watering necessarily walk through said spray machine,

said spray machine having a frame shaped to form a passageway therethrough,

a spray means extending over said machine passageway for directing spray onto cattle passing through the machine,

an actuator arm spring biased extending to a position laterally across said machine passageway and adapted to be deflected to a longitudinally extending position upon engagement by animals passing through and said arm being operatively connected to said spray means for turning said spray means on when said arm is in said longitudinally extending position and turning said spray means off when said arm is in said lateral position, and

said machine passageway having a length being at least as long as the length of the cattle using the machine and said actuator arm being located far enough from the entrance end of said machine passageway that the cattle are substantially inside the machine before contact with the actuator arm is made thereby not frightening the cattle when said spray means is actuated, and said spray means is positioned between the actuator arm and the exit to said machine passageway such that the cattle are sprayed from front to rear as they pass through the machine and said spray means remains on as long as said cattle maintain engagement with said actuator arm to hold it in said longitudinal position.

3,949,710

STEAM GENERATOR

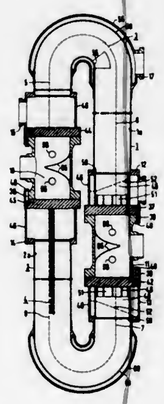
Raimund Reisacher, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 16, 1973, Ser. No. 416,369

Claims priority, application Germany, Nov. 17, 1972, 2256633

Int. Cl.² F22B *1/02*

U.S. Cl. 122—34 **3 Claims**



1. A steam generator comprising two U-shaped tube bundles each having two legs interconnected by a bend, the legs of each of said bundles respectively forming inlet and outlet ends for a primary medium and said two bundles being positioned with their respective inlet legs end-to-end in interspaced relationship and their respective outlet legs end-to-end in interspaced relationship, a separate individual tube sheet for each of said ends, in each instance one of said ends of said legs being mounted in one of said tube sheets, the tube sheets being interspaced, a common primary medium inlet connection chamber interconnecting the interspaced tube sheets in which said inlet tube bundle ends are mounted and a common primary medium outlet chamber interconnecting said interspaced tube sheets in which said outlet tube bundle ends are mounted, each of said tube bundles being enclosed by a separate U-shaped jacket having legs connected with and closed by said tube sheets for the bundles' said leg ends, and means for passing a secondary medium through said jacket; said tube bundles and their said jackets being vertically arranged with a first one of said jackets and said tube bundle enclosed thereby below a second one of said jackets and said tube bundle enclosed thereby; said means for passing a secondary fluid through said jackets including a secondary medium main inlet opening through said first jacket and positioned below and adjacent to the one of said tube sheets in which is mounted the outlet end of the tube bundle enclosed by this first jacket, said first jacket having a secondary medium intermediate outlet opening therefrom below and adjacent to the tube sheet in which is mounted the inlet end of the tube bundle enclosed by this first jacket, said second jacket having a secondary medium main outlet opening above and adjacent to the tube sheet in which is mounted the inlet end of the tube bundle enclosed by said second jacket, and an upper secondary medium intermediate inlet opening a substantial distance above the tube sheet in which is mounted the outlet end of the tube bundle enclosed by this second jacket and a lower secondary medium intermediate inlet opening above and adjacent to the tube sheet in which is mounted the outlet end of the tube bundle in this second jacket, a water separator chamber outside of said jackets and connecting the first jacket's said secondary medium intermediate outlet to the second jacket's said upper secondary medium intermediate inlet, and a vertical gravity conduit having an upper end connecting with said water separator chamber to receive separated water therefrom and a lower end connecting with the seocond jacket's said lower secondary medium intermediate inlet.

3,949,711

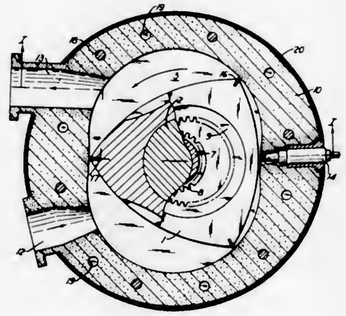
ROTARY ENGINE WITH GRAPHITE HOUSING

Erle I. Shobert, II, St. Marys, Pa., assignor to Stackpole Carbon Company, St. Marys, Pa.

Filed Feb. 8, 1974, Ser. No. 440,842

Int. Cl.² F02B *53/00*

U.S. Cl. 123—8.01 **4 Claims**



1. In a rotary engine comprising a housing having a side wall and parallel end walls defining a chamber, a shaft rotatably mounted in an end wall and extending into said chamber, a rotor in the chamber mounted on the shaft, metallic sealing means projecting from the rotor into sliding engagement with said side wall, said housing being provided with fuel intake and exhaust openings for said chamber, means carried by the housing for periodically igniting fuel in the chamber to drive the rotor, and means operatively connecting the rotor with said shaft to rotate the shaft; the improvement characterized by the side wall of the housing being composed of graphite throughout its thickness.

3,949,712

ROTARY-PISTON INTERNAL COMBUSTION ENGINE HAVING A COMBUSTION ANTECHAMBER

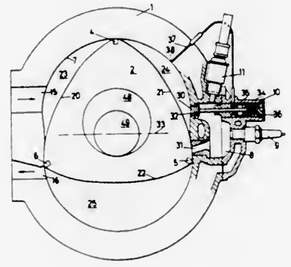
Konrad Thaler, Russelsheim, Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 15, 1974, Ser. No. 524,130

Claims priority, application Germany, Dec. 20, 1973, 2363491

Int. Cl.² F02B *53/10*

U.S. Cl. 123—8.09 **1 Claim**



1. A rotary-piston internal combustion engine comprising a casing providing a trochoidal cavity, a rotary piston disposed within said cavity, an output shaft rotatably supported by the casing and having an eccentric rotatably supporting the piston, said piston having faces bounding, with said casing, variable volume working spaces distributed around the rotary piston and which move with said piston within the casing and act successively as induction space, compression space, and expansion space, inlet passage means and outlet passage means, each said passage means being periodically connected to each of said working spaces as the piston moves; said engine including also the following combination: a combustion antechamber which has a spark plug and a fuel injection nozzle and is connected to said trochoidal cavity by an inlet port and by a firing passage, said firing passage opening into said cavity in immediate proximity to the minor axis of said cavity and running obliquely to said minor axis in the direction of rotation of the piston; said inlet port being arranged before the firing passage, in the direction of rotation of said piston; and a valve operable to control said inlet port in accordance with the position of the rotary piston in such a way that during compression in said compression space the inlet port is opened in a certain position of the rotary piston and is closed shortly before attainment of maximum compression; said valve being connected to a piston movable in a cylinder by spring loading towards closure, and said cylinder being connected by a conduit line to the compression space whereby the piston is loadable by compression force in valve-opening direction; the connection of said conduit line to the compression space being approximately at the position where the trailing edge of that rotary piston face bounding the compression space is situated when said piston face is at right angles to the minor axis of the trochoidal cavity so that at approximately two-thirds of the way into the compression phase the valve opens and approximately one-fourth to one-half of the compression volume is forced into the antechamber.

3,949,713

ELECTRONIC FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

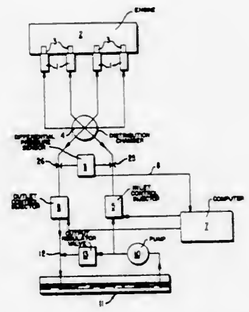
Jean Pierre Rivere, Paris, France, assignor to Regie Nationale des Usines Renault and Automobiles Peugeot, both of Paris, France

Filed Jan. 21, 1974, Ser. No. 435,211

Claims priority, application France, Jan. 19, 1973, 73.01898

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 EA **14 Claims**



1. A system for electronic fuel injection for use in internal combustion engines, comprising:

a plurality of cylinder injectors positioned at the cylinders of the engine,

a distribution chamber for feeding fuel to said cylinder injectors and for receiving fuel from said cylinder injectors,

a fuel reservoir,

an inlet control injector for receiving fuel from said fuel reservoir and for directing it to said distribution chamber,

means for supplying pressurized fuel to said inlet control injector,

an outlet control injector for receiving fuel from said distribution chamber and for returning it to said fuel reservoir,

a pressure differential sensor for sensing the pressure difference between the outlet of said inlet control injector and the inlet of said outlet control injector,

means responsive to said pressure differential sensor for controlling the operation of said inlet control injector and for controlling the operation of said outlet control injector.

3,949,714

FUEL-AIR METERING AND INDUCTION SYSTEM

Harry R. Mitchell, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

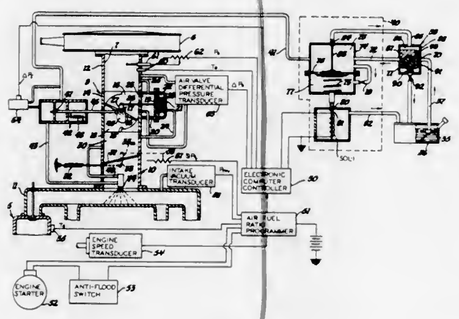
Filed Apr. 22, 1974, Ser. No. 462,631

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 EA **6 Claims**

1. A fuel-air supply system for an engine having an air induction passage means provided with a flow control throttle valve, said fuel and air supply system including a mass airflow meter assembly in communication with the air induction passage upstream of the throttle valve and having a pivotable air valve and a servo mechanism operably connected to the air valve and operable as a function of the differential air pressure across said air valve to maintain said differential air pressure substantially constant under all engine operating conditions to essentially effect airflow measurement, a fuel supply means including a fuel pump for supplying high pressure fuel, a fuel atomizing nozzle positioned for discharge into the air induction passage means downstream of the throttle valve, said fuel atomizing nozzle being supplied with air from the air induction

passage upstream of the throttle valve and being supplied with fuel from said fuel supply means, an electrically controlled valve mechanism and a fuel metering valve connected in series between said fuel supply means and said fuel atomizing nozzle, said fuel metering valve being operatively connected to said air valve whereby fuel flow through said fuel metering valve is varied as a function of the rotative position of said air valve



and, electric circuit means for supplying an electrical signal to said electrically controlled valve mechanism, said electric circuit means having variable means responsive to airflow through said airfow metering means, to a plurality of engine operating conditions and to the differential fuel pressure across said fuel metering valve for controlling the magnitude of said electrical signal.

3,949,715

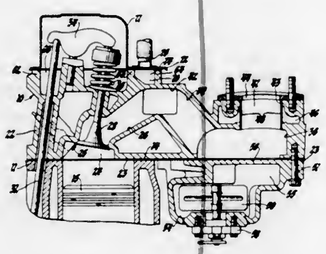
MANIFOLD CONSTRUCTION FOR AN INTERNAL COMBUSTION ENGINE

Louis J. Faix, Washington; Robert T. Price, Rochester, and James R. Spaulding, Royal Oak, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 20, 1974, Ser. No. 499,028

Int. Cl.² F02M *35/00*

U.S. Cl. 123—52 MC **4 Claims**



1. The combination in an internal combustion engine of a cylinder block having a plurality of longitudinally aligned cylinders opening through an end wall of said block,

a unitary cylinder head and manifold member having a planar mounting face sealingly engaging said block end wall and extending laterally outboard thereof, said head member closing the ends of said cylinders and defining combustion chambers therewith,

a plurality of reentrant exhaust ports extending laterally in said cylinder head, said exhaust ports each having one of opposite ends thereof opening to one of said combustion chambers and their other ends opening through said head mounting face adjacent said cylinder block, said other ends forming longitudinally aligned openings in said head mounting face,

a mixture receiving plenum in said cylinder head and opening through said mounting face,

a pair of mixture flow feeder passages in said head extending upwardly and outwardly from said plenum,

a pair of aligned spaced longitudinal distribution passages in said head and extending above and laterally between said cylinders and said plenum, said distribution passages each connecting with one of said feeder passages,

a plurality of intake passages in said head, each intake passage connecting with one of said combustion chambers and angled upwardly to connect with an adjacent one of said distribution passages,

an exhaust manifold sealingly secured to the said cylinder head mounting face adjacent said cylinder block, said manifold having exhaust passages connecting with said cylinder head exaust ports and a heat chamber beneath said cylinder head plenum, said plenum and said heat chamber being separated by a hot wall, and valve means in said exhaust manifold operable to direct exhaust gases from certain of said exhaust passages through said heat chamber to heat said hot wall.

3,949,716

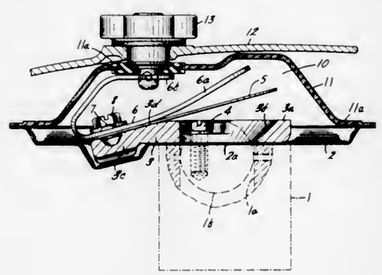
SPEED LIMITING GOVERNOR FOR INTERNAL COMBUSTION ENGINE

Li-Hsiung Liu, Stamford, Conn., assignor to Textron, Inc., Providence, R.I.

Filed Apr. 18, 1974, Ser. No. 462,180

Int. Cl.² F02D *11/08, 9/02*

U.S. Cl. 123—97 R **4 Claims**



1. A governor for limiting the speed of an internal combustion engine having a carburetor for supplying a fuel-air mixture to the engine, the carburetor having an air intake passage with an aperture through which air is supplied to the carburetor at a periodically varying rate of flow having a frequency proportional to the speed of the engine, said governor comprising a flexible spring reed which is planar when in relaxed condition, and means mounting said reed on a support disposed at an angle to the plane of said aperture with a portion of said reed overlying the intake side of said aperture, said overlying portion of said reed being spaced from said aperture when the reed is in relaxed condition and being movable by flexing of said reed from a normal open position to a closed position in which said overlying portion at least partially blocks said aperture to restrict air flow therethrough, said reed being tuned to vibrate at a resonant frequency approximately equal to the frequency of variation of said rate of flow at a selected maximum engine speed, whereby vibration of said reed induced by said periodically varying rate of flow when the engine approaches the selected maximum speed results in said overlying portion of the reed intermittently at least partially blocking said aperture to restrict air flow therethrough so as to reduce the fuel-air supply to the engine and also to increase the fuel-air ration and thereby limit engine speed.

3,949,717

PRESSURE REDUCTION LIMITER IN A COMBUSTION ENGINE

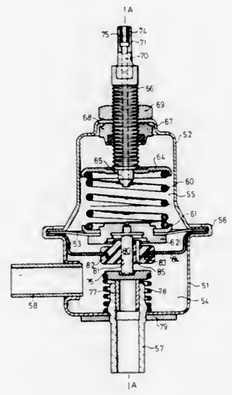
Norbert Rittmannsberger, Stuttgart; Hermann Hoelle, Sonthofen, and Klaus Bertsch, Backnang, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Oct. 11, 1972, Ser. No. 296,536

Claims priority, application Germany, Oct. 22, 1971, 2152586

Int. Cl.² F02B *32/00, 3/00*

U.S. Cl. 123—119 D **12 Claims**



1. In a combustion engine having air intake means, throttle valve means having a closed position blocking air from said intake means, whereby sudden closure of said throttle valve means causes a sudden pressure drop in said air intake means, and fuel injection means for injecting quantities of fuel varying as a function of air volume or pressure in said air intake means during each operating cycle of said engine, a pressure reduction limiter responsive to said pressure drop in said air intake means and furnishing a quantity of air sufficient for maintaining combustion in said engine to said air intake means following said closure of said throttle valve means, said pressure reduction limiter comprising a housing; membrane means for dividing said housing into a first and second chamber, said membrane means including reinforcement means for reinforcing said membrane means, said reinforcement means comprising a reinforcement disc having a first surface facing said first chamber; ring target means connected to said reinforcement means; first spring means for applying tension to said membrane means, said first spring means having a first end in operative contact with said ring target means; first connecting means for connecting said first chamber to said air intake means in a position following said throttle valve means in the direction of air flow; second connecting means for connecting said first chamber to said air intake means prior to said throttle valve means in said direction of said air flow; sealing valve means braced against said membrane means, said sealing valve means having a closed position for blocking air flow from said first chamber to said air intake means; a rigid partition positioned between said sealing valve means and said membrane means, said rigid partition having a collar of synthetic material sprayed into a hole in said partition, said collar surrounding a bore; a pressure pin mounted through said bore, said pressure pin having a first end portion in contact with said reinforcement disc and a second end portion in contact with said sealing valve means, said pressure pin being movable in a lengthwise direction through said bore in said rigid partition, and third connecting means for connecting said second chamber to said air intake means following said throttle valve means in the direction of said air flow, said third connecting means comprising a connector having a choke bore.

3,949,718

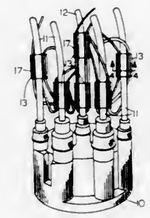
ENGINE SPARK IGNITION SYSTEM CORONA COUPLER

James E. Turner, 720 S. Kimball, Southlake, Tex. 76051

Filed May 21, 1974, Ser. No. 471,865

Int. Cl.² F02M *27/04*

U.S. Cl. 123—119 E **16 Claims**



1. In a corona coupler constructed for use with the ignition system of a spark ignition internal combustion engine having a plurality of firing chambers: a plurality of corona coupling engine blocks adapted to be individually snap-mounted on heavy current wires used as spark plug wires and a coil wire of an internal combustion engine system; insulated wire means interconnecting and running through said plurality of corona coupling unit blocks; an elemental length of conductive means carried by each of said unit blocks in a position to generally parallel and be in close adjacency to the heavy current wire upon which each unit block is mounted; wherein said insulated wire means is two insulated wires interconnecting and running through the plurality of corona coupling unit blocks of the corona coupler; and the portions of said two insulated wires running through unit blocks are contained in spaced parallel end-to-end extended passageway means in each of said unit blocks.

3,949,719

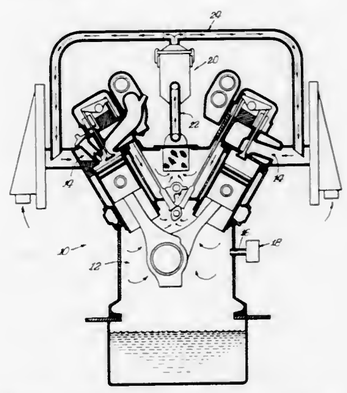
VOLUMETRIC CONTROL VALVE UNIT FOR CRANKCASE VENTILATION SYSTEM

Joseph M. Bellanca, Woodstock; Lewis D. Sargert, Addison, and Rodney M. Antrim, Arlington Heights, all of Ill., assignors to Kar Products Inc., Des Plaines, Ill.

Filed Jan. 27, 1975, Ser. No. 544,146

Int. Cl.² F01M *13/00*

U.S. Cl. 123—119 B **7 Claims**



1. An internal combustion engine having a crankcase and an intake manifold, a filter unit defining a condensation filtration chamber and having an upper outlet opening, inlet conduit means accommodating the flow of vapors from the crankcase to the condensation filtration chamber, and outlet conduit

means accommodating the flow of vapors from the outlet opening to the intake manifold: a volumetric control valve unit within the condensation filtration chamber for metering the flow of vapors between the condensation filtration chamber and the outlet opening comprising a vertical tubular member mounted at its upper end in the outlet opening, said tubular member being formed with slot means adjacent the upper end thereof to provide first passageway means restricting the flow of vapors through said control valve unit and presenting a metering area corresponding to a predetermined value of pressure desired in the crankcase under normal operating conditions, valve seat means adjacent the lower end of said tubular member, a ball valve within said tubular member and normally seated on said valve seat means, and said ball valve being unseated from said valve seat means when the pressure in the crankcase exceeds said predetermined value of pressure to provide additional passageway means for the flow of vapors through said control valve unit.

3,949,720

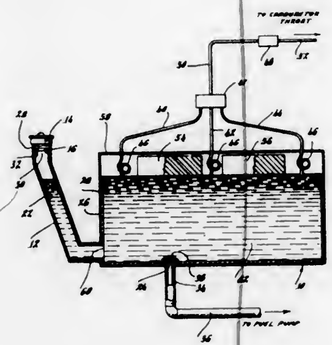
FUEL CONTAINER SYSTEMS

Charles F. Zipprich, 20 Locust Ave., Troy, N.Y. 12180; Harvey R. Prins, Box 107 R.D. No. 1, Averill Park, N.Y. 12018, and Keith M. Gagnier, Box 214, Poestenkill, N.Y. 12140

Filed Feb. 25, 1974, Ser. No. 445,457

Int. Cl.² B65D *25/38*

U.S. Cl. 123—136 **6 Claims**



1. In a vehicular fuel system, fuel storage apparatus comprising the combination of

a rigid outer container having a filler opening,

a continuous collapsible liner positioned within said outer container, the interior of which liner is accessible via an opening positioned inside said filler opening, said liner being without flotation material positioned at the underside of the top of said liner that would form pockets.

resilient, compressible, expansion volume devices positioned between the outside of the top of said liner and the inside of the top of said outer container,

and means for removing vapor from the top of the interior of said collapsible liner which comprises conduit means for conducting vapor away from said collapsible liner, suction producing means connected to said conduit means, and liquid check valve means positioned in the flow path formed by said conduit means between said collapsible liner and said suction producing means.

3,949,721

DISTRIBUTOR FOR AN INTERNAL COMBUSTION ENGINE CONTAINING AN APPARATUS FOR SUPPRESSING NOISE

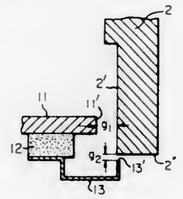
Osamu Hori, and Teruo Yamanaka, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 17, 1974, Ser. No. 470,974

Claims priority, application Japan, Dec. 28, 1973, 49-3467

Int. Cl.² H01H *19/00*

U.S. Cl. 123—146.5 A **13 Claims**



1. An electrical interference suppressng distributor for a spark ignition internal combustion engine of the type that includes a housing, the housing having a central terminal for connection to a source of timed ignition pulses and a plurality of stationary terminals spaced on a circular locus concentric with the central terminal for connection to spark ignition devices of an engine, and a rotor located inside the housing for rotation about an axis through the central terminal, the rotor having a conductive member contacting the central terminal and includng a surface spaced from the circular locus to define a first discharge gap between said surface and each terminal, wherein the improvement comprises:

an electrode member that includes a portion located close to the first discharge gap to define a second discharge gap having a distruptive voltage lower than that of the first discharge gap, the electrode member further including a resistance element connected in series with the second discharge gap between each stationary terminal and the conductive member, the path through the resistance element and second discharge gap being electrically in parallel with the path through the first discharge gap, such that an ignition pulse applied to the central terminal when the rotor is aligned with a stationary terminal will cause a spark discharge between the rotor and the stationary terminal to occur initially as a low current discharge through the second discharge gap followed immediately by a main current discharge through the adjacent first discharge gap.

3,949,722

SEMICONDUCTOR CONTROLLED IGNITION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

Hans Linstedt, Reutlingen; Helmut Roth, Stuttgart; Götz Bundschuh, Gerlingen; Gerd Höhne, Ludwigsburg; Bernd Bodig, Leinfelden; Gert Strelow, Stuttgart; Peter Schmidt, Munklingen; Gerhard Söhner, Geradstetten; Herman Roozenbeek, Schwieberdingen, and Hartmut Michel, Reutlingen, all of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Filed July 23, 1974, Ser. No. 491,047

Claims priority, application Germany, Aug. 7, 1973, 2339896

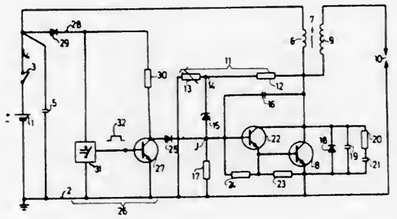
Int. Cl.² F02P *3/02*

U.S. Cl. 123—148 E **10 Claims**

1. Ignition system for internal combustion engines having a series circuit including a current source (1), the primary (6) of an ignition transformer (7) and a semiconductor ignition current switching means (8, 22)

characterized by

a voltage divider (11) including two resistors (12, 13) and having a division tap point (14), the voltage divider being permanently and continuously connected in parallel to the switching path of the semiconductor switching means (8, 22);



and a voltage sensitive breakdown element (15) of predetermined voltage breakdown characteristic connected with one terminal to the tap point (14) of the voltage divider and with the other terminal (J) to the control electrode of the semiconductor switching means (8, 22) to provide an additional control voltage thereto if the voltage sensed by said sensing means exceeds a value leading to breakdown of said voltage sensitive means.

3,949,723

AIR PRE-HEATING ARRANGEMENT FOR COMBUSTION ENGINES

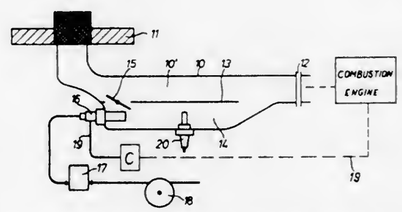
Otto Beesch, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 161,233, July 9, 1971, abandoned. This application Dec. 10, 1973, Ser. No. 423,519

Claims priority, application Germany, Sept. 28, 1970, 2047589

Int. Cl.² F02N *17/00*; F02M *39/00*

U.S. Cl. 123—179 H **11 Claims**



1. Arrangement for supplying pre-heated intake air to a Diesel engine comprising, in combination, an elongated manifold having an upstream portion communicating with the ambient atmosphere, a longitudinally spaced downstream portion communicating with the Diesel engine, and an elongated enlarged portion intermediate said upstream and downstream portions of said manifold, said enlarged portion defining an elongated enclosed compartment having an inlet portion communicating with said upstream portion, and a longitudinally spaced outlet portion communicating with said downstream portion of said manifold; an elongated partition arranged in said elongated compartment extending longitudinally thereof and of said manifold and partitioning said elongated compartment in said enlarged portion into two parallel elongated passages, one of which is an elongated airflow passage and the other of which is an elongated combustion passage, said elongated partition extending from said inlet portion and terminating short of said outlet portion so as to subdivide said inlet portion into an inlet of said elongated airflow passage and an inlet of said elongated combustion passage, and so as to form one outlet from said elongated airflow passage and anotuer outlet from said elongated combustion passage into said outlet portion of said elongated compartment, said elongated partition being formed with an inlet port communicating said upstream portion of said manifold with said inlet of said elongated combustion passage, said inlet into and outlet from said elongated airflow passage being permanently open so as to permit continuous passage of air through said elongated airflow passage and into said downstream portion of said manifold leading to the Diesel engine during operation thereof, and said outlet from said elongated combustion passage being also permanently open; valve means mounted in said partition in the region of said inlet port leading into said elongated combustion passage, and operative for controlling the flow-through cross-section of said inlet port to thereby adjustably branch off a portion of the air stream passing through said upstream portion of said manifold and admit the same into said elongated combustion passage; means for injecting a spray of fuel under positive pressure into said elongated combustion passage in the region of said inlet thereof so that said fuel spray becomes admixed with said branched-off portion of said air stream and forms therewith a combustible mixture in said elongated combustion passage downstream of said inlet; and ignition means in said combustion passage for igniting said combustible mixture so as to generate heat which heats said partition whereby the latter exchanges heat with and preheats the air flowing through said elongated airflow passage, the hot combustion products from said elongated combustion passage joining and becoming admixed with the air flowing through said elongated airflow passage in said outlet portion of said elongated compartment whereby said air stream is additionally pre-heated during its passage through said downstream portion of said manifold.

3,949,724

CYLINDER HEAD UNITS FOR INTERNAL COMBUSTION ENGINES

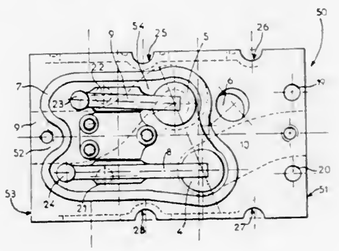
Jean Nickly, 2 rue Le Royer, Lyon 3° (Rhone), France

Filed Mar. 27, 1972, Ser. No. 238,299

Claims priority, application France, Mar. 25, 1971, 71.11428

Int. Cl.² F01P *3/02*; F02F *1/36*

U.S. Cl. 123—193 H **5 Claims**



1. In a unit cylinder head for a diesel engine of the type having a single inlet valve seating and a single exhaust valve seating and adapted to receive, respectively, an inlet valve and an exhaust valve, the improvement comprising:

a. a vertical channel formed on each lateral face of the head for forming a joint with an adjacent similar cylinder head, the vertical channel adapted to be aligned with a vertical channel in the adjacent cylinder head to form the joint, each vertical channel having a semi-cylindrical cross-section,

b. a clamping screw received in the joint, thereby, straddling the two adjacent cylinder heads,

c. two rocker stems to control the valves, one rocker stem for each of the valves,

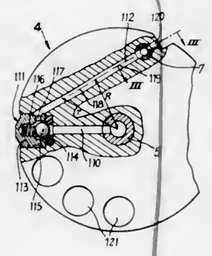
d. a sealing joint disposed at each lateral face and being compressed between two adjacent cylinder heads, and wherein,
e. the vertical plane joining the axis of the two valve seatings is inclined in relation to the vertical plane passing through the longitudinal axis of the engine,
f. the exhaust manifold is shortened and the inlet manifold is provided with a spiral profile,
g. the lateral faces of the head are formed with openings which are used successively for removing the moulding sand during manufacture, and then for the circulation of water from one cylinder head to another, and
h. one of the manifolds passes between the two rocker stems to open on to an adjacent face of the cylinder head, while the other manifold opens on to the opposite face of the head.

3,949,725

IMPROVEMENTS MADE TO THE LUBRICATION OF ENGINES

Eric Jaulmes, Paris, France, assignor to Ateliers de la Motobecane, Pantin, France

Filed Dec. 31, 1974, Ser. No. 537,827
Claims priority, application France, Mar. 11, 1974, 74.08225
Int. Cl.² F01M *1/00*
U.S. Cl. 123—196 R **4 Claims**



1. In a device for separate-oil lubrication for internal combustion engines, especially for two-cycle engines, said system comprising a pressurized oil tank, an oil pump driven by the engine;

a centrifugal valve integral with a part which is rotational about an axis, means for driving said part in rotation around said axis, a connecting channel linking an outlet of said oil pump to the inlet of said valve, and a feed channel arranged inside said rotational part and linking the outlet of said valve to a distribution point for the oil in the engine, the improvement consisting in that

said feed channel comprises a first section adjacent to the valve and having successive portions downstream from said valve in the direction of oil flow located on decreasing radii of gyration, and a second section located beyond the first section in the direction of the flow of the oil between said first section and said distribution point, the successive portions of said second portion in the direction of said flow being located on increasing radii of gyration.

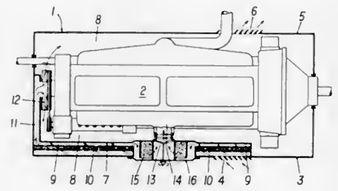
3,949,726

INTERNAL COMBUSTION ENGINE WITH ENCASING

Hans List, 126, Heinrichstrasse, Graz, Austria

Filed Sept. 10, 1974, Ser. No. 504,761
Claims priority, application Austria, Apr. 3, 1974, 2792/74
Int. Cl.² F02F *1/34;* **F02B** *77/00*
U.S. Cl. 123—198 E **4 Claims**

1. An internal combustion engine having an encasing surrounding the outer surfaces of the engine in spaced relation thereto through which cooling-air flows, at least one cooling-air inlet and one cooling-air outlet in said encasing, a cooling-air blower arranged in the encasing and having a suction end and a delivery end, the suction end of the cooling-air blower communicating with the cooling-air inlet, the delivery end of the cooling-air blower communicating with the cooling-air



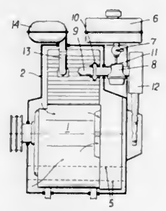
outlet, said engine comprising a chamber formed within said encasing and having two end portions opposed to each other, one end portion connected to said cooling-air inlet, the other end portion connected to the suction end of the cooling-air blower, and a cooling air filter located in the chamber in the path of the cooling-air flowing through the chamber.

3,949,727

CARBURETOR ENGINE WITH SOUND-PROOF ENCASING

Gerhard Thien, and Heinz Fachbach, both of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Sept. 19, 1974, Ser. No. 507,523
Claims priority, application Austria, May 20, 1974, 4183/74
Int. Cl.² F02F *1/34;* **F02B** *77/00*
U.S. Cl. 123—198 E **5 Claims**



1. In a sound-absorbing encased carburetor internal combustion engine having a crankcase, at least one cylinder and one cylinder head, in combination a sound-proof encasing extending completely thereabout and being spaced from the outer surfaces of said crankcase, cylinder and cylinder head of the engine, at least one aperture in the sound-proof encasing, a carburetor located outside the encasing adjoining said aperture, a suction pipe extending from the cylinder of the engine through said aperture as far as the carburetor and sealed off against the encasing in the area of said aperture, the suction pipe being sound insulated against the cylinder of the engine, further fuel-carrying structural elements being arranged outside said encasing and conductively connected to said carburetor.

3,949,728

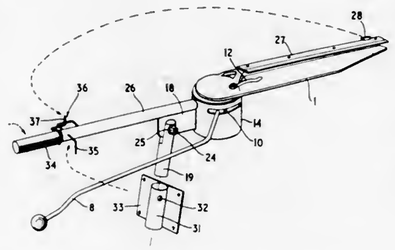
CLAY PIGEON THROWING DEVICE

Arne Gustafsson, Vikingstad, Sweden, assignor to Stiga AB, Sweden

Filed Sept. 11, 1974, Ser. No. 504,929
Int. Cl.² F41B *3/04*
U.S. Cl. 124—8 **8 Claims**

1. A clay pigeon trap comprising
a. a housing defining a chamber;

b. a tensioning bush rotatably mounted about its axis in said chamber and including a bore therein;
c. a throwing arm for releasably supporting a clay pigeon and including a pivot shaft positioned for rotation in said bore, said pivot shaft including a spring detachable securing means;
d. a helically coiled spring having two terminal ends and positioned in said chamber, one end of said spring being detachably secured to said securing means so as to releasably connect the spring and the throwing arm and the opposite end thereof being secured to said tensioning bush for biasing the pivotal movement of said throwing arm in one direction;
e. stationary means mounted on said housing and extending in a direction transverse to said axis;
f. first means mounted on said stationary means for releasably securing said throwing arm adjacent said stationary means against said biased pivotal movement when said coiled spring under tension;



g. a tensioning arm connected to said bush and projecting transversely of said axis;
h. second means mounted on said stationary means for securing said tensioning arm adjacent said stationary means against biased pivotal movement in the direction opposite said one direction;
i. whereby said throwing arm may be pivoted in said opposite direction to tension said coiled spring and be secured in position by said first releasable securing means, said coiled spring may be further tensioned by pivoting said tensioning arm and consequently rotating said bush in said one direction and securing said tensioning arm by said second securing means, and said throwing arm may be released by said first releasable securing means to permit said throwing arm to pivot in said one direction under the influence of said tensioned coiled spring and project a clay pigeon supported thereon.

3,949,729

ELASTIC BAND GUIDED ARTICLE PROJECTING DEVICE

James M. Pfotenhauer, 1302 N. 19th St., Escanaba, Mich. 49829

Filed Jan. 6, 1975, Ser. No. 538,802
Int. Cl.² F41B *7/00*
U.S. Cl. 124—20 B **8 Claims**

1. A slingshot comprising:

a housing having a handgrip;

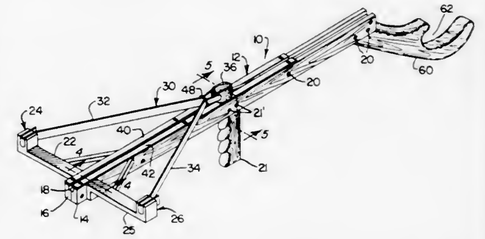
said housing including an upwardly open and rearwardly open projectile discharge slot extending fore-to-aft along said housing for slidably receiving a projectile, said slot being upwardly open throughout its rearward extent and having a forward discharge opening to discharge a projectile;

an elastic band having portions converging rearwardly from points located laterally outwardly and vertically above said slot;

said elastic band including a convergent end which forms a pouch for being gripped by fingers of an operator so as to be rearwardly expandible to a tensioned condition above said slot;

an plunger slidably disposable in said slot;

a flexible line having a first end disposed out of said slot and connected to said convergent end of said elastic band,



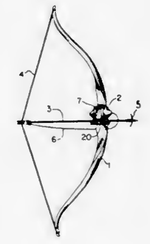
and a second end disposed in said slot in connection with said plunger, release of said elastic band from a tensioned condition caused said plunger to be propelled forwardly in said slot to advance and launch a projectile located thereahead.

3,949,730

ARCHERY BOW WITH FISHING REEL SUPPORTING BRACKET

Simon Ray Schoenberger, 1806 Bridge City Ave., Bridge City, La. 70094

Filed Nov. 18, 1974, Ser. No. 524,669
Int. Cl.² F41B *5/00*
U.S. Cl. 124—24 R **12 Claims**



7. A combination comprising; a bow having a hand-grip intermediate the ends of the bow, a captive-type arrow associated with one side of the bow which embodies a shaft having an arrowhead on its leading end constructed to pierce and embed itself in a victim fish or the like, a reel and has a fishing line having one end attached to the shaft inwardly of the arrowhead on the shaft, the other end of the line being wound on said reel, and wherein the reel includes an extended mounting foot attached to one side of said reel which has a leading tip and a trailing tip, said adapter comprising:

first, vertical mounting bracket means for attaching the adapter to the bow at its hand-grip portion;

an intermediate, horizontally disposed, transverse arm section attached at one end to said first mounting bracket; and

second, at least generally horizontally disposed, longitudinally extended mounting bracket means for mounting the reel connected to the other end of said intermediate, transverse arm section; said second, longitudinally extended mounting bracket means including at one end a transverse slot of a dimension to receive in close engagement one tip of the mounting foot of the reel in direct male-female mating engagement therewith, and at the other end easily engageable and disengageable compressive, locking means for locking in the other tip of the

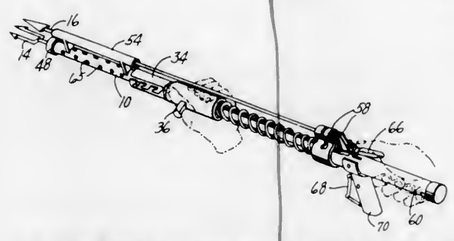
mounting foot of the reel between it and the main body of said second bracket means; said second, longitudinally extended bracket means including vertical edges extending vertically from its sides, and a slightly turned lip at its end that includes said transverse slot, said slot beginning at the beginning of said turned lip, the edges and the lip serving to position, locate and hold the mounting foot of the reel when the reel is mounted on said second bracket means; whereby the reel can be easily and quickly detachably connected to the bow.

3,949,731

SPRING TYPE SPEAR FISHING GUNS

Adolph Caso, 654 Wellesley St., Weston, Mass. 02193

Filed Jan. 15, 1975, Ser. No. 541,336
Int. Cl.² F41B 7/04
U.S. Cl. 124—27 **6 Claims**



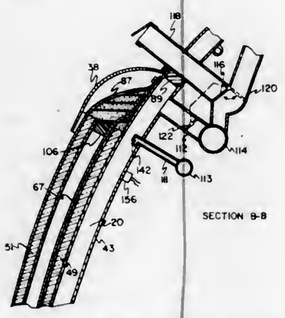
1. A spear fishing gun assembly comprising a barrel having forward and rearward ends, a spear slidably supported in the barrel and having a rearward end near the rearward end of the barrel, means on the forward end of the barrel for retaining the spear captive in the barrel, means for propelling the spear including a spring wrapped around the barrel and having a rearward end in engagement with the rearward end of the spear, means for holding the spring in stretched condition, a first sear means for retaining the spear in its rearward position against the force of the spring and a first trigger means for releasing the spear after the spring has been stretched.

3,949,732

SOLAR HEATED BUILDING

Robert G. Reines, Star Rte. 103, Tijeras, N. Mex. 87059

Filed June 10, 1974, Ser. No. 478,341
Int. Cl.² F24J 3/02
U.S. Cl. 126—270 **17 Claims**



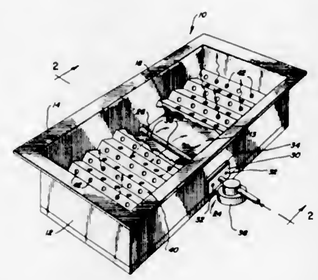
1. A solar heated building comprising in combination: a substantially hemispherical outer wall; a plurality of adjacent frusto-sector shaped solar heat collectors supported on said outer wall and extending both in azimuth and in vertical spherical angle with directions of useful receipt of solar energy including diurnal and seasonable variations in such directions; said solar heat collectors each having a solar heat collecting sheet; means for circulating a heat transport fluid in thermal contact with the solar heat collecting sheet; at least one transparent covering sheet supported in spaced covering relation over each solar heat collecting sheet; said plurality of frusto-sector shaped heat collectors being separated into discrete arrays; a heat transport fluid distributing manifold connected to the top end of each of the solar heat collecting sheets in each array; a heat transport fluid collecting manifold connected to the bottom ends of all the solar heat collecting sheets; a controllable valve connected in series with the input of each of the heat transport fluid distributing manifolds; a heat transport fluid storage reservoir; piping means connecting the heat transport fluid reservoir to a circulating pump; piping means connecting the circulating pump to the controllable valves; piping means connecting the storage reservoir to the heat transport fluid collecting manifold; a temperature responsive device connected in thermal contact with at least one solar heat collecting sheet in each array; a temperature responsive device connected in thermal contact with the heat storage reservoir; and means responsive to a positive difference between the temperature of the solar heat collecting sheets and the temperature of the heat storage reservoir to open the controllable valves of all those arrays which are hot enough to contribute heat to the heat storage reservoir; whereby the number of heat contributing arrays is a maximum when the temperature of the heat storage reservoir is depleted and tracking of the sun is automatic.

3,949,733

STEAM HEATING APPARATUS

Dye O. Miller, Mount Prospect; August J. Antunes, and Jerome Antunes, both of Elmhurst, all of Ill., assignors to A. J. Antunes & Co., Chicago, Ill.

Filed Feb. 14, 1975, Ser. No. 550,033
Int. Cl.² F24H 1/18
U.S. Cl. 126—348 **7 Claims**



1. A steam heating apparatus for heating foods or the like, comprising:
a housing forming a steam chamber;
a heated, steam generating platen mounted in the steam chamber of the housing;
water inlet means mounted on the housing above the platen for introducing water from a source thereof into the steam chamber, said inlet means being thermally insulated from said housing; and
an apertured food support plate mounted above the platen and the water inlet means for supporting a food item thereon and forming the top of the steam chamber, whereby steam generated by the platen will pass through the food support plate and steam heat the food item.

3,949,734

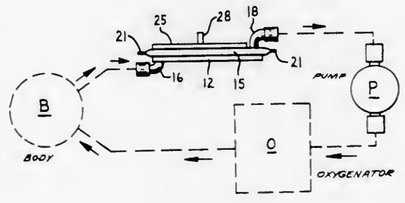
FLUID PUMP CONTROL SYSTEM

Miles Lowell Edwards, 13191 Sandhurst Place, Santa Ana, Calif. 92705, and Eugene G. Taatjes, 229-9th St., Huntington Beach, Calif. 92648

Filed July 22, 1974, Ser. No. 490,359
Int. Cl.² A61M 1/03
U.S. Cl. 128—1 D **6 Claims**

1. In an extracorporeal blood circuit for a patient, a pump driven by a variable speed electric motor, and a control system

for said motor to regulate the speed of said pump so that the pump does not impose a back pressure on the input flow from the patient by running too slowly and does not create suction pressure on the input flow from the patient by running too fast; said control system comprising a flexible bladder connected in said inlet flow from the patient so as to expand and contract in accordance with the rate of said inlet flow of blood from the patient relative to the output of the pump, a platen bearing on said bladder and movable with the expansion and contraction of the bladder, circuit means operable by said platen to increase the speed of said motor in accordance with the amount of movement of the platen in one direction when the bladder is expanding and operable to decrease the speed of said motor in accordance with the amount of movement of the platen in an opposite direction when the bladder is contracting; and circuit means operable by said platen to stop said motor in response to excessive contraction or substantial collapse of the bladder; said first circuit means comprisng a silicon controlled rectifier in circuit with said motor, a capacitor, a transducer connected with said platen and having circuit means arranged to vary the charging time of said capacitor, and means for discharging said capacitor through said rectifier to energize said motor, the frequency of discharge of said capacitor controlling the speed of said motor; said circuit means arranged to vary the charging time of said capacitor comprising an integrator and current amplifier connected in series between said transducer and capacitor, said means for discharging said capacitor comprising an avalanche diode; said transducer comprising coaxial primary and secondary coils, said primary coil being connected across an AC supply, a center tap in said secondary coil connected to a reference voltage terminal, a core of magnetic material movable axially in said coils by said platen, a pair of resistors each connected at one end to a signal voltage terminal, a pair of diodes connected between the ends of said secondary coil and the other ends of said resistors, respectively, and a pair of condensers connected between said reference voltage terminal and said other ends of said resistors, respectively.



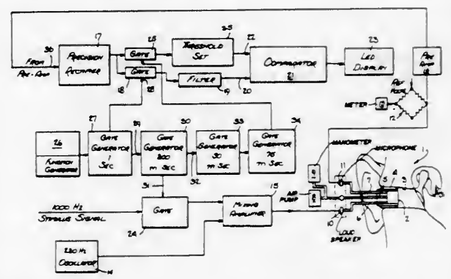
3,949,735

METHOD AND APPARATUS FOR AN IPSILATERAL REFLEX TEST

Irwin Klar, New City, N.Y., and Arthur W. Rochussen, Nashua, N.H., assignors to American Electromedics Corporation, Dobbs Ferry, N.Y.

Filed Aug. 20, 1974, Ser. No. 498,992
Int. Cl.² A61B 5/12
U.S. Cl. 128—2 Z **16 Claims**

1. An improved method of reflex testing for a contraction of the stapedial muscle of the ear when subjected to a stimulus signal by measuring a change in the relative acoustic impedance of the middle ear system comprising the steps of:
obtaining a measure of the relative acoustic impedance of the ear under test using a probe tone;
subjecting the same ear to a stimulus signal;
thereafter terminating the stimulus signal;
obtaining a second measure of the relative acoustic impedance of the ear under test during the reflex response latency period after the termination of the stimulus signal;
comparing the two said acoustic impedance measurements;
and
generating a signal when the said measures differ.

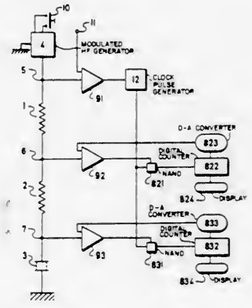


3,949,736

CIRCUIT FOR AUTOMATICALLY DERIVING AND MEASURING RELATIVE VOLTAGES ASSOCIATED WITH IMPEDANCE COMPONENTS OF A BIOLOGICAL OBJECT

Jiri Vrana, and Milan Cervencl, both of Prague, Czechoslovakia, assignors to Vyvojova a provozni zakladna vyzkumnych ustavu, Bechovice, Czechoslovakia

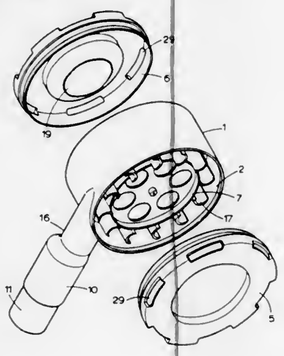
Filed July 15, 1974, Ser. No. 488,291
Int. Cl.² A61B 5/05
U.S. Cl. 128—2.1 Z **1 Claim**



1. In a circuit for automatically deriving and measuring relative voltages associated with impedance components of a biological object, a source of amplitude-modulated high-frequency current, first and second equal resistances connected in series with the source, means for coupling the biological object to be investigated in series with the first and second resistances, a first comparator having a first input connected to a first connecting point of the source and the first resistance and a second input connected to a reference voltage, a step-by-step voltage generator having a triggering input connected to the output of the first comparator, second and third comparators individually having first inputs connected to a second connecting point of the first and second resistances and to a third connecting point of the second resistance and the coupling means, respectively, first and second means for recording the values of voltages at the second and third connecting points, first and second gate means having outputs individually connected to the inputs of the first and second recording means, respectively the first and second gate means further having first inputs individually connected to the outputs of the second and third comparators, respectively and second inputs connected to the output of the step-by-step voltage generator, and feed-back means for individually coupling the outputs of

the first and second recording means to second inputs of the second and third comparators, respectively.

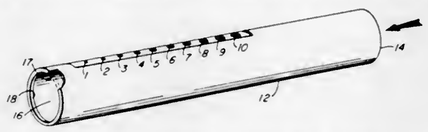
3,949,737
SPIROMETER
Carl Philip Nielsen, Chatswood, Australia, assignor to Allen & Hanburys Limited, London, England
Filed Dec. 28, 1973, Ser. No. 429,087
Claims priority, application Australia, Jan. 4, 1973, 1799/73
Int. Cl.² A61B *5/08*
U.S. Cl. 128—2.08 **2 Claims**



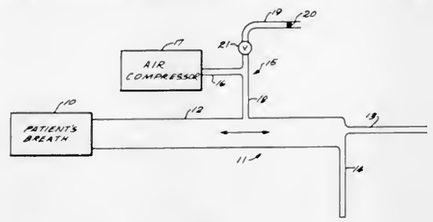
1. Combination means for indirectly determining the forced expiratory volume in 1 second (FEV_1) of a subject, the combination comprising:
1. a device for measuring lung exhalation comprising a body defining a cylindrical interior volume; a partition axially dividing the interior volume into two cylindrical chambers; a shaft rotatably mounted centrally in the partition and extending axially into both chambers; an impeller in one of said chambers having an arcuately vaned periphery and being mounted on and rotatable with the shaft; tubular inlet means for the exhalation of a subject connected to the body and opening into said first chamber, and inlet means extending outwardly from the chamber and substantially tangentially of the vaned periphery of the impeller, whereby exhalation flowing through the inlet will impinge upon the impeller and cause it to rotate; a cover for the first chamber; reduction gear train means in the second of said chambers driven by the shaft and comprising a final gear; a second cover for the second chamber; a second shaft rotatably mounted in the cover and extending axially into the second chamber and externally of the body and an indicator mounted on and rotatable with said second shaft and with respect to the second cover, whereby rotation of the impeller causes slower rotation of the indicator relative to the cover, and
2. means for converting the angular distance travelled by the indicator with respect to the second cover into the forced expiratory volume in one second for a subject exhaling into the inlet means.

3,949,738
PEAK VENTILATORY FLOW INDICATOR
Robert Grier Monroe, Westwood, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.
Filed Nov. 1, 1974, Ser. No. 520,189
Int. Cl.² A61B *5/08*
U.S. Cl. 128—2.08 **12 Claims**

1. A peak ventilatory flow rate indicator comprising an elongated tubular member having both ends open, one end serving as a mouthpiece, said member being constricted to resist air flow therethrough when air is discharged into said mouthpiece thereby to produce across the wall of said member a pressure drop having magnitude functionally related to ventilatory flow rate, and a series of openings through the wall of said member for retaining thereacross a meniscus of a selected liquid, each of said openings being of a size predetermined so that such meniscus thereacross is dislodged by a pressure drop across the wall of said member at the locus of said meniscus having a magnitude which corresponds to a predetermined ventilatory flow rate, whereby peak ventilatory flow rate is indicated by the identity of said openings from which such meniscus is dislodged.



3,949,739
SPIROMETER
Jerome A. Rodder, 775 Sunshine Drive, Los Altos, Calif. 94022
Filed Dec. 11, 1974, Ser. No. 531,554
Int. Cl.² A61B *5/08*
U.S. Cl. 128—2.08 **16 Claims**

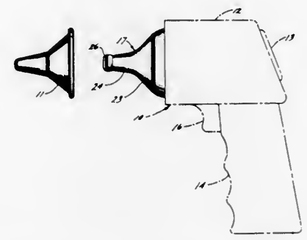


1. A spirometer comprising:
a breath transmission passage having a first end and a second end that are open, the first end being adapted for communication with the breath of a patient and the second end being adapted for communication with the atmosphere;
a flow measurement passage communicating with the atmosphere at one end;
a source of gas under pressure;
means for coupling the source of gas to the breath transmission passage and the flow measurement passage so part of the gas flows through the flow measurement passage to the atmosphere without flowing through the breath transmission passage, the proportion of gas flowing through the flow measurement passage increasing during exhalation and decreasing during inhalation; and
means for measuring the gas flow rate through the flow measurement passage.

3,949,740
DISPOSABLE SPECULUM FOR TYMPANIC THERMOMETER
Max E. Twentier, Phoenix, Ariz., assignor to Products International Marketing, Phoenix, Ariz.
Division of Ser. No. 390,687, Aug. 23, 1973, Pat. No. 3,878,836. This application Dec. 16, 1974, Ser. No. 533,138
Int. Cl.² A61B *1/22*
U.S. Cl. 128—9 **5 Claims**

1. A combination of a speculum retainer and a speculum, the speculum retainer comprising a rigid member having an axial interior passage and a generally frustoconical exterior with a peripheral enlargement nearer its smaller end and a reduced cross-section portion between the enlarged portion and the wider portion of the exterior;

the speculum comprising a generally frustoconical plastic member having a principal portion interiorly complementary to the exterior of the retainer and a minor portion elastically stretchable to conform to the enlargement without exceeding the fast tensile strength of the plastic in the stretched portion of the speculum, and wherein the stretching of the speculum by the enlargement induces stress cracking in the speculum in no more than a few minutes.

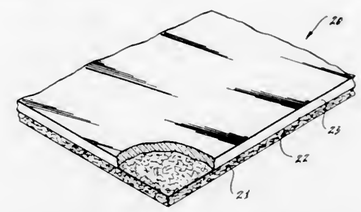


3,949,741
WRINKLE-REDUCING METHOD
Ross E. Hofmann, 1104 Malaga Ave., Coral Gables, Fla. 33134
Filed May 15, 1974, Ser. No. 470,280
Int. Cl.² A61F *5/08*
U.S. Cl. 128—76 B **11 Claims**



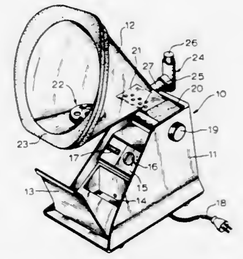
1. A method for reducing facial wrinkles comprising:
1. tightly applying to wrinkle prone areas of the human face a pressure-sensitive adhesive appliance in such a manner that the skin under the appliance is placed in a flattened and smoothed configuration;
2. allowing the appliance to remain in place for at least four hours;
3. removing the appliance and thereby strip therewith dead skin cells from the surface of the skin; and
4. repeating steps 1, 2 and 3 a plurality of times with no more than 48 hours elapsing between a repetition thereof and said repetition being continued for at least 15 days;
and wherein the said appliance is capable of transmitting an amount of moisture at least equal to the moisture transmitted by the normal facial skin of a human at rest and wherein the appliance is comprised of a film and a pressure-sensitive adhesive coating thereon, said film having a tensile strength of at least 3 pounds per inch, and an ultimate elongation of between 20 and 150%, said pressure-sensitive adhesive providing an adhesion of between 5 and 50 ounces per inch between the adhesive and the film and between 2 and 30 ounces per inch between the adhesive and the skin and the adhesion between the adhesive and the film is greater than the adhesion between the adhesive and the skin.

3,949,742
MEDICAL DRESSING
Bogdan Nowakowski, Shelton, Conn., assignor to Frigitronics, Inc., Shelton, Conn.
Filed Sept. 20, 1974, Ser. No. 507,744
Int. Cl.² A61F *13/00;* **C09J** *7/02*
U.S. Cl. 128—155 **4 Claims**



1. A medical dressing for topical application to skin wounds which comprises a unitary composite of a thin layer of thrombogenic reticulated foam cohesively secured to a thin elastomeric backing having an apparent density more than about 98 percent and an average pore size below about 0.01 microns, wherein the said medical dressing is permeable to gases and impermeable to liquids and bacteria, and performs as a synthetic skin over skin wounds without loss of adhesiveness and flexibility.

3,949,743
MEDICATED VAPOR PRODUCTION METHOD AND APPARATUS
Edward Shanbrom, Santa Ana, Calif., assignor to Schick Incorporated, Lancaster, Pa.
Continuation of Ser. No. 342,820, March 19, 1973, abandoned. This application Sept. 6, 1974, Ser. No. 503,860
Int. Cl.² A61H *33/00;* **A61M** *16/00*
U.S. Cl. 128—173.1 **9 Claims**



1. Apparatus for applying a particulate medicament of a type subject to decomposition when heated above a predetermined temperature to an afflicted area comprising, in combination:
steam generating means having a discharge orifice for generating a vapor mist whereby the initial temperature of said generated vapor mist at said orifice is above said predetermined temperature;
conduit means defining a flow path for said vapor mist from said discharge orifice to the afflicted area whereby the temperature of said vapor mist progressively decreases as said mist progresses along said flow path and eventually falls below said predetermined temperature at a first predetermined location along said flow path; and
medicament introducing means for injecting the medicament in particulate form into said flow path at a second predetermined location along said flow path substantially downstream from said first predetermined location whereby the medicament intermingles with said vapor mist after the temperature of said mist has fallen below

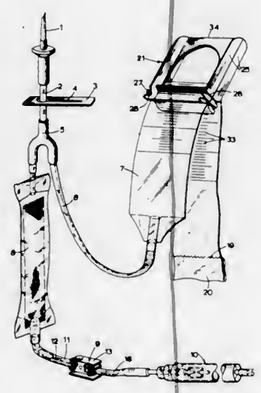
said predetermined temperature to reduce the likelihood of temperature-induced decomposition of the medicament.

3,949,744

APPARATUS FOR THE ADMINISTRATION OF LIQUIDS

Ellis Whiteside Clarke, 47 Deramore Drive, Belfast, Ireland (NS9 5JS)

Filed Sept. 3, 1974, Ser. No. 502,680
Claims priority, application United Kingdom, Sept. 4, 1973, 41634/73
Int. Cl.² A61M 5/14
U.S. Cl. 128—214 R **12 Claims**



1. Apparatus for the administration of a liquid comprising a readily collapsible but substantially inextensible container, duct means adapted to be connected to a source of liquid and through which liquid enters and leaves the container, and take-up means operative positively to restrict the volume of the operative part of the interior of the container, that is the part communicating with the duct, so that the remainder of the interior of the container is inaccessible from the operative part thereof, the take-up means being infinitely adjustable so as to vary the volume of the operative part between limits, and calibration means enabling that volume or at least changes in that volume to be determined.

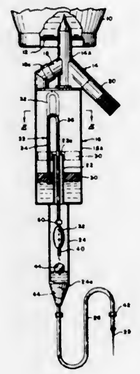
3,949,745

PARENTERAL FLUID ADMINISTRATION SET

William L. Howell, 3615 Macomb St., N.W., Washington, D.C. 20016

Filed Aug. 28, 1975, Ser. No. 608,576
Int. Cl.² A61M 5/16
U.S. Cl. 128—214 C **10 Claims**

1. Means for maintaining uniform flow of a parenteral fluid from a reservoir supply thereof through a flow path to a distal point of use, including a flow regulator positioned in said flow path and receiving fluid from said reservoir flowing thereto by gravity, said flow regulator comprising an upright fluid-receiving container, an open-ended tube of substantially lesser axial length than that of said upright container affixed to and extending uprightly from and opening through the container bottom wall, the upper open end of said tube determining the maximum level of fluid collecting in said container, a siphon operatively disposed in said upright container for limited vertical movement therein, said siphon comprising a U-tube having a fluid intake end and a fluid outlet end, said outlet end being vertically below said inlet end and extending through the container bottom wall into a fluid collecting reservoir, the wall structure of said reservoir providing means for aseptically priming the siphon thereby inducing fluid flow therethrough, and means for maintaining constant the vertical distance (*a*) between the siphon intake and the surface of the fluid in the container and (*b*) the vertical distance between the siphon intake and the siphon outlet.

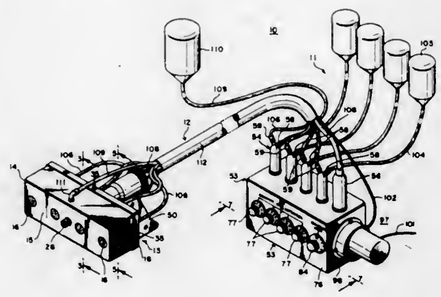


3,949,746

ANIMAL INJECTOR APPARATUS

Mark Wallach, New York, N.Y., assignor to Animal Systems, Inc., Branson, Mo.

Filed Sept. 3, 1974, Ser. No. 502,800
Int. Cl.² A61M 5/00
U.S. Cl. 128—218 G **14 Claims**



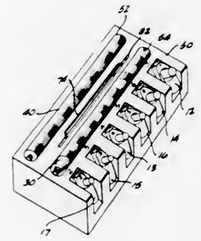
1. A multiple dose injection apparatus comprising a plurality of longitudinally extending hypodermic needles, hand manipulatable common mount supporting said needles, a liquid feed station remote from said support which is freely movable relative to said station, said station comprising a plurality of liquid metering means having repetitive cycles, means including a flexible tube connecting the outlet of each of said metering means to a respective hypodermic needle, a plurality of receptacles for holding liquids and communicating with the inputs of respective metering means, means for actuating said metering means a predetermined cycle, means for forcing said liquids through said needles and means for individually adjusting the output of each of said metering means for said predetermined cycle.

3,949,747

BIOPSY SET

William K. Hevesy, 2417 E. LaPalma Ave., Anaheim, Calif. 92806

Filed Oct. 3, 1974, Ser. No. 511,534
Int. Cl.² A61B 10/00
U.S. Cl. 128—2 B **8 Claims**



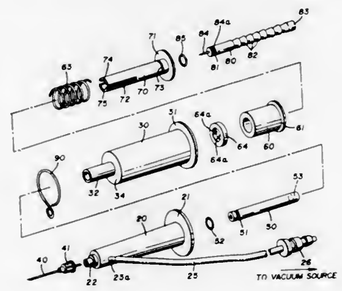
1. A biopsy set comprising:
a plurality of tissue biopsy punches each having a sharp edge, a biopsy punch handle, attachment means on each of said tissue biopsy punches and on said biopsy punch handle for selectively engaging said biopsy punch handle into one of said tissue biopsy punches;
a base of sterilizable material, said base having a top and a side, recess means in said top for disengageably receiving said biopsy punch handle;
a plurality of receptacle slots in said base angularly directed with respect to said top and intersecting both said top and said side, a holding pin extending into each of said slots for receiving one of said tissue biopsy punches and retaining a biopsy punch within each of said receptacles with its sharp edge away from said base so that said base acts as a holder for said biopsy punch handle and all of said tissue biopsy punches.

3,949,748

INJECTION SYRINGE HAVING ASPIRATING AND METERING CAPABILITIES

Oscar Malmin, 127 E. Wayne Ave., Akron, Ohio 44301

Filed Sept. 26, 1974, Ser. No. 509,423
Int. Cl.² A61M 5/00
U.S. Cl. 128—218 DA **9 Claims**



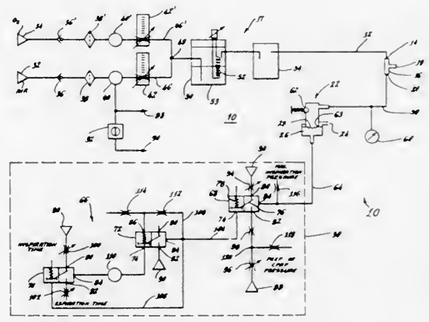
1. A syringe adapted to receive a cartridge internally thereof, comprising;
A. an elongate hollow body having first and second ends;
B. an elongate hollow barrel having first and second ends;
C. said first end of said body being releasably connected to said second end of said barrel in coaxial relationship therewith;
D. plunger means received within said second end of said body in coaxial alignment therewith and being movable along the longitudinal axis thereof;
E. an elongate cartridge having
1. first and second ends and front and rear seals on said first and second ends, respectively, and
2. being received in said barrel in coaxial alignment therewith, with said second end disposed adjacent said second end of said barrel;
F. metering means received within said body in coaxial alignment therewith;
G. means for engaging said rear seal of said cartridge carried by the end of said metering means disposed adjacent thereto;
H. said plunger being releasably engagable with said metering means;
I. said metering means being movable a predetermined distance in one direction along the axis of said body and said barrel in response to movement of said plunger means
1. whereby a measured amount of contents of said cartridge will be ejected upon depression of said plunger; and
J. vacuum means carried by said first end of said barrel in fluid communication therewith.

3,949,749

PEDIATRIC RESPIRATOR

Jeffrey L. Stewart, Brookfield, Conn., assignor to Bio-Med Devices Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 445,758, Feb. 24, 1974, Pat. No. 3,910,270. This application June 7, 1974, Ser. No. 477,194
Int. Cl.² A61M 16/00
U.S. Cl. 128—145.8 **15 Claims**



1. A compact respirator operating in an ambient environment comprising
patient connection means having a patient port, an inlet port and a control port coupled in communication with the patient port for delivering breathable gas;
means for supplying the inlet port with a flow of breathable gas at a rate selected to aid the breathing cycle of a patient breathing gas from the patient port, said gas being continuously suppliable through the inlet port to the patient port and to the control port;
a control valve coupled between the control port and the ambient environment to controllably release gas from the control port for a corresponding control of gas at the patient port;
means including a pneumatically controlled bistable gas pressure controlling element operatively coupled to the control valve to control inspiratory gas flow to the patient port during one state of the bistable element and enable

expiratory gas flow away from the patient port during the other state of the bistable element; and

pneumatic oscillating means for providing cyclic gas pressures between levels selected to actuate the bistable gas pressure controlling element between its states, a first gas pressure level from the pneumatic oscillating means being selected to endure in correspondence with a desired length of time of inspiratory gas flow to the patient port and a second gas pressure level from the pneumatic oscillating means being selected to endure in correspondence with a desired length of time of the expiratory gas flow away from the patient port;

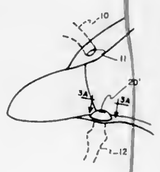
whereby the patient port may be provided with a continuous supply of breathable gas from the inlet port independent of the state of the control valve while producing inspiration and expiration respiratory support.

3,949,750

PUNCTUM PLUG AND METHOD FOR TREATING KERATOCONJUNCTIVITIS SICCA (DRY EYE) AND OTHER OPHTHALMIC ALIMENTS USING SAME

Jerre M. Freeman, 1509 Peabody Ave., Memphis, Tenn. 38104

Filed Oct. 7, 1974, Ser. No. 512,430
Int. Cl.² A61M *29/00, 31/00*
U.S. Cl. 128—260 **10 Claims**



1. A removable rod-like plug for blocking lacrimal fluid flow through the punctum and associated canaliculus of the human eye comprising: a projecting tip portion having a maximum cross-sectional dimension in the range of about 1.0 to 1.4 mm which is sufficient to occlude the canaliculus when inserted therein, a middle neck portion of smaller cross-section than the largest part of said tip portion with a maximum dimension in the range of about 0.6 to 0.8 mm and adapted to be tightened upon by the punctum sphincter ring, said tip and neck portions cooperating with said canaliculus and punctum sphincter ring respectively to prevent accidental extrusion of said plug, and a head portion of larger cross-section than said neck portion and adapted to rest on the surface of the punctal aperture and prevent said plug from passing down into the canaliculus, with the overall length of said plug comprised of said tip, neck and head portions being not less than about 3.2 mm.

3,949,751

METHOD AND DEVICE FOR DISPENSING MEDICAMENT TO THE BODY

Leslie William Birch, Desborough; Desmond Alfred Dean, Beeston, both of England, and Harry Howell, deceased, late of Castle Donnington, England (by Eunice Cockburn Gray, executor), assignors to Fisons Limited, London, England

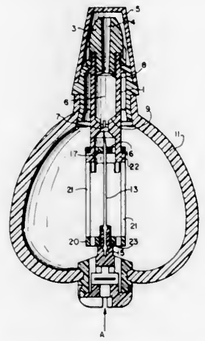
Continuation-in-part of Ser. No. 127,493, March 24, 1971, abandoned. This application Aug. 26, 1974, Ser. No. 500,471
Claims priority, application United Kingdom, Mar. 3, 1970, 14544/70
Int. Cl.² A61M *15/08, 13/00*
U.S. Cl. 128—266 **9 Claims**

1. A device for dispensing medicament in finely divided form from a container containing such medicament, which device comprises:

an elongated housing having a longitudinal passageway therethrough, one end of said housing being provided with a collapsible bulb for driving air through said passageway, the other end of the housing having medicament dispensing means for insertion into an opening of a body cavity;

a chamber adapted to receive the container of medicament, said chamber being located wholly within said housing and intermediate the ends of said housing, said chamber being intersected by said passageway;

means for piercing a container mounted within said chamber and comprising an elongated piercing needle having an operative piercing end for piercing that end adjacent to the said collapsible bulb of a container mounted within



said chamber, said piercing end being reciprocable substantially along the longitudinal axis of the housing from a normally non-operative position to an operative piercing position; and

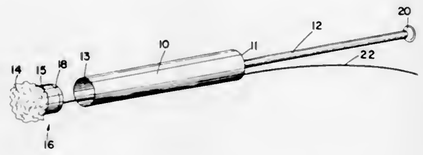
mounting means attached to the collapsible bulb and located within said collapsible bulb for mounting the non-piercing end of said piercing needle within and attaching said non-piercing end to said collapsible bulb, said mounting means being reciprocable by compression of said collapsible bulb substantially along the longitudinal axis of the piercing needle, whereby said piercing needle may be driven from its normally non-operative position to its operative position along the intended direction of flow of air through the device.

3,949,752

MENSTRUAL DEVICE FOR AN ANIMAL

Beverly Van Stee, 315 Yorktown Drive, Chapel Hill, N.C. 27514

Filed Aug. 31, 1973, Ser. No. 393,320
Int. Cl.² G61F *13/20*
U.S. Cl. 128—270 **6 Claims**



1. A tampon for use with a lower animal having an angular vaginal canal with a cul-de-sac comprising an enclosure having a menstral fluid absorbent material on a forward end and a means to permit easy removal including a lubricant means on the rear end having a means for releasing the lubricant

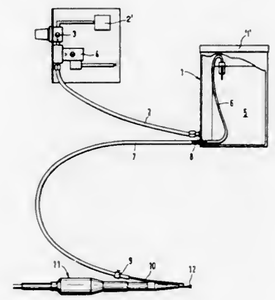
after insertion to provide a lubricated return path for the tampon.

3,949,753

APPARATUS FOR SUPPLYING ASEPTIC FLUIDS

Rolf Dockhorn, Im Rosengartle 4a, 75 Karlsruhe-Durlach, Germany

Filed Nov. 26, 1973, Ser. No. 418,962
Claims priority, application Germany, Nov. 27, 1972, 2258069; June 16, 1973, 7322503[U]
Int. Cl.² A61B *17/16*
U.S. Cl. 128—303 R **2 Claims**



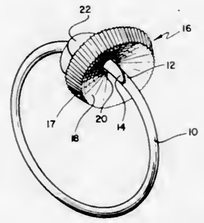
1. Apparatus for feeding aseptic fluids to a field of operation comprising a holder for aseptic fluids having elastically deformable walls, an outlet pipe connected to said holder for directing fluid to a field of operation, and means for applying pressure on the outside of such walls, said pressure applying means being adjustable to control the quantity of outflow from the holder, the means for applying pressure including a closed container enclosing the holder and means for supplying a compressible fluid under pressure to said container on the outside of the holder, means for controlling the supply of pressure medium to the container, said outlet pipe including an adjustable throttle valve for controlling the quantity of fluid flowing therethrough per unit of time, the outlet pipe containing a check valve means for permitting flow only in the direction away from the holder and preventing back flow in the outlet pipe, the holder being interchangeably arranged in the container.

3,949,754

SELF-PIERCING EAR WIRE

Nicholas J. Ferro, Johnston, R.I., assignor to Ferro Novelty Company, Inc., Johnston, R.I.

Filed Sept. 11, 1974, Ser. No. 504,900
Int. Cl.² A61B *17/34*
U.S. Cl. 128—330 **3 Claims**



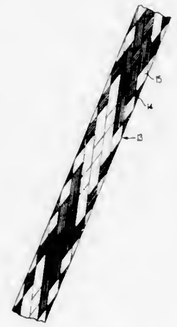
1. A self-piercing ear wire consisting of a circular discontinuous loop of non-corrosive tempered spring wire having tapered pointed ends in overlapping engagement, a pressure pad locator comprising a dished plate having an axial bore passing therethrough and slidingly engaging the ear wire and being slidable along the ear wire toward and from one of the pointed ends thereof and having its dished portion of enlarged section whereby the locator may be positioned adjacent the overlapped ends and the ends may be spread apart to place the wire in tension with the pointed ends engaging an ear lobe, and the locator thereafter slid against the lobe to position said bore and the portion of the wire passing therethrough with their axes normal to the ear lobe.

3,949,755

SURGICAL LIGATURE

Paul Vauquois, Champagne-au-Mont-d'Or, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed Apr. 9, 1974, Ser. No. 459,415
Claims priority, application France, Apr. 9, 1973, 73.12620
Int. Cl.² A61L *17/00*
U.S. Cl. 128—335.5 **10 Claims**



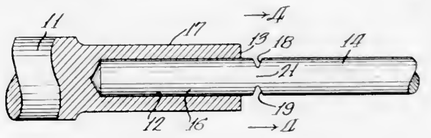
1. A surgical ligature comprising a sterile thread having a surface on which is a succession of closely spaced areas of contrasting shades, whereby at least one of the shades appears dark through a film of blood and at least one of the shades appears light through a film of blood.

3,949,756

SUTURES WITH NOTCH NEAR NEEDLE-SUTURE JUNCTION

Franklin S. Ace, Oldwick, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Nov. 20, 1974, Ser. No. 525,328
Int. Cl.² A61B *17/06*
U.S. Cl. 128—339 **11 Claims**



1. A needle-suture combination comprising a needle having a sharp end and a blunt end and having a recess at said blunt end, a suture having one tip positioned within said recess, means retaining said tip of said suture within said recess to attach said suture to said needle, and a weakened segment in said suture adjacent the location of its attachment to said needle and exterior of said recess, said weakened segment having a breaking strength of from about 3 to 26 ounces and comprising a notch in said segment which reduces the cross-sectional area at said segment to a value (in square inches) equivalent to KP/DT in which K is a constant factor ranging from about 2.0 to about 2.5, P is a rupture load value between

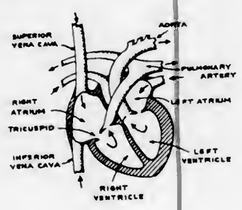
about 0.3 and 1.6 pounds, D is the suture density of the suture, and T is the tensile strength of the suture material in pounds per square inch, whereby said needle can readily be separated from said suture by applying a pulling force to said needle to break said weakened segment.

3,949,757

CATHETER FOR ATRIO-VENTRICULAR PACEMAKER

George H. Sabel, 336 Westwood Ave., Westwood, N.J. 07675

Filed May 13, 1974, Ser. No. 469,067
Int. Cl.² A61N 1/04
U.S. Cl. 128—404 1 Claim



1. A catheter assembly for establishing independent electrical connection between a signal generating means and the surfaces of the atrium and ventricle of a heart, comprising:

a first catheter for establishing electrical connection between said signal generating means and said surface of said ventricle, said first catheter including a conductor with a connector end for electrical connection with said signal generating means and a distal tip for establishing electrically conductive contact with said surface of said ventricle;

a first insulating covering rigidly encapsulating said first conductor from a point adjacent said connector end to a point adjacent said distal tip, said first insulating covering having a longitudinally extending passage formed therein, said passage extending from a point adjacent to the conductor end of said first catheter to a point displaced from said distal tip of the conductor of said first catheter;

a second catheter slidably disposed within said passage, said second catheter for establishing electrical connection between said signal generating means and said surface of said atrium, said second catheter including a conductor having a connector end for electrical connection with said signal generating means and a distal tip for establishing electrically conductive contact with said surface of said atrium, said second catheter being flexible and including a resiliently curvilinear portion adjacent to said distal tip, said resiliently curvilinear portion being flexible between rectilinear and curvilinear configuration in response to sliding said second catheter longitudinally with respect to said first catheter within said longitudinally extending passage; and

a second insulating covering disposed upon said conductor of said second catheter from a point adjacent to said connector and to a point adjacent to said distal tip connector.

3,949,758

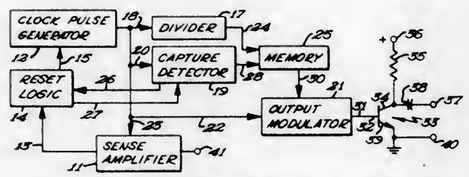
AUTOMATIC THRESHOLD FOLLOWING CARDIAC PACER

Thomas L. Jirak, Plymouth, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 1, 1974, Ser. No. 493,701
Int. Cl.² A61N 1/36
U.S. Cl. 128—419 PG 40 Claims

1. In a cardiac pacer of the type having a source of timed pulses and having means for providing energy controlled cardiac stimulating pulses in response to pulses from said timed pulse source, the improvement comprising:

said means for providing energy controlled cardiac stimulating pulses including means connected and responsive to said timed pulse source for decreasing the energy of successive cardiac stimulating pulses only after every *n*



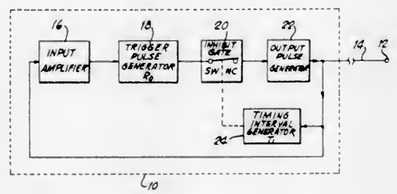
pulses from said timed pulse source, *n* being a number greater than 1, and further including means for increasing the energy of successive cardiac stimulating pulses in the absence of a driven heartbeat.

3,949,759

CARDIAC PACING APPARATUS

Robert R. Brownlee, State College, and G. Frank O. Tyers, Hershey, both of Pa., assignors to Research Corporation, New York, N.Y.

Filed May 5, 1975, Ser. No. 574,385
Int. Cl.² A61N 1/36
U.S. Cl. 128—419 PG 7 Claims



1. A cardiac pacing apparatus, which comprises:

triggerable means for generating artificial heart stimulating pulses;

means for detecting natural heart stimulating pulses and said artificial heart stimulating pulses and producing a signal in accordance therewith;

control means responsive to said signal from said detecting means for generating trigger pulses to normally trigger said triggerable pulse generating means at a rate between the limits of a predetermined minimum rate and a predetermined maximum rate, said control means generating trigger pulses in direct response to said signal from said detecting means at said predetermined minimum rate in the absence of a detected natural heart stimulating pulse rate above said minimum rate, said control means generating trigger pulses in direct response to said signal from said detecting means at the detected natural heart rate when the natural rate is greater than said minimum rate but less than said maximum rate, and said control means generating trigger pulses at no higher than said predetermined maximum rate when the natural pulse rate equals or exceeds said maximum rate.

3,949,760

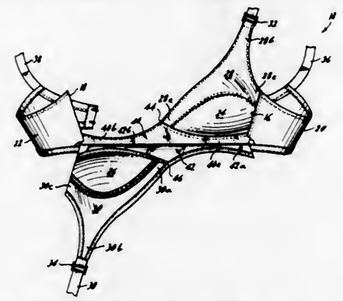
MOVEMENT-COMPENSATING BRASSIERE

Joyce Baranowski, Bridgeport, and Stanley Malinowski, Trumbull, both of Conn., assignors to Warnaco Inc., Bridgeport, Conn.

Filed Nov. 18, 1974, Ser. No. 524,407
Int. Cl.² A41C 3/00
U.S. Cl. 128—425 5 Claims

1. A brassiere comprising left and right bust cups and left and right side body panels, each of said side body panels being

fixed to a respective one of said bust cups. said brassiere including inner and outer diaphragm bands underlying both of said bust cups, each of said diaphragm bands being fixed to both of said respective side body panels at the proximate circumferential location wherein each of said side body panels are fixed to said respective bust cups, said inner diaphragm



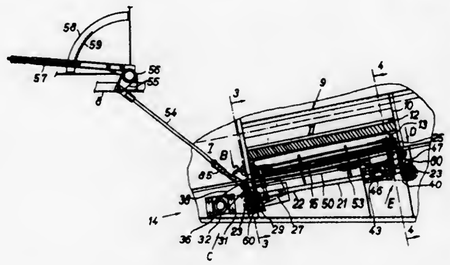
band being fixed to a first one of said bust cups and being free of a second one of said bust cups, said outer diaphragm band being fixed to the second one of said bust cups and being free of the first one of said bust cups, each of said inner and outer diaphragm bands including a substantially straight lower edge, said diaphragm bands being fixed to one another along said lower edge.

3,949,761

CONCAVE ADJUSTING MEANS FOR COMBINE

Frans Henri Mortier, Maldegem, and Antoon Sylvain Cools, Brugge St. Kruis, both of Belgium, assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Nov. 1, 1974, Ser. No. 520,173
Claims priority, application Germany, Nov. 8, 1973, 2355792
Int. Cl.² A01F 12/28
U.S. Cl. 130—27 L 13 Claims



I. A mobile axial flow threshing and separating machine comprising:

a. a main frame with side panels;

b. at least one concave extending longitudinally within the side panels;

c. at least one threshing and separating rotor mounted to said frame within said side panels, the threshing and separating rotor cooperating with the concave to remove grain from incoming crop material;

d. front and rear pairs of stub-shafts rotatably mounted about respective transverse axes, each of which extends through a portion of one of said side panels, the inner end of each of said stub-shafts of said front pair being disposed adjacent the front edge of said concave, the inner end of each of said stub-shafts of said rear pair being disposed adjacent the rear edge of said concave,

e. means for supporting said concave, said means being disposed totally within and between said side panels and being operably connected to the inner ends of said stub-shafts; and

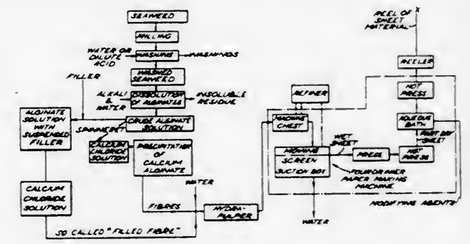
f. actuating means connected to the outer end of at least one of said stub-shafts adjacent the exterior surface of one of said side panels and operable to rotate said stub-shafts to effect vertical adjustment of the position of said concave relative to said rotor.

3,949,762

FIBRES

Anthony Alfred West, 49, Brendon, Basildon, Essex, and Derek Anthony King, 7, Clement Green Lane, South Woodham, Ferrers, Essex, both of England

Filed Nov. 7, 1974, Ser. No. 521,878
Claims priority, application United Kingdom, Nov. 13, 1973, 52721/73
Int. Cl.² A24B 15/00; A24D 1/18
U.S. Cl. 131—2 7 Claims



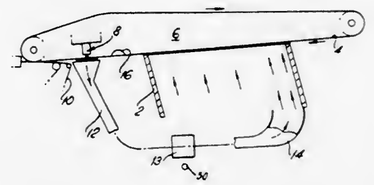
7. A process of manufacturing a smokeable material including a basic material consisting of calcium alginate in fibrous form, into which filler material is incorporated, in which the calcium alginate fibres are formed from the admixture of two solutions, the filler material being suspended in at least one of the solutions in such quantity and the solutions being so mixed that the filler is incorporated integrally in the fibres themselves as they are formed so as to constitute more than 50% by weight of the fibres and thereafter forming the fibres incorporating the filler into a sheet by a paper making process and subsequently shredding the paper to form the smokeable material.

3,949,763

CIGARETTE MAKING MACHINES

Francis Auguste Maurice Labbe, Neuilly-sur-Seine, France, and Clifford Russell Marritt, London, England, assignors to Molins Limited, London, England

Filed Sept. 10, 1973, Ser. No. 395,678
Claims priority, application United Kingdom, Sept. 12, 1972, 42358/72
Int. Cl.² A24C 5/18
U.S. Cl. 131—84 B 11 Claims



11. A cigarette making machine for producing a cigarette rod comprising conveyor means arranged for movement along a path; means at a first portion of said path for forming on said conveyor means a tobacco stream containing tobacco in ex-

cess of that required for said rod, a trimmer at a second portion of said path downstream of said first portion mounted for movement towards and away from said conveyor means between a first location which is a controlled variable distance from said conveyor means to trim away part of the tobacco stream as discard tobacco while the tobacco stream is being carried by the conveyor means and a second location which is a predetermined distance closer to said conveyor means than said first location to trim tobacco closer to said conveyor means from said tobacco stream; means for feeding the discard tobacco from said trimmer to said conveyor means at the first portion of said path; and control means for regulating said movement of said trimmer, said control means being adapted to move the trimmer to said second location, whereby, while the machine is being started, said trimmer can be moved temporarily to said position closer to said conveyor means to trim tobacco closer to said conveyor means and build up the trimmed excess tobacco to a predetermined quantity, and to move the trimmer from said second location to said first location, whereby said trimmer can trim tobacco at said controlled variable distance.

3,949,764

TREATMENT OF NATURAL AND SYNTHETIC HAIR WITH A HEAT-SETTABLE COMPOSITION

Howard L. Scott, Philadelphia, Pa., assignor to Fabalon, Inc.; The First Foundation and Charles L. Wragg, all of Philadelphia, Pa., a part interest to each

Continuation-in-part of Ser. No. 721,158, April 15, 1968, Pat. No. 3,568,685, which is a continuation-in-part of Ser. No. 386,730, July 31, 1964, abandoned. This application Nov. 3, 1970, Ser. No. 86,597

Int. Cl.² A45D *7/06*; **A61K** *7/09*

U.S. Cl. 132—7 **10 Claims**

1. A hair treating composition comprising a hardening and adhesive agent and a flame-retardant agent in an aqueous medium, the hardening and adhesive agent being in a concentration of about 10–80% by volume and being selected from the group consisting of (1) p,p'-methylenedianiline; (2) a copolymer of (a) about 0.5–25% by weight of itaconic acid, (b) 3–4% by weight of at least one polymerizable compound selected from the group consisting of acrylonitrile, alkyl esters of acrylic and methacrylic acids having from 1 to 18 carbon atoms in the alkyl group, phenyl methacrylate, cyclohexyl methacrylate, p-cyclohexyl-phenyl methacrylate, methacrylonitrile, methyl vinyl ketone and vinyl chloride, and (c) 35–96.5% by weight of vinylidene chloride, the proportions being selected to total 100%; (3) a copolymer of acrylonitrile and styrene wherein a 50% by weight solution has a viscosity of SX (Gardner Holdt) at 25°C; and (4) vinyl chloride polymer latex; said flame-retardant agent being present in about 1–25% by volume and being selected from the group consisting of sodium bicarbonate, tris-(2,3-dibromo-propyl) phosphate, hexabromobenzene and hexabromobiphenyl.

6. A method of treating hair which comprises coating the hair with an effective amount sufficient to set the hair of the composition of claim 1 and then heating the coated hair to a temperature of about 120°–250°F.

3,949,765

BRUSH FOR USE WITH HAIRDRYERS

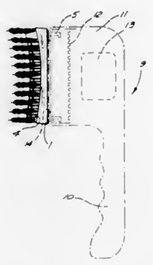
Joseph Vallis, 353 Cortleigh Blvd., Toronto, Ontario, Canada

Filed Oct. 15, 1974, Ser. No. 515,007

Int. Cl.² A45D *24/00*

U.S. Cl. 132—11 R **17 Claims**

1. A brush for use with an electric hairdryer, comprising a support member having two sides; connecting means at one of said sides for detachably connecting said member to a hairdryer in the path of heat emitted by the latter; and a plurality of tufts of bristles projecting from the other of said sides, said tufts each comprising a plurality of shorter softer bristles and



at least one longer stiffer bristle which projects beyond said shorter bristles.

3,949,766

HAIR CURL CLIP

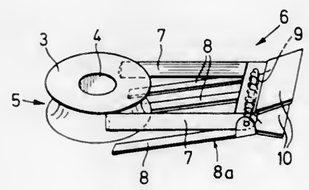
Heinz Merges, Sudermannplatz 3, 5 Cologne, Germany

Filed Oct. 30, 1974, Ser. No. 519,110

Claims priority, application Germany, Nov. 2, 1973, 2354709

Int. Cl.² A45D *8/00*

U.S. Cl. 132—46 A **12 Claims**



1. A clip for setting a preformed hair curl comprising a pair of jaws, means pivotally uniting said jaws for pivotal movement toward and away from each other, means for biasing said jaws toward each other, means consisting solely of a plate for storing heat and dissipating such stored heat to a preformed hair curl for setting the latter, said plate being carried by only one of said jaws, and an entire curl-contracting surface of said plate being in opposing relationship to a second of said jaws.

3,949,767

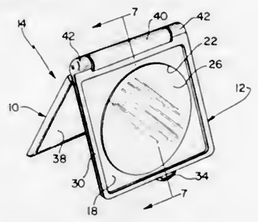
MIRROR CASE

Arnold Rose, Providence, R.I., assignor to Trina, Inc., Fall River, Mass.

Filed July 30, 1975, Ser. No. 600,421

Int. Cl.² A45D *33/00*

U.S. Cl. 132—83 R **16 Claims**



1. A combination support and case for make-up mirrors, comprising two rigid parts, hinge means connecting the two parts for angular movement relative to each other about the

axis of the hinge means on the one hand to dispose the parts parallel to each other with a face of one confronting the face of the other and on the other hand to dispose the parts at an angle to each other, said confronting faces each containing a recess and a mirror fixed to the part within the recess such that when the parts are disposed face-to-face they constitute a case within which the mirrors are protectively contained with a space between their opposed surfaces and when the parts are disposed at an angle to each other each comprises a support supporting the other part and the mirror mounted thereon at an angle thereto.

3,949,768

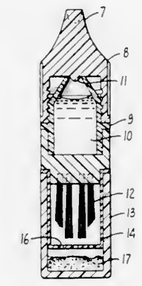
DEVICE FOR ASSISTING IN THE CARE OF DENTURES

Barbara J. Doyle, 1224 Euclid, Santa Monica, Calif. 90404

Filed Feb. 21, 1975, Ser. No. 551,512

Int. Cl.² A45D *44/18*

U.S. Cl. 132—84 B **6 Claims**



1. A kit for denture care comprising:

a brush member having an axial bore in one end thereof and a bristle mounting section on the opposite end thereof;

a multiplicity of bristles mounted on said bristle mounting section and extending outwardly therefrom;

a paste container having a resilient wall held in said axial bore and having an aperture therein for dispensing said paste from said container when said resilient wall is squeezed;

powder containing means detachably held on one end of said brush member and having an apertured wall which includes a multiplicity of holes defined therein to be coaxial with said brush member for dispensing said powder from said powder containing means; and

a bristle accommodating means detachably held in axial alignment with said brush member and said powder containing means on said brush member to accommodate said bristles therewithin.

3,949,769

DENTAL FLOSS HOLDER

Karlis Minka, 204 E. Joppa Road, Towson, Md. 21204

Continuation-in-part of Ser. No. 413,693, Nov. 7, 1973, abandoned. This application Jan. 28, 1975, Ser. No. 544,747

Int. Cl.² A61C *15/00*

U.S. Cl. 132—91 **20 Claims**

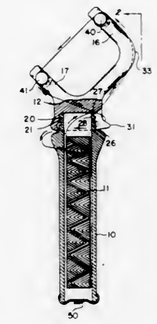
1. A dental floss holder comprising:

a. a hollow handle adapted to receive a supply of floss and having a longitudinal axis, said handle having an engaging end,

b. a cap having a shank adapted for assembly with said engaging end of the handle,

c. said engaging end having first clamping means and a shoulder extending transversely outwardly with respect to said axis,

d. said cap having second clamping means for cooperating with said first clamping means to clamp the beginning of a length of floss therebetween and a cooperating rim extending transversely outwardly with respect to said axis for forming an annular outwardly facing V-shaped groove with said shoulder on the handle upon assembly with said engaging end thereof,



e. the width of said V-shaped groove being of dimensions sufficient for wedging of the end of said length of floss in said V-shaped groove,

f. spaced apart studs on said cap, the studs having means for supporting a portion of said length of floss therebetween, and

g. a passageway to permit said length of floss to pass from the inside of the handle to the outside of the holder.

3,949,770

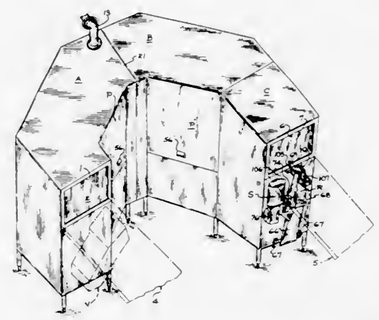
ARCUATE-SHAPED MODULARS FOR A COMMERCIAL DISHWASHING MACHINE

Tore H. Noren, 3200 Lakeview Highway, Petaluma, Calif. 94952

Division of Ser. No. 286,448, Sept. 5, 1972. This application Nov. 20, 1974, Ser. No. 525,345

Int. Cl.² B08B *3/02*

U.S. Cl. 134—60 **9 Claims**



5. A dishwashing machine including:

a. a first dishwashing unit having a passageway therethrough for guiding dish-carrying baskets from the entrance to the exit ends thereof;

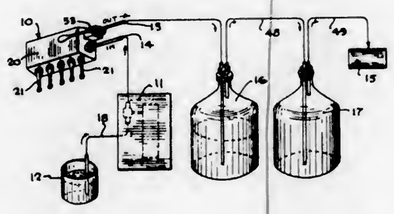
b. a dish-rinsing and sterilizing unit having a passageway through which the dish-carrying baskets pass;

c. means for moving the baskets through the first unit and through the dish-rinsing and sterilizing unit;

d. said first unit having a water-receiving tank and power means for taking water from the tank and spraying it onto the dishes as the baskets pass through said first unit, the water returning to the first tank after washing the dishes;

e. said first unit having a plurality of removable screens placed on an inclined supporting ledge that extends downwardly at an inclined angle from the exit to the entrance end thereof, the screens being positioned above the level of the water in the tank in said first unit;
f. means for delivering a hot rinse and sterilizing water spray onto the dish-carrying baskets as they pass through the rinsing and sterilizing unit;
g. means for delivering the used hot water from the rinse and sterilizing unit to the exit end of said first unit for causing this heated used water to be directed over the inclined screens to flow over the screens for flushing any food particles on the screens toward the lower end thereof, some of the water draining through the screens and dropping into the tank for raising the temperature of the water therein; and
h. an outlet pipe having its entrance at the lower end of the screens for receiving any food particles and water that reaches the end of the screens and for conveying them away.

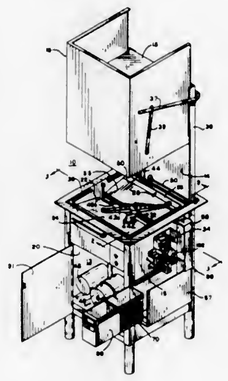
3,949,771
COMBINED WASHER AND ASPIRATOR
John Dennis Dodge, Arlington Heights, and Robert Francis Koschalk, Zion, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed July 10, 1974, Ser. No. 487,356
Int. Cl.² B08B *3/02, 3/04*
U.S. Cl. 134—94 **11 Claims**



1. A combined washer and aspirator device for a solid body member comprising a body section defining at least two independent fluid passages, a nozzle member operatively connected to said body section and defining a fluid intake channel and a fluid outlet channel in fluid communication with said fluid passages, said nozzle member having a probe portion defining an orifice having an internal wall surface, and positioning means operatively associated with said orifice to limit movement of said solid body member in a spaced manner from the wall surface of said orifice.

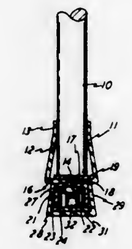
3,949,772
DOOR TYPE DISHWASHER
Stanley G. Hartmann, Toms River, N.J., assignor to General Electric Company, Carmel, Ind.
Filed Dec. 13, 1974, Ser. No. 532,380
Int. Cl.² B08B *3/02*
U.S. Cl. 134—99 **14 Claims**

1. A dishwashing machine comprising:
a. a cabinet structure defining a chamber to receive dishes to be washed and a sump to receive liquid for recirculation to said chamber; said sump being positioned below said chamber;
b. means for spraying liquid on dishes in said chamber to provide a washing operation on the dishes, including a pre-rinse of the dishes;
c. a divider positioned within said cabinet and separating said chamber and said sump, said divider including a trough extending substantially across said chamber; and



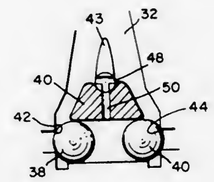
d. valve means at one end of said trough and operative in conjunction with at least the pre-rinse action to provide for egress of liquid from said chamber.

3,949,773
CONVERTIBLE TIP FOR CRUTCH OR THE LIKE
Anthony E. Marescalco, 5947 Seventh Ave., Apt. M-1, Kenosha, Wis. 53140
Filed Mar. 10, 1975, Ser. No. 556,550
Int. Cl.² A45B *9/04*
U.S. Cl. 135—57 **3 Claims**



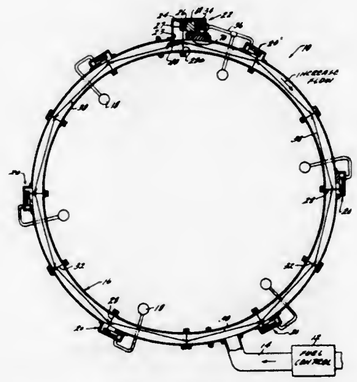
1. A convertible tip for a crutch, pole, and the like, comprising an elastomeric cup-shaped member adapted to be disposed on the end of said pole for encircling the latter to be available for contacting the ground during the use of supporting a person, a cylindrical cup-shaped cleat member having teeth spaced around the edge of the cylinder thereof for engaging the ground when in position on said cup-shaped member, the aforesaid cup-shaped members both including base portions and being disposed in base portion-to-base portion abutting position, a releasable fastener extending through said base portions of the aforesaid cup-shaped members for co-axially removably attaching said cleat member to said elastomeric cup-shaped member, and a second elastomeric cup-shaped member snugly disposed on said cleat member and being frictionally held thereto by virtue of the elastomeric stretch over said cleat member and covering said teeth to prevent engagement of a floor by said teeth and said second elastomeric cup-shaped member being removable from said cleat member to permit engagement of the floor by said teeth.

3,949,774
VALVE
David Morrow, Scottsdale, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.
Division of Ser. No. 396,044, Sept. 10, 1973, abandoned. This application Feb. 20, 1975, Ser. No. 551,471
Int. Cl.² F16K *11/16*; F02K *1/00*
U.S. Cl. 137—1 **10 Claims**



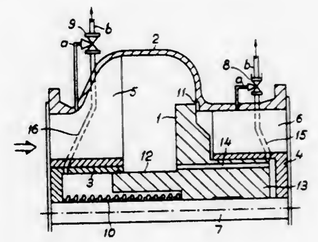
6. A method of controlling fluid flow in a valve means having a fluid inlet opening and first and second outlet openings, said method comprising:
diverting fluid in said inlet opening toward one of said outlet openings and away from the other outlet openings when flow is desired from said one outlet opening;
displacing a first seal member away from said one outlet opening by fluid pressure from said diverted fluid;
displacing by fluid pressure from said diverted fluid a second seal member in sealing engagement with said other outlet opening to prevent fluid flow therefrom; and
directing fluid in said inlet opening between said outlet openings for displacing both of said sealing means into sealing engagement with their respective outlet openings when no flow is desired from either outlet opening.

3,949,775
FUEL SUPPLY AND DISTRIBUTION SYSTEM
Richard Henry Cornell, Marblehead, Mass., assignor to General Electric Company, Lynn, Mass.
Filed July 12, 1974, Ser. No. 487,888
Int. Cl.² G05D *11/00*
U.S. Cl. 137—118 **8 Claims**



1. A fuel supply and distribution system comprising:
a manifold tube for receiving a flow of pressurized fuel;
an actuator having a piston slidably disposed therein wherein the piston is actuated in response to changes in the pressure of the fuel in the manifold tube;
a plurality of flow dividing valves disposed about the manifold tube each including a metering piston translatably disposed therein for regulating the flow of fuel from the manifold tube;
linkage means extending through the manifold tube interconnecting the actuator with the flow dividing valves such that movement of the actuator piston is simultaneously imparted to the flow dividing valve pistons;
wherein the linkage means includes a plurality of circumferentially spaced apart pivot arms disposed about the inside of the manifold tube wherein one end of each pivot arm is pivotally connected to the manifold tube with the other end of a selected number of pivot arms respectively engaging the actuator and metering pistons such that rotation of the pivot arms about their respective points of pivot operate to respectively translate the actuator and metering pistons, and a plurality of links interconnecting the pivot arms so that the pivot arms rotate in unison about their respective points of pivot in the manifold tube.

3,949,776
DISK VALVE
Jan Persson, and Ulf Sodergren, both of Finspong, Sweden, assignors to Stal-Laval Turbin AB, Finspong, Sweden
Filed July 25, 1974, Ser. No. 491,840
Claims priority, application Sweden, Aug. 1, 1973, 7310583
Int. Cl.² F16K *31/12*
U.S. Cl. 137—219 **4 Claims**

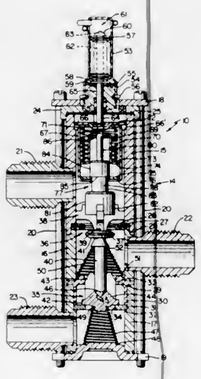


1. In a disk-type valve including a valve housing having inlet and outlet passages, a valve disk operatively movable within the valve housing in the direction of flow of a medium through the valve, a valve seat against which the valve disk seats to block the flow and close the valve, the improvement enabling rapid closing of the valve through aiding action of the pressure of the medium flowing therein comprising:
a stationary cylinder located within the valve housing positioned downstream of the valve disk,
a corresponding stationary cylinder located within the valve housing positioned upstream of the valve disk,
a pair of pistons secured to the valve disk on either side thereof,
each of the pistons moving in a respective one of the stationary cylinders,
a passageway bore in the valve disk providing communication between the upstream side of the disk and the downstream cylinder,
channel means for providing communication between the upstream side of the valve disk and the upstream cylinder and between the downstream side of the valve disk and the downstream cylinder
the channel means including connection means connecting the cylinders and the upstream and downstream sides of the valve disk and an area of pressure magnitude less than that at the upstream side, and
valve means operatively associated with the channel means for connecting a cylinder with its corresponding side of the valve disk or with the low pressure area.

3,949,777
VALVE CONSTRUCTION AND SYSTEM UTILIZING THE SAME

Edward N. Caldwell, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 290,558, Sept. 20, 1972, Pat. No. 3,818,981. This application Apr. 17, 1974, Ser. No. 461,514
Int. Cl.² G05D *23/13*
U.S. Cl. 137—271 **2 Claims**



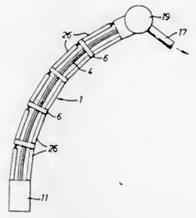
1. A valve cnstruction comprising a housing means having an inlet and a pair of outlets, a pair of valve seat means carried by said housing means for respectively controlling fluid flow from said inlet to said outlets, a pair of valve member means for respectively controlling said valve seat means, said valve member means being operatively associated together to move substantially in unison, and means operatively associated with said valve member means to position the same to act respectively on one side of said pair of valve seat means or on the other side of said pair of valve seat means, said pair of valve member means when increasing the fluid flow to either of said outlets will decrease the fluid flow to the other of said outlets regardless of which side said pair of valve seat means said pair of valve member means are acting, one of said valve seat means comprising a single valve seat, said valve member means controlling said single valve seat being movable through said single valve seat as said means positions said valve member means respectively between said one side of said pair of valve seat means and said other side of said pair of valve seat means.

3,949,778
PETROL DISPENSING

Peter David Woodford, Rochford, and John Alan Jackson, Brentwood, both of England, assignors to Gilbarco Limited, Greensboro, N.C.

Filed Dec. 5, 1973, Ser. No. 421,748
Claims priority, application United Kingdom, Dec. 7, 1972, 56582/72
Int. Cl.² B67D *5/06;* **B65H** *75/34*
U.S. Cl. 137—355.16 **3 Claims**

1. A petrol dispensing pump having a casing, pumping means in said casing, an upright hose support including at least one flexible petrol conduit section anchored to said pump in fluid communication and at least one resilient and flexible arm attached to and extending longitudinally of said conduit section to maintain said conduit section in a normal vertical position, at least one fluid delivery hose connected at one end thereof to the uppermost termination of said petrol conduit section by means of a swivel connecting joint enabling the

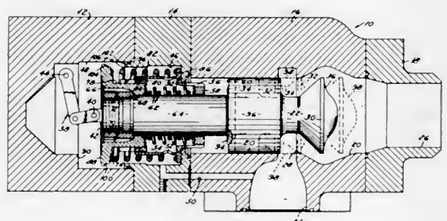


delivery hose to normally hang vertically downward from the uppermost termination of said conduit section.

3,949,779
FLOW SHUT OFF VALVE

Peter B. Olmsted, Traverse City, Mich., assignor to Olmsted Products Co., Traverse City, Mich.

Filed Dec. 30, 1974, Ser. No. 537,175
Int. Cl.² F16K *17/22*
U.S. Cl. 137—493 **25 Claims**



1. Fluid control means comprising a valve body having a chamber therein, exerciseable means in the chamber, means biasing the exerciseable means to a neutral position, external fluid port means communicating with the chamber on one side of the neutral position and second external port means communicating with the chamber on the opposite side of the neutral position, the exerciseable means constrained to reciprocate about the neutral position in response to reversing fluid pressure differentials occurring between the ports;
and characerized by,
separately actuateable shut off means adapted to prevent the flow of fluid through the fluid control means in response to a fluid pressure differential in excess of the reversing fluid pressure differentials.

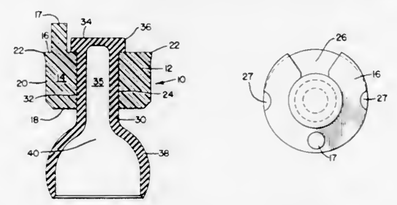
3,949,780
TWO PIECE CHECK VALVE

Thomas P. Buckman, 11561 Shelly Vista Drive, Tujunga, Calif. 91042

Filed Sept. 19, 1974, Ser. No. 507,428
Int. Cl.² F16K *15/00, 17/00, 21/04*
U.S. Cl. 137—525 **6 Claims**

1. A two piece check valve assembly adapted for positioning within a tubular member for controlling flow in one direction therethrough, said check valve assembly comprising:
a retainer of resilient material having a cylindrical body including a top and bottom connected by a vertical side wall, gripping means on the vertical side wall for engaging the wall of the tubular member to retain the check valve assembly in position within said tubular member, said body having a vertical hole extending longitudinally therethrough on the axis of the body, an arcuate cutout

portion extending from the vertical wall inwardly and connecting with the aforesaid hole to provide access for the valve when assembled with the retainer,
a valve member of resilient material having a hollow cylindrical body portion, a cap formed on the top of the body to close off that end, said cap having a peripheral flange extending outwardly beyond the body portion, a dome-shaped valve element connected to the lower end of the valve body with the open face of the dome directed downwardly, said dome-shaped valve element having an opening in its dome sized and aligned with the hollow in the valve body, the dome-shaped valve element being sized

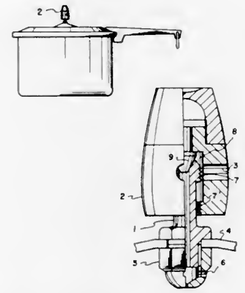


such that its outer and largest portion will engage the wall of the tubular member in which the valve is carried,
the valve element being assembled with the retainer by introducing the body of the valve element into the arcuate opening in the retainer body and moving same inwardly until said body is snugly positioned in the vertical hole in the body, whereby when the valve assembly is introduced into the tubular member the retainer will grip the wall of the tubular member with the valve element facing downwardly whereby when pressure is exerted on the inner surface of the dome-shaped valve element said valve element will snugly engage the wall of the tubular member to prevent flow therepast.

3,949,781
EXHAUST VALVE

Domingos Scalabrin, Sao Paulo, Brazil, assignor to Alcan Aluminio Do Brasil S.A., Brazil

Filed July 5, 1974, Ser. No. 486,068
Claims priority, application Brazil, Aug. 9, 1973, 006085
Int. Cl.² F16K *15/00*
U.S. Cl. 137—532 **2 Claims**

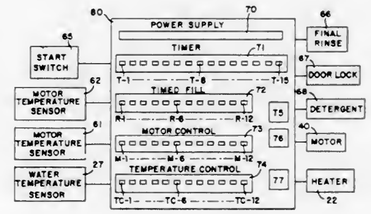


1. In an exhaust valve of the type used in the lids of pressure cookers, including a vertical exhaust tube on which a suitable weight is mounted provided with an exhaust port, the improvement that said tube, having an upper orifice and a lower end, is fitted in said lid by means of a nut, provided adjacent its upper orifice, with an external thread and, adjacent its lower end, with a steam passage, and that said weight is formed with a threaded hole adapted to engage with said external thread of said tube and further formed with an elongated chamber extending vertically in continuation of said threaded hole and terminating by a bottom surface and adapted to receive with play said upper threaded portion of said tube and close the same by means of said bottom surface, said exhaust port connecting said chamber with the outside.

3,949,782
CONTROL CIRCUIT FOR DISHWASHER

Stuart E. Athey, Troy; Alan Lee Vore, Franklin, and Donald E. Swihart, St. Paris, all of Ohio, assignors to Hobart Corporation, Troy, Ohio

Division of Ser. No. 348,192, April 5, 1973, Pat. No. 3,844,299. This application Oct. 25, 1974, Ser. No. 518,087
Int. Cl.² B08B *3/02;* **H02B** *1/02*
U.S. Cl. 137—565 **2 Claims**



1. In a control circuit for any one of a family of different models of dishwashing machines which have as common features a pump motor and associated control circuit, a tank, and water temperature control means, and which may in addition include optional functions peculiar to a particular dishwasher model such as motor overload protection means, door lock means, timed fill means, and detergent dispensing means,
the improvement comprising
a control circuit for controlling the operation of the pump motor, water temperature control means, and other dishwasher controls,
said control circuit including
a circuit board common to all said different models of dishwashers in said family,
said circuit board having connections to various control and sensing devices within said dishwasher, and
function control boards removably connected to said circuit board and containing control components for controlling specific optional functions peculiar to a particular dishwasher model.

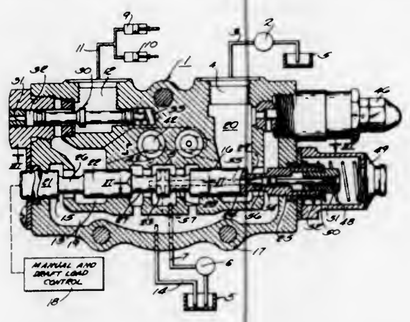
3,949,783
DUAL PUMP DRAFT CONTROL VALVE

John R. Plate, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 24, 1974, Ser. No. 536,244
Int. Cl.² F15B *13/09*
U.S. Cl. 137—596.12 **10 Claims**

1. A draft control valve for use on a vehicle comprising, a valve housing defining a central opening interconnecting a low volume pump chamber, a high volume pump chamber, a hydraulic actuator chamber, and a sump chamber, hydraulic actuator passage means for connecting said hydraulic actuator chamber to a hydraulic actuator, a valve member received in said central opening for selectively alternately directing fluid flow from said pump chambers to said hydraulic actuator chamber and connecting said hydraulic actuator chamber to said sump chamber, a flow restrictor for restricting fluid flow from said hydraulic actuator passage means to said sump chamber, said valve member and said valve housing defining passage means and a variable orifice means connected in parallel for controlling the flow of fluid between said high

volume pump chamber and sump chamber responsive to movement of said valve member, draft load control and manual control means selectively positioning said valve member for operation of said valve.



3,949,784

AIR CUSHION VEHICLE FLUID FLOW SYSTEM

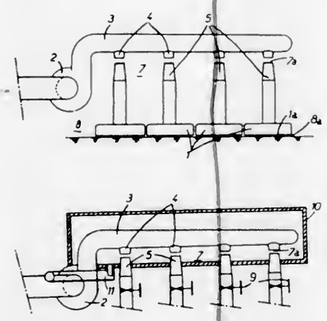
Louis Duthion, Paris, and Alain Verneau, Trappes, both of France, assignors to Bertin & Cie, Plaisir, France

Filed Nov. 29, 1973, Ser. No. 420,299

Claims priority, application France, Nov. 29, 1972, 72.42385

Int. Cl.² B60V *1/00, 1/11*

U.S. Cl. 137—608 **9 Claims**



I. In and for an installation comprising a fluid source and a plurality of fluid receiving pipes to be fed with fluid from said source, a device for supplying fluid from said source to said pipes independently of one another, said device comprising a fluid manifold connected with said fluid source and branching out into a plurality of fluid emission nozzles each having an outlet opening, said plurality of fluid-receiving pipes each having an inlet opening located in line with and spaced by a gap from the outlet opening of a corresponding emission nozzle, said gaps comprising means permitting excess fluid to overflow to a common volume, the cross-sectional area of said inlet opening of a receiving pipe being at the very most equal to the cross-sectional area of said outlet opening of said corresponding emission nozzle.

3,949,785

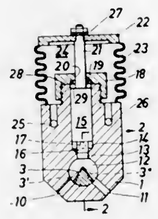
VALVE COMBINATION FOR FLAME PHOTOMETERS

Günther Ropte, Jena-Neulobeda, Germany, assignor to Jenoptik Jena G.m.b.H., Jena, Germany

Filed May 30, 1974, Ser. No. 471,400

Int. Cl.² G05D *7/00*

U.S. Cl. 137—613 **1 Claim**



1. A valve combination for flame photometers comprising a housing, a switching valve and a safety valve, said switching valve and said safety valve being arranged in said housing, said switching valve having a valve cavity, at least a first and a second gas inlet opening and a first gas outlet opening, a plug rotatably arranged in said valve cavity and being rotatable into different positions and having at least one recess, said recess connecting one of said gas entrance openings with said first gas outlet opening, said safety valve including a cylindrical valve cell, a third gas inlet opening in flow communication with said first gas outlet opening, and a second gas outlet opening being joint and in operational connection with said third gas inlet opening, said third gas inlet opening being provided in the bottom face of said cylindrical valve cell, said second gas outlet opening being located in the wall of said cylindrical valve cell adjacent to said bottom face, a plunger being axially displaceable in said cylindrical valve cell, said plunger possessing a stem and a plunger head which is adapted to close and to open said third gas inlet opening, a closing plate, and a bellows being in airtight connection with said housing, on one end portion, and with said closing plate, on the opposite end portion, said stem projecting from said housing and being connected with said closing plate, said housing being provided with channels for air supplying and air emptying said bellows.

3,949,786

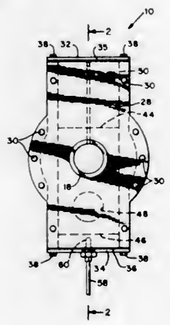
AUTOMATIC COMBINATION CHECK VALVE

William T. Houston, 2639 Flory Drive, San Jose, Calif. 95121

Continuation of Ser. No. 428,335, Dec. 26, 1973. This application June 11, 1975, Ser. No. 585,885

Int. Cl.² F16K *17/00*

U.S. Cl. 137—460 **1 Claim**



1. Valve means for a pressurized fluid, said valve means comprising:

a. a housing formed in two sections which are secured to each other, said housing having a first chamber in one of said sections, a second chamber in the other one of said sections in flow communication with said first chamber, and a valve seat formed in said first chamber;

b. an inlet conduit in fluid flow communication with said second chamber, an outlet conduit in fluid flow communication with said first chamber, said inlet conduit being on the other side of said second chamber remote from said valve seat and said outlet conduit being adjacent said valve seat;

c. a first valve member in the form of a ball loosely contained in said first chamber and arranged to engage said valve seat;

d. a second valve member in the form of a slide contained in sealed relationship within said second chamber, said slide including an opening therethrough and first and second end faces, said slide being movable between a first position that blocks the flow of fluid from said inlet conduit to said first chamber and a second position permitting fluid flow from said inlet conduit through said opening in said slide through said second chamber and into said first chamber;

e. first passageway means formed integrally within said housing and in one of said sections thereof for permitting fluid flow from said inlet conduit to said second chamber and against said first end face of said slide to transmit inlet pressure to act against said first end face in a first position direction;

f. second passageway means formed integrally within said housing and in the other one of said sections thereof to communicate said outlet with said second chamber adjacent said second end face of said slide to transmit a lowered outlet pressure to said second end face to effect a first flow blocking position movement of said slide upon a loss of outlet pressure; and

g. tube means connected to a source of pressurized air for displacing said slide from said second position thereof to said first position thereof, said tube means being in fluid communication with said second chamber and arranged to direct a flow of pressurized air against said second face of said slide.

3,949,787

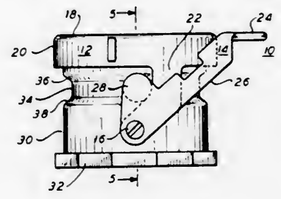
PIPE CAP

August Milo, Hillside, N.J., assignor to Universal Valve Company, Inc., Elizabeth, N.J.

Filed Oct. 21, 1974, Ser. No. 516,324

Int. Cl.² F16L *55/10*

U.S. Cl. 138—89 **11 Claims**



1. The pipe cap comprising:

a cover; and

a generally U-shaped handle including:

a center section;

a pair of opposing leg sections, each leg section having two ends, one end of each of said leg sections being connected respectively to opposite sides of said center section, the remaining two leg ends being respectively pivotally attached to a pivot point on opposite sides of said cover; and

lug means attached to each leg section and located at a point intermediate said pivot point and said center section, said lug means comprising a pair of inwardly facing, dome-shaped projections offset from the main body of each leg section by a predetermined amount.

3,949,788

WEB WEAVING MACHINE WITH SEVERAL HEALD SHAFTS

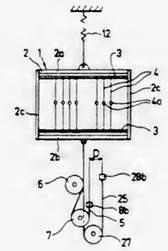
Francisco Speich, Frick, Switzerland, assignor to Jakob Muller Forschungs-und Finanz AG, Switzerland

Filed Oct. 24, 1974, Ser. No. 517,591

Claims priority, application Switzerland, Nov. 22, 1973, 16465/73

Int. Cl.² D03C *13/00, 5/00*

U.S. Cl. 139—57 **9 Claims**



I. A web weaving machine comprising, in combination, a support; a plurality of heald shafts each mounted to be displaceable relative to said support, said heald shafts being disposed to have a plane of symmetry common to said plurality; a plurality of healds supported on each said heald shaft in mutually parallel spaced relationship; at least one deflector roller rotatably mounted on said support; a plurality of tension transmitting elements, at least one of said elements being flexible and being guided by said at least one roller, an end portion of each said tension transmitting element being disposed to be substantially parallel to said healds and being connected to a respective one of said heald shafts at a portion thereof which is disposed in said plane of symmetry, a single tension member connected centrally to each of said support, and restoring means acting on said support to return it in an opposite direction.

3,949,789

HEDDLE FRAME STAVE WITH CLOSED T-RAIL

Martin Graf, Horgen, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland

Continuation of Ser. No. 369,386, June 12, 1973, abandoned. This application Mar. 6, 1975, Ser. No. 556,034

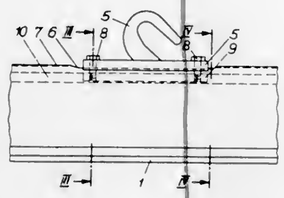
Claims priority, application Switzerland, June 14, 1972, 8831/72

Int. Cl.² D03C *9/06*

U.S. Cl. 139—91 **2 Claims**

1. A frame stave for the heald frame of a weaving machine comprising an extruded, light metal alloy rail having a channel intregrally formed along one edge thereof, said channel having a "T" shaped cross-section closed substantially along the entire length of the channel and oriented such that the cross member of the "T" is closest to the longitudinal axis of the rail, the wall thickness of the uppermost portion of the "T" channel being less than the side walls defining the channel, at

least one recess in the uppermost edge extending down into the "T" shaped channel, and a frame drive connecting element located within the recess and attached to the frame stave.



3,949,790

APPARATUS FOR JOINING TWO COILS OF WIRE

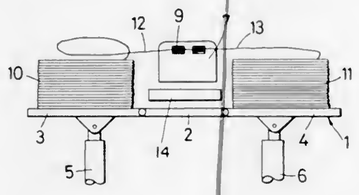
Alfred Rass, Auf Schwarzfeld 6; Walter Rass, Am Herrenbrunnchen 86, and Rudolf Schneider, Parkstr. 16, all of 55 Trier, Germany

Filed Oct. 29, 1974, Ser. No. 518,512

Claims priority, application Germany, Nov. 2, 1973, 2354979

Int. Cl.² B21F *15/08*

U.S. Cl. 140—112 **3 Claims**



1. Apparatus for combining two coils of wire comprising a supporting table including a central portion having a width substantially equal to the sum of the axial heights of the two coils and two swingable side flaps disposed at opposite sides of said central portion, each side flap being adapted to carry a coil with its axis disposed substantially vertically, welding means disposed adjacent to said supporting table central portion, means for gripping an end of each coil supported on each of said side flaps to be welded together by said welding means, and elevating means for synchronously swinging said side flaps about parallel pivot axes from substantially horizontal positions to substantially upright positions and thereby depositing the cables on said supporting table central portion with their axes substantially aligned.

3,949,791

PISTON TYPE LIQUID FILLER VALVE

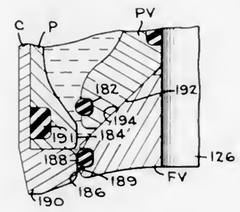
Leslie Vadas, Los Gatos, Calif., assignor to FMC Corporation, San Jose, Calif.

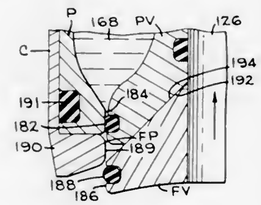
Filed Mar. 31, 1975, Ser. No. 565,987

Int. Cl.² B65B *3/04*

U.S. Cl. 141—5 **11 Claims**

1. A filler for filling open top containers with liquid from a reservoir; said filler including a valve connected to the reservoir and having elements comprising a cylinder, a foot valve, a piston and a plug valve; means for establishing communication between said cylinder and a container; said cylinder having a bottom wall formed with a container filling port, closeable by said foot valve; said measuring piston being slidable in said cylinder and having a bottom wall formed with a charging port closeable by said plug valve; said piston and plug valve elements having bottom wall surfaces respectively conforming to the opposed surface of the bottom wall of said cylinder to the opposed surface of said foot valve and means for independently operating said elements to trap a measured quantity of liquid in a measuring chamber defined by said elements, followed by opening of said foot valve and displacement of the liquid from said measuring chamber to a container; the improvement wherein said filling port and said foot valve have cooperating seating surfaces with one of said surfaces being cylindrical and with sealing means at the other seating surface, said charging port and said plug valve also





having cooperating seating surfaces with one of said seating surfaces being cylindrical and with sealing means at the other seating surface, said seating surfaces being concentric, said operating means first raising said foot valve from an open position and into engagement with said plug valve while the latter is sealed with said piston charging port, said operating means then raising the valves until said foot valve seals off the filling port in said cylinder, said operating means continuing to raise said valves until said plug valve breaks the seal with said piston charging port while maintaining the seal between the foot valve and the cylinder filling port.

3,949,792

CONSTRUCTION OF VALVES FOR BOTTLING MACHINES

Juan Ramoneda Sibidi, Sabadell (Barna), Spain, assignor to Mecano Quimica, S.A., Barcelona, Spain

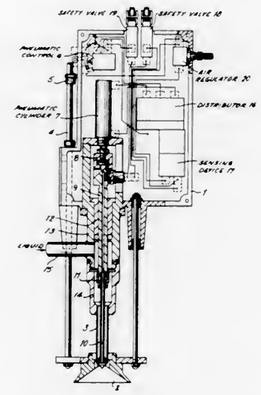
Filed Feb. 20, 1975, Ser. No. 551,384

Claims priority, application Spain, Feb. 21, 1974, 423475

Int. Cl.² B65B *3/26*

U.S. Cl. 141—198 **9 Claims**

1. A valve assembly for liquid filling of bottles in a bottling machine comprising a tubular channel member having an inlet for the supply of liquid to be introduced into a bottle and an outlet for said liquid, an air duct slidably mounted within said tubular channel and having an outlet nozzle thereon, said air duct being movable between a retracted position on which said nozzle blocks the outlet of the tubular channel and an extended position in which the outlet of the tubular channel is open and liquid can be discharged therefrom, cylinder means for moving said air duct between said retracted and extended positions, means for discharging air from said air duct, means for sensing change in pressure of the air discharged from the air duct due to increase of liquid level in a bottle being filled, and means for operating said cylinder means to move the duct to its retracted position when a given level of liquid has been reached in the bottle.



3,949,793

MANUFACTURE OF TUBULAR TYPE BATTERY PLATES

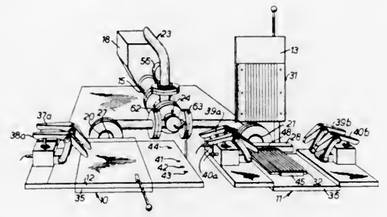
Kenneth Peters, Worsley; Robin Gordon, Stockport, and Gilbert Sands, Bolton, all of England, assignors to Chloride Group Limited, London, England

Filed July 5, 1974, Ser. No. 486,154

Claims priority, application United Kingdom, July 6, 1973, 32366/73; Apr. 9, 1974, 15768/74

Int. Cl.² B65B *3/12, 3/36*

U.S. Cl. 141—234 **7 Claims**



1. Apparatus for filling plates of the tubular type for lead acid electric storage batteries which includes:

means for supporting tubes of a plate assembled on their spines,

a pump and an extrusion head fluidically connected to said pump for extruding active material in the form of a paste, and

a plurality of feed passages each having an inlet end connected to one of a plurality of ports distributed substantially uniformly around the longitudinal axis of the extrusion head to receive paste from it, and an outlet end communicating with one of a number of extrusion nozzles arranged in a straight row and registering one with each tube of the plate,

the sizes of the nozzles being graduated so that those communicating with ports remote from the axis of the extrusion head are larger than those communicating with ports nearer to said axis, whereby the amount of paste issuing from each nozzle is substantially the same.

3,949,794

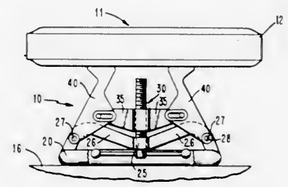
WHEEL STAND

Don J. Marshall, Box 410, Rte. 6, Edgewater, Md. 21037

Filed Sept. 4, 1974, Ser. No. 502,931

Int. Cl.² B25H *5/00*

U.S. Cl. 144—288 A **11 Claims**



1. A wheel stand for grasping and supporting the rim of a wheel, said stand comprising: a base having a hub connected thereto; a plurality of rim grasp and support means pivotally connected to said base for pivotal rotation in a plane perpendicular to the plane of the base; actuator means coupled through said hub to said rim grasp and support means for effecting rotation of said support means about said pivots; each of said grasp and support means including a radially extending projection and an upwardly extending ear at the inner end thereof; an outwardly facing notch in said radially extending projection at the radial outer terminal end thereof; said ears adapted to engage and grasp the periphery of the center hole of the web of a wheel, and said notches adapted to engage and grasp the peripheral edge of the rim of open rim type wheels.

3,949,795

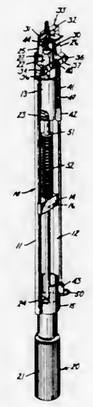
SINK CLIP INSERTING DEVICE

Donald G. Hull, Box 651, International Falls, Minn. 55649

Filed June 16, 1975, Ser. No. 586,904

Int. Cl.² B25B *15/00, 23/08*

U.S. Cl. 145—52 **4 Claims**



1. A mechanics' hand tool comprising in combination:

an elongated frame having a longitudinal axis and comprising opposite longitudinal members joined by intermediate and terminal cross members;

a screwdriver extending along the axis of said frame through and rotatable in said cross members and having a handle extending beyond said frame at one end thereof;

means including a compression spring continuously impelling said screwdriver toward an extreme position at the opposite end of said frame;

gripping means mounted on said frame at said opposite end thereof for closing toward said axis to hold an object such as a sink clip;

resilient means urging said gripping means into closed position; and

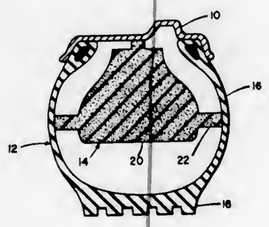
means extending along said frame and operable from said one end thereof to open said gripping means.

3,949,796

SAFETY TIRE

Donald M. Bartos, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed July 31, 1973, Ser. No. 384,332
Int. Cl.² B60C *5/00*
U.S. Cl. 152—158 **1 Claim**
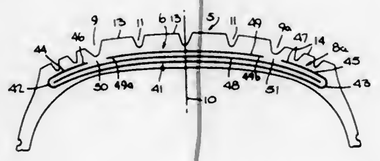


1. A pneumatic tire assembly comprising a tire casing, having a wall, mounted on a wheel rim and an insert having a substantially solid toroidal body portion positioned within the casing in spaced circumscribed relation to the rim, the body portion having a series of rod like collapsible protrusions extending from at least three sides, one of which is directed at the rim, spacing the body portion from the casing and the insert freely rotatable within the casing and the body portion having a thickness substantially greater than the thickness of the casing wall.

3,949,797

PNEUMATIC TIRE AND TREAD THEREFOR HAVING VARIABLE ROLLING CONTACT WITH THE GROUND

Henri Jean Mirtain, and Jacques Vervin, both of Compiegne, France, assignors to Uniroyal, Clairoix, France

Filed Mar. 26, 1973, Ser. No. 344,687
Claims priority, application France, Apr. 7, 1972, 72.12303
Int. Cl.² B60C *11/04, 9/22*
U.S. Cl. 152—209 R **10 Claims**



1. A high speed pneumatic tire comprising a tread having a road contact central portion symmetrical to an equatorial plane of the tire;

first and second shoulder portions being spaced respectively, laterally of the central tread portion by a continuous circumferentially extending groove and at an angle to the central portion within the range of 10 to 30°, the shoulders each having a tread of a radially variable lesser extent than the central tread portion;

the first and second shoulder portions forming with the central portion the entire width of the tread surface, the tread surface forming said first and second portions having a width in variable contact with the road;

a reinforcing breaker located under the tread extending transversely under the first, second and central portions;

said breaker comprising at least one layer having marginal free edges folded back toward the equatorial plane to form folded back portions radially external of an intermediate portion of the breaker layer, each having a folded edge;

each of said folded back portions having a width at least equal to the width of a respective one of the shoulder portions;

each said folded back portion located under one of the respective shoulder portions;

each folded edge extending laterally only into a respective shoulder portion;

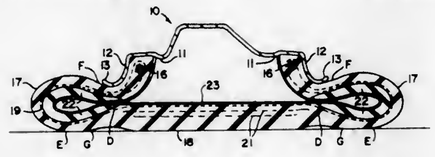
said breaker further comprising an annular supplementary ply layer, the folded back portions being folded around respective marginal free edges of the supplementary ply layer.

3,949,798

PNEUMATIC TIRE

James Dennis Gardner, Akron, and James Herbert Boettler, North Canton, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 23, 1974, Ser. No. 463,220
Int. Cl.² B60C *17/00, 9/04*
U.S. Cl. 152—330 RF **8 Claims**



1. A radial ply pneumatic tire construction having a stable, flex-resistant run-flat configuration, when said tire is run deflated carrying the vehicle load, that gives said tire the capability of being run-flat for a specified distance without injuring the remaining useful life of the tire, wherein said tire comprises an annular road-engaging tread, two sidewalls, each connecting a lateral side of said tread to an annular bead, a body containing at least one fabric reinforcing ply extending from one bead to the other through the sidewalls and tread area of said tire, and an inner-liner covering the entire inner periphery of said tire, said tread having a width greater than the rim width of the rim said tire is designed to be mounted on, said tire having a low profile in which its inflated section height is 70% or less of its inflated section width, said sidewalls having rubber inserts located between the axially innermost body reinforcing ply and the inner-liner in the area of the sidewalls which is in compression when the tire is run-flat, said inserts located in the sidewalls at the points where the inner periphery of the tire contacts itself when the tire is run flat so that said inserts abut themselves when the tire is run-flat, said inserts being axially separated from each other in the tread area of the tire and continuous within each sidewall between said tire contact points for each sidewall, said sidewalls forming an angle of 40° or less as measured from a line parallel to the axis of rotation of the tire through the point where the tire sidewall last contacts the rim flange to the line defined by said last contact point and a point on said sidewall defined by the intersection of said sidewall and a line perpendicular to said axis of rotation located axially outwardly from said last contact point a distance of 10% of said tire section width, the outer periphery of the sidewalls of said tire when the tire is run-flat having a smooth, substantially wrinkle-free configuration in the area of said sidewalls immediately before and after

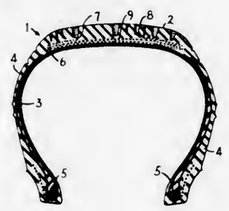
the tire contacts the road surface, thereby lessening the movement and heat generation in the said tire when it is run flat.

3,949,799

HIGH-SPEED RADIAL TIRE WITH FOLDED METAL BELT

Jean Bernard Montagne, Cebazat, France, assignor to Compagnie Generale des Establissements Michelin, Clermont-Ferrand, France

Continuation-in-part of Ser. No. 313,643, Dec. 11, 1972, abandoned. This application Nov. 20, 1974, Ser. No. 525,676
Claims priority, application France, Dec. 15, 1971, 71.45193
Int. Cl.² B60C *9/18*
U.S. Cl. 152—361 FP **8 Claims**



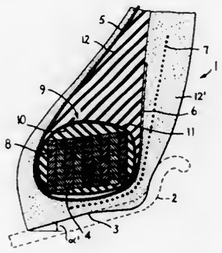
1. A tire comprising a radial carcass and a tread reinforcement, the tread reinforcement comprising at least one ply of twisted metal cords having at least one folded portion, the direction of the fold of the ply, the direction of the inclination of the cords with respect to the circumferential direction of the tire, and the direction of the twist of the cords being such, relative to one another, that the cords are relatively untwisted at the fold.

3,949,800

TIRE WITH PACKAGE BEAD RING

Daniel Lejeune, Clermont-Ferrand, France, assignor to Compagnie Generale des Establissements Michelin, Clermont-Ferrand, France

Filed Mar. 1, 1974, Ser. No. 447,365
Claims priority, application France, Mar. 7, 1973, 73.08228
Int. Cl.² B60C *15/04*
U.S. Cl. 152—362 R **3 Claims**



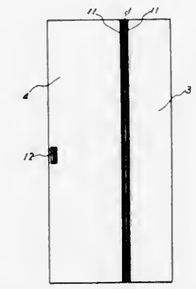
1. A pneumatic tire comprising a bead, a package bead ring in the bead, and a carcass reinforcement turned around the bead ring, the bead ring comprising at least one metal wire having a cross section of a quadrilateral with two parallel opposite faces, said at least one wire forming adjoining multiple turns around the tire through the bead, said adjoining turns making metal-to-metal contact with each other along their facing surfaces in directions extending both radially and axially of the tire, further comprising a rubber sheathing surrounding the bead ring and a stuffing rubber around the bead ring and contained within the sheathing.

3,949,801

DEVICE FOR AUTOMATICALLY CLOSING A FOLDING DOOR

Giichi Sasaki, 17-37, Yotsuihon, Fukui, Japan

Filed Nov. 29, 1974, Ser. No. 528,174
Int. Cl.² E05D *15/00*
U.S. Cl. 160—229 R **4 Claims**



1. A device for automatically closing a folding door having at least two sections comprising:

a furnishing member secured to an edge defining the joint of each door section;

a coupling pivotably joining each of said furnishing members and defining a pair of longitudinal holes through said coupling along the length of each door section; and

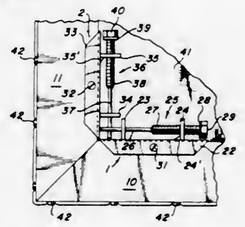
a torsion bar inserted into each hole of said coupling and having a radial projection adjacent to one end engaging said coupling, and a transverse bar portion at its opposite end freely contacting said furnishing member so that when the door sections are pivoted open, said torsion bars are twisted between each transverse bar portion and each projection to create a torsional stress in each of said torsion bar so that when said door sections are closed, the torsional stress of each of said torsion bar will automatically close said door.

3,949,802

TENSIONING DEVICES

Prosper Buratovich, 460 Shannon Place, Cliffside Park, N.J. 07010

Filed Jan. 3, 1975, Ser. No. 538,354
Int. Cl.² A47G *5/00;* **E06B** *9/24*
U.S. Cl. 160—374.1 **1 Claim**



1. A device for applying tension to an artist's canvas affixed to mitered corner, tongue and groove stretcher bars comprising a substantially right angle bracket member adapted to engage first and second sides of one of said stretcher bars with one surface of said bracket member provided with an aperture therethrough; means cooperating with said aperture for affixing said bracket member to said one of said stretcher bars; an adjusting screw having a threaded portion and a tip portion extending from said threaded portion; first and second mounting ears extending substantially perpendicularly from the other surface of said bracket member, said first ear having an

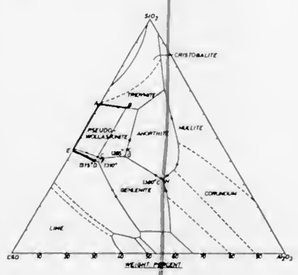
aperture therethrough for receiving said tip portion and said second ear having an aperture therethrough for receiving said threaded portion, said adjusting screw being mounted in a substantially parallel relationship to said other surface of said bracket member; and a fillet affixed to said second ear and to said other surface of said bracket member such that upon adjustment of said screw, said fillet is effective to maintain said second ear substantially perpendicular to said other surface and said tip portion engages another one of said stretcher bars whereby a controlled tension is applied to said artist's canvas.

3,949,803

METHOD OF CASTING MOLTEN METAL USING MOLD ADDITIVES

Makoto Hiroishi; Kazuo Mitsunaga, and Yoshiyuki Fujisawa, all of Soja, Japan, assignors to Foseco International Limited, Birmingham, England

Division of Ser. No. 356,138, May 1, 1973, abandoned. This application July 30, 1974, Ser. No. 493,071
Claims priority, application Japan, May 1, 1972, 47-44146
Int. Cl.² B22D *27/20, 27/18*
U.S. Cl. 164—56 **15 Claims**



1. A method of casting molten metal in a mould, which method comprises adding to the mould prior to, during or after teeming a mould flux which is in the form of a flowable powder mix consisting essentially of in particulate form:
   i. wollastonite;
   ii. at least one low melting fluxing agent;
   iii. a low density refractory material; the proportion by weight of low density refractory material being at most 15% and the proportion by weight of any alumina (Al_2O_3) in the overall composition being not more than 10% by weight.

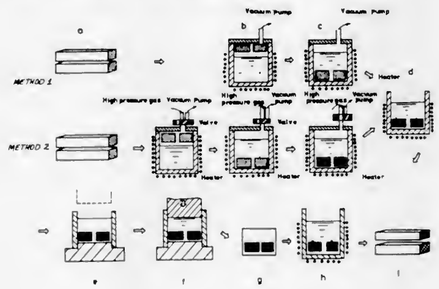
3,949,804

METHOD OF MANUFACTURING A METAL-IMPREGNATED BODY

Yasuhisa Kaneko, Toyota; Yoshiro Komiyama, Okazaki; Katsumi Kondo, Toyota; Fumiyoshi Noda, Toyota; Hideki Murakami, Toyota, and Kunihiko Uchida, Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 21, 1974, Ser. No. 453,427
Claims priority, application Japan, Mar. 26, 1973, 48-34302
Int. Cl.² B22D *27/16*
U.S. Cl. 164—62 **7 Claims**

1. Method of manufacturing a metal-impregnated body which comprises the steps of:
   introducing a porous body into a vacuum furnace at a subatmospheric pressure to reduce the pressure in pores of the body to sub-atmospheric pressure;
   submerging said body in a molten pool of alloy in the furnace to fill the surface pores of the body with molten alloy while its internal pores are under sub-atmospheric pressure;
   raising the pressure in the furnace to at least atmospheric pressure to partially impregnate the body with the alloy;
   removing the molten alloy and body from the furnace;
   placing the molten alloy and body in a pressurizing mold with the body submerged in the alloy;



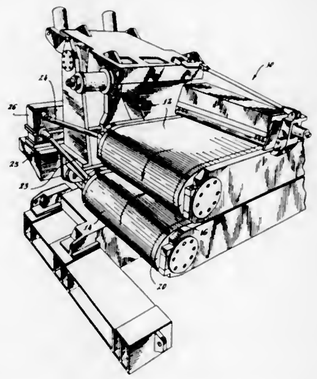
   applying high pressure to the molten alloy and said body in the mold to further impregnate the body with the alloy;
   cooling the molten alloy and the so impregnated body in said mold while maintaining the high pressure, to solidify the molten alloy around the impregnated body;
   re-heating the solidified alloy and said impregnated body to re-melt the alloy; and
   removing the impregnated body from the re-melted alloy.

3,949,805

SYMMETRICAL BELT TENSIONING SYSTEM AND APPARATUS FOR TWIN-BELT CONTINUOUS CASTING MACHINES

Robert William Hazelett, Winooski; John Frederick Barry Wood, Burlington, and Robert J. Carmichael, Colchester, all of Vt., assignors to Hazelett Strip-Casting Corporation, Winooski, Vt.

Division of Ser. No. 350,600, April 12, 1973, Pat. No. 3,878,883. This application May 30, 1974, Ser. No. 474,617
Int. Cl.² B22D *11/06;* **B65G** *39/20;* **F16H** *7/22*
U.S. Cl. 164—278 **9 Claims**



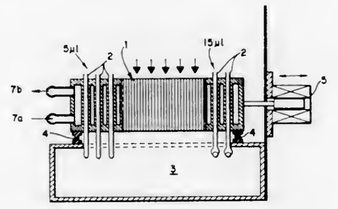
1. A symmetrical belt tensioning system for use in a twin-belt continuous casting machine of the type in which a casting region is defined between spaced parallel portions of the two revolving endless casting belts, said system comprising:
   a frame for supporting and revolving an endless casting belt having a pair of main rolls at opposite ends, said rolls extending parallel to each other and also parallel to the plane of the casting region for defining an oval shaped path around which the casting belt is revolved,
   at least one of said main rolls being hollow,
   a rigid squaring shaft passing through said hollow roll from one end of the roll to the other,
   a pair of bearings positioned within said hollow roll and encircling said squaring shaft for mounting said hollow roll on said squaring shaft, one of said bearings being mounted within the hollow roll near each end of said hollow roll providing free rotation of said roll about said squaring shaft,
   a pair of pivot mountings positioned and mounted on opposite sides of the frame,
   a pair of parallel torque arms pivotally mounted on the respective pivot mountings and being rigidly secured to opposite ends of said squaring shaft for causing equal and simultaneous swinging movement of said torque arms about their respective pivot mountings,
   a pair of consistent, predictable force-applying means, one of said force-applying means being pivotally coupled to each of said torque arms for urging both of said torque arms simultaneously to swing equally about said pivot mountings for simultaneously moving both ends of said one roll equal amounts in a direction away from the other roll for symmetrically tightening the casting belt on said frame for maintaining the inboard and outboard edges of the revolving endless belt under equal lengths of travel.

3,949,806

METHOD AND APPARATUS FOR REFLUXATION IN MICROLITER SCALE

Wolfgang Dunges, Rilkeallee 14, 65 Mainz-31, Germany

Filed Apr. 8, 1974, Ser. No. 459,095
Int. Cl.² F25B *13/00*
U.S. Cl. 165—2 **8 Claims**



1. In a method of refluxing a liquid in a vessel of less than 50 μl content wherein the lower part of the vessel is heated while the upper part of the vessel is cooled, the improvement comprising continuously vibrating said vessel during the time of refluxation whereby the formation of droplets is suppressed in the upper portion of said vessel.

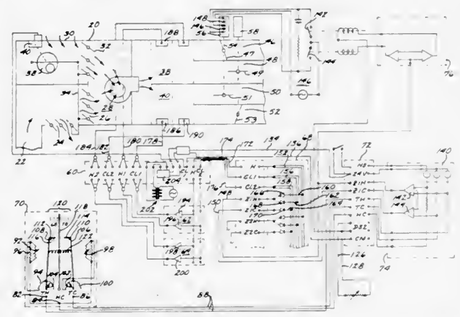
3,949,807

AIR CONDITIONING SYSTEM WITH INTEGRAL ENERGY CONSERVING ELEMENTS

Hugh Jean Tyler, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 30, 1974, Ser. No. 502,049
Int. Cl.² F25B *29/00*
U.S. Cl. 165—16 **9 Claims**

1. An environmental air conditioning control system for a building having a zone of controlled air temperature therein with air conditioning means including air heating, air cooling and air circulation means including means to return air from said zone to said conditioning means which comprises:
   zone air temperature sensing means for simultaneously generating a first sensor signal proportional to the deviation of said zone air temperature below a first set point and a second sensor signal proportional to the deviation of said zone air temperature above a second set point temperature, higher than said first set point temperature with said first and second signals being of discontinuous proportionation, offset by a band of from 4° to about 15° F.;
   a plurality of air conditioning controller means; each associated with a respective air cooling means and air heating means; and



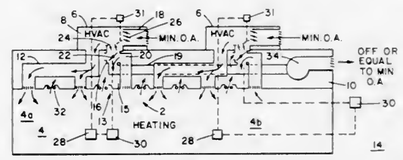
   circuitry connected between said zone temperature sensing means and said controller means to apply simultaneously: (1) a first control signal, responsive to said first sensor signal to said controller of said heating means and (2) a second control signal, responsive to said second sensor signal, to said cooling means.

3,949,808

AIR CONDITIONING APPARATUS

Theodore C. Gilles, Marshalltown, Iowa, assignor to Lennox Industries, Inc., Marshalltown, Iowa

Filed Jan. 22, 1975, Ser. No. 543,186
Int. Cl.² F24F *7/00*
U.S. Cl. 165—22 **9 Claims**

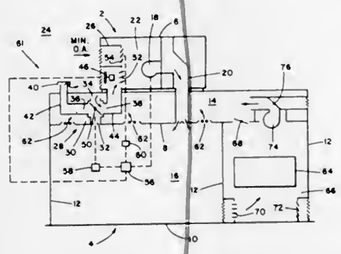


1. An air processing system for an enclosed area comprising, in combination:
   a plenum;
   temperature sensing means;
   an air processing unit responsive to said temperature sensing means, said air processing unit having an air intake;
   processed air means for directing processed air from said air processing unit to said enclosed area;
   air passing light fixtures between said enclosed area and said plenum, whereby indoor air within said enclosed area passes in heat transfer relationship with said light fixtures into said plenum;
   outdoor air means for directing fresh outdoor air to said air intake;
   return air means for controlling the air received by said air processing unit from said enclosed area, said return air means including room air means for directing indoor air within said enclosed area to said air intake, plenum air means for directing plenum air within said plenum to said air intake, and exhaust air means in communication with said room air means and said plenum air means for exhausting air therefrom to the outdoors; and
   control means for regulating said fresh air means, said room air means, said plenum air means and said exhaust air means, said control means being responsive to said temperature sensing means.

3,949,809
AIR PROCESSING APPARATUS

Theodore C. Gilles, Marshalltown, Iowa, assignor to Lennox Industries, Inc., Marshalltown, Iowa

Filed Jan. 22, 1975, Ser. No. 543,187
Int. Cl.² F24F 7/00
U.S. Cl. 165—22 16 Claims



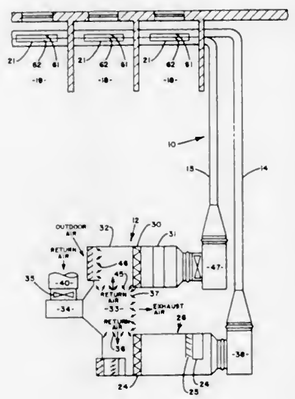
1. An air processing system for an enclosure, having a plenum, comprising, in combination:
- temperature sensing means for sensing the air temperature within said enclosure;
- air processing means for supplying a stream of processed supply air to said enclosure, said air processing means being responsive to said temperature sensing means;
- air passing light fixtures between said enclosure and said plenum, air within said enclosure passing in heat transfer relationship with said light fixtures into said plenum;
- ventilation means in communication with the outdoors;
- outdoor air means for directing a stream of fresh outdoor air to said air processing means, said outdoor air means having a minimum outdoor air setting;
- return air means for directing a stream of return air to said air processing means, said return air means including air distribution means having a first and second inlet and a first and second outlet, said first and second inlets communicating with said enclosure and said plenum, respectively, said first outlet communicating with said ventilation means through a first duct, said second outlet communicating with said air processing means through a second duct;
- power exhaust means in communication with said second duct for exhausting air therein to the outdoors, said power exhaust means being responsive to said temperature sensing means; and
- damper means for controlling the flow of air through said air return means, said damper means being responsive to said temperature sensing means.

3,949,810
AIR CONDITIONING SYSTEM

George E. Cobb, Houston, Tex., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 29, 1974, Ser. No. 528,074
Int. Cl.² F25B 29/00
U.S. Cl. 165—30 2 Claims

1. An air conditioning system for conditioning air in a plurality of enclosed areas in a building comprising:
- terminal means disposed in each of the enclosed areas for the supply of conditioned air thereinto;
- first air conditioning apparatus to provide conditioned air at a relatively constant cold temperature level;
- means to supply said relatively cold air to said terminal means;
- said terminal means including first control means to regulate the quantity of said relatively cold conditioned air discharged into said area in accordance with the temperature level therein, said first control means including means to generate a control signal, the magnitude thereof being indicative of the quantity of conditioned air discharged into said area; and
- means to receive said control signal including means to supply relatively warm air into said area, and second control means to activate said warm air supply means when the magnitude of the control signal indicates that the quantity of said constant temperature air discharged into said area has decreased below a predetermined level.



3,949,811
METHOD FOR REDUCING THE PERMEABILITY OF SUBTERRANEAN FORMATIONS TO BRINES

Curtis B. Threlkeld; James E. Hessert; Richard L. Clampitt, and Riley B. Needham, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

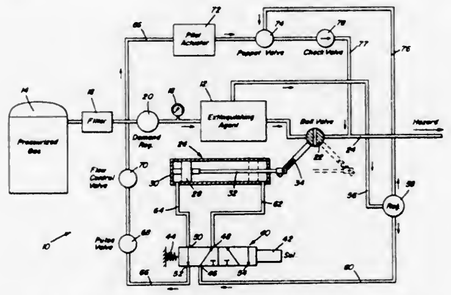
Continuation-in-part of Ser. No. 353,452, April 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 193,338, Oct. 28, 1971, abandoned, Continuation-in-part of Ser. No. 359,722, May 14, 1973, abandoned, which is a continuation-in-part of Ser. No. 184,784, Sept. 29, 1971, abandoned. This application Apr. 19, 1974, Ser. No. 462,325
The portion of the term of this patent subsequent to Oct. 2, 1990, has been disclaimed.
Int. Cl.² E21B 33/13
U.S. Cl. 166—294 31 Claims

1. A method for reducing the permeability to brine of a subterranean formation, said formation being penetrated by at least one well bore, comprising:
- injecting into the well bore and outwardly through the formation at least a first slug and thereafter a second slug of a thickened aqueous polymer solution comprised of from about 500 to about 3,000 ppm of a polymer selected from the group consisting of polyacrylamide, and partially hydrolyzed polyacrylamides;
- interspacing the thickened aqueous polymer solution slugs with brine having multivalent cations selected from the group consisting of Fe^{3+}, Al^{3+}, Ti^{4+}, Zn^{2+}, Sn^{4+}, Ca^{2+}, Mg^{2+}, and Cr^{3+}; and
- terminating injection of the second slug of thickened aqueous polymer solution.

3,949,812
FIRE EXTINGUISHING SYSTEM

George P. Hay, P.O. Box 587, Springfield, Mo. 65801

Filed Nov. 12, 1974, Ser. No. 523,124
Int. Cl.² A62C 37/06
U.S. Cl. 169—61 14 Claims

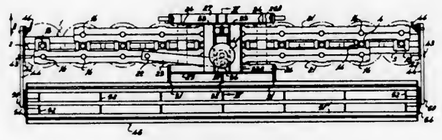


10. A fire extinguishing system comprising means for containing an extinguishing agent, valve means for controlling the discharge of said extinguishing agent from said containing means, pneumatic means for opening and closing said discharge control valve means, solenoid-actuated directional control valve means for controlling the flow of pressurized gas to operate said pneumatic means, and timer means for automatically and repeatedly energizing and de-energizing said directional control valve means solenoid to thereby open said discharge control valve means for a pre-determined period of time and close said discharge control valve means until the fire is extinguished.

3,949,813
SOIL CULTIVATORS

Cornelis van der Lely, 7 Bruschenrain, Zug, Switzerland

Division of Ser. No. 401,144, Sept. 27, 1973, Pat. No. 3,887,014, which is a continuation of Ser. No. 144,462, May 7, 1971, abandoned. This application Aug. 5, 1974, Ser. No. 494,963
Claims priority, application Netherlands, May 19, 1970, 7007174
Int. Cl.² A01B 49/02
U.S. Cl. 172—59 8 Claims

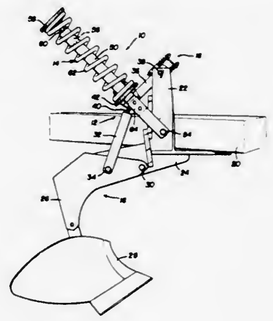


1. A soil-working cultivator comprising a generally horizontal frame supporting a plurality of power-driven soil-working members with downwardly extending tines arranged in a row that extends transverse to the direction of travel, said soil-working members including holders and tines mounted in said holders, said soil-working members being rotatable about upwardly extending axes to work overlapping strips of ground, an elongated roller member being connected to said cultivator in trailing position behind said row of soil-working members, said roller member being rotatable about a transverse substantially horizontally extending axis and having a soil-smoothening periphery of spaced apart elongated, substantially round elements which extend substantially parallel to the frame, said elements extending horizontally along the length of said roller member, said roller member being pivotally connected to said frame through arm means and said arm means including a pair of supporting arms, each of said arms extending to spaced apart connections adjacent an end of said row of soil-working members and said arms being connected at opposite sides of the row with respect to the direction of travel, a first of said connections being a pivot connection and a second of said connections including vertically spaced locking means for adjusting the relative heights of said frame with respect to the axis of rotation of said roller member to control the working depths of said soil-working members.

3,949,814
SPRING AUTOMATIC RESET PLOW ASSEMBLY

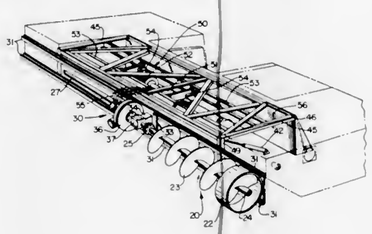
Harold A. Ralston, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Mar. 13, 1974, Ser. No. 450,720
Int. Cl.² A01B 61/04, 15/14, 35/24
U.S. Cl. 172—267 2 Claims



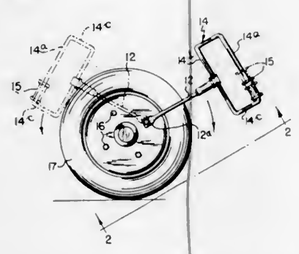
1. In an automatic reset assembly for an earth working implement, comprising:
- an elongated, generally horizontal frame for an earth working implement, and including a member which is stationary relative to the frame;
- an earth working implement pivotally connected to said frame;
- an elongated guide member including two, spaced, parallel rigid rails pivotally connected directly to the stationary member above said implement at a pivot point which is stationary relative to the frame;
- a first toggle link pivotally connected to the stationary member at a point above and spaced from said guide pivotal connection;
- a second toggle link pivotally connected to the earth working implement;
- a slide member slideably mounted on said guide, said slide including (a) a base having slots through which respective rails extend and (b) two parallel supports generally perpendicular to said base and positioned between said rails, a pin extending between and secured within said parallel supports, said first and second toggle links being pivotally connected to said pin;
- means resiliently biasing said slide and toggle links toward the stationary pivotal connection between the guide and the stationary member;
- an abutment between the slide member and the stationary pivotal connection, said abutment limiting the movement of said slide and links toward said stationary pivotal connection and preventing the toggle links from reaching a dead center position;
- the earth working implement being resiliently biased downwardly through the force exerted on said second toggle link by said biasing means, said biasing means (1) allowing the implement to pivot upwardly when it strikes an immovable object and (2) automatically downwardly pivoting said implement once the object has been passed to properly reset the implement for further operation.

3,949,815
SHALLOW-HOLE KERF BORING MACHINE WITH AUGER ON SIDE-ARM ELEVATING ASSEMBLY
William Sebert Bryant, Jr., and Cornelius Durham Garbutt, Jr., both of Summersville, W. Va., assignors to Badger Manufacturing Corporation, Summersville, W. Va.
Filed July 24, 1974, Ser. No. 491,569
Int. Cl.² E21C *25/58*
U.S. Cl. 173—23 19 Claims



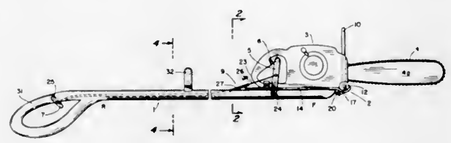
1. A kerf boring machine, comprising:
A. a side-arm elevating assembly which comprises an L-shaped frame formed from a pair of main lifting arms and a pair of side arms which are perpendicularly attached thereto; and
B. an auger assembly which comprises:
1. an auger plate which is rigidly attached to said side arms,
2. an auger guide which is rigidly attached to said auger plate,
3. a cutter head, and
4. an auger flight, having an auger shaft and spirals, which fits rotatably within said guide and is attached to said cutter head.

3,949,816
UTILITY IMPACT WRENCH
Frank B. Harvath, 6028 St. Clair Ave., Cleveland, Ohio 44103
Filed May 15, 1975, Ser. No. 577,692
Int. Cl.² B25D *15/00*
U.S. Cl. 173—93 2 Claims



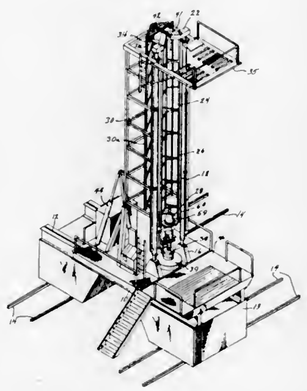
1. An impact wrench comprising a short spindle, means on the end of said spindle for engaging a threaded object to be turned, a moment arm pivotally mounted on the end of said spindle, a linear weight guide rigidly mounted on said arm at a right angle thereto at the end opposite said pivot, and a weight embracing said guide and easily slidable thereon, whereby said spindle means may be engaged with an object to be turned and said moment arm may be swung about said pivot point to a position where said weight slides along said guide, and stop means at each end of said guide causing said weight to stop suddenly responsive to resistance to said threaded object to apply an impact to said object at right angles to the axis of said threads.

3,949,817
CHAIN SAW EXTENDER
John S. Rice, Rte. 1, Freeman, Mo. 64746
Filed Dec. 2, 1974, Ser. No. 528,872
Int. Cl.² B27B *17/00*
U.S. Cl. 173—170 11 Claims



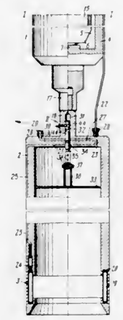
1. The combination of a chain saw and an apparatus for hand-holding and controlling same while extending the reach of the saw comprising:
a. a post which can be held in the hands and which includes means at the front of said post to which end said chain saw is secured;
b. saw actuating means comprising a pivotal lever attached to said post toward the front end thereof;
c. a control trigger attached to said post rearwardly of said actuating means;
d. a flexible cable operably connecting said actuating means and said control trigger;
e. a chain saw cutting chain projecting forwardly of said post in orientation with the longitudinal axis thereof; and
f. a chain saw power trigger selectively engaged by said actuating means whereby depression of said control trigger depresses said power trigger.

3,949,818
HYDRAULIC DRILLING RIG AND POWER SWIVEL
Duane K. Russell, Bothell, Wash., assignor to Western Gear Corporation, Everett, Wash.
Filed Sept. 30, 1974, Ser. No. 510,378
Int. Cl.² E21B *19/14*
U.S. Cl. 175—52 25 Claims



15. The method of moving pipe in an earth-working operation including connecting pipe sections to a power swivel by threadably joining the sections to a rotary driven stem assembly of the power swivel and alternately tripping lengthy, connected pipe sections from the earth, the improvement comprising:
removing the rotary driven stem assembly from the power swivel, leaving a central passage; and
moving the pipe and the power swivel axially relative to each other for removal of the pipe from the earth by causing the pipe to move through said central passage.

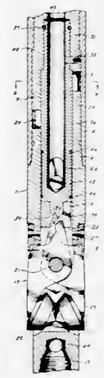
3,949,819
SOIL SAMPLING DEVICE
Evgeny Ivanovich Tanov, ulitsa Dzerzhinskogo, 34, Ashkhabad Turkmenskoi SSR, U.S.S.R.
Filed July 10, 1974, Ser. No. 487,393
Int. Cl.² E21B *25/00, 9/20*
U.S. Cl. 175—243 3 Claims



1. A soil sampling device comprising: a pneumatic impact mechanism; a socket for taking substantially columnar soil samples, rigidly connected with said impact mechanism; said socket having a body portion with an inner side surface near its free end, which is provided with a groove defining an annular recess; means for holding the soil sample in said socket when the latter is extracted from the ground, in the form of an elastic inflatable element, connectable to a source of compressed gas, said element being located in said recess when said socket is driven into the ground, and covering completely the inner cross-sectional area of said socket when the latter is extracted from the ground; and a conveying and controlling system for the compressed gas, including a channel in said body portion of the socket to communicate said inflatable element with said source, and a non-return valve also included in said system, to prevent leakage of the gas from said inflatable element after it is inflated; as well as a branch line further included in said system, with which line is associated with said non-return valve, and a signaling device to which the compressed gas is also supplied, to indicate that said socket is filled with the soil sample.

3,949,820
UNDERREAMER CUTTER ARM
John H. Furse, Anchorage Branch, Ky., assignor to Smith International, Inc., Long Beach, Calif.
Filed Feb. 21, 1975, Ser. No. 551,600
Int. Cl.² E21B *9/26*
U.S. Cl. 175—286 12 Claims

1. An underreamer cutter arm comprising:
an elongated body;
a transverse pivot pin hole through the body;
cam surface means on the body for pivoting the body about the axis of the pivot pin hole;
journal means on one end of the body for mounting a rock cutter cone for rotation about an axis transverse to the axis of the pivot pin hole; and
a fluid flow passage through the body between the pivot pin hole and the journal means comprising:
a first straight passage portion having one end in fluid communication with the pivot pin hole and the other end terminating within the body;
a second straight passage portion having one end in fluid communication with the journal means and the other



end terminating within the body in fluid communication with the first passage portion, the first and second passage portions being skewed relative to each other for conducting fluid along a non-straight path between the pivot pin hole and the journal means.

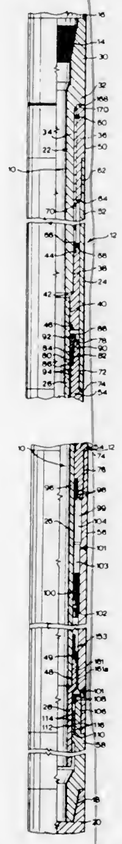
3,949,821
DRILL STRING JARRING AND BUMPING TOOL WITH PISTON DISCONNECT
Theodore Arthur Raugust, Calgary, Canada, assignor to Jarco Services Ltd., Calgary, Canada
Filed Mar. 3, 1975, Ser. No. 555,203
Int. Cl.² E21B *1/10*
U.S. Cl. 175—297 9 Claims

1. A tool for imparting an upward jar or a downward bump to a drill string, the tool comprising:
a mandrel adapted to be coupled at one end to a part of the drill string;
a tubular housing surrounding said mandrel and defining therewith an annular chamber for hydraulic fluid, said housing being adapted to be coupled at its end remote from said one end of the mandrel to another part of said drill string;
splined coupling means between the mandrel and the housing, said coupling means being adapted to allow relative longitudinal sliding movement of the mandrel and housing between an extended position of the tool and a closed position of the tool;
respective pairs of abutment faces on the mandrel and housing, defining said extended and closed positions of the tool;
a floating piston assembly of annular form positioned around the mandrel in said chamber and defining a first by-pass passageway through which fluid can by-pass the piston assembly when the passageway is open;
said chamber having a first section dimensioned to closely receive said piston assembly, a second section disposed adjacent one end of said first section and of greater inside diameter than said first section, and a third and elongated section disposed adjacent the other end of said first section;
stop means in the said annular chamber at said other end of said first section, said stop means being coupled to the

tubular housing and defining a rest position for the piston assembly when the tool is closed;

a fluid flow control device in said piston assembly, said device providing a path for fluid to flow through the piston assembly at a restricted rate when said first by-pass passageway is closed;

displacing means coupled to said mandrel and located in said chamber adjacent the end of said third section remote from said first section when the tool is in closed position, said displacing means including contact means for contacting said piston assembly and for displacing said piston assembly from said stop means through said first section of said hydraulic chamber into said second section as said tool is extended;



co-operating means on the displacing means and piston assembly for sealing said first by-pass passageway against the flow of hydraulic fluid therethrough during relative movement of the mandrel and housing towards the extended position of the tool with said piston assembly in said first section of said hydraulic chamber;

whereby, in use, said relative movement causes the piston assembly to be displaced slowly along said first section of the hydraulic fluid chamber at a rate dependent on the rate of flow of hydraulic fluid through said control device, until the piston assembly enters said second section of the hydraulic fluid chamber, whereupon pressurized hydraulic fluid in said second section is released and flows past the piston assembly, allowing the relevant abutment faces of the mandrel and housing to slam together, applying an upward jar to the drill string; and,

releaseable engaging means on the piston assembly and displacing means for coupling said assembly and displacing means during return movement of the mandrel and housing towards the closed position of the tool;

whereby said return movement of the mandrel and housing causes said displacing means to withdraw the piston assembly until movement of the assembly is arrested by said stop means, said engaging means then releasing and said displacing means moving out of engagement with the piston assembly and through said third section of said hydraulic chamber as closing movement of said tool continues;

said displacing means defining with the inner wall of said third section of said hydraulic chamber or second fluid by-pass passageway of substantial size, to permit fluid rapidly to by-pass around said displacing means as said displacing means moves through said third section,

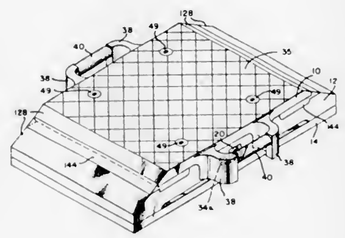
whereby the other faces of said mandrel and housing may slam together to apply a downward bump to the drill string as closing movement of said tool continues.

3,949,822

VEHICLE WHEEL WEIGHING SYSTEM

David C. English, Seattle, and Godfrey A. Holmstrom, Issaquah, both of Wash., assignors to Jerry L. McCauley, Tukwila, Wash.

Filed Sept. 30, 1974, Ser. No. 510,698
Int. Cl.² G01G *21/00, 3/14*
U.S. Cl. 177—126 **12 Claims**



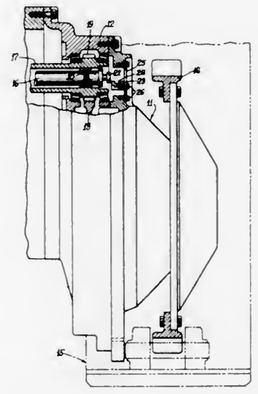
1. A weight sensing pad for sensing the weight of a vehicle transmitted by one wheel of the vehicle, comprising: first and second elongated bending beams spaced apart from each other in substantially parallel relationship, each of said beams having two ends and a midsection, means fixedly securing the ends of said bending beams such that their midsections can deflect upon application of downward load to their midsections, first and second strain sensing means associated, respectively, with said first and second bending beams providing electrical signals proportional to loads applied to each of said bending beam midsections, web means interconnecting said first and second bending beams for transferring load therebetween, and plate means positionable in load-bearing contact with the one wheel of the vehicle for transferring load applied to said plate means by said wheel to said bending beam midsections, said plate means being secured to and extending between said first and second bending beam midsections such that they are deflected downwardly substantially simultaneously when downward load is applied to said plate means by the one wheel of the vehicle.

3,949,823

LOCK-OUT DEVICE FOR FINAL DRIVE OF A TRACK-TYPE VEHICLE

Charles H. Herr, Jr., Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 9, 1975, Ser. No. 566,541
Int. Cl.² B60K *17/10*
U.S. Cl. 180—9.62 **15 Claims**



1. In a power train comprising a rotary driving member disposed for rotation about a longitudinal axis thereof and reciprocally mounted in a stationary housing for axial movement between a normally engaged position with respect to a rotary driven member to transmit power therebetween and a disengaged position relative to said driven member, the invention comprising

a lock-out device for selectively maintaining said driving member in said disengaged position including

first locking means secured to said driving member and

second locking means secured to said housing and normally disposed in close proximity to said first locking means when said driving member is maintained in its engaged position and attachable to said first locking means when said driving member is moved to its disengaged position, said second locking means being secured internally on a cover plate releasably secured to said housing by fastening means exposed externally of said housing.

3,949,824

DRIVE ARRANGEMENTS FOR MECHANICAL HANDLING VEHICLES

Sydney Bennett, Batley, England, assignor to Joshua Shaw & Sons Limited, United Kingdom

Continuation-in-part of Ser. No. 358,684, May 9, 1973, abandoned. This application June 24, 1974, Ser. No. 481,997
Claims priority, application United Kingdom, Feb. 23, 1973, 8926/73
Int. Cl.² B60K *7/00, 17/14*
U.S. Cl. 180—66 R **1 Claim**

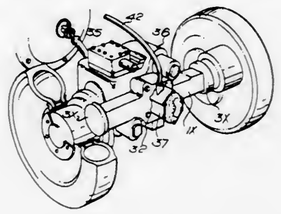
1. In a drive arrangement for a mechanical handling vehicle comprising the combination of

1. 2 one piece solid axle extending across the vehicle substantially from side to side thereof and supporting a ground wheel at each end of the axle, and

2. a hydrostatic transmission having (a) a hydraulic motor mounted at each end of said axle for driving each of said wheels, (b) a pump for supplying hydraulic fluid to the motors,

the improvement wherein

said one piece axle has formed therein two spaced apart passages extending axially between the motors by which said motors communicate hydraulically with one another and with said pump whereby hydraulic fluid



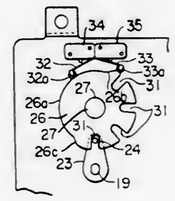
under pressure can be transmitted selectively through either one of the axial passages to drive both motors while the low pressure fluid from both motors returns through the other axial passage, and said pump is mounted directly on said axle with the ports of said pump in direct communication with said axial passages.

3,949,825

SAFETY BELT FOR VEHICLES

Kenichi Kazaoka, Nagoya; Kimiharu Hirose, Obu; Yasuo Takeshita, Toyota, and Hisao Matsumoto, Aichi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Division of Ser. No. 316,719, Dec. 12, 1972, Pat. No. 3,860,260. This application Oct. 21, 1974, Ser. No. 516,873
Claims priority, application Japan, Dec. 24, 1971, 47-1410; Dec. 24, 1971, 47-1411
Int. Cl.² B60R *21/02*
U.S. Cl. 180—82 C **4 Claims**



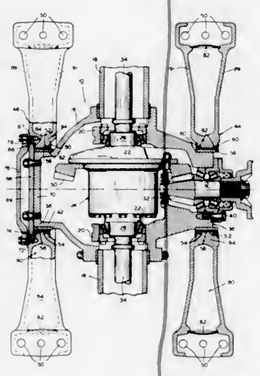
1. A seat belt device in a vehicle containing at least one door, a seat, and floor, roof and pillar vehicle elements, said device being for securing a passenger to said vehicle seat in the absence of manual manipulation, said device comprising; a waist belt permanently anchored at one end thereof to the vehicle door and at the other end to a portion of the vehicle opposed to said door on the seat or the floor; retracting means fastened to one of said belt ends for securing said waist belt to said door or vehicle portion; a shoulder belt having one end permanently anchored to a roof side portion of the vehicle body immediately over the shoulder of a passenger in said seat; a second retracting means securing the other end of said shoulder belt to a portion of the vehicle opposite to said door on the seat side or the floor, said shoulder belt being operatively connected at the middle portion thereof with said waist belt; a guide track extending closely along a curvature of the roof side from a portion thereof proximate the end of said shoulder belt over the passenger's shoulder toward a front pillar of the vehicle; sliding guide means having a sliding fit on said guide track and strokably holding said shoulder belt; electrically reversible driving means; a cable operatively connecting said driving means to said sliding guide means for driving said sliding guide means by said driving means; and

means for controlling said driving means in response to ingress or egress motion of the passenger so as to respectively displace said shoulder belt and said waist belt into the protecting or unprotecting position to thereby render it unnecessary for the passenger to manually strap to or release his body from the vehicle seat; said means for controlling comprising, a supply circuit for said driving means, a first switch in said circuit, said first switch having two closed circuit positions to drive said driving means in either direction in response to ingress and egress motions of the passenger, and second switching means effective upon the preceding operational direction of said driving means to selectively operate said circuit for operating said driving means reversely to the preceding operational direction.

3,949,826
LUBRICATION SYSTEM FOR TRUNNION MOUNTED AXLE

Noah A. Shealy, Niles, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed May 23, 1975, Ser. No. 580,257
Int. Cl.² B60G 9/02
U.S. Cl. 180—88 **10 Claims**

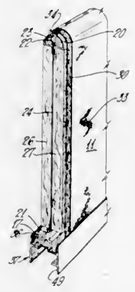


1. In a vehicle having a frame and an axle support assembly, comprising in combination a swing axle, a trunnion bearing assembly for supporting said axle and a lubrication system for said bearing assembly, said lubrication system comprising:
   a. a pair of co-axial cylindrical trunnion members secured to and operative to support said axle, each of said trunnion members having an outer bearing surface;
   b. a pair of support members, attached to said vehicle frame, each support member having a through bore therein and receiving the bearing surface of one of said trunnion members;
   c. first bearing means interposed between the bearing surface of at least one of said trunnion members and the through bore of at least one of said support members;
   d. said at least one of said support members being adapted to hold lubricating fluid; and
   e. first passage means in fluid communication with said first bearing means and said at least one support member to permit the flow of lubricating fluid from said at least one support member to said first bearing means.

3,949,827
ACOUSTICAL PANEL ASSEMBLY

Charles R. Witherspoon, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 24, 1975, Ser. No. 571,121
Int. Cl.² G01K 11/04; E04B 1/99
U.S. Cl. 181—33 GB **21 Claims**



1. An acoustical panel assembly comprising, in combination, a plurality of panels each including a septum member, a frame surrounding said septum member, a pair of fibrous glass layers positioned respectively adjacent opposite sides of said septum member, and a pair of semi-rigid fibrous glass diffuser members positioned respectively adjacent said fibrous glass layers, and means for joining adjacent ones of said panels.

3,949,828
FLUID EXHAUST SILENCER

Alain Frochaux, Boston, Mass., assignor to Barry Wright Corporation, Watertown, Mass.

Filed Aug. 30, 1974, Ser. No. 502,054
Int. Cl.² F01N 3/06
U.S. Cl. 181—36 A **10 Claims**

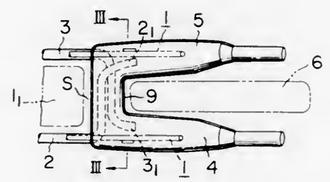


1. A fluid exhaust silencer device comprising:
   a first member adapted to be connected to a fluid exhaust, said first member having a bore therethrough with an inlet for receiving fluid from said exhaust;
   a tubular noise-reducing element made up of a knitted metal wire mesh fabric that has been convoluted and compressed into a self-supporting, dense, porous mass with the wire threads of said fabric oriented randomly in said mass and forming capillary-sized passageways; and
   a second member comprising a plurality of spaced legs attached to said first member with said noise-reducing element clamped between them;
   said tubular noise-reducing element having an inner surface and being aligned with said bore so that fluid can pass from said bore to the inner surface of said element;
   said plurality of spaced legs defining apertures at the outer surface of said element whereby fluid can flow radially through said element and exit said device via said apertures.

3,949,829
EXHAUST SILENCER FOR MOTORCYCLE

Soichiro Honda, Tokyo; Minoru Morioka, Niiza, and Takeshi Tukahara, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan

Filed Dec. 18, 1974, Ser. No. 533,864
Claims priority, application Japan, Dec. 22, 1973, 49-2247
Int. Cl.² F01N 3/06; B62D 3/00
U.S. Cl. 181—36 D **2 Claims**



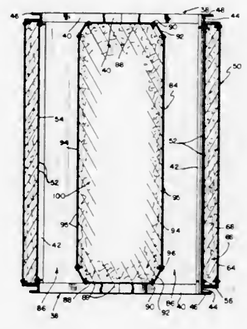
1. An improved exhaust structure for a motorcycle which comprises:
   a. a pair of exhaust silencer tubes securely mounted on both sides of a body of the motorcycle in the lengthwise direction thereof;
   b. a connecting tube of a length lying breadthwise in a dead space between a rear part of said motorcycle body and a rear wheel in an intersecting manner, said pair of exhaust silencer tubes and said connecting tube being integrally and communicatively connected in substantially U-shaped structure to provide an increased space for said exhaust silencer without constituting any part of the motorcycle body; and
   c. at least a pair of exhaust pipes extending from a motorcycle engine into said exhaust silencer tubes and along the lengthwise direction thereof.

3,949,830
FAN SILENCER

James H. Muehlbauer, Evansville, and Larry A. Wandtke, Newburgh, both of Ind., assignors to George Koch Sons, Inc., Evansville, Ind.

Filed June 20, 1975, Ser. No. 588,672
Int. Cl.² F01N 1/10, 1/24
U.S. Cl. 181—50 **11 Claims**

1. A fan silencer comprising a frame for mounting said silencer into ductwork; a central core having a perforated core wall; first connecting means for releasably fixing said core wall with respect to said frame to form a central chamber for supporting insulating material; an external shell having a perforated inner wall and an outer wall; second connecting means for releasably fixing said inner wall with respect to said frame to form an air flow passage between said inner wall and said central core; and third connecting means for releasably fixing said outer wall with respect to said frame to form a shell

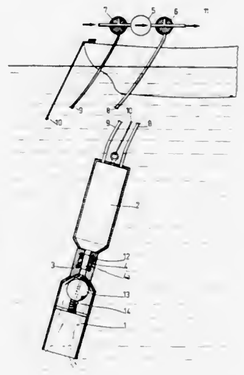


chamber between said inner and outer walls for receiving insulating material.

3,949,831
DEVICE FOR GENERATING ACOUSTIC WAVES IN A LIQUID MEDIUM

Jean Cassand, Rueil-Malmaison, and Jean-Pierre Fail, Royan, both of France, assignors to Institut Francaise de Petrole, des Carburants et Lubrifiants, France

Continuation of Ser. No. 250,365, May 4, 1972, abandoned.
This application Apr. 29, 1974, Ser. No. 465,343
Claims priority, application France, May 7, 1971, 71.16727
Int. Cl.² G01V 1/38
U.S. Cl. 181—120 **16 Claims**



1. A device for generating acoustic waves in a liquid medium comprising
   a hollow enclosure immersed in operation in the liquid medium including at least one first elongated member and at least one second elongated member communicating with the first member through at least one constricted part,
   said constricted part having a cross-section substantially reduced with respect to the cross-section of said first and second members, the first member being open to the liquid medium at an end remote from said constricted part,
   valve means for selectively intermittently separating and communicating said first and second members, said valve means including a valve seat and blocking means pro-

vided with a calibrated spring means, said spring means being calibrated to provide said constricted part in open communication between said first and second members when said spring means is free from stress,

means for introducing in at least said first member pressurized fluid having a pressure at least equal to the pressure of the liquid medium,

means for creating in the second member a pressure considerably lower than that prevailing in said first member, and

means for obtaining communication between said first and second members through said valve means when a pressure difference is established between said first and second members such that said liquid medium rapidly enters said first member upon obtaining said communication between said first and second members to be abruptly braked at said constricted part.

3,949,832

PORTABLE FIRE ESCAPE

Cloyce R. Hunter, 492 Topaz Ave., Mansfield, Ohio 44907

Filed Dec. 4, 1974, Ser. No. 529,589

Int. Cl.² A62B *1/14*

U.S. Cl. 182—7 **10 Claims**



1. An apparatus for use in descending from high elevations, said apparatus including an elongated flexible tension member having a first end for anchoring to a suitable support structure at said high elevation and a free end portion which may depend downwardly to a lower elevation, a slide member guidingly engaged with said tension member for guided movement therealong, said slide member including readily actuatable and deactivatable friction brake and clamping means operative to selectively and variably frictionally brake and clamp said tension member for controlling the descent of said slide member downwardly along said tension member, said slide member being elongated and extending lengthwise along said tension member, said brake and clamping means including a pair of selectively and variably actuatable friction brake and clamp structures carried by opposite end portions of said slide member, the opposite ends of said slide member including endwise outwardly opening bores through which said tension member is slidably received, each of said brake and clamping means including a collet sleeve through which said tension member is snugly slidably received, said sleeves and bores including opposing cam surfaces functioning to radially inwardly displace the inner end portions of said sleeves in response to said sleeves being inwardly displaced into predetermined inner positions within said bores and to thereby cause the inner end portions of said collet sleeves to tightly clamp and frictionally brake said tension member and sleeves against relative longitudinal shifting.

3,949,833

SAFETY DEVICE FOR LIFTER-EQUIPPED EXTENSIBLE LADDER VEHICLE

Tetsuo Kozai, Higashiosaka, Japan, assignor to Morita Pump Kabushiki Kaisha, Osaka, Japan

Filed Nov. 8, 1974, Ser. No. 522,317

Int. Cl.² E06C *7/12*

U.S. Cl. 182—19 **4 Claims**



1. In a working vehicle having a turntable at one end of the vehicle, a support frame assembly mounted on said turntable, an extensible multi-stage ladder assembly unit mounted at one end to said support frame assembly, an operator carrying lifter unit mounted on said ladder assembly unit and movable along its length thereof, an automatic ladder extension and contraction stopping unit, said ladder stopping unit including an automtic stop motion master cylinder and a solenoid valve for said cylinder, said ladder stopping unit having an electric circuit for actuating said ladder stopping unit, an automatic lifter stopping unit, an electric circuit for actuating said lifter stopping unit, and a power source for said electric circuits, the improvement of a safety device for the ladder assembly unit, said safety device comprising a limit switch incorporated in said electric circuit for said ladder stopping unit, said limit switch being connected between said power source and said solenoid valve, said limit switch being open when the lifter unit is in a predetermined position on said ladder assembly unit to permit the operation of said ladder assembly unit, and said limit switch unit being closed when the lifter unit is in other than the predetermined position to prevent the operation of the ladder assembly unit.

3,949,834

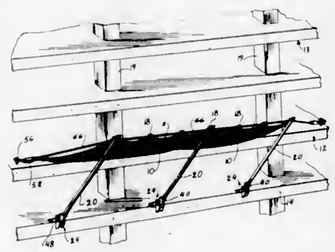
SAFETY NET AND ADJUSTABLE SUPPORT THEREFOR

Arthur Nusbaum, 16 Whitewood Road, Tenafly, N.J. 07670

Filed Mar. 19, 1975, Ser. No. 559,835

Int. Cl.² A62B *1/22*

U.S. Cl. 182—138 **2 Claims**



1. A safety net construction for multi-story buildings, comprising:

a. a bracket secured to the lower of two adjacent floors of the building, said bracket incorporating a pair of opposite parallel flanges extending outwardly of the floor;

b. a rotatable socket, said rotatable socket being hingedly secured between said flanges;

c. a support pole, said support pole being engaged by said socket for rotation therewith,

d. whereby a safety net may be extended from an upper floor to the upper end of said support pole;

e. said bracket additionally comprising a cross member extending between said flanges;

f. said cross member engaging against said socket to prevent rotation of said socket relative to said bracket beyond the point of contact between said cross member and said socket,

g. said bracket additionally comprising a cross bolt to hingedly secure said socket to said bracket for rotation with respect thereto, and

h. said bracket additionally comprising a second cross bolt, said second cross bolt being located to engage against said socket when the axis of said socket is vertically aligned;

i. said second cross bolt preventing rotation of said socket with respect to said bracket.

3,949,835

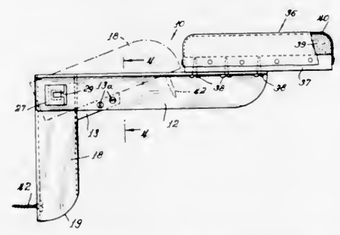
FOLDABLE HUNTING STOOL

William E. Butler, 845 Treasure Island Drive, Rte. 1, Mattawan, Mich. 49071

Filed July 10, 1974, Ser. No. 486,986

Int. Cl.² A47C *9/10*

U.S. Cl. 182—187 **10 Claims**



1. A foldable stool comprising a pair of spaced-apart lateral frame members, a seat mounted on said frame members, a support member adapted to be mounted in the vertical position in the operable seating position, means pivotally connecting the top end of said support member to the ends of said lateral frame members, a fixed stop member affixed to at least one of said lateral frame members and having at least a portion thereof positioned in the space between said lateral frame members and arranged to be engaged by said support member to restrain said lateral frame members from rotating with respect to said support member beyond a position substantially perpendicular to that of said support member in operable seating position but permitting said support member to rotate upwardly and over said lateral frame members into partially nested folded position, and means mounted on said stool for connecting said stool to both ends of a chain.

3,949,836

LADDER STRUCTURE

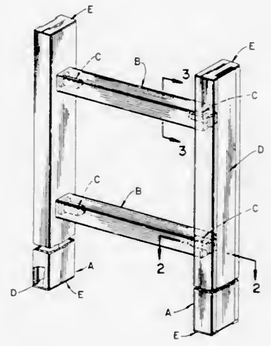
Adolph D. Russo, Beachwood, Ohio, assignor to Russo Ornamental Iron Products, Inc., Bedford Heights, Ohio

Filed Nov. 8, 1974, Ser. No. 522,150

Int. Cl.² E06C *7/50*

U.S. Cl. 182—194 **23 Claims**

1. A ladder comprising, spaced apart rail members and a plurality of rungs extending therebetween, said rail members having corresponding inner and outer surfaces, each rung having opposite ends facing the inner surface of a corresponding one of said rail members, each of said opposite ends having a non-circular opening extending axially inwardly of said rung, each of said rail members having a non-circular opening therethrough axially aligned with the opening in the corresponding end of said rung, and expandable fastener means interconnecting each of said opposite ends of said rung with the corresponding rail member, said fastener means including first and second non-circular portions respectively in said rung opening and said rail member opening and of complementary non-circular configuration and dimension with respect to the corresponding opening so as to interengage therewith to prevent rotation of said fastener means and rung relative to said corresponding rail member, said first portion including radially displacable legs in said rung opening, and said fastener means further including means engaging the outer surface of the corresponding rail member to position said first and second portions axially of said openings and a member displacable relative to said legs to radially spread and wedge said legs of said first portion against the inner surface of said rung opening.



3,949,837

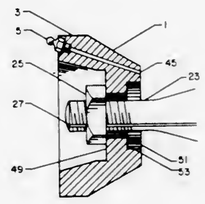
SELF-CENTERING LUBRICATING TOOL

Theodore C. Tremblay, 7 Page Road, Bedford, Mass. 01730

Filed Feb. 11, 1974, Ser. No. 441,058

Int. Cl.² F01M *11/04*

U.S. Cl. 184—105 R **7 Claims**



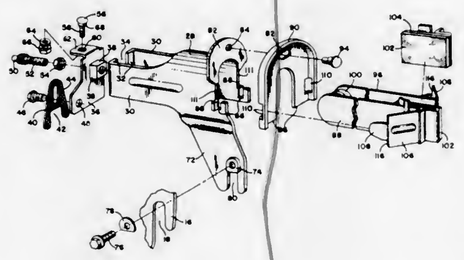
1. A tool for lubricating a bearing in place, comprising, an open ended member having a frusto-conical exterior surface, said member abutting an annular base at the largest diameter of said member, said member having a cylindrical inner surface, said inner surface adapted to be positioned in an annular spaced relationship to a spindle on which said bearing is positioned, a lubricant passageway at an acute angle to the longitudinal axis of the member, said passageway extending from the outer end surface of the small diameter end of said member to the largest diameter end of said member and terminating in said annular base, said lubricant passageway generally parallel to said frusto-conical exterior surface, and a grease fitting attached to said passageway in said annular base.

3,949,838

BICYCLE WITH SELF-ALIGNING DISC BRAKES

Delmar L. Fuhrman, Kettering, Ohio, assignor to The Huffman Manufacturing Company, Miamisburg, Ohio

Filed Apr. 11, 1974, Ser. No. 459,869
Int. Cl.² B62L 5/00
U.S. Cl. 188—26 **2 Claims**



1. In a bicycle including a pair of intersecting frame members joined at the intersection thereof by a toe plate having an open ended slot formed therein, a wheel having an axle received in said open ended slot in said toe plate and a brake disc carried by and fixed with respect to said wheel, a pair of elongated plate members joined adjacent their forward ends, carrying brake pads adjacent their rear ends and having actuating means responsive to movement of said plate members longitudinally thereof to cause said brake pads to move into engagement with opposite faces of said brake disc, and a cable engaging said joined ends of said plate members to cause longitudinal movement thereof, the improvement comprising:

a. a mounting bracket having an opposed pair of legs extending along one of said frame members and terminating in means forming an adjustable connection between said mounting bracket and said one of said frame members,

b. said mounting bracket further including a downwardly extending leg extending beneath said toe plate and having an open ended slot therein in registration with said open ended slot in said toe plate,

c. a U-shaped portion pressed outwardly of said downwardly extending leg and received in a portion of said slot in said toe plate inwardly of said axle of said wheel,

d. said mounting bracket further including a generally flat collar portion lying substantially in a plane perpendicular to the plane of said brake disc,

e. a carrier carrying said plate members, and

f. means forming a floating connection between said carrier and said collar of said mounting bracket.

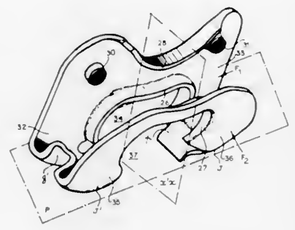
3,949,839

FIXED SUPPORT FOR A DISC BRAKE

Jean-Claude Girauldon, Ponthierry, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Sept. 27, 1972, Ser. No. 292,590
Claims priority, application France, Oct. 4, 1971, 71.35635
Int. Cl.² F16D 65/02
U.S. Cl. 188—73.3 **4 Claims**

1. In a disc brake including a disc rotatable with a member to be braked, a U-shaped fixed support having a first member having a pair of circumferential arms defining a recess therebetween, said first member being located adjacent one side of the disc, a second member having a corresponding pair of circumferentially spaced arms defining a corresponding recess therebetween, said second member being located adjacent the other side of said disc, and a pair of connecting members straddling said disc and joining the circumferentially spaced arms on the one side of the disc with the circumferentially spaced arms on the other side of the disc, and gutters formed in each of said connecting members to define struts projecting toward the periphery of said disc, said gutters extending inwardly toward said recesses from corresponding opposite edges of said fixed support, the depth of said gutters at said



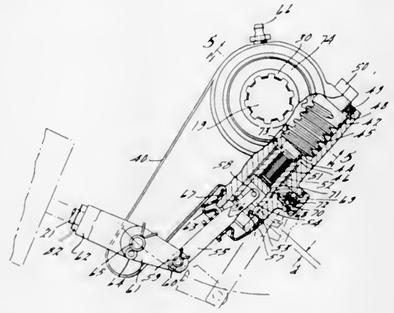
corresponding opposite edges of the fixed support being unequal to the depth of the gutters at the ends thereof closest to said recesses.

3,949,840

CAM BRAKE AUTOMATIC SLACK ADJUSTING MECHANISM

James C. Cumming, Pleasant Ridge, and Alton B. Holmes, Troy, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Mar. 3, 1975, Ser. No. 554,634
Int. Cl.² F16D 65/56
U.S. Cl. 188—79.5 K **15 Claims**



1. A lever actuator and automatic slack adjusting mechanism for a rotary oscillating cam actuated brake assembly comprising:

an elongated housing having an opening therethrough and a bore,

a worm gear rotatably mounted in said opening,

a shaft mounted for rotation in said bore and having a worm non-rotatably secured thereto, said worm drivingly engaging said gear,

a plunger assembly including a plunger slidably mounted in said bore, said plunger having an axially movable rotary driving connection with said shaft in said bore, detent means in said housing, said detent means being axially fixed relative to said bore and resiliently biased into engagement with said plunger, and

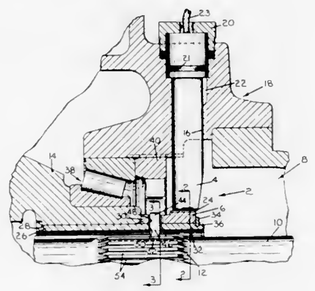
link means pivotally connecting one end of said plunger assembly to said housing whereby pivotal movement of said link means relative to said housing will move said plunger assembly relative to said detent means and said detent means will rotate said plunger, said worm and said worm gear upon return movement of said plunger assembly following outward movement of said assembly beyond a predetermined distance relative to said detent means.

3,949,841

WHEEL SPEED SENSOR FOR DRIVE AXLE

Raymond John Jovick, Troy, and Roger James Malott, Union Lake, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 7, 1975, Ser. No. 575,159
Int. Cl.² B60T 8/02
U.S. Cl. 188—181 R **17 Claims**



1. A wheel speed sensor for a wheel mounted on an end of an axle shaft of a vehicle for rotation therewith, said sensor comprising:

an electromagnetic sensing device capable of being mounted on a housing adjacent said axle shaft in general alignment with a portion of said axle shaft inwardly of said wheel;

an excitor rotor capable of being mounted generally about said portion of said axle shaft in alignment with said sensing device mounted on said housing for rotation about an axis which is disposed with respect to said sensing device to maintain a distance between said sensing device and said rotor within a predetermined limit without allowing contact therebetween; and

a drive means mounted relative to said rotor and for making contact with said portion of said axle shaft to cause said rotor to rotate in response to rotary movement of said axle shaft.

3,949,842

FREE FALL SAFETY DEVICE

Mogens Kiehn, 310 Melvin, Northbrook, Ill. 60062

Filed Apr. 3, 1975, Ser. No. 564,632
Int. Cl.² F16D 59/02
U.S. Cl. 188—189 **17 Claims**

1. A free-fall safety device for use at the end of cable means supporting a load from the top portion of a hollow mast having an upwardly tapering inside wall, said cable means passing over a pulley at said upper portion and trained downwardly through the mast to a lower position thereof comprising:

an elongated housing member defining at least one side wall.

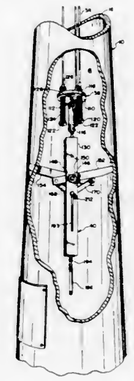
means at one end of said housing member for attachment to the downwardly trained end of said cable means;

a pair of locking arms pivotally mounted on a first pivot axis contiguous to said side wall and adapted to pivot thereon into a diametric position with extended ends engageable against said tapering inside wall of said hollow mast to anchor the downwardly trained end of said cable means;

linkage means connected at one end to a second pivot axis contiguous to said side wall and connected at the other ends to said locking arms;

said first and second axes being coplanar and longitudinally spaced along said side wall of said housing member with one of said axes being fixed to said side wall and the other being guidably movable laterally in relation to said fixed axis along the length of said side wall;

means biasing said movable axis laterally toward said fixed axis whereby said linkage means pivots said locking arms into said diametric position; and



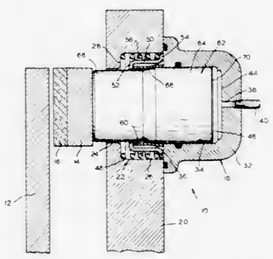
releasable catch means associated with said movable axis to prevent the retraction of said locking arms from said diametric position.

3,949,843

BRAKE ADJUSTER

Orla L. Holcomb, Jr., South Bend, Ind., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Apr. 7, 1975, Ser. No. 566,013
Int. Cl.² F16D 65/54
U.S. Cl. 188—196 R **8 Claims**



1. Brake adjusting apparatus for brakes of all kinds having a constant running clearance and being energized by pressurized fluid, said brake adjusting apparatus comprising:

a. a cylindrical chamber, closed on one end, having a fluid connection, on said one end, with a controlled source of pressurized fluid;

b. an annular chamber, having spaced first and second annular end surfaces, said annular chamber being adjacent to but radially outwardly spaced from an open end of said cylindrical chamber, said first annular end surface being adjacent to said cylinder open end;

c. an annular follower member slidably received within said annular chamber, said first and second annular end surfaces limiting the movement of said follower member in the brake-release and brake-application directions, respectively;

d. resilient means interposed between said second annular end surface and said annular follower member for urging

said follower member into abutment with said first annular end surface;

e. piston means slidably and sealingly retained in said cylindrical chamber and axially extending freely through said annular chamber; and

f. a deformable hollow member slidably carried by said piston means in said annular chamber, said hollow member having an interference fit with said piston means and having one end thereof in a abutment with said annular follower member;

g. said pistón means being responsive to said pressurized fluid and together with said hollow member and follower member movable in the brake-application direction, said follower member being engageable with said second annular end surface whereupon said piston means is forceably urged through at least an axial portion of said hollow member and causes deformation thereof and thereby axially repositions said piston means to the extent provided by undesired brake clearance between frictionally engageable members of the brake; with the release of the pressurized fluid and the urging of said resilient means permitting movement of said piston means together with said hollow member and follower member in the brake-release direction until said follower member engages said first annular end surface, thereby establishing a constant brake running clearance.

3,949,844

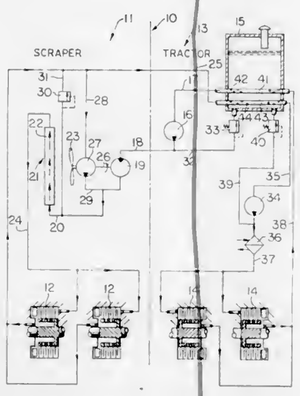
BRAKE COOLING SYSTEM WITH A COMMON FLUID MIXING CHAMBER

Donald J. Larson, and Lawrence F. Schexnayder, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 15, 1974, Ser. No. 524,113

Int. Cl.² F16D *65/853*

U.S. Cl. 188—264 P **7 Claims**



1. A system for cooling the brakes of a vehicle, said system comprising, in combination:

a liquid reservoir;

an outlet line from said reservoir;

a liquid pump to withdraw liquid from the reservoir through the outlet line;

a heat exchanger that includes a liquid cooler, a liquid motor driven by said pump, and a fan driven by said motor for blowing air across the surface of said cooler;

a line connecting the discharge side of the motor to the liquid cooler and further connecting the cooler to the brakes for conducting liquid from the motor through the cooler to the brakes;

a return line from the brakes to the reservoir for conducting liquid which has passed through the brakes back to the reservoir;

a bypass pump;

a bypass line fron the return line to the low pressure side of the bypass pump;

and a line which connects the high pressure side of the bypass pump with the line between the motor and the liquid cooler.

3,949,845

THRUST TRANSMITTING ASSEMBLIES

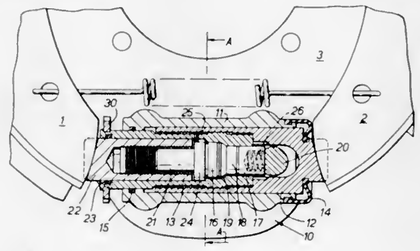
Charles Newstead, and Andrew Charles Walden Wright, both of Birmingham, England, assignors to Girling Limited, Birmingham, England

Filed July 31, 1974, Ser. No. 493,639

Claims priority, application United Kingdom, Aug. 1, 1973, 36666/73

Int. Cl.² F16D *51/20*

U.S. Cl. 188—331 **4 Claims**



1. A thrust transmitting assembly for transmitting the thrust of an input element to an output element comprising a cylinder body having operative engagement with said output element, a first piston slidably received within said cylinder body and having operative engagement with said input element, a second piston disposed in said cylinder body and having a frontal area smaller than that of said first piston and in direct communication therewith, a mass of fluent elastomeric material disposed between said pistons in thrust transmitting relationship with both said pistons, a shoulder in said cylinder body defined by the respective diameters of said first and second pistons, and abutment means fixed relative to the cylinder body and engaging said second piston to limit movement thereof, a portion of thrust on said first piston when moved in one direction by said input element being transmitted through said fluent material to said shoulder to move said cylinder body and hence said output element in said one direction but at a higher speed than said first piston is moved by said input element.

3,949,846

PLURAL ACTUATOR FOR DISC BRAKES

Yoshihiro Hayashida, Chigasaki, Japan, assignor to Tokico Ltd., Japan

Filed Aug. 6, 1974, Ser. No. 495,539

Claims priority, application Japan, Aug. 20, 1973, 48-93141; Aug. 20, 1973, 48-93142

Int. Cl.² B60T *11/24*

U.S. Cl. 188—345 **6 Claims**

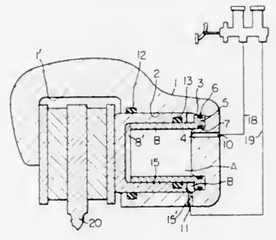
1. A disc brake comprising:

a caliper having therein a groove large enough to pass a circumferential portion of a brake disc therethrough;

a cylinder formed in said caliper and extending in a direction perpendicular to said groove, said cylinder having at a first end thereof an opening communicating with said groove, said cylinder having at a second end thereof a closed bottom face, said cylinder having an inner peripheral surface extending between said bottom face and said opening, said bottom face having formed therein an annular groove;

a cylindrical member positioned within said cylinder, said cylindrical member having at a first end thereof a flange extending radially outwardly thereof, said flange being positioned in said annular groove and maintained in contact with said bottom face of said cylinder, said cylindrical member having an inner peripheral wall surface and an outer peripheral wall surface, said outer peripheral wall surface being spaced from said inner peripheral surface of said cylinder and defining therewith an annular space;

a cup-shaped piston having a cylindrical wall slidably fitted in said annular space, said wall having an outer peripheral surface slidable relative to said inner peripheral surface of said cylinder and an inner peripheral surface slidable relative to said outer peripheral wall surface of said clyindrical member, said piston having a first closed end and a second open end having a ring-shaped face;



a first pressure fluid passage communicating with a first fluid chamber defined by said inner peripheral wall surface of said cylindrical member and said closed end of said piston;

a second pressure fluid passage communicating with a second fluid chamber defined by said inner peripheral surface of said cylinder, said outer peripheral wall surface of said cylindrical member, and said ring-shaped face of said piston;

a first annular seal positioned between said inner peripheral surface of said piston and said outer peripheral wall surface of said cylindrical member;

a second annular seal positioned within said annular groove, on said inner peripheral wall surface of said cylindrical member, and between said cylindrical member and said cylinder; and

said first annular seal having an inside diameter greater than that of said second annular seal.

3,949,847

LOCK-UP CLUTCH FLOW-LIMITING AND PRESSURE-REDUCING VALVE

Richard F. Hoehn, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

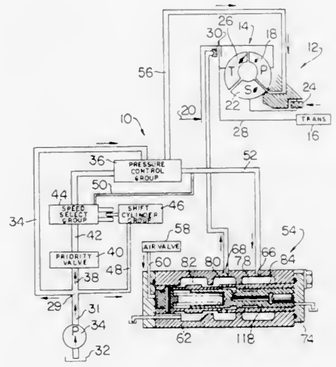
Filed Nov. 7, 1974, Ser. No. 521,625

Int. Cl.² B60K *29/00;* **F16D** *39/00*

U.S. Cl. 192—3.3 **3 Claims**

1. A power transmission comprising a torque converter, a first fluid-actuated clutch for locking the impeller to the turbine of the torque converter, at least a second fluid-operated clutch for connecting the output of said torque converter to a load, a source of pressurized fluid, first means for directing fluid from said source to said second clutch at a first pressure and rate, and second means comprising a flow-limiting pressure-reducing valve for directing fluid from said source to said first clutch at a reduced rate and pressure, wherein said flow-limiting pressure-reducing valve comprises a housing having a bore, an inlet, an outlet and return openings all communicating with said bore;

a spool assembly mounted in said bore for controlling communication between said openings;



said spool assembly including a sleeve, a spool mounted in said sleeve, and a spring disposed between the ends of said sleeve and said spool to bias same to opposite ends of said bore to block communication between said inlet and said outlet and to provide communication of said outlet with said return opening.

3,949,848

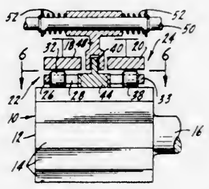
GEAR CHANGING MECHANISM

Mark J. Fogelber, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 1, 1974, Ser. No. 520,194

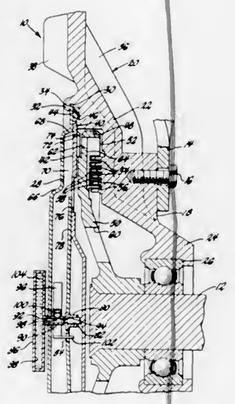
Int. Cl.² F16D *41/08, 47/00*

U.S. Cl. 192—38 **10 Claims**



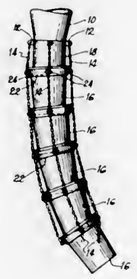
1. In a torque transfer mechanism, the combination comprising input means including first and second outer races, output means including an inner race, first and second bidirectional clutches between said first and second outer races, respectively, and said inner race, and shifting means engagable with said first clutch for positioning said first clutch in a freewheeling mode and rendering said second clutch positionable in a torque transferring mode in response to the application of torque to the mechanism, said shifting means being disengagable with said first clutch and engagable with said second clutch upon a momentary torque interruption for positioning said second clutch in a freewheeling mode and rendering said first clutch positionable in a torque transferring mode in response to torque applied to the mechanism.

3,949,849
VISCOUS FLUID CLUTCH
Dale F. Hammer, Bellbrook, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 18, 1974, Ser. No. 524,659
Int. Cl.[2] F16D *35/00, 43/25*
U.S. Cl. 192—58 B 1 Claim



1. A viscous fluid clutch comprising first and second relatively rotatable drive members, said first drive member including front and rear walls and defining a fluid cavity therebetween, a cooling fan mounted on an outer surface of said first drive member, a divider wall sealed between said front and rear walls in said fluid cavity and dividing said fluid cavity into first and second chambers, said second drive member being rotatable in said first chamber, said second drive member and said rear wall having opposed spaced parallel surfaces defining a fluid shear space therebetween and cooperable with a fluid medium in said shear space to provide a shear-type fluid drive therebetween, a first opening formed in said divider wall for providing communication between said first chamber and said second chamber, a dam element formed on said divider wall in said first chamber adjacent said first opening for causing said fluid medium to flow through said first opening for varying the volume of fluid medium in said shear space to vary the torque transmitted between said first and second drive members, a second opening formed in said divider wall for at times communicating said fluid medium from said second chamber to said first chamber, valve means for controlling the flow of said fluid medium through said second opening to further vary the torque transmitted between said first and second drive members, a drive slot formed in said valve means, a hollow disk having a hollow stem formed thereon and extended through and secured within an opening formed in said front wall, the interiors of said hollow disk and said hollow stem being in communication with one another, a bourdon tube connected at one open end thereof to said hollow stem in said second chamber, the interiors of said hollow stem and said bourdon tube being in communication with one another, a drive pin formed on the other closed end of said bourdon tube and extended through said drive slot, and a thermal-sensitive expandable fluid contained in said hollow disk, said hollow stem and said bourdon tube for causing said bourdon tube to straighten out in response to increased ambient temperature and corresponding increased pressure of said expandable fluid and, thereby, causing said valve means to uncover said second opening to permit said fluid medium to flow from said second chamber to said first chamber to provide said shear-type fluid drive between said first and second drive members and thus drive said cooling fan.

3,949,850
SPOUT CONSTRUCTION FOR GRAIN ELEVATORS AND THE LIKE
H. Dale Schumm, 1323 Briarwood, Albert Lea, Minn. 56007
Filed Nov. 7, 1974, Ser. No. 521,845
Int. Cl.[2] B65G *11/10*
U.S. Cl. 193—25 E 3 Claims

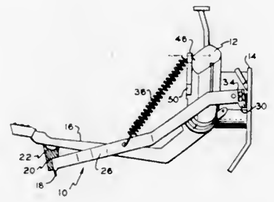


1. In a spout construction for use in association with grain elevators and the like, said construction comprising an assembly of interfitting tubular sections with chains extending along the assembly for interconnecting the sections, the improvement wherein said sections are composed of polyurethane characterized by a Shore D hardness between 50 and 75, and comprise integrally molded tapered body portions having a wide upper end and a narrower lower end with integrally molded outwardly extending shoulder portions formed at said upper end, and supporting rings located adjacent the upper end of each tubular section, said shoudlers each nesting on a ring, said rings being formed from initially flat, curved strips of metal whereby bending of the strips to form a receiving opening for the tubular sections results in tapered rings fitting in surface-to-surface relationship against the tapered outer surfaces of the tubular sections, tab means formed in said rings for attachment of said chains thereto, said tab means comprising portions of said metal strips bent outwardly from the strips, releasable attaching means for use in attaching said chains, said attaching means comprising clips, said tabs comprising spaced apart tabs with said chains extending between pairs of tabs, and openings defined by said tabs, said clips including a portion extending through said openings and through at least one link of a chain.

3,949,851
MOTION TRANSLATION MEANS FOR HIGH SPEED PRINTER PRINT HEAD
Roy Lawrence Phelan, Centerville, Ohio, assignor to Victor Comptometer Corporation, Chicago, Ill.
Filed Jan. 24, 1975, Ser. No. 543,881
Int. Cl.[2] B41J *1/24*
U.S. Cl. 197—1 R 8 Claims

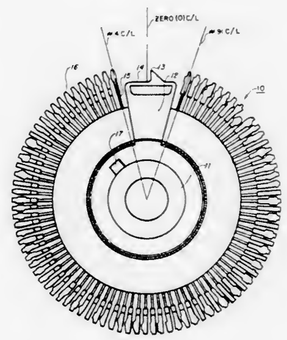
1. In a high speed serial printer having backing means for print-receiving media, and means for effecting display of indicia in printing lines on said media, including a print head having a printing end and selectively operable printing means; motion translation means for oscillating said printing end of said print head laterally relative to said backing means from a starting position for the full length of a said line and return to said starting position, comprising a pivot for said print head having an axis of rotation substantially perpendicular to the plane of lateral movement of said print head, and drive means for oscillating said print head about said pivot, wherein said media backing means presents a straight surface and said motion translation means comprises pivot shifting means for moving said pivot relative to said media backing means in synchronism with the lateral moving of said printing end to thereby maintain said printing end spaced substantially the same distance from said straight surface at all times.

3,949,852
TYPEBAR SUPPORT
Hans W. Mueller, and Richard E. Shattuck, both of Cortland, N.Y., assignors to SCM Corporation, New York, N.Y.
Filed July 31, 1974, Ser. No. 493,379
Int. Cl.[2] B41J *7/30*
U.S. Cl. 197—42 5 Claims



1. In a typewriter having a frame, a typebar segment rigidly assembled to the frame, a plurality of typebars having one end pivotally anchored in the segment, and a yieldable support having a rest position for the free end of the typebars, the yieldable support comprising:
- arcuate means spaced from the frame for supporting the free end of the typebars;
- arm means having one end fixed to said arcuate means and having its opposite end defining an enlarged aperture therethrough;
- retention means comprising a reduced cross sectional portion, and an enlarged cross sectional portion, said reduced portion extending through and beyond said aperture and into said frame with sufficient clearance between said reduced portion and said aperture to allow said arm means to rock relative to the frame and wherein said enlarged portion is secured to said reduced portion on the side of said aperture opposite said frame; and
- biasing means for dissipating energy of an impacting typebar and for urging said arm means toward the rest position of the free end of the typebars.

3,949,853
PROPORTIONAL-SPACED CHARACTER PRINT WHEEL
Roy Jeremy Lahr, Sierra Madre, Calif., and Frank M. Weller, Jr., Boulder, Colo., assignors to Xerox Corporation, Stamford, Conn.
Filed Sept. 25, 1974, Ser. No. 509,195
Int. Cl.[2] B41J *1/24*
U.S. Cl. 197—53 3 Claims

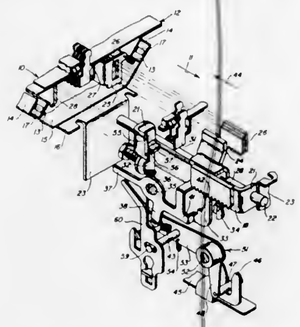


1. A print wheel element of about 3 inch diameter for an impact printer comprising:
- an inner central member having a plurality of spokes extending radially outward therefrom;
- a character slug near the outer end of each spoke, said character slug including:
- at the 1st, 12th, 20th, 71st, 73rd, 74th, 77th, 81st, 83rd, 85th and 87th spoke position, a printing surface shaped in the form of a character of zone width 0.0996 inches;
- at the 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th, 28th, 29th, 30th, 31st, 32nd, 33rd, 34th, 35th, 36th, 37th, 72nd, 76th, 78th, 79th, 80th, 82nd, 84th, 86th and 88th spoke position, a printing surface shaped in the form of a character of zone width 0.0830 inches;
- at the 38th, 40th, 42nd, 48th, 58th, 60th and 62nd spoke position, a printing surface shaped in the form of a character of zone width 0.0664 inches;
- at the 15th, 17th, 19th, 44th, 46th, 50th, 52nd, 56th, 64th, 66th and 68th spoke position, a printing surface shaped in the form of a character of zone width 0.0498 inches;
- at the 13th, 54th and 70th spoke position, a printing surface shaped in the form of a character of zone width 0.0332 inches;
- at the 16th, 39th, 41st, 43rd, 47th, 49th, 53rd, 57th, 59th, 61st, 63rd, 65th, 67th, 69th and 75th spoke position, a printing surface shaped in the form of a character of zone width 0.1162 inches;
- at the 14th, 18th, 45th, 51st and 55th spoke position, a printing surface shaped in the form of a character of zone width 0.1328 inches.

3,949,854
TYPEWRITER CARRIAGE CONSTRUCTION
Theodore N. Madison, Windsor, Conn., assignor to Litton Business Systems, Inc., New York, N.Y.
Division of Ser. No. 333,389, Feb. 16, 1973, Pat. No. 3,876,054. This application Jan. 27, 1975, Ser. No. 544,183
Int. Cl.[2] B41J *21/02*
U.S. Cl. 197—63 3 Claims

1. In a typewriter having a frame and a carriage mounted for movement relative to said frame,
- a rail mounted on said frame,
- a complementary shaped rail mounted on said carriage forming with said frame mounted rail bearing channels,

said carriage mounted rail having mounted thereon in closely spaced relationship an escapement rack, a margin rack and a tab rack, said escapement rack, margin rack and tab rack being located between said bearing channels and between said frame and carriage mounted rails,



and said frame mounted rail having openings between bearing channels to accommodate escapement and backspace pawls for engagement with said escapement rack, a tab blade for engagement with set stops on said tab rack and a center stop for engagement with margin stops on said margin rack.

3,949,855

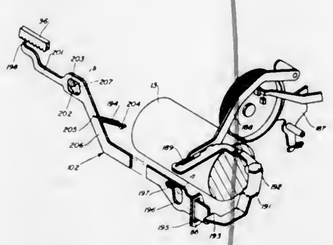
TYPEWRITER CARRIAGE JAM PRECLUDING AND ACTION JAM RELEASE MECHANISMS

Theodore N. Madison, Wethersfield, Conn., assignor to Litton Business Systems, Inc., New York, N.Y.

Division of Ser. No. 333,389, Feb. 16, 1973, Pat. No. 3,876,054. This application Jan. 6, 1975, Ser. No. 538,953

Int. Cl.² B41J *19/62*

U.S. Cl. 197—91 **2 Claims**



1. In an electric typewriter having a frame and a carriage movable relative to said frame in carriage return, backspace, escapement and tabulating directions,

an escapement rack mounted in said carriage controlled by an escapement pawl,

a backspace actuator pivotally mounted on said frame,

a backspace pawl mounted on said frame for pivotal movement in a forward direction about a first pivot extending through a first opening in said pawl from a rest position to engagement with said escapement rack and for limited lateral movement to drive said rack one tooth in response to actuator movement thereagainst,

a spring connected between said pawl and frame for holding said pawl in rest position in contact with said backspace actuator,

means on said pawl and frame including a second pivot extending through a second opening in said pawl for allowing reverse pivoting of said pawl about said second pivot to a disabled active position in response to carriage return movement initiated contemporaneously with backspace movement,

and means for holding said pawl in said disabled active position until termination of carriage return movement or retraction of said backspace actuator.

3,949,856

SYSTEM TO DETECT ABNORMAL PAPER FEED IN PRINTERS

Armin Ulber, Munich, and Gerhard Muller, Taufkirchen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 16, 1973, Ser. No. 416,386

Claims priority, application Germany, Nov. 29, 1972, 2258546

Int. Cl.² B41J *15/04*

U.S. Cl. 197—133 R **1 Claim**

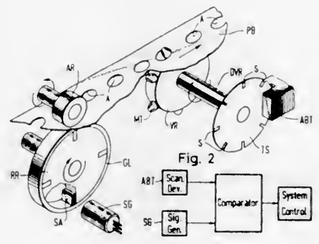


Fig. 2

1. A system for monitoring the paper feed means of printing mechanisms and the like, in which a paper web to be transported is provided with feed perforations for the reception of drive pins of such paper feed means, comprising signal generating means in the form of a timing disc rotatable in synchronism with the advancing movement of such paper feed means, and a scanning device cooperable with said timing disc operable to generate said reference signals in response to rotation of said timing disc, means for generating supervisory signals in correspondence to the advancing movement of such a paper web, under normal web movement, in predetermined relation to said reference signals, said supervisory signal-generating means comprising a smooth surfaced rotatable wheel arranged for frictional engagement with such a paper web, a smooth surfaced pressure roller arranged to press such a paper web in driving engagement with said rotatable wheel whereby said wheel will be rotated by advancing movement of such a paper web through frictional engagment of said wheel therewith, said rotatable wheel being provided with signal-producing means comprising a plurality of ferro-magnetic blocks circumferentially spaced on said rotatable wheel, a signal transmitter arranged to scan said signal producing means comprising a magnetic differential field sensor cooperable with said blocks as said rotatable wheel rotates, and a comparator circuit arranged to compare the reference and supervisory signals, operable to provide an output signal in the presence of a predetermined abnormal relation between the compared signals, which output signal may be employed to actuate control means for the paper feed means.

3,949,857

ELECTROMECHANICAL WRITING DEVICE

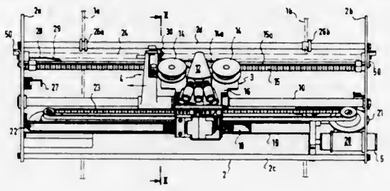
Hinderikus Peters, Paderborn, and Reinhard Mix, Salzkotten, both of Germany, assignors to Nixdorf Computer AG, Paderborn, Germany

Filed Aug. 28, 1974, Ser. No. 501,283

Claims priority, application Germany, Aug. 30, 1973, 2343859

Int. Cl.² B41J *29/02*

U.S. Cl. 197—186 A **8 Claims**



1. An electromechanical writing device comprising:

a writing head;

carrier means for carrying the writing head;

guide means along which the carrier means is movable during a writing operation;

a writing platen disposed parallel to the direction of movement of the carrier means;

an upper frame part on which the guide means is mounted;

a lower frame part on which the writing platen is mounted;

a crossbar about which the upper frame part and the lower frame part are mounted for pivotal movement relative to one another, said crossbar being disposed parallel to the length of the writing platen so that the longitudinal axis of said crossbar lies in the plane of the writing platen; and

adjustable stop means for adjusting the distance between the upper frame part and the lower frame part.

3,949,858

HANDRAIL FOR PASSENGER CONVEYORS AND THE LIKE

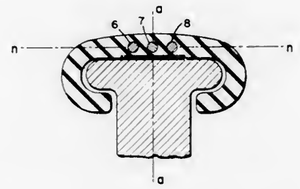
Giovanni Ballocci, Monza, and Aurelio Brollo, Milan, both of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed May 2, 1974, Ser. No. 466,463

Claims priority, application Italy, May 4, 1973, 23718/73

Int. Cl.² B66B *9/14*

U.S. Cl. 198—16 R **3 Claims**



1. An elastomeric handrail for a passenger conveyor, C-shaped in cross-section, comprising a substantially inextensible cord embedded therein and extending longitudinally through the handrail along the point of intersection of the neutral plane and plane of symmetry thereof and at least one cord substantially parallel to the inextensible cord disposed on each side thereof, the said cords on each side of the inextensible cord being relatively extensible, and a fabric embedded in the inner surface of the handrail at a level where its outer surface is on substantially the same level as said surface, said fabric being opposite the cords and extending at least just beyond the said relatively extensible cords which are farthest removed on each side from the said extensible cords.

3,949,859

APPARATUS FOR GRABBING, HOLDING AND TRANSPORTING WORKPIECES ON A CONVEYOR CHAIN

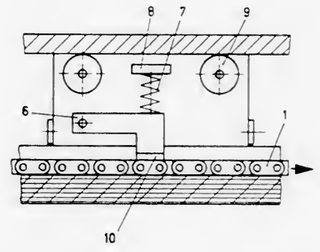
Manfred Nussbaumer, Dietikon, and Karl Boesch, Spreitenbach, both of Switzerland, assignors to Micafil A.G., Zurich, Switzerland

Filed May 21, 1975, Ser. No. 579,582

Claims priority, application Switzerland, May 30, 1974, 7377/74

Int. Cl.² B23Q *7/00*; **B61B** *13/00*

U.S. Cl. 198—19 **10 Claims**



1. Apparatus for transporting work pieces by means of work piece pickups engageable with a chain type conveyor to a plurality of work stations located along the conveyor comprising a pair of parallel spaced endless link type conveyor chains movable along a path at which the work stations are located, a pair of parallel spaced guide rails also located in parallel spaced relation above said pair of conveyor chains, work piece pickups located between said spaced guide rails, each said work piece pickup including laterally extending guide rolls which are spring loaded into engagement with the undersides of said guide rails and a pair of laterally extending pivotally mounted carrier arms including toe portions which are spring loaded into engagement with the links of the chains thereby serving to transport said work piece pickups along the chains to the various stations, means for stopping said work piece pickups at each station while permitting the chains to have a continuous motion and means carried by said work piece pickups for holding the work pieces.

3,949,860

APPARATUS FOR REMOVING ARTICLES FROM A MOLDING MACHINE AND DEPOSITING THEM ON A CONVEYOR

Richard D. Bilodeau, North Stonington, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed July 26, 1974, Ser. No. 492,001

Int. Cl.² B65G *47/04*, *47/86*

U.S. Cl. 198—25 **6 Claims**

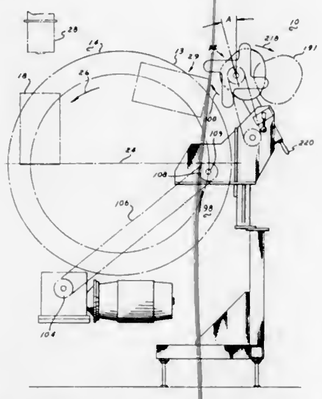
1. Apparatus for removing articles from a wheel blow molding machine and depositing them on a conveyor, said machine having a central axis and a plurality of molds which include partible sections which open parallel to the axis about a parting line said apparatus comprising, in combination:

A. a turret assembly including a vertically oriented, rotatably mounted turret adjacent the periphery of the wheel machine carrying article pickup assemblies pivoted to said turret, each pickup assembly including article gripping means coplanar with the parting line of the sections;

B. drive means for moving the turret in synchronism with and in a circumferential direction opposite to that of said machine to sequentially advance the article gripping

means through the space between successively presented separated mold sections for engagement with the articles;

C. means for orienting the gripping means of each pickup assembly with respect to the article being removed and said conveyor;



D. means to actuate the gripping means of the pickup assemblies; and

E. means for moving the turret assembly out of operative position with respect to said machine without changing the synchronous relation between the machine and turret.

3,949,861

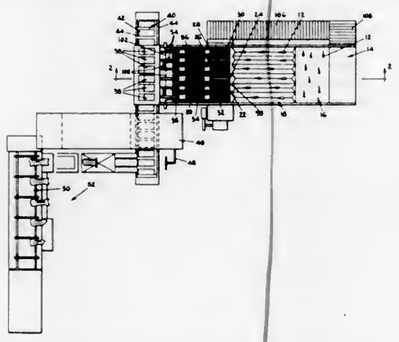
PACKAGING WEIGHTED GROUPS OF ARTICLES

Simon A. Scholtens, and Albert Scholtens, both of Grant, Mich., assignors to Nu-Way Marketing and Packaging Co., Inc., Grant, Mich.

Continuation-in-part of Ser. No. 309,146, Nov. 24, 1972. This application Sept. 18, 1974, Ser. No. 506,979

Int. Cl.² B65G *69/00*

U.S. Cl. 198—39 **8 Claims**



1. In an apparatus for feeding groups of articles to a packaging operation in a timed continuous sequence, each of said groups having a minimum weight, said apparatus comprising:

a plurality of weighing means, each of said weighing means including a weigh hopper for holding a plurality of said articles, means for weighing articles in said weigh hopper, and means to dump articles from said weigh hoppers;

said weigh hoppers being aligned in a row along a predetermined path;

means for feeding said articles seriatim to each of said weighing means to accumulate a minimum weight of said articles in each of said weigh hoppers;

means for blocking further feeding of said articles to said weighing means after said minimum weight of said articles is present in each of said weigh hoppers;

conveyor means having a plurality of containers adapted to hold and receive a quantity of said articles;

said conveyor means positioning each of said containers for movement along said predetermined path and beneath each of said weighing means for reception of articles dumped from said weigh hoppers;

means for intermittently driving said conveyor means to move containers beneath said weigh hoppers;

the improvement which comprises:

means for controlling each of said dumping means of said weighing means to dump articles in each of said weigh hoppers only in an empty container so that only one group of articles is dumped in each of said containers;

each of said hoppers having means to prevent operation of said dumping means when a predetermined weight has not been attained by said hopper at the time said conveyor stops;

said control means for at least one weighing means comprising circuit means having first switch operated by the weighing means to close when the weight of the articles in the weighing means reaches a predetermined value;

a first actuating means in said circuit to operate said dumping means of the one weighing means;

second switch means in said circuit means adapted to be closed when an empty container is beneath the one weighing means; and

said circuit means being adapted to operate said first actuating means when said first and second switch means are closed.

3,949,862

FEED REGULATING CONVEYOR BIN

Herbert Voigtlaender, Weiterstadt, Germany, assignor to Firma Carl Schenck AG, Darmstadt, Germany

Filed Dec. 6, 1974, Ser. No. 530,366

Claims priority, application Germany, July 4, 1974, 2432135

Int. Cl.² B41J *1/16, 35/12*

U.S. Cl. 198—57 **11 Claims**

1. In a dosing bin for discharging loose, fibrous material, having a top and a supply opening in said top, a bottom and a discharge opening in said bottom, which bin further includes a first endless feed advance conveyor adjacent to the bottom of the bin and discharge means located adjacent to and above said discharge opening in said bin, said first conveyor moving with its upper run toward said discharge means, and wherein a second endless conveyor is arranged adjacent to said top of said bin, said second conveyor having an upper run also moving toward said discharge means and a lower run moving in the opposite direction, said upper run of said second conveyor receiving material through said supply opening in the top of the bin, a platform arranged in the bin below said supply opening, said upper run of said second conveyor depositing the received material on the lower run of the second conveyor for moving the material away from said discharge opening of said bin, the improvement wherein said second endless conveyor comprises cross bars and endless driven means supporting said cross bars at given spacings between adjacent cross bars, and flexible surface means secured to said cross bars, said surface means having a dimension perpendicularly to said cross bars larger than said given spacings between adjacent cross bars, said flexible surface means being dragged along the top of the material in the bin as the lower run of the second conveyor moves away from said discharge opening of the bin, said discharge means comprsiing two rows of discharge elements, said rows being arranged in parallel to each other so that one row of discharge elements is located to face the material in the bin.

3,949,863

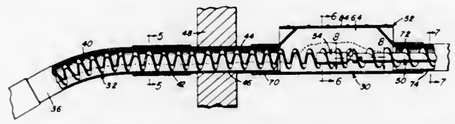
COMBINATION AUGER SYSTEM

Dominic M. Lippi, Luverne, Minn., assignor to A. R. Wood Manufacturing Company (Entire), Luverne, Minn.

Filed Sept. 24, 1974, Ser. No. 508,763

Int. Cl.² B65G *33/00, 37/00*

U.S. Cl. 198—104 **3 Claims**



1. In combination, a first input auger conveyor including an outer tubing having generally straight opposite end portions and a curved intermediate portion, an auger screw disposed in and extending longitudinally along said tubing, corresponding first end portions of said screw and tubing including coacting supportive structure journaling said first end portion of said screw within said first end portion of said tubing, said screw including a coreless section extending from said supportive structure through said first end portion of said tubing, through said curved portion and through and projecting outwardly of the free end of the second end portion of said tubing remote from said curved portion, a second output auger conveyor having an outer tube and a core-type auger screw rotatable therein, one end of said second conveyor tube being endwise aligned with and spaced from the free end of said second end portion of the first conveyor tubing, an elongated housing having opposite end walls, said free end of the second end portion of the tubing of said first conveyor opening end-wise into said housing through one end wall thereof, said one end of said second conveyor tube opening into said housing through the other end thereof, said core-type auger screw projecting outwardly of said one end of said second conveyor tube and into said housing, the end of said coreless section projecting outwardly of said second end portion of said tubing being disposed within said housing and including a center longitudinal stub shaft projecting outwardly of the corresponding end of said coreless screw section, coupling means drivingly coupling the outer end of said stub shaft to the adjacent end of said core-type screw, said housing being closed and including a transverse sectional interior area considerably larger than the transverse sectional interior areas of said tubing and tube for permitting material being conveyed from said tubing into said tube to boil and take position outside the core of the core-type auger screw, the space of the core being unavailable for the material.

3,949,864

FABRIC PRINTING MACHINE

Jose Aragones Montsant, Barcelona, Spain, assignor to Maquinaria de Impresion Textil, S.A., Gerona, Spain

Filed May 22, 1975, Ser. No. 579,797

Claims priority, application Spain, June 8, 1974, 427105

Int. Cl.² B65G *23/00;* **B41F** *13/54;* **B65H** *23/18*

U.S. Cl. 198—110 **6 Claims**

1. In a fabric printing machine having a conveyor belt for supporting thereon a fabric to be printed, a drive unit interconnected to said belt for moving same, and a control mechanism coacting with said belt and said drive unit for permitting intermittent unidirectional advancing movement of said belt through a selected distance, comprising the improvement wherein:

said drive unit including first drive means for advancing the conveyor belt at a fast speed and second drive means for advancing the conveyor belt at a slow speed;

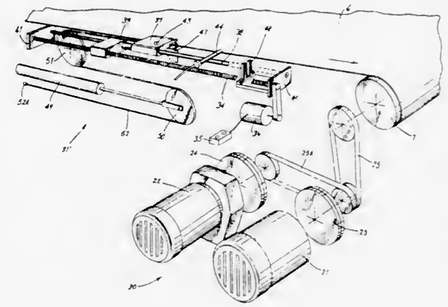
elongated guide means disposed adjacent and extending substantially parallel to a portion of said conveyor belt;

said control mechanism including a belt engaging device slidably supported on said guide means, said belt engaging device including gripping means adapted for gripping engagement with said belt for causing synchronous movement of said belt and said engaging device during the advancing movement of said belt;

stop means coacting with said guide means for determining the initial position of said belt engaging device;

said control mechanism also including first means for causing activation of said gripping means so that same grippingly engages said belt when said belt engaging device is in said initial position and for causing said first drive means to be drivingly connected to said belt for moving said belt at said fast speed;

first switch means for deactivating said first drive means and interconnecting said second drive means to said belt,



after said belt engaging device and said belt have been moved through a first preselected distance away from said initial position, for permitting further advancing movement of said belt at said slow speed;

second switch means for stopping said conveyor belt and said belt engaging device after they have been moved through a second preselected distance beyond said first preselected distance, said second preselected distance being small in comparison to said first preselected distance; and

return means for releasing said gripping means from said belt, after displacement through first and second preselected distances, and returning said belt engaging device to said initial position.

3,949,865

PLATE CONVEYING APPARATUS

William C. Guenst, Jr., and Gerold Litschi, both of Ambler, Pa., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 456,841, April 1, 1974, Pat. No. 3,926,297. This application May 2, 1975, Ser. No. 574,057

Int. Cl.² B65G *17/12*

U.S. Cl. 198—131 **1 Claim**

1. Plate conveying apparatus comprising:

1. a platform;

2. an endless chain driven on the platform;

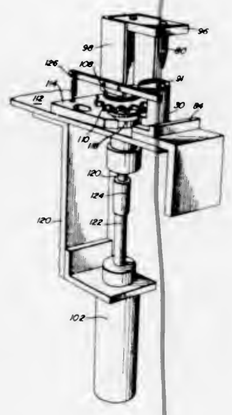
3. a plurality of anvils on the chain, each anvil having a vertical shaft with a constricted neck;

4. means to pull a plate over the top of at least two anvils;

5. staker means to drive a staking pin down into the anvil shaft and to bring it up again; and

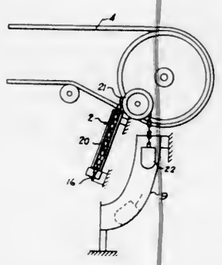
6. stop-start means, the chain drive having means automatically (a) to stop when a plurality of anvils are in staking positions opposite a plate-holding station, and (b) to start again after the staking pin is pulled up from the anvil

shaft;
the said apparatus having means to pick up a plate at a plate



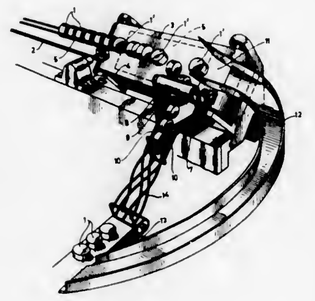
storage station and to convey the plate successively to several stations in a photocomposing assembly.

3,949,866
CONVEYER SCRAPER WITH CONTINUOUSLY APPLIED CONSTANT SURFACE PRESSURE
Richard Pott, Lage-Heiden, Germany, assignor to Contico Industries Ltd., Edmonton, Canada
Filed Aug. 20, 1974, Ser. No. 498,957
Claims priority, application Germany, Sept. 3, 1973, 2344409
Int. Cl.² B65G *45/00*
U.S. Cl. 198—230 **4 Claims**



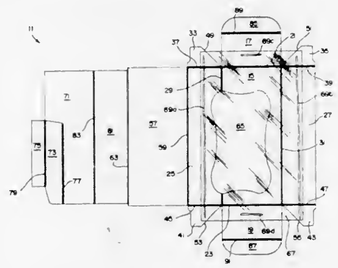
1. A device for scraping a conveyor belt comprising:
a support member;
a scraper;
means for suspending the scraper from the support member in close proximity to the underside of the conveyor belt; and
means for raising the suspending means toward the conveyor belt to bring the scraping edge of the scraper into contact with the belt and to press it thereagainst with substantially constant force,
said raising means comprising
a counterweight, attached to said suspending means for raising it by exerting a downward force thereon, and a curved guide means slidably receiving the counterweight whereby the downward force gradually diminishes as the counterweight moves along the guide means.

3,949,867
DEVICE FOR CHANGING THE DIRECTION OF MOVEMENT OF AN ADVANCING ROW OF CYLINDRICAL CONTAINERS WITH RESPECT TO THEIR MAIN AXIS OF SYMMETRY
Jan Lucas Kuiper, Alphen a/d Rijn, Netherlands, assignor to Stork Amsterdam B.V., Amstelveen, Netherlands
Filed Sept. 24, 1974, Ser. No. 508,915
Claims priority, application Netherlands, Sept. 25, 1973, 7313157
Int. Cl.² B65G *47/24*
U.S. Cl. 198—271 **1 Claim**



1. A device for changing the relative orientation of a row of successively advancing cylindrical, checker-shaped containers with respect to their main axis of symmetry, comprising:
a. a substantially horizontally extending conveyor to feed the containers successively in an initial edgewise attitude, with a somewhat unstable equilibrium, in a lengthwise feeding direction that substantially coincides with the axis of symmetry;
b. a transport surface adjoining said conveyor and movable away therefrom in the feeding direction, having an elongated operative area as well as proximate and distant ends with respect to said conveyor, and being angularly inclined with respect to the feeding direction;
c. stationary magnet means disposed under said transport surface, for exerting a magnetic force on a plurality of the containers over a range that is smaller than said operative area of the transport surface; the magnetic force being sufficient to maintain the containers on said surface in the edgewise attitude while allowing them to roll down about their axes of symmetry along said surface under the action of gravity; the magnetic force holding some containers that are fallen over in an upright attitude which is perpendicular to the initial edgewise attitude, flat against said transport surface, with the axis of symmetry perpendicular to the latter;
d. a winding basket having inlet and outlet ends, said inlet end being above said distant end of the transport surface, for receiving the plurality of containers in the initial edgewise attitude, said basket being angularly supported with respect to the feeding direction;
e. a discharge path substantially lengthwise aligned with said outlet end of the basket, which end is distant from said transport surface;
f. a catching device in the form of a chute with a substantially rectangular cross-section, having inlet and outlet ends, the former at least partly rectilinearly ajoining said distant end of the transport surface, for receiving the some containers in the upright, flat attitude, while said outlet end meets said discharge path; and
g. a connection between said outlet end of the chute and said discharge path;
whereby the plurality of containers in the edgewise attitude roll down on said transport surface under the action of gravity, at least partly outside the range of said magnet means, pass through said basket and land in an upright position on said discharge path, the latter position being identical with the upright, flat attitude; while the some containers that were held by said magnet means flat against said transport surface eventually enter said inlet end of the chute to reach said discharge path by the intermediary of said chute and said connection, similarly in the upright position, without change in their attitude, to be intermixed along said discharge path with the plurality of containers.

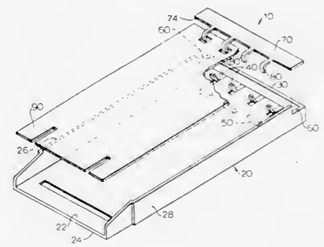
3,949,868
CARTON WITH HEAT SHRINKABLE WINDOW AND BLANK FOR PRODUCING SAME
R. H. Allen, Memphis, Tenn., assignor to Eastex Packaging, Inc., Oak Brook, Ill.
Filed Sept. 16, 1974, Ser. No. 506,580
Int. Cl.² B65D *25/00, 65/00, 5/58*
U.S. Cl. 206—45.34 **12 Claims**



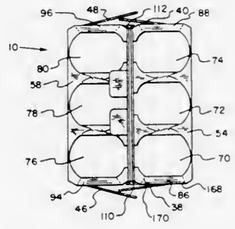
1. A carton for holding certain products, said carton comprising front and rear walls joined along the lengths thereof by a pair of side walls, a window opening defined at least in part by portions of said front wall, a pair of dust flaps respectively having free side margins cooperating with closure flap means for establishing and closing each end of said carton; and transparent heat-shrinkable membrane means enclosing said window opening and having peripheral segments thereof secured to predetermined portions of each of said side walls, said dust flaps, and said closure flap means for restraining the product in optimum orientation subsequently to said heat-shrinkable membrane means being shrunk and also for minimizing pilferage of the product by tying together and jointly pulling said pair of side walls, said dust flaps, and said closure flap means inwardly; whereby said carton will purposely sustain damage as a result of an attempt to pilfer the product therefrom; said dust flaps respectively being triangular in shape to provide further assurance that said pair of side walls, said dust flaps, and said closure flap means are all firmly pulled jointly inwardly, said triangular shaped dust flaps and said front wall jointly defining a pair of prominent spaces respectively disposed at either end of said front wall and subjacent said closure flap means, whereby said heat-shrinkable membrane means if unrestrained in proximity to the entire perimeter of said front wall and is free to totally pull away from said front wall as it is being shrunk.

3,949,869
DOCUMENT TRAY
Ralph K. Rand, New Milford, Conn., assignor to Graphic Sciences, Inc., Danbury, Conn.
Filed May 1, 1975, Ser. No. 573,792
Int. Cl.² A47F *7/00*; B65D *1/34*
U.S. Cl. 206—73 **5 Claims**

1. A paper-carrying tray comprising
a base member having side walls and a rear wall,
a plurality of first ring-like members disposed on said base member adjacent to said rear wall, and
an auxiliary member seated on said base member adjacent to said rear wall and having a plurality of second ring-like members extending from an edge thereof, with each second ring-like member aligned with and mating with one of said first ring-like members,
said first and second ring-like members being fused together at the point where they contact each other.

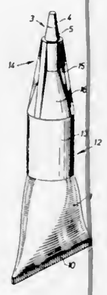


3,949,870
REUSABLE WRAP-BASKET CARRIER
Earl J. Graser, Monroe, La., assignor to Olinkraft, Inc., West Monroe, La.
Filed July 17, 1974, Ser. No. 489,311
Int. Cl.² B65D *75/08*
U.S. Cl. 206—141 **12 Claims**



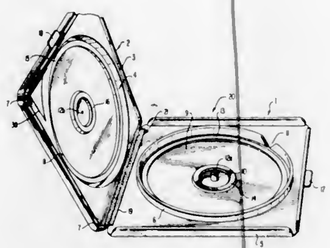
1. A carrier for a plurality of objects wherein the objects are to be removed from the top of the carrier, the carrier comprising
a bottom,
a pair of side panels attached to respective opposite side edges of the bottom,
end means extending between opposite end edges of the side panels at both ends of the carrier,
a top having respective openings for exposing each of the plurality of objects,
said top having strips extending between adjacent pairs of the openings to retain the objects therein,
each of said strips having tear means formed therein for allowing each strip to be partially torn from an edge of a respective one of the openings, and
said tear means having a size sufficient to enlarge the respective openings enough when torn to allow removal of the objects through the respective openings.

3,949,871
PACKAGE TUBE
Tom Christensen, Allerod, Denmark; Ove Wendel, Malmo, and Carl-Erik Sandstrom, Lund, both of Sweden, assignors to AB Akerlund & Rausing, Lund, Sweden
Filed Jan. 7, 1975, Ser. No. 539,243
Claims priority, application Sweden, Jan. 10, 1974, 7400286
Int. Cl.² B43K *9/00, 8/00*; **B65D** *47/42*
U.S. Cl. 206—229 **6 Claims**



1. A package tube comprising a tube body, a tube neck integral therewith and extending therefrom and provided with a discharge passage therein, a closing means formed integrally with said tube neck and connected thereto by a weakened portion for closing the discharge passage in said tube neck, the inner end portion of said closing means having a greater outer dimension than said tube neck, said closing means also being provided with an offset portion facing said tube body, a sponge-like body mounted on said tube neck, and a protecting cover member provided with a passage therethrough, said passage having an enlarged portion at the inner end thereof for enclosing and protecting said sponge-like body and said cover member being provided with a recess for engaging the offset portion of said closing means for retaining the cover member in place.

3,949,872
INDIVIDUAL CASE FOR PHONOGRAPH RECORDS
Francis Paudras, 68, rue de Clichy, 75009 Paris, France
Filed July 11, 1974, Ser. No. 487,658
Claims priority, application France, July 19, 1973, 73.26529
Int. Cl.² B65D *85/30*
U.S. Cl. 206—310 **12 Claims**



1. In an individual case for discrete miscellaneous articles composed of a thin molded synthetic material, the case having a substantially rectangular body, and a substantially rectangular lid hingedly jointed to said rectangular body, wherein the improvement comprises:

first and second flush joints formed by cooperating elements in the body and the lid, each flush joint consisting of a male member and a female member, wherein said first joint is formed on the four rectilinear edges of the case and said second joint is formed in a shape encircling the outer periphery of the miscellaneous article,

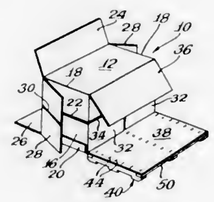
whereby said first and second flush joints allow for tight closure between the case body and the case lid and simultaneously stiffens the edges of the case body and the case lid to provide a very rigid case for better protection of the miscellaneous article.

3,949,873
CARDBOARD AND PAPER RECORD JACKET
Joseph Platt, Point Lookout, N.Y., assignor to Imperial Paper Box Corporation, Brooklyn, N.Y.
Filed Nov. 20, 1974, Ser. No. 525,572
Int. Cl.² B65J *85/30, 5/42*
U.S. Cl. 206—311 **2 Claims**



1. A record jacket construction, comprising an inner cardboard layer having a first panel folded into juxtaposition with a second panel, each panel having an outer edge and two side edges, a respective side flap extending along each side edge of said second panel, folded backwardly over said second panel, and having an outer edge arranged in substantially coplanar abutment with each side edge of said first panel, said first and second panels defining a record receiving pocket therebetween opening adjacent the outer edges of said first and second panels, and a printed paper cover sheet having first and second panels and an interior adhesive surface adhered to said blank first and second panels, and having respective paper second panel flaps which overlie but are not as wide as said blank second panel flaps, said paper first panel overlying said blank first panel and extending outwardly from each side edge thereof, and overlying and adhered to at least a portion of each blank second panel flap and a portion of each paper second panel flap.

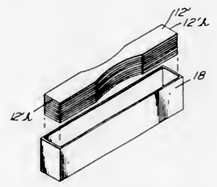
3,949,874
REINFORCED COLLAPSIBLE CONTAINER
Larry W. Heavner, Lisle, Ill., assignor to Coronet Container Corporation, Lombard, Ill.
Filed Aug. 28, 1974, Ser. No. 501,237
Int. Cl.² B65D *19/00*
U.S. Cl. 206—386 **6 Claims**



1. A reinforced, collapsible, reuseable container, comprising, in combination, a first pair of opposed side walls, said walls being pivotally interconnected along lateral upright, adjacent edges thereof, said first pair of walls being simultaneously foldable so that said second pair of walls are movable from an open, spaced apart condition, to a closed, closely positioned condition, a bottom wall, said bottom wall being

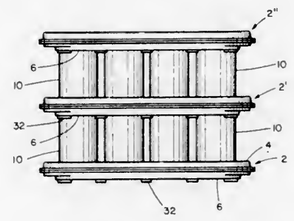
hingedly interconnected to the lower edge of one of said second pair of walls, and a rigid, reinforcing frame fixedly secured to the underside of said bottom wall, said frame including rigid frame members which are rigidly secured to the entire outer perimeter of said bottom wall for reinforcement thereof, said frame including a first pair of rigid frame members rigidly secured to the underside of said bottom wall along a first pair of opposite edges thereof, and a second pair of rigid frame members rigidly secured to the underside of said bottom wall along the other pair of opposite edges of said bottom wall, at least one of said pairs of rigid frame members being constructed and arranged to define a skid for raising the bottom wall of said container above ground level and for defining means for receiving forks of a fork lift, said fork lift receiving means including openings for receiving said forks both from a direction transverse to said first pair of walls and to said second pair of walls.

3,949,875
SHAMPOO NECK STRIP
Anthony V. Catania, 134 Chatham Road, and Mary H. Biviano, 125 Kent Road, both of Upper Darby, Pa. 19082
Filed Apr. 18, 1974, Ser. No. 462,129
Int. Cl.² B65D *85/671*; **A41B** *3/16*
U.S. Cl. 206—390 **6 Claims**



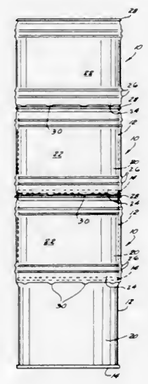
1. A hair stylist's disposable neck strip adapted to be positioned within an apron and entirely about the human neck, comprising an elongated strip somewhat longer than the circumference of the average human neck but having a width smaller than the length of said neck, said strip including a plurality of superimposed plies all of which are made of liquid-absorbent material, said strip having opposed, inwardly arcuate sections located substantially intermediate its ends to prevent bunching of said strip, said plies being maintained in adhesion with one another.

3,949,876
ARTICLES FOR BEVERAGE SERVICE
John A. Bridges, and Harold W. Storrs, both of Nashville, Tenn., assignors to Aladdin Industries, Incorporated, Chicago, Ill.
Filed Sept. 26, 1974, Ser. No. 509,496
Int. Cl.² B65D *85/20, 21/02*
U.S. Cl. 206—427 **3 Claims**



1. Beverage service means comprising a first tray having an upper surface and a lower surface, said upper surface having a plurality of uniform recesses provided therein for receiving the bottoms of a plurality of beverage containers, said lower surface having a plurality of downwardly projecting portions conforming in number, disposition and generally in size to said recesses, each downwardly depending portion being relatively thick to provide thermal insulation, each downwardly depending portion being surrounded by a groove formed in said lower surface, a second tray identical in construction to said first tray, and a plurality of beverage containers having their bottoms disposed in the recesses of one tray and their tops disposed in the grooves of the other tray.

3,949,877
NESTABLE DRUM
Cesar Santoni, Hamilton, Canada, assignor to Greif Bros. Corporation, Delaware, Ohio
Filed Mar. 4, 1974, Ser. No. 447,733
Int. Cl.² B65D *21/02*
U.S. Cl. 206—519 **6 Claims**



1. A large nestable drum of multi-gallon capacity and capable of containing heavy leads with space saving capabilities comprising in combination:

a high strength large metal tubular shell, the tubular shell being formed with a welded seam and having a bottom end and a top end, and further being divided into a bottom substantially vertical sided tubular section having a top and bottom and a top substantially vertical sided tubular section having a top and bottom and the major portion of which having essentially the same radius of curvature from its top to its bottom the top section and the bottom section being interconnected by an integral circumferential step intermediate the shell ends and extending substantially at a continuous uniform axial point about the circumference of the shell, the top section possessing a larger cross-section than the bottom section, the larger top section being initially formed with the same gauge material as the bottom section and being expanded to the larger cross-section and becoming thinner than the bottom section to provide a larger size drum without the necessity of additional material, the bottom section being adapted to be received by and nest in the open top section of another of such drums when stacked one above the other, the step including anti-locking means for preventing the stacked drums from being air locked together;

the anti-locking means being defined by a series of spaced outwardly extending reinforcing gussets forming an integral part of the step, the gussets being formed of outwardly and downwardly projecting substantially arcuate protuberances spaced about the circumference of the drum and when the bottom section of one drum being

nested in the open top section of another of such drums the protuberances of the upper drum resting on the top end of the lower drum to provide only a predetermined number of point contacts with the top end of a lower drum thereby providing minimum surface contact and engagement with the lower drum so as to reduce scuffing of surface of the stacked drums, and

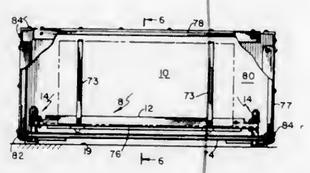
a closure at the bottom end.

3,949,878

APPARATUS FOR PROTECTIVELY MOUNTING AN OBJECT

Doane, Tuthill, 373 School St., Westbury, N.Y.

Filed Feb. 24, 1975, Ser. No. 552,416
Int. Cl.² B65D *81/02, 85/30*
U.S. Cl. 206—521 **13 Claims**



1. Apparatus for protectively mounting an object resting on a given plane and having a peripheral underportion located at a given distance above the given plane, said apparatus comprising:

support means having a lifting portion positionable beneath the peripheral underportion of the object to be mounted, said lifting portion having a height less than the given distance;

shock absorbing means including a first portion resting against the given plane and a second portion isolated from shock with respect to said first portion and wherein said second portion is mountable to the support means while said support means is positioned under the object; and

adjustable elevating means disposed on said support means and said second portion of said shock absorbing means for mounting said support means with respect to said second portion for elevating movement from a non-supporting position, first into contact with the peripheral underportion of the object being mounted and thereafter into a supporting position thereby elevating and protectively mounting the object above the given plane.

3,949,879

PROTECTIVE PACKING PRODUCT

Dean M. Peterson, Littleton, and Franklin P. Elliott, Denver, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

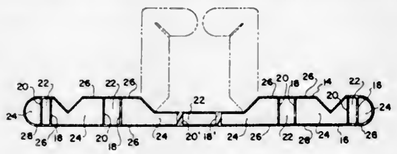
Filed Dec. 11, 1974, Ser. No. 531,623
Int. Cl.² A47C *27/08;* **B65D** *81/14, 85/30*
U.S. Cl. 206—522 **1 Claim**

1. A protective packing product comprising a thin walled plastic structure having first and second wall members;

said first and second wall members being sealed together to define an air pocket therebetween;

resilient means between said sealed wall members positioned to tend to maintain said first and second wall members in spaced relationship with respect to each other, said resilient means comprising an imperforate air chamber formed of first and second spaced transverse wall members sealed to said first mentioned wall members, said imperforate air chamber being of substantially smaller dimensions than said air pocket between said first mentioned wall members, and

at least one of said first mentioned wall members having at least one air-bleed orifice therein, said air-bleed orifice



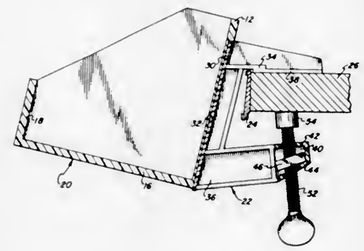
providing a passage through which air may escape from said air pocket when pressure is applied to said structure, said air-bleed orifice being positioned externally of said air chamber, said product thereby providing a damped resilience protection.

3,949,880

SHELF EXTENDER

Vincent Fortunato, Valley Stream, N.Y., assignor to Henschel-Steinau, Inc., Englewood, N.J.

Filed Feb. 20, 1975, Ser. No. 551,368
Int. Cl.² A47F *5/00;* **F16B** *39/16;* **B25B** *1/12, 5/10*
U.S. Cl. 211—86 **24 Claims**



1. A shelf extender for holding a product so as to display the same to the purchaser forward of a shelf having two surfaces comprising:

a wall member having a front surface and a rear surface;

at least one receiving means cooperative with the rear surface;

means for supporting the product affixed to the wall member;

a clamp comprising:

a plate shaped to fit with the receiving means;

an arm cantilevered from the plate having a clamping pad at the free end thereof so as to engage one surface of the shelf;

a post cantilevered from the plate spaced from the cantilevered arm;

the post having a cavity therein, an upper plate and a lower plate, each of said plates having an opening therein located to permit a bolt to pass therethrough;

the lower plate being canted with respect to the upper plate;

a conventional nut received within the cavity, the nut being of standard size and configuration and including an opening with an unmodified conventional internal helical thread of given standard size and having a given inside diameter;

the opening in the nut being in general alignment with the openings in the cavity's plates;

a conventional bolt of standard size and configuration including an unmodified conventional external helical thread of a standard size having an outside diameter no larger than the inside diameter of the nut opening;

the upper and lower plates of the cavity being placed so that the nut is movable between a first position against the upper plate and a second position against the lower plate;

in the first position, the nut is normal to the bolt and the bolt passes freely through the nut and in the second position, the nut is canted with respect to the bolt and at least a portion of the thread of the nut engages at least a portion of the thread of the bolt in threaded engagement, whereby the bolt may be moved to obtain a coarse adjustment in the first position of the nut and a fine adjustment in the second position of tne nut;

a second clamping pad on the end of the bolt to engage the other surface of the shelf so that the means for supporting the product is projected forward of the shelf and is held in place with respect thereto.

12. A clamp for attachment to a workpiece comprising:

a C-shaped frame having a spine and two spaced apart arms cantilevered from the spine;

one of said arms having a first clamping surface;

the other of said arms having a cavity adjacent the free end thereof, and an upper plate and a lower plate, each of the plates thereof having an opening therein located to permit a bolt to pass therethrough;

the lower plate being canted with respect to the upper plate;

a conventional nut received within the cavity, the nut being of standard size and configuration and including an opening with an unmodified conventional internal helical thread of given standard size and having a given inside diameter;

the opening in the nut being in general alignment with the openings in the plates;

a conventional bolt of standard size and configuration including an unmodified conventional external helical thread of a standard size having an outside diameter no larger than the inside diameter of the nut opening;

the plates of the cavity being shaped so that the nut is movable between a first position against the upper plate and a second position against the lower plate;

in the first position, the nut is normal to the bolt and the bolt passes freely through the nut and in the second position, the nut is canted with respect to the bolt and at least a portion of the thread of the nut engages at least a portion of the thread of the bolt in threaded engagement, whereby the bolt may be moved to obtain a coarse adjustment in the first position of the nut and a fine adjustment in the second position of the nut;

a second clamping surface on the end of the bolt to thereby permit the workpiece to be securely held between the first clamping surface and the second clamping surface.

18. In a clamp for engaging a workpiece having a spine and an arm cantilevered from the spine the improvement comprising:

a cavity adjacent the free end of the arm to receive a conventional nut and having an upper plate and a lower plate, each of the plates having an opening therein located to permit a bolt to pass therethrough;

a conventional nut received within the cavity, the nut being of standard size and configuration and including an opening with an unmodified conventional internal helical thread of given standard size and having a given inside diameter;

the opening in the nut being in general alignment with the openings in the plates;

a conventional bolt of standard size and configuration including an unmodified conventional external helical thread of a standard size having an outside diameter no larger than the inside diameter of the nut opening;

the plates of the cavity being shaped such that the lower plate is canted with respect to the upper plate and so that the nut is movable between a first position against the upper plate and a second position against the lower plate;

in the first position, the nut is normal to the bolt and the bolt passes freely through the nut and in the second position, the nut is canted with respect to the bolt and at least a portion of the thread of the bolt engages at least a portion of the thread of the nut in threaded engagement, whereby the bolt may be moved to obtain a coarse adjustment in the first position of the nut and a fine adjustment in the second position of the nut;

a clamping surface on the end of the bolt for engaging the workpiece.

21. A shelf extender for holding a product so as to display the same to a purchaser forward of a shelf having two surfaces comprising:

product receiving means having a floor and a back wall;

a pair of end members having receiving means to receive the edges of the product receiving means;

a clamp integral with each of the end members;

said clamp comprising:

a C-shaped frame having a spine and two spaced apart arms cantilevered from the spine;

one of said arms having a first clamping surface;

the other of said arms having a cavity adjacent the free end thereof, and an upper plate and a lower plate, each of the plates thereof having an opening therein located to permit a bolt to pass therethrough;

the lower plate being canted with respect to the upper plate;

a conventional nut received within the cavity, the nut being of standard size and configuration and including an opening with an unmodified conventional internal helical thread of given standard size and having a given inside diameter;

the opening in the nut being in general alignment with the openings in the plates;

a conventional bolt of standard size and configuration including an unmodified conventional external helical thread of a standard size having an outside diameter no larger than the inside diameter of the nut opening;

the plates of the cavity being shaped so that the nut is movable between a first position against the upper plate and a second position wherein it is canted with respect to the first position;

in the first position, the nut is normal to the bolt and the bolt passes freely through the nut and in the second position, the nut is canted with respect to the bolt and at least a portion of the thread of the bolt engages at least a portion of the thread of the nut in threaded engagement, whereby the bolt may be moved to obtain a coarse adjustment in the first position of the nut and a fine adjustment in the second position of the nut;

a second clamping surface on the end of the bolt to thereby permit the workpiece to be securely held between the first clamping surface and the second clamping surface.

3,949,881

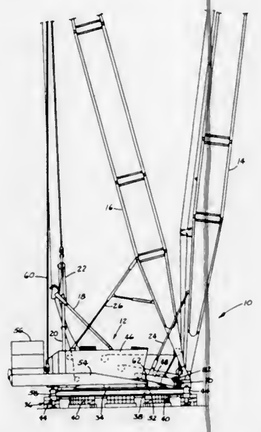
SWING DRIVE ASSEMBLY

James G. Morrow, Sr., and David J. Pech, both of Manitowoc, Wis., assignors to The Manitowoc Company, Manitowoc, Wis.

Filed Nov. 11, 1974, Ser. No. 522,787
Int. Cl.² B66C *23/86*
U.S. Cl. 212—68 **15 Claims**

1. A swing drive assembly for a load handling device having upper works rotatable about a central pivot and supported by rollers on a roller path disposed substantially concentrically with said pivot, comprising, in combination, a frame element mounted on said upper works and extending outwardly therefrom to adjacent said roller path, means defining a ring gear secured to one peripheral edge of said roller path, mounting means on said frame element for journalling a pinion gear for normal engagement with said ring gear and for moving said pinion gear toward and away from said ring gear, a guide flange mounted on said roller path concentric with said ring

gear, a guide roller supported by said frame element and journalled for engagement with said flange, means including a reversible hydraulic motor for driving said pinion against said ring gear so as to swing said upper works about said pivot, actuator means including a hydraulic actuator for urging said

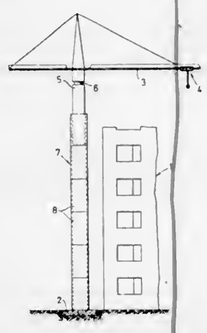


pinion toward said ring gear and said roller into engagement with said flange so as to maintain substantially constant backlash between said pinion and ring gear regardless of eccentricities in said roller path, and hydraulic pump means for selectively pressurizing said motor and for constantly pressurizing said actuator during swing drive operation.

3,949,882
ROTARY TOWER CRANE

Elmar Reich, Biberach an der Riss, Germany, assignor to Hans Liebherr, Biberach, Germany

Continuation of Ser. No. 369,972, June 14, 1973, abandoned. This application Jan. 7, 1975, Ser. No. 539,086
Claims priority, application Germany, June 15, 1972, 2229317
Int. Cl.² B66C *23/62*
U.S. Cl. 212—144 **9 Claims**

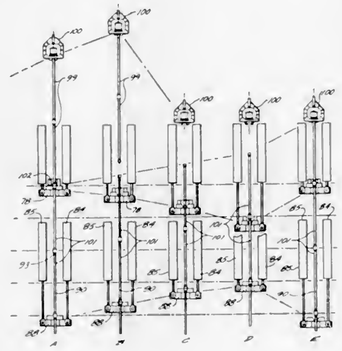


1. A rotary tower crane having a tower head and a tower formed from vertically aligned tower sections at least one of said tower sections having an enlarged cross section, said enlarged tower section comprising:
a plurality of uniformly shaped geometric structures;
each of said geometric structures comprising a plurality of rectangular faces enclosing open vertical ends, each of said geometric structures constructed and arranged to serve as an individual tower section for a rotary tower crane;
each of said geometric structures having a plurality of vertical longitudinal edges of equal length;
each of said geometric structures disposed in a common horizontal plane so that two of said vertical longitudinal edges of each geometric structure are disposed adjacent said vertical longitudinal edges of adjacent geometric structures along the length of said longitudinal edges; and
means connecting said adjacent vertical longitudinal edges to hold said geometric structures in disposition so that said structures form an enclosed central opening adapted to receive said tower head said opening having sides substantially equal in length to the horizontal length of said faces of said geometric structures.

3,949,883
HYDRAULICALLY OPERATED HEAVY LIFT SYSTEM FOR VERTICALLY MOVING A STRING OF PIPE

Robert C. Crooke, Corona Del Mar, and Abraham Person, Los Alamitos, both of Calif., assignors to Global Marine Inc., Los Angeles, Calif.

Filed June 13, 1974, Ser. No. 479,094
Int. Cl.² E21B *19/00*
U.S. Cl. 214—1 P **6 Claims**

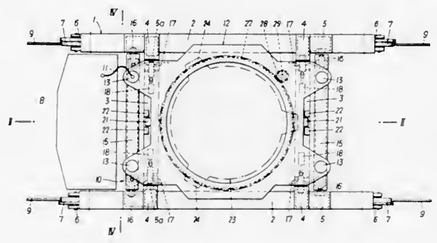


1. Apparatus for longitudinally moving at substantially constant velocity a string of pipe having collars at fixed intervals along the pipe string, said apparatus comprising: first and second releasable collar engaging means, first and second reciprocating linear drive means spaced along the pipe string for stroking the collar engaging means reciprocally lengthwise of the pipe string between a pipe collar engaging position and a pipe collar releasing position, control means for each of the linear drive means and associated collar engaging means, said control means including means for cycling the first and second drive means through successive drive cycles, the drive means during each drive cycle moving the associated collar engaging means during half of each cycle at a first control operating velocity through a distance equal to half the distance between the two collars, and moving the associated collar engaging means at slightly slower velocity in the same direction at one end of the limit of travel for a small portion of the second half cycle, at a slightly higher velocity in the same direction at the other end of the limit of travel for a small portion of the second half cycle, and in the reverse direction during the remainder of the second half cycle, the drive cycles of the first and second drive means being a half cycle out of phase.

3,949,884
TRANSPORTING AND LIFTING VEHICLE FOR HEAVY LOADS

Friedrich Despalmes, Vienna, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Oct. 24, 1974, Ser. No. 517,412
Claims priority, application Austria, Nov. 14, 1973, 9569/73
Int. Cl.² B25J *5/02*
U.S. Cl. 214—1 D **15 Claims**



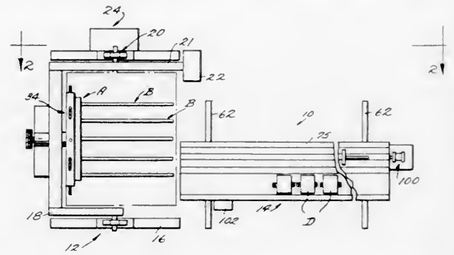
1. A transporting and lifting vehicle for a heavy load, e.g. for converter exchange vessels in steel production plants, said vehicle comprising:
a travelling frame capable of being rotated for transposition into different directions of travel and provided with turret-like projections, said projections having recesses;
a climbing-lifting mechanism inserted within said travelling frame, which climbing-lifting mechanism comprises a lifting frame for receiving the converter, said lifting frame being provided with bolts that are extendable into and retractable from the recesses in said projections;
lifting means carried by said lifting frame and having a lifting height smaller than the total lifting height of the vehicle;
traverse-like carriers arranged below said lifting frame and being connected to said lifting means, said traverse-like carriers being provided at their ends with bolts that are extendable into and retractable from the recesses in said projections; and
a rotating frame, wherein the bolts of the lifting frame and the bolts of the traverse-like carriers are, after actuating the lifting means, engageable and disengageable alternatingly in turns with the recesses of the turret-like projections.

3,949,885
CARRIER LOADING DEVICE

Theodore E. Lide, Jr., Madison, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Jan. 17, 1975, Ser. No. 542,004
Int. Cl.² B25J *3/00*
U.S. Cl. 214—1 B **16 Claims**

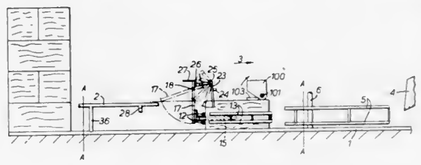
13. An assembly for loading a plurality of yarn packages onto spindles of a yarn package carrier without the necessity of using a spindle extension, said assembly comprising:
a. movable mounting means for mounting a yarn package carrier so that the spindles of said carrier may be moved from a vertically disposed position to a horizontal position,
b. means for holding a yarn package carrier onto said movable mounting means
c. generally horizontally disposed loading tray means for receipt of a plurality of yarn packages for subsequent loading onto a spindle of a yarn package carrier,
d. means associated with said tray means for moving yarn packages from said tray means onto a horizontally disposed spindle of a yarn package carrier mounted on said mounting means, and for compressing said packages onto said spindle, and
e. means for allowing positioning of a horizontally disposed spindle of a yarn package carrier mounted on said movable mounting means and said horizontally disposed loading tray so that said tray and said spindle are in alignment so that yarn packages from said tray may be disposed onto said spindle by said package moving and compressing means.



3,949,886
STACKING OF BALES

Gerald Harber; Leslie Albert Young, both of Upton-upon-Severn; Roger Sidney Allard, Worcester; Alan James Marshall, Malmesbury, and Michael John Montgomery, Wootton Bassett, all of England, assignors to British Lely Limited, Swindon, England

Filed Nov. 18, 1974, Ser. No. 525,285
Int. Cl.² A01D *87/12;* **B65G** *57/32*
U.S. Cl. 214—6 B **15 Claims**



1. A bale stacking implement for attachment to a baler having a bale discharge chute for discharging bales in a substantially rectilinear path, the implement comprising a bale receiving frame elongated in the direction of said path, said frame being open to the ground to permit bales received by the frame to contact the ground and to be caused thereby to pass along the frame during travel of the baler and implement over the ground; first bale guiding means carried by the frame for guiding into groups bales passing along the frame due to their contact with the ground; second bale guiding means actuated by the passage of said groups along the frame due to their contact with the ground to displace angularly through substantially 90° relative to said path alternate ones of said groups; and stacking means to receive and stack in their alternate angularly displaced and angularly un-displaced positions said groups passed thereto due to their contact with the ground.

3,949,887
SAILPLANE STORAGE SYSTEM

Laszlo Horvath, 3108 Fairway Drive, Tempe, Ariz. 85282

Filed Sept. 5, 1974, Ser. No. 503,297
Int. Cl.² E04H *6/06*
U.S. Cl. 214—16.1 A **11 Claims**

1. A hangar system for storing a plurality of vertically oriented sailplanes in radial alignment about a center point within a hangar, said hangar system comprising:

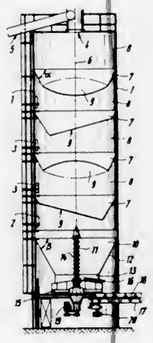
a. a selectively rotatable circular platform disposed within the hangar;
b. a plurality of pairs of cross tracks mounted upon said platform, each of said pairs of cross tracks being generally radially alingned upon said platform;
c. a feeder track extending from the periphery of said platform external to the hangar through an opening in a side wall of the hangar, said feeder track being in alignment with one of said pairs of cross tracks at the periphery of said platform;
d. means for incrementally rotating said platform to position any one of said pairs of cross tracks into alignment with said feeder track at the periphery of said platform;
e. a carrier for supporting one of the sailplanes within the hangar and whenever the sailplane is moved onto or off of said platform and along said feeder track, said carrier being mounted upon one of said pairs of cross tracks and movable therefrom along said feeder track when the respective one of said pair of cross tracks is in alignment with said feeder track, said carrier including means for maintaining the longitudinal axis of the sailplane in vertical alignment and the wings of the sailplane in general lateral alignment with the direction of travel of said carrier; and
f. means disposed in proximity to said feeder track for pivoting said carrier in a vertical plane to load and unload a sailplane from the pivoting one of said carriers when said one carrier is positioned upon said feeder track; whereby, the hangar stores a plurality of vertically oriented and radially aligned sailplanes upon said platform and permits individual insertion and withdrawal of any sailplane without inserting or withdrawing any other sailplane.

3,949,888

SILO, ESPECIALLY FOR HEAVY FLOWING CHEMICAL AND MINERAL SUBSTANCES

Hans Gessler, Aalen, and Josef Faul, Wasseralfingen, both of Germany, assignors to Schwabische Huttenwerke Gesellschaft mit beschrankter Haftung, Wasseralfingen, Germany

Filed Apr. 12, 1974, Ser. No. 460,611
Claims priority, application Germany, Apr. 12, 1973, 2318560
Int. Cl.² B65G 65/46
U.S. Cl. 214—17 D **11 Claims**



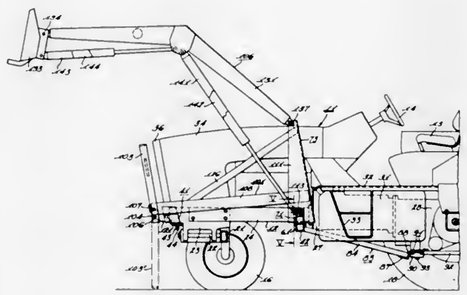
1. A silo for pourable materials which has an inner wall and an upper portion and a lower portion, especially for heavy-flowing chemical and mineral substances, which includes: a charging station arranged at said upper silo portion for charging pourable materials into said silo, at least one discharge station arranged at the lower silo portion for withdrawing pourable material from said silo, a plurality of friction walls arranged in vertically spaced superimposed position and mounted on said inner wall, each of said friction walls extending all the way around said inner wall while being provided with passage means therethrough for pourable materials to flow from said charging station to said discharge station, said friction walls being inclined in the direction toward said lower silo portion at an angle of inclination relative to horizontal planes which is greater than the specific pouring angle of the pourable materials to be passed through said silo having an inner cross section of predetermined configuration, and said friction walls being designed as wall portions of a cone with the cone tip cut off and the cut-off portion pointing toward said lower silo portion and defining said passage means, the axes of said passage means of successive friction walls being axially offset with regard to each other.

3,949,889

FRONT END LOADER

Richard G. Moe, LaPorte, Ind., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jan. 13, 1975, Ser. No. 540,721
Int. Cl.² E02F 3/72
U.S. Cl. 214—131 A **7 Claims**



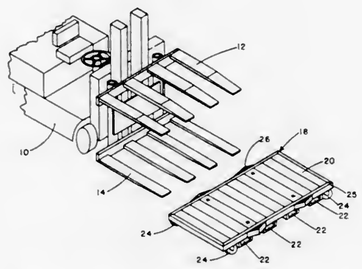
1. A front end loader attachment for a tractor comprising:
a support structure including
a front support adapted for rigid connection to the front of a tractor including a pair of laterally spaced coupling parts, and
a rear support including
a transverse beam adapted to extend beneath and to be connected to an intermediate pair of the main frame of said tractor and having transversely opposite ends adapted for connection to and support of a loader frame said ends being disposed outwardly from opposite sides of said tractor when said support is installed thereon and
a longitudinally extending truss structure rigidly secured at its front end to that part of said transverse beam that is beneath said main frame of said tractor when said support is installed thereon and adapted at its rear end for connection to the underside of the final drive housing of said tractor at the point where the drawbar is attached,
a loader frame including a pair of laterally spaced and longitudinally extending side frames releasably attached at their lower rear ends to said opposite ends, respectively, of said beam and having coupling components at their forward ends in cooperative emgagement with said coupling parts, respectively, and a pair of upstanding boom support members, and
a loader having a pair of longitudinally extending booms pivotably attached at their rear ends to said boom support members.

3,949,890

BALE HANDING METHOD AND APPARATUS

Alex Jacques Keller, Gastonia, N.C., assignor to Automatic Material Handling, Inc., Gastonia, N.C.

Filed Oct. 24, 1973, Ser. No. 409,275
Int. Cl.² B65G 61/00
U.S. Cl. 214—152 **2 Claims**



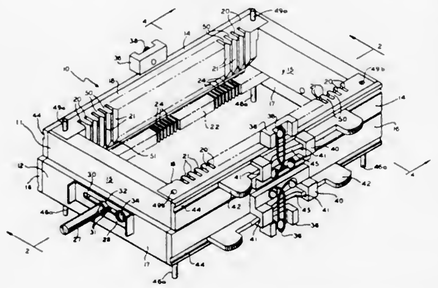
1. The method of removing the straps and wrapping from a compressed bale of fibers and simultaneously palletizing the bale which comprises:
a. positioning one surface of the bale against a pallet,
b. clamping said pallet and bale together,
c. rotating the bale and pallet together to a first position with the pallet on top of the bale,
d. severing the straps,
e. unclamping the bale and pallet and raising the pallet out of engagement with the bale,
f. removing the wrapping and strapping from said one surface of the bale,
g. lowering the pallet back into engagement with the bale and clamping the bale and pallet together again
h. rotating the pallet and bale together to a second position with the pallet underneath the bale,
i. unclamping the bale and pallet while in the second position, and
j. removing the wrapping and strapping from the surface of the bale opposite said one surface and leaving the bale on the pallet.

3,949,891

SEMICONDUCTOR WAFER TRANSFER DEVICE

Robert M. Butler, Port Byron, and George A. Anderson, III, East Syracuse, both of N.Y., assignors to Micro Glass Inc., East Syracuse, N.Y.

Filed July 22, 1974, Ser. No. 490,517
Int. Cl.² B65G 65/04
U.S. Cl. 214—301 **4 Claims**



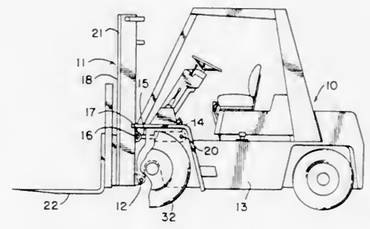
1. A device for transferring a plurality of waferlike elements from one carrier having a plurality of wafer supporting slots to another such carrier comprising an upper and a lower open frame, the walls of which form the perimeter about a completely open interior, each frame having a plurality of pairs of wafer slots, the slots in one of the frames being greater in number and more closely spaced than the slots in the other frame, means interconnecting the two frames so that limited shifting movement between the frames is permitted whereby the slots of the frame having the smaller number can be brought into registry with two or more different groups of the slots in the frame having the greater number, and means to releasably secure each frame in an interfacing relation to a wafer carrier having a corresponding number of slots, whereby wafer carriers can be releasably secured to the upper and lower open frames in order to transfer wafers from one carrier through said device into the other carrier.

3,949,892

CUSHIONED MAST FOR LIFT TRUCKS

Edward J. Ohms, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 29, 1974, Ser. No. 528,185
Int. Cl.² B66F 9/20
U.S. Cl. 214—674 **5 Claims**



1. In a fork lift truck having a body defining front and rear ends, a lift mast assembly pivotally mounted to the forward end, said lift mast assembly including a lift mast and a pair of lift forks extending therefrom and mounted for vertical motion relative to said lift mast, and tilt cylinder means including tilt cylinders for tilting the lift mast relative to the body, a hydraulic control system for actuating said tilt cylinders including a source of fluid pressure, valve means for selectively directing fluid from said source of fluid pressure to the head and rod ends of said tilt cylinders so as to cause tilting of the lift mast relative to the body, wherein the improvement comprises hydraulic-pneumatic damping means communicating with said tilt cylinders for damping pressure surges in said cylinders and thereby minimizing pitching or loping of the vehicle caused by surface discontinuities encountered by the vehicle when in the roading phase, wherein said damping means comprises an accumulator a portion of which contains a pneumatic fluid and conduit means intercommunicating said accumulator with one end of said tilt cylinders, and a restrictive orifice in said conduit means.

3,949,893

SAFETY CLOSURE CONTAINER

Gerhardt E. Uhlig, 1900 Alexis Road, Apt. L-201, Toledo, Ohio 43613

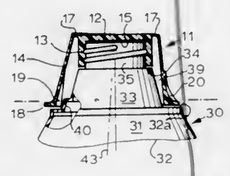
Filed Aug. 19, 1974, Ser. No. 498,588
Int. Cl.² B65D 55/02, 85/56; A61J 1/00
U.S. Cl. 215—216 **5 Claims**

1. In combination:
a container including (1) a principal hollow body serving as a receptacle and (2) a connected upstanding neck terminating in a rim-defined opening and having closure attachment means formed on the exterior annular surface of said neck for rotational, releasable engagement by

cooperating attachment means formed on a suitable closure,

a closure member including (1) a top wall spanning said rim-defined opening, said top wall being adapted to sealingly contact said rim, (2) a connected depending skirt having attachment means formed on the inner surface of said skirt adapted to rotationally, releasably engage said attachment means on said neck of said container,

said skirt and container each including a cooperatively engageable and disengageable lock abutment, each abutment located in mutual coincident registration with reference to said attachment means and achievement of said sealing contact, and



means for accomplishing purposeful, dextrous, manipulative disengagement of said abutments, said means comprising a lower terminus formed on said skirt, said terminus being relatively more rigid than said skirt proper such that lateral pressure at a point on said terminus, generally diametrically opposite said abutment, will cause lateral deflection of said skirt and disengagement of said lock abutments, whereby rotating disengagement of said attachment means can be initiated.

3,949,894

LAMINATED CONTAINER

Theodore A. Underwood, Cuyahoga Falls, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Jan. 2, 1975, Ser. No. 538,045

Int. Cl.² B23K *1/16*

U.S. Cl. 220—63 A **5 Claims**



1. A laminated container suitable for containing lubricating oil at a temperature in the range of about 150° to about 230°C and characterized when containing lubricating oil at a temperature in the range of about 150° to about 230°C by withstanding the puncture of an impacting 0.50 caliber APM2 service projectile with a minimal escape of oil and withstanding its accompanying hydraulic ram-shock effect without appreciable delamination, said laminated container comprising an oil-impervious rigid container having adhered to its outer surface a laminate of outwardly successive adherent laminae comprising a first rubbery polyfluorohydrocarbon composition lamina having a thickness of about 0.3 to about 0.6 inch adhered to said rigid container with a polyfluorohydrocarbon cement and a second lamina having a thickness of about 0.03 to about 0.12 inch of about four to about eight layers of a flexible, substantially non-extensible textile woven fabric selected from aromatic polyamides and polyaramides coated with a flexible polyfluorocarbon composition, said second lamina adhered to said first lamina with a polyfluorohydrocarbon cement.

3,949,895

EPOXY EXTERIOR COATING FOR LAP-SEAM BEVERAGE CANS

John D. Downs, Bradley, and Andrew Leo Massa, Kankakee, both of Ill., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 420,401, Nov. 30, 1973, Pat. No. 3,888,808, which is a continuation-in-part of Ser. No. 293,635, Sept. 29, 1972, abandoned. This application Feb. 24, 1975, Ser. No. 552,459

Int. Cl.² B65D *7/42*

U.S. Cl. 220—64 **3 Claims**

1. A metal container, exterior coated with a coating composition comprising an inert organic solvent having dissolved therein a thermosetting resin that consists essentially of a polyglycidyl ether of a bisphenol, having a molecular weight of between about 170 and about 200 and an Epoxy Value between about 0.50 and about 0.60, upgraded in molecular weight with a stoichiometric amount of additional bisphenol by reaction at temperatures of between about 215° and about 225°C. for between about 20 minutes and about 30 minutes, forming an upgraded epoxy having a WPE of between about 1600 and about 2000; and said upgraded epoxy being esterified with an unsaturated fatty acid mixture, obtained from tall oil, consisting essentially of, by weight 25 to 55 percent oleic acid, 35 to 65 percent linoleic acid, with the balance essentially being conjugated linoleic acid; esterification being carried out using a weight ratio of upgraded epoxy: fatty acid mixture of between about 65:35 and about 70:30 at temperatures between about 225° and about 250°C. for between about 6 hours and about 8 hours and having a Gardner-Holt Viscosity of between Z_3 and Z_5 at 50 percent solids and an Acid Number below 1.0; said container having seams, said seams being bonded with a nylon adhesive in contact with said coating composition.

3,949,896

SEAMED ARTICLE

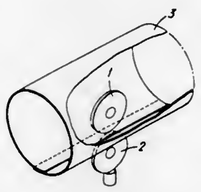
Penelope Jane Vesey Luc, 18, rue Fourcroy, Paris 17, France

Continuation of Ser. No. 190,700, Oct. 20, 1971, abandoned, which is a continuation-in-part of Ser. No. 830,831, June 5, 1969, abandoned. This application July 9, 1974, Ser. No. 486,844

Claims priority, application France, Oct. 23, 1970, 70.50494; Dec. 14, 1970, 70.59366

Int. Cl.² B65D *7/42*

U.S. Cl. 220—75 **8 Claims**



1. A seamed article formed from metal sheet material and having at least one seam disposed along an interface between intimately contacting facing surfaces of juxtaposed portions of metal sheet each having an original grain structure, the seam joining the portions of metal sheet at the interface being a metallurgically homogeneous continuous line weld between the metal portions produced by energy supplied by dynamic rubbing friction applied by an external and independent tool in contact with a surface of at least one of the juxtaposed portions of metal sheet opposite to and adjacent the facing surfaces of the interface thereof while the facing surfaces of the metal portions at the interface are substantially stationary relative to one another, the line weld between the portions having:

i. substantially uniform metallurgical grain characteristics at all points along the weld;

ii. reorientation of the crystallization of the metal of the facing surfaces of the portions at the interface;

iii. an absence at the interface of macroscopic disorientation of the metal grain structure of the type which would be caused by the melting of portions of the metal at the interface; and

iv. through the thickness of the portions of the metal sheet extending from the line weld, the substantial preservation of the original metal grain structure of the portions of metal extending from the interface of the portions.

3,949,897

CLOSURE FOR CONTAINER

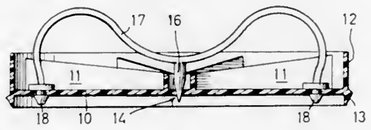
James Anthony Carpenter Shaw, and Eva Shaw, both of 114 Fort Road, Oxley, Queensland, 4075, Australia

Filed Aug. 7, 1973, Ser. No. 386,359

Claims priority, application Australia, Aug. 16, 1972, 0097/72

Int. Cl.² B65D *51/16*

U.S. Cl. 220—231 **5 Claims**



1. A disc-like closure slidable within a container for sealing the same at a level above and adjacent to the contents of the container, including; a closure body in the form of a flat disc integrally formed with an annular peripheral rim the axis of which is perpendicular to the plane of said disc, said rim including a relatively short, downwardly depending skirt, said skirt being formed with an outer annular bead for resiliently engaging the interior of a container body for sealing the closure in the container; an air vent through said disc; a retractable plug to close said vent; a flexible handle attached to said disc to slide the closure upwards in said container; and a connection between said handle and said plug, whereby force on said handle in a direction to raise said closure first retracts said plug from said vent and subsequently raises said closure from within said container.

3,949,898

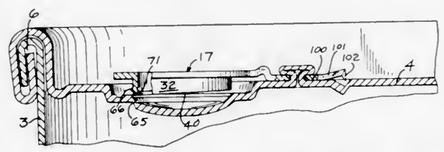
NON-DETACHABLE EASY OPEN FLAP AND TAB ASSEMBLY

Anil U. Patel, Chicago; James V. DePhillips, Bolingbrook, and Harry A. Peyser, Olympia Fields, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 1, 1974, Ser. No. 438,908

Int. Cl.² B65D *41/02*

U.S. Cl. 220—277 **4 Claims**



1. In an easy opening container, an end panel having a closure flap offset below the plane of the panel, a crush score on the panel defining a thin peripheral edge portion about said flap, a tubular element connecting the panel and flap and defining a well, a tubular fitment having an inner edge with means for rupturing the score, said fitment having an axial length greater than the tubular element and fitting thereinto and adapted upon being pressed inwardly to break the score and displace the flap inwardly, means on the tubular element adapted to abut the panel to limit inward movement of the tubular element, said flap having an inwardly displaced concavity and providing guide surface means for engagement by the edge of the fitment for aligning said fitment axially with said crush score whereby during opening of the flap said fitment imposes a fracturing force directly upon said thin peripheral edge of the flap.

3,949,899

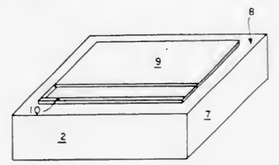
CHILD RESISTANT SLIDING PANEL CONTAINER

M. Neal Jacobs, 11809 Randy Lane, Laurel, Md. 20810, and Richard Mainzer, 2307 Hillman Place, Bowie, Md. 20715

Filed Aug. 15, 1974, Ser. No. 497,692

Int. Cl.² B65D *43/20*

U.S. Cl. 220—346 **2 Claims**



1. A container comprising a case having a sliding panel closure, which is upwardly supported against the interior surface surrounding the perimeter of a rectangular opening through the use of supporting springs, which are composed of a material of specific resiliency and flexibility so as to offer upward support regardless of the degree of downward pressure exerted on said sliding panel, said springs resting on a rigid runner or track which is inwardly projecting from the interior of said container so as to be perpendicular to said springs and to be at a depth so as to offer sufficient support for the said springs in order to maintain a constant upward pressure on the said sliding panel against the said perimeter of the opening in the said container while the system is at rest, also said sliding panel having small tabs protruding downwardly toward the said runners which upon the administration of excessive downward pressure on said sliding panel, said tabs will engage with corresponding notches or holes in the said runners so as to prevent the lateral movement of said sliding panel under these conditions, also a second notch or hole on said runners just beyond said primary holes so as to prevent the lateral movement of said sliding panel under excessive downward pressure in the event that said tabs do not engage in said primary holes, also an upwardly protruding tab on said sliding panel, of sufficient height so as to prevent said sliding panel from being moved laterally beyond a certain point so as to prevent said springs from disengaging from the said runners, also said upwardly protruding tab would be of sufficient height so as to enable the user of said container to grasp and move said sliding panel laterally, also a downwardly protruding barrier extending the entire width of said sliding panel and protruding to a depth approximately equal to the thickness of said sliding panel so as to restrict the lateral movement of said sliding panel in the absence of any downward pressure.

3,949,900

CHEMICAL DISPENSER

William I. Chapel, 1145 Country Club Drive, Warsaw, Ind. 46580

Filed Oct. 23, 1974, Ser. No. 517,177

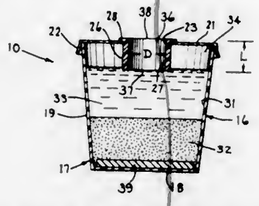
Int. Cl.² E03D *9/02*

U.S. Cl. 222—54 **4 Claims**

1. A dispenser for use with a reservoir of water for permitting a chemical to be dispensed into said body of water, said dispenser comprising:

container means defining therein a compartment which is partially filled with a solid chemical, said compartment being adapted to have water deposited therein for forming a saturated chemical solution within said compartment;

standpipe means mounted on said container means and having an interior opening therethrough which extends through the wall of said container means for providing the sole communication between said compartment and the surrounding reservoir of water, said standpipe means comrising an axially elongated sleevelike member having



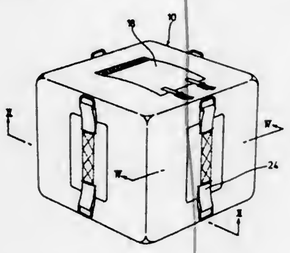
said interior opening of rather large cross-section extending axially therethrough, said standpipe means opening upwardly and having the lower end thereof in communication with said saturated solution; and

said opening as defined by said standpipe means being of substantially uniform cross-section throughout the complete axial length thereof and being completely open at both the upper and lower ends thereof, and the diameter and axial length of said opening being of similar magnitude with said opening having a diameter of at least one-half inch and an axial length of at least one-half inch.

3,949,901
SHIPPING BAG

Shinko Tokita, Tokyo, Japan, assignor to National Marineplastic, Ltd., Tokyo, Japan

Filed Feb. 6, 1975, Ser. No. 547,453
Int. Cl.² B65D *35/22*
U.S. Cl. 222—94 **4 Claims**

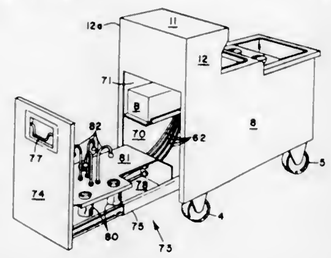


1. A shipping bag for powdered granular material which comprises an outer enclosure of flexible sheet material having an inner wall defining a chamber of rectangular cross section, said inner wall having four corner portions and planar sections intermediate said corner portions, the diametric distance between opposed planar sections being less than the diametric distance between opposed corner portions, an inner cylindrical casing of the same material as said outer enclosure and being coaxially disposed therewithin and joined at its circumference in sealing relation only to said planar sections of said inner wall intermediate said corner portions thereof leaving thereby four corner spaces each bounded by a corner portion and that part of said inner casing, forming a partition, spaced from the corner portion, each partition being formed with openings to enable passage of granular material, when present in the inner casing, from the inner casing through said openings into said corner portions, a bag inlet communicating with an upper end of the inner casing enabling the charging of a powder material thereinto, and a bag outlet communicating with a bottom end of said inner casing enabling discharge of a powder material therefrom, covering means for covering said inlet, and a closure means for closing off said outlet.

3,949,902
PORTABLE DISPENSING BAR

Frank B. Thompson, 719 Tammy Drive, San Antonio, Tex. 78216

Filed June 11, 1973, Ser. No. 369,111
Int. Cl.² A47J *31/40*
U.S. Cl. 222—129.1 **8 Claims**



1. A portable bar assembly for serving mixed drinks consisting of a unitary cabinet structure mounted on a plurality of casters, said cabinet structure having a front wall, a back wall, parallel side walls having upward extensions toward the back of the cabinet, a top wall extending between the upward extensions and a plurality of liquid dispensing units mounted inside the cabinet structure between said upward extensions and underneath said top wall, said liquid dispensing units having measuring means for selectively dispensing a measured quantity of liquid for said mixed drink, said liquid being contained in reservoirs stored on a slidable tray connected to a portion of said back wall underneath said dispensing units, flexible tubing means connecting said reservoirs to said measuring means;

said unitary cabinet structure has an offset storage surface between said side walls and extending forwardly from said dispensing units;

said dispensing units including a liquid pump, a motor, a dispensing nozzle, a push bar operatively connected to a switch for energizing said motor, and a rechargeable battery pack located in said storage compartment for providing power to each of said motors.

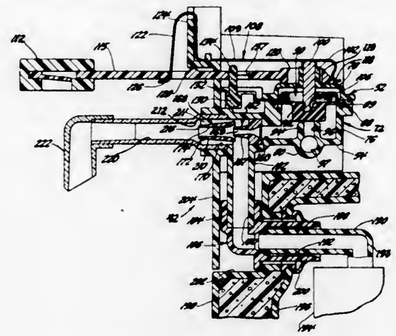
3,949,903
WATER AND BEVERAGE CONCENTRATE DISPENSER

Louis D. Benasutti, Fairborn, and Jost S. Sucro, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 413,691, Nov. 7, 1973, abandoned. This application Sept. 12, 1974, Ser. No. 505,452
Int. Cl.² B67D *5/56*
U.S. Cl. 222—129.2 **6 Claims**

1. In a beverage concentrate dispenser, a discharge valve casing including a valve chamber having an inlet for connection to a source of water supply under pressure, a nozzle passage extending from said valve chamber and communicating with a mixing tube, said mixing tube having a first enlarged bore joined to a second reduced downstream bore by means of a tapered throat section, said first enlarged bore having enclosed therein in axially aligned fashion a primary Venturi nozzle whereby the flow from said nozzle passage may enter said Venturi nozzle, a beverage concentrate feed tube in communication with said enlarged bore, said primary Venturi nozzle having the downstream portion of its outer peripheral

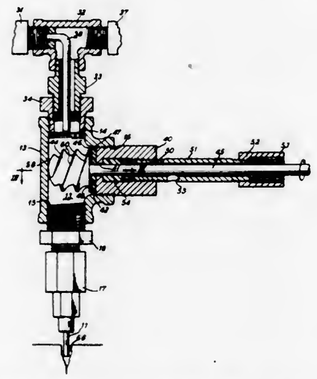
surface reduced in diameter relative to said first enlarged bore, a secondary straight jet nozzle disposed in spaced relation within said enlarged bore and coaxial with said primary Venturi nozzle and downstream therefrom, said secondary straight jet nozzle having its outer peripheral surface generated in the shape of a cone converging toward its downstream exit orifice, said secondary nozzle outer surface being reduced in diameter relative to said first enlarged bore whereby an annular flow channel in the form of one-half of a cone section is defined therebetween, said primary Venturi nozzle having its downstream end telescoped in spaced relation within the entrance of said secondary nozzle defining a first stage beverage concentrate aspirator in communication with said concentrate feed tube, whereby a first stage primary mixing of concentrate and water is achieved in the passage of said secondary jet nozzle, said secondary jet nozzle having its exit orifice located in the annular area of said tapered throat section thereby forming a second stage concentrate aspirator in conjunction with said jet nozzle which is in communication with said concentrate feed tube via said annular flow channel, such that a secondary mix of concentrate with said primary water-concentrate mix is achieved in said second reduced downstream bore for dispensing the beverage into a container from the exit of said second reduced bore.



3,949,904
EPOXY GUN

Carl E. Hendrickson, P.O. Box 81, Sheridan, Wyo. 82801

Filed June 7, 1974, Ser. No. 477,350
Int. Cl.² B01F *7/08*
U.S. Cl. 222—135 **8 Claims**

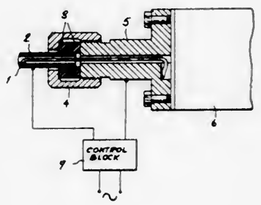


8. A portable device for mixing two materials in a desired proportion and dispensing the materials under pressure from a nozzle, comprising a housing having a mixing chamber in communication with an inlet port, an outlet port and an opening intermediate said ports; a nozzle attached to the outlet port; a separate container for each of the two materials; separate passages connecting each container to the inlet port; means for creating a pressure flow of each of the materials from its container through its passage, the mixing chamber and out of the nozzle; a fitting having an axial passage disposed in the opening with a flat end surface facing the mixing chamber; a mixing element attached to an end of a shaft, said shaft being supported for rotation in the axial passage of the fitting with the mixing element extending into the mixing chamber; means for rotating said shaft; and seal means surrounding the shaft between the flat end and the mixing element for preventing flow of the material along said shaft, said seal means including a metal washer and a plastic washer telescopically received on the shaft; said mixing element having groove means for mixing the material during rotation of the shaft and for coacting with the material to create a force to urge the element against the seal means so that as the pressure of the material in the chamber increases, the force increases to urge the element tighter against the seal means.

3,949,905
DEVICE FOR THE PRODUCTION OF ARTICLES WITH A COMPACT SMOOTH SKIN AND A CELLULAR CORE FROM POLYMER MATERIALS

Ivan Dimov Nikolov; Stefan Georgiev Semerdjiev; Dragan Iliev Nenov, and Nikolay Tihomirov Popov, all of Sofia, Bulgaria, assignors to Institute po Metaloznanie i Technologia na Metallte, Sofia, Bulgaria

Filed June 5, 1974, Ser. No. 476,600
Int. Cl.² B29F *1/03, 1/08*
U.S. Cl. 222—146 HE **1 Claim**



1. An apparatus for the injection molding of an article with a compact smooth skin and a cellular core which comprises:

a. a nozzle comprised of a housing and a tip mounted in front of said housing, said housing and said tip forming an axial passage running throughout their combined length;

b. an elongated electric heating element located co-axially within and throughout the passage;

c. means for electrically insulating said housing from said tip;

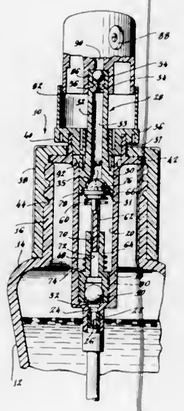
d. means for forcing a thermoplastic molding material through said passage, said element being connected at one end to said tip and at the other end to said housing; and

e. a source of electric current connected across said tip and said housing for supplying current to said electric heating element, said tip having an annular flange, said insulating means including a pair of insulating rings flanking said flange and a nut engaging one of said rings and threaded onto said housing.

3,949,906
LIQUID DISPENSING PUMP SELECTIVELY SEALABLE AGAINST LEAKAGE

Edward A. Pettersen, Waterbury, and Paul M. Kotuby, Naugatuck, both of Conn., assignors to The Risdon Manufacturing Company, Naugatuck, Conn.

Filed Mar. 19, 1975, Ser. No. 559,894
Int. Cl.² B67D 5/32
U.S. Cl. 222—153 8 Claims



1. In a finger operated plunger pump adapted for mounting in a container for dispensing liquid therefrom, wherein the pump includes a housing and mounting means for securing it in the mouth of the container, a pumping chamber defined by the housing and a hollow plunger telescopically received with a piston fit in the chamber for reciprocation therein and for rotation relative to said housing about the axis of said housing, said housing and plunger having inlet and outlet flow passages, respectively, and check valve means located therein to prevent return flow of liquid therethrough, the improvement in selectively operable seal means for disabling pump operation and preventing leakage through the pump during periods of non-use which comprises:

a valve seat formed about one of said inlet and outlet passages within said pump chamber,

stopper means disposed in said chamber for cooperation with said valve seat to block the flow of liquid, said stopper means having a stem, and a base member within which said stem is telescopically received, one of said stopper means and valve seat being non-rotatively supported in said housing and the other in said plunger, whereby said stopper means and valve seat can be rotated relative to each other through rotation of said housing and plunger,

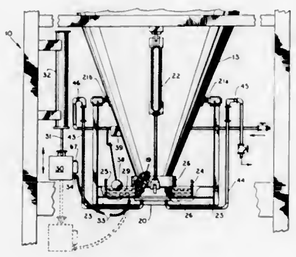
means for urging at least a portion of said stopper means against said valve seat, and

detent means on said stopper means and valve seat which are registrable in one rotated angular position of said stopper means and seat and non-registrable in another, said detent means producing a camming action on rotation of said stopper means and seat from the registrable to the non-registrable position to cause axial separation of said stopper means from said seat to unblock said flow passage.

3,949,907
STORAGE BIN WITH LIQUID SEALED DISCHARGE OPENING

Erbie Gail Mize, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Filed Dec. 23, 1974, Ser. No. 535,286
Int. Cl.² B67D 3/00
U.S. Cl. 222—188 8 Claims



1. Material storage bin with airtight discharge opening, comprising:

storage bin means for receiving material to be stored;

said storage bin means having a material discharge opening;

gate means operatively associated with said storage bin means for selectively effecting substantial material flow closure of said material discharge opening;

said gate means being selectively operative either to a closed position for effecting said substantial closure of said material discharge opening, or to an open position for opening said material discharge opening;

means defining a liquid retaining region in surrounding relation with said material discharge opening and having an uppermost region in elevated relation thereto;

liquid supply means operative independently of said gate means either to admit said liquid into said liquid retaining region in quantity sufficient to immerse said material discharge opening, or to withdraw said liquid from said liquid retaining region; and

control means operatively associated with said liquid supply means to cause said liquid supply means to admit liquid into said liquid retaining means only at selected times when said gate means is in said closed position.

3,949,908
APPARATUS AND METHOD FOR DISTRIBUTING PARTICULATE MATERIAL OVER A ZONE

Lloyd A. Baillie, Homewood, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

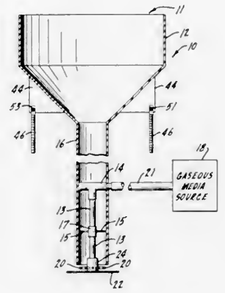
Filed Oct. 25, 1974, Ser. No. 518,129
Int. Cl.² B67D 5/24
U.S. Cl. 222—193 15 Claims

1. Apparatus for distributing particulate material over a zone comprising:

a supply hopper, having inlet means and outlet means, for holding particulate material;

a deflection plate located adjacent to and below the end of said outlet means away from said supply hopper to deflect the direction of at least a portion of said particulate material flowing through said outlet means, provided that the cross-sectional area of said deflection plate is larger than the cross-sectional area of the end of said outlet means away from said supply hopper and that said deflection plate extends beyond the vertical projection of said outlet means in substantially all directions; and

a plurality of conduits in fluid communication with at least one source of gaseous media through which gaseous media is caused to flow, said conduits extending into and terminating in the space between said outlet means and said deflection plate to thereby cause at least a portion of

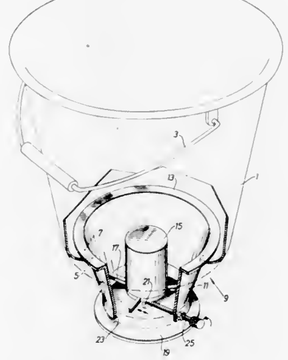


said particulate material to be propelled in a plurality of directions beyond said deflection plate.

3,949,909
ANIMAL FOOD DISPENSING APPARATUS

Karl Thore Sterner, Fack, S-781 08 Borlange 8, Sweden

Filed Oct. 21, 1974, Ser. No. 516,590
Int. Cl.² B65G 65/70; A01K 39/014
U.S. Cl. 222—199 17 Claims

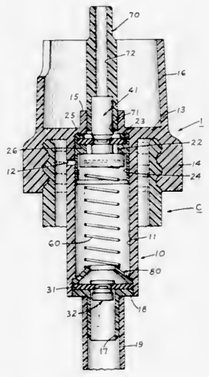


1. An apparatus for dispensing animal food in powder, granular or lump form comprising: a container having a top, a side wall, and a bottom, and an opening in the bottom thereof, an insert detachably arranged and suspended in said opening and extending therebelow, said insert having an opening in the bottom thereof communicating with the food in the container, said insert including a sleeve, a vibrator within and at least partially surrounded by said sleeve, said sleeve defining an upper sleeve opening and a lower sleeve opening, a vibrating portion fixedly mounted to said vibrator, a food dispensing plate mounted to said vibrating portion, said food dispensing plate being located at a predetermined distance beneath said lower sleeve opening, the area of said plate exceeding the area of said lower sleeve opening, so that the food on the plate will be dispensed over the peripheral edge thereof only when said vibrator is activated.

3,949,910
DISPENSING PUMP

John Richard Focht, Yonkers, N.Y., assignor to Precision Valve Corporation, Yonkers, N.Y.

Continuation-in-part of Ser. No. 420,234, Nov. 29, 1973, abandoned. This application Aug. 12, 1974, Ser. No. 496,883
Int. Cl.² B67D 5/42
U.S. Cl. 222—321 18 Claims



1. A dispenser pump which comprises:

a housing including a cylindrical pump chamber;

an outlet valve including an outlet valve body with an upstanding tubular valve stem having an axial product passage and a valve orifice extending transversely through the valve stem into communication with the axial product passage and an annular flexible elastomeric valve orifice sealing gasket, the inner margin of said gasket gripping said valve stem to normally sealingly occlude said valve orifice;

a reciprocable piston including a piston body and said annular gasket, said piston body having a tubular skirt slidingly received in said pump chamber, said annular gasket extending transversely across said piston body and being sealingly engaged with said piston body;

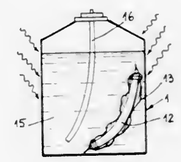
inlet check valve means for controlling flow of product into said pump chamber; and

means to bias said piston and outlet valve body upwardly, downward axial movement of said valve stem flexing said annular gasket out of occlusion with said valve orifice and moving said piston in said pump chamber.

3,949,911
PRESSURIZABLE CONTAINER BY HEAT ACTIVATION

Bruno P. Morane, Paris, France, assignor to Societe Anonyme dite: L'Oreal, Paris, France

Filed May 6, 1974, Ser. No. 467,293
Claims priority, application France, May 7, 1973, 73.16344
Int. Cl.² B65D 83/14
U.S. Cl. 222—386.5 8 Claims



1. Container for holding a fluid under pressure which comprises an outer jacket equipped with at least one valve for

dispensing the stored fluid, a flexible separate gas-tight hermetically sealed pouch within said jacket, a cartridge within said pouch which is capable of sustaining only a predetermined internal pressure therewithin, said cartridge being initially closed and filled with a propellant which is in liquid form at said predetermined pressure but is gaseous at room temperature and atmospheric pressure, said propellant being expansible in response to the application of heat so as to produce a pressure within said cartridge above said predetermined pressure which causes the release of said propellant from said cartridge and results in at least partial gasification of said propellant which then expands said pouch to fill the entire free internal space within the pouch under a pressure sufficient to eject the fluid in said jacket through the valve on the container when said valve is opened.

3,949,912

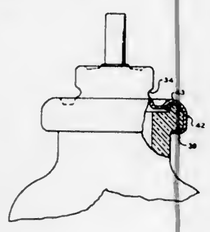
DISPENSER HAVING A STEPPED MOUNTING CUP

Philip Meshberg, 85 Old Oaks Road, Fairfield, and Emil David Meshberg, 2625 Park Ave., Apartment 3J, Bridgeport, both of Conn. 06604

Continuation-in-part of Ser. No. 415,218, Nov. 12, 1973, which is a continuation-in-part of Ser. No. 240,545, April 3, 1973. This application Aug. 5, 1974, Ser. No. 495,032

Int. Cl.² B65D *83/00*

U.S. Cl. 222—394 **25 Claims**



1. A container adapted for use in combination with a preformed dispenser closure assembly having a sealing member therein comprising:

A. a container having

a. an outlet end with a recessed central opening, having a wall which is substantially vertical and

b. an enlarged lip of predetermined maximum outer diameter surrounding the outlet end and having

1. a substantially horizontal upper surface portion which is a sealing surface adjacent the substantially vertical wall of the recessed central opening forming an annular sealing edge therebetween,

2. a convex, intermediate, quarter-circle surface portion of a predetermined radius smaller than the predetermined radius of a cooperating concave quarter-circle portion of the overlying closure assembly when measured in a vertical plane passed through the longitudinal axis of the container, which convex surface is a sealing surface contiguous with the horizontal upper portion throughout the entire circumference of the lip and connecting the upper portion and the portion having the predetermined outer diameter,

3. a vertical lower surface portion contiguous with the convex intermediate surface and which is the portion of predetermined outer diameter and extends a predetermined distance parallel to longitudinal axis of the container, and

4. a decreasing diameter portion which together with the vertical lower surface portion provides a corner for securely mounting the closure assembly to the container, the distance from the annular sealing edge to a point on the decreasing diameter portion measured in a vertical plane passed through the longitudinal axis of the container being uniform throughout the entire circumference of the lip, whereby the recessed opening, the annular sealing edge and at least the upper and intermediate sealing portions of the lip coact with the preformed dispenser closure assembly to provide a channel continuously diverging inwardly for constraining the sealing member therebetween and flowing the sealing member inwardly toward the central opening.

3,949,913

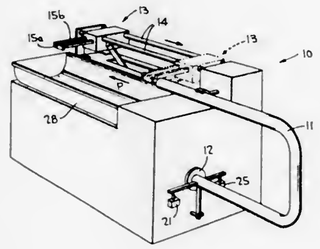
HOSIERY HANDLING SYSTEM WITH U-SHAPED FORM

Gus T. Smith; Clifton Gregory, both of Paducah, Ky., and Lester W. Campbell, Claremont, N.C., assignors to Marvel Specialty Company, Hickory, N.C.

Filed Nov. 26, 1974, Ser. No. 527,441

Int. Cl.² A41H *43/00*

U.S. Cl. 223—43 **11 Claims**



1. Apparatus for handling hosiery comprising:

a U-shaped tubular form for receiving a string of hosiery,

bearing means supporting said form for oscillation about a substantially fixed axis,

means operatively connected to said form for providing suction to said tube to turn said hosiery,

means for pulling, separating and stacking said hosiery from the string after said turning, and

control means responsive to oscillation of said form for controlling said suction and said pulling and separating means, whereby said hosiery may be turned and separated from a string of maximum length and in response to the movement of said form.

3,949,914

SIZE MARKER ASSEMBLY

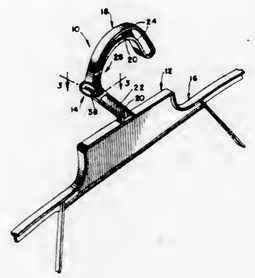
Henry D. Ostroll, Jackson Heights, N.Y., assignor to J. C. Penney Company, Inc., New York, N.Y.

Filed Feb. 7, 1975, Ser. No. 548,449

Int. Cl.² A47J *51/098*

U.S. Cl. 223—85 **3 Claims**

1. In combination, a clothing hanger means having a hook portion; and a marker device which includes a marking surface adapted to carry identifiable indicia, and clasp means protruding from one side of the marking surface for detachable connection to the hook portion, said hook portion including retaining means, said retaining means includes at least one laterally protruding stop means which extends along at least a portion of said hook portion and is arranged for restricting



uncontrolled downward movement of the marker device along the hook portion.

3,949,915

WAIST ATTACHMENT FOR HANDBAG INCLUDING SHOULDER BAG

Edna K. Burhans, 1809 Brickell Ave., Miami, Fla. 33129

Filed Oct. 2, 1974, Ser. No. 511,181

Int. Cl.² A45C *1/04*

U.S. Cl. 224—26 K **6 Claims**

1. A safety attachment for securement to a person's body and for releasably anchoring a handbag, purse or shoulder bag to that person in a manner to foil a purse snatching attempt, said attachment comprising a housing defining a receptacle opening in a downward direction and closed at its upper end to the exclusion of a small diameter opening, an elongated flexible anchor member slidably received through said opening with a first end portion of said anchor member disposed within said receptacle and a second end portion disposed outwardly of said receptacle, each end portion of said anchor member including means defining an enlargement thereon incapable of being passed through said opening, said receptacle including anchor means for anchoring the receptacle to a person's body, one side wall of said receptacle including a first anchor element, the second end portion of said anchor member including a second anchor element releasably anchorable to said first anchor element, the first end portion of said anchor member including releasable clip means for releasably engaging a predetermined anchor point on an associated purse, handbag or shoulder bag, said first anchor element being supported from a lower portion of said receptacle, and the length of said anchor member being such that when said anchor elements are engaged with each other said clip means will be retracted upwardly into the interior of said receptacle and when said second anchor element is released from engagement with said first anchor element and the enlargement on said second end portion is engaged with the portions of said receptacle defining said small diameter opening said clip means may be downwardly withdrawn from the open lower end of said receptacle, said anchor means including a belt engageable clip for removable support of said attachment from the belt of the user.

3,949,916

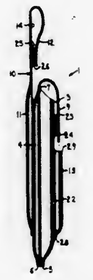
TOBACCO POUCH AND ACCESSORY CARRIER

Robert E. Yount, 11108 W. 70th Terrace, Shawnee, Kans. 66203

Filed Nov. 29, 1974, Ser. No. 528,282

Int. Cl.² A45C *11/00*

U.S. Cl. 224—26 R **3 Claims**



1. A tobacco pouch carrier combination comprising:

a. a rear member having opposite side edges and first and second end edges;

b. a front member overlying said rear member and having opposite side edges and first and second end edges in substantially registering relation with respective opposite side edges and first and second end edges of said rear member, said opposite side edges of said front member each being secured to a respective one of the opposite side edges of said rear member, one of said first and second end edges of said front member having spaced portions thereof secured to respective spaced portions of a respective one of said first and second end edges of said rear member to define a passage between said respective end edges of said front and rear members and an entrance between the other end edges of said front and rear members;

c. an elongated extension on said rear member defining a flap adapted to be in covering relation with a portion of said front member;

d. cooperating fastening means on facing surfaces of said extension of said rear member and on said front member for releasably closing the entrance between the other end edges of said front and rear members;

e. an elongated strap having one end portion thereof secured to said rear member and extending beyond the other end edges of said front and rear members, said strap having an other end portion thereof adapted to be positioned in facing relation with an intermediate portion of said strap to define a loop, said one end portion of said strap being secured to said rear member in a manner to define an open top pocket;

f. second cooperating fastening means on the facing portions of said strap for releasably retaining same in the loop defining position to receive a support member therein;

g. a second front member having opposite side edges and first and second end edges, said opposite side edges of said front member each being secured to an outwardly facing surface of said first named front member, one of said first and second end edges of said second front member being secured to the outwardly facing surface of said first named front member to define a compartment having an entrance between the other end edge of said sec-

ond front member and the outwardly facing surface of said first named front member; and

h. a flexible container removably received between said rear member and said front member and having at least one entrance and entrance closing means for selectively securing same in a closed position.

3,949,917

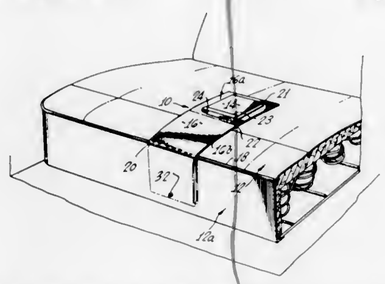
AUTOMOBILE NOTE PAD ASSEMBLY

John R. Mann, 19764 Corbin Drive, Chatsworth, Calif. 91311

Filed Oct. 11, 1974, Ser. No. 514,006

Int. Cl.² B42D *1/00*

U.S. Cl. 224—29 D **3 Claims**



1. The combination of a note pad assembly and a vehicle seat cushion having a seating surface, a frontal surface, and an upper frontal edge where said seating surface and frontal surface merge, which comprises:

an elongated backing sheet of sufficient thinness and flexibility to be readily folded along a line intermediate the ends of said sheet;

a first attachment means at one end of said backing sheet pivotally attaching the back sheet to said upper frontal edge of said vehicle seat cushion;

a note pad having a length less than half the length of said backing sheet

a second attachment means for mounting said note pad onto the outer surface of said backing sheet when the backing sheet is disposed on said seating surface and onto the outermost portion of said backing sheet adjacent its other end; and

a third attachment means, mounted onto said backing sheet and said frontal surface, for attachment of said backing sheet to the frontal surface of said vehicle seat cushion when said backing sheet and said note pad attached thereto is folded over along said line intermediate the ends thereof and said backing sheet is further rotated about said first attachment means to confront said frontal surface of said vehicle seat cushion to stably mount said note pad immediately adjacent said frontal surface of said vehicle seat cushion.

3,949,918

MACHINE FOR DISPENSING UNIFORM LENGTHS OF THICK PLASTIC FILM

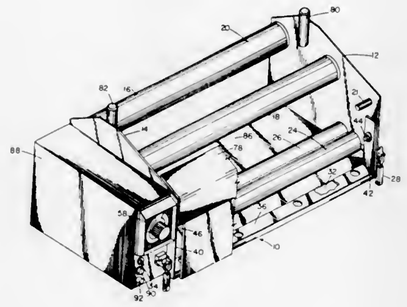
Jerold Julius Golner, Lowell, and Russell Brown Strout, Winchester, both of Mass., assignors to Borden, Inc., Columbus, Ohio

Filed Aug. 5, 1974, Ser. No. 494,623

Int. Cl.² B26F *3/02*

U.S. Cl. 225—11 **2 Claims**

1. In a machine for dispensing plastic film in premeasured lengths, a frame having a base and two vertical side walls; two support rolls with shafts journalled and rotatably mounted between the two side walls, said two support rolls being parallel in the horizontal plane and positioned to support a roll of packaging film; two nipper rolls with shafts jounalled and mounted between the two side walls, said nipper rolls being parallel in the horizontal plane and at least one of the nipper rolls being power driven, said nipper rolls being positioned to draw film from the film roll supported on the support rolls; a fixed cut-off knife horizontally mounted between the two side walls and positioned to be contactable with film drawn through the nipper rolls; a knife guard co-extensive with said knife and mounted on a pair of opposed arms, one arm being at each end of said guard and pivotably mounted to its adjacent side wall to cover and uncover the blade; an eccentric pin mounted on the frame rotated by the swinging of the guard away from the cutting edge of the blade; a push-rod that transmits the force from the movement of said eccentric pin to a time delay switch; a time delay switch mounted on the



frame which when activated by the movement of the pin and push-rod transmits a signal after a preset period of time; a timer mounted on the frame activatable by the signal from the time delay switch which electric timer provides an electric current for a preset length of time; an electric motor mounted on the frame and electrically connected to said electric timer which motor runs during the time that the current is supplied to it, the time being correlatable with the number of revolutions that the motor turns; a mechanical connection between the motor and at least one of the nipper rollers providing for a translation of motor rotation into rotation of the nipper roller.

3,949,919

SELF-ALIGNING CAPSTAN BEARING

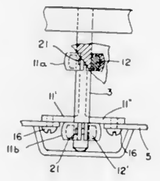
Yoshiyuki Takei, Iwaki, Japan, assignor to Alps Motorola, Inc., Tokyo, Japan

Filed Oct. 18, 1974, Ser. No. 516,027

Claims priority, application Japan, Oct. 23, 1973, 48-119185

Int. Cl.² B65H *17/20*; **F16C** *23/04, 23/08, 35/12*

U.S. Cl. 226—194 **7 Claims**



1. A bearing mounting assembly for use in a cartridge-type tape player device having a tape player chassis, including in combination:

a capstan shaft having spaced first and second capstan bearings for driving the tape in the cartridge

said first and second capstan bearings each having an outer convex surface thereon, each of said first and second bearings receiving said capstan shaft for exposing said shaft to the tape in the cartridge, and

bearing support means mounted to the chassis and having a pair of parallel extensions thereon, each of said extensions receiving and holding one of said first and said second capstan bearings to provide a self-aligning bearing structure for mounting said capstan shaft within the player chassis to hold said shaft in operative relationship with respect to the tape in the cartridge.

3,949,920

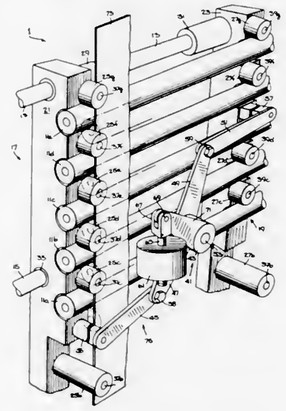
FABRIC ALIGNMENT APPARATUS

William C. Habert, Grosse Pointe Farms, and Philip A. Phillips, Detroit, both of Mich., assignors to Uniroyal Inc., New York, N.Y.

Filed Aug. 1, 1974, Ser. No. 494,264

Int. Cl.² B65H *23/32*

U.S. Cl. 226—198 **12 Claims**



1. Apparatus for adjusting a strip of fabric moving longitudinally in a first plane transversely relative to a longitudinally extending reference plane which is orthogonal relative to said first plane comprising:

first and second longitudinally extending carriage means supported on said frame for transverse movement;

control means coupled to said first and second carriage means for simultaneously and equally moving said carriage means toward and away from each other and said reference plane wherein said control means comprises:

a rotatable shaft, the axis of rotation thereof being perpendicular to said first plane; and

first and second linking means connected between said shaft and said first and second carriage means, respectively; and

bias means coupled to said control means for continuously urging each of said carriage means into contact with one side edge of said strip for transverse adjustment thereof.

3,949,921

FASTENING GUN

Jacques Brack, Nyon, Switzerland, assignor to Olin Ski A.G., Oberhunenberg, Switzerland

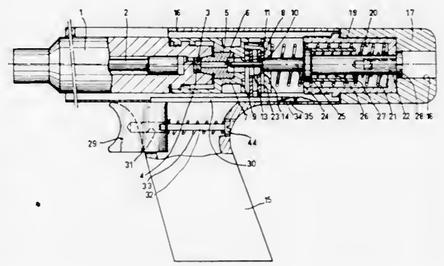
Filed July 30, 1974, Ser. No. 493,641

Claims priority, application Switzerland, July 9, 1973, 11523/73

Int. Cl.² B25C *1/18*

U.S. Cl. 227—9 **4 Claims**

1. A fastening gun of the type in which a striker causes the ignition of a charge, said gun including means for holding a charge, a striker assembly moveable between a fired position and a cocked position, means urging said firing pin toward its fired position, a locking member including a bore and moveable in a direction transverse to the direction of movement of said striker assembly between a locking and an unlocking position, said striker assembly being slidable in said bore, means on said striker assembly for engaging said locking member when said locking member is in said locking position, means for biasing said locking member into its locked position, a trigger member mounted remote from said locking member, an elongated rod member attached to and extending from said trigger member toward said locking member, and fixed ramp means mounted in said gun and including an inclined surface for cooperating with the free end of said elongated rod member to raise said free end to engage said locking member and move it from its locking position to its unlocking position upon actuation of the trigger member.



3,949,922

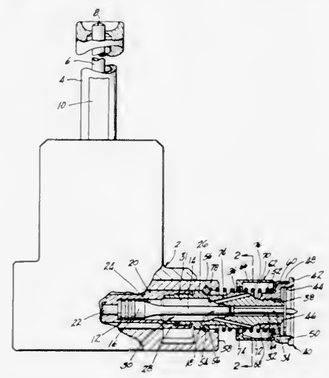
POWDER-ACTUATED TOOL

Elmer R. Hodil, Branford, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 494,663, Aug. 5, 1974. This application Apr. 28, 1975, Ser. No. 572,048

Int. Cl.² B25C *1/14*

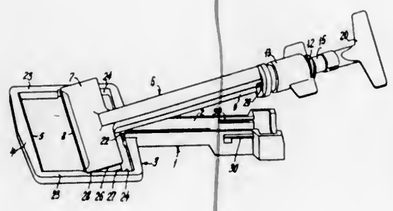
U.S. Cl. 227—10 **8 Claims**



1. In a powder actuated tool, a housing, a barrel assembly mounted in said housing and having a portion extending forwardly therefrom and being moveable between a rearward firing position and a forward position, a bore in said barrel assembly, a fastener driving member mounted in said bore for movement between a rearward driving position and a forward driven position, a muffler member surrounding said barrel assembly forwardly of and separate from said housing and forming a chamber between the exterior surface of said barrel assembly and said muffler member, and means for bleeding

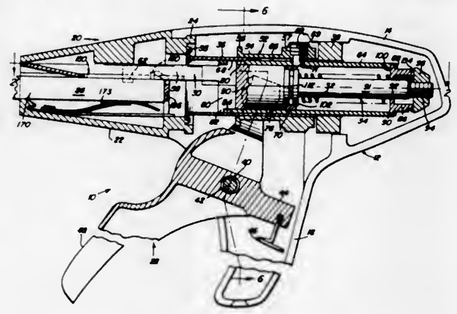
gases generated by the powder charge upon actuation of the tool from said bore to said chamber.

3,949,923
SURGICAL SUTURING INSTRUMENT
Ernest Mikhailovich Akopov, Dubninskaya ulitsa, 61, kv. 88; Nikolai Nikolaevich Kapitanov, 8 ulitsa Oktyabrskogo polya, 5, kv. 9; Alexei Alexeevich Strekopytov, ulitsa Vsevoloda Vishnevskogo, 10, kv. 67; Evgenia Sergeevna Ogoltsova, Rogozhsky val, 13, korpus 3, kv. 14, and Alexandr Ilich Paches, ulitsa Medvedeva, 12/6, kv. 5, all of Moscow, U.S.S.R.
Filed June 5, 1974, Ser. No. 476,558
Claims priority, application U.S.S.R., July 26, 1973, 1954520
Int. Cl.² B25C 5/02
U.S. Cl. 227—19 8 Claims



1. A surgical instrument for suturing tissues and organs with metal staples, comprising:
a supporting body with a longitudinal slot;
a flat frame extending from one end of said supporting body and having a supporting jaw disposed transversely with respect to said slot, said supporting jaw having a flat face facing said slot, said flat face having depressions for the legs of said staples to be bent;
a stapler body disposed in said slot of said supporting body and attached thereto for reciprocating longitudinal movement therein, said stapler body having a head at one end thereof toward said supporting jaw; a magazine for said staples disposed within said head of said stapler body toward said supporting jaw;
a staple ejector attached movably to said stapler body and adapted to reciprocate longitudinally in said stapler body for ejecting staples from said magazine;
an actuator means for said stapler body connected at the opposite end of said stapler body from said head, for controlling the longitudinal movement of said stapler body in said slot of said supporting body toward and away from said supporting jaw;
an actuator of said staple ejector connected at the end of said stable ejector farthest from said staple magazine for reciprocating said staple ejector relative to said magazine; said slot in said supporting body being open in the direction perpendicular to the plane of said flat frame of said supporting body whereby said stapler body with said staple ejector and said staple magazine can be inserted inside and removed from said slot in said direction, thereby enabling the placement of said supporting jaw of said supporting body, separated from said stapler body, in a difficulty accessible suturing position and the subsequent attachment of said stapler body to said supporting body in said direction.

3,949,924
SURGICAL STAPLING INSTRUMENT
David Thomas Green, Norwalk, Conn., assignor to United States Surgical Corporation, New York, N.Y.
Filed Oct. 18, 1974, Ser. No. 516,111
Int. Cl.² B25C 5/02
U.S. Cl. 227—132 14 Claims

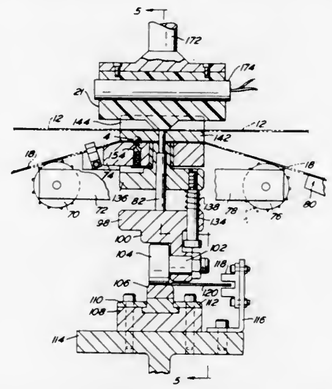


1. A manually powered surgical stapling instrument for applying sterilized staples to the disunited skin or fascia of a patient for affecting a joining of the skin or fascia, the instrument adapted to associate with a staple-carrying cartridge having anvil means at one end thereof and adapted to house a plurality of staples therein, a pusher element slidably mounted therein for advancing said staples in said cartridge, for ejecting said staples from said cartridge and for forming said staples around said anvil means, said surgical stapling instrument comprising: a main body portion; means for mounting said staple-carrying cartridge on said main body portion; pusher-activating means mounted to reciprocate in said main body portion for driving said pusher element forward to advance, eject and form said staples; trigger means for transmitting a manually applied force to said pusher-activating means to advance said pusher-activating means and thereby advance said staples; and impact means powered by said trigger means for impacting said pusher-activating means after said pusher-activating means is advanced by said manually applied force to further advance said pusher-activating means and thereby eject and form said staples.

3,949,925
OUTER LEAD BONDER
Alan S. Keizer, Huntingdon Valley, and Hugh R. Harris, Levittown, both of Pa., assignors to The Jade Corporation, Huntingdon Valley, Pa.
Filed Oct. 3, 1974, Ser. No. 511,835
Int. Cl.² H05K 3/32
U.S. Cl. 228—5.5 6 Claims

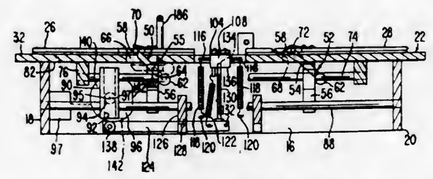
1. Apparatus for thermocompression bonding of outer leads within a lead frame to inner leads on a film carrier, said inner leads having previously been bonded to a semi-conductor chip, comprising:
means for sequentially advancing a continuous strip of outer lead frames to position individual lead frames at a thermocompression bonding site;
means for sequentially advancing a continuous strip of film carrier supporting the inner leads and the individual semiconductor chips bonded thereto to bring individual sets of inner leads and a chip to the bonding site in alignment with the outer leads of the outer lead frame for mating engagement of individual ones of said inner and outer leads for thermocompression bonding to each other;
lead frame guide means for laterally positioning the strip of outer lead frames at the bonding site;
a die holder and die supported in juxtaposed relation to define a slot through which the film carrier is advanced,

said slot providing means to precisely, laterally align the inner leads on said film carrier strip at the bonding site;
a reciprocable punch for shearing the film carrier at the bonding site and displacing the chip and leads into mating engagement with the outer leads at the bonding site;
a reciprocable bonding tool for movement to the bonding site while said inner leads are held in engagement with the outer leads and thermocompression bonding individual ones of said engaged inner and outer leads to each other;



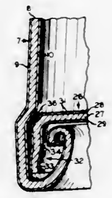
pilot pin means reciprocable with said punch for engaging said lead frame strip in holes therein and fixing said outer lead frame during bonding; and
longitudinal alignment means for accurate longitudinal alignment of the film carrier at the bonding site including reciprocable pawls for engaging the film carrier in sprocket holes, means for biasing said film carrier in the direction opposite to the direction of advance by the advancing means, and said advancing means including means to overadvance the film carrier and then release it so that the biasing means moves it back toward the bonding site until it is engaged by the pawls.

3,949,926
APPARATUS FOR INCREMENTAL MOVEMENT OF DIE FRAME
John C. Diepeveen, 1737 Kimberly Drive, Sunnyvale, Calif. 94087
Division of Ser. No. 438,137, Jan. 30, 1974, which is a division of Ser. No. 297,506, Oct. 13, 1972, Pat. No. 3,840,163. This application Mar. 3, 1975, Ser. No. 554,825
Int. Cl.² B23K 37/04
U.S. Cl. 228—44.1 A 8 Claims



1. Apparatus for incrementally advancing a die support frame having a plurality of openings therethrough comprising: a support; means on said support for defining a track over which a die support frame can move; a pawl for entering any one of said frame openings; means on one side of the track for mounting the pawl for pivotal movement in a plane transverse to said track; means coupled with said pawl for biasing the same across the track; and means coupled with said mounting means for reciprocating the latter and thereby said pawl to cause the latter to enter a frame opening and to move the frame as the pawl is moved in one direction and to cause the pawl to exit from a frame opening as the pawl moves in the opposite direction, wherein said track defining means includes a plate having an opening therein, and wherein is included a heater element, means mounting said heater element in said opening in a position in heat exchange relationship to said frame when the latter is disposed on said track, and means defining a heat shield adjacent to said heater element.

3,949,927
IMPACT RESISTANT CONTAINER BOTTOM STRUCTURE
Ernest L. Smith, Kansas City, Mo.; Wayne E. Maw, Freeport, Ill., and George E. MacEwen, Kansas City, Mo., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Mar. 21, 1975, Ser. No. 560,608
Int. Cl.² B65D 5/40, 5/56
U.S. Cl. 229—14 BL 14 Claims

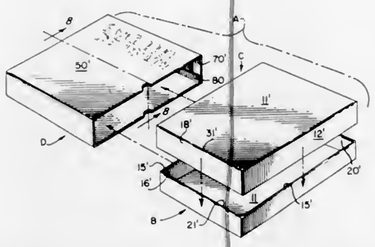


1. A container having a generally upstanding tubular sidewall member and a bottom member, the lower portion of said tubular sidewall member forming an opening, said bottom member being positioned within said opening formed by the lower portion of said tubular sidewall member, said bottom member having a central portion and a skirt, said central portion having a configuration at least substantially conforming to the cross-sectional configuration of the inner surface of said tubular sidewall member at the level of said central portion, said skirt extending completely around the periphery of said central portion and being inclined generally downwardly from the periphery of said central portion and having a lower portion and an upper portion, said tubular sidewall member having a coating of a thermoplastic material on at least the inner surface thereof, said bottom member being formed of a paper-like fibrous material with the upper surface of said central portion and the outer surface of said skirt contiguous to said sidewall member having a coating thereon of a thermoplastic material, said lower portion of said skirt and the portion of sidewall member contiguous thereto being adhered together by a thermal bonding of the coating of thermoplastic material on said lower portion of said skirt and the coating of thermoplastic material on the inside surface of said sidewall member, the coating on said outer surface of said upper portion of said skirt being free of adherence to the coating on the inside surface of said tubular sidewall member.

3,949,928
CARTON CONSTRUCTION
William H. Perkins, Oxford, Ohio, assignor to Diamond International Corporation, New York, N.Y.
Filed Feb. 12, 1975, Ser. No. 549,190
Int. Cl.² B65D 5/38, 13/06
U.S. Cl. 229—19 8 Claims

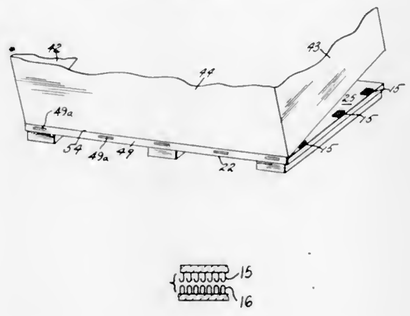
1. A tray member suitable for containing articles therein in combination with an outer sleeve member into which said tray member is adapted to be inserted, said tray member comprising a bottom panel having pairs of opposite side edges and opposite end edges, an outer side wall panel extending upwardly from said bottom panel and integral therewith along each of said side edges, an outer end wall panel extending

upwardly from said bottom panel and integral therewith along each of said end edges, each of said outer side wall panels having an upper edge and opposite end edges, each of said outer end wall panels having an upper edge and opposite side edges, each of said outer side wall panels further having an inner side wall panel integral therewith along said upper edge thereof and opposite end flaps integral therewith along said opposite end edges thereof, each of said outer end wall panels further having an inner end wall panel integral therewith along said upper edge thereof and opposite side flaps integral therewith along said opposite side edges thereof, said end flaps of each of said outer side wall panels being formed as an independent and separate piece apart from an adjacent side flap on said inner end wall panels, one of each adjacent end flap and side flap being folded 180° along the edge along which it is integral with an outer side or end wall panel and secured to said adjacent flap along confronting surfaces thereof, said inner side and end wall panels each being folded inwardly 180° along the upper edges of the outer side and end wall panels, respectively, whereby said tray in its assembled condition has no exposed or visible raw edge along the exterior thereof, said outer sleeve member comprising a plurality of wall panel portions and of which each panel portion is formed of at least two-ply thickness with all exposed or externally visible edges thereof being folded and thereby showing no raw cut edges, said combination with said tray member inserted in said outer sleeve member may be adaptable to being placed on a shelf in a position on an end with the bottom panel of said tray extending vertically, said outer sleeve member in the storage condition of said combination including a generally elongated opening which may be directed toward the back of a book shelf and a generally elongated wall section opposite to said opening, and said wall section being finished along its exterior surface as a facsimile portion of a book cover.

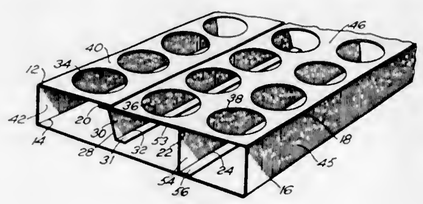


3,949,929
COLLAPSIBLE CONTAINER CONSTRUCTION HAVING HOOK AND PILE INTERCONNECTING MEANS
Julius B. Kupersmit, 145-80 228th St., Springfield Gardens, New York, N.Y. 11413
Filed Dec. 13, 1974, Ser. No. 532,707
Int. Cl.² B65D *19/20*
U.S. Cl. 229—23 C **3 Claims**

1. In a collapsible reusable shipping container of a type having a relatively rigid pallet element defining a floor, and a plurality of hingedly interconnected walls selectively engaged at the lower edges thereof to a surface of said pallet, improved means for accomplishing engagement of said lower edges comprising: a plurality of flaps hingedly interconnected to said side walls at said lower edges, and foldable to lie in a plane substantially at right angles with respect to the plane of a respective wall to overlie a portion of an upper surface of said rigid pallet elements; said flaps having a downwardly facing surface and cooperating hook and pile interconnecting means secured to said downwardly facing surface of said flaps and said upper surface of said pallet element, one of said flaps being interconnected to an edge surface of said pallet to permit said one of said flaps to remain attached to said pallet as the remaining flaps are disconnected prior to folding respective walls upon said pallet, and selectively allowing complete detachment of said walls for replacement.



3,949,930
ARTICLE CARRIER
David J. Giordano, Colonia, N.J., assignor to Slater Paper Box, Inc., Fall River, Mass.
Filed Mar. 24, 1975, Ser. No. 561,499
Int. Cl.² B65D *5/48*
U.S. Cl. 229—28 R **4 Claims**

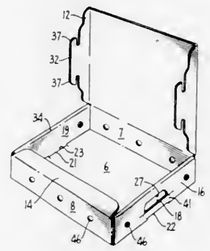


1. In a carrier for a plurality of articles comprising a single sheet of cardboard material scored and folded into tubular form and having spaced upper and lower decks with longitudinal side walls extending between said decks, said upper deck having spaced rows of article receiving holes, a plurality of longitudinally extending supporting walls between the upper and lower decks providing a plurality of compartments, said upper deck including a flap portion folded back underneath a row of holes and then downwardly into contact with the lower deck, said flap portion having a tongue cut from the central portion thereof beneath said row of holes and folded downwardly from said flap portion into contact with the lower deck.

3,949,931
TAMPER-PROOF CONTAINER
Richard A. Hall, Pleasanton, Calif., assignor to Willamette Industries, Inc., San Leandro, Calif.
Filed Jan. 27, 1975, Ser. No. 544,362
Int. Cl.² B65D *5/22, 45/00*
U.S. Cl. 229—36 **2 Claims**

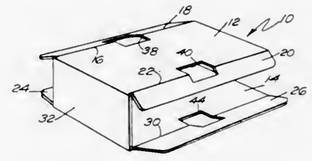
1. A self-locking tamper-proof container comprising:
a rectangular bottom panel having side edges and end edges and having coutouts therein adjacent the end edges thereof;

a pair of side walls having spaced side edges and each connected along a fold line at one side edge thereof to a respective side edge of said bottom panel;
a top rectangular panel having end edges and connected along a fold line to the other side edge of one of said side walls;
a pair of top panel end flaps foldably connected along fold lines to the end edges of said top panel and each end flap having a free edge spaced from the fold line, a T-shaped locking tongue on the free edge of each of said end flaps, said locking tongues each having a head portion having a pair of arcuate edged locking ears which extend in the direction of said top panel end edges and a base integral with said head and each said top end flap to connect said head to said end flaps so that said locking ears are each spaced from the free edges of said end flaps;
a pair of end panels having opposite side edges and each connected along a fold line at one side edge thereof to said end edges of said bottom panel;
a pair of end wall flaps connected along fold lines to the other side edges of said end panels, and having extension tabs on said other side edges thereof, said tabs received in said bottom panel cutouts when said end wall flaps are folded to be co-extensive with said end panels;
said end panels each having an elongated cutout portion defined therein to receive one of said locking ears with one edge of said locking ear head portion engaging said end panel along one edge of said elongated cutout portion to lock said container top panel to said end panel, said elongated cutout portions each having one side longer than the other, with said long side positioned between the short side and said bottom panel, and arcuate ends connecting said sides;
a tearout tab in each of said end panels defined by score-lines in said end panels which extend from said elongated cutout portion and which are removable from said each end panel to form a long side toward said bottom panel opening therein so that said locking ears are accessible from outside of the container and can be freed from engagement with said end panels while giving an indication that the container has been tampered with by physically altering the appearance of the container.

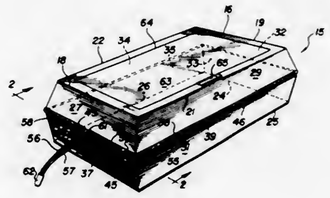


3,949,932
END BOX FOR PACKAGING ARTICLES
Michael B. Shore, Barrington, R.I., assignor to Simon Nemzow, Providence, R.I., a part interest
Filed May 8, 1974, Ser. No. 467,901
Int. Cl.² B65D *5/18, 75/02*
U.S. Cl. 229—40 **1 Claim**

1. A blank for an end box in which elongated articles are packaged, comprising a one-piece construction defined by opposed panels between which a reduced panel is connected by score lines, each of said opposed panels including a central panel to which side flaps are joined along score lines and a plurality of substantially rectangular openings being formed in said opposed panels and bisecting said score lines dividing the central panels from the side flaps thereof, wherein said openings extend equally into said central panels and side flaps joined thereto.



3,949,933
COLLAPSIBLE CONTAINER
Harry J. Giambrone, and Robert L. Naas, both of Kettering, Ohio, assignors to Baxter Laboratories, Inc., Deerfield, Ill.
Filed Dec. 30, 1974, Ser. No. 537,239
Int. Cl.² B65D *5/42*
U.S. Cl. 229—50 **17 Claims**

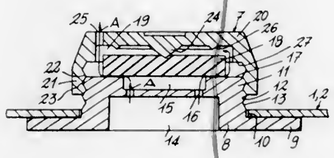


1. An expansible and collapsible container comprising: substantially identical, oppositely disposed top and bottom panels of polygonal shape, side wall panels attached to sides of said top and bottom panels, each side wall panel comprising a set of upper and lower panels having edges hingedly connected to edges of said top and bottom panels respectively along associated edges thereof, each set of upper and lower panels being hingedly interjoined along interconnection edges thereof, and being adjacently disposed outwardly from said top and bottom panels when said container is in collapsed condition; and means for rendering rigid the container in expanded condition, said means being releasable to permit collapse of the container, said upper and lower panels defining outwardly extending side edges for engagement with corresponding outwardly extending side edges of adjacent side wall panels, whereby the respective upper and lower panels, when engaging adjacent side wall panels as said container is in fully-expanded condition, define an angle with each other of less than 180°, to prevent inward collapsing of said side wall panels.

3,949,934
CONTAINER HAVING A VALVE MOVABLE BETWEEN ONE-WAY FLOW AND CLOSED POSITIONS
Luigi Goglio, Via Solari 10, Milan, Italy
Filed May 24, 1974, Ser. No. 473,311
Claims priority, application Italy, June 14, 1973, 25370/73
Int. Cl.² B65D *31/14*
U.S. Cl. 229—62.5 **3 Claims**

1. In a container, a wall defining at least part of the interior of the container and a valve having a base body fixed to said wall and formed with at least one passageway through which fluid can flow from the interior to the exterior of the container, a lid also formed with at least one passageway, and connecting means connecting said lid to said base body for movement between at least two different positions with re-

spect to said base body, a resilient body being interposed between said lid and base body and normally occupying a position closing off communication between the interior of the container and the outer atmosphere through said passageway of said base body, said lid having a central projection pressing on said resilient body, and said lid also having a rib concentric

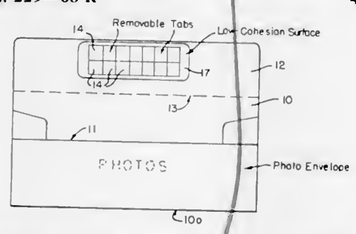


with said central projection and of a lesser depth than the latter for engaging the resilient body in one position of said lid to hold said resilient body in a closed position and to be spaced from said resilient body in another position while said central projection still presses on said resilient body, to release said resilient body to permit one-way flow out of the interior of the container.

3,949,935
PHOTOGRAPHIC PRINT ENVELOPE HAVING ADHESIVE TRANSFER TABS

Sven Goran Stackig, McLean, Va., assignor to Photo Marketing Systems Company, Beltsville, Md.

Filed Aug. 8, 1975, Ser. No. 603,205
Int. Cl.² B65D *27/00*
U.S. Cl. 229—68 R **4 Claims**

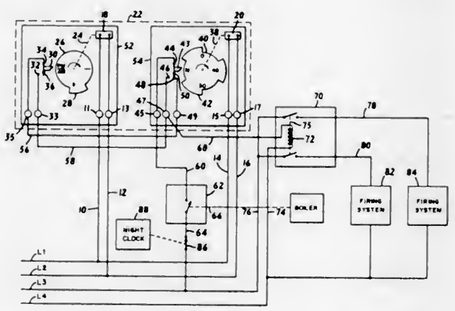


1. A photographic envelope having an open-sided pocket adapted to receive a plurality of photographic prints, a foldable closure flap on said envelope adapted to selectively cover the opening to said pocket, said envelope including a low-cohesion polished surface portion, a plurality of removable adhesively-backed tabs supported by said polished surface portion of said envelope, each of said tabs comprising a layer of backing paper spaced from said polished surface portion by a layer of pressure sensitive adhesive, the level of adhesion between said adhesive and said backing paper being greater than the level of adhesion between said adhesive layer and said polished surface portion whereby each of said tabs and its associated layer of adhesive may be selectively removed as a unit from said surface portion, the level of adhesion between said adhesive layer and said backing paper being less than the level of adhesion between said adhesive layer and the paper in said photographic prints, whereby the adhesive layer of a removed tab may be applied to the back of a photographic print taken from said pocket and the backing paper layer of said tab may thereafter be readily removed to transfer said adhesive layer from said backing paper layer to said photographic print back, said polished surface portion and the removable tabs supported thereby being positioned on said envelope at a location which is concealed by said closure flap when said flap is folded to cover the opening to said pocket and which is exposed to permit selective removal of said tabs from said surface portion for application to the backs of the photographic prints taken from said pocket when said flap is manipulated to uncover the opening to said pocket and gain access to photographic prints in said pocket.

3,949,936
CONTROL SYSTEM FOR BOILERS FURNISHING STEAM FOR HEATING

Charles Boyer, 3900 Bailey Ave., and Michael Pemenidis, 3850 Hudson Manor Terrace, both of Bronx, N.Y. 10463

Filed Mar. 4, 1974, Ser. No. 447,666
Int. Cl.² F24D *1/00*; **F23N** *5/20*
U.S. Cl. 236—26 A **7 Claims**



1. In combination, in a system for controlling the firing of a steam boiler: first switch means for providing electrical continuity therethrough when steam generated by said boiler has heat content below a first predetermined heat content level and thereafter until such heat content increases to a second predetermined heat content level higher than said first level; and clock-controlled switch means series-connected with said first switch means, said clock-controlled switch means providing electrical continuity therethrough during a first time period of at least one hour in extent and providing electrical continuity therethrough during a plurality of spaced time intervals of a first one hour period immediately following said first time period, and providing electrical continuity therethrough during a further plurality of spaced time intervals of the one hour period immediately successive to said first one hour period, each said time interval being of continuous time extent of not less than multiple minutes.

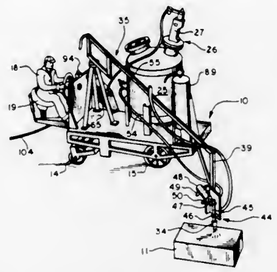
3,949,937
SYSTEM FOR HANDLING AND APPLYING A NON-SUSPENDED REFRACTORY SLURRY

Edwin T. Sortwell, and David S. Kerr, both of Wheaton, Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jan. 29, 1975, Ser. No. 545,172
Int. Cl.² B05B *12/02*
U.S. Cl. 239—70 **11 Claims**

1. Apparatus for handling and applying a non-suspended refractory slurry to steel ingot forming parts which comprises, a slurry storage tank, agitator means for said tank to continually agitate the slurry, a spray application unit, a delivery system interconnecting the tank and spray application unit having means for controlling spray application cycles, means for automatically clearing the delivery system and spray application unit between spray application cycles, said means for clearing the delivery system and spray application unit including means directing wet air through the delivery system and spray application unit having a pressurized water tank providing a source of water under pressure, a rotometer for providing a regulated water volume, a source of air, and a mixing tee

for receiving the air and regulated water volume to provide a source of wet air, and valve means selectively connecting

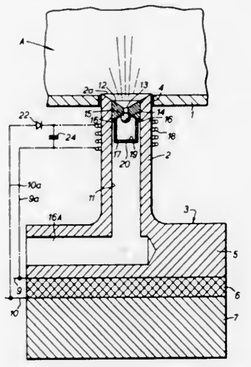


either said slurry storage tank or said source of wet air to said delivery system and spray application unit.

3,949,938
FUEL ATOMIZERS

Mark Wallinger Goodinge, Brentwood, England, assignor to Plessey Handel und Investments A.G., Suz, Switzerland

Filed Feb. 12, 1975, Ser. No. 549,306
Claims priority, application United Kingdom, Mar. 14, 1974, 11407/74
Int. Cl.² B05B *3/14, 1/30*
U.S. Cl. 239—102 **9 Claims**



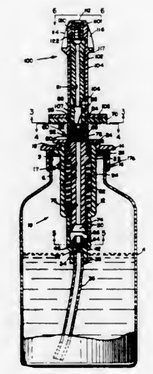
1. A fuel injection system comprising a fuel injection nozzle having a fuel injection orifice, and a vibrator to produce atomization of the fuel injected by the nozzle, the nozzle being equipped at the inlet side of its nozzle orifice with a liquid-retaining valve which is arranged to normally close the nozzle orifice and thus prevent the injection of fuel by the nozzle and which is adapted to move away from the nozzle orifice when the vibrator is activated and thus allow the injection of fuel by the nozzle, the valve being situated in a housing in the nozzle and the housing having at least one aperture at a position where the valve will tend to move to when the vibrator is activated, thereby to allow fuel to enter the housing through this aperture and force the valve towards the nozzle orifice when the nozzle is not being vibrated.

3,949,939
METERED SPRAY DEVICE

Frank E. Brown, Burbank, Calif., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Mar. 26, 1975, Ser. No. 562,092
Int. Cl.² B05B *7/30*; **G01F** *11/28*
U.S. Cl. 239—350 **8 Claims**

1. A metered spray device comprising:
a container having an open top,
a barrel sealed in the top of the container and extending into the container,
an elongated piston slidably mounted in the barrel with its lower end engaging the inner wall of the barrel,
said piston having a passage running the full length of the piston,
spring means exterior of the piston to bias the piston towards its retracted position,

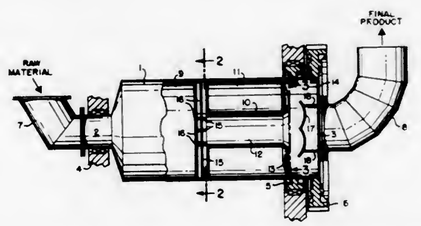


a check valve in the lower end of the barrel to block the flow of fluid from the barrel into the container,
a discharge nozzle connected to the upper end of the piston, and
a disc check valve in the upper end of the piston and a spring biasing the disc check valve downwardly to a closed position to block the flow of fluid downwardly in the passage of the piston.

3,949,940
TUBE MILL

Bent Horning, Copenhagen Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

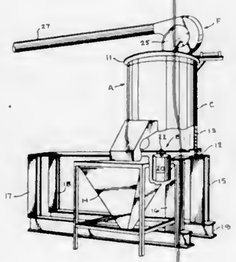
Filed Mar. 19, 1974, Ser. No. 452,504
Claims priority, application United Kingdom, Mar. 23, 1973, 14214/73
Int. Cl.² B02C *17/06*
U.S. Cl. 241—30 **20 Claims**



1. A method of grinding material in an air-swept tube mill comprising: feeding material and at least one of air and gas into one end of the mill; grinding said material in at least a first grinding chamber; entraining the ground material in said air or gas; carrying said entrained material through a material imperforate internal by-pass conduit through a last grinding chamber into a discharge chamber at the outlet end of the mill, said conduit communicating at one end with a grinding chamber immediately preceding the last grinding chamber and at the

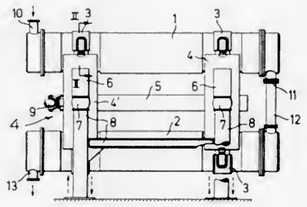
other end with the discharge chamber at the outlet end of the mill; feeding material greater than a predetermined size back from the discharge chamber through the last grinding chamber in a direction opposite to the direction in which it is conveyed through the preceding grinding chamber; further grinding the oversize material during passage of said material through said last grinding chamber in said opposite direction; conveying said additionally ground material from said last grinding chamber to said by-pass conduit; and entraining said finely ground material in said air or gas and discharging said entrained material through said by-pass conduit out of the mill.

3,949,941
THERMOPLASTIC WASTE CONVERTER
Bob P. Gray, and James A. Gray, both of 503 Summit Ave., Gainesville, Tex. 76240
Continuation-in-part of Ser. No. 414,742, Nov. 12, 1973, Pat. No. 3,897,011. This application Apr. 9, 1975, Ser. No. 566,174
Int. Cl.² B02C *11/08*
U.S. Cl. 241—41 **1 Claim**



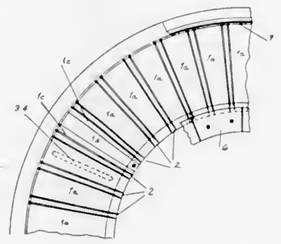
1. In an apparatus for converting thermoplastic foil material into granulated thermoplastic, including:
a. a cylindrical container having a top and a bottom;
b. motor means mounted below said bottom for rotating a shaft extending through said bottom and disposed substantially axially of said cylindrical container;
c. a plurality of circumferentially spaced fixed blades mounted at the wall of said cylinder and projecting radially inwardly and above the bottom of said cylinder, the improvement comprising:
a rotatable blade member mounted on the shaft of said motor and extending diametrically of said cylinder below said fixed blades, said rotatable blade member having sharpened leading cutting edges on opposite sides of said shaft for cutting thermoplastic material in said cylinder and said sharpened leading edge being inclined with respect to the center line of said blade member; said rotatable blade also having a sharpened cutting edge extending along each end of said blade member and tapered outwardly and rearwardly of said leading cutting edge; and said rotatable blade further having a plurality of bars mounted on an upper surface of said blade member, each of said bars extending from a position adjacent an end of said blade member to a position adjacent said shaft.

3,949,942
VIBRATING BALL MILL WITH HEAT INSULATED GRINDING CHAMBER
Helmut Haas, Proz-Wahn, and Freidhelm Haude, Cologne, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany
Filed Oct. 25, 1974, Ser. No. 518,061
Claims priority, application Germany, Oct. 27, 1973, 2353964
Int. Cl.² B02C *17/18*
U.S. Cl. 241—179 **11 Claims**



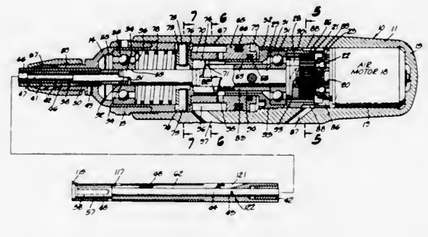
1. A vibrating mill having at least one grinding chamber surrounded by an insulating sleeve, said grinding chamber being fixed to a supporting frame to which a vibrating device means is attached, said vibrating mill comprising:
clamping means interconnecting said supporting frame and said grinding chamber;
an annular elastically deformable supporting device positioned between said clamping means and said grinding chamber, said device being effective to transfer the accelerating forces from the supporting frame to the grinding chamber, said device including
an annular centrally disposed elastically deformable supporting portion;
outer central annular supporting means; and
inner annular spaced supporting means connected to said annular centrally disposed elastically deformable supporting portion to form a bridge-like cross section therewith;
said outer central annular supporting means lying centrally between said inner annular spaced supporting means.

3,949,943
MILL BOWL LINING CONSTRUCTION
Udo Schüler, Stetten, Filder; Herbert Hess, Kornwestheim, and Günter Klotz, Marbach, all of Germany, assignors to EVT Energie-und Verfahrenstechnik GmbH, Stuttgart, Germany
Filed Nov. 25, 1974, Ser. No. 526,946
Claims priority, application Germany, Nov. 2, 1973, 2354844
Int. Cl.² B02C *17/22*
U.S. Cl. 241—183 **4 Claims**



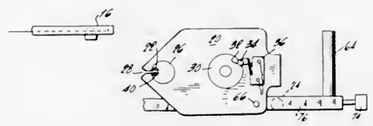
1. In a roller mill of the type including a mill bowl, and a lining disposed in the mill bowl comprising a plurality of individual segments disposed adjacent each other in an annular, ring-like arrangement and fastened to said mill bowl at the radially inner and outer edges thereof, the improvement comprising said segments having the adjacent engaging sides thereof configured in an angular, interlocking shape and being interlocked with one another, and said mill bowl lining including a plurality of interlay members interposed between said segments having the sides thereof engaging said segments configured in an angular interlocking shape and being interlocked with said segments and having a thickness which is greater than that of said segments so as to extend beyond the lining formed by said segments into said mill bowl.

3,949,944
AIR POWERED ROTARY WIRE CUTTING AND WRAPPING TOOL
John H. Bent, Fullerton, Calif., assignor to H. F. Wilson Engineering Company, Glen Ellyn, Ill.
Division of Ser. No. 188,751, Oct. 13, 1971, Pat. No. 3,798,910. This application Dec. 10, 1973, Ser. No. 422,999
Int. Cl. H01r *43/00*
U.S. Cl. 242—7.17 **5 Claims**



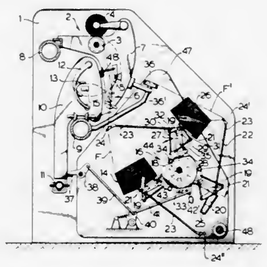
1. In a tool of the class described, the combination of: a spindle, an air motor connected to rotate said spindle, a bit driven by the spindle for shearing a wire and then wrapping it about a terminal, pressure responsive means for applying a torque to said spindle to initiate turning movement thereof to shear the wire, said means including a releasable clutch to permit free turning of the spindle by the air motor after the initial turning movement, and means for delivering air under pressure to both said air motor and said pressure responsive means.

3,949,945
BOBBIN TERMINATOR
John Broomfield, Bolton, Mass., assignor to Amacoil Machinery, Inc., New Rochelle, N.Y.
Continuation of Ser. No. 224,686, Feb. 9, 1972. This application Aug. 1, 1974, Ser. No. 493,776
Int. Cl.² H01F *41/06, 41/10*
U.S. Cl. 242—7.17 **3 Claims**



1. An apparatus for wrapping wire on the terminals of a wire carrying bobbin comprising;
a bobbin holder,
a housing having a forward portion, said portion having a flared guide,
a rotatable first gear mounted in said housing, said first gear having a notch on its periphery between two of the teeth, said notch being in alignment with said guide at the initial position of the first gear,
a hollow cylindrical protrusion fixably mounted on the face of said first gear, said protrusion having a lateral grove positioned in alignment with said notch,
means for moving said housing to an operating position such that said notch is offset from the axis of said terminal,
means for rotating said first gear, and,
means for pivoting said housing to break said wire when rotation of said first gear termintates.

3,949,946
APPARATUS FOR HOLDING READY AND POSITIONING OF YARN PACKAGES IN TEXTILE MACHINES
Joachim Rohner, Rheydt; Wilhelm Maassen, Monchen-Gladbach, and Franz-Josef Reiners, Ratheim, all of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Germany
Filed Apr. 17, 1972, Ser. No. 244,445
Claims priority, application Germany, Apr. 16, 1971, 2118443
Int. Cl.² B65H *54/20, 54/26*
U.S. Cl. 242—35.5 R **8 Claims**

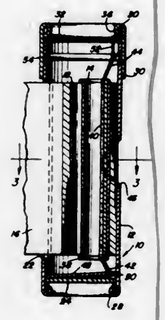


1. In a textile machine having at least one work station, an apparatus for holding ready and positioning yarn packages to be unwound at the work station, the apparatus comprising rotatable shaft means, a plurality of arm means radially extending from said shaft means and circumferentially disposed at a given angle from one another, horizontally extending pivot means mounted on each of said arm means, a spool holder radially extending from each of said pivot means, said spool holder and said pivot means together with said plurality of arm means on which said pivot means are mounted, forming a positioning device, the plurality of spool holders at the work station being jointly revolvable with the plurality of arm means about said shaft means.

3,949,947
PAPER DISPENSING DEVICE
Robertson Youngquist, Kensington, Md.; Donald Green, and Edward Stone Cohen, both of Washington, D.C., assignors to New World Container Corporation, Washington, D.C.
Filed Sept. 23, 1974, Ser. No. 508,560
Int. Cl.² B65H *19/00*
U.S. Cl. 242—55.53 **10 Claims**

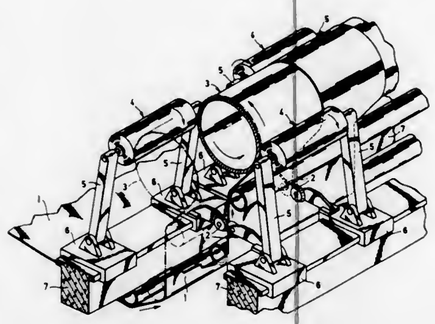
9. A device for storing and dispensing paper such as cigarette paper, eyeglass lens cleaning paper and the like comprising a generally cylindrical tubular housing dimensioned for convenient reception in a user's pocket, purse or the like, said housing including a closed end and an open end, a removable cap on the open end of the housing, said housing including a longitudinally extending discharge slot in the peripheral wall thereof for receiving the free end of a paper web wound onto a core, a hollow spindle disposed within the housing and positioned within the core of the roll of paper for relative rotation of the core with respect to said spindle, a resilient

member extending through the spindle and having its ends attached to the housing adjacent the periphery thereof for resiliently biasing the spindle and paper roll toward the inter-



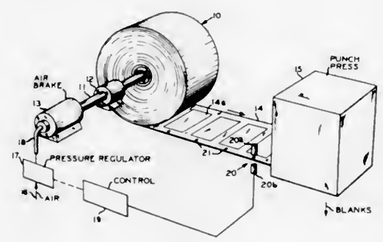
ior surface of the housing for frictionally engaging the paper with the housing to resist unwinding of the paper from the paper roll.

3,949,948
DEVICE FOR WEB CUTTING
Kauko Tomma, Helsinki, Finland, assignor to Oy Wartsila AB, Helsinki, Finland
Filed Dec. 27, 1974, Ser. No. 536,891
Claims priority, application Finland, Jan. 4, 1974, 3474/74
Int. Cl.² B65H *35/02*
U.S. Cl. 242—56.2 **2 Claims**



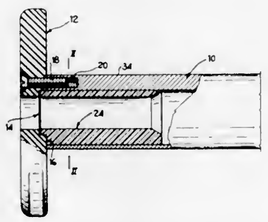
1. A device for cutting a web into a plurality of longitudinal sections, said device comprising slitters, a center drum and supporting arms for rewind rolls formed of adjacent slitted web sections and located at opposite sides of said center drum, said arms being attached to sliding carriages movable along guide beams in a cross-web direction, said slitters being attached to said sliding carriages so as to move with them when setting the slitting width, whereby said slitters and said supporting arms are automatically correctly positioned with respect to each other in a cross-web direction, said supporting arms being journalled at said rewind rolls and at said sliding carriages and being free to move away from said center drum while said sliding carriages are stationary.

3,949,949
WEB TENSION CONTROL
James K. Thompson, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Apr. 25, 1975, Ser. No. 571,668
Int. Cl.² B65H *75/43*
U.S. Cl. 242—75.43 **7 Claims**



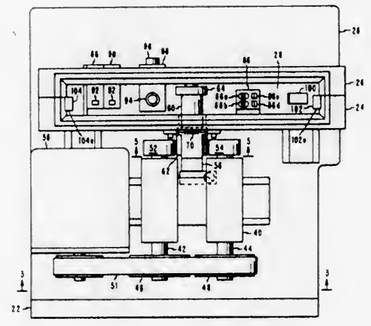
1. In a system in which a web of printed material is withdrawn from a roll which is mounted on a shaft and is passed to a means to cut blanks from the web, apparatus to maintain proper alignment of printing on the resulting blanks comprising:
- a pneumatically operated brake secured to the shaft to adjust the retarding force tending to prevent the roll from being unwound;
- a sensing means positioned to detect register marks on the web;
- a source of pneumatic pressure;
- an adjustable pressure regulator connected between the source of pneumatic pressure and the brake; and
- control means responsive to said sensing means to adjust said pressure regulator and thereby the retarding force exerted on said shaft so as to control the rate at which the web is fed to said means to cut.

3,949,950
YARN WINDING BOBBIN
Loredana Brovelli, Milan, Italy, assignor to M. Scaglia S.p.A., Italy
Filed June 20, 1974, Ser. No. 481,322
Claims priority, application Italy, July 5, 1973, 26224/73
Int. Cl.² B65H *75/14*
U.S. Cl. 242—118.6 **8 Claims**



1. A yarn winding bobbin, particularly for high count yarn, comprising a hollow core, a flange secured to each end of said core, a head body secured in said core between said flanges, and at least one balancing weight extending axially through a portion of said body.

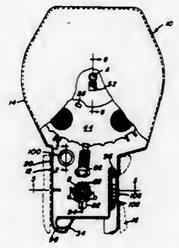
3,949,951
TAPE CARTRIDGE DRIVE
Townsend Henry Porter, Jr., and Robert Ellsworth Schopp, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 17, 1974, Ser. No. 533,735
Int. Cl.² G03B *1/04*; **G11B** *15/32*
U.S. Cl. 242—192 **11 Claims**



1. A tape cartridge drive including a frame defining a recess into which a tape cartridge may be inserted, said tape cartridge having a driver roller which when driven drives the tape of the cartridge, a swingable member supported by said frame and carrying a rotatable drive member thereon engaging with said roller when the cartridge is in said recess, a pair of drive rolls carried by said frame, motor means for driving said drive rolls differently from each other, said drive rolls being disposed on opposite sides of said swingable member so that said rotatable drive member engages one or the other of said drive rolls depending on the direction in which said swingable member is swung for thereby driving said tape differently depending on which of the drive rolls is so engaged, a pair of moveable brake members on opposite sides of said swingable member and engaging said rotatable drive member to brake the rotatable drive member and to thereby brake said tape when said swingable member is in a neutral position with said rotatable drive member being out of driving relationship with respect to said pair of drive rolls, and means carried by said swingable member for moving each of said brake members out of braking relationship with respect to said rotatable drive member when said swingable member is swung in the direction toward this brake member to engage said rotatable drive member with one of said pair of drive rolls whereby said brake members are ineffective on said rotatable drive member when said rotatable drive member is being driven.

3,949,952
FILM CARTRIDGE AND ASSOCIATED DRIVE MEANS
Jasper S. Chandler, and Hugh R. McNair, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 15, 1974, Ser. No. 451,640
Int. Cl.² G03B *1/04*; **G11B** *15/32*; **G03B** *1/00*
U.S. Cl. 242—194 **10 Claims**

1. A web-handling cartridge for use with cartridge-receiving apparatus having web-feeding means, said cartridge having a web housing portion operable to extend exteriorly of said apparatus when said cartridge is received therein and including first and second web winding spools for accommodating respective portions of a wound web, said spools being disposed for independent coaxial rotation within said housing, said cartridge comprising:
1. means for defining a web path along which a web portion wound on one of said spools may be unwound and advanced to the other of spools for winding thereon, said means including
   a. rotatable drive sprocket means for use in advancing a web along said path and for so engaging said web at two spaced locations on said web as to define a closed web loop path of fixed length,
   b. means for presenting web material in said web loop for movement by said web-feeding means of said apparatus, and
   c. curved wall means disposed for snubbing engagement with said web at a location along said closed loop path between said presenting means and said sprocket means and spaced from said presenting means in the



direction of web advancement from said first spool to said second spool;
2. spool drive means for imparting winding rotation to said one spool in response to unwinding rotation of said other spool, said drive means including a spring motor comprising an elongate resilient strip member so formed as to define
   a. a first spiral coil in concentric engagement with said second spool,
   b. a second spiral coil in eccentric engagement with said first spool and having a central axis generally parallel to the central axis of said first coil, and
   c. an intermediate strip portion interconnecting said coils and intersecting a plane defined by said coil axes.

3,949,953
FLUID-PROPELLED TRANSPORTERS
Leslie Arthur Hopkins, Southampton, England, assignor to Air Cushion Equipment Limited, Southampton, England
Filed Apr. 15, 1974, Ser. No. 461,234
Claims priority, application United Kingdom, Apr. 14, 1973, 18102/73
Int. Cl.² B65G *51/04*
U.S. Cl. 243—3 **12 Claims**



1. A fluid-propelled transporter for use in a duct having a wall, comprising a body having a periphery and sealing means carried by the body so as to form a fluid tight seal between the periphery of the body and the wall of the duct, said sealing means comprising at least one ring of independently deflect-

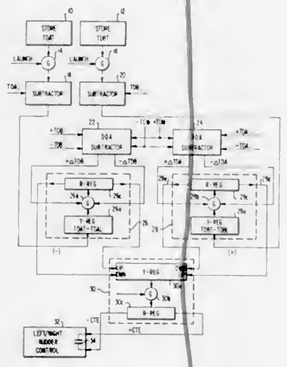
able flexible sealing members of hollow, inflatable form, with said members extending around the periphery of the body in side-by-side engagement.

3,949,954

LORAN GUIDANCE FOR REMOTE BOMB

Elmer M. Lipsey, Annandale, Va., assignor to Ato Inc., Willoughby, Ohio

Filed July 26, 1971, Ser. No. 166,147
Int. Cl.[2] F41G 7/00
U.S. Cl. 244—3.15 18 Claims



1. A method of guiding a projectile to a target having loran coordinates TDAT and TDBT via loran processed TDA and TDB signals, comprising the steps of

a. launching said projectile from a point having loran coordinates TDAL and TDBL,

b. electromechanically controlling the horizontal control rudder of said projectile to cause said projectile to fly a path which is the locus of all points i having a constant ratio

$$\frac{TDAT - TDA_i}{TDBT - TDB_i} = \frac{TDAT - TDAL}{TDBT - TDBL}$$

c. initiating a ballistic foldover of said projectile when the projectile reaches a predetermined loran coordinate, said predetermined loran coordinate being selected at a point on said path in advance of the target whereby a ballistic foldover begun at said point will end substantially over said target, and

d. electromechanically controlling the vertical control fins of said projectile after said foldover to properly postion said projectile along said path.

3,949,955

MONOPULSE RECEIVER CIRCUIT FOR AN ANTI-RADAR MISSILE TRACKING SYSTEM

Langthorne Sykes, Manhattan Beach; Duane J. Russell, and Robert E. Atkinson, both of China Lake, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 4, 1963, Ser. No. 270,773
Int. Cl.[2] F41G 7/00; G01S 9/22
U.S. Cl. 244—3.19 3 Claims

1. In a monopulse radar receiver system for determining the angular co-ordinates of a pulsed RF radiation source, the combination comprising:

an RF signal processing circuit adapted to convert a directional antenna input signals to inversely related pairs of computer input pulses;

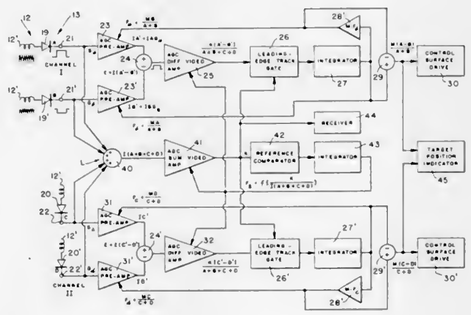
a pair of automatic gain control pre-amplifiers connected to said processing circuit adapted to simultaneously receive and amplify the pairs of input signals;

a difference circuit connected between the outputs of each pair of pre-amplifiers for providing a difference signal pulse;

amplifying means connected with said difference circuit for amplifying said difference signal pulse;

a leading-edge gate circuit connected with said amplifying means, adapted to be operatively triggered at the pulse-repetition rate of the pulses propagated by the RF radiation source for accepting only the leading edge of each amplified difference signal pulse;

means for triggering the gate circuit;



a pulse integrator circuit connected with the output of said gate circuit adapted to provide an output signal which is a function of the position of the source of radiation;

direct connecting means joining the output of said integrator with one pre-amplifier of said pair for directing the integrator output signal to the one pre-amplifier for driving the gain thereof in a first direction;

an inverter circuit connecting the output of said integrator with the other pre-amplifier of said pair, adapted to invert and combine a reference voltage with the output of said integrator circuit to provide an inverted gain control signal having a reference imposed thereon for driving the gain of the other pre-amplifier in a second direction opposed to said first direction; and

a second difference circuit connected with the output of said integrator and the output of said inverter circuit for deriving a difference signal indicative of the angular co-ordinate of the source of pulsed RF radiation, relative to said system, when the difference signal is driven to a zero valve.

3,949,956

PARAMETRICALLY SHAPED LEADING EDGE FLAPS

Alberto Alvarez-Calderon, Avenida Salaverry 3465, Orrantia del Mar, Lima, Peru

Division of Ser. No. 377,621, July 9, 1973, Pat. No. 3,897,029.
This application Feb. 11, 1974, Ser. No. 441,331
Int. Cl.[2] B64C 3/50, 9/28
U.S. Cl. 244—42 CA 7 Claims

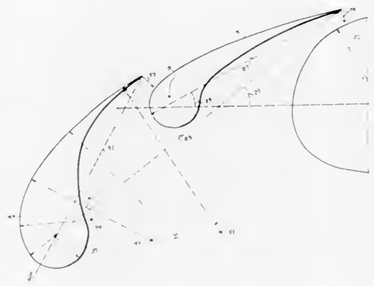
1. A family of highly cambered double-slotted leading edge flaps for a family of wings having any thickness to chord ratio in which very high lift flows are obtained with reduced adverse pressure gradient, minimized local speeds, and reinforced boundary layer re-energizing along the surfaces of said flap and wing by virtue of the type of curvature and slot relationship embodied in the flap comprising:

a. a first flap member which in its high lift configuration is an upstream member,

b. a second flap member which in its high lift configuration is located downstream of said first member,

c. said leading edge flap members being positioned in a cooperating relationship defining a highly curved double-slotted combined airfoil with a cross-sectional shape relationship defined parametrically,

d. said combined airfoil having a rounded upstream portion of its upstream member with a radius at least as large as



approximately 15% of the maximum thickness of said wing,

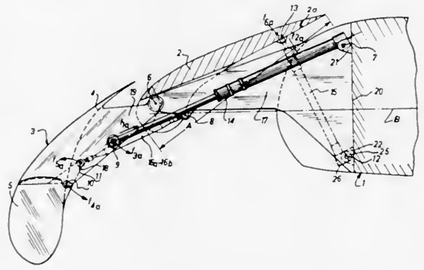
e. with the radius of the curvature of a portion of said upstream member which is located approximately above the geometric center of the radius of curvature of said rounded upstream portion of said upstream member being no greater than approximately 35% of the maximum thickness of said wing.

3,949,957

ACTUATING SYSTEM FOR WING LEADING-EDGE SLATS

Serge Portier, Clichy, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Nov. 1, 1974, Ser. No. 520,421
Claims priority, application France, Nov. 6, 1973, 73.39383
Int. Cl.[2] B64C 9/26
U.S. Cl. 244—42 CA 2 Claims



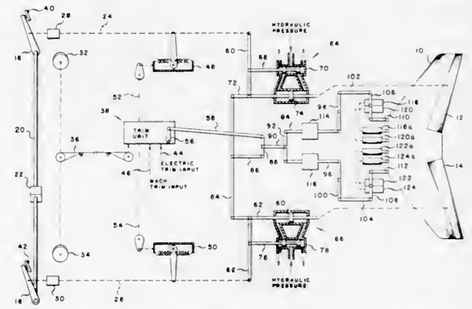
1. A wing leading-edge slat actuating system comprising a beam fast with the wing, an intermediate slat having a trailing edge and hinged to said beam, a front slat hinged to said beam, and a leading edge hinged to said front slat, characterized in that said system includes a first jack having one end hingedly connected to a fixed point on the wing and a second end hingedly connected to a moving point fast with said front slat and placed substantially at middle distance on a line drawn from a hinge point common to said front slat and said leading edge and reaching a trailing edge of said front slat; two rectilinear rods on either side of said jack having their hinge-points respectively located, on the one hand, at points fast with said leading edge which is fair shaped and on an outer part of the undersurface thereof, and at fixed points on said beam on the other; a second jack having a fixed hinge-point on the wing and a moving hinge-point on said intermediate-slat trailing edge; said jacks and rods being so arranged that when said jacks are in their extended position said slats are extended and form two slits, one of said slits between said intermediate slat and said wing and the other slit between said front slat and said intermediate slat, it being possible for said slits to be masked for certain flight configurations such that when said jacks are in their retracted position said slats have been retracted by pivotal motion and blend completely with the leading-edge profile.

3,949,958

PITCH CONTROL SYSTEM

Heinz K. Richter, Los Angeles, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Dec. 7, 1973, Ser. No. 422,516
Int. Cl.[2] B64C 13/12
U.S. Cl. 244—83 R 4 Claims



1. An aircraft having at least one elevator and a horizontal stabilizer;

first drive means for displacing said elevator;

first control means to control said first drive means;

second drive means for displacing said horizontal stabilizer;

second control means to control said second drive means;

means to input displacement commands to said first and second control means;

linkage means interconnecting the output of said first drive means with the input of said second control means;

a selectively controllable trim unit on said aircraft;

means to connect the output motion of said trim unit to said linkage means between the output of said first drive means and the input of said second control means;

a flight deck control column;

a control cable system interconnecting the output of said control column with the input of said first control means;

a feel unit on said cable control system; and

means to feed back the motion obtained from said feel unit as an input to said trim unit.

3,949,959

ANTENNA APPARATUS FOR VEHICLE TRACK RAIL SIGNALS

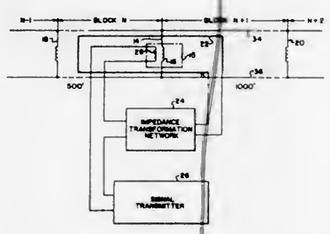
Richard S. Rhoton, Monroeville, and David H. Woods, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 17, 1974, Ser. No. 515,746
Int. Cl.[2] B61L 21/08
U.S. Cl. 246—34 CT 6 Claims

1. In an antenna apparatus for providing a signal current in a track circuit including a plurality of signal blocks for the control of a vehicle operative with said track circuit, the combination of

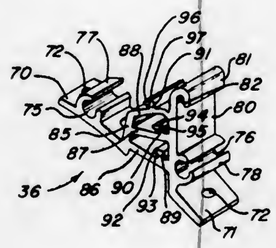
first means operative with each of adjacent signal blocks for providing a first portion of said signal current in each of said adjacent signal blocks, and

second means operative with each of said adjacent signal blocks for providing a second portion of said signal current in each of said adjacent signal blocks,



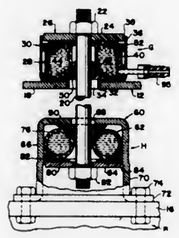
with said first means being more efficient in relation to the provision of signal current in said adjacent signal blocks and said second means being operative to balance the respective signal current levels in said adjacent signal blocks.

3,949,960
BRACKET SYSTEM FOR MOUNTING RETRACTABLE AWNINGS
Donald S. McKee, Louisville, Colo., assignor to The Scott & Fetzer Company, Lakewood, Ohio
Filed Mar. 24, 1975, Ser. No. 561,366
Int. Cl.² A47F 5/00; E06B 7/28
U.S. Cl. 248—225 **9 Claims**



1. A bracket system for mounting a roll-up awning housing on a convexly curved wall surface of a recreational vehicle, comprising a mounting bracket adapted to be secured to the awning housing, an adaptor bracket interengaged with said mounting bracket and including concave mounting means adapted to be mounted on said curved recreational vehicle surface, and selectively engageable means on said adaptor bracket and said mounting bracket including a plurality of keyhole tenon and mortise joints and a plurality of tongue and groove joints, a pair of joints including one tenon and mortise joint and one tongue and groove joint being selectable according to the curved surface on which said bracket system is mounted for engaging and holding said mounting bracket on said adaptor bracket with said awning housing in a generally upright operative position.

3,949,961
MATERIAL HANDLING APPARATUS
Karl A. Pamer, Chagrin Falls, Ohio, assignor to McNeil Corporation, Akron, Ohio
Continuation-in-part of Ser. Nos. 261,377, June 9, 1972, Ser. No. 261,529, June 9, 1972, Ser. No. 290,125, Sept. 18, 1972, and Ser. No. 432,688, Jan. 11, 1974. This application Feb. 25, 1974, Ser. No. 445,568
Int. Cl.² F16M 13/00
U.S. Cl. 248—317 **12 Claims**

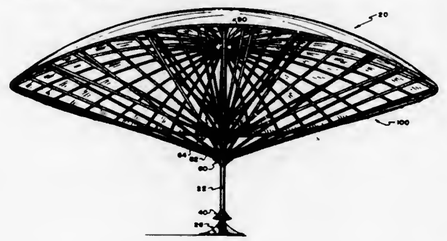


1. In a cushioning load bearing device: a tubular rigid first member defining a peripherally extending wall and a transverse load bearing wall extending inwardly from said peripheral wall; a rigid second member loosely received in said peripheral wall, said second member having a periphery which is smaller than said peripheral wall so that a clearance opening is defined between the periphery of said second member and said peripheral wall of said first member, said clearance opening having a sufficient extent to allow universal relative movement between said first and second members, said second member defining a second load bearing wall spaced from said load bearing wall of said first member and in confronting relationship therewith, said peripheral wall and said first and second load bearing walls defining a chamber-like spaced within said first member; a rod-like member connected to one of said first and second members and extending through said chamber-like space; the other of said first and second members defining an aperture in its respective load bearing wall and through which said rod-like member projects with a second clearance opening, said second clearance opening having a sufficient extent to enable universal relative movement between said rod-like member and said other member; annular elastomer means in said chamber-like space and extending about said rod-like member in direct compressive load transmitting relationship with said first and second load bearing walls, said elastomer means substantially filling and conforming to the shape of said chamber-like space and being resiliently deformable in response to relative universal movement between said first member, said second member and said rod-like member to conform to consequent changes in shape of said chamber-like space while transmitting load between said members; a third member disposed in said chamber-like space between said elastomer means and one of said first and second members, said third member surrounding and engaging said rod-like member and overlying said second clearance opening to prevent a portion of said elastomer means from moving into said second clearance opening; and a fourth member positioned in said chamber-like space to overlie said first clearance opening and prevent a portion of said elastomer means from moving into said first clearance opening.

3,949,962
COLLAPSIBLE UMBRELLA CONCRETE FORM
Arnold Wilson, 415 E. Maple, Mapleton, Utah 84663
Filed Sept. 25, 1974, Ser. No. 508,958
Int. Cl.² E04G 11/36
U.S. Cl. 249—18 **16 Claims**

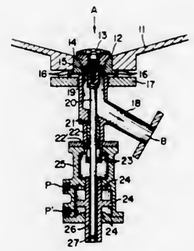
1. A collapsible and reusable concrete form comprising:

a vertical column;
a base associated with the column;
a connector at the top of the column;
at least one intermediate strut connector carried by the column for relative axial displacement in respect to the column and means for securing said strut connector in any selected one of a plurality of axial positions;
a plurality of outwardly and downwardly extending radially directed members associated with concrete form means, each radially directed member being rotatably joined to the top connector;



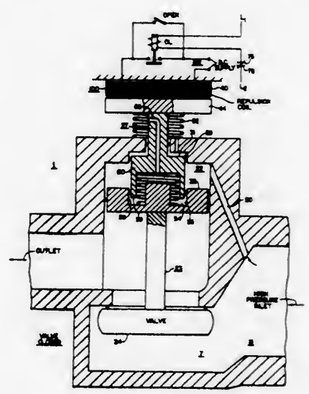
load-bearing form means bridging between and supported by said radially directed members;
at least one diagonal strut rotatably connected to each radially directed member and respectively spanning from said connection to and connecting with the strut connector;
whereby the radially directed members are (a) flexed into a greater diametral span by upward displacement of the struts caused by elevating the strut connectors along the column and (b) relaxed into a lesser diametral span by downward displacement of the struts caused by lowering the strut connectors along the column.

3,949,963
BOTTOM DRAIN VALVE CONSTRUCTION
Kaoru Aoki, No. 2249 Arima, Takatsu, Kawasaki, Kanagawa, Japan
Filed Nov. 7, 1974, Ser. No. 521,760
Claims priority, application Japan, Dec. 26, 1973, 48-143924
Int. Cl.² F16K 31/363
U.S. Cl. 251—63.6 **5 Claims**



1. A bottom drain valve construction, comprising a valve housing with an upper tubular portion having a top drain opening and an annular inwardly and downwardly sloping valve seat around the drain opening, a drain discharge connecting the lower part of said upper tubular portion and extending to one side thereof, a valve rod guide and sealing portion of said housing extending below and aligned with said upper tubular portion and having a valve rod guide bore therethrough, a lower cylindrical portion having a bottom wall with a piston passage bore and having a first drain chamber below said valve rod guide and sealing portion and a second piston chamber below said drain chamber and with a piston guide chamber defined between said first drain chamber and said second piston chamber, an actuating piston movable in said second piston chamber having a central hollow tubular portion which is guided in said piston guide chamber adjacent its upper end and guided through said piston bore adjacent its lower end and out of said lower cylindrical portion, said hollow tubular portion permitting draining of leakage liquid therethrough, a valve member including a rod portion extending through at least part of said hollow tubular portion of said piston and through said valve rod guide bore and said valve rod guide and sealing portion, removable pin means connecting the lower end of said valve rod portion to said piston, said valve member having a valve head on said rod portion engageable on said valve seat to close the opening and being movable with said rod portion upwardly off said valve seat to open said opening, and means for moving said piston to move said valve member to open and close the opening.

3,949,964
ELECTROMECHANICALLY-OPERATED VALVE
Willie B. Freeman, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 13, 1975, Ser. No. 549,569
Int. Cl.² F16K 31/06
U.S. Cl. 251—76 **9 Claims**



1. An electromechanically operated valve comprising, in combination:
A. means defining a valve body defining a gas-inlet opening and a gas-outlet opening;
B. said valve body additionally defining a valve-seat between said inlet and outlet openings;
C. high-pressure gas disposed in said inlet opening;
D. relatively low-pressure gas disposed in said outlet opening;
E. a two-part main poppet-valve assembly comprising:
a. a first part (23) comprising a main valve (24) seating on said valve seat and thereby controlling the gas flow through the valve body;
b. a balance piston portion (32) affixed to said main valve (24) and comprising a first piston portion (32) constantly exposed to high-pressure gas;
c. said balance piston portion (32) having a second piston portion (33) exposed to low-pressure gas (17) in the closed-valve position;
d. said main poppet-valve assembly (20) comprising a second part (27) comprising an independently-movable pilot-piston assembly (30) at times making abut-

ment with said balance piston (32) to thereby effect opening of the main poppet valve (24);

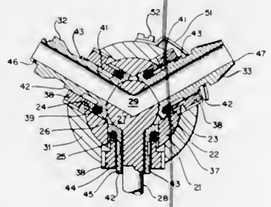
e. said pilot-piston assembly (30) comprising a first piston portion (31) alternately exposed to low and high-pressure gas dependent upon opening movements of the pilot-piston assembly 30; and,

F. electrical means (35) for providing an impact thrust to said pilot-piston assembly (30) upon energization of the electrical means, whereby upon low-voltage conditions and correspondingly reduced electrical impact thrust, the pilot-piston assembly (30) will move sufficiently to expose the first piston portion (31) to high pressure gas and receive an augmented pneumatic thrust force to open the main poppet valve (24).

3,949,965
BALL VALVE

Thomas D. Sharples, Atherton, and John T. Taylor, Santa Clara, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Nov. 9, 1973, Ser. No. 414,401
Int. Cl.² F16K *3/22*
U.S. Cl. 251—171 **6 Claims**



1. A valve comprising in combination:

a valve body with communicating, angularly equally spaced openings therein including an inlet opening, and an outlet opening,

a valve ball having a passageway therethrough,

means for rotating the ball to bring the passageway therein into or out of registry with body openings,

hollow sealing members formed with peripheral shoulders around inner ends thereof fitting the valve body openings, the inner ends being adapted to seat upon the ball,

clamping means for pressing the shoulders inward to press the inward ends upon the ball, the shoulder at the inner end of each sealing member being formed with an annular groove open toward the upper end of the sealing member and the groove being surrounded by a lip fitting the opening in the valve body, and

an O-ring mounted in each annular groove with means for pressing the O-ring inward to expand the lip against the valve body opening for sealing the opening.

3,949,966
VARIABLE CONSTANT FLOW SELECTOR VALVE

Donald Clayton Fabish, Anaheim, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 30, 1975, Ser. No. 573,376
Int. Cl.² F16K *3/34*
U.S. Cl. 251—206 **11 Claims**

1. A variable, constant flow, selector valve that comprises:

a body having a central cavity open to one end thereof;

carriage plate means received within said cavity and rotatably carried in said body;

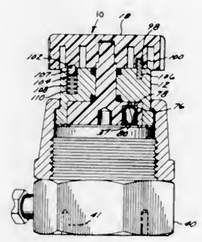
means carried on said body to effect rotation of said plate within said cavity;

first external port means carried by said body;

fluid passageway means extending interiorly of said body from said first external port means;

at least two internal ports in fluid communication with said fluid passageway means within said body and open to said cavity therein at spaced-apart locations; and

a plurality of orifice members carried by said carriage plate and extending therethrough to establish fluid communi-

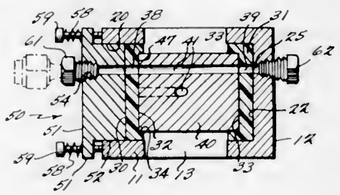


cation through said plate means to alternate one of said internal port means, said orifice members bearing orifices of distinct and preselected flow areas whereby the constant flow rate through said valve can be varied by rotation of said carriage plate.

3,949,967
OFF AXIS ROTARY VALVE

Edward R. Kratfel, Baltimore, Md., assignor to Scientific Research Instruments, Baltimore, Md.

Filed May 29, 1974, Ser. No. 474,423
Int. Cl.² F16K *5/04*
U.S. Cl. 251—314 **8 Claims**



1. A valve assembly comprising

a. means defining a fluid inlet,

b. means defining a fluid outlet,

c. a rotatable valve cylinder having an off-center opening therethrough extending from one end face of said cylinder to the other end face, said valve in a first angular position thereof providing communication through said opening between said fluid inlet and said fluid outlet, and in a second angular position thereof not allowing communication through said opening between said fluid inlet and said fluid outlet,

d. means for rotating said valve cylinder between said first and second angular positions,

e. sealing means for providing face-to-face sealing for sealing said end faces of said cylinder, for providing face-to-face sealing for sealing said means defining said fluid inlet and said means defining said fluid outlet, for providing communication between said cylinder opening and said inlet and said outlet, and for engaging the circumferential edges of said cylinder thereby axially locating said cylinder, said sealing means comprising two annular sealing members each having a recess for receiving an end of said cylinder, the border of each said recess of said member engaging the corresponding circumferential edge of said cylinder, and at least one off-center aperture in each member for providing communication between said valve cylinder opening and said fluid inlet or said fluid outlet,

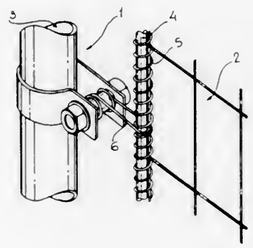
f. means for supporting said sealing means comprising an inlet end block and an outlet end block, each block having an opening therein for receiving said sealing means, and

g. resilient means for loading said sealing means for providing fluid tight engagement between said sealing means and said valve cylinder faces and between said sealing means and said means defining said fluid inlet and said means defining said fluid outlet.

3,949,968
STRETCHER FOR WIRES, ROPES AND SIMILAR FLEXIBLE ELEMENTS FOR USE IN FENCES OR SUCHLIKE

Romain Verhelst, Kortrijk, Belgium, assignor to N.V. Bekaert S.A., Zwevegem, Belgium

Filed Sept. 24, 1974, Ser. No. 508,729
Claims priority, application Belgium, Oct. 23, 1973, 806383
Int. Cl.² A63B *61/04*
U.S. Cl. 254—162 **2 Claims**



1. A wire stretcher for stretching wires, or ropes, in particular for use in fences, or drying racks, characterized in that the wire stretcher (1) comprises a yoke (7) to be attached to a post (3), whereby the outer end portions of the yoke (7) are provided with two opposite apertures (8) and (9) wherein a rotatable stretching element (10) is disposed, which stretching element (10) is provided with a through cross-aperture (11) in which a wire to be stretched can be secured and with a threaded outer end (12) and an associated nut (13), whereby the cross-section of the threaded outer end (12) is smaller than the cross-section of the stretching element (10) itself and substantially equal to the cross-sectoon of the aperture (9) in one outer end portion of the yoke (7), so that, by tightening the nut (13), this outer end portion of the yoke (7) is gripped between the collar of the stretching element (10) and the nut (13).

3,949,969
CABLE WINCH

Carl Kaufer, D-5291 Kupferberg near Wipperfurth, Germany

Filed Jan. 16, 1974, Ser. No. 433,746
Claims priority, application Germany, Feb. 15, 1973, 2307370
Int. Cl.² B66D *1/76*
U.S. Cl. 254—175.7 **12 Claims**

1. A cable winch comprising

a. a housing with a cable inlet and a cable outlet;

b. a cable passing through said housing from said inlet to said outlet;

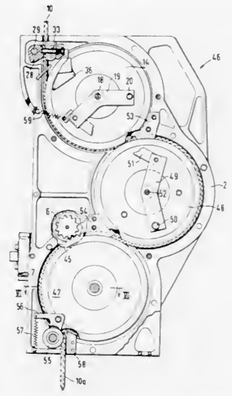
c. driving sheave means mounted for rotation in said housing, said driving sheave means having a circumferential groove for receiving said cable;

d. driving means connected to said driving sheave means;

e. a tensioning wheel eccentrically pivotally mounted for rotation in said housing adjacent said inlet;

f. a pressure wheel eccentrically pivotally mounted for rotation in said housing adjacent said driving sheave means, for urging said cable into said circumferential groove of said driving sheave means; and

g. an articulated linkage coupling the mounting of said tensioning wheel to the mounting of said pressure wheel;



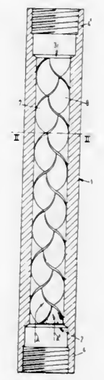
h. the axis of said pressure wheel being parallel to and movable relative to the axes of said tensioning wheel and said driving sheave means;

i. whereby tension on said cable causes said pressure wheel to urge said cable into said circumferential groove in direct relation to the degree of said tension.

3,949,970
MIXER

Johannes Gerardus ter Braak, Schiedam, Netherlands, assignor to Gebrs. ter Braak B.V., Rotterdam, Netherlands

Filed Jan. 2, 1974, Ser. No. 430,143
Int. Cl.² B01F *5/00*
U.S. Cl. 259—4 AB **6 Claims**



1. Apparatus for mixing two or more fluids to provide extensive mixing and kneading which leads to the formation of a homogeneous mixture in a relatively short length of the apparatus while creating only a small pressure drop, comprising in combination:

an elongate casing defining a through-bore of substantially uniform cross-section throughout for at least a major extent thereof;

at least one pair of helically twisted strips in which one strip is twisted in right-hand direction whereas the other strip

is twisted in left-hand direction, said strips being disposed in side-by-side nested and interfitted relation whereby to define fluid flow paths which periodically merge and then separate along the length of said strips;

said strips being housed within said casing within the section thereof which is of substantially uniform cross-section and said casing tightly enclosing said strips whereby to confine said fluid flow paths and enhance intermingling and mixing of fluids passing therethrough.

3,949,971

PUMP CONSTRUCTION

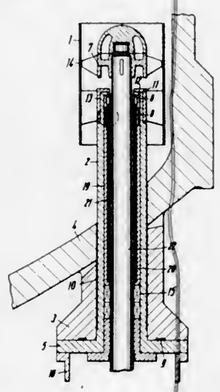
Karl Gaffal, Breslauer-Str. 21a, 6711 Hessheim, Pfalz; Rolf Martens, Muhlstrasse 33, 6710 Frankenthal, Pfalz, and Peter Havekost, Fontanestrasse, 8, Bobenheim-Roxheim 2, all of Germany

Filed May 18, 1973, Ser. No. 360,879

Claims priority, application Germany, May 20, 1972, 2223853

Int. Cl.² B01F *7/22*; **F16C** *3/16*

U.S. Cl. 259—95 **6 Claims**



1. In a pump, particularly a reactor pump, a combination comprising an outer tubular member adapted to be connected at one end with a wall of a pressure vessel; an inner tubular member rigidly connected with and extending coaxially through said outer tubular member, said inner tubular member having a portion extending beyond said one end and with clearance through an opening in said wall into the interior of said pressure vessel and having an end portion therein; a pump shaft extending through said inner tubular member; a radial bearing for said pump shaft located in said portion of said inner tubular member; a tubular baffle releasably connected with said end portion of said inner tubular member coaxially with the latter; an impeller connected with said pump shaft and mounted thereon for rotation within said tubular baffle; a pump shaft seal in said inner tubular member within the confines of said outer tubular member; and means for sealingly connecting said tubular members, and for supporting an additional pump shaft bearing. both outside said pressure vessel.

3,949,972

DIRECT ACTING HYDRAULIC DUST STOP

Wilson A. Bell, Southbury, and Douglas W. MacLeod, Oxford, both of Conn., assignors to USM Corporation, Boston, Mass.

Filed July 2, 1975, Ser. No. 592,763

Int. Cl.² B01F *7/08*; **F16J** *15/28*

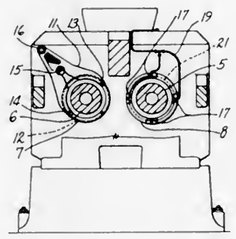
U.S. Cl. 259—104 **1 Claim**

1. In an internal rotary mixer, having rotor shafts which extend through openings in the mixer body to be journaled on the exterior thereof, a dust stop assembly for sealing the shaft openings comprising:

A. A pair of sealing gland rings situated in the shaft openings for sealing engagement with each end of the rotor;

B. Bearing surfaces on each end of the rotor for engagement with the sealing gland rings;

C. Cylinder support segments fixed to the mixer body, at the shaft openings and having flanges which are constructed to receive hydraulic cylinders;



D. Hydraulic cylinders mounted on the flanges of the cylinder support segments with the piston rods thereof in direct operative contact with the sealing gland rings; and

E. A static source of hydraulic fluid connected to supply the hydraulic cylinders at each end of the rotor, thereby providing a balanced force on each of the gland rings.

3,949,973

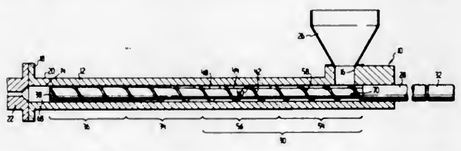
UNDERCUT FEED SECTION SCREW

Thomas G. Bishop, Mount Gilead, and William T. Flickinger, Marion, both of Ohio, assignors to Koehring Company, Milwaukee, Wis.

Filed July 5, 1974, Ser. No. 485,949

Int. Cl.² B29B *1/10*

U.S. Cl. 259—191 **7 Claims**



1. Apparatus for masticating particles of solid synthetic resinous material to plasticize the same comprising:

a barrel having a generally cylindrical bore and a feed opening communicating therewith for supplying particles of synthetic resinous material to the interior of the bore; and

a screw having two ends, being positioned in said bore and including:

an elongated generally cylindrical member with an exterior surface that defines a helical screw flight protruding outwardly from a screw root to a screw crest and including a shoulder on the screw flight,

a feed section of small root diameter at one end of said screw, said feed section including an outlet portion downstream of said shoulder, and an inlet portion upstream of said shoulder and said outlet portion for receiving particles of synthetic resinous material and advancing the material into said outlet portion under pressure,

a metering section of larger root diameter at the other end of said screw,

a transition section between said feed section outlet portion and said metering section having a root diameter that progressively increases from said small root diameter of said feed section toward said root diameter of said metering section,

said screw crest in close proximity to the bore wall and having a first diameter substantially throughout said metering section, said transition section and said feed section outlet portion, and having a second, smaller diameter in said feed section inlet portion,

the screw crest of said feed section inlet portion radially spaced from the bore wall and cooperating therewith to define an unobstructed spaced around said feed section inlet portion that communicates with said feed openings, and permits back flow of particles of synthetic resinous material over said screw flight to limit the pressure built up in said feed section outlet portion so as to reduce the tendency of still unplasticized but pressurized particles to score the surface of said barrel bore and said screw.

3,949,974

APPARATUS FOR PREVENTING RAW MIX FROM BEING UNEVENLY SINTERED BY A SINTERING MACHINE

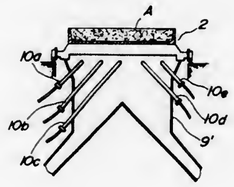
Nobumasa Shiokawa; Masakazu Maeda, both of Chiba; Takashi Harada, Yachiyo; Tsuguo Takehara, Chiba; Hiroyuki Fujikawa, Chiba, and Akio Yokokawa, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Continuation-in-part of Ser. No. 318,984, Dec. 27, 1972, abandoned. This application Mar. 20, 1975, Ser. No. 560,135

Claims priority, application Japan, Nov. 8, 1972, 47-111877

Int. Cl.² F27B *21/00*

U.S. Cl. 266—21 **4 Claims**



1. An apparatus for preventing raw mix from being unevenly sintered in a moving grate type sintering machine comprising a surge hopper having an opening at its lower front side, a feeding drum arranged immediately below said surge hopper, a main gate rotatable with respect to said feeding drum so as to adjust the height of said opening, a plurality of auxiliary gates arranged side by side in front of said main gate and between said main gate and said feeding drum and independently rotatable with respect to said feeding drum so as to adjust the height of adjacent regions of said opening which extend across the width of said opening, a pallet for receiving the raw mix to be sintered and transporting the mix through the sintering machine, said pallet being mounted for movement in an endless manner, a sloping plate arranged below said feeding drum and adpated to absorb the dropping energy of the raw mix as it falls into said pallet, a cut-off plate arranged above said pallet and adpated to apply pressure to the raw mix disposed on said pallet so as to form a bed, an ignition furnace positioned after said cut-off plate and into which is blown a controlled amount of combustion gas and air for igniting and sintering said bed, a plurality of wind boxes arranged side by side beneath said pallet in the longitudinal direction of said pallet for removing waste gas, a plurality of temperature measuring means arranged side by side in one of said wind boxes located at the exit end of the sintering machine and adapted to measure the temperature of the waste gas immediately after it passes through said bed in a direction perpendicular to said bed, computer means for receiving at its input an electrical signal representing the temperature of said waste gas measured by said temperature measuring means and supplying from its output an electrical signal representing the change in the temperature of any selected region extending across the width of said bed, means for rotating said main gate, means for rotating said auxiliary gates independently of each other, and link means for operatively connecting said main and auxiliary gates to their respective rotating means, said means for rotating said auxiliary gates acting in response to the electrical output signal from said computer means to adjust the amount of raw mix fed to regions extending across the width of said bed corresponding to the regions at which the temperature of the waste gas was measured.

3,949,975

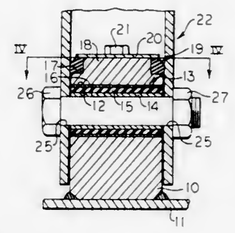
VIBRATION DAMPING MEANS FOR THE ROLL-OVER PROTECTION CANOPY OF A HEAVY VEHICLE

Bruce Walter Miers, Peoria Heights, and James Lloyd Taylor, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 24, 1975, Ser. No. 561,136

Int. Cl.² F16F *7/12*

U.S. Cl. 267—136 **4 Claims**



1. In means for mounting on a heavy vehicle such as a tractor a roll-over protection structure that includes an upright rectangular mounting stub on the vehicle and a hollow post that is substantially rectangular in cross section with slightly concave sides, said post sliding over the stub and being secured by a bolt which impales the stub and the post, improved vibration damping means comprising:

an elastomeric member of predetermined thickness at the upper end of the stub, said elastomeric member having a central opening bounded by four sides with a span across the outer faces of each two opposite sides which is slightly less than the internal width of the post so as not to bind within the post, and said elastomeric member having rounded external corners which project outwardly past the planes of the adjacent outer faces of the member so as to fit snugly in the corners of the post;

and means for securing the elastomeric member firmly to the stub, said securing means including an upper end portion of reduced cross sectional area surmounting the stub and impaling the central opening in the elastomeric member, the height of said upper end portion being not significantly less than the thickness of said member, a retaining plate which overlies the upper end portion and the elastomeric member, and a fastener impaling the plate and detachably engaging the top of the upper end portion.

3,949,976

TRACTOR STANDS

Robert E. Cofer, 1011 Central, Dodge City, Kans. 67801

Filed Feb. 10, 1975, Ser. No. 548,575

Int. Cl.² B66F *5/04*, *7/28*

U.S. Cl. 269—17 **6 Claims**

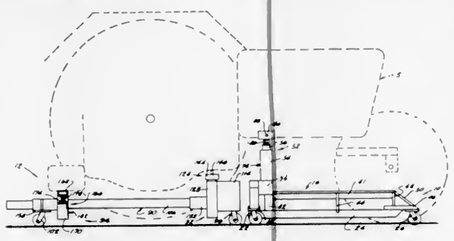
1. A vehicle support stand for supporting the forward and rear portion of a tractor or the like when the vehicle is disassembled for maintenance as its midsection between the vehicle's front and rear wheels, the support stand comprising:

a front stand including:

an elongated frame having a lower portion and an upper portion:

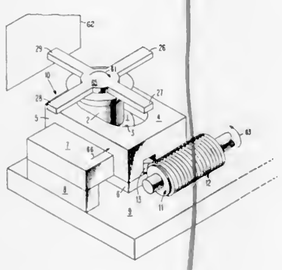
a transverse frame secured to one end of said elongated frame, said transverse frame having a lower portion and

an upper portion, the upper portion including a pair of elongated rail-like members:
a pair of telescopic supports mounted on the rail-like members of said transverse frame for supporting the engine of the vehicle; and
caster wheels attached to the ends of the lower portion of said transverse frame and the lower portion of the opposite end of said elongated frame;
a rear stand including:
an elongated frame having a pair of elongated rectangularly shaped members;
a transverse frame secured to one end of the pair of the elongated rectangularly shaped members of said elongated frame, said transverse frame having an upper portion and a lower portion;
a cross support member for supporting a mid portion of the frame of the vehicle;



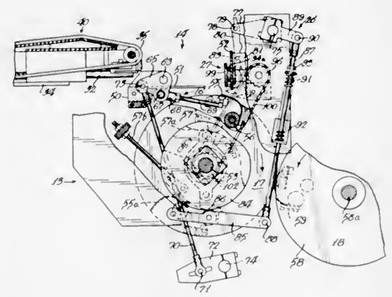
a pair of telescopic supports mounted on the rectangularly shaped members of said elongated frame, said pair of said telescopic supports supporting said cross support member thereon;
a movably mounted frame having a pair of sleeves at the ends thereof for slidably mounting on the pair of rectangularly shaped members of said elongated frame;
a rear support member for supporting a rear portion of the frame of the vehicle;
a pair of telescopic supports mounted on said movably mounted frame, said pair of telescopic support members supporting said rear support member thereon; and
caster wheels attached to the ends of the lower portion of said transverse frame and the lower portion of the movably mounted frame.

3,949,977
STAGING APPARATUS
Rolf Wustrau, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 19, 1974, Ser. No. 534,325
Int. Cl.[2] B23Q *1/04*
U.S. Cl. 269—56 **9 Claims**



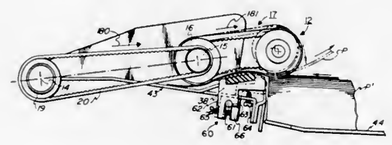
1. Staging apparatus comprising:
a. first means being linearly translatable and rotatable for causing an article to be positioned along a limited work path corresponding to one of a plurality of linear and curvilinear communicating channels; and
b. second means having a plurality of follower means, one of which serves as a pivot for said first means about a point along a linear one of said communicating channels upon rotation of said first means, said second means being for guiding said first means along a plurality of paths corresponding to said communicating channels upon rotation and translation of said first means.

3,949,978
COLLATOR FOR PRINTED SHEETS
Kermit E. Swanson, Naperville, Ill., assignor to R. R. Donnelley & Sons Company, Chicago, Ill.
Division of Ser. No. 370,522, June 15, 1973, Pat. No. 3,880,418. This application Feb. 7, 1975, Ser. No. 547,984
Int. Cl.[2] B65H *39/02*
U.S. Cl. 270—54 **2 Claims**



1. In a collator which includes an endless gathering chain provided with spaced carriers to deliver collated printed sheets for binding, and a series of printed sheet supply boxes aligned beside the conveyor chain for feeding printed sheets forwardly onto said carriers as the latter move past said boxes, in combination:
a supply box frame;
a hopper on top of said frame with horizontal support means to hold a small stack of generally horizontally disposed printed sheets, said hopper having a front wall provided with slots in its lower portion;
a plurality of stack lifter hooks each of which has an upright shank and a finger at the lower end of the shank, each of said hooks being pivotally suspended from its upper end forward of said front wall with its finger extending rearwardly in alignment with one of said slots;
means for simultaneously raising and lowering all of said hooks substantially endwise with no effective motion of said hooks toward said supply of box;
cam means including a follower roller on each hook shank and a cam track forward of the front wall having parallel surfaces between which each said roller is confined and travels as the hooks are raised and lowered, each said cam track and follower cooperating to modify said substantially endwise motion so as to project the hook finger rearwardly through the slot into engagement with the stack as the hook is raised and to retract the finger as the hook is lowered;
and gripper means beneath the hopper for engaging the bottom printed sheet in the stack near its leading edge to pull said sheet downwardly and forwardly out of the stack for feeding onto a conveyor chain carrier.

3,949,979
SHEET FEEDING APPARATUS
Thomas N. Taylor, Rochester, and Wayne F. Schoppe, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sept. 5, 1974, Ser. No. 503,413
Int. Cl.[2] B65H *3/04, 1/06, 5/06, 9/06*
U.S. Cl. 271—10 **42 Claims**

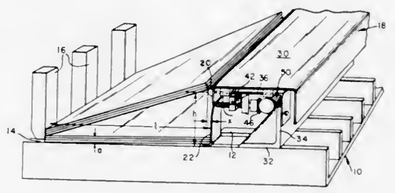


1. Sheet feeding apparatus for feeding individual sheets from a stack of said sheets comprising:
friction means for feeding said sheets from said stack, said feeding means engaging said stack with a first normal force;
friction retard means engaging said feeding means to form a nip therebetween for passage of said sheets, said feeding means encountering a frictional resistance at said nip; and
means responsive to said frictional resistance encountered by said feeding means at said nip for increasing said first normal force to a second normal force greater than said first force when a sheet is being fed by said feeding means.

18. In a reproducing apparatus including means for forming an image on a copy sheet and means for transporting said sheet in a given direction along a sheet feed path to said imaging means, the improvement wherein said apparatus further includes:
means for placing said sheet in tension in a direction transverse to said given direction as said sheet is transported to said imaging means, said tensioning means comprising first and second toed out rolls each defining an axis of rotation, said axis of said first roll being canted with respect to said given direction, and said axis of said second roll being generally oppositely canted with respect to said given direction;
a common shaft for supporting said toed out rolls for rotation thereabout;
at least one middle roll supported about said shaft between said toed out rolls with the axis of rotation of said middle roll being normal to said given direction;
means for registering a sheet with respect to said imaging means, said registration means including said rolls and stop means for intercepting a lead edge of said sheet, said stop means being movable in and out of sheet blocking relationship in said sheet feed path, and
pinch rolls for engaging said first and second rolls to form a nip for advancement of sheets therebetween, said pinch roll being coaxially aligned about an axis positioned normal to said given direction.

22. A sheet feeding apparatus for feeding individual sheets from the bottom of a stack of said sheets comprising:
friction feeding means for feeding said sheets from the bottom of said stack, said feeding means engaging said stack with a given normal force;
adjustable stop means engaging the top of said stack for restraining said stack against said feeding means;
override means for disengaging said stop means from said stack upon the application of a force of a desired level greater than said given force;
said stop means comprising a lever which is pivotally mounted at one end for movement of the other end toward and away from said stack, and said override means comprising a one way clutch connected to said lever.

3,949,980
METERING MEANS FOR BLANKS
Theodore J. Hartka, Phoenix, Md., assignor to Wm. C. Staley Machinery Corporation, Hunt Valley, Md.
Filed Nov. 25, 1974, Ser. No. 527,052
Int. Cl.[2] B65H *1/24*
U.S. Cl. 271—134 **10 Claims**



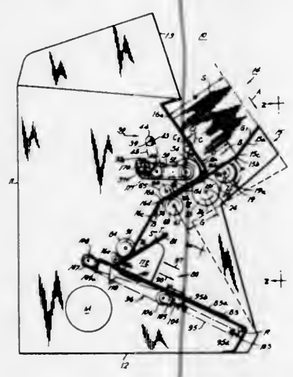
1. In apparatus for feeding cardboard blanks one by one from the bottom of a stack of blanks through a gate means, an assembly supported above blank supporting structure, said assembly comprising
front wall means positioned above said supporting structure leaving a gap that forms gate means,
reciprocated feed means for engaging the trailing end of each blank when it is lowermost in the stack and feeding such blank into the gate means,
backstop means,
said backstop means including metering lip means to serially engage the trailing end of each of the blanks to provide a pile of blanks on the supporting structure and support the remainder of the stack in sloping inclined position to concentrate the weight of the stack on the leading end of the lowermost blank,
means for adjustment of said lip means toward and away from said front wall means independently of the position of said backstop means to accommodate the feeding of either flat or warped blanks in a controlled manner to maintain a measured pile of blanks on the supporting structure.

3,949,981
MECHANISM FOR STACKING SHEETS
George P. McInerny, Andalusia, Pa., assignor to Brandt-Pra, Inc., Cornwells Heights, Pa.
Division of Ser. No. 344,999, March 26, 1973, Pat. No. 3,857,559, which is a division of Ser. No. 227,847, Feb. 22, 1972, Pat. No. 3,771,783. This application Sept. 16, 1974, Ser. No. 505,987
Int. Cl.[2] B65H *29/22, 31/14*
U.S. Cl. 271—178 **3 Claims**

1. Apparatus for receiving and neatly stacking a plurality of sheets of varying size, thickness, condition, shape and finish moving in a first predetermined direction toward said apparatus in tandem fashion comprising:
deflecting means positioned in the path of movement of said sheets for deflecting said sheets away from said first direction and toward said stacking apparatus and for simultaneously realigning sheets moving toward said deflection means in a skewed fashion;
stacking means comprising
a guiding plate for engaging the leading edges of sheets delivered to said stacking means, said guiding plate having track means;
a bar having a base slidably engaged by said track means for moving along said path defined by said track means;
said bar having a surface for engaging the surface of a sheet delivered to said stacking means;
said surface being inclined at an angle of less than 90° relative to the surface of said guiding plate;
the end of said deflecting means closest to said bar being inclined at another angle of less than 90° relative to both

said surface and said guiding plate, said deflecting means end having an opening;

kicker means including at least one cylindrical roller having a continuous smooth surface and means for rotating said roller about an axis thereof with at least a portion of said continuous roller surface partially protruding through said opening for slidingly engaging the leading edge of each sheet delivered to said kicker means and cooperating with said deflection means and for redeflecting said engaged sheet leading edge both towards said first direction and against said guiding plate and for urging said trailing edge of each sheet delivered to said kicker means



toward said bar inclined surface to permit the edge of the next sheet delivered to the stacking means to move between said last sheet and said kicker means unimpeded by said last sheet;

biasing spring means;

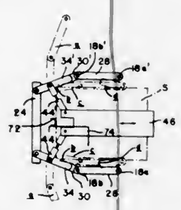
linkage means having a mechanical advantage greater than one for interconnecting said biasing spring means to said bar, whereby the elongation of said spring means is inversely proportional to the distance moved by said bar in response to the accumulation of said sheets thereon to render more uniform the force exerted on said bar by said spring means.

3,949,982

ARTICULATED ARM SHEET JOGGING MECHANISM

Donald L. Snellman; Wade C. Vaughn, and Marvin H. Haapala, all of Seattle, Wash., assignors to Norfin, Inc., Seattle, Wash.

Filed Dec. 2, 1974, Ser. No. 528,655
Int. Cl.² B65H *31/38*
U.S. Cl. 271—222 **22 Claims**



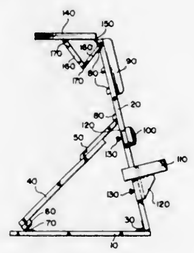
19. A sheet jogging mechanism for aligning the edges of sheets in a stack, comprising: an articulated arm including pivotally interconnected forward and rear arm sections; sheet edge contact means including forward and rear contact portions mounted by said forward arm section, means for mounting said rear arm section to swing toward a jogging position adjacent one side of the sheet stack; arm control means actiing between said arm sections for controlling relative pivotal movement thereof such that said forward contact portion first engages the sheet edges of the one side of the sheet stack as said rear arm section is swung toward said jogging position, and then said forward and rear contact portions simultaneously engage the sheet edges of the one side of the sheet stack when said rear arm section reaches said jogging position, to thereby align the sheet edges of the one side of the sheet stack; and backup means providing a stop against which the sheet edges of the opposite side of the sheet stack are aligned.

3,949,983

PRONE BOARD FOR PEDIATRIC PHYSICAL THERAPY

Ralph P. Tommasino, North Merrick, N.Y., assignor to The Raymond Lee Organization, Inc., a part interest

Filed Mar. 10, 1975, Ser. No. 556,724
Int. Cl.² A63B *23/00*
U.S. Cl. 272—57 R **4 Claims**



1. An exercise board for use in pediatric physical therapy, said board comprising:

a horizontal base;

an elongated support strut hingedly attached to the rear edge of the base and extending upwardly and forwardly therefrom;

means for setting the inclination of the support strut to any one of a plurality of pre-selected values;

a feeding tray hingedly attached to the top end of the support strut and adjustable to be generally horizontal for all orientations of said strut, said tray having a central flat surface with a raised peripheral border so as to retain dishes and the like on the central surface;

a foot rest attached to the support strut near its lower end;

a chest pad attached to the support strut at its top end in a manner that the chest pad will abut the chest of a child whose feet are placed upon the foot rest; and

a knee pad disposed upon the support strut between the foot rest and the chest pad for protecting the knees of a child whose feet have been placed upon the foot rest and whose chest abuts the chest pad.

3,949,984

BREATHING EXERCISER

Joseph Navara, 2105 W. Walton, Chicago, Ill. 60622

Continuation of Ser. No. 423,216, Dec. 10, 1973, abandoned. This application Mar. 17, 1975, Ser. No. 559,071
Int. Cl.² A63B *23/00*
U.S. Cl. 272—57 F **2 Claims**

1. A bronchial breathing exerciser, comprising;

an inflatable member;

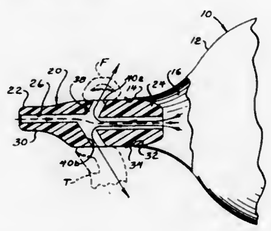
a holder having a longitudinal axis extending to a proximal end for placement in a user's mouth and a distal end for retention of the inflatable member;

a main lumen extending through the holder between said proximal and distal ends and communicating with the inside of said inflatable member;

opening means having a pair of passageways each on opposite sites of the holder intermediate its proximal and

distal ends and communicating between said lumen and the outside, whereby inflation and deflation of the inflatable member may be controlled by placement of the user's fingers on said opening means;

each of said passageways having a longitudinal axis extending in a direction toward said distal end to direct expelled air away from the user,



said distal end including means to retain the inflatable member to the holder in spaced relationship to the passageways to permit either fluid communication between the passageway and the outside or access to the passage for control by a user, said retaining means comprising annular groove adjacent the distal end for securing the inflatable member to the holder and

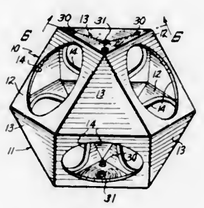
said holder includes a tapered portion adjacent its proximal end for fitment in the user's mouth and for orientation of the holder when placed in the mouth.

3,949,985

PLAYING IMPLEMENT

Louis Stampfli, Chemin des Cotes, CH-1297 Founex, Switzerland

Continuation-in-part of Ser. No. 426,701, Dec. 20, 1973, abandoned. This application Nov. 22, 1974, Ser. No. 526,157
Int. Cl.² A63B *9/00*
U.S. Cl. 272—60 R **11 Claims**



1. A hollow body playground apparatus comprising:

a. a hollow body in the form of a polyhedron of a size to accommodate a child therein;

b. said hollow body being formed of a pair of symmetrical shell halves, each shell half including means for joining said halves together;

c. each shell half further having at least one face constructed of a size to permit a child to stand thereon;

d. said face on one shell being diametrically opposite said face on the other shell to provide top and bottom surfaces for the apparatus; said faces being concaved inwardly and having a plurality of holes therein, one of said holes being substantially in the center of said face, and the other of said holes being closer to the edge of said face whereby water will drain from the substantially center hole in the top face and from said other holes in the bottom face;

e. said two identical shell halves being made of plastic material, each having edges abutting like edges of the other shell half to form said hollow body;

f. a set of alternating tongues and grooves along said edges disposed so that tongues of one half shell snugly fit into facing grooves of the other half shell in removable assembled condition of said hollow body;

g. cavities across walls of said shell halves registering in pairs when said halves are assembled and fastening means in said cavities for fixing said halves together;

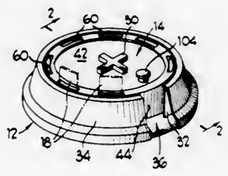
h. said body having at least one flat face for abutment against a like flat face of a like body to which it is to be connected and having connection means including an opening through said flat face and a connection element in said opening and in an aligned opening of said like body to removably join said bodies together.

3,949,986

ROTATABLE CARD CARRYING GAME APPARATUS

Jeffrey D. Breslow, Highland Park, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 13, 1975, Ser. No. 549,699
Int. Cl.² A63G *31/02*
U.S. Cl. 273—1 R **7 Claims**



1. A game apparatus, comprising:

a base including a peripheral side wall portion about which a plurality of players may position themselves, said base including a viewing area defined by a vertical slot in said side wall;

a plurality of substantially flat playing cards, at least some of which include indicia thereon;

card display means mounted on the base, said display means including card carrying means for rotatably and removably supporting at least one of said playing cards, said display means moving at least one card past the viewing area defined by said slot thereby exposing the face of a card in the card carrying means for only a limited period of time, during rotation, to one player of the game positioned in front of the viewing area but hiding the indicia on a card at the viewing area from another player not positioned in front of the viewing area so that one player may visually convey the message related by the indicia of a card in the viewing area to another player of the game during said limited period of time.

3,949,987

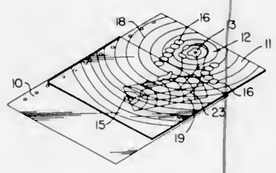
GOLFER'S AID

James T. Candor, 5440 Cynthia Lane, Dayton, Ohio 45429

Division of Ser. No. 307,977, Nov. 20, 1972, Pat. No. 3,820,786, which is a continuation-in-part of Ser. No. 220,045, Jan. 24, 1972, abandoned. This application Apr. 25, 1974, Ser. No. 464,102
Int. Cl.² A63B *57/00, 69/36*
U.S. Cl. 273—176 L **3 Claims**

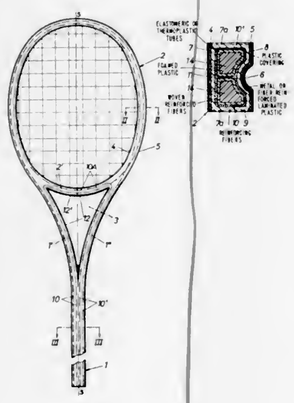
1. A golfer's aid including a map of a particular golf hole that can be played actually or vicariously by a golfer comprising a sheet member having uniformally spaced apart concentrically disposed arcs defining predetermined increments of distance thereon extending away from the center of said arcs in sufficient directions that said sheet member is adapted to readily accommodate proportionally accurate layouts of the widely varying holes played by golfers, including holes having a dogleg to the right of the tee area and a dogleg to the left of the tee area with said increments of distance extending to said tee area, said sheet member having the characteristics of said

particular golf hole laid out thereon and over said increments of distance thereon and comprising means disposed on said sheet member at said center to represent the golf green of said hole, means disposed on said sheet member at the appropriate distance from said center to represent the golf tee area of said hole, means disposed on said sheet member between said tee area representation and said green representation to represent the location of the landmarks and hazards of said hole that could be encountered by the golfer in playing said hole, and means adapted to be disposed on said sheet member to represent the first strategic shot path that the golfer could follow



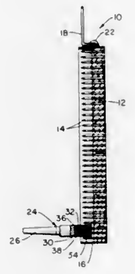
with his particular golf playing abilities or vicarious abilities to reach a first desired strategic location in attempting to reach the green of said hole in a minimum number of strokes for those abilities said means representing said first stategic shot path comprising a second sheet member adapted to be disposed on the first mentioned sheet member, said second sheet member having concentrically disposed arcs thereon spaced apart in the same increments of distance as the arcs provided on said first sheet member and extending away from the center thereof a distance sufficient to encompass said first strategic shoth path.

3,949,988
RACKET
Adolf Staufer, Ried im Innkreis, Austria, assignor to Fischer Gesellschaft m.b.H., Innkreis, Austria
Filed May 30, 1973, Ser. No. 365,065
Claims priority, application Austria, June 8, 1972, 4935/72
Int. Cl.² A63B *49/10*
U.S. Cl. 273—73 F **3 Claims**



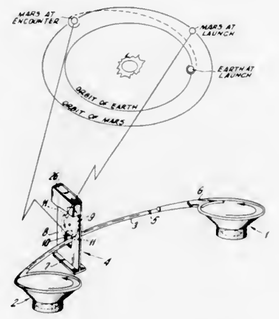
1. A racket comprising an elongated member closed upon itself to form a curvilinear head frame having a bridge portion, a stringing which is stretched in this frame and forms a striking surface, and an elongated handle for holding the racket, said handle havng a pair of forked arms at one end merging into the frame at said bridge portion and forming an integral body therewith, which body comprises an elongated core constructed of an expansible material and means surrounding said core for longitudinally reinforcing the same, said reinforcing means comprising a layer of resin impregnated woven reinforcing fibers surrounding said expansible core and a layer of resin impregnated longitudinally extending reinforcing fibers surrounding said woven fiber layer, said body being stiffened by aluminum structural straps attached to and conforming only with inner and outer surfaces of said reinforcing means, which surfaces extend substantially at right angles to the plane of the striking surface, said straps having a modulus of elasticity greater than 200,000 kilograms per square centimeter, said elongated core comprising a first core element extending from the free end of the handle on one side of the racket axis through one of said forked arms, around said head frame, across said bridge, and back through said one arm into said handle, and a second core element extending from the free end of the handle on the other side of the racket axis through the other of said forked arms, around said head frame, across said bridge, and back through said other arm into said handle, said core elements disposed one over the other throughout said racket on respective perpendicular sides of the string plane, said core elements containing a foamable plastic material which expands and exerts pressure on said reinforcing means after foaming.

3,949,989
BRISTLED DART AND SPIKED BOARD
James A. Van Meter, 15357 Magnolia, Van Nuys, Calif. 91403
Filed Oct. 2, 1974, Ser. No. 511,487
Int. Cl.² A63B *71/00*
U.S. Cl. 273—95 R **3 Claims**



1. A dart game comprising:
a dart board, said dart board having a scoring surface thereon, a plurality of spikes secured to said board and protruding above said scoring surface, said spikes arranged in an evenly spaced apart manner totally across said scoring surface;
a dart adapted to be thrown through the air and to be impaled upon one or more of said spikes, the forward end of said dart including a penetrable material, said penetrable material comprising a bundle of tightly packed bristles, whereby one or more of said spikes are to penetrate said penetrable material and rigidly support said dart with respect to said board; and
said dart including a removable casing, said bundle of bristles being contained within said casing, whereby said casing may be removed to replace said bundle of bristles.

3,949,990
ROTATING DISK TOY
Joseph Polonyi, P.O. Box 182, Forest Hills, N.Y. 11375
Filed July 11, 1974, Ser. No. 487,616
Int. Cl.² A63F *7/00*
U.S. Cl. 273—118 A **12 Claims**



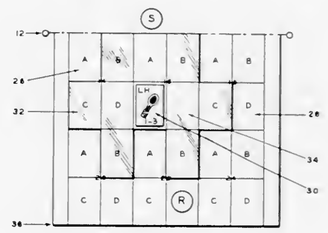
9. A game comprising an upright stand; a channel supported by the stand; a ball which is guided along a predetermined path by said channel when moving thereon; a disk having a portion cut out from the circumference thereof, the circumferential extent of the cut out portion being larger than the diameter of the moving ball but smaller than the uninterrupted extent of the disk circumference; means for mounting the disk on the stand for rotation about its center in a plane transverse to the predetermined path, the disk being positioned above the channel such that the edge of the disk clears the surface of the channel but blocks passage of the moving ball except when the cut out portion is alined with the channel; and means for rotating the disk, whereby passage of the moving ball along the channel is alternately prevented by the disk edge and permitted by the cut out portion as the disk revolves.

3,949,991
BOARD GAME APPARATUS
Michael Dennis Chase, R.R. 1, Box 76A, South County Trail, Exeter, R.I. 02822
Filed Feb. 7, 1974, Ser. No. 440,292
Int. Cl.² A63F *3/04*
U.S. Cl. 273—134 AC **4 Claims**



1. A game apparatus comprising a game board, a plurality of rectangularly shaped pieces of paper having monetary designations thereon whereby said pieces of paper constitute play money, said game board having indicia imprinted thereon representing a map of the world, said game board having a path divided into a plurality of dash lines and dots interspersed interspersed at intervals among said dash lines, said dots (alternating in two) having two different colors, some of said dash lines bearing a country or continent thereon and adapted and constructed to overlie said game board at said dashes, whereby a country or continent on said map may have a marker positioned thereabove, a first numbered die, five numbered dice smaller than said first die, a playing piece adapted and constructed to be moved along said path in accordance with a number on said first die thrown by one player, whereby said playing piece is brought to rest on one of said dash lines or dots a first set of cards in one of said two different dot colors, each card in said set bearing an instruction with regard to paying or receiving a quantity of play money when said playing piece overlies a dot of the same color as the cards;
when a playing piece comes to rest upon a marker bearing dash line, a plurality of forms are distributed to all players for recording estimates made by each player, prior to rolling the five smaller dice by said one player, of the total presented when the said five smaller dice are thrown, the player possessing that estimate closest to the total of the five dice acquiring the country or continent under the playing piece by paying a preselected amount of play money to a world bank, and removing the marker from the board, the world bank being a silent partner which can acquire countries or continents when the five dice thrown by a player total a preselected sum arrived at prior to the start of the game when the five dice are thrown to arrive at said sum, a second set of cards in the other of two different dot colors, each card in said second set bearing a set of instructions with regard to rolling of said five smaller dice for the purpose of acquiring one or more countries or continents.

3,949,992
TENNIS SIMULATING TABLE GAME
Larry J. Battis, 702 Claymont Estates, Ballwin, Mo. 63011
Filed Feb. 13, 1974, Ser. No. 442,074
Int. Cl.² A63F *3/00*
U.S. Cl. 273—134 CB **14 Claims**

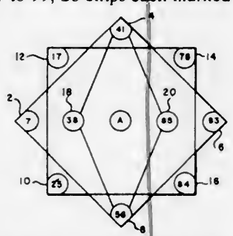


1. In a simulated tennis game: a board or like means having court areas thereon physically divided into separately identified areas; player-selectable means including a plurality of devices accessible to the server, for his choice, the devices having different area designation indicia thereon on one side only, so that the server may pre-select one of them and by it designate an area to which he may direct a serve; and chance means to indicate whether or not he makes the serve reach the selected area.

3,949,993
GAME TO BE PLAYED WITH CARDS AND PIECES
William Gerena, Hato Rey, P.R., assignor to Government of the Commonwealth of Puerto Rico, P.R.
Filed Aug. 14, 1973, Ser. No. 388,259
Int. Cl.² A63F *3/06*
U.S. Cl. 273—135 B **1 Claim**

1. A game to be played by any number of players, comprising 26 cards each of which is shaped as an eight-pointed star having a diamond marked thereon with two corners, thus providing a total of 10 corners on each of which there is marked one number of a series of numbers which are assigned

to that corner, a stripe extending across the card and connecting opposite corners, a letter of the alphabet marked at the center of the stripe, 99 chips each marked with one of the numbers from 1 to 99, 26 chips each marked with a letter of



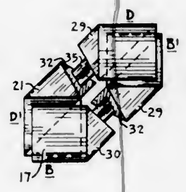
the alphabet, and a canister in which all of the chips are placed in random and from which they are drawn by successive players and placed on the corresponding number or letter on the player's card.

3,949,994

THREE DIMENSIONAL INTERLOCKING PUZZLES

Raymond L. Knarr, The Stone Barn Apartments, Bldg. 4, Apt. 5, Kennett Square, Pa. 19348

Filed Apr. 11, 1975, Ser. No. 567,094
Int. Cl.² A63F 9/12
U.S. Cl. 273—160 9 Claims



1. A puzzle comprising
a body of three dimensions with diagonally related surface portions,
said surface portions being constituted by a plurality of elements,
said portions being arrayed relative to each other so as to form two vertically arrayed tiers thereof,
pairs of said elements each comprising a discrete unit having a slidable connection therebetween for movement of elements in each pair away from each other to enable disassembly of the units and toward each other,
one of the elements of each pair being disposed in a first tier and the other element of each pair being disposed in another tier, and
said slidable connections extending generally parallel to the body diagonals of said body.

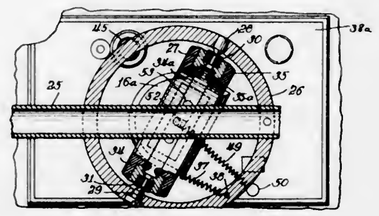
3,949,995

RECORD PLAYER NEEDLE CONTROL MECHANISM

Dwipendra Nath Guha, Huntington, N.Y., assignor to Avnet, Inc., New York, N.Y.

Filed Oct. 21, 1974, Ser. No. 516,798
Int. Cl.² G11B 3/10
U.S. Cl. 274—23 R 6 Claims

1. In a record player, a baseplate (1), a turntable (2) having a vertical tone arm supporting shaft (16) journaled in said baseplate, a horizontally disposed tone arm (25) having a pickup (15) with needle (15*a*) on the outer end of said tone arm, a pair of gimbal rings (26, 27) connecting said tone arm supporting shaft and said tone arm, and comprising an inner gimbal ring (27) lying in a generally vertical plane and being mounted on the upper end of said tone arm shaft (16) and an outer gimbal ring (26) embracing said inner ring (27) and being supported on the inner ring (27) on bearings (28, 29) disposed in the outer ring (26) on a horizontal axis diagonal to the axis of the tone arm (25) whereby said tone arm (25) may be swung horizontally on said vertical tone arm shaft (16) and may swing vertically on said horizontal axis (28, 29), a needle pressure control ring (35) mounted on the side of the



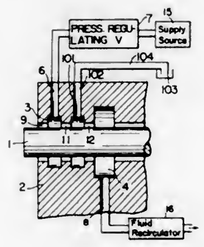
inner gimbal ring (27) which faces away from the pickup, said control ring (35) being rotatable on the side of the inner gimbal ring (27) facing away from the pickup, a needle pressure control spring (49) connected between said control ring (34) and the base plate (38*a*), said control ring (34) being rotatable on its mounting (34*a*) on said inner gimbal ring (27) to control the tension of the spring (49) and thereby the downward pressure of the pickup needle (15*a*) in the groove.

3,949,996

FLUID PRESSURE SEAL ARRANGEMENT

Gentel Inoue; Chuichi Sato, both of Fujisawa; Mamoru Tanaka, Yokohama, and Nobuhiro Matsuo, Kamakura, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1973, Ser. No. 347,529
Claims priority, application Japan, Apr. 11, 1972, 47-35717
Int. Cl.² B65D 53/06; F16C 33/74; F16J 15/40; F16L 17/02
U.S. Cl. 277—15 1 Claim



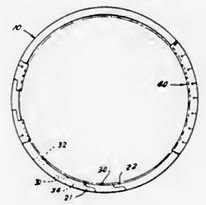
1. In a static pressure seal arrangement for sealing fluid in a bearing body having a shaft mounted for rotation therein, said shaft being mounted within an internal cylindrical wall of said body leaving an axially extending space formed between said wall and said shaft along the length of said body, said body having an annular fluid discharge groove disposed in said wall around said shaft at a longitudinal position along the length of said body, the improvement wherein the following are provided; first and second annular sealing gas supply grooves disposed about said shaft in said wall, each of said supply grooves communicating with a pressurized sealing gas supply source through a radially disposed channel in said body, a first annular outlet groove for said sealing gas disposed about said shaft in said wall and communicating to the outside through a radially disposed channel in said body and located at an axial position between said first and second supply grooves, and a second annular outlet groove for said sealing gas disposed about said shaft in said wall and communicating to the outside through a second radial channel in said body and located at an axial position between said second supply groove and said fluid discharge groove.

3,949,997

PISTON RING STRUCTURE

Alfred Bergeron, 1288 Bagley, Lot No. 6, Dallas, Tex. 75211

Filed Aug. 26, 1970, Ser. No. 66,991
Int. Cl.² F16J 9/16
U.S. Cl. 277—221 3 Claims



1. A piston ring structure comprising
first and second split ring members, each of said members being a flat member having a uniform generally rectangular cross-section; the confronting ends of each ring member including radially interengaging tongues defining a sealed joint to prevent radial blowby, one end of each ring member including an outer tongue defining a part of the outer peripheral wall thereof;
said first and second ring members being disposed in contiguous side-by-side relation with said one ends being disposed in overlapping angularly spaced relation; and silver solder joint means joining said one ends of said first and second members to define a rigid assembly of said members; said silver solder joint means being disposed immediately adjacent to each of said outer tongues to prevent movement of said outer tongues relative to the respective adjacent ring member; and the other end of each ring member, including an inner tongue, being radially confined by its respective outer tongue;
said one ends of said first and second ring members being angularly overlapped through a substantial angle; and said silver solder joint means including a first silver solder joint disposed immediately adjacent to the outer tongue of said first ring member, and a second silver solder joint disposed immediately adjacent to the outer tongue of said second ring member.

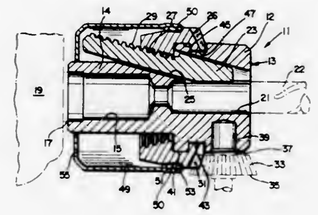
3,949,998

TOOL CHUCK

William H. Dietzen, Fayetteville, N.C., and Stephen J. Ehrlich, Owings Mills, Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Continuation of Ser. No. 126,472, March 22, 1971, abandoned. This application May 2, 1973, Ser. No. 356,615
Int. Cl.² B23B 31/04
U.S. Cl. 279—62 17 Claims

1. A tool chuck comprising a body having a plurality of ways formed therein, said ways converging toward the front of said body, jaws slideably supported in said ways and having gear teeth formed thereon, a gear rotatably supported on said body and having internal gear teeth threadedly engaging the teeth on said jaws, whereby rotation of said gear is effective to move the jaws longitudinally of said ways, said gear and said body having interfitting means disposed wholly toward the front of



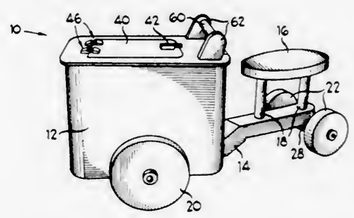
said body from said internal gear teeth preventing axial movement of said gear relative to said body.

3,949,999

OPERATOR PROPELLED TOY VEHICLE

Jeffrey D. Breslow, Highland Park, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 20, 1974, Ser. No. 534,846
Int. Cl.² B62M 1/00
U.S. Cl. 280—1.11 R 4 Claims



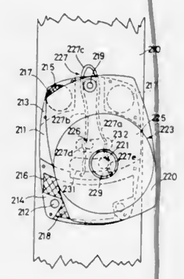
1. A miniature riding toy, comprising:
a generally hollow front compartment portion for receiving dispensable objects mounted by a single transverse axle to a pair of wheels for rollingly supporting the compartment portion for movement over a subjacent support surface;
a single elongated frame member pivotally mounted by a single generally vertical pin in a flush relationship to the underside of said compartment portion for rotation relative thereto about said pin and having an offset portion extending rearwardly and above the bottom of the compartment portion;
a second pair of wheels mounted by a transverse axle to said rearwardly extending portion of said frame structure for rollingly supporting the same for movement over the support surface;
a seat mounted by a pair of upstanding posts to said rearwardly extending portion of said frame member in position for supporting a rider so as to be capable of propelling the vehicle over the support surface; and
handle means mounted on the top of said compartment portion near the rear thereof for grasping by the rider and manipulating said compartment portion about said vertical pin to guide the vehicle as the rider sits on said seat and propels the vehicle over the support surface.

3,950,000

DEVICE IN SKI BINDINGS WITH PIVOTAL SOLE SUPPORT

Brigitte Sittmann, Stuttgart, Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch and Co. GmbH, Germany

Filed Dec. 3, 1973, Ser. No. 421,349
Claims priority, application Germany, Dec. 1, 1972, 2258905; June 29, 1973, 2333166
Int. Cl.² A63C 9/00
U.S. Cl. 280—11.35 C **61 Claims**



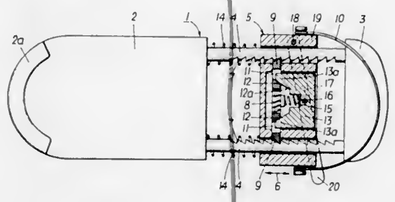
1. Ski binding apparatus comprising:
sole support means,
and sole support securing means for securing said sole support means to a ski with said sole support means being pivotal about a pivot axis extending approximately perpendicularly to the ski surface, said sole support securing means including non-threaded readily detachable means for accommodating simple manual detachment of said sole support means from a ski, whereby said sole support means can be manually detached from and attached to a ski without use of any tools,
in which the sole support means includes a rotatable disk and is rotatably supported on a sole plate means which, in its turn, is pivotally supported on the ski about a pivot axis disposed substantially perpendicularly to the ski surface, wherein the rotatable disk is rotatably secured on the sole plate means against axial lifting off by the readily detachable means.

3,950,001

ADJUSTING MECHANISM FOR SKI BINDINGS

Erwin Weigl, Brunn am Gebirge, Austria, assignor to Gertsch AG, Zug, Switzerland

Filed July 2, 1974, Ser. No. 485,245
Claims priority, application Austria, July 4, 1973, 5881/73
Int. Cl.² A63C 9/00
U.S. Cl. 280—11.35 K **11 Claims**



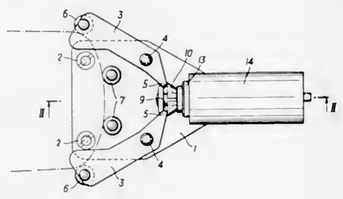
1. An adjusting mechanism for adjusting the spacing between toe and heel members which engage the toe and heel, respectively, of a ski boot, comprising:
plate means for engaging a sole of a ski boot, said plate means including a toe member having toe engaging means thereon for engaging the toe portion of said ski boot and a heel member having heel engaging means thereon for engaging the heel portion of said ski boot, said toe member and said heel member being relatively movable toward and away from each other;
guide means connected to said toe member and said heel member for guiding said relative movement of said toe member and said heel member toward and away from each other;
first securement means on said guide means;
second securement means on at least one of said toe member and said heel member cooperably engaging said first securement means to permit said toe member and heel member to be freely movable toward each other, said cooperably engaging first and second securement means including means for preventing a movement of said toe member and heel member away from each other;
release means for releasing the cooperable engagement between said first and second securement means to facilitate a movement of said toe and heel members away from each other; and
resilient means for urging said toe member and said heel member away from each other.

3,950,002

FRONT JAWS FOR SKI BINDINGS

Gottfried Schweizer; Josef Koos, both of Vienna, and Thomas G. Smolka, Vienna-Mauer, all of Austria, assignors to Gertsch AG, Zug, Switzerland

Continuation of Ser. No. 348,750, April 6, 1973, abandoned. This application Mar. 28, 1975, Ser. No. 562,979
Claims priority, application Austria, Apr. 6, 1972, 2945/72
Int. Cl.² A63C 9/08
U.S. Cl. 280—11.35 T **17 Claims**



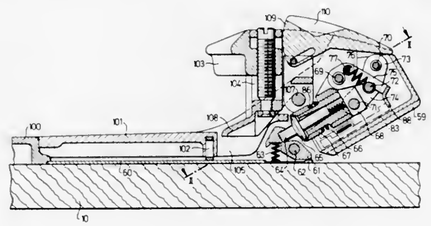
1. A front jaw for ski bindings, comprising:
a base plate fixedly secured to a ski;
a pair of horizontally spaced rocking levers each having a long arm and a short arm, each of said long arms being adapted to engage the toe of a ski boot;
a pair of horizontally spaced support means mounted on said base plate and extending perpendicularly upwardly from said base plate for rotatably supporting each of said rocking levers on said base plate; and
resilient means mounted on said base plate, said resilient means including a spring and means defining an elongated rod mounted for reciprocal movement parallel to the longitudinal axis of said ski, said rod extending away from said toe of said ski boot toward the tip of said ski and having a body portion and first coupling means comprising one of means defining an annular groove and means defining a pair of hooks on an end of said body portion adjacent said toe of said ski boot, second coupling means on each of said shorter arms of said rocking levers adapted to be coupled to said first coupling means while remaining spaced from said body portion while said rocking levers pivot through a majority of their limits of movement whereby a rotatable movement of at least one of said rocking levers will effect a longitudinal shifting of said rod against the return force of said spring and without said second coupling means impeding said longitudinal shifting of said rod.

3,950,003

METHOD AND APPARATUS FOR RELEASING A SKI BOOT FROM A SKI

Heinz Korger, Munich, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany

Filed July 31, 1974, Ser. No. 493,404
Claims priority, application Germany, Aug. 13, 1974, 2340861
Int. Cl.² A63C 9/081
U.S. Cl. 280—11.35 K **7 Claims**



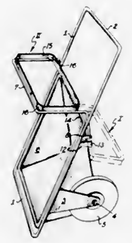
1. An apparatus for automatically releasing a ski boot and sole plate therefor from a ski upon the application of an excessive, prolonged force on the leg of a skier, comprising, in combination, a sole plate for accommodating a ski boot, means for releasably locking said sole plate on the ski in a fixed position, said locking means including a flexible force responsive member supported on said sole plate and engageable with said ski, latching means on said sole plate for permitting disengagement of said force responsive member from said ski, means including said force responsive member for sensing the magnitude of force applied to the leg of a skier in terms of, means for mechanically sensing the duration of said applied force, means for mechanically applying the sensed values of both said sensing means to said latching means to permit disengagement of said force responsive member when the combined values of both of said sensing means exceeds a threshold value to release said locking means and said sole plate from the ski.

3,950,004

ARRANGEMENT FOR GARDEN BARROWS

Tage Olsson, Valhallagatan 11, 260 14 Glumslov, Sweden

Filed Jan. 21, 1974, Ser. No. 435,404
Claims priority, application Sweden, Jan. 25, 1973, 7301021
Int. Cl.² B62B 1/20
U.S. Cl. 280—47.18 **6 Claims**



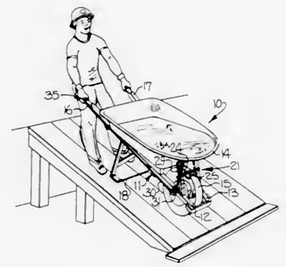
1. A garden barrow comprising:
a. a frame having a handle,
b. a load trough fixedly mounted on the frame,
c. at least one wheel rotatably mounted on the frame,
d. clamp means having free ends pivotally mounted on the frame and being movable between first and second working positions,
e. said clamp means being effective to form a standard for a wheel barrow in said first working position and being effective to form a holding means for a refuse sack barrow in said second working position, and
f. support means for fixedly maintaining the clamp means in said first working position,
g. said support means including two tongue members disposed on opposite sides of the barrow,
h. said tongue members being resiliently disposed on said barrow and being effective to releasably grip the clamp means adjacent said pivotally mounted free ends.

3,950,005

BRAKE APPARATUS FOR A MANUALLY PROPELLED MATERIAL HANDLING VEHICLE

Wayne C. Patterson, No. 3 Watson St., Rome, Ga. 30161

Filed Jan. 28, 1975, Ser. No. 544,700
Int. Cl.² B62B 1/18
U.S. Cl. 280—47.31 **3 Claims**



1. A manually propelled material handling vehicle comprising frame means for supporting a load of material and having a pair of elongate rearwardly extending handle members for manipulation by an operator propelling and guiding the vehicle, a single wheel mounted from said frame means adjacent the forward extremity thereof for supporting said frame means, brake shoe means mounted from said frame means for movement adjacent said wheel means for selectively engaging said wheel means and applying thereto force resisting rotation thereof, spring means mounted from said frame means for normally exerting force biasing said brake shoe means away from engagement with said wheel means so as to normally allow said wheel means and the vehicle to roll freely, hand grip means slidably mounted on one of said handle members for manual gripping thereof by an operator propelling and guiding the vehicle and for rearward movement away from said wheel means in response to force exerted by an operator resisting any tendency of the vehicle to increase speed and move away from the operator, and elongate flexible cable means operatively connecting said hand grip means and said brake shoe means for transmitting to said brake shoe means force exerted by an operator resisting increasing vehicle speed so as to overcome said spring means biasing force and move said brake shoe means into braking engagement with said wheel means thereby facilitating control over the vehicle by the operator.

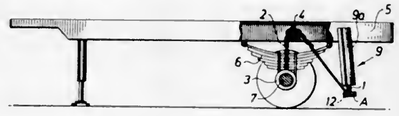
3,950,006
RACK AND PINION STEERING ASSEMBLY
Ruey E. Wood, Jr., Eastlake, Ohio, assignor to TRW Inc., Cleveland, Ohio
Continuation of Ser. No. 288,045, Sept. 11, 1972, abandoned, which is a division of Ser. No. 34,156, May 4, 1970, Pat. No. 3,693,999. This application May 21, 1974, Ser. No. 471,979
Int. Cl.² B62D 3/12
U.S. Cl. 280—96 5 Claims



1. A rod joint for connecting the rack of a rack and pinion steering assembly to a tie rod having a ball end comprising bearing means for enclosing the ball end of the tie rod, said bearing means including a pair of plastic bearing seats having arcuate inner surfaces disposed in engagement with the ball end of the tie rod and circular outer surfaces, a metal housing having a generally cylindrical wall with an inner surface disposed in abutting engagement with said circular outer surfaces of said plastic bearing seats, said housing having an inturned axially outer end portion at least partially defining an aperture through which the tie rod extends and forming a shoulder abutment which is engaged by one of said bearing seats to retain said bearing means and tie rod ball end in said housing, an end closure adapter at least partially disposed within said housing adjacent to an inner end portion of said housing opposite from said inturned outer end portion of said housing and connected with an end of the rack, said end closure adapter axially retaining said bearing means and cooperating with said shoulder abutment to apply an axial preload force to said bearing seats, said end closure including surface means defining an annular groove and an annular bead disposed axially outwardly from said annular groove, said generally cylindrical wall of said housing being plastically deformed radially inwardly into abutting engagement with a bottom portion of said annular groove and being disposed in abutting engagement with opposite annular side surfaces of said bead to retain said housing and end closure against axial movement relative to each other under the influence of the preload force and operating forces applied to the bearing seats, said wall of said housing including an outer surface which defines a groove in said wall where said wall is plastically deformed radially inwardly into said annular groove in said end closure adapter, and means for preventing relative rotation between said housing and said rack, said means for preventing relative rotation between said housing and said rack including a detent tab which extends into a recess formed in said rack.

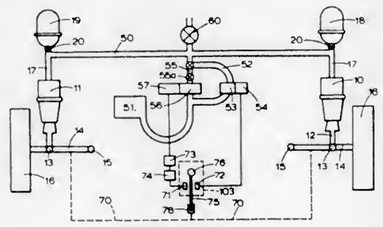
3,950,007
LOADING VEHICLE
Gunvald Magnus Svante Berger, Helmfeltsgatan 4 A, S-211 48 Malmo, Sweden
Filed Feb. 26, 1975, Ser. No. 553,273
Claims priority, application Sweden, Feb. 26, 1974, 74025073
Int. Cl.² B60S 9/10
U.S. Cl. 280—124 R 9 Claims

1. A loading vehicle provided with a chassis and a carrying frame for at least one load carrier and a compression device for the spring or springs forming at least a part of the spring system which carries at least one wheel shaft on the vehicle, said compression device comprising a moveable actuating device which, when actuated, transfers a force to the springs in order to compress them so that the carrying frame will be moved towards the wheel shaft, characterized by the carrying frame being a part of the vehicle chassis or being coupled to the chassis independent of the compression device, and by a lifting device coupled to the compression device or forming a part thereof which, when activated, is arranged to lift the



chassis, and therewith the carrying frame, so that the carrying frame will take a pre-determined height in relation to the ground essentially independent of the weight of the load carried by the carrying frame.

3,950,008
CONTROL SYSTEMS
Philip Basil Uncles, Bradford-on-Avon, England, assignor to Moulton Developments, Limited, Bradford-on-Avon, England
Filed July 2, 1975, Ser. No. 592,400
Claims priority, application United Kingdom, July 2, 1974, 29300/74
Int. Cl.² B60G 11/26
U.S. Cl. 280—124 F 7 Claims

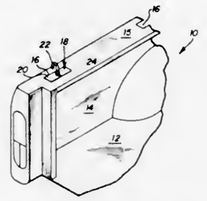


1. A delay mechanism in combination with two electrical limit switches for controlling the operation of an electric circuit in dependence upon the movement of a mechanical component, the delay mechanism comprising: an elongate flexible element mounted for oscillatory movement about a pivot axis, a rotary damper device acting on the flexible element and arranged to damp said oscillaroty motion in both clockwise and anticlockwise directions, the flexible element being located adjacent the mechanical component and spaced a predetermined distance from the pivot axis to cooperate with the mechanical component so that movement thereof is transmitted to the flexible element, and the electrical limit switches being located, one on each side of the flexible element at locations spaced from the pivot axis a distance less than said predetermined distance so that on movement of the mechanical component the flexible element is resiliently deformed so that one or other of the limit switches is operated only when movement of the mechanical componenet exceeds a predetermined extent and for a predetermined duration of time.

3,950,009
PYROTECHNIC FORMULATION
Brian K. Hamilton, Utica, Mich., assignor to Allied Chemical Corporation, New York, N.Y.
Continuation of Ser. No. 224,524, Feb. 8, 1972, abandoned. This application Aug. 10, 1973, Ser. No. 387,406
Int. Cl.² C06D 5/00
U.S. Cl. 280—150 AB 6 Claims

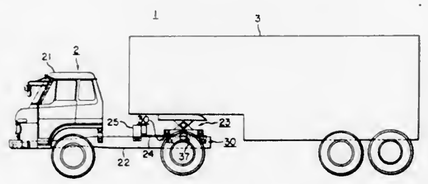
1. A method of supplying generated gas to expand an inflatable safety restraint without the production of substantial water vapor during gas generation, comprising the steps of:
a. preparing a mixture consisting essentially of:
1. an oxidizer which does not contain hydrogen, said oxidizer being selected from the group consisting of metal chlorates and perchlorates;
2. a carbon material;
3. a carbonate coolant;
b. burning said mixture to produce a gas; and
c. directing the gas into the inflatable safety restraint.

3,950,010
TIE-DOWN CLAMP ASSEMBLY FOR TRUCK VEHICLE BED
Robert H. Robertson, Dallas, Tex., assignor to Ronbil Industries, Inc., Mesquite, Tex.
Filed Jan. 29, 1975, Ser. No. 545,086
Int. Cl.² B60P 7/00
U.S. Cl. 280—179 R 11 Claims



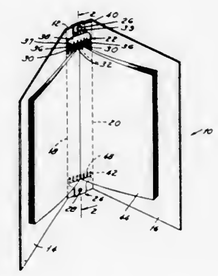
1. A tie down clamp assembly comprising:
a housing having a rectangular top and downwardly depending side walls,
means for positioning said housing in a predetermined position within an opening,
upwardly inclined slots extending in said side walls in opposing directions,
an aperture formed in said rectangular top,
a rigid elongate member slidably received in said aperture,
a lock plate having a length longer than the width of said housing connected to the lower end of said elongate member and received within said housing below said top of said housing,
and means for rotating said elongate member such that the ends of said lock plate are received in said inclined slots and cammed upwardly toward said rectangular top to be positioned transverse to the opening, and
abutment means for positioning said lock plate transversely to said housing.

3,950,011
TRAILER TRUCK
Akira Yamanaka, Yokohama, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 11, 1974, Ser. No. 514,016
Int. Cl.² B62D 3/10
U.S. Cl. 280—432 15 Claims



1. A trailer truck comprising a trailer mounted at its front on the rear of a chassis frame of a tractor to be allowed to move forwardly or upwardly relative to said frame upon application of a longitudinal impact force greater than a predetermined value to said trailer, and an energy absorbing system located between said chassis frame and said front of the trailer for absorbing kinetic energy of said trailer upon said relative movement thereof, said energy absorbing system being located between said chassis frame of the tractor and a bed of a coupler connected at its upper end to the bottom of said front of the trailer, said energy absorbing system comprises a flat load carrying friction plate positioned between said chassis frame of the tractor and said bed of the coupler, and shearable means connecting said chassis frame to said coupler bed.

3,950,012
RETAINER FOR MULTI-LEAFED DEVICES
Robert G. Donovan, 15 East Lane, Stauffer Heights, Pittston, Pa. 18640
Filed Mar. 17, 1975, Ser. No. 558,679
Int. Cl.² B42D 3/00
U.S. Cl. 281—46 3 Claims

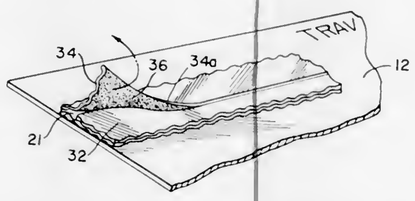


1. The combination comprising a retainer for a multi-leafed device and a multi-leafed device, said retainer comprising an elongated support comprising the back of a binder having cover elements, a pair of spaced apart brackets secured to the support, one of said brackets being an upper bracket and the other of said brackets being a lower bracket, each bracket having a plurality of spaced apart prongs extending therefrom towards the other bracket, each of the prongs on the upper bracket being longer than each of the prongs on the lower bracket, the distance between the tips of a pair of opposed prongs being less than the length of the multileafed device retained on the retainer while said distance plus the length of the prongs on the upper bracket is greater than the length of said multi-leafed device and said distince plus the length of the prongs on the lower bracket is less than the length of said multi-leafed device, and stop structure on the prongs of said upper bracket which is movable on the prongs of the upper bracket from a position to prevent inadvertent release of said multi-leafed device on the retainer to a position allowing release of said multi-leafed device.

3,950,013
SYSTEM FOR PREVENTING UNAUTHORIZED CASHING OF TRAVELERS CHECKS OR THE LIKE
Dominick P. Tagliaferri, 424 Burmont Drive, Utica, N.Y. 13502
Filed Mar. 13, 1975, Ser. No. 558,012
Int. Cl.² B42D 15/00
U.S. Cl. 283—6 1 Claim

1. For use with a Travelers Check or similar negotiable instrument having a first linear space on its face whereon a user at the tme of purchase can place an initial comparison signature and having a second linear space on its face whereon such user at the time of presentment to a payor can place his signature which the payor can compare with the signature on the first linear space to ensure that the proper person is pres-

enting such check; a unit separate from but adapted to be attached to the check at the time of purchase thereof for preventing unauthorized cashing of such check, said unit comprising a substantially rectangular transparent strip separate from the check and adapted to be affixed to the face of the check at the time of purchase thereof with such strip being of a size so as to completely overlie and cover the first linear space and the signature thereon, said strip having an inner face and an outer face with said inner face being provided with pressure sensitive adhesive whereby the strip can be securely fastened on the face of the check over the first linear space so as to completely overlie the initial comparison signature but with such signature being visible through the strip, cover strip means secured to said inner face to protect the adhesive



thereon with such cover strip means being removable to expose such face for affixing the same on the check over the first linear space, and thin opaque covering strip means adhesively fastened to and overlying the outer face of the transparent strip and being of a size and shape to complement the size and shape of the transparent strip and completely cover the outer face thereof, said cover strip means being composed of a pair of opaque thin covering strips arranged lengthwise of the transparent strip and having inner edges arranged in an overlapping arrangement so that the covering strips can be easily peeled off from the transparent strip without damaging the latter, said inner overlapping edges of the covering strips being straight and the transparent strip and the covering strips having outer scalloped side and end edges.

3,950,014

SUCTION PIPE FOR DUST OR LIQUID SUCTION DEVICE

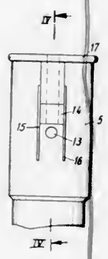
Eric G. Doubleday, Am Kraherwald 167, 7 Stuttgart-W, Germany

Filed Jan. 6, 1975, Ser. No. 539,013

Claims priority, application Germany, Jan. 10, 1974, 2401006

Int. Cl.² A47L *9/24*; F16L *37/08*

U.S. Cl. 285—7 **7 Claims**



1. A suction pipe, or wand, for a suction cleaning device comprising a plurality of pipe sections adapted for end to end interconnection, each region of interconnection of adjacent pipe sections comprising a sleeve portion on the end of one pipe section and a plug portion on the end of the other pipe section receivable in the sleeve portion, a radial protuberance on said plug portion and a recess in the sleeve portion to engage said protuberance when the pipe sections are interconnected, at least said plug and sleeve portions of the pipe sections being formed of resilient material, an axial incision in said sleeve portion on each side of said recess and having one end extending in a direction away from the outer end of the sleeve portion at least to said recess and each of said incisions terminating at the other end thereof in said sleeve portion between the recess and the mouth of said sleeve portion.

3,950,015

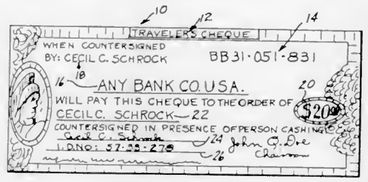
NEGOTIABLE INSTRUMENT

Cecil C. Shrock, 5016 N. Winthrop Ave., Chicago, Ill. 60640

Continuation of Ser. No. 270,597, July 11, 1972, abandoned. This application Oct. 10, 1973, Ser. No. 404,872

Int. Cl.² B42D *15/00*

U.S. Cl. 283—7 **5 Claims**



1. A system for transmitting funds comprising a plurality of blank travelers cheques each bearing the printed name of the intended recipient, the amount payable, a serial number and a single space for the recipient to sign his name and his identification number, said cheques being issued in blank with respect to the recipient's signature, an identification certificate bearing the user's printed name, his signature, and an exclusive identification number, whereby each cheque may be authenticated at the time of cashing by signing and filling in the identification number in the presence of the person cashing who has been presented with the identification certificate, said cheques being issued separate from and subsequent to the issuance of said identification certificate, whereby said identification certificate may be used repeatedly for the cashing of a plurality of cheques from time to time.

3,950,016

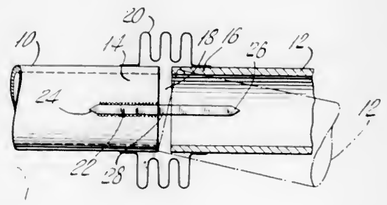
FLEXIBLE FLUID-CONDUCTING ASSEMBLIES

Arthur C. Worley, Morristown, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Nov. 7, 1974, Ser. No. 521,832

Int. Cl.² F16L *13/04*

U.S. Cl. 285—114 **3 Claims**



1. In a fluid-conducting assembly, a pair of pipes respectively having open free end regions situated adjacent but spaced from each other for defining a predetermined gap therebetween, fluid-tight, flexible tubular sheet means surrounding and fluid-tightly connected with said free end regions exterior of said pipe and bridging said gap therebetween for preventing fluid from escaping through said gap, and single

plate means having portions situated internally of said free end regions of said pipes, said plate means comprising a planar one-piece body of uniform thickness throughout its length and being of a width corresponding to the inside diameter of said pipes and extending continuously from the interior of the free end region of one of said pipes across said gap to the interior of the free end region of the other of said pipes, means securing the edges of said plate means to the interior of said free end regions of said pipes, said body having in said gap an intermediate portion including a pair of opposed semicircular notches formed in the edges of said plate means to thereby reduce the stiffness thereof in the plane of said gap to permit said pipes to bend about an axis defined by the intersection of the plane of said gap with the plane of said plate means.

3,950,017

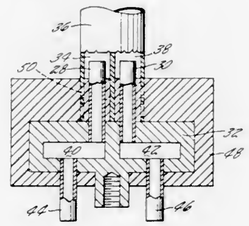
LEAKPROOF CONNECTION FOR POLYETHYLENE TUBING

Robert John Beurer, West Haven, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 29, 1974, Ser. No. 465,195

Int. Cl.² F16L *39/04*

U.S. Cl. 285—137 R **2 Claims**



1. A leakproof connection between polyethylene tubing and metal tubing including;
a polyethylene tube defining a plurality of walled passages;
a metal tube for each of said passages;
each metal tube having an end received within an end of each passage and spaced from the passage wall;
at least one radially extending hole in the wall of each passage;
each of said metal tubes being attached to adaptor means providing individual connections;
and cast polyurethane means sufficiently surrounding said polyethylene tube, metal tubes and adaptor to provide a leakproof connection;
said polyurethane means extending through said radially extending holes and filling the spacing between each metal tube and its surrounding passage wall.

3,950,018

BOLT LOCKS FOR FREIGHT CAR, TRAILER TRUCK AND AIR CARGO DOORS

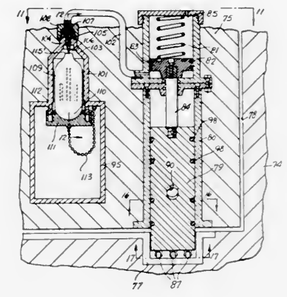
John J. Pickering, 102 Barrett Ave., North Providence, R.I. 02904

Filed Oct. 20, 1972, Ser. No. 299,201

Int. Cl.² E05C *1/06*

U.S. Cl. 292—144 **7 Claims**

1. In a freight vehicle having a doorway, a door movably mounted on the vehicle for opening and closing said doorway, said door having a portion movable adjacent a portion of the doorway when the door is closed, co-operating bolt and detent means respectively mounted on said portions for at times locking the door in closed position, said bolt means including an air pressure cylinder and a movable bolt member mounted on one of said portions, said cylinder having a movable piston therein, bolt-restraining means coupled to said piston, said detent means comprising a detent element mounted on the other portion and being lockingly engagable by said bolt means, means to at times admit pressure air into said cylinder, wherein said bolt means comprises a bolt slidably mounted on said door portion, and wherein said detent means comprises a socket element on said doorway portion located to receive said bolt, an air chamber on said door, conduit means communicatively connecting said chamber to said cylinder for admitting pressure air to said cylinder, a normally sealed pressure air container in said chamber, means for changing the position of said container in said chamber, and means to unseal said container responsive to a change of position of said container in said chamber.



3,950,019

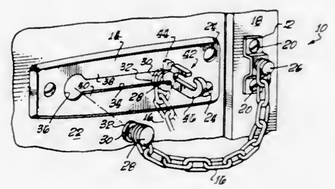
CHAIN DOOR FASTENER

Thomas J. Dugan, 2501 El Camino Real, No. 206, San Clemente, Calif. 92672

Filed Apr. 5, 1974, Ser. No. 458,116

Int. Cl.² E05C *17/36*

U.S. Cl. 292—264 **2 Claims**

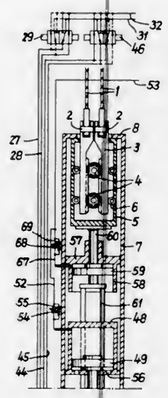


1. A door chain latch comprising:
a. first and second plate members to be mounted on a door and the jamb portion of the door frame, respectively;
b. a latch chain;
c. means fixedly securing one end of said chain to one of said plate members;
d. means releasibly securing the other end of said chain to the other plate member comprising a stud on said chain and a slideway in said other plate member for removably slidably receiving said stud; and
e. hook means having a portion removably slidably engageable in said slideway before said stud and having a hook portion insertable through a selected intermediate link of said chain.

3,950,020
GRIPPING DEVICE

Bernhard Hoffmeister, Wilhelmshaven, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Mar. 25, 1974, Ser. No. 454,296
Claims priority, application Germany, Mar. 29, 1973, 2315662
Int. Cl.² G21C *19/10*; B66C *1/28*
U.S. Cl. 294—86 A 4 Claims

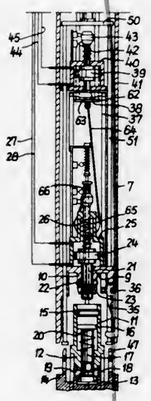


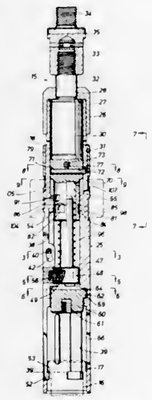
1. A device for use in gripping and axially moving elongated bodies, especially the fuel elements and the control bars in a core reactor, comprising:
a. a lift mechanism,
b. a load supporting body suspended from said lift mechanism,
c. a gripper housing enclosing said load supporting body and having lost vertical motion connection with it,
d. first and second gripper means arranged on the lower end of said gripper housing each having gripping and release positions,
e. a first cylinder arranged within said gripper housing near the lower end of it,
f. a first piston reciprocable in said first cylinder and connected to a first rod pertaining to said first gripper means,
g. a second cylinder arranged within said gripping housing higher than said first cylinder,
h. a second piston reciprocable in said second cylinder and connected by second rod means to said second gripper means,
i. said first piston and said second piston can be actuated by pressure fluid each at least in one direction corresponding to the adjustment of said first gripper means and of said second gripper means into said release positions relatively and can be adjusted at least by spring means each in the opposite direction,
k. a blocking means connected to said load supporting means by third rod means and arranged in such a manner that it blocks said first and said second piston in
l. such positions in which said pistons hold said first gripper means and said second gripper means respectively in their gripping positions,
m. feeler means which are guided axially reciprocable in said gripper housing between a lower position and an upper position and which in said lower position is so arranged that when said gripper housing is lowered said feeler means engages a supporting means prior than said gripper housing engages another supporting means which said supporting means are connected to a bearing means which receives said elongated bodies before these bodies will be gripped and moved upwards,
n. said feeler means being fixed to a third piston reciprocable in a third cylinder arranged in said gripper housing,
o. said third cylinder is filled above said third piston with fluid and connected to a fluid source by a pipe which includes means for retarding flow of fluid from said third cylinder to said fluid source, but for permitting free flow of fluid from said fluid source to said third cylinder.

3,950,021
PULLING AND RUNNING TOOL

Pierre Goldschild, Paris, and Bernard Doremus, Fontainebleau, both of France, assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed July 29, 1974, Ser. No. 492,798
Int. Cl.² E21B *31/12*
U.S. Cl. 294—86.28 21 Claims



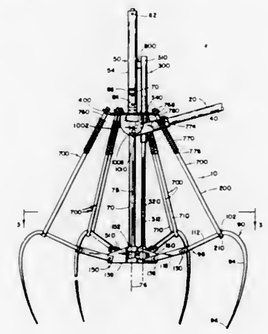


1. Apparatus adapted for running and pulling well devices, comprising: a tubular support; elongated gripping members pivotally mounted on said support and yieldably urged toward a disengaged position; a control body movable on said support between selected positions, said control body having first surface means engaging said gripping members in one of said selected positions to prevent disengagement of said members from a well device, and second surface means defining recess means cooperable with said members in another of said selected positions to enable disengagement of said members from a well device; and releasable means for fixing said control body initially in said one position, release of said releasable means enabling movement of said control body to said other position.

3,950,022
POWER HAY FORK

Henry Flohr, P.O. Box 647, Saratoga, Wyo. 82331

Filed Dec. 16, 1974, Ser. No. 532,943
Int. Cl.² B66C *3/04*
U.S. Cl. 294—88 6 Claims

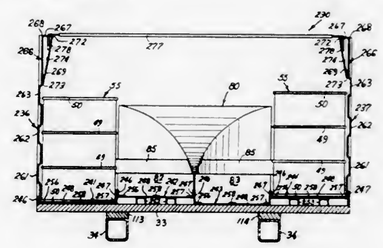


2. An anti-bending hay fork for grappling hay comprising: a fluid means pressure housing, piston means slidable in said housing, a tooth-control shaft slidably extending through the lower end of said housing for upward and downward movements with respect thereto and connected to the lower end of said piston means, said housing having upper and lower ports at opposite ends of said piston whereby selective introduction and removal of a fluid means at said ports will cause said piston and tooth-control shaft to move downwardly and upwardly respectively along a straight shaft-axis, a plurality of hay-gripping teeth each having a downwardly depending outer tooth section spaced from said tooth-control shaft as seen in top plan view and an inner tooth section attached to the upper end of said downwardly depending tooth section and inwardly extending therefrom toward said tooth-control shaft axis, a tooth-carrying hub attached to the lower end of said tooth-control shaft, said teeth being spaced with respect to each other around said tooth-control shaft in a cooperative relationship for gripping hay, means pivotally attaching to said hub those ends of each of said inner tooth sections which are closest to said hub in a manner for swinging of said inner tooth sections upwardly and downwardly at their outer ends each about a respective substantially horizontal tooth pivot axis through the respective inner tooth portion, said tooth pivot axes being disposed substantially at a right angle to said tooth-control shaft, elongated holding assemblies disposed one at each tooth and each extending upwardly from a place adjacent a respective tooth, at least one of said holding assemblies comprising two elongated relief rod assemblies upwardly extending alongside each other, each of said relief rod assemblies comprising an elongated pressing member, means pivotally attaching the lower ends of said two pressing members to one of said teeth in a manner for rotation about a holding assembly lower pivot axis disposed substantially horizontally and at a right angle to a radius of said tooth-control shaft axis, means pivotally attaching the upper ends of each of said two pressing members independently to said housing in a manner permitting the lower ends of said two pressing members to permit the respective tooth to move at its lower end from an outer retracted position to an inner hay-gripping position, said holding assemblies each being sufficiently stiff that as said tooth-control shaft moves from a lower position toward an upper position the respective tooth will be forced to move from said retracted position to said hay-gripping position.

3,950,023
SIDE WALL CONSTRUCTION FOR A CARGO TRANSPORTING AND HANDLING VEHICLE

James D. Mahoney, 4 Ivy Lane, Oak Brook, Ill. 60521

Division of Ser. No. 302,477, Oct. 30, 1972, Pat. No. 3,833,139, which is a continuation-in-part of Ser. No. 132,319, April 8, 1971, abandoned. This application Feb. 22, 1974, Ser. No. 445,284
Int. Cl.² B62D *25/02*
U.S. Cl. 296—28 M 4 Claims

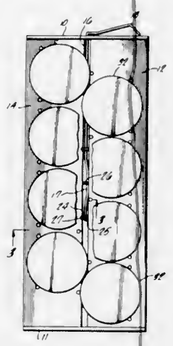


1. In a cargo transporting and handling vehicle for transporting a plurality of cargo elements having laterally outwardly protruding structure thereon, said vehicle including a vehicle body having an elongated cargo supporting surface and laterally spaced upstanding side walls, and guide means carried by said surface and defining at least two longitudinally extending, side-by-side, parallel paths on said surface, one of said paths being disposed adjacent to one of said side walls and one of said paths being elevated above the other of said paths so that the laterally outwardly protruding structure on cargo elements on one of said paths does not contact the laterally outwardly protruding structure on cargo elements on the other of said paths as the cargo elements are moved along their respective paths, the improvement of means carried at least by said one side wall for accommodating the protruding structure on cargo elements on said one path so that said side wall may be positioned close to cargo elements on said one path and the overall width of said vehicle body minimized, said accommodating means also serving to strengthen said side wall and comprising at least one laterally outwardly displaced, longitudinally extending portion of the material of said one side wall, said displaced portion being located so as to be in substantial vertical alignment with the protruding structure on the cargo elements on said one path and normally being out of contact with said protruding structure.

3. In a cargo transporting and handling vehicle for transporting a plurality of cargo elements having laterally outwardly protruding structure thereon, said vehicle including a vehicle body having an elongated cargo supporting surface and laterally spaced upstanding side walls having upper, longitudinally extending edges, and guide means carried by said surface and defining at least one longitudinally extending path on said surface adjacent one of said side walls, the improvement of means carried at least by the side wall adjacent to said path for accommodating the protruding structure on said cargo elements so that said side wall may be positioned close to cargo elements on said path and the overall width of said vehicle body minimized, said accommodating means also serving to strengthen said side wall and comprising at least one laterally outwardly displaced portion of the material of said side wall, said displaced portion being located so as to be in substantial vertical alignment with the protruding structure on said cargo elements when said cargo elements are positioned on said path and normally being out of contact with said protruding structure, and said side walls having enlarged sections on the upper portions thereof to further strengthen said

side walls, each of said enlarged sections having a laterally inwardly extending flange on the upper edge of said side wall and an elongated plate having one of its longitudinal edges secured to the inner edge of said flange, the other longitudinal edge of said plate being secured to said side wall below said flange, whereby said enlarged section is triangular in cross section.

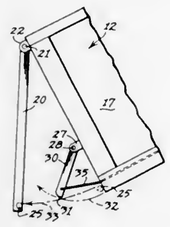
3,950,024
APPARATUS FOR CARRYING DISC-SHAPED ARTICLES
Raymond S. Martin, Escondido, Calif., assignor to James W. Smith; William E. Stevenson and Arthur P. McGill, all of San Marcos, Calif.
Filed Jan. 13, 1975, Ser. No. 540,525
Int. Cl.² A47J *45/00*
U.S. Cl. 294—34 **4 Claims**



1. A device for retaining a plurality of disc-shaped objects comprising:
first and second strip members arranged side-by-side in co-planar relationship, two spaced-apart end retaining means each engaging one end of each of said strip members, the first one of said strip members being fixedly secured to the retaining means at each end thereof, the second strip member being laterally slidable within said retaining means with respect to said first strip member;
actuating means cooperatively coupled between said first and second strip members for moving said second strip member laterally within said end retaining means with respect to said first strip member; and
a plurality of upstanding lug members affixed to said first and second strip members, said upstanding lug members being located on said strip members to cooperatively engage disc-shaped objects upon a surface of said strip members.

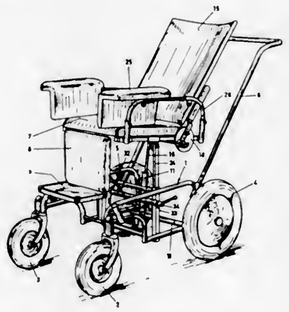
3,950,025
TAILGATE REGULATORS
Amos J. Little, Rte. 1, Waverly, Tenn. 37185
Filed Feb. 24, 1975, Ser. No. 552,367
Int. Cl.² B62D *25/00*
U.S. Cl. 296—56 **4 Claims**

1. In a truck vehicle including a dump body having an open rear end and a tailgate having upper and side edge portions, said tailgate being pivotally mounted on said dump body to swing about a horizontal axis along its upper edge portion toward a closed position closing the rear end of the dump body and away from said rear end to various open positions, a regulator device for controlling the open and closed positions of said tailgate comprising:
a. a substantially horizontal abutment member on said tailgate,
b. a control arm of predetermined length having a free end and a pivotal end,
c. means journaling the pivotal end of said control arm upon said dump body below the horizontal swing axis of said tailgate but above said abutment member in closed position so as to allow said control arm to swing about a substantially horizontal axis,
d. the swing arc of the free end of said control arm intersecting the swing arc of said abutment member when said tailgate occupies an open critical position at a predetermined critical acute angle from said closed position,



e. said control arm being in an operative position engaging said abutment member while said tailgate occupies a position between said closed position and said critical position, said control arm disengaging said abutment member while said tailgate occupies any open position beyond said critical position from said closed position, and
f. means connected to said control arm for positively pulling said control arm toward said rear end of said dump body.

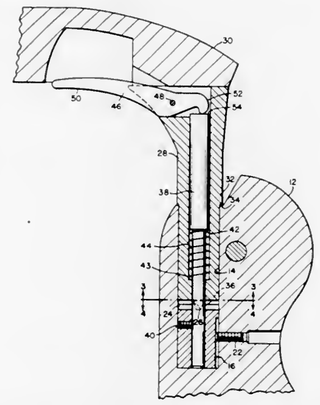
3,950,026
CHAIR OR A WHEELED CHAIR
Robert Johannes Van Seenus, 23, Onder den Doel, Blaricum, Netherlands
Filed Mar. 14, 1974, Ser. No. 451,132
Claims priority, application Netherlands, July 6, 1973, 7309461
Int. Cl.² A47C *1/02*
U.S. Cl. 297—328 **7 Claims**



1. A chair assembly for supporting infirm patients, comprising:
a frame for supporting a seat, a backrest, and arm- and feet-supports, said backrest having at least two laterally extending slots located at lateral side portions of said backrest;
means mounting said seat to said frame for pivotal movement about an axis substantially parallel to the plane of said seat;
means mounting said backrest to said seat for pivotal movement at right angles to said seat and for movement in a plane substantially parallel to the plane of said seat;

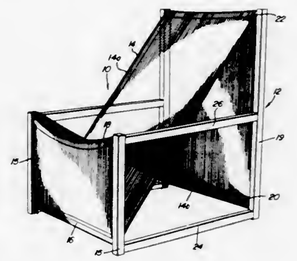
means mounting said arm supports to said seat for slidable movement in two mutually perpendicular directions parallel to the plane of said seat;
means mounting said feet supports to said seat for pivotal movement about an axis substantially parallel to the plane of said seat;
a pair of lateral side supports each having one surface containing a further slot and a pin loosely mounted in said first slot for movement within the bounds of said further slot, said pins extending through said slots in said backrest; and
means engaging the portions of said pins extending through said slots in said backrest to, in a first position, secure said lateral supports against movement relative to said backrest and, in a second position, to permit adjustment of said lateral supports relative to said backrest in at least two mutually perpendicular directions.

3,950,027
ARMREST FOR DENTAL CHAIR
David Barry Wilson, Holcomb, N.Y., assignor to Sybron Corporation, Rochester, N.Y.
Filed Oct. 15, 1974, Ser. No. 514,667
Int. Cl.² A47C *7/54*
U.S. Cl. 297—416 **7 Claims**



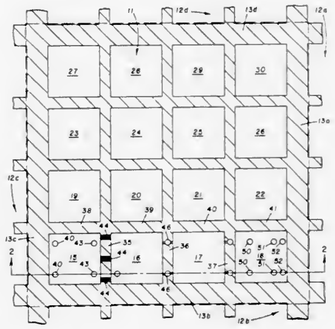
1. An adjustable armrest assembly including locking means for attachment as an assembly to a dental chair having a vertical bore to receive said assembly, said assembly comprising:
a. a first sleeve member having an outer diameter substantially equal to the bore and adapted to be inserted into and fixed within the bore to connect said assembly to said dental chair;
b. an upright rod fixed to and upstanding axially from said first sleeve member;
c. a second sleeve member having an outer diameter substantially equal to the bore and carried by said rod, a portion of said second sleeve member being adapted to be disposed in the bore and being rotatable about said rod and axially movable along said rod to abut said first sleeve member;
d. an armrest attached to said second sleeve member, said armrest being rotatable with said second sleeve member between a first in-use position and a second, out-of-the-way position;
e. lock means on said first and second sleeve members cooperating to prevent rotation of said second sleeve member when said armrest is at either said first or second position; and
f. bias means between said upright rod and second sleeve member urging said second sleeve member towards said first sleeve member for engaging said lock means, said armrest being lifted vertically to move said second sleeve member axially on said rod against said bias means and disengage said lock means.

3,950,028
CHAIR
Marguerite S. Schnepel, R.F.D. 2, Noxon Road, Poughkeepsie, N.Y. 12603
Filed Apr. 29, 1975, Ser. No. 572,920
Int. Cl.² A47C *1/12*
U.S. Cl. 297—445 **5 Claims**



1. An article of furniture such as a chair, sofa, couch or the like comprising a frame including upper and lower generally horizontally disposed front bars, upper and lower, generally horizontal rear bars with the rear upper bar being disposed above the front upper bar, a flexible cord extending diagonally from the front upper bar downwardly and rearwardly to the rear lower bar and from the upper rear bar forwardly and downwardly to the front lower bar with the diagonals of the cord intersecting along a generally transverse line between the front bars and the rear bars and defining a flexible seat and back rest.

3,950,029
IN SITU RETORTING OF OIL SHALE
Thomas H. Timmins, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
Filed June 12, 1975, Ser. No. 586,470
Int. Cl.² E21B *43/24, 43/26;* **E21C** *43/00*
U.S. Cl. 299—2 **10 Claims**



2. A method of recovering hydrocarbons from an oil shale deposit or the like comprising:
constructing a retorting zone within said deposit,
said retorting zone upon construction comprising:
at least two galleries lying adjacent one another and separated by a barrier pillar, said barrier pillar formed

from said oil shale and being of sufficient thickness to prevent the leakage of gas between galleries;

a plurality of rooms within each of said galleries, each of said rooms being filled with rubblized shale and being defined and separated by room walls, said room walls being formed from said oil shale and being of substantially less thickness than said barrier pillars;

heating said rubblized shale in each of said rooms; and

recovering the products produced from said shale.

9. A retorting system for recovering hydrocarbon products from an oil shale deposit or the like, said system comprising:

a retorting zone within said deposit having at least two galleries lying adjacent one another;

a barrier pillar separating said adjacent galleries, said barrier pillar being formed from undisturbed oil shale and being of a thickness to prevent gas from leaking from one gallery to another;

a plurality of rooms within each gallery, said rooms being defined by room walls formed from undisturbed shale and being of a thickness substantially less than said barrier pillar;

rubblized shale in each of said rooms and inlet communication passages into each of said rooms for the injection of retorting gas; and

outlet communication passages into each of said rooms for recovering hydrocarbon products from said rooms.

3,950,030

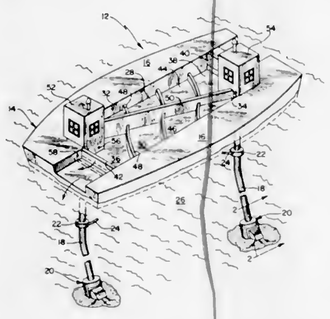
UNDERWATER MINING

Barney Girden, P.O. Box 725, Norwich, Conn. 06360

Continuation-in-part of Ser. No. 285,870, Sept. 1, 1972, which is a continuation-in-part of Ser. No. 154,986, June 21, 1971, abandoned, which is a continuation-in-part of Ser. No. 41,432, May 28, 1970, Pat. No. 3,683,627. This application Aug. 2, 1974, Ser. No. 494,065

Int. Cl.² E02F *7/06*

U.S. Cl. 299—9 **12 Claims**



1. Apparatus for recovering and separating materials from a body of water comprising, in combination:

conduit means having an inlet means and an outlet means;

said inlet means disposed below the surface of the body of water at a depth lower than said outlet means at a depth where materials to be recovered and separated are located;

means operatively associated with said conduit means for inducing upwelling of water and any such entrained material as may be drawn into said inlet means generally upwardly through said conduit means to and through said outlet means;

a vessel including a deck which extends above the surface of the body of water and generally divergent material recovery field having an apex inboard of said vessel operatively connected to said outlet means and a wider outlet portion for discharge from said vessel of the remaining upwelled water and entrained material to the body of water;

said recovery field including a plurality of floor portions lower than the level of said deck and extending along progressively lower levels from said apex to said outlet portions, and baffles separating each of floor portions, each baffle having an upper edge higher than either of its associated floor portions, the upper edges of said baffles being progressively lower as the distance from said apex toward said outlet portion increases.

3,950,031

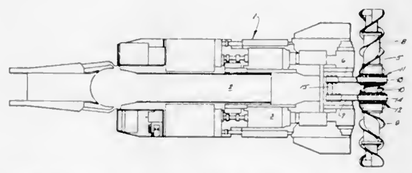
TRIM CHAIN TAKE-UP SPROCKET ASSEMBLY FOR MINING MACHINES AND THE LIKE

Claude B. Krekeler, c/o The Cincinnati Mine Machinery Co., 2980 Spring Grove Ave., Cincinnati, Ohio 45225

Filed May 7, 1975, Ser. No. 575,378

Int. Cl.² E21C *1/02*

U.S. Cl. 299—76 **30 Claims**



1. An adjustable trim chain idler assembly for taking up slack in the at least one trim chain of a mining machine of the type having an elongated body, a cutting drum at the forward end of said body and extending transversely thereof, said cutting drum being rotatably mounted on the end of at least one beam affixed to said body and being shiftable vertically by said beam and at least one trim chain to cut clearance for that portion of said cutting drum rotatably supported on said at least one beam, said idler assembly comprising a pair of spindles, each of said spindles having an inboard end and an outboard end, said spindles being in coaxial, opposed relationship with their inboard ends facing each other, a pair of hubs each having an inboard end and an outboard end, each of said hubs being rotatably mounted on one of said spindles, means for releasably maintaining each of said hubs on its respective one of said spindles, means releasably joining said inboard ends of said hubs, said hubs supporting at least one chain engaging means for said at least one trim chain, means on the outboard ends of said spindles for mounting said idler assembly on said mining machine body transversely thereof and shiftable longitudinally thereof, means at the outboard ends of said spindles for shifting said sprocket assembly longitudinally of said mining machine to increase the distance between said idler assembly and said cutting drum to take up slack in said at least one trim chain and means to maintain said idler assembly in any desired adjusted position with respect to said cutting drum.

3,950,032

INNER RIM WEDGE LOCK MOUNT WHEEL

Eugene J. Miller, 3912 W. Oak St., McHenry, Ill. 60050

Filed Nov. 11, 1974, Ser. No. 522,778

Int. Cl.² B60B *23/02*

U.S. Cl. 301—18 **9 Claims**

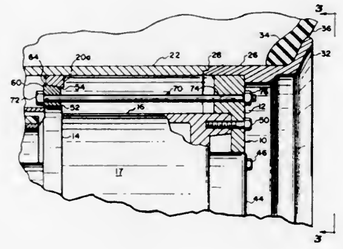
1. A wheel-hub assembly for heavy mobile machinery comprising:

a wheel member having a radial member supporting an outer circumferential rim member;

an inner surface of said rim member and an outer surface of said wheel member defining a pair of spaced opposing circumferentially disposed weight-supporting surfaces one of which is a beveled surfaced and the other of which is a substantially cylindrical surface, said surfaces being axially displaced from said radial wheel member;

a split-ring disposed between said spaced surfaces and presenting a beveled surface and a substantially cylindrical surface corresponding to the respective beveled and cylindrical surfaces of said rim and wheel members; and

adjustable means to move said split-ring axially whereby said opposed beveled surfaces cam one against the other



and change the diameter of said split-ring to bring its cylindrical surface into a predetermined spaced relationship with aid cylindrical surface of said assembly and flexibly distribute the weight of said mobile machinery axially between said radial member and said cylindrical surfaces.

3,950,033

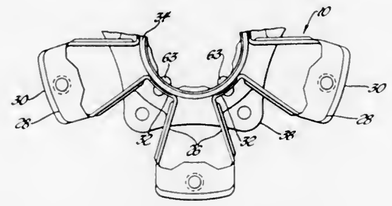
VEHICLE WHEEL

Raymond J. Wilcox, 44 Via Casitas, San Luis Rey Downs, Calif. 92068

Division of Ser. No. 446,199, Feb. 22, 1974, Pat. No. 3,874,055. This application Oct. 15, 1974, Ser. No. 514,550

Int. Cl.² B60B *1/06*

U.S. Cl. 301—66 **10 Claims**



1. A vehicle wheel comprising:

a plurality of circumferentially spaced radial vanes extending from an inner diameter to an outer diameter;

a plurality of rim retaining flanges extending between and interconnecting alternate pairs of said vanes at said outer diameter;

a plurality of hub attachment flanges extending between and interconnecting alternate pairs of said vanes at said inner diameter, said hub attachment flanges being displaced circumferentially from said rim retaining flanges such that the circumferential midpoints of said hub attachment flanges are not radially aligned with the circumferential midpoints of said rim retaining flanges;

said vanes, said rim retaining flanges, and said hub attachment flanges being disposed to afford unobstructed axial clearance through said wheel; and

a hub fitted into said inner diameter and attached to said hub attachment flanges.

3,950,034

HIGH FLUIDITY LIQUID FOR PIPELINING SOLIDS

Karl D. Dreher, and William B. Gogarty, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 375,293, June 29, 1973, abandoned. This application Nov. 23, 1973, Ser. No. 418,353

Int. Cl.² B65G *53/04*

U.S. Cl. 302—66 **22 Claims**

1. In a process of transporting solids dispersed in a liquid, the improvement comprising dispersing the solids in a composition and pumping the mixture at flow rates predetermined to obtain retro-viscous behavior in the composition, the composition containing lamellar micelles having an axial ratio of at least 3.5, and having a viscosity of at least 75 cp at a shear rate of 10^{-1} seconds at 23°C., and comprised of a liquid hydrocarbon, water and about 4 to about 15% of surfactant which is an alkaryl sulfonate having an average equivalent weight of about 350 to about 525, or a carboxylate having an average equivalent weight of about 200 to about 500, the percents based on weight, the composition being optically clear, phase stable, and exhibiting birefringence and the composition exhibiting a substantial increase in flow rate at minor increase in pressure drop while the liquid is under flow conditions at elevated pumping pressure.

3,950,035

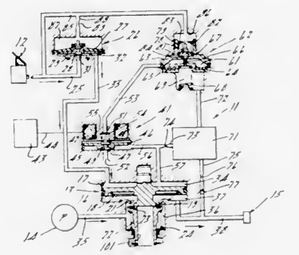
RELAY VALVE OPERATED SKID CONTROL SYSTEM

Leonard T. Tribe, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Oct. 25, 1974, Ser. No. 517,865

Int. Cl.² B60T *8/10*

U.S. Cl. 303—21 F **24 Claims**



1. A vehicular anti skid braking system having brake applying means, an operator control for selectively applying actuating pressure to said brake applying means for actuating a vehicle brake, regulator means for providing a controlled supply of pressure of predetermined value, means responsive to an incipient skid condition for relieving the pressure in said brake applying means to prevent skidding, and means responsive to a predetermined condition for thereafter applying pressure at the predetermined value from said regulator means to said brake applying means for subsequent application of said brake applying means at a regulated pressure.

3,950,036

METHOD AND APPARATUS TO GENERATE AN ELECTRIC ANTISKID CONTROL SIGNAL FOR AN ANTISKID SYSTEM

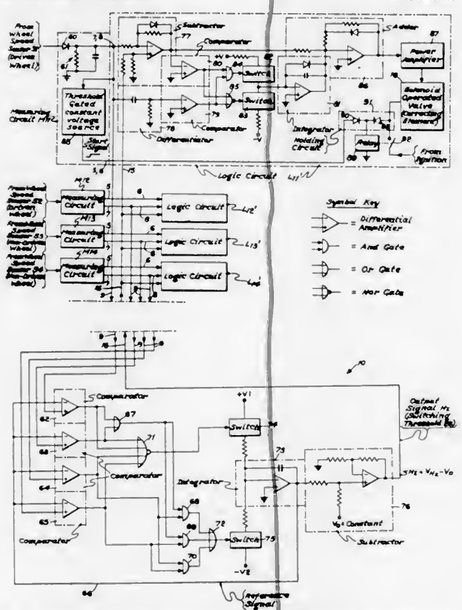
Werner Fink; Dieter Kircher, both of Frankfurt am Main; Hubertus von Grunberg, Niederhochstadt, and Hans-Wilhelm Bleck-Mann, Frankfurt am Main, all of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 412,926, Nov. 5, 1973, abandoned. This application Nov. 6, 1974, Ser. No. 521,319

Claims priority, application Germany, Nov. 6, 1972, 2254295

Int. Cl.[2] B60T *8/08*

U.S. Cl. 303—21 BE **8 Claims**



1. A method for antiskid control of all braked wheels of a motor vehicle comprising during braking the steps of:

generating for each of said wheels a voltage proportional to the speed of an associated one of said wheels, each of said voltages having a speed waveform;

combining in a predetermined manner all of said voltages to produce a reference signal which approximates the vehicle speed and to provide an output signal predeterminedly related to said reference signal; and

comparing separately said output signal with each of said voltages to provide a control signal for each of said wheels to control brake pressure in the associated one of said wheels;

said step of combining including the steps of

determining for each of said wheels speed differences ΔV and $\Delta\Delta V$ in time steps ΔT using the speed value of a preceding time step as a reference value when the rotational speed V_R of an associated one of said wheels is lower than said reference signal; and

providing as said output signal a switching threshold signal following said reference signal but spaced ΔV_1 below said reference signal.

7. A circuit arrangement to produce separate antiskid control signals for each of N braked wheels of a motor vehicle comprising:

N speed sensors each coupled to a different one of said N wheels, where N is an integer greater than one;

N measuring circuits each coupled to a different one of said N sensors to provide a voltage proportional to the speed of the associated one of said N wheels, each of said N measuring circuits having two outputs;

a combining circuit having an output and N inputs each coupled to one of said two outputs of a different one of said N measuring circuits, said combining circuit providing an output signal at said output thereof derived from a combination of said voltages produced in said N measuring circuits;

N antiskid correcting elements each coupled to a different one of said wheels; and

N logic circuits each having an output coupled to an associated one of said N correcting elements and three inputs, a first of said three inputs being coupled to the other of said two outputs of an associated one of said N measuring circuits, a second of said three inputs being coupled to said one of said two outputs of an associated one of said N measuring circuits and a third of said inputs being coupled to said output of said combining circuit, each of said N logic circuits producing a control signal at its output which can be continuously varied to control the associated one of said N correcting elements;

the value of said output signal of said combining circuit at first being equal to the highest descending input value of said voltages from said N measuring circuits but having a variable maximum negative gradient and then being equal to a constant value between the highest and second-highest input value of said voltages from said N measuring circuit, said constant value being equal to the value at the intersection of said output signal and said highest input value of said voltages, said constant value remaining constant until the value of said output signal equals the value of the second-highest input value of said voltages;

said combining circuit reducing said output signal by a constant value equal to a given speed change ΔV_1

each of said N logic circuits including

means to determine the difference between said output signal reduced by ΔV_1 and the speed of the associated one of said wheels and the difference of the present speed and the preceeding speed of the associated one of said wheel.

3,950,037

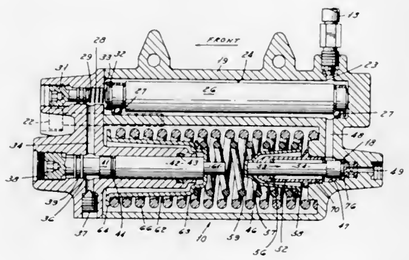
BRAKE PROPORTIONING VALVE FOR A MOTOR VEHICLE RESPONSIVE TO BOTH THE RATE OF VEHICLE DECELERATION AND VEHICLE LOAD VARIATION

James D. Pembleton, Lathrup Village, and Keith C. Pratt, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 30, 1974, Ser. No. 474,508

Int. Cl.[2] B60T *8/26*

U.S. Cl. 303—24 F **1 Claim**



1. A brake valve for a motor vehicle brake system,

said brake valve having a pressure inlet constructed to be connected to a brake master cylinder and a pressure outlet constructed to be connected to a wheel brake,

said brake valve having a housing with a proportioning valve operatively interposed between said inlet and said outlet,

said proportioning valve having a proportioning valve element engaged by a proportioning valve spring constructed to limit a pressure increase at said outlet relative to a pressure increase at said inlet when the pressure at said inlet exceeds a split point pressure determined, in part, by the force exerted by a proportioning valve spring,

a fluid chamber and communicating means connecting said chamber to said inlet,

a modulating piston coupled to said proportioning valve spring and disposed, in part, in said chamber,

said modulating piston being coaxial with said proportioning valve element,

a second spring biasing said modulating piston at an at-rest position.

said modulating piston being displaceable and constructed to increase said force exerted by said proportioning valve spring in response to said displacement of said modulating piston,

said modulating piston being displaceable in response to fluid pressure in said chamber that exceeds a predetermined minimum pressure that is determined, in part, by the biasing force of said second spring on said piston,

displacement of said modulating piston being constructed to cause an increase in the force exerted by said proportioning valve spring by said proportioning valve element whereby the effective split point pressure of said proportioning valve is increased,

means constructed to compensate for brake system dead time,

said just-mentioned means comprising said proportioning valve spring and said second spring cooperating to define an initial split point pressure for said proportioning valve that is less than said predetermined minimum pressure in response to which said modulating piston is displaceable whereby said proportioning valve will limit a pressure increase at said outlet when the pressure at said inlet is greater than said initial split point pressure but less than said predetermined minimum pressure,

a linearly displaceable inertia weight having a valve element secured thereto and disposed in said communication means,

said weight being displaceable in said housing along an axis that is parallel to and spaced apart from the axis of said modulating piston,

said inertia weight and valve element being constructed to close the communication between said chamber and said inlet in response to a rate of vehicle deceleration that exceeds a predetermined minimum rate,

said communication means including a passage and a plug fitted in said passage having an outside dimension slightly less than said passage,

said passage and said plug cooperating to define an annular restrictive orifice,

said annular restictive orifice being located between said inertia weight and valve element and said fluid chamber,

said annular restrictive orifice being constructed to restrict the flow of fluid from said inlet to said chamber to limit the rate of increase in pressure in said chamber to compensate for vehicle lag.

3,950,038

FLUID BEARING TRACK DEVICE

Kenneth G. Wood, Seattle, Wash., assignor to Aero-Go Engineering & Development Co., Seattle, Wash.

Filed June 12, 1972, Ser. No. 261,637

Int. Cl.[2] B62D *55/00;* **B60V** *1/00*

U.S. Cl. 305—34 **19 Claims**

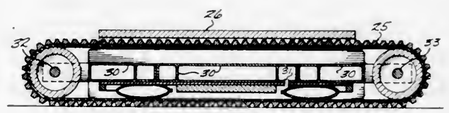
1. A fluid bearing track device for moving heavy loads on a cushion of air over a nonsmooth surface, comprising in combination:

means defining a first rigid support member;

fluid bearing means comprising an inflatable, flexible walled diaphragm of generally annular configuration defining a hollow central portion depending from one surface of said rigid support member;

a continuous belt positioned around said first rigid support member and said fluid bearing means, said continuous belt having a substantially smooth, nonporous inner surface; and

means for movably supporting said continuous belt around said first rigid support member and said fluid bearing means such that said continuous belt includes an upper



run and a lower run, said movably supporting means supporting said belt with the portion forming said lower run extending substantially straight for bearing on said nonsmooth surface, said one surface of said rigid support member, said hollow central portion of said flexible wall diaphragm, and the inner surface of said lower run, forming a plenum chamber such that when said sufficient fluid is fed into said plenum chamber a small amount of fluid escapes between said diaphragm and said inner surface of said lower run, forming a continuous cushion of air of substantial uniform thickness around the periphery thereof.

3,950,039

TEXTILE MACHINE BEARINGS

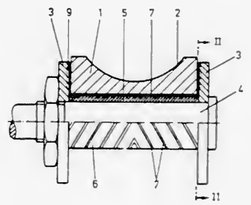
Wolfgang Huber, Schweinfurt, and Horst G. Schrecke, Dittelbrunn, both of Germany, assignors to SKF Industrial Trading and Development Company, B.V., Plettenburgerweg, Jutphaas, Netherlands

Filed Dec. 23, 1974, Ser. No. 535,973

Claims priority, application Germany, Jan. 30, 1974, 2404325

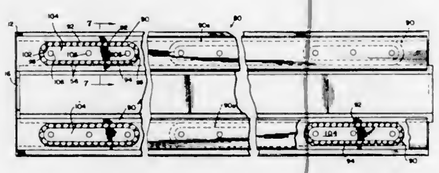
Int. Cl.[2] F16C *5/00, 17/00, 21/00, 23/02*

U.S. Cl. 308—3 R **13 Claims**



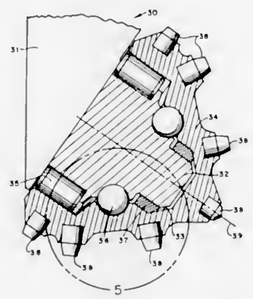
1. A roller construction comprising a roller supported by a sliding bearing which absorbs axial and radial stresses, a plurality of flat grooves in the sliding bearing surfaces of at least one of said roller and sliding bearing to define open spaces between said bearing surfaces for receiving a lubricating medium, said flat grooves being shaped at the respective bearing surface to automatically generate a dynamic pressure for reducing friction between said bearing surfaces during relative rotation of said roller and bearing surface.

3,950,040
THIN-LINE CIRCULATING BALL DRAWER SLIDE
Herbert S. Fall, 6248 E. Iona Road, Indianapolis, Ind. 46203
Filed Jan. 21, 1974, Ser. No. 434,813
Int. Cl.² F16C *17/00*
U.S. Cl. 308—6 C 2 Claims



1. A slide assembly comprising a first horizontally elongated track member, a second horizontally elongated track member generally parallel to said first track member, a third horizontally elongated track member disposed between and generally parallel to said first and second members, each said track member having upper and lower longitudinally extending edge portions, said third track member providing, respectively at its upper and lower edge portions, a first set of upwardly and downwardly opening, longitudinally extending channels and, intermediate its upper and lower edge portions, a second set of upwardly and downwardly opening, longitudinally extending channels in vertical registry with said first-mentioned channels, the upper and lower edge portions of said first track member providing downwardly and upwardly longitudinally extending runners extending respectively into said first set of channels, the upper and lower edge portions of said second track member providing downwardly and upwardly longitudinally extending runners extending respectively into said second set of channels, said third track member providing a plurality of closed-loop path ball bearing raceways between the upwardly opening channel of said first set and the downwardly opening channel of said second set and a plurality of closed-loop path ball bearing raceways between the downwardly opening channel of said first set and the upwardly opening channel of said second set, and ball bearings substantially filling said raceways, said raceways being in communication respectively with said channels such that said track members are freely movably supported relative to each other by said ball bearings, each raceway being elongated in the direction of extension of said channels to provide an upper rectilinear run generally parallel to and in communication with its associated upwardly opening channel, a lower rectilinear run generally parallel to and in communication with its associated downwardly opening channel, and end runs connecting said upper and lower runs, said runners of said first and second track members engaging said ball bearings respectively in said upper and lower runs, said third track member having a generally vertically extending side wall and is formed with elongated cavities in said wall defining said raceways, each said cavity having an outer perimetral wall defining the outer perimeter of its said raceway, and an elongated race member centrally disposed in each said cavity and having an outer perimetral edge defining the inner perimeter of the raceway of said cavity, said ball bearings being disposed within and filling the space between said outer wall and said race member of each cavity, each of said race members being connected to said third track member for slight shifting movement vertically from its central position in its respective cavity.

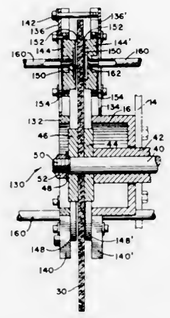
3,950,041
ROCK BIT BEARING SYSTEM FOR CARRYING OUT THRUST
Raul A. Miglierini, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Continuation of Ser. No. 396,622, Sept. 12, 1973, abandoned.
This application Mar. 7, 1975, Ser. No. 556,239
Int. Cl.² F16C *19/00*
U.S. Cl. 308—8.2 13 Claims



1. An earth boring bit that encounters a radial load and an out thrust load during drilling, comprising:
a bit body having a bearing pin;
a rotatable cone cutter mounted over said bearing pin, said cone cutter having a cone mouth, an internal cavity that projects from said cone mouth and an axis of cutter rotation;
a first bearing means in said internal cavity for carrying a portion of said radial load;
a second bearing means in said cavity for carrying a portion of said radial load; and
a third bearing means in said cavity located between said first bearing means and said second bearing means for carrying substantially all of said out thrust load and locking the cone cutter on the bearing pin, said third bearing means comprising a series of ball bearings between said bearing pin and said rotatable cone cutter for carrying substantially all of said out thrust load, said ball bearings having axial axes substantially parallel to said axis of cutter rotation, a ball bearing raceway on said cutter for containing said ball bearings, said ball bearing raceway extending a substantial distance on either side of said axial axes, and a ball bearing raceway on said bearing pin for containing said ball bearings, said ball bearing raceway extending a substantial distance on either side of said axial axes.

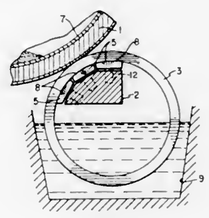
3,950,042
MEANS FOR STABILIZING A ROTARY MEMBER
Donald Allen Farmer, North Haven, Conn., and Lucian Kops, Montreal, Canada, assignors to American Chain and Cable Company, Inc., Bridgeport, Conn.
Filed June 5, 1974, Ser. No. 476,440
Int. Cl.² F16C *35/00*
U.S. Cl. 308—9 17 Claims

2. Apparatus for use in stablilizing a wheel having a large diameter - to - thickness ratio thereby to overcome during rotation axial flutter in the region toward the wheel periphery comprising a supporting frame, a shaft, means mounting said wheel and shaft on said frame for joint rotation of said wheel and shaft about a fixed axis, bearing plate means disposed on opposite sides of said wheel, means mounting said bearing plate means on said frame in parallel relation and spaced from respective side surfaces of said wheel to provide a gap through which said wheel is free to rotate, nozzle means in said bearing plate means formed by the surface of said wheel and a juxtaposed surface of said bearing plate means extending from a relieved portion of said bearing plate means facing said wheel surface, said nozzle means directed substantially toward the periphery of said wheel and arranged in substantially balanced relation about said shaft, and means communicating a liquid to each relieved portion to impinge on opposite surfaces of



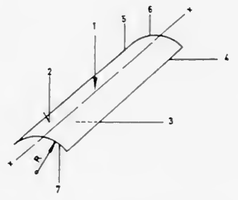
said wheel whereby through wheel rotation and developed centrifugal forces said liquid is caused to move through said nozzle means at a higher velocity and while in contact with the surfaces of said wheel to provide hydrodynamic support for said wheel in said peripheral region.

3,950,043
SUPPORT OF ROTARY DRUMS SUCH AS KILNS
William Christian Endersen, Copenhagen Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.
Filed Dec. 17, 1973, Ser. No. 425,292
Claims priority, application United Kingdom, Dec. 18, 1972, 58375/72
Int. Cl.² F16C *13/04*
U.S. Cl. 308—15 6 Claims



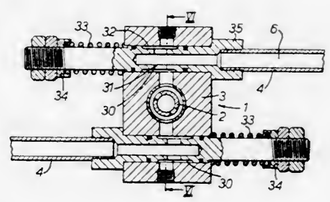
1. An arrangement for supporting a drum such as a tube mill or rotary kiln of the type which is rotatable about a horizontal or slightly inclined axis and provided on its circumference with at least one running surface for supporting the drum on a foundation comprising at least one support member mounted on the foundation, at least one substantially rigid endless annular body member positioned about said support member with the running surface of the drum in contacting relation with outer surface portions of the annular body member, a plurality of slide shoes mounted on said support member in adjacent relation to each other and individually adjustably movable toward and away from the support member to adjustably contact, in supporting slidable relation, the inner peripheral surface portion of said annular body member closest to the drum to provide uniform sliding contact therebetween such that at least a portion of the weight of the drum is uniformly transmitted to said slide shoes while said endless annular member follows an endless rotation path substantially perpendicular to the axis of said drum while rotatably moving in running contacting relation with the corresponding running surface of the drum during rotation thereof.

3,950,044
METHOD FOR THE PRODUCTION OF CONCENTRIC MACHINE ELEMENTS
Helmut Imme, Friedberg, and Werner Moser, Augsburg, both of Germany, assignors to SKF Industrial Trading and Development Company, B.V., Jutphaas, Netherlands
Filed Nov. 18, 1974, Ser. No. 524,490
Claims priority, application Germany, Dec. 22, 1973, 2364223
Int. Cl.² F16C *3/06*
U.S. Cl. 308—23 5 Claims



1. A concentric machine element forming all or a portion of a casing adapted to surround a further machine element, said concentric element comprising an elongated elastic spring material having a rolled curvature transverse to its longitudinal axis converted to a rolled curvature along its longitudinal axis and holding said stress in said longitudinal direction to form a longitudinally curved concentric machine element.

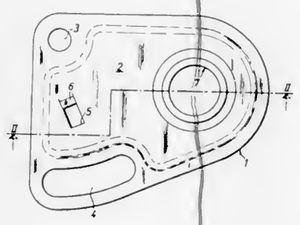
3,950,045
JET AND SPRAY PRODUCING APPARATUS
Bernard Eaton Hart, Rosebank, Stoford, Nr. Salisbury Wiltshire, England
Filed Apr. 11, 1975, Ser. No. 567,297
Claims priority, application United Kingdom, Apr. 11, 1974, 16356/74
Int. Cl.² F16C *17/00, 19/00, 21/00, 29/00*
U.S. Cl. 308—36 R 6 Claims



1. A rotatable bearing assembly comprising:
a first part;
a second part;
means defining a bore in said second part through which said first part extends, said parts being relatively rotatable about the axis of said bore;
means defining a passage for fluid in said first part;
means defining a passage for fluid in said second part and in communication with said passage in said first part;
means defining a pair of opposed radially extending annular bearing surfaces on said first part;
means defining a pair of radially extending annular bearing surfaces on said second part, each said bearing surface on said second part co-operating with one of said bearing surfaces on said first part;

wherein said first part comprises a first body and a second body, which are relatively axially movable and each provide one of said bearing surfaces of said first part, and means whereby said bodies are axially biassed by the pressure of fluid in said passages in a direction to reduce the axial gap between said bearing surface of said first part.

3,950,046
BEARING PLATE
Karl Lubbersmeyer, Herzogenaurach, Germany, assignor to Industriewerk Schaeffler OHG, Herzogenaurach, Germany
Filed Aug. 7, 1974, Ser. No. 495,304
Claims priority, application Germany, Aug. 30, 1973, 2343748; Mar. 5, 1974, 2410381
Int. Cl.² F16C *33/00*
U.S. Cl. 308—190 3 Claims

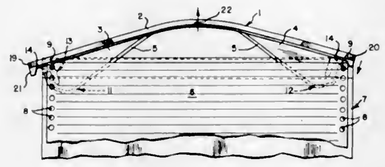


1. A bearing plate for the pivotal support of a tension roller secured thereto comprising a sheet metal bearing plate provided with a bore hole to accommodate a fastening bolt and an oblong slot to accommodate a locking bolt and also provided with an integral hollow-cylindrical protuberance on which the tension roller is to be mounted, a tension roller mounted thereon by a roller bearing consisting of an inner race secured on the hollow-cylindrical protuberance of the plate, an outer race forming the roller proper and rollers rolling on said races, the said plate being provided with a substantially U-shaped cut and the resulting lug is bent at a right angle to the bearing plate to form an anchor for a tension spring.

3,950,047
BEARING MATERIAL WITH MICROENCAPSULATED LUBRICANT
Alfred J. Capelli, Palos Verdes Peninsula, Calif., assignor to Sargent Industries, Inc., Los Angeles, Calif.
Filed Oct. 4, 1973, Ser. No. 403,453
Int. Cl.² F16C *27/00*
U.S. Cl. 308—238 17 Claims

1. A bearing material comprising:
- a plurality of frangible micro capsules constructed to be broken upon the application of pressure against the capsules;
- a lubricant held in said micro capsules for release from broken micro capsules and for distribution after release;
- means forming a body for holding the capsules, said capsules being supported by said body and being dispersed relative to said body to become individually broken upon the application of pressure as the body becomes worn; and
- said body at least partially defining a wear surface with the micro capsules and the lubricant released from capsules broken at the wear surface of the body.

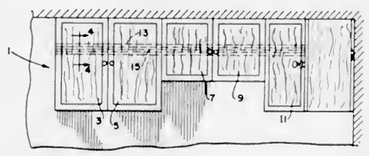
3,950,048
CARRYING AND SUPPORT HANDLE FOR BINDERS
Louis Aloyious Unti, Chicago; Jack Harold Michaelis, Elmhurst, and Frank John Malcik, Berwyn, all of Ill., assignors to Swingline, Inc., Long Island City, N.Y.
Filed July 10, 1974, Ser. No. 486,965
Int. Cl.² B42F *15/00*
U.S. Cl. 312—184 7 Claims



1. A post binder carrying handle capable of engagement with and disengaged from the posts of a binder of tightly packed sheets comprising
- a. an elongated body portion having a central hand gripping area and depending web end portions on either side of the gripping area, said body portion capable of being flexed to a bow shape substantially parallel to the plane of the sheets;
- b. each of the web end portions having a blade edge portion for assisting in the insertion of the web portions between and movement relative to said tightly packed sheets; and
- c. post engaging means on each end portion for engagement with the posts of the binder

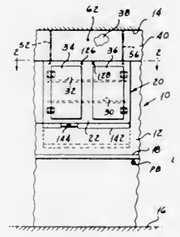
whereby one end of the handle may be engaged with one portion of the binder and the handle flexed in a bow shape to assist in insertion of the other end of the handle.

3,950,049
CABINET MOUNTING STRUCTURE
Patrick E. Drass, 9507 Atom Road, Clinton, Md. 20735
Continuation of Ser. No. 393,305, Aug. 31, 1973, abandoned. This application Dec. 23, 1974, Ser. No. 535,787
Int. Cl.² A47B *67/02*
U.S. Cl. 312—245 8 Claims



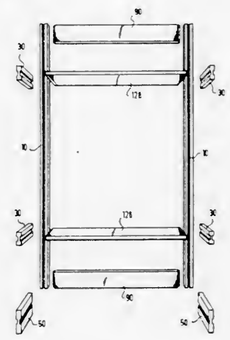
1. Mounting apparatus for mounting a cabinet to an interior wall, said interior wall having a gap therein exposing the wall studs, comprising:
- a wall member, said wall member having a rectangular base, a first arm integrally formed with one of the long sides of said rectangular base and extending at substantially a right angle to said base, a second arm integrally formed with the other long side of said rectangular base and extending at substantially a right angle to said base, said base and said first and second arms forming substantially a U-shape, a flange integrally formed with said first arm and extending at substantially a right angle away from said second arm, a second flange integrally formed with said second arm and extending at substantially a right angle away from said first arm, a generally rectangular shaped coupling member secured along one of its long edges to the inside of said first arm, said coupling member being spaced apart from said base and extending from said first arm toward said second arm, the height of said coupling member being such that said coupling member does not extend the full distance between said first arm and said second arm, said coupling member also being substantially parallel with said base over a portion of its height going from said secured edge of said coupling member toward said second arm and then being inclined away from said base over the balance of its height;
- means to secure said wall member in said gap to said exposed wall studs such that said first and second arms extend away from said wall studs and said flanges extend slightly over the outside of said interior wall on each side of said gap to thereby close said gap;
- a cabinet member having a flat rectangular plate and an L-shaped member secured to the flat plate, said L-shaped member having a short arm extending at substantially a right angle to one of the surfaces of said flat plate and a long arm extending at substantially a right angle to said short arm and substantially parallel to said one surface of said flat plate; and
- means to mount said flat plate to the back wall of said cabinet such that said long arm of said L-shaped member points toward the bottom of said cabinet, whereby said L-shaped member is slipped over said coupling member to mount said cabinet on said interior wall.

3,950,050
GEAR DRIVEN LINKAGE FOR MOVING MEMBERS BETWEEN LIMIT POSITIONS
John W. Kinder, 944 Annette Drive, Wantagh, N.Y. 11793
Filed Dec. 2, 1974, Ser. No. 528,792
Int. Cl.² A47B *67/02, 57/06*
U.S. Cl. 312—247 13 Claims



1. Apparatus for moving an article between a first position and a second position including in combination, a support, means mounting said article on said support for sliding movement between said positions, a lazy tongs linkage, means connecting said linkage at one end thereof to said article, said linkage being actuatable between a retracted position corresponding to the first position of said article and an extended position corresponding to the second position of said article, a drive shaft mounted for rotary movement on said support, and means responsive to a single revolution of said shaft in a given direction for positively actuating said linkage from said retracted position to said extended position and back to said retracted position to move said article from said first position to said second position and back to said first position.

3,950,051
STRUCTURAL MEMBERS FOR FURNITURE ASSEMBLIES
Gerd Lange, Kapsweyer, Germany, assignor to Rudolf Baresel-Bofinger, Ilsfeld, Germany
Filed July 8, 1974, Ser. No. 486,354
Claims priority, application Germany, Mar. 4, 1974, 2410211
Int. Cl.² F16B *12/00*; A47B *47/00*
U.S. Cl. 312—263 17 Claims



8. A construction assembly comprising a plurality of elements which coact in combination with each other for the construction of furniture articles such as tables, chairs, cupboards, wardrobes, bookcases, shelves and the like, said elements including vertical and horizontal supports which are respectively provided with longitudinal grooves and tongues, the tongues of said horizontal support fitting into the grooves of said vertical supports and the supports being provided with holes which receive anchor bolts which are locked in said openings by bushings which join said supports in cooperating relationship with each other said bushings and said anchor bolts having cooperating slidable keying means, said bushing being rotatable about an eccentric axis in engagement with said support to exert an axial pulley action on said bolts to place said bolts under tension.

3,950,052
SWIVELLING ELECTRICAL CONNECTION
Henry J. Walter, Wilton, and William E. Springer, Shelton, both of Conn., assignors to Clairol Incorporated, New York, N.Y.
Continuation of Ser. No. 451,647, March 15, 1974, abandoned. This application Aug. 7, 1975, Ser. No. 602,864
Int. Cl.² H01R *39/00*
U.S. Cl. 339—8 R 16 Claims

1. In an attached electrical connection for an appliance having a housing wherein said connection and said housing cooperate to allow the plug to rotate, wherein the connection uses a rotatable plug for connecting a pair of insulated leads to a socket associated with the appliance, the plug comprising:
- an axial contact member having a free end for establishing electrical contact with the socket and a junction end attached to one of the leads;
- a concentric contact member having a contact area thereon for establishing electrical contact with the socket and having a junction thereon to which the other of said leads is attached; and
- an integral insulating means of elastomeric material surrounding and in contact with the insulation surrounding the leads, wherein said insulating means comprises:
- a first portion disposed between and in contact with said axial contact member and said concentric contact member, said first portion holding said axial contact member in spaced coaxial relation to said concentric contact member;

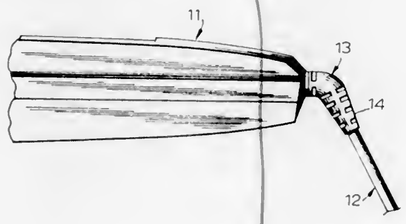
a second portion surrounding and in contact with the junctions between the axial contact member and said one lead and the concentric contact member and said other lead, but being axially displaced relative to said first portion to expose the contact area of said concentric contact member for subsequent electrical contact; and

a third portion extending from said second portion surrounding and in contact with the insulation surrounding said leads, said third portion having an axial section in axial alignment with said first and second portions and terminating in a transverse section extending transverse to the axial extent of said plug and said first and second portions and being more flexible than the axial section.

14. In an attached electrical connection for an appliance having a housing, wherein said connection and said housing cooperate to allow the plug to rotate, wherein the connection uses a rotatable plug for connecting a pair of insulated leads to a socket associated with the appliance, the plug comprising:

an axial contact member having a free end for establishing electrical contact with the socket and a junction end attached to one of the leads;

a concentric contact member having a contact area thereon for establishing electrical contact with the socket and having a junction thereon to which the other of said leads is attached; and



an integral insulating means of elastomeric material surrounding and in contact with the insulation surrounding the leads, wherein said insulating means comprises:

a first portion disposed between and in contact with said axial contact member and said concentric contact member, said first portion holding said axial contact member in spaced coaxial relation to said concentric contact member;

a second portion surrounding and in contact with the junctions between the axial contact member and said one lead and the concentric contact member and said other lead, but being axially displaced relative to said first portion to expose the contact area of said concentric contact member for subsequent electrical contact; and

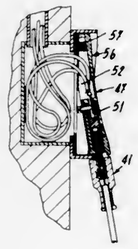
a third portion extending from said second portion surrounding and in contact with the insulation surrounding said leads, said third portion having at least one axial section in axial alignment with said first and second portions and having a cylindrical bushing surrounding said axial section and being restrained from axial movement relative to said axial section, said bushing having a flange extending therearound which engages the periphery of an opening in the end of the housing and serving as a bearing to allow said plug to swivel with respect to said housing.

3,950,053

ASSEMBLING UNIT FOR MODULAR ELECTRICAL APPARATUS

Norberto Brighenti, Milan, Italy, assignor to Zeus Rapizzi S.p.A., Italy

Filed June 3, 1974, Ser. No. 475,458
Claims priority, application Italy, June 12, 1973, 25122/73
Int. Cl.² H01R *13/14, 13/10*
U.S. Cl. 339—34 **11 Claims**



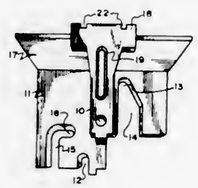
1. Electrical apparatus including in combination an electrical set-in box fixed in a wall structure and extending substantially to a front face surface of said wall structure, said set-in box containing electrical conductors within the confines thereof, a modular electrical apparatus supporting box having a back wall mounting same on said front face surface of said wall structure, said supporting box having side walls defining with said back wall, a chamber space which side walls extend outwardly from said front face surface of said wall structure, wall means in said back wall defining an opening for the passage of said electrical conductors from said set-in box to said supporting box, said supporting box having a front opening opposite said back wall, modular electrical apparatus located within said chamber space and occupying substantially all of said chamber space of said supporting box, said modular electrical apparatus being relatively thin and having a relatively large front face surface, electrical connection means connecting said electrical conductors to said modular electrical apparatus, and means for securing said modular electrical apparatus in said chamber space of said supporting box.

3,950,054

ADAPTER BRACKET FOR CONNECTING BLOCKS

Ronald C. Ward, and James M. Love, both of Huntsville, Ala., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 7, 1974, Ser. No. 521,599
Int. Cl.² A47F *5/08;* **H01R** *13/46;* **H02G** *3/10*
U.S. Cl. 339—36 **3 Claims**



1. A bracket for a terminal block having openings therethrough for receiving mounting means to hold said block to a mounting surface, said bracket providing means for securing a cover to said terminal block, said bracket comprising:

a base portion having apertures therein positioned to overlay said openings in said terminal block, said base portions generally rectangular shaped, including passage-ways extending from one edge thereof to said apertures and one of said passage-ways extending upward from the lower edge of said base portion along the line parallel to one side of said base portion for a predetermined distance and then curved toward the center of said base portion prior to terminating at one of said apertures;

an intermediate portion extending outward from one edge of said base portion; and

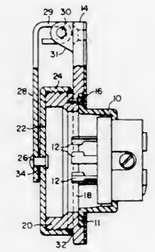
a tongue portion extending downward from said intermediate portion, said tongue portion including means for receiving a cover attaching means for securing said cover to said bracket and hence over said terminal block.

3,950,055

WEATHERPROOF ELECTRICAL RECEPTACLE WITH COVER HOLDUP FEATURE

Allen J. Samuels, Bethel Park, Pa., and Roy O. Wiley, Huntington, Conn., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 20, 1974, Ser. No. 471,733
Int. Cl.² H01R *13/44*
U.S. Cl. 339—44 R **2 Claims**



1. A weatherproof electrical receptacle comprising: a housing containing electrical contacts; a cover plate on the housing to protect the contacts when not in use while permitting access to the contacts for use, the cover plate having a generally flat base, an access port to the contacts through the base, a threaded rim fixed to the base surrounding the access port, and a cover for the access port threadably engaging the threaded rim of the access port; the cover being pivotally secured to a strap that is hinged to the base, the strap being generally L-shaped with a loop at the end thereof around a pin secured to the base, the loop being shaped to slide over the pin when the cover is raised and to bear against the base holding the cover in a latched-open position, wherein the loop in the leg of the L-shaped strap being such that when the cover is in the closed position, the internal dimension of the loop normal to the base is substantially greater than the maximum cross-sectional dimension of the pin running through the loop while the internal dimension of the loop parallel to the base is approximately the same as that of the pin with adequate clearance for movement.

3,950,056

RELEASABLE RETENTION MEANS FOR ELECTRICAL CONTACTS IN A CONNECTOR

Roger Bowen, 118 Patrician Way, Pasadena, Calif. 91105

Filed Aug. 26, 1974, Ser. No. 500,540
Int. Cl.² H01R *13/40*
U.S. Cl. 339—59 M **14 Claims**

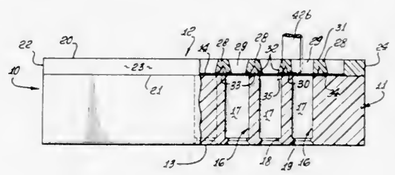
1. In an electrical connector, an insulator member having a plurality of bores therethrough extending from a forward face to a rearward face thereof, said bores being adapted to receive respective electrical contact members therein which are insertable from the rear and each of which has surface defining a rearwardly facing shoulder,

a wafer extending generally over said rearward face of said insulator member and being secured thereto,

aa plurality of passages extending through said wafer;

the improvement comprising:

each passage being in register with a plurality of said bores to permit respective contact members to be inserted through the passages and into respective bores,



each passage being defined by a pair of spaced ribs having ends secured within said wafer beyond said bores,

said ribs having resilient portions overlapping parts of said bores and being adapted to overlap portions of said shoulders when said contact members are in said boress to releasably retain said contact members therein, and

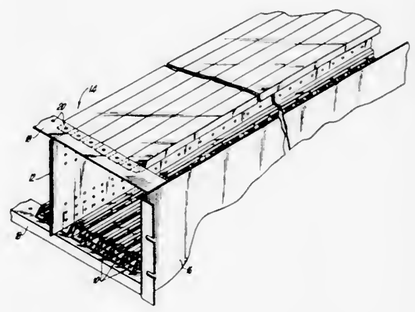
said passages and said spaced ribs being elongated.

3,950,057

COMPOSITE PRINTED CIRCUIT CARD GUIDE AND HOLDING DEVICE

Anthony D. Calabro, 8738 West Chester Pike, Upper Darby, Pa. 19082

Filed June 2, 1975, Ser. No. 582,617
Int. Cl.² H01R *13/62*
U.S. Cl. 339—65 **12 Claims**

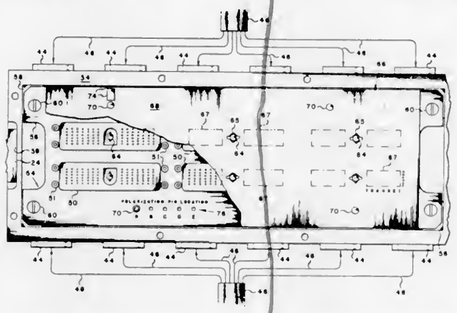


1. A composite printed circuit card guide and holding device comprising:

an elongated, rigid U-shaped support member including a base and two upstanding arm members, with inwardly directed flanges extending from each upstanding arm and spaced a sufficient distance to enable the passage therethrough of the edge of the printed circuit card; and

printed circuit card engaging means slidably received within said U-shaped member, said printed circuit card engaging means including a plurality of opposed, cantilevered, flexible spring fingers extending into the region wherein said printed circuit card is received so as to resiliently engage and hold said card.

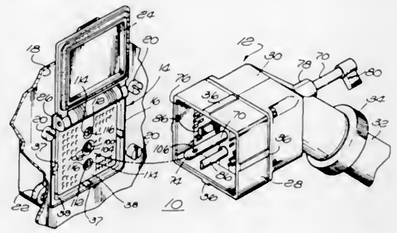
3,950,058
PROGRAMMABLE WIRING SYSTEM AND JUNCTION BOX FOR USE THEREIN
Michael J. Cronin, Sherman Oaks, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Nov. 5, 1973, Ser. No. 413,166
Int. Cl.² H01R *13/54*
U.S. Cl. 339—75 M **32 Claims**



1. A wiring system for an installation having a plurality of points of use concentrated in at least two locations comprising:
at least one programmable junction means at each of said locations, said junction means comprising,
a mother board having
a plurality of discrete connector means upon one side thereof and mounted for accessibility at its opposite side, and
a matrix board having
means, complementary to said discrete connector means, to interconnect said discrete connector means at an opposite side of said mother board with one side of said matrix board,
program means on the opposite side of said matrix board for selectively interconnecting said complementary means, and
means to selectively lock and unlock said means to interconnect between said mother board and said matrix board;
means to connect the points of use at each said location to said at least one junction means at each said location; and
conductor means interconnecting said junction means via said discrete connector means.

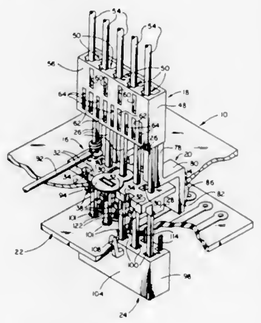
3,950,059
ZERO FORCE ELECTRICAL CONNECTOR
John W. Anhalt, Orange, and James H. Curley, Costa Mesa, both of Calif., assignors to International Telephone & Telegraph Corporation, New York, N.Y.
Filed June 27, 1975, Ser. No. 591,171
Int. Cl.² H01R *13/54*
U.S. Cl. 339—75 M **9 Claims**

1. An electrical connector assembly comprising:
a first connector member having a plurality of contacts, each contact having a contacting surface and being secured in individual bores in said first connector member;
a second connector member having a plurality of contacts, each of said second connector member contacts being secured in individual bores in said second connector member and having a contacting surface extending from said bores;
each of said contacts in said second connector member being associated with a contact in said first connector member and being spaced apart from said associated contact when said connector members are mated;
means for moving said plurality of contacts in one of said connector members in tandem causing said first connector member contacting surfaces to mate with said second connector member contacting surfaces after said first connector member is secured to said second connector member comprising a split insulator member forming a pair of actuating plates; and
driving means for moving said actuating plates in opposite directions, said driving means including an actuating shaft in said one connector member between said actuating



plates rotatable about an axis extending parallel to said contacts, said shaft having an actuating cam fixed thereon engaging said plates, at least one additional actuating cam between said plates rotatable about a second axis parallel to said first-mentioned axis, and means for transmitting rotational movement from said shaft to said additional actuating cam.

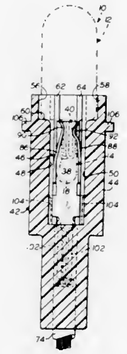
3,950,060
CONNECTOR ASSEMBLY
John M. Stipanuk, Glen Ellyn, and Kerry M. Krafthefer, Naperville, both of Ill., assignors to Molex Incorporated, Lisle, Ill.
Filed Oct. 29, 1974, Ser. No. 518,276
Int. Cl.² H01R *13/64*
U.S. Cl. 339—91 R **9 Claims**



1. A connector assembly for use in electrical circuit comprising:
a support member for mounting and electrically connecting circuit elements thereon, said support member including a first aperture and a second aperture;
a first electrical connector including an insulated base adapted to be mounted in said aperture and a plurality of generally rigid conductive pins extending from at least one side of said base, said base including a plurality of indexing openings along the periphery thereof, one of said openings being in alignment with said second aperture, said base further including a plurality of resilient hook-shaped support member engaging tabs, one underlying each of the indexing openings for engaging the bottom of the support member when the first connector is mounted in said first aperture;

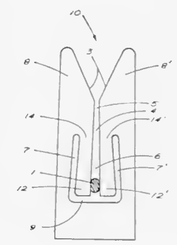
a second electrical connector including a housing having a plurality of recesses to receive said pins and a terminal mounted in each recess to electrically contact each pin; and
a stepped-shaped polarizing pin attached to said second connector and adapted to cooperate with said second aperture, said aligned indexing opening and said respective support member engaging tab to position the second connector in a given way with respect to said first connector, said polarizing pin including a portion engaging the second connector, a generally horizontal portion adapted to rest on top of said first connector base for spacing the second connector a given distance from the first connector base, and a vertical locking portion extending downwardly from said horizontal portion through said second aperture and the aligned indexing opening, said locking portion including first detent means formed thereon to snap-engage the other side of the support member and second detent means which snap-engages the respective support member engaging tab, the snap-engagement of said first and second detent means occuring when said horizontal portion rests on said first connector base, whereby said second connector is positioned with respect to said support member and first connector.

3,950,061
SOCKET FOR WEDGE BASE LAMP
Theodore Kausen, Fort Lee, N.J., assignor to Industrial Devices, Inc., Edgewater, N.J.
Filed Dec. 20, 1974, Ser. No. 534,740
Int. Cl.² H01R *33/12*
U.S. Cl. 339—93 L **13 Claims**



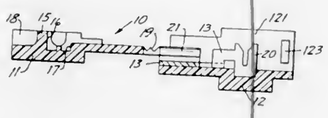
1. A lamp socket for a wedge-base lamp of the type having a pair of leads extending along the wedge-base, and a cylindrical envelope; said socket comprising:
a receptacle having a cylindrical wall of substantially circular cross-section defining a lamp opening;
said receptacle being of sufficient height to receive at least a portion of the lamp envelope therein;
a pair of terminals in said receptacle accessable through said opening for respectively engaging each one of said lamp leads to connect said leads to a source of energy;
and stabilizing means in said receptacle for engaging said lamp to prevent movement of said lamp with respect to said terminals;
said stabilizing means comprising at least a pair of opposed resilient ribs adapted to engage said envelope and extending upwardly on the inner surface of said wall a distance sufficient to engage the envelope in a line contact, said ribs being integral with said wall along their entire length and projecting inwardly toward each other a predetermined distance so that the space between said ribs is slightly smaller than the width of said envelope at the point where said ribs engage said envelope.

3,950,062
WIRE SLOT TERMINAL DOUBLE BEAM SYSTEM
Robert Philmore Reavis, Jr., Statesville, N.C., assignor to AMP Incorporated, Harrisburg, Pa.
Filed July 23, 1974, Ser. No. 490,838
Int. Cl.² H01R *9/08*
U.S. Cl. 339—97 R **8 Claims**



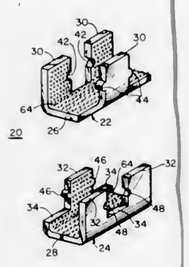
1. The combination of a connecting device and two conductors which are in electrical contact with said connecting device:
said connecting device comprising a platelike member having a conductor-receiving end, a conductor-receiving slot extending inwardly from said conductor-receiving end, said conductor-receiving slot having an inner end which is remote from said conductor-receiving end, said conductor-receiving slot having a width which is less than the width of said conductors,
additional slot means in said plate-like member, said additional slot means extending beside, on each side of, said conductor-receiving slot, said additional slot means having first ends which are proximate to, and spaced from, said conductor-receiving end of said plate-like member, said additoonal slot means having second ends which are remote from said conductor-receiving end and adjacent to said inner end of said conductor-receiving slot, the length of said conductor-receiving slot being greater than the length of said additional slots,
one of said conductors being in said conductor-receiving slot at a location between said first and second ends of said additional slot means, said one conductor being resiliently compressed by opposed edge portions of said conductor-receiving slot under the influence of a first pair of stressed beams in said plate-like member on each side of said conductor-receiving slot, said first pair of stressed beams being defined by said conductor-receiving slot and said additional slot means,
the other one of said conductors being in said conductor-receiving slot at a location between said first ends of said additional slot means and said conductor-receiving end of said plate-like member, said other conductor being resiliently compressed by opposed edge portions of said conductor-receiving slot under the influence of a second pair of stressed beams, said second pair of stressed beams comprising cantilever beams extending from portions of said plate-like member on each side of said conductor receiving slot,
transverse slot means connecting said conductor receiving slot and said additional slot means.

3,950,063
CONNECTOR FOR LOOPED WIRE
Ronald C. Johansson, Croix Beach, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 21, 1974, Ser. No. 516,607
Int. Cl.² H01R 11/20
U.S. Cl. 339—97 R 5 Claims



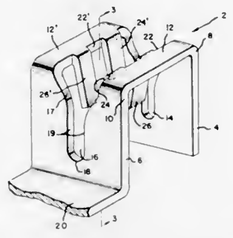
1. A wire-connector for snubbing and electrically contacting a loop of insulated wire, comprising: a body having a U-shaped channel for receiving and supporting a loop of wire, a post at a position corresponding to the center of the U defined by said channel and extending perpendicular to the plane of said U, and a contact element having a bifurcate spring compression reserve contact end and another contact end; and wherein said post is grooved along the side adjacent said loop to form a retaining groove for said bifurcate contact, and the floor of said channel is grooved in line with the groove in said post to provide grooves for receiving the tips of said bifurcate contact.

3,950,064
MODULAR CONNECTOR
Ted L. C. Kuo, Fanwood, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Dec. 30, 1974, Ser. No. 537,583
Int. Cl.² H01R 11/20, 5/08
U.S. Cl. 339—97 C 18 Claims



1. A modular connector comprising: a first connector member having a base portion and foldable leg portions extending upwardly from said base portion in a first alternating arrangement along opposite sides of said base portion; and a second connector member have a base portion and foldable leg portions extending upwardly from said second connector member base portion in a second alternating arrangement along opposite sides of said second connector member base portion, said second alternating arrangement being complementary to said first alternating arrangement so that said first and said second connector members may be disposed adjacent one another with said first and said second connector member leg portions extending in a common direction and said leg portions of said first connector member interlocked with said leg portions of said second connector member.

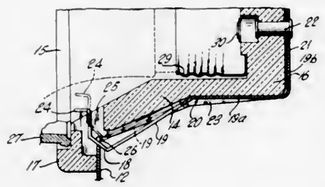
3,950,065
CONNECTING DEVICE HAVING INTEGRAL CONDUCTOR RETAINING MEANS
Robert Maurice Renn, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Apr. 28, 1975, Ser. No. 572,591
Int. Cl.² H01R 9/08
U.S. Cl. 339—98 9 Claims



1. A one-piece sheet metal stamped and formed connecting device for forming an electrical and mechanical connection with an elongated conductor, said device comprising:
- a pair of plate-like members disposed in side-by-side relationship, said members being connected to each other by spaced-apart connecting strap members, said strap members being integral with, and extending between, corresponding ends of said plate-like members,
- each of said plate-like members having a conductor receiving slot, said slots being in alignment with each other with respect to an axis extending through said slots, said slots extending inwardly from said corresponding ends,
- flexible conductor retaining means integral with, and extending from at least one of said strap members, said conductor retaining means having portions thereof which are disposed between said plate-like members and which extend transversely with respect to said axis, whereby,

upon movement of a conductor laterally of its axis, between said strap members and into said slots, said retaining means is deflected by said conductor, and said retaining means engages said conductor after said conductor comes to rest in said slots and prevents movement of said conductor laterally from said slots.

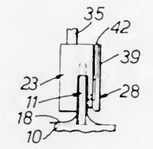
3,950,066
COVERED ELECTRICAL RECEPTACLE WITH SNAP-IN MOUNTING
Wolfgang F. Bienwald, Melville, N.Y., assignor to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Jan. 2, 1975, Ser. No. 538,024
Int. Cl.² H02B 1/02
U.S. Cl. 339—128 5 Claims



1. An electrical receptacle for removably mounting a wiring device in an opening of a panel, which comprises:
- a. a hollow housing of insulating material;
- b. said housing having an open front end and having a closed rear end for receiving and supporting a wiring device therein;

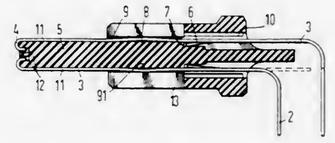
- c. said rear end of said housing being adapted to pass through an opening in a panel;
- d. a supporting flange carried by said housing and extending outwardly therefrom at said front end thereof and resting on a front face of said panel;
- e. said flange containing oppositely disposed slots in a lower surface thereof;
- f. said slots communicating with a cavity in said housing adjacent said open front end thereof;
- g. snap-in mounting means carried by the housing for removably securing said housing in said panel opening;
- h. said mounting means including oppositely disposed spring fingers engaging with a rear face of said panel in opposing relation to a rear face of sail flange;
- i. said spring fingers having inturned ends extending through said slots and into said open front end of the housing; and
- j. a removable cover resting on an outer face of said flange and enclosing said open front end of said housing.

3,950,067
ELECTRICAL CONNECTION MEANS
Brian Leavesley, Aspley, England, assignor to TRW Inc., Cleveland, Ohio
Filed Aug. 2, 1974, Ser. No. 494,119
Claims priority, application United Kingdom, Aug. 8, 1973, 37511/73
Int. Cl.² H01R 13/50
U.S. Cl. 339—176 MF 10 Claims



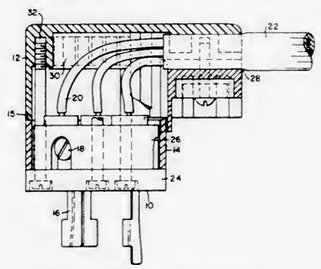
1. Electrical connection means for enabling electrical connection to be made between selected electrical wiring conductors and selected electrically-conducting paths carried on a thin flexible electrically-insulating substrate including
- a tongue over which a part of such a substrate may be folded with bare parts of the selected conducting paths exposed outermost, and
- a one-piece electrical connection socket arranged for sliding engagement on the tongue and having gripping parts including a pair of laterally spaced limbs arranged to overlie one side of the tongue for gripping such a substrate part when folded over the tongue whereby to grip the substrate part firmly between opposing parts of the tongue and socket,
- the tongue also having substrate locating means for engaging the substrate and restraining it against movement relative to the tongue when the socket is pressed home into its operative position on the tongue and associated substrate part, and
- the socket having resilient electrical contact members for connection with the respective selected wiring conductors and having electrical contact surfaces for electrically contacting the respective bare parts of the selected conducting paths,
- the socket and tongue being provided with cooperating locking members for engaging one another when the socket is pressed home to its operative position and for thereafter retaining the socket in that position, one of the locking members being resiliently mounted to enable it to be disengaged from the other locking member whereby to enable the socket and tongue to be disengaged,
- the resiliently mounted locking member being disposed substantially centrally on the socket between the pair of limbs of the socket and the tongue-mounted locking member projecting from the same side of the tongue as that which the limbs overlie.

3,950,068
ELECTRICAL QUICK DISCONNECT PLUG
Gerhard Schmieg, Germering, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Mar. 4, 1974, Ser. No. 447,964
Claims priority, application Germany, Mar. 9, 1973, 2311809
Int. Cl.² H01R 13/50
U.S. Cl. 339—176 M 2 Claims



1. A quick disconnect electrical connector plug comprising an insulating plate having grooves formed in one end face thereof, a pair of metal strips having ends carried in said grooves and hooked over the end of said plate and lying along opposite surfaces thereof, said connector plug having an enlarged head formed integrally with said plate at the other end thereof and having elongated slit-like apertures formed in said enlarged head and in coplanar relation with said plate, each of said apertures having a wall parallel to and opposite said plate, shoulders formed on said connector plug adjacent the ends of said apertures opposite said one end of said plate, each of said metal strips extending through one of said slit-like apertures and being formed with a single obtusely angled portion fitted within said one of said apertures, said obtusely angled portion consisting of a single bend wherein the apex thereof contacts said parallel wall of said one of said apertures, within the confines of said said one of said apertures and said metal strips having tongues extending outwardly from the surface of said strips intermediate the ends thereof and overlying said shoulders whereby to fix said strips in position in said plug.

3,950,069
ELECTRICAL ANGLE PLUG
Roy O. Wiley, Huntington, Conn., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 10, 1974, Ser. No. 531,427
Int. Cl.² H01R 13/58, 33/06
U.S. Cl. 339—196 M 5 Claims



1. An electrical angle plug comprising:
- a base member of insulating material with electrical contact elements secured therein and having a front face from which said contact elements extend, said contact elements each having a terminal for wire engagement therewith, said base member having a first cylindrical periphery at said front face and a second cylindrical periphery remote from said front face of lesser diameter than said

first periphery, said base member having a plurality of fastener passageways therethrough;

a cover member of insulating material having an access port for admitting a cable in a direction substantially parallel to said front face, said cover member having an interior chamber with a substantially smooth cylindrical surface and with an opening facing said base member and a back wall opposite said opening, said chamber having a plurality of fastener receiving apertures disposed in an arcuate array around said cylindrical surface and against said back wall;

a cylindrical ring member slidably fitting on said second cylindrical periphery of said base member and having an inner-diameter less than said first cylindrical periphery, said ring having an edge abutting against the outside of said chamber opening of said cover,

said base being rotatable with respect to said cover to any of a variety of positions;

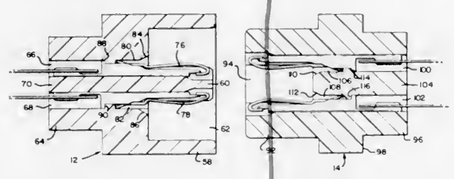
a plurality of fasteners extending through said base passageways and into a like number of said apertures of said cover for securing said base and said cover in any of said variety of positions, said base, cover and ring members being freely rotatable except as secured by said fasteners.

3,950,070

FLAT FLEXIBLE CABLE TERMINAL AND ELECTRICAL INTERCONNECTION SYSTEM

James Leon Groft, Camp Hill; Jean Jacques Redslob, Wellsville, and Marvin Leo Yeager, Carlisle, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 25, 1974, Ser. No. 482,969
Int. Cl.[2] H01R 9/08
U.S. Cl. 339—217 S 16 Claims



1. A multiple conductor electrical connector comprising:

plug means including a first body of dielectric material;

receptacle means including a second body of dielectric material;

a plurality of contact receiving channels in each said first and second bodies of dielectric material;

a like plurality of nubs formed integral with said first and second bodies of dielectric material and positioned such that one nub projects into each of said contact receiving channels;

a plurality of contacts each located in a respective one of said plurality of contact receiving channels,

each said contact including a unitary body of conductive material, said body having a pair of integral inclined sidewalls defining a V-shaped section with an open third side, a bridge extending at least partially across the open side of said body intermediate the ends thereof, a light spring force resilient cantilever contact arm integral with and extending from a first side of said bridge forwardly along said open side of said body and having a curved free end hooking around one free end of the body, a flexible latch means integral with and extending from an opposite side of said bridge rearwardly along said body, at least one rigid restraining tab integral with said body and spaced from said latch means, and means for attachment of said contact to an electrical conductor;

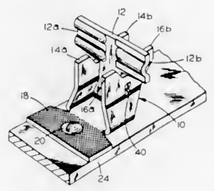
said latch means and said at least one restraining tab interfitting with said nubs to retain said contacts firmly in place within said contact receiving channels.

3,950,071

MULTIPLE STAB ELECTRICAL CONNECTOR

James Edward McGann, and Rodney Laban Naas, both of Plainville, Conn., assignors to General Electric Company, New York, N.Y.

Filed Nov. 11, 1974, Ser. No. 522,772
Int. Cl.[2] H01R 11/22
U.S. Cl. 339—258 F 12 Claims



1. A multiple stab electrical connector formed from a single electrically conductive sheet metal blank; said stab connector comprising, in combination:

A. a base for electrical connection to a current carrying member;

B. a rigid body section bent away from the plane of said base about the junction therebetween;

C. a first contact blade formed in the terminal portion of said body section remote from said base, said first contact blade oriented at essentially right angles to said base;

D. at least rigid one wing section bent away from the plane of said base about the junction therebetween;

E. at least one second contact blade formed in the terminal portion of said wing section remote from said base, said second contact blade oriented at essentially right angles to said base; and

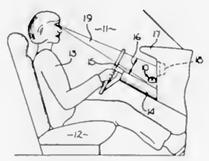
F. means integrally formed with said body section and said wing section immovably mechanically interconnecting said sections at a point intermediate said contact blades and said base.

3,950,072

INSTRUMENT PANEL REFLECTING APPARATUS

Robert M. Aten, 9567 Geyser Ave., Northridge, Calif. 91324

Filed Dec. 16, 1974, Ser. No. 533,083
Int. Cl.[2] G02B 27/02
U.S. Cl. 350;110 4 Claims



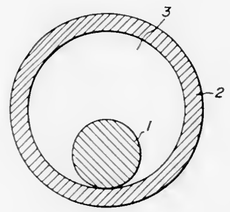
1. An instrument panel reflecting apparatus for use in vehicles to provide visual observation of the instrument panel indicia, comprising a semicylindrical translucent reflecting member having an untreated base surface having a longitudinal length consistent with the instrument panel indicia and having a semi-circular cross-section, the circular surface of said reflecting member having a defined center of curvature and image converging point, said base member being disposed in the proximity of said instrument panel such that the image of the indicia converges substantially at said base surface whereby an operator of the vehicle can view a non-inverted reflective image of the indicia.

3,950,073

ECCENTRIC CORE OPTICAL WAVEGUIDE

Masaharu Horiguchi, Urizura; Takao Edahiro; Kunio Masuno, both of Mito; Tadashi Miyashita, Hitachi, and Shiro Takahashi, Mito, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed May 23, 1974, Ser. No. 472,758
Claims priority, application Japan, May 23, 1973, 48-57311
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96 WG 11 Claims



1. An eccentric core optical waveguide comprising a right circular cylindrical glass core having refraction index n_1, an outer cylindrical glass jacket having larger inner diameter than diameter of the glass core and having refraction index n_2, and a space between the glass core and the outer cylindrical glass jacket filled with air, the glass core is so arranged as to tangential contact with the inner wall of the said outer cylindrical glass jacket, wherein said refraction indices have a relationship of:

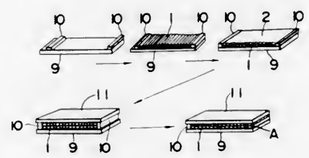
$$n_1 > n_2$$

3,950,074

IMAGE-TRANSMITTING LIGHT-CONDUCTING FIBRE ARRAY

Atsuyuki Tanaka, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 8, 1974, Ser. No. 513,163
Claims priority, application Japan, Nov. 7, 1973, 48-128720
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96 B 2 Claims



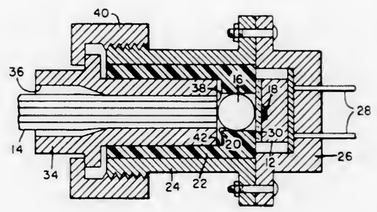
1. An array of image-transmitting light-conducting fibres each of which is a cylindrical member of a single light-conducting material and having an outer peripheral surface with a multiplicity of alternate indented portions and protuberent portions, and each being coated with a light-adsorbent material which fills said indented portions to a depth sufficient to bring the outer surface thereof generally level with the outermost surface of said protuberent portions and giving to the fibre a substantially uniform outside diameter said fibres being bound together in parallel side by side relationship with one another, and corresponding opposite ends thereof being coplanar and constituting an image emitting face and an image receiving face, whereby light entering said fibre at an angle greater than an aperture angle thereof is adsorbed by said light-adsorbent material so that the effect of flair is prevented in the transmission of images.

3,950,075

LIGHT SOURCE FOR OPTICAL WAVEGUIDE BUNDLE

Thomas A. Cook, and Marshall C. Hudson, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 6, 1974, Ser. No. 440,068
Int. Cl.[2] G02B 5/16
U.S. Cl. 350—96 C 5 Claims



1. A transmission system for the purpose of guiding optical wave energy comprising, in longitudinal axial alignment,

a light emitting diode,

a transparent spherical bead of uniform refractive index,

a bundle of optical waveguides disposed in side-by-side relation, the ends of said waveguides being disposed in a single plane to form an endface that is disposed adjacent to said bead, and

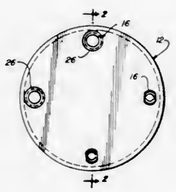
deformable means disposed between said endface and said diode for supporting said bead in axial alignment with said bundle, said deformable means having aperture defining means which engages said bead, the diameter of said aperture defining means being less than that of said bead except at the area of contact between said bead and said aperture defining means.

3,950,076

SNAPABLE AND REMOVEABLE SAFETY REFLECTOR

Curt S. Carlson, 1295 Warwick Court, Deerfield, Ill. 60015

Filed Sept. 11, 1974, Ser. No. 504,916
Int. Cl.[2] G02B 5/12
U.S. Cl. 350—97 9 Claims



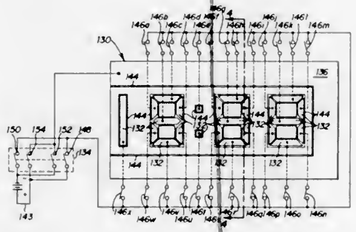
1. A safety reflector comprising a pair of molded support members of identical construction, each having a reflective material on a front face thereof and complimentary snap-acting interlocking means on a rear face thereof for lockingly securing said pair of support members together in spaced-apart relationship so as to receive therebetween an element for the purpose of removable securing said reflector to the element, said interlocking means comprising a complimentary spacer and a stud, said spacer projecting from said rear face and having a bore therein, a flange at the end of said bore providing a reduced diameter entrance into said bore and a shoulder within said bore, said stud having a rib extending at least partially about its peripheral side wall proportioned to be forcibly urged into said bore in said spacer to snap-actingly lockingly engage said rib behind said shoulder to secure said stud in said bore in said spacer to secure said pair of support members together, said support members when secured together being held in spaced-apart relationship by said spacers.

3,950,077

LEAD REFERENCE AND COUNTER ELECTRODE FOR AN ELECTROCHROMIC DISPLAY

Raymond J. Jasinski, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 20, 1974, Ser. No. 507,913
Int. Cl.² G02F 1/28
U.S. Cl. 350—160 R 17 Claims



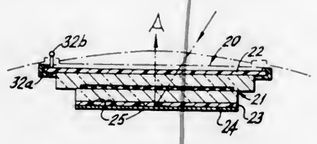
1. An electrochromic display cell comprising:
a. cell structure means defining a sealed volume;
b. an electrolyte composition completely filling said volume comprising water, a dihydrogen phosphate anion and an n-heptylviologen cation which when reversibly reduced combines with said anion to produce an insoluble insulating film that markedly absorbs visible light;
c. a lead counter electrode contained in said cell structure means and contacting said electrolyte forming a lead/lead phosphate half cell;
d. a display electrode contained in said cell structure and contacting said electrolyte;
e. means for applying an electrical voltage across said cell to effect an electrolytic current flow; and
f. means for reversing said current flow across said cell such that said cation is reversibly reduced on said display electrode to an insoluble, insulating, colored adherent film and subsequently oxidized to a colorless soluble cation.

3,950,078

LIQUID CRYSTAL DISPLAY

Norman C. Zatsky, Southbury, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Oct. 16, 1974, Ser. No. 508,473
Int. Cl.² G02F 1/13; G04B 19/30
U.S. Cl. 350—160 LC 6 Claims



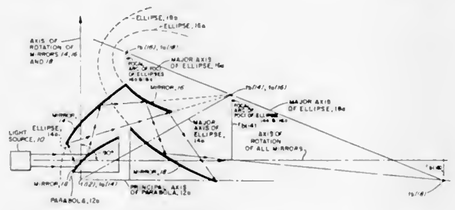
1. A liquid crystal display comprising:
a liquid crystal cell having a plurality of selectively activated segments to form display characters,
a first polarizing element disposed on one side of said cell and a second polarizing element disposed on the other side of said cell,
a reflector disposed on the opposite side of the second polarizing element from the cell, and
a plurality of thin phosphorescent light emitting segments aligned with and behind said character segments.

3,950,079

STEERABLE CATOPTRIC ARRANGEMENTS

Werner R. Rambauske, Carlisle, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Aug. 19, 1974, Ser. No. 498,686
Int. Cl.² G02B 5/10
U.S. Cl. 350—285 10 Claims



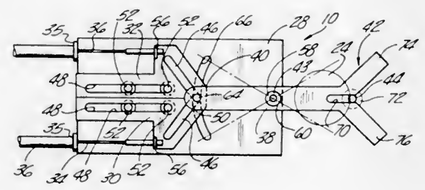
1. An improved catoptric arrangement for directing a laser beam, such arrangement comprising:
a. a curved entrance mirror having a focal point, such mirror being rotatably mounted in the path of a laser beam to be steered, the reflecting surface of such mirror being inclined with respect to the longitudinal axis of such beam to redirect such beam away from such axis as though from the focal point;
b. a curved second mirror having at least one focal point coincident with the focal point of the entrance mirror disposed in the path of the beam reflected from the entrance mirror, the reflecting surface of such mirror being inclined with respect to the longitudinal axis of such reflected beam and being rotatable with respect thereto; and,
c. selectively actuable means for rotating the entrance mirror, the second mirror and the focal points of such mirrors together about the longitudinaal axis of the laser beam to be steered and for rotating the second mirror about the longitudinal axis of the beam reflected for the entrance mirror.

3,950,080

REAR VIEW MIRROR ACTUATING DEVICE

Clyde M. McKee, 22175 Bernard St., Taylor, Mich. 48180, and Ward Scott, 429 Rochdale Drive, Rochester, Mich. 48063

Filed Nov. 25, 1974, Ser. No. 526,795
Int. Cl.² G02B 5/08
U.S. Cl. 350—302 15 Claims



1. An actuating device to automatically control the orientation of mirrors movably mounted on a vehicle in response to the relative positions of the vehicle and a trailer being towed by the vehicle to provide a variable field of view through the mirrors to a driver of the vehicle, said device comprising:
mirror actuating means slidably mounted to the vehicle for movement in the longitudinal direction of the vehicle;
connection means connecting said mirror actuating means to the mirrors;

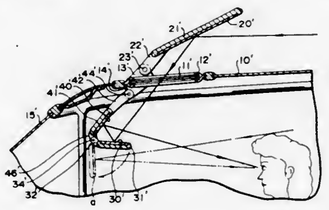
an arm pivotally mounted to the vehicle and operatively engaged with said mirror actuating means; and
actuating means attached to the trailer and automatically operatively engaging said arm when said trailer is connected to said vehicle for towing of said trailer by said vehicle, wherein said actuating means automatically operatively disengages from said arm upon the disconnection of said trailer from said vehicle,
said actuating means being operable to pivot said arm in a direction and to a degree depending upon the angle existing between said vehicle and trailer whereby, as the vehicle negotiates a turn, the trailer being towed by the vehicle assumes an angle with respect to the vehicle, and in so doing said actuating means causes said arm to pivot about its pivotal mounting which in turn causes said mirror actuating means to move in the longitudinal direction of the vehicle, thus, moving said connection means interconnecting said mirror actuating means and the mirrors thus moving the mirrors to a position depending upon the direction and degree of turning of said vehicle.

3,950,081

PERISCOPE-TYPE VIEW MIRROR APPARATUS FOR AUTOMOBILE

Makoto Yamashita, Ayase; Masagoro Kushida, Isehara; Fumio Niitsuma, Hatano; Masao Enomoto, Yokohama, and Akira Miyamoto, Tokyo, all of Japan, assignors to Ichikoh Industries Limited, Tokyo, Japan

Filed Feb. 25, 1974, Ser. No. 445,333
Claims priority, application Japan, Feb. 26, 1973, 48-22226; Feb. 26, 1973, 48-22227
Int. Cl.² G02B 5/08
U.S. Cl. 350—302 2 Claims



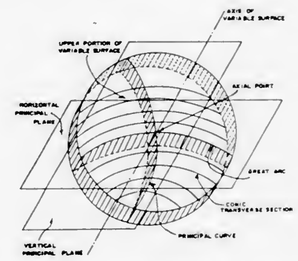
1. A periscope-type rear view mirror apparatus for an automobile, said automobile having a roof, said roof having an aperture therein, said apparatus comprising:
a frame supporting a glass pane, said frame positioned to cover said aperture with said glass pane, said frame having first and second pairs of parallel, flat lugs integral therewith and respectively extending upwardly and downwardly from the forward portions of the opposed lateral edges thereof;
a housing hingedly connected to said pair of upwardly extending lugs of said frame and adapted to be movable from a first position against said roof to a second position away therefrom;
a roof-type planar objective mirror positioned above said aperture and supported by said housing for reflecting light rays received from the rear of the automobile forwardly and downwardly through said glass pane into the interior of the automobile when said housing is in said second position, said objective mirror being against said roof when said housing is in said first position;
first and second mirror holding members; said second mirror holding member having upwardly extending side portions constituting two parallel, flat lugs and having downwardly extending side portions constituting two parallel, flat lugs; said first mirror holding member having forwardly extending side portions constituting two parallel, flat lugs; said upwardly extending lugs of said second mirror holding member being rotatably secured to said pair of downwardly extending lugs of said frame to provide means for allowing free rotation of said second mirror holding member with respect to said frame; said forwardly extending lugs of said first mirror holding member being rotatably secured to the downwardly extending lugs of said second mirror holding member to provide means for allowing free rotation of said first mirror holding member with respect to said second mirror holding member;
a first planar reflecting mirror positioned on said first mirror holding member for reflecting the light rays reflected from said objective mirror upwardly and forwardly; and
a second planar reflecting mirror positioned on said second holding member and adjacent said first reflecting mirror for reflecting the light rays reflected from said first reflecting mirror to the position of a driver's eyes.

3,950,082

OPHTHALMIC LENS FOR PRESBYOPIA AND APHAKIA

David Volk, 2460 Fairmount Blvd., Cleveland, Ohio 44106

Continuation-in-part of Ser. No. 322,488, Jan. 10, 1973, abandoned. This application Jan. 15, 1975, Ser. No. 541,147
Int. Cl.² G02C 7/06
U.S. Cl. 351—169 11 Claims



1. A multifocal ophthalmic lens of homogeneous transparent optical material, useful for the correction of the refractive error and the accommodative insufficiency or absence of accommodation in presbyopia and aphakia, having a geometrically and optically continuous variable convex front surface at least a portion of which changes continuously and regularly in refractive power, and a coacting coincoid conicold surface of eccentricity zero or greater or toric back surface, said variable front surface characterized by having a single pair orthogonal principal planes each of said planes of said pairs intersecting said variable convex front surface normally at all points, the first of said principal planes, generally horizontal in use, intersecting said front surface normally in a conic great arc of eccentricity zero or greater, the derivative of curvature of said variable front surface vanishing at said great arc at least in sections by all planes orthogonal to it, said arc providing a unique tangential junction between an upper and a lower portion of said variable front surface, there being geometrical and optical continuity and a continuous and regular change in curvature and refractive power in crossing said conic great arc, without localized distortion in the field of vision through said lens, the second of said principal planes being a generally vertical plane of symmetry of said variable front surface, intersecting orthogonally said great arc and said first principal plane and forming the axis of said variable front surface, said axis intersecting the center of curvature of said great arc when its eccentricity is zero and coinciding with the major axis and intersecting both foci and the center of curvature of the apex of said great arc when its eccentricity is greater than zero, and intersecting said variable front surface normally in a principal curve in which, at the point where said axis intersects said variable front surface, namely, the axial umbilical point, the curvature of said great arc and said principal curve are equal,

the derivative of curvature of said principal curve and of said great arc of said variable front surface in all meridian sections containing said axis, vanishing or zero at said axial umbilical point, said principal curve at least below said great arc, increasing in curvature and refractive power downwardly in a continuous and regular manner and at an accelerated rate with increasing distance from the axial umbilical point of said variable front surface, all transverse sections of said variable front surface below said great arc, by planes orthogonal to said principal curve, being conics of eccentricity greater than zero whose axes containing the foci of said conics lie in said vertical principal plane and intersect normally said principal curve, the curvature of said conic transverse sections at said principal curve below said great arc increasing in a continuous and regular manner at a rate substantially equal to the accelerated rate of increase in curvature of the principal curve itself, every transverse section of said variable front surface above said great arc by planes orthogonal to said principal curve being conics of eccentricity zero or greater, the lines of intersection of said orthogonal planes and said vertical principal planes all intersecting at the common center of curvature of said conics when their eccentricity is zero, the axes of said conics which contain their foci when their eccentricities are greater than zero coinciding with their respective lines of intersection of said orthogonal planes and said vertical principal plane, the eccentricities of said conic transverse section below said great arc increasing continuously and regularly with distance from said great arc, all transverse sections by planes orthogonal to the principal curve being conics of eccentricity greater than zero when said great arc is a conic of eccentricity greater than zero, the derivative of curvature of all of said conic transverse sections of eccentricities greater than zero vanishing at said principal curve, there being sufficient thickness of said lens to allow for the generating, grinding and polishing of a coacting coicoid back surface of eccentricity zero or greater or toric back surface to incorporate an ophthalmic prescription into said lens.

3,950,083

FADING AUDIO-LEVEL CONTROLS FOR SOUND-RECORDING MOTION PICTURE CAMERAS

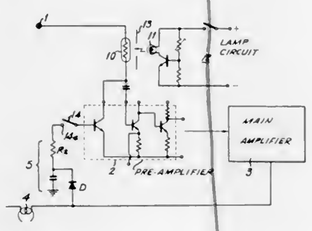
Hirofumi Yoshimura; Toyonori Higuma, and Noriaki Itoo, all of Tokyo, Japan, assignors to Kabushiki Kaisha Yashika, Japan

Filed Oct. 18, 1974, Ser. No. 515,898

Claims priority, application Japan, Oct. 23, 1973, 48-119106

Int. Cl.² G03B *31/02, 21/36*

U.S. Cl. 352—25 **12 Claims**



1. In a motion picture camera, fade means for carrying out fade-out and fade-in operations, sound-recording means for recording sound during film exposure, adjustable means operatively connected with said sound-recording means for adjusting the audio level thereof, and control means operatively connected on the one hand to said adjustable means and on the other hand to said fade means for automatically controlling said adjustable means to reduce the audio level when a fade-out operation is carried out by said fade means and to gradually increase the audio level when a fade-in operation is carried out by said fade means.

3,950,084

CINEMATOGRAPHIC APPARATUS WITH ADJUSTABLE SHUTTER MEANS

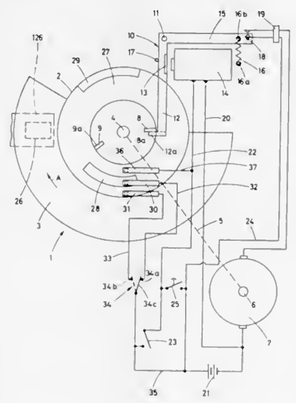
Herbert Reinsch, Kongen, Germany, assignor to Robert Bosch Photokino G.m.b.H., Stuttgart, Germany

Filed Feb. 15, 1972, Ser. No. 226,435

Claims priority, application Germany, Feb. 24, 1971, 2108668

Int. Cl.² G03B *21/38*

U.S. Cl. 352—169 **16 Claims**



1. In a cinematographic apparatus, a combination comprising means defining a light-admitting aperture; a shutter having blade means and being movable between and beyond first and second positions in which said blade means respectively overlies and is out of register with said aperture; offset first and second surfaces arranged to move along a predetermined path when the shutter is in motion; means for driving said shutter; an intercepting device movable in a single predetermined plane between two predetermined operative and inoperative positions in which a portion thereof respectively extends into and is retracted from the path of movement of said surfaces whereby said shutter is respectively arrested in said first and second position when said intercepting device dwells in said operative position and said portion thereof is respectively engaged by said first and second surfaces; displacing means actuable to move said intercepting device to said inoperative position; and control means operative to selectively effect a movement of said intercepting device to said operative position while said portion thereof is respectively approached by said first and second surfaces.

3,950,085

OPTICAL TRANSFORMATION DRAWING APPARATUS

Gerhard Grimm, Neutraubling, Germany, assignor to Krones-Transyscop GmbH, Neutraubling, Germany

Filed Aug. 25, 1975, Ser. No. 607,375

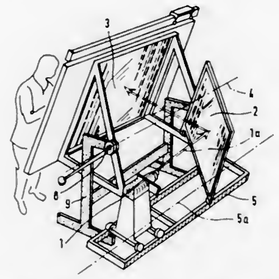
Claims priority, application Germany, Aug. 27, 1974, 2441072

Int. Cl.² G03B *21/10, 21/28*

U.S. Cl. 353—44 **4 Claims**

1. In an optical transformation drawing apparatus comprising a projection screen having front and rear faces and a projector for projecting an image on to said rear face of said projection screen to enable a draftsman to trace on said front face of said screen said image which is transmitted through the screen, the improvement comprising a fixed frame (9), a projector support frame (5) supporting said projector (1),

means mounting both said projection screen (3) and said projector support frame (5) to said fixed frame (9) for pivotal movement about an axis (4) with said projector support frame (5) and the projector (1) thereon acting as a counterweight to



said projection screen (3) and with said projector support frame (5) arranged parallel to said axis (4), and a mirror (2) adapted to deflect said image projected from said projector on to said rear face of said projection screen (3).

3,950,086

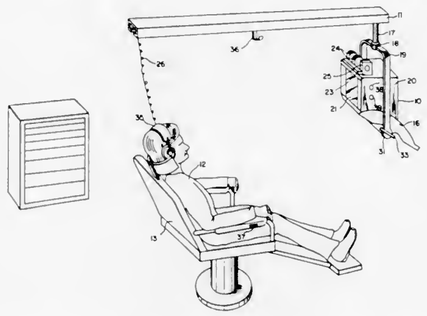
DENTAL LIGHT REFLECTOR AND VISUAL-AUDIO ANALGESIC ASSEMBLY

Herbert Schulman, 24 Clematis St.; Francis P. Russo, 193 Norwood Ave.; James W. Carter, 32 Clematis St., and John L. Parry, 112 Alden Drive, all of Port Jefferson Station, N.Y. 11776

Filed Jan. 22, 1975, Ser. No. 543,168

Int. Cl.² G03B *21/22;* **A61C** *19/02;* **A61B** *1/06*

U.S. Cl. 353—74 **3 Claims**



1. An assembly to illuminate the area of a dental patient's mouth under operation and provide a display screen for viewing by the patient comprising:

a housing having a display screen to display images,

yoke means to support and variably position the housing in front of the patient,

track means, the housing being movably supported in the track means by support means coupled to the yoke means, the support means enabling the housing to be laterally translated and including swivel means to enable the housing and light reflector assembly to be simultaneously swivelled,

a light reflector assembly mounted below the housing having a reflector and light, the reflector being securely mounted to the bottom portion of the housing, said yoke means supporting the light enabling the reflector to illuminate the area of the patient's mouth under operation without interfering with the patient's view of the display screen, and

earphones for use by the patient to reproduce the soundtrack of the selected program on the display screen.

3,950,087

SLIDE PROJECTOR FOR RECEIVING ALTERNATE SLIDE TRAYS OF DIFFERENT CONFIGURATIONS

Jean-Paul Erchoff, Belsele, Belgium, assignor to GAF Corporation, New York, N.Y.

Continuation of Ser. No. 376,181, July 3, 1973, abandoned. This application Feb. 11, 1975, Ser. No. 549,027

Int. Cl.² G03B *23/04, 23/06*

U.S. Cl. 353—116 **15 Claims**

1. In a slide projector of the type including a slide tray receiving groove formed by first and second side walls for holding a slide tray having a plurality of spaced apart slide receiving spaces, and a slide carrier slidably disposed for reciprocating movement transversely to the slide tray receiving groove for transferring a slide from a slide tray installed therein to the viewing position on the optical axis of the projector and returning the same to the slide tray, the improvement comprising means for alternately receiving within the slide tray receiving groove at least four slide trays having different shapes and indexing racks of different configurations, said racks located adjacent one or the other of said side walls of said groove including tray guide means fixedly disposed within the slide tray receiving groove and having a contoured surface corresponding to and adapted to slidably engage, support and guide the alternate slide trays; and an indexing mechanism for incrementally advancing said alternate slide trays disposed within the slide tray receiving groove to sequentially present slides contained in said slide trays for viewing; said indexing mechanism including a first rotatable drive gear adapted to engage and advance the indexing rack of one of said alternate trays in which the indexing rack is located adjacent said first side wall of said groove, and a second rotatable drive gear having its longitudinal axis spaced from the longitudinal axis of said first gear and adapted to engage and advance the alternate tray in which the indexing rack is located adjacent the second side wall of said groove of the other of said alternate trays.

3,950,088

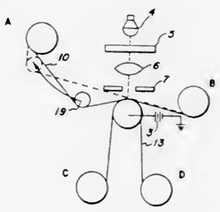
VELOCITY COMPENSATION FOR BEAD BYPASS WITH SPEED REDUCTION

Earl V. Jackson, Penfield; Roger G. Teumer, Fairport, and LeRoy Baldwin, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed June 4, 1974, Ser. No. 476,185

Int. Cl.² G03G *15/00*

U.S. Cl. 355—3 P **7 Claims**



1. Apparatus for removing a bead of accumulated material from the entrance to the nip of a web surface and another surface, successive portions of which move into contact with each other at the nip, comprising:

a. means for advancing successive portions of said surfaces into contact with each other at the nip including means to advance at least one of the surfaces relative to the nip region so that at least the part of the bead of accumulated material on said surface is advanced beyond the nip region, when the surfaces are separated;

b. means for separating the surfaces at the nip to a spacing sufficient to allow the bead of accumulated material to pass the nip region wherein said separating means in-

cludes compensating means for automatically compensating for motion during said separation whereby the advancing rate of velocity for the web remains constant, said compensating means comprising:

i. at least one roller in continuous contact with the outside surface of said advancing web, and

ii. tracking means for providing a fixed approximately elliptical path for said roller, said elliptical path permitting said roller during separation to track in a path which always causes reduction of the wrap angle formed by said advancing web in contact with the other surface to cause separation of the two surfaces without changing the advancing velocity rate of the web; and

c. means for reducing the advancing velocity of said other surface when the surfaces are being separated or while they are separated, whereby said other surface is advanced at a slower velocity than its prior velocity.

3,950,089

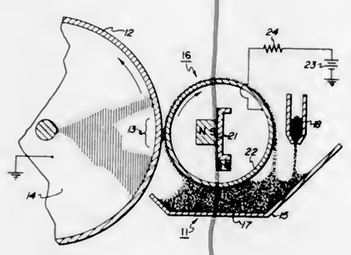
COATED ROLL FOR MAGNETIC BRUSH DEVELOPMENT AND CLEANING SYSTEMS

Lawrence J. Fraser; Delmer G. Parker, both of Rochester, and Joseph L. Scaletta, Henrietta, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 24, 1975, Ser. No. 552,010

Int. Cl.² G03G *15/00*

U.S. Cl. 355—3 DD **13 Claims**



1. In an electrostatographic processor having an electrically insulating imaging surface with an electrically conductive backing; and a system including an electrode spaced from said imaging surface, means for creating a voltage drop between said electrode and said backing to generate an electrostatic field, and means for circulating electrically conductive carrier particles along a path passing through the space between said imaging surface and said electrode; the improvement comprising a substantially uniformly thick layer of resistive material in intimate contact with said electrode, the thickness of said layer and resistivity of said material being selected to limit the energy dissipated during any carrier caused short circuit event to a predetermined non-destructive level and to confine the effects of such an event on said field to a localized portion of said field.

3,950,090

ELECTROPHOTOGRAPHIC COPYING MACHINE

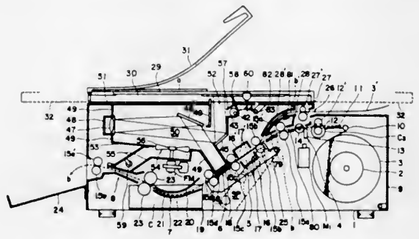
Takaji Washio, 2-5-5, Okakaminomachi, Toyonaka, Osaka, and Tatsuo Aizawa, 6-34, Kuwazu-cho, Higashisumiyoshi, Osaka, Osaka, both of Japan

Filed Nov. 26, 1973, Ser. No. 418,976

Int. Cl.² G03G *15/22*

U.S. Cl. 355—8 **8 Claims**

1. A photocopy machine comprising a frame having an upper surface with front and rear ends, said upper surface of said frame having a light exposure opening including an introduction edge located generally centrally of said front and rear ends, a carriage for carrying an original document to be copied movably mounted on said frame between a start print position where one end of said carriage projects from one of said front and rear ends of said frame and a carriage return position where the other end of said carriage projects from the other of said front and rear ends of said frame, said carriage normally located in a home position intermediate said start print and return positions and spaced from each, carriage drive means for reciprocating said carriage along said frame, said carriage drive means having first clutch means for moving said carriage in a first direction and second clutch means for moving said carriage in a direction opposite said first direction, a carriage setting device adjacent said start print position including a rear stop switch means for deactivating said first clutch means so that the leading edge of said original document is positioned adjacent the introduction edge of said light exposure opening, pin means on said carriage for engaging said carriage setting device, a supply of copy paper, a copy paper feed means adjacent said supply, means within said frame defining a copy paper transport passage, a plurality of copy paper driving means along said passage to convey a copy paper from said copy paper feed means through said transport passage, said transport passage including copy paper cutting means, charging means, light exposure means having receiving and discharge ends, developing means, and fixing means, optical system means in said frame between said light exposure opening and said light exposure zone to focus an image of the original document onto said copy paper, copy initiating switch means for activating said first clutch means of said carriage drive means to move said carriage from the home position to the start print position and said copy paper feed means to initiate the transport of the copy paper through said



transport passage, and copy paper detecting means mounted along said transport passage adjacent said receiving end of said light exposure means for detecting the presence of the copy paper, said copy paper detecting means including a copy paper detecting switch means for activating said second clutch means when a copy paper is present and causing said carriage to move from the start print position to the carriage return position, said paper cutting means being spaced from said copy paper detecting means by a predetermined distance, a length determining means mounted on said carriage, said length determining means being selectively adjustable along said carriage between a minimum position and a maximum position to indicate the length of the original paper carried thereby, said minimum position indicating a length of the original paper which is equal to said predetermined distance, means mounted along said upper surface of said frame for detecting said length determining means and including a length determining switch means, said means for detecting said determining means being normally in engagement with said length determining means to actuate said length determining switch means when said length determining means is adjusted to said minimum position and said carriage is at said start print position, means for connecting said copy paper cutting means with said copy paper detecting switch means and said length determining switch means so that said copy paper cutting means is actuated to cut the copy paper only when both said copy paper detecting switch means and said length determining switch means are actuated, whereby the image of the original paper on the moving carriage is cast upon the moving copy paper and the copy paper is cut into the length of the original paper.

3,950,091

APPARATUS FOR CONTROLLING MOVEMENT OF A CARRIAGE

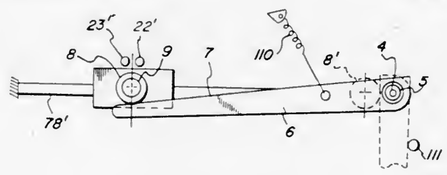
Edric Raymond Brooke, Welwyn Garden City, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 25, 1974, Ser. No. 445,527

Claims priority, application United Kingdom, Mar. 1, 1973, 9984/73

Int. Cl.² G03G *15/28*

U.S. Cl. 355—8 **8 Claims**



1. A carriage drive apparatus comprising:

a carriage;

drive means to drive the carriage in one direction;

a shaft rotatable about an axis at a given speed and in a given direction;

at least one lever arranged to rotate about said axis, said lever contacting said carriage so that said lever is rotated about said axis in said given direction as said carriage is moved in said one direction; and

means for preventing said lever from rotating about said axis in said given direction at a greater angular velocity than said shaft, said preventing means comprising an overrunning clutch mounted to the shaft and connected to said lever.

3,950,092

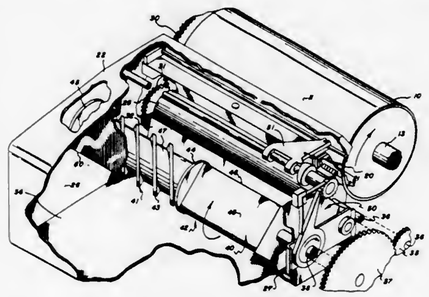
IMPELLER MEMBER FOR USE IN TRANSPORTING PARTICULATE MATERIAL IN A REPRODUCING MACHINE

John D. Zoltner, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 20, 1974, Ser. No. 507,907

Int. Cl.² G03G *21/00*

U.S. Cl. 355—15 **16 Claims**



10. In an electrostatographic reproducing apparatus including an image retaining member;

means for forming an electrostatic image on a surface of said member;

means for developing said electrostatic image by the application of particulate material thereto;

means for transferring said developed image to a sheet of final support material; and

means for cleaning residual particulate material from said surface following transfer, said cleaning means including means for removing said material from said surface, storage means for storing said material removed by said cleaning means, and transport means for transporting said material from said cleaning means to said storage means;

the improvement wherein, said transport means includes an impeller member having a first portion extending from an end thereof having means for moving said material transversely of said storage means and a second portion of said member adjacent said first portion, said second portion having means for moving said material into said storage means.

3,950,093

METHOD AND APPARATUS FOR PRINTING COLOURED ORIGINALS

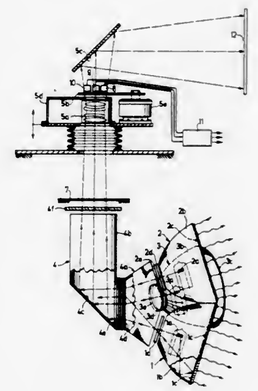
Bruno Schneider, Kloten-Augwil, Switzerland, assignor to Gretag Aktiengesellschaft, Kloten-Augwil, Switzerland

Filed Sept. 24, 1974, Ser. No. 508,853

Claims priority, application Germany, Oct. 12, 1973, 2351377

Int. Cl.² G03B *27/54, 27/76, 27/32*

U.S. Cl. 355—37 **13 Claims**



1. A light source of adjustable colour, comprising three light emitters of separately adjustable intensity, a light mixer adapted to mix light emitted by the emitters into one beam, and filtering means whereby the first emitter emits light containing one additive primary colour, the second emitter emits light containing the same colour and one other additive primary colour, and the third emitter emits light of all three additive primary colours.

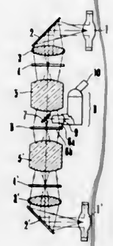
11. A method for providing light of adjustable colour, comprising the steps of filtering the light emitted by three light emitters to provide a first beam of light of one additive primary colour, a second beam of light comprising said additive primary colour and one other, and a third beam containing all three additive primary colours; and mixing the light from the emitters to provide one beam.

3,950,094

BOTH-SIDE PRINTING DEVICE

Ichiro Kano, Yokohama, and Hideki Yoshinari, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 12, 1974, Ser. No. 478,892
Claims priority, application Japan, June 18, 1973, 48-68439
Int. Cl.² G03B 13/28
U.S. Cl. 355—45 11 Claims



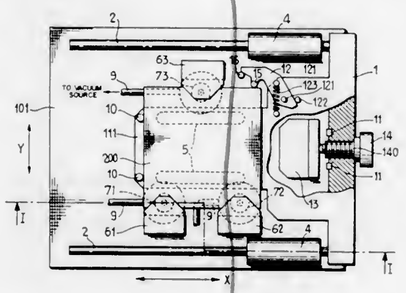
1. A printing device for printing patterns on both sides of a photosensitive material of predetermined thickness, comprising first optical means arranged for forming a first image of a first pattern on a plane corresponding to a position at which one side of a photosensitive material is to assume, second optical means arranged for forming a second image of a second pattern on a second plane spaced from the first plane corresponding to a position at which a second side of a photosensitive material is to assume, observation means for observing images in the first plane; and image shifting means between said first and second optical means for shifting the image formed in the second plane to the first plane.

3,950,095

POSITIONING DEVICE FOR A FLAT RECTANGULAR WORKPIECE

Jean Bouygues, and Rene Gerard, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 13, 1974, Ser. No. 441,968
Claims priority, application France, Feb. 16, 1973, 73.05560
Int. Cl.² G03B 27/58
U.S. Cl. 355—72 11 Claims



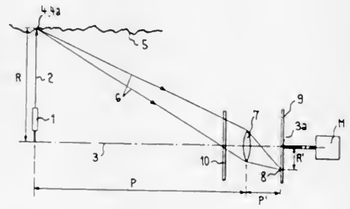
1. A device for operatively positioning a flat rectangular workpiece, comprising:
a support;
a carriage movably mounted on said support for displacing a workpiece between a handling position and a working position, said carriage being narrower than the workpiece and being provided with stop means defining a relative position in which two opposite lateral workpiece edges overhang the carriage; and
gripper means rising from said support on opposite sides of said carriage for engagement with the overhanging workpiece edges upon an advance of the carriage into said working position, said gripper means having fixed upper jaws overlying said workpiece edges in said working position and vertically movable lower jaws for lifting the workpiece off said carriage and clamping said overhanging edges against said upper jaws.

3,950,096

DEVICE FOR THE AUTOMATIC MEASUREMENT OF TUNNEL SECTIONS

Jean Philippe Aeschlimann, Lausanne; Pierre Emile Ravussin, Belmont-sur-Lausanne, and Jean Pierre Vuille, Epalinges, all of Switzerland, assignors to Alcyon Electronique & Physique S.A., Lausanne, Switzerland

Filed Aug. 30, 1974, Ser. No. 502,040
Claims priority, application Switzerland, Aug. 31, 1973, 12524/73
Int. Cl.² G01C 3/00, 3/08
U.S. Cl. 356—1 9 Claims



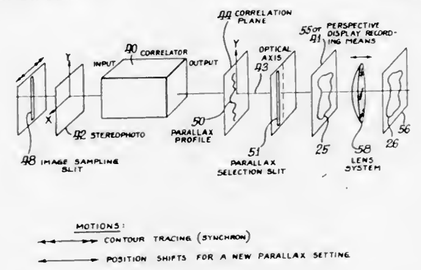
1. A device for the measurement of tunnel profiles, comprising means for generating a beam of light and directing said beam onto the tunnel wall to illuminate a spot thereon;
an image analyzer; and
optical means cooperating with said light generating means and said image analyzer to project said illuminated spot onto said image analyzer whereby the distance of said projected spot from the axis of said optical means is proportional to the distance of said illuminated spot from said axis;
said image analyzer including
a rotable disc
coaxially disposed with respect to said optical means and having a spiral slit running from the center of said disc toward the periphery thereof, a reference slit, and a series of slits regularly spaced about the circumference of the disc, said spiral slit being formed to produce a linear relationship between (a) the distance from the center of the disc to a point on the spiral and (b) the number of said circumferentially disposed slits counted from said reference slit up to a radius passing through the point on said spiral slit,
a light detector disposed adjacent said disc and responsive to said projected spot passing through said spiral slit for generating a signal, and
means cooperating with said disc for counting said circumferentially spaced slits from said reference slit as said disc rotates until said light detector signal is generated whereby the distance to said illuminated spot on the tunnel wall is measured from said axis.

3,950,097

METHOD AND APPARATUS FOR CONTOUR MAPPING AND ORTHOPHOTO MAPPING

Wolfgang M. Gopfert, and Alvin A. Read, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Feb. 18, 1975, Ser. No. 550,222
Int. Cl.² G01C 11/08
U.S. Cl. 356—2 12 Claims



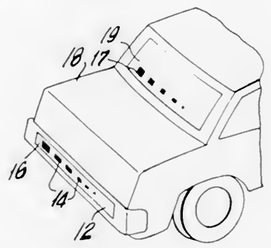
1. An optical parallax correlation system having an optical axis and using coherent light, Fourier transforming lenses, and holographic recording to correlate images of stereophoto transparencies and to reproduce indicia of image element relative positions in a correlation plane, the improvement comprising:
means defining a sampling slit aperture disposed in front of a transparency and mounted for transverse movement with respect to the optical axis;
display-recording means disposed at the correlation plane and also mounted for movement transverse to the optical axis; and
means defining a parallax selection slit aperture mounted in front of said display-recording means and also mounted for movement transverse to the optical axis.

3,950,098

SAFE DISTANCE VISUAL WARNING DEVICE

Harold A. Caine, 484 Kent Court, Oceanside, N.Y. 11572

Continuation-in-part of Ser. No. 420,952, Dec. 3, 1973, Pat. No. 3,868,629. This application Apr. 24, 1974, Ser. No. 463,576
Int. Cl.² G01C 3/00; G02B 5/12
U.S. Cl. 356—3 17 Claims



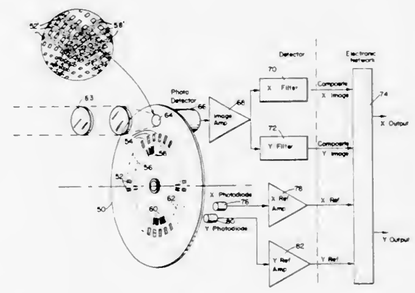
1. A vehicle safety device for providing a visual indication to a driver of one vehicle when the distance between his vehicle and another vehicle is safe, unsafe or where caution is needed, for the speed at which he is driving, said device comprising a plurality of different sized solid geometric warning areas, located with respect to said other vehicle all areas having a similar geometric shape, the areas sequentially positioned to form a total integral pattern in which each area has a particular position, each area being assigned to a particular speed at which an indication is to be provided, and wherein the discrete appearance of an area indicates an unsafe distance at the particular assigned speed, the absence of the discrete appearance of the area indicates a safe distance at the particular speed, and the lack of clear discernment of the area indicates that caution is needed.

3,950,099

TWO-AXIS IMAGE MOTION DETECTOR

Richard M. Malueg, Glendora, Calif., assignor to Actron Industries, Inc., Monrovia, Calif.

Filed Nov. 1, 1972, Ser. No. 302,769
Int. Cl.² G01P 3/36; G01J 1/20
U.S. Cl. 356—28 11 Claims



1. A two-axis image motion detector system comprising:
a substantially transparent disc rotating at a substantially constant speed;
a first plurality of uniformly spaced apart opaque grid bands extending around the disc in an annular ring in a pattern of equal width, alternating opaque and transparent areas, each said band being located on said disc at a first angle with respect to a corresponding given radius line of said disc; and
a second, different plurality of uniformly spaced apart opaque grid bands extending around the disc in said annular ring in a pattern of equal width, alternating opaque and transparent areas, each said band being located on said disc at a second angle with respect to a corresponding given radius line, said second angle being in the direction opposite said first angle,
said first and second grid bands being at right angles to each other where said bands intersect a given radius line, the locus of said right angle intersections being a circle concentric with the disc center, whereby said rotating disc generates a first image interrupting frequency with said first plurality of bands and a second, different image interrupting frequency with said second plurality of bands.

3,950,100

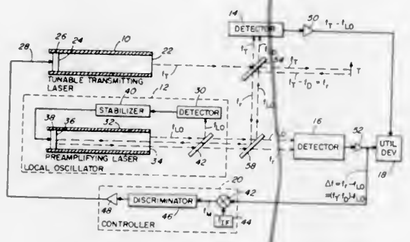
LASER HETERODYNE SYSTEM

Wayne H. Keene, Medfield; Clarke E. Harris, Waltham; Albert V. Jelalian, Bedford; Christopher R. Miller, South Acton, and Richard E. Seavey, Newton, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 337,486, March 2, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 518,924
Int. Cl.² G01P 3/36; H01S 3/00
U.S. Cl. 356—28 13 Claims

1. In combination:
a. laser means for producing a beam of coherent light having a frequency f_1, and for amplifying light having a frequency f_2; and
b. means for controlling said amplification by adjusting the

difference between the frequency f_1 and the frequency f_2 to a predetermined frequency and comprising means for



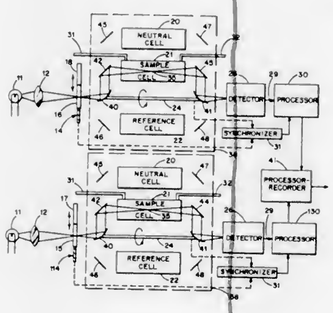
maximizing the amplification of the light having the frequency f_2.

3,950,101

MEASURING THE HEATING VALUE OF A FUEL IN THE GASEOUS STATE: METHOD AND APPARATUS

C. Forbes Dewey, Jr., Belmont, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Feb. 1, 1974, Ser. No. 438,902
Int. Cl.² G01N *21/24*
U.S. Cl. 356—51 **11 Claims**



1. A method of measuring the heating value of a fuel in the gaseous state and having two or more constituents with overlapping spectra in at least one region, said method comprising the steps of:

a. measuring the amount of radiant energy absorbed by such fuel in a spectral region where two or more constituents have overlapping spectra and energy absorption is a known function of the composite contribution to said heating value by the constituents having overlapping spectra in said spectral region;

b. measuring the relative concentration of other constituents which contribute to the heating value of such fuel, the concentration of each of said other constituents being proportional to its heating value contribution, thereby to obtain the heating value contribution of the other constituents; and

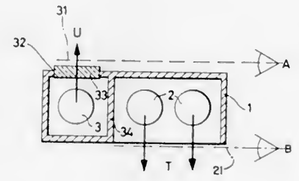
c. combining heating value contributions from said measuring steps.

3,950,102

ANALYSIS LAMP, PARTICULARLY FOR THE EXAMINATION OF PRECIOUS STONES

Manfred Eickhorst, Hans-Henny-Jahnn-Weg 21, 2 Hamburg 76, Germany

Filed Feb. 21, 1975, Ser. No. 551,678
Claims priority, application Germany, Feb. 26, 1974, 7406627[U]
Int. Cl.² G01N *21/04*
U.S. Cl. 356—73 **9 Claims**



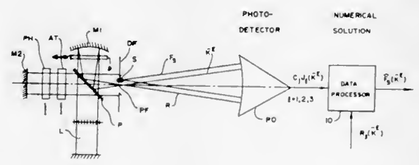
1. An analysis lamp, particularly for the examination of precious stones, with at least one artificial daylight source and at least one artificial UV light source, wherein the improvement comprises: means for establishing an observation plane for the light emitted by the daylight source and an observation plane for the light emitted by the UV source that is spatially separated from the daylight observation plane so that a stone may be viewed in the daylight observation plane without interference from the UV light source and viewed in the UV observation plane without interference by the daylight source with both sources emitting light.

3,950,103

METHOD AND APPARATUS TO DETERMINE SPATIAL DISTRIBUTION OF MAGNITUDE AND PHASE OF ELECTRO-MAGNETIC FIELDS ESPECIALLY OPTICAL FIELDS

Heinz Günter Schmidt-Weinmar, Edmonton, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 347,703, April 4, 1973, abandoned. This application June 21, 1974, Ser. No. 481,881
Claims priority, application Canada, Oct. 27, 1972, 154991
Int. Cl.² G01B *9/02*
U.S. Cl. 356—106 R **9 Claims**



1. A method of numerically determining the distribution of magnitude and phase of a time harmonic electromagnetic, particularly an optical, wave field comprising:

a. engendering a reference wave field such that its spatial distribution is similar to the field to be measured whereby fringes are obtained the position of which varies slowly with the recording coordinates;

b. using the reference wave as reference surface;

c. recording under far field conditions point by point by means of photodetector three interference fringe patterns which belong to the unknown field and variations of the said reference field distribution, the relationship of said variations as to magnitude and phase being such as to uniquely determine, for any recording point, the amplitude and phase distribution of the unknown electromagnetic wave field;

d. recording data in numeral form obtained from the photodetector;

e. placing an optical element in the said reference wave optical path such that the reference wave front is shifted in relation to the unknown wave front by a small known amount;

f. repeating the measurements as in (c) and (d); and

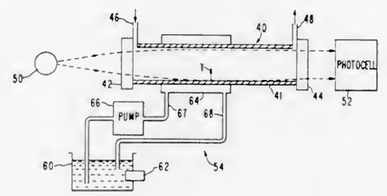
g. processing said data to obtain numeral values of magnitude and phase of the electromagnetic wave field being measured, such as to provide information in terms of a smooth spherical wavefront.

3,950,104

REFRACTIVE INDEX AND FLOW RATE DETECTOR AND METHOD

Miner N. Munk, Walnut Creek, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed July 22, 1974, Ser. No. 490,593
Int. Cl.² G01N *21/46, 1/10;* **G01F** *1/68*
U.S. Cl. 356—128 **27 Claims**



1. Apparatus for detecting rate of flow of effluent having a known index of refraction, said apparatus comprising:

a. an elongated flow cell for passage of the effluent therethrough, said flow cell having light-transmissive oppositely facing light input and exit windows and thermally conductive side walls extending between said windows, passage of said fluid causing a temperature gradient to be generated at the walls of the cell by frictional heating;

b. a light source for directing a beam of light through said input window along said thermally conductive side walls toward said exit window; and

c. light sensing apparatus for generating a signal proportional to absorbance of the light passing through said exit window.

3,950,105

PORTABLE SKI WAX APPLICATOR

Arnold T. Moss, 4442 Village Road, Long Beach, Calif. 90808; Steele Quinton Therkleson, 9911 Annik Drive, Huntington Beach, Calif. 92646, and Anton Magnet, 11208 Firmona Ave., Inglewood, Calif. 90304

Filed Apr. 17, 1975, Ser. No. 569,312
Int. Cl. A47l *13/32*
U.S. Cl. 401—1 **5 Claims**

1. A portable ski wax applicator comprising:

a heat conductive housing formed with a wax receiving compartment having top, bottom and respective first and second oppositely disposed side and end walls;

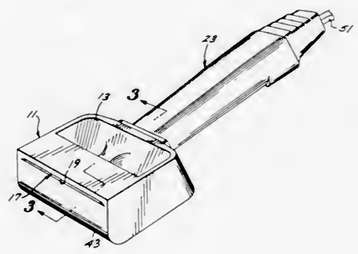
an inlet formed in said top wall adjacent said first end wall;

an elongated exterior dispersion groove formed in said second end wall proximate the top thereof and extending longitudinally of said top wall with one side thereof defining a spreader;

a plurality of through wax metering orifices formed in said second end wall and terminating at outlets spaced apart longitudinally in said groove, disposed ahead of said spreader;

an electrical heater mounted in said bottom wall; and

a low coefficient of heat transfer handle projecting from said housing whereby solid wax may be introduced through said inlet into said compartment to be melted by heat from said heater, said handle grasped to manipulate said housing to abut said second end wall flush against the bottom of a ski to cause melted wax to be metered onto said orifices to pour into said dispersion groove to run longitudinally therein and said spreader drawn along said ski to cause said spreader to spread said melted wax evenly theralong.

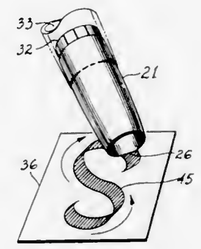


3,950,106

EMBOUCHURE PEN

Ben Braun, 15 Georgia Drive, Syosset, N.Y. 11791

Filed Jan. 7, 1975, Ser. No. 539,056
Int. Cl.² B43K *17/00*
U.S. Cl. 401—256 **10 Claims**



1. A resilient pen body having two nested body portions defining an ink feeding channel and terminating at their forward ends in respective abuting lips to form an embouchure writing tip wherein the improvement comprises, an embouchure tip for dispensing ink, said tip having two opposed lips defining a continuous capillary juncture therebetween of substantially annular free shape constituting the mouth of said feed channel, a support means for permitting said lips to osculate in response to writing pressure on the pen and for simultaneously reforming said mouth into an embouchure slit for ink tracking action, said lips constituting a progressive-contact spring means for controlling the widening of said slit whereby a corresponding line may be drawn in all writing positions of the pen.

3,950,107

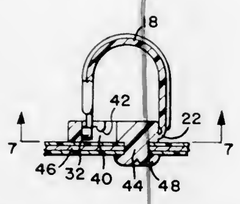
BINDER RING

Paul E. Seaborn, Los Gatos, Calif., assignor to The Mead Corporation, Dayton, Ohio

Filed June 26, 1974, Ser. No. 483,123
Int. Cl.² B42F *3/02*
U.S. Cl. 402—22 **5 Claims**

1. A binder construction comprising:

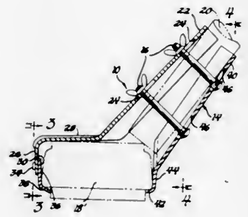
a. a molded plastic base having upper and lower surfaces and a continuous closed perimeter joining said upper and lower surfaces,
b. a flexible strap formed integrally with said base, projecting from a side thereof and terminating in a cross bar extending perpendicularly to said strap,
c. means defining wholly within said perimeter of said base a socket for receiving a portion of said flexible strap and said cross bar,
d. said socket having a substantially rectangular configuration as viewed from the bottom of said base,
e. a pair of spaced parallel legs disposed within said socket,
f. said legs having upper surfaces thereof substantially flush with said upper surface of said base and lower surfaces thereof positioned within said socket inwardly from said lower surface of said base,
g. said legs extending from the side of said socket opposite the side of said base from which said strap projects,



h. said spaced parallel legs terminating short of the side of said socket opposite the side from which they extend and defining thereby a substantially T-shaped configuration in said base as viewed from the top thereof,
i. locking means projecting downwardly from said lower surfaces of said legs adjacent outer ends thereof toward the plane of said lower surface of said base,
j. said cross bar being no longer in length than the width of said socket measured parallel to said cross bar but longer then the spacing between said spaced parallel legs,
k. the spacing between said spaced parallel legs being sufficient to receive therebetween that portion of said strap adjacent said cross bar but being substantially less than the length of said cross bar so that said cross bar engages said locking mean when disposed under said legs, and
l. securing means on said base for securing said base to a cover, said securing means being positioned intermediate said socket and said strap.

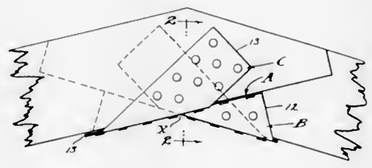
3,950,108
ADJUSTABLE BROOM BLOCK CLAMP
Paul P. Thomas, Bryan, Ohio, assignor to Winzeler Stamping Company, Montpelier, Ohio
Division of Ser. No. 342,328, March 19, 1973, Pat. No. 3,858,266. This application Oct. 23, 1974, Ser. No. 517,112
Int. Cl.² B25G 3/24
U.S. Cl. 403—192 **1 Claim**

1. A combined handle and an adjustable clamp assembly for securing a broom block to the handle comprising
an elongated handle member having first and second substantially aligned, longitudinally spaced holes therethrough;
an upper clamp member including first and second elongated substantially aligned, longitudinally extending, upper clamp member apertures for use in securing said upper clamp member to said handle member;
a lower clamp member including first and second elongated substantially aligned, longitudinally extending, lower clamp member apertures for use in securing said lower clamp member to said handle member, and
first and second fastener members extending respectively through said first and second elongated upper clamp member apertures, said first and second holes in said handle, and said first and second elongated lower clamp member apertures to interconnect and secure together said upper clamp member, said handle member, and said



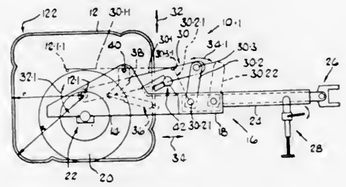
lower clamp member; said upper and lower clamp members adapted to engage and retain a said broom block and said first and second fastener members being positioned in said elongated apertures such that said handle may be in engagement with a said broom block.

3,950,109
COUPLING FOR ANGULARLY RELATED BEAMS
Wayburn S. Smith, 1340 Engracia Ave., Torrance, Calif. 90501
Filed May 1, 1975, Ser. No. 573,398
Int. Cl.² F16B 7/00
U.S. Cl. 403—403 **11 Claims**



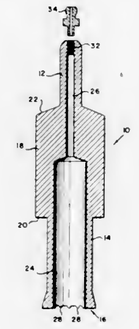
1. A coupling for establishing structural continuity between the overlapped ends of two angularly related beams and comprising; identical complementary members to be fastened to said beam ends respectively and each fabricated from a sheet of material having a midpoint spaced from an outer edge a distance to receive the thickness of one beam end to be engaged thereby, said sheet having an up-slope end and a down-slope end, there being a bend and shear line disposed through said midpoint and parallel with said outer edge, the sheet being sheared along said line from said midpoint to said down-slope end and bent downwardly along said line from said midpoint to said up-slope end, there being a slope line disposed from said midpoint downwardly at an angle toward said up-slope end and along which line the sheet is bent inwardly and then upwardly along a bend line parallel to and spaced from the slope line a distance to receive the thickness of the other beam end to be engaged thereby, the two members being nested together with their midpoints coincidental and their outer edges faced oppositely and with the slope line of one member coincidental with the shear portion of the first mentioned line of the other member.

3,950,110
NON-CIRCULAR COMPACTION ROLLER, AND A MOUNTING THEREFOR
John Michael Clifford, Pretoria, South Africa, assignor to South African Inventions Development Corporation, Pretoria, South Africa
Filed Apr. 16, 1975, Ser. No. 568,452
Claims priority, application South Africa, Apr. 19, 1974, 74/2502
Int. Cl.² E01C 19/26
U.S. Cl. 404—124 **10 Claims**



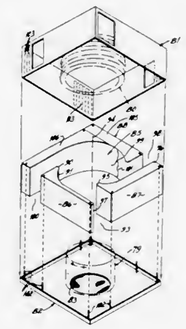
1. A compaction roller assembly which includes:
a draw frame;
a non-circular multi-lobed compaction roller;
guide means for rotatably guiding the rolling of the roller about its axis to follow the draw frame and comprising a pair of laterally spaced longitudinally extending composite links on either side of the roller and pivotally connected to the draw frame about primary pivotal axes extending laterally, each composite link comprising at least two constituent links pivotally connected together about secondary pivotal axes parallel to the primary pivotal axes, bias means to bias at least two of the constituent links of each composite link resiliently into position in which they are at an angle to one another, and bearings for the roller on each of the composite links rotatably mounting the roller about its axis, the guide means permitting arcuate displacement of the roller axis independently about the primary and secondary pivotal axes.

3,950,111
STUD REMOVER
Harry B. Churchwell, 1701 Meadow Lane; Warner Quearry, 1108 Normandy Lane, both of Blytheville, Ark. 72315, and Thomas K. Verzi, 126 Shore Drive, Williamsburg, Va. 23185
Filed May 24, 1974, Ser. No. 472,455
Int. Cl.² B23B 51/04
U.S. Cl. 408—204 **7 Claims**



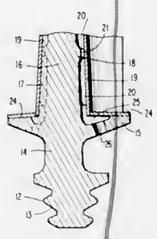
1. A cutting tool for removing a stud from a workpiece by cutting a kerf around the stud comprising a cylindrical body including a shank portion, a stem portion, and a greater diametered portion between the shank portion and the stem portion, a cutting surface fixed at one end of the stem portion, and a longitudinal bore coaxial with said cylindrical body and having a diameter substantially the same as the outside diameter of said stud extending from said cutting surface into said greater diametered portion said cutting surface comprising an annular ring of teeth, the annular ring having a greater outside diameter than said stem portion but less than said greater diametered portion, and between each pair of adjacent teeth a flute for allowing the escape of waste cut by the teeth from the kerf, the waste being removed only along the outside of said stem.

3,950,112
FLUID MOVING DEVICES WITH MODULAR CHAMBER-FORMING MEANS AND MULTIPLE OUTLETS
Robert F. Crump, Louisville, and Andrew H. Susemichel, Anchorage, both of Ky., assignors to Robert F. Crump and Andrew H. Susemichel, both of Louisville, Ky., part interest to each
Filed Apr. 8, 1974, Ser. No. 459,079
Int. Cl.² F04D 29/44
U.S. Cl. 415—206 **13 Claims**



1. A centrifugal type fluid moving device comprising,
a rotor,
drive means for rotating said rotor about an axis,
chamber defining means establishing a working chamber around the rotor in which the rotor moves fluid centrifugally, said chamber means comprising a plurality of modules around the rotor, each module having an axial dimension which is a fraction of the axial dimension of the rotor, the modules being stacked axially upon one another over the length of the rotor, each module forming an axial section of the working chamber,
the modules presenting outlets for the respective axial sections of the working chamber which they respectively define,
said device also including isolating means intermediate the length of the rotor and between axially adjacent modules, said isolating means restricting flow in the direction axially of said rotor from the working chamber section of one said module into that of the adjacent module,
and a housing adapted to receive a plurality of said modules in different orientations, the housing including selectively openable outlet ports, the positions of the openable ports corresponding to different possible orientations of modules in the housing.

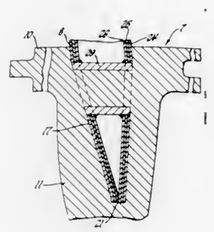
3,950,113
TURBINE BLADE
Günther Albrecht, Esslingen am Neckar, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany
Filed Oct. 9, 1970, Ser. No. 79,548
Int. Cl.² F01D *5/18*
U.S. Cl. 416—97 A **9 Claims**



1. An air-cooled type turbine blade structure for mounting on a rotor having an axis of rotation, said structure comprising: root means for attaching said blade structure to the rotor, web plate means disposed radially outwardly of said root means with respect to said axis, solid blade core means disposed radially outwardly of said web plate means, blade jacket means surrounding said core means and including discharge apertures arranged over the surface thereof for discharging cooling air, a plurality of longitudinal radially extending rib means and a plurality of cross rib means interconnecting respective adjacent longitudinal rib means being arranged on the surface of said core means, said jacket means being attached to the outer edges of the respective rib means to form a set of first hollow spaces between said jacket means and the surface of said core means which are bounded by said respective rib means, channel means extending through said web plate means for communicating the radially innermost first hollow spaces between respective adjacent longitudinal rib means with cooling air supply means, and aperture means extending through said cross rib means for communicating said radially innermost first hollow spaces with first hollow spaces arranged radially outwardly thereof, said aperture means being dimensioned as throttling spaces for effecting a predetermined distribution of cooling air throughout the various first hollow spaces arranged on the surface of the blade core means, wherein said Web plate means includes recess means formed in a radially outwardly facing surface, a sheet metal member being provided for covering said recess means to form a plurality of second hollow spaces between said sheet metal member and said web plate means, each of said second hollow spaces extending to a position directly radially inwardly with respect to a respective radially innermost first hollow space such that said second spaces and said radially innermost first spaces communicate respectively with one another, said channel means extending from outside the web plate means to said second spaces, wherein each of said second spaces is connected with a separate channel forming part of said channel means for communicating cooling air from the cooling air supply means to the respective second space, and wherein the cross-sectional area of each of the respective channels is substantially less than the cross-sectional area of the respective second space connected therewith.

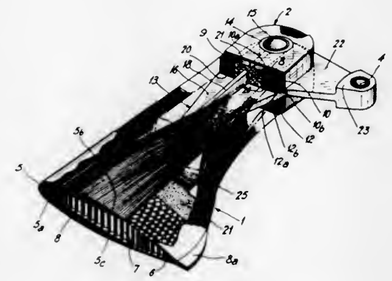
3,950,114
TURBINE BLADE
Harold E. Helms, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 23, 1968, Ser. No. 707,556
Int. Cl.² F01D *5/18*
U.S. Cl. 416—97 A. **12 Claims**

1. A fluid-directing member for a turbomachine comprising, in combination, a hollow tubular porous metal blade including an airfoil portion with spaced fluid-directing walls and a hollow tubular attaching portion integral with the airfoil portion and extending therefrom, a base member to which the blade is attached, the attaching portion extending into the base member, at least one tube fixed to the attaching portion of the



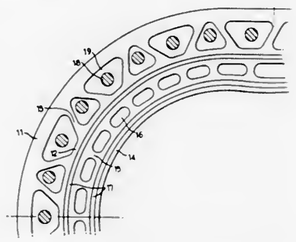
blade and extending from wall to wall thereof, the base member including a portion filling the tube integral with the remainder of the base member external to the attaching portion, and means defining an entrance into the airfoil portion for a cooling fluid through the base and attaching portion.

3,950,115
PLASTICS ROTOR BLADE
August Hanns Leonhard Euler, Aix en Provence, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France
Filed Nov. 26, 1974, Ser. No. 527,291
Claims priority, application France, Nov. 30, 1973, 73.42730
Int. Cl.² B64C *27/46*
U.S. Cl. 416—226 **7 Claims**



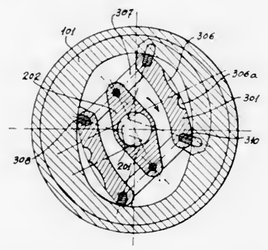
1. A high strength rotor blade comprising longitudinal rovings forming a rigid skein loop in the vicinity of the blade base or root thereby enabling said blade to be secured by a pin to a hub member, said blade further comprising a metal mounting member including a socket through which said pin may extend and a longitudinal extension of tapering configuration, said rovings extending away from said loop into bifurcate portions, said longitudinal rovings being arranged in said blade with said loop extending around said socket and said longitudinal extension being disposed between and in engagement with said bifurcate portions of said rovings, said rovings and extension being assembled in said blade by a compact filling consisting of a mineral loading agent and an adhesive, the filling being connected to the blade hub, the rovings being applied to the filling as they extend away from said blade root and separate into bifurcate portions.

3,950,116
ENGINE HOUSINGS
John Sharples, Sandbach, England, assignor to Rolls-Royce Motors Limited, Crewe, England
Filed Sept. 4, 1974, Ser. No. 503,082
Claims priority, application United Kingdom, Sept. 18, 1973, 43657/73
Int. Cl.² F04C *21/06*
U.S. Cl. 418—83 **8 Claims**



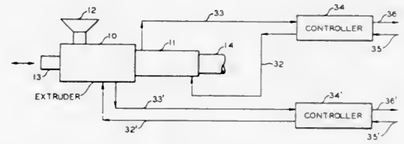
2. In an engine housing defining a combustion chamber, said engine housing comprising: an inner wall having a curved internal wall surface defining at least a portion of the combustion chamber; an intermediate wall; an outer wall; a plurality of webs joining said inner wall and said intermediate wall together and defining a plurality of coolant channels therebetween; and, a further plurality of webs joining the intermediate wall and the outer wall tigether whereby mechanical loads on the inner wall due to gas pressure in the combustion chamber are transferred from the inner wall to the intermediate wall by the webs joining the same and from the intermediate wall to the outer wall by the webs joining the same, so that the inner wall is relieved of some of its load carrying function and is more efficiently cooled to reduce thermal stresses therein, said further plurality of webs joining the outer and intermediate walls together having at least some of the webs extending in a non-radial direction relative to the local curved internal wall surface.

3,950,117
MACHINE WITH ROTARY ARTICULATED PISTONS
Jose Ignacio Martin Artajo, Alberto Aguilera, No. 25, Madrid, Spain
Filed Mar. 4, 1974, Ser. No. 447,991
Claims priority, application Spain, June 27, 1973, 416371
Int. Cl.² F01C *3/00*
U.S. Cl. 418—150 **3 Claims**



1. A machine with rotary articulated pistons to be used as a pump, motor or compressor to effect thermodynamic transformation of energy, said machine comprising an outer body or housing having an internal cavity and including inlet and outlet ports in communication with said cavity in such a manner as to permit admission and expulsion of a gas, liquid, or fuel medium, the pistons rotatably received within said cavity and mounted upon a crankshaft extending into said cavity, internal profile of said cavity having a profile which is a conjugated trochoid, said profile being developed from the locus of a point or points of contact between said rotatably received pistons moving in slideable and sealable contact with the said conjugated trochoidal profile of said outer body or housing, said pistons being connected to said crankshaft by connecting links pivotally connected to said pistons at the ends thereof, and, arms connected to said crankshaft and the midpoints of said links, thereby forming a mechanism to transmit torque to or receive torque from said crankshaft.

3,950,118
CONTROL OF TEMPERATURE PROFILE ACROSS A HEAT EXCHANGER
James G. Adair, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed May 17, 1974, Ser. No. 470,742
Int. Cl.² B29F *3/08*
U.S. Cl. 425—144 **5 Claims**

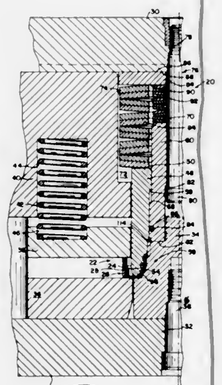


1. In an extrusion apparatus which includes a reciprocating piston type extruder, a die having a first passage extending therethrough through which thermoplastic material being extruded passes for shaping said material, said first passage being tapered to compensate for shrinkage of said thermoplastic material and a heat exchanger in heat exchange relationship with said die which exchanger extends longitudinally along the die, said heat exchanger having a second passage therein through which a fluid can be circulated, temperature regulating apparatus comprising:
- conduit means communicating with said second passage to introduce a fluid;
- temperature control means connected to said conduit means for regulating the temperature of fluid introduced into said second passage so as to introduce such fluid at a constant predetermined temperature;
- means to measure the temperature of fluid removed from said second passage; and
- means responsive to said means to measure temperature to control the rate of flow of fluid through said second passage so as to maintain the measured temperature constant.

3,950,119
APPARATUS FOR MOLDING FLUID SEAL ELEMENTS
Jerry D. Reichenbach, Carpentersville, Ill., assignor to Chicago Rawhide Manufacturing Company, Elgin, Ill.
Filed Jan. 14, 1974, Ser. No. 433,195
Int. Cl.² B29G *1/00, 3/00*
U.S. Cl. 425—251 **6 Claims**

1. An apparatus for molding articles having a body portion formed from a cured material and bonded to a relatively rigid insert portion, said apparatus comprising, in combination, first and second mold members arranged for relative movement along a given axis between open and closed positions of said members, each of said members including surfaces at least partly directed towards each other to define therebetween, in said closed position of said members, a molding cavity predetermining the exact shape of the body of said article to be formed, means on said first member for engaging a relatively rigid insert, said engaging means being adapted to form a flash barrier on said insert upon engagement thereof, means on said

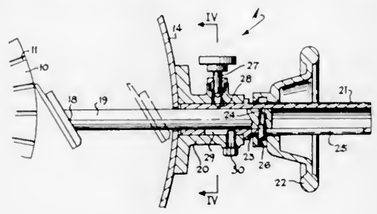
second member for supporting said insert along at least one surface thereof, a material pressing member movable relative to both said first and second mold members, means on said second mold member for receiving a prepared portion of moldable material from which said article is to be formed, means reciprocable along said given axis for applying a predetermined closing force to said first mold member and said press member, first resilient means disposed between said force applying means and said first mold member, second resilient means disposed between said press member and said force applying means, said first, second mold members and said press member confining said portion of moldable material, said members having mutual sealing surfaces separated from each other by a working clearance, said first and second resilient means having uncompressed, free height positions



such that movement of said force applying means causes said first mold member to move from said open position to said closed position, thereby to define said molding cavity between said first and second mold member and said insert, and whereby subsequent movement of said press member causes said press member to engage said material and causes only that material able to be accommodated by said cavity to flow from the area of said material-receiving means into said molding cavity under the force applied by said press member through said second resilient means, the shape of said body portion thereby being determined solely by the predetermined shape of said cavity and not by the amount of moldable material in said portion thereof, the resiliency of said second resilient means limiting the force able to be applied to said material.

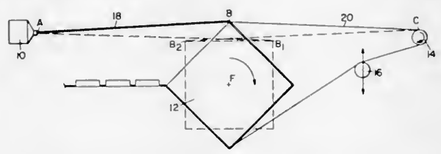
3,950,120
PELLETISING MACHINES
Herbert Jones, Churchdown, and Michael Thomas Dorn, Hardwick, both of England, assignors to Simon-Barron Limited, England
Filed Nov. 22, 1974, Ser. No. 526,242
Claims priority, application United Kingdom, Dec. 21, 1973, 59594/73
Int. Cl.² B29C *17/14*
U.S. Cl. 425—314 **11 Claims**

1. A pelletising machine comprising a rotatably mounted annular die having radial bores, means for extruding material introduced into the interior of the die outwardly through said bores, a door mounted for movement between a closed position during machine operation and an open position providing access to the die, a housing on said door, a guide sleeve axially slidably mounted on said housing, a shaft axially slidably mounted in said guide sleeve and extending through an opening in the door, a cut-off knife mounted on the shaft adapted to be disposed adjacent the outer periphery of said die when the door is closed for breaking off the extrusions into pellets of predetermined length, means providing axial ajustment of said shaft within said guide sleeve for accurately locating said knife in a set pellet forming position relative to the outer periphery of said die when the door is closed, and releasable



locking means interconnecting said housing and guide sleeve during normal operation of said machine, release of said locking means permitting movement of said shaft and guide sleeve as a unit together on said housing for displacing said knife rapidly between said set position and an outer position permitting the door to be opened while not disturbing said adjustment of the shaft relative to the guide sleeve.

3,950,121
DRIVING MECHANISM FOR VACUUM FORMING DRUM
David James Torrans, Kennett Square, Pa., assignor to Hercules Incorporated, Wilmington, Del.
Filed Mar. 18, 1975, Ser. No. 559,607
Int. Cl.² B29D *7/20*
U.S. Cl. 425—326 R **3 Claims**

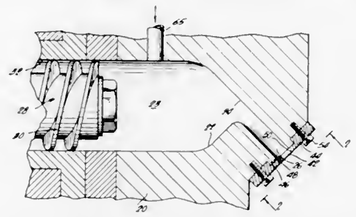


1. A driving mechanism for a forming drum comprising:
a rotational forming drum;
a film dye for extruding film onto the surface of said forming drum, said film being extruded from said die at a first point, and contacting the surface of the forming drum at a second point;
a drive pulley and belt means driven by said drive pulley, said belt means contacting the periphery of said forming drum and said drive pulley, said drive pulley contacting the belt means returning from the surface of said forming drum at a third point, said first, second and third points being substantially in line and the distance from said first point to said second point being approximately the same distance from said second point to said third point.

3,950,122
APPARATUS FOR FINISHING SOAP BARS
Charles F. Fischer, Jersey City, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Continuation of Ser. No. 384,084, July 30, 1973, abandoned.
This application Mar. 25, 1975, Ser. No. 561,823
Int. Cl.² B29F *3/04*
U.S. Cl. 425—380 **5 Claims**

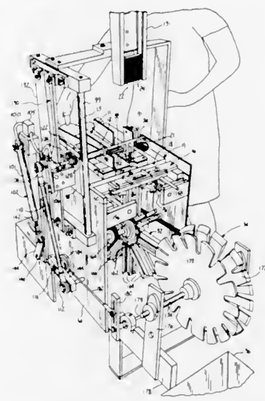
1. An apparatus for high intensity shear refining of soap from a soap plodder to produce a striated product including a housing, rotating means in said housing for high intensity shear mixing of soap, said rotating means adapted to rotate at a rate of from 3,000 to 40,000 shear cuts per minute, said

rotating means comprising an auger having a plurality of flights thereon, said housing having a barrel bore for receiving said auger, an extrusion outlet conduit having a smaller cross sectional area than said bore communicating with said bore, a nozzle plate secured to said housing in alignment with said extrusion outlet, said auger terminating before the end of said bore to form a free space disposed between said extrusion



outlet conduit and said (bore) auger, said free space having the same cross sectional area as said barrel bore, said free space ending with a portion that converges with said extrusion outlet conduit, said conduit being angularly disposed to said free space, said conduit including a wall that forms a straight line and intersects one side of the converging portion of said free space and means communicating with said free space for introducing coloring matter into said free space.

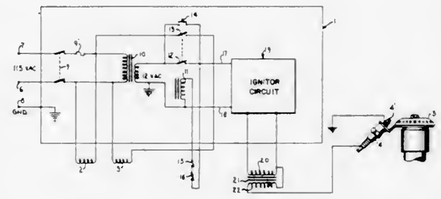
3,950,123
APPARATUS FOR MAKING A FOOD PRODUCT
Edward Louie, 14 Otis St., San Francisco, Calif. 94103
Filed Feb. 6, 1974, Ser. No. 440,110
Int. Cl.² A21C *11/00*
U.S. Cl. 425—500 **14 Claims**



1. A machine for making a shaped food product from a generally flat, foldable cake comprising: a support having a first fixed, flat upper surface for receiving the cake; means adjacent to said first surface and continuously movable relative thereto for advancing the cake in one direction over the same; means at one end of the first surface defining a second fixed, flat upper surface for receiving and supporting the cake, said second surface having an elongated, cake-receiving passage extending transversely of said one direction and downwardly from said second surface with the passage having a transverse dimension less than a corresponding transverse dimension of the cake, said moving means being disposed to advance the cake over said first surface and onto the second surface with said cake extending across the passage; reciprocal means including strip holding means to transfer a strip to said cake, continuously movable relative to said second surface for urging the cake disposed thereon into said passage to cause the cake to be folded about a first axis extending longitudinally of the passage; means including a pair of continuously moving members below said surface for folding the cake about a second axis transverse to the first axis; means adjacent to said folding means for receiving the cake and for moving the same to a location remote from said folding means; and means coupled to said advancing means, said urging means and said members for controlling the sequence of operation thereof.

7. A machine for making a fortune cookie product from a generally flat, foldable cake comprising: means defining an elongated, flat, fixed surface for supporting the cake and having a passage therein at one end thereof, said passage having a width less than the minimum transverse dimension of said cake; means adjacent to the surface for causing said cake to slide over said surface toward said passage and into a position overlying the same; continuously moving strip holding means to transfer a strip to said cake movable toward and away from said surface for urging said cake disposed thereon into said slot to cause said cake to be folded about a first axis extending longitudinally of said slot; means below said surface and extending transversely of said slot for supporting an intermediate portion of said cake after the latter has been folded about said first axis; continuously moving means adjacent to said supporting means for folding said cake about a second axis transverse to said first axis when said intermediate portion is supported by said supporting means, the latter being movable downwardly to lower said cake after it has been folded about said second axis; means movable into alignment with the downward path of travel of said supporting means for receiving said cake and for moving the same to a location remote from said path; and means coupled with said causing means, said urging means, said supporting means and said folding means for controlling the sequence of operation thereof.

3,950,124
BURNER IGNITOR ARRANGEMENT
Fred M. Berry, 10101 Wenona Lane, Leawood, Kans. 66206
Filed Apr. 10, 1975, Ser. No. 566,912
Int. Cl.² F23Q *3/00*
U.S. Cl. 431—254 **10 Claims**



1. Apparatus for producing a rapidly repeating ignition spark for igniting a burner forming part of a device utilizing an alternating current source, said arrangement comprising:
a. a circuit including a power transistor, an ignition coil having a primary and a secondary winding, and a spark plug,
b. said primary winding being connected to said source through the collector current path of said power transistor,
c. said secondary winding being connected across the gap of said spark plug, and
d. a regenerative feeder connected to the base of said power transistor and accelerating cut-off upon reversal of source voltage direction,
e. whereby sparks are repeatedly created across the gap of said spark plug in response to the alternating of said current source.

3,950,125

BURNERS

John Drummond McGugan, Gorleston, England, assignor to Noralco Overseas, Inc., Metairie, La.

Filed May 23, 1974, Ser. No. 473,068
Int. Cl.² F23D *15/02*
U.S. Cl. 431—352 21 Claims

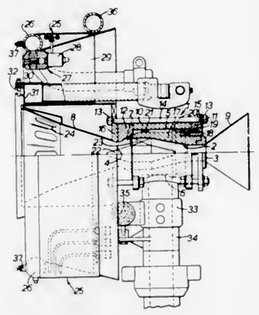
1. A burner for fluid fuel comprising:

a body defining a bore open at both ends, said bore having, sequentially in the direction from one of said open ends to the other of said open ends, a first frusto-conical portion of increasing cross sectional area in said direction, a cylindrical portion and a second frusto-conical portion of decreasing cross sectional area in said direction, said body further defining an annular chamber surrounding said bore;

inlet means to said chamber, and outlet means from said chamber surrounding said bore and opening into said bore in the region of the junction of said cylindrical portion with said first frusto-conical portion and arranged to discharge fuel along the surface of said first frusto-conical portion to its open end;

means for supplying fluid fuel to said inlet means to said chamber; and

air guide means in said bore comprising a body having a cylindrical mid-portion and tapering end portions extending co-axially of said bore with a tapering portion being in said first and second frusto-conical portions and said cylindrical mid-portion being in said cylindrical portion of said bore;



wherein, in operation, fluid fuel and air mixture is burnt adjacent said one end of said bore, air being drawn into said bore from said other end, and drawing fluid fuel from said chamber through the opening of said outlet means.

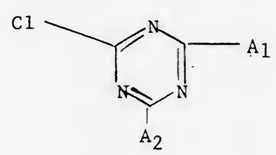
3,950,126

METHOD FOR PROMOTING BLEACHING EMPLOYING CHLORO-s-TRIAZINES

Junichiro Sugano; Minoru Kakuda, both of Yokkaichi, and Tokuzo Tsuiki, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Co. Inc., Tokyo, Japan

Filed July 24, 1973, Ser. No. 382,166
Claims priority, application Japan, July 29, 1972, 47-75537
Int. Cl.² C01B *15/00*; C11D *7/18*; D06L *3/00*
U.S. Cl. 8—111 12 Claims

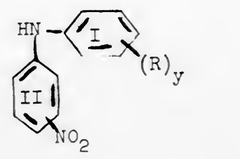
1. In a method for promoting the bleaching action of a peroxy bleaching agent by forming a mixture of peroxy bleaching agent with an activating agent, the improvement which comprises using as said activating agent for the bleaching agent at least one chloro-s-triazine derivative of the formula



wherein A_1 and A_2 are substituents which are the same or different and each represents chlorine atom or (1) $-OR_1$, wherein R_1 is an alkyl group containing not more than 12 carbon atoms or (2)



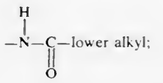
wherein R_2 and R_3 are the same or different and each represents hydrogen atom or an alkyl group containing not more than 12 carbon atoms, which the proviso that A_1 and A_2 are not chlorine atoms at the same time said activating agent being present in an amount sufficient to activate said bleaching agent.



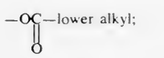
in which:

a. *y* is a whole number from 0 to 1 inclusive; and

b. R is an electron donor substituent selected from the group consisting of $-NH_2$; $-N(\text{lower alkyl})_2$; $-NH(\text{lower alkyl})$; $-N(\text{lower hydroxyalkyl})_2$; $-NH(\text{lower hydroxyalkyl})$; $-N(\text{lower alkyl})(\text{lower hydroxyalkyl})$;



—OH; —O-lower alkyl;



—lower alkyl; said lower alkyl having 1 to 6 carbons.

3,950,127

HAIR DYE COMPOSITIONS CONTAINING NITRODIPHENYLAMINE DYES AND METHOD FOR DYEING HAIR THEREWITH

Alexander Halasz, Norwalk, and David Cohen, Stamford, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,293
Int. Cl.² A61K *7/13*
U.S. Cl. 8—10.1 20 Claims

1. A hair dye composition for dyeing human hair comprising an aqueous direct-dye hair dye vehicle suitable for application to human hair having incorporated therein from about 0.001% to 10% by weight based on the composition of a nitrodiphenylamine hair dye of formula:

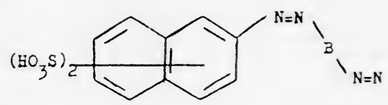
3,950,128

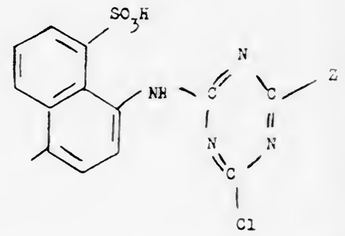
DISAZO DYESTUFFS

Peter Gregory, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 11, 1973, Ser. No. 359,542
Claims priority, application United Kingdom, June 14, 1972, 27744/72
Int. Cl.² C09B *27/00*, *45/48*; D06P *1/02*, *3/00*
U.S. Cl. 8—26 5 Claims

1. A disazo dyestuff of the formula:





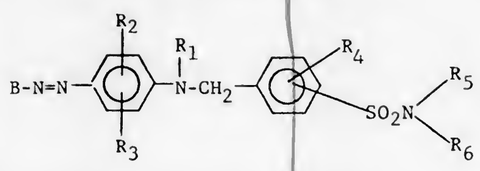
wherein B is a member of the group consisting of 1,4-phenylene, 1,4-naphthylene, 1,4-phenylene carrying 1 or 2 substituents from the class consisting of CH_3, OCH_3, $NHCOCH_3$ and $NHCONH_2$, and 1,4-naphthylene substituted by SO_3H in the 6- or 7-pisition, and Z is NH_2 or OCH_3.

3,950,129
FLAME-RESISTANT WOOL
Mendel Friedman, Moraga, and Willie Fong, Richmond, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Oct. 19, 1973, Ser. No. 408,037
Int. Cl.[2] D06M *13/20;* **D06P** *3/14*
U.S. Cl. 8—17 **2 Claims**

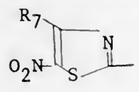
1. A process for modifying wool to make it flame resistant, which comprises
contacting the wool with an aqueous solution containing about from 8 to 12%, owf, of chlorendic acid at 100° C., the contacting being continued until the wool adsorbs about 8%, based on the weight of wool, of chlorendic acid.

3,950,130
THIAZOLE-AZO DYES AND THE COLORATION OF POLYESTER TEXTILE FIBERS THEREWITH
Edgar Earl Renfrew, and Henry Wolfgang Pons, both of Lock Haven, Pa., assignors to American Aniline Products, Inc., Paterson, N.J.
Division of Ser. No. 175,399, Aug. 26, 1971, abandoned. This application Dec. 7, 1973, Ser. No. 422,854
Int. Cl.[2] D06P *1/18;* **C09B** *29/36*
U.S. Cl. 8—41 C **8 Claims**

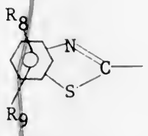
1. Polyester dyed with a compound of the formula:



wherein B is selected from the group consisting of



and

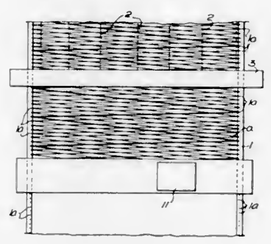


wherein
R_7 is selected from the group consisting of hydrogen and methyl, and
R_8 and R_9 are independently selected from a group consisting of hydrogen, lower alkyl, lower alkoxy, chloro, bromo, nitro, sulfamyl, N lower alkyl sulfamyl, N,N-(di-lower-alkyl)sulfamyl, cyano and lower alkyl sulfonyl;
R_1 is selected from the group consisting of lower alkyl, hydroxy lower alkyl, and cyano lower alkyl;
R_2, R_3, and R_4 are independently selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, chlorine and bromine; and
R_5 and R_6 are independently selected from the group consisting of hydrogen, lower alkyl, cyano lower alkyl and hydroxy lower alkyl.

3,950,131
CONTINUOUS METHOD FOR RECLAIMING CHROMIUM HYDROXIDE FROM SPENT CHROME TANNING LIQUORS AND RE-USE THEREOF IN SUBSEQUENT TANNING
Harland H. Young, Western Springs, Ill., assignor to Hoffmann-Stafford Tanning Co., Chicago, Ill.
Filed June 20, 1973, Ser. No. 371,595
Int. Cl.[2] C14C *3/06;* **C01G** *37/02*
U.S. Cl. 8—94.27 **4 Claims**

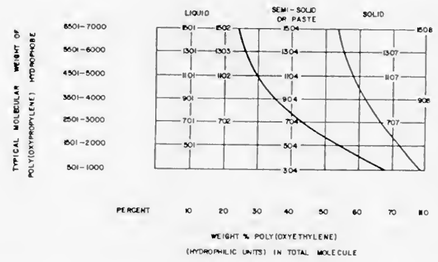
1. The continuous process for recovery of chromium from spent chrome tanning liquors which comprises:
a. adding to spent chromium containing liquor an alkaline reacting substance in an amount sufficient to raise the pH of said liquor to at least about 8.0 and not greater than about 9.5, thereby forming a thixotropic suspension of precipitated chromium hydroxide;
b. depositing a layer of said suspension of uniform thickness on a first filter segment of a multisegment continuous pressure filter;
c. continuously agitating said layer while subjecting said layer to superatmospheric pressure, whereby aqueous liquid is expelled therefrom through said filter segment;
d. moving said filtered suspension under pressure to successive filter segments of said multisegment filter and simultaneously agitating said suspension;
e. repeating step (d) until said suspension reaches a predetermined substantially constant concentration of chromium hydroxide;
f. discharging said concentrated suspension to a mixing zone and adding thereto an amount of an acid reacting substance sufficient to substantially dissolve said suspension and convert it into a material suitable for tanning.

3,950,132
METHOD FOR DYEING AND CONTINUOUS HEAT SETTING OF TEXTILE YARNS
Jack Somers, and Elias Cuthbert, both of Dundee, Scotland, assignors to Caird (Dundee) Limited, Dundee, Scotland
Filed Jan. 30, 1974, Ser. No. 437,805
Claims priority, application United Kingdom, Feb. 3, 1973, 5455/73
Int. Cl.[2] D06B *23/04*
U.S. Cl. 8—149 **5 Claims**



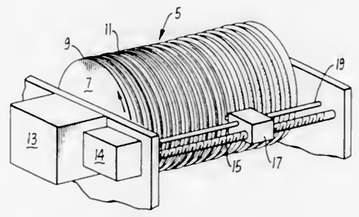
1. A method for the production of randomly dyed textile yarn wherein one or more individual slivers of yarn are laid in transversely zig-zag convolutions in tensionless condition along conveyor means and successively passed through random dyeing, fixing, washing and drying and heat setting stations and then the individual yarn sliver or slivers wound upon separate yarn carriers to produce packages of yarn randomly dyed along its length, characterized by the steps of holding said convolutions in relative longitudinal positions after they are laid on said conveyor means and maintaining such during passage through all of said stations, and then releasing said convolutions for winding the sliver or slivers on said carriers.

3,950,133
REAGENT FORMULATIONS FOR ASSAYING BIOLOGICAL SPECIMENS AND METHODS OF PREPARING AND USING SAME
Alexander A. Monte, and Ching Chiang, both of Glendora, Calif., assignors to Mallinckrodt, Inc., St. Louis, Mo.
Division of Ser. No. 200,552, Nov. 19, 1971, Pat. No. 3,816,262, which is a continuation-in-part of Ser. No. 190,883, Oct. 20, 1971, abandoned. This application May 6, 1974, Ser. No. 467,550
Int. Cl.[2] G01N *33/16*
U.S. Cl. 23—230 B **9 Claims**



1. In a method of conducting a clinical diagnostic test on a biological specimen wherein the specimen is mixed with a liquid reagent formulation to form a specimen/reagent system, the liquid reagent formulation containing a reagent capable of effecting a reaction which causes a measurable change in the specimen/reagent system, and a change in the system resulting from the reaction is measured, the improvement which comprises preparing the liquid reagent formulation by dissolving in water a granular, water-soluble, substantially anhydrous, storage-stable mixture containing the reagent and a nitrogen-containing polyoxyalkylene nonionic surfactant obtained by the sequential reaction of ethylenediamine with propylene oxide and ethylene oxide in the presence of a catalyst, the surfactant containing polyoxypropylene chains having an average molecular weight of between about 750 and about 6750 and polyoxyethylene chains constituting between about 10 and about 80 weight percent of the surfactant.

3,950,134
ASSAY MACHINE AND METHOD
Laughton E. M. Miles, Stanford, Calif., assignor to The Board of Trustees of the LeLand Stanford Junior University, Stanford, Calif.
Filed Sept. 20, 1974, Ser. No. 507,693
Int. Cl.[2] G01N *23/00, 33/16*
U.S. Cl. 23—230 B **6 Claims**



1. An apparatus for conducting chemical assays comprising in combination:
a. a length of a flexible, soft plastic tubing,
b. a slit running the length of said tubing,
c. means for holding said tubing in a coiled configuration,
d. dispensing means including a needle-like member extending in self-sealing relationship into said slit, and
e. means for moving said dispensing means through the slit in said tubing.

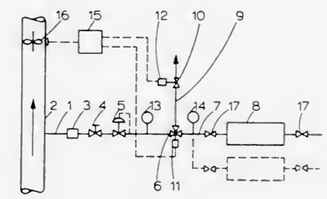
3,950,135
METHOD OF SEPCTRAL ANALYSIS USING NMR SHIFT REAGENTS
George M. Whitesides, Newton, Mass.; Michael McCreary, Rochester, and Daniel Lewis, Support Command, APO, both of N.Y., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed July 24, 1974, Ser. No. 491,594
Int. Cl.[2] C01F *17/00;* **G01N** *27/78*
U.S. Cl. 23—230 R **9 Claims**

1. A method of spectral analysis of a composition containing at least one organic compound comprising adding a shift reagent to said composition, said shift reagent being a lanthanide chelate of a ligand selected from d,d-dicampholylmethane, 1,1-dicampholylmethane, and a compound of the formula:



wherein R is hydrogen, alkyl, halogenated alkyl or aryl and Me is a paramagnetic trivalent rare earth ion, and measuring the nuclear magnetic spectrum of said composition containing said shift reagent.

3,950,136
METHOD AND DEVICE FOR TAKING GAS SAMPLES
Hendrik Bellinga, Roden, Netherlands, assignor to N.V. Nederlandse Gasunie, Groningen, Netherlands
Filed Nov. 5, 1974, Ser. No. 521,136
Claims priority, application Netherlands, Nov. 7, 1973, 7315230
Int. Cl.[2] G01N *1/22*
U.S. Cl. 23—232 R **9 Claims**



1. Process for obtaining a composite sample of average composition of a gas in a gas sample collecting vessel which process comprises providing a gas under pressure, providing a gas sample vessel for receiving said gas and a means for directing said gas into said gas sample collecting vessel, feeding said gas through said means into said gas sample vessel; wherein the pressure drop of said gas through said means is such that the gas travels through said means at a velocity equal to the velocity of sound within said gas; filling said sample collecting vessel so that the pressure within said sample collecting vessel does not exceed half the pressure upstream of said means, whereby a truely average sample of said gas is collected in the gas sample collecting vessel.

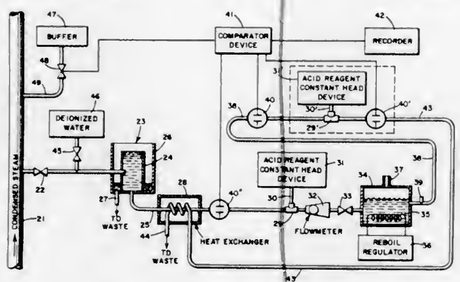
3,950,137
APPARATUS FOR MEASURING THE PRESENCE OF A WEAK ACID OR A WEAK BASE IN A LIQUID

Thurston E. Larson; Russell W. Lane, and Chester H. Neff, all of Champaign, Ill., assignors to Illinois State Water Survey of the Department of Registration and Education, Champaign, Ill.

Continuation-in-part of Ser. No. 281,778, Aug. 18, 1972, Pat. No. 3,904,365. This application Oct. 11, 1974, Ser. No. 514,234

Int. Cl.² G01N *27/10, 33/20*

U.S. Cl. 23—253 R **15 Claims**



1. Apparatus for measuring the acidity or alkalinity of water comprising:

a. a flow line for a sample of the water to be measured;

b. means to control the rate of flow of said water sample through said line;

c. a first conductivity cell on said line adapted to measure the electrical conductivity of a water sample flowing through said line;

d. a first fluid inlet downstream from said first conductivity cell on said line for adding a controlled proportion of reagent to a water sample flowing through said line;

e. a second conductivity cell downstream from said first fluid inlet for measuring the electrical conductivity of a water sample flowing through said line after the addition of a controlled proportion of reagent;

f. a second fluid inlet downstream from said second conductivity cell on said line for adding a controlled proportion of a liquid to a water sample flowing through said line;

g. a third conductivity cell downstream from said second fluid inlet on said line for measuring the electrical conductivity of a water sample flowing through said line after the addition of a controlled proportion of liquid; and

h. an electronic calculator connected to said first, second and third conductivity cells and adapted to generate an output signal indicative of the acidity or alkalinity of a water sample flowing through said line.

3,950,138
APPARATUS FOR CONDUCTING CHEMICAL REACTIONS, PARTICULARLY POLYMERIZATION, CONTINUOUSLY

Axel Wolf, and Ulrich Goetze, both of Cologne, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

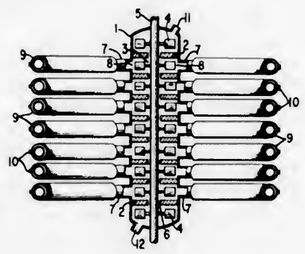
Filed Aug. 28, 1974, Ser. No. 501,150

Claims priority, application Germany, Aug. 30, 1973, 2343788

Int. Cl.² B01J *1/00, 8/00;* **F28D** *15/00*

U.S. Cl. 23—283 **8 Claims**

1. An apparatus for conducting chemical reactions, particularly polymerizations, continuously comprising substantially axially symmetrical central reaction chamber containing a plurality of vertically spaced substantially axially symmetrical separators dividing said central reaction chamber into a plurality of compartments, a rotatable shaft extending perpendicularly to said separators through each of said separators, means to rotate said rotatable shaft, small openings in said separators allowing a restricted flow of liquid between said plurality of compartments, at least three ring-shaped conduits, each rigidly mounted externally and in communication with one of said plurality of compartments by two unrestricted openings therein on substantially the opposite sides of said



compartments, the volume of said ring conduits being from 50% to 90% of the total volume of said central reaction chamber and said ring conduits, and separate feeding and dispensing means in the topmost and bottommost of said plurality of compartments and in said ring-shaped conduits to receive and dispense fluids.

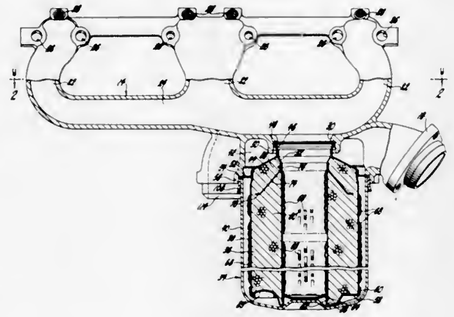
3,950,139
CATALYTIC CONVERTER HAVING CATALYST RESERVOIR MEANS

Earl R. Cannon, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 23, 1974, Ser. No. 500,330

Int. Cl.² B01J *8/02;* **F01N** *3/15, 7/00*

U.S. Cl. 23—288 F **2 Claims**



1. A catalytic converter for use in an internal combustion engine exhaust system, said catalytic converter comprising a vertically disposed inner tube having an upper end for receiving exhaust gases, an outer tube disposed about said inner tube and defining a catalyst bed therebetween, said inner and outer tubes having louvers formed therein permitting flow of exhaust gases substantially radially outwardly through said catalyst bed, said catalyst bed containing a plurality of catalyst beads adapted to promote an oxidizing or reducing reaction within said exhaust gases, and a substantially frusto-conical reservoir plate secured to said inner tube and extending radially outwardly and downwardly from a location thereon above said louvers therein, said reservoir plate having an outer rim spaced inwardly from said outer tube and located above the louvers of said outer tube, said reservoir plate thereby separating said bed into a reservoir portion thereabove and a gaseous flow portion therebelow and providing a restricted annular opening from said reservoir portion into said gaseous flow portion through which said beads may enter and leave said gaseous flow portion during thermal expansion and contraction of said catalytic converter.

3,950,140
COMBINATION STRIP FRAME FOR SEMICONDUCTIVE DEVICE AND GATE FOR MOLDING

Thomas G. Bliven, Scottsdale, and John R. Hugill, Phoenix, both of Ariz., assignors to Motorola, Inc., Phoenix, Ariz.

Continuation of Ser. No. 369,095, June 11, 1973, abandoned, which is a division of Ser. No. 79,601, Oct. 9, 1970, Pat. No. 3,753,634. This application Feb. 18, 1975, Ser. No. 550,436

Int. Cl.² B32B *15/00*

U.S. Cl. 29—193.5 **8 Claims**

1. In an integral metal strip to serve the purpose of a carrier for electric components assembled thereon to be encapsulated in a multi-portion plastic mold having a plurality of cavities and a runner therein, and to serve the purpose of gate means for such plastic mold runner in a molding operation, such metal strip having a plurality of frame portions disposed side by side over the length of said metal strip, each frame portion having a mount for an electrical component and two groups of conductors extending away from said mount which are electrically connectible with an electric component when secured on said mount, with one group of said conductors extending in one direction away from said mount and the other group extending in the opposite direction from said mount in such frame portion, and two support bars each extending the length of said metal strip and spaced apart from one another on opposite sides of said frame portion mounts with one support bar being integral with one group of conductors in each frame portion in the metal strip and the other support bar being integral with the other group of conductors in each frame portion in the strip, the improvement being that one of said support bars is wider than the other and is positionable over the runner in the plastic mold, said wider support bar having therein at least one notch for each frame portion with said notch opening toward said mount in that frame portion and toward a mold cavity and opening into the mold runner whereby plastic flowing in the mold runner flows through said wider support bar notch as a gate for a corresponding mold cavity to plastic encapsulate the electrical component and mount in such a cavity.

3,950,141
SLIDING FRICTION BEARINGS

Erich B. Roemer, Wiesbaden, Germany, assignor to Glyco-Metall-Werke Daden & Loos GmbH, Wiesbaden, Germany

Continuation-in-part of Ser. No. 193,036, Oct. 27, 1971, abandoned. This application Nov. 19, 1973, Ser. No. 418,276

Claims priority, application Germany, Nov. 2, 1970, 2053696

Int. Cl. B32b *15/18, 15/20*

U.S. Cl. 29—196.2 **19 Claims**

1. A composite bearing comprising a backing layer, an intermediate layer of a good heat conducting, medium modulus of elasticity metal on said backing layer having a Vickers hardness (Diamond Pyramid Hardness) in the range between approximately 30 (kp/mm²) and 100 (kp/mm²) and a thickness in the range between approximately 0.2 and 0.7 mm (0.001 and 0.03 inch), a first bearing layer as the main surface layer on said intermediate layer having a thickness of more than 0.0025 mm (0.0001 inch) and not more than 0.1 mm (0.004 inch) preferably in the range between 0.003 mm to 0.01 mm (0.00012 to 0.0004 inch) and consisting of an alloy of nickel and tin having a tin content between approximately 30% and 90%, the remainder being nickel and having a Vickers hardness (Diamond Pyramid Hardness) of at least 200 (kp/mm²), and an additional surface layer over said first bearing layer as a running-in layer having a thickness of not more than 0.05 mm (0.002 inch) and consisting of a bearing metal alloy having a Brinell hardness in the range between approximately 4 (kp/mm²) and 30 (kp/mm²).

15. A composite bearing according to claim 12, characterized in that the said first bearing layer comprises at least for the most part of intermetallic compounds between nickel and tin.

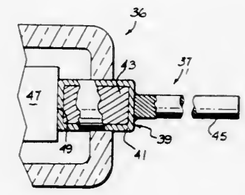
3,950,142
LEAD ASSEMBLY FOR SEMICONDUCTIVE DEVICE

Robert R. Brenan, and Robert W. Smith, both of Warren, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Continuation of Ser. No. 126,198, March 19, 1971, abandoned. This application Aug. 5, 1974, Ser. No. 494,635

Int. Cl.² H01L *23/02*

U.S. Cl. 29—191 **11 Claims**



1. In a lead assembly adapted for utilization in a semiconductive device having a glass envelope and an electrical device positioned within said envelope having at least one end surface, said lead assembly comprising a metallic seal member having an outer portion adapted for providing a first path of heat transfer, said seal member further adapted for extending through and bonding to said glass envelope and affixing to said end surface of said electrical device along a first common interface, and a metallic lead member bonded along a second common interface to said metallic seal member, said second common interface located externally of said glass envelope, the improvement comprising:

providing a substantially uniform copper coating along the entirety of said first common interface between said electrical device and said seal member to provide a second path for heat transfer and thereby facilitate the removal of heat from within said semiconductive device, said copper coating not providing a bond between said electrical device and said seal member.

3,950,143
PROCESS FOR PRODUCING SOLID INDUSTRIAL FUEL

Owen Pyle, Anchorage, Ky., assignor to The Kingsford Company, Louisville, Ky.

Continuation-in-part of Ser. No. 271,795, July 14, 1972. This application Aug. 11, 1972, Ser. No. 279,767

Int. Cl. C10l *5/00*

U.S. Cl. 44—1 C **37 Claims**

1. A continuous process for making substantially pollution-free solid fuel from moist small particle woody materials characterized by a cellulosic fibrous structure comprising the steps of:

continuously supplying said materials to a drier;

drying said materials until the moisture content thereof is less than approximately 15 percent;

admitting said dried materials to a carbonizer;

pyrolyzing said materials in said carbonizer at least until the fibrous structure thereof is destroyed to form a solid fuel having a fuel value of at least about 11,000 B.t.u. per pound of solid fuel formed on a moisture and ash-free basis and a volatile combustible matter content of at least about 30 percent;

cooling and conditioning said fuel against spontaneous combustion to form a solid, low sulfur industrial fuel.

27. A continuous process for making substantially pollution-free solid fuel from moist small particle woody materials

characterized by having a cellulosic fibrous structure comprising the steps of:

supplying said material to a drier;

drying said materials until the moisture content thereof is less than about 15 percent;

admitting said dried materials to a carbonizer;

pyrolizying said materials in said carbonizer until the fibrous structure thereof is destroyed to form a solid industrial fuel having a fuel value of at least about 11,000 B.t.u. per pound on a moisture and ash-free basis and a volatile combustible matter content of at least about 30 percent;

collecting said fuel as it leaves the carbonizer and immediately quench-cooling said fuel to a temperature between about 200°–225° F;

conditioning said fuel by agitation in a steam atmosphere until said fuel is no longer pyrophoric.

3,950,144

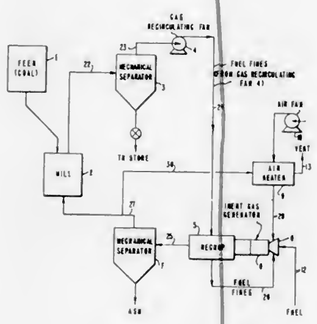
COAL PROCESSING SYSTEM

Robert P. Gillette, Randolph, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed May 23, 1974, Ser. No. 472,556

Int. Cl.² C10L *5/00*

U.S. Cl. 44—2 **6 Claims**



1. A system for handling combustible raw materials and reducing said raw materials to product and by-product fines of selected particle sizes comprising:

a reducing mill for reducing the raw materials and producing an outlet stream of said product and by-product fines, a fuel fired generator coupled in closed circuit relationship with said reducing mill for producing an inert gaseous medium for carrying said product and by-product from said reducing mill;

means in flow communication with said gas generator for circulating said gaseous medium; separator means in flow communication with said reducing mill for receiving said outlet stream of said mill and separating said product and by-product fines;

conduit means coupled to said separator means for directing by-product to said inert gas generator for combustion therein such that by-product fines provide a portion of the fuel necessary for producing said gaseous medium, and eliminating said by-product fines.

3,950,145

FUEL COMPOSITIONS AND ADDITIVE MIXTURES CONTAINING METHANETRICARBOXYLATES FOR REDUCING EXHAUST GAS CATALYST PLUGGING

Leonard M. Niebylski, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed June 5, 1975, Ser. No. 584,141

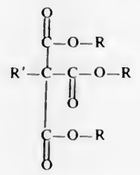
Int. Cl.² C10L *1/18*

U.S. Cl. 44—68 **21 Claims**

1. As a composition of matter, a gasoline for an internal combustion engine comprising

i. an antiknock amount of a cyclopentadienyl manganese tricarbonyl antiknock compound and

ii. an amount sufficient to reduce the plugging of an exhaust gas catalyst of a compound having the general formula:



wherein R and R′ are independently selected from hydrogen and hydrocarbyl radicals.

3,950,146

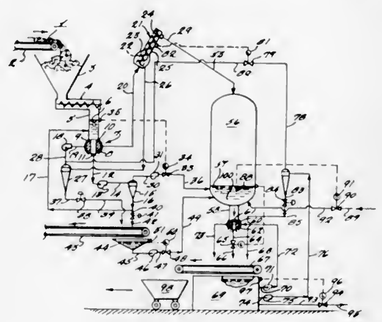
CONTINUOUS PROCESS FOR ENERGY CONSERVING COOPERATIVE COAL FEEDING AND ASH REMOVAL OF CONTINUOUS, PRESSURIZED COAL GASIFIERS AND THE LIKE, AND APPARATUS FOR CARRYING OUT THE SAME

Erwin D. Funk, Glens Falls, N.Y., assignor to Kamyr, Inc., Glens Falls, N.Y.

Filed Aug. 8, 1974, Ser. No. 496,023

Int. Cl.² C10J *3/30, 3/50*

U.S. Cl. 48—69 **24 Claims**



1. A process of producing gas from gas producing particles, such as coal, by continuously feeding a supply of such particles into inlet means of gasifier means under a predetermined elevated inlet pressure, continuously heating the particles under pressure within the gasifier means to produce gas and ash particles and continuously discharging the ash particles from the gasifier means, the improvement therein which comprises the steps of:

confining a liquid, such as water, within a first feed path including a first volume defining a first free surface exposed to pressure conditions which are low with respect to the elevated inlet pressure of said gasifier means,

progressively introducing a supply of gas producing particles into the first volume of liquid within said first confined path downwardly through the first free surface thereof,

confining liquid within a circuitous second feed path including a second volume defining a second free surface spaced from said gasifier inlet means but in communication with a zone of elevated pressure including the inlet means of said gasifier means,

continuously circulating the liquid within said circuitous second feed path by pumping the same at a pumping position spaced from said second volume,

progressively removing successive incremental volumes of liquid and entrained gas producing particles within said first feed path and communicating said successive removed volumes of liquid and entrained gas producing particles with the liquid flowing in said second feed path at a position between said pumping position and said second volume,

progressively collecting the gas producing particles within said second volume and moving the collected particles upwardly through said second free surface and then through said zone and into the inlet means of said gasifier means,

confining liquid within a third discharge path including a third volume having a third free surface in communication with the gas pressure at the ash particle discharge end of the gasifier means,

progressively discharging the ash particles into said third volume of liquid through the third free surface thereof,

maintaining a continuous flow of liquid along a fourth discharge path at an energy level reduced with respect to the energy level of the liquid in said third discharge path,

progressively removing successive incremental volumes of liquid and entrained ash particles from communication with said third discharge path and communicating said successive incremental volumes of liquid and entrained ash particles with the liquid flowing in said fourth discharge path,

progressively separating the ash particles from the liquid at a separation position along said fourth discharge path downstream from the position of communication of said incremental volumes of liquid and entrained ash particles therewith,

progressively directing liquid from at least one of said feed paths from which the gas producing particles have been separated into the liquid in one of said discharge paths to aid in maintaining said third volume at a temperature below boiling, and

progressively directing liquid from at least one of said discharge paths which has been heated and from which ash particles have been separated into at least one of said feed flow paths so that the gas producing particles contacting the same within said feed paths will be heated by heat transfer therewith.

3,950,147

PROCESS FOR FEEDING COAL TO A FLUIDIZED BED OR SUSPENDED PARTICLE PRESSURIZED PROCESSING CHAMBER AND APPARATUS FOR CARRYING OUT THE SAME

Erwin D. Funk; Oliver A. Laakso, and James R. Prough, all of Glens Falls, N.Y., assignors to Kamyr, Inc., Glens Falls, N.Y.

Filed Aug. 8, 1974, Ser. No. 496,024

Int. Cl.² C10J *3/50*

U.S. Cl. 48—86 R **25 Claims**

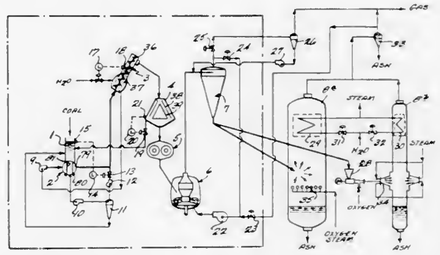
1. A process of converting coal or the like particles into gas, heat, or gas and heat within a processing chamber maintained under a predetermined elevated pressure in which the particles are fed to the chamber in a dry finely sized form less than ⅜ inch nominal diameter and maintained therein during processing in an agitated condition, the improvement which comprises the steps of:

confining a liquid within a first path including a first volume defining a first free surface exposed to pressure conditions which are low with respect to said predetermined elevated pressure of said processing chamber.

progressively introducing a supply of particles of a size range larger than said finely sized form into the liquid within said first confined path downwardly through the free surface thereof,

confining liquid within a second path which is circuitous and includes a second volume defining a second free surface communicating with a zone having an elevated pressure of the order of said predetermined elevated pressure of said processing chamber,

continuously circulating the liquid within said second circuitous path by pumping the same at a pumping position spaced from said second volume,



progressively removing successive incremental volumes of liquid and entrained particles within said first path and communicating said successive removed volumes of liquid and entrained particles with the liquid flowing in said second path at a position between said pumping position and said second volume,

progressively collecting the particles within said second volume and moving the same upwardly through said second free surface and into said zone,

progressively converting the particles moved into said zone into said dry finely sized form while maintaining the same under the aforesaid pressure of the order of said predetermined elevated pressure of said processing chamber and then

progressively feeding the particles in dry, finely sized form into the processing chamber under said predetermined pressure.

3,950,148

LAMINATED THREE-LAYER RESINOID WHEELS HAVING CORE LAYER OF REINFORCING MATERIAL AND METHOD FOR PRODUCING SAME

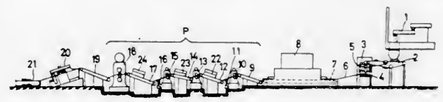
Heijiro Fukuda, No. 123, 3-chome, Umegaoka, Nagaokakyo, Kyoto, Japan

Filed Aug. 1, 1974, Ser. No. 493,814

Claims priority, application Japan, Oct. 9, 1973, 48-113719; Oct. 18, 1973, 48-117081; Mar. 18, 1974, 49-31284

Int. Cl.² B24D *11/00*

U.S. Cl. 51—297 **6 Claims**

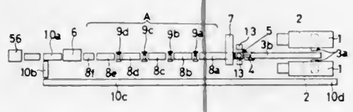


1. A method for the continuous production of a laminated three-layer resin-bonded abrasive wheel having a core layer of reinforcing material, comprising the steps of:

a. preparing a moldable resinous abrasive composition by admixing abrasive grains having a mesh size in the range of about 16 to 220 mesh, with an uncured thermosetting synthetic resin binder therefor, in the proportion of about

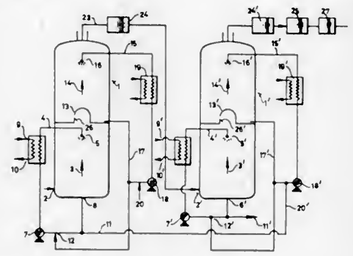
60 to 90 parts by weight of abrasive grains to about 10 to 20 parts by weight of said binder;
b. placing a specified amount of said abrasive composition into a die in the form of a thin layer;
c. placing over said layer a sheet of a glass reinforcing material having said binder previously deposited thereon to form a reinforcing core to a total thickness between about 0.4 and 4.5 mm;
d. placing a specified amount of said resinous abrasive composition upon said reinforcing layer to form a three-layer mass;
e. molding said three-layer mass at a temperature of about 70° to 90°C at a pressure of about 80 to 140 kg/cm² for 20 to 60 seconds to form a molded block of laminated abrasive composition having a thickness of about 25 to 40 mm;
f. heating said molded block by high frequency wave energy heating at a temperature of about 40° to 75°C for about 15 to 25 seconds;
g. rolling said block by multiple rolling to a resin-binded laminated sheetblank having a thickness of 1 to 15 mm;
h. blanking out a circular piece from said sheet; and
i. baking said circular piece at a temperature from room temperature to 180°C for a period of about 20 to 30 hours.

3,950,149
METHOD FOR CONTINUOUSLY PRODUCING RESINOID WHEELS
Heijiro Fukuda, No. 123, 3-chome, Umegaoka, Nagaokakyo, Kyoto, Japan (617)
Filed May 16, 1974, Ser. No. 470,419
Int. Cl.² C09K 3/14
U.S. Cl. 51—298 R **5 Claims**



1. A method for producing a resin-bonded abrasive wheel comprising the steps of:
a. kneading abrasive grains having a mesh size in the range of about 16 to 220 mesh, and an uncured thermosetting synthetic resin binder therefor, in the proportion of about 60 to 90 parts by weight of abrasive grains to about 10 to 90 parts by weight of said binder, to form an abrasive composition suitable for molding;
b. molding said abrasive composition at a temperature from about 70° to about 90° C and at a pressure from about 80 to about 140 kg/cm² for about 20 to 60 seconds, to form a molded block having a thickness of 25 to 40 mm.,
c. heating said molded block by high frequency wave energy heating at a temperature of about 40° to about 75° C for about 15 to about 25 seconds;
d. rolling said block by multiple pairs of rolls to form a resin-bonded abrasive sheet blank having a thickness of 1 to 15 mm.;
e. blanking out a circular piece from said sheet; and
f. baking said circular piece at a temperature from room temperature to 180° C for a period of 20 to 30 hours to form said wheel.

3,950,150
METHOD AND DEVICE FOR REMOVING WATER VAPOR
Johannes Jacobus Smorenburg, Abcoude, Netherlands, assignor to Stork Amsterdam B.V., Amstelveen, Netherlands
Filed Apr. 5, 1974, Ser. No. 458,258
Claims priority, application Netherlands, Apr. 6, 1973, 7304868
Int. Cl.² B01D 53/14
U.S. Cl. 55—30 **8 Claims**



1. In a procedure for deacidulation and deodorization of edible oil by means of stripper steam, a method of removing water vapor from the stripper steam after deacidulation and deodorization comprising the steps of:
a. contacting the steam in a first stage with finely divided sulphuric acid in a region at a pressure lower than 4 mm of mercury,
b. recycling the sulphuric acid and extracting heat from it during the recycling step,
c. moving the steam by means of a blower from the first stage to a second stage,
d. contacting the same steam in the second stage with finely divided sulphuric acid of higher concentration in a region at a pressure lower than 4 mm of mercury,
e. recycling the sulphuric acid of the second stage and extracting heat from it during the recycling step,
f. adding sulphuric acid from the second stage to the sulphuric acid of the first stage,
g. moving the steam by means of a steam jet from the second stage to a condenser, and
h. condensing the steam.

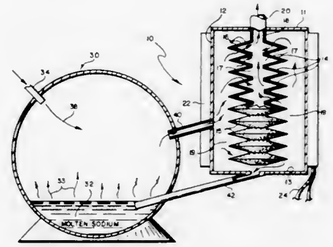
3,950,151
POLLUTION CONTROL APPARATUS AND METHOD
Robert Thomas Martin, Salt Lake City, Utah, assignor to Air Pollution Research System, Salt Lake City, Utah
Filed Apr. 15, 1974, Ser. No. 460,758
Int. Cl.² B01D 47/02
U.S. Cl. 55—95 **11 Claims**

1. A method for removing contaminants from a contaminated gas stream consisting of
1. providing an apparatus comprising
a. a housing having lower, central and upper chambers formed therein;
b. perforated divider means separating the lower and central chambers;
c. a liquid in the lower chambers;
d. means for maintaining the liquid at a substantially constant level in the lower chamber;
e. a contaminated gas inlet to said lower chamber at a location above the level of the liquid;
f. a duct supported by the housing and having an open lower end positioned a spaced distance above the level of the liquid and an open upper end in the central chamber;
g. blower means including a drive shaft and an impeller on the lower end of the drive shaft, said blower means being supported by the housing and positioned in the central chamber, above the open upper end and arranged to pull air from within the duct and to direct said air into the upper chamber;
h. a fully open conduit extending through the central chamber above the blower means and transversely to flow of air through the duct;
i. a pulley in the conduit and fixed to the upper end of the drive shaft;
j. drive means for driving the blower means comprising a motor fixed to the exterior of the housing, and a belt extending into the conduit to drivingly interconnect the pulley fixed to the upper end of the drive shaft and a pulley on the output shaft of the motor;
k. at least one discharge duct extending upwardly and outwardly from the upper chamber; and
l. vertically extending baffle means, arranged in each said discharge duct, such that air cannot pass through said duct in a straight path, whereby contaminants and water impinging on the baffle means gravitates down the baffle means and the housing, through the upper and central chambers, through the perforated divider and into the liquid in the lower chamber;
2. drawing the contaminated gas stream into the lower chamber through the contaminated gas inlet,
3. operating said blower means such that the surface tension of the liquid immediately below the duct is reduced and particles of liquid and the contaminated gas stream are drawn upwardly through the duct and central chamber of the apparatus being intimately admixed therein thereby transferring the contaminants from the contaminated gas stream to the liquid particles, and
4. passing the liquid particles and gas stream into the upper chamber by said blower means whereby the velocity of the liquid particles and gas stream decreases and the liquid particles containing the contaminants coalesce or impinge on the walls or baffle means of the upper chamber and gravitate down the baffles and having, through the upper and central chambers, through the perforated divider and into the liquid in the lower chamber, and
5. venting the gas stream from which the contaminants have been removed through said baffle means.

3,950,152
FILTER VAPOR TRAP
Jerold Guon, Canoga Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Continuation-in-part of Ser. No. 311,085, Dec. 1, 1972, abandoned. This application Oct. 3, 1973, Ser. No. 402,937
Int. Cl. B01d 46/04
U.S. Cl. 55—96 **13 Claims**

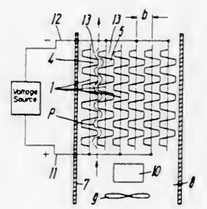
1. A method for cleansing entrained liquid metal particulates from an inert effluent gas emanating from a pool of liquid metal comprising the steps of

a. providing a filter trap means, including a housing and a porous metal filter member having inner and outer surfaces contained within said housing, said inner surface defining a hollow chamber, said outer surface and said housing defining an inner zone,
b. providing a natrophobic coating on one of said surfaces of said filter member,
c. passing the inert gas containing the liquid metal particulates entrained therein into said filter trap means,



d. impinging the inert gas upon the coated surface of said porous metal filter member, whereby the inert gas passes through said porous metal filter member,
e. maintaining said filter trap means for a determined period of time at a temperature above the melting point of the liquid metal so that the liquid metal particulates are in a liquid phase upon their contacting the coated surface of said porous metal filter member whereby the liquid metal particulates contained in the inert gas are collected on the coated surface and form globules, and
f. passing the inert gas cleansed of the liquid metal particulates out of said filter trap means.

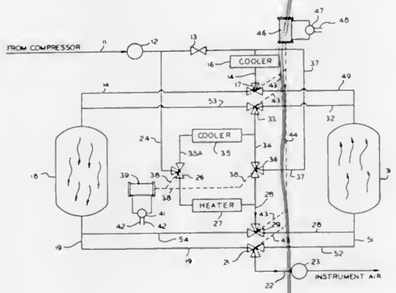
3,950,153
ELECTROSTATIC PRECIPITATOR
Constantin Graf von Berckheim, Friedrichstrasse 9, 6940 Weinheim an der Bergstrasse, Germany
Filed Dec. 10, 1973, Ser. No. 430,301
Claims priority, application Germany, Dec. 11, 1972, 2260550
Int. Cl.² B03C 3/08
U.S. Cl. 55—138 **18 Claims**



1. An arrangement for electrofiltration, comprising a flow passage for a fluid; a voltage source which includes a positive and a negative terminal; and at least two electrodes for generating a potential difference in said flow passage so as to permit charged particles in a fluid flowing through said passage to be separated from the remainder of the fluid, said electrodes being connected to different ones of said terminals, and at least one of said electrodes being a collector electrode which communicates with said passage and attracts charged particles, said collector electrode being provided with a plurality of hollow projections so as to enhance the ability thereof to attract and retain charged particles, and said projection having an end and including a substantially circumferentially complete wall portion which at least in part defines said pro-

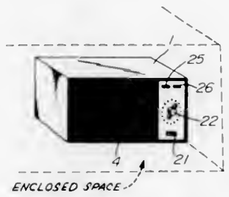
jection and an associated depression which is outwardly open at a location opposite said end.

3,950,154
REGENERATING DRYING SYSTEM
Terry Henderson, 1928 Flintshire Drive, Schaumburg, Ill. 60172, and Joseph H. Henderson, 1 S. 712 Vista Ave., Lombard, Ill. 60148
Filed Mar. 22, 1974, Ser. No. 453,587
Int. Cl.² B01D *53/04*
U.S. Cl. 55—179 **4 Claims**



1. In a system for drying air:
a. a source of air to be dried;
b. a pair of vessels containing desiccant material past which air must move in the drying of same;
c. said vessels being alternately connected in a drying step between said source and a discharge point for dried air;
d. one of said vessels having the desiccant material therein being regenerated while the desiccant material of the other of said vessels is removing moisture from air supplied at said source;
A. said vessels being arranged so that the flow of air through the other vessel connected for removing moisture therefrom is in one direction, while
B. said one vessel having the desiccant material therein being regenerated having the flow of regenerating air in the opposite direction from the flow of air in the other vessel;
e. circuit means for connecting said vessels alternately for drying and regeneration by flow therethrough in said opposite directions comprising;
f. a bypass circuit connected between said source and the connection of said source to the vessel in said drying step and bypassing a part of the air from said source;
g. a heater in said bypass circuit for heating said bypass air before being diverted to said one vessel;
h. additional circuit means for connecting said one vessel to the other vessel with heated bypass air which has regenerated the desiccant therein;
i. a cooling circuit connected in shunt with said by pass circuit and having a cooler connected therein including means for directing cooler air in an opposite direction through the desiccant of said one vessel to cool the desiccant therein after the desiccant has been regenerated.

3,950,155
AUTOMATIC AIR-PURIFYING SYSTEM
Uichi Komiyama, Kokubunji, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed July 26, 1973, Ser. No. 382,979
Claims priority, application Japan, July 28, 1972, 47-88815[U]
Int. Cl.² B01D *50/00*
U.S. Cl. 55—210 **7 Claims**



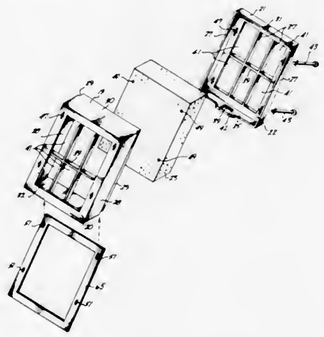
1. An automatic air purification system, comprising, in combination, electrically operated air-purifying means for purifying the air in an at least substantially enclosed space by removing chemical impurities from the air in such enclosed space, said air-purifying means comprising a body of reducing-gas-absorbing material and electrically operated fan means for causing air to pass through said body of reducing-gas-absorbing material; sensing means located in said enclosed space and operative for generating electrical signals having values indicative of the level of concentration of chemical impurities in the air contacting said sensing means; warning means operative for issuing a warning signal; and control means connected to said electrically operated fan means, connected to said sensing means and also connected to said warning means for controlling the operation of said electrically operated fan means and the operation of said warning means dependent upon said electrical signals generated by said sensing means.

3,950,156
DEVICE FOR SEPARATING LIQUIDS FROM GASEOUS MEDIA
Horst Kall, Gummersbach, Germany, assignor to L. & C. Steinmuller GmbH, Gummersbach, Germany
Filed July 17, 1974, Ser. No. 489,154
Claims priority, application Germany, July 18, 1973, 2336447
Int. Cl.² B01D *45/08*
U.S. Cl. 55—440 **4 Claims**



1. Means for separating liquids from a gaseous medium which includes a plurality of longitudinal sinuous substantially web-like structures each having front and rear ends and in which said liquids and gaseous medium flow from the front toward the rear ends of said structures, each said web-like structure being formed with successive crests and valleys transverse to the longitudinal direction of said web-like structure, the crests and valleys on one side having corresponding complementary valleys and crests on the opposite side, said crests on both sides having first catching troughs open in a direction facing the front end of said means and constituting confinements formed by first transverse flanges fixed at their rear sides to said web-like structure and spaced from said web-like structure at their open, front sides which face the front end of said web-like structure, said web-like structure at its front end having other transverse troughs opening in the direction opposite that of said first troughs and constituting other confinements formed by second transverse flanges fixed at their front sides to said web-like structure in front of said crests and spaced from said web-like structure at their rear sides and projecting toward said first flanges with said first flanges overlapping said second flanges, said first flanges at their rear sides merging into transverse grooves on the rear sides of the crests having said transverse flanges, and being offset from said crests.

3,950,157
RAM AIR FILTER FOR LIGHT AIRCRAFT
Dorrance Henry Matney, 24415 - 116th Ave. SE., Kent, Wash. 98031
Filed Oct. 7, 1974, Ser. No. 512,488
Int. Cl.² B01D *46/10*
U.S. Cl. 55—490 **5 Claims**



1. A ram air filter for light aircraft comprising:
1. a paralleleipiped housing defined by right rectangular parallelograms when viewed in two of its principal bisecting planes and a non-right parallelogram when viewed in the third of its principal bisecting planes, said parallelepiped housing comprising:
a. a base element formed of high impact plastic, said base element including: an apertured main wall; a pair of opposed parallel side walls projecting outwardly from one side of said apertured main wall; an obtuse end wall projecting outwardly from the same side of said apertured main wall as said side walls at an obtuse angle; and, an acute end wall projecting outwardly from the same side of said apertured main wall as said side walls at an acute angle, said obtuse and acute end walls projecting outwardly from opposite edges of said apertured main wall; and
b. a cover element formed of high impact plastic, said cover element including: an apertured main wall; a pair of opposed parallel side lips projecting outwardly from one side of said apertured main wall; an obtuse end lip projecting outwardly from the same side of said apertured main wall as said side lips at an obtuse angle; and, an acute end lip projecting outwardly from the same side of said apertured main wall as said side lips at an acute angle, said obtuse and acute end lips projecting outwardly from opposed edges of said apertured main wall;
c. said base and cover elements assemblable together in a manner such that they define an enclosure through which air can flow by entering the enclosure through the apertured main wall of one of said base and cover elements and leaving said enclosure through the apertured main wall of the other of said base and cover elements, said apertured main wall of said base element lying in a plane parallel to said apertured main wall of said cover element; and,
2. a filter element formed of a compressible foam material mounted in the enclosure defined by said base and cover elements and sized so as to substantially entirely fill said enclosure between said apertured main walls.

3,950,158
UREA COLD PACK HAVING AN INNER BAG PROVIDED WITH A PERFORATED SEAL
Rodger L. Gossett, Red Bud, Ill., assignor to American Medical Products Company, St. Louis, Mo.
Filed May 31, 1974, Ser. No. 475,032
Int. Cl.² F25D *5/00*
U.S. Cl. 62—4 **8 Claims**



1. In a refrigerating pack for use in providing a decrease in temperature from the ambient temperature comprising a group of three pliable sleeve type plastic bags, two of said bags being of approximately the same size and strength and forming the exterior and contiguous interior major liners of the pack, an inner bag comprising a minor liner being formed as a sleeve type bag and having dimensions and strength substantially less than the combined major liners enveloping said inner bag, the upper marginal seams of said major and minor liners being co-extensive and sealed together to form the upper end of the pack, the lower end of the minor liner having a closing seam being capable of pressure rupture upon application of manual force, said inner bag having a seal extending below the upper marginal seams, the improvement which consists of a perforation provided through said inner bag within the seal provided below the upper marginal seams to provide a pressure relief at the time of activation of the pack to prevent the pressure from acting against the upper marginal seams and thereby cause rupture of the pack proximate said seams, the inner bag disposed for holding a quantity of water, the interior major liner disposed for holding a quantity of urea which upon reaction with said water provides for the decrease in temperature, the ratio by volume of the urea to water contained in the pack being between about a 1 to 1 ratio to a 2 to 1 ratio.

3,950,159
PRODUCTS AND PROCESSES
Richard Fox, Rosanna, and Hubert Charles Oldland, North Balwyn, both of Australia, assignors to ICI Australia Limited, Melbourne, Australia
Filed May 3, 1973, Ser. No. 356,809
Claims priority, application Australia, May 16, 1972, 8972/72
Int. Cl.² C05F *11/00, 7/00;* **B01F** *17/00;* **C08B** *1/00*
U.S. Cl. 71—11 **12 Claims**

1. In a process of preparing a suspension fertilizer mixture by mixing one or more fertilizer components with water in the presence of a suspending agent, the improvement wherein said suspending agent is at least one agent comprising at least one polysaccharidic gum being cross-linked by a substance comprising a redox system and selected from the group consisting of crosslinked galactomannan polysaccharides and cross-linked biopolymeric material which is produced by a process

comprising the microbial transformation of carbohydrate material, and wherein said agent constitutes from 0.1% w/w to 5% w/w of said fertilizer mixture.

2. A composition of matter suitable for use as a water repellent fertilizer and comprising a mixture of water; one or more compounds capable of acting as a fertilizer and at least one polysaccharidic gum selected from the group consisting of crosslinked galactomannan polysaccharides and crosslinked biopolymeric material which is produced by a process comprising the microbial transformation of carbohydrate material, said gum being cross-linked by a substance comprising a redox system and being capable of thickening said mixture and being present in an amount from 0.1 part to 5 parts by weight per 100 parts by weight of said composition.

3,950,160

INHIBITING THE GROWTH OF WEEDS WITH 2-SUBSTITUTED PYRDIDOPYIMIDINES AND SALTS THEREOF

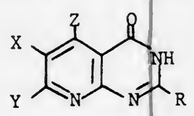
Marwan J. Abu El-Haj, Gales Ferry, and Beryl William Dominy, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 292,645, Sept. 27, 1972, Pat. No. 3,862,191. This application Sept. 23, 1974, Ser. No. 508,061

Int. Cl.² A01N 9/22

U.S. Cl. 71—92 **7 Claims**

1. A method of inhibiting the growth of weeds which comprises treating the soil before emergence of the weeds or the growing weeds themselves with a herbicidal amount of a compound selected from the group consisting of



the alkali metal and the mono-, di- and trialkylamine salts thereof wherein each alkyl group has from 1 to 12 carbon atoms;

R being selected from the group consisting of alkyl having from 3 to 5 carbon atoms, cycloalkyl having from 3 to 5 carbon atoms and CF_2R_1 wherein R_1 is selected from the group consisting of F, Cl, H and —CLMN wherein L, M and N are each selected from the group consisting of H, F and Cl;

X being selected from the group consisting of H, Cl, Br and alkyl having from 1 to 4 carbon atoms and

Y and Z each being selected from the group consisting of H and CH_3.

3,950,161

PROCESS FOR INCREASING THE LIFE OF BASIC REFRACTORY LININGS IN HEARTH-TYPE FURNACES

Helmut Knuppel; Karl Brotzmann, and Hans-Georg Fassbinder, all of Sulzbach-Rosenberg, Germany, assignors to Eisenwerk-Gesellschaft Maximilianshutte mbH, Sulzbach-Rosenberg, Germany

Filed Aug. 2, 1974, Ser. No. 494,678

Claims priority, application Germany, Aug. 16, 1973, 2341424

Int. Cl.² C21C 5/34

U.S. Cl. 75—52 **8 Claims**

1. In a process for increasing the life of basic refractory linings of hearth-type furnaces for steel production, wherein oxygen surrounded by hydrocarbon fluid is fed into a pig iron melt in said furnace below the surface of said melt by means of tuyeres consisting of two concentric pipes, the oxygen being blown in through the center pipe and the hydrocarbon being blown in through the space between said pipes;

the improvement which comprises:

feeding lime dust into the melt entrained in said oxygen, the amount of lime fed into the melt being at least 3 kg of lime dust per 0.1% of silicon in the melt and per ton of pig iron, and the lime being fed into the melt during desiliconization of the melt; wherein said lime is fed for at most 25% of refining time, from the beginning of refining of said melt.

3,950,162

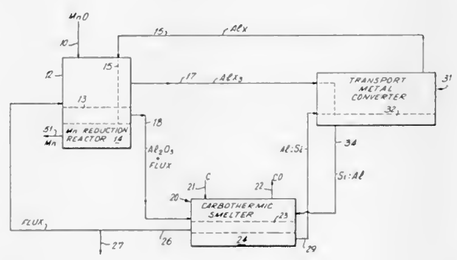
REDUCTION TO MANGANESE METAL USING METAL TRANSPORTING COMPOUNDS

Harold H. Schobert, Gloucester Point; Roger C. Field, Gloucester, and Paul H. Cardwell, Zanoni, all of Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

Filed May 20, 1974, Ser. No. 471,234

Int. Cl.² C22B 47/00

U.S. Cl. 75—80 **51 Claims**



1. A process for the production of manganese metal comprising reacting a manganese compound, selected from the group consisting of manganese oxides and manganese halides, with a subhalide of a transport metal said transport metal being silicon, to form manganese metal and a normal halide of the transport metal.

3,950,163

QUATERNARY FLUXES FOR ELECTROSLAG REMELTING FERROUS ALLOYS AND SUPERALLOYS

Ralph Hamilton Nafziger, Albany, Oreg., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 8, 1975, Ser. No. 539,469

Int. Cl.² C22B 9/10, 4/00

U.S. Cl. 75—94 **3 Claims**

1. A flux composition for use in electroslag remelting of metals consisting, in weight percent, 40% CaF_2, 37% CaO, 4% MgO and 20% Al_2O_3, the percentages being selected to add to 100 percent.

3,950,164

ALUMINIUM-BASED ALLOY

Vladimir Adolfovich Rotenberg, Zelenodolskaya ulitsa, 10/14, kv. 29; Kira Markovna Khruschova, Leningradsky prospekt, 88, korpus 1, kv. 10; Jury Yakovlevich Zilberg, 4 Grazhdanskaya ulitsa, 37, korpus 1, kv. 34; Anzhelika Petrovna Begidzhanova, Verkhaaya ulitsa, 18, Kv. 37; Anatoly Sergeevich Gulyaev, Schelkovskoe shosse, 77, korpus 2, kv. 3; Irina Vladimirovna Protasova, ulitsa Miklukho-Maklaya, 51, korpus 1, kv. 86, all of Moscow; Alexei Ivanovich Shapochkin, ulitsa Korova, 5, Mikhailovsk Sverdlovskoi oblasti; Vladislav Ivanovich Pavlov, Polynkovskaya ulitsa, 17, Tambov; Eduard Sergeevich Mirakov, Leningradskoe shosse, 7/2, korpus 2, kv. 63; Arseny Emelyanovich Izotov, Mironovskaya ulitsa, 9, kv. 78, both of Moscow; Ivan Alexandrovich Serikov, ulitsa Dzerzhinskogo, 64, kv. 3, and Not Vasilievich Ignatiev, ulitsa Kosmonavtov, 2, kv. 7, both of Kharkov, all of U.S.S.R.

Filed May 10, 1974, Ser. No. 469,023

Claims priority, application U.S.S.R., May 10, 1973, 1921777

Int. Cl.² C22C 21/00

U.S. Cl. 75—138 **5 Claims**

1. An aluminium-based alloy consisting essentially of antimony in an amount between 2.0 and 8.0 wt %; and at least one element selected from the group consisting of copper, nickel, chromium, and titanium taken in a total amount of between 0.2 and 3.0 wt %; at least one element selected from the group consisting of sulphur, selenium, tellurium, phosphrus, and arsenic, taken in total amount between 0.005 and 0.5 wt %, with the balance being aluminum.

3,950,165

METHOD OF LIQUID-PHASE SINTERING FERROUS MATERIAL WITH IRON-TITANIUM ALLOYS

Teishiro Oda, and Takashi Daikoku, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 205,614, Dec. 7, 1971, which is a continuation-in-part of Ser. No. 171,394, Aug. 12, 1971, which is a continuation-in-part of Ser. No. 751,074, Aug. 8, 1968, abandoned. This application Sept. 6, 1973, Ser. No. 394,630

Claims priority, application Japan, Aug. 9, 1967, 42-51068; Nov. 18, 1967, 42-74100

Int. Cl.² B22F 3/00, 1/00

U.S. Cl. 75—200 **2 Claims**

1. A method of sintering ferrous structural material which comprises

1. adding a predetermined quantity of alloy powder consisting essentially of iron-titanium alloy powder composed of about 14 to about 46% by weight of titanium and the balance iron, to an iron powder, wherein the alloy powder added to the iron powder contains impurities comprising up to 1 of the total weight of the alloy powder,
2. cold-pressing the resultant mixture at a pressure of about 5 tons/cm² and,
3. sintering the resultant powdered mixture in the liquid phase at and above a temperature of about 1400°C at which the iron titanium are fusing, said predetermined amount being in the range of 0.1 to 8% by weight of titanium to iron powder, whereby said ferrous structural material is obtained having density of substantially more than 7 gm/cm³, tensile strength substantially more than 25 kg/mm², percent elongation more than 25.

2. Method of manufacturing a machine component consisting of an exhaust valve seat of ferrous material having density of substantially more than 7 gm/cm³, tensile strength substantially more than 25 kg/mm², percent elongation substantially more than 25, which comprises

1. adding to an iron powder a predetermined amount of alloy powder consisting essentially of an iron-titanium alloy powder composed of about 14 to about 46% by weight of titanium, balance iron, said predetermined amount of alloy powder being in the range 0.1 to 8% by weight titanium to iron powder, wherein the alloy powder added to the iron powder contains impurities comprising up to 1 percent of the total weight of the alloy powder;
2. cold-pressing the resultant ferrous alloy powder mixture at a pressure of 5 tons/cm² into the desired machine component shape,
3. sintering the cold-pressed powdered mixture at a temperature of about 1400°C, and
4. recovering the finished machine component of said ferrous material.

3,950,166

PROCESS FOR PRODUCING A SINTERED ARTICLE OF A TITANIUM ALLOY

Kunio Obara, Urawa; Yoshio Nishino, and Shoji Matsumoto, both of Omiya, all of Japan, assignors to Mitsubishi Metal Corporation, Tokyo, Japan

Filed Jan. 30, 1974, Ser. No. 437,902

Claims priority, application Japan, Feb. 7, 1973, 48-14606

Int. Cl.² B22F 3/16

U.S. Cl. 75—213 **16 Claims**

1. A process for producing an article of a titanium alloy by powder metallurgy techniques, comprising a first sintering stage in combination with a second sintering stage, in which said first sintering stage comprises the steps of: mixing at least one material selected from the group consisting of powdered titanium and titanium hydride and at least one powdered additive to provide a first powder mixture, sintering the first powder mixture at a temperature not more than 400° C. higher than the melting point of the additive and the eutectic point of the additive with titanium to partially alloy the titanium with the additive, and reducing in size the partically sintered mass to prepare a mother alloy powder; and said second sintering stage comprises the steps of: mixing said mother alloy powder with at least one material selected from the group consisting of powdered titanium and titanium hydride to provide a second powder mixture having a predetermined composition, compacting the second powder mixture to form a compact having a predetermined shape, and sintering the compact to provide the article of a titanium alloy.

3,950,167

IMAGING SYSTEM

Simpei Tutihasi, Pittsford, and William L. Goffe, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 26, 1973, Ser. No. 401,092

Int. Cl.² G03G 5/04

U.S. Cl. 96—1 R **11 Claims**

1. An imaging method comprising the steps of:

a. providing an imaging member comprising a nonmigrating electrically porous layer of electrically photosensitive material contacting an insulating layer;

b. charging said imaging layer;

c. imagewise exposing said member to activating radiation for said electrically porous layer;

d. promoting the dissipation of charge in the nonexposed areas relative to the imagewise exposed areas and the capture of charge in the exposed areas, whereby an electrostatic latent image with higher surface potential in imagewise exposed areas is created; and

e. using said electrostatic latent image to form a visible image.

3,950,168
FIXING POWDER IMAGES

Peter Franklin Erhardt, Webster; William Conrad Richards, Marion, and John Michael Pochan, West Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 26, 1973, Ser. No. 336,100
Int. Cl.² G03G *13/20*
U.S. Cl. 96—1.4 **15 Claims**

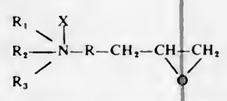
1. An imaging method comprising forming an electrostatographic latent image on a surface, developing the latent image with electroscopic marking materials, said marking materials comprising resin component and colorant and having a blocking temperature of at least about 110° F, transferring the developed image to a paper or thin polymeric sheet, thereafter subjecting the image present on the substrate to pressure of at least about 10 pounds per linear inch at temperatures of about room temperature up to about 30° C, and immediately thereafter exposing the image to vapors of a solvent for the marking materials so as to fix the image to the receiving substrate, said vapors characterized by a high vapor pressure.

3,950,169
ELECTROPHOTOGRAPHIC ELEMENT WITH POLYMERIC CONDUCTIVE LAYER

Daniel Maurice Timmerman, Mortsel, and Walter Frans De Winter, Berchem, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Division of Ser. No. 323,420, Jan. 15, 1973, Pat. No. 3,864,158. This application Jan. 3, 1975, Ser. No. 538,260
Claims priority, application United Kingdom, Jan. 17, 1972, 2134/72
Int. Cl.² G03G *5/04*
U.S. Cl. 96—1.5 **4 Claims**

1. An electrophotographic recording material comprising a support of paper or synthetic polymer and an electroconductive layer coated on at least one side of said support, said electroconductive layer having a surface resistance measured at 15 percent of relative humidity lower than 10^{11} ohm/sq., said electroconductive layer consisting of or including a major proportion of a water-soluble polymer resulting from the amino-alkylation of polyethylene imine with an epoxy compound bearing a quaternary ammonium end group, according to the general formula:



wherein: R represents a branched or unbranched alkylene group having up to 4 carbon atoms, each of R_1, R_2, and R_3 (same or different) represents an alkyl group containing up to 4 carbon atoms, a cycloalkyl group or an aralkyl group, or wherein R_1, R_2, and R_3 together with the nitrogen atom represent an heterocyclic amine group, and X is an anion, wherein a photoconductive layer is applied to the electroconductive layer.

3,950,170
METHOD OF PHOTOGRAPHIC TRANSFER USING PARTIAL EXPOSURES TO NEGATE MASK DEFECTS

Rainer Grosholz, Heilbronn-Bockingen, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Continuation of Ser. No. 303,822, Nov. 3, 1972, abandoned, which is a continuation of Ser. No. 94,561, Dec. 2, 1970, abandoned. This application Jan. 20, 1975, Ser. No. 542,277
Claims priority, application Germany, Dec. 2, 1969, 1960463
Int. Cl.² G03C *5/04, 5/06*
U.S. Cl. 96—27 E **12 Claims**

1. A method of photographic transfer of the image of a structure forming part of an original pattern to a substrate coated with a photosensitive coating comprising the steps of exposing said coating to said structure of said original pattern for 1/n-th of the time necessary for full exposure, where n is at least equal to three, where one-half of a full exposure is sufficient to cause development of the coating to begin and a representation of the pattern to become apparent on the coating and an exposure for 1/n-th of the full exposure time is insufficient to cause a representation of the pattern to become apparent on the coating, replacing said structure with another and identical structure, and, in sequence, repeating the step of exposing said coating and repeating the step of replacing until full exposure is achieved.

3,950,171
DIAZOTYPE MULTICOLOR REPRODUCTION PROCESS

Kouzi Nihyakumen, Hirakata; Yasui Ueda, Kobe; Yasutoki Kamezawa, Hirakata, and Tatsuo Aizawa, Kuwatsu, all of Japan, assignors to Mita Industrial Co. Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 166,044, July 26, 1971, abandoned. This application Apr. 24, 1974, Ser. No. 463,593
Claims priority, application Japan, July 27, 1970, 45-65167
Int. Cl.² G03C *5/34, 5/18*
U.S. Cl. 96—49 **8 Claims**

1. In a process for diazotype multi-color reproduction which comprises

A. exposing image-wise to actinic light a diazotype photosensitive material having a photosensitive layer containing at least one photosensitive diazonium salt (*c*) through an original sheet having opaque image areas and transparent or semi-transparent non-image areas; and

B. heating a layer containing at least one thermovolatile or sublimable azo coupler (*a*), which is disposed in face-to-face contact with the photosensitive layer of said photosensitive material, at a preselected area corresponding to an opaque image area of the original sheet desired to be reproduced in a different hue, to thereby heat-transfer said layer of the azo coupler (*a*) to the corresponding position on the surface of said photosensitive layer; said steps (A) and (B) being performed simultaneously or in the time sequence of (A) to (B) or (B) to (A); and

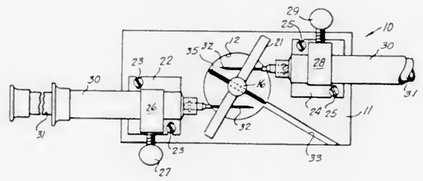
C. developing the exposed photosenstive material in the presence of an azo coupler (*b*) having a substantially lower rate of coupling with the diazonium salt (*c*) under the developing condition than that of the azo coupler (*a*), to thereby develop said photosensitive material, whereby in the unexposed latent image area of the portion to which the coupler (*a*) has been heat-transferred, a dye (*c*)-(*a*) having a certain hue or color is formed by the selective reaction of the heat-transferred coupler (*a*) with the diazonium salt (*c*) and at the same time, in the unexposed latent image areas to which the coupler (*a*) has not been heat-transferred, a dye (*c*)-(*b*) having a different hue or color from said dye (*c*)-(*a*) is formed by the reaction of the coupler (*b*) with the diazonium salt (*c*), thus producing a multi-colored copied image, the improvement which comprises:

using as said diazotype photosensitive material, that which has a continuous thermoplastic resin layer between a base paper and a photosensitive layer containing at least one photosensitive diazonium salt, in which said thermoplastic resin is selected from at least one of the group consisting of polyvinyl acetate, polyacrylic acid ester, polyvinyl chloride, polyvinylidene chloride, polystyrene, ethylene/vinyl acetate copolymer, styrene/butadiene copolymer and vinyl acetate/acrylic acid copolymer said continuous thermoplastic resin layer having the property that when completely dried it exhibits a water-repellant property uniformly throughout the surface.

3,950,172
INTRA PACKET FILM PROCESSING METHOD AND APPARATUS

Dwin R. Craig, Gaithersburg, and Marvin Phillip Sirkis, Rockville, both of Md., assignors to Insite Corporation, Gaithersburg, Md.

Filed Dec. 10, 1973, Ser. No. 423,568
Int. Cl.² G03C *5/30, 5/16*; G03B *41/16*
U.S. Cl. 96—61 M **1 Claim**



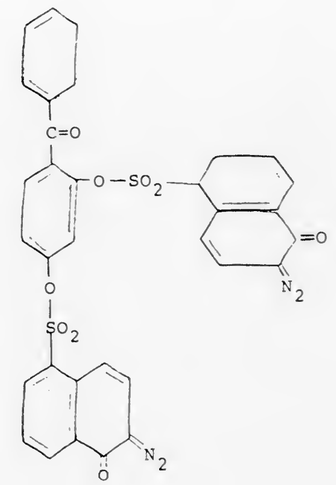
1. A method of insitu developing imagewise exposed X-ray dental film in a conventional flexible light tight film packet of the type having a film sheet carrying emulsion on both sides thereof and surrounded by a black light shield paper with a lead foil layer against one surface and a plastic envelope encompassing the film, paper and lead foil layer which includes the steps of penetrating the flat surfaces of the covering layers on one side of the packet with a hypodermic needle with the packet flexing in a direction away from the needle as the needle penetrates the packet, penetrating the flat surfaces of the covering layers on the other side of the packet with a hypodermic needle with the packet flexing away from the needle as the needle penetrates the packet injecting a viscous monobath processing solution into the area between the film emulsion and the paper on both sides of the film sheet of the film packet through the penetrating hypodermic needle on each side of the packet so as to uniformly coat the emulsion surfaces of the film, stripping the film cover from the processed film.

3,950,173
ELECTRON BEAM RECORDING ARTICLE WITH O-QUINONE DIAZIDE COMPOUND

Daniel Louis Ross, Princeton, and Lucian Anthony Barton, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 332,025, Feb. 12, 1973, Pat. No. 3,852,771. This application Sept. 11, 1974, Ser. No. 505,083
Int. Cl.² G03C *1/54, 1/76*
U.S. Cl. 96—75 **6 Claims**

1. An article of manufacture of improved sensitivity for electron beam recording which comprises a support having a layer of an electron beam sensitive mixture thereon, and an electrically conductive film applied onto the outer surface of said layer away from said support, said mixture consisting essentially of from about 1 to about 50 percent by weight based on the total weight of the mixture of an electron beam sensitive compound of the structure



and an alkali soluble resin.

3,950,174
ELECTRICALLY INSULATING COATING GLASS

Yoshiro Suzuki, Tokyo; Masahiko Ishiyama, and Jiro Chiba, both of Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Apr. 22, 1974, Ser. No. 462,927
Claims priority, application Japan, Apr. 24, 1973, 48-45699
Int. Cl.² C03C *3/22, 3/10, 3/04*
U.S. Cl. 106—39.6 **6 Claims**

1. An electrically insulating crystallized coating glass composition which contains $CaO.Al_2O_3.2SiO_2$ crystals consisting essentially of:

	percent by weight
SiO_2	25–48
Al_2O_3	8–24
PbO	0.5–40
TiO_2	5–25
CaO	4–20
ZrO_2	0–5
ZrO_2+TiO_2	5–25
ZnO	0–20
PbO+ZnO	0.5–40
Sb_2O_3	0–3
Bi_2O_3	0–3
CdO	0–3
SrO	0–3
MgO	0–3
PbF_2	0–3
$Bi_2O_3+CdO+SrO+MgO+PbF_2$	0–3.

3,950,175
PORE SIZE CONTROL IN CORDIERITE CERAMIC

Irwin M. Lachman, Corning, and Rodney D. Bagley, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 5, 1973, Ser. No. 412,863
Int. Cl.² C04B *35/06*
U.S. Cl. 106—40 R **13 Claims**

1. A porous, fired ceramic product having at least 70 volume percent cordierite crystals and at least 20 percent of open

pores larger than 10 microns in diameter and being made by the process of:

1. formulating a batch composition using ceramic raw materials analytically containing Al_2O_3, MgO and SiO_2, at least one being −200 Tyler mesh and selected from the group consisting of:
   1 to 17% pyrophillite,
   1 to 40% kyanite,
   1 to 20% quartz, and
   1 to 20% fused silica,
   each of the ceramic raw materials selected in an effective amount for yielding at least 70 volume percent cordierite in the product upon sintering the batch composition;
2. blending the batch composition into a plastically formable mass;
3. forming the plastic batch into a green ceramic body; and
4. firing the green ceramic body at a temperature sufficient to sinter the raw materials and bring about the development of the cordierite crystals.

3,950,176

SEMICONDUCTING GLASSES AND THE METHOD OF PREPARATION THEREOF

Emil W. Deeg, Woodstock, Conn.; Robert E. Graf, Southbridge, Mass., and Robert J. Landry, Poolesville, Md., assignors to American Optical Corporation, Southbridge, Mass.

Filed Apr. 24, 1974, Ser. No. 463,628
Int. Cl.² C03C *3/16, 3/30*
U.S. Cl. 106—47 R **14 Claims**

1. A semiconducting glass composition consisting essentially of as given in weight percent:

V_2O_5	25–35
MoO_3	35–45
P_2O_5	10–20
BaO	0–15
Al_2O_3	0–5
Fe_3O_4	0–10
CaO	0–2
Co_3O_4	0–4

with $V_2O_5 + MoO_3 + P_2O_5$ being in the range of 70 to 90 weight percent, the glass being chemically stable and having a resistivity within the range of from about 2×10^7 to about 6×10^8 ohm·cm.

3,950,177

REFRACTORY COMPOSITIONS

James Derek Birchall, and John Edward Cassidy, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 324,840, Jan. 18, 1973, abandoned, which is a continuation of Ser. No. 121,548, March 5, 1971, abandoned. This application Nov. 29, 1973, Ser. No. 420,077
Claims priority, application United Kingdom, Mar. 16, 1970, 12544/70; Dec. 11, 1970, 59032/70; Dec. 11, 1970, 59046/70
The portion of the term of this patent subsequent to Apr. 16, 1991, has been disclaimed.
Int. Cl.² C04B *35/66*
U.S. Cl. 106—55 **9 Claims**

1. A dry composition suitable for the preparation of a refractory composition which comprises a dry mixture of a refractory material and from 0.5 to 25% of the composition of a halogen-containing complex phosphate of aluminium wherein the ratio of the number of gram atoms of aluminium to the number of gram atoms of phosphorus is substantially 1:1 and containing at least one chemically-bound molecule selected from the group consisting of water and oxygen-containing organic molecules.

3,950,178

CONCRETE CONTAINING SPARINGLY SOLUBLE BARIUM COMPOUNDS

Hans Jaklin, Devorastr. 4, 55 Trier, Germany

Filed Sept. 23, 1974, Ser. No. 508,372
Claims priority, application Germany, Sept. 25, 1973, 2348081
Int. Cl.² C04B *7/02*
U.S. Cl. 106—89 **5 Claims**

1. In a concrete composition comprising cement, calcium sulfate and water, the improvement which comprises including at least about 0.5% by weight of the cement of at least one sprainly soluble barium compound selected from the group consisting of barium oxalate, barium fluoride and barium silicate hydrate.

3,950,179

STABILIZATION COMPOSITION

Gordon L. Schneider, 4236 Cottage Circle No. 3, Las Vegas, Nev. 89109

Filed May 17, 1974, Ser. No. 470,805
Int. Cl.² C08L *5/00*
U.S. Cl. 106—208 **13 Claims**

1. A composition useful in stabilizing finely divided soils consisting essentially of
   a hydratable gum in an amount effective in providing positive bonding between granular particles up to about 1¼ ounces per gallon of water;
   water; and
   a monohydric alcohol having 1 to 4 carbon atoms in an amount of 25–35% by volume based upon the volume of water and alcohol.

3,950,180

COLORING COMPOSITES

Chuzo Kato, Tokyo, Japan, assignor to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed July 2, 1974, Ser. No. 485,086
Int. Cl.² C09C *1/28*
U.S. Cl. 106—288 Q **5 Claims**

1. A coloring composite comprising an inorganic substance, said inorganic substance being at least one clay mineral selected from the group consisting of zeolites and hydrogenmontmorillonite, said hydrogenmontmorillonite being prepared by alkali-treatment and successive acid-treatment of montmorillonite, and a compound selected from the group consisting of organic basic colored compounds having organic cations, said organic basic colored compounds being composed of methine-, polymethine-, cyanine-, azo-, anthraquinone-, triphenylmethane-, thiazine-, azine-, triarylmethane-, phthalein basic dyes and being combined with said inorganic substance through ionic bond.

3,950,181

GRANULATING METHOD AND APPARATUS

Thomas Albert Pilgrim, Edwalton, England, assignor to BPB Industries Limited, England

Filed Jan. 31, 1974, Ser. No. 438,339
Claims priority, application United Kingdom, Feb. 1, 1973, 5144/73; Jan. 7, 1974, 589/74
Int. Cl.² C09C *1/02*
U.S. Cl. 106—306 **7 Claims**

1. A method of preparing discrete porous gypsum granules comprising the steps of:
   agitating a suspension of powdered gypsum plaster in a stable aqueous foam until the foam becomes interspersed with enlarging spheres of agglomerated hydrating plaster particles;
   collapsing the foam when the plaster has sufficiently set that the spheroidal granules retain their spherical shape and discrete identity after collapse of the foam;

and drying the resultant discrete porous spheroidal granules.

3,950,182

TREATMENT PROCESS

Margaret Lilian Steel, and Frank Holt, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 18, 1974, Ser. No. 524,946
Claims priority, application United Kingdom, Nov. 20, 1973, 53771/73; Mar. 8, 1974, 10521/74; Mar. 25, 1974, 13083/74
Int. Cl.² B02C *23/06*
U.S. Cl. 106—308 C **25 Claims**

1. A mineral comminution process which comprises comminuting the mineral in the presence of a liquid medium comprising an ionic polysaccharide.

24. A mineral slurry comprising a comminuted mineral and anionic polysaccharide in a liquid medium.

3,950,183

PRODUCTION OF ANNEALED PIGMENTS

Horst Weber, Leverkusen; Siegfried Gruhl, Leichlingen, and Karl-Heinz Endlich, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 4, 1974, Ser. No. 457,738
Claims priority, application Germany, Apr. 25, 1973, 2320806
Int. Cl.² C09C *3/00*
U.S. Cl. 106—309 **4 Claims**

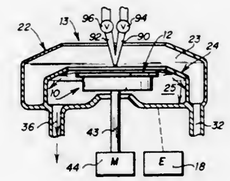
1. In the production of annealed products such as inorganic pigments wherein pigment-forming starting materials are mixed, optionally with the addition of auxiliary substances, thereafter annealed, optionally ground, washed and then dried, the improvement which comprises adding water to the mixture of pigment-forming materials to form an aqueous suspension containing at least about 10% by weight of H_2O, applying said suspension to the horizontal flat ring surface of a hearth which has been heated to at least about 500°C, rotating said ring about its center so that in the course of one rotation of the ring the applied material is heated to the temperature of formation of the desired annealed product, calcined and removed from the surface of the ring before the one rotation has been completed.

3,950,184

MULTICHANNEL DRAINAGE SYSTEM

Anthony L. Adams, Richardson, Tex., and Darien Fenn, North Little Rock, Ark., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 18, 1974, Ser. No. 524,592
Int. Cl.² B08B *7/04*
U.S. Cl. 134—10 **7 Claims**



1. A drainage system for separately draining the centrifugally broadcast residue of different liquids sequentially dispensed on a spinning semiconductor wafer comprising:
   a. a cup assembly comprising a plurality of stacked drainage cups, each of said cups having a separate outlet; and
   b. means for aligning a particular drainage cup of the cup assembly with said spinning wafer during the treatment of said wafer with a predetermined liquid.

4. A method for separately draining the centrifugally broadcast residue of different liquids sequentially dispensed on a semiconductor wafer spun on a spin order work station comprising the steps of:
   aligning a multichannel drain system containing a plurality of stacked drainage cups, each with an isolated outlet, such that said wafer is disposed within a predetermined drainage cup during the treatment of said wafer with a predetermined liquid.

3,950,185

FILM REMOVING COMPOSITIONS

Mitsuo Toyama; Toshio Ito, both of Tokyo; Eiji Kobayashi, Higashikurume, and Hideo Kosaka, Sayama, all of Japan, assignors to Nichiban Co., Ltd., Tokyo, Japan

Filed May 7, 1974, Ser. No. 467,841
Claims priority, application Japan, May 12, 1973, 48-52151
Int. Cl.² B08B *7/04*
U.S. Cl. 134—38 **4 Claims**

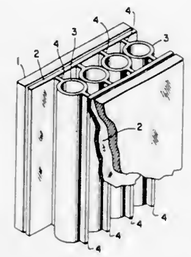
1. A film removing composition consistng essentially of at least one halogenated hydrocarbon solvent, as a major solvent selected from the group consisting of methylene chloride, chloroform, carbon tetrachloride, bromochloromethane, ethylene dichloride, trichloroethylene, tetrachloroethylene, monochlorobenzene and a mixture thereof, and 5 to 20g of a pressure-sensitive adhesive component per 100 ml of said major solvent.

3,950,186

ENVELOPE FOR THE TUBULAR ELECTRODES OF STORAGE BATTERIES

Heinz Breidenbach, Renningen, Germany, assignor to Varta Batterie Aktiengesellshaft, Hannover, Germany

Filed July 8, 1974, Ser. No. 486,419
Claims priority, application Germany, July 23, 1973, 2337320
Int. Cl.² H01M *35/04*
U.S. Cl. 136—54 **12 Claims**



1. An envelope for the tubular electrodes of a lead acid storage battery comprising a plurality of spaced-apart fabric tubes, and characterized in that each tube comprises groups of warp threads tied off by weft threads forming a plurality of spacers protruding beyond the diameter of the tube.

3,950,187

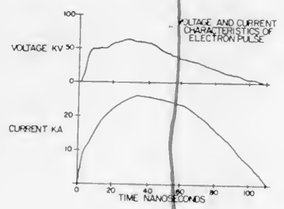
METHOD AND APPARATUS INVOLVING PULSED ELECTRON BEAM PROCESSING OF SEMICONDUCTOR DEVICES

Allen R. Kirkpatrick, Chelmsford, Mass., assignor to Simulation Physics, Inc., Burlington, Mass.

Filed Nov. 15, 1974, Ser. No. 524,062
Int. Cl.² H01L *21/263*
U.S. Cl. 148—1.5 **15 Claims**

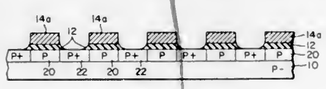
1. A method for thermal processing localized regions of semiconductor devices and materials comprising the steps of:

a. generating a short duration pulse of electrons in the form of a directed beam constituting a short duration pulsed electron beam;
b. directing said short duration pulsed electron beam at a surface of the semiconductor in the vicinity of a region to be thermally processed;
c. impacting said region to be thermally processed with said short duration pulsed electron beam; and



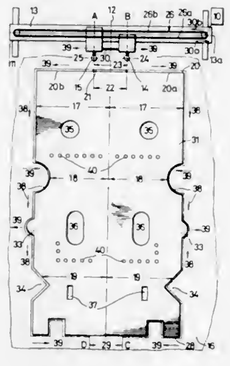
d. momentarily elevating the temperature of said region to be thermally processed, energy deposited in or near said region by said short duration pulsed electron beam impacting thereon raising the temperature of said region above a threshold processing temperature for a time period of less than one second.

3,950,188
METHOD OF PATTERNING POLYSILICON
Robert W. Bower, Santa Clara, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed May 12, 1975, Ser. No. 576,912
Int. Cl.² H01L *21/265*
U.S. Cl. 148—1.5 **12 Claims**



4. A method of selectively implanting impurity ions in a semiconductor, comprising:
A. forming an insulating coating on a semiconductor substrate;
B. forming a continuous layer of polysilicon on said coating;
C. depositing a masking layer of relatively non-oxidizable material on said polysilicon layer;
D. selectively etching said masking layer to expose predetermined regions of said polysilicon layer;
E. selectively oxidizing said polysilicon layer through the entire depth of said exposed regions to form regions of silicon oxide separating elements of polysilicon, with said silicon oxide regions being thicker than said polysilicon elements;
F. removing said masking layer; and
G. exposing said layer of polysilicon elements and silicon oxide regions to a first beam of impurity ions of sufficient energy to penetrate through said polysilicon elements and into the regions of said semiconductor substrate aligned therewith without penetrating said thick silicon oxide regions.

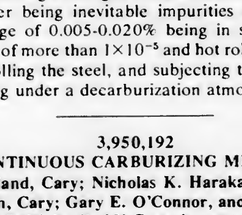
3,950,189
METHOD FOR CUTTING OUT A WORK PIECE BY A PLASMA JET OR SIMILAR CUTTING ARRANGEMENT
Gerhardt Lange, Frankfurt am Main, and Hans Hirschberg, Altenhain, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Germany
Filed Sept. 3, 1974, Ser. No. 502,763
Claims priority, application Germany, Sept. 18, 1973, 2346847
Int. Cl.² B23K *7/02*; **B26D** *3/00*
U.S. Cl. 148—9 R **8 Claims**



1. A method for cutting out from a piece of predetermined material, a work piece imparting thereto a shape symmetrical about an axis of symmetry, using cutting devices operable to cut the material,
comprising the steps of:
a. mounting the material for axial movement relative to the cutting devices in a direction of the axis of symmetry;
b. mounting two said cutting devices for normally simultaneous perpendicular movements of equal magnitude, relative to, and perpendicular to said axis of symmetry and in directions toward and respectively away from each other;
c. activating said axial and perpendicular movements at the same time or, respectively, separately, as required by the desired shape of the work piece, whereby the sides of the work piece on each side of said axis of symmetry, are simultaneously cut with edges parallel and/or angular relative to said axis of symmetry.

3,950,190
RECOVERY-ANNEALED COLD-REDUCED PLAIN CARBON STEELS AND METHODS OF PRODUCING
Peter B. Lake, Boardman Township, Mahoning County, Ohio, assignor to Youngstown Sheet and Tube Company, Youngstown, Ohio
Filed Nov. 18, 1974, Ser. No. 524,745
Int. Cl.² C21D *9/46*
U.S. Cl. 148—12 R **10 Claims**

1. A method of treating plain carbon steel to provide a non-full hard steel strip without substantial recrystallization, said steel having no agents purposely added to contribute significantly to precipitation strengthening, comprising:
cold reducing said steel in the order of 10 to 50%, and recovery annealing the cold-reduced steel at a temperature and for a time such that will provide a yield strength in the range of 55 to 80 ksi (379-551 MPa) and increase



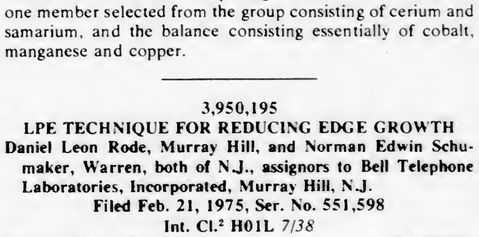
its ductility to at least 10%, as measured by percent longitudinal elongation.

3,950,191
COLD ROLLED STEEL SHEETS HAVING AN EXCELLENT ENAMELABILITY AND A METHOD FOR PRODUCING SAID COLD ROLLED STEEL SHEETS
Kenji Ito; Isao Takahashi, both of Chiba; Yo Ito, Kurashiki; Takuo Imai, Chiba; Fumio Kosumi, and Hideo Kuguminato, both of Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan
Filed Oct. 21, 1974, Ser. No. 516,407
Int. Cl.² C21D *9/48*
U.S. Cl. 148—12.1 **5 Claims**

1. A method for producing cold rolled steel sheets having an excellent enamelability which comprises adding to a molten steel containing not more than 0.020% of carbon, not more than 0.03% of silicon, not more than 0.50% of manganese, not more than 0.01% of aluminum, not more than 0.050% of oxygen, and having a nitrogen content of less than 0.01%, and the remainder being inevitable impurities and iron, boron within a range of 0.005-0.020% being in such amounts of $B(\%) \times O(\%)$ of more than 1×10^{-5} and hot rolling the resulting steel, cold rolling the steel, and subjecting to a recrystallization annealing under a decarburization atmosphere.

3,950,192
CONTINUOUS CARBURIZING METHOD
David I. Golland, Cary; Nicholas K. Harakas, Raleigh; John W. Mottern, Cary; Gary E. O'Connor, and Charles J. Runkle, both of Raleigh, all of N.C., assignors to Monsanto Company, St. Louis, Mo.
Filed Oct. 30, 1974, Ser. No. 519,365
Int. Cl.² C21D *1/45*
U.S. Cl. 148—16.5 **11 Claims**

1. In the method of continuously carburizing black plate stock wherein the carburized stock has an essentially soot-free surface and a microstructure substantially free of proeutectoid ferrite, comprising the steps of:
a. providing black plate stock in coil form;
b. heating said stock in the austenitization range of 950°–1150°C in a continuous heat treating furnace containing a carburizing atmosphere consisting essentially of a hydrocarbon gas and an endothermic gas wherein said gas has a carbon availability in the range of about 0.010 to about 0.080 so that residence time of said stock in said furnace is less than about 10 minutes;
c. homogenizing said stock in the austenitizing range of 800°–1040°C so as to attain a uniform macro distribution



of carbon across the length, width and thickness of said stock; and
d. quenching said stock at a temperature below about 600°C from the austenitizing range by impinging gas jets on the surfaces of said stock so as to attain a uniform micro distribution of carbon.

3,950,193
TARNISH RESISTANT COPPER AND COPPER ALLOYS
Elmer J. Caule, New Haven, Conn., assignor to Olin Corporation, New Haven, Conn.
Continuation of Ser. No. 147,673, May 27, 1971, abandoned. This application Aug. 5, 1974, Ser. No. 494,736
Int. Cl.² C23F *7/12*; **B32B** *15/04*
U.S. Cl. 148—31.5 **9 Claims**

1. A tarnish resistant material consisting essentially of a material selected from the group consisting of copper and copper alloys and a uniform glassy like and substantially pore free coating consisting of copper phosphate on the surface thereof ranging in thickness from 20 to 1000 Angstrom units.

3,950,194
PERMANENT MAGNET MATERIALS
Hozumi Hirota, Yamato-koriyama, and Yoshio Tawara, Shifyonawate, both of Japan, assignors to Matsushita Electrical Industrial Co., Ltd., Kadoma, Japan
Filed July 17, 1974, Ser. No. 489,837
Claims priority, application Japan, July 20, 1973, 48-81808
Int. Cl.² H01F *1/04*
U.S. Cl. 148—31.57 **2 Claims**

1. A magnetic composition having a maximum energy product of above 12 MG·Oe comprising 12 to 13 mole % of at least one member selected from the group consisting of cerium and samarium, and the balance consisting essentially of cobalt, manganese and copper.

3,950,195
LPE TECHNIQUE FOR REDUCING EDGE GROWTH
Daniel Leon Rode, Murray Hill, and Norman Edwin Schumaker, Warren, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 21, 1975, Ser. No. 551,598
Int. Cl.² H01L *7/38*
U.S. Cl. 148—171 **10 Claims**

1. A liquid phase epitaxial growth technique comprising the steps of:
a. in a controlled atmosphere, heating a source solution and a substrate until said solution is saturated;
b. rapidly cooling said solution and substrate to a temperature at which said solution is supersaturated but heterogeneous nucleation in said solution does not occur;

c. before bringing said solution and substrate into contact with one another, allowing sufficient time to elapse for convective equilibrium to be established in said solution;
d. bringing said solution and substrate into contact with one another for a sufficient time period to allow an epitaxial layer of a desired thickness to be grown on said substrate; and
e. during steps (c) and (d), maintaining substantially constant the temperature of said solution and substrate.

3,950,196
COOL-BURNING GUN PROPELLANT CONTAINING TRIAMINOQUANIDINE ETHYLENE DINITRAMINE

Joseph E. Flanagan, Woodland Hills, and Vernon E. Haury, Santa Susana, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

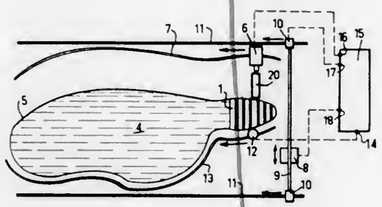
Filed June 14, 1973, Ser. No. 370,133
Int. Cl.² C06B *23/34, 25/18*
U.S. Cl. 149—92 **6 Claims**

1. A gun propellant consisting of about 75% by weight of triaminoguanidine ethylenedinitramine, about 24.5% by weight of nitrocellulose, and about 0.5% by weight of ethyl centralite.

3,950,197
METHOD FOR MAKING A SUBSTANTIALLY PLANAR STRUCTURE CONSTITUTED BY JOINTED BUILDING ELEMENTS

Jean Beranger, Massy, and Pierre Perrin, Pont Ste Marie, both of France, assignors to La Vermiculite et la Perlite S.A., Nanterre, France

Filed July 8, 1974, Ser. No. 486,672
Claims priority, application France, July 11, 1973, 73.25357
Int. Cl.² B32B *31/20*
U.S. Cl. 428—311 **9 Claims**



1. A method for manufacturing a floating roof for covering a liquid reserve, comprising the steps of:
moulding at the site of the liquid reserve a successive of substantially parallelepipedic elongated building elements from a rapidly polymerizable foamed plastic material;
moving each one of said moulded elements, as it issues from said mould, over said liquid reserve, in such a way that it is juxtaposed to the previously moulded element on top of said liquid reserve; and
applying a bonding material along the joint between said element and said previous element after the juxtaposition has been accomplished.

3,950,198
FUSION OF VINYL PLASTISOL TO HEAT-SENSITIVE BACKING

Joseph A. Cannon; John F. Pysz, Jr., and James T. Renshaw, all of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

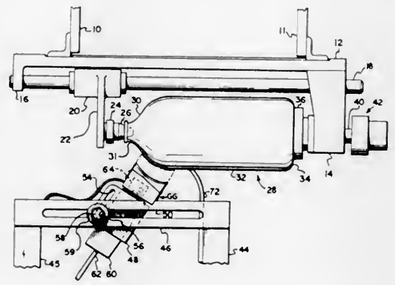
Division of Ser. No. 188,999, Oct. 19, 1971. This application Feb. 28, 1974, Ser. No. 446,996
Int. Cl.² D05C *17/00;* **B29C** *27/00;* **C09J** *5/00*
U.S. Cl. 156—79 **11 Claims**

1. The process of preparing a carpet material comprising a carpet facing, a heat-sensitive backing therefor and a vinyl backing therefor which comprises (A) applying a vinyl plastisol to a heat-sensitive backing integral with a carpet facing and (B) heating said material in a heating zone having communication with the atmosphere wherein a heating medium selected from the group consisting of air, gas or steam is projected against the surface of said vinyl plastisol from sources of said heating medium within said heating zone and wherein:
1. the distance of said material from said heating medium sources is from about 1 inch to about 10 inches;
2. the temperature within said heating zone is from about 150°C. to about 200°C.;
3. the dwell time of said material in said heating zone is from about 3 minutes to about 10 minutes;
4. the velocity at which said heating medium issues from said source is from about 100 to about 4000 feet per minute but below the point at which deformation of the surface of said plastisol occurs;
5. the angle at which said heating medium is applied to the surface of said plastisol is from about 0° to about 90°.

3,950,199
BOTTLE COATING METHOD

Howard R. Lucas, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 15, 1974, Ser. No. 451,574
Int. Cl.² B29C *27/24;* **B05D** *1/26, 1/40, 3/12*
U.S. Cl. 156—86 **4 Claims**



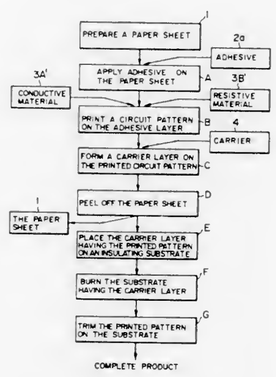
1. A method for completely enclosing two contiguous regions of a glass container which comprises the steps of:
providing a reservoir having formed thereon a doctoring edge having a radius of curvature substantially corresponding to the radius of curvature of a first region of said glass container, said reservoir containing molten organic polymeric material extending said reservoir containing said molten material from a remote location to a location adjacent said first region of said glass container after said glass container is at a coating application station;
supplying molten organic polymeric material to said reservoir at a flow rate sufficient to maintain said reservoir in a substantially overflow condition at the time of extension from said remote location;
contacting said first region of said glass container with said overflowing organic polymeric material;

flowing said molten organic polymeric material direectly from the reservoir onto said first region of said glass container and simultaneously doctoring said flowing material by moving said reservoir and said glass container relative to one another through 360° with respect to the circumference of said glass contaner while said glass container is in contact with said overflowing organic polymeric material to thereby cause said first region to be completely enclosed with a substantially uniform layer of said organic polymeric material;
retracting said reservoir to said remote location after said relative 360° movement has taken place;
placing a hollow tubular member of a contractable thermoplastic material around the second region of said glass container; and
contracting said thermoplastic tubular member into a snug fitting conforming engagement with said second region of said glass container to thereby completely enclose said second region.

3,950,200
METHOD OF FABRICATING THERMAL PRINTING HEAD

Shoichi Muramoto; Ichiro Fukunaga, both of Tokyo, and Haruyuki Ikeda, Nagoya, all of Japan, assignors to Nippon Toki Kabushiki Kaisha, Japan

Filed Dec. 10, 1973, Ser. No. 423,451
Claims priority, application Japan, May 2, 1973, 48-48482
Int. Cl.² B32B *31/26;* **C03C** *17/22;* **G01D** *15/20;* **H05B** *3/16*
U.S. Cl. 156—89 **8 Claims**

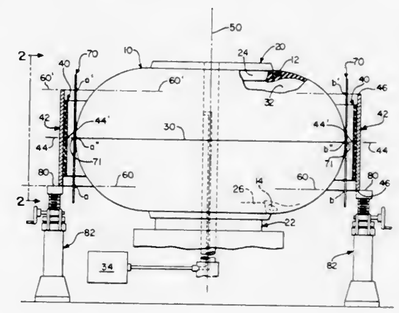


1. A method of fabricating a thermal printing head comprising the steps of printing a circuit pattern of resistive elements and electric conductors on one surface of a flat paper sheet, covering said circuit pattern and said one surface of said paper sheet with a carrier layer of a substantially transparent compound formed of a methacrylic acid resin capable of being burned off by heat baking at a temperature above about 500°C. without forming residual carbonides, peeling off said flat paper sheet, placing the remaining carrier layer carrying said circuit pattern over the surface of a preshaped insulating substrate with said circuit pattern being interposed between said carrier and said substrate and lying on said substrate, and thereafter baking said carrier layer substrate and circuit pattern at a temperature above about 500°C. to cause the carrier layer to be cleanly burned off and to cause the circuit pattern to adhere to said substrate.

3,950,201
TIRE MANUFACTURE

Charles J. McEvoy, and Warren R. Dietrich, both of Topeka, Kans., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 24, 1974, Ser. No. 473,118
Int. Cl.² B29H *17/37*
U.S. Cl. 156—126 **4 Claims**

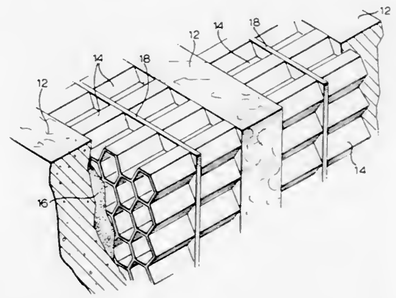


1. In a method of assembling an endless inexpansible belt and an expandable tire carcass to make a pneumatic tire, the improvement comprising the steps of establishing a plurality of points each fixed equidistantly at a predetermined distance axially of said carcass from a respectively associated point on the mid-circumferential line of said carcass such that said plurality of points define a reference plane fixed directly with respect to said mid-circumferential line of the carcass independently of apparatus supporting the carcass, placing said belt in an endless cylindrical ring having a lateral edge parallel to the mid-circumferential centerline of the belt, and spaced therefrom by said predetermined distance, locating said belt and said ring in surrounding annularly spaced relation about said carcass with the circumferential centerline of said belt coplanar with the mid-circumferential line of said carcass by locating said lateral edge coplanar with said reference plane.

3,950,202
METHOD OF MAKING A COMPOSITE NATURAL STONE VENEER PRODUCT

William E. Hodges, Royal York Hotel 100 Front St. West, Toronto, Ontario, Canada

Filed June 12, 1973, Ser. No. 369,308
Int. Cl.² B32B *3/12, 31/18;* **E04C** *2/04*
U.S. Cl. 156—154 **4 Claims**



1. A method of making a composite stone veneer product having a veneer layer of a naturally-occurring, slabable stone material of several square feet in area bonded to supporting material including the steps of:

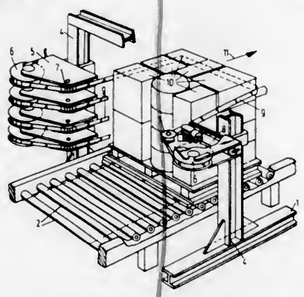
a. saw cutting the naturally-occurring stone material to form slabs having parallel side faces and a thickness of the order of not greater than three-quarters of an inch and significantly thicker than twice the thickness of the desired ultimate veneer layer of a composite stone veneer product so that said slabs may be manoeuvered and handled without breaking;
b. adhesively bonding a layer of supporting material to each of said parallel side faces of one or more of said slabs;
c. maintaining one or more of the slabs with the supporting material adhered thereto in a secured position so that said one or more slabs can be subjected to a further saw cutting operation; and
d. saw cutting through said one or more slabs in a direction parallel to and midway between said parallel side faces to abrade away a significant central volume of the naturally-occurring stone material lying between two parallel planes parallel to said side faces so as to form at least two composite stone veneer products each having a veneer of said naturally-occurring stone material of essentially uniform thickness, the thickness of each veneer being of the order of at least three-sixteenths of an inch and significantly less than one-half the thickness of said one or more slabs.

3,950,203

METHODS OF APPLYING A TAPE AROUND AN OBJECT OR A STACK OF OBJECTS AND DEVICES FOR CARRYING OUT SAID METHOD

Auke Van der Wal, Oss, Netherlands, assignor to Vereenigde Metaalverpakking en Hechtdraad Industrie B.V.MVM-Endra, Oss, Netherlands

Filed Apr. 2, 1975, Ser. No. 564,447
Int. Cl.² B29C *17/04*
U.S. Cl. 156—213 **6 Claims**



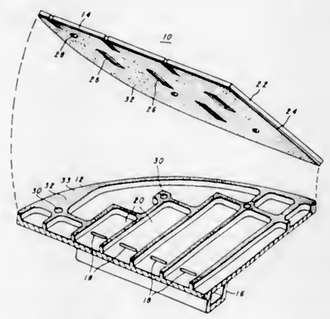
1. A method of applying a tape around an object or a stack of objects, in which a tape extending between two supply reels and consisting of two tapes, which emanate from individual supply reels and have their ends interconnected, is passed in U-shaped fashion around the object or the stack of objects and subsequently the tape portions then extending between the object of the stack of objects and the supply reels are forced towards one another along the object or the stack of objects and connected with one another and severed in a manner such that the object or the stack of objects is surrounded by a closed tape, and whereby a tape extending between said supply reels and consisting of tapes, which emanate from individual supply reels and have their ends interconnected, is again formed, characterized in that each of the two tape portions forced towards one another is clamped tight at a given distance from the other tape portion at two places spaced apart by about twice said given distance in a direction transverse of the object or the stack of objects, after which in order of succession, one tape portion is cut at a spot midway between its two clamping places, the tape ends thus formed between said clamping places and facing one another are directed towards the other tape portion, this other tape portion is also cut at a spot midway between its two clamping places, the resulting tape ends of the other tape portion facing one another are bent over, forced against the tape ends of the first-mentioned tape portion and jointed thereto, where upon the clamped tape portions are released.

3,950,204

LOW PRESSURE, THIN FILM BONDING

Warren D. Williams, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 293,708, Sept. 29, 1972, abandoned. This application July 29, 1974, Ser. No. 492,385
Int. Cl.² B29C *27/12*
U.S. Cl. 156—235 **4 Claims**



1. A method of bonding together sections of aluminum surfaces for fabricating a slotted waveguide type antenna which comprises:
a. priming one of the aluminum surfaces of one of two antenna sections to be joined, and applying an adhesive film less than 1 mil thick to the primed aluminum surface of the two antenna sections, wherein the primed aluminum surface of one of the sections to be joined is a slotted flat plate and the second section is a plurality of thin wall waveguide shunt guides;
b. contacting the aluminum surfaces to combine the primer and adhesive material between the aluminum surfaces of the two antenna sections to be bonded together;
c. positioning the contacting sections in a vacuum bag adaptable, when subject to a vacuum, to the form of the antenna sections;
d. evacuating the vacuum bag to exert a selected uniform bonding pressure on the antenna section; and
e. heating said vacuum bag containing the antenna sections to an adhesive curing temperature to bond together the antenna sections.

3,950,205

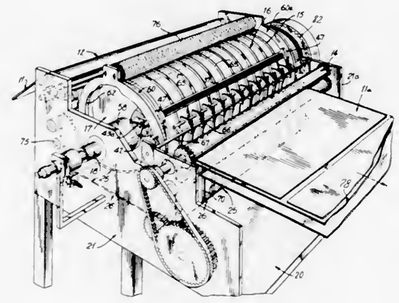
ROTARY HEAT SEALER

Albert W. Hawkins, Princeton; Ronald J. O'Shea, and Herbert M. Case, both of Somerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 186,261, Oct. 4, 1971, Pat. No. 3,767,508. This application Aug. 13, 1973, Ser. No. 388,047
Int. Cl.² B32B *31/00*
U.S. Cl. 156—251 **3 Claims**

1. The method of heat sealing multi-ply layers of thermoplastic film into a plurality of successive separable seam-welded segments comprising:
a. advancing a continuous ribbon of multi-ply layers of thermoplastic film to a continuously rotating arcuate film support having heat sealing means recessed and movably mounted therein;
b. supporting a portion of said advancing ribbon of film in an untensioned manner about at least a substantial portion of the arcuate film support and bridging the movably mounted recessed heat sealing means advancing of said ribbon of film being continued concurrently with the rotation of said arcuate film support without tensioning said ribbon of film supported thereon;

c. extending the recessed heat sealing means from within the rotating arcuate film support into uniform, positive engagement with the supported untensioned film bridging the heat sealing means to prepare adjacent, parallel, separable seamwelds in the continuously advancing layers of film;



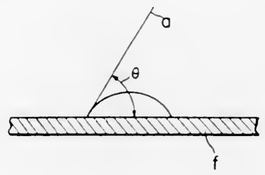
d. retracting the heat sealing means from the heat-sealed layers of film as the arcuate film support continues to rotate and the supported untensioned ribbon of film advances therewith; and then
e. discharging the heat-sealed layers of film from the surface of the rotating arcuate film support and from the surface of the film support means.

3,950,206

METHOD FOR HEAT-BONDING POLYESTER FILMS OR SHEET-LIKE STRUCTURES AND SAID POLYESTER FILMS OR SHEET-LIKE STRUCTURES

Tomio Adachi, Sagamihara; Yukio Mitsuishi, Machida; Rikuo Miura, and Hideaki Kawakami, both of Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 10, 1973, Ser. No. 423,553
Claims priority, application Japan, Dec. 15, 1972, 47-125212
Int. Cl.² B29C *27/04;* **B32B** *27/06*
U.S. Cl. 156—272 **3 Claims**



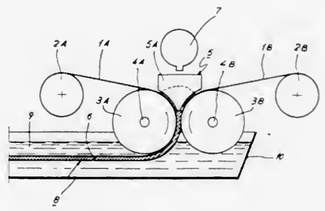
1. A process for heat-bonding polyester films or sheet-like structures which comprises subjecting to a corona discharge treatment one or both surfaces of a polyester selected from the group consisting of polyethylene terephthalate and polyethylene-2,6-naphthalate, bringing the treated surface or surfaces into direct contact with the surface or surfaces which may be treated of another film or preformed sheet-like structure of said polyester and heat-bonding said films at a temperature from 70°C. higher than the glass transition temperature of the polyester to 10°C. lower than its melting point and an external pressure in the range of 0.01 to 20 Kg/cm², said corona discharge treatment being performed so that the treated structure has a contact angle of not more than $(\theta - 10°)$ and not less than $(\theta - 45°)$ wherein θ is the contact angle of the structure before treatment.

3,950,207

PROCESS FOR THE MANUFACTURE OF MULTILAYER IMPERMEABLE STRIPS

Eusebio de Zuloaga Amat, Barcelona, Spain, assignor to Texsa S.A., Spain

Continuation-in-part of Ser. No. 260,266, June 6, 1972, abandoned. This application June 17, 1974, Ser. No. 480,305
Int. Cl.² C09J *5/12*
U.S. Cl. 156—308 **12 Claims**



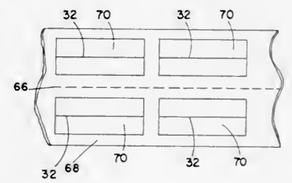
1. Process for the manufacture of multilayer moisture-impermeable strips having at least two very thin continuous flexible plastic layers bonded together by an adhesive medium constituted by a layer of asphalt, the thickness of which is a large multiple of the thickness of the plastic layers and is adjustable at will, said process comprising the steps of continuously feeding at least two very thin strips of the flexible plastic in spaced facing relation to each other to define a space between their facing surfaces; continuously supplying the asphalt, in a hot molten condition, into such space; continuously bonding the very thin strips to the asphalt by supplying pressure to the outer surfaces of the strips to subject the strips and the asphalt to compression to form a three-layer multi-layer moisture-impermeable strip; simultaneously with such pressure application, and in the zone of pressure application, continuously cooling the very thin strips by conducting heat away from the outer surfaces thereof while the strips are subjected to compression; and thereafter further cooling the multi-layer strip.

3,950,208

METHOD OF MAKING EGG CARTONS

Frank Eugene Pavuk, Methuen, Mass.; Roger Henry Steiner, Londonderry, N.H.; Sumner Sheldon Feinstein, West Peabody, and Richard Joseph Venuti, Billerica, both of Mass., assignors to Borden, Inc., Columbus, Ohio

Filed Aug. 17, 1973, Ser. No. 389,309
Int. Cl.² B29C *17/04, 17/10;* **B29D** *27/00*
U.S. Cl. 264—156 **3 Claims**



1. Method for forming at least one pair of egg cartons from a foamed thermoplastic sheet comprising perforating the sheet medially to form a centerline, heating the sheet to render it sufficiently pliable for forming the egg cartons, feeding the sheet between matching molds, closing the molds to form the pair of egg cartons and moving mold elements into place following mold closure to form projections in the egg cartons, the projections being formed adjacent to said centerline of medial perforations.

3,950,209
PROCESS FOR PREPARING CARBOXYLATED POLYMER COMPOSITION

Yujiro Kosaka; Masaru Uemura; Mitsutaka Saito, and Yuji Suzuki, all of Shin Nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

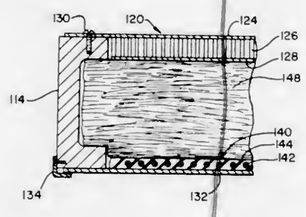
Continuation-in-part of Ser. No. 369,597, June 13, 1973, abandoned. This application Oct. 17, 1974, Ser. No. 515,546
Claims priority, application Japan, June 13, 1972, 47-58888
Int. Cl.[2] C08F *263/04*
U.S. Cl. 156—333 6 Claims

1. A method of bonding substrates, which comprises:
applying to a first substrate a graft copolymer which comprises a polymer of 0.1 – 20 parts by weight of an unsaturated carboxylic acid or anhydride monomer, and 1 – 40 parts by weight of a vinyl monomer containing at least one chlorine atom, which is grafted onto 99 – 40 parts by weight of an ethylene-vinylacetate copolymer,
and bonding a second substrate thereto.

3,950,210
VACUUM PRESS

David A. Gibbs, Waban, and Domenico S. Sarcia, Carlisle, both of Mass., assignors to Seal Incorporated, Derby, Conn.

Filed Apr. 10, 1973, Ser. No. 349,815
Int. Cl.[2] B30B *15/34*; B32B *31/00*
U.S. Cl. 156—367 3 Claims

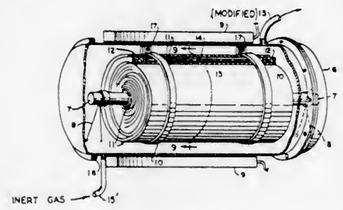


1. A vacuum press comprising:
a work-support assembly including a first frame defining a first opening, means supporting said first frame, and a pliable air-impermeable sheet extending across said first opening and secured at its edges to said first frame, said sheet drooping between its edges;
a platen assembly disposed above and hingedly connected to said work-support assembly so as to be movable into and out of engagement with said work-support assembly, said platen assembly including a second frame defining a second opening, a flexible metal platen extending across said second opening and overlapping the underside of said second frame, said metal platen being supported only at its edges by said second frame so that (a) said metal platen can droop between its edges under its own weight and (b) the edges of said metal platen are free to move relative to said second frame on expansion and contraction of said metal platen in response to changes in temperature thereof, and electrical heater means for heating said metal platen, said heater means being disposed within said second opening above said metal platen;
said platen assembly and said work-support assembly when engaged providing an air-tight work-receiving chamber therebetween with said metal platen and said flexible sheet forming opposite side walls of said chamber;
means for evacuating said chamber so that the atmospheric pressure exterior of said chamber will force said flexible sheet and said metal platen toward each other and thereby compress a workpiece supported on said sheet; and
control means for operating said electrical heater means and said evacuating means so that a workpiece in said chamber is both heated and compressed.

3,950,211
HEAT BONDING FLUOROCARBON AND OTHER PLASTIC FILMS TO METAL SURFACES

Ransome W. Erwin, Ogden, Utah, assignor to Austral-Erwin Engineering Company, Houston, Tex.

Division of Ser. No. 493,890, Aug. 1, 1974, which is a continuation-in-part of Ser. No. 401,656, Sept. 28, 1973, which is a continuation-in-part of Ser. Nos. 311,137, Feb. 1, 1972, Pat. No. 3,841,937, and Ser. No. 246,220, April 21, 1972, Pat. No. 3,837,956, and Ser. No. 371,346, June 19, 1973, abandoned, said Ser. No. 311,139, and Ser. No. 246,220, each is a division of Ser. No. 41,375, May 28, 1970, abandoned. This application May 28, 1975, Ser. No. 581,659
Int. Cl.[2] B32B *31/26*
U.S. Cl. 156—382 13 Claims

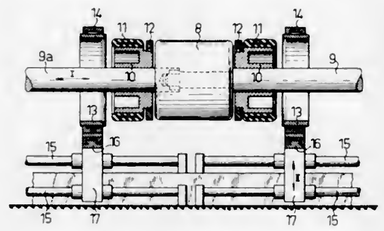


1. Apparatus for heat bonding superposed layers of material including a thin metal sheet and a thin plastic fluorocarbon film wrapped in a coil, said apparatus including a heating vessel, means, including a core, for supporting said coil within the heating vessel, spacer means at each end of the coil to provide an expansion space for a layer of film between each coil and means for subjecting the coil to vacuum and heat treatment within the vessel.

3,950,212
TIRE BUILDING MACHINE

Rolf Bullmann, Hannover, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

Filed May 13, 1974, Ser. No. 469,461
Claims priority, application Germany, May 12, 1973, 2324215
Int. Cl.[2] B29H *17/12, 17/22, 17/24*
U.S. Cl. 156—398 2 Claims

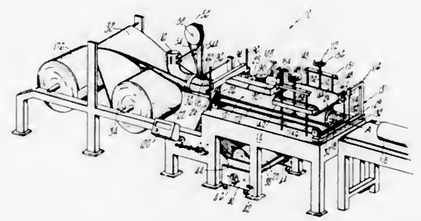


1. A tire building machine which includes in combination: rotatable shaft means, a tire building drum of variable diameter connected to said shaft means for rotation therewith, bead core applying means respectively arranged opposite each end face of said drum, each applying means including a bead core holder having two coaxially arranged, relatively slidable annular bodies one within the other surrounding said shaft means in radially spaced relationship thereto and axially movable to position a bead core against tire fabric on the end face of said drum, two inflatable bodies mounted on said shaft means and respectively arranged at opposite ends of said drum inside of said annular bodies for cooperation with the inner of the respective adjacent annular bodies, the annular bodies of each of said bead applying means being movable over the respective adjacent inflatable body, and each of said inflatable bodies being expandable so as to engage the respective adjacent inner annular body, two supporting rings mounted on said shaft means and respectively arranged at opposite ends of said tire building drum spaced therefrom between the latter and the respective adjacent inflatable body, each said supporting ring being variable in diameter to expand radially outwardly against said fabric and bead core, each of said supporting rings having a width corresponding approximately to the width of the bead cores to be applied, the guiding means spaced from said shaft means and slidably supporting each of said bead core applying means for guiding said bead core applying means in the axial direction of said shaft means, said bead core applying means additionally being adjustable transversely of said shaft means on said guiding means perpendicular to said shaft means independently in two directions perpendicular to each other.

3,950,213
MACHINE FOR MANUFACTURING INSULATED DUCT

William E. Rejeski, and Norman J. Perusse, both of Farmington, Conn., assignors to The Wiremold Company, West Hartford, Conn.

Filed Nov. 7, 1974, Ser. No. 521,657
Int. Cl.[2] B29D *23/10*
U.S. Cl. 156—461 14 Claims



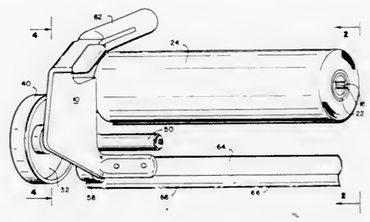
1. A machine for making tubular duct with a supporting core surrounded by insulation and an outer casing to be wrapped about the insulation with opposite edges of the casing projecting radially outwardly in confronting relation to one another to be sealed into a longitudinally extending joint, the machine comprising a first power operated conveyor for supporting and conveying duct along a linear path of movement, a tape reversing unit for receiving and forming a connecting tape into a pair of interconnected leg flaps for receipt between the opposite edges of the casing in confronting relation thereto, a joint sealer downstream of the tape reversing unit, the joint sealer having a pair of opposed downstream sealing rolls and a pair of opposed drive conveyors upstream of the sealing rolls, the drive conveyors of the joint sealer overlying the first conveyor for clamping and driving the projecting casing edges and the connecting tape from the tape reversing unit to the sealing rolls, the drive conveyors of the joint sealer cooperating with the underlying first conveyor to guide and advance the casing along its path of movement with the tape interposed in clamped relation between its opposite edges.

3,950,214
HAND MASKING MACHINE

Danny L. Pool, 2045 E. Broadway No. 26, Tempe, Ariz. 85281, and Robert R. Pool, 607 E. Franklin, Mesa, Ariz. 85204

Filed Nov. 18, 1974, Ser. No. 524,629
Int. Cl.[2] B32B *31/00*
U.S. Cl. 156—527 5 Claims

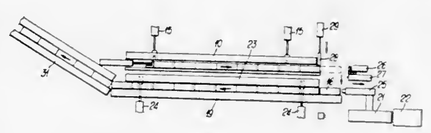
1. A manually operable masking machine having a frame provided with a manually holdable handle; a paper roll spindle rotatably mounted on said frame an adhesive tape roll holder rotatably mounted on said frame; said tape roll holder axially offset relative to the longitudinal axis of said paper roll spindle whereby a roll of tape on said holder is aligned with an end of said paper roll spindle so as to provide for the overlapping of an edge of paper aligned generally with said end of said spindle; means on said frame for holding said paper roll spindle such that an edge of a roll of paper thereon is directly aligned with an intermediate portion between opposite edges of tape carried by said tape roll holder; an applicator roller rotatably mounted on said frame and adapted to rotatably press tape and paper on a surface; and an idler roller having a periphery disposed in close proximity to said applicator roller so as to press said tape and said edge of said paper together as said paper and tape progresses between said applicator roller and said idler roller; the axially offset disposition of said roll of tape being such that substantially half of the width of said tape overlaps an edge of paper dispensed from said roll of paper so as to allow the remaining half of said tape to adhere to a surface beyond the edge of said paper when dispensed and rolled onto said surface.



3,950,215
HONEYCOMB MATERIALS

Desmond Deverell White, Dyserth, England, assignor to Dufaylite Developments, Ltd., St. Neots, England

Filed Apr. 8, 1974, Ser. No. 458,956
Int. Cl.[2] B31D *3/02*
U.S. Cl. 156—558 2 Claims

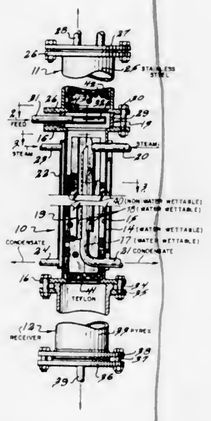


1. Apparatus for adhesively securing together slices of structural honeycomb material in the unexpanded state to form continuous expandable material which comprises a magazine for holding a supply of the slices and delivering them singly to supporting means at a ramming station, a guideway leading from the ramming station for receiving the slices from the ramming station and holding the received slices positively located, a ramming device for ramming the slices into and through the guideway in turn by ramming them by ramming force in their expansion direction against the reaction of slices previously rammed into the guideway and an adhesive applicator for applying to the slices, adhesive positioned to adhere the slices together as they are rammed through the guideway said adhesive applicator being carried by the ramming device and serving to transmit the ramming force of the ramming device to the slices.

3,950,216
FALLING FILM EVAPORATOR

Lester E. Bruns, Kennewick, Wash., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 18, 1974, Ser. No. 434,457
Int. Cl.² B01D *1/22, 1/00;* B22C *19/04, 13/04*
U.S. Cl. 159—13 R 2 Claims

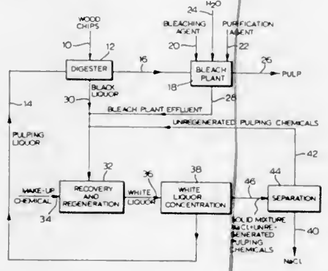


1. A falling film evaporator comprising a vertically oriented pipe heated exteriorly by a steam jacket and the space within said pipe interiorly by a vertically finned steam tube, all heating surfaces of said vertically oriented pipe and steam tube being formed of stainless steel which is wet by water, packing within the pipe consisting of Raschig rings formed of a polyvinylidene fluoride which is not wet by water, means for introducing a feed solution to the top of the vertically oriented pipe and means for venting vapors from the top & means for discharging concentration from the bottom of the pipe.

3,950,217
REMOVAL OF SODIUM CHLORIDE FROM PULPING OPERATIONS

Douglas W. Reeve, Orton, Canada, assignor to ERCO Envirotech Ltd., Islington, Canada

Filed Dec. 12, 1973, Ser. No. 423,998
Claims priority, application United Kingdom, Dec. 15, 1972, 58029/72; Mar. 22, 1973, 13726/73; May 31, 1973, 25985/73
Int. Cl.² D21C *3/26, 11/04, 11/12*
U.S. Cl. 162—19 43 Claims



1. A process of pulping cellulosic fibrous material including the steps of contacting said cellulosic fibrous material with a pulping liquor containing sodium hydroxide as an active pulping chemical, separating pulped material from spent pulping liquor, subjecting said spent pulping liquor to recovery and regeneration steps to provide a white liquor containing dissolved quantities of sodium hydroxide and unregenerated pulping chemicals including sodium carbonate and sodium sulphate, said white liquor also containing sodium chloride introduced to said recovery and regeneration steps, evaporating at least part of said white liquor to deposit therefrom (*a*) sodium chloride and (*b*) sodium carbonate and sodium sulphate constituting at least part of said unregenerated pulping chemicals, recovering at least part of the deposited sodium carbonate and sodium sulphate substantially free from sodium chloride from the deposited materials, forwarding at least part of said recovered substantially sodium chloride-free sodium carbonate and sodium sulphate to said spent pulping liquor, and separating and recovering sodium chloride from the deposited materials.

3,950,218
METHOD OF MANUFACTURING STABILIZED FLUFFY BATTS OF FIBERS AND RESULTING PRODUCT THEREFROM

Yvon George Levesque, Montreal, Canada, assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jan. 7, 1974, Ser. No. 431,280
Int. Cl.² D21H *3/00*
U.S. Cl. 162—201 12 Claims

1. A method of manufacturing stabilized, lightweight, fluffy uniform batts of wood pulp fibers comprising: treating a first surface of wood pulp board with a first material, treating a second surface of wood pulp board with a second material capable of reacting with said first material, said surface treatments leaving from 40 percent to 80 percent untreated wood pulp fibers in the pulp board, said surface treatments applied in amounts sufficient to stabilize said batt of fibers upon the reaction of said first and second materials, grinding the treated wood pulp board to individualize the fibers therein and place the reactive materials in contact with each other, reacting said materials and collecting the individualized fibers in the form of a uniformly stabilized, lightweight, fluffy batt of said fibers.

3,950,219
METHOD OF MANUFACTURING A STABILIZED FLUFFY BATT OF FIBERS AND PRODUCTS RESULTING THEREFROM

Yvon George Levesque, Montreal, Canada, assignor to Johnson & Johnson, New Brunswick, N.J.

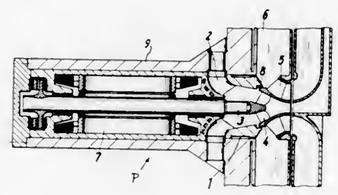
Filed Jan. 7, 1974, Ser. No. 431,534
The portion of the term of this patent subsequent to Apr. 13, 1993, has been disclaimed.
Int. Cl.² D21H *3/00*
U.S. Cl. 162—201 8 Claims

1. A method of manufacturing a fluffy, light weight, uniformly stabilized batt of wood pulp fibers comprising; applying to a surface of wood pulp board a material capable of being activated to adhere adjacent wood pulp fibers together, said material penetrating through only a portion of the depth of said board in a sufficient amount to adhere the fibers together in the formed batt, grinding said treated wood pulp board to individualize and uniformly disperse the fibers and said material, collecting said individualized fibers and material in the form of a fluffy, light weight batt of wood pulp fibers having uniformly distributed throughout the batt said material and treating said batt to activate the material to cause adjacent fibers to adhere together and uniformly stabilize the batt.

3,950,220
INTERNAL PRIMARY RECIRCULATING PUMP FOR BOILING WATER REACTORS

Hans Holz, Frankenthal, Germany, assignor to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal (Pfalz), Germany

Filed Mar. 23, 1973, Ser. No. 344,368
Int. Cl.² G21C *15/00*
U.S. Cl. 176—65 8 Claims



1. In a nuclear reactor, particularly in a boiling water reactor, a combination comprising a pressure vessel having an opening; and an internal recirculation pump having a body a portion of which extends into said opening and is provided with an annular chamber for reception of feed water, a shaft rotatably mounted in said body and extending into said opening, a turbine mounted on said shaft in the path of flow of feed water from said chamber into said pressure vessel, a pump rotor supported by and surrounding said turbine for circulating said feed water in said vessel, and an electric motor supported by said body and arranged to drive said shaft, whereby said turbine prolongs the interval of deceleration of said rotor to zero speed in the event of failure of current supply to said motor.

3,950,221
PROCESS FOR IMPROVING THE QUALITY OF MICROBIAL RENNET

Yoshitaka Kokusho, Kunitachi; Susumu Higashi, Fuchu; Haruo Machida, and Shinjiro Iwasaki, both of Hino, all of Japan, assignors to Meito Sangyo Kabushiki Kaisha, Nagoya, Japan

Filed July 22, 1974, Ser. No. 490,278
Claims priority, application Japan, Aug. 2, 1973, 48-86396
Int. Cl.² C07G *7/02;* A23C *19/00*
U.S. Cl. 195—65 4 Claims

1. A process for improving the quality of microbial rennet which can be used for making cheese from milk by inactivating cellulase impurities in microbial rennet which comprises heat-treating microbial rennet at a temperature of from about 45° to about 90°C. in an aqueous medium in the presence of at least 5% by weight of sodium chloride.

3,950,222
METHOD OF IMMOBILIZING ENZYMES TO MICROBIAL CELLS

Yoshiyuki Takasaki, Chiba, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 1, 1974, Ser. No. 447,086
Claims priority, application Japan, Mar. 7, 1973, 48-27255
Int. Cl.² C12D *13/10;* C07G *7/02;* C12D *13/02*
U.S. Cl. 195—68 6 Claims

1. A method for the immobilization of an enzyme on microorganic cells which comprises the steps of first treating said microorganic cells with a di-isocyanate reagent to produce microorganic cells each having a free functional group, and only thereafter reacting the microorganic cells having free functional groups thus obtained with an enzyme to immobilized said enzyme on said microorganic cells.

3. A method of making microorganic immobilized-enzyme cells comprising the steps of:

a. first reacting microorganic cells selected from the group which consists of mold and Actinomycetes cells with a di-isocyanate to affix said di-isocyanate with one of its functional groups to said cells while leaving another functional group of said di-isocyanate available for reaction; and

b. only thereafter contacting the cells having said di-isocyanate affixed thereto with an enzyme reactive with said other group and selected from the group which consists of glucose isomerase, glucoamylase, α-amylase, β-amylase, isoamylase, pullulanase, invertase, galactosidase, cellulase, lipase, protease, glucose oxidase and catalase to immobilize said enzyme on said cells.

3,950,223
STABILIZING AND ENHANCING UROKINASE ACTIVITY

Yasumi Yugari, Kamakura, and Kenji Takezawa, Yokohama, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Dec. 7, 1973, Ser. No. 422,789
Claims priority, application Japan, Dec. 7, 1972, 47-122809
Int. Cl.² C07G *7/02*
U.S. Cl. 195—68 6 Claims

1. A method which comprises adding a water soluble amine selected from the group consisting of amino sugars and cationic surfactants to an aqueous media containing urokinase while maintaining the pH at from 4 to 11 in an amount sufficient to stabilize and enhance the urokinase activity in said media;

a. the amino sugars being selected from the group consisting of hexosamines and N-acyl derivatives thereof;

b. the cationic surfactants being selected from the group consisting of
tetraalkylammonium salts
cethyltrimethylammonium salts
stearyl-trimethyl-ammonium salts
higher alkyl-aralkyl quaternary ammonium salts
higher alkyl-dimethyl-benzyl-ammonium salts
dimethyl-benzyl-lauryl ammonium salts
higher alkyl aryl quaternary ammonium salts
higher alkyl-dimethyl-phenyl ammonium salts
aryl-aralkyl-alkyl-quaternary ammonium salts
dimethyl-phenyl-benzyl ammonium salts
higher alkylpyridinium salts
laurylpyridinium salts and
polyalkyl-naphthalene methylpyridinium salts,
wherein said alkyl group is a lower alkyl group containing up to 6 carbon atoms or a higher alkyl group containing from about 11 to 20 carbon atoms, and said aryl group being phenyl.

3,950,224
METHOD FOR CLONING FILAMENTOUS MICROORGANISMS

Calvin B. Ward, Kensington, and Robert D. Bruner, Richmond, both of Calif., assignors to Cetus Corporation, Berkeley, Calif.

Filed Sept. 3, 1974, Ser. No. 502,441
Int. Cl.² C12B *1/00*
U.S. Cl. 195—76 10 Claims

1. A method for cloning filamentous microorganisms, comprising, suspending the microorganisms in liquid media, subjecting the microorganisms in suspension to a fragmentation procedure to produce a substantial increase in the number of viable filaments having less than a predetermined size, and filtering the suspension of filaments through a filter having pores of a size for which there is a likelihood of passing substantially only those filaments having less than the predetermined size, said predetermined size being selected such that colonies grown from such filaments will be predominantly genetically pure.

3,950,225
MEDIUM, COMPONENT THEREOF AND PROCESS EMPLOYING SAME FOR THE PRODUCTION OF MICROBIAL INSECTICIDES, SUCH AS *BACILLUS POPILLIAE* SPORES AND THE LIKE, FOR THE CONTROL OF JAPANESE BEETLES AND OTHER INSECTS

Richard David Skole, Elmhurst, N.Y., and Anthony Benny Rizzuto, Piscataway, N.J., assignors to Amstar Corporation, New York, N.Y.

Filed Oct. 15, 1974, Ser. No. 514,473
Int. Cl.² C12K *1/10*
U.S. Cl. 195—96 **10 Claims**

1. A method of sporulating a microorganism capable of undergoing sporulation which comprises incubating said microorganism in a medium containing filtered cane sugar refinery animal char waste water.

3,950,226
NOVEL REAGENT AND METHOD FOR THE DETERMINATION OF UREA IN BIOLOGICAL FLUIDS

Moon Ki Chang, 1262 Barrington Ave., Apt. 105, Los Angeles, Calif. 90025

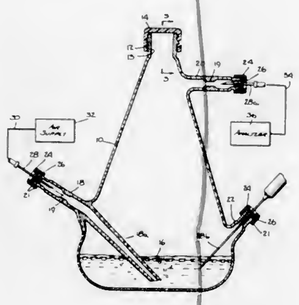
Filed Oct. 31, 1974, Ser. No. 519,600
Int. Cl.² C12K *1/04*
U.S. Cl. 195—103.5 R **12 Claims**

1. A novel composition for the determination of the urea level in biological fluids comprising urease, buffers and an indicator dye, the improvement wherein said buffers are mixed buffers comprising at least one buffer which increases in pH as the temperature increases and at least one other buffer which decreases in pH as the temperature increases.

3,950,227
BATCH METHOD OF ESTABLISHING AND MAINTAINING A CONTROLLED AEROBIC ENVIRONMENT FOR A MICROBIAL CULTURE

Constantine Efthymiou, Kew Gardens, N.Y., assignor to St. John's University, New York, N.Y.

Division of Ser. No. 99,952, Dec. 21, 1970, Pat. No. 3,793,154. This application Dec. 12, 1973, Ser. No. 424,083
Int. Cl.² C12B *1/14*
U.S. Cl. 195—109 **1 Claim**



1. A batch method of establishing and maintaining a controlled aerobic environment for a microbial culture in a liquid medium present within a sealable vessel having an input tube extending from without the vessel to a point within the vessel near the bottom surface thereof, and having further an outlet tube extending through the wall of the vessel at a point above the lowest point of the input tube, said method comprising the steps of

introducing the liquid medium into the vessel in a quantity sufficient to establish the level of the medium above the lowest point of the input tube and below the intersection of the outlet tube with the wall of the vessel;

introducing the microbial culture to the liquid medium;

permitting the culture in the medium to incubate while introducing a metered oxygen-containing gas into the vessel through the input tube so that the gas bubbles up through the liquid medium to dissolve the oxygen into the liquid medium while substantially precluding entry to or exit from the vessel of other gases or liquids, except exit of gases via the outlet tube;

shaking the vessel during incubation;

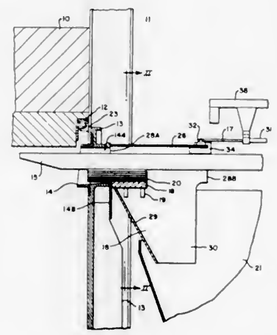
permitting gases above the surface of the liquid medium to exit from the vessel through the outlet tube, while substantially precluding entry to or exit from the vessel of other gases or liquids, except for the entry of the oxygen-containing gas via the input tube; and

directing the effluent gas to an analyzer in a precise volume and analyzing the gas for the gaseous products of metabolism.

3,950,228
LEVELING ARRANGEMENT FOR COKE OVENS

Friedrich-Wilhelm Drebes, Bochum, Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Germany

Filed Apr. 1, 1974, Ser. No. 457,107
Claims priority, application Germany, Apr. 7, 1973, 2317685
Int. Cl.² C10B *29/00, 45/00*
U.S. Cl. 202—270 **6 Claims**



1. In a battery of coke ovens, an apparatus to level coal in a coke oven chamber having a removable door for closing the machine side of the oven chambers, said removable door having an opening therein, said apparatus comprising:

a leveling rod including drive means supported for movement along the battery of coke ovens,

a frame surrounding said opening in said removable door,

means for selectively closing the opening in said removable door,

hood means including a wall defining spaced front and back openings whereby the hood means forms a horizontal extension to the opening surrounded by said frame when the hood means is operatively positioned into a sealed relation with said frame to thereby enclose a portion of said leveling rod during its movement into a coking chamber, the wall of said hood means including a roof joined by spaced-apart side walls to a diagonally-sloping floor wall having a front edge commencing at said front opening, said diagonally-sloping floor wall diverging from said roof with the lower edge of the floor wall being extended in a direction away from the coke oven chamber and forming part of said back opening.

a bin arranged in a material receiving relation below said diagonally-sloping floor wall for movement along the battery of coke ovens with said leveling rod,

a support member secured to said hood means and extending between said side walls above said diagonally-sloping floor wall, the upper edge surface of the support member being permanently arranged at an elevation within said hood such that it is essentially flush with the lower edge of said frame,

a plurality of bracket plates to support said leveling rod while the bracket plates are carried by said support member, said leveling rod being displaceable into an oven chamber upon the top surface of the uppermost plate, said plurality of bracket plates being arranged one on top of the other and the aggregate height thereof as defined by the thicknesses of said plates is changeable to thereby define one of different preselected elevations at which the leveling rod operates within the oven chamber for leveling a coal charge therein, said bracket plates being constructed to support said leveling rod internally and externally of a coke oven chamber by extending through the opening surrounded by said frame, and

fastening means for attaching said bracket plates to said support member.

3,950,229
PURIFICATION OF ADIPONITRILE

Colin Moore, and Michael Joseph Thornton, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 22, 1974, Ser. No. 463,128
Claims priority, application United Kingdom, Apr. 24, 1973, 19272/73
Int. Cl.² B01D *3/34*
U.S. Cl. 203—38 **6 Claims**

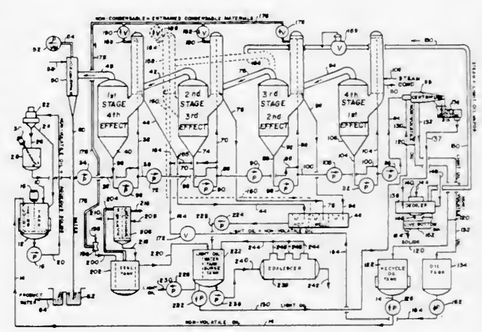
1. A process for separating adiponitrile from 2-cyanocyclopenten-(1)-ylamine, 5-cyanovaleric acid, or both present as impurities in adiponitrile which comprises reacting said impurities with an amine having a boiling point in excess of 100°C at atmospheric pressure and differing in boiling point from adiponitrile at a given pressure by more than ±20°C, said amine being selected from the group consisting of hexamethylene diamine, 1,2-diaminocyclohexane, bis-hexamethylene triamine, and the high boiling residue obtained from the distillation of hexamethylene diamine manufactured by hydrogenation of adiponitrile, to give compounds of higher boiling point than adiponitrile, by contacting the impure adiponitrile with said amine in an amount of from 0.1 to 10 times the weight of said impurity at from 0° to 250°C for 10 minutes to 48 hours, and fractionally distilling to separate adiponitrile from the resulting mixture.

3,950,230
PROCESS AND APPARATUS FOR RECOVERING RESIDUAL OIL FROM SOLIDS DEHYDRATED IN AN OIL MEDIUM AND GROSSLY DEOILED

Charles Greenfield, Murray Hill; Robert E. Casparian, Boonton, and Anthony J. Bonanno, Parsippany, all of N.J., assignors to Hanover Research Corporation, East Hanover, N.J.

Continuation-in-part of Ser. No. 318,424, Dec. 26, 1972, Pat. No. 3,855,079. This application Oct. 3, 1974, Ser. No. 511,825
Int. Cl.² B01D *3/00, 21/00*
U.S. Cl. 203—47 **18 Claims**

10. An apparatus for recovering clean water and dry, essentially oil-free solids from aqueous solids, said apparatus comprising (1) a tank adapted to receive a stream of said aqueous solids and provided with a stirring or mixing mechanism, (2) a fluidizing oil reservoir, (3) a conduit for transmitting fluidizing oil from said oil reservoir to said tank wherein fluidizing oil and aqueous solids may be mixed, (4) an evaporator disposed to be supplied with evaporative heat, (5) a conduit extending from said tank to said evaporator wherethrough may flow a stream of aqueous solids admixed with fluidizing oil from said tank into the evaporating region of said evaporator, (6) a condenser, (7) a conduit extending from said evaporator to said condenser through which may flow water vapor formed as a result of heating of said aqueous solids and fluidizing oil mixture, (8) means for withdrawing water vapor condensate from said condenser as a clean water product, (9) a liquid-solid separating means, (10) a conduit extending from said evaporator to said liquid-solid separating means wherethrough may flow a stream of a substantially anhydrous slurry of solids in fluidizing oil, (11) a light oil reservoir, (12) a conduit extending from said light oil reservoir to said liquid-

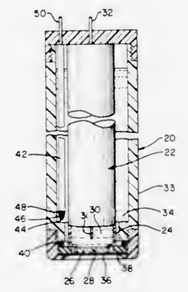


solid separating means wherethrough may flow a stream of light oil from said reservoir to said liquid-solid separating means wherein said light oil may extract residual fluidizing oil remaining on said solids after separation of fluidizing oil therefrom, (13) a deoiler means disposed to receive blowing steam to come into direct contact with any light oil-laden solids therein, and (14) a conduit extending from said liquid-solid separating means to said deoiler means wherethrough may flow a stream of light oil-laden solids.

3,950,231
METHOD OF DETERMINING HYDROGEN CYANIDE

Martin S. Frant, Newton; John H. Riseman, and John A. Krueger, both of Cambridge, all of Mass., assignors to Orion Research Incorporated, Cambridge, Mass.

Division of Ser. No. 349,224, April 9, 1973, Pat. No. 3,859,191. This application Aug. 30, 1974, Ser. No. 502,171
Int. Cl.² G01N *27/46*
U.S. Cl. 204—1 R **11 Claims**



1. Method of determining the hydrogen cyanide content of a sample solution comprising the steps of;

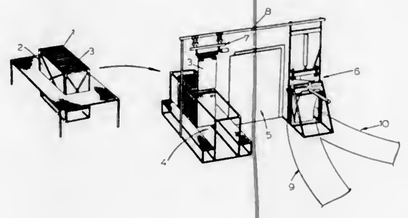
diffusing said hydrogen cyanide into an electrolyte through a membrane which is permeable to said hydrogen cyanide but substantially impermeable to liquids and ionic constituents thereof, and

measuring the cyanide ion activity in said electrolyte with a potentiometric ion selective electrode.

3,950,232
PROCESS FOR REMOVING ELECTRODEPOSITS

Colin Walter Nightingale, Liverpool; Georg Paul Richard Bielstein, London; David Alexander Taylor, Kenton-Middlesex, and William Nelson, Birkenhead, all of England, assignors to British Copper Refiners Limited, London, England

Filed Feb. 4, 1974, Ser. No. 439,025
Int. Cl. C25d *1/04*
U.S. Cl. 204—12 11 Claims



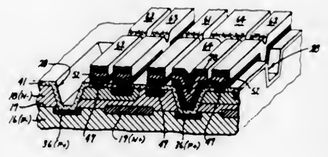
1. A method of electrolytically refining metal by the series process which comprises immersing unrefined electrodes in an electrolyte solution contained in a tank; passing a direct current through the electrolyte to cause impure metal from one of the electrodes to be dissolved in the electrolyte solution and deposited as pure metal on another of the electrodes, to form partially refined intermediate electrodes each having adjacent one of its boundary edges an unrefined boundary portion; removing the electrodes from the tank before all the impure metal has been dissolved therefrom; passing each electrode so formed in turn through apparatus in which the electrode is supported with its unrefined boundary portion gripped by clamping means; effecting limited relative movement between said clamping means and the partially refined portion of the electrode so that said unrefined boundary portion is moved from the plane of said partially refined portion of the electrode into a plane intersecting said first mentioned plane in a line substantially parallel to the boundary between the partially refined portion and unrefined boundary portion, in such a direction that impure metal adjoining said unrefined boundary portion peels from pure metal adjacent said unrefined boundary portion to form a split along the plane of weakness between the pure and impure metal; introducing a separating device into the split so formed between the pure and impure metal; and moving the separating device relative to the electrode in such a direction and to such an extent as to cause complete separation of the pure and impure metals of the electrode.

3,950,233
METHOD FOR FABRICATING A SEMICONDUCTOR STRUCTURE

Warren C. Rosvold, Sunnyvale, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Division of Ser. No. 381,040, July 30, 1973, Pat. No. 3,911,474. This application July 1, 1974, Ser. No. 484,799
Int. Cl.² C25D *5/02, 5/10*
U.S. Cl. 204—15 9 Claims

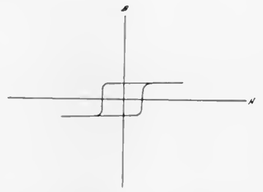
1. In a method for fabricating a semiconductor structure, providing a semiconductor body having a planar surface and having regions of first and second conductivity types extending to said surface, forming a layer of insulating material on the surface of the semiconductor body, forming openings in said layer of insulating material to expose portions of said regions extending to said surface and forming a lead structure on said layer of insulating material and extending into said openings to make contact with said portions of said regions, the forming of said lead structure including the step of electroforming a gold layer having a roughened surface with a roughness scale ranging from 10 to 20 microinches on the layer of insulating material.



3,950,234
METHOD FOR ELECTRODEPOSITION OF FERROMAGNETIC ALLOYS AND ARTICLE MADE THEREBY

John P. Faulkner, Thousand Oaks, and Dennis S. Morton, Simi Valley, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 29, 1974, Ser. No. 518,352
Int. Cl.² C25D *3/56*; G11C *11/02*
U.S. Cl. 204—43 P 33 Claims



1. An aqueous electrolytic plating solution comprising:
cobaltous ion in the range of from about 3 to about 15 grams per liter;
nickelous ion in the range of from about 30 to about 50 grams per liter, the ratio of nickelous ion to cobaltous ion being in the range of from about 3:1 to about 15:1; and
orthophosphite ion in the range of from about 3 to about 12 grams per liter;
said solution having a pH in the range of from about 3.5 to about 4.7 and being substantially free of hypophosphite ion, copper and iron.

15. A process for depositing a ferromagnetic recording film on an electrically conductive substrate comprising passing a plating current in the range of from about 10 to about 120 amperes per square foot through the substrate as a cathode in an aqueous electrolyte at a temperature in the range of from about 70 to about 140° F; said electrolyte having a pH in the range of from about 3.5 to about 4.7 and comprising cobaltous ion in the range of from about 3 to about 15 grams per liter; nickelous ion in the range of from about 30 to about 50 grams per liter, the ratio of nickelous ion to cobaltous ion being in the range of from about 3:1 to about 15:1; and orthophosphite ion in the range of from about 3 to about 12 grams per liter; and being substantially free of hypophosphite ion, copper and iron.

28. An article comprising a structure having therein a ferromagnetic coating having a coercivity in the range of from about 90 to about 800 oersteds, a retentivity in the range of from about 1000 to 7500 gauss, and a hysteresis loop having an essentially vertical side and a knee radius R_2 less than about 1/16 inch on a scale wherein 1½ inch equals about 1000 oersteds and 1½ inch equals about 10,000 gauss, and deposited according to the process of claim 15.

3,950,235
ELECTROLYTIC METHOD OF PRODUCING BRANCHED PERFLUORO-ALKANES

Siegfried Benninger, Schwalbach, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 433,473, Jan. 15, 1974, abandoned. This application Nov. 15, 1974, Ser. No. 524,345
Claims priority, application Germany, Jan. 17, 1973, 2302132
Int. Cl.² C25B *3/08*
U.S. Cl. 204—59 F 6 Claims

1. A method for making a branched perfluoroalkane by electrofluorination in an electrolytic cell, which method comprises continuously or discontinuously electrolyzing an electrolyte, consisting essentially of anhydrous hydrogen fluoride and of at least one branched perfluoro-olefin having 6 to 12 carbon atoms, at a temperature from 0° to 20°C. and at a voltage from 4 to about 6.6 volts.

3,950,236
PRODUCTION OF ANGULAR ALKYLATED POLYCYCLIDES BY ELECTROCHEMICAL ANNELATION

Larry L. Miller; Frank R. Stermitz, both of Fort Collins, Colo., and J. Russell Falck, Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of Health, Education and Welfare, Washington, D.C.

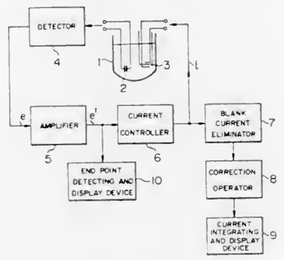
Filed July 24, 1974, Ser. No. 491,610
Int. Cl.² C25B *3/02*
U.S. Cl. 204—78 6 Claims

1. An electrochemical process for producing angular alkylated polycyclides comprising oxidizing a lower alkyl substituted alkoxy bibenzyl compound in an acetonitrile electrolyte in the presence of lithium perchlorate background electrolyte at a voltage of from 0.80 V to 2.25 volts.

3,950,237
COULOMETRIC TITRATING DEVICES

Kiyoshi Arawa, and Seiji Ishikawa, both of Kitakyushi, Japan, assignors to Mitsubishi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 424,280, Dec. 13, 1973, abandoned. This application Mar. 31, 1975, Ser. No. 563,476
Claims priority, application Japan, Dec. 14, 1972, 47-125488
Int. Cl.² G01N *27/42*
U.S. Cl. 204—195 T 14 Claims



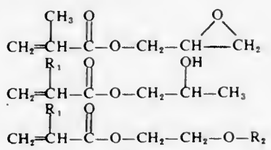
1. In an electric quantity titrating device of the type comprising electrolytic electrodes immersed in a solution of a substance to be analyzed for passing electrolytic current through said solution, detecting electrodes immersed in said solution, detecting means connected across said detecting electrodes for producing a voltage signal which is used to continuously supply said electrolytic current to said electrolytic electrodes and means for integrating said electrolytic current for measuring the electric quantity required for the analysis until an end point is reached, the improvement which comprises: means for controlling electric current including means for detecting the deviation of said voltage signal from a preset value thereof at the end point, an amplifier for amplifying the deviation signal, a current converter for converting the amplified signal into output current, and means for supplying said output current to said electrolytic electrodes, and wherein said integrating means includes means for converting the output from said current converter into a pulse train, and means for counting said pulse train.

3,950,238
RADIATION CURED ACRYLONITRILE-BUTADIENE ELASTOMERS

Roger J. Eldred, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 9, 1974, Ser. No. 496,146
Int. Cl.² C08F *8/00*; C08L *9/02*
U.S. Cl. 204—159.15 3 Claims

1. An acrylonitrile-butadiene elastomeric composition having improved elongation properties comprising the high energy electron beam radiation-induced reaction product of, by weight:
a. 100 parts of an acrylonitrile-butadiene random copolymer consisting of from 30 to 45% acrylonitrile,
b. from 15 to 80 parts of carbon black,
c. from 4 to 16 parts of trimethylolpropanetrimethacrylate, and
d. a polymerizable noncrosslinking monomer selected from the group consisting of

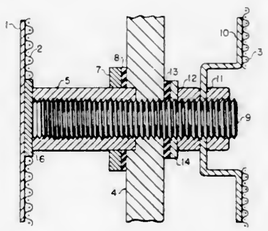


wherein R_1 may be —H or $—CH_3$, and R_2 may be —H or an alkyl group having up to 10 carbon atoms wherein the mole ratio of noncrosslinking monomer to trimethylolpropanetrimethacrylate is within the range of 1.0 to 1.4, and wherein said trimethylolpropanetrimethacrylate, said noncrosslinking monomer and said carbon black are initially uniformly dispersed throughout said copolymer.

3,950,239
ELECTRICAL CONNECTOR FOR BIPOLAR ELECTRODES

Wilfredo E. Figueras, Amherst, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed July 24, 1974, Ser. No. 491,191
Int. Cl.² C25C *7/00, 7/02*
U.S. Cl. 204—254 4 Claims



1. A bipolar electrolytic filter press cell for the electrolytic decomposition of ionizable chemical compounds which comprises a cell housing containing a plurality of cell units made

up of anode compartments each containing a bipolar cathode element, said compartments being separated within the cell housing by a membrane member, each anode compartment being maintained in spaced relationship with the cathode compartment of the adjoining cell unit by an electrically inactive cell separator which prevents electrolyte and gas flow from one cell unit to the adjoining cell unit, and means for transferring electrical energy from the anode element to the cathode element of the adjoining cell unit, said means comprising

1. an electroconductive cylinder member, having a cap on one end, fixedly attached to, and in electrical contact with, said anode element at said capped end and extending from said anode element to said cell separator,
2. said cylinder member having a collar positioned around the periphery thereof, said collar being positioned contiguous to said cell separator,
3. a gasket member positioned between said collar and said cell separator preventing electrolyte and gas leakage through said cell separator,
4. an electroconductive rod extending through said cell separator one end of said rod adjustably engaged, and in electrical contact with, the inside of said cylinder member,
5. the other end of said rod being mechanically attached, and in electrical contact with said cathode member.

3,950,240

ANODE FOR ELECTROLYTIC PROCESSES

Arthur S. Cookfair, Tonawanda; Donald E. Stephens, and Tilak V. Bommaraju, both of Grand Island, all of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed May 5, 1975, Ser. No. 574,477
Int. Cl.² C25B *1/26, 1/34, 11/10*
U.S. Cl. 204—290 F **17 Claims**

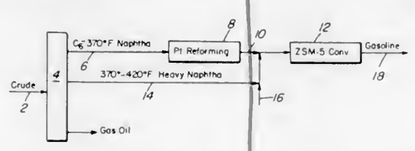
1. An electrode comprising an electroconductive substrate and a coating thereon of tin oxide containing as a doping agent niobium in the amount of about 0.1 to about 15 mole percent based on the moles of tin and having an electrocatalytic material present at the outer surface of said coating.

3,950,241

METHOD FOR UPGRADING A WIDE CUT NAPHTHA TO FULL RANGE GASOLINE

John C. Bonacci, Cherry Hill, and William E. Garwood, Haddonfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed June 24, 1974, Ser. No. 482,537
Int. Cl.² C10G *37/00*
U.S. Cl. 208—64 **11 Claims**



1. A method for improving the octane rating of a full boiling range naphtha to gasoline produce which comprises,

separating a full range naphtha to recover a low boiling naphtha fraction thereof substantially free of dicyclic naphthenes from a higher boiling naphtha fraction containing said dicyclic naphthenes,

reforming said low boiling fraction under conditions of severity selected to increase the octane rating of gasoline boiling range product,

combining the product of the reforming operation with said higher boiling naphtha fraction containing dicyclic naphthenes and passing the combined materials comprising product of reforming and said higher boiling naphtha fraction in contact with a ZSM-5 type crystalline zeolite catalyst under exothermic temperature conditions within the range of 500° to 900°F.

3,950,242

FLUID CATALYTIC CRACKING PLUS SELECTIVE UPGRADING OF CRACKED GASOLINE

William E. Garwood, Haddonfield; Donald M. Nace, Woodbury, and Hartley Owen, Belle Mead, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 2, 1974, Ser. No. 457,282
Int. Cl.² C10G *37/10*
U.S. Cl. 208—70 **6 Claims**

1. A method for producing gasoline boiling range product which comprises,

cracking a petroleum fraction boiling from about 400°F. to about 1100°F. in the presence of a crystalline zeolite cracking catalyst under conditions of temperature, pressure, space velocity and catalyst to oil ratio providing a conversion level of at least

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3,950,243

HYDROCARBON CONVERSION WITH AN ACIDIC SULFUR-FREE MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 14, 1975, Ser. No. 558,503
Int. Cl.² C10G *35/08*
U.S. Cl. 208—139 **19 Claims**

1. A process for catalytically reforming a gasoline fraction which comprises contacting said fraction at reforming conditions which include a temperature of about 800° to about 1100°F and a pressure of about 0 to about 1000 psig, with an acidic sulfur-free catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.1 to about 5 wt. % nickel, about 0.01 to about 2 wt. % rhenium, and about 0.1 to about 3.5 wt. % halogen, wherein the platinum group metal, nickel, and rhenium are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum group metal is present in the elemental metallic state, and wherein substantially all of the nickel and rhenium are present in the elemental metallic state or in a state which is reducible to the elemental metallic state under hydrocarbon conversion conditions or in a mixture of these states.

3,950,244

PROCESS FOR TREATING A SOLID-CONTAINING LIQUID HYDROCARBON OIL

Sun W. Chun, Murrysville; Donald C. Cronauer, Gibsonia, and Thomas W. Leslie, Blawnox, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 441,604, Feb. 11, 1974, Division of Ser. No. 226,503, Feb. 15, 1972, abandoned. This application June 24, 1974, Ser. No. 482,079
Int. Cl.² C10G *23/00*
U.S. Cl. 208—143 **13 Claims**

1. A process for the conversion of solid-containing liquid hydrocarbon oils, said solids containing in excess of about 50 weight per cent of inorganic components, which comprises introducing said solid-containing liquid hydrocarbon oils and hydrogen into a reaction vessel comprising a plurality of reaction zones separated by porous partitions, a portion of said zones containing a solid particulate hydrogenation catalyst which will not pass through said porous partitions and the remainder of said zones forming substantially unobstructed passageways through said reaction vessel and passing said liquid hydrocarbon oils and hydrogen through said unobstructed passageways and through said porous partitions into contact with said catalyst under hydrogenation conditions, whereby hydrogenation of said liquid hydrocarbon oils takes place.

3,950,245

METHOD OF BREAKING DOWN OIL EMULSIONS

Vagab Safarovich Aliev, ulitsa Nizami, 66, kv. 40; Natalia Borisovna Altman, ulitsa Patrisa Lumumby, 31, kv. 45, both of Baku; Pavel Petrovich Galonsky, Naberezhnaya Shevchenko, 1/2, kv. 80, Moscow; Alexandr Davidovich Guterman, ulitsa Patrisa Lumumby, 31, kv. 45, Baku; Lia Vasilievna Malina, ulitsa Krzhizhanovskogo, 2, kv. 51, Elektrogorsk Moskovskoi oblasti; Rafkhat Shagimardanovich Mingareev, ulitsa Bolshaya Bronnaya, 29, kv. 75, Moscow; Alekper Bagirovich Suleimanov, ulitsa Sameda Vurguna, 85, kv. 75, Baku, all of U.S.S.R.; Mansur Ilal ogly Akhmedov, deceased, late of Baku, U.S.S.R., and by Elmira Mamed Emin kyzy Ramazanova, administrator, prospekt Lenina, 16/21, kv. 10, Baku, U.S.S.R.

Filed June 28, 1974, Ser. No. 484,632
Int. Cl.² C10G *33/00*
U.S. Cl. 208—187 **3 Claims**

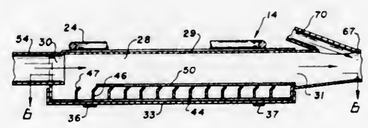
1. A method of breaking down oil emulsions, which comprises heating the oil emulsion to be broken to a temperature of from 40° to 70°C; bubbling air through said heated oil emulsion at the rate of from 0.1 to 10 nm^3 per 1 m^3 of the oil emulsion until total breakdown of the emulsion as a result of oxidation of the natural oil emulsifying agents contained therein; settling the mixture to provide for the separation of oil and water; and separating the oil from the water layer.

3,950,246

DREDGE UNITS

Dieter G. A. Klefisch, 1021 Bridgeport Road, Richmond, British Columbia, Canada (V6X 1S9)

Claims priority, application Canada, Oct 25, 1974, 212320
Filed Dec. 10, 1974, Ser. No. 531,389
Int. Cl.² B03B *5/26*
U.S. Cl. 209—44 **16 Claims**



1. A portable dredge unit comprising a frame formed by upper and lower rings interconnected by spacers, an inflatable buoyancy tube fitting between the rings and against the spacers to support the frame on a body of water, a substantially horizontal sluice box, means connected to said frame and the sluice box to suspend said box immediately below the frame, said box having an inlet end and an outlet end, a suction hose operatively connected to the inlet end of the box, a riffle and mat arrangement along the bottom of the sluice box, and a water suction system connected to the outlet end of the box and discharging into said outlet end in the direction away from the box to draw water through said suction hose and the box and to discharge the water therefrom, whereby operation of the suction system draws water and material through the suction hose and over the riffle and mat arrangement where material of relatively high specific gravity is retained in said riffle and mat system, and discharges the remainder of the material and the water.

3,950,247

SEPARATION PROCEDURE

Robert Chiang, Ballwin, and Eli Perry, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 46,801, June 16, 1970, abandoned. This application Oct. 20, 1971, Ser. No. 191,097
Int. Cl.² B01D *13/00*
U.S. Cl. 210—23 R **6 Claims**

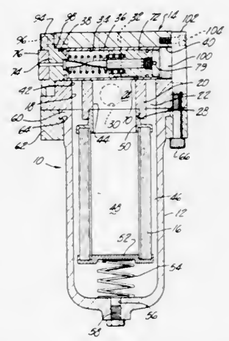
1. Process for the separation of water from feed mixtures comprising water and formaldehyde which comprises contacting the aforesaid mixture against one side of a polyvinylchloride membrane and withdrawing, at the second side, a vaporous mixture having a higher concentration of water than the aforesaid feed mixture, with the mixture at second side being maintained at a lower chemical potential than the feed side.

3,950,248

FLUID FILTERING DEVICE

Carl A. Brown, and Martin K. Kleine, both of West Bloomfield, Mich., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Apr. 11, 1974, Ser. No. 460,101
Int. Cl.² B01D *35/14*
U.S. Cl. 210—90 **2 Claims**



1. In a fluid filter device having a housing with a fluid inlet passage and a fluid outlet passage and having a filter element positioned in a fluid pathway between said inlet and outlet passages; the improvement which comprises:

a bore in the housing communicating with said inlet passage and having an intermediate portion thereof communicating with the outlet passage and having the ends thereof closed by covers detachably connected to the housing,

a hollow cylinder in the bore provided with a first aperture which effects fluid communication between the interior of said cylinder and said inlet passage and provided with a scond aperture which, when open, effects fluid communication between the interior of said cylinder and said outlet passage and hence provides a fluid pathway between said inlet and outlet which by-passes said filter;

a piston mounted on guide means in said cylinder for reciprocal movement within said cylinder and adapted to move responsively to fluid pressure from a first position where it closes said second aperture to a second position where said second aperture is open;

indicator means responsive to the position of said piston for indicating said fluid pressure;

and said cylinder being connected to one of said covers for removal from said bore when said one cover is detached from said housing,

wherein said cylinder is mountable in one position in said bore in which said second aperture is in register with said outlet passage to effect said communication between the interior of the cylinder and said outlet passage when the second aperture is open, and said cylinder is mountable

in another position in said bore in in which said second aperture is out of register with said outlet passage so that there is no communication between the interior of the cylinder and the outlet passage when the second aperture is open, and

wherein the one cover is attachable to the housing in a fixed position and said cylinder is attachable to said cover in either of said two mounting positions.

3,950,249

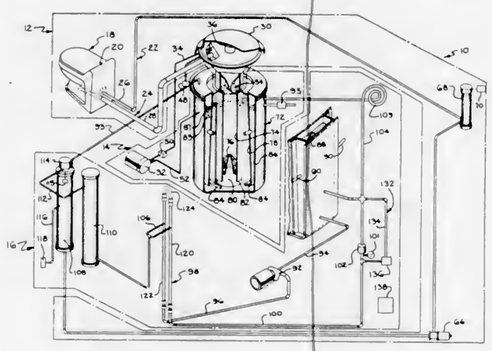
SANITARY WASTE TREATMENT PLANT

Leroy O. Eger, and Samuel C. Crosby, both of Jacksonville, Fla., assignors to Thetford Corporation, Ann Arbor, Mich.

Continuation of Ser. No. 435,735, Jan. 23, 1974, abandoned. This application Mar. 14, 1975, Ser. No. 558,306

Int. Cl.² B01D *13/00*; **C02C** *1/06*

U.S. Cl. 210—104 **20 Claims**



1. A water-recycling sanitary waste treatment plant comprising a delivery system, a biological treatment system and a water recovery system;

said delivery system including a flush-type toilet with a demand actuator and a bowl in which sanitary waste can be deposited, flush water supply means for transferring clear water from the water recovery system to the delivery system and for supplying the clear water as flush water under pressure to said bowl upon activation of said demand actuator, and delivery means for delivering the flush water and sanitary waste to said biological treatment system in response to activation of said demand actuator;

said biological treatment system including apparatus for reducing biologically the sanitary waste received from the delivery system and discharging an effluent to said water recovery system; and,

said water recovery system including ultrafiltration means for separation of said effluent into a water permeate and an effluent concentrate, said ultrafiltration means having a semipermeable tubular membrane into one end of which said effluent is introduced axially at a first pressure and from the other end of which said effluent concentrate is discharged, and a permeate collector tube that surrounds said tubular membrane for collecting at a lower second pressure permeate that passes radially through the membrane, recirculation means including a pump means for returning a portion of said effluent concentrate to said biological treatment system and for returning the remainder of said effluent concentrate at said first pressure to said ultrafiltration means for further separation into water permeate and effluent concentrate, water storage means, a secondary filtration means for receiving and polishing said water permeate, said secondary filtration means being in communication with said ultrafiltration means so that said permeate can be discharged at said second pressure from said ultrafiltration means to said secondary filtration means to be polished and discharged to said water storage means as clear water, and said water storage means being in communication with said delivery system for transfer thereto of the clear water by said flush water supply means.

3,950,250

APPARATUS FOR PURIFICATION OF INDUSTRIAL WASTE WATER

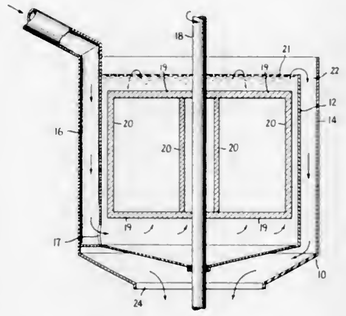
Knut Waldeman Jahnsen, Oslo, Norway, assignor to Elkem-Spigerverket A/S, Oslo, Norway

Filed Jan. 24, 1973, Ser. No. 326,567

Claims priority, application Norway, Feb. 4, 1972, 283/72

Int. Cl.² B01D *21/08*

U.S. Cl. 210—208 **3 Claims**



1. Apparatus for the treatment of industrial waste water containing cyanides and suspended material which comprises a mechanical flocculating container in which the cyanides and one or more chemical reagents are commingled to render the cyanides harmless for deposit in public waters and in which the suspended material is commingled with a flocculating reagent and flocculated simultaneously with the commingling of said cyanides and said one or more chemical reagents, said container having an inner compartment with side and bottom walls and an outer concentric compartment with side and bottom walls, the side and bottom walls of said outer compartment being spaced away from the side and bottom walls of said inner compartment to surround the inner compartment therein and provide space between the exterior of the side and bottom walls of said inner compartment and the interior of the side and bottom walls of said outer compartment, the entire bottom wall of said inner compartment being inside the outer compartment and spaced above the bottom wall of the outer compartment, said inner compartment having an inlet opening located in the bottom end portion thereof and said inner compartment being open at the top thereof, the rim at the top end portion of the side wall of said outer compartment being located above the top of the side wall of said inner compartment and in open communication with the open top of said inner compartment, said outer compartment having an outlet opening in the bottom wall thereof in open communication with the said space between the bottom walls of said inner and outer compartments, the said space between the bottom walls of the inner and outer compartments and the said opening in the bottom wall of said outer compartment being free of obstructions to provide in combination an unobstructed exit outlet passage for the flow of treated waste water, means for feeding waste water with cyanides and suspended material through the said inlet opening into the bottom end portion of said inner compartment, said inner compartment having agitation means therein and having a solid bottom wall and solid side wall which isolates the inner compartment from the outer compartment except for the open communication between the two compartments at the top thereof, whereby all of the waste water fed into the bottom end portion of said inner compartment will flow upwardly in one direction and into the top of said outer compartment where all of the waste water

and suspended material under the force of gravity will flow downwardly in a second direction in the said space between the side walls of said inner and outer compartments and in a third direction in the said space between the bottom walls of said inner and outer compartments and flow out through the outlet opening in the bottom of said outer compartment along with the flocculated material and treated cyanides which are thereby removed from said container.

3,950,251

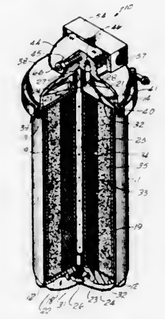
FILTER WITH QUICK-CONNECT COUPLING

Donald E. Hiller, Santa Barbara, Calif., assignor to Rayne International, Santa Barbara, Calif.

Filed Mar. 25, 1974, Ser. No. 454,405

Int. Cl.² B01D *27/08*

U.S. Cl. 210—232 **5 Claims**



1. A filtration assembly, comprising

an upright filter housing adapted to rest on a floor, and having an open upper end adapted to receive a replaceable modular filter;

a cover removably secured to and closing the upper end of the housing, the cover defining inlet and outlet conduits for circulating fluid through the housing, the conduits terminating at a first set of openings in a substantially vertical face of the cover;

an adapter block having inlet and outlet conduits adapted for connection to fluid supply and delivery lines, the conduits terminating at a second set of openings in a substantially vertical face of the block;

the first and second sets of openings respectively being substantially in mating alignment, one of the sets of openings being encircled by domed convex seats defined by the associated vertical face, and the other set of openings being encircled by resilient seals captively retained in recesses in the associated vertical face, whereby the assembled housing and cover can be fluid connected to and unconnected from the adapter block by horizontal movement of the housing and cover along the floor, and without requiring additional vertical clearance space; and

means for securing the block to the cover so the seals are urged together in mating engagement, whereby the domed convex seats effect a face seal against said seals and around the respective sets of respective openings.

3,950,252

UPFLOW FILTER

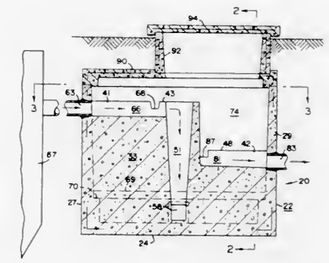
Edward J. Jordan, Mentor, and John R. Snyder, Eastlake, both of Ohio, assignors to Jet Aeration Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 449,735, March 11, 1974, abandoned. This application Mar. 17, 1975, Ser. No. 558,820

Int. Cl.² B01D *23/16*, *23/18*

U.S. Cl. 210—281 **8 Claims**

1. An upflow filter including in combination a generally rectangularly-shaped, cast, one-piece, concrete container having an open top, a bottom wall and four sidewalls, said container containing a concrete dividing wall integral with and extending between two opposed sidewalls of said container thereby forming first and second filtering chambers, said dividing wall having a first and a second end portion and an intermediate portion therebetween, said first end portion and said intermediate portion each having a top edge portion which is at a higher vertical level than a top edge portion of said second end portion, said dividing wall comprising generally an L-shape in side elevational view with said top edge of said first end portion and said intermediate portion being on the high part of the L-shape and the top edge of said second end portion being on the low part of the L-shape, a vertical opening cast into said intermediate portion of said dividing wall and extending through said intermediate portion from said top edge portion substantially to said bottom of said



container and having first and second lateral exit portions that communicate with the bottom of said first and second filtering chambers, a liquid inlet, first conduit means extending along the top edge of said first end portion of said dividing wall from said liquid inlet to said vertical opening, a grating positioned in each of said first and second filtering chambers and dividing each into top and bottom portions, a filtering material on each of said gratings for filtering liquid passing between said bottom and top portions of each chamber, a liquid outlet, second conduit means integrally formed on the top edge of said second end portion of said dividing wall and defining a second passage connected to said liquid outlet, first and second weirs formed in said second conduit means to provide for the entrance of liquid from said first and second chambers into said second passage and thereafter out said liquid outlet, and a cover closing said open top of said container.

3,950,253

DOMESTIC WATER FILTRATION APPARATUS

Emanuel Stern, Mount Kisco, N.Y., assignor to Dynek Corporation, Port Chester, N.Y.

Continuation-in-part of Ser. No. 308,117, Nov. 20, 1972, abandoned. This application Jan. 8, 1975, Ser. No. 539,608

Int. Cl.² B01D *27/02*

U.S. Cl. 210—282 **24 Claims**

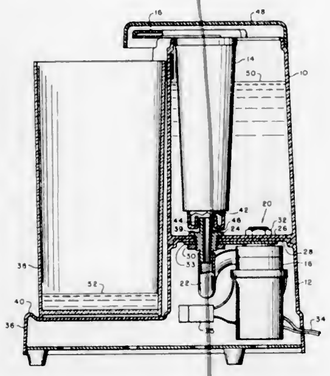
1. Water purification apparatus comprising

a portable container having a water reservoir compartment for storing untreated water and a pumping compartment in juxtaposition to said reservoir compartment, said water reservoir compartment having a bottom wall, an inlet for adding untreated water to said reservoir compartment and a water outlet passage in said bottom wall,

water pumping means having an inlet and an outlet, said pumping means being mounted within the pumping compartment of the portable container and having said inlet thereof connected to the water outlet passage of the water reservoir compartment for receiving water directly from said reservoir compartment, and

a filter means removably mounted within said water compartment of said container, said filter means having an inlet connected to the outlet of said water pump means

and an outlet nozzle integrally constructed within the filter means extending over the upper edge of said container, whereby untreated water placed in the reservoir is



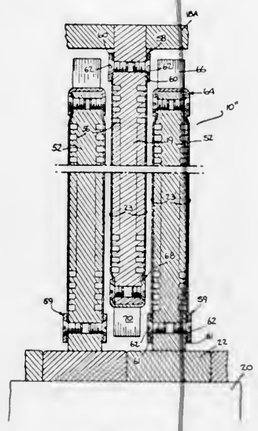
positively pumped from the reservoir through the filter means for purification and pumped out the integral outlet nozzle of the filter means.

3,950,254

SOLIDS CONCENTRATOR WITH A ROTOR HAVING PLOUGHS THEREON

James Donovan, Cambridge, and Alex Bagdasarian, Arlington, both of Mass., assignors to Artisan Industries Inc., Waltham, Mass.

Division of Ser. No. 469,627, May 13, 1974, Pat. No. 3,884,813. This application Jan. 16, 1975, Ser. No. 541,390
The portion of the term of this patent subsequent to May 20, 1992, has been disclaimed.
Int. Cl.² B01D *33/00*
U.S. Cl. 210—297 **2 Claims**



1. A dynamic concentrator for separating a filtrate and a concentrated slurry from a solids-containing fluid, said concentrator comprising (1) a housing characterized by a longitudinal axis and having an inlet for introducing a solids-containing fluid into said housing and an outlet for removing a concentrated slurry of solids therefrom; (2) at least two substantially parallel, coaxially spaced-apart and relatively stationary filter means mounted within said housing between said inlet and said outlet, said filter means each being of annular configuration and each comprising a filter chamber having at least one filtering surface with the interior of each filter chamber being in fluid communication with the exterior of said housing for the removal of filtrate from those chambers; (3) a rotor shaft disposed to have motor means connected thereto for imposing rotation thereon extending coaxially through said housing and the central openings of said annularly configured filter means with perceptible radial clearance from the inner peripheries of said two filter means; (4) a radially extensive element mounted on said shaft to be turned therewith between said two filter means in spaced relation to each of them and having at least one passageway therethrough in juxtaposition to said rotor shaft to permit a minor flow of the solids-containing fluid through said radially extensive element; and (5) at least one plough member mounted to said rotor shaft in juxtaposition to the passageway through said radially extensive element and disposed to rotate with said element and said rotor shaft.

3,950,255

SUPPORTED SEMI-PERMEABLE MEMBRANES

Kiyoshi Ishii, and Shobu Konomi, both of Ohi, Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Nov. 6, 1974, Ser. No. 521,520
Claims priority, application Japan, Nov. 9, 1973, 48-126028
Int. Cl.² B01D *25/04*
U.S. Cl. 210—490 **8 Claims**

1. In a supported semi-permeable membrane, the improvement which comprises: the support is selected from the group consisting of (1) a woven fabric made of at least two different yarn components, wherein one yarn component is soluble in the same solvent or solvents as the membrane and the other yarn component or components is substantially insoluble in said solvent or solvents, (2) a woven fabric made of blended yarns of at least two different fibers, wherein one fiber is soluble in the same solvent or solvents as the membrane and the other fiber or fibers is substantially insoluble in said solvent, and (3) a woven fabric having a surface coated with a polymer film which is soluble in the same solvent or solvents as the membrane, the membrane having been formed on said support from a solution thereof in a solvent which is also a solvent for said one yarn component, said one fiber or said polymer, whereby the membrane is firmly bonded to said one yarn component, said one fiber or said polymer, by co-solidification therewith from said solvent solution.

3,950,256

FILTER ELEMENTS

Brian Read, Wirral, England, assignor to Fawcett Engineering Limited, Bromborough, England

Continuation of Ser. No. 260,944, June 8, 1972, abandoned. This application Apr. 1, 1974, Ser. No. 457,035
Int. Cl.² B01D *39/14*
U.S. Cl. 210—493 R **9 Claims**



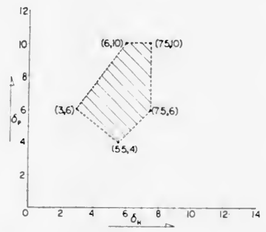
1. In a pleated filter element comprising a pleated sheet filter medium formed into a cylinder, a flexible support structure disposed within said cylinder and engaging the pleats of said filter medium, the improvement in said flexible support structure comprising a base portion having a plurality of spaced parallel bars, and spaced parallel rows of fingers projecting from one surface of said base portion, adjacent bars of said base portion being held in their spaced parallel positions by root portions of said fingers, the fingers in each row being spaced from each other to define flow passages through said base structure, each said flow passage being bounded by a pair of adjacent bars and a pair of adjacent fingers.

3,950,257

SEMIPERMEABLE MEMBRANE AND PROCESS FOR THE PREPARATION THEREOF

Kiyoshi Ishii, and Zenjiro Honda, both of Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Mar. 22, 1974, Ser. No. 453,965
Claims priority, application Japan, Mar. 27, 1973, 48-35206
Int. Cl.² B01D *13/04, 39/16;* **B29D** *27/04*
U.S. Cl. 210—500 M **10 Claims**



1. The method of preparing a semipermeable membrane suitable for ultrafiltration comprising

dissolving in a solvent a copolymer of 90 to 60 molar percent,

based on the total monomers, of acrylonitrile and the balance is a non-electrolytic water-soluble vinyl monomer whose homopolymer is also water-soluble, said solvent being selected from the group consisting of

i a water miscible solvent having hydrogen bond and dipole parameters within the hatched area of FIG. 1, and mixtures thereof, and

ii a mixture of (i) and an organic water-miscible solvent, and mixtures thereof, in such proportion that the hydrogen bond and dipole parameters of (ii) calculated from weighted averages of the ingredients thereof, are within said hatched area,

to prepare a membrane-forming solution,

forming a film of said resulting solution on a surface,

evaporating said solvent from said film and then immersing said film in ice water to transform same to a semipermeable ultrafiltration membrane.

3,950,258

AQUEOUS LUBRICANTS

Takaichi Imai; Motohiko Ii, both of Kyoto, and Yoshio Goto, Osaka, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Dec. 6, 1974, Ser. No. 530,304
Claims priority, application Japan, Dec. 7, 1973, 48-137923
Int. Cl.² C10M *1/40, 3/34, 5/22, 7/38*
U.S. Cl. 252—33 **10 Claims**

1. A lubricant composition which comprises a diluent and an anionic compound of the formula:

$$[R_1\text{-}OA_1)_p]_m R_2\text{-}(A_2O)_n SO_3M]_n$$

wherein each R_1 is independently selected from the group consisting of H and organic groups having a hydrocarbon radical of 1 to 22 carbon atoms, which groups can be bonded to R_2 directly or through the $\text{-}OA_1)_p$ group and wherein at least one R_1 is an organic group having a hydrocarbon radical of 11 to 22 carbon atoms, R_2 is the residue of a compound having 3 to 8 active hydrogen atoms, OA_1 and A_2O are each independently oxyalkylene groups having 2 to 4 carbon atoms, M is a monovalent salt-forming group, p and q are each 0 to 40, provided that the total number of OA_1 and A_2O groups is 3 to 40, and m and n are integers of 1 or higher, provided that $m+n$ is 3 to 8.

3,950,259

POURABLE GRANULATED SILICEOUS INSULATION

John M. Pallo, Englewood, and Donald J. Fischer, Sedalia, both of Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 281,100, Aug. 16, 1972, abandoned. This application May 29, 1973, Ser. No. 365,002
Int. Cl.² C04B *43/00*
U.S. Cl. 252—62 **13 Claims**

1. An insulating composition in dry, free-flowing form and having low thermal conductivity, which comprises:

a. 60 to 94 weight percent of a first siliceous material, being a particulate material having a silica content of at least 85 weight percent, a bulk density of 10 to 15 lb/ft³, an average particle size in the range of 50 to 100 microns, and a B.E.T. surface area of at least 175 m²/g;

b. 1 to 10 weight percent of a second siliceous material, being a particulate material having a silica content of at least 85 weight percent, a bulk density of 0.5 to 2.5 lb/ft³, average particle size of 1 to 10 microns, and a B.E.T. surface area of 80 to 150 m²/g; and

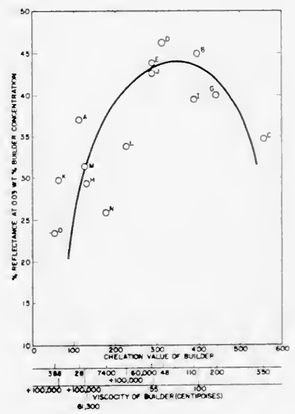
c. 5 to 30 weight percent of a particulate opacifier having its individual particle size essentially all in the range of 10 to 80 microns.

3,950,260

POLYACRYLATES OF SELECTIVE VISCOSITY AS DETERGENT BUILDERS

Ibrahim Andrew Eldib, 22 Beekman Terrace, Summit, N.J. 07087

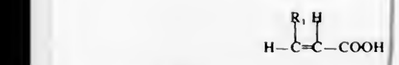
Continuation-in-part of Ser. No. 689,107, Jan. 16, 1968, abandoned. This application Apr. 10, 1972, Ser. No. 242,690
Int. Cl.² C11D *3/37*
U.S. Cl. 252—89 R **11 Claims**



1. A detergent formulation comprising

a. an organic water soluble surfactant selected from the group consisting of anionic, nonionic, zwitterionic, ampholytic surfactants and mixtures thereof, and

b. a polyelectrolyte builder comprising a water soluble salt of a homopolymer of an acid having the general formula:



wherein R_1 is a hydrogen atom or methyl radical, said polyelectrolyte having a chelation value of at least about 75, the viscosity of a 12.5 wt. percent aqueous solution of the 100 percent sodium salt of said homopolymer at 72° F. being in a range of 25–350 centipoises, the weight ratio of said polyelectrolyte builder to said surfactant varying between about 1:5 to less than about 5:1.

3,950,261

ANHYDROUS LIQUID IODOPHOR SOLUTION

Henry Patrick Landi, Yorktown Heights, and Vincent Anthony Perciaccante, Long Island City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 29, 1975, Ser. No. 581,600
Int. Cl.² C11D *3/48*
U.S. Cl. 252—106 **2 Claims**

1. A substantially anhydrous liquid iodophor detergent solution comprising:
propylene glycol, about 30% by weight,
a nonionic detergent consisting of at least one condensation product of ethylene oxide and an alkylphenol, said alkyl group having from 5 to 15 carbon atoms in a straight chain, about 43% by weight,
an iodine complex of an ethylene oxide alkylphenol condensation product, having about 20% by weight available iodine, said alkyl having from about 5 to 15 carbon atoms in a straight chain, about 22% by weight.
sodium acetate, about 2% by weight,
sodium iodide, about 2% by weight, and
citric acid in sufficient quantity to produce a pH of between about 3 and 5.5.

3,950,262

GRAPHITE INTERCALATED ANTIMONY PENTAFLUORIDE

Jean-Marc Lalancette, Sherbrooke, Canada, assignor to Ventron Corporation, Beverly, Mass.

Filed Nov. 26, 1973, Ser. No. 419,097
Int. Cl.² B01J *27/12, 23/18, 37/02*
U.S. Cl. 252—187 R **4 Claims**

1. A composition consisting essentially of graphite intercalated antimony pentafluoride.

3,950,263

GAS COOLING AND FILTERING AGENT FOR AIR BAG GAS GENERATOR

Daizo Fukuma, Tokorozawa; Haruki Maruizumi, Tokyo, and Tadahiko Nagaoka, Tokorozawa, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 26, 1973, Ser. No. 428,125
Claims priority, application Japan, Dec. 26, 1972, 48-715; Dec. 26, 1972, 48-716; Dec. 26, 1972, 48-718
Int. Cl.² B60R *21/08;* **B01D** *39/00;* **C09K** *3/00*
U.S. Cl. 252—193 **4 Claims**

1. A gas cooling and filtering agent for use in a gas generator of an air bag system containing an azide of an alkali or an alkaline earth metal as a gas generating agent which generates toxic compounds when decomposed, said gas cooling and filtering agent comprising a material which combines with said toxic compounds to produce harmless compounds, said material being selected from the group consisting of zinc carbonate, calcium carbonate, magnesium carbonate, iron carbonate, aluminum sulfate, zinc sulfate, manganese sulfate, iron sulfate, boric acid and silicic acid; and said gas cooling and filtering agent being in the form of particles.

3,950,264

SCHIFF-BASE LIQUID CRYSTALS DOPED TO RAISE DYNAMIC SCATTERING CUTOFF FREQUENCY

Freeman B. Jones, Jr., Westlake Village, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 7, 1973, Ser. No. 357,565
Int. Cl.² C09K *3/34;* **G02F** *1/13*
U.S. Cl. 252—299 **8 Claims**

1. A dynamic scattering type nematic liquid crystal doped with an ionic dopant of the formula $(R_1)_2\ (R_2)_2N^+B^-(R_3)_4$ where R_1, R_2 and R_3 are each selected from the group consisting of phenyl, biphenyl and $CH_3(CH_2)_n$, where n is a positive integer or zero and R_1 and R_2 are different groups.

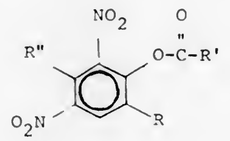
3,950,265

DISPERSIONS OF 2-ALKYL-4,6-DINITROPHENOL ESTERS

Konrad Albrecht, Fischbach, Taunus, and Heinz Frensch, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 27, 1974, Ser. No. 455,327
Claims priority, application Germany, Mar. 29, 1973, 2315641
Int. Cl.² B01J *13/00*
U.S. Cl. 252—311 **2 Claims**

1. Stabilized aqueous dispersions of 2-alkyl-4,6-dinitrophenol esters of the formula



where R is alkyl of 1 to 5 carbon atoms or cycloalkyl of 5 or 6 carbon atoms, R′ is alkyl or o-alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, phenyl or cyclohexyl, and R″ is methyl or hydrogen, having a melting point above 30°C, which consists essentially of, in addition to water, said ester, and dispersing agent, from 0.1 to 3% by weight of a metal complex azo dyestuff selected from the group consisting of Acid Blue 199 (2:1 monoazo dyestuff/chromium complex) and azo dyestuff complexes obtained by laking Lake Pigment Red 53 (C.I. No. 15 585), Lake Pigment Red 68 (C.I. No. 15 525), Lake Pigment Red 57 (C.I. No. 15 850) or Lake Pigment Red 54 (C.I. No. 14 830) or a metal complex phthalocyanine dyestuff selected from the group consisting of Pigment Blue 15 (C.I. No. 74 160), Pigment Green 7 (C.I. No. 74 260) and cobaltphthalocyanine.

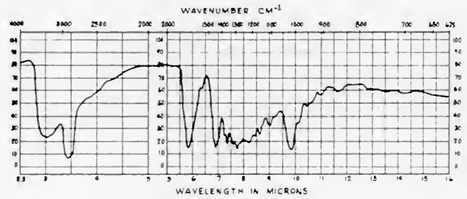
3,950,266

METHOD OF PRODUCING AN ANTIOXIDANT COMPOSITION FROM ROSEMARY AND SAGE

Stephen S. Chang, East Brunswick, N.J.; Biserka Ostric-Matljasevic, Forest Hills, N.Y.; Cheng-Li Huang, Piscataway, and An-Li Hsieh, New Brunswick, both of N.J., assignors to Rutgers Research and Educational Foundation, New Brunswick, N.J.

Filed Nov. 28, 1973, Ser. No. 419,715
Int. Cl.² C09K *15/34;* **A23B** *4/00;* **A23L** *1/28*
U.S. Cl. 252—398 **11 Claims**

1. A method of producing an antioxidant composition from plant material which is of the class consisting of rosemary and sage and which contains antioxidant material, comprising:
a. treating said plant material with a first, organic solvent which is a low-boiling solvent having a boiling point not over about 100°C, to extract from said plant material, in solution in said solvent, extract materal which contains said antioxidant material and contaminating material;
b. treating the extract solution to separate said extract material from said solvent by evaporating said solvent;
c. dissolving the separated extract material in a second, high-boiling solvent which vaporizes at a temperature



substantially higher than said first solvent, and subjecting the resulting solution to distillation treatment for recovery, by temperature-responsive separation, of a purified, substantially tasteless and odorless product comprising said antioxidant material, freed from said contaminating material which is removed in vapor state at a temperature at which said antioxidant material is in non-vapor state.

3,950,267

PROCESS FOR PRODUCING ACTIVATED CARBON

Hideo Arakawa; Tatsuo Hasebe, both of Tokyo, and Shigeru Sato, Kashiwa, all of Japan, assignors to Japan Eng. Co., Ltd., Tokyo and Nippon Iron Powder Co., Ltd., Kashiwa, both of, Japan

Filed Dec. 6, 1973, Ser. No. 422,417
Claims priority, application Japan, Dec. 12, 1972, 47-123974
Int. Cl.² C01B *31/12, 31/10;* **C21B** *13/08*
U.S. Cl. 252—425 **13 Claims**

1. A process for producing activated carbon which comprises:
a. charging an internal space of an internally heated rotary furnace, said furnace having a charge inlet at one end thereof, an opposed discharge outlet at the other end thereof and a ratio of length to diameter of from 1:1 to 10:1, with a mixture of an organic material capable of being carbonized at a temperature of 200°C or higher, and a material containing therein at least one metal compound capable of reacting with carbonized organic material at a temperature of at least 500°C to form activated carbon, said metal compound being selected from the group consisting of metal oxides, carbonates and hydroxides, through the inlet of said rotary furnace;
b. rotating said rotary furnace to cause said mixture of said organic material and said metal compound-containing material to travel from the feed end to the opposite discharge end of said rotary furnace through a distillation and carbonization zone and an activation zone in said internal space of said rotary furnace;
c. blowing air or oxygen gas into said internal space of said rotary furnace from and through said opposite discharge end thereof in a direction which is parallel to the longitudinal axis of said rotary furnace or inclined at an angle from said axis towards an inside periphery surface of said rotary furnace;
d. heating said mixture in said distillation and carbonization zone at a temperature of at least 200°C to carbonize said organic material in said mixture and to generate from said organic material combustible distilled gas;
e. heating the resulting mixture containing said carbonized material in contact with said metal compound in said activation zone at a temperature of at least 500°C to activate said carbonized material, to reduce said metal compound and to generate carbon monoxide which, together with said distilled gas serves as the sole fuel used to generate heat in said process;
f. contacting said distilled gas and carbon monoxide with said blown air or oxygen at a temperature of at least 500°C to burn said distilled gas and carbon monoxide;
g. whereby the burnt gas including said air or oxygen gas is uniformly circulated throughout said internal space of said rotary kiln by said blowing of said air or oxygen gas to provide the heat required by said heating steps (*d*) and (*e*).

3,950,268

CATALYST FOR THE POLYMERIZATION OF OLEFINS

Nicholas M. Karayannis, Hinsdale, and Sam S. Lee, Hoffman Estates, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Continuation of Ser. No. 196,719, Nov. 8, 1971, abandoned. This application July 15, 1974, Ser. No. 488,542
Int. Cl.² B01J *31/38;* **C08F** *4/66*
U.S. Cl. 252—429 B **4 Claims**

1. A composition useful for the polymerization of propylene to highly crystalline polypropylene made by combining a sulfide of a bis-(trialkyl)-tin radical wherein the alkyl groups contain between one and six carbon atoms with a dialkylaluminum halide and activated titanium trichloride.

3,950,269

OLEFIN POLYMERIZATION CATALYST SYSTEM AND PROCESS FOR POLYMERIZATION OF OLEFINS

Robert Alton Setterquist, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed May 20, 1974, Ser. No. 471,811
Int. Cl.² C08F *110/02, 110/04, 110/06, 110/14*
U.S. Cl. 252—430 **12 Claims**

1. An improved catalyst for the polymerization and copolymerization of 1-olefins which consists essentially of a transition metal hydrocarbyl hydride aluminate supported on alumina in which from about 60% up to substantially 100% of the radicals, other than aluminate, bonded to the transition metal are hydride radicals, said transition metal being selected from the group consisting of the metals of the Group IV(a) of the Periodic Table of the Elements in which the transition metal is in a valence state less than four and at least in part in a valence state of three and said hydrocarbyl radical being selected from the group consisting of radicals having the structure $R—CH_2—$ in which R— is aryl, aralkyl in which no hydride radical is attached to the carbon atom bonded to the methylene group, or tertiary butyl.

3,950,270

PROMOTED PLATINUM-IRIDIUM-CONTAINING REFORMING CATALYSTS

John D. Paynter, Louisville, Ky., and William M. Bunting, Baton Rouge, La., assignors to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 388,907, Aug. 16, 1973, Pat. No. 3,867,280. This application Aug. 15, 1974, Ser. No. 497,532
Int. Cl.² B01J *21/04, 23/64*
U.S. Cl. 252—464 **5 Claims**

1. A catalyst for dehydrogenation and dehydrocyclization of paraffinic naphthas comprising a composite including a porous inorganic oxide support, halogen in concentration ranging from about 0.1 to about 2 percent, platinum in concentration ranging from about 0.05 to about 3 percent, iridium in concentration ranging from about 0.05 to about 3 percent, and iron or bismuth in concentration ranging from about 0.5 to about 5 percent, based on the total weight of the catalyst.

3,950,271
NUCLEAR SHIELDS

Robert C. Linares, Warren Township Somerset County; Louis F. Nienart, Elizabeth, both of N.J., and George A. Toelcke, Sandy, Utah, assignors to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 26, 1974, Ser. No. 464,605
Int. Cl.² G21F *1/10*
U.S. Cl. 252—478 **13 Claims**

1. A melt processable composition having a shielding effect against neutron radiation comprising a chloro-fluoro substituted ethylene polymer having distributed therethrough, and intimately admixed therewith, from about 1 to about 75% by weight of a gadolinium compound.

3,950,272
METHOD OF PREPARING CONDUCTRON-TYPE PHOTOCONDUCTORS AND THEIR USE AS TARGET MATERIALS FOR CAMERA TUBES

Shmuel Mardix, Faculty Apt. No. 3E, University of Rhode Island, Kingston, R.I. 02881; Paul M. McIlvaine, Deer Park, Apt. No. 30, Rte. 320, Rubey Road, West Willington, Conn. 06279, and Sol Nudelman, 1401 Big Rock Road, Tucson, Ariz. 85718

Filed Jan. 30, 1974, Ser. No. 437,775
Int. Cl.² H01L *13/00*
U.S. Cl. 252—501 **11 Claims**

1. A photoconductive element comprising a solid, transparent and conductive surface, a layer of epoxy resin as a binder, and a coating of photoconductive silver sulfide said element being characterized both by a resistivity on the order of 1×10^6 ohm-cm. and having a photoresponse in the visible and near infrared regions, and wherein said photoconductive silver sulfide is prepared by a method comprising the following steps:

a. reacting an excess of silver cation in an aqueous acidic solution with an organic sulfur compound to provide a microcrystallite suspension predominantly comprising photoconductive beta - silver sulfide in the reaction solution, said reaction carried out at a temperature of from about 0–15°C;

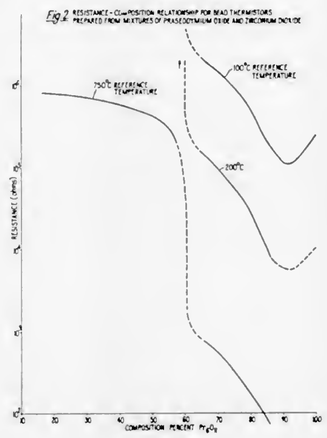
b. reacting excess silver cation in the reaction solution with an inorganic source of sulfide ion to provide for the overgrowth of silver sulfide on the microcrystallites; and,

c. recovering the photoconductive sulver sulfide produced thereby.

3,950,273
MEDIUM TEMPERATURE THERMISTOR

Colin Stanley Jones, Taunton, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed July 5, 1973, Ser. No. 376,501
Claims priority, application United Kingdom, July 6, 1972, 31673/72
Int. Cl.² H01C *1/00*
U.S. Cl. 252—517 **8 Claims**



1. A thermistor comprising a mixture of between 99% and 50% by weight of Pr_6O_{11} and 1% to 50% by weight of an oxide of the group of metals consisting of thorium, aluminum, hafnium, zinc, cadmium, mercury and magnesium.

3,950,274
PROCESS FOR MAKING A LOW VOLTAGE VARISTOR

John E. May, Skaneateles, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,131
Int. Cl.² H01B *1/08*
U.S. Cl. 252—519 **6 Claims**

1. A method for making a varistor body comprising the steps of:

mixing together and reacting a plurality of additives, said reacted additives forming a reaction product by heating them to a temperature above their melting points and then cooling them;

grinding said reaction product;

mixing ground reaction product with zinc oxide to form a final mixture; and

forming said body of said final mixture by pressing and sintering.

3,950,275
METHOD OF MANUFACTURING GRANULAR DETERGENTS

Sadao Toyoda; Kuniyoshi Takenouchi, both of Funabashi; Noboru Hara, Tokyo, and Fusao Kondo, Chiba, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1973, Ser. No. 388,663
Claims priority, application Japan, Aug. 17, 1972, 47-81830
Int. Cl.² B01J *2/16, 2/28;* C11D *11/00, 17/06*
U.S. Cl. 252—527 **6 Claims**

1. A process of preparing a granular detergent having improved resistance to powdering and reduced hygroscopicity, which comprises the steps of: wetting the surfaces of spray-dried detergent granules with a liquid binder selected from the group consisting of water and dilute aqueous solutions of a binder substance selected from the group consisting of surface active agent, carboxymethylcellulose and water glass, said liquid binder being applied in an amount of from 0.01 to 0.30 parts by weight per one part by weight of said granules; coating the thus-wetted surfaces of said granules with only a powdered builder substance selected from the group consisting of anhydrous sodium sulfate, sodium tripolyphosphate, sodium carbonate, sodium nitrilotriacetate, sodium citrate and mixtures thereof, the amount of said builder substance coated on said granules being from 0.02 to 4.0 parts by weight per one part by weight of said granules, said powdered builder substance being the sole material applied on said wetted surfaces of said granules; and then drying the thus-formed coated granules at a temperature of from 100° to 300°C.

3,950,276
SULFONATE DETERGENT COMPOSITIONS

Paul Sheldon Grand, South Bound Brook, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 198,455, Nov. 12, 1971, abandoned. This application May 22, 1972, Ser. No. 255,357
Int. Cl.² C11D *1/37, 3/08*
U.S. Cl. 252—536 **6 Claims**

1. A granular non-phosphate, non-enzymatic detergent composition consisting essentially of an anionic sulfonate detergent selected from the group consisting of olefin sulfonate, paraffin sulfonate and mixtures of olefin sulfonate and paraffin sulfonate detergents, (b) sodium silicate, (c) nonionic detergent and (d) carboxymethyl cellulose, the ratio *a:b* being in the range of about 2:1 to 1:2, the ratio *a:c* being in the range of about 15:1 to 4:1, the ratio *a:d* being in the range of about 90:1 to 6:1 and the amount of *c* being at least about 4% of the total weight of *a+b*, said olefin sulfonate being a mixture of water soluble long chain alkenyl sulfonate and water soluble long chain hydroxyalkane sulfonate in water the hydroxy is on a carbon atom not directly attached to the carbon atom adjacent the sulfonate group, both said alkenyl and hydroxyalkane sulfonates being of 12 to 20 carbon atoms, said paraffin sulfonate being a water soluble salt of 10 to 20 carbon atoms, said sodium silicate being of an $Na_2O:SiO_2$ weight ratio of about 1:2 to 1:3, said nonionic detergent being an ether of polyethylene glycol and a monohydric alkanol of about 10 to 18 carbon atoms wherein the polyethylene glycol is of about 5 to 15 oxyethylene units, and said composition, when dissolved in 0.15% concentration in water of 150 parts per million of hardness, resulting in a pH below 10, a turbidity of less than 30 and a calcium electrode potential of at most about 20 millivolts less than the potential of said hard water, when measured by means of a calcium activity electrode.

3,950,277
LAUNDRY PRE-SOAK COMPOSITIONS

Robert Lee Stewart; Homer Wallace McCune, both of Cincinnati, and Francis Louvaine Diehl, Wyoming, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed July 25, 1973, Ser. No. 382,415
Int. Cl.² C11D *3/386, 1/22*
U.S. Cl. 252—541 **6 Claims**

1. A laundry pre-soak composition for improved triglyceride stain removal comprising from about 0.01 to about 7.0% by weight of a lipase and from about 0.1 to about 70% by weight of a water-soluble lipase activator selected from the alkali metal salts and ammonium salts of isopropylnaphthalene sulfonate, methylnaphthalene sulfonate, or butylnaphthalene sulfonate.

3,950,278
PROCESS FOR PRODUCING A CROSSLINKED FOAM OF POLYOLEFIN RESIN HAVING OPEN CELLS

Motomu Wada, Nagaokakyo; Kaoru Kitadono, Takatsuki, and Akira Oishi, Nara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 28, 1974, Ser. No. 473,831
Claims priority, application Japan, May 31, 1973, 48-61527
Int. Cl.² C08J *9/08, 9/10*
U.S. Cl. 260—2.5 HA **7 Claims**

1. A process for producing a crosslinked foam having uniform, fine, open cells in a proportion of at least 40% in terms of open cell percentage defined hereinbefore comprising

mixing an ethylene polymer selected from the group consisting of general purpose low density polyethylene, high density polyethylene and an ethylene-vinyl acetate copolymer having a vinyl acetate content of no more than 40% by weight, an organic peroxide and a foaming agent,

heating the resulting mixture under pressure and

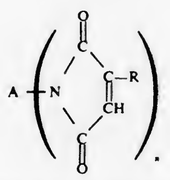
then relieving the pressure, characterized in that an amorphous propylene polymer having an intrinsic viscosity of 0.3 to 0.6 dl/g as measured in tetralin at 135°C and obtained as a by-product at the time of production of a general purpose polypropylene is mixed with said ethylene polymer in a proportion of 20 to 60% by weight based on the weight of total resin components.

3,950,279
MIXTURES, CONTAINING POLYIMIDES, WHICH CAN BE CONVERTED TO HEAT-RESISTANT FOAMED PLASTICS

Theobald Haug, Frenkendorf, Switzerland, and André Schmitter, F-Hegenheim, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

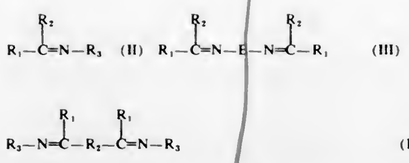
Filed Jan. 14, 1975, Ser. No. 540,923
Claims priority, application Switzerland, Jan. 16, 1974, 571/74
Int. Cl.² C08F *22/40, 30/02, 222/40, 122/40*
U.S. Cl. 260—2.5 N **26 Claims**

1. A mixture which can be converted to a heat-resistant foamed plastic, characterised in that it contains a) a diimide or triimide of the formula I



(I)

in which A denotes a n-valent organic radical with at least 2 and at most 30 carbon atoms, R denotes hydrogen or methyl and n denotes 2 or 3, b) an azomethine of the formula II, III or IV



(II) (III)

(IV)

in which R_1 denotes a hydrogen atom, an aliphatic, cycloaliphatic, cycloaliphatic-aliphatic or aromatic radical with at most 12 carbon atoms, an araliphatic radical with at most 20 carbon atoms or a heterocyclic or heterocyclic-aliphatic radical, R_2 and R_3 have the same meaning as R_1, with the exception of hydrogen, and R_1 together with R_2 and with the inclusion of the carbon atom carrying the two substituents can also denote a cycloaliphatic ring system, and E represents a divalent organic radical with 2 to 30 carbon atoms, and c) a solid blowing agent for foaming.

3,950,280

THERMOPLASTIC CAN END SEALANT COMPOSITION

Henry M. Singleton, Dallas, Tex., assignor to The Southland Corporation, Dallas, Tex.

Filed July 16, 1973, Ser. No. 379,312
Int. Cl.² C08L *7/00, 9/00*
U.S. Cl. 260—4 R **1 Claim**

1. A sealant composition for sealing a can end consisting essentially of a mixture of:

a. about 15–30 percent by weight of a hydrocarbon resin melting in the range of about 85°–125°C and consisting essentially of 100 weight parts of at least one of natural and synthetic rubber and 30 to 120 weight parts of a hydrogenated hydrocarbon resin tackifier having a molecular weight between 400 – 3,000, a softening point between 60° and 150°C, a bromine value less than 30 prepared by polymerizing a cracked petroleum fraction boiling between −10° and 280°C and containing unsaturated hydrocarbons at least 50 weight percent of which is at least one of aromatic olefins, cyclic olefins and cyclic diolefins, and hydrogenating the resultant polymer to a hydrogenation rate of at least 40 percent,

b. about 1–8 percent by weight of stearic acid,

c. about 0.1–1 percent by weight of butylated hydroxy toluene,

d. about 0.1 – 1 percent by weight of polyparadinitrosobenzene,

e. about 20 – 40 percent by weight of paraffin wax,

f. about 1 – 5 percent by weight of zinc oxide,

g. about 0.25 – 1 percent by weight of lamp black,

h. about 5 – 15 percent by weight of titanium dioxide,

i. about 10 – 30 percent by weigh of polyisobutylene, and

j. at least one further rubber present in amounts additional to that of the rubber present in component (a), said further rubber being selected from butyl rubber, styrene-butadiene rubber having a Shore A hardness of 60 – 65 and styrene-isoprene rubber having a Shore A hardness of 35 – 40, said addition amount being about 10 – 20 percent by weight, said sealant composition on a 100% solids basis, having a specific gravity at 80°F of 0.925, and a maximum viscosity at 350°F of 10,000 cps as measured by the Brookfield LVF Viscometer, No. 4 spindle at 6 rpm.

3,950,281

ELASTOMERIC COMPOSITIONS CONTAINING OLEFIN-ACRYLIC ESTER COPOLYMER

Teruyoshi Usamoto, Osaka; Taisuke Okita, Toyonaka; Nobuyuki Yoshida, Takatsuki; Masaaki Hirooka, Ibaraki; Isoji Taniguchi, Toyonaka, and Shyozaburo Imai, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Division of Ser. No. 279,289, Aug. 10, 1972, Pat. No. 3,833,689, which is a continuation of Ser. No. 29,276, April 16, 1972, abandoned. This application Jan. 31, 1974, Ser. No. 438,183
Claims priority, application Japan, Apr. 16, 1969, 44-29900
Int. Cl.² C08L *7/00, 9/02, 9/06*
U.S. Cl. 260—4 R **49 Claims**

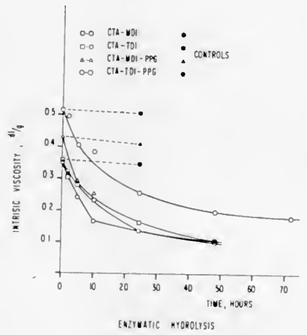
1. An elastomeric composition comprising 1 part by weight of at least one curable elastomer selected from the group consisting of natural diene rubbers and synthetic conjugated diene rubbers and 0.01 to 100 parts by weight of at least one copolymer having olefin and acrylic ester monomer units, said copolymer being composed of 10 to 70 mole % of aliphatic α-olefin monomer units having 3 to 20 carbon atoms, 90 to 30 mole % of acrylic monomer ester units, and 0.1 to 30 mole % of a monomer unit selected from the group consisting of a monomer having at least one double bond and a monomer having at least one halogen atom.

3,950,282

POLYANHYDROGLUCOSE BIODEGRADABLE POLYMERS AND PROCESS OF PREPARATION

Richard D. Gilbert, 713 Dartmouth Road, Raleigh, N.C. 27609; Vivian T. Stannett, 1105 Bancroft St., Raleigh, N.C. 27612, and Soojaa L. Kim, 2209 E. Cedar St., Apt. C., Allentown, Pa. 18103

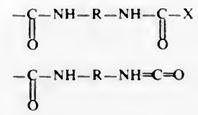
Filed Dec. 6, 1974, Ser. No. 530,349
Int. Cl.² C08L *1/02*
U.S. Cl. 260—9 **10 Claims**



1. The biodegradable polymer having the formula:

W—M— Z

wherein M is a polyanhydroglucose block which does not contain any ester substituents and wherein W and Z are organic diisocyanates having the formula:



or

wherein R is an divalent organic radical and wherein X is a terminal group, —M—Z, —M—W or —M, said biodegradable polymer degrading faster than cellulose, said biodegradable polymer being prepared by reacting a polyanhydroglucose triester oligomer containing hydroxyl end groups with diisocyanates or with isocyanate capped non-cellulosic polymers to produce linear block copolymers containing polyanhydroglucose triester blocks, and subsequently de-esterifying said linear block copolymers to yield said biodegradable copolymer containing polyanhydroglucose blocks.

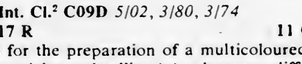
3,950,283

MULTICOLOURED PAINTS FROM TWO OR MORE PIGMENTED AQUEOUS POLYMER EMULSIONS

Keith Sellars, Farnborough, and Peter Laybourn, Sawbridgeworth, both of England, assignors to Harlow Chemical Company Limited, London, England

Continuation-in-part of Ser. No. 834,876, June 19, 1969, abandoned. This application July 9, 1971, Ser. No. 161,309
Claims priority, application United Kingdom, Mar. 7, 1969, 12168/69
Int. Cl.² C09D *5/02, 3/80, 3/74*
U.S. Cl. 260—17 R **11 Claims**

1. A process for the preparation of a multicoloured paint which comprises mixing and gelling (a) at least two differently coloured pigmented aqueous film-forming polymer paint emulsions, each of said emulsions additionally containing hydroxyethyl cellulose, with (b) an aqueous dispersion of a clay of the formula



wherein M is a cation, x is a value greater than zero and less than 6, y is from 1.00 up to but less than 4 and n is an integer from 1 to 3, to produce a multicoloured paint dispersion comprising discrete differently coloured aqueous polymer emulsion particles as the disperse phases in an aqueous continuous phase of the clay dispersion.

3,950,284

POLYMER DISPERSED LIQUID

Tadanori Fukuda; Masao Takahashi, and Keiko Kawamura, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed July 24, 1974, Ser. No. 491,615
Claims priority, application Japan, July 28, 1973, 48-85273
Int. Cl.² C08L *1/14*
U.S. Cl. 260—17 A **3 Claims**

1. In a method of making a polymer dispersed liquid, the steps which comprise polymerizing at least two different types of monomers of the vinyl series in an organic liquid or in a mixed organic liquid containing at least 2 components which is able to dissolve the resulting copolymer of the vinyl series in the presence of a block or graft copolymer,

said copolymer containing

a. a component composed of a polymer of a higher alkyl ester of acrylic acid or methacrylic acid, wherein the number of carbon atoms of the alkyl group is 8 – 18, and

b. a component composed of a polymer the majority of which is a lower alkyl ester of acrylic acid of methacrylic acid, wherein the number of carbon atoms of the alkyl group is 1 – 7 and, at that stage, adding an alkylated melamine-formaldehyde reaction product to the reaction system before, during or after the polymerization reaction, and uniformly mixjng said reaction product in said reaction system, and thereafter adding another organic liquid or distilling out at least one component in the mixed organic liquid in order to vary the solubility parameter of the organic liquid by at least 0.5, the majority of the final dispersion medium being an aliphatic hydrocarbon.

3,950,285

PREPARATION OF POLYMERIC URETHANES FROM DICARBAMATES

Larry G. Wolgemuth, Cherry Hill, N.J., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 4, 1974, Ser. No. 457,942
Int. Cl.² C08G *18/24, 18/80*
U.S. Cl. 260—18 TN **7 Claims**

1. An improved process for preparing polyester polyurethanes comprising transesterifying a mixture containing

a. an organic dicarbamate, free of substituents which would interfere with the desired reaction, having the structural formula



wherein R is an organic radical containing 2 to 18 carbon atoms, R′ and R″ are the same or different organic radicals containing 1 to 12 carbon atoms and

b. an organic dicarboxylic acid ester having a molecular weight of about 118 to 462, the esterifying alcohols of which contain 1 to 12 carbon atoms, with

c. a dihydroxy organic compound having a molecular weight of about 64 to 2,000,

said dicarbmate, dicarboxylic acid ester and dihydroxy organic compound being free of substituents which would interfere with the desired transesterification reaction, in the presence of about 0.005 to 5.0%, based on the total weight of reactants, of an organotin compound selected from the group consisting of organotin oxides, organo tin alkoxides, and tin salts of fatty acids at a temperature of about 60° to 180° C.

3,950,286

COATING PROCESS AND COMPOSITION

Herbert Hoenel, and Heinrich Lackner, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Vienna, Austria

Continuation-in-part of Ser. No. 586,589, Sept. 20, 1966, abandoned. This application July 16, 1970, Ser. No. 55,571
Claims priority, application Austria, Sept. 21, 1965, 8592/65
Int. Cl.² C08B *91/00*
U.S. Cl. 260—19 R **14 Claims**

1. A process for producing water-soluble coating compositions by

A. combining at elevated temperatures

I. an adduct of maleic anhydride with an olefinic unsaturated compound of the group consisting of vegetable and animal fatty acis, tall oil fatty acid, rosin acids, their hydroxy-free esters with polyols and mixtures thereof;

II. a polyhydroxy compound of the group consisting of trimethylol propane, pentaerythritol, propylene glycol, and butylene glycol, and partial esters thereof with fatty acids; and

III. a water-insoluble, heat-hardenable phenol-formaldehyde condensation product, in the resol state, of a phenol substituted in the ortho or para position by a radical with at least 3 carbon atoms and being a member of the groups of alkyl phenols and aryl phenols; and

B. at least partially neutralizing the reaction product of (A) with a water-soluble nitrogen base.

3,950,287

PRODUCTION OF THERMOSET WATER-IN-OIL EMULSIONS

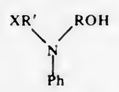
Carlton E. Coats, Burnsville, and Golden F. Watts, Rosemount, both of Minn., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 110,856, Jan. 29, 1971, abandoned. This application Jan. 24, 1973, Ser. No. 326,363

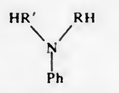
Int. Cl.² C08L *67/06*

U.S. Cl. 260—22 CB **30 Claims**

1. A method of curing polymerizable water-in-oil emulsions in which at least a major weight portion of the oil phase is one or more α,β-ethylenically unsaturated polyester resin of a member selected from the group consisting of α,β-ethylenically unsaturated polycarboxylic acid, anhydride thereof, and mixtures thereof; and a member selected from the group consisting of polyhydric alcohol, alkylene oxide, and mixtures thereof; and is susceptible to free radical induced polymerization and copolymerizable ethylenically unsaturated compounds susceptible to free radical induced polymerization wherein said emulsion contains and is polymerized to thermoset form with the aid of a combination of amine compounds, wherein at least one of the amine compounds in said combination has at least one hydroxy alkyl group connected to the amino nitrogen and has the following formula:

(A) 

wherein X is a hydroxy group, R and R′ are identical or different divalent saturated aliphatic hydrocarbon groups having 1–6 carbon atoms and Ph is phenyl; and wherein at least one other of the amine compounds in said combination has the following formula:

(B) 

wherein H is hydrogen and R′, R and Ph have the definitions given above; and wherein the molar ratio of A to B is at least about 0.5 and not more than about 3, said emulsion also contains and also is polymerized with the aid of at least one peroxy free radical generating catalyst compound, and at least one oil soluble cobalt salt of organic carboxylic acid promoter, the weight of said combination of amines, cobalt salt promoter and peroxy catalyst is equal to about 0.25 to about 10% by weight, based on the polymerizable ingredients of the emulsion, and wherein for each mole of cobalt as metal, about 1 to 10 coordination equivalents of the aforesaid amines are employed.

8. The method of claim 1 wherein said cobalt salt is selected from the group consisting of cobalt neodecanate, cobalt neodecanate, cobalt tallate, cobalt stearate, cobalt octoate, cobalt linoleate, and cobalt naphthenate.

3,950,288

PIGMENT COMPOSITIONS IN PASTE OR POWDER FORM FOR USE IN PRINTING INKS

Willy Herbst, Hofheim, Taunus; Albert Rudolphy, Wiesbaden, and Hans Peter Simson, Mainz, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 29, 1974, Ser. No. 519,031

Claims priority, application Germany, Oct. 30, 1973, 2354225

Int. Cl.² C09D *3/66, 11/10, 17/00*

U.S. Cl. 260—22 CB **7 Claims**

1. A pigment composition in powder or paste form, which consists essentially of pigment and, as a preparation agent, a mixture consisting of

a. an alkyd resin having a high oil content of 70 to 80% prepared from mixtures of drying, semi-drying and non-drying oils, mixtures of iso- and ortho-phthalic acids and small portions of an α, β-ethylenically unsaturated dicarboxylic acid and mixtures of glycerol and pentaerythritol,

b. a hydrocarbon resin having an average molecular weight of 600 to 1700 and bromine number between 10 and 200, and

c. a mineral oil boiling between 240° and 320° C, the ratio of component (*a*) to component (*b*) being from 1 : 1 to 1 : 1.5 and that of components (*a*)+(*b*) to component (*c*) varying from 4 : 1 to 0.7 : 1.

3,950,289

ANTIFOGGING POLYMERIC FILM

Anthony S. D'Amato, Chlemsford, and Miles N. Gattenby, Jr., Lowell, both of Mass., assignors to Borden, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 417,776, Dec. 11, 1964, Pat. No. 3,479,308. This application Aug. 11, 1969, Ser. No. 849,211

Int. Cl.² C08K *5/06, 5/10;* **C08L** *27/06*

U.S. Cl. 260—23 XA **4 Claims**

1. A film comprising polymeric vinyl resin, said vinyl resin being selected from the group consisting of polyvinyl chloride, polyvinyl acetate, mixtures of polyvinyl chloride and polyvinyl acetate containing major proportions of polyvinyl chloride, copolymers of vinyl chloride with a monomer selected from the group consisting of vinyl acetate and C_{1-8} alkyl esters of aliphatic-unsaturated acids having 3–5 carbon atoms per molecule, and copolymers of vinyl chloride with up to 15% by weight of C_2–C_8 mono olefins, and an antifogging and anti-tackifying agent, said agent being the combination of, on 100 parts by weight of said vinyl resin, 0.5 to 5 parts by weight polyalkoxylated alkyl phenol derived by condensation of 1 mol of alkyl phenol with an average of 3–50 mols of a C_{2-4} alkylene oxide, 1 to 6 parts by weight partial ester (1) of a water soluble C_{2-6} polyol with a C_{12-18} aliphatic monocarboxylic acid and 0.5 to 5 parts by weight polyalkoxylated derivative of a partial ester (2) of a water soluble C_{2-6} polyol and a C_{12-18} aliphatic monocarboxylic acid, the alkoxy groups therein having 2–3 carbon atoms and the number of alkoxy groups being about 3–30 per molecule of said alkoxylated partial ester, the proportions of plasticizer being from about 20 to about 60 parts by weight for each 100 parts of polymeric vinyl resin and the total of said agents being at least 4 parts by weight when 40 or more parts of plasticizer are used.

3,950,290

AQUEOUS COATING AND PRINTING COMPOSITIONS

Raymond L. Drury, Jr.; Charles S. Nevin, both of Decatur, and James W. Hines, Maroa, all of Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed May 1, 1973, Ser. No. 356,243

Int. Cl.² C08L *93/00*

U.S. Cl. 260—23 EM **67 Claims**

1. An aqueous printing ink composition suitable for use under ambient printing conditions and containing uniformly dispersed throughout the ink composition a polymer dispersion as a principle ink vehicle on a weight basis, said printing ink composition comprising an admixture of:

A. a polymer dispersion comprising:

a. a continuous, aqueous external phase consisting essentially of an adduct reaction product of an unsaturated glyceride oil and at least one dicarboxylic acid selected from the group consisting of an alpha, beta-ethylenically unsaturated dicarboxylic acid and an alpha, beta-ethylenically unsaturated dicarboxylic acid anhydride, said adduct reaction product being reacted with an aqueous solution of a nitrogen base having at least one reactive hydrogen moiety, in an amount sufficient to provide a water-soluble salt reaction product having a pH within the range of 7.0 to 10.0,

b. a non-continuous, internal phase of minute, polymerized monovinyl aromatic polymer particles having an average particle size of less than 0.4 micron uniformly dispersed within said external phase,

said polymer dispersion being further characterized as containing (on total dry weight basis) at least 40% by weight of said external phase and said internal phase, and at least one part to less than four parts external phase dry solids for each six parts by weight of dry internal phase solids, and

B. a color imparting agent of at least one member selected from the group consisting of an organic color agent and an inorganic coloring agent with the proviso that when the major coloring agent (on a total dry solids coloring agent weight basis) is an organic coloring agent, the ink composition contains from at least one part by weight to less than four parts by weight organic coloring agent for each four parts by weight polymer particles dry solids, and that when the major coloring agent (total dry solids coloring agent weight basis) is an inorganic coloring agent, the ink composition contains from about 1 to about 8 parts by weight inorganic coloring agent for each two parts by weight of dry polymer dispersion solids,

said ink composition being further characterized as containing at least 30% by weight dry solids and a sufficient amount of (A), (B), ink additives and water to provide a No. 2 Zahn cup reading of between about 15 to about 50 seconds, with the further proviso that when the ink composition contains organic coloring agents as a major coloring agent (on a weight basis), the total dry solids content of said printing ink composition ranges from about 30% to about 55% and when the inorganic coloring agents are a major coloring agent, the total dry solids content of said ink composition ranges from at least 45% to about 80% by weight.

3,950,291

HOT-MELT ADHESIVE COMPOSITION

Lawrence D. Jurrens, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 3, 1974, Ser. No. 475,976

Int. Cl.² C08L *91/00*

U.S. Cl. 260—23.7 R **11 Claims**

1. The method of preventing an increase in viscosity during heat aging of a hot melt adhesive based on a radial block copolymer of at least one conjugated diene and at least one monovinyl-substituted aromatic hydrocarbon, said copolymer containing terminal non-elastomeric blocks and central elastomeric blocks wherein the ratio of conjugated diene to monovinyl aromatic is in the range of from 50/50 to 95/5 and wherein said radial block copolymer is of the formula $(A\text{-}B)_xY$ wherein A is a non-elastomeric polymer block, B is an elastomeric polymer block and Y is an atom or group of atoms derived from a polyfunctional compound having at least 3 reactive sites, and x is an integer of at least 3, comprising adding to the hot melt adhesive a sufficient amount of a viscosity-stabilizing material comprising fatty acid, tall oil rosin, wood rosin, gum rosin, glycerol ester of rosin, disporportionated rosin (dehydroabietic acid), modified rosin containing 40 percent dimeric resin acid, or mixtures thereof.

3,950,292

RESINOUS SOLUTION RADIAL BLOCK COPOLYMER/SOLUTION RUBBERY COPOLYMER BLEND

William T. Cooper, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 12, 1972, Ser. No. 296,847

Int. Cl.² C08L *91/00*

U.S. Cl. 260—23.7 R **10 Claims**

1. A solid polymeric blend comprising: (1) a resinous solution polymerized radial block copolymer comprising 70–95 weight percent of a polymerized monovinyl-substituted aromatic compound containing 8–18 carbon atoms per molecule and 30 to 5 weight percent of a conjugated diene containing 4 to 12 carbon atoms per molecule; and (2) a solution polymerized rubbery copolymer of 65–90 weight percent of a conjugated diene and 35-10 weight percent of a monovinyl-substituted aromatic compound, said resinous radial block copolymer being present in an amount within the range of 5–60 parts by weight per 100 parts by weight of said solution polymerized rubbery copolymer.

3,950,293

PRODUCTION OF NON-FOAMING AQUEOUS SUSPENSIONS OF POLYETHYLENE OR POLYPROPYLENE FIBRIDS

Bruno Sander, Ludwigshafen; Eckhard Bonitz, Frankenthal; Heinz Berbner, Moerlenbach, and Manfred Hoffmann, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Claims priority, application Germany, Oct. 18, 1973, 2352190

Filed Oct. 17, 1974, Ser. No. 515,550

Int. Cl.² C08L *23/02*

U.S. Cl. 260—29.6 RW **4 Claims**

1. A process for the manufacture of non-foaming aqueous suspensions of polyolefin fibrids by dispersing polyethylene fibrids or polypropylene fibrids in water in the presence of a dispersing agent, said fibrids having a specific surface area of 1-150 m^2/g, the improvement wherein the dispersing agent used consists of from 0.1 to 2.0% by weight, based on the dry weight of the fibrids, of an ammonium salt of a copolymer of styrene and acrylic acid, said copolymer having a styrene to acrylic acid molar ratio of 1.6:1.

3,950,294

AQUEOUS COATING COMPOSITIONS OF DISPERSIONS OF THERMOPLASTIC ADDITION POLYMERS WITH LOW MOLECULAR WEIGHT PLASTICIZERS

William Connelly, 15 Lynch Road, Willowdale, Toronto, Ontario, Canada; Hamid Iqbal Khan, c/o Paintex Limited, P.O. Box 273, Ferozepur Road, Lahore, Pakistan, and Ian Hugh McEwan, 60 Ravendale Court, Kleinburg, Ontario, Canada

Continuation-in-part of Ser. No. 378,492, July 12, 1973, abandoned. This application Jan. 30, 1974, Ser. No. 438,023

Int. Cl.² C08L *25/06, 41/00*

U.S. Cl. 260—29.6 R **11 Claims**

1. A composition consisting essentially of an aqueous dispersion of a solid, water insoluble, thermoplastic, synthetic addition polymer consisting essentially of polymerized units from at least one α,β-ethylenically unsaturated monomer selected from the group consisting of styrene, methyl methacrylate, methacrylic acid, α-methyl styrene, esters of acrylic, methacrylic and maleic acids in which the alcohol residues are either straight or branched chain alkyl groups containing at least 4 carbon atoms, vinyl sulphonate, allyl sulphonate and sulpho esters of the formula:

$$R—CO_2—Q—SO_2M$$

wherein R is selected from the group consisting of vinyl and α-chloro-or α-alkyl-substituted vinyl, Q is a divalent hydrocarbon radical having its valence bonds on different carbon atoms and M is a cation selected from the group consisting of sodium, potassium, lithium, morpholinium, lower alkyl substituted morpholinium, ammonium and substituted ammonium

compounds of the formula NR^1_4, wherein R^1 is hydrogen, lower alkyl or alkanolamino, said monomer or monomers having been polymerized in the presence of at least one non-reactive plasticizer selected from the group consisting of dibenzyl azelate, dibenzyladipate, dibenzyl sebecate, neopentyl glycol dibenzoate, dibenzyl phthalate, butyl acetate, benzyl acetate, dibenzyl dineopentyl glycol triadipate, dibenzyl diethylene glycol diadipate and neopentyl glycol butyl adipate, said polymer having an intrinsic viscosity within the range of from about 0.20 to about 1.0 dl./g. measured at a concentration of 0.5 g. polymer per 100 ml. dimethyl formamide at 25° C.

3,950,295

METHOD OF PREPARING A COMPOSITION CONTAINING GYPSUM, A VINYL MONOMER AND SULFITE ION

Tadashi Yamaguchi; Takayuki Ono, both of Sendai, and Hiroshi Hoshi, Narashino, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Feb. 1, 1974, Ser. No. 438,532
Claims priority, application Japan, Feb. 3, 1973, 48-13920
Int. Cl.² C08J *3/20*
U.S. Cl. 260—29.6 S **7 Claims**

1. A method of preparing a gypsum vinyl polymer composite which comprises forming a mixture consisting essentially of hydratable gypsum powder, about 1–15 parts per 100 parts of said gypsum of a vinyl monomer, about 40–80 parts per 100 parts of said gypsum of water, and about 0.1–100 parts, calculated as sulfur dioxide, per 100 parts of vinyl monomer of a source of hydrogen sulfite ions as the essential polymerization agent for said vinyl monomer and allowing said mixture to harden by simultaneous polymerization of said monomer and hydration of said gypsum, said parts all being by weight.

3,950,296

REVERSIBLE COACERVATION OF ANION-CONTAINING AQUEOUS DISPERSE SYSTEMS WITH AMPHOTERIC POLYELECTROLYTES

Donald A. Kangas, and W. Robert Neuendorf, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 248,667, April 28, 1972, Pat. No. 3,843,585. This application Oct. 21, 1974, Ser. No. 516,697
The portion of the term of this patent subsequent to Oct. 22, 1991, has been disclaimed.
Int. Cl.² C08L *23/36, 27/22*
U.S. Cl. 260—29.6 PT **13 Claims**

1. A composition comprising an aqueous disperse system of an anionizable disperse material and an amount of an inherently water-dispersible amphoteric polyelectrolyte effective to reversibly coacervate the system at a value of pH which is at or below the isoelectric point of the polyelectrolyte and at which value the anionizable material contains anions, said disperse material being particles of the dispersed or solvated material of an aqueous dispersion or aqueous solution wherein one or more anionizable groups reside in or on the surface of each of the dispersed or solvated particles, said anionizable group being any group that will form an anion at some value of pH below the isoelectric point of the amphoteric polyelectrolyte, said polyelectrolyte having an isoelectric point at pH of at least 6 and containing ionizable cationic groups having a pKa in the range from about 4 to about 11 and ionizable anionic groups having a pKa less than about 6, said polyelectrolyte having a molar ratio of ionizable cationic groups to ionizable anionic groups of at least 1:1.

3,950,297

COPOLYAMIDES CONTAINING CAPROLACTAM, LAURICLACTAM AND HEXAMETHYLENE DIAMINE ADIPATE

Fritz Raabe, Bonn, and Eduard De Jong, Bonn-Beuel, both of Germany, assignors to Plate Bonn Gesellschaft mit beschrankter Haftung, Bonn, Germany

Continuation-in-part of Ser. No. 384,370, July 31, 1973, Pat. No. 3,883,485. This application May 6, 1974, Ser. No. 467,233
Claims priority, application Germany, May 12, 1973, 2324159; Japan, Aug. 8, 1973, 48-88567
The portion of the term of this patent subsequent to May 13, 1992, has been disclaimed.
Int. Cl.² C08G *69/46, 69/14*
U.S. Cl. 260—30.8 R **18 Claims**

1. A composition of matter comprising a copolyamide consisting essentially of recurring units of caprolactam, lauriclactam, hexamethylene diamine adipate and a hexamethylene diamine salt of an aliphatic dicarboxylic acid of the formula

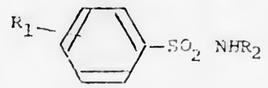
$$HOOC-(CH_2)_n-COOH \quad (1)$$

in which n is the number 7, 8, 10 or 11, said units being incorporated in the copolyamide by polymerisation in the following proportions;

caprolactam	25–35% by weight
lauriclactam	20–40% by weight
hexamethylene diamine adipate	8–25% by weight
hexamethylene diamine salt of the acid of formula (1)	10–40% by weight

and a plasticizer which is compatible with and suitable for plasticizing said copolyamide.

15. The composition of matter as defined by claim 1, wherein said plasticizer is selected from the group consisting of a sulfonic acid derivative of the formula



wherein R_1 is hydrogen or methyl and R_2 is hydrogen, lower alkyl or cyclohexyl; a phenol carboxylic acid; a phenol carboxylic acid alkyl ester and Bisphenol A.

3,950,298

FLUOROALIPHATIC TERPOLYMERS

Joseph D. McCown, Maplewood, and Myron T. Pike, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 3, 1974, Ser. No. 502,749
Int. Cl.² C08F *214/18, 216/18, 226/02;* **C08K** *5/01*
U.S. Cl. 260—33.6 F **6 Claims**

1. Hydrocarbon-soluble, low-foaming, low surface energy, oil and water repellent thermoplastic terpolymer of monomers
A. fluoroaliphatic vinyl monomer containing at least 25 percent of fluorine in the form of fluoroaliphatic radicals terminating in CF_3 groups and containing in their chain a total of at least three fully fluorinated carbon atoms and not more than one atom of hydrogen or chlorine for every two carbon atoms of said chain,
B. higher aliphatic hydrocarbyl vinyl monomer containing higher aliphatic hydrocarbyl groups of 8 to 20 carbon atoms, and
C. mono- to di-acrylate or methacrylate of polyoxytetramethylene diol of molecular weight from about 750 to about 4000.

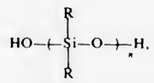
3,950,299

HEAT-CURABLE SILICONE RUBBER COMPOSITIONS

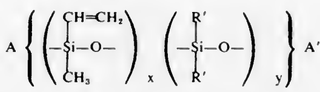
Kunio Itoh; Naoyoshi Kuga, and Takeshi Fukuda, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd, Tokyo, Japan

Filed Apr. 1, 1975, Ser. No. 563,978
Claims priority, application Japan, Apr. 2, 1974, 49-37132
Int. Cl.² C08L *83/04*
U.S. Cl. 260—37 SB **9 Claims**

1. A heat-curable silicone rubber composition which comprises
i. 100 parts by weight of a diorganopolysiloxane with a polymerization degree higher than 3,000 produced by the dehydrochlorination-condensation between (a) a diorganopolysiloxane with a polymerization degree higher than 500 expressed by the general formula



where R is a substituted or unsubstituted saturated monovalent hydrocarbon group and n is a positive integer, and (b) a diorganopolysiloxane with a polymerization degree higher than 50 expressed by the general formula



where R′ is a substituted or unsubstituted saturated monovalent hydrocarbon group, A is a halogen atom or a diorganohalogenosiloxy group, A′ is a diorganohalogenosilyl group and x and y each are positive integers with the proviso that $x/(x+y) = 0.05$, in an amount of more than 0.9 mole per mole of diorganopolysiloxane (a),
ii. from 0 to 200 parts by weight of a diorganopolysiloxane gum having a random structure with a polymerization degree higher than 3,000,
iii. from 20 to 200 parts by weight, based on 100 parts by weight of components (i) and (ii), of a siliceous filler with a specific surface area larger than 150 m^2/g, and
iv. a catalytic amount of a curing agent.

3,950,300

DENTAL IMPRESSION MATERIALS

Paul Hittmair; Wolfgang Hechtl; Eckhart Louis, and Ernst Wohlfarth, all of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Division of Ser. No. 405,338, Oct. 11, 1973, abandoned. This application May 28, 1974, Ser. No. 473,452
Claims priority, application Germany, Oct. 11, 1972, 2249822
Int. Cl.² C08L *83/04*
U.S. Cl. 260—37 SB **25 Claims**

1. A method of making a dental impression material, which comprises mixing
a. a diorganopolysiloxane containing triorganosiloxy terminal units, each of which contains at least one vinyl group, and having a viscosity of from 500 to 300,000 cP at 25°C.,
b. an organopolysiloxane free of aliphatic multiple bonds and having at least three Si-bonded hydrogen atoms per molecule and having from 0.01 to 1.7 percent by weight of Si-bonded hydrogen atoms in which the silicon valencies not satisfied by hydrogen atoms or siloxane oxygen atoms are satisfied by unsubstituted and substituted monovalent hydrocarbon radicals free of aliphatic multiple bonds and in which at least 50 percent of the hydrocarbon radicals bonded to silicon atoms carrying hydrogen atoms are methyl radicals, said organopolysiloxane (b) being present in an amount so that a total of 0.75 to 5 gram atoms of Si-bonded hydrogen is present per gram molecule of vinyl group and
c. a catalyst which is capable of promoting the addition of Si-bonded hydrogen to vinyl groups at room temperature, said catalyst is selected from the group consisting of platinum, platinum compounds, platinum complexes, cobalt carbonyls and manganese carbonyls.

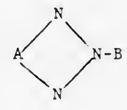
3,950,301

LIGHT STABILIZED POLYESTER RESIN COMPOSITION

Karl J. Balog, and Donald I. Craft, both of Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

Filed Aug. 1, 1974, Ser. No. 493,683
Int. Cl.² C08K *5/27;* **C08L** *67/02*
U.S. Cl. 260—40 R **35 Claims**

1. A stabilized polyester composition consisting essentially of
a. a high molecular weight polyester resin;
b. a flame retardant additive in minor proportion but in an amount at least sufficient to render the polyester resin non-burning or self-estinguishing.
c. a stabilizing amount of a hydroxybenzotrianzole selected from compounds of the formula:



wherein A represents an o-phenylene radical bound by two neighboring carbon atoms to two nitrogen atoms of the triazole ring, and B represents a phenyl radical which contains in the 2-position an OH group and in further positions a member selected from the group consisting of H, lower alkyl, lower alkoxy, lower carbalkoxy, cyclohexyl, phenyl and halogen.

3,950,302

DISPERSIBLE COPOLYMER POWDER

Karl Josef Rauterkus, Kelkheim, Taunus; Jan Blazek, Bad Soden, Taunus, and Wolfgang Zimmermann, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 2, 1973, Ser. No. 356,405
Claims priority, application Germany, May 5, 1972, 2222033
Int. Cl.² C08F *6/10, 218/04, 218/08, 218/10*
U.S. Cl. 260—42.52 **9 Claims**

1. A dry readily dispersible emulsifier free and anti-caking agent free copolymer powder, consisting essentially of 50 to 92 weight percent vinyl ester, 0 to 45 weight percent of ethylene and 2 to 20 weight percent acrylamide of the formula $CH_2{=}CX{-}CO{-}NHY$, wherein X is hydrogen or methyl, Y is hydrogen or CH_2OZ, and Z is hydrogen, alkyl of 1 to 4 carbon atoms or acyl of 1 to 4 carbon atoms, obtained by emulsion copolymerizing, in an emulsifier-free aqueous medium, said vinyl ester; optionally ethylene; and said acrylamide and spray drying the resulting emulsifier free copolymerized product dispersion, in the absence of an anti-caking agent, to yield a free flowing dry copolymer powder.

3,950,303
POLYOLEFIN/CHROMIUM MODIFIED MINERAL COMPOSITIONS AND PROCESS FOR THEIR PREPARATION

Robert DeWald Lipscomb, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 11, 1974, Ser. No. 449,987
Int. Cl.² C08K *9/00, 9/04;* **C08J** *3/20*
U.S. Cl. 260—42.14 **6 Claims**

1. The method of preparing a moldable, essentially homogeneous, polyolefin/inorganic filler composition which comprises

a. contacting particulate inorganic filler having a surface area of less than 100 m^2/g and an average effective particle diameter of less than 50 μ with a solution of chromium (III) compound in a polar solvent selected from the group consisting of water and alcohols whereby the chromium compound is adsorbed onto the surface of the filler in the amount of 0.01 to 1% by weight of chromium, based on the filler;

b. activating the chromium-modified filler by drying to remove the polar solvent at a temperature of 25° to 400°C;

c. dispersing at least 1 weight/volume percent of the resulting chromium-modified filler as a slurry in an inert, liquid hydrocarbon;

d. adding to the slurry 0.01 to 2% by weight, based on the filler, of organoaluminum compound selected from the group consisting of trialkylaluminums, dialkylaluminum hydrides, dialkylaluminum alkoxides, alkylaluminum halides and polymeric hydrocarbylaluminums in which the alkyl groups, alike or different, have 1 to 10 carbons each;

e. polymerizing olefin selected from the group consisting of (C_2–C_{10})-1-alkenes and mixtures thereof in the presence of the slurry with agitation at a temperature of 0° to 250°C and a pressure from atmospheric to 500 atmospheres to form a polyolefin having an inherent viscosity of at least 2.5; and

f. isolating the resulting polyolefin/filler composition as a free-flowing, essentially homogeneous powder.

3,950,304
CURABLE COMPOSITION USED FOR AN ELECTRICAL INSULATING MATERIAL

Jihei Inomata, Komae; Susumu Michishima; Kanji Kasahara, both of Yokohama; Seiichi Hino, Yokohama; Satoru Igarashi, Kawasaki, and Tatsuo Tani, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Feb. 1, 1974, Ser. No. 438,859
Claims priority, application Japan, Feb. 9, 1973, 48-15583
Int. Cl.² C08C *19/04;* **C08K** *3/04, 3/34*
U.S. Cl. 260—42.37 **8 Claims**

1. A curable composition having excellent electrical properties, which comprises:

a polyhydroxy hydrocarbon polymer characterized by a hydroxyl group content of at least about 1.5 and selected from the group consisting of polyhydroxy diene polymers, hydrogenated polyhydroxy diene polymers, mixtures of unsaturated, polyhydroxy diene polymers and saturated polyhydroxy diene polymers, oxdized hydrogenated products of isobutylene-diene copolymers and oxidized hydrogenated products of α-olefin-nonconjugated diene copolymers;

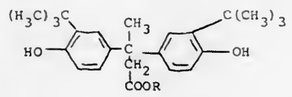
from 10 – 150 wt.% of talc, clay or mixtures thereof, from 0.1 – 20 wt.% of carbon black and from 1 – 50 wt.% of a curing agent, wherein the percent by weight limitations are based on the amount of said polyhydroxy hydrocarbon polymer.

3,950,305
STABILIZED POLYVINYL BUTYRAL AND STABILIZER FOR POLYVINYL BUTYRAL

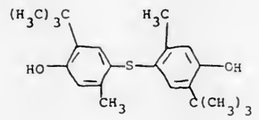
Erwin Schmidt, Kelkheim, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

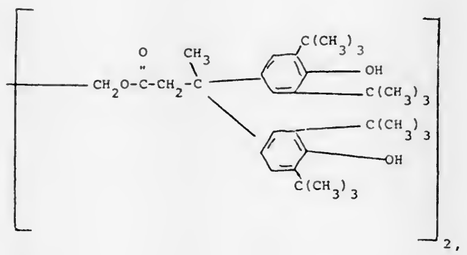
Continuation of Ser. No. 332,809, Feb. 16, 1973, abandoned. This application July 10, 1974, Ser. No. 487,365
Claims priority, application Germany, Feb. 22, 1972, 2208167
Int. Cl.² C08K *5/49*
U.S. Cl. 260—45.7 P **4 Claims**

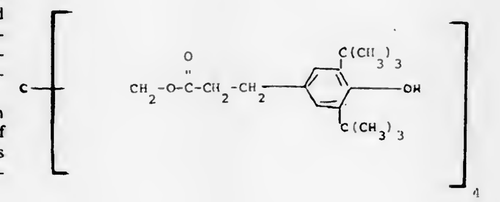
1. A solid stabilized composition consisting essentially of a polyvinyl butyral resin which may be optionally plasticized, said composition comprising from about 0.6 to 4.5 weight %, preferably from 1.5 to 3 weight %, relative to the polyvinyl butyral, of a mixture of from 5 to 50 weight % of at least one phenolic compound selected from the group consisting of: 2,6-di-tert.-butyl-p-cresol, 2,4,6-trimethylphenol, 2,6-di-tert.-butyl-4-lauryl-phenol, bornyl-xylenol,

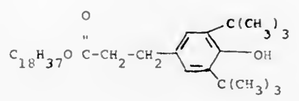


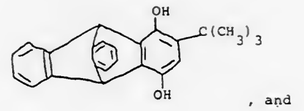
where R is hydrogen,alkyl or allyl



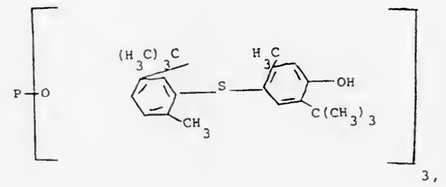




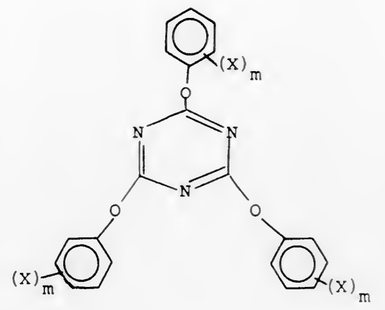




, and



3,



wherein each X is independently Br or Cl, each *m* is independently an integer of 1 to 5, and at least about 45% by weight of the compound is Br, Cl or a mixture thereof.

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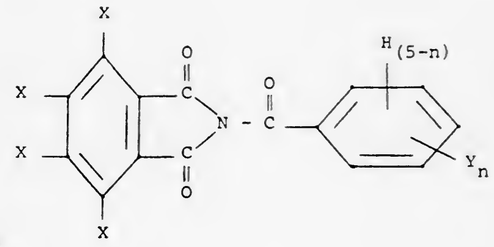
and from 50 to 95 weight % of at least one phosphorous acid triester which, as is the phenolic stabilizer, is soluble in the stabilized mixture and non-volatile at processing temperatures.

3,950,306
TRIS-(POLYHALOPHENOXY)-S-TRIAZINE FLAME RETARDANTS

R. Garth Pews, and Jeffrey A. Gunsher, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 261,353, June 9, 1972, Pat. No. 3,843,650. This application Oct. 1, 1974, Ser. No. 510,963
Int. Cl.² C08J *3/20*
U.S. Cl. 260—45.8 NT **6 Claims**

1. A composition comprising a polymer containing as a fire retardant a small but fire retarding amount of a compound of the general formula



wherein X and Y are each chlorine or bromine and n is an integer from 2 to 5.

3,950,307
HALOBENZOYL TETRAHALOPHTHALIMIDES

Sidney B. Richter, Chicago, and Glendon D. Kyker, Glen Ellyn, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Mar. 10, 1975, Ser. No. 554,895
Int. Cl.² C07D *209/48;* **C08L** *23/00, 25/06*
U.S. Cl. 260—45.75 B **13 Claims**

1. A compound of the formula

7. A fire retardant polymeric composition comprising a combustible polymer and a fire retarding amount of the compound of claim 1.

3,950,308

CROSSLINKED POLYMERS CONTAINING SILOXANE GROUPS

Gerd Greber, Binningen; Roland Darms, Therwil, and Dieter Lohmann, Pratteln, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

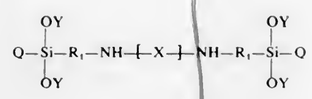
Filed May 24, 1974, Ser. No. 473,022

Claims priority, application Switzerland, June 7, 1973, 8260/73; Aug. 2, 1973, 11231/73

Int. Cl.² C08G 77/04

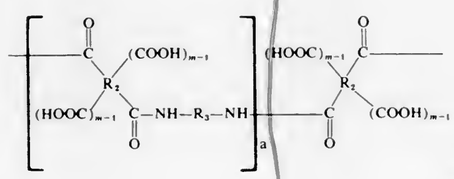
U.S. Cl. 260—46.5 E **14 Claims**

1. Crosslinked polyamides, polyimides or polyamide-imides containing siloxane groups and having a silicon content of 0.2 to 38.0% by weight, which are obtainable by heating a silicon-modified polyamide, polyamide-acid or polyamide-amide-acid monomer or prepolymer having an inherent viscosity of 0.04 to 4.0, of the formula I



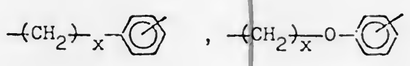
(I)

wherein X represents a structural element of the formula II

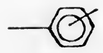


(II)

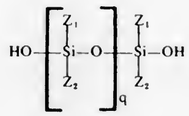
a denotes a number from 0 to 100, and the individual m, R_1, R_2, R_3, Q and Y independently of one another denote the following: *m* denotes the number 1 or 2, R_1 denotes a radical $-(CH_2)_x-$,



or



with *x* denoting a number from 1 to 4, R_2 denotes a carbocyclic aromatic or heterocyclic radical, wherein the cabonamide and carboxyl groups are bonded to different ring carbon atoms and the carboxyl groups are each in the ortho-position to a carbonamide group, R_3 denotes an aliphatic radical with at least 2 carbon atoms, or a cycloaliphatic, araliphatic, carbocyclic-aromatic or heterocyclic radical, Q denotes methyl, phenyl or a -OY radical, with Y having the meaning indicated below, and Y denotes an alkyl radical with 1 to 6 carbon atoms or a phenyl radical, or corresponding cyclised derivatives, in the presence of a compound or a mixture of compounds of the formula VI



(VI)

wherein Z_1 and Z_2 independently of one another denote methyl or phenyl and q denotes a number from 0 to 1,000, to temperatures between 50° and 350°C.

3,950,309

NOVEL THERMOSETTING RESINS AND PROCESS FOR PREPARING THE SAME COMPRISING REACTING A NOVOLAK WITH A TITANIC ACID ESTER

Tzong Jeng Chu, and Susumu Konii, both of Shimodate, Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

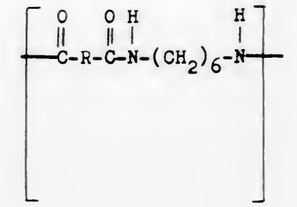
Filed Oct. 30, 1972, Ser. No. 302,207

Claims priority, application Japan, Oct. 29, 1971, 46-85520; Oct. 29, 1971, 46-85521

Int. Cl.² C08G 2/30

U.S. Cl. 260—51 R **10 Claims**

1. A process for preparing a thermoset resin having a thermal resistance such that the temperature at which the resin is caused to show a weight loss of 6% when heated at a temperature elevation rate of 10°C per minute is at least 400°C, said process comprising the steps of reacting:
   1. a novolak obtained by the reaction of a phenol and an aldehyde in the presence of an acid catalyst with
   2. a titanic acid ester of the formula Ti $(OR)_4$ wherein R represents alkyl or aryl in the presence of an alkaline catalyst while keeping the reaction system in a molten state, said titanic acid ester being employed in an amount of 0.06–0.2 molar equivalents, based on the amount of phenol present in the starting system to be reacted with said titanic acid ester, to produce a thermosetting resin; adding hexamethylenetetramine to said thermosetting resin and heating the resultant mixture to produce the thermoset resin.



3,950,310

POLYAMIDES FROM CYCLOHEXANE BIS(ETHYLAMINE)

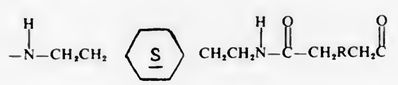
Constantine J. Bouboulis, Union, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 115,140, Feb. 12, 1971, abandoned, which is a continuation of Ser. No. 718,934, April 4, 1968, abandoned. This application Feb. 23, 1972, Ser. No. 228,622

Int. Cl.² C08G 69/26

U.S. Cl. 260—78 R **4 Claims**

1. A fiber forming polyamide consisting essentially of the repeating unit:



wherein R is an alkylene, cyclohexylene, or mixtures thereof.

3,950,311

PROCESS FOR THE PREPARATION OF POLYCAPROLACTAM WHICH CAN BE DYED WITH CATIONIC DYES

Eduard Radlmann, Dormagen-Hackenbroich; Jürgen Schramm, and Günter Nischk, both of Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

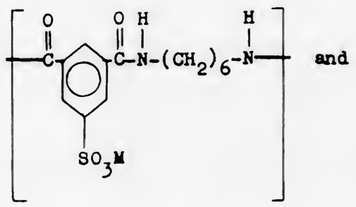
Filed Mar. 8, 1974, Ser. No. 449,496

Claims priority, application Germany, Mar. 10, 1973, 2311982

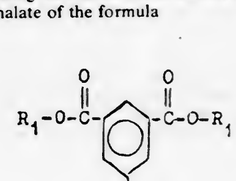
Int. Cl.² C08G 69/16

U.S. Cl. 260—78 L **7 Claims**

1. A process for the production of homogenous polycaprolactams having a sulfonate group concentration of from about 40 to about 1500 mval per 1000 grams of polymer, said polycaprolactams further containing structural elements of the formulae:



and

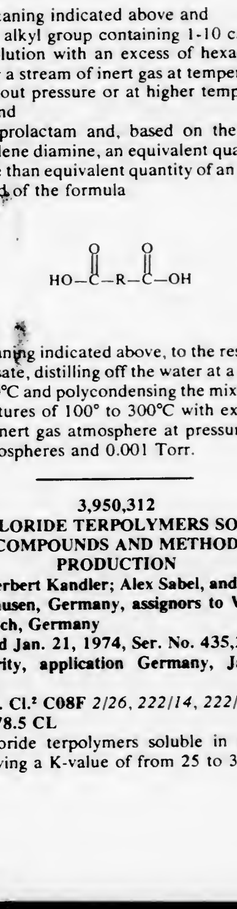


wherein:

M denotes an alkali metal and

R denotes an alkylene group containing 4-12 carbon atoms; which consists essentially of

a. precondensing the alkali metal salt of a dialkyl 5-sulphoisophthalate of the formula



wherein:

M has the meaning indicated above and

R denotes an alkyl group containing 1-10 carbon atoms in aqueous solution with an excess of hexamethylene diamine under a stream of inert gas at temperatures of up to 100°C without pressure or at higher temperatures under pressure, and

b. adding caprolactam and, based on the excess of the hexamethylene diamine, an equivalent quantity or preferably more than equivalent quantity of an aliphatic dicarboxylic acid of the formula

wherein:

R has the meaning indicated above, to the resulting aqueous precondensate, distilling off the water at a temperature of 100° to 140°C and polycondensing the mixture in the melt at temperatures of 100° to 300°C with exclusion of oxygen in an inert gas atmosphere at pressures between 20 excess atmospheres and 0.001 Torr.

3,950,312

VINYL CHLORIDE TERPOLYMERS SOLUBLE IN AROMATIC COMPOUNDS AND METHOD FOR THEIR PRODUCTION

Dieter Kurz; Herbert Kandler; Alex Sabel, and Johann Bauer, all of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Jan. 21, 1974, Ser. No. 435,205

Claims priority, application Germany, Jan. 31, 1973, 2304663

Int. Cl.² C08F 2/26, 222/14, 222/16

U.S. Cl. 260—78.5 CL **2 Claims**

1. Vinyl chloride terpolymers soluble in aromatic compounds and having a K-value of from 25 to 38, measured in

cyclohexanone, consisting essentially of an emulsion polymerized monomer mixture of from:

65% to 80% by weight of vinyl chloride,

15% to 27% by weight of a diester of an acid selected from the group consisting of maleic acid, fumaric acid and mixtures thereof, with an alkanol having from 9 to 15 carbon atoms and more than one branched chain, and

3% to 15% by weight of a monoester of an acid selected from the group consisting of maleic acid, fumaric acid and mixtures thereof, with an alkanol having from 9 to 15 carbon atoms and more than one branched chain.

3,950,313

NITROGEN POLYMER COMPOSITIONS HAVING THERMALLY REVERSIBLE CROSS-LINKS RESULTING FROM TREATMENT WITH ORGANOMETALLIC COMPOUNDS

Peter James Stratford Bain, Llangollen; William Rees Foster, Wrexham, and Alan Jeffrey Neale, Llangollen, all of Wales, assignors to Monsanto Chemicals Limited, London, England

Filed Nov. 6, 1972, Ser. No. 303,692

Claims priority, application United Kingdom, Nov. 9, 1971, 51951/71

Int. Cl.² C08D *5/02, 13/28*

U.S. Cl. 260—79.5 C **14 Claims**

1. A polymer composition comprising an elastomeric polymer having nitrogen atom-containing groups pendant from the polymer chain which polymer is a copolymer of a conjugated diene and a nitrogen atom-containing monomer or an interpolymer of a conjugated diene, a nitrogen atom-containing monomer and at least one other ethylenically unsaturated monomer, and a cross-link agent consisting essentially of an organometallic compound selected from the group consisting of metal carboxylate, a metal thiocarboxylate, metal alkoxide, mercaptide, metal dithiocarbamate and metal phosphorodithioate containing a metal atom which forms thermally reversible cross-links with the nitrogen atoms of at least two of the said pendant groups.

3,950,314

PROCESS FOR IMPROVING THERMOFORMABILITY OF METHYL METHACRYLATE POLYMERS AND THE IMPROVED COMPOSITIONS

Robert M. Graff, Cornwells Heights, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed June 17, 1974, Ser. No. 480,184

Int. Cl.² C08F *120/14, 220/14*

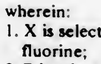
U.S. Cl. 260—80.73 **9 Claims**

1. A composition comprising (A) a polymer of a monomer system comprising about 70 to 100 weight percent methyl methacrylate monomer with the balance selected from the group consisting of lower alkyl acrylates, other lower alkyl methacrylates wherein the alkyl group has between two and four carbon atoms, the polymerizable styrenes, cycloalkyl esters of acrylic and methacrylic acid, and acrylic acids and amides and (B) about 0.0002 to 0.004 moles, based on metal, per 1000 grams of (A), of a compound of the formula

$$R_yM(XR')_z$$

wherein z=0 to 3; y=1 to 4; $z+y$=valence of M; X represents

or —S—; M, when X is —S—, is a metal selected from the group consisting of Pb^{II}, Pb^{IV}, Sn^{II}, Sn^{IV}, Zn^{II}, Cd^{II}, and Cu^{II}; M; when X is



is a metal selected from the group consisting of Pb^{II}, Pb^{IV}, Sn^{II}, Sn^{IV}, Sb^{III}, Zn^{II}, Cd^{II}, Al^{III}, and Ni^{III}; and R and R′ are the same or different acyclic or cyclic alkyl, alkenyl or alkynyl radicals containing 1 to 20 carbon atoms, optionally containing one or more substituents selected from the group consisting of halo-, alkoxy-, carboxy-, and hydroxy-; said compound being further defined as effective to prevent bubble formation at thermoforming temperatures.

3,950,315

CONTACT LENS HAVING AN OPTIMUM COMBINATION OF PROPERTIES

Charles S. Cleaver, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

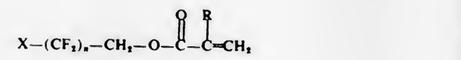
Continuation-in-part of Ser. No. 152,073, June 11, 1971, abandoned. This application June 28, 1973, Ser. No. 374,571

Int. Cl.² C08F *214/18*

U.S. Cl. 260—86.1 E **13 Claims**

13. As a new article of manufacture, a contact lens having increased oxygen permeability, said lens being fabricated from a composition having a refractive index from about 1.36 to about 1.45, said composition being a solid copolymer of comonomers consisting essentially of:

a. about 30 to 90 parts by weight of a fluoroalkyl ester of the structure



wherein:

1. X is selected from the class consisting of hydrogen and fluorine;
2. R is selected from the class consisting of methyl groups; and
3. n is an integer from 1 to 13, and

b. about 70 to 10 parts by weight of an ester of a C_1 monohydric alkanol and an acid selected from the class consisting of methacrylic acid.

3,950,316

CATALYST SUPPORT FORMED BY ADDING ACIDIC MATERIAL TO SILICA CONTAINING TITANIUM

Donald R. Witt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 3, 1974, Ser. No. 466,691

Int. Cl.² C08F *4/02, 4/24, 10/00*

U.S. Cl. 260—88.2 R **20 Claims**

1. A method of preparing a silica-containing catalyst support comprising:

a. mixing a water soluble titanium compound with an alkali metal silicate solution, said titanium compound being non-reactive with said silicate;

b. adding an acidic material to said silicate solution containing said titanium compound to form a hydrogel;

c. aging said hydrogel for a time greater than 1 hour;

d. washing said thus aged hydrogel with either an ammonium salt solution or a dilute acid to produce a substantially alkali metal-free hydrogel;

e. forming a mixture comprising said thus washed hyrogel and a normally liquid oxygen-containing, water soluble organic azeotrope-forming compound; and

f. separating said organic compound and water from said mixture to form a xerogel.

3,950,317

PROCESS FOR THE PREPARATION OF GRAFT COPOLYMER DISPERSIONS

John T. Patton, Jr., Wyandotte, Mich.; Gerhard G. Ramlow, Ludwigshafen, Germany, and Louis C. Pizzini, Trenton, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Oct. 29, 1973, Ser. No. 410,681

Int. Cl.² C08F *283/06*

U.S. Cl. 260—88.3 A **8 Claims**

1. In a process for the preparation of a graft copolymer dispersion by the in situ polymerization in the presence of a free radical catalyst at a temperature between 80° C. and 170° C. of a vinyl monomer in a polyol having an equivalent weight of from 250 to 5000 the improvement which comprises mixing a stream of the catalyst with a stream of the monomer in a static mixer to achieve an intimate homogeneous blend of catalyst and monomer and thereafter adding the catalyst-monomer mix to the polyol.

3,950,318

PRODUCTION OF POLYMERS

Anthony John Park, South Croydon; Alan Charles Sturt, Guildford, and Richard Harvey Williams, Horsham, all of England, assignors to BP Chemicals International Limited, London, England

Continuation of Ser. No. 384,716, Aug. 1, 1973. This application Mar. 21, 1975, Ser. No. 560,340

Claims priority, application United Kingdom, Mar. 29, 1973, 15167/73

Int. Cl.² C08F *2/18, 2/24*

U.S. Cl. 260—92.8 A **10 Claims**

1. A process for the production of a vinyl halide paste forming polymer which comprises preparing a vinyl halide polymer latex by microsuspension of a vinyl halide monomer using an alkali-metal salt of an alkyl sulfuric acid as the major emulsifier, adding an aralkyl sulphonate emulsifier to said latex after polymerisation to form said latex is substantially complete, and isolating said polymer in the presence of said aralkyl sulphonate emulsifier.

3,950,319

AMYLASE INHIBITOR FROM WHEAT GLUTEN USING ALCOHOL

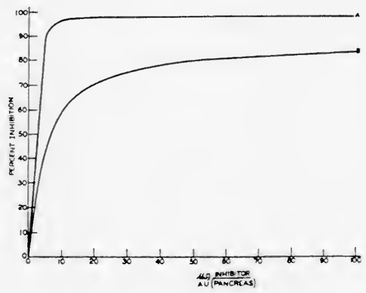
Delf Schmidt, Wuppertal-Vohwinkel, and Walter Puls, Wuppertal-Elberfeld, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 110,482, Jan. 28, 1971, abandoned. This application Jan. 23, 1974, Ser. No. 435,648

Claims priority, application Germany, Jan. 29, 1970, 2003934; June 11, 1970, 2028739

Int. Cl.² C07G *7/00*

U.S. Cl. 260—112 G **5 Claims**



1. A process for the production of an amylase inhibitor which comprises extracting wheat gluten with an aqueous solution containing from 10% up to about 90% of an alcohol of from 1 to 3 carbon atoms in a mixture with a dilute acid and having a pH from 2 to 4, and separating the amylase inhibitor contained in solution from the extraction mixture; and wherein said amylase inhibitor on a dry weight basis has an inhibiting capacity in relation to pancreas amylase of 700 to 800 pancreas amylase inhibitor units (pancreas AIU) per mg, and in relation to saliva amylase of 900 to 1000 saliva amylase inhibitor units (saliva AIU) per mg.

3,950,320
PHENYLAZO DERIVATIVES OF ANTIBIOTIC X-537A

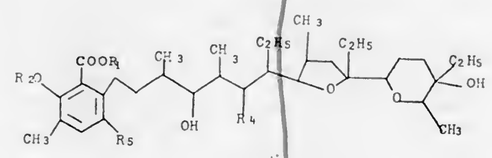
Arthur Stempel, Teaneck, and John Westley, Mountain Lakes, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 300,091, Oct. 24, 1972, Pat. No. 3,836,516, which is a division of Ser. No. 851,044, Aug. 18, 1969, Pat. No. 3,715,372. This application June 26, 1974, Ser. No. 483,259

Int. Cl.² A23K *1/17;* **A61K** *21/00;* **C07D** *7/100*

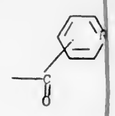
U.S. Cl. 260—152 **2 Claims**

1. A compound selected from the group of compounds of the formula



wherein

R_1 is selected from the group consisting of hydrogen, lower alkyl, phenyl, and phenyl substituted by a member of the group consisting of halogen, nitro and lower alkyl; R_2 is selected from the group consisting of hydrogen, lower alkyl, lower alkanoyl,



benzoyl, and benzoyl substituted by a member of the group consisting of halogen, nitro and lower alkyl; R_5 is selected from the group consisting of phenylazo and phenylazo substituted by a member of the group consisting of halogen, nitro, lower alkyl and lower alkoxy; and R_4 is selected from the group consisting of —OH, =O, and =N—OH

and the pharmaceutically acceptable alkali metal, alkaline earth metal and ammonium salts thereof.

3,950,321
DISPERSE AZO DYES OF THE 2,6-DIAMINOPYRIDINE SERIES

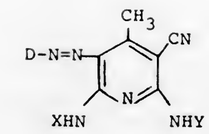
Johannes Dehnert, and Günther Lamm, both of Ludwigshafen, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed Oct. 18, 1973, Ser. No. 407,563

Int. Cl.² C07C *107/04*

U.S. Cl. 260—156 **2 Claims**

1. A dye of the formula



where

D is phenyl substituted by chlorine, bromine, methyl, methoxy, nitro, cyano, methylsulfonyl, ethylsulfonyl, phenylsulfonyl, carbalkoxy of a total of 2 to 5 carbon atoms, carbo-β-alkoxyethoxy, said alkoxy having 1 to 4 carbon atoms, or N,N-dialkyl-substituted sulfamoyl, said alkyl having 1 to 3 carbon atoms; phenylazophenyl; phenylazophenyl substituted by chlorine, bromine or nitro; benzthiazolyl; benzthiazolyl substituted by nitro, cyano, methylsulfonyl or ethylsulfonyl; benzisothiazolyl substituted by chlorine, bromine, cyano or nitro; thiazolyl substituted by cyano or nitro; thienyl substituted by methyl, cyano, nitro or carbalkoxy of a total of 2 to 5 carbon atoms; or thiadiazolyl substituted by phenyl, methyl, chlorine, bromine, methylmercapto, ethylmercapto or alkoxycarbonylethylmercapto, said alkoxy having 1 to 4 carbon atoms; and

one of the radicals X and Y is alkanoyl of 1 to 8 carbon atoms, benzoyl, $NC—CH_2CO—$, $ClCH_2CO—$, $H_5C_6CH_2CO—$, $H_5C_6OCH_2CO—$, $—SO_2CH_3$, $—SO_2C_2H_5$ or $SO_2C_6H_5$ and the other hydrogen; alkyl of 1 to 6 carbon atoms; alkyl of 2 to 6 carbon atoms substituted by hydroxy, cyano, methoxy, ethoxy, phenoxy, phenoxyethoxy, benzyloxy or phenyl; cyclohexyl; norbornyl: phenyl; β-hydroxy-β-phenylethyl; or $(CH_2)_3(OC_2H_4)_nOR$,

R being alkyl of 1 to 4 carbon atoms or benzyl and n being the integer 1 or 2.

3,950,322
FLUOROGENIC SUBSTRATE GLYCOSIDES

John J. Thomas, Satellite Beach, and Edward C. Folger, Melbourne, both of Fla., assignors to Research Corporation, New York, N.Y.

Filed Aug. 27, 1973, Ser. No. 391,702

Int. Cl.² C07H *17/06*

U.S. Cl. 260—210 R **15 Claims**

1. 2,0-Flu-(N acetyl-neuraminic acid) wherein Flu is an aryl moiety whose origin HO.Flu is selected from the group consisting of fluoroescein, methylfluoroscein, methylumbelliferone, umbelliferone and resorufine.

3,950,323
DIGOXIGENINE-3-[2′,3′-DIDESOXY-GLYCOSIDES] AND A PROCESS FOR THEIR MANUFACTURE

Ulrich Stache, Hofheim, Taunus; Werner Fritsch, Neuenhain, Taunus; Werner Haede, Hofheim, Taunus, and Ernst Lindner, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 16, 1973, Ser. No. 416,656

Claims priority, application Germany, Nov. 20, 1972, 2256912

Int. Cl.² C07J *19/00*

U.S. Cl. 260—210.5 **1 Claim**

1. Digoxigenine-3-L-[2′, 3′-didesoxy-rhamnoside].

3,950,324
D-GLUCOSE-1-0-NICOTINOYL-2-DEOXY-2-NICTINAMIDO DERIVATIVES

Karl Friedrich Gey, Reinach; Joseph Kiss, Arlesheim; Hans Lengsfeld, Reinach; Pierre-Charles Wyss, Muttenz, and Willy Schuep, Birsfelden, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

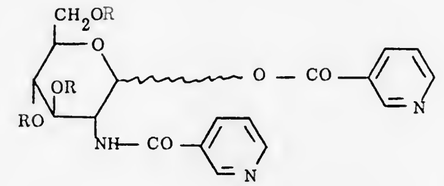
Filed Jan. 9, 1975, Ser. No. 539,886

Claims priority, application Switzerland, Jan. 25, 1974, 1039/74; Nov. 14, 1974, 15193/74

Int. Cl.² C07H *5/06*

U.S. Cl. 260—211 R **6 Claims**

1. A glucose derivative of the formula



(I)

wherein R is lower alkanoyl, (lower alkoxy)-(lower alkanoyl) or benzoyl which may be substituted by C_1–C_6 alkyl, C_1–C_6 alkoxy or halogen.

3,950,325
NOVEL PROCESS FOR PREPARING 2,2′-CYCLOCYTIDINE OR 1-β-D-ARABINOFURANOSYL CYTOSINE

Ichizo Inoue, Ikeda; Takeshi Adachi, Nishinomiya, and Kazuhiko Kondo, Osaka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Jan. 21, 1975, Ser. No. 542,817

Claims priority, application Japan, Jan. 30, 1974, 49-13118

Int. Cl.² C07H *17/02*

U.S. Cl. 260—211.5 R **8 Claims**

1. A process for preparing 2,2′-cyclocytidine which comprises reacting cytidine with a silicon derivative taken from the class consisting of silicon tetrahalide, tetra lower-aliphatic acyloxy silicon, and silicon oxyhalide, and hydrolyzing the reaction product under acidic conditions.

3,950,326
CIS OR TRANS-6-SUBSTITUTED-11-AMINOALKYLIDENEMORPHANTHRIDINES

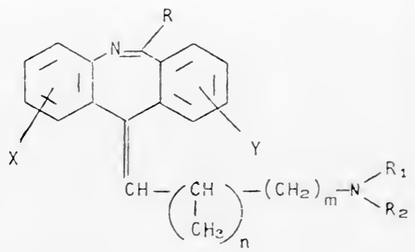
Jules Freedman, Thiensville, Wis., assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed Dec. 6, 1973, Ser. No. 422,438

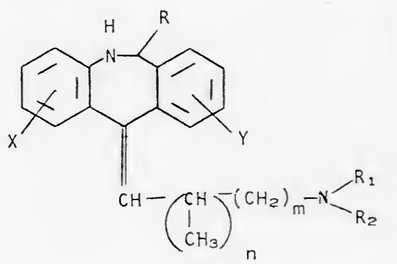
Int. Cl.² C07D *223/24*

U.S. Cl. 260—239 D **1 Claim**

1. The method of preparing a pure cis or trans isomer of a compound of the formula:



in which *n* and *m are* 0 to 3, R is a lower alkyl of 1 to 4 carbon atoms, R_1 and R_2 are hydrogen, a lower alkyl of 1 to 4 carbon atoms or an hydrocarbon aralkyl of 7 to 13 carbon atoms, X and Y are hydrogen, halo or trifluoromethyl, which comprises the steps of dissolving a pure cis or trans isomer of a compound of the formula:



(I)

in dilute hydrochloric acid and then passing oxygen through the solution in the presence of a platinum on carbon catalyst under reflux conditions to effect dehydrogenation.

3,950,327
NITRONES, THEIR MANUFACTURE AND THEIR USE FOR THE MANUFACTURE OF N-SUBSTITUTED ARALIPHATIC ALDEHYDE-NITRONES

Albert Eschenmoser, Kusnacht, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

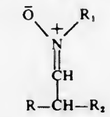
Continuation-in-part of Ser. No. 398,511, Sept. 18, 1973, Pat. No. 3,894,085. This application July 24, 1974, Ser. No. 491,197

Claims priority, application Switzerland, Sept. 19, 1972, 13677/72; Oct. 12, 1972, 14962/72

Int. Cl.² C07C *119/00*

U.S. Cl. 260—240 G **4 Claims**

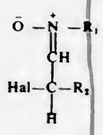
1. A process for preparing nitrones of the general formula



wherein R represents a member selected from the group of thiophenyl, furyl, benzofuryl, N-lower alkyl- or N-lower alkanoyl-pyrryl or -benzopyrryl, toluyl. cresyl, dimethoxyphenyl, dimethylphenyl, acetylaminophenyl, indanyl, naphthyl and its lower alkyl, lower alkoxy or lower alkanoylamino derivatives, phenanthryl and oestronyl, R_1 denotes 5 or 6 ringmembered

cycloalkyl or lower alkyl and R_2 denotes hydrogen or lower alkyl, phenyl or phenyl-lower alkyl, which comprises reacting the compounds of the formulae

R—H and



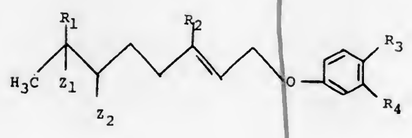
wherein Hal represents chloro or bromo and R_1 and R_2 have the abovementioned meaning, in the presence of silver ions and a solvent at a temperature below 50° C.

3,950,328
TERPENE ARYL ETHERS

Friedrich Karrer, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 190,307, Oct. 18, 1971, abandoned. This application May 16, 1973, Ser. No. 360,854
Claims priority, application Switzerland, Oct. 20, 1970, 15436/70; Aug. 23, 1971, 12321/71
Int. Cl.² C07D *303/18*
U.S. Cl. 260—240 H **2 Claims**

1. A compound of the formula



(I)

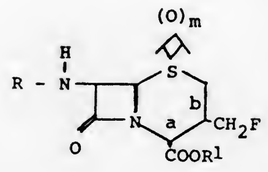
wherein
Z_1 and Z_2 together are an oxygen bridge,
R_1 and R_2 are each methyl or ethyl,
R_3 is hydrogen and R_4 represents propargyloxy.

3,950,329
FLUORINATED CEPHALOSPORINS

George Albert Boswell, Jr.; David R. Brittelli, both of Wilmington, Del., and William J. Middleton, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 11, 1972, Ser. No. 314,023
Int. Cl.² C07D *501/20*
U.S. Cl. 260—243 C **12 Claims**

1. A compound of the formula (1)



wherein
m is zero or 1;
a and *b* are either a single or double bond with the proviso that *b* is a double bond only when $m = 0$ and *a* is a single bond;
R is H,



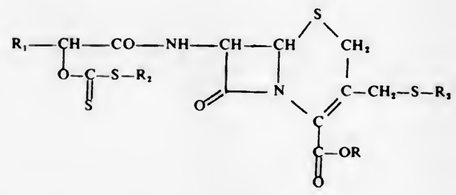
in which Q is phenylmethyl, 2-thienylmethyl, 3-[1,2,5-thiadiazolyl]methyl, 3-[2,5,6-tricyanopyrazinyl]methyl or furfurylmethyl; and
R^1 is H, diphenylmethyl, 2,2,2-trichloroethyl, alkali metal, alkaline earth metal, or ammonium or amine salt; and
2. a pharmaceutically acceptable acid addition salt of (1).

3,950,330
3-ALKYLTHIO AND 3-HETEROTHIO DERIVATIVES OF [[(THIOALKOXY)THIOCARBONYL]OXY]ACETYL CEPHALOSPORINS

Uwe D. Treuner, and Hermann Breuer, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 18, 1974, Ser. No. 533,900
Int. Cl.² C07D *501/20*
U.S. Cl. 260—243 C **11 Claims**

1. A compound of the formula



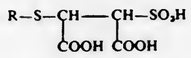
wherein R is hydrogen, lower alkyl, phenyl-lower alkyl, tri(-lower alkyl)stannyl, tri(lower alkyl)silyl, $-CH_2OCO-R_4$, alkali metal, alkaline earth metal or (lower alkyl)amine; R_1 is hydrogen, lower alkyl, phenyl, R_5-pyridyl, R_5-thienyl or R_5-furyl; R_2 is lower alkyl or phenyl-lower alkyl; R_3 is a five membered heterocyclic of the group R_5-thiadiazole, R_5-triazole, R_5-oxadiazole or R_5-tetrazole; R_4 is lower alkyl, phenyl or phenyl-lower alkyl; and R_5 is hydrogen or lower alkyl.

3,950,331
SULFOSUCCINATE DERIVATIVES AS DETERGENT BUILDERS

Vincent Lamberti, Upper Saddle River, N.J., assignor to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 394,613, Sept. 5, 1973, which is a division of Ser. No. 156,933, June 25, 1971, abandoned. This application July 1, 1974, Ser. No. 484,918
Int. Cl.² C07D *295/00*; **C07C** *143/00*
U.S. Cl. 260—247.1 E **7 Claims**

1. An α-alkylthio-β-sulfosuccinic acid having the general formula:



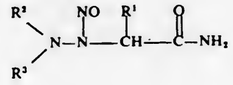
and the alkali metal, ammonium, monoethanolammonium, diethanolammonium, triethanolammonium, methylammonium, dimethylammonium, trimethylammonium, tetramethylammonium, morpholinium, N-methylmonoethanolammonium or N-ethylmonoethanolammonium salt thereof wherein R is an alkyl containing 1 - 30 carbon atoms.

3,950,332
α-(N-SUBSTITUTED AMINO-N-NITROSOAMINO)ACETAMIDES

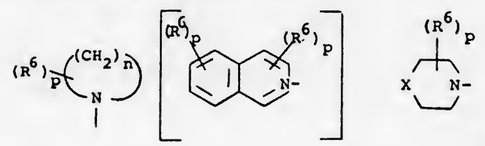
Paul L. Anderson, Dover, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 104,734, Jan. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 56,744, July 20, 1970, abandoned. This application Feb. 14, 1973, Ser. No. 332,432
Int. Cl.² C07D *295/22*
U.S. Cl. 260—247.2 A **8 Claims**

1. A compound of the formula



where
R^1 represents hydrogen or lower alkyl and
R^2 and R^3 each, independently, represent lower alkyl; lower alkenyl; lower alkynyl; ω-hydroxyloweralkyl; or cycloalkyl having 3 to 8 carbon atom; and
R^2 and R^3 together with N represent



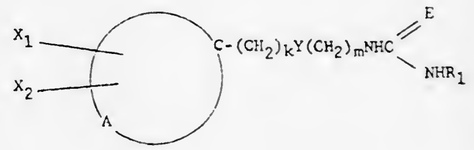
where
n is 4, 5 or 6;
p is 0, 1 or 2;
X represents -O- or $R^7N<$;
where
R^7 is hydrogen; lower alkyl; alkanoyl having 2 to 4 carbon atoms; ω-hydroxy lower alkyl; alkoxyalkyl having 1 to 4 carbon atoms substituted with 1 to 4 halogen atoms having an atomic weight between 19 to 36; and
R^6 represents hydroxy; halo having an atomic weight of about 19 to 36; lower alkyl; lower alkoxy; alkanoyl having 2 to 4 carbon atoms; alkanoyloxy having 2 to 4 carbon atoms; ω-hydroxy lower alkyl; alkoxyalkyl having 2 to 4 carbon atoms; or lower alkyl having 1 to 4 carbon atoms substituted with 1 to 4 halogen atoms having an atomic weight between about 19 to 36.

3,950,333
PHARMACOLOGICALLY ACTIVE GUANIDINE COMPOUNDS

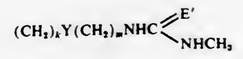
Graham John Durant, Welwyn Garden City; John Colin Emmett, Codicote, and Charon Robin Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Continuation-in-part of Ser. No. 290,584, Sept. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 230,451, Feb. 29, 1972, abandoned. This application Mar. 14, 1974, Ser. No. 450,957
Int. Cl.² C07D *237/06*
U.S. Cl. 260—250 A **22 Claims**

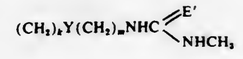
1. A compound of the formula:



wherein A is such that there is formed together with the carbon atom shown an unsaturated heterocyclic nucleus, said unsaturated heterocyclic nucleus being an imidazole, pyrazole, pyrimidine, pyrazine or pyridazine ring; X_1 is hydrogen, lower alkyl, hydroxy, trifluoromethyl, benzyl, halogen, amino or



in which E′ is NH or N-cyano; X_2 is hydrogen or when X_1 is lower alkyl, lower alkyl or halogen; *k* is 0 to 2 and *m* is 2 or 3, provided that the sum of *k* and *m* is 3 or 4; Y is oxygen, sulphur or NH; E is NR_2; R_1 is hydrogen, lower alkyl or di-lower alkylamino-lower alkyl; and R_2 is hydrogen, nitro or cyano, or a pharmaceutically acceptable addition salt thereof with the proviso that X_1 is



only when E is NH or N-cyano.

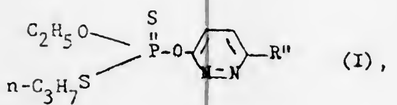
3,950,334

O-ALKYL-S-ALKYL-O-[6-ALKYL- OR 6-HALO-PYRIDAZIN-(3)-YL]-(THIONO)THIOL-PHOSPHORIC ACID ESTERS

Hans-Jochem Riebel; Lothar Rohe, both of Wuppertal; Ingeborg Hammann, Cologne, and Wolfgang Behrenz, Overath-Steinenbrueck, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 11, 1974, Ser. No. 522,404
Claims priority, application Germany, Nov. 30, 1973, 2359661
Int. Cl.² C07D *237/14*
U.S. Cl. 260—250 AP 4 Claims

1. An O-ethyl-S-n-propyl -O-(6-substituted-pyridazin(3)-yl)-thiono thiolphosphoric acid ester of the formula



(I),

in which
R'' is alkyl with 1 to 3 carbon atoms or halogen.

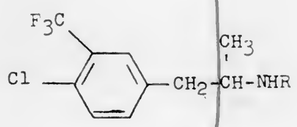
3,950,335

1-(3'-TRIFLUOROMETHYL-4'-CHLORO-PHENYL)-2-AMINO-PROPANES AND SALTS THEREOF

Kurt Schromm; Ernst-Otto Renth; Anton Mentrup, and Richard Reichl, all of Ingelheim am Rhine, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Continuation-in-part of Ser. No. 138,002, April 27, 1971, abandoned. This application June 11, 1974, Ser. No. 478,264
Claims priority, application Germany, May 2, 1970, 2021620
Int. Cl.² C07C *97/10*; C07D *473/00*
U.S. Cl. 260—253 4 Claims

1. A racemic mixture of a compound of the formula



wherein
R is $-(CH_2)_n-CO-C_6H_5$ or $-(CH_2)_n-CO-CH_3$,
where
n is 1 or 2,
an optically active component thereof; or a non-toxic, pharmacologically acceptable acid addition salt of said racemate or optically active component.

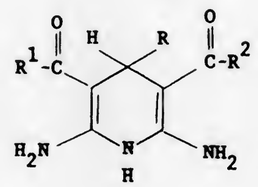
3,950,336

2,6-DIAMINO-1,4-DIHYDROPYRIDINE DERIVATIVES

Horst Meyer, Wuppertal; Friedrich Bossert, Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Division of Ser. No. 336,483, Feb. 28, 1973, Pat. No. 3,855,231. This application Mar. 27, 1974, Ser. No. 454,996
Claims priority, application Germany, Mar. 6, 1972, 2210687
Int. Cl.² C07D *239/34*
U.S. Cl. 260—256.4 C 4 Claims

1. A compound of the formula:



wherein
R is pyrimidyl unsubstituted or substituted by one or two members selected from the group consisting of lower alkyl, lower alkoxy and halogeno provided only one tertiary group will be present when two substituents are on adjacent carbon atoms; and
each of R^1 and R^2, taken independently of the other is lower alkoxy, lower alkoxy(lower alkoxy), alkenyloxy of 2 to 4 carbon atoms, alkynyloxy of 2 to 4 carbon atoms, amino, lower alkylamino or di(lower alkyl)amino.

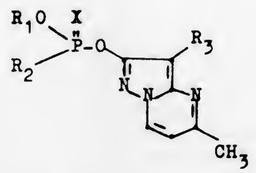
3,950,337

O-PYRAZOLOPYRIMIDINE-(THIONO)-PHOSPHORIC-(PHOSPHONIC) ACID ESTERS

Hellmut Hoffmann, Wuppertal, and Ingeborg Hammann, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 8, 1973, Ser. No. 386,684
Claims priority, application Germany, Aug. 23, 1972, 2241395
Int. Cl.² C07D *239/00*
U.S. Cl. 260—256.4 E 7 Claims

1. An O-pyrazolopyrimidine-(thiono)-phosphoric(phosphonic) acid ester of the formula



(I)

in which
R_1 is alkyl of 1 to 6 carbon atoms,
R_2 is alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 6 carbon atoms or phenyl,
R_3 is hydrogen, chlorine or bromine, and
X is oxygen or sulfur.

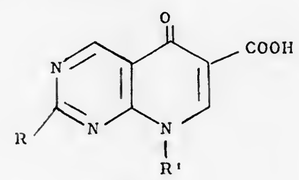
3,950,338

8-ALKYL-5-OXO-5,8-DIHYDRO-PYRIDO(2,3-D)PYRIMIDINE-6-CARBOXYLIC ACIDS AND THEIR PREPARATION

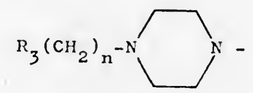
Marcel Pesson, Paris, France, assignor to Laboratoire Roger Bellon, Neuilly sur Seine, France

Filed July 31, 1973, Ser. No. 384,203
Claims priority, application France, Aug. 2, 1972, 72.27876
Int. Cl.² C07D *239/00*
U.S. Cl. 260—256.4 F 12 Claims

1. An 8-alkyl-5-oxo-5,8-dihydro-pyrido(2,3-d)-pyrimidine-6-carboxylic acid of the formula:



wherein: -
R' is lower alkyl radical and
R is of formula



in which *n* is 0, 1, 2, or 3, and R_3 is hydrogen, hydroxyl, vinyl, phenyl or phenyl substituted by halogen or lower alkoxy, the term "lower alkyl, lower alkoxy" meaning a radical with 1 to 5 carbon atoms.

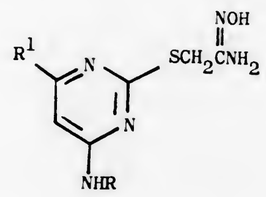
3,950,339

SUBSTITUTED-2-(PYRIMIDINYLTHIO)ACETAMIDOXIMES AND ACETONITRILES

Arthur A. Santilli, Havertown, and Anthony C. Scotese, King of Prussia, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 514,676, Oct. 15, 1974, abandoned. This application Apr. 22, 1975, Ser. No. 570,546
Int. Cl.² C07D *239/00*
U.S. Cl. 260—256.5 R 18 Claims

1. A compound of the formula



wherein R is 4-halobenzyl, 4-methoxyphenyl, or 1,3-benzodioxol-5-ylmethyl, and R^1 is methyl, ethyl, propyl, or phenyl; with the provisos that when R^1 is propyl, R cannot be 4-methoxyphenyl, and when R^1 is phenyl, R cannot be 4-halobenzyl or 4-methoxyphenyl; or a pharmaceutically acceptable acid addition salt thereof.

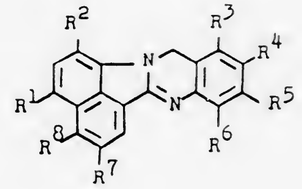
3,950,340

QUINAZOLINE DYES

Ernst Schefczik, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed July 24, 1973, Ser. No. 382,275
Claims priority, application Germany, July 29, 1972, 2237372
Int. Cl.² C07D *487/06*
U.S. Cl. 260—256.4 Q 3 Claims

1. A compound of the formula



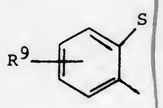
in which:
R^1 is hydrogen; chloro; methyl; methoxy; ethoxy; phenoxy; benzoyl; benzoyl mono-substituted by chloro, bromo, methyl, methoxy or cyano; sulfamoyl; sulfamoyl substituted at the nitrogen once or twice by methyl, ethyl, propyl, butyl, β-hydroxyethyl, γ-methoxypropyl or β-ethylhexyl; sulfopyrrolidide; sulfopiperidide; sulfomorpholide; sulfopiperazide; naphthylmercapto; phenylmercapto; phenylmercapto di-substituted by chloro; phenylmercapto mono-substituted by methyl, methoxy, ethoxy, acetylamino, trifluoromethyl, carbalkoxy with 1 to 4 carbon atoms in the alkoxy, carbo-β-hydroxyethoxy or carbo-β-methoxyethoxy; o-aminophenylmercapto; or o-aminophenylmercapto mono-substituted by methyl, ethyl or methoxy;
R^2 is hydrogen, chloro; naphthylmercapto; phenylmercapto; phenylmercapto di-substituted by chloro; phenylmercapto mono-substituted by methyl, methoxy, ethoxy, acetylamino, trifluoromethyl, carbalkoxy with 1 to 4 carbon atoms in the alkoxy, carbo-β-hydroxyethoxy or carbo-β-methoxyethoxy; o-aminophenylmercapto; or o-aminophenylmercapto mono-substituted by methyl, ethyl or methoxy;
R^3 is hydrogen; chloro; methyl; carboxyl; carbamoyl; carbamoyl substituted at the nitrogen once or twice by alkyl of 1 to 4 carbon atoms, β-hydroxyethyl, γ-methoxypropyl or β-ethylhexyl; carbopyrrolidide; carbopiperidide; carbomorpholide; carbopiperazide; carbalkoxy with 1 to 8 carbon atoms in the alkoxy; carbo-β-hydroxyethoxy; carbo-ω-hydroxyhexoxy; carbo-β-methoxyethoxy; carbo-β-butoxyethoxy; carbo-β-(β'-methoxyethoxy)ethoxy; benzoyl; benzoyl mono-substituted by chloro, bromo, methyl or methoxy; naphthylmercapto; phenylmercapto; phenylmercapto di-substituted by chloro; phenylmercapto mono-substituted by methyl, methoxy, ethoxy, acetylamino, trifluoromethyl, carbalkoxy with 1 to 4 carbon atoms in the alkoxy, carbo-β-hydroxyethoxy or carbo-β-methoxyethoxy; o-aminophenylmercapto; or o-aminophenylmercapto mono-substituted by methyl, ethyl or methoxy;
R^4 is hydrogen; chloro; bromo; nitro; methyl; methoxy; ethoxy; the carboxylic esters or amides specified for R^3; naphthylmercapto; phenylmercapto; phenylmercapto di-substituted by chloro; phenylmercapto mono-substituted by methyl, methoxy, ethoxy, acetylamino, trifluoromethyl, carbalkoxy with 1 to 4 carbon atoms in the alkoxy, carbo-β-hydroxyethoxy or carbo-β-methoxyethoxy; o-aminophenylmercapto; or o-aminophenylmercapto mono-substituted by methyl, ethyl or methoxy;

R^5 is hydrogen; methoxy; ethoxy; the carboxylic esters or amides specified for R^3; naphthylmercapto; phenylmercapto; phenylmercapto di-substituted by chloro; phenylmercapto mono-substituted by methyl, methoxy, ethoxy, acetylamino, trifluoromethyl, carbalkoxy with 1 to 4 carbon atoms in the alkoxy, carbo-β-hydroxyethoxy or carbo-β-methoxyethoxy; o-aminophenylmercapto; or o-aminophenylmercapto mono-substituted by methyl, ethyl or methoxy;

R^6 is hydrogen; chloro; bromo; nitro; methyl; methoxy; naphthylmercapto; phenylmercapto; phenylmercapto di-substituted by chloro; phenylmercapto mono-substituted by methyl, methoxy, ethoxy, acetylamino, trifluoromethyl, carbalkoxy with 1 to 4 carbon atoms in the alkoxy, carbo-β-hydroxyethoxy or carbo-β-methoxyethoxy; o-aminophenylmercapto; or o-aminophenylmercapto mono-substituted by methyl, ethyl or methoxy;

R^7 and R^8 are hydrogen; methoxy; or ethoxy;

R^1 and R^8 together are



;

and

R^9 is hydrogen; methyl; methoxy; or ethoxy;

with the proviso that only one or two of R^1 to R^6 may represent said naphthyl and phenylmercapto members.

3,950,341
REACTION PRODUCT OF A POLYALKENYL SUCCINIC ACID OR ITS ANHYDRIDE, A HINDERED ALCOHOL AND AN AMINE

Nobukazu Okamoto, Saitama, and Michihide Tokashiki, Kawagoe, both of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1974, Ser. No. 459,334
Claims priority, application Japan, Apr. 12, 1973, 48-41602
Int. Cl.² C07D *295/18*
U.S. Cl. 260—268 C **11 Claims**

1. An oil-soluble ashless detergent dispersant composition consisting essentially of a reaction product obtained by reacting in a first stage, at 100° to 250°C.

a. a polyalkenyl succinic acid or its anhydride, wherein the polyalkenyl has at least 40 carbon atoms and is a polymer of an α-olefin of 2 to 6 carbon atoms having a molecular weight of 400 to 20000, with

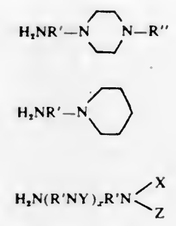
b. a hindered alcohol selected from the group consisting of pentaerythritol, dipentaerythritol, tripentaerythritol, neopentylglycol, trimethylol ethane, trimethylol propane and methyl propyl propane diol,

wherein the molar ratio of (a):(b) is (2 to 3):(0.5 to 1.0), until the presence of said alcohol (b) cannot be detected to obtain an intermediate product, and then reacting in a second stage, at 50° to 250°C, said intermediate product from the first stage with

c. an amine selected from the group consisting of

RNH_2

$H_2N(R'NH)_xR'NH_2$



wherein R is alkyl of 1 to 20 carbon atoms, R′ is alkylene of 2 to 6 carbon atoms, R″ is hydrogen or alkyl of 1–4 carbon atoms, x is an integer from zero to 5, and X, Y and Z are hydrogen or alkyl of 1 to 6 carbon atoms, ethylene oxide and propylene oxide adducts of the above, morpholine, imidazoline, tetrakis (methyl propionyl) tetraethylene pentamine, 1-(3,6,9-triazanonyl)-2-ethyl-imidazoline and 1-(3,6,9,12-tetraazadodecyl)-2-ethyl-imidazoline,

said amine having at least one primary or secondary amino group,

wherein the sum of the number of moles of the primary and secondary amino groups does not exceed the sum of the moles of ester linkages in said intermediate product and the mole ratio of (a):(c) is (2 to 3):(0.1 to 2), to obtain said reaction product exhibiting characteristic imide $\nu_{C=O}$ absorptions at 1780 cm^{-1} and 1715 cm^{-1}, ester $\nu_{C=O}$ absorption at 1745 cm^{-1} and amide $\nu_{C=O}$ absorption at 1645 cm^{-1}, in the infrared absorption spectrum.

3,950,342
ACRIDONE-DICARBOXYLIC ACIDS

John Henry Gorvin, London, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 287,043, July 9, 1972, abandoned. This application Mar. 6, 1973, Ser. No. 338,578
Claims priority, application United Kingdom, Feb. 24, 1972, 8609/72; Feb. 24, 1972, 8610/72; Aug. 29, 1972, 39940/72; Aug. 29, 1972, 40079/72; Sept. 8, 1971, 41852/71
Int. Cl.² C07D *219/00*
U.S. Cl. 260—279 R **7 Claims**

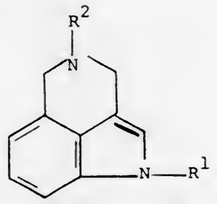
1. 10-Loweralkylacridone-2,7-dicarboxylic acids and pharmaceutically acceptable salts thereof.

3,950,343
PYRROLOISOQUINOLINE DERIVATIVES

Adolf H. Philipp; Christopher A. Demerson, both of Montreal, and Leslie G. Humber, Dollard-des-Ormeaux, all of Canada, assignors to Ayerst, McKenna and Harrison Ltd., Montreal, Canada

Filed Nov. 6, 1973, Ser. No. 413,417
Int. Cl.² C07D *471/06*
U.S. Cl. 260—288 CF **17 Claims**

1. A compound of the formula



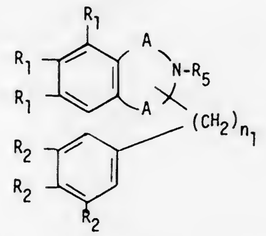
in which R^1 and R^2 each are hydrogen, lower alkyl having one to six carbons, when a straight chain alkyl, and from three to four carbons, when a branched chain alkyl or di(lower)alkylamino(lower)alkyl in which the alkylene portion thereof has from two to six carbons and the alkyl portion thereof has from one to six carbon atoms, when a straight chain alkyl, and from three to four carbon atoms, when a branched chain alkyl and the corresponding acid addition salts with pharmaceutically acceptable acids.

3,950,344
NON-PHENOL OXIDATIVE COUPLING

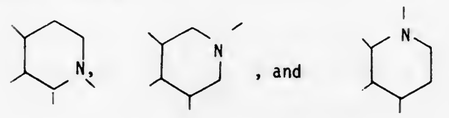
Solomon Morris Kupchan, Charlottesville, Va., and Andris J. Liepa, Blakehurst, Australia, assignors to The University of Virginia, Charlottesville, Va.

Filed Sept. 13, 1973, Ser. No. 396,811
Int. Cl.² C07D *215/12, 217/20, 221/26*
U.S. Cl. 260—289 A **5 Claims**

1. A method for effecting oxidative intramolecular coupling of a compound of the formula

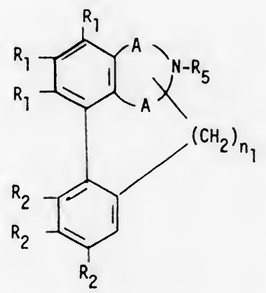


wherein n_1 is an integer of from 1 – 3; each R_1 and R_2 may be a lower alkyl having 1 – 3 carbon atoms, lower alkoxy havng 1 – 7 carbon atoms or hydrogen, with the proviso that at least one of each R_1 and R_2 are lower alkoxy, and wherein the ring system defined by -A-N-A- and the two carbon atoms shared in common with the adjacent benzene ring is selected from the group consisting of



;

R_5 is lower alkyl acyl group of the form RCO wherein R is a lower alkyl having 1–7 carbon atoms, or is hydrogen, or R_5 is hydrogen or a lower alkyl group having 1 – 7 carbon atoms, with an oxidant selected from the group consisting of VOF_3, $MoOCl_4$, Pb_3O_4, $Tl(CF_3COO)_3$, CrO_3, MnO_2, $Co(OH)_3$, $Ce(NH_4)_2(NO_3)_6$ and $Ce(SO_4)_2$ at −45° to 60°C to form a cyclized compound of the formula:



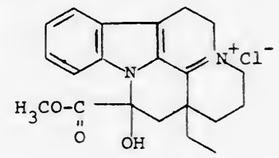
3,950,345
PROCESS FOR THE PREPARATION OF CIS-VINCAMINE

Henry Najer; Yves Robert Alain Pascal, and Jean Pierre Gaston Lefevre, all of Paris, France, assignors to Synthelabo, Paris, France

Filed Feb. 21, 1975, Ser. No. 551,780
Claims priority, application France, Feb. 22, 1974, 74.06051
Int. Cl.² C07D *487/06*
U.S. Cl. 260—293.52 **8 Claims**

1. A process for the preparation of cis-vincamine, said process consisting essentially of the steps of

a. oxidising trans-vincamine with tertiary butyl hypochlorite to obtain dehydrovincamine chloride of formula



(II)

b. reducing the compound of formula (II) with a metal in an aqueous acidic medium and neutralising the product to obtain a mixture of cis- and trans-vincamines, and

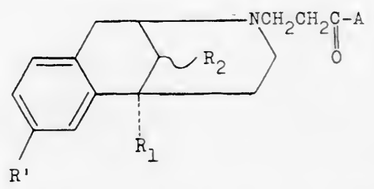
c. separating cis-vincamine from the mixture.

3,950,346
NOVEL PROCESS FOR PRODUCING 2-KETOETHYLBENZOMORPHAN DERIVATIVES AND SALTS THEREOF

Toshio Atsumi, Ooi; Kenji Kobayashi; Yoshiaki Takebayashi, both of Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed May 3, 1973, Ser. No. 356,807
Claims priority, application Japan, May 8, 1972, 47-45683
Int. Cl.² C07D *221/26*
U.S. Cl. 260—293.54 **20 Claims**

1. A benzomorphan derivative of the formula:



wherein R′ is a hydrogen atom or a group of the formula: —OR″, wherein R″ is a hydrogen atom, a C_{1-5} alkanoyl group, a C_{1-4} alkyl group, a C_7–C_{11} phenylalkyl group, a C_{3-7} alkoxycarbonylmethyl group or a tetrahydropyranyl group, R_1 is a hydrogen atom, a C_{1-5} alkyl group or a phenyl group substituted or unsubstituted with halogen, C_{1-4} alkyl, C_{1-4} alkoxy or trifluoromethyl, R_2 is a hydrogen atom or a C_{1-4} alkyl group and A is a C_{1-5} alkyl group, a C_{1-5} alkoxy group or a group of the formula:



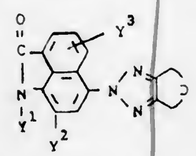
wherein R_3 and R_4 are independently a hydrogen atom or a C_{1-4} alkyl group, and its pharmaceutically acceptable non-toxic salts.

3,950,347
NAPHTHOLACTAM DYESTUFFS

Horst Harnisch, Cologne, and Alfred Brack, Odenthal, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 25, 1973, Ser. No. 363,989
Claims priority, application Germany, May 26, 1972, 2225648
Int. Cl.² C07D *213/71*
U.S. Cl. 260—294.8 B **8 Claims**

1. Naphtholactam dyestuff of the formula



wherein

Y^1 is hydrogen, C_1-C_5-alkyl, benzyl, C_1-C_2-alkyl-benzyl, chlorobenzyl, C_1-C_2-alkoxybenzyl, cyanobenzyl, phenyl, C_1-C_2-alkylphenyl, chlorophenyl, C_1-C_2-alkoxyphenyl, cyclohexyl, or C_1-C_5 -alkyl substituted by chloro, hyroxy, cyano, carboxy, carboxylic acid (C_1-C_4-alkyl) ester, benzyl ester, carboxylic acid amide, or C_1-C_3-alkoxy),

Y^2 is hydrogen, chloro, bromo, C_1-C_3-alkyl, C_1-C_2-alkoxy, amino, or sulpho;

Y^1 and Y^2, when taken together, are propylene;

Y^3 is hydrogen or C_1-C_2-alkoxy; and

D is the remaining portion of a benzene ring which is unsubstituted or substituted by C_1-C_4-alkyl, C_1-C_{12}-alkoxy, amino, C_1-C_4-alkylamino, di(C_1-C_4-alkyl) amino, C_1-C_6-alkyl carbonylamino, C_1-C_6-alkylsulphonylamino, C_1-C_6-alkylcarbonyl (C_1-C_3-alkyl) amino, C_1-C_6-alkylsulphonyl (C_1-C_3-alkyl) amino, phenyl (C_1-C_3-alkyl) carbonylamino, phenyl (C_1-C_3-alkyl) sulphonylamino, halophenyl (C_1-C_3-alkyl) carbonylamino, halophenyl (C_1-C_3-alkyl) carbonyl (C_1-C_3-alkyl) amino, benzoylamino, phenylsulphonylamino, substituted phenylsulphonylamino wherein the substituent is halo, C_1-C_4-alkyl, C_1-C_4-alkoxy, cyano, or carboxylic acid C_1-C_4-alkyl ester;

in addition D is the remaining portion of a pyridine ring or the quaternary salt thereof wherein said ring is unsubstituted or substituted by bromo, methyl, carbomethoxy, amino, amino substituted by acetyl, trifluoroacetyl, chloropropionyl, chloroethylsulphonyl, 2,2,3,3-tetrafluorocyclobutyl-1-carbonyl, chloroacryloyl, benzoyl, chlorobenzoyl, toluyl, methoxybenzoyl, toluenesulphonyl, or phenacetyl; and wherein halo is chloro or bromo.

3,950,348
PROCESS FOR PREPARING E-PYRIDYL-4-METHYLOXYCARBONYLLYSINE

Ralph F. Hirschmann, Blue Bell, and Daniel F. Veber, Ambler, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 214,384, Dec. 30, 1971, Pat. No. 3,780,015. This application Sept. 6, 1973, Ser. No. 393,351
Int. Cl.² C07D *213/55*
U.S. Cl. 260—295 R **1 Claim**

1. The process for the preparation of ϵ-pyridyl-4-methyloxycarbonyllysine which comprises reacting a copper complex of lysine with pyridyl-4-methyl-succinimide carbonate at a pH of 7–12.

3,950,349
N-(N¹-1¹,2¹-BENZISOTHIAZOLIN-3¹-3¹-ONYLCARBONYLTHIO)-1,2-BENZISOTHIAZOLIN-3-ONE

Alan John Buckley; Edward George Gazzard; Michael Singer, and John Anthony Taylor, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 4, 1974, Ser. No. 458,040
Claims priority, application United Kingdom, Apr. 19, 1973, 18959/73
Int. Cl.² C07D *277/74*
U.S. Cl. 260—304 A **1 Claim**

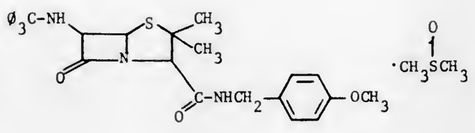
1. The compound N-(N′-1′,2′-benzisothiazolin-3′-onylcarbonylthio)-1,2-benzisothiazolin-3-one.

3,950,350
PENAM-DIMETHYLSULFOXIDE COMPLEX

Philip D. Hammen, East Lyme, and Stephen S. Massett, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Dec. 27, 1974, Ser. No. 536,718
Int. Cl.² C07D *277/04*
U.S. Cl. 260—306.7 C **1 Claim**

1. A complex of the formula

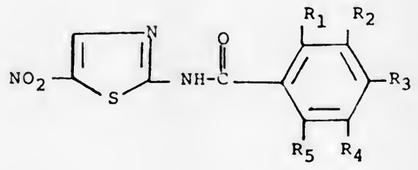


3,950,351
DERIVATIVES OF 2-BENZAMIDO-5-NITRO THIAZOLES

Jean-Francois Rossignol, Paris, and Raymond Cavier, Villejuif, both of France, assignors to S.P.R.L. Phavic, Mouscron, Belgium

Filed Aug. 8, 1974, Ser. No. 495,749
Claims priority, application United Kingdom, Aug. 8, 1973, 37608/73
Int. Cl.² C07D *277/44, 277/58*
U.S. Cl. 260—306.8 R **3 Claims**

1. A 2-benzamido-5-nitro-thiazole of the formula:



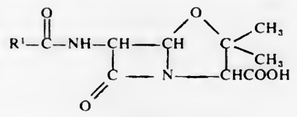
in which one or two of the symbols R_1, R_2, R_3, R_4 and R_5 represents an acetoxy or propionyloxy group, and the remaining symbols represent hydrogen with the proviso that one of the remaining symbols can represent a methoxy group or a chlorine or bromine atom.

3,950,352
2,2-DIMETHYL-3R-CARBOXY-6S-PHENYL(OR PHENOXY)ACETAMIDO-1-OXA-4-AZA-5R-BICYCLO[3,2,0]HEPTAN-7-ONE AND PROCESSES FOR THEIR PRODUCTION

Saul Wolfe, Kingston, Canada, assignor to Queen's University, Kingston, Canada

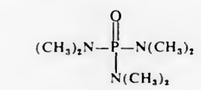
Division of Ser. No. 242,842, April 10, 1972, abandoned. This application Aug. 26, 1974, Ser. No. 500,437
Int. Cl.² C07D *263/52*
U.S. Cl. 260—307 FA **13 Claims**

1. The process of producing a compound of the formula

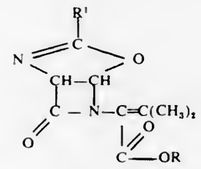


wherein R^1 is benzyl or phenoxymethyl

which comprises the consecutive steps of reacting a compound of the formula R^2SLi wherein R^2 is (lower)alkyl in solution in the compound having the formula



with about an equimolar amount of a compound of the formula



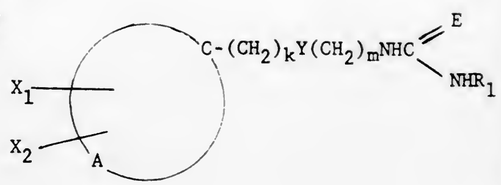
wherein R^1 is benzyl or phenoxymethyl and R is (lower)alkyl, trichloroethyl, benzhydryl or benzyl and then acidifying the resulting mixture.

3,950,353
PHARMACOLOGICALLY ACTIVE THIOUREA AND UREA COMPOUNDS

Graham John Durant, Welwyn Garden City; John Colin Emmett, Codicote, and Charon Robin Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

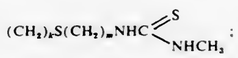
Continuation-in-part of Ser. No. 290,584, Sept. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 230,451, Feb. 29, 1972, abandoned. This application Mar. 14, 1974, Ser. No. 451,333
Int. Cl.² C07D *233/22, 233/24*
U.S. Cl. 260—309 **13 Claims**

1. A compound of the formula:

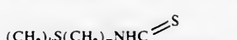


wherein A is such that there is formed together with the carbon atom shown an unsaturated heterocyclic nucleus, said unsaturated heterocyclic neucleus being an imidazle or pyrazole ring;

X_1 is hydrogen, lower alkyl, hydroxyl, trifluoromethyl, benzyl, halogen, amino or



X_2 is hydrogen or when X_1 is lower alkyl, lower alkyl or halogen; k is 0 to 2 and m is 2 or 3, provided that the sum of k and m is 3 or 4; Y is oxygen, sulphur or NH; E is oxygen or sulphur; and R_1 is hydrogen, lower alkyl, benzoyl or di-lower alkylamino-lower alkyl or a pharmaceutically acceptable addition salt thereof with the proviso that X_1 is



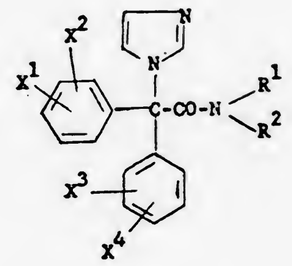
only when Y and E are sulphur and R_1 is methyl and with the proviso that when X1 is other than hydrogen or lower alkyl and X_2 is other than hydrogen, X_1 and X_2 are attached at carbon atoms.

3,950,354
IMIDAZOLYLACETIC ACID AMIDES

Jürgen Wenzelburger; Karl Heinz Büchel; Manfred Plempel, and Werner Meiser, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Sept. 24, 1973, Ser. No. 400,263
Claims priority, application Germany, Sept. 26, 1972, 2247187
Int. Cl.² C07D *233/60*
U.S. Cl. 260—309 **13 Claims**

1. An imidazolylacetic acid amide of the formula:



or a pharmaceutically acceptable nontoxic salt thereof wherein

R^1 is phenyl or cyclohexyl, unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of alkyl of 1 to 3 carbon atoms, chlorine, fluorine, bromine, trifluoromethyl and nitro, and

R^2 is hydrogen; and

X^1, X^2, X^3 and X^4 are the same or different and are each hydrogen or halogen.

3,950,355

5-CHLOROCARBONYL-PYRROLES

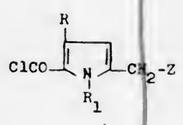
John Robert Carson, Norristown, Pa., assignor to McNeil Laboratories, Inc., Fort Washington, Pa.

Division of Ser. No. 277,845, Aug. 3, 1972, Pat. No. 3,846,447. This application Apr. 18, 1974, Ser. No. 491,076

Int. Cl.² C07D *207/24*

U.S. Cl. 260—326.2 **5 Claims**

1. A 5-chlorocarbonyl-pyrrole having the formula:



wherein

R is a member selected from the group consisting of hydrogen and lower alkyl;

R_1 is lower alkyl; and

Z is a member selected from the group consisting of CN and COO(lower alkyl);

provided that, when said R is lower alkyl, then said Z is COO(lower alkyl).

3,950,356

SYNTHESIS OF PHOTOCHROMIC INDOLINESPIROPYRANS

Alain Hinnen, Vauhallan, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Mar. 5, 1970, Ser. No. 16,962

Claims priority, application France, Mar. 6, 1969, 69.06138

Int. Cl.² C07D *209/54*

U.S. Cl. 260—326.11 S **11 Claims**

1. A method for the synthesis of photochromic indolinespiropyrans by the condensation of a base of an alkylene-2-indoline and an orthohydroxyl-aromatic aldehyde, which comprises dissolving the aromatic aldehyde in dimethyl formamide, adding the indoline base to the solution and heating under reflux, and recovering the photochromic indolinespiropyran.

3,950,357

ANTIBIOTICS

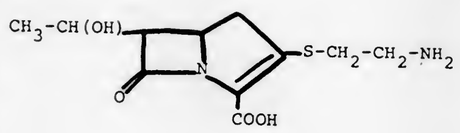
Jean S. Kahan; Frederick M. Kahan, both of Rahway; Edward O. Stapley, Metuchen; Robert T. Goegelman, Linden, all of N.J., and Sebastian Hernandez, Madrid, Spain, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 25, 1974, Ser. No. 526,992

Int. Cl.² C07D *207/12*

U.S. Cl. 260—326.27 **2 Claims**

1. A compound having the following structure:



3,950,358

ARYL KETALS OF 3,7-DIHYDROXY-11-OXO-DODEC-1-ENE

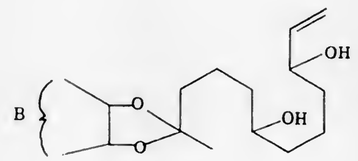
Michael Rosenberger, Bloomfield, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 289,015, Sept. 14, 1972, Pat. No. 3,856,817, which is a division of Ser. No. 11,023, Feb. 12, 1970, Pat. No. 3,708,500, which is a continuation-in-part of Ser. Nos. 824,319, May 13, 1969, Pat. No. 3,544,600, and Ser. No. 825,389, May 16, 1969, abandoned. This application Oct. 15, 1974, Ser. No. 514,500

Int. Cl.² C07D *317/48, 317/70*

U.S. Cl. 260—340.5 **1 Claim**

1. A compound of the formula



wherein B with the dioxolanyl ring is phenylenedioxy, 4,5-dimethylphenylenedioxy or 2,3-naphthalenedioxy.

3,950,359

PROSTAGLANDINS AND METHODS OF MAKING SAME

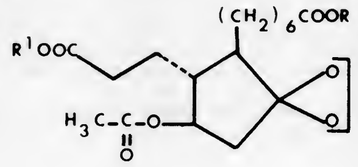
Norman L. Wendler, Summit, and David Taub, Metuchen, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 309,389, Nov. 24, 1972, Pat. No. 3,894,052, which is a division of Ser. No. 48,548, June 22, 1970, Pat. No. 3,736,335. This application Dec. 16, 1974, Ser. No. 533,119

Int. Cl.² C07D *13/04*

U.S. Cl. 260—340.9 **4 Claims**

1. A compound having the formula



---

where R is lower alkyl and R^1 is hydrogen, benzyl or substituted benzyl.

4. The process for preparing 3-acetoxy-2(2-carboxyethyl)-5-oxocyclopentane heptanoic acid lower alkyl ester, 5-cyclic ethylene acetal that comprises treating 3-acetoxy-2-[2-(benzyloxycarbonyl)-ethyl]-5-oxocyclopentane heptanoic acid lower alkyl ester, 5-cyclic ethylene acetal with hydrogen in the presence of palladium catalyst.

3,950,360

ANTIBIOTIC SUBSTANCES

Atsushi Aoki; Rikiya Fukuda; Toshio Nakayabu, all of Sapporo; Keijiro Ishibashi, Tokyo; Chiyoko Takeichi, Tokyo, and Mitsuo Ishida, Tokyo, all of Japan, assignors to Sankyo Company Limited, Tokyo, Japan

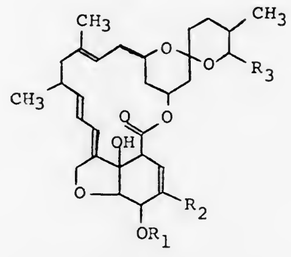
Continuation-in-part of Ser. No. 365,188, May 30, 1973, abandoned. This application Sept. 4, 1973, Ser. No. 394,073

Claims priority, application Japan, June 8, 1972, 47-57058

Int. Cl.² C07D *313/00*

U.S. Cl. 260—343.2 R **6 Claims**

1. A compound having the formula



wherein R_1 represents a hydrogen atom or methyl, R_2 represents methyl and R_3 represents methyl or ethyl.

3,950,361

PROCESS FOR PURIFYING BETA-LACTONES

Yasuo Taneda, and Tadakazu Tsutada, both of Hino, Japan, assignors to Teijin Ltd., Osaka, Japan

Filed July 12, 1971, Ser. No. 161,979

Claims priority, application Japan, July 14, 1970, 45-61621

Int. Cl.² C07D *305/12*

U.S. Cl. 260—343.9 **4 Claims**

1. A process for purifying beta-lactones, which comprises contacting a beta-lactone selected from the group consisting of alpha,alpha-dimethyl-beta-propiolactone, beta-propiolactone and a mixture thereof, with a solid phase alkaline earth metal hydroxide in an amount of from 0.1% to 20% by weight based on the weight of said beta-lactone, in the substantial absence of free water.

3,950,362

OXABICYCLOOCTANES AND PROCESS FOR THEIR MANUFACTURE

Robert Burns Woodward, Cambridge, Mass., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

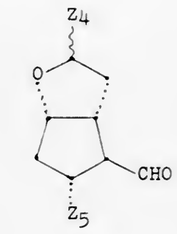
Filed Feb. 2, 1973, Ser. No. 329,250

Claims priority, application Switzerland, May 10, 1972, 6936/72

Int. Cl.² C07D *307/77*

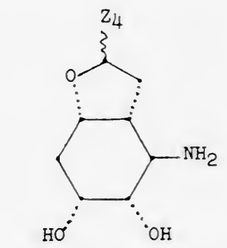
U.S. Cl. 260—346.2 R **17 Claims**

1. A process for the manufacture of a compound of the formula IX



(IX)

in which Z_4 and Z_5 each independently represents a member of a group consisting of a free hydroxyl group, a hydroxyl group etherified by a lower alkanol, a lower alkanol containing halogen or phenyl, a lower alkanol, in which the methylene group in the α-position is replaced by oxygen, a cycloalkanol with 5 to 7 carbon atoms, a cycloalkanol with 5 to 7 carbon atoms in which the methylene group in the α-position is replaced by oxygen, or by a tri-lower alkylsilyl group, and a hydroxyl group esterified with an aliphatic monocarboxylic acid, an aliphatic dicarboxylic acid, an aromatic monocarboxylic acid or an aromatic dicarboxylic acid, or of the optical antipode and racemate thereof, wherein a compound of the formula VIII



(VIII)

in which Z_4 has the meaning given under the formula IX, or the optical antipode or racemate thereof, or an acid addition salt thereof is diazotised with nitrous acid or with a reactive functional derivative thereof.

3,950,363

PROSTAGLANDIN CYCLIC ETHERS

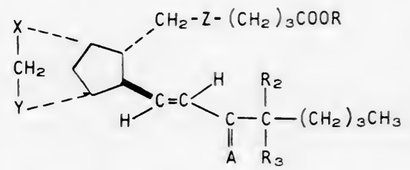
Gordon L. Bundy, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 10, 1975, Ser. No. 556,768

Int. Cl.² C07D *307/00*

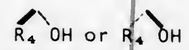
U.S. Cl. 260—347.3 **25 Claims**

1. A compound of the formula:



wherein X and Y are —O— or a valence bond with the proviso that one of X and Y is —O— and the other is a valence bond; wherein Z is $-CH_2CH_2-$ or cis-CH=CH—, wherein R is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or a pharmacologically acceptable cation; wherein R_2 and R_3 are

hydrogen, methyl, or ethyl; and wherein A is



wherein R_4 is hydrogen, methyl, or ethyl with the proviso that R_2 and R_3 are both hydrogen, when R_4 is methyl or ethyl.

3,950,364

PROCESS FOR THE PREPARATION OF ORGANIC SILICON COMPOUNDS

Hans-Joachim Vahlensieck, Wehr; Claus-Dieter Seiler, and Hans-Joachim Kotzsch, both of Rheinfelden, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

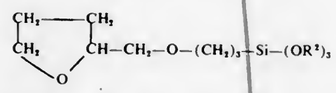
Division of Ser. No. 418,793, Nov. 23, 1973, which is a continuation of Ser. No. 58,189, July 24, 1970, abandoned. This application Oct. 15, 1974, Ser. No. 514,962

Claims priority, application Germany, July 25, 1969, 1937904

Int. Cl.² C07D *307/42*

U.S. Cl. 260—347.8 **2 Claims**

1. A silane of the formula:



wherein R^2 is an alkyl group of 1 to 3 carbon atoms.

3,950,365

METHOD FOR PURIFICATION OF FATTY ACID MIXTURES

Helmut Singer, Mainz-Gonsenheim, and Werner Stein, Erkrath-Unterbach, both of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

Filed Nov. 30, 1973, Ser. No. 420,436

Claims priority, application Germany, Dec. 14, 1972, 2261067

Int. Cl.² C11C *1/08, 3/00;* **C09F** *7/06;* **C08H** *5/00*

U.S. Cl. 260—419 **9 Claims**

1. A method for the separation of polyunsaturated components from mixtures of higher fatty acid compounds, wherein the fatty acids thereof have 8 to 26 carbon atoms consisting essentially of heating a mixture of higher fatty acid compounds selected from the group consisting of higher fatty acids and esters thereof with alkanols having 1 to 4 carbon atoms and glycerol, said mixture comprising a major amount of mono-unsaturated higher fatty acid compounds and from 3% to 25% by weight of polyunsaturated higher fatty acid compounds, to a temperature of between 90°C and 150°C in the presence of from 2% to 15% by weight based upon the weight of said mixture of an organic macroporous, acid ion exchange resin catalyst devoid of gel characteristics and having a specific surface area of at least 35 m^2/gm, said catalyst being the sulfonation product of styrene-divinylbenzene copolymers which have been prepared by suspension polymerization for a time of from 2 to 10 hours wherein said time is sufficient to lower to the desired value the amount of polyunsaturated higher fatty acid compounds in said mixture, separating said ion exchange resin catalyst from said mixture, distilling and recovering said mixture of fatty acid compounds substantially free of polyunsaturated components.

3,950,366

METAL SALTS OF 1,1,5,5-TETRASUBSTITUTED DITHIOBIURETS

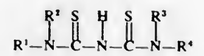
William R. Diveley, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 10, 1973, Ser. No. 359,164

Int. Cl.² C07F *3/00*

U.S. Cl. 260—429.9 **7 Claims**

1. A metal salt of a 1,1,5,5-tetrasubstituted dithiobiuret of the formula:



in which R^1, R^2, R^3 and R^4 independently of each other are selected from the group consisting of C_1-C_{18} alkyl, C_6-C_{12} aryl, C_3-C_{12} cycloalkyl and these radicals substituted by at least one member of the group consisting of hydroxyl, C_1-C_4 alkyl, C_1-C_8 aryl, halo and nitro.

3,950,367

PREPARATION OF N-CHLOROFORMYL-CARBAMIC ACID AMIDES AND ESTERS

Artur Botta, Krefeld, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

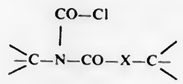
Filed Nov. 16, 1973, Ser. No. 416,569

Claims priority, application Germany, Nov. 22, 1972, 2257344

Int. Cl.² C07C *155/02*

U.S. Cl. 260—455 A **8 Claims**

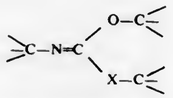
1. A process for the production of an N-chloroformyl carbamic acid amide or ester having the functional group



wherein X is oxygen, sulfur or



which comprises reacting an imino compound having the functional group



and free of interfering radicals with at least about 1 mole of phosgene per mole of imino group.

3,950,368

MANUFACTURE OF METHANE

Franz Josef Broecker; Guenter Zirker; Bruno Triebskorn; Laszlo Marosi, all of Ludwigshafen; Matthias Schwarzmann, Limburgerhof; Winfried Dethlefsen, Ludwigshafen, and Knut Kaempfer, Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Nov. 13, 1973, Ser. No. 415,416

Claims priority, application Germany, Nov. 15, 1972, 2255956

The portion of the term of this patent subsequent to Oct. 14, 1992, has been disclaimed.

Int. Cl.² C07C *27/06*

U.S. Cl. 260—449 M **5 Claims**

1. A process for the manufacture of methane by steam reforming of hydrocarbons of 2 to 30 C atoms or their mixtures on nickel catalysts at superatmospheric pressure, and after-treatment of the resulting cracked gases consisting essentially of carbon monoxide and carbon dioxide, hydrogen, methane and steam, wherein, in a first process stage, in order to produce gases containing methane, the hydrocarbon vapors or their mixtures together with steam are passed under superatmospheric pressure and at temperatures above 250°C through the bed of a practically alkali-free supported nickel catalyst produced from the catalyst precursor $Ni_6Al_2(OH)_{16}.CO_3.4H_2O$, wherein the catalyst precursor is manufactured by precipitating the compound $Ni_6Al_2(OH)_{16}.CO_3.4H_2O$ from aqueous solution, drying it at a temperature of from 80° to 180°C, calcining it at a temperature of from 300° to 550°C and subsequently reducing it in a stream of hydrogen, with the proviso that between the drying stage and the calcination stage the temperature is raised at a rate in the range from 1.60° to 3.33°C/minute, and the reaction products obtained after passing through the first process stage, in which the catalyst has been kept at temperatures from 300° to 500°C by the heat of reaction which was liberated, are cooled, and the gases consisting essentially of methane, hydrogen and carbon monoxide and carbon dioxide are passed, in a further catalytic process stage, under superatmospheric pressure and at temperatures of the gas mixtures from 200° to 300°C, through a bed of a low temperature naphtha cracking catalyst containing nickel.

3,950,369

METHANOL PRODUCTION

Alan Edward Alford Gent, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 215,175, Jan. 3, 1972, abandoned, which is a continuation of Ser. No. 809,777, March 24, 1969, abandoned. This application Mar. 28, 1974, Ser. No. 455,722

Claims priority, application United Kingdom, Apr. 8, 1968, 16853/68

Int. Cl.² C07C *29/16*

U.S. Cl. 260—449.5 **5 Claims**

1. In a process for the production of methanol by passing a gas comprising hydrogen and carbon dioxide over a methanol synthesis catalyst which consists essentially of copper, zinc and a third component which is chromium or a metal oxide from Groups II to IV of the Periodic Table at a pressure below 150 atmospheres and a temperature up to 300°C. to form a gaseous reaction mixture including methanol and water and unreacted carbon dioxide and then recovering the methanol from said gaseous reaction mixture, the improvement whereby the efficiency of the methanol recovery is increased, said improvement comprising the steps of cooling said gaseous reaction mixture to condense part of the methanol and water therein, scrubbing the remaining gaseous mixture with water to remove substantially the remainder of the methanol therefrom and recycling the scrubbed gas for further contact with said methanol synthesis catalyst.

3,950,370

PROCESS OF DIMERIZATION

Olav Torgeir Onsager, Suffern, N.Y., assignor to Halcon International, Inc., New York, N.Y.

Filed Dec. 30, 1974, Ser. No. 537,296

Int. Cl.² C07C *120/00*

U.S. Cl. 260—465.8 D **4 Claims**

1. A process for the dimerization of acrylonitrile to produce 2-methylene glutaronitrile which comprises reacting said acrylonitrile in the liquid phase at a temperature of 10° to 150°C. in the presence of a catalyst consisting essentially of (a) at least one metal compound of the formula $M(X)_n$ wherein M is magnesium, chromium or manganese, X is a halide and n is a number equal to the valence of the metal M; and (b) at least one nitrogen-containing Lewis Base which is (1) a tertiary monoamine of the formula



wherein R^1, R^2, and R^3 are the same or different and each is an alkyl, cycloalkyl, benzyl or aryl radical; or (2) a tertiary poly-functional amine which contains at least two Lewis Base nitrogen groups separated from each other by at least one carbon atom, and which are (a) N-disubstituted amino groups wherein each N-substituent is the same or different and is an alkyl, cycloalkyl, benzyl or aryl radical, or (b) N-heterocyclic groups containing three to 20 carbon atoms; or (3) a mono nitrogen-containing N-substituted heterocyclic amine containing three to 20 carbon atoms in the heterocyclic ring wherein the N-substituent is an alkyl, cycloalkyl, benzyl or aryl radical, wherein the Lewis Base/metal compound mole ratio is from 0.1:1 to 25:1, each radical and each heterocyclic group or ring may be unsubstituted or substituted by non-reactive groups, each alkyl radical contains one to 20 carbon atoms and each aryl radical contains six to 20 carbon atoms.

3,950,371

METHOD OF SEPARATING MIXTURES OF FATTY SUBSTANCES

Lutz Jeromin, Dusseldorf; Norbert Bremus, Langenfeld Rhineland; Georg Friederici, Dusseldorf, and Peter Peiffer, Krefeld, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

Filed Apr. 8, 1974, Ser. No. 458,684

Claims priority, application Germany, Apr. 7, 1973, 2317563

Int. Cl.² C11C *1/08;* **C11B** *3/00;* **B01D** *9/00*

U.S. Cl. 260—419 **9 Claims**

1. In the method for separation of mixtures of fatty acids into components of different melting points by the rewetting process which comprises the steps of (a) at least partial melting a fatty acid mixture, (b) cooling and crystallizing said fatty acid mixture into a mixture of liquid and solid particles, (c) dispersing said mixture of liquid and solid particles in an aqueous wetting agent solution, having a wetting agent selected from the group consisting of an anionic surface-active compound and a nonionic surface-active compound, containing electrolyte at a temperature whereby a dispersion of liquid and solid fatty acids is obtained, (d) separating said dispersion into a lighter phase consisting substantially of the liquid lower-melting fatty acid fractions and a heavier phase consisting substantially of solid, higher melting fatty acid fractions dispersed in said aqueous wetting agent solution, (e) separating the solid higher-melting fatty acid fractions from said aqueous wetting agent solution, and (f) recovering said separated fatty acids of different melting points, the improvement which consists essentially in step (b) of adding an aqueous non-surface-active electrolyte solution containing from 0.1% to 10% by weight of a water-soluble salt selected from the group consisting of a chloride, a sulfate and a nitrate of a metal

selected from the group consisting of a monovalent metal, a divalent metal and a trivalent metal, to said at least partially melted fatty acid mixture and cooling to the temperature of incipient crystallization by evaporation under vacuum of a part of the water of said aqueous electrolyte solution with simultaneously intensely mixing said at least partially melted fatty acid mixture and said aqueous electrolyte solution, whereby the amount of aqueous phase at the end of the evaporation cooling of step (b) is from 0.3 to 5 times the weight of the fatty acid mixture charged.

3,950,372

1:1 MANGANESE ALPHA AMINO ACID COMPLEXES

Mahmoud M. Abdel-Monem, South Minneapolis, Minn., assignor to Zinpro Corporation, Chaska, Minn.

Filed July 3, 1974, Ser. No. 485,442

Int. Cl.² C07F *13/00*

U.S. Cl. 260—429 R **5 Claims**

1. 1:1 manganese glycine complexed salts of the formula:

$$[H_2C(H_2N)COO \cdot Mn^{++}]_w X^-$$

wherein X is an anion selected from the group consisting of sulphates, phosphates and acetate and W is an integer equal to the anionic charge of X.

5. A process of making solid form 1:1 manganese methionine acid sulphate, comprising:

reacting substantially equimolar quantities of water dissolved methionine and water dissolved manganese sulphate to provide a reaction product,

separating the reaction product,

dissolving the reaction product in a minimum amount of hot water needed to dissolve said reaction product, and

adding ethyl alcohol to reprecipitate the desired product in solid form.

3,950,373

METHOD FOR ISOLATING ORGANOMETALLIC COMPOUNDS AND THIOUREA ADDUCTS WITH ORGANOMETALLIC COMPOUNDS

Alexandr Nikolaevich Nesmeyanov, glavnoe zdanie MGU, korpus K, kv. 105; Margarita Iosifovna Rybinskaya, ulitsa Novatorov, 40, korpus 5, kv. 80, and Georgy Borisovich Shulpin, B. Filevskaya ulitsa, 19/18, korpus 1, kv. 185, all of Moscow, U.S.S.R.

Filed Aug. 30, 1974, Ser. No. 502,106

Int. Cl.² C07F *11/00*

U.S. Cl. 260—429 CY **15 Claims**

5. A method for isolating an organometallic compound selected from the group consisting of ferrocene, ruthenocene, osmocene, nickelocene, cyclopentadienyl manganese tricarbonyl, cyclopentadienyl rhenium tricarbonyl, benzene chromium tricarbonyl benzene molybdenum tricarbonyl, benzene tungsten tricarbonyl and bis-benzene chromium from a mixture with substances that do not form adducts with thiourea comprising treating said mixture with thiourea in the presence of an organic solvent selected from the group consisting of alkanols having from 1 to 3 carbon atoms, dialkyl ketones and mixtures of said alkanols and said ketones to form a thiourea adduct of said organometallic compound; separating said thiourea adduct from the substances that do not form thiourea adducts; and decomposing said thiourea adduct to isolate said organometallic compound.

3,950,374

CARBAMATE PESTICIDE

Minoru Ueda, Takarazuka; Shigehiro Ooba, Kobe; Masachika Hirano, Toyonaka, and Hisami Takeda, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

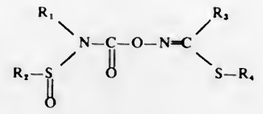
Filed Jan. 23, 1973, Ser. No. 326,101

Claims priority, application Japan, Jan. 26, 1972, 47-10155; Mar. 7, 1972, 47-23700

Int. Cl.² C07C *119/18*

U.S. Cl. 260—453 R **3 Claims**

1. A compound of the formula



wherein R_1 represents alkyl of 1 to 5 carbon atoms, R_2 represents alkyl of 1 to 12 carbon atoms, phenyl or phenyl monosubstituted by methyl, nitro o chloro, and R_3 and R_4 are the same or different alkyl of 1 to 4 carbon atoms.

3,950,375

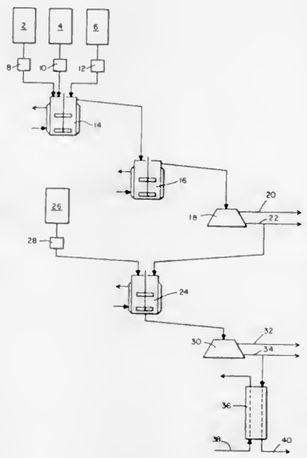
CONTINUOUS MANUFACTURE OF PEROXYDICARBONATES

Peter M. McKee, and Uday D. Wagle, both of Grand Island, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 10, 1973, Ser. No. 423,350

Int. Cl.² C07C *179/18*

U.S. Cl. 260—463 **15 Claims**



1. In a process for the continuous manufacture of peroxydicarbonate, RO-C(O)-OO-C(O)-OR wherein R is alkyl of 2–16 carbons, by continuously reacting chloroformate, RO-C(O)-Cl, with hydrogen peroxide and aqueous alkali metal hydroxide at a temperature in the range of −10°C. to +50°C. in at least two reaction zones connected in series, the improvement which comprises isolating peroxydicarbonate product in at least 97% purity by continuously feeding a solvent-free reaction mixture from the last of said reaction zones directly through a centrifuge to recover the organic phase.

3,950,376

SULFAMYLBENZOIC ACID DERIVATIVES

Peter Werner Feit, Gentofte; Ole Bent Tvaermose Nielsen, Vanlose, and Herta Bruun, Graested, all of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S, Ballerup, Denmark

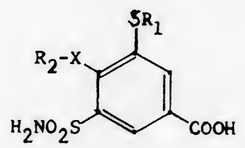
Filed June 18, 1973, Ser. No. 370,609

Claims priority, application United Kingdom, July 13, 1972, 32909/72; Nov. 7, 1972, 51384/72; Jan. 24, 1973, 3658/73

Int. Cl.² C07C *143/78*

U.S. Cl. 260—415 D **25 Claims**

1. A compound of the formula I



I

in which

R_1 is selected from the group consisting of straight and branched C_1–C_6 alkyl, alkenyl and alkynyl radicals; said group further consisting of methyl and ethyl radicals monosubstituted with phenyl,

R_2 stands for a phenyl radical, optionally being substituted with a member selected from the group consisting of lower alkyl, hydroxy and lower alkoxy;

X stands for a member selected from the group consisting of oxygen and sulphur;

and pharmaceutically acceptable, non-toxic salts of the carboxylic acid of formula I; and esters thereof with cyanomethanol, benzyl alcohol, and C_1–C_6 alkanols.

3,950,377

DIPHENYLAMINE DERIVATIVES

Charles Brian Barlow, Camberley, England, assignor to Imperial Chemical Industries Limited, London, England

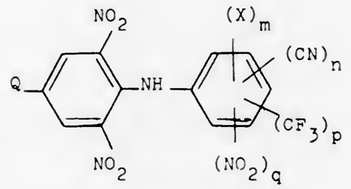
Continuation-in-part of Ser. No. 425,279, Dec. 17, 1973, abandoned. This application Apr. 15, 1974, Ser. No. 461,219

Claims priority, application United Kingdom, Dec. 20, 1972, 58692/72; Feb. 9, 1973, 6393/73; Feb. 9, 1973, 6394/73; Feb. 9, 1973, 6395/73; May 15, 1973, 23046/73; May 15, 1973, 23047/73; Feb. 9, 1973, 6392/73

Int. Cl.² C07C *121/78, 87/50*

U.S. Cl. 260—465 E **5 Claims**

1. A diphenylamine derivative of formula:



wherein either (a) Q represents a cyano or trifluoromethyl group, and X represents a halogen atom, *m* is an integer from zero to three, *n* is zero or one, *p* is an integer from zero to two, and *q* is an integer from zero to three, the sum of *m*, *n*, *p* and *q* being an integer from two to five; or (b) Q represents a nitro group and X represents a halogen atom, *m* is an integer from zero to three, *n* is zero or one, *p* is an integer from zero to two, and *q* is an integer from zero to three, the sum of *n* and *p* being an integer from one to three, and the sum of *m*, *n*, *p* and *q* being an integer from two to five.

3,950,378

PREPARATION OF β-ANILINO-α-BENZYLACRYLONITRILES

Ronald M. Cresswell, Scarsdale; John W. Mentha, Hartsdale, and Russell L. Seaman, Chappaqua, all of N.Y., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

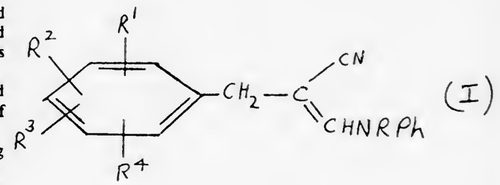
Continuation of Ser. No. 259,340, June 2, 1972, abandoned, which is a division of Ser. No. 16,606, March 4, 1970, Pat. No. 3,697,512. This application May 1, 1974, Ser. No. 465,899

Claims priority, application United Kingdom, Mar. 6, 1969, 11908/69; Mar. 6, 1969, 11909/69; May 16, 1969, 25171/69; June 13, 1969, 30247/69

Int. Cl.² C07C *121/78;* C07D *317/06*

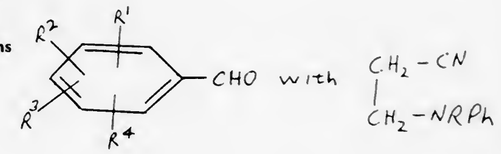
U.S. Cl. 260—465 E **12 Claims**

1. The method of preparing compounds of the formula I



(I)

which comprises reacting



with

in the presence of base in a polar aprotic or polar non-aprotic solvent, where R is lower alkyl or hydrogen, where Ph is aryl of 6 to 12 carbons which may be substituted in one, two or three positions with lower alkyl, lower alkoxyl or halogen wherein lower alkyl and lower alkoxyl have 1 to 4 carbon atoms and where R^1 – R^4 are the same or different and each is a hydrogen or halogen atom, lower alkyl, lower alkoxy or benzyloxy or R^3 and R^4 taken together may be a methylenedioxy group when both R^1 and R^2 are hydrogen atoms and

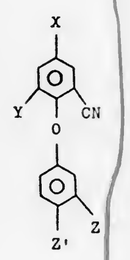
wherein in $R^1 - R^4$ the lower alkyl and lower alkoxyl contain 1 to 4 carbons in the above.

3,950,379
2-CYANO-DIPHENYL ETHERS

Horst O. Bayer, Levittown; Colin Swithenbank, Perkasie, and Roy Y. Yih, Doylestown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 234,657, March 14, 1972, abandoned. This application Aug. 19, 1974, Ser. No. 498,785
Int. Cl.² C07C *121/75*
U.S. Cl. 260—465 F **7 Claims**

1. A compound of the formula



wherein

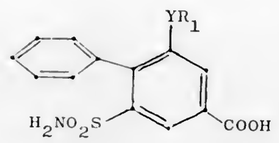
X is a halogen atom or a trifluoromethyl group,
Y is a hydrogen atom, a halogen atom, a trifluoromethyl group, or a (C_1–C_4) alkyl group,
Z is a hydrogen atom, a halogen atom, a cyano group, a trifluoromethyl group, a (C_1–C_4) alkyl group, or a (C_1–C_6) alkoxy group, and
Z′ is a halogen atom, a cyano group, a trifluoromethyl group, or, when X is a halogen atom, additionally a nitro group.

3,950,380
PHENYL-BENZOIC ACID DERIVATIVES

Peter Werner Feit, Gentofte; Ole Bent Tvaermose Nielsen, Vanlose, and Herta Bruun, Graested, all of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S, Ballerup, Denmark

Filed Aug. 20, 1974, Ser. No. 499,042
Claims priority, application United Kingdom, Sept. 6, 1973, 42050/73
Int. Cl.² C07C *121/64, 149/32, 101/48, 65/14*
U.S. Cl. 260—465 D **8 Claims**

1. A compound of the general formula Ia



Ia

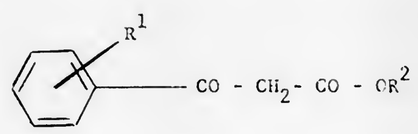
in which R_1 represents a straight or branched C_1-C_6 alkyl, alkenyl or alkynyl radical, benzyl or phenethyl; and Y stands for O, S, or NH; and pharmaceutically acceptable, non-toxic salts thereof; and esters thereof with cyano methanol, benzyl alcohol and C_1-C_6 alkanols.

3,950,381
PREPARATION OF AROYL ACIDIC ESTERS

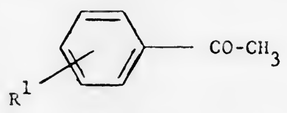
Peter Hartmann, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 27, 1974, Ser. No. 501,016
Claims priority, application Germany, Aug. 31, 1973, 2343974
Int. Cl.² C07C *69/95, 121/76*
U.S. Cl. 260—465 D **7 Claims**

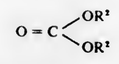
1. Process for preparing an aroyl acetic ester having the formula:



wherein
R^1 is hydrogen, C_1–C_6 alkyl, an aromatic radical with up to 12 C-atoms, C_1–C_6 alkoxy, aroxy with up to 12 C-atoms, halogen, cyano, or methyl or ethyl substituted by fluorine and/or chlorine; and
R^2 is C_1–C_4 alkyl,
which comprises adding an arylmethyl ketone having the formula:



wherein R^1 is as defined above;
evenly over a period of at least 90 minutes at a temperature in the range of from 50° to 140°C to excess dialkylcarbonate having the formula:



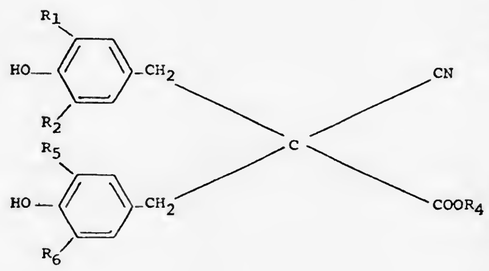
where R^2 is as defined above,
containing at least the stoichiometrically equivalent quantity of an alkali metal alcoholate based on the arylmethyl ketone, and simultaneously removing the alcohol liberated; and converting the alkali metal salt formed into the aroyl acetic ester by adding water and at least the stoichiometrically equivalent quantity of acid.

3,950,382
BIS(4-HYDROXY-3,5-DIALKYLBENZYL)CYANO-CARBOXYLIC ACID ESTERS

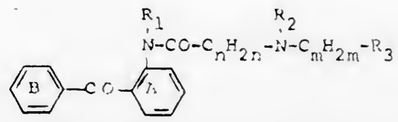
Heinz Eggensperger, Gadernheim uber Bensheim; Volker Franzen, Heidelberg; Karl-Heinz Diehl, Benxheim, and Wilfred Kloss, Kolmbach uber Bensheim, all of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 211,125, Dec. 22, 1971, Pat. No. 3,856,846, which is a continuation-in-part of Ser. No. 714,100, March 18, 1968, Pat. No. 3,646,110. This application Oct. 1, 1974, Ser. No. 511,078
Int. Cl.² C07C *121/76*
U.S. Cl. 260—465 D **7 Claims**

1. A compound corresponding to the formula



wherein R_1, R_2, R_5 and R_6 are alkyl groups having 1 to 6 carbon atoms and R_4 is selected from the group consisting of alkyl, straight chain alkenyl, sulfur interrupted alkyl, oxygen interrupted alkyl and aralkyl having up to 20 carbon atoms.



and the acid addition salts thereof, wherein R_1 and R_2 are substituents selected from the group consisting of hydrogen, alkyl having 1 to 5 carbon atoms, an alkenyl radical with 2 to 4 carbon atoms, an alkinyl radical with 2 to 4 carbon atoms, or a β-bromoallyl radical ($-CH_2-CBr=CH_2$); R_3 is CN; n is an integer selected from 1 and 2; and m is an integer selected from 1, 2 and 3, and wherein the ring A is selected from the group consisting of phenylene, halogenphenylene, nitrophenylene, trifluormethylphenylene, methylphenylene, methoxyphenylene and methylmercaptophenylene; the ring B is selected from the group consisting of phenyl, fluorphenyl and chlorophenyl.

3,950,383
CYANOALKYLAMINO-AMIDO BENZOPHENONES

Heinz Günter Greve, and Klaus Resag, both of Frankfurt am Main, Germany, assignors to Cassella Farbwerke Mainkur Akt, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 358,455, May 8, 1975, Pat. No. 3,888,899. This application Nov. 5, 1974, Ser. No. 521,010
Int. Cl.² C07C *121/78*
U.S. Cl. 260—465 D **8 Claims**

1. Benzophenone derivatives having the structural formula

3,950,384
PROCESS FOR THE MANUFACTURE OF NITRILOTRIACETONITRILE

Hubert Neumaier, Knapsack; Wilhelm Vogt, Efferen; Kurt Sennewald, Hermulheim; Richard Schuller, Cologne-Holweide, and Gunther Lenz, Frechen-Bachem, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 133,978, April 14, 1971, abandoned. This application June 18, 1974, Ser. No. 480,524
Claims priority, application Germany, May 26, 1970, 2025632
Int. Cl.² C07C *120/00*
U.S. Cl. 260—465.5 A **8 Claims**

1. Process for the manufacture of nitrilotriacetonitrile by reacting an ammonium salt of sulfuric acid, phosphoric acid or hydrochloric acid with an aqueous formaldehyde solution having a strength of between about 20 and 55 weight percent and liquid hydrogen cyanide or an aqueous solution thereof, having a strength of at least 40 weight percent, at a temperature of between about 50° and 110°C., completing the reaction and separating the reaction mixture into firstly crystalline nitrilotriacetonitrile and secondly an aqueous acid mother liquor which comprises

A. continuously supplying a preliminary reactor with a substantially saturated aqueous solution of the ammonium salt and the aqueous methanol-free formaldehyde solution, which are preheated at a temperature of between about 50° and 110°C., the ammonium salt being used in a stoichiometric excess between 5 and 40 percent over the formaldehyde;

thoroughly mixing the said aqueous solution components and reacting them inside the said preliminary reactor at a temperature of between about 50° and 110°C. and within a period of between about 2 seconds and 4 minutes;

B. delivering the resulting reaction product to a second reactor series-connected to the said preliminary reactor and reacting the said reaction product in the said second reactor with a stoichiometric proportion, based on the amount of the formaldehyde, of liquid hydrogen cyanide or with the aqueous solution thereof, for a period between about 3 and 10 minutes, under a pressure between 3 and 25 atmospheres gauge and at a temperature between about 90° and 110°C. with the resultant formation of nitrilotriacetonitrile and the free acid of the ammonium salt;

C. withdrawing the reaction mixture from the said second reactor and quenching it by cooling down to a temperature between about 20° and 30°C. with pressure relief to

atmospheric pressure and isolating the precipitated nitrilotriacetonitrile from the reaction mixture by filtration or centrifugation.

3,950,385
PREPARATION OF NITRONITRATES

Mahmoud Kablaoui, Wappingers Falls, and Richard F. Love, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 1, 1974, Ser. No. 519,901
Int. Cl.² C07C 77/04
U.S. Cl. 260—466 11 Claims

1. A method of preparing nitronitrates which comprises contacting an alkene, dinitrogen tetroxide, oxygen and concentrated sulfuric acid.

11. A method according to claim 1 wherein said alkene is cyclooctene.

3,950,386
CYCLIC COMPOUNDS SYNTHESIS

Stephen J. Hannam, Thackley, England, assignor to Sun Chemical Corporation, New York, N.Y.

Filed Apr. 19, 1974, Ser. No. 462,318
Claims priority, application United Kingdom, Feb. 21, 1973, 8554/73; Aug. 1, 1973, 36548/73
Int. Cl.² C07C 64/74
U.S. Cl. 260—468 J 3 Claims

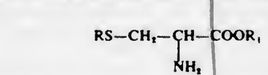
1. A one-step simultaneous esterification and halogenation process for preparing 4,5-dihalocyclohexane-1-(monoethylene glycol carboxylate)-2-carboxylic acid which comprises reacting bromine, chlorine, iodine, hydrogen bromide, hydrogen chloride, or hydrogen iodide with a mixture of tetrahydrophthalic anhydride and monoethylene glycol in a substantially anhydrous medium.

3,950,387
CYSTEINE DERIVATIVES

Maurice Joullié, Saint-Germain-en-Laye; Lucien Lakah, Paris; Gabriel Maillard, Paris, and Pierre Muller, Paris, all of France, assignors to Recherches Pharmaceutiques et Scientifiques, Paris, France

Filed June 7, 1973, Ser. No. 367,821
Claims priority, application France, June 15, 1972, 72.21607
Int. Cl.² C07C 69/52
U.S. Cl. 260—468 L 8 Claims

1. An L S-substituted cysteine derivative of the formula



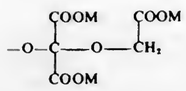
in which R is a substituent selected from the group consisting of allyl, geranyl, cinnamyl, benzylidene-3-butyl and 1-(para-chlorophenyl)ethyl and R_1 is selected from the group consisting of hydrogen and alkyl having one to four carbon atoms provided that when R is allyl, R_1 is an alkyl group having 1 to 4 carbon atoms, and salts of said derivatives with pharmacologically acceptable organic and mineral acids.

3,950,388
PROCESS FOR MAKING HYDROXYETHER CARBOXYLATES

Kent P. Lannert, Freeburg, Ill., assignor to Monsanto Company, St. Louis, Mo.

Filed May 24, 1974, Ser. No. 473,112
Int. Cl.² C07C 59/12, 69/66
U.S. Cl. 260—468 K 16 Claims

1. A process for making organic compounds having a substituent represented by the formula



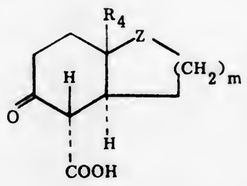
wherein M is alkali metal or ammonium and acids or esters thereof, said process comprising reacting a conjugate base of a hemiketal of a ketomalonic acid diester and an alcohol having an active alcoholic hydroxy group with a bromo or iodo acetate ester to yield the ester form of said organic compounds; and, when the alkali metal salt form of said organic compounds is desired, reacting said ester form with an alkali metal hydroxide to yield said alkali metal salt form; and, when the acid form of said organic compounds is desired, acidulating said alkali metal salt form to yield said acid form; and, when the ammonium salt form of said organic compounds is desired, reacting said acid form with ammonia or ammonium hydroxide to yield said ammonium salt form.

3,950,389
STEREOSPECIFIC TOTAL STEROIDAL SYNTHESIS VIA SUBSTITUTED C/D-TRANS INDANONES

Zoltan George Hajos, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 765,023, Oct. 4, 1968, Pat. No. 3,897,460. This application June 24, 1974, Ser. No. 482,540
Int. Cl.² C07C 61/36, 69/74
U.S. Cl. 260—468 G 7 Claims

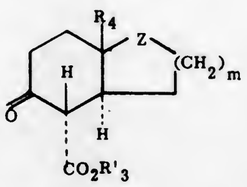
1. A compound of the formula



wherein R_4 is hydrogen or lower alkyl; Z is $CH(OR_2)$; R_2 is lower alkyl, lower alkoxy-lower alkyl, phenyl lower alkyl and tetrahydropyranyl; m is an integer having the value of 1 or 2 and R'_3 is selected from the group consisting of lower alkyl, lower cycloalkyl, phenyl or phenyl substituted with lower alkyl, lower alkoxy, nitro, amine and halogen,

its optical enantiomer and the racemate thereof.

5. A compound of the formula



wherein R_4 is hydrogen or lower alkyl, Z is $CH(OR_2)$; R_2 is lower alkyl, lower alkoxy-lower alkyl, phenyl-lower alkyl or tetrahydropyranyl; and *m* is an integer having the value of 1 or 2,

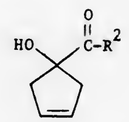
its optical enantiomer and the racemate thereof.

3,950,390
1-HYDROXY-3-CYCLOPENTENE CARBOXYLIC ACID

Hermann Faubl, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 370,337, June 15, 1973, Pat. No. 3,852,322. This application Aug. 26, 1974, Ser. No. 500,804
Int. Cl.² C07C 61/32, 67/74
U.S. Cl. 260—468 K 4 Claims

1. A compound of formula



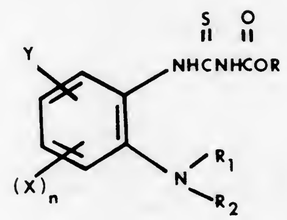
wherein R^2 is selected from the group consisting of alkoxy having from one to five carbon atoms and hydroxy.

3,950,391
ALKYL 4-(o-AMINOPHENYL)-3-THIOALLOPHANATES

Charles D. Adams, 12 Edgemont Road, Newark, Del. 19711

Continuation-in-part of Ser. No. 805,017, March 6, 1969, which is a continuation-in-part of Ser. No. 773,302, Nov. 4, 1968, abandoned. This application Oct. 13, 1969, Ser. No. 865,964
Int. Cl.² C07C 157/09
U.S. Cl. 260—470 5 Claims

1. A compound of the formula:



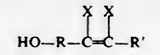
wherein
X is hydrogen, fluorine, chlorine, or bromine;
Y is hydrogen or alkyl of 1 to 4 carbon atoms;
R is alkyl of 1 to 12 carbon atoms;
R_1 is hydrogen or alkyl of 1 to 12 carbon atoms;
R_2 is hydrogen or alkyl of 1 to 6 carbon atoms;
when Y is alkyl, n is 0 and when Y is hydrogen, n is 1, 2 or 3; and the sodium, potassium, lithium, calcium, barium, copper, zinc and manganese salts of these compounds.

3,950,392
UNSATURATED ESTER-AMIDES OF HALOGENATED ALKENES

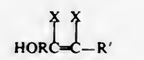
Gaetano F. D'Alelio, 2011 E. Cedar St., South Bend, Ind. 46617

Continuation-in-part of Ser. No. 198,949, Nov. 15, 1971, Pat. No. 3,823,183, which is a division of Ser. No. 785,336, Dec. 19, 1968, Pat. No. 3,637,813. This application Jan. 14, 1974, Ser. No. 432,851
Int. Cl.² C07C 103/14
U.S. Cl. 260—482 R 12 Claims

1. An ester-amide of an α,β-ethylenic unsaturated polycarboxylic acid selected from the class consisting of maleic, fumaric, methyl and dimethyl maleic and fumaric, mono and dichloromaleic and fumaric, dibromo maleic and fumaric, itaconic and aconitic acids, one of the acid groups therein being esterified by a halogenated alcohol having the formula



wherein
R is a divalent hydrocarbon radical having 1–10 carbon atoms therein,
R′ is selected from the class of H and monovalent hydrocarbon radicals of 1–20 carbon atoms, and
X is bromine or chlorine,
the second acid group being converted to an amide group of the formula $-CONR''_2$ wherein R″ is a group selected from the class consisting of hydrogen and hydrocarbon groups of 1–20 carbon atoms and derivatives of said hydrocarbon groups in which derivative there is only one derivative group selected from the class consisting of —OH or $-NH_2$, and when the polycarboxylic acid is aconitic acid, the third acid group is similarly amidified or unesterified or esterified with an alcohol selected from the class consisting of methyl, ethyl, propyl, amyl, hexyl, stearyl, benzyl, vinyl, allyl, methallyl, propargyl, butynyl, or crotyl, beta-N,N-dimethylaminoethyl, cyclohexyl, beta-hydroxyethyl, beta-hydroxypropyl, and



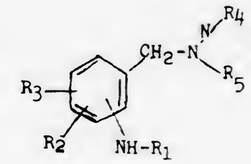
alcohol.

3,950,393
AMINOBENZYL-AMIDES AND SALTS THEREOF

Johannes Keck, Biberach an der Riss; Klaus-Reinbold Noll, Warthausen-Oberhofen; Helmut Pieper, Biberach an der Riss; Gerd Kruger, Biberach an der Riss, and Sigfrid Puschmann, Biberach an der Riss, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Filed Apr. 5, 1974, Ser. No. 458,099
Claims priority, application Germany, Apr. 13, 1973, 2318636; Jan. 23, 1974, 2402989
Int. Cl.² C07C 101/48, 101/68
U.S. Cl. 260—471 R 3 Claims

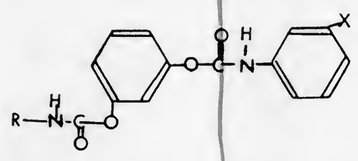
1. A compound of the formula



wherein
R_1 is hydrogen, lower alkanoyl, benzoyl or halobenzoyl,
R_2 is hydrogen, chlorine or bromine,
R_3 is carboxyl or lower carbalkoxy, and R_4 and R_5 are each hydrogen, alkyl of 1 to 5 carbon atoms, mono- or dihydroxy-(alkyl of 1 to 5 carbon atoms), alkenyl of 2 to 4 carbon atoms, cycloalkyl of 5 to 7 carbon atoms, mono- or dihydroxy-(cycloalkyl of 5 to 7 carbon atoms) or benzyl,
or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,950,394
M-PHENYLENE-DICARBAMATE
Mike Mehdi Fooladi, Apt. 4-B, Oakmont Manor Apts., Vicksburg, Miss. 39180
Filed Nov. 14, 1974, Ser. No. 523,686
Int. Cl.² C07C *125/06*
U.S. Cl. 260—471 C **1 Claim**

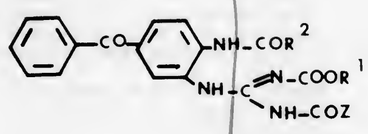
1. Dicarbamate having the general formula



wherein R is a methyl group and X designates a chlorine.

3,950,395
BENZOYLPHENYLGUANIDINES
Heinrich Kolling, Haan; Arno Widdig, Blecher; Herbert Thomas, and Hans Peter Schulz, both of Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany
Filed Jan. 28, 1974, Ser. No. 437,045
Claims priority, application Germany, Feb. 1, 1973, 2304764
Int. Cl.² C07C *133/10*
U.S. Cl. 260—471 C **22 Claims**

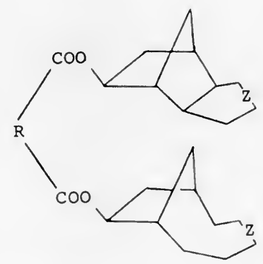
1. A benzoylphenylguanidine of the formula



wherein
R^1 is alkyl of 1 to 4 carbon atoms;
R^2 is hydrogen; alkyl of 1 to 18 carbon atoms unsubstituted or substituted by a substituent selected from the group consisting of halogen, cyano, alkoxy of 1 to 4 carbon atoms, alkoxycarbonyl of 2 to 5 carbon atoms, phenoxy, halophenoxy, lower alkylphenoxy and lower alkoxyphenoxy; cycloalkyl of 5 to 8 carbon atoms; benzyl unsubstituted or substituted by a substituent selected from the group consisting of halogen, alkyl of 1 to 4 carbon atoms and alkoxy of 1 to 4 carbon atoms; or phenyl unsubstituted or substituted by a substituent selected from the group consisting of halogen, alkyl of 1 to 4 carbon atoms and alkoxy of 1 to 4 carbon atoms; and is hydrogen; alkyl of 1 to 18 carbon atoms unsubstituted or substituted by a substituent selected from the group consisting of halogen, cyano, alkoxy of 1 to 4 carbon atoms, alkoxycarbonyl of 2 to 5 carbon atoms, phenoxy, halophenoxy, lower alkylphenoxy and lower alkoxyphenoxy; alkenyl of 2 to 12 carbon atoms; alkinyl of 2 to 12 carbon atoms; cycloalkyl of 5 to 8 carbon atoms; benzyl unsubstituted or substituted by a substituent selected from the group consisting of halogen, alkyl of 1 to 4 carbon atoms and alkoxy of 1 to 4 carbon atoms; or phenyl unsubstituted or substituted by a substituent selected from the group consisting of halogen, alkyl of 1 to 4 carbon atoms and alkoxy of 1 to 4 carbon atoms.

3,950,396
DIESTERS OF TRICYCLIC ALCOHOLS
Yoshiaki Inamoto; Hirokazu Nakayama, both of Wakayama; Hidetsugu Takenaka, Arita, and Takeji Kadono, Kainan, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan
Division of Ser. No. 173,666, Aug. 20, 1971, Pat. No. 3,862,206. This application Nov. 18, 1974, Ser. No. 524,658
Claims priority, application Japan, Aug. 28, 1970, 45-75410
Int. Cl.² C07C *69/80, 69/82*
U.S. Cl. 260—475 R **5 Claims**

1. A compound of the formula



wherein Z is a single or double bond, and R is selected from the group consisting of o-phenylene, p-phenylene, m-phenylene, o-benzylene and 2,6-naphthylene.

3,950,397
PROCESS FOR THE PREPARATION OF CITRIC ACID ESTERS, CITRIC ACID OR CITRIC ACID SALTS
Jan Gerardus Batelaan, Westervoort, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.
Filed Dec. 6, 1974, Ser. No. 530,378
Claims priority, application Netherlands, Dec. 7, 1973, 7316762
Int. Cl.² C07C *59/16*
U.S. Cl. 260—484 P **10 Claims**

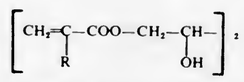
1. A process for the preparation of a citric acid triester which comprises reacting the cyanohydrin of acetone dicarboxylic diester in the presence of an inert halogenated solvent at a temperature not higher than 50° C. with 1 to 3 molar equivalents of an aliphatic alcohol having 1 to 4 carbon atoms and at least 2 molar equivalents of anhydrous HCl, followed successively by removing the excess HCl, adding water to obtain a two-layer system, heating, separating the organic layer and isolating the triester of citric acid from this layer.

3,950,398
METHACRYLIC ACID ADDITION SALT OF 2-MONO(LOWER)ALKYL AMINO ETHYL METHACRYLATE
Max Klein, New Shrewsbury, N.J., assignor to Normac, Inc., New Shrewsbury, N.J.
Continuation-in-part of Ser. No. 15,935, March 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 488,756, Sept. 20, 1965, abandoned. This application Nov. 5, 1973, Ser. No. 413,043
Int. Cl.² C07C *69/54*
U.S. Cl. 260—486 R **15 Claims**

1. A solid, water-soluble polymerizable methacrylic acid addition salt of a 2-mono(lower)alkylaminoethyl methacrylate wherein (a) alkyl has up to about 6 carbon atoms and (b) the methacrylic acid and the 2-mono(lower)alkylaminoethyl methacrylate components are present in said salt in the ratio of from one to about 1.5 moles of one per mole of the other.

3,950,399
1,4-DIACYLOXY-2,3-BUTENDIOL
Jiri Labsky, and Josef Exner, both of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia
Filed Jan. 30, 1974, Ser. No. 438,010
Claims priority, application Czechoslovakia, Feb. 23, 1973, 1315-73
Int. Cl.² C07C *69/54*
U.S. Cl. 260—486 R **1 Claim**

1. 1,4-Diacyloxy-2,3-butanediol of the general formula I



(I)

where R is a hydrogen atom or methyl group.

3,950,400
PROCESS FOR THE OXACYLATION OF OLEFINS IN THE GASEOUS PHASE
Hans Fernholz, Fishbach, Taunus; Friedrich Wunder, Florsheim, Main, and Hans-Joachim Schmidt, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed Nov. 18, 1971, Ser. No. 200,140
Claims priority, application Germany, Nov. 20, 1970, 2057087
Int. Cl.² C07C *67/04*
U.S. Cl. 260—497 A **6 Claims**

1. In the process for oxacylation of ethylene, propylene or isobutylene in the gaseous phase in the presence of oxygen and a carrier catalyst consisting essentially of palladium salts or palladium salts and as additives therefor alkali and alkaline earth metal salts, gold, gold salts, cadmium, cadmium salts, bismuth, bismuth salts, the improvement consisting essentially of adding a barium carboxylic acid aurate of a carboxylic acid having from 2 to 10 carbon atoms to said carrier catalyst and oxacylating said ethylene, propylene or isobutylene with said catalyst.

3,950,401
OLEFIN SULFONATES
Dennis G. Petrille, Naperville, and Robert E. Karll, Batavia, both of Ill., assignors to Standard Oil Company, Chicago, Ill.
Continuation of Ser. No. 316,840, Dec. 20, 1972, abandoned. This application Nov. 18, 1974, Ser. No. 524,560
Int. Cl.² C07B *13/00*
U.S. Cl. 260—504 R **5 Claims**

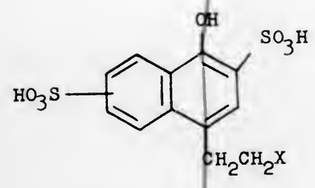
1. The process for preparing oil-soluble ammonium alkenyl sulfonates wherein the alkenyl moiety is a propene or butene polymer having a number average molecular weight of about 250 to about 500 comprising (a) continuously treating a falling-film reactor a liquid propene or butene polymer having a number average molecular weight of about 250 to about 500 with about 1.7 to about 2.1 moles of sulfur trixoide per mol of said polymer by cocurrently passing a liquid film of said polymer and a gaseous stream of sulfur trioxide diluted with an inert gas thru said reactor while maintaining an excess of sulfur trioxide in contact with said film during passage of said liquid film thru said reactor to form a crude acid mixture comprising the corresponding alkene sulfonic acids and sultones of said polymer; (b) admixing said acid mixture with about 0.25 to about 1.25 volumes of a water immiscible inert liquid hydrocarbon solvent per volume of acid mixture and about 3 to about 20 weight percent of water based on said acid mixture, holding with agitation the aqueous mixture at a temperature of about 70° to 175°F for about 0.25 to about 2 hours, thereafter separating the aqueous and hydrocarbon solvent phases and recovering the hydrocarbon solvent organic phase containing a mixture of said oil-soluble alkenyl sulfonic acids and oil-soluble polymer sultones; (c) treating at atmospheric pressure said mixture of acids and sultones in the solvent phase of step b at a temperature in the range of from about 100°F to about 170°F with anhydrous ammonia sufficient to neutralize said sulfonic acids and provide a basic mixture comprising oil-soluble ammonium alkenyl sulfonates and oil soluble polymer sultones; and (d) heating at atmospheric pressure the mixture of step c with continuous introduction of anhydrous ammonia thereto to maintain the mixture basic to a temperature of from about 290°F to about 340°F to remove water and said hydrocarbon solvent therefrom, and thereafter holding the mixture with continued introduction of anhydrous ammonia thereto to maintain the mixture basic at said pressure and temperature for a period of time sufficient to reduce the sultone content thereof and form additional ammonium alkenyl sulfonates.

3,950,402
PROCESS FOR PRODUCING N-PHOSPHONOMETHYL GLYCINE
John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.
Continuation-in-part of Ser. No. 258,281, May 31, 1972. This application Feb. 16, 1973, Ser. No. 333,414
Int. Cl.² C07F *9/38*
U.S. Cl. 260—502.5 **13 Claims**

1. A process for the production of N-phosphonomethyl glycine which comprises forming an admixture of N-(phosphonomethyl)iminodiacetic acid, water and a metallic catalyst selected from the class consisting of platinum, palladium, rhodium, iridium, ruthenium or osmium, heating said admixture to an elevated temperature and contacting said admixture with a free oxygen-containing gas whereby said N-(phosphonomethyl)iminodiacetic acid is oxidized to yield N-phosphonomethyl glycine.

3,950,403
SPIRO COMPOUNDS
Paul Rys, Zurich, and Rolf Vogelsanger, Zumikon, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Division of Ser. No. 195,031, Nov. 2, 1971, Pat. No. 3,873,615. This application Dec. 2, 1974, Ser. No. 528,620
Claims priority, application Switzerland, July 28, 1971, 11176/71
Int. Cl.² C07C *143/42*
U.S. Cl. 260—512 C **2 Claims**

1. A compound of the formula



wherein X is chlorine, bromine or iodine.

3,950,404

METHOD FOR PREPARATION OF SULFINIC ACIDS

Gordon Filby, Karlsruhe; Kirsten Günther, Spock, and Ralf-Dieter Penzhorn, Neuthard, all of Germany, assignors to Gesellschaft fur Kernforschung mbH, Karlsruhe, Germany

Filed Apr. 30, 1974, Ser. No. 465,565

Claims priority, application Germany, May 3, 1973, 2322199

Int. Cl.² C07C *145/00*

U.S. Cl. 260—513.7 **13 Claims**

1. A method for preparing a high purity sulfinic acid, comprising

a. dissolving an organic compound containing a sulfhydryl group bound to a carbon atom in a solvent which is inert and readily volatile at room temperature to form a first solution, said organic sulfhydryl containing compound being of the formula R—SH wherein R is a hydrocarbon radical selected from the group consisting of alkyl, aryl, alkylaryl, and arylalkyl radicals and said solvent being methylene chloride, chloroform, carbon tetrachloride or an easily volatilized fluorocarbon;

b. dissolving a stoichiometric quantity of a weak oxidation agent in the form of m-chloroperoxy benzoic acid or peroxyacetic acid in a solvent which is inert and readily volatile at room temperature to form a second solution, said solvent being methylene chloride, chloroform, carbon tetrachloride or an easily volatilized fluorocarbon;

c. bringing the organic sulfhydryl containing compound into intimate contact with the oxidation agent at a temperature of from about −30° C to about −80° C to oxidize the organic sulfhydryl containing compound to a sulfinic acid and reduce the oxidation agent by adding the first and second solutions together to form a reaction mixture;

d. removing from the reaction mixture the reduced oxidation agent formed during the oxidation; and

e. thereafter blowing the solvent out from the reaction mixture at room temperature with a stream of inert gas.

3,950,405

TRANS-4-AMINOMETHYLCYCLOHEXANE-1-CARBOXYLIC ACID

Atsuji Okano, Otsuka; Shizuo Kadoya, Yokohama; Takeo Naito, Ichikawa; Takaaki Aoyagi, Fujisawa, and Masao Shimizu, Otsukanaka, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 418,325, Dec. 14, 1964, abandoned. This application June 4, 1969, Ser. No. 836,196

Claims priority, application Japan, Dec. 24, 1971, 46-69632

Int. Cl.² C07C *61/08*

U.S. Cl. 260—514 J **1 Claim**

1. Trans-4-aminomethylcyclohexane-1-carboxylic acid.

3,950,406

HYDROXYLATED 15-DEOXY DERIVATIVES OF 9-HYDROXY-13-TRANS-PROSTENOIC ACID

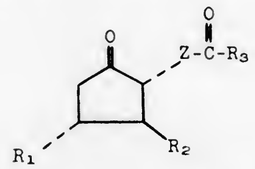
Middleton Brawner Floyd, Jr., Suffern, N.Y.; William James McGahren, Demarest, N.J.; Robert Eugene Schaub, Upper Saddle River, N.J., and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 274,769, July 24, 1972, abandoned. This application June 19, 1974, Ser. No. 480,989

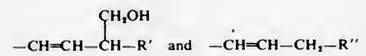
Int. Cl.² C07C *61/38, 69/74*

U.S. Cl. 260—514 D **33 Claims**

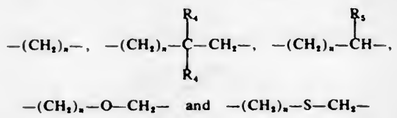
1. An optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof wherein R_1 is selected from the group consisting of hydroxy, lower alkoxy, tetrahydropyranyloxy, lower alkanoyloxy, ω-hydroxy substituted lower alkoxy and ω-tetrahydropyranyloxy substituted lower alkoxy; R_2 is a moiety selected from the group consisting of those of the formulae:



wherein R′ is selected from the group consisting of a straight chain alkyl group having from 2 to 10 carbon atoms and a straight chain alkyl group having from 2 to 6 carbon atoms and having one branched alkyl group of from 1 to 3 carbon atoms, and R″ is selected from the group consisting of a straight chain alkyl group having from 2 to 10 carbon atoms and substituted with an hydroxy group, a straight chain alkyl group having from 2 to 6 carbon atoms and having one branched alkyl group of from 1 to 3 carbon atoms and substituted with an hydroxy group, a straight chain alkenyl group having from 2 to 10 carbon atoms and substituted with an hydroxy group and a straight chain alkenyl group having from 2 to 6 carbon atoms and having one branched alkyl group of from 1 to 3 carbon atoms and substituted with an hydroxy group; R_3 is selected from the group consisting of hydroxy, alkoxy having from 1 to 12 carbon atoms and tetrahydropyranyloxy; and Z is a divalent radical selected from the group consisting of those of the formulae:



wherein n is an integer from 3 to 8, inclusive, R_4 is an alkyl group having up to 3 carbon atoms, and R_5 is selected from the group consisting of an alkyl group having up to 3 carbon atoms, a fluorine atom and a phenyl group; and the pharmacologically acceptable cationic salts thereof when R_2 is hydroxy.

3,950,407

PROCESS FOR PREPARING DIBENZO[a,d]CYCLOHEPTENES

Walton J. Hammar, St. Paul, Minn., assignor to Riker Laboratories, Incorporated, Northridge, Calif.

Filed June 18, 1973, Ser. No. 371,118

Int. Cl.² C07C *63/595*

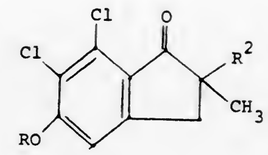
U.S. Cl. 260—515 R **4 Claims**

1. Process for preparation of 12-carboxy-10,11-dihydro-5,10-methano-5H-dibenzo[a,d]cycloheptene, which comprises converting the maleic anhydride adduct of anthracene to the trans or cis form of 12-carboalkoxy-11-carboxy-9,10-dihydro-9,10-ethanoanthracene by reaction with a lower alkanol in the presence of strong base at a temperature in the range of 0° to 120° C., or with a lower alkanol alone at a temperature in the range of 60° to 120° C., respectively, and then carrying out the steps of:

1. reacting the 11-carboxyl group with a lower alkyl chloroformate in an inert solvent and in the presence of strong base at a temperature in the range of −20° to 10° C.;
2. treating the product of step (1) with aqueous alkali metal azide at a temperature in the range of −20° to 25° C.;
3. heating the product of step (2) at about 80° to 120° C. in an inert solvent;
4. reacting the product of step (3) with benzyl alcohol to form a cis- or trans-11-(N-carbobenzyloxyamino)-12-lower carboalkoxy-9,10-dihydro-9,10-ethanoantracene;
5. debenzylating the product of step (4) by catalytic hydrogenation at a temperature in the range of about 25° to 100° C. to form cis- or trans-11-amino-12-lower carboalkoxy-9,10-dihydro-9,10-ethanoanthracene;
6. treating the 11-amino compound of step (5) with nitrous acid in a protic solvent to form 11-lower acyloxy-, 11-hydroxy- or 11-alkoxy-12-syn- or anti-lower carboalkoxy-10,11-dihydro-5,10-methano-5H-dibenzo-[a,d]cycloheptene;
7. catalytically reducing the product of step (6) in inert solvent solution at a temperature in the range of 25° to 100° C. to remove the substituent in the 11 position;
8. subjecting the product of step (7) to hydrolysis to form syn- or anti-12-carboxy-10,11-dihydro-5,10-methano-5H-dibenzo[a,d]cycloheptene;

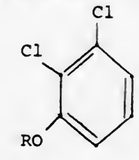
or alternatively, when starting with compounds of cis configuration:

9. converting 11-lower acyloxy- or 11-hydroxy-12-syn-lower carboalkoxy-10,11-dihydro-5,10-methano-5H-dibenzo[a,d]cycloheptene product of step (6) to the corresponding lactone and
10. catalytically reducing the lactone product of step (9) in inert solvent solution at a temperature in the range of 25° to 100° C. to form syn-12-carboxy-10,11-dihydro-5,10-methano- 5H-dibenzo[a,d]cycloheptene.

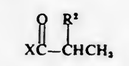


wherein R^2 is cyclopentyl or isopropyl; R is CH_2COOH, R^1 or CH_2COOR^1, and wherein R^1 is lower alkyl or halo lower alkyl selected from the group consisting of methyl, ethyl, isopropyl, trifluoromethyl, propyl and butyl; phenyl or substituted phenyl selected from the group consisting of nitrophenyl, tolyl, xylyl and ethylphenyl; benzyl or nuclear substituted benzyl selected from the group consisting of pchlorobenzyl and p-nitrobenzyl comprising the steps of:

a. reacting under Friedel-Crafts conditions wherein said conditions comprise the use of a Lewis acid catalyst selected from the group consisting of aluminum trichloride, $SnCl_4$, $AlBr_3$ and BF_3; and the use of an organic solvent which does not react with the reactants; and wherein said reaction is carried out at a temperature from about 0°C. to about 50°C; an ether derivative of 2,3-dichlorophenol of the formula:



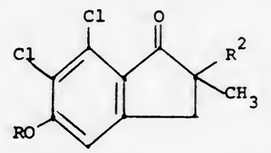
wherein R is a defined above and a 2-substituted propionyl halide of the formula:



wherein R^2 is as defined above; and X is halo; wherein the molar ratio of the reactants may range from about 2:1 respectively to about 1:4 respectively; and wherein the amount of catalyst ranges from about 25 to about 200 moles % based on the ether derivative of 2,3-dichlorophenol; and

b. reacting the resulting propiophenone of Step (a) with formaldehyde in the presence of an acid selected from the group consisting of the trifluoroacetic acid methanesulfonic acid, borontrifluoride, H_2SO_4, HF and phosphoric acid; wherein the molar ratio of the propiophenone of Step (a) to formaldehyde, is in the range of from about 1:1 to about 1:10; wherein the molar ratio of the acid relative to the propiophenone ranges from about 0.05 to about 0.99; and wherein the reaction is carried out at a temperature in the range of from about 25°C. to about 150°C.

4. A process for preparing a compound of the formula:



wherein R^2 is cyclopentyl or isopropyl; R is CH_2COOH, R^1 or CH_2COOR^1, and wherein R^1 is lower alkyl or halo lower alkyl selected from the group consisting of methyl, ethyl, isopropyl,

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3,950,408

PROCESS FOR PREPARING [1-OXO-2-CYCLOPENTYL (OR 2-ISOPROPYL)-2-METHYL-6,7-DICHLORO-5-INDANYLOXY] ACETIC ACID

Earl M. Chamberlin, Westfield; Warren K. Russ, Jr., Piscataway, and George G. Hazen, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

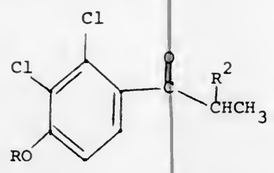
Filed Feb. 15, 1974, Ser. No. 442,691

Int. Cl.² C07C *65/20*

U.S. Cl. 260—520 D **5 Claims**

1. The process for preparing a compound of the formula:

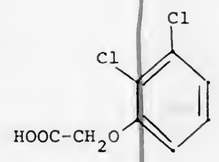
trifluoromethyl, propyl and butyl; phenyl or substituted phenyl selected from the group consisting of nitrophenyl, tolyl, xylyl and ethylphenyl; benzyl or nuclear substituted benzyl selected from the group consisting of p-chlorobenzyl and p-nitrobenzyl; comprising reacting a propiophenone of the formula:



wherein R and R^2 are as defined above with formaldehyde in the presence of an acid selected from the group consisting of trifluoroacetic acid, methanesulfonic acid, borontrifluoride, H_2SO_4, HF and phosphoric acid; wherein the molar ratio of the propiophenone to formaldehyde is in the range of from about 1:1 to about 1:10; wherein the molar ratio of the acid relative to the propiophenone ranges from about 0.05 to about 0.99; and wherein the reaction is carried out in the temperature in the range of from about 25°C. to about 150°C.

5. A process for preparing (1-oxo-2-cyclopentyl-2-methyl-6,7-dichloro-5-indanyloxy)acetic acid and (1-oxo-2-isopropyl-2-methyl-6,7-dichloro-5-indanyloxy)-acetic acid comprising the steps of:

a. reacting the ether derivative of 2,3-dichlorophenol having the structure:



with a 2-cyclopentyl propionyl halide or 2-isopropyl propionyl halide, respectively, under Friedel-Crafts conditions; wherein said conditions comprise the use of a Lewis acid catalyst selected from the group consisting of aluminum trichloride, $SnCl_4$, $AlBr_3$ and BF_3; and the use of an organic solvent which does not react with the reactants; wherein said reaction is carried out at a temperature from about 0° to 50°C.; wherein the molar ratio of the reactants may range from about 2:1 respectively to about 1:4 respectively; and wherein the amount of catalyst ranges from about 25 to about 200 mole % based on the ether derivative of 2,3-dichlorophenol; and

b. reacting the resulting propiophenone of Step

a. with formaldehyde in the presence of acid selected from the group consisting of trifluoroacetic acid, methanesulfonic acid, borontrifluoride, H_2So_4, HF and phosphoric acid; wherein the molar ratio of the propiophenone of Step a.) to formaldehyde, is in the range of from about 1:1 to about 1:10; wherein the molar ratio of the acid relative to the propiophenone acid ranges from about 0.05 to about 0.99 and wherein the reaction is carried out in the temperature in the range of from about 25°C. to about 150°C.; to obtain the corresponding α-substituted propiophenone; and

c. treating the product of Step (b) or a halide or ester derivative thereof with a Lewis Acid selected from the group consisting of trifluoroacetic acid, boron trifluoride, concentrated sulfuric acid, phosphoric acid and hydrofluoric acid at a temperature in the range of from about 0°C. to about 100°C. from about 1 hour to about 5 hours to effect ring closure.

3,950,409
PROCESS FOR CONTINUOUS PREPARATION OF TEREPHTHALIC ACID

Yoshiro Yokota, Ohtake; Toshihiko Ueda; Osamu Nakano, both of Iwakuni; Sigeru Hirokane, Waki, and Yoshiro Hisatomi, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Mar. 25, 1974, Ser. No. 454,414
Claims priority, application Japan, Apr. 5, 1973, 48-38277
Int. Cl.² C07C *51/33*
U.S. Cl. 260—524 R **5 Claims**

1. In a process for continuously preparing terephthalic acid by oxidizing para-xylene with molecular oxygen in the liquid phase in acetic acid in the presence of a heavy metal oxidation catalyst, separating and collecting terephthalate acid from the resulting oxidation reaction mixture, recycling a part of the mother liquor to the catalytic liquid-phase oxidation zone either as such or after concentration, concentrating the remainder of the mother liquor, extracting the residual bottoms containing the heavy metal oxidation catalyst and the organic by-products with water, and recycling the resulting catalyst-containing aqueous solution to the above zone; the improvement comprising

1. concentrating said mother liquor until the amount of acetic acid in said bottoms becomes not more than 5 % by weight based on the weight of the residual bottoms and the amount of benzoic acid in said bottoms becomes not less than 15 % by weight based on the weight of the residual bottoms,
2. contacting said bottoms in the hot and molten state with 2 to 5 times their weight of water, and rapidly cooling to a temperature of not more than 50°C., and
3. separating the aqueous solution containing the catalyst from the resulting mixture of granular solid of organic by-products and said catalyst-containing aqueous solution, and recycling the aqueous solution so separated to the catalytic liquid-phase oxidation zone.

3,950,410
OXIDATION PROCESS

José Lopez-Meroño, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 257,574, May 30, 1972, abandoned. This application Mar. 13, 1974, Ser. No. 450,885
Claims priority, application United Kingdom, June 4, 1971, 19009/71
Int. Cl.² C07C *51/26*
U.S. Cl. 260—531 R **4 Claims**

1. In a process for producing adipic acid by oxidising with nitric acid a liquid mixture of cyclohexanol and cyclohexanone, the improvement which comprises controlling the reaction temperature by bringing a mixture of nitric acid with a liquid mixture of cyclohexanol and cyclohexanone, while still undergoing reaction in a vessel and thereby evolving gas, into contact with a plurality of cooling surfaces disposed within said vessel in vertically spaced formation from each other and consisting of horizontally disposed banks of tubes of substantially circular cross section and of external diameter from 0.3 to 10 cm., the distance in centimeters between the banks of tubes and between the tubes themselves being from 0.04 *k* to 0.20 *k*, and the overall height of the cooling elements in the vessel being from 20 to 60 cm., *k* being the number of kilos per hour of mixed cyclohexanol and cyclohexanone passing through the vessel for each square meter of cooling surface and lying within the range 10 to 60, whereby the interspacing of the cooling surfaces is such that turbulence induced by the reaction inhibits the formation of bubbles upon them.

3,950,411
PROCESSES FOR ASYMMETRIC CONVERSION OF 3-FLUORO-L-ALANINE AND 2-DEUTERO-3-FLUORO-L-ALANINE TO THEIR D-ISOMERS

Donald F. Reinhold, North Plainfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 223,292, Feb. 3, 1972, Pat. No. 3,880,922. This application Feb. 24, 1975, Ser. No. 552,474
Int. Cl.² C07C *99/00*
U.S. Cl. 260—534 C **8 Claims**

1. The process of asymmetrically converting an L-isomer, selected from the group consisting of 3-fluoro-L-alanine and 2-deutero-3-fluoro-L-alanine, to the corresponding D-isomer, which comprises reacting the said L-isomer in solution in aqueous hydrohalic acid with sodium nitrite thereby forming the corresponding L-2-halo-3-fluoro-propionic acid or L-2-deutero-2-halo-3-fluoro-propionic acid, and reacting this L-2-halo-3-fluoro-propionic acid or L-2-deutero-2-halo-3-fluoro-propionic acid (a) with ammonia; or (b) with sodium azide, thereby replacing the 2-halo substituent by 2-azido, followed by catalytic hydrogenation; to produce 3-fluoro-D-alanine or 2-deutero-3-fluoro-D-alanine.

3,950,412
METHOD FOR THE PRODUCTION OF HALOACETOACETIC ACIDS

Karl-Josef Boosen, Visp, Valais, Switzerland, assignor to Lonza Ltd., Gampel, Valais, Switzerland

Continuation-in-part of Ser. No. 151,130, June 8, 1971, abandoned, which is a division of Ser. No. 838,646, July 2, 1969, Pat. No. 3,701,803. This application Feb. 11, 1974, Ser. No. 441,425
Int. Cl.² C07C *51/04, 51/58*
U.S. Cl. 260—539 R **9 Claims**

1. A method for the production of acetoacetic acids having the formula:

$$R_1CH_2—CO—CR_2R_3—COOH$$

wherein R_1 represents bromine or chloride and R_2 and R_3 each represents hydrogen, bromine or chlorine, wherein diketene is reacted at a temperature between about −10° C. and about −40° C., with bromine or chlorine to give a acetoacetic acid bromide or chlorine, respectively, of the formula

$$R_1CH_2—CO—CR_2R_3—CO\text{-}Hal$$

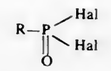
wherein R_1, R_2 and R_3 have the meanings given above and Hal represents bromine or chlorine, and said acetoacetic acid bromide or chloride is hydrolyzed with a stoichiometrically equivalent quantity of water or a quantity of water in excess of the stiochiometrically equivalent quantity at a temperature between about −10° C. and about −40° C., whereby said acetoacetic acid is formed.

3,950,413
PROCESS FOR THE PREPARATION OF PHOSPHONIC ACID DIHALIDES

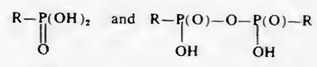
Manfred Finke, Fischbach, Taunus, and Hans-Jerg Kleiner, Bad Soden, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 299,850, Oct. 24, 1972, abandoned. This application May 23, 1974, Ser. No. 472,801
Claims priority, application Germany, Oct. 26, 1971, 2153149; Aug. 26, 1972, 2241993
Int. Cl.² C07R *9/42*
U.S. Cl. 260—543 P **3 Claims**

1. A process for the preparation of phosphonic acid dihalides of the formula



in which R is α,β-unsaturated alkenyl having 2 to 18 carbon atoms, α,β-unsaturated cycloalkenyl having 3 to 10, preferably 5–6 carbon atoms, phenyl or benzyl wherein R may be substituted by chlorine, bromine, lower alkyl, lower alkoxy, cyano or trifluoromethyl, and Hal is chlorine or bromine, which comprises reacting, at atmospheric pressure, correspondingly substituted phosphonic or pyrophosphonic acids of the formulae



(II) (III)

their monothio-analogs or their functional derivatives with acid halides of the formula

$$(CO)_nHal_2$$

where *n* is 1 or 2.

3,950,414
PREPARATION OF AROMATIC DIACID CHLORIDES

Theodore A. Koch, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 30, 1974, Ser. No. 437,857
Int. Cl.² C07C *63/22*
U.S. Cl. 260—544 D **8 Claims**

1. In a process for producing aromatic dicarboxylic acid chlorides by the reaction of aromatic dialdehydes with chlorine, the improvement which comprises contacting the aromatic dialdehyde in the liquid phase with chlorine at a temperature in the range of about from 0° to 125°C., said dialdehyde being one in which the aldehyde groups are attached directly to an aromatic nucleus and being dissolved in a solvent which is inert with respect to said dialdehyde and to chlorine under the reaction conditions employed, said solvent being selected from the group consisting of aromatic hydrocarbons and halogenated hydrocarbons.

3,950,415
DECREASING THE AMOUNT OF DICHLOROACETYL CHLORIDE CONTAINED IN MONOCHLOROACETYL CHLORIDE

Ulrich Bressel, Mannheim, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Mar. 6, 1974, Ser. No. 448,454
Int. Cl.² C07C *53/20*
U.S. Cl. 260—544 Y **6 Claims**

1. A process for decreasing the amount of dichloroacetyl chloride contained in monochloroacetyl chloride which comprises treating monochloroacetyl chloride containing dichloroacetyl chloride with water, an alcohol or alkanediol of up to four carbon atoms or a fatty acid of up to four carbon atoms and separating the monochloro-acetyl chloride by distillation from the mixture thus obtained, the amount of water, alkanol, alkanediol or fatty acid is from 0.5 to 10 percent based on the monochloroacetyl chloride containing dichloroacetyl chloride.

3,950,416

SYNTHESIS OF DICYANOFORMAMIDES

Tad L. Patton, Baytown, Tex., assignor to Exxon Research and Engineering Company, Linden, N.J.

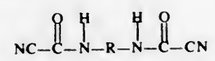
Continuation of Ser. No. 188,434, Oct. 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 685,288, Nov. 24, 1967, Pat. No. 3,637,843. This application Mar. 25, 1974, Ser. No. 454,516

The portion of the term of this patent subsequent to Jan. 25, 1989, has been disclaimed.

Int. Cl.² C07C *63/00*

U.S. Cl. 260—545 R 20 Claims

1. A process for producing an aromatic dicyanoformamide having the formula:



wherein R is an aromatic hydrocarbon free of functional groups containing active hydrogen which comprises:

reacting hydrogen cyanide with a diisocyanate having the same aromatic R in the approximate molar proportions of 2 mols of said hydrogen cyanide with 1 mol of said diisocyanate at a temperature less than 25° C. in the presence of a nonreactive solvent and a nitrogen containing cyclic ring compound catalyst which has no active hydrogens, has a basicity expressed in K_b of no greater than 1×10^{-8} and will not catalyze the reaction mixture to form polymers.

3,950,417

HIGH-LATHERING NON-IRRITATING DETERGENT COMPOSITIONS

Robert J. Verdicchio, Succasunna, and John M. Walts, Clark, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

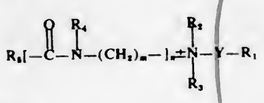
Filed Feb. 28, 1975, Ser. No. 553,952

Int. Cl.² C11D *1/831, 1/84*

U.S. Cl. 252—545 12 Claims

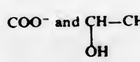
1. A detergent composition having good foam stability and low ocular irritation consisting essentially of:

a. a surfactant betaine having the formula:



wherein

R_1 is a member selected from the group consisting of



R_2 is loweralkyl,

R_3 is loweralkyl,

R_4 is a member selected from the group consisting of hydrogen and loweralkyl,

R_5 is higher alkyl,

Y is loweralkyl,

m is an integer from 2 to 7, and

n is the integer 1 or 0;

b. an anionic surfactant; and

c. a polyoxyethylene derivative of a hydrophobic base as nonionic surfactant,

the molar ratio of said surfactant betaine to said anionic surfactant being from about 0.9:1 to about 1.1:1 and the weight of said nonionic surfactant being from about 0.5 to about 2.5 times the combined weight of said surfactant betaine and said anionic surfactant.

3,950,418

VITAMIN A ACID AMIDES

Werner Bollag, Basel; Rudolf Ruegg, Bottmingen, and Gottlieb Ryser, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

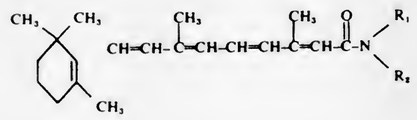
Division of Ser. No. 354,026, April 24, 1973, abandoned, which is a continuation of Ser. No. 106,275, Jan. 13, 1971, abandoned. This application Sept. 23, 1974, Ser. No. 503,559

Claims priority, application Switzerland, Feb. 2, 1970, 1428/70

Int. Cl.² C07C *103/737*

U.S. Cl. 260—557 R 8 Claims

1. A compound represented by the formula



wherein R_1 is a lower alkoxy alkyl group and R_2 is hydrogen.

3,950,419

AROMATIC CARBOXYLIC ACID ESTERS AND AMIDES AS FIXING AGENTS

Hans-Peter Baumann, Allschwil, and Hans-Georg Karmann, Binningen, both of Switzerland, assignors to Sandoz Ltd., (Sandoz AG), Basel, Switzerland

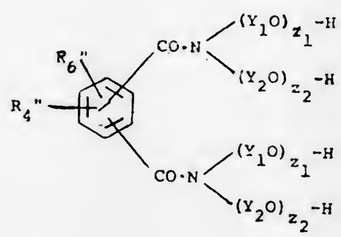
Filed Oct. 9, 1973, Ser. No. 404,696

Claims priority, application Switzerland, Oct. 13, 1972, 15035/72

Int. Cl.² C07C *103/24*

U.S. Cl. 260—559 R 8 Claims

1. A compound of the formula,



wherein Y_1 and Y_2 are, independently, ethylene, 1,2-propylene, 1,3-propylene, 1,2-butylene or phenylethylene, with the proviso that

a. only the group Y_1 or Y_2 which is bound to X can be 1,3-propylene, and

b. each (Y_1-O) or (Y_2-O) chain contains no more than 2 phenylethylene groups,

R_4'' is hydrogen, $-CO_2M$, $-OR_6$ or a group $-CO-X-(Y_1O)_m-R_1$,

R_5'' is hydrogen, $-CO_2M$ or a group $-CO-X-(Y_1O)_m-R_1$,

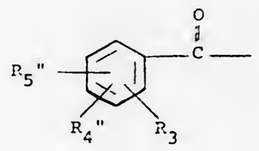
M is a charge equivalent of a cation,

R_6 is hydrogen, phenyl, phenylalkyl (C_7–C_{22}), phenyl or phenylalkyl (C_7–C_{22}) substituted by —OH, alkyl or halogen and having up to 22 carbon atoms in the aggregate thereof, alkyl (C_1–C_{22}), cycloalkyl (C_5–C_7), alkyl (C_1–C_{15}) cycloalkyl (C_5–C_7), cycloalkyl (C_5–C_7) alkyl (C_1–C_{15}) cycloalkyl (C_5–C_7) alkyl (C_1–C_{15}) or a group $-(Y_2-O)_m-R_2$,

X is —O— or —NR—,

R is one of the significances of R_6,

R_1 and R_2 are, independently, hydrogen, phenyl, phenylalkyl (C_7–C_{22}), phenyl or phenylalkyl substituted on the phenyl nucleus by —OH, alkyl or halogen and having up to 22 carbon atoms in the aggregate thereof, alkyl (C_1–C_{22}), cycloalkyl (C_5–C_7), alkyl (C_1–C_{15}) cycloalkyl (C_5–C_7), cycloalkyl (C_5–C_7) alkyl (C_1–C_{15}), alkyl (C_1–C_{15}) cycloalkyl (C_5–C_7) alkyl (C_1–C_{15}), or a group



R_3 is hydrogen, halogen, alkyl (C_1–C_{22}), cycloalkyl (C_5–C_7), cycloalkyl (C_5–C_7) alkyl (C_1–C_{15}), alkyl (C_1–C_{15}) cycloalkyl (C_5–C_7), alkyl (C_1–C_{15}) cycloalkyl (C_5–C_7) alkyl (C_1–C_{15}), —CN, $-COOR_6$, $-SO_3R_6$, $-OR_6$, $-NHR_6$ or $-N(R_6)_2$, $-CO_2M$, $-SO_3M$ or a group $-CO-X-(Y_1O)_m-R_1$,

with the proviso that when R_4'' or R_5'' is a group $-CO-X-(Y_1O)_m-R_1$, then R_1 is hydrogen, or when R_4 is a group $O-(Y_2-O)_m-R_2$, then R_2 is hydrogen,

m_1 and m_2 are integers 1 to 100 , the sum of all the integers m_1 and m_2 being 1 to 100,

and z_1 and z_2 are integers 1 to 100 , the sum of all the integers z_1 and z_2 being 5 to 100, and when relevant, the sum of all the integers z_1 , z_2, m_1 and m_2 being 6 to 100.

3,950,420

CYCLOHEXANE DERIVATIVES

Mikio Sawaki; Isao Iwataki, both of Odawara; Yoshihiko Hirono, Hiratsuka, and Hisao Ishikawa, Odawara, all of Japan, assignors to Nippon Soda Company, Ltd., Tokyo, Japan

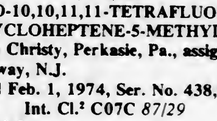
Filed July 22, 1974, Ser. No. 490,349

Claims priority, application Japan, Aug. 15, 1973, 48-91425; Mar. 7, 1974, 49-25714

Int. Cl.² C07C *87/36*

U.S. Cl. 260—563 C 11 Claims

1. A compound of the formula



wherein

R_1 is selected from the group consisting of hydrogen, alkyl and phenyl,

R_2 is selected from the group consisting of alkyl, straight or branched chain lower alkenyl, lower alkynyl, lower alkoxyalkyl, lower alkyl-thiomethyl and benzyl,

X is a same or different substituent which is selected from the group consisting of alkyl, halogen, phenyl, phenyl substituted with halogen or methoxy, styryl, 5,5-pentamethylene and 4,5-tetramethylene,

n is 0 or an integer from 1 to 6; or a hydrate or a light metal salt of the compound defined herein above.

3,950,421

METHOD OF PRODUCING TRIAMINOGUANIDINE NITRATE

Vernon E. Haury, Simi Valley, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 347,110, April 2, 1973, abandoned. This application Sept. 13, 1974, Ser. No. 505,705

Int. Cl.² C07C *133/10*

U.S. Cl. 260—564 F 5 Claims

1. A method of producing triaminoguanidine nitrate, said method comprising the steps of:

forming a source of free nitrate ions within an aqueous medium, and

reacting guanidine nitrate with hydrazine in said aqueous medium to produce triaminoguanidine nitrate.

3,950,422

6-AMINO-ISOPROTERENOL

Nathan O. Kaplan, La Jolla, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed June 20, 1974, Ser. No. 481,282

Int. Cl.² C07C *91/22*

U.S. Cl. 260—570.6 1 Claim

1. 6-amino-isoproterenol.

3,950,423

10,11-DIHYDRO-10,10,11,11-TETRAFLUORO-5H-DIBENZO[a,d]CYCLOHEPTENE-5-METHYLAMINES

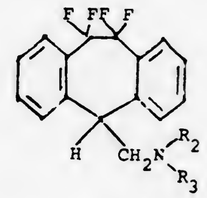
Marcia Elizabeth Christy, Perkasie, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 1, 1974, Ser. No. 438,924

Int. Cl.² C07C *87/29*

U.S. Cl. 260—570.9 7 Claims

1. A compound of the formula



wherein R_2 and R_3 are similar or dissimilar and are either hydrogen or loweralkyl, or a derivative thereof in which one or two of the hydrogens at the 1-, 2-, 3-, 4-, 6-,7-, 8- or 9-positions is replaced with a substituent selected from hydrogen,

halogen, loweralkyl, loweralkoxy, perfluoroloweralkyl, loweralkylmercapto and loweralkylsulfonyl.

3,950,424
AROMATIC AMINE INHIBITED BY ANTIOXIDANTS AND METAL COMPLEXERS

Ronald L. Pearson, Cincinnati, Ohio, and Charles A. Schneider, Villa Hills, Ky., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Oct. 29, 1974, Ser. No. 518,531
Int. Cl.² C07C *87/50, 87/52*
U.S. Cl. 260—575 **9 Claims**

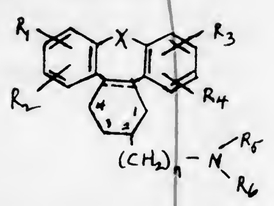
1. A composition consisting essentially of (A) an aromatic amine of the formula $R—NH_2$ wherein R is a disubstituted phenyl radical in which one substituent is an alkoxy group of 1 to 4 carbon atoms in one of the positions ortho and para to the NH_2 group and the other substituent is selected from the group consisting of an alkyl group of 1 to 4 carbon atoms and a chlorine atom and is disposed in any position on the benzene ring, (B) a heterocyclic compound containing 2 to 8 carbon atoms, 2 to 3 sulfur atoms, 1 to 2 heterocyclic nitrogen atoms and at least 2 hydrogen atoms, said heterocyclic compound including a single heterocyclic ring of 5 to 6 atoms containing at least 2 carbon atoms, 1 to 2 nitogen atoms and 1 to 2 sulfur atoms, the substituents on the nitrogen atoms being restricted to hydrogen atoms and each acyclic sulfur atom being bonded to a carbon atom on the heterocyclic ring, the concentration of component (B) ranging from about 0.001 to about 0.20 percent by weight of component (A), and (C) a metal complexing agent selected from the group consisting of aliphatic, cyclicaliphatic and aromatic compounds of no more than about 22 carbon atoms and containing from two to four carboxyl groups structurally arranged to permit the hydroxyl oxygen atoms to fit the coordination positions about the metal atoms being complexed, the concentration of component (C) ranging from about 0.001 to about 0.02 percent by weight of component (A).

3,950,425
AMINO-SUBSTITUTED TETRACYCLIC COMPOUNDS

Willem Jacob van der Burg, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Apr. 24, 1974, Ser. No. 463,636
Claims priority, application Netherlands, May 2, 1973, 7306069
Int. Cl.² C07C *87/28, 87/64*
U.S. Cl. 260—576 **4 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable salt thereof, in which
X represents the group $—CR_8R_9—$,
R_1, R_2, R_3 and R_4 are selected from the group consisting of hydrogen, hydroxy, halogen, alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms, alkylthio having 1 to 6 carbon atoms, and trifluoromethyl,
R_5, R_6 are selected from the group consisting of hydrogen, alkyl having 1 to 6 carbon atoms, aralkyl having 7 to 10 carbon atoms,
R_8, R_9 are selected from the group consisting of hydrogen and methyl, and is selected from 0, 1 and 2 and the dotted line means an optional bond.

3,950,426
1-AMINO-2-PROPENYL AND 1-AMINO-2-METHYLPROPENYL ALKANE HYDROCARBON

George S. Culbertson, Downers Grove, Ill., assignor to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 116,722, Feb. 11, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 391,590
Int. Cl.² C07C *83/00, 87/02, 87/24*
U.S. Cl. 260—583 P **4 Claims**

1. An N-hydrocarbyl-substituted alkylene polyamine product of the formula $Z—HN—(A—NH)_n—Z_1$ wherein n is an integer from 1 to 10, —A— is a divalent hydrocarbon radical containing 1 to 10 methylene radicals, the substituent Z is

$$R—CH=C—CH_2—$$
$$\quad\quad\quad

(when $m = 2$) can have the above definitions and can also join to form a substituted or unsubstituted alkylene diradical having 1–3 carbons in the alkylene chain; and R_6 is (when $m = 2$) a substituted or unsubstituted alkylene diradical having 1–8 carbons in the alkylene chain or, when both Rs and H, a substituted or unsubstituted phenylene diradical;

the substituents being selected from one or more of lower alkyl, carboxy, and lower alkoxycarbonyl.

3,950,433

1-PHENYL-1-P-PROPARGYLOXYPHENYL-2-NITRO-ETHANE DERIVATIVES

Beat Böhner, Binningen; Dag Dawes, Prattein, and Willy Meyer, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 28, 1974, Ser. No. 437,417

Claims priority, application Switzerland, Feb. 5, 1973, 1620/73; Dec. 14, 1973, 17553/72

Int. Cl.² C07C *43/20*

U.S. Cl. 260—612 R **5 Claims**

1. The 1-p-Ethoxyphenyl-1-p-propargyloxyphenyl-2-nitro-propane.

2. The 1-p-Isopropylphenyl-1-p-propargyloxyphenyl-2-nitro-propane.

3,950,434

METHOD FOR PRODUCING BIPHENYLS

Naoya Kominami, Tokyo; Nobuhiro Tamura, Oi, and Etsuo Yamamoto, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

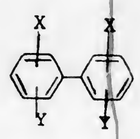
Continuation of Ser. No. 62,656, Aug. 10, 1970, abandoned. This application June 28, 1973, Ser. No. 374,769

Claims priority, application Japan, Aug. 11, 1969, 44-62939; Sept. 29, 1969, 44-76911

Int. Cl.² C07C *15/14*, *25/00*, *43/20*, *79/10*

U.S. Cl. 260—613 R **6 Claims**

1. In a method for producing biphenyl compounds of the formula:



wherein X is H, lower alkyl having 1 to 6 carbon atoms, Cl, NO_2 or lower alkoxy having 1 to 3 carbon atoms and Y is H or CH_3 by heating to an elevated temperature a mono-nuclear aromatic compound of the formula:



wherein X and Y are as defined aforesaid, in the presence of an oxygen containing gas and a catalytic amount of palladium or a palladium compound selected from the group consisting of palladium sulfate, nitrate, phosphate, acetate and propionate, the improvement comprising conducting the reaction in the presence of 0.001 – 0.4 mols, per mole of mono-nuclear aromatic compound, of sulfuric acid at a temperature in the range of 30°C – 300°C under an oxygen pressure of at least 5 kg/cm².

3,950,435

HERBICIDAL DIPHENYL ETHERS

Ryohei Takahashi, Kusatsu; Kankchi Fujikawa, Kyoto; Isao Yokomichi, Kusatsu; Tadaaki Toki, Kusatsu, and Shinzo Someya, Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

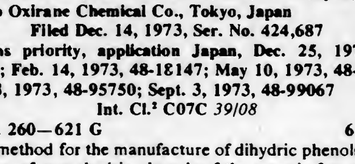
Continuation-in-part of Ser. No. 326,366, Jan. 24, 1973. This application Mar. 25, 1975, Ser. No. 561,994

Claims priority, application Japan, Jan. 27, 1972, 47-10367; May 13, 1972, 47-47322; Aug. 2, 1972, 47-76944; Dec. 6, 1972, 47-121665; Dec. 11, 1972, 47-123369

Int. Cl.² C07C *43/22*

U.S. Cl. 260—613 R **3 Claims**

1. A herbicidal compound having the formula:



wherein R represents allyloxy or (2-propynyl)oxy group.

3,950,436

PROCESS FOR PREPARING VICINAL DIALKOXYALKANES

Takashi Koyano, Ohimachi, and Saburo Fukushi, Tokyo, both of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 260,522, June 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 845,542, July 28, 1969, Pat. No. 3,699,174, which is a continuation-in-part of Ser. No. 691,151, Dec. 18, 1967, abandoned. This application May 10, 1974, Ser. No. 468,639

Claims priority, application Japan, Feb. 8, 1967, 42-8098

Int. Cl.² C07C *41/10*, *41/00*

U.S. Cl. 260—615 R **6 Claims**

1. A process for synthesizing a dialkoxyalkane having the alkoxy radicals on adjacent carbon atoms, which comprises:

reacting at a temperature in the range of 100° to 350°C,

A. a dihaloalkane selected from the group consisting of dichloroalkanes and dibromoalkanes, said dihaloalkane having the halogen substituents on adjacent carbon atoms and having a total number of carbon atoms from 2 to 4, with,

B. an alkanol having 1 to 4 carbon atoms,

in the presence of from one to five equivalents, based on the halogen of the dihaloalkane, of metallic iron, as a hydrogen halide absorbing agent insoluble in said alkanol.

3,950,437

METHOD FOR MANUFACTURE OF DIHYDRIC PHENOLS

Juichi Imamura, Chofu; Moriyasu Ando, Koganei; Kazuo Sasaki, Kuwana, and Takumi Iio, Mie, all of Japan, assignors to Oxirane Chemical Co., Tokyo, Japan

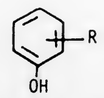
Filed Dec. 14, 1973, Ser. No. 424,687

Claims priority, application Japan, Dec. 25, 1972, 47-129301; Feb. 14, 1973, 48-18147; May 10, 1973, 48-51940; Aug. 28, 1973, 48-95750; Sept. 3, 1973, 48-99067

Int. Cl.² C07C *39/08*

U.S. Cl. 260—621 G **6 Claims**

1. A method for the manufacture of dihydric phenols by the oxidation of monohydric phenols of the generic formula:



wherein, R is one member selected from the group consisting of H and alkyls having 1–12 carbon atoms, said oxidation being carried out at a temperature in the range of from 50°C to 150°C with one organic peracid selected from the group consisting of peracetic acid, perpropionic acid and perisobutyric acid in the presence of at least one member selected from the group consisting of:

pyridine-2,6-dimethanol,

8-oxyquinoline,

$Na_5R'_5(P_3O_{10})_2$ wherein R′ is one member selected from the group consisting of alkyls having 4 - 10 carbon atoms,

$H_5R'_5(P_3O_{10})_2$ wherein R′ is one member selected from the group consisting of alkyls having 4 – 10 carbon atoms,

polycarboxylic acids containing 1-3 nitrogen atoms and having a heavy metal ion-chelating property selected from the group consisting of iminodiacetic acid, nitrylotriacetic acid, ethylenediaminotetracetic acid, 1,2-cyclohexandiamine tetracetic acid and diethylenetriamine pentacetic acid,

magnesium salts of said polycarboxylic acids,

sodium salts of said polycarboxylic acids,

potassium salts of said polycarboxylic acids,

polycarboxylic acids containing 1-3 OH radicals and having a heavy metal ion-chelating property selected from the group consisting of citric acid and tartaric acid,

magnesium salts of said polycarboxylic acids,

sodium salts of said polycarboxylic acids,

sodium salt of phosphoric acid,

potassium salt of phosphoric acid,

mono and di-alkyl esters of phosphoric acid, having 12 or less carbon atoms,

sodium salt of pyrophosphoric acid, and

mono, di and tri-alkyl esters of pyrophosphoric acid, having 12 or less carbon atoms.

3,950,438

PREPARATION OF RESORCINOL AND ALKYL-SUBSTITUTED DERIVATIVES THEREOF

Sijbrandus E. Schaafsma, Beek; Johannes E. L. Claassens, Heerlen, and Egidius J. M. Verheijen, Sittard, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

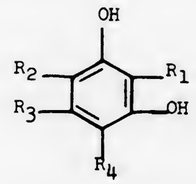
Filed Mar. 11, 1974, Ser. No. 450,219

Claims priority, application Italy, Mar. 14, 1973, 03537/70

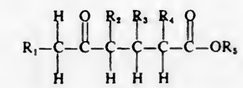
Int. Cl.² C07C *37/00*, *45/00*, *27/00*

U.S. Cl. 260—621 R **11 Claims**

1. A process for the preparation of a resorcinol of the general gormula:



wherein R_1, R_2, R_3 and R_4, which are the same or different, are each hydrogen or an alkyl group containing up to 6 carbon atoms, and the total number of carbon atoms of R_1, R_2, R_3 and R_4 is no more than 12 carbon atoms, which comprises contacting a keto ester of the general formula



wherein R_1, R_2, R_3, and R_4 are as defined above and R_5 is an alkyl, cycloalkyl, or monocyclic or bicyclic aryl or arylalkyl group containing up to 12 carbon atoms, with a dehydrogenation catalyst wherein the dehydrogenation catalyst contains a metal or a compound of a metal selected from the group consisting of iron, cobalt, nickel, ruthenium rhodium, palladium, osmium, iridium, platinum and copper at a temperature of about 100°C to 500°C.

3,950,439

PRODUCTION OF LINEAR PRIMARY ALCOHOLS

Anthony Macaluso, Sr., Port Arthur, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 271,310, July 13, 1972, abandoned. This application July 12, 1974, Ser. No. 488,130

Int. Cl.² C07C *29/16*

U.S. Cl. 260—632 HF **9 Claims**

1. A hydroformylation process for the conversion of unsubstituted olefinic hydrocarbons consisting of predominantly straight chain terminal olefins having n carbon atoms per molecule to predominantly straight chain linear alcohols having $n+1$ carbon atoms to the molecule, n being from 11 to 20, inclusive, comprising reacting said hydrocarbons with carbon monoxide and hydrogen at a temperature of from about 200°F to about 5000°F. and a pressure of from about 1000 to 3500 psig for a reaction time of from about 1 to 20 hours in the presence of a cobalt tri-alkylphosphine oxo catalyst prepared in situ and of an aqueous base selected from the group of alkali metal hydroxides, and alkali metal salts of organic acids, the molar ratio of base to olefinic hydrocarbons, being from about 0.05 to 1 to 10 to 1, and the molar ratio of base to cobalt being from about 10:1 to 20:1.

3,950,440

PROCESS FOR OXIDIZING OLEFINS

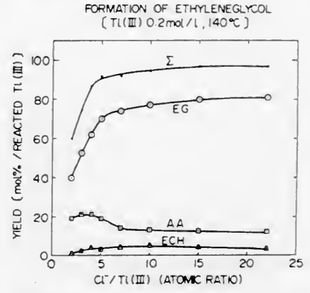
Isao Hirose, Mitaka; Kazutoshi Funabashi, Hino; Takeshi Fujii, Iwakuni, and Kiyoshi Kawajiri, Hiroshima, all of Japan, assignors to Teijin Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 615,423, Feb. 13, 1967, abandoned. This application Mar. 9, 1970, Ser. No. 17,589

Claims priority, application Japan, Feb. 17, 1966, 41-9565; Feb. 17, 1966, 41-9566

Int. Cl.² C07C *29/04*, *27/12*

U.S. Cl. 260—635 H **4 Claims**



1. A process for the preparation of an alkylene glycol having 2 to 4 carbon atoms, which comprises contacting an unsubstituted aliphatic olefin having 2 to 4 carbon atoms with an aqueous solution containing chlorine ions, bromine ions or a mixture thereof and thallic ions (TlIII) at a temperature of 120°C. to 200°C. and a partial pressure of said olefin of above

5 atmospheres, the atomic ratio of said chlorine ions, bromine ions or mixture thereof to said thallic ions being at least 6.

3,950,441
PROCESS AND CATALYST FOR PREPARING 1,4-BUTANEDIOL

Stanley Rudoff, Elizabeth, and Waldo DeThomas, Parsippany, both of N.J., assignors to GAF Corporation, New York, N.Y.

Divlsion of Ser. No. 72,870, Sept. 16, 1970, Pat. No. 3,759,845. This application Mar. 30, 1973, Ser. No. 346,657
Int. Cl.² C07C *29/00*
U.S. Cl. 260—635 M **3 Claims**

1. In a process for the catalytic hydrogenation of 1,4-butynediol to 1,4-butanediol the improvement which comprises: hydrogenating an aqueous solution of 1,4-butynediol with hydrogen in a twostage process wherein the first stage is conducted in the presence of a hydrogenation catalyst under conditions of temperature and pressure lower than that employed in the second stage to partially hydrogenate said 1,4-butynediol and subjecting said partially hydrogenated 1,4-butynediol to said second stage hydrogenation at a temperature of from about 120° to 175°C and a pressure of from about 1,000 to about 3,000 psig in the presence of a catalyst consisting of a high surface area alumina support carrying thereon approximately by weight 12 to 20% nickel, 1 to 10% copper and 0 to 1.5% manganese.

3,950,442
MANUFACTURE OF t-BUTANOL

Hans-Henning Vogel; Hans-Martin Weitz, and Toni Pfeiffer, all of Frankenthal, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Continuation of Ser. No. 409,274, Oct. 24, 1973, abandoned. This application June 13, 1975, Ser. No. 586,540
Claims priority, application Germany, Oct. 27, 1972, 2252685
Int. Cl.² C07C *29/06*
U.S. Cl. 260—641 **3 Claims**

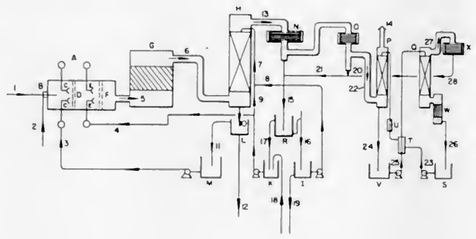
1. A process for the manufacture of t-butanol by hydration of isobutylene comprising

a. contacting in a hydrating stage an isobutylene-containing C_4-hydrocarbon mixture at temperatures of 20° to 45°C and at a pressure from 1 to 10 atmospheres gauge with a mixture of aqueous sulfuric acid and t-butanol, the concentration of the aqueous sulfuric acid being 25 to 45% w/w at the beginning of the reaction and the concentration of the t-butanol in the mixture of aqueous sulfuric acid and t-butanol being from 10 to 35% w/w at the beginning of the reaction,
b. passing the mixture obtained in the hydrating stage to a separation stage to obtain an essentially isobutylene-free and t-butanol containing C_4-hydrocarbon mixture and a t-butanol/aqueous sulfuric acid mixture,
c. introducing the essentially isobutylene-free and t-butanol containing C_4-hydrocarbon mixture and the t-butanol-/aqueous sulfuric acid mixture of step (b) at separate points into an extraction stage and adding essentially isobutylene-free and t-butanol-free C_4-hydrocarbon mixture to the extraction stage to obtain an extracted mixture of t-butanol and C_4-hydrocarbon and a t-butanol/aqueous sulfuric acid mixture having a reduced content of t-butanol, said extraction stage being at 0° to 50°C, and
d. recycling the t-butanol/aqueous sulfuric acid mixture having a reduced content of t-butanol to the hydrating stage and isolating the t-butanol from the extracted mixture of t-butanol and C_4-hydrocarbon mixture.

3,950,443
UTILIZATION OF WASTE PRODUCTS CONTAINING CHLORINE IN THE PRODUCTION OF CHLORINATED ORGANIC COMPOUNDS BY COMBINATION OF OXYCHLORINATION WITH COMBUSTION

Walter H. Prahl, Pfaffstrasse 16, 75 Karlsruhe 41, Germany

Filed Sept. 27, 1973, Ser. No. 401,378
Int. Cl.² C07C *25/00*
U.S. Cl. 260—650 R **3 Claims**



1. A process of preparing chlorinated hydrocarbons by the oxychlorination process which comprises:

1. Oxidizing combustible chlorine-containing hydrocarbon waste material to form a combustion gas,
2. mixing the combustion gas with a hydrocarbon, a chlorinated hydrocarbon or mixtures thereof,
3. contacting said mixture in the vapor phase with an oxychlorination catalyst, and
4. recovering the chlorinated hydrocarbon obtained in the process.

3,950,444
PROCESS FOR PREPARING ORTHO SUBSTITUTED ARYL FLUORIDES

Walter A. Gay, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 338,724, March 5, 1973, abandoned. This application Aug. 30, 1974, Ser. No. 502,247
Int. Cl.² C07C *25/13*
U.S. Cl. 260—650 F **8 Claims**

1. A process for preparing a selected ortho-substituted aryl fluoride having 6–10 ring carbon atoms and an ortho substituent selected from the group consisting of halogen and trihalomethyl which comprises:

a. contacting a reaction mixture of a corresponding ortho-substituted aryl diazonium fluoride, with a heat exchange medium in a decomposition zone at a temperature in the range of 100-350°C., which temperatures is above the distillation temperature of the resulting ortho-substituted aryl fluoride, thereby decomposing said diazonium fluoride,
b. simultaneously removing the resulting ortho-substituted aryl fluoride from said decomposition zone, and
c. recovering said ortho-substituted aryl fluoride.

3,950,445
PROCESS FOR THE PRODUCTION OF BENZOTRIFLUORIDE

Kurt Ryf, Visp, Wallis, Switzerland, assignor to Lonza Ltd., Gampel, Valais, Switzerland

Filed Dec. 23, 1974, Ser. No. 536,973
Claims priority, application Switzerland, Dec. 21, 1973, 17987/73
Int. Cl.² C07C *25/14*
U.S. Cl. 260—651 F **19 Claims**

1. The process of preparing benzotrifluoride which comprises reacting benzotrichloride with hydrogen fluoride in a reaction zone at a pressure between 20 and 45 atm. and at a temperature between 85° and 100°C. in the presence of a catalyst consisting of a mixture of aluminum chloride and activated charcoal, the ratio of said aluminum chloride to said activated charcoal in said catalyst being between 1:2.5 and 1:3.0, on a stoichiometric basis, said hydrogen fluoride being 1.0 to 1.1 times the amount of said benzotrichloride, said benzotrichloride, said catalyst and said hydrogen fluoride being present as a mixture, and said mixture being intensively mixed to an extent during the reaction that the admixture or intermixture has a Reynolds number between 65,000 and 100,000.

3,950,446
PROCESS FOR PRODUCING ETHYNYLATING AGENTS

John Nicholson Gardner, Garrison, N.Y., and George McClelland Whitesides, Newton, Mass., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 15, 1974, Ser. No. 460,847
Int. Cl.² C07F *3/02*
U.S. Cl. 260—665 R **5 Claims**

1. The process of forming an ethynylating agent comprising mixing under substantially anhydrous conditions from about 10% to about 95% by weight of sodium acetylide with from about 5% to about 95% by weight of an anhydrous magnesium compound selected from the group consisting of magnesium sulfate, magnesium chloride, magnesium fluoride, aryl magnesium halide, lower alkyl magnesium halide and cycloalkyl magnesium halide said weight percent being based upon the total weight of magnesium in said magnesium compound and sodium acetylide; said mixing being carried out in the presence of liquid ammonia at a temperature of from −100°C. to 100°C. and a pressure of from 15 psia to 1000 psia.

3,950,447
METHOD FOR CARRYING OUT SIMULTANEOUSLY THE CATALYTIC REACTIONS INVOLVING HYDROGEN EVOLUTION AND CONSUMPTION

Vladimir Mikhailovich Gryaznov, Leninskie Gory, MGU, zona L, kv. 11, Moscow, U.S.S.R.

Continuation of Ser. No. 838,650, July 2, 1969, abandoned. This application Apr. 30, 1971, Ser. No. 139,235
Int. Cl.² C07C *5/10, 3/00, 15/00*
U.S. Cl. 260—667 **11 Claims**

1. A method for simultaneously carrying out a catalytic reaction wherein hydrogen is evolved and a catalytic reaction wherein hydrogen is consumed, said method comprising conducting each of said reactions in separate reaction zones isolated from one another by a membrane partition made of a catalytic material consisting essentially of palladium or alloys thereof and selectively permeable to hydrogen only, wherein in one reaction zone hydrogen is evolved from the material fed to said reaction zone, and wherein in the other reaction zone, the hydrogen is combined with the material fed to said other reaction zone, the hydrogen evolved in the first reaction zone passing through the partition which is selectively permeable thereto, said material being fed to the other reaction zone being capable of undergoing hydrogenation or hydrodealkylation, and maintaining the temperature in said reaction zones in the range of from 300° to 500°C to effect reaction in both zones, the palladium partition serving as the catalytic material in both zones.

3,950,448
DETERGENT-GRADE ALKYLATE PRODUCTION

Paul A. Witt, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

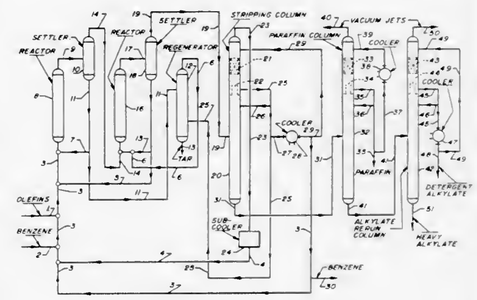
Filed Feb. 24, 1975, Ser. No. 552,016
Int. Cl.² C07C *3/54, 7/04*
U.S. Cl. 260—671 B **10 Claims**

1. A method for recovering HF and benzene from a mixture thereof with alkylbenzenes, the alkyl group of which contains from ten to about fifteen carbon atoms per molecule, polyalkyl benzenes and/or polyphenyl alkanes, which method comprises the steps of:

a. introducing said mixture into a combination stripping/-fractionating column, at an intermediate first locus thereof;
b. withdrawing a bottoms fraction from said column, at a lower second locus thereof, containing alkylbenzenes, polyalkyl benzenes and/or polyphenyl alkanes, substantially free from HF and benzene;
c. withdrawing a side-cut fraction from said column, substantially free from HF, at an intermediate third locus thereof, said third locus being above said first locus and below a contact-condenser disposed in an upper section of said column;
d. introducing a first portion of said side-cut fraction, at substantially the same temperature, into said column, at a fourth locus intermediate said first locus and said third locus;
e. cooling a second portion of said side-cut fraction and introducing said second portion into said column at a fifth locus above said contact-condenser; and,
f. withdrawing HF and benzene as an overhead fraction from said column, a sixth locus above said fifth locus.

4. A process for the production of an alkylaromatic hydrocarbon which comprises the steps of:

a. reacting aromatic hydrocarbons with an olefinic hydrocarbon in contact with a hydrogen fluoride catalyst, in a



reaction zone at alkylation conditions selected to produce alkylated aromatics;
b. separating the resulting reaction zone effluent, in a separation zone, to provide a hydrocarbon-rich stream, containing hydrogen fluoride, and a hydrogen fluoride-rich stream;
c. introducing at least a portion of said hydrogen fluoride-rich stream into a regeneration zone to produce regenerated hydrogen fluoride and recycling regenerated hydrogen fluoride to said reaction zone;
d. introducing said hydrocarbon-rich stream, containing aromatic hydrocarbons, HF, alkylaromatics, polyalkyl aromatics and/or polyaryl alkanes, into a combination stripping/fractionation zone having a contact-condenser disposed therein, and recovering therefrom (i) an overhead fraction rich in aromatic hydrocarbons and HF, (ii) a bottoms fraction containing alkylaromatics, polyalkyl aromatics and/or polyaryl alkanes and (iii) a side-cut fraction containing aromatic hydrocarbons and substantially free from HF;
e. introducing a first portion of said side-cut fraction, at substantially the same temperature, into said column;
f. introducing a second portion of said side-cut fraction into said regeneration zone and countercurrently contacting therein said hydrogen fluoride-rich stream; and,
g. recovering said linear alkylaromatics from said bottoms fraction.

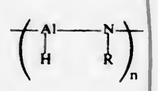
3,950,449
PRODUCTION OF LIQUID POLYMERS HAVING A VERY HIGH VISCOSITY

Pierleone Girotti; Renato Tesei, and Telemaco Floris, all of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed Mar. 12, 1974, Ser. No. 450,474
Claims priority, application Italy, Mar. 12, 1973, 21456/73
Int. Cl.² C07C *3/21*
U.S. Cl. 260—683.15 D **10 Claims**

1. Process for the preparation of liquid polymers having a very high viscosity of between 250 cSt and 15,000 cSt at 210°F, through polymerization of a member of the group consisting of n-alpha olefins, and mixtures thereof, having the general formula R - CH = CH_2 wherein R is an alkyl radical containing from 6 to 8 atoms of carbon, in which:

the polymerization is carried out in the presence of a catalyst system formed by a catalyst consisting of $TiCl_4$ and an aluminum compound, which is a polyiminoalane having the formula



wherein *n* is whole number not higher than 50 and R is an isopropyl radical;

said catalyst system is formed at a temperature in the range of 0°–150°C and said polymerization occurs in a substantially inert atmosphere.

3,950,450
PROCESS FOR PRODUCING 4-METHYL-1-PENTENE

Harukichi Hashimoto, and Shuichi Omiya, both of Sendai, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed July 12, 1974, Ser. No. 488,180
Claims priority, application Japan, July 12, 1973, 48-77901
Int. Cl.² C07C *3/20*
U.S. Cl. 260—683.15 E **3 Claims**

1. A process for producing 4-methyl-1-pentene, which comprises dimerizing propylene in the presence of a catalyst composed of (a) potassium, (b) copper and (c) from 0.1 to 5 moles per mole of potassium of an aliphatic tertiary amine having 3 to 30 carbon atoms.

3,950,451
HARDENABLE EPOXY RESIN COMPOSITION

Hirosi Suzuki; Akira Matsui, and Tsunekazu Inoue, all of Tokyo, Japan, assignors to Asahi Denka Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 228,729, Feb. 23, 1972, abandoned. This application Dec. 27, 1973, Ser. No. 428,674
Claims priority, application Japan, Feb. 27, 1971, 46-10077
Int. Cl.² C08G *59/18;* **C08L** *63/00*
U.S. Cl. 260—831 **1 Claim**

1. A hardenable epoxy resin composition which contains as essential constituents

A. at least one epoxy compound having on the average more than one adjacent epoxy group per molecule and selected from the group consisting of polyglycidyl ethers of polyhydric phenols containing one or more aromatic nuclei, polyglycidyl ethers of alcoholic polyhydroxyl compounds obtained by the addition reaction of polyhydric phenols containing one or more aromatic nuclei with alkylene oxides containing 2 to 4 carbon atoms, and polyglycidyl ethers of alcoholic polyhydroxyl compounds containing one or more alicyclic rings and

B. 15 to 35 percent by weight, based on the weight of the epoxy compound (A), of at least one hardener produced by coupling

1. a polyamino condensation product produced by condensing essentially

1-1. phenol (a) having at least one reactive hydrogen atom attached to an aromatic nucleus and selected from the group consisting of phenol, cresol and 2,2-bis(4-hydroxyphenyl)-propane, with

1-2. diamine (b) having at least one active hydrogen atom attached to an amino nitrogen atom per molecule and selected from the group consisting of ethylenediamine, hexamethylenediamine, triethylene tetramine and xylylenediamine, and with

1-3. member (c) selected from the group consisting of formaldehyde and its functional derivatives, in the mole ratio of (a) : (b) : (c) of 1 : 1–3 : 1—3, the condensation reaction mixture being at a temperature lower than 40°C when the member (c) is added, and then the temperature is raised above 40°C to effect a condensation reaction, and

2. alkylphenol (d) selected from the group consisting of cresol and nonylphenol, the ratio of equivalents of phenolic hydroxy groups of alkylphenol (d) : equivalents of active hydrogen atom attached to amino nitrogen atoms of the polyamino condensation product being 0.1 – 1.0 : 1, the coupling reaction being carried out at a temperature of 10°–150°C.

3,950,452
POLYURETHANE HIGH-VOLTAGE INSULATOR APPLIANCE

Karl Schmidt, Wiesbaden, and Gerhard Boockmann, Steinheim, both of Germany, assignors to Dr. Beck & Co. AG, Hamburg, Germany

Continuation of Ser. No. 33,176, May 8, 1970, abandoned, which is a continuation of Ser. No. 719,224, April 5, 1968. This application Jan. 21, 1972, Ser. No. 219,824
Claims priority, application Austria, Apr. 24, 1967, 3873/67
Int. Cl.² C08G *18/42;* **C08L** *75/06;* **H01B** *3/30*
U.S. Cl. 260—859 R **5 Claims**

1. In a weather-resistant electrical high voltage insulator appliance used to support or separate a conductor from the earth or from another conductor to prevent a flow of current between them or to another object at least the parts of the high voltage insulator exposed to the atmosphere consist of a solvent free aliphatic polyurethane substantially free of aromatic and cycloaliphatic groups obtained by reacting a diisocyanate with a hydroxy group containing aliphatic compound.

3,950,453
PROCESS FOR PREPARING PETROLEUM RESINS

Minoru Ishiguro; Yuzo Takeuchi, and Shozo Shiozaki, all of Kawasaki, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed June 13, 1974, Ser. No. 478,995
Claims priority, application Japan, June 25, 1973, 48-71566
Int. Cl.² C08F *297/00, 240/00*
U.S. Cl. 260—878 B **15 Claims**

1. In a process for producing a petroleum resin by providing a starting oil composition comprising chain conjugated diolefins having 4 to 5 carbon atoms and monoolefinic unsaturated hydrocarbons having 4 to 10 carbon atoms and being copolymerizable with said conjugated diolefin and cationically polymerizing the starting oil composition in the presence of a Friedel-Crafts type catalyst,

said process comprising the steps of:

providing (I) a first feed portion comprising at least one of the chain conjugated diolefins and at least one of the monoolefinic unsaturated hydrocarbons in a proportion of from 20 to 80% by weight of the monomers contained in the first portion and (II) a second feed portion comprising at least one of the chain conjugated diolefins and, if desired, at least one of the monoolefinic unsaturated hydrocarbons in a proportion, which is less than said proportion in the first feed portion, by weight of the monomers contained in the second feed portion, the starting oil composition consisting essentially of the first and second feed portions (I) and (II),

polymerizing the first feed portion (I) in a first step and successively polymerizing in a second step the second feed portion (II) in the presence of the resulting reaction mixture from the first step, thereby obtaining a petroleum resin having a low melt viscosity and satisfactory compatibility.

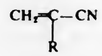
3,950,454
POLYMERIZATES OF OLEFINIC NITRILES AND DIENE RUBBERS

Linda W. Hensley, Bainbridge Township, Geauga County; George S. Li, Aurora, and Gerald P. Coffey, Cleveland Heights, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Dec. 9, 1974, Ser. No. 531,185
Int. Cl.² C08L *9/02*
U.S. Cl. 260—879 **10 Claims**

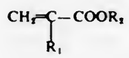
1. The polymeric composition resulting from the polymerization of 100 parts by weight of

A. from about 60 to 90% by weight of at least one nitrile having the structure



wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen,

B. from about 10 to 39% by weight of an ester having the structure



wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms, and

C. from about 1 to 15% by weight of at least one member selected from the group consisting of indene and coumarone

wherein the given percentages of (A), (B), and (C) are based on the combined weight of (A), (B), and (C), and the amount of (B) is always equal to or greater than the amount of (C), in the presence of 1 to 40 parts by weight of

D. a rubbery polymer of at least 50% by weight of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and up to 50% by weight of at least one member selected from the group consisting of styrene, acrylonitrile, and ethyl acrylate.

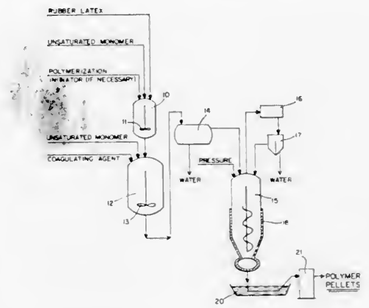
3,950,455
METHOD FOR GRAFT POLYMERIZATION OF DIENE POLYMER

Takehiko Okamoto, Aichi; Akihiko Kishimoto, Nagoya; Masakazu Inoue, Nagoya; Ikuo Nagai, Nagoya, and Mitsunobu Otani, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

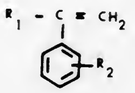
Continuation-in-part of Ser. No. 304,645, Nov. 11, 1972, abandoned, which is a continuation-in-part of Ser. No. 74,721, Sept. 23, 1970, abandoned. This application June 26, 1974, Ser. No. 483,107
Int. Cl.² C08F *291/02*
U.S. Cl. 260—880 R **7 Claims**

1. Method for producing impact resistant rubber modified thermoplastic resin containing from about 5 to 35% by weight of rubber component comprising

a. in a first process step, emulsion graft polymerizing 5 to 40 parts by weight of at least one unsaturated monomer



which is selected from the group consisting of unsaturated monomers represented by the general formula



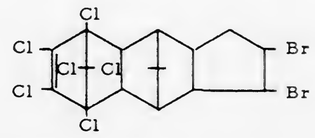
wherein R_1 is —H or —CH_3, R_2 is selected from the group

3,950,456
FLAME-RETARDANT COMPOSITION

Jack Newcombe, Freehold, N.J., assignor to Cities Service Company, Tulsa, Okla.

Division of Ser. No. 281,692, Aug. 18, 1972, which is a continuation-in-part of Ser. No. 115,081, Feb. 12, 1971, abandoned. This application July 25, 1975, Ser. No. 599,215
Int. Cl.² C08J *3/20*
U.S. Cl. 260—880 R **8 Claims**

1. A composition comprising a normally flammable organic polymer and a flame retardant corresponding to the formula:



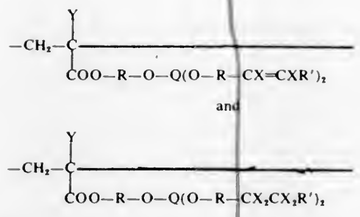
2. The composition of claim 1 containing antimony trioxide in an amount such as to provide a flame retardant/antimony trioxide weight ratio of about 1–4.5/1.

3,950,457
POLYMERS OF HALOGENATED ESTERS OF PHOSPHORUS-CONTAINING ACIDS

Gaetano F. D'Alelio, 2011 E. Cedar St., South Bend, Ind. 46617

Division of Ser. No. 383,583, July 30, 1973, Pat. No. 3,886,236, which is a continuation-in-part of Ser. No. 179,543, Sept. 10, 1971, Pat. No. 3,780,144, which is a continuation of Ser. No. 785,335, Dec. 19, 1968, abandoned. This application Nov. 18, 1974, Ser. No. 524,666
Int. Cl.² C07F *9/09, 9/113, 9/141, 9/143*
U.S. Cl. 260—928 **27 Claims**

1. A polymer having a plurality of repeating units therein selected from the class consisting of



wherein
Y represents H, CH_3 or Cl;
Q represents >p— or



X represents Cl or Br;
R represents a divalent hydrocarbon radical of 1–20 carbon atoms;
R′ represents H, X or R″; and
R″ represents a monovalent hydrocarbon radical of 1–20 carbon atoms.

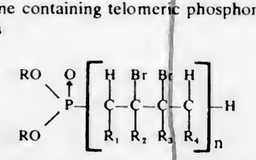
3,950,458

BROMINE CONTAINING TELOMERIC PHOSPHONIC ACID ESTERS

Siegfried Noetzel, Kelkheim, Taunus; Horst Jastrow, Niederhochstadt, Taunus, and Edgar Fischer, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed June 11, 1974, Ser. No. 478,262
Claims priority, application Germany, June 13, 1973, 2329924
Int. Cl.² C07F 9/40; C08K 5/53
U.S. Cl. 260—961 **2 Claims**

1. Bromine containing telomeric phosphonic acid esters of the formula



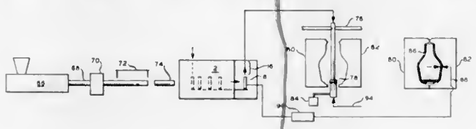
where R is a lower straight-chain or branched aliphatic hydrocarbon radical having from 1 to 8 carbon atoms; R_1 to R_4 are hydrogen, halogen or lower alkyl having from 1 to 4 carbon atoms; and *n* is an integer of from 2 to 30.

3,950,459

CONTINUOUS PROCESS FOR PRODUCING, REHEATING, AND BLOW MOLDING PARISONS

Charles L. Seefluth, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 318,704, Dec. 27, 1972, abandoned. This application Feb. 11, 1975, Ser. No. 549,107
Int. Cl.² B29C 17/07
U.S. Cl. 264—25 **7 Claims**



1. A continuous process for producing a parison and blow molding said parison into conformity with a molding zone cavity to produce a molded article having substantially uniform wall thickness, said process comprising:

a. producing tubular extrudate and cooling said extrudate below its orientation temperature;
b. separating said tubular extrudate into parison preforms;
c. passing said preforms through a heating zone containing a primary heating source while maintaining said heating zone at an elevated temperature and maintaining the parison preforms essentially free of any angular rotation, thereby heating said preforms to an average temperature within the orientation range;
d. passing said heated preforms through a secondary radiant heating zone while maintaining the parison preforms essentially free of any angular rotation;
e. directing radiant energy in said secondary radiant heating zone on at least three peripheral radial portions disposed about the circumference of each parison so that each of said peripheral radial portions is selectively heated to a different orientation temperature;
f. passing the thus irradiated parison into a molding zone;
g. creating a pressure differential sufficient to expand the parison into conformity with a molding zone cavity;
h. measuring the thickness of the wall of the expanded parison at least at a point within each of said selectively irradiated peripheral radial portions; and
i. controlling the orientation temperature of the equivalent peripheral radial portion of preforms passing through said radiant heating zone in response to said measured thickness to obtain molded articles having walls of substantially uniform thickness.

3,950,460

PROCESS FOR MAKING RIGID, ELECTRICALLY CONDUCTIVE, CELLULAR STRUCTURES

Sebastian Vito Rocco Mastrangelo, Hockessin, and Jerry Allen Nelson, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 216,805, Jan. 10, 1972, abandoned. This application Oct. 26, 1973, Ser. No. 411,491
Int. Cl.² B27D 27/00
U.S. Cl. 264—44 **24 Claims**

1. A method for making an electrically conductive rigid, self-supporting, cellular structure which comprises (i) coating the surface of a porous, heat or solvent-removable substrate with a coating mixture of aluminum powder up to about 100-mesh in size and at least one liquid titanate ester that forms cohesive polymeric titanium oxide films by being heated to 200° to 450° C or by being hydrolyzed with water or water vapor, the atom ratio of aluminum to aluminum plus titanium being from 0.81 to 0.96, and removing excess coating mixture, (ii) decomposing the titanate ester of the coating mixture by hydrolysis, pyrolysis or a combination thereof, at a temperature of up to 450° C, to form titanium oxide and to effect cohesive binding of the coating, said temperature being below the decomposition temperature of the substrate, (iii) removing the substrate by heating to a temperature higher than that of step (ii) but below 650° C, or by contacting the substrate with a solvent, and (iv) heating the remaining structure to at least 650° C thereby forming an intimate mixture of aluminum and an intermetallic compound of aluminum and titanium, and developing electrical conductivity.

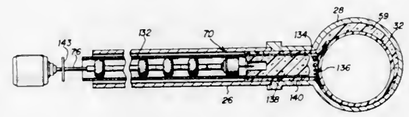
3,950,461

PIPE REPAIR APPARATUS AND METHOD

Joseph A. Levens, Richardson, Tex., assignor to Nipak, Inc., Dallas, Tex.

Filed May 31, 1974, Ser. No. 474,922
Int. Cl.² B29D 27/04
U.S. Cl. 264—46.5 **11 Claims**

1. In a method of remotely connecting subsurface intersecting service and main conduits without excavating the intersection, having the steps of:
opening the service and main conduits at points remote from the intersection;
axially inserting a main conduit into an elongated cavity to extend through the area of intersection with said service conduit;
filling the space between said main conduit and said cavity adjacent to the area of intersection of said service and main conduits with a sealant material;
forming a port extending through the wall of said main conduit whereby said service conduit is connected to said main conduit;
the improvement wherein said filling step comprises:



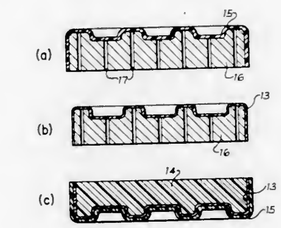
inserting a dispenser through said service conduit to a point adjacent to the area of intersection of said service and main conduits;
inserting a seal through said service conduit to a point adjacent to said dispenser to prevent flow through said service conduit in a direction from said dispenser and away from said main conduit; and dispensing said sealant material from said dispenser into the space between said main conduit and said cavity adjacent the area of intersection of said service and main conduits.

3,950,462

METHOD FOR MAKING A RESILIENT STORAGE INSERT

Clifford K. Shaffer, Westfield, and Joe B. Weiss, Indianapolis, both of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 19, 1975, Ser. No. 588,527
Int. Cl.² B29D 9/00, 5/00
U.S. Cl. 264—46.8 **5 Claims**



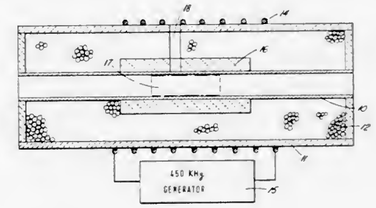
1. A method for making a resilient storage insert comprising,
die forming a sheet of rigid plastic material into a rigid container and then using the same die to form a sheet of flexible plastic material into a shape similar to said rigid container,
then positioning said sheet of flexible plastic material into said rigid container to provide a container of flexible plastic material,
then filling said container of flexible plastic material with a liquid foam material and curing said liquid foam material into a solid material which is the underside of a resilient storage insert, and
then removing said resilient storage insert from said rigid container.

3,950,463

PRODUCTION OF β-ALUMINA CERAMIC TUBES

Ivor Wynn Jones, Chester, England, assignor to The Electricity Council, London, England

Continuation-in-part of Ser. No. 82,718, Oct. 21, 1970, abandoned. This application May 9, 1972, Ser. No. 251,675
Claims priority, application United Kingdom, Oct. 22, 1969, 51780/69
Int. Cl.² F27B 9/14
U.S. Cl. 264—57 **8 Claims**



1. A method of producing a tube of β alumina ceramic comprising the steps of compressing into the shape of a tube powdered β alumina ceramic or a powdered mixture of materials which, on heating, produce a β alumina ceramic and then traversing this tube in its axial direction at a uniform speed *v* through a furnace having a temperature profile increasing in temperature from one end to a maximum sintering temperature between 1600°C and 1900°C and decreasing towards the other end, the length *l* of the sintering zone which is within 10°C of the maximum temperature in the furnace and the velocity vr at which the tube is traversed being such that the time *l*/vr during which any point on the tube is in the sintering zone is between 12 seconds and 2 minutes, the temperature profile of the furnace and the rate of traverse of the tube being such that a point on the tube is heated up to the sintering temperature and cooled from the sintering temperature at a rate between 200° C per minute and 2400°C per minute.

3,950,464

METHOD FOR PRODUCING A SINTERED SILICON NITRIDE BASE CERAMIC AND SAID CERAMIC

Hideyuki Masaki, Nagoya, Japan, assignor to Kabushiki Kaisha Toyota Chuo Kenkysusho, Nagoya, Japan

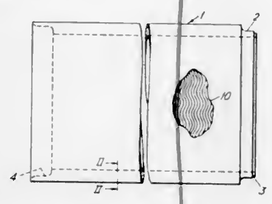
Filed Oct. 23, 1973, Ser. No. 408,358
Claims priority, application Japan, Oct. 24, 1972, 47-106817
Int. Cl.² F27D 7/06; C04B 35/58
U.S. Cl. 264—65 **2 Claims**

1. A process of preparation of a silicon nitride based ceramic comprising the steps of combining 60 to 92 mol percent of finely powdered Si_3N_4 with at least one member of a first group consisting of MgO, ZnO and NiO and at least one member of a second group consisting of Al_2O_3, Cr_2O_3, Y_2O_3, TiO_2 and SnO_2, said Si_3N_4 powder and said members being in powdered form finer than 300 mesh, the mol ratio of said first group member or members to said second group member or members ranging from 1:9 to 9:1 and the combined total quantity of said members lying between 8 and 40 mol percent of the combination including said Si_3N_4, mixing said powdered materials, forming said mixed powders into a green compact and sintering said green compact at a temperature between 1600°C and 1800°C in an inert gas in the absence of applied pressure, the resultant composition consisting essentially of Si_3N_4 and members of said first and second groups.

3,950,465
CONCRETE PIPES

Robert M. Farahar, Sevenoaks, England, assignor to Amey Roadstone Corporation Limited, London, England

Filed June 14, 1973, Ser. No. 370,145
Claims priority, application United Kingdom, July 27, 1972, 35184/72
Int. Cl.² B28B *1/08*
U.S. Cl. 264—69 7 Claims



1. A method of making a tubular structure comprising a body formed by an integrally cast mass of cementitious material including a Portland or aluminous cement which forms a cement matrix, and a glass fibre roving consisting essentially of a plurality of glass monofilaments, which are resistant to deterioration by said cementitious material incorporated in said cement matrix, said method including the steps of providing a centrifugal casting mould having an internal peripheral surface, rotating said mould to move said peripheral surface at a speed sufficient to produce a centrifugal effect, positively feeding said glass fibre roving from a feeding device within said mould at a speed at least as great as the speed of movement of said peripheral surface, projecting said roving from said feeding device onto said mould to rotate therewith, moving said feeding device axially of said mould as said mould is rotated whereby said winding is formed on said peripheral surface, introducing said cementitious material including a suspension of cement particles in water forming said cement matrix into said mould, and continuing to rotate said mould to compact said cementitious material and cause said roving to be impregnated with and incorporated into and bonded to said cement matrix.

3,950,466
STABILISING SLEEVE

Robin Hasler, Hertford, England, assignor to Imperial Chemical Industries Limited, London, England

Filed July 19, 1973, Ser. No. 380,665
Claims priority, application United Kingdom, Aug. 9, 1972, 37151/72
Int. Cl.² B29D *23/04*; B29C *25/00*
U.S. Cl. 264—89 9 Claims

1. Means for stabilizing the position of a tubular film travelling in a given direction without mechanically contacting or damaging the film, said means comprising

an annular sleeve through which the tubular film can be passed, said sleeve providing around the periphery of the tubular film a circumferentially continuous gas-permeable surface the internal diameter of which is gradually decreased to a minimum value and subsequently gradually increased in the direction of travel of the tubular film to provide adjacent the tubular film a convex arcuate gas-permeable surface which is uniformly curved throughout its length in the direction of travel of the tubular film, and

means for supplying gas under pressure inwardly through said surface to create a cushion of gas between the tubular film and said surface.

5. A method of forming a tubular film comprising the steps of

extruding a tube of a thermoplastic polymeric filmforming material,

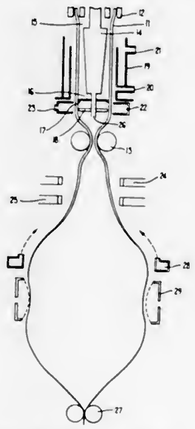
establishing the movement of said tube in a given direction,

cooling said extruded tube while controlling the rate at which said tube is travelling,

reheating said cooled tube to an orienting temperature,

introducing transverse orientation into said reheated tube by inflating it to form a tubular film,

stabilizing the position of said tubular film without contacting said tubular film with mechanical means and without inflicting damage thereto by passing said tubular film through an annular sleeve located around the periphery of said tubular film in the region in which said tubular film attains its maximum diameter, said sleeve providing adja-



cent the tubular film a circumferentially continuous gas-permeable convex arcuate surface which is uniformly curved throughout its length in the direction of travel of said tubular film,

supporting said tubular film out of contact with said surface of said sleeve without completely collapsing said inflated tubular film by supplying gas inwardly through the arcuate surface of said sleeve to create a cushion of gas between said tubular film and said arcuate surface and

introducing longitudinal orientation into said tubular film by collapsing and withdrawing said inflated tubular film at a rate greater than said controlled rate of travel.

3,950,467
METHOD FOR SHAPING TUBULAR FILMS IN DOWNWARD AND WET MANNER

Masahide Yazawa, Kunitachi; Kazuhiko Kurihara, Tokyo; Kenichi Narikawa, Tokyo, and Hiroshi Yazawa, Kunitachi, all of Japan, assignors to Polymer Processing Research Institute Ltd., Tokyo, Japan

Filed Feb. 6, 1974, Ser. No. 440,099
Claims priority, application Japan, Feb. 26, 1973, 48-22966
Int. Cl.² B29D *7/20*
U.S. Cl. 264—89 2 Claims

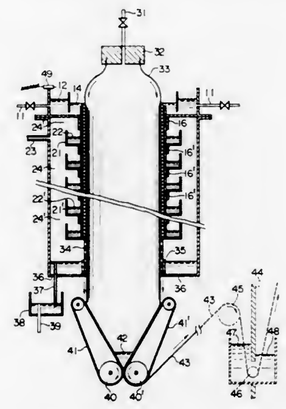
1. In the known method for shaping a tubular film wherein an extruded tubular film is drawn downwardly through the interior of a cylinder having perforated walls, a coagulation liquid stream is passed downwardly between the exterior of said downwardly moving (tubular film and the interior of said cylinder, negative pressure is applied from the exterior side of said cylinder so as to both draw some of the coagulation liquid outwardly through the perforations in the wall of said cylinder and to also draw the tubular film outwardly, the improvement which comprises:

disposing a plurality of annuli between the exterior of said tubular film and the interior of said perforated cylindrical wall,

said annuli being arranged in aligned side-by-side relationship so as to essentially form a cylindrical array of annuli,

each annulus comprising a helical coil arranged in a circular configuration so that the center of the helix is a circle that surrounds the exterior of said tubular film,

the individual coils of each helix extending radially outwardly with respect to the exterior surface of said tubular film,

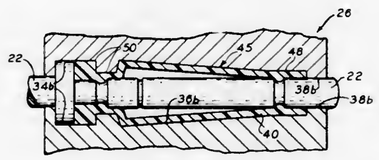


whereby during shaping of the tubular film the coagulation liquid flows by gravity downwardly over and through each annulus and also in contact with the exterior of the tubular film, and the downwardly moving tubular film contacts each annulus in sequence in such a manner that the plurality of arcuate surfaces of each helical coil that actually contacts the tubular film essentially correspond to radial extensions of the tubular film.

3,950,468
INJECTION BLOW MOLDING OF CONTAINER OPEN AT BOTH ENDS

Dewey Rainville, 11 Kent Place, Westfield, N.J. 07090

Filed Aug. 19, 1974, Ser. No. 498,472
Int. Cl.² B29C *17/07*
U.S. Cl. 264—97 12 Claims

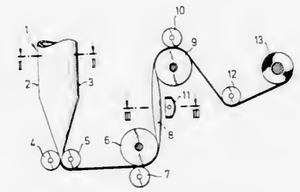


1. The method of blow molding a container that is open at both ends, which method includes applying a molten plastic parison to a core rod in an injection mold, applying the parison around all sides of the core rod and leaving portions of the sides of the core rod, at both ends of the parison, free of any coating by the parison, transferring the core rod with the parison thereon, from the injection mold to a blowing mold, with the parison still at an elevated temperature for blowing, holding both ends of the core rod in the blowing mold, confining both end portions of the parison, adjacent to opposite ends thereof, in the blowing mold so as to provide necks at opposite ends for a parison, and blowing the intermediate part of the parison, between the confined necks, to the desired shape of a body portion of the container between the necks which form the opposite open ends of the blown container.

3,950,469
PROCESS FOR THE PRODUCTION OF A PLASTIC TUBE TO BE USED AS AN ARTIFICIAL SAUSAGE CASING

Detlef Gneuss, Marktredwitz; Hans Strutzel, and Wolfgang Meintzschel, both of Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 316,984, Dec. 20, 1972, abandoned. This application May 31, 1974, Ser. No. 475,022
Claims priority, application Germany, Dec. 22, 1971, 2163764
Int. Cl.² B29D *7/24*; B29C *17/02*
U.S. Cl. 264—95 5 Claims



1. A process for the manufacture of a plastic tube suitable for use as a sausage casing which comprises extruding polyethylene terephthalate at a temperature above its crystalline melting point through an annular die of non-uniform cross-section to produce a tube having a non-uniform wall thickness around the circumference thereof, said wall thickness varying continuously from a maximum to a minimum, the portion of minimum wall thickness and the portion of maximum wall thickness being diametrically opposed on the circumference of said tube and the maximum being from about 1.3 to 3.0 times as thick as the minimum, cooling the tube below its crystalline melting point, biaxially stretching the tube in the longitudinal direction in the range from about 1 : 3.3 to 1 : 3.8 and in the transverse direction in the range from about 1 : 4 to 1 : 4.6, and thereafter longitudinally stretching the biaxially oriented tube under conditions such that the temperature of the tube portion of maximum wall thickness is in the range from about 120° to 150° C and the temperature of the tube portion of minimum wall thickness is in the range from about 80° to 130° C, while maintaining the thickness profile of the biaxially stretched tube.

3,950,470
PROCESS FOR THE FABRICATION OF SINTERED PANELS AND PANELS RESULTING FROM THE APPLICATION OF THIS PROCESS

Joseph Davidovits, Saint-Quentin, France, assignor to Coordination et Developpement de l'Innovation Societe Anonyme, en Abrege CORDI, Saint-Quentin, France

Filed Oct. 29, 1973, Ser. No. 410,490
Claims priority, application France, Oct. 9, 1973, 73.35979; Nov. 2, 1972, 73.38746
Int. Cl.² B29D *7/02*, *7/08*
U.S. Cl. 264—113 6 Claims

1. A panel manufacturing process characterized in that it consists substantially of spreading in succession on a stationary or mobile support a layer of an alkaline silicate mixture, said alkaline silicate mixture being formed by the mixture of a clay material and an alkaline lye selected from the group consisting of soda, lime and sodium carbonate; followed by a layer of a mixture of mineral particles selected from the group consisting of glass, rock wool, vermiculite, asbestos and expanded clay; or organic particles selected from the group consisting of wood fragments, sawdust, vegetable particles, flax, straw, paper, pasteboard, and organic fibers of, natural, or synthetic textile fibers; and of an organic thermosetting resin, and simultaneously compressing these layers and bring them up to a temperature of at least 80°C.

3,950,471

MANUFACTURE OF MOLDED ARTICLES OF PARTICULATE FOAMED ETHYLENE COPOLYMERS

Fritz Stastny, Ludwigshafen; Hans Georg Trieschmann, Hambach; Rudolf Gaeth, Limburgerhof, and Udo Haardt, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Continuation of Ser. No. 248,430, April 28, 1972, abandoned. This application May 2, 1974, Ser. No. 466,295

Claims priority, application Germany, May 7, 1971, 2122665

Int. Cl.² B29C 27/10; B29D 27/00

U.S. Cl. 264—122 4 Claims

1. A process for the manufacture of molded articles from

A. a binder mix containing

i. di- or polyisocyanates selected from the group consisting of hexamethylene diisocyanate, diphenylmethane-4,4'-, -2,4'-, or -2,2'-diisocyanate, naphthalene - 1,5-diisocyanate, benzene-1,4-diisocyanate, triphenylmethane-4,4', 4''-triisocyanate, polyphenyl-polymethylene-polyisocyanates, toluylene -2,4,6-triisocyanate, toluene -2,4- or -2,6-diisocyanate and the addition products obtained from 1 mole of trimethanolpropane and 3 moles of toluene diisocyanate,

ii. an unbranched, branched-chain or partially branched polyol having a molecular weight ranging from 300 to 5,000 and hydroxy numbers of from 30 to 85 selected from the group consisting of polyetherols and polyesterols,

iii. a catalyst and

iiii. optionally auxiliaries selected from the group consisting of stabilizers, plasticizers, dyes, fillers and flame retardants, and

B. foamed ethylene copolymer particles with predominantly closed cells containing approximately 50 to 99% by weight of polymerized units of ethylene in addition to polymerized units of other olefinically unsaturated monomers, which contain, in the molecule, substituents having Zerewitinoff-active hydrogen atoms and having a diameter of from 30 to 50 mm and a bulk density of from 5 to 200 g/l, by mixing components A and B, compressing the mixture in molds to from 80 to 20% of its original bulk volume and curing under pressure, wherein the foamed ethylene copolymers contain, attached to the polymer chain, substituents having Zerewitinoff-active hydrogen atoms selected from the group consisting of $-SO_3H$, $-SO_2NH_2$, $-NHCONH_2$, NHCONH—, —CO—NH–CO–, —CO—NH—SO_2, $-NH_2$, —OH, —COOH and —NH-COOR, wherein R is an unsubstituted or substituted alkyl radical of from 1 to 6 carbon atoms.

3,950,472

MOLDING WOOD ARTICLES FROM AMMONIUM SALT-WOOD PARTICLE MIXTURES

Cheh Jen Su, Alsip, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 26, 1975, Ser. No. 553,387

Int. Cl.² B29J 5/02

U.S. Cl. 264—122 5 Claims

1. In the method for preparing molded wood articles comprising molding wood particles into a wood article in a mold at a temperature up to about 200°C, and a pressure of about 1000–10,000 psi, the improvement which comprises admixing with the wood particles prior to molding an ammonium salt selected from the group consisting of ammonium oxalate and ammonium salts of weak acids.

3,950,473

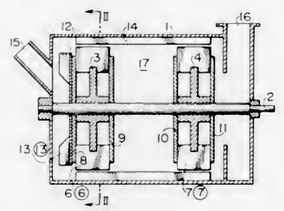
PROCESS FOR PRODUCING SYNTHETIC PULP FROM A FILM OF A MIXTURE OF POLYPROPYLENE AND LOW DENSITY POLYETHYLENE

Eitaro Iwahori, Narashino; Mitsuo Kurita, Yokohama, and Mitsumasa Uno, Ichihara, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 209,778, Dec. 20, 1971, abandoned. This application May 21, 1973, Ser. No. 362,580

Int. Cl.² B29C 17/14; B02C 19/00; D21H 3/40

U.S. Cl. 264—141 10 Claims



1. A process for producing a synthetic pulp which comprises:

a. making a composition consisting of

1. 50 to 90 parts by weight of polypropylene having a melt flow rate of 30 to 150 as measured at 230°C and under a load of 2.16 kg and

2. 50 to 10 parts by weight of low density polyethylene,

into a film having a thickness of 70 μ or less,

b. uniaxially stretching the resulting film to at least 8 times its original length,

c. cutting the film thus stretched to lengths of 5 mm or less, and

d. fibrillating the cut film lengths by passing them through at least two clearances having a distance of 5 mm or less formed between a plurality of linear projections on the inner peripheral surface of a cylindrical casing and the tip ends of at least two sets of a large number of vanes rotating therein at a peripheral speed of 92 – 100 m/sec. whereby a crumpling and disintegrating action mainly by blows and a whirling air stream is brought about to effect fibrillation, and

e. recovering a synthetic pulp having the following characteristics

1. the fibrils being branched in a developed manner from a trunk,

2. the trunks and fibrils being extended in various large and small creep or snake-like forms along the longitudinal direction thereof,

3. the sizes of the trunks substantially being less than 20 deniers and most of the sizes being less than 5 deniers,

4. as the sizes of the trunks are increased, the width is increased as compared with the thickness,

5. the length of the trunks being less than 5 mm, and the trunks having substantially uniform fiber lengths for any given length,

6. the fibers of each pulp being slightly entangled with one another when collected, and

7. the pulp being free from small twisted masses caused by firm entanglement of the fibers and free from molten small particles.

3,950,474

METHOD OF MANUFACTURING CONTAINER PACKAGE

Ernest Ray Cunningham, Libertyville, Ill., assignor to Grip-Pak, Inc., St. Louis, Mo.

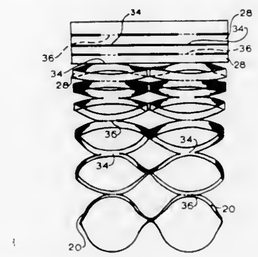
Division of Ser. No. 243,357, April 12, 1972, Pat. No. 3,785,484. This application Nov. 12, 1973, Ser. No. 415,088

Int. Cl. B29h 7/18; B32b 3/10

U.S. Cl. 264—147 5 Claims

1. The method of forming a scrapless multi-packaging device including the steps of extruding at least two elongated and

interconnected tubes of stretchable and elastic plastic material, flattening each of said tubes to provide flattened tubular elements, forming a plurality of pairs of parallel slits in each of said flattened tubular elements which are transversely aligned across said flattened tubular elements in order that each said pair of slits defines a flattened material band in one of said flattened tubular elements which is transversely aligned with a flattened material band in at least one other flattened



tubular element, and forming alternate integral marginal connecting webs between each of said flattened material bands in each said tube while said flattened tubular elements are being slit in the aforementioned manner in order to form an interconnected series of transversely aligned flattened material bands that can be automatically opened up when longitudinally stretched as a continuous non-aligned sequence of generally tubular shaped bands.

3,950,475

METHOD OF PRODUCING BANDED FIBERS FROM A THERMOPLASTIC SHEET

James Dow, Thaxted; Ronald Lloyd, Sawbridgeworth, and Albert George Patchell, Welwyn Garden City, all of England, assignors to Smith & Nephew Polyfabrik Limited, England

Continuation of Ser. No. 7,828, Feb. 2, 1970, abandoned. This application Jan. 17, 1973, Ser. No. 324,475

Claims priority, application United Kingdom, Feb. 5, 1969, 6132/69

Int. Cl.² B29C 17/02; B29D 27/00

U.S. Cl. 264—154 11 Claims



1. The method of making an array of substantially longitudinally disposed fibers in which individual fibers are within their length alternately fibrillated and banded and between which there are occasional connecting fibrils comprising starting with a drawable thermoplastic sheet which embodies areas of different degrees of fibrillation, cold drawing the sheet at a predetermined temperature to initiate the formation of embryonic longitudinally extending cracks in the areas of lower resistance to fibrillation, such that cracks terminate at the areas of higher resistance to fibrillation and further cold drawing the sheet but at a higher temperature to open said cracks and to cause propagation of the cracks through the areas of higher resistance to fibrillation, said drawings being effected without lateral extension.

3,950,476

MANUFACTURE OF UNIQUE SYNTHETIC FILM AND YARN

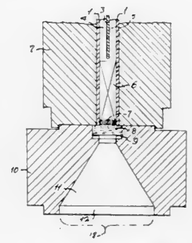
Wilhelmus Johannes Fontijn, Dieren, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 751,447, Aug. 9, 1968, abandoned. This application Feb. 5, 1973, Ser. No. 329,315

Claims priority, application Netherlands, Aug. 19, 1967, 6711464

Int. Cl.² B29F 3/12

U.S. Cl. 264—171 6 Claims



1. A process for the manufacture of synthetic film, sheet and the like sheet-like products which comprises arranging at least two unmixed polymeric components, in the liquid state, side by side in a particular order to form a single main stream; repeatedly dividing and doubling the main stream into a multi-layer stream; temporarily dividing the multi-layer stream in a direction transverse to the direction of the layers at least once into a plurality of sub-streams which do not re-unite into a layered structure and which are on the order of magnitude of the layer thicknesses in situ, while retaining the continuity of flow of the multi-layer stream to thereby form a plurality of endless threads of one component embedded within a basic mass of a different component, and then extruding the resulting stream containing the plurality of the sub-streams through a casting slit, whereby a film having the endless threads of one component embedded with a basic mass of a different component is formed.

4. A process for the manufacture of synthetic film having a plurality of endless threads of one polymeric component embedded within a basic mass of a different polymeric component which comprises arranging two unmixed polymeric components in the molten state, side by side, to form a single main stream having a layer of each polymeric component extending parallel to the other; repeatedly dividing and doubling said main stream into a multi-layered stream having continuous layers of each of said polymeric components also extending parallel to each other; temporarily dividing the multi-layered stream in a direction transverse to the direction of the layers at least once into a multiplicity of continuous sub-streams having a substantially circular cross section and having a diameter on the order of magnitude of the layer thickness in situ, while retaining the continuity of flow of the multi-layer stream to thereby form a plurality of endless threads of one polymeric component embedded within a basic mass of the other polymeric component; and then extruding the resulting stream containing a multiplicity of said sub-streams through a casting slit to form said film having the endless threads of one polymeric component embedded within a basic mass of the other component therein.

3,950,477

PROCESS FOR ARTIFICIALLY FORMING ROCKS

Philip A. Di Giacomo, 13246 Chandler Blvd., Van Nuys, Calif. 91401

Filed June 20, 1974, Ser. No. 481,049

Int. Cl.² B29C 1/02

U.S. Cl. 264—226 4 Claims

1. A process for forming artificial rocks comprising:

applying several coatings of a liquid latex on the surface of

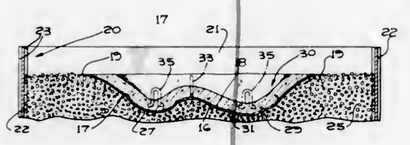
a natural rock to thereby form a rubber film mold having markings characteristic of the manner of the natural formation and the weathering of said natural rock impressed on the surface thereof,

removing said rubber film mold from said natural rock,

distributing supporting elements beneath the rubber film mold so as to shape its impressed surface with a first desired overall contour,

pouring a first filling of concrete onto the impressed surface of said rubber film mold,

separating the first filling of concrete from the rubber film mold after the concrete has hardened with the characteristic markings of the mold cast on the surface thereof,



thereafter redistributing the supporting elements beneath the rubber film mold so as to shape its impressed surface with a second desired contour which differs from said first contour,

pouring a second filling of concrete onto the impressed surface of said rubber film mold, and

separating the second filling of concrete from the rubber film mold after the concrete has hardened with the characteristic markings of the mold cast on the surface thereof,

whereby said first and second fillings of concrete form rocks which have the same characteristic markings on the surface thereof but which differ from each other in overall contour.

3,950,478

PROCESS FOR PRODUCING ALUMINA FIBER

Jeffrey Stuart Kenworthy; Michael John Morton, and Michael David Taylor, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 5, 1973, Ser. No. 337,845

Claims priority, application United Kingdom, Dec. 21, 1972, 59108/72

Int. Cl.² C01F 7/02, 7/30

U.S. Cl. 264—234 **23 Claims**

1. A process for the preparation of a fiber comprising alumina or an alumina hydrate which includes the steps of:

a. fibrising by extrusion through an aperture a composition having a viscosity in the range 0.1 to 3000 poise and comprising (i) a water-soluble aluminum compound decomposable to alumina and selected from the group consisting of the chlorides, sulphates, acetates, formates, propionates, oxalates, phosphates and nitrates of aluminum or mixtures thereof, (ii) a water-soluble organic polymer having a molecular weight in the range 10^3 to 10^7 and present in an amount by weight of 0.1 to 10 percent of the aluminum oxide equivalent of the aluminum compound and an amount by weight less than the aluminum compound and (iii) water;

b. removing at least part of the water from the fiber;

c. subjecting the fiber to the action of ammonia or a basic amine; and

d. subjecting the fiber to hydrothermal treatment at a temperature of 200°C to 800°C and a pressure in the range 0.5 to 50 atmospheres to decompose at least a substantial proportion of the aluminum compound to alumina or an alumina hydrate.

3,950,479

METHOD OF PRODUCING HOLLOW SEMICONDUCTOR BODIES

Konrad Reuschel, Vaterstetten; Arno Kersting, Erlangen, and Wolfgang Keller, Pretzfeld, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Erlangen, Berlin, Germany

Continuation of Ser. No. 192,672, Oct. 26, 1971, Pat. No. 3,751,539, which is a continuation-in-part of Ser. No. 826,249, May 20, 1969, abandoned. This application Feb. 12, 1973, Ser. No. 331,501

Claims priority, application Germany, Apr. 2, 1969, 1917016

The portion of the term of this patent subsequent to Aug. 7, 1990, has been disclaimed.

Int. Cl.² B29D 23/00; B01J 17/32; B29C 24/00; B29D 31/00

U.S. Cl. 264—248 **7 Claims**

1. Method of producing a hollow tubular body closed on at least one end, comprised of semiconductor material selected from the group consisting of silicon, germanium, silicon carbide, an $A^{III}B^{V}$ compound and an $A^{II}B^{VI}$ compound, by precipitation from a gaseous compound of said semiconductor material upon the surface of a heated graphite tubular carrier body open at two opposite sides to precipitate a tubular layer of semiconductor material of a thickness of at least 0.5 mm., removing said carrier body without damaging said layer, and welding a solid wafer of the same semiconductor material as that precipitated, whose size is adjusted to an open end of the tubular layer, to the precipitated semiconductor material in a vacuum or a protective gas.

3,950,480

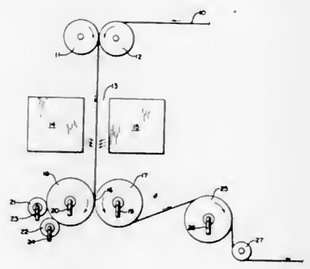
METHOD FOR EMBOSSING PLASTIC MATERIAL

James M. Adams, Terre Haute; Randall R. Hopper, Shelburn; Robert R. Pease, and Garland E. Raley, both of Terre Haute, all of Ind., assignors to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 323,055, Jan. 12, 1973, abandoned. This application May 7, 1975, Ser. No. 575,224

Int. Cl.² B29B 3/00; B29C 15/00

U.S. Cl. 264—284 **8 Claims**



1. In a method for embossing a thermoplastic film prepared from a crystalline or semi-crystalline polymer or copolymer, the steps comprising:

a. continuously passing a vertically extending length of said film through a narrow, transverse heating zone extending the full width of said film;

b. applying a high velocity stream of air heated to a temperature of from about 200°F to about 800°F to each side of said film over opposite areas defined by said heating zone to raise the temperature of the film as it leaves said heating zone to a uniform temperature within the range of about ±20°F of the crystalline melting point of the polymer or copolymer; and

c. simultaneously quenching and embossing said heated film at one end of said heating zone by passing said heated film between the nip of a pair of embossing rolls, one of said rolls being an engraved metal roll having its surface temperature maintained in a range of from about 70°F to about 170°F lower than the crystalline melting temperature of the polymer or copolymer, and the other of said rolls being a resilient covered roll having its surface temperature maintained in the range of from about 125°F to about 180°F lower than the crystalline melting temperature of the polymer or copolymer.

3,950,481

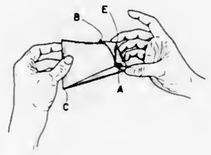
PROCESS FOR INVERTING AN ENDLESS BELT-TYPE RECORDING BELT

George L. Lange, 2605 Boston, Muskogee, Okla. 74401

Continuation-in-part of Ser. No. 436,122, Jan. 24, 1974, abandoned. This application Apr. 25, 1975, Ser. No. 571,495

Int. Cl.² B29D 17/00

U.S. Cl. 264—294 **5 Claims**



1. A process for inverting a wide endless belt-type recording belt, said belt being defined as a flexible cylindrical film sleeve having circumferential length at least not less than π (3.14 . . .) times that of the width not more than four times that of the width and including the steps of passing one edge of the belt through the interior of the belt without stretching said belt; bending the said belt at a single point and rotating the entire belt through the interior of said belt until the belt is completely inverted.

3,950,482

METHOD OF ROTATIONAL MOLDING VINYLCHLORIDE-ALKYLENE COPOLYMER

Wolfgang Looman; Wolfgang Pungs, both of Troisdorf; Egon Bierwirth, Porz-Urbach, and Robert Buning, Troisdorf, Siegiar, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Division of Ser. No. 330,920, Feb. 9, 1973, Pat. No. 3,887,728, which is a continuation of Ser. No. 117,690, Nov. 18, 1970, abandoned. This application Dec. 12, 1973, Ser. No. 424,232

Claims priority, application Germany, Nov. 18, 1969, 1946612; Nov. 18, 1969, 1957824

Int. Cl.² B29C 5/04

U.S. Cl. 264—310 **4 Claims**

1. In the process of forming a hollow shaped plasticizer-free article of a vinyl chloride polymer by rotational molding wherein a mold containing a vinyl chloride polymer is caused to be rotated through two planes while heated and thereafter cooled; the improvement which comprises utilizing as the molding composition a molding composition comprising a solid plasticizer-free copolymer consisting essentially of 90 to 99.5 weight percent vinyl chloride and 0.5 to 10 weight percent ethylene, said copolymer having a K value of 45 to 65 and being in particulate form and having a grain size of about 0.04 to 0.5 mm, said composition free of plasticizer, and maintaining the inner wall of the mold at about 180° to 200°C.

3,950,483

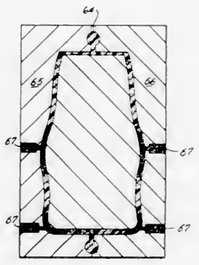
INJECTION MOLDING PROCESS

I Martin Spier, 50 Park Ave., New York, N.Y. 10016

Continuation-in-part of Ser. No. 232,314, March 2, 1972, abandoned. This application Mar. 8, 1974, Ser. No. 449,799

Int. Cl.² B29F 1/12

U.S. Cl. 264—328 **7 Claims**



1. An injection molding process comprising injecting a primary melt composition into a mold channel perimetrically surrounding a mold cavity thereof, introducing said primary melt composition, under positive pressure, into said mold cavity from said channel at a plurality of points lying in a plane bisecting said mold cavity, simultaneously injecting a predetermined quantity of at least one secondary melt composition into said mold cavity at a point having a linear projection normal to a plane bisecting said mold cavity, said primary and said at least one secondary melt compositions being characterized by at least one dissimilar property, controlling said injection of said at least one secondary melt composition into said die cavity so as to promote formation of an island thereof within said primary melt composition, controlling said introduction of said primary melt composition into said mold cavity so as to permit said primary melt composition to intimately mix with a continuous peripheral portion of said island of secondary melt composition for thereby promoting formation of a transition zone therebetween and setting said primary and secondary melt compositions and said coalescent transition zone therebetween within said mold cavity so as to form an injection, integrally molded/plastic article of unitary construction exhibiting specific preselected properties at predetermined areas thereof.

3,950,484

METHOD FOR INJECTION MOLDING A FOAMED THERMOPLASTIC POLYMER ARTICLE SUBSTANTIALLY FREE FROM SWIRL-PATTERNS IN ITS SURFACE

Ernst A. Egli, Lichtensteig, Switzerland, assignor to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 149,022, June 1, 1971, abandoned. This application Aug. 30, 1974, Ser. No. 502,096

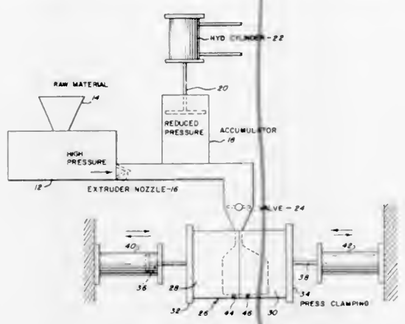
Int. Cl.² B29D 27/00; B29F 1/00

U.S. Cl. 264—45.5 **6 Claims**

1. A method for producing a foamed thermoplastic polymeric resinous article substantially free from swirl-patterns in its surface comprising:

injecting a heat plastified thermoplastic polymeric resinous material into a mold in the presence of a foaming agent and finely divided lithopone particles comprising about 30% zinc sulfide and about 70% barium sulfate and being of a size such that the lithopone particles will pass through a 10 mesh sieve; cooling the heat plastified ther-

moplastic polymeric resinous material; removing the cooled, foamed, moldshaped, thermoplastic polymeric



resinous article having the finely divided lithopone particles incorporated therein from the mold.

3,950,485

PRODUCTION OF ALUMINUM CHLORIDE FROM RAW MATERIALS CONTAINING COAL

Ernö Nemecz, Budapest; Aurél Ujhidy, Veszprem; Károly Polinszky, Budapest; János Szépvölgyi, Veszprem; Oszkár Borlai, Budapest; László Kapolyi, Bimbo Utca, and Tamas Szekely, Budapest, all of Hungary, assignors to Toth Aluminum Corporation, New Orleans, La.

Division of Ser. No. 481,543, June 20, 1974. This application July 18, 1975, Ser. No. 597,083

Claims priority, application Hungary, June 29, 1973, 10171

Int. Cl.² C01F *7/56*

U.S. Cl. 423—136 **5 Claims**

1. A process for production of aluminum chloride consisting essentially of the steps of: comminuting coal slate, having an ash content of at least 30% by weight and the aluminum content of the ash being at least 20%, calculated as Al_2O_3; calcining the coal slate to remove physically and chemically bound water and to cause coking; and chlorinating the calcined coal slate with a gaseous stream containing chlorine and carbon monoxide to form the aluminum chloride.

3,950,486

METHOD FOR SEPARATING METAL CONSTITUENTS FROM OCEAN FLOOR NODULES

Paul H. Cardwell, Zanoni, and William S. Kane, Wicomico, both of Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

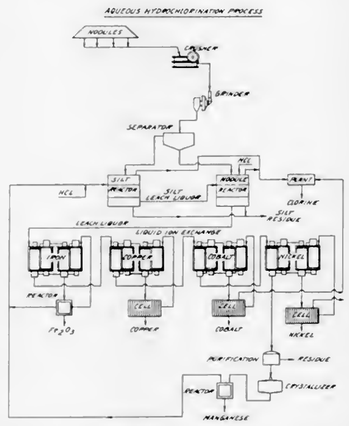
Continuation-in-part of Ser. Nos. 40,564, May 26, 1970, abandoned, Ser. No. 142,697, May 12, 1971, Pat. No. 3,752,745, Ser. No. 40,565, May 26, 1970, abandoned, Ser. No. 184,770, Sept. 29, 1971, abandoned, Ser. No. 40,587, May 26, 1970, abandoned, Ser. No. 184,771, Sept. 29, 1971, Pat. No. 3,773,635, Ser. No. 40,590, May 26, 1970, abandoned, and Ser. No. 40,730, May 26, 1970, abandoned. This application Apr. 26, 1972, Ser. No. 247,554

The portion of the term of this patent subsequent to Aug. 27, 1991, has been disclaimed.

Int. Cl.² C01G *3/04, 45/06, 49/10, 53/09*

U.S. Cl. 423—24 **9 Claims**

9. The process for the refining of ocean floor nodule ore, the ore comprising as major components, the oxides of manganese and iron and as secondary components, compounds of copper, cobalt and nickel, the weight proportion of manganese- to nickel-plus-cobalt being in the range of at least about 9, the process comprises (1) reacting at a temperature of at least about 100°C, the nodule ore with an aqueous solution of hydrogen chloride to form a pregnant leach solution comprising, concentrations of dissolved manganous chloride, ferric chloride, nickel chloride, copper chloride and cobalt chloride proportional to their concentrations in the nodule ore, the pregnant aqueous solution having a pH not greater than about 2; (2) separating the pregnant solution from any solid residue; (3) extracting ferric halide from the solution of the metal chlorides by contacting the pregnant aqueous solution with an organic, water-immiscible extracting solution, comprising a secondary aliphatic-trialkylamine extraction agent selective for ferric halide so as to extract the ferric halide into the organic solution and to form an iron-free raffi-



nate; (4) contacting the iron-free raffinate with a water-immiscible organic extracting solution comprising an extraction agent selective for copper and selected from the group consisting of alpha-hydroxyoximes and hydrocarbon-substituted-8-hydroxyquinolines, the aqueous solution having a pH not greater than 2.5, and (5) contacting the copper-free raffinate with an organic, water-immiscible extracting solution comprising a trialkyl amine to selectively extract cobalt into the organic solution and to form a cobalt-free raffinate, whereby individual solutions of copper and cobalt values are obtained from the ore.

3,950,487

SOLVENT-IN-PULP EXTRACTION OF COPPER AND NICKEL FROM AMMONIACAL LEACH SLURRIES

J. Paul Pemsler, Lexington, and John K. Litchfield, Bedford, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed June 13, 1974, Ser. No. 479,150

Int. Cl.² C01G *3/00, 51/00;* **C22B** *3/00*

U.S. Cl. 423—24 **16 Claims**

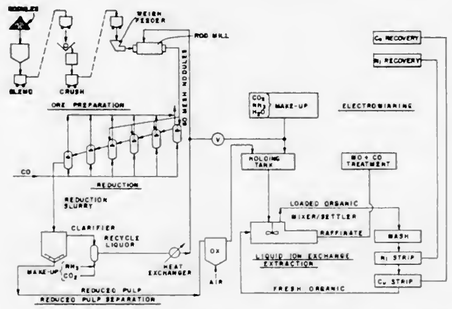
1. A process for the recovery of base metal values selected from the group consisting of copper and nickel from a manganese containing ore comprising introducing a stream of said manganese containing ore into a reaction vessel containing cuprous ions in an aqueous ammoniacal ammonium carbonate solution to enable the cuprous ions to reduce the manganese oxides in the ore and solubilize the metal values therein, delivering reduced manganese ore slurry from the reaction vessel to a mixer/settler, lowering the pH of the slurry to at least 10.0, but not lower than 8.5, maintaining the amount of solid in the slurry in the mixer at 20% by weight or less, introducing an organic extractant capable of extracting copper and nickel values from aqueous ammonical ammonium carbonate solutions at pH's between 8.5–10 into the mixer/settler, the volume of slurry and organic extractant being maintained at a ratio so that the organic extractant in the mixer is in the continuous phase and extracting the base metal values from the slurry with the extractant, the control of pH, solid content of the slurry and mixer operation enabling metal values to be

extracted from slurries with losses of organic reagents held to 100–200 parts per million.

13. A process for extracting at least one metal value selected from the group consisting of copper and nickel directly from a slurry which contains solids and an ammoniacal solution containing the metal values to be extracted comprising the following steps:

a. adjusting the pH of the slurry to a value of 10.0 or lower, but not lower than 8.5;

b. diluting the slurry so that the solid content of the slurry is at a value of 20% by weight or less;



c. contacting the slurry with an organic extractant capable of extracting said copper and nickel metal values from said ammoniacal leach solutions having pH's between 8.5 and 10, the volume of organic extractant being selected so that the system is in an organic-continuous phase;

d. agitating the slurry to increase contact between the organic extractant and the slurry without causing the formation of emulsions; and,

e. separating the extractant from the slurry to yield an organic extractant loaded with said copper and nickel metal values;

the control of pH, solid content of the slurry and mixer operation enabling metal values to be extracted from slurries with losses of organic reagents held to 100–200 parts per million.

3,950,488

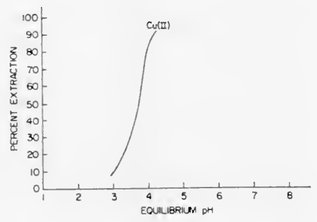
PROCESS FOR RECOVERING COPPER FROM BASIC CARBONATE MIXTURES

Roald R. Skarbo, Lokken Verk, Norway, and David L. Natwig, Brighton, Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Nov. 4, 1974, Ser. No. 520,673

Int. Cl.² C01G *3/00, 53/00, 39/00*

U.S. Cl. 423—24 **27 Claims**



1. In a process for separating copper values from a basic salt containing copper and other non-ferrous base metal values in which the salt is dissolved in an acid and the solubilized copper is reacted with a hydrogen cation exchanger which is selective for copper at a particular pH wherein the improvement comprises partially dissolving the basic salt mixture with an amount of acid that is equivalent to the molar amount of the other base metals of the basic mixture and reacting the copper with an amount of a hydrogen cation exchanger selected so that the exchangeable hydrogen ion on the extractant is at least equivalent to the amount required to extract all the copper in the metal bearing liquor, the foregoing relationship of acid and hydrogen cation exchanger eliminating the need for the addition of a base to maintain a constant pH because the hydrogen ion in the hydrogen cation exchanger when liberated, supplements the acid and reacts with undissolved salts to place these undissolved salts into solution.

3,950,489

CHLORINE TREATMENT OF TITANIFEROUS ORES

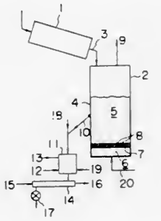
Seitaro Fukushima, Omiya, Japan, assignor to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 13, 1974, Ser. No. 450,853

Claims priority, application Japan, Mar. 16, 1973, 48-30629

Int. Cl.² C01G *23/04, 49/10*

U.S. Cl. 423—74 **6 Claims**



1. In a process for producing artificial rutile by the chlorine treatment of a titaniferous ore wherein said ore is treated with chlorine thereby to chloridize and remove selectively therefrom iron oxides within the ore, the improvement which comprises performing in sequence:

1. a predetermined step which comprises oxidatively roasting ore in a oxygen-containing atmosphere having an oxygen partial pressure sufficient for converting Fe^{2+} in the ore to Fe^{3+}, at a temperature below the sintering temperature of the ore, until the residual Fe^{2+} within the ore becomes less than 5 percent thereby to activate the ore;
2. a chloridization step which comprises charging said ore thus activated in said pretreatment step into a fluidized bed chloridization furnace, thereby to maintain a fluidized bed of the ore therewithin, blowing chlorine into said bed through the bottom of said furnace in a quantity substantially in the range of from 100 to 115 percent of the theoretical quantity with respect to the iron oxides to be removed, and subjecting said ore to chloridization treatment in the presence of a solid reducing agent consisting essentially of carbon in a maximum quantity of 10 percent by weight of the ore, at a reaction temperature of at least 800° C, and for an average residence time of the ore in the furnace of from 200 to 400 minutes,
3. a magnetic separation step which comprises subjecting said ore thus chlorine-treated in the chloridization step to magnetic separation with a magnetic field of at least 20,000 gauss, thereby to separate the magnetic fraction of the chlorine-treated ore comprising incompletely reacted ore as the magnetic fraction from the non-magnetic fraction comprising substantially completely reacted ore and remaining carbon reducing agent,
4. a wet table treatment step which comprises subjecting the non-magnetic fraction of the ore obtained in the magnetic separation step to a stream of water and vibration to effect a differential flow rate between the particles of non-magnetic ore and remaining carbon reducing agent,

thereby effecting a partial separation of the remaining carbon reducing agent from the ore of said non-magnetic fraction and

5. an electrostatic separation step which comprises subjecting ore of said non-magnetic fraction to electrostatic separation at from 5,000 to 12,000 volts, thereby recovering the still remaining carbon reducing agent and producing artificial rutile of high titanium dioxide content.

3,950,490

PROCESS FOR THE TREATMENT OF CARBURIZING SALT WASTES

Wolfgang Müller, Mannheim-Rheinau, and Lothar Witzke, Bruhl, both of Germany, assignors to Th. Goldschmidt AG, Germany

Filed Dec. 30, 1974, Ser. No. 537,449

Claims priority, application Germany, Jan. 4, 1974, 2400319

Int. Cl.² C01F *1/00*

U.S. Cl. 423—155 **2 Claims**

1. A process for the treatment of the reaction mass produced by igniting a dry mixture of barium-containing nitrite-/nitrate-bearing carburizing salt wastes and cyanide-/cyanate-bearing wastes at temperatures above about 150°C, comprising suspending the reaction mass in water to obtain a suspension containing sodium chloride, alkali carbonate, and alkali-nitrite/nitrate as dissolved constituents, and barium carbonate as an undissolved constituent,

adding barium nitrate to the aqueous suspension in equimolar quantities, based upon carbonate ions,

separating barium carbonate,

concentrating the clear solution obtained to a water content of 10–20% by weight to precipitate sodium chloride,

separating the sodium chloride,

and evaporating the residual solution to dryness.

3,950,491

REACTIVATION OF AUTOMOBILE EXHAUST OXIDATION CATALYST

David Liederman, Blackwood, N.J., and Sterling E. Voltz, Media, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 27, 1974, Ser. No. 455,434

Int. Cl.² B01J *8/02, 23/96*

U.S. Cl. 423—213.5 **9 Claims**

1. A method of using and reactivating an automobile exhaust catalyst containing a noble metal supported on a carrier therefor comprising the steps of (1) oxidizing the carbon monoxide and hydrocarbons in the said automobile exhaust in the presence of the said catalyst at temperatures above 1100°F. in air for a prolonged period of time thereby thermally deactivating the said catalyst and (2) reactivating the catalyst by placing the catalyst in a flowing stream or in a static atmosphere of a gas selected from the group consisting of a carbonyl halide alone or in admixture with a carrier gas from the group consisting of helium, carbon dioxide and nitrogen, and a mixture of carbon monoxide and halogen at a temperature in the range of between 400° and 1100°F.

3,950,492

PROCESS FOR REMOVAL OF AMMONIA, HYDROGEN SULFIDE AND HYDROGEN CYANIDE FROM GASES CONTAINING THESE SUBSTANCES

Egon Haese, Bochum, Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Germany

Filed Feb. 11, 1974, Ser. No. 441,249

Int. Cl.² C01B *17/16;* **C01C** *3/00*

U.S. Cl. 423—220 **5 Claims**

1. A process to remove gaseous ammonia, hydrogen sulfide and hydrogen cyanide from a gas, said process including the steps of:

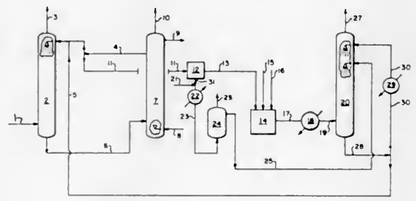
washing a gas containing gaseous ammonia, hydrogen sulfide and hydrogen cyanide with an aqueous iron salt washing solution formed from at least one acid selected from the group consisting of sulfuric acid and sulfurous acid,

oxidizing a diverted portion of the washing solution used for said step of washing a gas whereby the oxidized solution essentially includes ammonium sulfate solution containing iron hydroxide and iron cyanide as solid compounds,

returning a first portion of the oxidized washing solution for further washing of said gas,

separating said iron hydroxide and iron cyanide as solid compounds out of a second portion of the oxidized washing solution to thereby obtain clarified ammonium sulfate solution,

heating said clarified ammonium sulfate solution to a temperature of at least 900°C by combustion agents and



producing combustion products including nitrogen, water vapor and the acid anhydride of said acid,

cooling said combustion products,

forming an aqueous suspension of said iron hydroxide and iron cyanide solid compounds,

hydrolyzing said aqueous suspension at an elevated temperature of at least 190°C and at an increased pressure to form gaseous ammonia, formate salts and multivalent iron hydroxide,

reacting at least said multivalent iron hydroxide from said step of hydrolyzing with said acid anhydride of said combustion products to form an aqueous solution of iron salts as a reaction product, and

using said reaction product together with returned portions of the oxidized washing solution for washing further quantities of said gas to absorb gaseous ammonia, hydrogen sulfide and hydrogen cyanide therefrom.

3,950,493

PROCESS FOR ABSORBING SO_3

Karl-Heinz Dörr, Mainz; Lothar Reh, Bergen-Enkheim; Hugo Grimm, Frankfurt am Main, and Karel Vydra, Bad Nauheim, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sept. 23, 1974, Ser. No. 508,443

Claims priority, application Germany, Sept. 25, 1973, 2348108

Int. Cl.² B01D *53/34*

U.S. Cl. 423—242 **2 Claims**

1. A method of removing sulfur trioxide from a gas stream containing same, comprising the steps of:

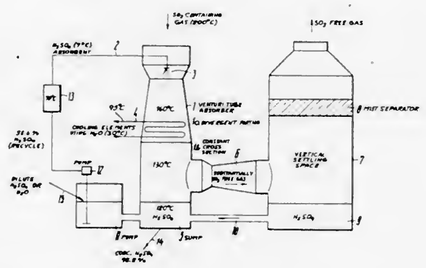
a. spraying sulfuric acid into the sulfur-trioxide gas stream;

b. passing said sulfur-trioxide containing gas stream in admixture with the sprayed droplets of sulfuric acid as absorbent through a vertical, downwardly-discharging Venturi absorber with a downwardly widening discharge portion having an outlet end;

c. abstracting heat from the mixture in step (b) by indirect heat exchange with a cooling fluid at a point adjacent the outlet end of the vertical Venturi absorber whereby said mixture is cooled after an initial absorption to a temperature of about 120°C;

d. collecting the liquid phase of the mixture in a first sump located directly below said discharge portion;

e. deflecting the gas phase of the mixture through a horizontal Venturi absorber connected to the discharge portion of the vertical Venturi absorber to effect after absorption of sulfur-trioxide from the gas;



f. passing the gas phase after traversal through the horizontal Venturi into an upwardly extending settling chamber to effect additional after absorption;

g. collecting mist from the gas phase in the chamber and forming droplets therefrom; and

h. collecting said droplets in a second sump at the base of said chamber.

3,950,494

SUPPRESSION OF VOLATILIZATION OF NOXIOUS ACIDIC VAPORS

Richard A. Guenthner, Birchwood Village, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 25, 1974, Ser. No. 483,054

Int. Cl.² B01J *1/18;* **C09K** *3/00*

U.S. Cl. 423—270 **4 Claims**

1. The method of suppressing the evolution of noxious acidic vapor from a body of volatile, inorganic, normally liquid chemical which reacts with water, which comprises applying to the exposed surface of said body an amount of a treating agent sufficient to form a layer thereof on the surface of said body, said treating agent consisting essentially of: a fluorinated aliphatic liquid which is inert and stable with respect to said chemical and vapor thereof, has a boiling point greater than about 55°C, and contains 60 to 76 weight percent carbon-bonded fluorine; and finely divided, non-reactive, inorganic solid thickening agent dispersed in said fluorinated aliphatic liquid in an amount sufficient to thicken the same and impart to it a viscosity sufficient to render said layer of treating agent relatively immobile on the surface of said body so as to reduce the rate of flow from said inorganic liquid of said acidic vapor evolved therefrom.

3,950,495

METHOD FOR THE CONTINUOUS PREPARATION OF STABLE AQUEOUS AMMONIUM POLYPHOSPHATE COMPOSITIONS

Alvin William Ries, Highland, Ind., assignor to Standard Oil Company, Chicago, Ill.

Filed Dec. 21, 1973, Ser. No. 427,043

Int. Cl.² C01B *15/16, 25/26*

U.S. Cl. 423—306 **6 Claims**

1. An improved method for the continuous production of a stable aqueous ammonium polyphosphate composition comprising

A. reacting in a pipe reactor wet-process superphosphoric acid, said acid being primarily in the orthophosphate form, and anhydrous ammonia vapor in an exothermic ammoniation to thereby ammoniate a portion of the acid and to dehydrate and convert a portion of the orthophosphate to polyphosphate in the pipe reactor by means of the heat generated by the exothermic ammoniation reaction by

I. introducing the ammonia in the form of a single stream and exclusively into the pipe reactor and introducing the acid in the form of a single stream and exclusively into the pipe reactor along the axis of the pipe reactor and into the center of the stream of ammonia in the pipe reactor to thereby form the reaction mixture and to prevent corrosion of the pipe reactor by minimizing contact of the pipe reactor walls with the acid heated by the heat evolved in the ammoniation reaction, said streams containing the exact stoichiometric amounts of the acid and the ammonia that are required in the analysis desired for the final stable aqueous ammonium polyphosphate composition and said acid stream being introduced into said ammonia stream at a point downstream from where said ammonia stream is introduced into the pipe reactor;

II. reducing the linear velocity of the combined ammonia and acid streams in the pipe reactor as they are being combined to form the reaction mixture in order to achieve efficient mixing of the combined streams within the pipe reactor; and

III. allowing the temperature of the reaction mixture in the pipe reactor to increase in response to the heat liberated by the ammoniation reaction and without the addition or removal of heat by external means and thereby effecting the partial conversion of orthophosphate to polyphosphate in the pipe reactor;

B. quenching the conversion reaction by removing the hot reaction mixture stream from the pipe reactor and adding to it a cooler stream consisting essentially of water, said water being at such a temperature as to lower the temperature of the reaction mixture enough to quench the conversion reaction and said water being added in the exact stoichiometric amount that is required in the analysis desired for the final stable aqueous ammonium polyphosphate composition; and

C. completing rapidly the ammoniation reaction and the conversion of the reaction mixture stream to a reaction product stream in a reaction medium formed by next introducing the reaction mixture stream into a cooler stream of the desired final stable aqueous ammonium polyphosphate, said cooler stream being at such temperature as to lower the temperature of the reaction mixture below that at which loss of polyphosphate due to hydrolysis is significant;

wherein steps A, B, and C are performed in a completely closed system, thereby eliminating additional separation steps and losses of volatile components by volatilization.

3,950,496

SYNTHETIC ZEOLITE ZSM-18

Julius Ciric, Pitman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 365,020, May 29, 1973, abandoned. This application Mar. 27, 1975, Ser. No. 562,734

Int. Cl.² C01B *33/28*

U.S. Cl. 423—328 **7 Claims**

1. A crystalline synthetic aluminosilicate having the composition expressed in terms of mole ratios of oxides

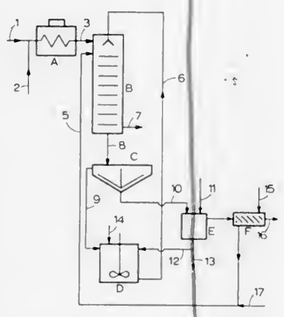
$$0.9 \pm 0.3\ M_{2/n}O: Al_2O_3: z\ SiO_2$$

wherein M represents at least one cation having a valence n and z is 10–30, said aluminosilicate having the x-ray diffraction lines as shown in Table 1.

3,950,497
PROCESS FOR PREPARING ALKALI METAL AND ALKALINE-EARTH METAL CYANATES

Johannes D. M. Verstegen, Sittard, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Filed June 19, 1974, Ser. No. 481,120
Claims priority, application Netherlands, June 28, 1973, 7309002
Int. Cl.² C01C 3/14
U.S. Cl. 423—365 6 Claims



1. A process for the preparation of alkali metal cyanate or alkaline-earth metal cyanates in relatively high yield comprising first cracking urea forming a gaseous mixture of (iso)cyanic acid and ammonia, then supplying the freshly prepared urea cracking gas to an absorption zone and contacting it at a temperature of about 20° to about 90° C with a hydroxide, carbamate or carbonate of a metal of Group IA or Group IIA of the periodic system in an aqueous solution or suspension thereof and maintaining the reaction within the stated temperature range and separating the resulting cyanate product from the reaction mixture.

3,950,498
PROCESS FOR THE PRODUCTION OF SULFUR TETRAFLUORIDE

Rolf Appel, and Ahmad Gilak, both of Bonn, Germany, assignors to Rolf Appel, Bonn, Germany

Filed Dec. 10, 1974, Ser. No. 531,411
Claims priority, application Germany, Dec. 21, 1973, 2363679
Int. Cl.² C01B 17/45, 7/08
U.S. Cl. 423—469 6 Claims

1. A process for the production of sulfur tetrafluoride comprising reacting sulfur tetrachloride or a mixture consisting of sulfur dichloride and chlorine with hydrogen fluoride in liquid phase at temperatures between −80°C and +40°C in the presence of carbon tetrachloride and subsequently separating the sulfur tetrafluoride.

3,950,499
PROCESS FOR PRODUCTION OF CALCIUM HYPOCHLORITE

Noboru Miyashin; Masashi Kumoda, both of Johetsu; Makoto Nishonomiya, Nakago; Katsumi Nakayama, Yono, and Yasushi Izawa, Myohkohkohgen, all of Japan, assignors to Nippon Soda Company, Ltd., Tokyo, Japan

Filed Nov. 15, 1974, Ser. No. 524,227
Claims priority, application Japan, Nov. 28, 1973, 48-132586
Int. Cl.² C01B 11/06; C01D 3/04
U.S. Cl. 423—474 10 Claims

1. A process for production of calcium hypochlorite comprising the steps of:

a. adding sodium hydroxide into an aqueous solution saturated with calcium hypochlorite and sodium chloride containing a small amount of calcium hypochlorite crystals and sodium chloride crystals;
b. chlorinating the mixture obtained in step (a) with chlorine gas to produce sodium chloride crystals and an aqueous chlorinated reaction mixture;
c. isolating the formed sodium chloride crystals from said aqueous chlorinated reaction mixture;
d. feeding calcium hydroxide and sodium hydroxide into the aqueous chlorinated reaction mixture remaining after separation of said crystals therefrom;
e. chlorinating the mixture obtained in step (d) containing calcium hydroxide and sodium hydroxide with chlorine gas to produce a slurry containing mainly sodium chloride crystals, calcium hypochlorite crystals and a mother liquor saturated with calcium hypochlorite and sodium chloride;
f. cyclone dividing said slurry into a first slurry [I] mainly containing calcium hypochlorite crystals, sodium chloride crystals and mother liquor saturated with calcium hypochlorite and sodium chloride, and a second slurry [II] containing calcium hypochlorite crystals with a small amount of sodium chloride crystals and mother liquor saturated with calcium hypochlorite and sodium chloride;
g. dividing said second slurry [II] into calcium hypochlorite crystals with a small amount of sodium chloride crystals and a third phase mother liquor [III] saturated with calcium hypochlorite and sodium chloride;
h. recycling said third phase mother liquor [III] and said first slurry [I] to step (a) as an aqueous solution saturated with calcium hypochlorite and sodium chloride containing a small amount of calcium hypochlorite and sodium chloride crystals.

3,950,500
METHOD OF PRODUCING CHLORINE DIOXIDE

Daniel J. Jaszka, Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Jan. 21, 1975, Ser. No. 542,759
Int. Cl.² C01B 11/02, 11/10, 7/02; C01D 3/04
U.S. Cl. 423—480 3 Claims

1. A process for the production of chlorine dioxide by the reaction of sulfur dioxide and sodium chlorate which comprises the steps of:

A. passing a stream of aqueous sodium chlorate into a packed reaction column, said stream having a concentration of from about 30 percent by weight to about the saturation point of sodium chlorate;
B. feeding countercurrently a stream of gaseous sulfur dioxide into the lower portion of said reaction column to contact said sodium chlorate,
C. feeding a stream of gaseous chlorine into said reaction column at a point near the lower portion of said reaction zone,
D. said streams having a molar ratios of from about 1.25 to about 1.5:1 sulfur dioxide and from about 0.5 to about 0.75:1 Chlorine, per mole of sodium chlorate,
E. adjusting the feed ratios of the components so as to maintain an acidity of from about 9 to about 10 normal in a reaction zone in said reaction column,
F. maintaining a reaction temperature of about 60°C. in said reaction zone,
G. maintaining a temperature of between about 20° to about 30°C. in the uppermost portion of said reaction column and a temperature of less than 60°C. in the lowermost portion of said reaction column, and
H. withdrawing a stream of chlorine dioxide from said reaction column.

3,950,501
PRODUCTION OF HIGH-PURITY CHLORINE FROM HYDROGEN CHLORIDE

Luther C. Chien, 625 McKinley Ave., Pitman, N.J. 08071; Jack K. Nyquist, Hillendale Road R.D. 1 Box 255, Avondale, Pa. 19311, and Charles Yembrick, Jr., 19 Drummond Drive, Wilmington, Del. 19808

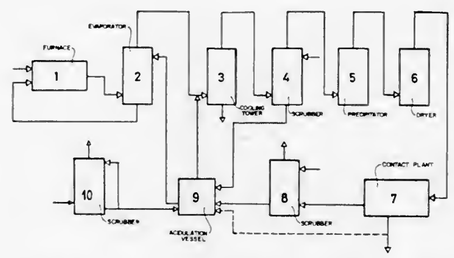
Filed Feb. 13, 1974, Ser. No. 442,170
Int. Cl.² C01B 7/00
U.S. Cl. 423—507 1 Claim

1. In a continuous process for making chlorine comprising
i. reacting hydrogen chloride with an aqueous oxidizing mixture of nitric and sulfuric acids thereby producing a chlorine-containing species, a nitrogen-containing species, spent sulfuric acid and water, and
ii. reacting the nitrogen-containing species with oxygen and aqueous sulfuric acid reactants thereby regenerating an aqueous mixture of nitric and sulfuric acids,
the improvement comprising,
maintaining in (i) a critical water concentration from 23.0 to 27.5 percent, by weight of the oxidizing mixture, maintaining the mol ratio of hydrogen chloride to nitric acid at between 1.8–2.2 to 1, and concentrating up to about 10 percent of the spent sulfuric acid and returning this concentrated acid back to the reaction, thereby maintaining the critical water concentration therein; and
maintaining in (ii) a critical water ratio from 27.5 to 30.0 percent, by weight of the reactants, thereby producing chlorine of at least 95 percent purity in a yield of at least 95 percent based on HCL and converting in excess of about 90 percent of said nitrogen containing species to nitric acid.

3,950,502
PROCESS FOR WORKING UP THE SCRUBBING SOLUTION OBTAINED IN THE SCRUBBING OF SO_2-CONTAINING WASTE GASES

Herbert Furkert, Grosskonigsdorf, Germany, assignor to Chemiebau Dr. A. Zieren Gesellschaft mit beschrankter Haftung & Co. KG, Cologne, Germany

Continuation-in-part of Ser. Nos. 284,709, Aug. 30, 1972, and Ser. No. 228,258, Feb. 22, 1972, Pat. No. 3,795,731. This application Nov. 23, 1973, Ser. No. 418,273
Claims priority, application Germany, Nov. 22, 1972, 2257227; Feb. 19, 1971, 2107910; Aug. 31, 1971, 2143444
The portion of the term of this patent subsequent to Mar. 5, 1991, has been disclaimed.
Int. Cl.² C01B 17/60, 17/50
U.S. Cl. 423—541 A 12 Claims



1. In a process which comprises scrubbing an SO_2-containing gas with an aqueous ammonia solution to form a scrubbing solution containing ammonium sulfite and ammonium bisulfite as reaction products; acidulating said reaction products with sulfuric acid to form SO_2 and aqueous ammonium sulfate; heating the concentrated aqueous ammonium sulfate to a temperature of 900°–1250°C in a combustion chamber burning a carbon or sulfur containing fuel in the presence of sufficient oxygen to maintain an oxygen content of 1–10 vol. % in the gas exiting from the combustion chamber to form a hot split gas consisting essentially of sulfur dioxide, sulfur trioxide, molecular nitrogen, molecular oxygen and water vapor; and heat exchanging said hot split gas with said aqueous ammonium sulfate to evaporate said aqueous ammonium sulfate to a concentrate having a water content of 15–55 wt. %, thereby cooling said hot split gas, the improvement which comprises:
acidulating said reaction products with a quantity of sulfuric acid sufficient to liberate SO_2 from 10–20% of the ammonium sulfite and ammonium bisulfite in said scrubbing solution to reduce the transfer of ammonia from the scrubbing solution to the hot split gas during evaporation of said hot split gas to 0–3% of the ammonia bound to the ammonium sulfite and ammonium bisulfite in the scrubbing solution and to avoid crystallization of ammonium salts during said evaporation step.

3,950,503
CALCINATION-DESULFURIZATION OF GREEN COKE WITH CONCURRENT SULFUR PRODUCTION

Byron G. Spars, Mill Valley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sept. 27, 1974, Ser. No. 509,884
Int. Cl.² C01B 17/06
U.S. Cl. 423—574 R 6 Claims

1. A process for the production of a calcined low-sulfur-content coke and elemental sulfur from a green coke having a substantial sulfur content which comprises:
a. producing a sulfur dioxide-containing off-gas and a partially desulfurized coke by calcining said green coke under oxidative conditions including a temperature in the range 1000°to 3000°F,
b. producing a hydrogen sulfide-containing off-gas and said low-sulfur-content coke by calcining said partially desulfurized coke under reducing conditions including a temperature in the range 2000°to 4000°F; and
c. forming elemental sulfur and water by combining and reacting at least a portion of said sulfur dioxide-containing off-gas with at least a portion of said hydrogen sulfide-containing off-gas.

3,950,504
PROCESS FOR PRODUCING MAGNESIUM ALUMINATE SPINEL

Jeffrey H. Belding, Ocean County, and Erwin A. Letzgus, Somerset County, both of N.J., assignors to Quigley Company, Inc., New York, N.Y.

Filed Sept. 26, 1974, Ser. No. 509,495
Int. Cl.² C01F 7/16
U.S. Cl. 423—600 5 Claims

1. A process for the production of high purity magnesium aluminate spinel refractory which comprises blending alumina in the form of ESP fines with a finely divided source of magnesia in such proportion as to provide a magnesia:alumina weight ratio of about 0.4 to 0.8 and heating said blend to a temperature of from about 1600° to 2100°C for a period of time sufficient for substantially complete reaction of said blend to produce spinel having a bulk density of at least about 90 percent of theory and a sodium oxide content below about 0.1 weight percent.

3,950,505
PREPARATION OF MANGANOUS HYDROXIDE

Irving Sochol, Baltimore, Md., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Apr. 28, 1975, Ser. No. 572,628
Int. Cl.² C01G 45/02
U.S. Cl. 423—605 11 Claims

1. A method for preparing manganous hydroxide comprising the steps of adding at least one manganese solubilizing agent selected from the group consisting of acetic acid, propionic acid, butyric acid, nitric acid, and the ammonium and

manganese salts thereof to an aqueous slurry of manganous oxide in an amount sufficient to form a 0.05 to 1.0 molar solution and maintaining the slurry at a temperature between about 40°C. and the boiling point of the solution until the manganous oxide is substantially converted to manganous hydroxide.

8. The method of claim 1 wherein 0.01 to 0.1% of a reducing agent is also added to the aqueous slurry.

9. The method of claim 1 wherein 0.05 to 0.1% of hydrazine is also added to the aqueous slurry.

3,950,506

PROCESS FOR THE PREPARATION OF AN OLATED CHROMIUM (III) NITRATE

Charles C. Cumbo, 1410 Bucknell Road, Green Acres, Wilmington, Del. 19803

Continuation-in-part of Ser. No. 119,842, March 1, 1971, abandoned. This application July 9, 1973, Ser. No. 377,570

Int. Cl.² C01B *37/02*

U.S. Cl. 423—607 **2 Claims**

1. A process for preparing an olated chromium (III) nitrate, said process comprising admixing at 0°–50°C. a concentrated aqueous solution of chromium trioxide with a reducing alcohol selected from isopropyl alcohol and isobutyl alcohol containing about 3 moles of nitric acid per mole of said chromium trioxide, the amount of said alcohol being such that less than about 10 weight percent of water is present in the reaction mixture; and maintaining all the reaction components in contact at 0°–50°C. until olation has substantially reached equilibrium conditions;

provided there never is present in the reaction mixture an excess of chromium trioxide.

3,950,507

METHOD FOR PRODUCING GRANULATED POROUS CORUNDUM

Georgy Konstantinovich Boreskov, ulitsa Zolotodolinskaya, 85; Valentina Nikolaevna Kuklina, bulvar Molodezhi, 28a, kv. 33; Emmanuil Aronovich Levitsky, ulitsa Akademicheskaya, 6, kv. 42; Boris Nikolaevich Badaev, ulitsa Rossiiskaya, 26, kv. 19, and Vladimir Alexandrovich Balashov, KsM, 45, kv. 1, all of Novosibirsk, U.S.S.R.

Filed Mar. 19, 1974, Ser. No. 453,004

Int. Cl.² C01F *7/02*

U.S. Cl. 423—626 **15 Claims**

1. A method for producing granulated porous corundum having a homogeneous porous structure with a total pore volume of from 0.3 to 1.0 cm^3/g and a predominant pore size of 5000 to 30000 A, comprising subjecting granules of a compound selected from the group consisting of active alumina and aluminum hydroxide to heat treatment by increasing the temperature from 20° C to 700° C for at least 0.5 hour; said initial granules of active alumina or aluminum hydroxide having a total pore volume of from 0.3 to 1.0 cm^3/g and a pore size of from 20 to 5000 A; further heat treating said granules in the temperature range of from 700° C to 1000° C for at least 0.5 hour, and then in the temperature range of from 1000° C to 1400° C for at least 0.5 hour, the heat treatment in the temperature range of from 20° C to 1000° C being essential to be carried out in an atmosphere of hydrogen fluoride which is present in an amount of from 0.01 to 2.0 percent of the weight of active alumina.

3,950,508

PROCESS FOR OBTAINING PHARMACEUTICAL SUSTAINED RELEASES

Claude Mony, and Geneviéve Costes, both of Orleans, France, assignors to Laboratoires Servier, France

Filed May 7, 1973, Ser. No. 358,116

Claims priority, application France, May 10, 1972, 72.16616

Int. Cl.² A61K *9/22*

U.S. Cl. 424—19 **4 Claims**

1. A process of preparing a dry, pharmaceutical delayed action composition suitable for oral administration in which at least one therapeutically active ingredient is dispersed in a vehicle or matrix of particulate talc, said talc being almost insoluble in the fluids of the digestive tract and the particles thereof being bound together by a binder consisting of a solid, water-insoluble, organosoluble, ethyl cellulose which comprises preparing a dry mixture by mixing in the dry powdered state the therapeutically active ingredient, the talc, and the binder, in the proportions of about 1 to 5 parts of talc for each part of active ingredient and about 16 and 59 parts of dry mixture for each part of binder, with the further proviso that there be present at least twice as much talc as ethyl cellulose, wetting the powder mixture with solvent in which the binder is soluble and in which the talc is insoluble in an amount just sufficient to insure granulation, and then granulating the resultant wetter powder mixture, drying the granules, incorporating therein as a tableting lubricant from about ⅜ to 2% of magnesium stearate, and tableting the resulting mixture.

3,950,509

METHOD OF CONTROLLING PERSPIRATION ODOR WITH A BIOLOGICAL PROTEASE INHIBITOR

Franz-Josef Geks, Cologne, and Gunter Schmidt-Kastner, Wuppertal-Elberfeld, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 280,151, Aug. 14, 1972, abandoned, and a continuation of Ser. No. 242,218, April 17, 1972, and a continuation-in-part of Ser. No. 59,339, July 29, 1970, abandoned. This application Feb. 20, 1974, Ser. No. 444,164

Claims priority, application Germany, Aug. 2, 1969, 1939419

Int. Cl.² A61K *7/32*

U.S. Cl. 424—65 **1 Claim**

1. The method of controlling perspiration odor which comprises topically applying to the human skin a deodorant composition containing in an effective perspiration odor-reducing amount between 0.1 to 5.0 weight percent of a biological protease inhibitor selected from the group consisting of kallikrein-trypsin inhibitor from the pancreas liver, lung, lymph glands, parotid glands, spleen, or blood serum and biological vegetable protease inhibitor derived from potatoes in a cosmetic carrier.

3,950,510

CONDITIONING SHAMPOO CONTAINING A WATER-INSOLUBLE HAIR COSMETIC AGENT

Geoffrey Philip Adams, Addlestone, England, assignor to Lever Brothers Company, New York, N.Y.

Filed July 25, 1973, Ser. No. 382,440

Claims priority, application United Kingdom, Aug. 1, 1972, 35901/72; Feb. 5, 1973, 5571/73

Int. Cl.² A61K *7/06*

U.S. Cl. 424—70 **4 Claims**

1. An aqueous shampoo composition for imparting cosmetic effects to the hair comprising:

a. about 5 to about 60% by weight of an anionic surfactant, a cationic surfactant, a nonionic surfactant, or a mixture thereof, and

b. about 1 to 15% by weight of a water-insoluble hair cosmetic agent consisting of wood rosin, maintained in dispersion in the composition by means of from 0.5 to 2% by weight of a thickening and suspending agent.

2. An aqueous shampoo composition for imparting cosmetic effects to the hair comprising:

a. about 5 to about 60% by weight of an anionic surfactant, a cationic surfactant, a nonionic surfactant, or a mixture thereof, and

b. about 1 to about 15% by weight of a water-insoluble hair cosmetic agent consisting of sucrose acetate isobutyrate, maintained in dispersion in the composition by means of from 0.5 to 2% by weight of a thickening and suspending agent.

3. An aqueous shampoo composition for imparting cosmetic effects to the hair comprising:

a. about 5 to about 60% by weight of an anionic surfactant, a cationic surfactant, a nonionic surfactant, or a mixture thereof, and

b. about 1 to about 15% by weight of a water-insoluble hair cosmetic agent consisting of dihydroxypolysiloxane oil, maintained in dispersion in the composition by means of from 0.5 to 2% by weight of a thickening and suspending agent.

4. An aqueous shampoo composition for imparting cosmetic effects to the hair comprising:

a. about 5 to about 60% by weight of an anionic surfactant, a cationic surfactant, a nonionic surfactant, or a mixture thereof, and

b. about 1 to about 15% by weight of a water-insoluble hair cosmetic agent consisting of mineral oil, maintained in dispersion in the composition by means of from 0.5 to 2% by weight of a thickening and suspending agent.

3,950,511

VACCINE FOR VIRAL PERICARDITE IN BARBARY DUCKS

Daniel Gaudry, Caluire, and Pierre Precausta, Thurins, both of France, assignors to Institut Merieux, France

Filed Oct. 3, 1974, Ser. No. 511,710

Claims priority, application France, Oct. 5, 1973, 73.35665

Int. Cl.² A61K *39/32*

U.S. Cl. 424—89 **5 Claims**

1. A vaccine against viral pericarditis in Barbary ducks comprising a vehicle containing particles of "virus K" reovirus resulting from source virus obtained from the liver and spleen of Barbary ducks having a viral disease caused by Barbary duck viral pericardite "virus K" reovirus, said source virus having then undergone (a) 20 passages on embryo Barbary duck eggs, then 30 passages on embryo chicken eggs, followed by 30 passages on embryo chicken cells or (b) 20 passages on embryo Barbary duck cells, followed by about 55 passages on embryo chicken cells.

3,950,512

ANIMAL VACCINES

Jerrell Bemis Emery, Chalfont, and James Long Bittle, Doylestown, both of Pa., assignors to Pitman-Moore, Inc., Washington Crossing, N.J.

Continuation-in-part of Ser. No. 274,940, July 25, 1972, abandoned, which is a continuation-in-part of Ser. No. 94,570, Dec. 2, 1970, abandoned. This application Feb. 6, 1975, Ser. No. 547,430

Int. Cl.² A61K *39/02, 39/18, 39/34*

U.S. Cl. 424—89 **24 Claims**

1. A vaccine useful in immunizing dogs against kennel cough comprising at least 100 $TCID_{50}$ per ml each of live attenuated canine parainfluenza virus and live attenuated canine adenovirus Type 2 in a physiologically acceptable carrier suitable for parenteral or intranasal administration, each of said viruses being attenuated by a sufficient number of serial passages in susceptible tissue culture until the virus is rendered non-pathogenic without loss of immunogenicity.

3,950,513

PROCESS OF STABILIZING THERAPEUTICALLY USEFUL PLASMIN SOLUTIONS

Villy Johannes Jensen, Copenhagen Vanlose, Denmark, assignor to Novo Terapeutisk Laboratorium A/S, Denmark

Continuation of Ser. No. 519,809, Dec. 3, 1969, abandoned, which is a continuation-in-part of Ser. No. 189,367, April 23, 1962, abandoned. This application Sept. 19, 1969, Ser. No. 860,172

Int. Cl.² A61K *37/48;* **G07F** *11/00*

U.S. Cl. 424—94 **18 Claims**

1. A method for the clinical use of therapeutically useful compositions suitable for plasmin therapy of animals and humans, which comprises administering parenterally a composition consisting essentially of plasmin in an amount of about 2 to about 25 plasmin units per milliliter as the essential active ingredient together with about 0.04 to about 2.5 millimoles of a non-toxic amino acid per plasmin unit, said non-toxic amino acid being selected from aliphatic amino acids containing from 2 to 6 carbon atoms, amino benzoic acid, histidine, tryptophane, phenylalanine, proline and hydroxy proline.

3,950,514

ANTIBIOTIC TM-481 DERIVED FROM MICROORGANISM OF THE *STREPTOMYCES RIBOSIDIFICUS* GROUP

Jiro Sawada, Kodaira; Sadafumi Omura, Saitama; Michinori Shibata, Saitama, and Sadao Machida, Saitama, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Sept. 4, 1974, Ser. No. 503,165

Claims priority, application Japan, Sept. 5, 1973, 48-99977

Int. Cl.² A61K *35/00*

U.S. Cl. 424—121 **5 Claims**

1. An antibiotic, TM-481 being a prism-shaped crystal; having a melting point of 188°–189°C; containing the elements of carbon, hydrogen, oxygen and sodium in the analytical value of C:61.93, H:8.64, O:26.75, Na: 2.68; having a molecular weight of about 846 and corresponding to the empirical formula $C_{42-45}H_{71-75}O_{14-15}Na$; having the degree of optical rotation $[\alpha]_D^{25} = 47°$ (C=1%, methanol); being soluble in ethyl acetate, benzene, chloroform, methanol, ethanol, acetone, n-hexane, petroleum ether and ethyl ether and insoluble in water; giving positive iodine and potassium permanganate tests and negative Molish and ferric chloride tests and showing the ultra violet absorption spectrum, the infrared absorption spectrum and the nuclear magnetic resonance spectrum as in the attached drawings, FIG. 1, FIG. 2 and FIG. 3, respectively.

2. A process for the production of antibiotic TM-481 which comprises cultivating the microorganism strain *Streptomyces ribosidificus* TM-481 (ATCC No. 31051) in a culture medium containing assimilable carbon and nitrogen sources, extracting the thus produced antibiotic TM-481 from the culture medium with an organic solvent and separating antibiotic TM-481 from the extract solution.

3,950,515

ANIMAL FEEDS CONTAINING ANTIBIOTIC AV290

Jack Peter Waite, Fareham, England, assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 355,240, April 27, 1973, Pat. No. 3,856,937. This application Sept. 5, 1974, Ser. No. 503,557

The portion of the term of this patent subsequent to Dec. 24, 1991, has been disclaimed.

Int. Cl.² A61K *35/00*

U.S. Cl. 424—115 **7 Claims**

1. A process for the production of a dried fermentation harvest mash solids animal feed supplement containing an antibiotic AV290-alkyl sulfate complex which comprises the steps of:

a. acidifying a fermentation whole harvest mash containing antibiotic AV290 to a pH of from 1.9 to 2.1 with a pharmacologically acceptable acid;

b. adding to the acidified mash a complexing agent selected from the group consisting of compounds of the formula:

$CH_3-(CH_2)_n-O-SO_2-OM$

wherein n is an integer from 9 to 17, inclusive, and M is sodium or potassium, and mixtures thereof until a sufficient amount of the antibiotic AV290-alkyl sulfate complex is imparted to said medium;

c. removing the harvest mash solids together with the precipitated antibiotic AV290-alkyl sulfate complex; and

d. drying the mixture of mash solids and antibiotic AV290-alkyl sulfate complex.

3,950,516

PROCESS FOR PREPARING CIRRAMYCIN A_1

Takeo Miyaki, Yokohama, Japan, assignor to Bristol-Myers Company, New York, N.Y.

Filed Nov. 18, 1971, Ser. No. 201,597

Int. Cl.² A61K *35/00*

U.S. Cl. 424—123 **4 Claims**

1. A process for the production of cirramycin A_1 which comprises producing cirramycin B_1 by cultivation of a strain of Streptomyces cirratus in an aqueous carbohydrate solution containing a nitrogenous nutrient under anerobic conditions until substantial antibiotic potency is produced in the broth, separating the cirramycin B_1 from said broth, and incubating the separated cirramycin B_1 in an aqueous substrate containing at least about 2 per cent cane molasses at a temperature sufficient to cause substantial conversion to cirramycin A_1 until substantial conversion results.

3,950,517

INSULIN DERIVATIVES

David Gordon Lindsay, Hove, and Sydney Shall, Lewes, both of England, assignors to National Research Development Corporation, London, England

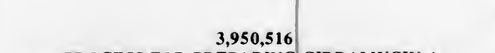
Division of Ser. No. 390,216, Aug. 21, 1973, Pat. No. 3,869,437, which is a continuation-in-part of Ser. No. 89,816, Nov. 16, 1970, abandoned. This application Dec. 6, 1974, Ser. No. 530,143

Claims priority, application United Kingdom, May 8, 1970, 22342/70

Int. Cl.² A61K *37/26*

U.S. Cl. 424—178 **29 Claims**

1. A pharmaceutical composition useful for treating diabetes in humans which comprises a hypoglycemically effective amount of a mono-, di- or tri-substituted insulin in which the terminal amino group of the B chain (B_1 phenylalanine) is protected by an acyl or other blocking substituent containing up to 7 carbon atoms selected from the group consisting of formyl, acetyl, trifluoroacetyl, cyclopropane-carbonyl, acetoacetyl, benzoyl, 2,2-dimethyl-3-formyl-L-thiazolidine-4-carbonyl, carbamyl, methylcarbamyl, thiocarbamyl, methylthiocarbamyl,



$HOCH_2CH_2CO-$, $HOOCCH_2CO-$ and H_2NOCCH_2CO-, the terminal amino group of the A chain (A_1 glycine) is either free or protected by an acyl or other blocking substituent containing no more than 4 carbon atoms and no free primary amino group selected from the group consisting of formyl, acetyl, trifluoroacetyl, cyclopropane-carbonyl, acetoacetyl, carbamyl, methylcarbamyl, thiocarbamyl, methylthiocarbamyl,



$HOCH_2CH_2CO-$, $HOOCCH_2CO-$ and $H_2NOC-CH_2CO-$ and the amino group of the B_{29} amino acid (lysine) is either free or protected by an acyl or other blocking substituent containing no more than 4 carbon atoms and no free primary amino group selected from the group consisting of formyl, acetyl, trifluoroacetyl, cyclopropanecarbonyl, acetoacetyl, carbamyl, methylcarbamyl, thiocarbamyl, methylthiocarbamyl,



$HOCH_2CH_2CO-$, $HOOC-CH_2-CO-$ and $H_2NOC-CH_2CO-$ in combination with a pharmaceutically acceptable diluent.

3,950,518

HYPOGLYCEMIC COMPOSITION AND METHOD OF USE

Carlton E. Turner, and John C. Craig, Jr., both of Oxford, Miss., assignors to The University of Mississippi, University, Miss.

Division of Ser. No. 533,347, Dec. 16, 1974, Pat. No. 3,922,263. This application May 20, 1975, Ser. No. 578,941

Int. Cl.² A61K *31/70, 35/78*

U.S. Cl. 424—180 **2 Claims**

1. A hypoglycemic composition consisting essentially of a glycosidic compound prepared from cockleburrs characterized by being in the form of a white crystalline solid having a decomposition point of 278°–279°C.; a molecular formula of $C_{31}H_{48}O_{24}S_2$, the aglycone portion of said molecule having the molecular formula $C_{18}H_{28}O_4$; substantially no ultraviolet absorption above 200 mμ; an infrared spectrum showing a hydrogen bonded OH absorption, 3440 cm^{-1}; C—H stretch, 2940 cm^{-1}; carbonyl stretch, 1734 cm^{-1}; C—O stretch, 1250 cm^{-1} and other absorptions at 1640; 1460; 1380; 1040; 1000; 900; and 800 cm^{-1}; the nuclear magnetic resonance spectrum in deuterium oxide shows broad absorption at 304, 230, 162, 134, 92 and 58 cps relative to tetramethylsilane standard; and the mass spectrum of the silyl derivative gives a mass fragment of 952 amu in admixture with a non-toxic pharmaceutically-acceptable carrier.

3,950,519

COMPOSITION AND METHOD OF TREATING ASTHMA

Rene M. Mora, 110 SW. 35th Ave., Miami, Fla. 33135

Continuation-in-part of Ser. No. 442,855, Feb. 15, 1974, abandoned. This application Apr. 2, 1975, Ser. No. 564,322

Int. Cl.² A61K *35/78, 35/04*

U.S. Cl. 424—195 **12 Claims**

1. An aqueous composition for treating allergenically induced asthma in human patients containing, as the only active ingredient, 35 to 50 grams of cedar resin obtained from *Cedrela Odorata* per liter of composition, said composition also including coloring and flavoring additives.

3,950,520

ASYMMETRIC O,S-DIALKYLL-O-[(PHENYL)-VINYL]-THLOPHOSPHATES AS INSECTICIDES

Alexis A. Oswald, Mountainside, and Paul L. Valint, Woodbridge, both of N.J., assignors to Ciba-Geigy AG, Basel, Switzerland

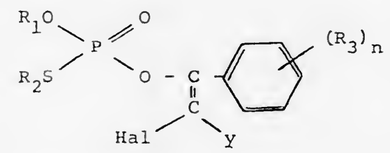
Division of Ser. No. 373,723, June 26, 1973, Pat. No. 3,878,268. This application Feb. 26, 1975, Ser. No. 553,334

Claims priority, application Switzerland, June 27, 1972, 9609/72; May 16, 1973, 7060/73

Int. Cl.² A01N *9/36*

U.S. Cl. 424—219 **13 Claims**

1. An insecticidal composition comprising (1) as active ingredient an insecticidally effective amount of a compound of the formula



wherein R_1 is methyl or ethyl; R_2 is propyl or butyl; each R_3 is hydrogen, chlorine, bromine, methyl or methoxy; n is 1, 2 or 3; y is hydrogen or chlorine; and Hal is chlorine or bromine; and (2) a suitable carrier.

3,950,521

ADMINISTRATION OF ALKALI METAL SALICYLAMIDE SALTS

Takeru Higuchi, and Anwar Hussain, both of Lawrence, Kans., assignors to Interx Research Corporation, Lawrence, Kans.

Continuation of Ser. No. 255,901, May 22, 1972, abandoned, which is a continuation of Ser. No. 22,049, March 23, 1970, abandoned. This application May 23, 1975, Ser. No. 580,134

Int. Cl.² A61K *31/615, 31/60*

U.S. Cl. 424—233 **10 Claims**

1. The method of obtaining analgesia, lowering body temperature, treating inflammation, or obtaining sedation in a mammalian organism, which method comprises administering to such organism a unit dosage analgesically, antipyretically, anti-inflammatorily or sedatively effective amount of an alkali metal salt of salicylamide in a pharmaceutically acceptable carrier.

3,950,522

PHARMACEUTICAL COMPOSITIONS AND METHODS OF INHIBITING GASTRIC ACID SECRETION

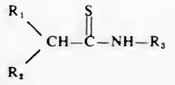
Bernard Loev, Broomall, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 460,315, April 12, 1974, Pat. No. 3,897,555, which is a continuation-in-part of Ser. No. 255,828, May 22, 1972, Pat. No. 3,825,547. This application Mar. 28, 1975, Ser. No. 563,411

Int. Cl.² A61K *31/535*

U.S. Cl. 424—248 **12 Claims**

1. A pharmaceutical composition having gastric acid secretion inhibitory activity, in dosage unit form, comprising a pharmaceutical carrier and a gastric acid secretion inhibiting amount of a thioamide compound of the formula:



in which:

R_1 is 2-pyridyl;

R_2 is $-(CH_2)_n-NR_4R_5$;

R_3 is an allyl or propargyl group optionally substituted by methyl or ethyl groups, said R_3 having 3–6 carbon atoms;

R_4 and R_5 are lower alkyl or taken together with the nitrogen atom to which they are attached form a piperidino, pyrrolidino, morpholino or N-lower alkyl-piperazino ring and

n is 0 or 1

or a pharmaceutically acceptable acid addition salt thereof.

3,950,523

PHARMACEUTICAL COMPOSITIONS CONTAINING A 5-OXO-2,3-DIHYDRO-IMIDAZO[1,2-a]-s-TRIAZINE AND METHOD OF USE

Helmut Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim am Rhein, and Wolfgang Hoefke, Budenheim, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

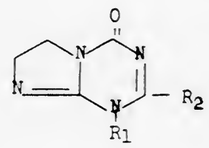
Division of Ser. No. 450,289, March 12, 1974, Pat. No. 3,887,552. This application Feb. 10, 1975, Ser. No. 548,365

Claims priority, application Germany, Mar. 23, 1973, 2314488

Int. Cl.² A61K *31/53*

U.S. Cl. 424—249 **16 Claims**

1. A pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective antidepressant amount of a compound of the formula



wherein

R_1 is phenyl or mono-, di- or tri-substituted phenyl, the substituents being each selected from the group consisting of halogen, methyl, methoxy and trifluoromethyl, and

R_2 is hydrogen, phenyl or halo-phenyl.

3,950,524

HYPOGLYCEMIC BENZENESULFONAMIDO PYRIMIDINES

Volker Hitzel, Lorsbach, Taunus; Rudi Weyer, Frankfurt am Main, and Walter Aumuller, Kelkheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

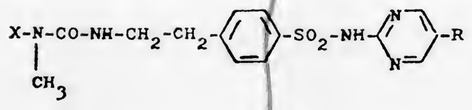
Filed Jan. 14, 1975, Ser. No. 540,964

Claims priority, application Germany, Jan. 16, 1974, 2401879

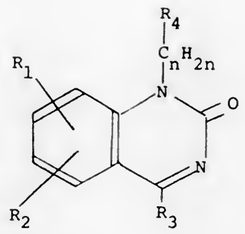
Int. Cl.² A61K *31/505;* **C07D** *239/00*

U.S. Cl. 424—251 **6 Claims**

1. A sulfonamido pyrimidine of the formula



in which X is a 6-membered heterocyclic ring containing 1 or 2 nitrogen atoms which may be substituted with 1 or 2 methyl groups; or quinolyl, and is linked to the rest of the molecule at the 2-position of said heterocyclic ring, and R is alkyl or alkoxy having 1 to 4 carbon atoms, or a pharmaceutically acceptable salt thereof.



(I)

wherein R_1 and R_2 are individually hydrogen, halogen, methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, methoxy, ethoxy, n-propoxy, isopropoxy, n-butoxy, nitro, methylthio, ethylthio, n-propylthio, isopropylthio, n-butylthio, isobutylthio, methylsulfonyl, ethylsulfonyl, n-propylsulfonyl, isopropylsulfonyl, n-butylsulfonyl, or isobutylsulfonyl; R_3 is hydrogen, C_{1-4} alkyl, cyclo-C_{3-6} alkyl, napthyl, furyl, or thienyl; R_4 is cyclo-C_{3-6} aklyl or trihalomethyl; and n is an integer of 1 to 3.

3,950,525

RELAXATION OF SMOOTH MUSCLE IN A MAMMAL

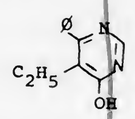
Gerald George De Angelis, Wilton, and Hans-Jurgen Ernst Hess, Old Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 371,483, June 19, 1973, Pat. No. 3,895,112, which is a division of Ser. No. 182,220, Sept. 20, 1971, Pat. No. 3,859,288, which is a continuation-in-part of Ser. No. 78,216, Oct. 5, 1975, abandoned. This application Apr. 11, 1975, Ser. No. 567,356

Int. Cl.² A61K *31/505*

U.S. Cl. 424—251 **1 Claim**

1. The method of relaxing smooth muscle in a mammal which comprises administering to said mammal an effective amount of a compound of the formula:



or a pharmaceutically acceptable salt thereof.

3,950,526

QUINAZOLINE DERIVATIVES IN PHARMACEUTICAL COMPOSITIONS FOR TREATING PAIN AND INFLAMMATION

Shigeho Inaba, Takarazuka; Michihiro Yamamoto, Toyonaka; Kikuo Ishizumi, Ikeda; Kazuo Mori, Kobe; Masao Koshiba, Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

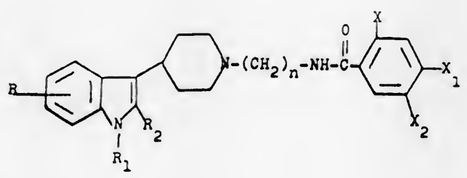
Division of Ser. No. 304,357, Nov. 7, 1972, Pat. No. 3,859,237, which is a continuation-in-part of Ser. No. 134,847, April 16, 1971, abandoned. This application Oct. 25, 1974, Ser. No. 518,070

Claims priority, application Japan, Apr. 20, 1970, 45-34057; June 3, 1970, 45-48570; Oct. 2, 1970, 45-86774

Int. Cl.² A61K *31/505*

U.S. Cl. 424—251 **34 Claims**

1. A pharmaceutical composition containing a pharmaceutically acceptable carrier and as an active ingredient an anti-inflammatorily and analgesically effective amount of a quinazoline derivative represented by the formula,



wherein R is selected from the group consisting of hydrogen and alkoxy of 1 to 3 carbon atoms, R_1 and R_2 are individually selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, n is 2 or 3, X is selected from the group

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3,950,527

N-[ω-(4′-(3″-INDOLYL)-PIPERIDINO)-ALKYL]-BENZAMIDES

Pierre Henri Deribie, Le Perreux; Jacques Guillaume, Aulnay-sous-Bois, and Claude Dumont, Nogent-sur-Marne, all of France, assignors to Roussel-UCLAF, Paris, France

Filed Jan. 22, 1975, Ser. No. 542,896

Claims priority, application France, Jan. 30, 1974, 74.03078

Int. Cl.² C07D *401/04*

U.S. Cl. 424—267 **17 Claims**

1. A compound selected from the group consisting of benzamides of the formula

wherein R is selected from the group consisting of hydrogen and alkoxy of 1 to 3 carbon atoms, R_1 and R_2 are individually selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, n is 2 or 3, X_1 is selected from the group consisting of hydrogen and alkoxy of 1 to 3 carbon atoms, X_2 is selected from the group consisting of hydrogen, fluorine, chlorine, bromine, $-NH_2$ and

and X_2 is selected from the group consisting of hydrogen, chlorine and sulfamoyl and their non-toxic, pharmaceutically acceptable acid addition salts.

3,950,528

1-SUBSTITUTED-3-AMINO-PYRAZOL-5-ONES

Harald Horstmann; Karl Meng, both of Wuppertal, and Egbert Wehinger, Neviges, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

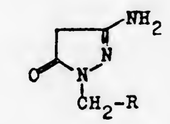
Division of Ser. No. 371,959, June 21, 1973, abandoned. This application Oct. 17, 1974, Ser. No. 515,448

Claims priority, application Germany, June 23, 1972, 2230792; June 23, 1972, 2230675

Int. Cl.² A61K *31/415*

U.S. Cl. 424—273 **32 Claims**

1. A pharmaceutical composition useful for effecting diuresis, saluresis and for treating hypertension in humans and animals which comprises a diuretically effective amount, a saluretically effective amount, or an antihypertensive amount of a compound of the formula



or a pharmaceutically acceptable non-toxic salt thereof, wherein R is anthryl; phenanthryl; naphthyl; or phenyl or naphthyl substituted by

a. 1, 2 or 3 identical or different substituents selected from the group consisting of halogen, alkyl of 1 to 8 carbon atoms, alkoxy of 1 to 8 carbon atoms, alkenoxy of 2 to 6 carbon atoms, cycloalkyl of 5 to 7 carbon atoms, trifluoromethyl and phenyl;

b. 1 or 2 nitro moieties;

c. 1 nitro substituent, and 1 or 2 substituents selected from the group consisting of alkyl of 1 to 8 carbon atoms, alkoxy of 1 to 6 carbon atoms, halogen and trifluoromethyl; d. 2 different substituents selected from the group consisting of alkyl of 1 to 8 carbon atoms, phenyl, halogen, alkoxy of 1 to 8 carbon atoms, trifluoromethyl, and nitro; in combination with a pharmaceutically acceptable nontoxic inert diluent or carrier.

3,950,529

AMINO ACID FORMULATIONS FOR PATIENTS WITH LIVER DISEASE AND METHOD OF USING SAME

Josef E. Fischer, Boston, Mass.; Norman N. Yoshimura, Woodland Hills, Calif.; Thomas L. Westman, and Fred H. Deindoerfer, both of Northridge, Calif., assignors to Massachusetts General Hospital, Boston, Mass. and American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 3, 1975, Ser. No. 546,689

Int. Cl.² A61K *31/415, 31/40, 31/195*

U.S. Cl. 424—273 **14 Claims**

1. An amino acid formulation for administration to human patients with liver disease, comprising a mixture of the following essential and nonessential amino acids combined in proportions defined by the following interrelated molar ranges:

Amino Acids	Molar Ranges
L-isoleucine	0.0549–0.0823
L-leucine	0.0670–0.101
L-valine	0.0574–0.0861
L-tryptophan	0.000816–0.00441
L-phenylalanine	0–M
L-tyrosine	0–0.00300
L-lysine	0.0333–0.0500
L-methionine	0.00491–0.0147
L-threonine	0.0228–0.0454
L-alanine	0.0686–0.103
L-arginine	0.0275–0.0413
L-histidine	0.0124–0.0186
L-proline	0.0556–0.00834
L-serine	0.0152–0.0571
glycine	0.0451–0.144
L-aspartic acid	0–0.0451
L-glutamic acid	0–0.0702
L-ornithine	0–0.0382
L-cysteine	0–0.00228

wherein M represents the upper limit of the range for phenylalanine and is equal to 0.009 minus the respective molar amount of tyrosine present in said mixture, the combined molar amounts of phenylalanine and tyrosine being at least equal to 0.002 on the same respective molar basis, the respective molar proportions of isoleucine, leucine, valine, tryptophan, phenylalanine, and tyrosine being selected from the above molar ranges thereof so that the ratio of the combined molar proportions of isoleucine, leucine, and valine to (a) the molar proportion of tryptophan is within the numerical range from 40 to 300, and to (b) the combined molar proportion of phenylalanine and tyrosine is within the numerical range from 15 to 135.

3,950,530

PYRROLIDINE INSECT CONTROL AGENTS

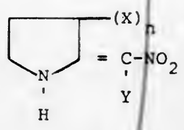
Charles A. Horne, Jr., Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 250,304, May 4, 1972, abandoned. This application Feb. 9, 1973, Ser. No. 331,157

Int. Cl.² A01N *9/22*

U.S. Cl. 424—274 **4 Claims**

1. A method for killing lepidopterous larvae of the genus Heliothis or the genus Agrotis upon the foliage or fruit of living plants which comprises applying to the living plant infested with said larvae an effective amount to kill said larvae of a compound of the formula



wherein *n* is 0 or 1, X is methyl and Y is hydrogen or bromine.

3,950,531

MEDICINE COMPRISING THE BENZILIC ESTER OF (DIMETHYL-2',5' PYRROLIDINO)-2-ETHANOL

Raymond Francois Sarbach, Chatillon-sur-Chalaronne, France, assignor to Institut de Recherche Scientifique I.R.S., Chatillon-sur-Charlaronne, France

Filed Mar. 27, 1973, Ser. No. 345,480

Claims priority, application France, Apr. 28, 1972, 72.10862

Int. Cl.² A61K *31/40*

U.S. Cl. 424—274 **13 Claims**

1. A method of treating stomach ulcerations in a human or veterinary patient in need of said treatment, comprising administering to said patient an effective anti-ulcerous amount of a compound selected from the group consisting of the benzilic ester of (dimethyl-2',5'-pyrrolidino)-2-ethanol and a pharmaceutically acceptable salt thereof.

3,950,532

TOPICAL APPLICATION OF CIS OF TRANS 3,4-THIOLANEDIOL TO REDUCE THE GREASY APPEARANCE OF HAIR AND SKIN

Claude Bouillon, Eaubonne, and Michel Colin, Livry-Gargan, both of France, assignors to L'Oreal, Paris, France

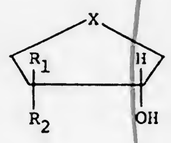
Filed May 10, 1972, Ser. No. 251,884

Claims priority, application Luxemburg, May 14, 1971, 63168

Int. Cl.² A61K *31/38*

U.S. Cl. 424—275 **12 Claims**

1. A process to combat dandruff and to eliminate a greasy appearance of the hair and scalp of a person having hair and scalp so characterized comprising topically applying to the hair an effective amount of a composition comprising a non-toxic carrier comprising a member selected from the group consisting of water and a dilute aqueous lower alkanol solution and an active compound of the formula



wherein

X is selected from the group consisting of S, SO and SO_2, and

R_1 is selected from the group consisting of

a. H, in which case R_2 is OH, and

b. OH, in which case R_2 is H,

said active compound being present in an amount effective to combat dandruff and to eliminate said greasy appearance of the hair and scalp.

3,950,533

PYROCATECHOL CARBAMATES AND O-MERCAPTOPHENOL CARBAMATES AND THEIR USE FOR COMBATING PESTS

Erwin Nikles, Liestal, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

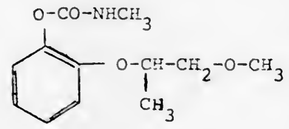
Division of Ser. No. 162,312, July 13, 1971, Pat. No. 3,843,720, which is a continuation-in-part of Ser. No. 775,584, Nov. 12, 1968, abandoned. This application July 22, 1974, Ser. No. 490,542

Claims priority, application Switzerland, Nov. 10, 1967, 15746/67

Int. Cl.² A01N *9/12, 9/20*

U.S. Cl. 424—300 **2 Claims**

1. A pesticidal composition for combatting pests selected from the group consisting of insects and acarids comprising (1) a pesticidally effective amount of the compound of the formula



and (2) a carrier.

3,950,534

FUNGICIDAL COMPOSITION CONTAINING 2-(N-N-BUTYLCARBAMOYLTHIO) ETHYL N¹-N-BUTYL-THIOCARBAMATE

Tomio Yagihara; Koshin Miyazaki; Sho Hashimoto, all of Odawara, and Akira Wakai, Tokyo, all of Japan, assignors to Nippon Soda Company, Ltd., Tokyo, Japan

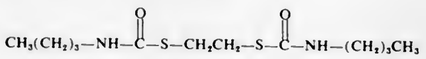
Filed July 24, 1974, Ser. No. 491,331

Claims priority, application Japan, Aug. 1, 1973, 48-85876; Mar. 7, 1974, 49-25713

Int. Cl.² A01N *9/12*

U.S. Cl. 424—300 **2 Claims**

1. A fungicidal composition for combatting plant fungi comprising an inert carrier and a fungicidally effective amount of the compound of the formula



3,950,535

CYANOBENZYL CYCLOPROPANE CARBOXYLATES

Royston H. Davis, Rainham, and Robert J. G. Searle, Rodmersham Green, both of England, assignors to Shell Oil Company, Houston, Tex.

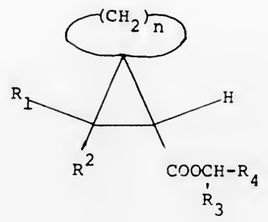
Filed Sept. 30, 1974, Ser. No. 510,197

Claims priority, application United Kingdom, Oct. 8, 1973, 46926/73

Int. Cl.² A01N *9/20*; C07C *121/66*

U.S. Cl. 424—304 **7 Claims**

1. Cyclopropane carboxylate derivatives of the formula:



wherein R_1 and R_2 each represents an alkyl group; R_3 represents a cyano group; R_4 represents a phenyl group optionally substituted by halogen, phenoxy or benzyl; and *n* is an integer from 2 to 5.

7. A method of combating insect and/or acarid pests at a locus which comprises applying to the locus a pesticidally active amount of a cyclopropane carboxylate derivative as claimed in claim 1 or a composition thereof.

3,950,536

N,N-DICHLORO SUBSTITUTED AMINOCARBOXYLIC ACIDS AS BACTERICIDES AND FUNGICIDES

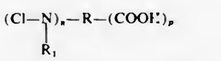
Sol Joseph Barer, 415 Cherry St., Elizabeth, N.J. 07208; Richard Frederick Stockel, 475 Rolling Hills Road, Bridgewater Township, N.J. 08876, and Peter Carl Valenti, 14 Lynnfield Drive, East Windsor, N.J. 08520

Filed Feb. 1, 1974, Ser. No. 438,712

Int. Cl.² A01N *9/30*

U.S. Cl. 424—319 **25 Claims**

1. A method for treating fungal and bacterial infection of any area of the skin or mucous membrane comprising applying to said area a microbiocidally effective amount of an N-chlorocarboxylic acid compound having the formula:



wherein R is a divalent saturated aliphatic hydrocarbon group; R_1 is a monovalent saturated aliphatic hydrocarbon group, acyl or chlorine, *n* is 1 or 2 and p is 1 or 2.

3,950,537

GASTROINTESTINALLY ACTIVE THIOUREAS

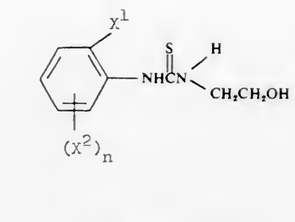
Peter L. De Benneville; Jack N. Moss, both of Philadelphia, Pa., and Esam Z. Dajani, Chicago, Ill., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 374,852, June 29, 1973, abandoned, which is a division of Ser. No. 175,373, Aug. 26, 1971, abandoned. This application Feb. 26, 1975, Ser. No. 553,354

Int. Cl.² A61K *31/17*

U.S. Cl. 424—322 **6 Claims**

1. A method for treating a mammal suffering from gastrointestinal disturbances which comprises administering to said mammal in an amount effective to reduce gastrointestinal motility and diarrhea, a compound of the formula:



wherein X^1 is methyl or ethyl; X^2 is 3,4 or 6-methyl; 3,4 or 5-chloro or bromo and *n* is an integer of 0–2.

3,950,538

ANTI-INFLAMMATORY METHODS UTILIZING CERTAIN THIOUREAS

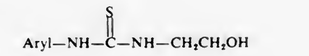
Philip J. Shea, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 452,032, March 18, 1974, abandoned. This application Nov. 7, 1974, Ser. No. 521,614

Int. Cl.² A61K *31/17*

U.S. Cl. 424—322 **26 Claims**

1. A method of alleviating an inflammatory condition in a mammal which comprises administering to said mammal an anti-inflammatory effective amount of a compound of the formula:



wherein aryl represents 2,4-dimethylphenyl, 4-methylphenyl, 3,5-dimethylphenyl, 2-methylphenyl, 2,4,6-trimethylphenyl, 3,4-dimethylphenyl, 2,6-dimethylphenyl, 3-methylphenyl, 2,5-dimethylphenyl, 2,4-dimethylbenzyl, 3,4-dimethoxyphenyl, 4-methoxy-2-methylphenyl, 6-methoxy-3-methylphenyl, 2-fluorophenyl, 3-fluorophenyl, 2,6-difluorophenyl, 2,5-difluorophenyl, 4-chlorophenyl, 2,4-dichlorophenyl, 2-chlorophenyl, 2,4,6-trichlorophenyl, 3-chloro-2-methoxyphenyl, 5-chloro-6-methoxyphenyl, 2-chloro-5-methoxyphenyl and 3-chloro-4-fluorophenyl.

3,950,539

SUBSTITUTED DIAMINOGUANIDINES

Hans Militzer, Hofheim, Taunus; Erhardt Winkelmann, Kelkheim, Taunus, and Wolfgang Raether, Dreieichenhain, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

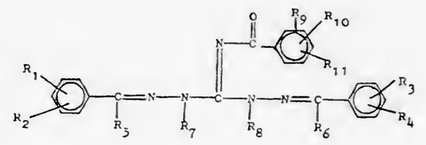
Filed Feb. 19, 1975, Ser. No. 550,917

Claims priority, application Germany, Feb. 21, 1974, 2408289

Int. Cl.² A61K *31/165*; C07C *103/22*

U.S. Cl. 424—324 **8 Claims**

1. Substituted diaminoguanidines of the general formula I



(I)

wherein R_1 and R_3 denote hydrogen, halogen, trifluoromethyl, R_2 and R_4 denote hydrogen or halogen, R_5, R_6, R_7 and R_8 denote hydrogen or alkyl with 1 to 6 C atoms, R_9 denotes hydrogen, halogen, alkyl or alkoxy with 1 to 6 C atoms in each case, trifluoromethyl or nitro, R_{10} denotes hydrogen, halogen or alkyl or alkoxy with 1 to 6 C atoms in each case and R_{11} denotes hydrogen, halogen or alkyl or alkoxy with 1 to 6 C atoms in each case and their pharmacologically acceptable salts.

3,950,540

AQUEOUS COMPOSITIONS CONTAINING TERTIARY AMINE OXIDES FOR TREATMENT OF RECTAL ITCHING AND LESSENING OF IRRITATION AND SWELLING OF PROLAPSED AND SWOLLEN EXTERNAL HEMORRHOIDS

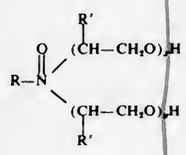
David A. Waldstein, 622 Bergen Ave., Jersey City, N.J. 07304

Continuation-in-part of Ser. No. 174,172, Aug. 23, 1971, abandoned, which is a continuation-in-part of Ser. No. 665,727, Sept. 6, 1967, abandoned. This application Nov. 1, 1973, Ser. No. 411,891

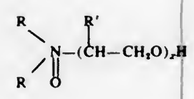
Int. Cl.² A61K *31/13*

U.S. Cl. 424—325 3 Claims

1. A method of treating external hemorrhoids in humans by relieving rectal itching and lessening of irritation and swelling of prolapsed and of irritated and swollen hemorrhoids, which method comprises immersing the affected area in a water bath containing as the active ingredient thereof from 0.01% to 0.5% by weight of a compound selected from the group consisting of



where R is a saturated or unsaturated fatty alkyl having from 10 to 25 carbon atoms, each R′ is hydrogen or methyl, x is at least 2, y is at least 2, and $x + y$ are from 5 to 60, and



where R and R′ are the same as above and x is from 5 to 60.

3,950,541

AQUEOUS COMPOSITIONS CONTAINING QUATERNARY AMMONIUM SALTS FOR TREATMENT OF RECTAL ITCHING AND LESSENING OF IRRITATION AND SWELLING OF PROLAPSED AND OF IRRITATED AND SWOLLEN EXTERNAL HEMORRHOIDS

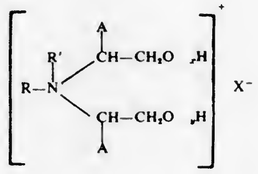
David A. Waldstein, 622 Bergen Ave., Jersey City, N.J. 07304

Continuation-in-part of Ser. No. 182,201, Sept. 20, 1971, abandoned, which is a continuation-in-part of Ser. No. 660,906, Aug. 16, 1967, abandoned. This application Nov. 1, 1973, Ser. No. 411,730

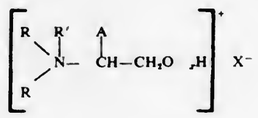
Int. Cl.² A61K *31/14*

U.S. Cl. 424—329 2 Claims

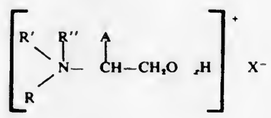
1. A method of treating external hemorrhoids in humans by relieving rectal itching and lessening of irritation and swelling of prolapsed and of irritated and swollen hemorrhoids, said method comprising immersing the affected area in a water bath containing as the active ingredient thereof from 0.01 to 0.5% by weight of a compound selected from the group consisting of



where R is a saturated or unsaturated fatty alkyl having from 10 to 25 carbon atoms, each A is hydrogen or methyl, R′ is a lower alkyl having from 1 to 6 carbon atoms, x is at least 2, y is at least 2, $x + y$ are from 5 to 60 and X is selected from the group consisting of chlorides, iodides, bromides, sulfonates and sulfates,



where each R is a saturated or unsaturated fatty alkyl having from 10 to 25 carbon atoms, A is hydrogen or methyl, R′ is a lower alkyl having from 1 to 6 carbon atoms, x is from 5 to 60 and X is selected from the group consisting of chlorides, iodides, bromides, sulfonates and sulfates, and



where R is a saturated or unsaturated fatty alkyl having from 10 to 25 carbon aroms, A is hydrogen, or methyl, R′ and R″ are each a lower alkyl having from 1 to 6 carbon atoms, x is from 5 to 60 and X is selected from the group consisting of chlorides, iodides, bromides, sulfonates, and sulfates.

3,950,542

CYSTEAMINE DERIVATIVES FOR ORAL TREATMENT OF SEBORRHEA

Gregoire Kalopissis, and Georges Manoussos, both of Paris, France, assignors to L'Oreal, Paris, France

Division of Ser. No. 140,956, May 6, 1971, Pat. No. 3,821,405, which is a continuation-in-part of Ser. Nos. 706,652, Feb. 19, 1968, Pat. No. 3,629,452, and Ser. No. 801,154, Feb. 20, 1969, abandoned. This application May 9, 1974, Ser. No. 468,595

Claims priority, application Luxemburg, Feb. 21, 1967, 53029; Feb. 20, 1968, 55522; Apr. 23, 1971, 63056; Apr. 23, 1971, 63057

Int. Cl.² H61K *31/205*

U.S. Cl. 424—316 2 Claims

1. A method for treating a scalp, characterized by an excessive secretion of sebum, to improve the condition thereof by reducing said excessive secretion of sebum comprising orally administering to a human being having a scalp so characterized a therapeutic composition comprising an ingestible carrier admixed with a non-toxic active compound selected from the group consisting of

2-methylthio ethylamine cinnamate,
2-hexadecylthio ethylamine hydrochloride,
2-allylthio ethylamine malate,
9-octadecene-2-ylthio ethylamine hydrochloride,
2-dodecylthio ethylamine hydrochloride,
2-isopentylthio ethylamine mandelate,
2-octadecylthio ethylamine salicylate,
2-β-hydroxyethylthio ethylamine hydrochloride,
2-(2,3-dihydroxy propylthio) ethylamine p-toluenesulfonate,
2-(2-hydroxy propylthio) ethylamine oxalate,
2-(2,2-dimethoxy ethylthio) ethylamine hydrochloride,
2-(2,2-dimethoxy ethylthio) ethylamine undecylenate,
2-(2,2-diethoxy ethylthio) ethylamine undecylenate,
2-(2,2-diethoxy ethylthio) ethylamine acetate,
2-undecenylthio ethylamine,
2-β-acetamidoethylthio ethylamine tropate,
2,2′-thio diethylamine fumarate,
3-β-aminoethylthio propylamine hydrochloride,
3-allylthio propylamine,
3-(2,2′-dimethoxy ethylthio) propylamine,
3-(2,2′-dimethoxy ethyl thio) propylamine sulfate,
2-t-butylthio ethylamine hydrochloride,
2,2′-thio diethylamine dihydrochloride,
2-methylthio ethylamine,
2-cetylthio ethylamine hydrochloride,
2-methylthio ethylamine phenylacetate and
2-methylthio ethylamine undecylenate,

said active compound being present in an amount ranging from 0.75 to 3 percent by weight of said composition and said composition being administered at a rate of 1–5 mg/kg/day based on the weight of the human being.

3,950,543

PROCESS FOR MAKING FOODS AND FEEDS

Aldo Buffa, Paris, France, and Adolf Holliger, Uzwil, Switzerland, assignors to United Nations Childrens' Fund, New York, N.Y.; Aldo Buffa, Algiers, Algeria and Gebrueder Buehler AG, Uzwil, Switzerland

Continuation of Ser. No. 444,558, Feb. 21, 1974, abandoned, which is a continuation of Ser. No. 149,712, June 3, 1971, abandoned. This application Sept. 3, 1974, Ser. No. 502,849

Int. Cl.² A21D *2/00*

U.S. Cl. 426—18 11 Claims

1. A process for making weaning flour which comprises mixing a raw material selected from the group consisting of flour, meal, grits, cereal, pulses, starch roots, tubers, oil seeds, cakes of oil seeds, milk products, and mixtures thereof, with at least one high temperature resistant starch-hydrolyzing enzyme and from 30–50% water based on a total weight of the mixture, extruding the mixture while heating at a temperature of from 65° to 115°C, and then fermenting the extruded product for 40 to 90 minutes at a temperature from 55°to 90°C in a nearly saturated humidity atmosphere to produce in the mixture a dextrin content of at least 25% and a reducing sugar content of at least 15% of the initial starch content, and then drying the product.

3,950,544

PREPARATION OF YOGURT FROM SOYBEAN MEAL

Eliahu Fridman, Haifa, Israel, assignor to Centre for Industrial Research Ltd., Haifa, Israel

Filed Jan. 18, 1974, Ser. No. 434,625

Claims priority, application Israel, Feb. 19, 1973, 41570

Int. Cl.² A23L *1/20*; A23C *9/12*, *11/00*

U.S. Cl. 426—46 8 Claims

1. A method for the manufacture of non-dairy yogurt based on soybean meal which comprises the steps of (1) leaching the soybean meal with an aqueous solution having a pH in the range of 4–5; (2) removing a filtrate to provide a residual cake; (3) leaching the residual cake with an aqueous solution having a pH from above 7.0 to 10.0; (4) removing solids from the resulting solution to obtain a clear solution; (5) adjusting the pH of the clear solution to a value in the range of 6.5–7.0; (6) adding sugar to the clear solution and homogenizing thereof to produce a soymilk; (7) sterilizing the homogenized soymilk at a temperature of about 116°C; (8) inoculating the sterile soymilk with a lactic culture and (9) incubating the soymilk to obtain the non-dairy yogurt.

3,950,545

BAKED PRODUCT CONTAINING PROTEIN AND VITAMINS AND PROCESS FOR PREPARING SAME

James R. Hayward, McHenry; William L. Keyser, East Dundee; Paul W. Swanson, Crystal Lake, and Walter J. Zielinski, Ingleside, all of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Jan. 23, 1975, Ser. No. 543,330

Int. Cl.² A23L *1/30*

U.S. Cl. 426—72 20 Claims

1. A highly nutritional baked product, containing proteins and vitamins, stable against loss of protein efficiency ratio and vitamin potency, and further stable against staling and microbial growth, said baked product comprising: a baked base having less than about 10 percent by weight wheat flour therein and comprising cereal flour, non yeast chemical leavening, sufficient protein from a protein source to give a minimum protein content in the total product of 9 percent by weight, said protein source comprising a member selected from the group consisting of egg albumin, casein, caseinate salts, and vegetable protein, with said vegetable protein not contributing more than 10 percent by weight wheat flour when combined with all other wheat flour in the product and said protein source having both egg protein and casein or caseinate salts as a part thereof, water in an amount sufficient to give a final moisture content of the baked product of from 15 percent to 45 percent by weight, vitamins, minerals and at least about 15 percent by weight of a stabilizing member selected from the group consisting of sugar and sugar equivalents with the stabilizing member including polyhydric alcohol in an amount sufficient to provide at least 3 percent by weight of the total base; and a frosting containing vegetable oil coated vitamins or fat coated vitamins, said base comprising a major portion by weight of the product, and said product having a water activity coefficient, A_w, of less than 0.87, said product being the product of the process in which said base is first baked and then coated with said frosting.

3,950,546

PULVERULENT VITAMIN AND MINERAL-FORTIFIED CLAY PRODUCT FOR FARROWING HOUSE FLOOR

Robert L. Hill, Nashville, and Max M. Edwards, McKenzie, both of Tenn., assignors to Music City Supplement Company, Nashville, Tenn.

Filed Mar. 24, 1975, Ser. No. 561,264
Int. Cl.² A23K *1/175, 1/18*
U.S. Cl. 426—72 6 Claims

1. A pulverulent material for application to the floor of a farrowing house to prevent knee abrasions and to provide nourishment to baby pigs, comprising a mixture of:
   a. 0.05 – 1.0% by weight vitamins comprising riboflavin, pantothenic acid, niacin and choline chloride,
   b. 3.5 – 8.0% by weight minerals comprising iron and zinc,
   c. the balance a finely divided clay comprising a mixture of 15–50% by weight of aluminum silicate and 81–41% by weight of sodium bentonite.

3,950,547

DIETARY COMPOSITION AND METHODS OF PREPARING

Percie L. Lamar, III, Palo Alto; Robert M. Marks, San Jose, and Andrew Piggott, Woodside, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Aug. 26, 1974, Ser. No. 500,239
Int. Cl.² A23K *1/175*
U.S. Cl. 426—74 54 Claims

1. A dry dietary food composition, for consumption mixed with water as an aqueous emulsion having improved stability, comprising, by dry wt., about from 3 to 40% of a nutritionally balanced peptide mixture, or amino acid supplemented peptide mixture, said peptide mixtures having a total amino acid profile sufficient to support normal human physiological functions; about from 2 to 35% lipid, said lipid containing sufficient linoleic acid or esters thereof, to provide said composition with a linoleic acid source content of at least 0.4%; about from 7.5 to 90% carbohydrate; about from 1 to 16% of a gelatinized high amylose starch, containing at least 50%, by wt., amylose; and about from 0.05 to 10% of a water-lipid emulsifying agent, and wherein said composition has a weight ratio of said high amylose starch to said lipid of at least 0.25, and wherein the total high amylose starch content of said composition is 16% or less and the total starch content is 20% or less and the total free amino acid content of said composition is less than 5%.

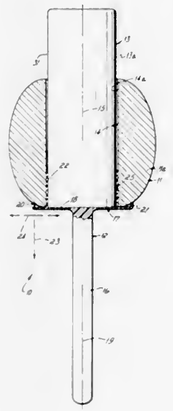
3,950,548

ICE CREAM AND FRUIT CONFECTIONERY PRODUCT

Phillip E. Baker, Route No. 2, Box 133, Georgetown, Ohio 45121

Filed July 3, 1975, Ser. No. 592,802
Int. Cl.² A23G *9/00;* A23L *1/212*
U.S. Cl. 426—91 10 Claims

1. A confectionery product comprising
a stick having a handle and a seat,
a fruit having a bore therein, said fruit being carried on said seat, and



at least one of an ice cream, a sherbet and/or an ice at least partially filling said fruit's bore.

3,950,549

SWEETENING AGENTS

Kenneth Newton, Runcorn, and Anthony John Hanson Sale, Sharnbrook, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Sept. 25, 1974, Ser. No. 509,196
Claims priority, application United Kingdom, Oct. 3, 1973, 46204/73
Int. Cl.² A23L *1/236*
U.S. Cl. 426—96 4 Claims

1. A sweetening agent is particulate form which volume for volume has a sweetening power about equal to that of table granulated sugar and has a calorific value considerably less than that of table granulated sugar, whose particles consist essentially of solid sugar particles embedded in a glassy matrix of water-soluble relatively bland polysaccharide and a non-nutritive sweetener; said sugar forming one-third to two-thirds by weight, and said non-nutritive sweetener forming 0.25 to 10% by weight, of the particles; the uncompacted bulk density of said particulate-form sweetening agent being in the range of from 0.25 to 0.5 gm/cm³.

3,950,550

FRIED TOFU PRODUCT AND METHOD FOR MAKING THE SAME

Tsutomu Katayama, Osaka, and Yoshiro Ishiwatari, Ashiya, both of Japan, assignors to Fuji Oil Co., Ltd., Osaka, Japan

Filed Dec. 4, 1974, Ser. No. 529,442
Claims priority, application Japan, Dec. 6, 1973, 48-139159
Int. Cl.² A23J *3/00;* A23L *1/34*
U.S. Cl. 426—94 24 Claims

1. A method for making a fried tofu product comprising
kneading a mixture containing a heat coagulable soy protein and sufficient water to form a plastic-like, moldable soy protein dough,
shaping said soy protein dough into the desired shape; and
deep frying said shaped soy protein dough.

3,950,551

COMPOSITE SUGAR SYRUP ARTICLE AND PROCESS

Elmer F. Glabe, Northbrook; Perry W. Anderson, Niles; Stergios Laftsidis, and Phillip G. Grothus, both of Chicago, all of Ill., assignors to Food Technology, Inc., Chicago, Ill.

Filed Oct. 31, 1974, Ser. No. 519,607
Int. Cl.² A23L *1/08, 1/09*
U.S. Cl. 426—103 18 Claims

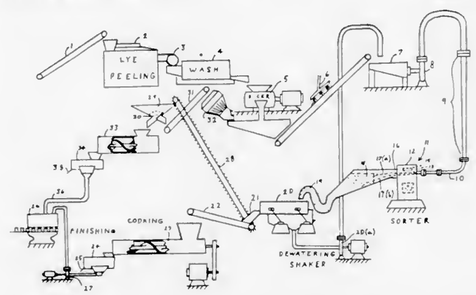
1. A process for forming composite food articles of dehydrated sugary syrups obtained initially in the form of dried or ground flakes obtained by thin film drying of said syrups in the presence of a substance selected from the group consisting of (1) ungelatinized starch which is partially gelatinized in situ during the dehydration, (2) soy protein and (3) mixtures of said starch and said soy protein, said sugary syrups being selected from the group consisting of corn syrup, malt syrup, sorghum syrup, molasses, honey, high fructose corn syrup, sugary syrups containing invert sugar, and mixtures thereof, the said syrups being intimately mixed with one or more of said substances to form a slurry and subsequently said slurry being subjected in a thin film to a heated surface for a period of time sufficient to dehydrate said slurry to form a thin dehydrated film and the dried flakes or ground flakes being formed from said dehydrated film, which comprises mixing said dried or ground flakes with water in an amount sufficient to form an extrudable mixture, extruding said mixture through a tubular or annular orifice of a die, cutting the extruded mixture as it emerges from said die into pieces of predetermined thickness, said thereafter drying the resultant pieces in a static condition until the moisture content is reduced to approximately 1–4% by weight.

3,950,552

METHOD FOR PRODUCING A POME FRUIT SAUCE WITH ELECTRONIC INSPECTION OF DICED FRUIT

Jeremiah Richard Cogley, Arendtsville, Pa., assignor to Knouse Foods Cooperative, Inc., Peach Glen, Pa.

Continuation-in-part of Ser. No. 160,723, July 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 791,525, Jan. 15, 1969, abandoned. This application Aug. 2, 1974, Ser. No. 494,067
Int. Cl.² A01K *43/00*
U.S. Cl. 426—231 13 Claims



1. A process for producing a pome fruit sauce, said process consisting essentially of the steps of
   A. introducing untrimmed fruit into a process stream wherein it is subjected to the steps of
      1. dicing the untrimmed fruit to produce fruit tissue in the form of dices of relatively uniform size and of a configuration having substantial cubic dimensions throughout and including dices with blemishes including blossom ends,
      2. washing the diced fruit to remove loose material resulting from the dicing operation, thereafter
      3. singulating and separating the dices,
      4. presenting the dices in a spaced single file product stream to an electronic inspection means,
      5. electronically inspecting and automatically assorting the dices to remove from said product stream said blemished dices including dices having blossom ends,
      6. passing the surviving unblemished dices along said process stream,
   B. providing an auxiliary processing path distinct from said process stream and
      7. passing said blemished dices through said auxiliary processing path and therein subjecting them to the following two steps, namely further subdividing the tissue thereof with random disregard of the location, extent and nature of blemishes thereon and returning at least the unblemished portion of the thus subdivided tissue to said process stream
   C. and
      8. cooking and finishing the unblemished dices and unblemished further subdivided tissue in said process stream

whereby the heretofore essential step of subjecting the fruit tissue to selective surface area trimming is obviated throughout said process.

3,950,553

PROCESS FOR PREPARING A SOLUBLE TEA PRODUCT

Rupert J. Gasser, Old Greenwich, Conn.; James G. Franklin, and John D. Fraley, both of Marysville, Ohio, assignors to Societe d'Assistance Technique pour produits Nestle S.A., Lausanne, Switzerland

Filed June 10, 1974, Ser. No. 477,601
Int. Cl.² A23F *3/00*
U.S. Cl. 426—262 16 Claims

1. A process for producing a tea product comprising:
   a. chilling a hot water extract of tea leaves to a temperature sufficient to precipitate unoxidized tannins therefrom, and separating the precipitated unoxidized tannins from the supernatant;
   b. dispersing said tannins in an aqueous medium at a pH of from about 7.0 to about 9.0;
   c. subjecting said medium containing said dispersed tannins to oxidation at a temperature of at least 50°C for a period of time sufficient to render the tannins soluble in cold water and to reduce the pH of said medium to between about 5.0 and 8.0;
   d. contacting said medium containing oxidized tannins with an agent comprising unoxidized tannins, said oxidized and unoxidized tannins being contacted in approximately equivalent amounts for a period of time sufficient to decolorize said oxidized tannins; and
   e. chilling the resultant aqueous tannin composition to a temperature sufficient to precipitate unoxidized tannins and separating a solution of decolorized, cold-water soluble tannins from the resultant precipitate.

3,950,554

TREATMENT OF MASTITIS IN BOVINE UDDERS

Emanuel C. Prince, Jacksonville, Fla., assignor to Southeastern Laboratories, Inc., Jacksonville, Fla.

Continuation of Ser. No. 234,341, March 13, 1972, abandoned. This application Jan. 31, 1974, Ser. No. 438,365
Int. Cl.² A61K *31/23, 31/415*
U.S. Cl. 424—273 10 Claims

1. A composition for the treatment of mastitis in udders which consists of an effective amount of an edible semi-drying oil and a fatty acid ester of an alcohol selected from the group consisting of low molecular weight monohydric alcohols, glycerol, propylene glycol, ethylene glycol and polyethylene glycol.

3,950,555
METHOD OF TENDERIZING AND IMPROVING THE FLAVOR OF FOOD

Bengt Stromberg, Hastholmsvagen 23, Stockholm So, Sweden

Continuation of Ser. No. 812,401, April 1, 1969, abandoned. This application June 15, 1971, Ser. No. 153,398
Claims priority, application Sweden, Apr. 1, 1968, 4292/68
Int. Cl.² A23L *1/31*
U.S. Cl. 426—281 **2 Claims**

1. A method of tenderizing and improving the flavor of slaughtered animal food comprising:
   a. blending by stirring a mixture of 0.4–6 parts by weight sodim glutamate, 1–10 parts by weight blood serum powder from cattle, 2–11 parts by weight sodium chloride, 1–6 parts by weight onion, 0.5–6 parts by weight flavoring and balance water in the relation of 1 part by weight of said solid ingredients and 2 parts by weight water to form a concentrate, and
   b. mixing said concentrate with the relationship of 18 parts by weight of concentrate to 100 parts by weight of water, and
   c. applying the mixture to the food to be treated.

3,950,556
PROCESS FOR PEELING FRUITS AND VEGETABLES

Charles C. Huxsoll, Moraga; Merle L. Weaver, Martinez, and Robert P. Graham, El Cerrito, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 24, 1974, Ser. No. 436,234
The portion of the term of this patent subsequent to Sept. 18, 1990, has been disclaimed.
Int. Cl.² A23L *1/10*
U.S. Cl. 426—287 **6 Claims**

1. A process of peeling fruits and vegetables, which consist of -
   a. applying a lye solution containing about 1 to 10% NaOH and at a temperature of 160°–217° F. to the unpeeled fruit or vegetable for a period of about 5 to 60 seconds,
   b. holding the so-treated fruit or vegetable at ambient temperature for about 5–30 minutes,
   c. applying a lye solution containing about 2 to 10% NaOH and at a temperature of 160°–217° F. to the so-treated fruit or vegetable for a period of 30 seconds to 4 minutes,
   d. holding the so-treated fruit or vegetable at ambient temperature for about 15 seconds to 5 minutes, and
   e. without exposing the so-treated fruit or vegetable to radiant or other heat, directly removing the loosened peel from the fruit or vegetable by dry brushing.

3,950,557
SEPARATION AND COLLECTION OF EGG COMPONENTS

Chong Sue Kheng, 27 Jalan Limau Kasturi, Bungsar Park, Kuala Lumpur, Selangor, Malaysia

Filed Sept. 9, 1974, Ser. No. 504,077
Claims priority, application United Kingdom, Sept. 19, 1973, 44050/73
Int. Cl.² A23B *5/04*; **A23L** *3/36*
U.S. Cl. 426—299 **7 Claims**

1. A method of separating various components of an egg comprising lowering the temperature of said egg to a temperature at which a desired portion of said components are substantially solidified, whereas the remaining portion of said components remain liquid, cutting the shell of said egg, and separating the said solidified portions from the said liquid portion.

2. The method of claim 1 wherein the temperature of said egg is lowered to a temperature at which all the said components are solidified, said egg shell is cut, said egg is thawed and said components are separated during thawing of said egg.

3,950,558
BEVERAGE BASE AND METHOD OF MAKING THE SAME

Michael Tansky, 15 Fourth Place, Long Beach, Calif. 90802

Filed Sept. 16, 1974, Ser. No. 506,121
Int. Cl.² A23L *2/02*
U.S. Cl. 426—309 **7 Claims**

1. The method of preparing a base useful for producing a beverage when mixed with water consisting of coating a cereal grain chosen from the group consisting of rye and barley with juice of a vegetable chosen from the group consisting of carrots and parsnips, and roasting the coated grain.

3,950,559
METHOD FOR DELAYING RIPENING OF HARVESTED BANANAS

Jatinder Kumar Kapoor, Liphook, England, and John Norman Turner, Govilon, Wales, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 15, 1974, Ser. No. 497,749
Claims priority, application United Kingdom, Aug. 24, 1973, 40190/73
Int. Cl.² A23L *3/34*; **A23B** *7/14*
U.S. Cl. 426—335 **8 Claims**

1. A method of improving the storage characteristics of bananas which comprises contacting harvested bananas with gibberellin A_4 or gibberellin A_7 in an amount sufficient substantially to delay the ripening thereof.

3,950,560
METHOD OF PRODUCING COMPACTED, DEHYDRATED, VEGETABLE PRODUCTS OF INCREASED DENSITY

Abdul R. Rahman, and Glenn R. Schafer, both of Natick, Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

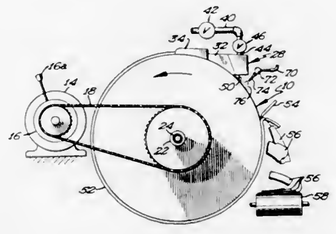
Filed June 14, 1974, Ser. No. 479,403
Int. Cl.² A23B *4/04*
U.S. Cl. 426—385 **11 Claims**

1. A process for making a compacted, dehydrated, vegetable mass characterized by having a density of about 0.7 to 1.2 grams per cc and being capable of rehydration to produce distinct particles of rehydrated vegetable which have substantially the same size and shape characteristics as the particles of vegetables from which said compacted, dehydrated, vegetable mass is prepared and which are acceptable in accordance with hedonic scale testing, which comprises the steps of:
   a. predrying, without freezing, particles of a vegetable to a moisture content of about 7 to 18 percent by weight, said particles being substantially of a size and shape in which said vegetable occurs naturally or in a subdivided particle form of said vegetable in which the cellular structure of said vegetable is present substantially in the form occurring in the plant from which said vegetable is obtained,
   b. compressing said predried particles of vegetable at a temperature of about 110°F. to 120°F. and a pressure of about 200 psi to 4000 psi for a sufficient period of time to cause said particles of vegetable to adhere together in a compacted, vegetable mass while maintaining the moisture content of said particles of vegetable and said compacted, vegetable mass at from about 7 to about 18 percent by weight, and
   c. redrying said compacted vegetable mass to a moisture content of about 1 to 5 percent by weight.

3,950,561
SHORTENING CHIP MANUFACTURE

Donald M. Collins, Louisville, Ky., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed Jan. 28, 1975, Ser. No. 544,734
Int. Cl.² A23D *5/00*
U.S. Cl. 426—417 **8 Claims**

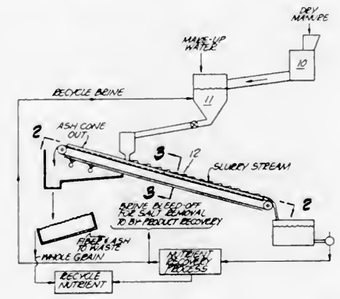


1. A process for preparing edible shortening chips for food use comprising depositing the shortening in a molten state upon an endless chilling surface which is held at a temperature below the cloud point of the shortening for the purpose of congealing the shortening as a film on the chilling surface, continuously advancing the endless chilling surface to thereby continuously form a film of the shortening on the surface thereof, continuously removing the thus formed film of shortening from the chilling surface and between the point at which the shortening is removed and the point at which the shortening is applied, applying water to the chilling surface to thereby cause the accumulation of a water film of the endless chilling surface where the chilling surface disappears under the deposited shortening and maintaining the applied water film in the location at which the shortening layer is applied to thereby provide a water layer interposed between the freshly applied shortening and the chilling surface.

3,950,562
PROCESS AND APPARATUS FOR REMOVING ASH AND INORGANIC COMPOUNDS FROM CATTLE MANURE

Franklin C. Senior, Phoenix, Ariz., assignor to Feed Recycling Co., Ripley, Calif.

Filed Nov. 30, 1973, Ser. No. 420,398
Int. Cl.² A23K *1/20, 1/28*; **B01D** *37/00*; **C05F** *3/00*
U.S. Cl. 426—431 **5 Claims**



1. A process for recovering nutrients from cattle manure which are substantially free of contaminants, comprising the steps of:
   mixing the manure with an aqueous solution to form a slurry;
   separating particulate matter including ash contaminants from the manure slurry;
   separating nutrients from the ash contaminants among the particulate matter;
   flocculating proteins from said manure-water mixture after the particulate matter is separated;
   removing soluble salts from at least a portion of the liquid remaining after flocculation; and
   recycling of the liquid remaining after flocculation including the salt-free portion in the process.

3,950,563
METHOD FOR MAKING A BUN

Donald S. Wheaton, Columbus, Ohio

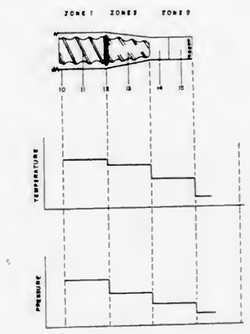
Division of Ser. No. 279,684, Aug. 10, 1972, Pat. No. 3,831,507. This application Mar. 11, 1974, Ser. No. 449,911
Int. Cl.² A21D *8/06*
U.S. Cl. 426—505 **2 Claims**

1. A method of baking a sandwich bun having a separate upper and lower portion between which a food product is to be disposed comprising the steps of placing a given quantity of dough in the recesses of a first baking pan and the recesses of a second baking pan; placing a third baking pan provided with a plurality of downwardly extending protrusions over said first baking pan with a respective one of said protrusions extending into a respective one of said recesses containing the dough in said first pan to form and maintain a recess in said dough corresponding to the shape of said protrusions; placing said second baking pan on top of said third baking pan with the dough-filled recess of said second pan substantially aligned with said recesses in said first pan; and wherein a substantially sealed relationship is provided upon assembly between said first and third pans and between said second and third pans and baking the dough in the arranged assembly of baking pans.

3,950,564
PROCESS OF MAKING A SOY-BASED MEAT SUBSTITUTE

Gabor Puski, Hanover Park, and Arthur H. Konwinski, Melrose Park, both of Ill., assignors to Central Soya Company, Inc., Fort Wayne, Ind.

Filed Aug. 2, 1974, Ser. No. 494,099
Int. Cl.² A23J *3/00*
U.S. Cl. 426—516 **3 Claims**



1. A process of making a soy-based meat substitute comprising the steps of introducing into an extruder an aqueous protein mix comprising a protein material obtained from a solvent extracted oilseed proteinaceous material having at least 40% protein on a dry basis, said protein mix having the water adjusted prior to extrusion to achieve a mix having 30% to 60% water content during extrusion, passing said protein mix through a plurality of pressure and temperature zones of decreasing value with the final zone prior to passing through a shaping die having a pressure less than 100 psi and a temperature less than 212°F with said final zone being characterized

by a cross-sectional area to length ratio of less than about 10 square inches per inch to provide a product having relatively flat elongated generally longitudinally aligned densely compacted protein fibers having the appearance of stacked platelets with greater than 0% but less than about 25% of the product volume being voids and with said voids having the general contour of said platelets.

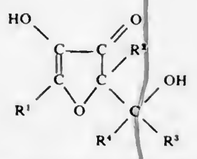
3,950,565

FLAVORING FOODS

Godefridus Antonius Maria van den Ouweland, Zevenaar, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed July 11, 1973, Ser. No. 378,085
Claims priority, application United Kingdom, July 12, 1972, 32653/72
Int. Cl.² A23L *1/226*
U.S. Cl. 426—536 **5 Claims**

1. A foodstuff that is heated to a temperature of over 100°C when prepared for consumption comprising 0.1–500 parts per million of a compound of the formula:



in which R^1 and R^2 represent a C_1–C_4 alkyl group, R^3 represents hydrogen or a methyl group and R^4 represents hydrogen, an alkyl group containing 1–14 carbon atoms or an alkenyl group containing 2–10 carbon atoms provided that R^4 does not contain more than 4 carbon atoms when R^3 is a methyl group.

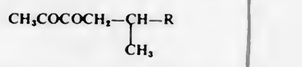
3,950,566

FLAVORING AGENT

Max Winter; Fritz Gautschi; Ivon Flament; Max Stoll, all of Geneva, Switzerland, and Irving M. Goldman, Niantic, Conn., assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 243,866, April 13, 1972, abandoned, which is a division of Ser. No. 70,560, Sept. 8, 1970, Pat. No. 3,702,253, which is a continuation of Ser. No. 543,069, April 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, April 30, 1965, abandoned. This application June 24, 1974, Ser. No. 482,688
Int. Cl.² A23L *1/234*
U.S. Cl. 426—534 **16 Claims**

1. A composition selected from the group consisting of foodstuffs and beverages to which has been added an effective flavor-improving amount of an alpha-diketone selected from the group having the general formula:



wherein R is an ethyl or propyl group.

3,950,567

METHOD OF MAKING A POPCORN CONFECTION

Barnard E. Tomlinson, 632 S. 12th St., Walla Walla, Wash. 99362

Filed Aug. 8, 1972, Ser. No. 278,732
Int. Cl.² A23G *3/00*; **A23L** *1/18*
U.S. Cl. 426—625 **2 Claims**

1. A process for making popcorn balls, comprising:
the steps of providing a cooked confection composition which when applied to popcorn does not adhere to the hands, said composition consisting essentially of fat, sweetener, water and gelatin, said sweetener exceeding the water in weight and wherein said gelatin is in an amount sufficient to keep the confection composition in a soft pliable state prior to use:
sealing a portion of the confection composition into a thin, synthetic plastic container adapted to withstand the temperature of boiling water,
placing the sealed container in boiling water to heat the confection composition to thin syrup consistency,
opening the container,
pouring the composition over popped popcorn, and
forming the confection-coated popped popcorn into popcorn balls.

3,950,568

CHUNK STYLE PEANUT BUTTER

Wilbur A. Parker, Somerville, and Daniel Melnick, West Englewood, both of N.J., assignors to CPC International Inc., Englewood Cliffs, N.J.

Continuation of Ser. No. 308,906, Nov. 22, 1972, abandoned. This application July 18, 1974, Ser. No. 489,635
Int. Cl.² A23L *1/38*
U.S. Cl. 426—633 **3 Claims**

1. A chunk style peanut butter exhibiting good spreadability and resistance to oil separation, said chunk style peanut butter being obtained by
a. providing a creamy phase consisting of peanut butter in an amount of about 75 to 82% by weight of said chunk style peanut butter;
b. adding liquid vegetable oil to said creamy phase in an amount to bring the oil content of the creamy phase to no less than 53% to about 56% by weight oil based upon the weight of said creamy phase;
c. further adding an amount of hard fat to said creamy phase such that the total oil content comprising said liquid oil and said hard fat in said creamy phase has a Solids Content Index of 3.0 to 5.5 at 50°F., 1.5 to 3.0 at 80°F., and 0.5 to 1.5 at 102°F.;
d. next, adding to said creamy phase seasonings comprising salt and sugars in an amount of at least 4.2 to about 7.0% by weight based upon the weight of said creamy phase;
e. admixing into said creamy phase roasted peanut granules in an amount of no less than 18% to about 25% by weight of said chunk style peanut butter, the largest particle cross-section of said granules being about 0.15 cm. to 1.0 cm. and,
f. continuing the admixing of said granules into said creamy phase until a homogeneous mixture thereof is obtained, said homogeneous mixture having a total oil content comprising said liquid oil and said hard fat in an amount of no more than 55% by weight of said chunk style peanut butter and wherein said seasonings are present in an amount of at least 3.1 to about 5.7% by weight of said chunk style peanut butter.

3,950,569

METHOD FOR PREPARING COATINGS WITH SOLID CURABLE COMPOSITIONS CONTAINING STYRENE-ALLYL ALCOHOL COPOLYMER BASED POLYTHIOLS

Charles R. Morgan, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 250,553, May 5, 1972, Pat. No. 3,843,572. This application Dec. 18, 1973, Ser. No. 425,749
Int. Cl.² B05D *3/06, 1/32*; **G03C** *1/68*
U.S. Cl. 427—36 **14 Claims**

1. A process which comprises:
A. applying to the surface of a substrate a solid layer of a curable composition consisting essentially of
1. a liquid polyene containing at least 2 reactive unsaturated carbon to carbon bonds per molecule and having a viscosity in the range of about 0 to 20 million centipoises at 70°C; and

2. a solid polythiol which is a reaction product of a styrene-allyl alcohol copolymer and at least one mercaptocarboxylic acid, said polythiol containing at least 2 thiol groups per molecule, the total combined functionality of (a) the reactive unsaturated carbon to carbon bonds per molecule and (b) the thiol groups in the polythiol being greater then 4;
B. exposing selected areas of said composition to a free radical generator, thereby curing the exposed areas of said composition; and
C. removing the unexposed uncured areas of the curable composition, thereby baring the surface of said substrate beneath the removed uncured areas of the composition.

3,950,570

METHOD OF DEPOSITING A METAL ON A SURFACE

John Thomas Kenney, Lawrence Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed May 2, 1974, Ser. No. 466,314
Int. Cl.² B44D *1/18*; **G03C** *5/00*
U.S. Cl. 427—98 **24 Claims**

1. A method of rendering a surface of a substrate capable of having a metal deposited thereon which comprises, selectively exposing to a source of ultraviolet radiation a sensitized surface, treated with a solution comprising a sensitizer selected from (a) a colloidal solution comprising a hydrous oxide of at least one element of a combination comprising Pd and an element selected from In and Ce, (b) a colloidal solution comprising a hydrous oxide of Ni, (c) a colloidal solution comprising a hydrous oxide of Mn, (d) a colloidal solution comprising a hydrous oxide of U, (e) a colloidal solution comprising a hydrous oxide of Mo, (f) a non-colloidal solution comprising a dissolved tungstate salt and (g) a non-colloidal solution comprising a dissolved molybdate salt, to delineate a pattern capable of accomodating a reduction of a catalytic activating metal thereon.

22. A method of depositing a metal on a surface of a substrate which comprises selectively exposing to a source of ultraviolet radiation a sensitized surface, treated with a solution comprising a sensitizer selected from (a) a colloidal solution comprising a hydrous oxide of Ni, (b) a colloidal solution comprising a hydrous oxide of Mn, (c) a colloidal solution comprising a hydrous oxide of U, (d) a colloidal solution comprising a hydrous oxide of Mo, (e) a non-colloidal solution comprising a dissolved inorganic tungstate salt, (f) a non-colloidal solution comprising a dissolved inorganic molybdate salt, and (g) a colloidal solution comprising a hydrous oxide of at least one element of a combination comprising Pd and an element selected from In and Ce, to delineate a pattern capable of accomodating a reduction of a metal; and
treating said delineated pattern with a solution, capable of having a metal reduced therefrom, selected from the group consisting of (a^1) a solution comprising an activating metal ion when said sensitizing solution is one selected from (a) to (f), or (b^1) an electroless metal deposition solution when said sensitizing solution comprises (g), to reduce and deposit a metal on said pattern.

24. A method of rendering an article selectively capable of reducing thereon a precious metal from a precious metal salt, which comprises:
coating the article with a photosensitive sensitizing solution selected from the group consisting of (a) a colloidal solution comprising a hydrous oxide of at least one element of a combination comprising Pd and an element selected from In and Ce, (b) a colloidal solution comprising a hydrous oxide of Ni, (c) a colloidal solution comprising a hydrous oxide of Mn, and (d) a colloidal solution comprising a hydrous oxide of U;
drying said coated article to form a sensitizer region thereon; and
selectively exposing portions of said sensitizer region to a source of ultraviolet radiation to delineate a pattern capable of having an activating metal reduced thereon.

3,950,571

METHOD FOR REHABILITATING SCORED AND MARRED SURFACES

La Vaughn R. McBride, 1017 Pacific Ave., Half Moon Bay, Calif. 94019; Jack D. Clark, 1708 Whipple Ave., Redwood City, Calif. 94062, and Dale Center, Box 123, Montara, Calif. 94037

Division of Ser. No. 279,889, Aug. 11, 1972. This application Apr. 1, 1974, Ser. No. 457,095
Int. Cl.² B23P *7/02*
U.S. Cl. 427—142 **6 Claims**

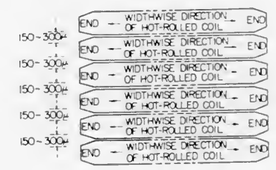
1. A repair process for restoring damaged metal, carbon, or other original surfaces by filling score marks, grooves, and other irregularities in the surface of articles such as pneumatic and hydraulic cylinders without changing the basic dimensions of such articles comprising:
filling all scores, grooves, and surface irregularities of said surface with a mixture of finely powdered molybdenum disulfide and epoxy resin adhesive,
wiping the filled surfaces to remove any excess mixture where it extends significantly above the original surface level, and
curing said resin at a temperature well above ambient for a time sufficient to complete the cure thereof and provide a material hard as mild steel and resistant to hydraulic fluids,
said mixture consisting essentially of from 10% to 90% by volume of said disulfide of particle size no larger than 60 microns and from 90% to 10% by volume of said resin adhesive, said adhesive being a glycidyl polyether of bisphenol-A containing a curing agent and having a Brookfield viscosity of 400,000 cps at 75°F.

3,950,572

METHOD FOR THE MANUFACTURE OF A HOT-ROLLED COIL HAVING EXCELLENT ADAPTABILITY FOR PICKLING

Saburo Ayusawa; Takeo Nagashima, and Masaya Tsutsumi, all of Kimitsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 21, 1974, Ser. No. 516,397
Claims priority, application Japan, Oct. 23, 1973, 48-118515; May 28, 1974, 49-59364
Int. Cl.² C23F *11/00*; **C23G** *1/02*
U.S. Cl. 427—156 **11 Claims**



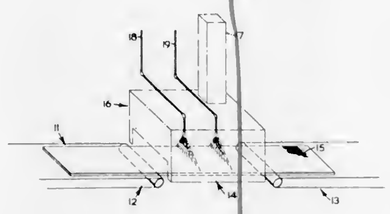
1. A method for the manufacture of a hot-rolled coil having excellent adaptability for pickling which comprises applying to a side of a hot-rolled coil which has just been coiled a coating agent comprising at least one member of the group consisting of lithium hydroxide, an oxygen compound of lithium, an inorganic salt of lithium, an organic salt of lithium, potassium hydroxide, an oxygen compound of potassium, an inorganic salt of potassium, an organic salt of potassium, sodium hydroxide, an oxygen compound of sodium, an inorganic salt of sodium, an organic salt of sodium, calcium hydroxide, an oxygen compound of calcium, an inorganic salt of

calcium, an organic salt of calcium, magnesium hydroxide, an oxygen compound of magnesium, an inorganic salt of magnesium, an organic salt of magnesium, an oxygen compound of boron, an oxygen compound of germanium, an oxygen compound of tin, an oxygen compound of antimony, an oxygen compound of lead, an oxygen compound of bismuth and an oxygen compound of vanadium.

3,950,573
METHOD FOR MAKING SEALING TAPES
William E. Bennett, Dallas, Tex., assignor to Hardcast, Inc., Dallas, Tex.
Division of Ser. No. 363,583, May 24, 1973, abandoned. This application Dec. 11, 1974, Ser. No. 531,540
Int. Cl.² B44D *1/44*
U.S. Cl. 427—208 **3 Claims**

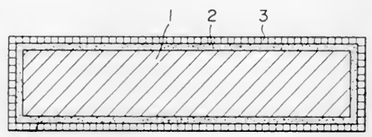
1. In the method of coating a gauze fabric strip with paster wherein a plaster slurry is transferred from a slurry reservoir to a fabric strip by a transfer roll rotating in contact with the underside of said fabric strip and the plaster slurry in the reservoir and said fabric strip is thereafter drawn through drying means, the improvement comprising:
a. drawing the top surface of said fabric strip across a first wiper positioned between said transfer roll and said drying means to force a substantial portion of the slurry on the top side of said fabric strip through said fabric strip, and
b. drawing the bottom surface of said fabric strip across a second wiper means positioned between said first wiper means and said drying means to at least partially force said slurry on the lower side of said fabric strip through said fabric strip.

3,950,574
HUMIDIFICATION OF PANELS OF CELLULOSIC MATERIAL
Paul A. Butler, Roxboro, Canada, assignor to Abitibi Paper Company, Ltd., Toronto, Canada
Filed Aug. 27, 1974, Ser. No. 500,930
Claims priority, application Canada, Feb. 8, 1974, 192057
Int. Cl.² B05C *9/04;* **B05D** *3/00, 1/02*
U.S. Cl. 427—209 **13 Claims**



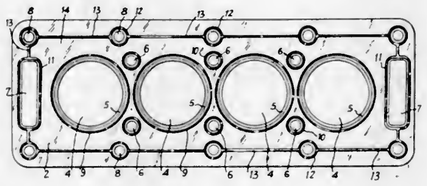
1. A method of humidifying a panel of cellulosic material, at least one side of which has a surface through which the panel can absorb water, including applying to said surface of the panel a liquid humidifying agent which wets the surface of the panel, which is soluble in water, and which reduces the surface tension of the water, and applying water to the panel to cause the water to follow the humidifying agent into the panel to increase its moisture content to a desired value.

3,950,575
HEAT TREATMENT OF METALS IN A CONTROLLED SURFACE ATMOSPHERE
Minoru Kitayama; Susumu Yamaguchi, and Hisao Odashima, all of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Jan. 18, 1974, Ser. No. 434,447
Claims priority, application Japan, Jan. 23, 1973, 48-489206
Int. Cl.² C23C *3/00*
U.S. Cl. 427—226 **5 Claims**



1. In a process for treating a steel surface with a coating to protect the surface during heating in an oxidizing atmosphere, the improvement which comprises coating the surface with a first base coating comprising a compound capable upon heating of producing a gas selected from the group consisting of carbon dioxide, carbon monoxide, nitrogen, hydrogen chloride, chlorine and hydrogen, coating said first coating with a second coating of an atmospheric shielding agent composition comprising CrO_3, a refractory or clay, SiO_2, a reducing agent, and water glass, and then subjecting the coated steel surface to the heat and oxidizing treatment.

3,950,576
METHOD OF LOCALLY IMPREGNATING SEALING MATERIALS WITH A FLUID-TIGHT IMPREGNANT
Jean Desvérchere, Lyon, France, assignor to Societe Anonyme dite: Cefilac, Paris, France
Filed Apr. 15, 1974, Ser. No. 460,896
Claims priority, application France, Apr. 20, 1973, 73.14656
Int. Cl.² B05D *5/00*
U.S. Cl. 427—284 **20 Claims**

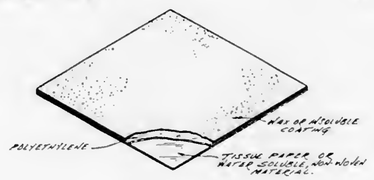


1. Method of locally impregnating a porous sealing material which comprises the steps of
locating a fluid tight member upon the outer surface of said material around a limited area of said outer surface, smaller than the total area of said surface, and
introducing a viscous liquid impregnating material under high pressure into said limited area, until the porous material beneath said limited surface area is impregnated with said liquid,
while simultaneously applying said member against said surface at a pressure greater than that exerted on the impregnating liquid.

3,950,577
COMPRESSION IMPREGNATION OF WOOD VENEERS
Harry J. Fry, Orrville, Ohio, assignor to Koppers Company, Inc., Pittsburgh, Pa.
Filed Nov. 7, 1973, Ser. No. 413,524
Int. Cl.² B05D *3/12, 1/18;* **B27D** *3/00*
U.S. Cl. 427—365 **12 Claims**

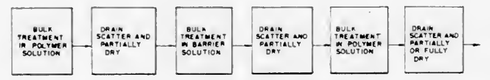
1. In a method for treating veneer with water borne chemical treating agents comprising passing the veneer between a pair of compression rollers such that the direction of feed of the veneer is parallel to the grain of the veneer and the compressive force exerted by the rollers is perpendicular to the grain of the veneer and the compression rollers are located such that the compressed veneer emerging from the rollers is completely submerged in the treating solution and is maintained submerged for at least about 5 seconds; the improvement comprising simultaneously passing multiple layers of veneer having a moisture content above the fiber saturation point between the compression rollers.

3,950,578
WATER-DISINTEGRATABLE SHEET MATERIAL
David H. E. Laumann, Freehold, N.J., assignor to Richard S. Keoseian, New York, N.Y.
Division of Ser. No. 872,656, Oct. 30, 1969, Pat. No. 3,654,064, which is a continuation-in-part of Ser. No. 790,134, Jan. 9, 1969, abandoned. This application June 9, 1971, Ser. No. 151,579
Int. Cl.² B05D *3/02, 3/04*
U.S. Cl. 427—378 **6 Claims**



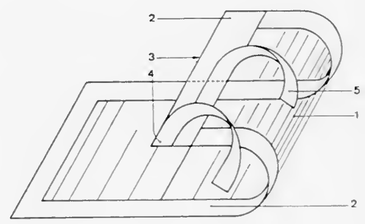
1. A method of producing a wax hold-out coating on water-disintegratable non-woven sheet without having the coating material penetrate the thin sheet or exhibit stretch properties, said hold-out coating being obtained by coating said sheet with an extremely thin layer of polymer on the order of from 2 to 5 pounds per 3000 square foot ream and subsequently flashing the coating with hot air at a temperature of at least 300°F for from 5 to 10 seconds.

3,950,579
METHOD OF COATING SURFACE
Richard B. Wallace, Bloomfield Hills, Mich., assignor to The Oakland Corporation, Troy, Mich.
Filed Mar. 15, 1974, Ser. No. 451,442
Int. Cl.² B05D *1/38*
U.S. Cl. 427—379 **21 Claims**



1. The method of building up a deposit of predetermined thickness of a friction producing resinous organic polymer on the thread surface of a threaded article which comprises preparing a solution of the polymer in a volatile organic solvent of a consistency such that application of an excess of the solution, draining and subsequent drying will provide a deposit of less than said predetermined thickness, applying an excess of the solution to the thread surface, draining the excess solution from the article, partly drying the deposit by evaporation of solvent to produce a substantially non-tacky outer surface on the partly dried deposit of polymer, applying a mixture of a barrier material in water to the surface of the partly dried deposit of polymer, partly drying the mixture to leave a coating of barrier material having a thickness only sufficient to protect the previous deposit of polymer from re-dissolving in the solvent, again applying an excess of the solution to the article, draining the excess solution from the article, and at least partly drying the last deposit by evaporation of solvent to produce a substantially non-tacky outer surface on the last deposit of polymer.

3,950,580
MEANS FOR DISPLAYING THE ADDRESS ON LETTERS AND PARCELS WITH A VIEW TO THEIR DISPATCH
Pierre Louis Emile Boudet, 119, bld Jean Jaures, Chatou (Yvelines), France
Continuation of Ser. No. 327,115, Jan. 26, 1973, abandoned. This application Mar. 24, 1975, Ser. No. 561,240
Claims priority, application France, Feb. 2, 1972, 72.03502
Int. Cl.² B65D *27/06, 27/16;* **G09F** *3/18*
U.S. Cl. 428—41 **7 Claims**

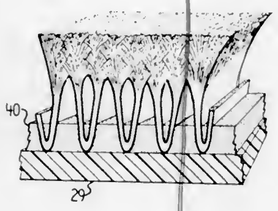


1. A device for affixing an article to a parcel wherein said article is visible while being enclosed in a protected pocket, comprising:
a light-transmitting sheet having a periphery surface to be attached to the face of the parcel to form said pocket;
first adhesive strip means having an adhesive coating on a first portion of said periphery surface for attaching said first portion to the parcel;
second adhesive strip means having an adhesive coating on a second portion of said periphery surface for attaching said second portion to the parcel to form said enclosed pocket, said second adhesive strip means including a plurality of adhesive strips independently detachable from said periphery surface for successive engagement of said parcel; and
removable strip means covering said first and second adhesive coatings, including a plurality of separately removable tape strips covering said second portion of said periphery surface, said strips each being selectively removable to expose one of said plurality of adhesive strips to the parcel, whereby said second portion is adapted for repeated engagement and disengagement with said parcel as one of said adhesive strips which is attached to said parcel is separated from said periphery surface and as a tape strip is removed from the adhesive strip immediately adjacent said separated adhesive strip to provide for repeated access to said article in said pocket.

3,950,581
MANUFACTURE OF PREFABRICATED PANELS
Aristide Maurin, Cretell, France, assignor to Manufacture Francaise des Chaussures "Eram", Saint Pierre-Montlimart, France
Continuation-in-part of Ser. No. 456,221, March 29, 1974. This application July 12, 1974, Ser. No. 487,986
Claims priority, application France, Mar. 30, 1973, 73.11673
Int. Cl.² B32B *3/14, 3/16*
U.S. Cl. 428—49 **6 Claims**

1. A prefabricated tile panel comprising:
1. a support sheet of asbestos-coated polyvinyl chloride;
2. a plurality of spaced apart tile; and
3. means for bonding said tile to one another and to said support sheet, said means being a mixture comprising:
   a. 1 to 10% by weight of a substantially stoichiometric mixture of at least one epoxide resin and at least one product selected from the group consisting of phenolic resins, polyamides, polyamines, polyisocyanates, dicyandiamines, and acrylics; and
   b. 10 to 50% by weight of at least one polymer selected from the group consisting of polyvinylchloride, the poly-vinylchloride-acetate and nitrile rubbers,
   c. the balance, materials comprising plasticizer, fire retardant, pigment or filler.

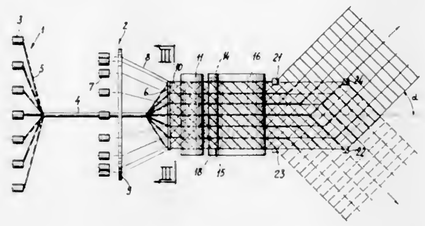
3,950,582
FIBRILLATED TEXTILE STRUCTURE AND PROCESS OF PRODUCING SAME
Herbert W. Keuchel, Tallmadge, Ohio, assignor to PNC Company, Wycoff, N.J.
Continuation-in-part of Ser. No. 169,183, Aug. 5, 1971, abandoned. This application Aug. 23, 1973, Ser. No. 391,029
Int. Cl.² D03D *27/00;* **D04H** *11/00;* **D05C** *17/00*
U.S. Cl. 428—85 **6 Claims**



1. A textile structure comprising
a substantially permanently pleated oriented thermoplastic structure having substantial width;
an adhesive and backing on one face of said pleated sheets;
the other face of said pleated sheet being fibrillated to a predetermined depth within said pleats.

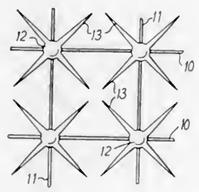
2. A method of producing a textile structure which comprises
pleating an oriented thermoplastic sheet having substantial width;
applying an adhesive and a backing to one face of said pleated sheet; and
pleat fibrillating the other face of said pleated sheet of said substantial width.

3,950,583
METHOD OF AND APPARATUS FOR MANUFACTURING A NET OF NON-WOVEN THREADS
Claude Patin, Pont Audemer, France, assignor to Papeteries de Pont-Audemer, Paris, France
Filed Feb. 25, 1974, Ser. No. 445,601
Claims priority, application France, Feb. 26, 1973, 73.07036
Int. Cl.² B65H *81/08;* **B04H** *3/08*
U.S. Cl. 428—105 **14 Claims**



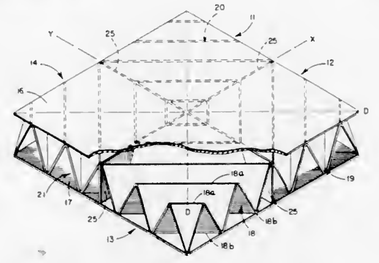
8. The method of forming a net comprising the steps of
forming a first lap of parallel longitudinal threads,
forming a second lap of parallel transverse threads spirally about said first lap,
severing the threads of the second lap at two longitudinal edges of the first lap,
joining a portion of the longitudinal threads of the first lap to a portion of the transverse threads of the second lap, thereby
forming a mesh of predetermined configuration between each adjacent pair of longitudinal threads and each adjacent pair of transverse threads, and
altering the configuration of each mesh thus formed uniformly throughout the net.

3,950,584
COMPOSITE NET
Anthony Bramley, Gosford House, Gosford, Kidlington, Oxfordshire, England
Filed Apr. 15, 1974, Ser. No. 460,708
Claims priority, application United Kingdom, May 16, 1973, 23357/73
Int. Cl.² A63J *7/00*
U.S. Cl. 428—113 **7 Claims**



1. In a netting of the type having mesh openings respectively bounded by spaced substantially parallel longitudinal threads, spaced substantially parallel transverse threads crossing said longitudinal threads at the corners of the mesh openings, and means interlocking and surrounding the crossing threads comprising buttons of thermoplastic material individually moulded about said thread crossings, the improvement comprising:
means for subdividing said mesh openings comprising unitary subdividing elements of thermoplastic material formed integrally with small masses of the same material, said masses being moulded on the threads, said subdividing elements radiating from said threads toward the centers of the mesh openings;
whereby to produce a netting having substantially closed openings of width substantially less than the parallel thread spacing while retaining the strength provided by said threads and without increasing the number of threads and thread crossing buttons.

3,950,585
SANDWICH PANEL STRUCTURE
Jesse R. Hale, 25913 Stanford St., Hemet, Calif. 92343
Continuation of Ser. No. 307,599, Nov. 17, 1972, abandoned. This application Sept. 20, 1974, Ser. No. 507,753
Int. Cl.² B32B *1/00, 3/00*
U.S. Cl. 428—181 **9 Claims**

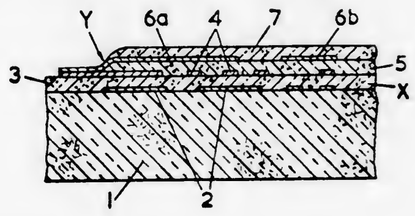


1. A sandwich panel structure comprising:
a pair of flat panel sheets oriented opposite each other in parallel relationship,
a plurality of similar periodic corrugated core sections sandwiched between said panel sheets, each of said core sections having a first set of fold lines forming ridges each of which runs unidirectionally and abuts against one of said sheets and a second set of fold lines forming ridges each of which runs unidirectionally and abuts against the other of said sheets, said fold lines each intersecting adjacent pairs of edges of said sections at predetermined oblique angles, said core sections being joined together along pairs of edges thereof, and
reinforcement means extending along the adjoining edges of said sections to provide structural continuity therebetween.

3,950,586
ELECTRICAL INSULATOR MATERIALS FOR USE IN MICRO-CIRCUIT CONSTRUCTION
Norman Davey, Newbury, England, assignor to National Research Development Corporation, London, England
Continuation of Ser. No. 189,791, Oct. 15, 1971, abandoned, which is a continuation of Ser. No. 775,404, Nov. 13, 1968, abandoned. This application Dec. 12, 1973, Ser. No. 424,048
Claims priority, application United Kingdom, Nov. 17, 1967, 52519/67
Int. Cl.² B05D *5/12;* **B32B** *3/10*
U.S. Cl. 428—195 **21 Claims**

1. A multi-layer microelectronic circuit which comprises a substrate, at least one pattern of metallic conductors on said substrate, a plurality of layers of insulator material with at least one pattern of metallic conductors each sandwiched between successive layers of insulator material, said insulator material consisting essentially of a glaze composition selected from the group of powdered, glassy compositions consisting of (a) oxides of calcium, boron and aluminum, (b) oxides of lead, calcium and aluminum, (c) oxides of titanium, calcium and aluminum, (d) oxides of barium, boron, aluminum and silicon, (e) oxides of lead, zirconium and silicon, (f) lead aluminoborate glasses, (g) lead borosilicate glasses, (h) sodium borosilicate glasses, (i) sodium lead silicate glasses and (j) titania glasses, wherein said glaze has a fusion temperature in the range of about 600° to about 1300° C and contains from about 10 to about 40% by weight of refactory oxide particles of diameter in the range of about 2 to about 30 microns, said refractory oxide selected from the group consisting of alumina, beryllia, titania, zirconia, calcium oxide and magnesium oxide.

12. A method of forming a microelectronic circuit upon a substrate including the steps of: (1) forming a pattern of metallic conductors upon a substrate, (2) screen-printing through a patterned stencil screen onto the substrate and pattern of electrical conductors, a mixture comprising an organic carrier liquid and an insulating material which consists essentially of a glaze composition selected from the group consisting of powdered, glassy compositions formed from oxides of calcium, boron and aluminum; oxides of lead, calcium and aluminum; oxides of titanium, calcium and aluminum; oxides of barium, boron, aluminum and silicon; oxides of lead, zirconium and silicon; lead aluminoborate glasses; lead borosilicate glasses; sodium boronsilicate glasses; sodium



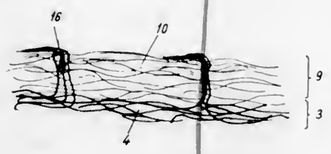
lead silicate glasses and titania glasses, said glaze composition having a fusion temperature in the range of about 600° to about 1300° C and containing from about 10 to about 40% by weight of refractory oxide particles in the range of about 2 to about 30 microns such that the amount of said refractory oxide particles is sufficient to reduce the fluidity of the glass component of said glaze composition, said refractory oxide selected from the group consisting of alumina, beryllia, titania, zirconia, calcium oxide and magnesium oxide, (3) removing the organic carrier liquid by evaporation, (4) heating the assembly to a temperature sufficient to cause fusion of the glass component of the glaze composition while said refractory oxide particles gradually diffuse into the glaze at said fusion temperature, and allowing the fused glaze to cool, (5) forming a pattern of metallic conductors upon the surface of the fused insulating material formed in step (4), (6) applying a layer of insulating material as defined in steps (2) to (4) above, whereby a microelectronic circuit having two layers is produced.

3,950,587
NON-WOVEN TEXTILE FIBER PRODUCTS HAVING A RELIEF-LIKE STRUCTURE
Johannes Jakobus Vincent Colijn, Belfaux, and Gunter Horst Tesch, Fribourg, both of Switzerland, assignors to Breveteam, S.A., Fribourg, Switzerland
Division of Ser. No. 217,363, Jan. 12, 1972, Pat. No. 3,856,602. This application May 29, 1974, Ser. No. 474,152
Int. Cl.² B32B *5/06*
U.S. Cl. 428—234 **8 Claims**

1. A non-woven textile fabric with a three-dimensional upper surface in the form of boucle-type knobs or ridges, comprising in combination:
a. at least two distinct upper and lower layers composed of at least two kinds of fibers of unequal retractability relative to a determined retraction treatment; the two layers being superposed and needled together by at least two needling operations, the fibers of higher retractability being substantially in the lower layer;
b. fibers of higher retractability in the lower layer of the batt having portions of their lengths needled upwardly entirely

through the batt thickness, the ends of said portions being folded back into the upper surface of the batt to form tight hooks around bunches of fibers of lower retractability in the upper layer of the batt, these hook-shaped fiber portions being concentrated within the narrow line regions of a regular needling line pattern so as to define hook-free surface areas therebetween;

c. the fibers of higher retractability in the lower layer including said portions of their lengths formed into hooks being in retracted condition induced by a retraction treatment of the fabric subsequent to the forming of said



hooks and acting selectively on said fibers of higher retractability, the hook-shaped portions of the retracted fibers exerting a vertical compression on said bunches of unretracted fibers in the upper layer within said line regions in the manner of seams, the retracted fibers of the lower layer of the batt maintaining the compressed line regions at such a reduced mutual horizontal distance relative to an original needling horizontal distance that the unretracted fibers located in the hook-free areas above the lower layer are horizontally compressed and raised to form boucle-type knobs or ridges at the upper surface.

3,950,588

COATING OF SILANOL-REACTIVE SURFACES WITH DI-SILYL POLY(PERFLUOROOXYALKYLENES)

Janice E. McDougal, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 1, 1974, Ser. No. 520,209
Int. Cl.² B32B *27/04*; **C07F** *7/02*
U.S. Cl. 428—288 **10 Claims**

1. A porous, woven or non-woven, inert, resilient carrier impregnated with a linear poly(perfluorooxyalkylene) compound terminated on each end with a trisubstituted-silyl group hydrolyzable to a tri-hydroxysilyl group, said compound having the formula:

$$R_{f_0}\left\{-Q(CH_2)_zSi(X)_3\right\}_2$$

where R_{f_0} is a divalent, linear poly(perfluorooxyalkylene) backbone structure having a number average molecular weight in the range of 500 to 10,000 and has the formula:

$$-CF_2O(CF_2CF_2O)_m(CF_2O)_n-CF_2-$$

where (CF_2CF_2O) and (CF_2O) are randomly distributed oxyethylene and oxymethylene repeating units, respectively, where the subscripts m and n are integers whose ratio m/n is in the range of 0.2/1 to 5/1, X is a hydrolyzable group selected from the group consisting of halo, alkoxy, and acyloxy, z is an integer of 2 to 11, and Q is a divalent organic linking group which is free of olefinic unsaturation and silanol-reactive groups.

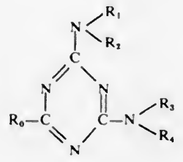
3,950,589

MELT-RESISTANT SYNTHETIC FIBER AND PROCESS FOR PREPARATION THEREOF

Masayuki Togo, Kyoto; Jiyuuro Takahashi, Otsu; Tamotsu Nakashima, Otsu, and Shizuyoshi Ikenaga, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

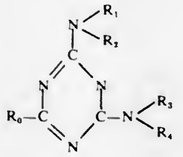
Filed Feb. 8, 1973, Ser. No. 330,580
Claims priority, application Japan, Mar. 23, 1972, 47-28570
Int. Cl.² B32B *27/42*; **D06M** *15/54*
U.S. Cl. 428—394 **12 Claims**

1. A melt-resistant synthetic fiber having a surface layer portion consisting of a 0.05 – 10μ thick continuous heat-resistant film consisting of a cross-linked melamine derivative compound represented by the following general formula.



wherein
R_0 is —H, —OH, $-C_6H_5$, $-Cn_1H\,2n_1+1$, $-COOCn_2\,H\,2n_2+1$, $-CONR_5\,R_6$ or $-NR_5R_6$
R_1 – R_6 is —H, —OH, $-OCn_3H\,2n_3+1$, $-CH_2OCn_3\,H\,2n_3+1$, $-CH_2COOCn_3H\ \ 2n_3+1$, $-CH_2OH$, $-CH_2CH_2OH$, $-CONH_2$, $-CONHCH_2OH$, $-O-(-OX)n_4-R_7$ or $-CH_2NHCOCn_3H\,2n_3+1$
R_7 is —H, $-CH_3$, $-C_2H_5$or $-C_3H_7$
X is $-C_2H_4-$, $-C_3H_6-$, or C_4H_8- and n_1 is a number from 1–10, n_2 and n_3 are numbers from 1–20, and n_4 is a number from 1–1500.

2. Process for the preparation of a melt-resistant synthetic fiber which comprises adhering to a synthetic fiber a mixed aqueous solution of components (a), (b) and (c) where (a) is a melamine derivative compound represented by the following general formula:

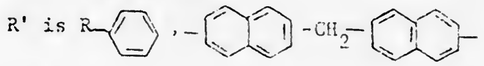


wherein
R_0 is —H, —OH, $-C_6H_5$, Cn_1H2n_1+1, $-COOCn_1H2n_2+1$, $-CONR_5R_6$ or $-RN_5R_6$,
R_1–R_6 is —H, —OH, $-OCn_3H2n_3+1$, $-CH_2OCn_3H2n_3+1$, $-CH_2COOCn_3H2n_3+1$, $-CH_2OH$, $-CH_2CH_2OH$, $-CONH_2$, $-CONHCH_2OH$, $-O-(-OX)n_4-R_7$ or $CH_2NHCOCn_3H2n_3+1$,
R_7 is —H, $-CH_3$, $-C_2H_5$, or $-C_3H_7$—
X is $-C_2H_4-$, $-C_3H_6-$, or $-C_4H_8-$ and n_1 is a number from 1 – 10, n_2 and n_3 are numbers from 1 – 20, and n_4 is a number from 1 – 1500,
b. is an acidic catalyst selected from the group consisting of an inorganic acid selected from the group consisting of phosphoric acid, sulfuric acid, nitric acid, hydrochloric acid and persulfuric acid; an organic acid selected from the group consisting of olefin-monocarboxylic acid, saturated dicarboxylic acid, olefin-dicarboxylic acid, aromatic dicarboxylic acid, oxycarboxylic acid and aminocarboxylic acid; and the ammonium salt, alkali metal salt and alkali earth metal salt of said inorganic or organic acid, and

c. is an anionic surface active agent represented by the following general formula:

$$R-COOX,\ R'-(SO_2X)n \text{ or } R''-OSO_2X$$

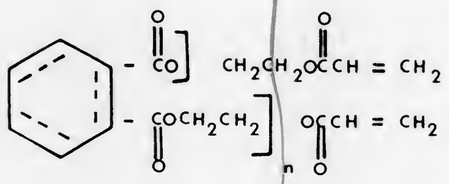
wherein R is $Cm\ H_2m+1$,

R' is 

R'' is C_8H_{17}

$$-CH{=}CH-CON-C_3H_4$$
$$\quad\quad\quad

a. coating a metal substrate with a primer composition comprising
1. from about 4 percent to about 70 percent by weight of a mixture of acrylic compounds wherein
a. each of said acrylic compounds has the formula



wherein *n* is from 0 to 10 and the six member ring is aliphatic or aromatic,
b. said mixture contains said acrylic compounds having said formula *n* is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10,
2. from about 30 percent to about 96 percent by weight of a copolymer of
a. from about 50 percent to about 95 percent by weight of a vinyl halide, and
b. from about 2 percent to about 45 percent by weight of a vinyl ester of an aliphatic monocarboxylic acid,
b. subjecting said coated metal substrate to ionizing irradiation to adhere said primer composition to said metal substrate and to provide compatibility to a radiation curable coating material;
c. applying to said irradiated primer composition a topcoating of a radiation curable material; and
d. subjecting said coated metal substrate to ionizing irradiation to cure said topcoated radiation curable material.

3,950,593

PREGUMMED REMOISTENABLE TAPE HAVING LONG OPEN TIME AND SHORT TACK TIME

William A. Bomball, and Thomas G. Swift, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Mar. 26, 1973, Ser. No. 344,658
Int. Cl.² C09J *7/04*
U.S. Cl. 428—476 **6 Claims**

1. A pregummed, water remoistenable fibre-reinforced tape for use in fabricating boxes on automatic box making apparatus, said tape having an open time of 20 seconds, said tape being coated with a remoistenable adhesive composition comprising an acid-hydrolyzed starch copolymerized with acrylamide, the starch being selected from the group consisting of waxy maize, waxy milo, tapioca, potato starches, and starches having high amylopectin levels; animal glue; and water such that the ratio of derivatized, acid-hydrolyzed starch to animal glue is in the range of 9:1 to 1:9, and the average Werle Tack Test for a reinforced pregummed tape coated with said adhesive composition remoistened with 17 pounds of water per three thousand square feet of tape employing an open time of 2.0 seconds and a closed time of 1.0 seconds is at least 100 g within less than 7 seconds.

3,950,594

DIELECTRIC COATING COMPOSITION

Ronald W. Hohlfeld, and Dieter H. Klein, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 31, 1973, Ser. No. 365,791
Int. Cl.² H01B *3/00;* **B32B** *23/08*
U.S. Cl. 428—511 **8 Claims**

1. A dielectric coating for use on electroconductive paper comprising an interpolymer of from about 80 parts by weight vinylidene chloride, at least about 1 part by weight of a vinyl acid with any remainder being one or more monoethylenically unsaturated comonomer, said interpolymer being obtained by polymerizing the monomeric constituents of said interpolymer in a strongly hydrogen bonded dispersing media containing from about 0.1 to 20 percent of a preformed dispersion stabilizer comprising the reaction product of (A) tripropylene glycol methylether acrylate and (B) at least one reactive comonomer capable of forming a side chain on said stabilizer which side chain is dispersible in said vinylidene chloride polymer and wherein the mass ratio of (A) to (B) is from about 99:1 to 80:20.

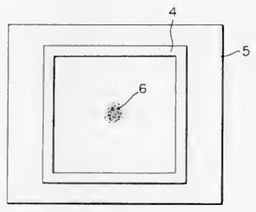
8. A paper suitable for use in electrostatic printing processes comprising an electrographic paper coated on at least one side with an effective amount of the dielectric coating composition of claim 1.

3,950,595

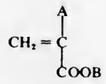
TRANSFERRING PAPER FOR ELECTROPHOTOGRAPHY

Hiroshi Tanaka, and Ikuo Soma, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1973, Ser. No. 419,046
Int. Cl.² D21H *1/28, 1/30*
U.S. Cl. 428—511 **12 Claims**



1. Transfer paper for electrophotography adapted to receive a developed image by liquid developer comprising a cellulosic web containing a copolymer formed from about 55 – 95 mole percent of one or more monomers represented by the formula:



wherein A is hydrogen or CH_3; and B is alkyl, and from about 5 to 35 mole percent of one or more monomers of unsaturated carboxylic acids, and from about 0 to 10 mole percent of acrylonitrile.

3,950,596

ALTERING THE APPEARANCE OF CORUNDUM CRYSTALS

Ronald Ray Carr, Merrillville, and Stephen Dale Nisevich, Munster, both of Ind., assignors to Astrid Corporation, Limited, Hong Kong

Continuation of Ser. No. 210,140, Dec. 20, 1971, abandoned. This application May 8, 1974, Ser. No. 467,937
Int. Cl.² B32B *9/04, 35/00;* **B05D** *5/06*
U.S. Cl. 428—539 **8 Claims**

1. A corundum crystal initially having a non-uniform color appearance whose surface is altered by contact with a powdered metal oxide colorant at an elevated temperature within the range of 1600° C to a temperature below the fusion temperature of the said powder, said metal oxide colorant consisting essentially of an oxide of titanium and at least one metal oxide selected from the group consisting of iron, chromium, vanadium and nickel, said metal oxide colorant being sufficient to impart to the surface of the crystal a uniform color appearance.

5. A corundum crystal initially having a first color appearance whose surface is altered by contact with a powdered metal oxide colorant at an elevated temperature within the range of 1600° C to a temperature below the fusion temperature of the said powder, said metal oxide colorant consisting essentially of an oxide of titanium and at least one metal oxide selected from the group consisting of iron, chromium, vanadium and nickel, said metal oxide colorant being sufficient to impart to the surface of the crystal a second color appearance different from the first color appearance.

3,950,597

POWDER COMPOSITIONS OF POLYNARY OXIDES AND COPPER

David Hitz Scheiber, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 326,952, Jan. 26, 1973, abandoned. This application Dec. 24, 1974, Ser. No. 536,319
Int. Cl.² H01B *1/02;* **B32B** *9/04*
U.S. Cl. 428—539 **9 Claims**

1. In powder compositions comprising conductive polynary oxides of pyrochlore-related crystal structure and dielectric material, useful for printing resistors on dielectric substrates, improved powder compositions wherein the polynary oxide has the formula $M_xM'_{2-x}M''_2O_{7-z}$, wherein M is at least one of Ag or Cu; M′ is Bi or a mixture of at least one-half Bi plus up to one-half of one or more cations from among (a) bivalent Cd or Pb and (b) trivalent Y, Tl, In and rare earths metals of atomic number 57–71, inclusive; M″ is at least one of (a) Ru, (b), Ir, and (c) a mixture of at least three-fourths of at least one of Ru and Ir and up to one-fourth of at least one of Pt, Ti, and Rh; x is in the range 0.10 to 0.6; and z is in the range 0.10 to 1.0 and is equivalent to the sum of the monovalent cations M and half of divalent cations in the polynary oxide, and wherein the composition additionally comprises 1–10 % by weight of finely divided copper metal powder, based on total weight of the composition.

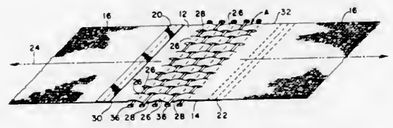
7. An electrical element comprising a dielectric substrate having adherent thereto the composition of claim 1.

3,950,598

FABRIC SPLICE

Alexander V. Alexeff, Cleveland, Ohio, assignor to Alexeff-Snyder Enterprises, Inc., Cleveland, Ohio

Division of Ser. No. 376,537, July 5, 1973, Pat. No. 3,885,596. This application Nov. 11, 1974, Ser. No. 522,516
Int. Cl.² B32B *3/10, 7/08*
U.S. Cl. 428—61 **9 Claims**



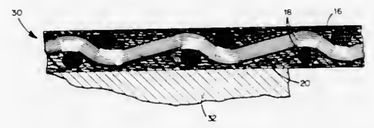
1. A splice between two pieces of fabric having contacting overlapped fabric end portions defining a fabric double layer having a longitudinal axis and a lapping plane, a plurality of loop rows in said double layer extending transversely of said longitudinal axis, each said loop row including a plurality of partial loops extending alternately in opposite directions out of said plane transversely of said longitudinal axis, each said partial loop including the contacting fabric of both said overlapped fabric end portions, and substantially rigid elongated rod means extending transversely of said axis through said partial loops in each of said loop rows for holding said fabric end portions together.

3,950,599

BEARINGS WITH LOW-FRICTION LAMINATE LINER

David A. Board, Jr., Laconia, N.H., assignor to New Hampshire Ball Bearings, Inc., Laconia, N.H.

Filed Feb. 21, 1974, Ser. No. 444,340
Int. Cl.² F16C *27/00;* **B32B** *27/02*
U.S. Cl. 428—236 **7 Claims**



1. A bearing device which comprises a bearing support surface and a laminate as a bearing liner secured to the bearing support surface, which laminate comprises:
a. a flexible woven backing sheet material;
b. a flexible, nonwoven, porous, thin, polymeric sheet material consisting essentially of a fibrous thermoplastic polymeric fluorocarbon material having low-friction, self-lubricating properties;
c. a hardened, thermoset resin binder material;
d. the backing sheet material characterized by a plurality of substantially regular and uniform, relatively large openings thereon having from about 10 to 45 openings per linear inch;
e. the polymeric sheet material characterized by a plurality of small pores therein up to about 100 microns and a pore volume of over about 50 percent;
f. the polymeric sheet material compressed into the openings of the backing sheet material and mechanically secured as a face surface to the backing sheet material;
g. the resin binder material impregnated into the openings of the backing sheet material and the pores of the compressed polymeric sheet material, the resin material and the backing sheet material adapted to serve as a structural load-carrying element; and
h. the compressed polymeric sheet material and the impregnated resin material in the backing sheet providing an internal laminate liner having a facing surface of compressed fibrous polymeric material essentially free of resin thereon, and a hardened, resin-rich backing surface secured to the supporting surface to form a low-friction bearing liner.

3,950,600

THERMOSENSITIVE ELEMENT, AND ITS EMPLOY IN THE THERMOGRAPHIC REPRODUCTION OR RECORD SYSTEMS

Franco Knirsch, Pavone (Turin); Dino Lavagna, Ivrea (Turin), and Giorgio Rossi, Banchette (Turin), all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

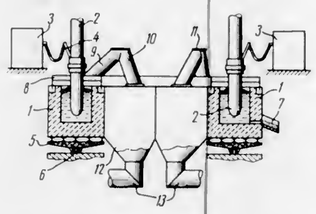
Filed July 8, 1974, Ser. No. 486,709
Claims priority, application Italy, July 27, 1973, 69267/73
Int. Cl.² B41M *5/18*
U.S. Cl. 428—327 **12 Claims**

1. In a temperature responsive record material comprising a supporting sheet having a single layer coated thereon comprising finely divided solid particles of a crystal violet lactone and finely divided particles of 4-4-isopropylidene-diphenol, wherein the improvement comprises having the particles dispersed in a binder matrix comprising a non-ionic cellulose ether mixed with a latex in a ratio of non-ionic cellulose ether to latex not greater than 3–97 parts by weight, the employ ratio of binding means/solids being variable from 1–1 to 1–25.

3,950,601
ELECTRIC FURNACE

Alexandr Nikolaevich Popov, ulitsa akademika Pavlova, 28, kv. 10; Leonid Savvich Katsevich, Sirenevy bulvar, 47, kv. 69, and Vladimir Lvovich Rozenberg, Novolesnaya ulitsa, 18, korpus 1, kv. 148, all of Moscow, U.S.S.R.

Continuation of Ser. No. 347,473, April 2, 1973, which is a continuation of Ser. No. 123,574, March 12, 1971, abandoned. This application May 23, 1974, Ser. No. 472,870
Int. Cl.² H05B 7/18
U.S. Cl. 13—9 R 7 Claims

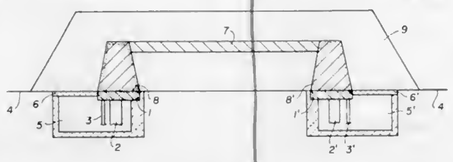


1. An electric furnace for the melting of metallic and non-metallic charge comprising: an annular hearth in which the charge is placed, an annular furnace roof, and a plurality of electrodes passing through said roof and arranged in said hearth, a power supply source to which said electrodes are connected, and means for causing relative circular movement between said annular hearth and said plurality of electrodes about an axis of said annular hearth.

3,950,602
FURNACE INSTALLATION OPERATED BY DIRECT ELECTRICAL HEATING ACCORDING TO THE RESISTANCE PRINCIPLE IN PARTICULAR FOR PREPARATION OF SILICON CARBIDE

Andreas Korsten, Balkhausen; Theodor Benecke, Grefrath; Eugen Korndorfer, Heiligblut; Fritz Petersen, Grefrath, and Gunter Wiebke, Munich, all of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Germany

Filed Dec. 10, 1974, Ser. No. 531,236
Claims priority, application Germany, Dec. 21, 1973, 2364107
Int. Cl.² F27B 21/00
U.S. Cl. 13—20 27 Claims

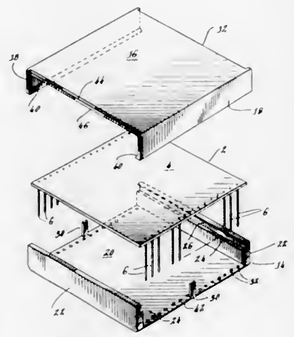


1. Furnace installation of the type operated by direct electric heating according to the resistance principle, for the preparation of silicon carbide from silica and carbonaceous material in intermittent operation, the current being supplied by means of electrodes through a resistance core of carbon horizontally inserted in a load consisting of a mixture of granulated coke, quartz sand and added materials, the improvement wherein the electrodes are arranged below the load as bottom electrodes and wherein a substantially vertical electric conducting means is arranged on top of each electrode connecting the electrodes to the resistance core, said connection being constructed separately of the resistance core and having a higher electric conductivity than the latter.

3,950,603
ENCLOSURE CASE FOR POTLESS IMMOBILIZATION OF CIRCUIT COMPONENTS

Paul C. Brefka, Southboro, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Jan. 23, 1975, Ser. No. 543,336
Int. Cl.² H05K 5/00
U.S. Cl. 174—52 R 9 Claims



1. An enclosed modular circuit component substantially immobilized for resistance to potentially harmful effects due to impact, shock and vibration movements without encapsulation in potting material comprising:

a first case-half means having a support means and two oppositely disposed side wall means projecting from the support means,

a second case-half means having support means and two oppositely disposed side wall means projecting from the support means,

the side wall means of at least one of the case halves having mechanical interlock means,

the other of the case halves having mechanical interlock means on its support means,

a modular circuit component positioned between the case halves,

the case halves being assembled together juxtaposed with the side wall means of one case half perpendicular to the side wall means of the other case half to form a complete enclosure,

the interlock means on the side wall means and on the support means cooperating with one another forming the tight fitting secure engagement,

at least one case half side wall means being sufficiently flexible in a spring-like manner relative to a plane substantially perpendicular to the other case half support means so that the secure engagement is aided by tension forces,

ledge means formed on the interior of the side wall means of at least one of the case halves supporting at least part of the component thereon,

the case half not having the ledge means including interior projection means contacting at least a part of the component therein,

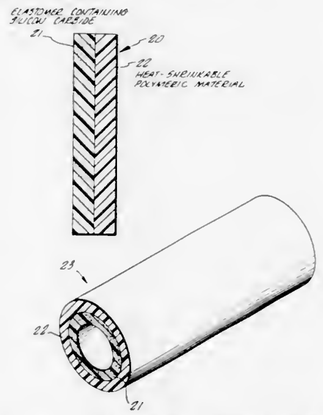
the ledge means and projection means forming clamp-like surfaces securely contacting the component therebetween

holding the circuit component immobilized therein essentially free from movement due to impact, shock, vibration and the like under use.

3,950,604
HEAT-SHRINKABLE ARTICLES HAVING NON-LINEAR ELECTRICAL RESISTANCE CHARACTERISTICS

Richard J. Penneck, Lechlade, England, assignor to Raychem Limited, Swindon, England

Filed Aug. 31, 1973, Ser. No. 393,509
Claims priority, application United Kingdom, Sept. 1, 1972, 40752/72
Int. Cl.² H01B 1/04; B32B 1/08, 5/16, 7/02
U.S. Cl. 174—68 A 15 Claims



1. A heat-shrinkable article possessing nonlinear electrical resistance characteristics comprising a laminate of:

a first layer of an elastomer having dispersed therein particulate silicon carbide; and

a second layer of a heat-shrinkable polymeric material.

10. An article capable of being rendered heat-shrinkable and possessing non-linear electrical resistance characteristics comprising of a laminate of:

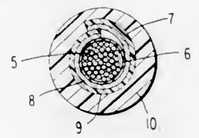
a first layer of an elastomer having dispersed therein particulate silicon carbide; and

a second layer of polymeric material capable of being rendered heat-shrinkable.

3,950,605
METAL FOIL-PLASTIC LAMINATE AND METHOD OF PREPARING THE SAME

Yutaka Hori; Zenzo Honda; Kenji Suzuki; Keiji Nakamoto, and Yoshiharu Yamamoto, all of Toyohashi, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaraki, Japan

Division of Ser. No. 95,742, Dec. 7, 1970, abandoned. This application Aug. 13, 1973, Ser. No. 387,971
Claims priority, application Japan, Dec. 30, 1971, 44-116052; Dec. 30, 1971, 45-39480
Int. Cl.² H01B 7/18
U.S. Cl. 174—107 6 Claims

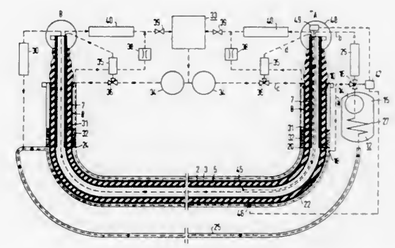


1. A plastic jacketed cable having a covering layer on the outside of an aggregated conductive core and provided with a polyethylene plastic jacket on the outer surface thereof, said covering layer comprising a metallic foil-plastic laminate comprising an upper layer of ethylene - vinyl acetate copolymer containing 3 to 8 wt % of vinyl acetate and a lower layer of an ethylene - vinyl acetate copolymer containing 10 – 45 wt % of vinyl acetate, said lower layer being thermally pressed in contact with the metal foil and said upper layer is adhered to said plastic.

3,950,606
APPARATUS AND METHOD FOR COOLING A SUPERCONDUCTING CABLE

Fritz Schmidt, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 10, 1974, Ser. No. 513,746
Claims priority, application Germany, Oct. 24, 1973, 2353336
Int. Cl.² H01B 12/00
U.S. Cl. 174—15 S 14 Claims



1. Apparatus for cooling an electrical cable having concentric inner and outer superconductor conductors, said cable also having an inner channel and an outer channel through which coolant can flow for cooling the inner and outer superconductors, said inner conductor being at a high voltage and said outer conductor being at a zero voltage and wherein said inner and outer superconductors are connected to corresponding inner and outer ordinary conductors at cable terminations at each end of said cable, comprising:

a. means at each of said terminations for cooling said inner and outer ordinary conductors with the gas stream of an evaporating cooling medium;

b. a first common coolant supply unit having its output coupled to supply coolant to said means cooling said inner and outer ordinary conductors separately at each termination and including a return means returning used coolant to said first supply unit, said means for cooling said inner and outer ordinary conductors and said return means form ordinary conductors and said return means forming first cooling paths; and

c. a second common coolant supply unit having its output coupled to one point of the inner and outer channels in said cable, and a common return line coupling another point of said cable, and a common return line coupling another point of said inner and outer channels to the input of said second coolant supply unit, said second coolant supply unit, inner and outer channels and return line forming second cooling paths.

3,950,607
BANDWIDTH COMPRESSION SYSTEM AND METHOD

Glen R. Southworth, Boulder; Roy W. Lewallen, Denver, and John E. Sparks, Boulder, all of Colo., assignors to Colorado Video, Inc., Boulder, Colo.

Filed Apr. 30, 1973, Ser. No. 355,802
Int. Cl.² H04N 7/12
U.S. Cl. 178—6 29 Claims

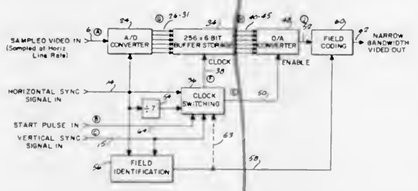
1. A bandwidth compression system, comprising:

input means for receiving a sampled signal having a wide bandwidth from one line and succeeding sampled signals from succeeding vertical positions;

first converter means connected with said input means for producing an output in digital form that is indicative of at least predetermined characteristics of a sampled signal received at said input means;

storage means connected with said first converter means for receiving the output therefrom and storing the same; and

second converter means connected with said storage means to receive the output therefrom and responsive thereto producing an output signal in analog form that includes



substantially the same predetermined characteristics of said sampled signal but having a relatively narrow bandwidth with respect thereto.

3,950,608

ELECTRONIC ENGRAVING AND RECORDING SYSTEM

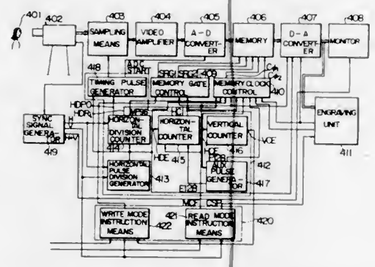
Katsuhiko Noda; Taisuke Watanabe, and Katsuyuki Niyada, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 21, 1974, Ser. No. 444,678

Claims priority, application Japan, Feb. 22, 1973, 48-21467; June 12, 1973, 48-66650

Int. Cl.² H04N *1/29*

U.S. Cl. 178—6.6 B **11 Claims**



1. An electronic engraving and recording system comprising:

image pickup means for picking up the image of an object and for converting the image into corresponding electric signals,

sampling pulse generating means for generating sampling pulses, said sampling pulse generating means including

a pulse generator for generating clock pulses having a frequency of the order of 3 MHz,

gating means for gating said clock pulses at intervals of *n* pulses, where *n* is an integer between 2 and 8, and

counting means for counting said clock pulses and producing signals which detect the completion of one horizontal scanning, one vertical scanning and *m* vertical scannings, where *m* is an integer equal to *n*/2or *n* + 1/2,

sampling means for sampling the output of said image pickup means under the control of said sampling pulses until said *m* vertical scanning detecting signal is produced,

analog-to-digital converting means coupled to said sampling means for converting the sampled signal into a digital signal,

memory means connected to said analog-to-digital converting means for storing the digital signals from said analog-to-digital converting means,

digital-to-analog converting means for converting the output signal from said memory means into an analog signal,

display means connected to said digital-to-analog converting means for displaying the output of said digital-to-analog converting means as a visible image, and

engraving means associated with said memory means for engraving the image of an object on a card plate in accordance with the output signal from said memory means.

3,950,609

FACSIMILE SYSTEM

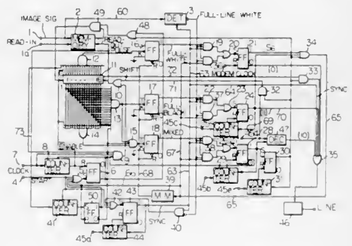
Yutaka Tanaka, Kadoma, and Sumio Ogawara, Tokyo, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd. and Matsushita Graphic Communication Systems, Inc., both of, Japan

Filed Mar. 28, 1974, Ser. No. 455,874

Claims priority, application Japan, Mar. 30, 1973, 48-37193

Int. Cl.² H04N *3/32*

U.S. Cl. 178—6 **10 Claims**



1. In a visual communication system of the type having a line scanner in which a visual image of a two-valued object field is scanned and converted into a series of line signals each comprising a predetermined number of first-valued and second-valued binary bits representative of the light values of said image, the improvement which comprises, at a transmitter station, memory means for storing said binary bits, means for sequentially reading out blocks of equal numbers of binary bits from said memory means, a first encoder receptive of said read out binary bits for translating each said block into a first code when all the bits of said block are of said first-valued binary bits, a second encoder receptive of said read out blocks for translating each said block into a second code when the bits of said block are of a mixture of said first-valued and second-valued binary bits, a third encoder receptive of said read out blocks for translating each said block into a third code when all of the bits of said block are of said second-valued binary bits, means receptive of each said block for selectively gating the binary bits of said block of mixed-valued bits for transmission upon the occurrence of said second code, and means for transmitting said codes and said gated binary bits in sequence as they occur and, at a receiver station, means for converting a sequence of incoming signals comprised of a sequence of said codes and said gated binary bits into an optical image corresponding to the visual image.

3,950,610

IMAGE ANALYSERS

Brian Martin Hopkins, Huntingdon, England, assignor to Becton, Dickinson & Company, Rutherford, N.J.

Filed July 16, 1974, Ser. No. 488,955

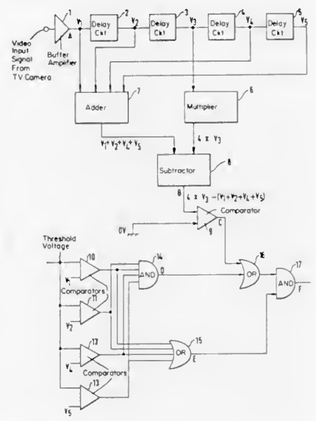
Claims priority, application United Kingdom, July 16, 1973, 33791/73

Int. Cl.² H04N *7/18*

U.S. Cl. 178—6 **7 Claims**

1. An image analyser for use in a line-by-line scanning system in which a field of an article is scanned to produce a video signal representative instantaneously of a point within that field, comprising *n* delay means connected in series where

n is an integer divisible by 2, the video signal being applied to the input of the first delay means, an adder to whose inputs are connected the input of the first delay means and the output of each delay means other than the *n*th/2 delay means in the series, a signal multiplier circuit to the input of which the



output of the *n*th/2 delay means in the series is connected, and which multiplies the signal received by *n*, and a subtracting circuit which is connected to the outputs of the adder and of the multiplier and which produces an output representative of the output of the multiplier minus the output of the adder.

3,950,611

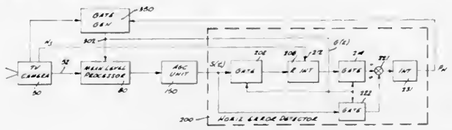
GATED VIDEO CENTROID TRACKER

James W. Callis, Manhattan Beach, and William A. Chambers, Torrance, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 22, 1966, Ser. No. 596,142

Int. Cl.² H04N *3/00*

U.S. Cl. 178—6.8 **11 Claims**



1. A system for determining with respect to an optical axis the angular location of an object in space in response to energy received therefrom comprising in combination:

transducer means, responsive to energy from a sector of said object, for optically scanning increments of area of said object with respect to the optical axis and developing area signals that are ampltidue representative of the relative intensity of the energy received from said increments of area;

gate generator means, coupled to the transducer means, for developing a plurality of gating signals; and

error detection means, connected to the gate generator means, for developing position signals representative of the angular location of said object with respect to the optical axis, said error detection means including a first integrator and a second integrator serially gated to said first integrator.

10. In a system for tracking a target having a sensor that provides received signals from the target and utilizing vertical and horizontal detectors for determining the center of a portion of said target by signal weighting, each of said detectors comprising in combination:

a first integrator; and

a second integrator serially gated to said first integrator.

3,950,612

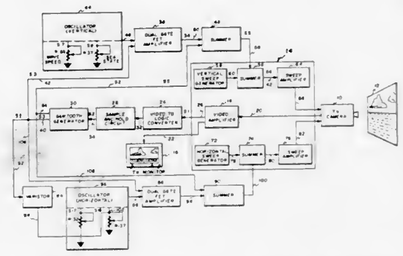
SYNTHETIC MOTION GENERATOR

Joseph R. Owen, Orlando, and Carl R. Driskell, Winter Park, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 14, 1975, Ser. No. 567,661

Int. Cl.² G01C *21/00*; H04N *5/22*

U.S. Cl. 178—6.8 **5 Claims**



1. A synthetic motion generator system for simulating motion in a display originating from a still life scene comprising:

a. a television display unit for providing a display scene when actuated;

b. a television camera for developing video signals of a still life scene;

c. a camera control unit including a video amplifier connected to pass video signals to said television display unit and including a sweep control circuit for generating and passing vertical and horizontal sweep signals to said camera; and

d. a sawtooth generator means, frequency tuneable oscillator means and mixing circuit means connected to said sweep control circuit to modulate the vertical and/or horizontal sweep voltages passed to said camera with a modulating signal which is a multiple of the television frame rate, plus or minus a few cycles per second, to generate desired motion in said display scene.

3,950,613

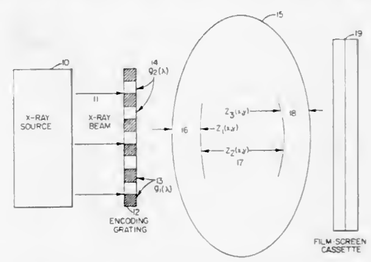
X-RAY ENCODING AND DECODING SYSTEM

Albert Macovski, 4100 Mackay Drive, Palo Alto, Calif. 94306

Filed Dec. 26, 1973, Ser. No. 428,453

Int. Cl.² H04N *3/00*; G01N *23/20*; G02B *5/18*

U.S. Cl. 178—6.8 **20 Claims**



1. Apparatus for encoding x-ray energy spectral information from an object onto a recording surface compising a grating structure positioned in the x-ray beam path between an x-ray source and the recording surface, the grating structure containing alternate stripes of different materials, with each material having a different x-ray energy transmission spectrum

whereby the difference of each of the products of the two grating material transmission spectra and the object transmission spectrum form an amplitude modulated grating image at the recording surface.

3,950,614

REMOTE WRITING APPARATUS

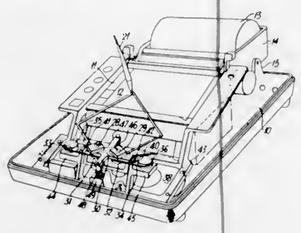
Trevor James Anderson, Crowborough, and Graham Laughton, Burgess Hill, both of England, assignors to Feedback Instruments Limited, Sussex, England

Filed Jan. 2, 1975, Ser. No. 538,238

Claims priority, application United Kingdom, Jan. 11, 1974, 01319/74

Int. Cl.² G08C *21/00*

U.S. Cl. 178—18 **7 Claims**



1. Writing apparatus comprising:
a. a housing;
b. a writing area defined within the housing;
c. a stylus support above the writing area;
d. cradle means mounted in fixed location on the housing laterally offset from the writing area and supported so that it can tilt toward and away from said writing area;
e. linkage means extending from the cradle means to the stylus support, the linkage means being rotatably supported on the cradle means and overlying the writing area whereby the stylus support approaches the writing surface when the cradle means tilts toward the writing area and recedes therefrom when the cradle means tilts away from the writing area; and
f. servo-system means fixed in position with respect to the housing and coupled with the linkage means where it is rotatably supported on the cradle means.

3,950,615

CHRONIC INTERLINE PHASE ERROR FROM AN IMAGE SCANNER GENERATING PLURAL SUCCESSIVE IMAGE SIGNALS IN A SINGLE SCANNING MOTION IS ELECTRONICALLY CORRECTED

Katsuo Murase, Hino, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

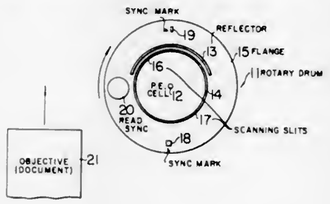
Continuation of Ser. No. 352,557, April 19, 1973, abandoned. This application Nov. 18, 1974, Ser. No. 524,824

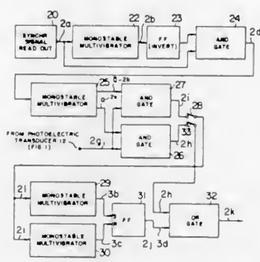
Claims priority, application Japan, Apr. 28, 1972, 47-42732

Int. Cl.² H04N *1/02*

U.S. Cl. 178—69.5 F **3 Claims**

1. A system comprising:
means for scanning each of a sequence of successive scanlines of an objective to derive a corresponding sequence of image signals, a plurality of scanlines being scanned in a single scanning motion of the scanning means to derive a corresponding composite signal comprising a plurality of image signals;
means for generating, for each scanning motion of the scanning means, a plurality of synchronizing signals, one for each image signal, said generating means including means stationary with respect to the scanning means, and each synchronizing signal occurring at a defined position of the scanning means with respect to said stationary means;
means for defining a selected fixed phase difference for at least a selected portion of one of the image signals with respect to the synchronizing signal for the last recited image signal; and
means for shifting the selected portion of the image signal by the defined phase difference with respect to the remainder of the composite signal, wherein each composite signal comprises a first and a second image signal corresponding respectively to a first and a second adjacent





scanline scanned in a single scanning motion of the scanning means; and the means for defining a selected phase difference comprises means for defining a selected phase difference for only the first image signal of each composite signal, said phase difference being with respect to the synchronizing signal for said first image signal of each composite signal, whereby the image signal corresponding to the first scanline of each two adjacent scanlines is shifted with respect to the second image signal corresponding to the second scanline, while the second image signal is not shifted.

3,950,616

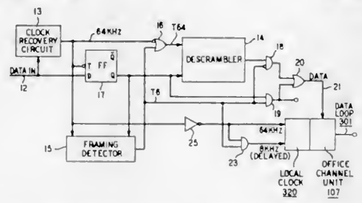
ALIGNMENT OF BYTES IN A DIGITAL DATA BIT STREAM

Tammaru, Tarmo, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 8, 1975, Ser. No. 566,609

Int. Cl.² H04L *7/08*

U.S. Cl. 178—69.5 R **10 Claims**



1. In a data transmission system including means at a transmitting station for transmitting binary data bits arranged in groups having control bits in a corresponding bit position in each group, control bits in different groups conveying information at a low speed signaling rate and means at a receiving station for identifying the bit position of the control bits, characterized in that
the transmitting means includes means for scrambling the data bits while maintaining the bits in the corresponding bit position unscrambled, and

the identifying means includes means for detecting rates of change of the binary condition of the bits occupying a corresponding bit position in different groups not exceeding a predetermined rate which is in excess of the low speed signaling rate and less than the anticipated rate of change of the scrambled bits.

3,950,617

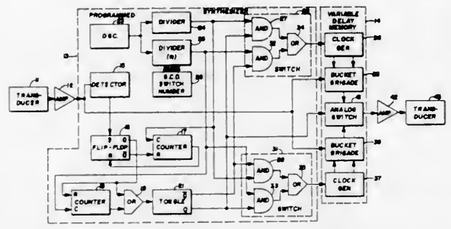
HELIUM SPEECH UNSCRAMBLER WITH PITCH SYNCHRONIZATION

Clell A. Dildy, Jr., Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 9, 1974, Ser. No. 504,634

Int. Cl.² H04J *3/18*

U.S. Cl. 179—1.5 H **9 Claims**



1. A pitch synchronized speech unscrambler, comprising in combination:
a first transducer;
a first bucket brigade delay line having a driving input, a loading input, and an unloading output, with the loading input thereof effectively connected to the output of said first transducer;
means connected to the driving input of said first bucket brigade delay line for timely effecting the loading thereof in response to a first signal having a predetermined first frequency;
a second bucket brigade delay line having a driving input, a loading input, and an unloading output, with the loading input thereof effectively connected to the output of said first transducer;
means connected to the driving input of said second bucket brigade delay line for timely effecting the loading thereof in response to a second signal having a predetermined second frequency;
means for generating said first signal having said first predetermined frequency;
means for generating said second signal having said second predetermined frequency;
a detector effectively connected to the output of said first transducer;
a flip-flop having a set input, a reset input, a Q output and a Q output, with the set input thereof connected to the output of said detector;
a first counter having a count input, a reset input, and an output, with the count input thereof connected to an output of said first predetermined frequency signal generating means, with the reset input thereof connected to the Q output of said flip-flop, and with the output thereof connected to the reset input of said flip-flop;
a second counter having a count input, a reset input, and an output, with the count input thereof connected to an output of said second predetermined frequency signals generating means, and with the reset input thereof connected to the Q output of said flip-flop;
an OR circuit having a pair of inputs and an output, with one of the inputs thereof connected to the Q output of said flip-flop, and with the other input thereof connected to the output of said second counter;
a toggle having an input, a Q output and a Q output, with the input thereof connected to the output of said OR circuit, with the Q output thereof connected to an input of said first predetermined frequency signal generating means, and with the Q output thereof connected to an input of the aforesaid second predetermined frequency signal generating means;
selector switch means having a drive input, a pair of data inputs, and an output, with the drive input thereof connected to the Q output of said toggle, and with the pair of data inputs thereof respectively connected to the unloading outputs of said first and second bucket brigade delay lines for effecting the unloading thereof in respective synchronization with said first and second signals; and
a second transducer effectively connected to the output of the aforesaid selector switch means.

3,950,618

SYSTEM FOR PUBLIC OPINION RESEARCH

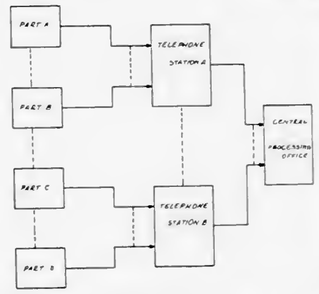
Albertoni de Lemos Bloisi, Rua Batatais 333, Sao Paulo, Brazil

Continuation-in-part of Ser. No. 170,003, Aug. 9, 1971, abandoned. This application Dec. 27, 1972, Ser. No. 318,851

Claims priority, application Germany, Mar. 25, 1971, 2114604

Int. Cl.² H04M *11/00*

U.S. Cl. 179—2 AS **29 Claims**



1. Public opinion research system for polling a plurality of participants each having access to a communication system transmitting communication signals within a predetermined frequency band, comprising, in combination, a plurality of selectively operative input means, one for each of said participants, each for furnishing, upon operation, an input burst signal of a length signifying a selected one of a plurality of predetermined responses, said input signal having a determined length differing from the corresponding characteristic value of input signals signifying others of said responses, said input signal further having a frequency outside of said predetermined frequency band, for simultaneous transmission of said communication signals and said input signal; connecting means connecting each of said input means to said communications network in such a manner that each of said input signals is transmitted to a central station of said communications network thereby furnishing a corresponding plurality of response signals at said central station; and summing circuit means at said central station for summing all response signals signifying each of said predetermined responses and furnishing a plurality of output signals, each signifying the total number of participants selecting a given one of said predetermined responses.

3,950,619

MESSAGE CHARGE CONTROL TELEPHONE ANSWERING DEVICE

Amos Edward Joel, Jr., South Orange, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 27, 1973, Ser. No. 429,036

Int. Cl.² G11B *23/04;* **H04M** *1/64*

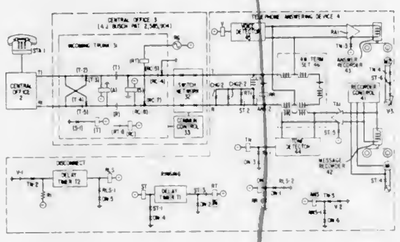
U.S. Cl. 179—6 C **14 Claims**

1. A telephone answering device for use with a telephone

line to answer a call incoming to the telephone line and generated by a calling subscriber comprising

means responsive to incoming call signals appearing on the telephone line for answering the telephone line,

means enabled by said answering means for transmitting and recording message signals on the answered telephone



line to establish message service with the calling subscriber, and

means for conditioning the answered telephone line to selectively assess message charges against the calling subscriber for various time intervals of the message service.

3,950,620

ELECTRIC CIRCUIT CONTAINING AN INTEGRAL PHASE-LOCKED LOOP

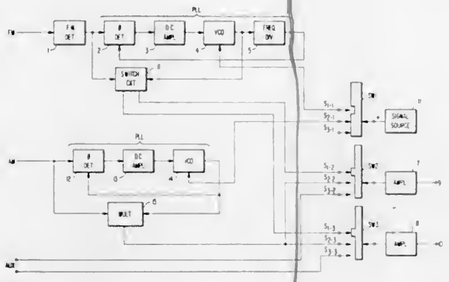
Tatuo Numata, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 25, 1974, Ser. No. 526,995

Claims priority, application Japan, Nov. 26, 1973, 48-132337

Int. Cl.² H04H *5/00*

U.S. Cl. 179—15 BT **9 Claims**



1. In an electric circuit having a first integral phaselocked loop including a phase-difference detector, an amplifier and a voltage-controlled oscillator connected in a closed loop, said circuit having a first mode of operation wherein said loop is required, and a second mode of operation wherein said loop is not required, the improvement comprising means for continuously applying operating power to said oscillator in both of said modes so that said oscillator is operative to oscillate during said first mode, and disabling means connected to said oscillator for rendering said oscillator inoperative in said second mode even though the operating power is continually applied to said oscillator, whereby said oscillator does not oscillate in said second mode.

3,950,621

APPARATUS FOR OPTICALLY READING A REFLECTING RECORD CARRIER

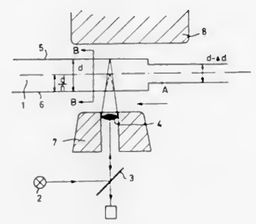
Gijsbertus Bouwhuis, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 7, 1974, Ser. No. 521,585

Claims priority, application Netherlands, Nov. 29, 1973, 7316384

Int. Cl.² H04N *5/76*; **G11B** *21/10*

U.S. Cl. 179—100.3 G **2 Claims**



1. An apparatus for optically reading a record carrier for information, which carrier is provided with an reflective optical structure in accordance with the information, comprising an air bearing shoe both at the top side and the underside of the carrier, said air bearing shoes at the top and underside of the carrier comprising means for establishing the ratio of the rigidity of the air pad at the side of the carrier on which the information is stored to the rigidity of the air pad at the side of the carrier which faces away from the information at $1 : n-1$, n being the refractive index of the carrier body.

3,950,622

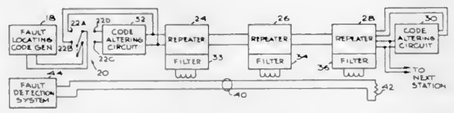
LINE FAULT LOCATING SYSTEM

Steven C. Taylor, San Mateo, Calif., assignor to Culbertson Industries Inc., Palo Alto, Calif.

Filed Oct. 15, 1974, Ser. No. 514,361

Int. Cl.² H04B *3/46*, *1/60*

U.S. Cl. 179—175.31 R **6 Claims**



1. In a PCM communication system where two lines extend between a first and second station and there are a plurality of repeaters in said line between said two stations which can receive and transmit signals in either direction, there being a fault locating cable pair extending between said two stations, to which all of said repeaters are coupled, a means for testing said repeaters for faults from one of said stations comprising

means at said one of said stations for generating a spaced three pulse bipolar pulse train having bipolar violation signals therein,

first and second circuit means each having an input and an output and comprising means for converting a spaced three pulse bipolar signal wavetrain having bipolar violations which is applied to its input into a spaced three pulse bipolar signal, wavetrain having no bipolar violations and for converting a spaced three pulse bipolar signal wavetrain having no bipolar violations which is applied to its input into a spaced three pulse bipolar signal wavetrain having bipolar violations,

means for connecting the input of said second of said circuit means at said second office location to receive signals from said transmission line and for connecting its output to said first transmission line to return signals back to said first office location,

means for applying the output of said pulse generating means at said first office location to said transmission line whereby a spaced three pulse bipolar pulse train with bipolar violations is transmitted between said first and second office locations, converted into a spaced three pulse bipolar wavetrain without bipolar violations by said second circuit means and then transmitted back to said first office location, whereby signals received at said first office location on said first cable pair may be monitored for determining the location of faulty repeaters in an outgoing direction,

means at said first office for applying the output of the pulse generating means to the input to said first circuit means, and

means for connecting the output of said first circuit means to said transmission line, whereby a spaced three pulse trio bipolar wavetrain without bipolar variations is transmitted between said first and second office locations and a spaced three pulse bipolar wavetrain with bipolar violations is transmitted between said second and first office locations, whereby signals on said fault locating pair may be monitored at said first office location for determining which of said repeaters is faulty in a return direction.

4. A circuit for converting a spaced three pulse bipolar wavetrain with bipolar violations into spaced three pulse bipolar wavetrain without violations and for converting a spaced three pulse bipolar wavetrain into a spaced three pulse bipolar wavetrain with bipolar violations comprising

input terminal means,

output terminal means,

polarity reversing means connecting said input terminal means to said output terminal means,

means responsive to three successive pulse signals followed by a zero pulse signal being applied to said input terminal means for generating a polarity reversing signal, and

means for applying said polarity reversing signal to said polarity reversing means to cause it to reverse the polarity of the connections between said input and output terminal means.

3,950,623

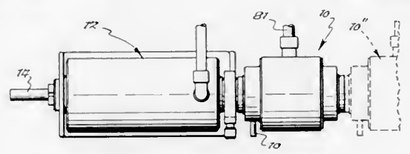
AUTOMATION SWITCHING APPARATUS

Clarence O. Jones, Jr., Eggertsville, and William F. Abraham, Lancaster, both of N.Y., assignors to Niagara Machine & Tool Works, Buffalo, N.Y.

Filed Oct. 10, 1974, Ser. No. 513,598

Int. Cl.² H01H *19/62*, *3/16*

U.S. Cl. 200—31 R **15 Claims**



1. In combination with a machine having auxiliary apparatus and a plurality of electrical circuits for controlling the operation of said apparatus, switching apparatus comprising:

a. a housing;

b. an input shaft rotatably supported in said housing;

c. a plurality of carrier elements movably connected to said housing at spaced locations along said shaft for movement relative to said shaft about the circumference thereof;

d. a plurality of electrical switches fixed to corresponding ones of said carrier elements and connected in said electrical circuits, said switches each including a movable arm;

e. a plurality of cams axially positioned on said shaft in a manner such that upon rotation of said shaft each of said cams will periodically move a corresponding one of said switch arms; and

f. motion transmitting means operatively engaging at least one of said carrier elements for moving said element to move the corresponding one of said switches about said input shaft in a manner adjusting the rotational orientation of said switch relative to said cams, said motion transmitting means comprising shaft means threadably engaging said carrier element in a manner such that upon rotation of said shaft means said carrier element is moved about said input shaft.

3,950,624

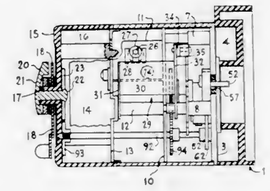
AUTOMATIC RESET TIMER WITH LATCH CONTROLLED CAM OPERATOR

John L. Harris, Clearwater, Fla., assignor to Deltrol Corporation, Bellwood, Ill.

Filed July 19, 1974, Ser. No. 489,981

Int. Cl.² H01H *7/08*; **F16H** *5/74*

U.S. Cl. 200—39 R **15 Claims**



1. In a control mechanism, a main bearing axis, a control device, an operator for the control device, actuator means pivotally mounted on the main bearing axis arranged to engage and actuate said operator in one direction as said actuator means moves in one direction to a predetermined position, means for driving said actuator means to said predetermined position, means including latch means for holding said actuator means in said predetermined position, and master control means pivotally mounted on the main bearing axis and movable independently of said actuator means, said master control means being constructed and arranged to release the latch means on movement of the master control means to a predetermined position, and operating means for the master control means arranged to move same from one position to said predetermined position.

3,950,625

SAFETY SWITCH FOR DRILL PRESS USING CHUCK KEY

Elmer C. Klebe, Jr., Easley, and Timothy J. Looper, Pickens, both of S.C., assignors to The Singer Company, New York, N.Y.

Filed Apr. 17, 1975, Ser. No. 569,136

Int. Cl.² H01H *27/06*

U.S. Cl. 200—61.58 R **3 Claims**

1. A safety system for a drill operated by an electric motor journaled in a housing to rotate a bit-carrying chuck, said safety system comprising:

a. a switch mounted in a side wall of the housing, and connected in circuit to actuate the motor,

b. the switch being slidable along a lineal path of travel to be moved between a normally "off" position at one end of its travel, and an "on" position at the other end of its travel,

c. a resilient guard means yieldably mounted in the housing,

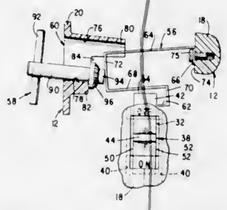
d. the guard means intersecting the path of travel of the switch normally to prevent the switch from being moved

along the lineal path of travel to force the switch to remain in the normally "off" position,

e. a socket formed in a side wall of the housing adjacent the guard means,

f. the socket including a pair of intersecting substantially circular apertures of different diameters, with the upper one larger than the lower one,

g. a chuck key having a shank terminating at one end in an enlarged pinion, and at the other end in a handle, and



h. the pinion end of the chuck key being inserted into the upper aperture with the shank substantially horizontal to define a first lineal motion, and the pinion end being moved vertically downwardly into the lower aperture to define a second lineal motion substantially perpendicular to the said first motion with the shank to remain horizontal, and to cause the pinion end to engage and to remove the guard means from the lineal path of travel of the switch whereby the switch is free to be actuated at will, while the chuck key is clamped in the lower aperture by its pinion end being entrapped between the lower aperture and the resilient guard.

3,950,626

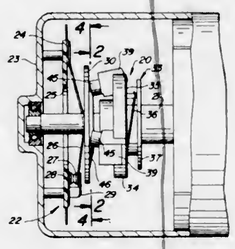
ROTARY CENTRIFUGALLY-OPERATED ELECTRICAL SWITCH FOR MOTORS

Joseph Greenhut, 3333 Warrensville Center Road, Shaker Heights, Ohio 44120

Filed Sept. 26, 1974, Ser. No. 509,664

Int. Cl.² H01H *35/10*

U.S. Cl. 200—80 R **19 Claims**



1. In a rotary speed-responsive electrical switch assembly, the combination of a centrifugal switch-operating unit adapted to be mounted for rotary movement, a switch unit adapted for mounting in spaced relationship to said centrifugal unit, spring means carried by said centrifugal unit, centrifugally actuated weights operatively attached to said spring means for radial displacement to effect energizing deflection of said spring means in response to a predetermined rotational speed thereof, said weights being bodily displaced axially by said spring means to advance and retract said weights into and out of engagement with said switch unit in response to rotational speed changes, and a surface provided in association with the electrical contacts of said switch unit and directly engageable by said weights and responsive to the longitudinal and radial movements thereof for operating said switch unit.

3,950,627

PUSH BUTTON SWITCH

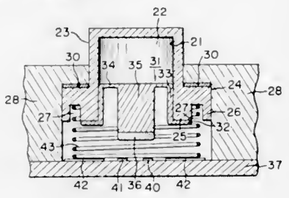
Minoru Murata, Yokohama, and Yuji Harada, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 17, 1973, Ser. No. 397,803

Claims priority, application Japan, Sept. 26, 1972, 47-111678[U]; Sept. 26, 1972, 47-111679[U]; Sept. 26, 1972, 47-111680[U]; Sept. 26, 1972, 47-111681[U]; Sept. 26, 1972, 47-111682[U]; Sept. 26, 1972, 47-111683[U]; Sept. 21, 1972, 47-94893

Int. Cl.² H01H *13/52*

U.S. Cl. 200—159 R **54 Claims**



1. A push button switch comprising:

a key top adapted to be applied with an external force, said key top having a recess therein;

a resilient member arranged to cover the recess, said resilient member having a projection extending therefrom in a direction opposite to the depth of the recess, at least an end of the projection being of conductive material;

the opening of the recess being of such dimension that at least a portion of the projection is passable through the opening;

a contact member secured to a base plate in opposed relationship with said projected portion; and

means, disposed outwardly of said contact member, for urging said key top in such a manner that the projection of said resilient member is spaced apart from said contact member when no external force is applied to said key top and that the projection of said resilient member engages the contact member when an external force is applied to said key top.

3,950,628

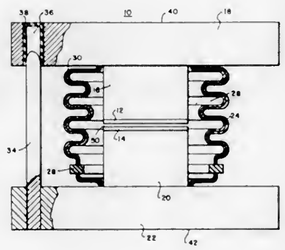
BELLOWS-TYPE SHORTING SWITCH

Robert M. Hruda, Horseheads, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 10, 1974, Ser. No. 513,788

Int. Cl.² H01H *35/32*

U.S. Cl. 200—302 **5 Claims**



1. A normally open, low voltage shorting switch comprising:

first and second conductive end plates spaced apart in parallel orientation, with axially aligned connecting portions extending from the spaced surface of the first and second conductive end plates, with the free end portions of the connecting portions spaced apart;

electrical contacts disposed on the free end portions of the respective connecting portions, which electrical contacts are spaced apart;

a flexible bellows about the electrical contacts with opposed ends of the bellows hermetically sealed to portions of the first and second conductive end plates, which bellows means includes a metal portion and an annular ceramic ring portion sealed thereto intermediate the bellows ends which prevents a continuous conducting path through the flexible bellows;

guide means comprising a plurality of rods extending from the first conductive end plate, and including aligned rod receiving openings in the second end plate receiving the respective rods, so that when compressive force is applied between the first and second conductive end plates the bellows will be compressed and the electrical contacts will be axially moved together to a closed electrical contact position.

3,950,629

ELECTRICAL ARC-WELDING TORCHES

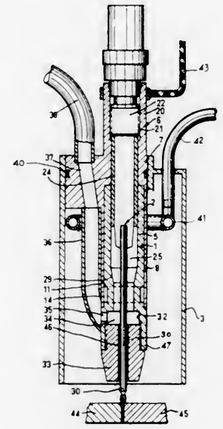
Louis Auzary, Paris; Leon Pluta, Bessancourt, and Maurice Pourrat, Parmain, all of France, assignors to La Soudure Autogene Francaise, Paris, France

Filed Sept. 13, 1974, Ser. No. 505,687

Claims priority, application France, Sept. 18, 1973, 73.33419

Int. Cl.² B23K *9/16*

U.S. Cl. 219—75 **15 Claims**



4. In a welding torch, in combination:

a torch body having a tubular core;

a refractory electrode projecting from the torch body;

clamping means within the tubular core for securing the refractory electrode to the torch body;

a sleeve disposed around the refractory electrode in coaxial relationship therewith, the sleeve being spaced from the electrode to form a narrow annular passage therebetween for laminar flow of arc-gas;

means for supplying the arc-gas to the annular passage, the torch body including an enlarged chamber connected between the supplying means and the annular passage for evenly distributing the arc-gas in said passage, said enlarged chamber being located downstream of said clamping means for unobstructed communication of arc-gas from said supplying means to said passage; and

a nozzle for shielding gas disposed around a portion of the torch body in spaced relationship therewith.

3,950,630

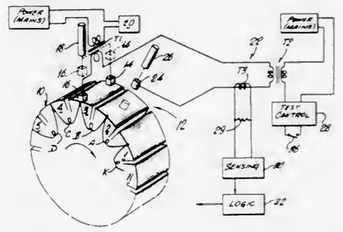
COMMUTATOR TERMINAL MACHINE AND METHOD

Allan S. Warner, 50 Haliday St., Clark, N.J. 07066

Filed Mar. 22, 1974, Ser. No. 453,869

Int. Cl.² B23K *11/10*

U.S. Cl. 219—91 **14 Claims**



1. A machine for terminating armature winding to commutator segments comprising first means for successively bonding winding portions to associated commutator segments and second means for testing the quality of the connections and winding electrically between each associated pair of segments after the latter segment is bonded but before any further segment is bonded and third means for controlling recycling of said first means to rebond the last bonded segment in response to the second means indicating a predetermined type of fault.

3,950,631

DEVICE FOR WELDING A WIRE BY MEANS OF THERMO-COMPRESSION BONDING

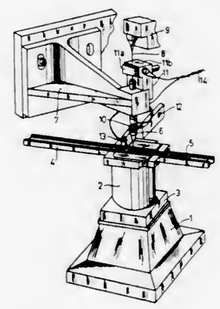
Jean Schmidt, Douvres-la-Delivrande, and Pierre Brehon, Epron, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 153,750, June 16, 1971. This application Apr. 23, 1973, Ser. No. 353,375

Claims priority, application France, June 19, 1970, 70.22666

Int. Cl.² B23K *21/00*

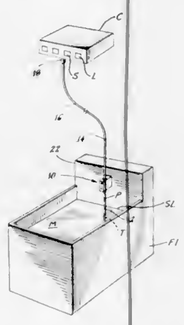
U.S. Cl. 219—107 **3 Claims**



1. A device for securing a wire to a support element by thermocompression bonding comprising a base for supporting said element, a movably mounted tool for holding said wire so that one end thereof is exposed means for welding said wire to said element by thermocompression bonding, means for supplying wire to said tool and welding means, an electrode located in proximity to the exposed end of said wire, means connected to said electrode and said wire for producing high electric voltage pulses therebetween so as to cause an electric spark discharge between said electrode and said exposed end of said wire sufficient to cause melting thereof thereby form-

ing a ball thereat, means for moving said tool so that said exposed end of said wire having said ball will be in contact with said support element, and means for activating said welding means to weld said wire to said support.

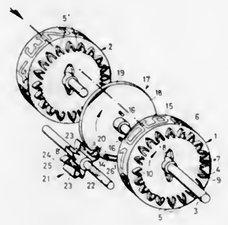
3,950,632
PROBE MOUNTING APPARATUS
Louis E. Rivelli, Shelton, Conn., assignor to Food Automation-Service Techniques, Inc., Stratford, Conn.
Filed Apr. 14, 1975, Ser. No. 567,800
Int. Cl.² H05B *3/06*
U.S. Cl. 219—523 **12 Claims**



1. An apparatus for repeatably and accurately mounting a probe assembly in a deep fat fryer wherein the length of cooking time is to be calculated by a timing computer responsive to the temperature in a predetermined location in the cooking medium, the probe assembly being of the type including a straight stiff sleeve formed of a smooth-surfaced metal containing a temperature sensing element at its end and arranged to be attached to the fryer and to be partly immersed in the cooking medium, said mounting apparatus comprising:
- a mounting block arranged to be fixedly attached in a predetermined location on the fryer;
- said block having an opening therein arranged to receive the probe sleeve and to determine the position of the longitudinal axis of the sleeve in the cooking medium;
- means in the block for gripping the probe sleeve in the opening therein; and
- means for fixing the longitudinal position of the probe sleeve in the block opening, thereby to establish a constant position for the temperature sensing element immersed in the cooking medium;
- whereby the end of the sleeve may be accurately and repeatedly positioned in said predetermined location in the cooking medium to provide uniform temperature data input to said computer despite repeated removal of said sleeve from the fryer for cleaning.

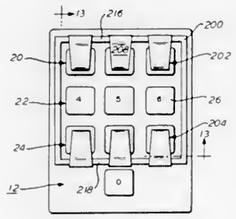
3,950,633
DAMPED TRANSFER ARRANGEMENT FOR A COUNTER
Heinz Kelch, Buchenberg, and Helmut Müeller, Sankt Georgen, both of Germany, assignors to Kienzle Apparate GmbH, Villingen, Germany
Continuation of Ser. No. 338,551, March 6, 1973, Pat. No. 3,836,072. This application May 13, 1974, Ser. No. 469,742
Claims priority, application Germany, Mar. 9, 1972, 2211392
Int. Cl.² G06C *7/10*
U.S. Cl. 235—133 R **7 Claims**

1. Damped transfer arrangement for a counter comprising at least first and second ordinal counter wheels having first and second counter teeth, respectively; a transfer wheel secured to said first counter wheel and including a peripheral rim having a first transfer tooth; and a transfer gear of deformable thermoplastic material and having second transfer teeth meshing with said second counter teeth and having a locked position in which one second transfer tooth slides on said peripheral rim for locking said transfer wheel and second counter wheel, another second transfer tooth being engaged with an impact by said first transfer tooth once during each revolution of said first counter wheel so that said transfer gear is angularly displaced for turning said second counter wheel, said first and second counter wheels and said transfer gear



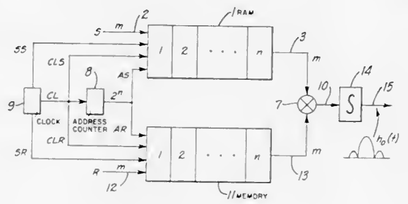
each include a disc, and said first and second counter teeth and said transfer teeth axially project from the respective disc and are formed with cutouts extending from the radially inner end of each tooth into the latter short of the radially outer end thereof so as to provide in each cutout tooth axially projecting, resilient, in tangential direction yieldably flank walls connected to each other only at the addendum circle and having free ends at the dedendum circle to dampen the impact.

3,950,634
KEYBOARDS
Meyer Speiser, 1617 50th St., Brooklyn, N.Y. 11204
Filed Feb. 19, 1974, Ser. No. 443,608
Int. Cl.² G06C *7/02, 25/00*
U.S. Cl. 235—145 R **4 Claims**



1. Means for operating the push-button of a keyboard, the keyboard having its push-buttons arranged in a matrix; said push-buttons operating means comprising:
- housing means cooperatively engagable with the matrix; and
- push-buttons operating means movably secured to said housing; said push-button means comprises a plurality of discrete manually operable element means movably secured to said housing so that a single human finger operates a first and a second of said elements by moving along a first predetermined path in either a first or second direction; said element means comprises resilient fingers disposed so as to be capable of engaging at least one row of the push-buttons.

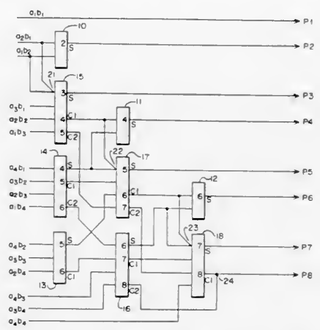
3,950,635
DIGITAL MATCHED FILTER AND CORRELATOR USING RANDOM ACCESS MEMORY
James Nickolas Constant, 1603 Danbury Drive, Claremont, Calif. 91711
Continuation-in-part of Ser. No. 435,681, Jan. 23, 1974, abandoned. This application June 17, 1974, Ser. No. 479,872
Int. Cl.² G06F *15/34*
U.S. Cl. 235—156 **14 Claims**



1. In a system for the digital implementation of matched filters and correlators, the combination of:
- a first digital delay means having a first random access memory for storing first signals, said first memory having storage locations for n words;
- a second digital delay means having a second memory for storing second signals, said second memory having storage locations for n words;
- an address counter connected to said memories for addressing n corresponding storage locations of said first and second memories in a sampling interval providing n pairs of outputs in sequence;
- clock means connected to said memories and to said address counter for controlling timing operations of said first and second memories and of said address counter, including means for shifting at least said first signals in said first memory after each sampling interval;
- multiplier means having as its input the n pairs of outputs of said first and said second memories and providing at its output the serial word by word product of said first and said second signals; and
- integrator means having said multiplier means output as an input for integrating the product over a number of sampling intervals.

3,950,636
HIGH SPEED MULTIPLIER LOGIC CIRCUIT
Tich T. Dao, Cupertino, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.
Filed Jan. 16, 1974, Ser. No. 433,871
Int. Cl.² G06F *7/38*
U.S. Cl. 235—164 **6 Claims**

1. A binary multiplier logic circuit for multiplying two numbers each represented by a group of bits arranged in increasing order and in which a product is provided which is obtained by adding all of the partial products of the same weight the product consisting of several bits of increasing weights said multiplier comprising a first plurality of adder circuits having inputs and each having only a sum output for respectively providing different bits of said product, a second plurality of adder circuits staged in a carry save configuration and each having a sum output and at least one carry output said second plurality of adder circuits having as inputs at least two inputs selected from the group consisting of said partial products and said sums and carries, said inputs for each adder circuit all being of the same weight said sum outputs corresponding to such weight and said carry output to the next higher weight; and carry look ahead means for summing the inputs of each of said first plurality of adder circuits and respectively coupling said sum to an input of one of said second plurality of adder circuits which provides a sum output of the next higher



weight relative to the respective sum output of the first adder circuit.

3,950,637
ARTIFICIAL LIGHT SOURCE AND ATTACHED GROWING AREA
Vincent L. Rodin, 503 E. 72nd St., New York, N.Y. 10021
Filed Oct. 11, 1974, Ser. No. 514,094
Int. Cl.² F21S *1/02;* **A01G** *13/00*
U.S. Cl. 240—10 P **8 Claims**

1. Light source apparatus particularly adapted for growing plants, comprising:
- dome means substantially of paraboloid shape and having a discharge aperture;
- light source means positioned in said dome means whereby the light therefrom is substantially directed to radiate through said aperture;
- a support carriage including a platform positioned in said discharge aperture and adapted for alignment with respect to the central and longitudinal axis of said parabolic dome and, a plurality of rods, each one of which is defined by a cap on one end and threaded leading portion on the other, and wherein said platform includes a plurality of threaded apertures adapted to threadably receive the respective leading and threaded ends of said rods, said dome further including alignment bores through the wall thereof in the region of said discharge aperture wherein each of said alignment bores is designed to receive a respective one of said rods whereby said caps act as stops for said rods as same engage said respective threaded apertures of said platform to orient said platform with

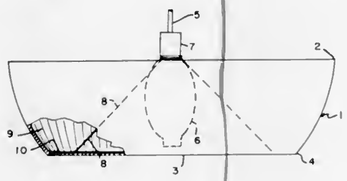
respect to the central longitudinal axis of said parabolic dome; and,

means to couple container means to said platform below said light source means so as to intercept substantially all of the light radiating from said light source means.

3,950,638
HIGH INTENSITY INDIRECT LIGHTING FIXTURE

S. Leonard Kent, Andover; Thomas M. Lemons, and Robert B. MacLeod, Jr., both of Marblehead, all of Mass., assignors to Lam Incorporated, Wakefield, Mass.

Filed Nov. 14, 1973, Ser. No. 415,836
Int. Cl.² F21M *7/00, 13/00;* **F21V** *7/00;* **F21S** *1/06*
U.S. Cl. 240—41.1 **9 Claims**

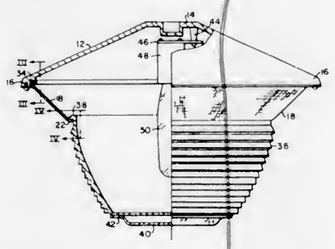


1. A luminaire for high intensity lighting devices which comprises an upwardly opening reflective bowl, terminating in a substantially circular outer lip, the diameter of said reflective bowl being greater on the outer lip than on the lower end; a base integrally disposed upon the lower end of said bowl; means to hold a high intensity light source substantially axially within said bowl and arranged relative to said lip so that the radiation which is emitted substantially below the horizontal plane of said outer lip will be reflected over said outer lip; said bowl being formed of a plurality of reflective flutes and having an optical shape so that substantially all the light which emerges from the light source leaves the luminaire after no more than one reflection, thereby substantially eliminating trapping of the light within the luminaire or reflection through said source.

3,950,639
HIGH BEAM LOW BRIGHTNESS LUMINAIRE

Frank Van Steenhoven, Peninsula, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 16, 1974, Ser. No. 515,392
Int. Cl.² F21V *13/00, 5/04*
U.S. Cl. 240—92 **8 Claims**



1. A luminaire comprising:

a generally frustoconical housing adapted to be mounted centrally at its narrower end and terminating in an annular peripheral edge at its larger end;

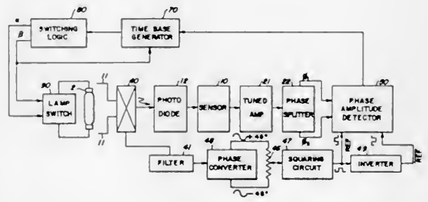
a generally frustoconical translucent refractor secured at its large diameter end to said annular peripheral edge of said housing, the smaller diameter end of said translucent refractor terminating in an inwardly directed flange; and

a generally bowl-shaped open bottomed transparent refractor including an annular outwardly directed flange at its upper edge, said outwardly directed flange on said transparent refractor constructed and arranged to overlie said inwardly directed flange on said translucent refractor to thereby retain and support said transparent refractor with respect to said housing through said translucent refractor.

3,950,640
LAMP CONTROL AND LAMP SWITCH CIRCUIT FOR CONTROLLING LIGHT BALANCE

Douglas E. Webb, Rochester, and Russell G. Schroeder, II, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 416,921, Nov. 19, 1973, Pat. No. 3,904,922. This application Apr. 17, 1975, Ser. No. 568,967
Int. Cl.² G01J *1/32*
U.S. Cl. 250—205 **28 Claims**



1. A lamp control circuit for maintaining balance of light intensity output of long multi-vapor arc lamps comprising:

a. a long multi-vapor arc lamp mounted for exposure;

b. light chopper means for exposing a light sensitive element to light intensity output from opposite ends of said lamp at a constant frequency, said light chopper means comprises chopper driver means for driving said light chopper means to thereby expose said light sensitive element at said constant frequency and providing a reference signal for reference signal means;

c. means for detecting said light sensitive element output signals to thereby provide an output signal proportional to light intensity imbalance end-to-end of said lamp;

d. tuned amplifier means for amplifying said imbalance signal between a narrow bandwidth near said constant frequency;

e. phase converter means for converting said imbalance signal into two signals ϕ_1 and ϕ_2 of equal amplitude separated in phase by 180°, said signals ϕ_1 and ϕ_2 amplitude is proportional to said imbalance signal;

f. said reference signal means in (b) above comprising

(i) filter means for filtering said reference signal

(ii) phase-splitter means for splitting said reference signal and thereby making available two signals of equal amplitude separated in phase by 180°

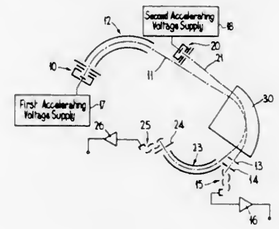
(iii) squaring and inverter means for squaring said reference signals from said phase-splitter to provide a squared signal REF means and developing another squared signal REF of the same amplitude as said squared signal REF but separated in phase by 180° and

h. phase amplitude detector means for providing an output signal indicative of which end of said lamp is brighter, said phase amplitude detector output signal results from said imbalance signals ϕ_1 and ϕ_2 and is controlled by said squared reference signals REF and REF.

3,950,641
METHODS OF MASS SPECTROMETRY AND MASS SPECTROMETERS

Sydney Evans, Sale, and Thomas Oliver Merren, Hale, both of England, assignors to Associated Electrical Industries Limited, London, England

Continuation of Ser. No. 254,938, May 19, 1972, abandoned. This application Dec. 31, 1974, Ser. No. 537,777
Claims priority, application United Kingdom, May 21, 1971, 16415/71
Int. Cl.² H01J *39/34;* **B01D** *59/44*
U.S. Cl. 250—283 **36 Claims**



1. A method of mass spectrometry comprising the steps of forming ions from a substance to be analyzed in a first ion source and accelerating the ions therefrom at a first accelerating voltage to form a first ion beam, forming ions in a range of masses from a reference substance in a second ion source and accelerating the ions therefrom at a second accelerating voltage substantially different from the first accelerating voltage to form a second ion beam, directing the first and second ion beams into a magnetic analyzer having a varying magnetic field thereby to deflect the ions in both the beams according to their respective accelerating potentials and mass to charge ratios, making a scanning variation of said magnetic field, simultaneously collecting deflected ions from the respective beams which have passed through the analyzer, the ions collected at any time from both beams being ions having substantially like products of their respective accelerating voltages times their respective mass charge ratios and the ions collected at such time from one beam having substantially different masses than ions from the other beam, and producing a first mass spectrum of the substance to be analyzed and a second mass spectrum of the reference substance, the first and second mass spectra having substantially different mass scales which are correlated and in inverse relationship to the first and second accelerating voltages, whereby to provide accurate chemical mass marking of the first mass spectrum by the second mass spectrum.

3,950,642
METHOD OF INSPECTING SHOT PEENED SURFACES FOR EXTENT OF COVERAGE

Paul G. Feld, La Mirada, Calif., assignor to Metal Improvement Company, Inc., Teaneck, N.J.

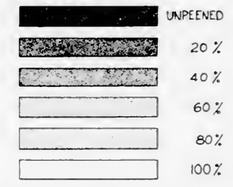
Filed May 27, 1975, Ser. No. 581,211
Int. Cl.² G09K *3/00*
U.S. Cl. 250—302 **10 Claims**

1. The method of inspecting shot peened surfaces of a workpiece to determine the extent of shot peening coverage comprising the steps of:

a. providing a control specimen composed of like material as the part to be shot peened with a coating of identifiable material;

b. shot peening the control specimen until a predetermined peening coverage has been obtained as indicated by the change in the appearance of the coating on the peened surface;

c. shot peening the surface of the workpiece to be peened which surface has been coated with the same identifiable material as the control specimen; and

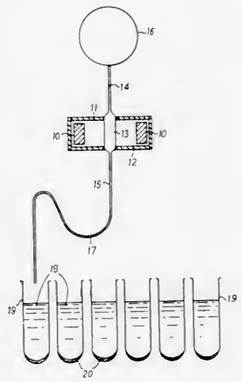


d. comparing the appearance of the shot peened surface of the workpiece with the appearance of the control specimen so that when the compared surfaces are the same in appearance, the shot peened surface of the workpiece is known to have been subjected to said predetermined peening coverage.

3,950,643
AUTOMATIC VOLUME COUNTING

John Cecil Charlton, Amersham, England, assignor to The Radiochemical Centre Ltd., Amersham, England

Filed Dec. 6, 1973, Ser. No. 422,200
Claims priority, application United Kingdom, Dec. 18, 1972, 58417/72
Int. Cl.² G01T *7/02*
U.S. Cl. 250—303 **10 Claims**



1. In a method of performing a competitive radioassay by providing a set of vessels each containing a known or unknown amount of a compound to be assayed, introducing into each vessel a standard amount of a reagent which is labelled with a gamma-emitting radionuclide, and effecting chemical reaction within the vessel, whereby the labelled reagent is portioned between two phases including a liquid phase in proportions depending on the amount of the compound to be assayed that was originally present;

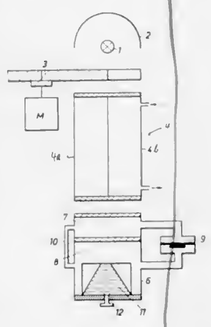
the improvement which comprises comparing the radioactive concentrations of the liquid phases in each of the set of vessels by

a. drawing an unmeasured liquid portion from one of the set of vessels into a measuring region defined by radiation shielding so that the liquid completely fills the said region;

b. measuring gamma-radiation emitted by the said liquid in the said region;

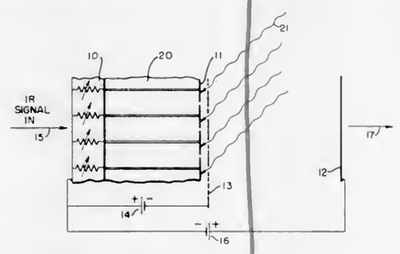
c. expelling the liquid from the said region, and repeating steps (a), (b) and (c) successively on the liquid phases in each of the set of vessels.

3,950,644
NON-DISPENSIVE INFRARED GAS ANALYZER
Otto Blunck, Hamburg, Germany, assignor to H. Maihak AG, Hamburg, Germany
Filed June 28, 1974, Ser. No. 484,336
Claims priority, application Germany, July 2, 1973, 2333664
Int. Cl.² G01N 21/26
U.S. Cl. 250—343 16 Claims



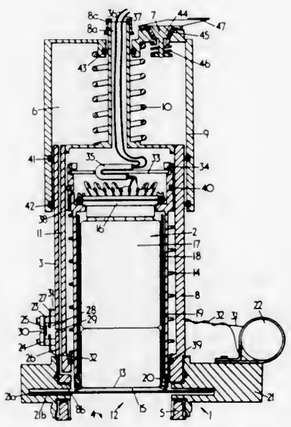
1. A non-dispersive infrared analyzer, particularly for determining the concentration of a gas in a gas mixture, comprising, in combination, a source of infrared radiation using a radiation beam; means for modulating said beam; a test chamber in the path of said modulated beam containing the gas to be analyzed; an absorption chamber in the path of the beam exiting said test chamber, comprising a forward and a rear portion which the beam suquentially traverses producing pressure changes in the forward and rear portions dependent upon the concentration of the gas being measured and upon the modulation of the beam; and in said rear portion a structure mounted to have an adjustable orientation and so configurated that changes of the orientation of said structure change the phase difference between the pressure changes in the forward and rear portions of the absorption chamber.

3,950,645
INFRARED DETECTION TUBE
Jacob Rotstein, Salem, and Robert J. Keyes, Waltham, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Sept. 21, 1964, Ser. No. 399,130
Int. Cl.² H01J 31/49; G01J 1/00
U.S. Cl. 250—352 5 Claims



1. An infrared imaging device comprising, cooling means for lowering the temperature of the device, a wafer of preselected infrared sensitive material, a layer of thin infrared transparent electrically conductive material deposited on one side of said wafer, a wire mosaic, said wire mosaic in intimate contact with the remaining side of said wafer, opaque material filling a preselected area between the wires of said wire mosaic, silver paste interposed between said wafer and the tips of the wires of said wire mosaic, a photoemissive surface deposited on one side of said wire mosaic, an evacuated tube having a grid, focusing means, and a phosphor screen at one end, said wire mosaic forming the other end of said tube, lamp means for illuminating said photoemissive surface thereby providing free electrons, voltage accelerating means whereby said free electrons are accelerated toward said phosphor screen and focussed on said screen in a predetermined manner, fixed bias means whereby free electrons are confined between said grid and said photoemissive cathode whereby the resistance of said infrared sensitive wafer cooperating with grid current flow reduces said bias permitting flow of electrons according to infrared radiation impinging on said wafer.

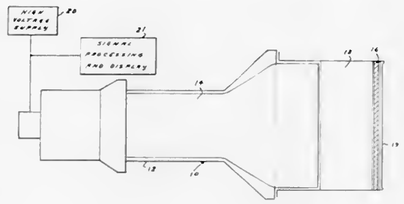
3,950,646
PORTABLE APPARATUS FOR MEASUREMENT OF NUCLEAR RADIATION
Gerald David Whitlock, 18, Pixiefields, Cradley, Malvern, Worcestershire, England
Filed Dec. 6, 1974, Ser. No. 530,080
Int. Cl.² G01T 1/20
U.S. Cl. 250—361 15 Claims



1. A portable apparatus for measurement of nuclear radiation, comprising a plastic scintillator sheet arranged in a base of a housing for detection of nuclear radiation, a sealing ring mounted in the base of the housing to make a substantially hermetic and light-tight seal between a support surface and the base of the housing, photo-multiplier means optically coupled to the scintillator sheet to detect and amplify scintillations of the sheet, and a device to reduce air pressure in the region of the sheet to substantially below atmospheric pressure.

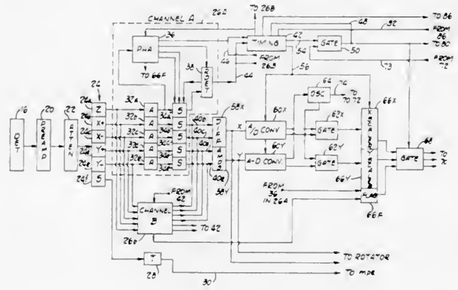
3,950,647
DETECTION INSTRUMENT FOR PLUTONIUM-AMERICIUM
Harley V. Piltingsrud, 522 Grand Ave., Dayton, Ohio 45406
Filed Sept. 25, 1974, Ser. No. 508,980
Int. Cl.² G01T 1/20
U.S. Cl. 250—361 4 Claims

1. An apparatus for detecting the normal radiation from plutonium-americium, comprising: a non-radioactive metal housing; an end window type photomultiplier tube; means for supporting said photomultiplier tube within said housing; a europium activated calcium fluoride scintillation crystal directly coupled to said photomultiplier tube; a light impervious, reflective, electrostatic shield on the side of said scintillation crystal remote from said photomultiplier tube; a shock absorbent layer on the side of said light impervious, reflective, electrostatic shield, remote from said scintillation crystal; means secured to said housing for retaining said shield within said housing; a radioactive contamination barrier layer on the



side of said shock absorbant layer, remote from said scintillation crystal; means for supplying power to said photomultiplier tube and means, for indicating the level of plutonium-americium electromagnetic emission reaching said detection instrument.

3,950,648
SCINTILLATION CAMERA
Ronald J. Martone, Cheshire; Peter G. Mueller, Guilford, both of Conn., and Robert Hindel, Auringen near Weisbaden, Germany, assignors to Picker Corporation, Cleveland, Ohio
Division of Ser. No. 287,623, Sept. 11, 1972. This application Aug. 5, 1974, Ser. No. 494,868
Int. Cl.² G01T 1/20, 1/164
U.S. Cl. 250—369 8 Claims

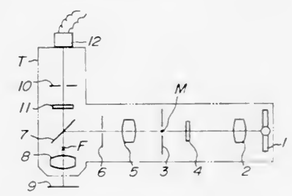


1. In a device for producing a visual display representing the spatial distribution of incident stimuli from a subject under investigation, said device including a light-emitting element for emitting flashes of light in response to such incident stimuli and a plurality of light-responsive components each of which is responsive to the light flashes to emit analog electrical signals with such signals each having an amplitude which is a function of the responsivity of said light responsive component and the intensity of the light signal the improvement comprising:

a. a selector for electrically isolating the analog signals emitted by at least one selected light-responsive component; and

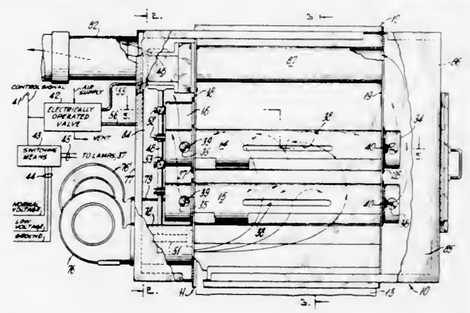
b. a processor for controlling the amplitude of each of said selectable components to enable calibration of the relative amplitudes of the analog signals from the selectable components so that the device has a uniform response to stimuli independent of variations in the responsivity of said light-responsive components.

3,950,649
VERTICAL REFLECTION TYPE FLUORESCENCE MICROPHOTOMETER
Ken Yonekubo, Tama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jan. 31, 1975, Ser. No. 546,185
Claims priority, application Japan, Feb. 6, 1974, 49-14503
Int. Cl.² F21K 2/02
U.S. Cl. 250—458 2 Claims



1. A vertical reflection-type fluorescence microphotometer, comprising: an optical illumination system; an optical photometric system and a dichroic mirror for reflecting an optical axis of said illumination system and aligning the reflected optical axis with an optical axis of said photometric system; said illumination system including an exciting light source, a lens for forming an image of said light source, an aperture diaphragm arranged at a position where said image of the light source is formed, a relay lens arranged between said diaphragm and said mirror, and a pinhole arranged between said relay lens and said mirror; said photometric system including an objective lens between said mirror and specimen for forming an image of said pinhole, reflected by said mirror on the upper surface of the specimen, said relay lens forming an image of said aperture diaphragm at a focal position at the rear of said objective lens; a diaphragm arranged at a position where a fluorescent image of the specimen is formed by said objective lens; and a photoelectric tube for receiving the fluorescence transmitted through said last-named diaphragm.

3,950,650
INK CURING AND DRYING APPARATUS
Robert W. Pray, Greenwich, and Ralph L. Foster, Darien, both of Conn., assignors to Thermogenics of New York, Inc., Byram, Conn.
Continuation-in-part of Ser. No. 454,402, March 25, 1974, Pat. No. 3,894,343, which is a division of Ser. No. 263,250, June 15, 1972, Pat. No. 3,829,982. This application Jan. 15, 1975, Ser. No. 541,149
Int. Cl.² F21V 7/00; F26B 3/28; G01J 1/00
U.S. Cl. 250—504 1 Claim



1. Ink curing apparatus comprising an ultraviolet lamp having neck portions extending from the ends thereof and carrying electric terminals, reflector means at least partially surrounding said lamp with said neck portions extending from

the ends of said reflector, plates closing the ends of said reflector and having openings through which said neck portions extend, said openings being substantially greater in diameter than said necks, closure means including an insulating element surrounding each of said necks to close the last said openings, a housing surrounding said reflector means and means for the circulation of air between said housing and said reflector means for cooling the latter and restricting the flow of air about said lamp, said closure means including a tubular member secured to and extending outwardly from each of said plates with each tubular member being aligned with and surrounding the opening in the associated plate and insulating means secured to the outer end of each tubular member with said neck extending therethrough, said tubular members and insulating means effectively closing the last openings, said housing extending beyond said reflector means to at least partially enclose said necks and terminal means and said air circulating means circulating air about the portions of said necks extending from said closure means together with said terminal means.

3,950,651

METHOD AND AN ARRANGEMENT FOR DEFINING A RADIATION TREATMENT FIELD

Rune E. Flocée, Vasterled 25, Bromma, Sweden

Filed Nov. 6, 1974, Ser. No. 521,276
Int. Cl.² G21F *5/04*
U.S. Cl. 250—505 **3 Claims**



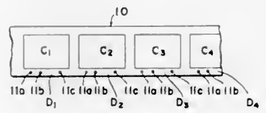
1. The method of shaping a radiation beam for the treatment of patients so that the beam cross-section conforms to the target area to be treated, comprising, in combination, the steps of mixing a volume of fine grain, heavy metal powder with a quantity of pressure sensitive, non-curing adhesive so as to form a mass of plastically deformable, radiation absorbable material, compressing said material into a block-like member of sufficient area to block said beam and sufficient thickness, considering the compressed density of the material, to absorb the radiation energy of said beam, said compression having the effect of increasing the density of said member and making that member geometrically stable, removing material from said member to form an aperture therethrough having a peripheral contour corresponding to the contour of said target area, and mounting said member in said beam so that said aperture permits a beam of the desired cross sectional shape and size to fall on said target area.

3,950,652

ROLL MICROFILM RETRIEVING METHOD AND DEVICE THEREFOR

Hajime Yamashita, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Continuation-in-part of Ser. No. 416,421, Nov. 16, 1973, which is a continuation of Ser. No. 133,527, April 1, 1973, which is a division of Ser. No. 777,301, Nov. 20, 1968, Pat. No. 3,594,581. This application Mar. 20, 1974, Ser. No. 453,051
Claims priority, application Japan, Nov. 27, 1968, 43-75988
Int. Cl.² G06K *7/10*
U.S. Cl. 250—570 **9 Claims**



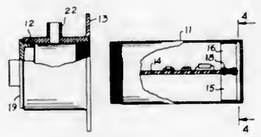
1. A roll microfilm having a series of picture frames each having a border therearound for use with a microfilm retrieving device of the type having a light source and a plurality of detecting elements, comprising a group of at least three small size marks having optical detection characteristics which may be simulated by dust particles lying on the microfilm, said marks being located within the border of each frame, spacings on either side of an intermediate mark in the lengthwise direction of the microfilm being disparate and corresponding in number and alignment with said detecting elements, whereby erratic activation of said detecting elements by dust particles on said microfilm is inhibited, the relative positions of said marks being invariable in each frame of said roll microfilm, each said group of marks including three small size round marks with each of said round marks having a diameter of about 0.5 to 1.0 millimeters, the border of said picture frames having a dimension of about 1.5 millimeters to 2.0 millimeters.

3,950,653

INSTRUMENT FOR SENSING LEVEL OF GRANULAR MATERIALS

William J. Kirkpatrick, Davenport, Iowa, assignor to Agridustrial Electronics, Inc., Bettendorf, Iowa

Filed Jan. 24, 1975, Ser. No. 543,674
Int. Cl.² H01H *35/00*
U.S. Cl. 307—116 **5 Claims**



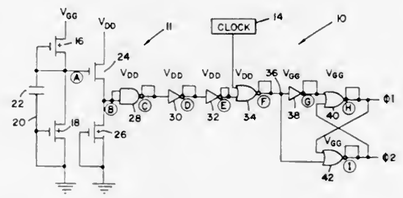
1. A proximity tester particularly adapted to test the levels of materials comprising:
- a closed housing having a perimetrical side wall and an adjoining closed end of dielectric material,
- first and second spaced coextensive capacitive elements, means for mounting said capacitive elements within said perimetrical side wall,
- a circuit board, said circuit board having circuits with respective input terminals connected to said capacitive elements for detecting changes in capacitance therebetween, said first capacitive element and its input terminal being isolated from ground,
- supporting means connected to said housing for positioning said side wall of said housing at a predetermined height within a container to be filled with material, said first capacitive element being an electrode adjacent a portion of the inner surface of said side wall at said adjoining end of said housing, and means for mounting said circuit board securely within said side wall.

3,950,654

POWER-ON INITIALIZING CIRCUIT FOR A CALCULATOR SYSTEM

Walter F. Broedner, Sunnyvale; Ravinder K. Bhatnagar; W. Eugene Hill, both of Cupertino, and Daniel W. Tjoa, San Jose, all of Calif., assignors to American Microsystems, Inc., Santa Clara, Calif.

Filed Nov. 14, 1974, Ser. No. 523,809
Int. Cl.² H03K *1/12, 5/153*
U.S. Cl. 307—208 **13 Claims**



1. An initializing circuit for an electronic calculator comprising:
- a level detecting means connected to the calculator power supply;
- a pair of clock buffers connected to and controlled by said level detecting means to provide alternating two phase clock outputs when the turn-on power reaches a pedetermined level; and a power-on pulse generator cicuit means connected to said power supply, said circuit means being also connected to and controlled by said two phase clock outputs for producing an initializing pulse output with at least a one bit time duration.

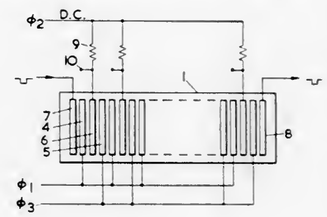
3,950,655

CHARGE COUPLED DEVICE WITH PLURAL TAPS INTERPOSED BETWEEN PHASED CLOCK

Donald John McLennan, Bonnyrigg; John Mavor, Edinburgh, both of Scotland; Gary Francis Vanstone, Malvern, and Donald James Windle, Upton-on-Severn, both of England, assignors to British Secretary of State for Defence, London, England

Filed Nov. 12, 1974, Ser. No. 523,082
Claims priority, application United Kingdom, Nov. 13, 1973, 52709/73
Int. Cl.² G11C *19/28*
U.S. Cl. 307—221 D **7 Claims**

1. A charge coupled device comprising a substrate, an insulating layer on a surface of the substrate, a row of electrodes spaced apart parallel to one another on the insulating layer and including a plurality of clocking electrodes and at least one tapping electrode, said tapping electrode being laterally spaced from said clocking electrodes and being disposed on the insulating layer between a pair of said clocking electrodes, a source gate at one end of the row of electrodes and a drain gate at the other end of the row of electrodes, first voltage means for applying short clocking voltage pulses to the clocking electrodes, second voltage means for applying different voltage pulses long in comparison with the clocking pulses to the tapping electrode whereby depletion wells may be formed in the substrate under the electrodes, and means coupled to said tapping electrode for nondestructively sensing the quantity of charge in a depletion well under said tapping



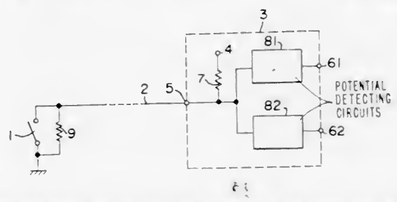
electrode as a packet of charge is transferred from the source gate to the drain gate in the depletion wells.

3,950,656

STATE DETECTING APPARATUS

Shizuo Sumida; Kazuo Nii, both of Hiroshima; Osamu Shimizu, Himeji; Atsushi Ueda, Himeji, and Mitsuaki Ishii, Himeji, all of Japan, assignors to Toyo Kogyo Co., Ltd. and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of, Japan

Filed Aug. 30, 1974, Ser. No. 501,962
Claims priority, application Japan, Aug. 30, 1973, 48-97653
Int. Cl.² H03K *5/20*
U.S. Cl. 307—235 N **4 Claims**



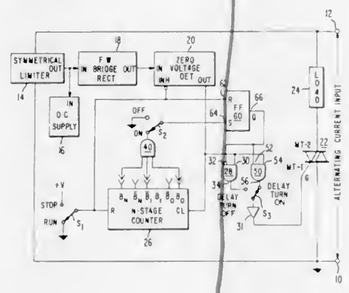
1. State detecting apparatus for detecting whether a switch is in its opened or closed state and for detecting whether a lead connected between the switch and a potential detecting circuit is faulty comprising:
- a power source for supplying potential,
- a first resistance,
- a potential detecting circuit,
- a switch having an opened and a closed state,
- a second resistance,
- a ground,
- means connecting the switch and the second resistance in parallel,
- means connecting one terminal of the switch-second resistance parallel combination to the ground,
- a lead connecting the other terminal of the switch-second resistance parallel combination to a first terminal of the first resistance,
- means connecting the other terminal of the first resistance to the power source,
- means connecting the potential detecting circuit to the first terminal of the first resistance,
- the first resistance being equal in value to the second resistance,
- the potential detecting circuit indicating both a non-fault condition of the lead and the switch in its opened state when the potential detected is equal to half the power source potential,
- the potential detecting circuit indicating both a non-fault condition of the lead and the switch in its closed state when the potential detected is equal to ground potential,
- the potential detecting circuit indicating a fault condition of the lead when the potential detected is equal to the power source potential.

3,950,657

TIMER CIRCUITS

Abel Ching Nam Sheng, Morris Plains, and Merle Vincent Hoover, Flemington, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 21, 1974, Ser. No. 516,588
Int. Cl.² H03K 17/00
U.S. Cl. 307—252 UA 10 Claims



1. In a switching circuit of the kind employing a thyristor switch and means for producing trigger pulses at zero crossings of an alternating current signal to be switched, the improvement comprising, in combination:

a counter having an initial count stored therein;

means for deriving clock pulses from said trigger pulses for advancing the counter;

circuit means initially in a first state and responsive to advancement of the count to a given value for changing to a second state; and

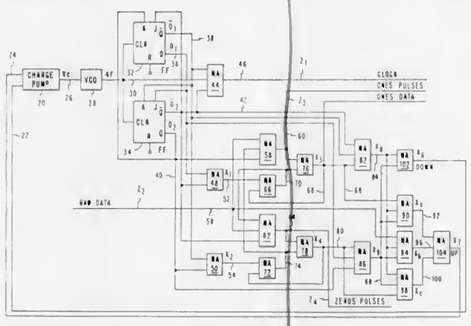
logic gate means receptive of said trigger pulses and responsive to a selected state of said circuit means for applying said trigger pulses to said thyristor during the interval said circuit means is in said selected state.

3,950,658

DATA SEPARATOR WITH COMPENSATION CIRCUIT

Gary LeVerne Mattson, Pine Island, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 15, 1974, Ser. No. 514,982
Int. Cl.² H03K 1/17, 5/13
U.S. Cl. 307—269 7 Claims



1. Circuitry for producing a data clock pulse for each data time at which a data pulse may normally exist on a raw data input line with the data pulses being shiftable timewise from their normal data times to be abnormal timewise, said circuitry comprising a variable frequency controlled oscillator for producing clock pulses, first means responsive to clock pulses from said variable frequency controlled oscillator for producing bit shift limit signals, second means responsive to clock pulses from said variable frequency controlled oscillator for producing data time signals, means responsive to said clock pulses, said limit signals and said data time signals for producing said data clock pulses, means for producing a first change frequency signal effective on said variable frequency oscillator to change the frequency in one direction and initiated under the control of a raw data pulse on said raw data line and terminated at said bit shift limit, means for initiating a second change frequency signal effective on said oscillator for changing the frequency of the oscillator in the opposite direction and initiated under control of termination of said first change frequency signal and terminated with the termination of a clock pulse from said variable frequency oscillator, and means for applying said first and second change frequency signals to said variable frequency oscillator whereby the frequency thereof is first increased and then decreased to provide a net change in frequency based upon the difference between time durations of said first and second change frequency signals.

4. Correction circuitry for generating increase and decrease frequency correction signals for a clock in data separator functioning to distinguish one bits occurring within a bit cell from clock bits occurring at the edge of a bit cell, the improvement comprising:

means for providing repetitively occurring pulses defining data times,

means for generating limit signals defining bit shift and clock shift limits,

means responsive to pulses representing one bits and clock bits for generating increase frequency correction signals having durations dependent upon their occurrence relative to said data times and clock times and terminating and at said bit shift and clock shift limits,

means for generating fixed duration decrease frequency correction signals in response to termination of said increase frequency correction signals, and

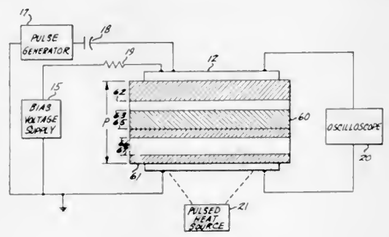
means for applying said increase and decrease frequency correction signals to said clock circuit whereby the frequency thereof is first increased and then decreased to provide a net change in frequency based upon the difference between time durations of said increase and decrease frequency correction signals.

3,950,659

METHOD OF PRODUCING TRANSDUCERS WITH PHASE, AREA AND DEPTH CONTROLLED POLARIZATION

Norman E. Dixon, Pasco, Wash., and William D. Jolly, San Antonio, Tex., assignors to Battelle Development Corporation, Columbus, Ohio

Continuation of Ser. No. 340,346, March 12, 1973, abandoned. This application July 5, 1974, Ser. No. 485,352
Int. Cl.² H01L 41/08
U.S. Cl. 310—8 15 Claims



1. A method for producing partially polarized piezoelectric transducers, wherein a polarization change is effected in a portion of a homogeneous ferroelectric element, comprising the steps of:

establishing an electric potential relationship between two generally opposed surfaces of said ferroelectric element;

generating a series of thermal pulses of controlled magnitude and rate, each of said thermal pulses individually containing a quantity of energy which is capable of producing a heating effect in said ferroelectric element substantially less than that required to effect a desired depth of polarization change in said ferroelectric element;

applying said series of thermal pulses to one of said opposed surfaces, said series of thermal pulses effecting a gradual polarization change inward of said ferroelectric element from said one surface thereof as said series of thermal pulses is applied to said one surface;

monitoring said polarization change simultaneously with the step of applying; and,

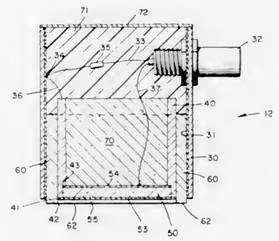
terminating the step of applying when said polarization change advances to a first interior boundary in said ferroelectric element equal in depth to said desired depth of polarization change.

3,950,660

ULTRASONIC CONTACT-TYPE SEARCH UNIT

Jerry T. McElroy, Boulder, Colo., assignor to Automation Industries, Inc., Los Angeles, Calif.

Filed Nov. 8, 1972, Ser. No. 304,740
Int. Cl.² H01L 41/08
U.S. Cl. 310—9.1 10 Claims



1. An electro-acoustic ultrasonic search unit comprising:

a generally cylindrical housing open at least at one end;

an inner cylinder open at least at one end mounted within said housing;

a piezoelectric crystal disc transducer mounted in said inner cylinder open end, one face of said crystal projecting beyond the end of said housing; and

a ceramic wear ring disposed between said housing and said inner cylinder, one end of said ring projecting beyond the end of said housing and substantially coplanar with said crystal face so as to define a wear face for said search unit that is abrasion resistant.

3,950,661

LINEAR INDUCTION MOTOR WITH ARTIFICIAL TRANSMISSION LINE

Robert V. Langmuir, Altadena, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Filed June 19, 1974, Ser. No. 480,713
Int. Cl.² H02K 41/02
U.S. Cl. 310—12 8 Claims

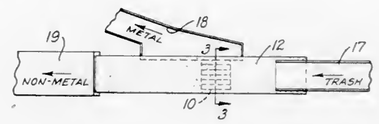
1. In a single phase linear induction motor, the combination of:

a magnetic core having a plurality of slots;

a plurality of coils positioned in said slots defining a plurality of magnetic poles in a line;

a termination resistance having first and second terminals;

circuit means for connecting said coils and termination resistance in series across a single phase ac power source, with said coils interconnected at junctions and with one coil connected to said termination resistance at said first terminal; and



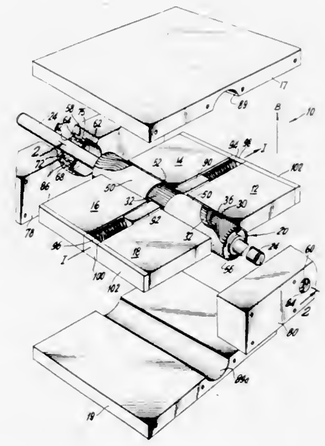
a plurality of capacitors, with a capacitor connected between each coil junction and said second terminal to form an artificial transmission line between said source and said termination resistance.

3,950,662

SELF-COMMUTATING MOTOR AND PRINTED CIRCUIT ARMATURE THEREFOR

Robert Page Burr, and Raymond J. Keogh, both of Huntington, N.Y., assignors to Photocircuits Division of Kollmorgen Corporation, Hartford, Conn.

Filed June 4, 1974, Ser. No. 476,280
Int. Cl.² H02K 37/00
U.S. Cl. 310—46 18 Claims



1. A self-commutating motor comprising:

a housing;

a printed circuit armature arranged within said housing, said printed circuit armature including a rotatable core with exposed elements at its outer surface;

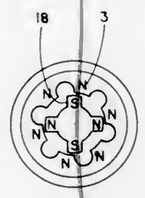
a plurality of permanent magnets symmetrically arranged within said housing relative to said printed circuit armature;

a pair of brushes transversely and centrally positioned relative to said printed circuit armature on opposite sides thereof and biased for engagement with said exposed conductive elements of said printed circuit armature to establish a commutator region therewith;

terminal means electrically coupled to said brushes for applying current thereto; and

said housing including flux return means positioned adjacent said magnets for providing a return path for the magnetic flux produced by said magnets.

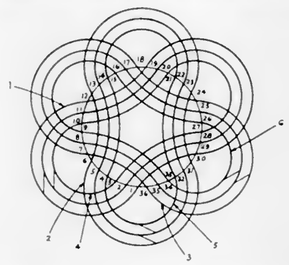
3,950,663
INLINE MOTOR IRON AND WINDINGS
John A. Mead, E. Charlemont Road, Shelburne Falls, Mass. 01370
Filed May 23, 1974, Ser. No. 472,597
Int. Cl.² H02K 37/00
U.S. Cl. 310—49 R 10 Claims



1. In a motor apparatus of the type described in which two stator elements are adapted to be periodically connected to an electrical voltage source for rotatably coercing across an annular air gap a coaxially mounted cylindrical rotor whose lengthwise splined poles extend through both elements, are equally spaced peripherally and are permanently charged with alternate north and south magnetic fields, each said element comprising a bobbin-styled winding whose coil axis is inline with the motor's central axis and flux-carrying stator iron pieces which surround said winding on its end faces and on its side away from said rotor, said stator iron pieces incorporating a full complement of pole lands and spaces of equal arcs extending radially at their two end-face sections toward said rotor whose poles number substantially less than stator lands in order that energizing the winding of either element emanates a toroidally-shaped flux circuit to selectively gate fluxes at the two rings of stator lands that surround said element toward circumferentially overlapping rotor poles, the coaction of field strengths of said rotor poles with those instant to said rings of stator lands whose polarities depend on the direction of electric current through the winding between them in producing a torque that aggregates uniformly at every rotor pole around the air gap and the resulting step movement of said rotor amounting to an arc equal to one-quarter that subtended by a stator land and space together adding to an arc of one full land and space after a cycle of four consecutive steps in the same direction, of which the first is marked by the passage of current in one direction through the winding of one element whose surrounding two rings of stator lands are oriented circularly one-half land pitch apart, the second by the passage of current in the same direction through the winding of the other element whose surrounding rings have their lands staggered one-half land pitch in the same manner as the one element but also oriented one-quarter land pitch in the direction of rotor movement from the corresponding rings in the one element, the third by the passage of current in the opposite direction through the winding of the one element and the fourth by the passage of current in the opposite direction through the winding of the other element and so on to impress sustained rotation through further step movement cycles and to permit rotation in the opposite direction by directing the same currents through the windings in reverse order.

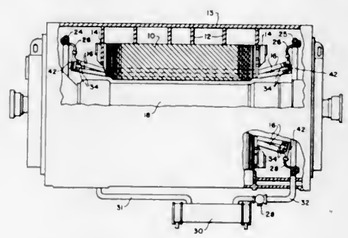
3,950,664
A.C. MOTOR WINDING
Vasile Andreica, 43-15 46th St., Sunnyside, N.Y. 11104
Filed Jan. 9, 1974, Ser. No. 431,906
Int. Cl.² H02K 27/02
U.S. Cl. 310—203 6 Claims

1. In an AC motor including cylindrical stator and rotor elements, the improvement in combination therewith of windings wound on at least one of said elements to form a plurality of poles, each element thus wound having an annular surface defining thereon a plurality of equally spaced-apart slots oriented generally axially of said surface, said windings comprising only one basic coil for each phase, each coil being a continuous closed wire loop defining a continuous path which never intersects its own path, circumscribing said annular surface of said element, made of axial portions lying in said slots, and circumferential portions joining axial portions, two first and second axial portions being connected by only one circumferential portion and third and fourth axial portions



joined to each of said first and second axial portions by only one circumferential portion, each of said circumferential portions being connected to said first and second axial portions at the opposite end of said first and second axial portions from the circumferential portion connecting said first and second axial portions, each of said slots having only one wire of said basic coil therein and each basic coil being positioned in the slots of each pole and the number of basic coils being equal to the number of phases.

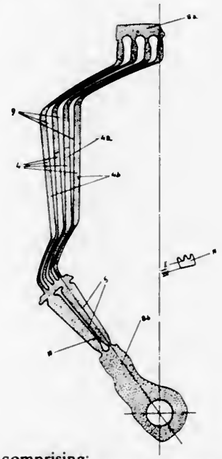
3,950,665
LIQUID-COOLED CONDUCTORS FOR DYNAMOELECTRIC MACHINES
Mark H. Schneider, Verona; Emil M. Fort, Murrysville; Leonard B. Simmonds, and Robert J. Kultzow, both of Monroeville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 25, 1974, Ser. No. 509,166
Int. Cl.² H02K 3/46
U.S. Cl. 310—260 2 Claims



1. In a dynamoelectric machine, an arrangement for improved mechanical support of conductors of a liquid cooled stator comprising:
a stator winding and a coolant system for circulating a liquid coolant therethrough;
a plurality of winding conductors connected together to constitute said winding, each of said conductors comprising a plurality of strands, at least some of said strands being hollow to serve as coolant ducts;
a header member on each end of each of said conductors and joined to said conductor with a liquid-tight joint, said header member providing an enclosed space communicating with said coolant ducts and having means for connecting said enclosed space to said coolant system;

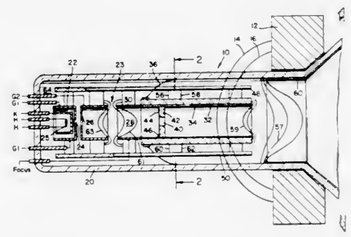
said strands of each of said conductors immediately adjacent to said header being supported in relation to each other by cured resinous material filling space between said strands;
each of said conductors having a ground wall insulation comprising a wrapped insulating tape impregnated with a cured resinous material, said ground wall insulation terminating on each of said conductors at a location spaced from said header;
a rigid insulating support member disposed over each of said conductors adjacent said header, said rigid insulating support member comprising a plurality of layers of insulating material, each of said layers providing substantially a full sleeve-like covering of said conductor from said header to said ground wall insulation, said rigid insulating support member being impregnated with a cured resinous material, and said layers of insulating material of said rigid insulating support member having extremities that are interleaved with layers of said tape of said ground wall insulation.

3,950,666
DISK OR CUP ROTOR WITH STAMPED-OUT WINDING ELEMENTS FOR A LOW-INERTIA ELECTRIC MACHINE
Dumitru Felician Lazaroiu; Sigmund Sleiher, and Gheorghe Mihai Mihaiescu, all of Bucharest, Romania, assignors to Institutul de Cercetare si Proietare Pentru Industria Elektrotehnica, Bucharest, Romania
Continuation-in-part of Ser. No. 345,216, March 26, 1973, Pat. No. 3,869,788. This application Aug. 12, 1974, Ser. No. 496,739
Int. Cl.² H02K 1/22
U.S. Cl. 310—268 10 Claims



1. A rotor comprising:
at least one dielectric support body formed as a body of revolution and having an outer periphery, an inner periphery, an intermediate region between said peripheries, and a pair of opposite faces;
a layer of conductors on each of said faces, each conductor having an outer end extending beyond said outer periphery and there joined to another outer end of another such conductor, at least every second conductor of each layer having an inner end joined at said intermediate region to an inner end of another such conductor of the other layer, the remaining conductors of each layer having inner ends extending beyond said intermediate region and being widened adjacent said inner periphery to form integral commutator bars joined with the commutator bars of the other layer, said conductors forming a closed waved series winding with at least two parallel current paths; and a second such support body and a second pair of such conductor layers thereon, said conductors of all of said layers forming a multiple waved winding with an even number of parallel current paths.

3,950,667
MAGNETIC DEFLECTION CATHODE RAY TUBE SYSTEM WITH ELECTRON GUN HAVING FOCUS STRUCTURE OF A DEPOSITED RESISTIVE MATERIAL
Arthur E. DeJong, Bellflower, and Neal H. Cosand, Fullerton, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Continuation of Ser. No. 376,263, July 3, 1973, which is a continuation of Ser. No. 194,381, Nov. 1, 1971, abandoned. This application Sept. 6, 1974, Ser. No. 503,893
Int. Cl.² H01J 29/46, 29/62
U.S. Cl. 313—450 2 Claims



1. A high speed magnetic deflection cathode ray tube system having a selected magnetic deflection time constant comprising
a glass envelope including a neck portion having first and second ends,
a magnetic deflection yoke positioned at the second end of said neck portion and passing deflection flux through a predetermined portion of said neck portion, and
an electron gun including a focus structure, means within said predetermined portion including at least a portion of said focus structure of said electron gun, said focus structure of said means within said predetermined portion including a tube of non-magnetic material having inner and outer surfaces and including a deposited film of a resistive material deposited on one or both of said surfaces, said resistive material being of a selected bulk resistivity ρ and selected thickness t so said deposited film provides a selected time constant τ of said deposited film caused by the eddy currents induced therein by the deflection flux, in accordance with the relationship

$$\tau = \frac{\mu t^2}{\pi^2 \rho}$$

where μ is the permeability of the resistive material, said means providing said time constant equal to or less than 100 nanoseconds.

3,950,668
CATHODE RAY TUBE CONTAINING SILICON SENSITIZED RARE EARTH OXYSULFIDE PHOSPHORS

James J. Mattis, Long Valley, and Melvin Tecotzky, Mendham, both of N.J., assignors to U.S. Radium Corporation, Morristown, N.J.

Division of Ser. No. 392,108, Aug. 27, 1973, Pat. No. 3,904,546, which is a continuation-in-part of Ser. No. 185,891, Oct. 1, 1971, abandoned. This application Apr. 11, 1975, Ser. No. 567,386

Int. Cl.² H01J *29/20*

U.S. Cl. 313—468 **5 Claims**

1. A cathode ray tube including a luminescent viewing screen comprising a substrate having on a surface thereof a plurality of particles of a rare earth oxysulfide phosphor consisting essentially of a rare earth oxysulfide matrix of the formula $M_{2-x}O_2S$:xA wherein M is at least one rare earth element selected from the group consisting of lanthanum, gadolinium and yttrium, A is at least one rare earth activator selected from the group consisting of praseodymium, neodymium, samarium, europium, terbium, dysprosium, holmium, erbium, ytterbium, and thulium, and x is 0.001 to 0.1, silicon incorporated in said matrix in an amount from about 10 to 1000 p.p.m. based on phosphor weight and, when M is gadolinium or yttrium, fluorine incorporated in said matrix in an amount from about 20 to 500 p.p.m.

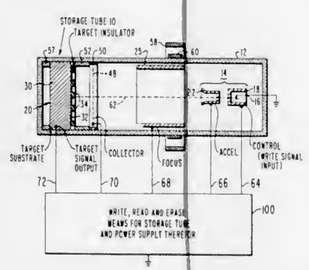
3,950,669
ERASING METHOD FOR STORAGE TUBE EMPLOYING RASTER SCAN

Edgar Merle Smith, Millersville, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 24, 1974, Ser. No. 463,604

Int. Cl.² H01J *29/41*

U.S. Cl. 315—12 R **8 Claims**



1. A method for erasing non-uniformly distributed electrical charges manifesting stored information which have already been written on the surface of a storage target of a storage tube, wherein said tube also comprises means including a cathode and control electrode for deriving an electron beam, means for scanning said beam over said target surface in a raster scan during each of a series of successive frames, and a collector electrode for collecting emitted secondary electrons from said surface of said storage target; said method comprising the steps of:

a. individually applying a different respective one of a first set of predetermined potentials relative to the potential of said cathode to said control electrode, said collector electrode and said storage target for a first integral number of scanning frames, said predetermined potentials of said first set being selected to result in said storage target assuming a substantially uniform "white" level of stored electrical charges by secondary electron redistribution, and

b. then individually applying a different respective one of a second set of predetermined potentials relative to the potential of said cathode to said control electrode, said collector electrode and said storage target for a second integral number of scanning frames, said predetermined potentials of said second set being selected to cause said stored electrical charges to be substantially dissipated from said storage target to thereby result in said storage target assuming a substantially uniform "black" level,

c. wherein said predetermined potentials of said first set are such that said control electrode has a potential substantially equal to said cathode potential, said collector electrode has a first given positive potential relative to said cathode potential, and said storage target has a second given positive potential relative to said cathode potential which is slightly greater in magnitude than said first given collector potential, and wherein said predetermined potentials of said second set are such that said control electrode still has a potential substantially equal to said cathode potential, said collector has a third given positive potential relative to said cathode potential which is considerably higher in magnitude than both said first and second given positive potentials and said storage target has a fourth given positive potential relative to said cathode potential which is considerably smaller in magnitude than both said first and second given positive potentials.

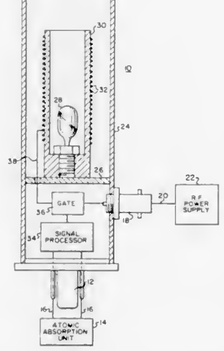
3,950,670
ELECTRODELESS DISCHARGE ADAPTOR SYSTEM

Robert M. Hruda, Horseheads, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 29, 1974, Ser. No. 518,912

Int. Cl.² H05B *41/00*

U.S. Cl. 315—344 **3 Claims**



3. An electrodeless discharge device system comprising:

a hollow generally cylindrical conductive member which is open at one end thereof;

a generally tubular support mounted concentrically within said cylindrical conductive member;

an elongated RF tunable coil disposed about the tubular support member;

an electrodeless discharge light source disposed proximate one end of the tunable coil along the coil axis;

and a disc-like conductive member having a central aperture therethrough slidably fitting within the open end of the cylindrical conductive member, which disc-like conductive member is slidable within said cylindrical conductive member along the cylinder axis, and is capacitively coupled to the RF coil, so that the RF coil is tuned to a selected frequency as the disc-like conductive member is moved along the cylinder axis.

3,950,671
BEAM MISLANDING CORRECTING SYSTEM FOR COLOR CATHODE RAY TUBE

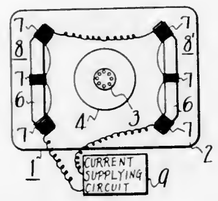
Koji Ichigaya, Toda; Hiromasa Machida, Mitaka; Masayuki Sudoh, Tokyo; Masami Mizuno, Yokohama, and Yoriyoshi Awata, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 14, 1974, Ser. No. 451,306

Claims priority, application Japan, Mar. 19, 1973, 48-33610

Int. Cl.² H01J *29/70, 29/76*

U.S. Cl. 315—368 **11 Claims**



1. A system for correcting mislanding of electron beams on the color phosphor screen of a color cathode ray tube which contains a beam selecting structure disposed near the screen and through which the electron beams pass for landing on the screen during scanning of the latter by said beams; said system comprising electromagnetic means including coil means for producing magnetic fields in response to a current flowing in said coil means, said electromagnetic means being located adjacent said tube for the passage of said electron beams through said magnetic fields so as to change the paths of said beams through said beam selecting structure and thereby correct for mislanding of the beams on said screen; first temperature detecting means for detecting the temperature of said beam selecting structure; second temperature detecting means spaced from said first temperature detecting means for detecting the ambient temperature about said tube; and circuit means for supplying said current to said coil means; said circuit means including means for varying said current in accordance with changes in the difference between the temperatures respectively detected by said first and second temperature detecting means.

3,950,672
CIRCUIT FOR PRODUCING CORRECTLY TIMED VERTICAL BLANKING PULSES FROM A VERTICAL SWEEP CIRCUIT

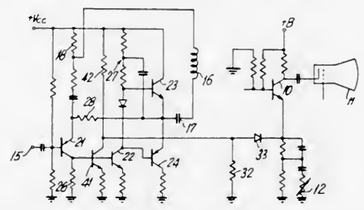
Hirokazu Fukaya, Tokyo; Kenji Andou, and Akio Nakashima, both of Yokohama, all of Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed June 10, 1974, Ser. No. 477,987

Claims priority, application Japan, June 11, 1973, 48-64839

Int. Cl.² H01J *29/70, 29/72*

U.S. Cl. 315—389 **6 Claims**



1. A television circuit including a vertical deflection coil, a resistor connected to said coil, vertical sweep circuit means responsive to a sawtooth voltage for supplying a vertical sweep current through said resistor to said deflection coil, said vertical sweep circuit means comprising a first load, first transistor means for developing a voltage drop across said resistor in response to said sawtooth wave, and for producing across said first load a first voltage that falls to zero during vertical flyback periods and rises above zero during vertical sweep periods, a second load, second transistor means connected to said second load and responsive to said first voltage for producing a second voltage across said second load, and a pair of push-pull connected transistors responsive to said second voltage for producing said sweep current, wherein the improvement comprises an additional load and additional transistor means of the same conductivity type as said second transistor means connected to said additional load and responsive to said first voltage for producing voltage pulses for vertical blanking independently of said second voltage at a point of connection of said additional transistor means with said additional load, said additional load being greater than said second load whereby said additional transistor means serves as a switching transistor and said second voltage is linear with respect to said first voltage.

3,950,673
GATING CIRCUIT FOR TELEVISION SCR DEFLECTION SYSTEM

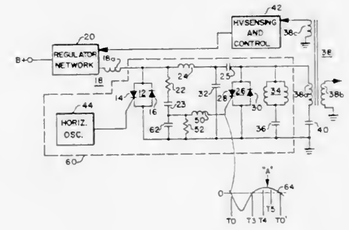
Robert Joseph Gries, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 16, 1974, Ser. No. 506,636

Claims priority, application United Kingdom, June 5, 1974, 24899/74

Int. Cl.² H01J *29/70*

U.S. Cl. 315—408 **5 Claims**



1. In a television deflection system in which a first switching means couples a deflection winding across a source of energy during a trace interval of each deflection cycle and a second switching means replenishes energy to said source of energy during a commutation interval of each deflection cycle, a gating circuit for said first switching means, comprising:

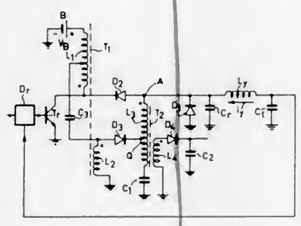
capacitive voltage divider means coupled in parallel with said second switching means for developing gating signals proportional to the voltage across said second switching means; and

means for coupling said voltage divider means to said first switching means to provide for conduction of said first switching means in response to said gating signals.

3,950,674
CIRCUIT ARRANGEMENT FOR GENERATING A SAWTOOTH DEFLECTION CURRENT THROUGH A LINE DEFLECTION COIL

Louis Geradus Josephus Joosten, and Oswald Johannes Verbeij, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 1, 1974, Ser. No. 484,586
Claims priority, application Netherlands, July 23, 1973, 7310198
Int. Cl.² H01J *29/70, 29/72*
U.S. Cl. 315—389 **5 Claims**

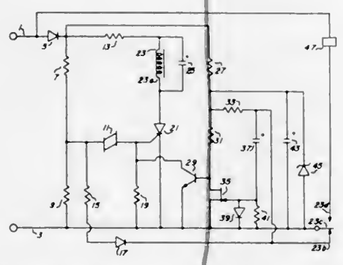


1. Circuit arrangement for generating a sawtooth deflection current flowing through a line deflection coil in an image display apparatus, which circuit arrangement comprises a deflection network including trace and retrace capacitor means coupling to said coil, and a first diode coupled to said retrace capacitor through which the deflection current flows during part of the trace interval, means for conveying the deflection current during the remainder of the trace interval including a second diode and a controllable switch coupled to said diode, said switch and second diode together being coupled in parallel with the first diode, the circuit arrangement further comprising an inductive element coupled to the switch, a third diode coupled to the deflection network and to said inductive element, a transformer having a core of a magnetic material and a winding, and a capacitor coupled to said winding and to the deflection network, characterized in that the inductive element is coupled via the third diode to the series combination of the above-mentioned series capacitor and part of the transformer winding less than all of said winding.

3,950,675
MOTOR PROTECTION DEVICE

Clement J. Weber, Evansville, and Henno Normet, Indianapolis, both of Ind., assignors to Diversified Electronics, Inc., Evansville, Ind.

Filed July 12, 1974, Ser. No. 488,162
Int. Cl.² H02H *3/28*
U.S. Cl. 317—13 A **4 Claims**



1. Apparatus for use in combination with an electrical load and an electrical power supply having a pair of output terminals, comprising:

normally open switch means connecting said load to said power source to the closed position, and disconnecting said load from said source in the open position;

first and second input terminals connectable to said pair of output terminals;

a first impedance element connected between said first input terminal and a circuit node;

a second impedance element connected between said second input terminal and said node;

a relay coil for closing said switch means when energized, being connected between said first and second input terminals and in series with a gated semi-conductor switching device having a gate terminal;

a voltage sensitive break-down device connected between said node and said gate terminal for applying a gate control signal to said gate terminal when the voltage level at said node exceeds a predetermined value;

said semi-conductor switching device being responsive to said gate control signal to energize said relay coil only in the presence of said signal;

an inhibit circuit connected to said gate terminal for preventing said semi-conductor switching device from responding to said signal for a predetermined period of time after said switch means is changed from the open to the closed position;

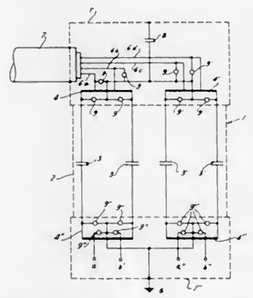
a third impedance element connected between said node and said second input terminal; and

switch means connected in series with said third impedance element and responsive to energization of said coil to open the current path through said third impedance element.

3,950,676
TRANSMISSION LINE-COMMUNICATIONS EQUIPMENT COUPLING UNIT HAVING SHORT-CIRCUIT AND OVERVOLTAGE PROTECTION

Karl Friedrich Dornseifer; Hans-Joachim Kirch, both of Cologne; Friedrich Levacher, Brauweiler, and Karl Heinz Nolting, Cologne, all of Germany, assignors to Felten & Guilleaume Carlswerk Aktiengesellschaft, Cologne, Germany

Filed Jan. 7, 1974, Ser. No. 431,561
Claims priority, application Germany, Jan. 11, 1973, 2201234
Int. Cl.² H02H *7/04, 3/22*
U.S. Cl. 317—14 R **9 Claims**

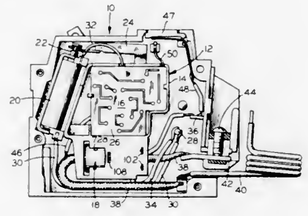


1. In a transmission system having a transmission cable for transmitting power on first conductor means in said cable and for transmitting carrier frequency communication signals on at least one set of twin wires electrically isolated from said first conductor means, said transmission system further having a coupling unit for coupling said carrier frequency communication signal to receiver equipment, said coupling unit comprising an elongated hollow insulating body having opposite ends, a first and second metal cap for closing said opposite ends, first autotransformer means mounted within said first metal cap and having a pair of low impedance terminals connected to said pair of twin conductors, a pair of high impedance terminals, and a center tap, first and second coupling capacitor means having first terminal connected to said high impedance terminals of said autotransformer means and a second terminal, and second autotransformer means mounted within said second metal cap and having a pair of high impedance terminals connected to said second terminals of said first and second coupling capacitor means, a pair of low impedance terminals adapted for connection to said receiver equipment and a center tap, in combination, means for limiting current flow comprising a protective capacitor connected between said center tap of said first autotransformer means and said first conductor means; and at least one overvoltage connected from said center tap of said autotransformer means to one of said high impedance terminals.

3,950,677
HOUSING MOUNTING ARRANGEMENT FOR GROUND FAULT CIRCUIT INTERRUPTER

Keith William Klein; Edward Keith Howell, both of Simsbury, and Joseph Michael Palmieri, Southington, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Oct. 30, 1974, Ser. No. 519,076
Int. Cl.² H05K *5/02*
U.S. Cl. 317—120 **7 Claims**



1. A module for use in a ground fault circuit interruption device, said module comprising, in combination:

A. magnetics including a differential current transformer having a wire-wound toroidal core and a pair of conductors passing through said core to serve as single-turn winding elements;

B. signal processing electronics electrically connected to said magnetics;

C. a molded, insulated shell;

D. means forming a first compartment in said shell accommodating said electronics;

E. means forming a second compartment in said shell accommodating said differential current transformer;

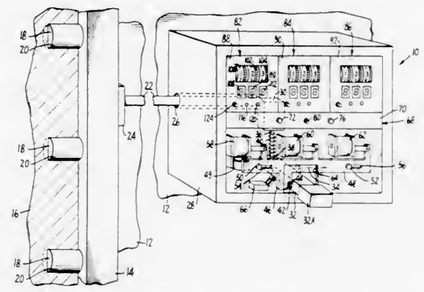
F. resilient means integrally formed in at least one sidewall of said second compartment, said resilient means yielding to admit assembly of said differential current transformer in said second compartment and thereafter frictionally engaging it for retention in said second compartment; and

G. means integrally formed with said shell forming an arch adjacent said second compartment under which said conductor pair pass, thereby to effectively lock said differential transformer in said second compartment.

3,950,678
TIMELOCK FOR BANK VAULT DOORS AND THE LIKE

Kenyon Edwin Brewer, 75 Industrial St., San Francisco, Calif. 94124

Filed Feb. 14, 1975, Ser. No. 549,861
Int. Cl.² H01H *47/00*
U.S. Cl. 317—134 **14 Claims**



1. A timelock for bank vault doors and the like comprising:

manually settable memory means settable to any one of a plurality of delay interval representing states;

timing pulse generating means for generating trains of timing pulses;

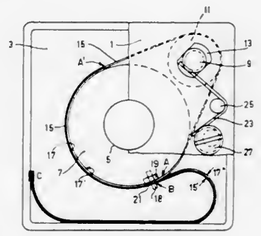
timing pulse train initiating means for initiating said trains of timing pulses; and

counter means for counting a preset plurality of said timing pulses following the actuation of said initiating means, the magnitude of said preset plurality being determined by the state of said memory means when said initiating means is actuated, and the counting operation of said counter means being unaffected by resetting of said memory means during the counting of timing pulses by said counter means.

3,950,679
VARIABLE CAPACITOR

Johannes Carolus Adrianus Boeren, Tilburg, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 20, 1974, Ser. No. 525,616
Claims priority, application Netherlands, Dec. 22, 1973, 7317645
Int. Cl.² H01G *5/04*
U.S. Cl. 317—249 R **11 Claims**



1. A variable capacitor comprising first and second drums, which are rotatable about substantially parallel shafts, the cylindrical surface of said first drum being composed of a conductive material over at least a part of the circumference and constituting a rotatable electrode; a flexible belt, having a first end, guided at least in part circumferentially over the two drums, said belt including at least one metallic electrode layer a dielectric layer situated between said metallic electrode layer and said rotatable electrode; and

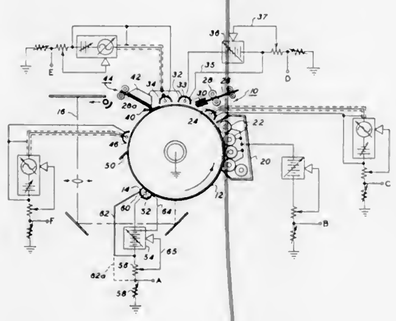
a supply lead having a metallic layer portion, connected to said belt on said first drum at a predetermined point, said belt and said supply lead comprising a continuous strip of synthetic material.

3,950,680

ELECTROSTATOGRAPHIC DIAGNOSTICS SYSTEM

Thomas B. Michaels, Pittsford, and George H. Place, Jr., Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 28, 1975, Ser. No. 572,683
Int. Cl.² G03G *15/02*
U.S. Cl. 317—262 A **13 Claims**



1. In an electrostatographic copying apparatus having an imaging surface with an electrically grounded substrate and a plurality of separate corona generators which have corona emitting electrodes shielded with conductive shields, and which function to apply an output current of electrical charges to said imaging surface, wherein appropriate power supply means are electrically connected to said corona generators for providing a selected input current to each said corona generator, and wherein a variable portion of said input current to each of said corona generators flows to the respective shield of said corona generator, the improvement wherein:

each of said corona generator shields is individually electrically isolated from one another and from said imaging surface and from ground,

a feedback circuit connects with each of said corona generator shields,

said feedback circuit is electrically isolated from said imaging surface and from ground,

said feedback circuit feeds said variable portion of said corona generator input current flowing to said shield back to said respective power supply means for said corona generator; and

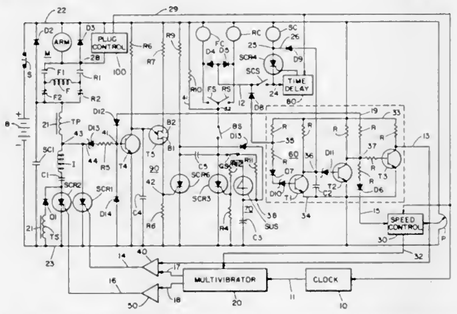
current measurement means are connected between each of said power supply means and said grounded substrate of said imaging surface for independently measuring only said output current flowing between each individual said corona generator and said imaging surface independently of said current flow to said shield, and independently of said input current and independently of the output current flow of other corona generators to said imaging surface.

3,950,681

CONTROL SYSTEM FOR AN ELECTRIC VEHICLE INCORPORATING A BRAKE SWITCH

Donald F. Kern, Brookfield, Wis., assignor to Square D Company, Park Ridge, Ill.

Filed Aug. 26, 1974, Ser. No. 500,818
Int. Cl.² H02P *7/14*
U.S. Cl. 318—139 **3 Claims**



1. An improvement in a control system for an electric vehicle including a direct current voltage source for supplying energy; a direct current motor for driving the vehicle; a main silicon controlled rectifier; a set of normally open reversing contacts; means connecting the main rectifier, the set of reversing contacts, and the motor in a series circuit across the source; a commutating silicon controlled rectifier; periodic switching means for switching the main rectifier to a conductive state and for alternately switching the commutating rectifier to a conductive state to render the main rectifier nonconductive thereby to supply the motor with spaced pulses of energy; a pair of direction controlling coils for controlling the set of contacts; a direction controlling switch movable in opposite directions from a neutral position for selecting the desired direction of vehicle movement by selectively energizing the appropriate one of the pair of coils and connected in series with the coils across the source; a brake switch having normally open contacts; a motor energization controlling silicon controlled rectifier for inhibiting the periodic switching means from switching the main rectifier to a conductive state whenever the motor energization controlling rectifier is nonconductive and connected in series with the coils, the direction controlling switch and the brake switch across the source; and means for switching the energization controlling rectifier to a nonconductive state in event the commutating rectifier is incapable of switching the main rectifier to a nonconductive state, the improvement comprising, means including a switch having contacts responsive to the position of the direction controlling switch for causing the energization controlling rectifier to switch to a conductive state when the direction controlling switch is in a neutral position and the brake switch is closed and for inhibiting the conduction of the energization controlling rectifier when the direction controlling switch is displaced from the neutral position and the contacts of the brake switch are moved from the open to the closed position.

3,950,682

DIGITAL DC MOTOR VELOCITY CONTROL SYSTEM

George J. Dohanich, Jr., Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1974, Ser. No. 534,250
Int. Cl.² H02P *5/16*
U.S. Cl. 318—314 **9 Claims**

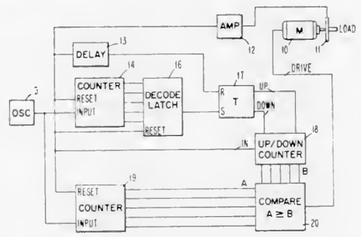
1. In a control system for a motor having an armature with drive circuit means for energizing said armature and having emitter means driven by said armature for producing feedback pulses,

first free running counter means reset by said feedback pulses for recording the feedback period;

decode latch means responsive to said first counter means for determining whether the feedback period is long or short;

trigger means for storing the status of said decode latch;

an up/down counter responsive to said feedback pulses and gated by said trigger means for adjusting the motor drive pulse width;



second free running counter means reset by said feedback pulses to terminate the drive to the motor; and

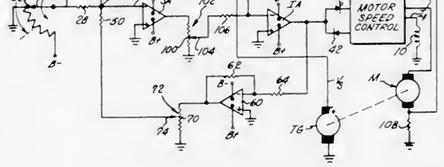
comparing means responsive to said up/down counter and said second free running counter means for controlling said motor drive circuit means to maintain a precise motor velocity.

3,950,683

MOTOR CONTROL SYSTEM HAVING DEAD BAND CONTROL

Wade Petherbridge Lamson, Pepperpike, Ohio, assignor to Cleveland Machine Controls, Inc., Cleveland, Ohio

Filed June 5, 1974, Ser. No. 476,690
Int. Cl.² H02P *5/00*
U.S. Cl. 318—327 **12 Claims**



1. A motor control system for controlling a DC motor comprising:

means for providing a DC reference signal representative of desired motor speed;

means for providing a DC motor signal representative of actual motor speed;

means responsive to said reference signal and to said motor signal for providing a DC error signal representative of the difference between said desired motor speed and said actual motor difference between said desired motor speed and said actual motor speed;

DC amplifying means having input circuit means for receiving a said DC error signal to be amplified and having output circuit means for carrying a DC command signal proportional to said error signal and having a magnitude representative of the amount by which said motor speed must be changed;

motor control means for controlling energization of said motor to vary the motor speed in dependence upon the magnitude of said command signal; and,

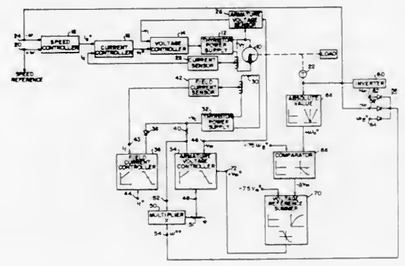
dead band control means for effecting a dead band range of operation of said DC amplifying means to effectively nullify said DC command signal for achieving essentially zero motor speed comprising offset signal means for applying an offset signal to said input circuit means of said amplifying means to oppose said error signal in such a manner as to effectively nullify said command signal only within a given range of magnitudes of said input reference signal representative of motor speed near zero so that throughout said given range of said reference signal a dead band range of operation is achieved, said offset signal means including a negative feedback network interposed between said output and input circuit means of said amplifying means, said network including saturable amplifier means coupled to said output means of said amplifying means for providing an amplified output signal proportional to said command signal until said command signal attains a threshold level at which said saturable amplifier means saturates.

3,950,684

DIRECT CURRENT MOTOR ,PEED CONTROL APPARATUS

Robert S. Peterson, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 29, 1974, Ser. No. 474,285
Int. Cl.² H02P *5/16*
U.S. Cl. 318—338 **15 Claims**



1. In speed control apparatus for a direct current motor including an armature and a field winding, the combination of

first means operative with said armature to determine the motor speed from zero to base speed by controlling the armature voltage,

second means operative with said field winding for controlling the field flux of said motor to determine the motor speed above said base speed,

third means operative with said field winding and responsive to said armature voltage for controlling the armature voltage of said motor, and

means responsive to the armature voltage of the motor for selecting one of said field flux controlling second means and said armature voltage controlling third means to determine the speed of said motor.

3,950,685

DC MOTOR POSITION CONTROLLER

Melvin G. Kramer, Riverton, Wyo., assignor to LRC, Inc., Riverton, Wyo.

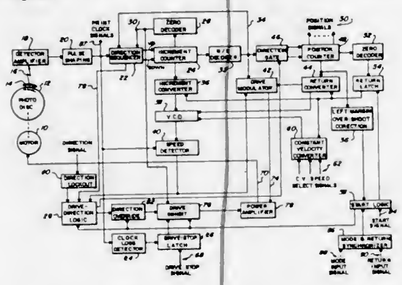
Filed Apr. 25, 1974, Ser. No. 464,153
Int. Cl.² G05B *13/00*
U.S. Cl. 318—561 **20 Claims**

1. In apparatus in which a reversible motor drive controls a motor to an instrumentality at selected ones of a plurality of predetermined, successively spaced positions, a control system comprising:

sensing means responsive to movement of the rotor of said motor drive for developing pulses representative of the rate of movement of said rotor;

a counter responsive to said pulses for totalizing the number of said pulses;

a first decoder responsive to totalization of a predetermined number of said pulses for developing an acceleration limit signal;



a second decoder responsive to totalization of another predetermined number of said pulses for developing a deceleration limit signal; and

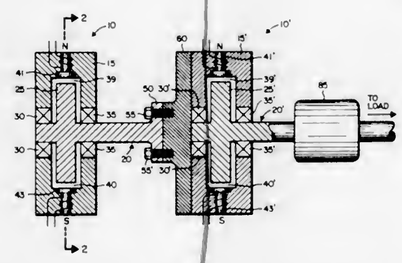
direction sensitive means cyclically operable in response to said first and second decoders for effecting forward and reverse driving of said motor drive in an initial acceleration mode until occurrence of said acceleration limit signal and thereafter effecting a controlled deceleration of said motor correlated with its acceleration to the acceleration limit signal and for removing energization of said motor in response to said deceleration limit signal.

3,950,686

SERIES REDUNDANT DRIVE SYSTEM

James Clyde Randall, Palos Verdes, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 11, 1974, Ser. No. 531,843
Int. Cl.² B64C *13/18*
U.S. Cl. 318—564 **9 Claims**



1. A series redundant drive apparatus, comprising;

a. a first and a second electric motor, each comprising:

a housing;

an armature at least in part enclosed within said housing;

a rotor within said armature adapted to selectively rotate with respect thereto; and a shaft coaxial with respect to the axis of rotation of said rotor, said shaft having a first end rigidly secured to said rotor and a second end projecting from said housing, the second end of the shaft of said first motor being rigidly secured to the housing of said second motor;

b. means to selectively activate a single one of said motors;

c. means to substantially prevent relative rotation between the rotor and armature of the other of said motors while said single one is activated;

d. means to detect spontaneous de-activation of said single one of said motors; and

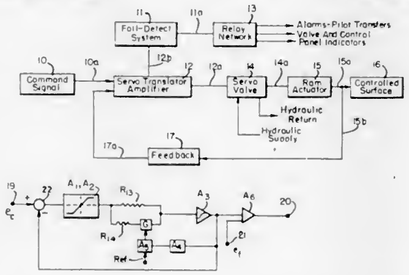
e. means responsive to said detection means to activate said other motor.

3,950,687

SERVO-MECHANISM FOR CONTROLLING VELOCITY AND POSITION OF A CONTROLLED MEMBER

James F. Watson, Jr., Hampton, Va., assignor to Newport News Shipbuilding & Drydock Co, Newport News, Va.

Filed Apr. 12, 1974, Ser. No. 460,625
Int. Cl.² F15B *9/03*; G05B *11/36*
U.S. Cl. 318—588 **6 Claims**



1. A servo system including a command signal processor for ensuring controlled rate of movement of a member controlled by said servo system, said command signal processor comprising,

means for receiving a command signal,

limiting means,

integrating means with an input and an output, said input connected to said limiting means, said integrating means having a time constant selectable from a group of at least two different non-zero values and including time constant selecting means connected to said integrater output for selecting said integrater time constant in accordance with the magnitude of said integrater output signal, and

summing means, connected to said means for receiving, to said integrater output and to said limiting means for providing, to said limiting means a signal proportional to the difference between said command signal and said integrater output signal,

whereby said integrater output signal comprises a shaped command signal which is compared with a signal representative of the actual position of said member to produce an actuation signal to control the rate of movement of said member.

2. The apparatus of claim 1 which includes,

amplifier means having at least two inputs and one output,

one of said inputs receiving a feedback position signal representative of said member position, and

another of said inputs connected to said integrator output,

whereby said amplifier means produces a servo valve actuation signal to control said member in position and velocity.

3,950,688

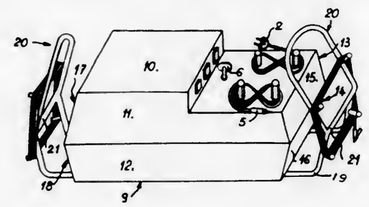
PORTABLE AUXILIARY CURRENT SOURCE INCLUDING A BATTERY AND CHARGER

Francois Sancey, Bonne, and Joel Petit, Ambilly, both of France, assignors to DAV, Vetraz Monthoux Annemasse, France

Filed Feb. 6, 1975, Ser. No. 547,629
Claims priority, application France, Feb. 6, 1974, 74.04001
Int. Cl.³ H02J *7/00*; H01M *2/10*
U.S. Cl. 320—2 **9 Claims**

1. A portable auxiliary current source comprising at least one battery of high output and small volume and low weight, an automatic charger for the battery, means to connect the

charger to a source of electrical energy, a casing enclosing the battery and the charger, a start-stop switch for the current source, and means preventing operation of the source when the source is not in a predetermined operative position, said casing having a prismatic shape characterized by a plurality of



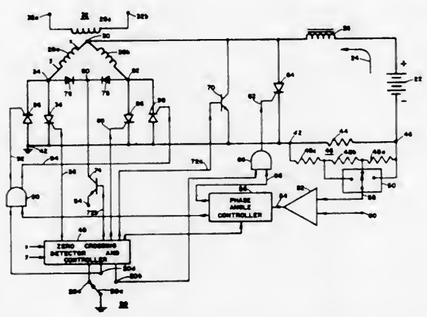
obtusely angled edges such that when it rests on a substrate it automatically assumes, under the influence of its own weight, one of only two positions, said two positions being said operative position and a position in which the current source is inaccessible for operation.

3,950,689

METHOD AND APPARATUS FOR CHARGING AND DISCHARGING A BATTERY

Robert M. Jamison, 6809 Mayfield Road, Apt. 1554, Mayfield Heights, Ohio 44124

Continuation-in-part of Ser. No. 354,753, April 26, 1973, abandoned. This application Nov. 27, 1974, Ser. No. 527,891
Int. Cl.² H02J *7/00*, *1/12*
U.S. Cl. 320—5 **7 Claims**



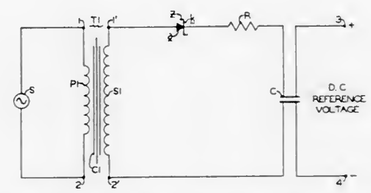
1. An apparatus for removing power from a direct current source and transmitting the power to an AC source which is providing usable current to a load, comprising switching means between said DC power source and the AC source, and means for controlling said switching means at a rate controlled entirely by the AC source frequency to remove power from said DC power source and deliver it to the AC source wherein the source frequency may be any frequency in a wide range between 25 and 2,000 Hz and wherein said switch controls the power to furnish current from the direct current power source in the proper direction to combine with the current of the AC source to said load, whereby said current supplements the AC source current, means disposed between said DC power source and said AC source for sensing the AC voltage and utilizing said sensed voltage to control said switch, said switching means including an AC voltage zero crossing detector, a controller connected to said detector and said switch means, a current line connected to said DC source wherein the DC current is controlled by current sensing means disposed in the current line between the DC source and said switch to sense the current in the line from the DC source, a source of reference potential, comparator means connected to said sensing means and said source of reference potential, a phase angle controller connected to the output of the comparator means, second switching means disposed across the DC source and said phase angle controller connected to said controller and said switch means.

3,950,690

FAIL-SAFE REFERENCE VOLTAGE SOURCE

Richard D. Campbell, Harmarville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Nov. 19, 1973, Ser. No. 417,113
Int. Cl.² H02M *1/14*
U.S. Cl. 321—10 **10 Claims**



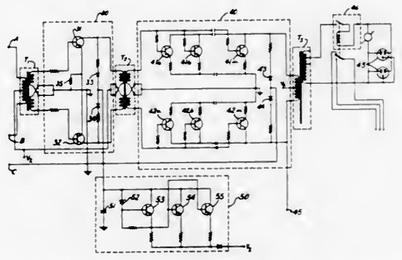
1. A fail-safe circuit for developing a direct current reference voltage comprising, source of periodic signals coupled to a reverse voltage breakdown regulating means, said reverse voltage breakdown regulating means connected to a first plate of a four-terminal impedance means, a second plate of said four-terminal impedance means coupled to said source of periodic signals, a pair of output terminals coupled to said first and second plates of said four-terminal impedance means so that a direct current reference voltage is developed across said pair of output terminals when and only when no critical circuit or component failure is present in the circuit.

3,950,691

HIGH-OUTPUT SOLID STATE DC-AC INVERTER WITH IMPROVED OVERLOAD PROTECTION AND CONTROL LOGIC CIRCUITRY

Shunjiro Ohba, 5969 N. Elston Ave., Chicago, Ill. 60646

Continuation-in-part of Ser. No. 401,801, Sept. 28, 1973, abandoned. This application May 20, 1974, Ser. No. 471,608
Int. Cl.² H02M *1/18*
U.S. Cl. 321—11 **16 Claims**



1. An inverter for converting power from a uni-directional power source to bi-directional electrical power at a predetermined output level, said inverter having components therein which develop internal potentially damaging transient signals, comprising:

oscillator means responsive to energization from said unidirectional power source for generating a bidirectional signal;

amplifier means energized by said unidirectional power source and responsive to said bidirectional signal for amplifying said bidirectional signal to said output level;

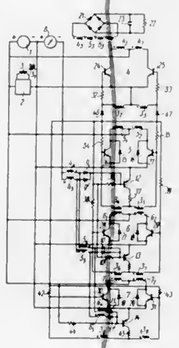
and protection means coupled to said amplifying means for sensing the level of said bidirectional signal and extracting that portion of said bidirectional signal which exceeds a predetermined level, said protection means including rectifying means connected to said amplifying means for rectifying said bidirectional signal, storing means connected to said rectifying means for storing said rectified signal, current only flowing to said storing means when the voltage of the rectified signal exceeds the voltage level of the signal stored in said storing means, and means connected to said storing means for extracting only the portion of the signal stored therein which exceeds said predetermined level, thereby protecting said amplifying means from damage resulting from said transient signals.

3,950,692

METHOD AND DEVICE FOR D.C. VOLTAGE REGULATION ACROSS LOAD

Leonid Evgenievich Smolnikov, 1 Pryadilnaya ulitsa, 11, kv. 8, and Nikolai Nikolaevich Laptev, Pervomaiskaya ulitsa, 64, kv. 50, both of Moscow, U.S.S.R.

Filed June 6, 1974, Ser. No. 477,066
Int. Cl.² H02M *7/00*
U.S. Cl. 321—27 R **7 Claims**



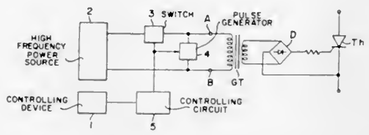
1. A method of regulating D.C. voltage across a load with the aid of a plurality of transistor inverter circuits controlled by square-wave voltage and having transformer outputs, said plurality comprising at least one main transistor inverter circuit and several additional transistor inverter circuits, whereby a reference voltage determining voltage across the load is set, then the output voltages of said transistor inverter circuits are summed and detected, so that the component of the sum corresponding to said main transistor inverter circuit does not reverse its sign in the course of regulation, while the sign of the sum component corresponding to any one of said additional transistor inverter circuits is reversed following a reversal of the sign of the difference between the total value of quantities proportional to the output voltages of said main transistor inverter circuit and several other additional transistor inverter circuits, and the value proportional to said reference voltage by alternating a train of alternate conduction and cut-off control signals and a train of only cut-off control signals applied to the control junctions of the transistors in any one of said additional transistor inverter circuits.

3,950,693

IGNITION APPARATUS FOR THYRISTORS

Hiroshi Mitsuoka, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed June 19, 1974, Ser. No. 480,824
Claims priority, application Japan, June 19, 1973, 48-68966
Int. Cl.² H02M *7/00*
U.S. Cl. 321—27 R **5 Claims**



1. An ignition apparatus for triggering a plurality of thyristros connected in series and/or parallel, each having a gate electrode and an ignition period, comprising:

a high frequency power source,

switch means for interrupting the output of said high frequency power source,

gate transformer means for supplying the output of said high frequency power source interrupted by said switch means to at least one of said gate electrodes,

pulse generator means for feeding a current pulse having a fast rise time to said gate transformer means; and,

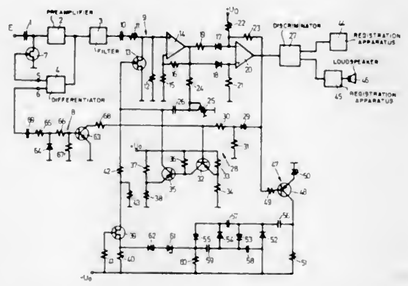
control means for controlling the switching time of said switch means and for controlling the output of said pulse generator means to generate a current pulse from said pulse generator to be fed to said gate transformer slightly before the output of said high frequency power source is applied to said gate transformer means to provide a large output capacity for the ignition apparatus to simultaneously ignite the plurality of thyristors connected in series and/or parallel and to eliminate the need to connect a rectangular AC generator to each group of thyristors having the same ignition period.

3,950,694

INSTALLATION FOR THE DETECTION AND PROCESSING OF ELECTRICAL SIGNALS

Michael Maas, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Dec. 6, 1974, Ser. No. 530,355
Claims priority, application Germany, Dec. 13, 1973, 2362039
Int. Cl.² G05F *1/00;* **A61B** *5/04*
U.S. Cl. 323—16 **5 Claims**



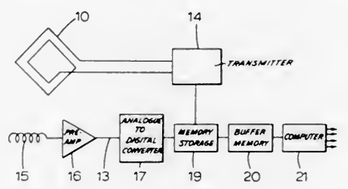
1. In an installation for detection and processing of electrical signals, in particular physiological measuring signals such as EKG, including a damping arrangement having an adjusting element for the setting of desired damping degrees for the signals, the improvement comprising: a control element operatively associated with said adjusting element; and a signal scanning arrangement being connected to said control element; said damping arrangement including a voltage divider with a field-effect transistor for the setting of the desired damping degree through controlled transistor resistance variation; a control transistor being connected to said field effect transistor so as to control the latter, at an increasing output voltage of said signal scanning arrangement, towards higher resistance values corresponding to the damping degree of said damping arrangement; said signal scanning arrangement detecting the frequency at which significant amplitude values occur in the signal and generating an electrical signal in conformance with the frequency of occurrence of the values, said control element adjusting said adjusting element in dependence upon said last-mentioned electrical signal whereby the damping degree is increased for said electrical signals until frequency of occurrence of the significant amplitude values falls below a predetermined minimum value.

3,950,695

GEOPHYSICAL PROSPECTING METHOD UTILIZING CORRELATION OF RECEIVED WAVEFORMS WITH STORED REFERENCE WAVEFORMS

Anthony Rene Barringer, Willowdale, Canada, assignor to Barringer Research Limited, Rexdale, Canada

Continuation-in-part of Ser. No. 349,629, April 9, 1973, Pat. No. 3,852,659. This application Oct. 15, 1974, Ser. No. 514,879
Int. Cl.² G01V *3/10, 3/16*
U.S. Cl. 324—3 **6 Claims**



1. A method of detecting a conductive body in an area comprising:

a. generating a primary electromagnetic field and directing said primary field towards said area, said primary field being defined by a time varying waveform of known frequency and phase composition, said field containing a plurality of frequency components sufficient to permit the identification of said conductive body in said area, said primary field causing eddy currents to be induced in any conductive body present in said area which is intersected by said primary field, said eddy currents resulting in the formation of secondary electromagnetic fields,

b. receiving electromagnetic signals in the vicinity of said primary electromagnetic field, said received signals including a first portion comprising signals emanating from said areas which are responsive in phase and amplitude to each frequency component of said secondary electromagnetic fields, and a second portion that is attributable to direct coupling with said primary electromagnetic field,

c. storing a plurality of reference signals which characterize (i) predetermined components of said primary field, and (ii) predetermined components of secondary fields which would emanate from a plurality of predetermined types of conductive bodies when such bodies are intersected by said primary field, and

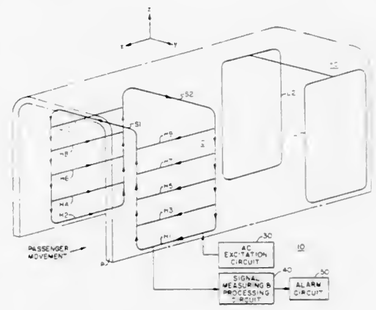
d. comparing said first and second portions of said received electromagnetic signals with said stored reference waveforms and indicating the reference waveforms which respectively provide optimum correlation with one or more selected components of said received signals.

3,950,696

TRAPEZOIDAL COIL CONFIGURATION FOR METAL DETECTOR IN THE SHAPE OF AN INVERTED U

Robert C. Miller, and George T. Mallick, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 465,448, April 29, 1974, abandoned, which is a continuation of Ser. No. 322,830, Jan. 18, 1973, abandoned. This application Jan. 2, 1975, Ser. No. 538,067
Int. Cl.² G01R *33/00*
U.S. Cl. 324—41 **7 Claims**



1. A metal detection system, comprising, a trapezoidal coil comprised of one or more turns of primary and secondary windings, said trapezoidal coil being in the form of an inverted U to form a passageway adapted to support the movement of an object or person therethrough, one of the non-parallel sides of said trapezoidal coil forming an inverted U and defining a vertical plane, said inverted U corresponding to the entrance arch of said passageway, the second of said non-parallel sides forming a second inverted U and defining a vertical plane and corresponding to the exit arch of said passageway, the parallel ends of said trapezoidal coil corresponding to the opposite side of the passageway and defining a horizontal plane,

an AC excitation means connected to the primary winding to establish a circuit flow to develop magnetic fields perpendicular to the vertical planes defined by the non-parallel sides of the trapezoidal coil and a magnetic field perpendicular to the horizontal plane defined by the parallel ends of the trapezoidal coil, and

measuring means connected to said secondary winding to monitor changes in said magnetic fields in response to the presence of metal associated with an object or person in said passageway.

3,950,697

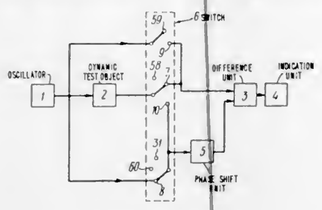
APPARATUS FOR MEASURING PHASE, AMPLITUDE AND FREQUENCY CHARACTERISTICS OF AN OBJECT

Leonid Petrovich Russin, ulitsa Nelidovskaya, 22, kv. 18, Moscow, U.S.S.R.

Filed Dec. 18, 1974, Ser. No. 533,840
Int. Cl.² G01R *27/00*
U.S. Cl. 324—57 R **4 Claims**

1. A device for measuring parameters of a dynamic object, which device comprises a source of periodic oscillations whose output is connected to an input of a dynamic object; a difference signal unit having two inputs, with a regulable amplification factor at one of said inputs, a second one of said inputs being electrically connected to the output of said source of periodic oscillations; a regulable phase shift unit whose output is connected to a first input of said difference signal unit; an indication unit whose input is electrically connected to the output of said difference signal unit; a switch having two positions and electrically connecting the outputs of

said source of periodic oscillations and said dynamic object to said second input of said difference signal unit and to the input of the regulable phase shift unit; said switch being capable of assuming a first one of said two positions, to thereby connect the output of said dynamic object to said second input of said difference signal unit and to connect the output of said source of periodic oscillations to the input of said regulable phase shift unit, enabling the measurement of the phase shift of said dynamic object within a range of 0° to −180°, the speed of response, the ratios between the electric signal amplitudes at



the output and input of said dynamic object, and the capacitance and inductance of its components; said switch being capable of assuming a second one of said two positions, to thereby connect the output of said source of periodic oscillations to said second input of said difference signal unit, and to connect the output of said dynamic object to the input of said regulable phase shift unit, enabling the measurement of the signal phase shift at the input and output of said dynamic object in excess of −180°, and the frequency values of said source of periodic oscillations.

3,950,698

ARRANGEMENT FOR DETERMINING THE MOISTURE CONTENT OF TOBACCO AND THE LIKE

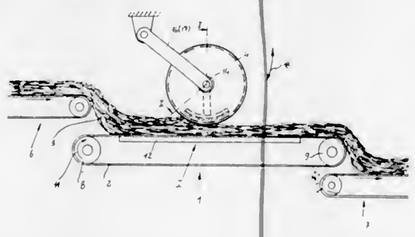
Waldemar Wochnowski, Hamburg, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Filed Mar. 22, 1974, Ser. No. 454,239

Claims priority, application Germany, Mar. 27, 1973, 2315155

Int. Cl.² G01R *27/26*

U.S. Cl. 324—61 R **14 Claims**



1. An arrangement for determining the moisture content of fibrous material and the like, particularly tobacco, other smokers' products and the like, comprising in combination, supporting means for supporting such material; and A.C. voltage source; first and second electrodes connected to said voltage source to form a capacitor, said electrodes being so disposed that the electric field joining said electrodes travels through material being supported by said supporting means; means for determining the moisture of such material by determining the effect upon said capacitor of moisture in material supported by said supporting means and penetrated by said field; and compressing means located and arranged for compressing such material while the material is being supported by said supporting means and penetrated by said field, wherein said compressing means comprises a rotating hollow body mounted to bear towards said supporting means at the location where said field penetrates material being supported by said supporting means, and wherein said first and second electrodes are stationarily mounted inside said rotating hollow body.

3,950,699

DEVICE FOR MEASURING A SIGNAL HAVING A VERY HIGH NOISE LEVEL

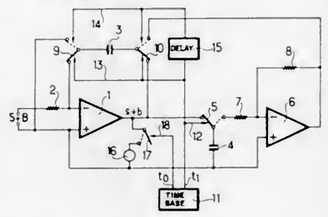
Michel Brouant, Boulogne, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, France

Filed Aug. 16, 1974, Ser. No. 498,300

Claims priority, application France, Aug. 16, 1973, 73.29878

Int. Cl.² G01R *19/00*

U.S. Cl. 324—76 A **12 Claims**



1. Device for measuring a signal with noise superimposed thereon comprising an integrator circuit including a resistor and a first capacitor connected with a first operational amplifier for providing an asymptotic integration value, means for memorizing a voltage which is representative of the charge of said first capacitor, multiplier circuit means, means for switching through said multiplier circuit means for voltage memorized by said memorizing means onto said first capacitor so as to bring the voltage of said first capacitor to a value approximate to the asymptotic integration value, whereby said integrator circuit approaches the asymptotic value in a shorter period of time.

3,950,700

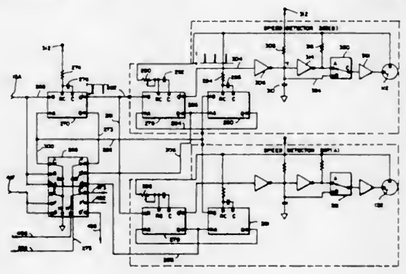
VEHICLE PERFORMANCE CONTROL SYSTEM

Emanuel S. Weisbart, 99-60 63rd Road, Forest Hills, N.Y. 11374

Continuation-in-part of Ser. No. 157,964, June 29, 1971, Pat. No. 3,835,382. This application Mar. 11, 1974, Ser. No. 449,708

Int. Cl.² G01P *3/56*

U.S. Cl. 324—177 **11 Claims**



1. A vehicle performance control system comprising pulse generator means operative for selective connection to the speedometer-odometer and tachometer-total engine revolutions takeoffs of a vehicle and to produce a series of electrical takeoff pulses in response to the operation of said vehicle takeoffs, gating means connected to the output of said pulse generator means operative to gate said series of electrical pulses over a preselected time interval, counter means operative to count up and store the instantaneous numerical value of said gated series of pulses and digital display means operative to selectively display said instantaneous numerical value of said gated pulses representing selectively the instantaneous vehicle velocity when said pulse generator means is connected to said speedometer-odometer takeoff and representing the engine rotational speed when said pulse generator means is connected to said tachometer-total engine revolutions takeoff respectively, speed limit comparator means for comparing said instantaneous numerical value with a preselected numerical value selectively representing the desirable vehicle or engine speed limits, digital speed limit setting means for presetting said preselected numerical values representing said desirable vehicle and engine speed limits respectively, said speed limit setting means includes switch means operative to place said speed limit means into a calibrate/monitor mode, whereby said desirable vehicle and engine speed limits are respectively displayed on said digital display, in said calibrate mode.

3,950,701

REAR VIEW MIRROR FOR A TWO-WHEELED VEHICLE

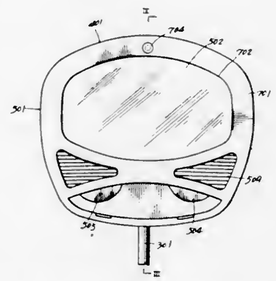
Nozomu Matuoka, Yao; Harumi Kitatani, Higashiosaka; Shuzo Isogami, Yao; Masaaki Ishibashi, and Tomohiko Uemura, both of Takatuki, all of Japan, assignors to Hoshidenkiseizo Kabushikikaisha, Yao, Japan

Filed Nov. 2, 1973, Ser. No. 412,311

Claims priority, application Japan, Apr. 14, 1973, 48-44983[U]; Apr. 14, 1973, 48-44984[U]; Apr. 14, 1973, 48-44985[U]

Int. Cl.² H04B *1/08*

U.S. Cl. 325—312 **12 Claims**



1. A rear view mirror for a wheeled vehicle comprising:
a hollow case housing;
a mirror mounted on the front surface of said case housing so as to face a driver of the vehicle;
a loudspeaker and radio receiving means mounted within said case housing behind said mirror; and
a plurality of slots formed on said front surface of said case housing at the periphery of said mirror for passing the audio sound from said loudspeaker to the outside of said case housing.

3,950,702

CIRCUITS FOR DETECTING TRIGGER SIGNALS FOR USE IN SYNTHESIZING TYPE RECEIVERS

Noboru Saikaishi; Yukio Numata, and Tsuneo Yamada, all of Tokyo, Japan, assignors to Trio Electronics Incorporated, Tokyo, Japan

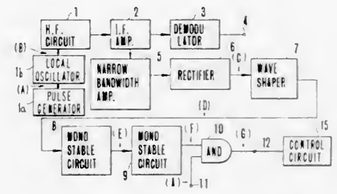
Filed Sept. 16, 1974, Ser. No. 506,101

Claims priority, application Japan, Sept. 18, 1973, 48-105201

Int. Cl.² H04B *1/32*

U.S. Cl. 325—335 **6 Claims**

1. A circuit for detecting a trigger signal for use in a synthesizing type high frequency receiver which uses as its local oscillator a voltage controlled oscillator whose oscillation frequency is sequentially varied by means of a sweeping clock pulse, said circuit comprising means for deriving an intermediate frequency signal from the received high frequency signal, means including a rectifier for said intermediate frequency signal and a wave shaper responsive to the initial rise of the output signal of said rectifier for shaping the waveform of said intermediate frequency signal into a pulse, a first monostable circuit connected to respond to the output from said wave shaper, said first monostable circuit having a time constant



larger than the width of said output pulse of said wave shaper but smaller than the time to scan the minimum frequency separation between individual stations, a second monostable circuit connected to respond to the output of said first monostable circuit and having a time constant smaller than the width of the output of said wave shaper, and an AND gate circuit for producing a logical product of the output of said second monostable circuit and said sweeping clock pulse, said AND gate circuit producing a signal which is used as said trigger signal.

3,950,703

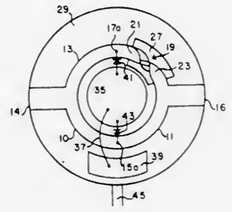
MICROCIRCUIT REVERSE-PHASED HYBRID RING MIXER

John Reindel, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 3, 1975, Ser. No. 546,368

Int. Cl.² H04B *1/26*

U.S. Cl. 325—446 **12 Claims**



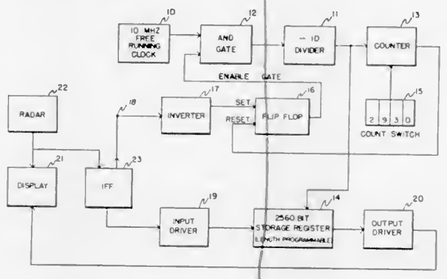
1. A frequency converter comprising:
a dielectric material having first and second sides;
a ground plane fixed to said dielectric material second side;
a signal divider circuit fixed to said dielectric material first side having first and second inputs;
said signal divider circuit including a phase reversal segment comprising first and second adjacent, substantially parallel conductors each having first and second sides and each being twisted 180°.

3,950,704

VIDEO RETIMER SYSTEM

Bernarr H. Humpherys, Escondido, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 12, 1974, Ser. No. 505,306
Int. Cl.² G01S 9/56
U.S. Cl. 328—55 **7 Claims**



1. A retiming system for eliminating a time delay period between a first signal and a delayed second signal to restore their synchronous relationship as derived from a repetitive common trigger signal comprising:

a source of constant frequency clocking pulses defining known uniform time increments;

a static shift register having a predetermined number of bits;

a counter having means for selectively setting its maximum cumulative count at the sum of said predetermined number of bits and the number of said known uniform time increments in said time delay period;

means responsive to said common trigger signal for simultaneously connecting said source of constant frequency clocking pulses to actuate said shift register and said counter;

means connecting the subsequently occurring said delayed second signal to the input of said shift register;

means responsive to the selectively set maximum cumulative count of said counter for simultaneously disconnecting said source of constant frequency clocking pulses from said shift register and said counter leaving said delayed second signal in said shift register with a remaining number of unshifted bits representative of the time interval between said common trigger signal and said first signal; and

means receiving the output of said shift register after its reactuation in response to the next successive trigger signal, shifting said remaining number of unshifted bits for generating a retimed second signal in synchronism with the next successive first signal.

3,950,705

NOISE REJECTION METHOD AND APPARATUS FOR DIGITAL DATA SYSTEMS

Arthur E. Fuerherm, White Plains, N.Y., assignor to Tull Aviation Corporation, Armonk, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,732
Int. Cl.² H03K 5/20
U.S. Cl. 328—108 **10 Claims**

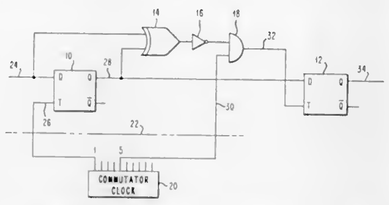
4. Apparatus for processing binary digital input signals and for rejecting spurious noise signals comprising

a commutator clock,

means for sampling and storing the input signal at a first clock interval,

means for comparing the stored sample signal with the input signal at a second clock interval,

and switching means connected for operation in response to said comparison means for switching one of said compared signals through as the true signal when the comparison verifies that the input signal at said second clock interval corresponds to the stored sample signal.

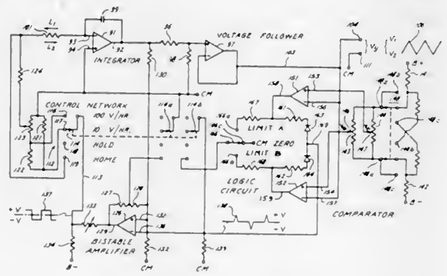


3,950,706

VOLTAGE SWEEP GENERATOR WITH BISTABLE CURRENT SOURCE PROVIDING LINEAR SWEEP VOLTAGES

Homer M. Wilson, Houston, Tex., assignor to Petrolite Corporation

Division of Ser. No. 436,250, Jan. 24, 1974, Pat. No. 3,855,101. This application Aug. 9, 1974, Ser. No. 495,932
Int. Cl.² H03K 4/06
U.S. Cl. 328—181 **2 Claims**



1. A voltage sweep generator comprising:

a. an integrator receiving a control current signal and providing responsively in an output circuit a linear sweep voltage signal following a triangular wave between first and second voltage magnitudes;

b. a control network providing the control current signal to said integrator in response to a control signal voltage of fixed magnitude and positive or negative in polarity;

c. a sweep voltage reference source for providing first and second reference voltages corresponding to the first and second voltage magnitudes;

d. comparator means for sampling the linear sweep voltage signal and comparing same with the first and second reference voltages, and said comparator means generating several switching signals of a polarity indicative of which of the first and second reference voltages is approached by the linear sweep voltage signal, and said comparator means including a pair of differential amplifiers each having one input connected to the output circuit of said integrator and each having another input receiving one of said first and second reference voltages, the outputs of said differential amplifiers connected to a logic circuit, said logic circuit receiving output signals from said differential amplifiers which signals change in magnitude as the linear sweep voltage approaches one of said first and second voltage magnitudes, said logic circuit producing successively said switching signals of alternate positive and negative polarity with a fixed relationship to each of said first and second voltage magnitudes and each signal corresponding in timing to the linear sweep voltage signal reaching one of said first and second voltage magnitudes; and

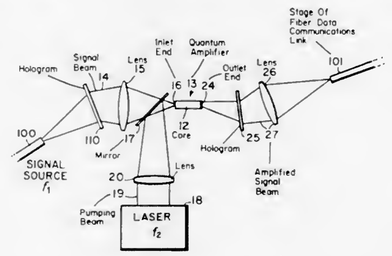
e. bistable amplifiers means receiving successive switching signals from said comparator means and producing the control signal voltage applied to said control network with a fixed magnitude but changing in polarity on each successive switching signal whereby said linear sweep voltage is a triangular wave between first and second voltage magnitudes.

3,950,707

QUANTUM AMPLIFIER HAVING PASSIVE CORE AND ACTIVE CLADDING PROVIDING SIGNAL GAIN BY INTERACTION OF EVANESCENT-WAVE COMPONENTS OF SIGNAL AND PUMP BEAMS PROPAGATING ALONG THE CORE

Kenneth O. Hill; Akira Watanabe, and John G. Chambers, all of Kanata, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Apr. 13, 1973, Ser. No. 350,687
Int. Cl.² H01S 3/09
U.S. Cl. 330—4.3 **4 Claims**



1. Apparatus for amplifying signal light energy of a first given band of wavelengths, comprising

a. an elongated dielectric waveguide structure having an entry face and an opposed exit face;

b. a source of coherent laser light pumping energy of a second band of different wavelengths; and

c. means including a dichroic mirror for directing said signal light energy and a beam of said coherent laser light pumping energy simultaneously into said entry face, said means for directing said signal light energy further including

1. a mode-converting volume hologram (110) having a spatial interference pattern recorded throughout the volume of the holographic medium such that signal light energy having a first predetermined wave front distribution incident thereon is transmitted through said hologram and converted to a desired mode order number by internal reflection from said interference pattern into a second predetermined wave front distribution, and

2. a first optical lens (15) for focusing the light transmitted by said volume hologram into the entry face of said waveguide structure to launch said signal light energy for propagation along said waveguide structure as a predetermined higher order number mode of said waveguide;

d. said waveguide structure including

1. a passive dielectric core having low absorption to said given bands of wavelengths, said core having a smooth continuous side wall portion throughout the length thereof, and

2. a cladding of a laser material intimately adhered on said side wall portion,

a. said cladding having an index of refraction lower than the index of refraction of said core and confining the signal and pumping energies propagating along said core as bound modes of the structure,

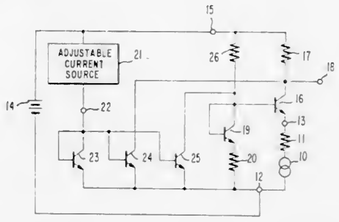
b. said cladding including an active medium capable of being optically pumped by ion coupling with evanescent-wave components of said laser light pumping energy and capable of interacting with evanescent-wave components of signal light propagating along said core and being stimulated to fluoresce in said first given band of wavelengths, whereby to amplify said signal light.

3,950,708

GAIN-CONTROLLED AMPLIFIER

James Robert Hall, Canoga Park, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 4, 1974, Ser. No. 520,791
Int. Cl.² H03G 3/30
U.S. Cl. 330—29 **15 Claims**



1. An amplifier in which the ratio of the amplifier output signal to the amplifier input signal is responsive to a control signal, said amplifier comprising:

a first terminal for application of a direct reference potential;

a second terminal for application of an input signal potential having a quiescent value substantially equal to said reference potential;

a third terminal for supplying said output signal;

a load direct coupled to said third terminal;

a first transistor of a first conductivity type, having base, emitter and collector electrodes, said collector electrode being connected to said third terminal and said emitter electrode being connected to said second terminal;

a first controlled current source responsive to a control signal for supplying a first controlled current;

first diode means connected between said first terminal and said first controlled current source and poled for easy conduction of said first controlled current, said first diode means responding to the flow of said first controlled current therethrough to develop a substantially direct offset potential between said first terminal and said first transistor base electrode, which offset potential controls the flow of collector current in said first transistor; and

a second controlled current source responsive to said control signal for supplying a second controlled current to said third terminal to counteract changes in the quiescent component of said first transistor collector current as supplied to said load.

3,950,709

AMPLIFIER FOR RANDOM ACCESS COMPUTER MEMORY

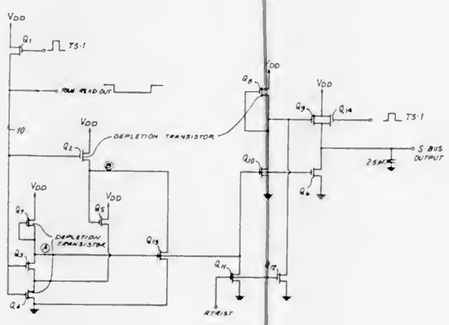
Richard B. Rubinstein, New York, N.Y., and Lamar T. Baker, Manhattan Beach, Calif., assignors to General Instrument Corporation, Clifton, N.J.

Filed Oct. 1, 1974, Ser. No. 510,981
Int. Cl.² H03F 3/42
U.S. Cl. 330—35 **3 Claims**

1. A high-speed amplifier, which comprises:

first (Q3) and second (Q4) semiconductor devices each having a gate, a source and a drain; serially connected via

their sources and drains between a source of potential (VDD) and ground;
a third semiconductor device (Q5) having a gate, a source and a drain and with said source and drain serially connected between said source of potential and the juncture of said first and second devices;
a fourth semiconductor device (Q2) having a gate, a source and a drain and with said source and drain serially connected between said source of potential and the gate of said third semiconductor device;
a fifth semiconductor device (Q13) having a gate, a source and a drain and with said source and drain serially connected between the gate of said third semiconductor device and ground;
means for supplying a first potential to the gate of said first, second and fourth semiconductor devices to cause the potential on the source of said first semiconductor device to fall towards ground;



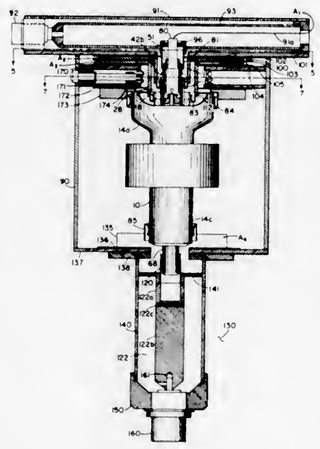
means for connecting the potential on the source of said first semiconductor device to the gate of said fifth semiconductor device whereupon, as said potential falls towards ground, the potential on the gate of said third semiconductor device rises towards the supply potential (VDD) turning the third semiconductor device on and producing an additional current flow through second semiconductor device;
means, connected to the gate of said first, second and fourth semiconductor devices, for supplying a second, negative-going potential to cause the potential on the gate of said fifth semiconductor device to rise; and
a sixth semiconductor device (Q6) having a gate, a source and a drain and with said source and drain connected between said supply potential and ground and having its gate connected to the gate of said fifth semiconductor device, whereby said sixth device produces an amplified version of said second, negative-going potential prior to said second potential reaching its minimum value.

3,950,710
WIDE BAND, IN-LINE, MICROWAVE AMPLIFIER

Martin B. Covington, Jr., Monkton, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 17, 1970, Ser. No. 99,196
Int. Cl.² H03F *3/60*
U.S. Cl. 330—49 **3 Claims**

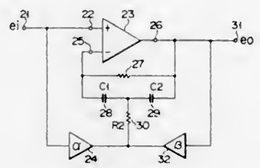
1. Means for amplifying the energy of an input frequency wave comprising:
a plurality of electrodes coaxial and in spaced relation with one another; a second pair of said electrodes being the conductors of a transmission line having a characteristic impedance;
means for applying said input wave to a first pair of said electrodes for propagation along said electrodes; and,
load means for terminating said transmission line, said load means having an impedance essentially equal to said characteristic impedance, said electrodes being coextensive with one another and extending in the direction of propagation of said input frequency wave about one-eighth wavelength of said input frequency wave.



3,950,711
FREQUENCY CHARACTERISTICS-CONTROLLING DEVICE

Motokazu Ohkawa, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 11, 1974, Ser. No. 531,612
Claims priority, application Japan, Dec. 14, 1973, 48-138758; July 2, 1974, 49-74964
Int. Cl.² H03F *1/36*
U.S. Cl. 330—85 **9 Claims**

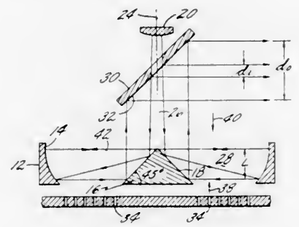


1. A frequency characteristics-controlling device which comprises a first operational amplifier provided with inversion and noninversion input terminals; a bridged-T circuit provided with a common terminal and connected between the inversion input terminal and output terminal of the first operational amplifier; first means for connecting the noninversion input terminal of the first operational amplifier and the common terminal of the bridged-T circuit; second means for connecting output terminal of the first operational amplifier and the common terminal of the bridged-T circuit; and a gain-controlling circuit included in at least one of said first and second connecting means.

3,950,712
UNSTABLE LASER RESONATOR HAVING RADIAL PROPAGATION

Peter P. Chenausky; Anthony J. DeMaria, both of West Hartford; David W. Fradin, Manchester, and Robert J. Freiberg, South Windsor, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 14, 1975, Ser. No. 568,083
Int. Cl.² H01S *3/081*
U.S. Cl. 331—94.5 C **8 Claims**

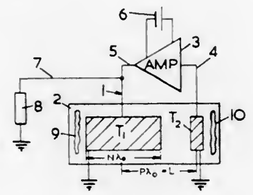


1. An unstable resonator comprising:
an end mirror having a circular reflective surface which is symmetrically disposed about an optical axis passing essentially through the geometric center of the circular surface;
a folding mirror having a conical reflective surface which is optically communicative with the circular end mirror and is symmetrically disposed about the optical axis and oriented with the cone apex toward the reflective surface; and
an annular end mirror having a curved reflective surface which is optically communicative with and disposed symmetrically about the folding mirror.

3,950,713
ACOUSTIC WAVE DEVICES

Meirion Francis Lewis, Malvern, England, assignor to National Research Development Corporation, London, England

Filed Feb. 14, 1974, Ser. No. 442,624
Claims priority, application United Kingdom, Feb. 16, 1973, 7880/73
Int. Cl.² H03H *9/26, 9/30, 9/32*; **H03B** *5/30*
U.S. Cl. 333—30 R **8 Claims**

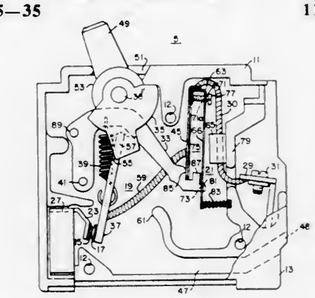


1. An acoustic wave device comprising:
a substrate able to support acoustic waves; an interdigital comb input transducer for launching acoustic waves in the substrate; an interdigital comb output transducer for detecting and receiving acoustic waves launched by the input transducer; wherein one of the transducers is of greater effective length than the other transducer, and wherein the length of the longer transducer is related to the separation of the transducers so as to produce frequency responses which suppress unwanted modes of acoustic frequency oscillation and allow only one mode.

3,950,714
SELF-ADJUSTING CIRCUIT BREAKER WITH ROTATING TRIP ASSEMBLY

Stephen A. Mrenna, Beaver, and Alfred E. Maier, Beaver Falls, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 18, 1974, Ser. No. 507,165
Int. Cl.² H01H *75/12*
U.S. Cl. 335—35 **11 Claims**

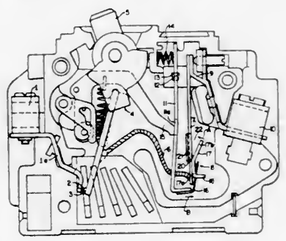


1. A circuit breaker comprising:
a. an insulating housing;
b. a circuit breaker mechanism supported within said housing, said mechanism comprising separable contacts;
c. operating means releasable to effect automatic separation of said contacts, said operating means comprising a latchable member;
d. latch means engaging said latchable member and operable to initiate release of said operating means upon disengagement of said latchable member;
e. trip means operable to disengage said latch means from said latchable member upon overcurrent conditions;
f. bias means biasing said latch means into engagement with said latchable member; and
g. adjustable positioning means determining the degree of engagement between said latch means and said latchable member;
h. said bias means and said adjustable positioning means cooperating to maintain a constant degree of engagement between said latch means and said latchable member.

3,950,715
CIRCUIT BREAKER WITH IMPROVED TRIP MEANS

Dante Bagalini, Johannesburg, and Alexander Towianski, New Redruth, both of South Africa, assignors to Fuchs Electrical Industries, Transvaal, South Africa

Filed Oct. 29, 1974, Ser. No. 518,913
Int. Cl.² H01H *73/12*
U.S. Cl. 335—35 **9 Claims**



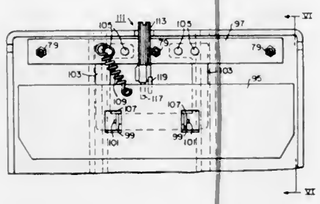
1. A circuit breaker comprising relatively movable contacts and releasable means releasable to effect automatic opening of said contacts, trip means comprising an elongated current carrying bimetal supported in proximity to one end thereof, a magnetic pole-piece supported on said bimetal, a movable trip member positioned on one side of said bimetal and latching

said releasable means, a magnetic armature, support means supporting said armature for movement on the side of said bimetal opposite said one side, extension means operatively connecting said trip member with said bimetal and operatively connecting said trip member with said armature, upon the occurrence of an overload below a predetermined value said bimetal flexing and operating through said extension means to move said trip member to release said releasable means, and upon the occurrence of an overload above said predetermined value said armature being attracted to said magnetic pole piece and operating through said extension means to move said trip member to release said releasable means.

3,950,716
MULTI-POLE CIRCUIT BREAKER WITH ADJUSTABLE THERMAL TRIP UNIT

Albert R. Cellerini; Paul Skalka, and William I. Stephenson, Jr., all of Beaver, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 21, 1975, Ser. No. 551,936
Int. Cl.² H01H *75/08*
U.S. Cl. 335—45 **6 Claims**



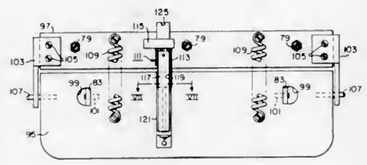
1. A multi-pole circuit breaker comprising a circuit breaker mechanism having a plurality of pole units, each pole unit comprising a pair of contacts, means releasable when released from a latched position to effect simultaneous opening of all of said pairs of contacts, a multi-pole trip device comprising trip means for each of said pole units, each of said trip means being constructed to operate upon the occurrence of certain current conditions to effect release of said releasable means, each pole unit comprising a bimetal element responsive to current flow to effect heating thereof, trip bar means movable to unlatch the latch lever and being biased in the latched position, the trip bar means comprising a first trip bar and a second trip bar, the first trip bar being mounted to oscillate between latched and unlatched positions, the second trip bar being pivotally mounted on and at spaced locations between the ends of the first trip bar and being pivotally adjustable to simultaneously vary the spacings from the bimetal elements, and adjustment means on one of the first and second trip bars for adjusting the second trip bar with respect to the bi-metal elements.

3,950,717
MULTI-POLE CIRCUIT BREAKER WITH ADJUSTABLE THERMAL TRIP UNIT

Albert R. Cellerini, and Louis N. Ricci, both of Beaver Falls, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 21, 1975, Ser. No. 551,937
Int. Cl.² H01H *75/08*
U.S. Cl. 335—45 **6 Claims**

1. A multi-pole circuit breaker comprising a circuit-breaker mechanism having a plurality of pole units, each pole unit comprising a pair of contacts, means releasable when released from a latched position to effect simultaneous opening of all of said pairs of contacts, a multi-pole trip device comprising trip means for each of said pole units, each of said trip means being contructed to operate upon the occurrence of certain current conditions to effect release of said releasable means, each pole unit comprising a bimetal element responsive to current flow to effect heating thereof, trip bar means movable to unlatch the releasable means and being biased in the latched position, the trip bar means comprising a trip bar and a trip arm, the trip bar being mounted to oscillate between

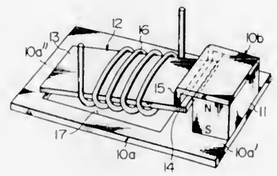


latched and unlatched positions, the trip arm being pivotally mounted on the trip bar and being pivotally adjustable to simultaneously vary the means on one of the trip bar and trip arm for adjusting the trip arm with respect to the bimetal elements.

3,950,718
ELECTROMAGNETIC DEVICE

Mitsuki Nagamoto, Tsu, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Nov. 26, 1974, Ser. No. 527,203
Claims priority, application Japan, Nov. 30, 1973, 48-140019; Nov. 30, 1973, 48-143224[U]
Int. Cl.² H01H *51/27*
U.S. Cl. 335—79 **17 Claims**



1. An electromagnetic device comprising a permanent magnet, first and second yokes in contact respectively at one end with each of the magnetic pole surfaces of said permanent magnet and extending opposed to one another in parallel spaced relation, the first yoke being longer than the second and terminating in a base end, a swingable armature pivoted at the base end of the first yoke and disposed between said first and second yokes and spaced from said permanent magnet so as to be alternatively engageable with respective opposing surfaces of the first and second yokes, and a coil wound around said armature and arranged so as to allow said armature to swing between the yokes.

3,950,719
PROXIMITY ACTUATED MAGNETIC BUTTON-CONTACTOR ASSEMBLY FOR SWITCHES

Palmer M. Maxwell, 522 E. 46th St., Savannah, Ga. 31401

Filed Aug. 21, 1974, Ser. No. 499,331
Int. Cl.² H01H *9/00*
U.S. Cl. 335—205 **14 Claims**

1. A proximity magnetically actuated electrical switch for selectively making and breaking an electrical circuit, comprising:

a rectangular channel defined by a floor member having an inner surface and an outer surface, a pair of spaced apart parallel sidewall members, and a pair of end wall members;

said side wall members and end wall members being adjacent to and upstanding a distance from the inner surface of said floor member;

said side wall members and said inner surface of said floor member being electrically conductive;

a first circuit connector means electrically connected to said conductive wall members and inner surface for connection with an electrical circuit to be controlled by said switch;

at least one of said end wall members comprising a fixed electrically conductive member mounted in electrically nonconductive relation with said wall members and inner surface;

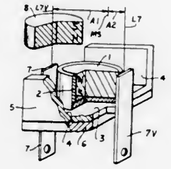
a second circuit connector means electrically connected to said one end wall member for connection with said electrical circuit;

a cylindrical button contactor member slidably received within said channel;

said button contactor member having a first end disposed on said inner surface of said floor member;

said first end and the circular wall of said cylindrical member comprising a cylindrical capsule of electrically conductive material;

a permanent magnetic member disposed within said cylindrical capsule with a first pole facing toward said inner surface of said floor member and with a second pole of opposite polarity facing away from said inner surface;



the outer diameter of said cylindrical capsule being sufficiently less than the spacing between said side wall members of said channel to permit the button contactor member to freely side between said end members of said channel;

a layer of magnetically permeable material disposed on said outer surface of said channel, and being of sufficient permeability and mass to sustain said cylindrical capsule in sliding electrical contact with said channel;

a nonmagnetic window mounted in spaced apart relation to said floor member inner surface to enclose said channel;

a magnetic actuating member positioned externally of said channel for movement adjacent to and along said window;

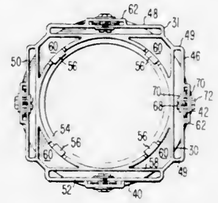
said actuating member having a magnetic pole facing said window of the same polarity as said second pole of said button contactor member, so that said actuating member exerts a repulsive force tending to urge said button contactor member for sliding travel along said channel to contact either one of said end members; and

switch control means operatively engaging said actuating member to selectively move said facing magnetic pole along substantially the same path of travel which said button contactor member can travel within said channel, so that such movement of the repulsive force of said actuating member causes snap-action movement of said button contactor member into contact with a selected one of said end members.

3,950,720
ADJUSTABLE SPRING MOUNT FOR A CATHODE RAY TUBE YOKE

Terry Monroe Shrader, Leola, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 7, 1975, Ser. No. 539,099
Int. Cl.² H01F *7/00*
U.S. Cl. 335—210 **24 Claims**



1. A yoke mount for a cathode-ray tube comprising,

a first portion adapted for receiving a yoke,

a second portion adapted for securing to a tube,

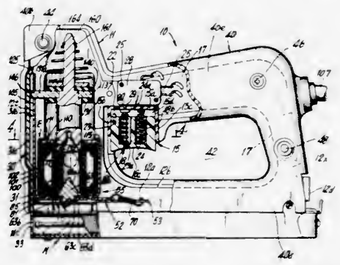
adjustable spring means connecting said first and second portions and providing the sole support of said first portion relative to said second portion, said spring means including means for maintaining the position of said first portion along a first axis while bending to permit movement of said first portion relative to said second portion along a second axis, and

means for securing the position of said first portion relative to said second portion with said spring means in a bent position.

3,950,721
NESTED BOBBINS FOR AN ELECTRO-MAGNETIC STAPLING MACHINE

George F. Manganaro, Lake Hiawatha, N.J., assignor to Electro-Matic Staplers Inc., Saddle Brook, N.J.

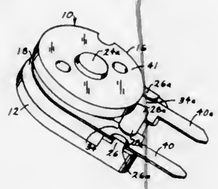
Filed Sept. 11, 1974, Ser. No. 505,169
Int. Cl.² H01F *7/00*
U.S. Cl. 335—278 **11 Claims**



1. An electro-magnet comprising a bobbin assembly, said assembly comprising first and second nested bobbins made of high heat resisting, electricity insulating material and comprising central axial inner tubular portions and spaced upper and lower flanges extending outwardly from said axial inner tubular portions, and outer tubular portions at the outer ends of said flanges, and a barrier bobbin interposed and nested between said first and second bobbins and comprising an axial tubular portion disposed between the axial inner tubular portions of said first and second bobbins, a flange between the upper flanges of said first and second bobbins, a flange between the lower flanges of said first and second bobbins, and an outer tubular portion disposed between the outer tubular portions of said first and second bobbins, and said bobbin assembly forming an annular chamber bounded by said inner tubular portions, said outer tubular portions and said upper

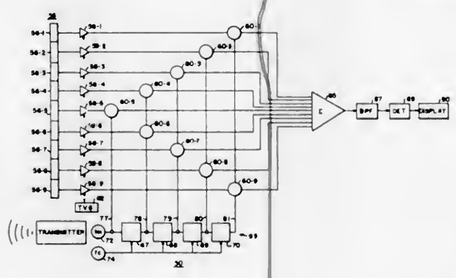
and lower flanges, and a coil of conductive wire within said chamber.

3,950,722
VARIABLE RESISTANCE CONTROL
James N. Hufford, Elkhart, Ind., and John Zdanys, Edwardsburg, Mich., assignors to CTS Corporation, Elkhart, Ind.
Filed July 1, 1974, Ser. No. 484,599
Int. Cl.² H01C *9/02*
U.S. Cl. 338—150 **9 Claims**



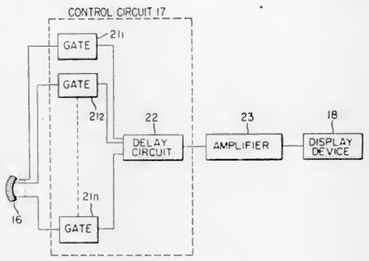
1. In a variable resistance control, the combination of an electrically insulative frame, a shaft integral with the insulative frame, attachment means connected to the insulative frame, first and second contact means carried by the insulative frame and connected to the attachment means, a first terminal integral with the first contact means, a second terminal integral with the second contact means, an electrically nonconductive base rotatably supported by the shaft, a surface on the base disposed adjacent to the insulative frame, said first and second contact means being disposed intermediate the insulative frame and said surface, and a first and second resistive paths disposed on the surface, said first contact means engaging the first resistive path and said second contact means engaging the second resistive path, said second resistive path being electrically connected to said first resistive path, the resistance between the terminals being the sum of the resistance of the first and the second resistance paths between the first and the second contact means.

3,950,723
SONAR APPARATUS
George A. Gilmour, Severna Park, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 21, 1974, Ser. No. 444,590
Int. Cl.² G01S *9/68*
U.S. Cl. 340—3 R **12 Claims**



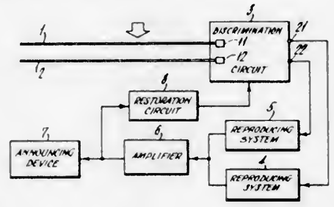
1. Side-looking sonar apparatus comprising:
a. a receiver transducer having a plurality of transducer segments lying along a line and each operable to provide an output signal in response to receipt of acoustic energy from a target area insonified by repetitive acoustic transmissions;
b. circuit means for forming multiple adjacent parallel receiver beams each said beam being centered on a respective one of said transducer segments;
c. signal processing means for focusing said receiver beams at a predetermined initial range and continuously electronically varying said focus after each said transmission.

3,950,724
HORIZONTAL FISH DETECTION SONAR
Keisuke Honda, 37, Shinyoshi-cho, Toyohashi Aichi, Japan
Filed Aug. 20, 1974, Ser. No. 499,034
Claims priority, application Japan, Aug. 22, 1973, 48-94024
Int. Cl.² G01S *9/68, 9/70*
U.S. Cl. 340—3 R **4 Claims**



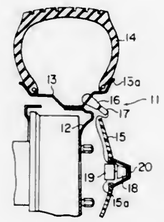
1. A horizontal fish detection sonar comprising an ultrasonic transducer means for emitting an ultrasonic wave spreading in a vertical plane, a plural number of receiving transducers arranged within the angle of said spreading ultrasonic wave, a control device means for permitting signals from said receiving transducers to be sampled in succession for a sampling period Δt after a predetermined time T seconds from the emission of said ultrasonic wave, and a display device displaying said successively sampled signals, whereby said display device provides information relating to the depth of water, a target (a school of fish), or obstructions at any determined distance from the present location in the direction emitting said ultrasonic wave.

3,950,725
AUTOMOBILE DETECTING AND ANNOUNCING DEVICE
Masaichi Kitajima, 12-18 Imazu-Yamanaka-cho, Nishinomiya; Hyogo, Japan (662)
Filed July 25, 1975, Ser. No. 599,068
Int. Cl.² G08G *1/02, 1/09*
U.S. Cl. 340—31 R **1 Claim**



1. An automatic automobile detecting and announcing device, comprising a pair of fluid-containing resilient hoses disposed substantially parallel to each other on and across a road, a discriminating circuit including a pair of pressure-responsive switches coupled respectively to said hoses and actuated by changes of the internal pressures of said hoses, said discriminating circuit having two outputs and discriminating the direction of movement of an automobile from the order of actuation of said switches to produce a signal from one of said outputs, a pair of information reproducing systems coupled respectively to said outputs for reproducing stored information in response to said signal supplied from said discriminating circuit, and a restoring circuit for sensing completion of the reproducing operation of said reproducing systems and restoring said discriminating circuit to its original ready condition.

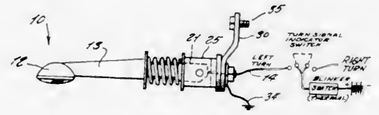
3,950,726
LOW TIRE PRESSURE ALARM SYSTEM FOR PNEUMATIC TIRES
Akira Fujikawa, Kodaira; Takashi Takusagawa, Ome; Akira Matsuda, Higashimurayama, and Norio Goshima, Kodaira, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Sept. 20, 1974, Ser. No. 507,987
Claims priority, application Japan, Oct. 1, 1973, 48-114478; Oct. 12, 1973, 48-118427
Int. Cl.² B60C *23/02*
U.S. Cl. 340—58 **15 Claims**



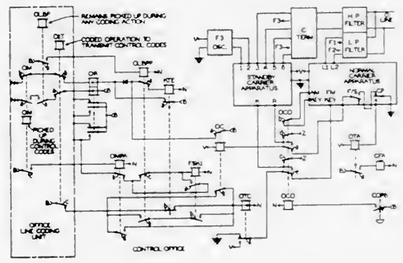
1. A low tire pressure alarm system for a pneumatic tire on a vehicle wheel including a wheel disc, a rim securely mounted on said wheel disc and having flanges for holding said tire, and a wheel cap casing covering an outer side of said wheel, said alarm system comprising in combination:
a low tire pressure detector in pneumatic communication with the interior of said tire for detection of a tire pressure drop below a predetermined level;
a hollow casing of a non-conductive material securely mounted on and substantially at the center of said wheel cap casing of said vehicle wheel:
a radio transmitter accommodated in said hollow casing and including a transmitting antenna in insulated relation with said wheel disc of said vehicle wheel and an oscillator having a resonance circuit electrically connected to said transmitting antenna and said wheel disc for producing an alarm signal of a predetermined frequency between said transmitting antenna and said wheel disc upon detection of an abnormal tire pressure drop by said detector; and
a receiving set including a receiving antenna mounted on the underside of a vehicle body for reception of an alarm signal transmitted from said radio transmitter and a radio receiver unit connected to said receiving antenna for actuating alarm means in response to said alarm signal.

3,950,727
FOLD-AWAY REAR TURN INDICATORS FOR MOTORCYCLES
Paul H. Smith, 5800 S. Y St., Fort Smith, Ark. 72901
Filed June 19, 1975, Ser. No. 588,510
Int. Cl.² B60Q *1/34;* **B62J** *5/00*
U.S. Cl. 340—134 **2 Claims**

1. A pair of fold-away directional indicators for a motorcycle, comprising a left turn and a right turn indicator assembly, each of said assemblies connected to switch means on the motorcycle, each of said assemblies including a stationary unit mounted on opposite sides of the motorcycle frame, a pivotable unit connected to each turn indicator and mounted on each of said stationary units, wherein the indicators are in a normal laterally outwardly extending position therefrom, said pivotable units being selectively movable from said outward position to a rearward retracted position, each pivotable unit comprising a lamp unit integral with an arm and electrically connected to the switch means, a compression spring fitted on one end of said arm between washers for retaining the pivotable unit in one of the selected positions, each of the pivotable units being moved to said retracted position when trail riding with the motorcycle to prevent damage to the turn indicators if the motorcycle falls.



3,950,728
CODED CARRIER REMOTE CONTROL SYSTEM
Alan D. Etchison, Verona, and William E. Higgins, Pittsburgh, both of Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Oct. 8, 1974, Ser. No. 513,149
Int. Cl.² H04Q *9/00*
U.S. Cl. 340—147 LP **10 Claims**

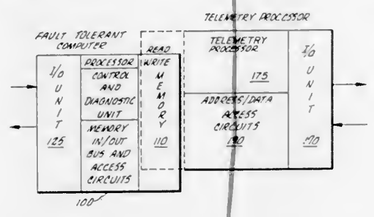


1. In a remote control system, which includes a control office and remote junction location connected by a main communication channel, and a plurality of branch communication channels diverging from said main channel at said junction, over which channels control and indication functions are transmitted between said office and remotely controlled stations connected to said plurality of branch channels, the combination comprising,
a. a transmitter-receiver means at said junction for each diverging channel coupled to the associated channel for transmitting and receiving functions to and from the corresponding stations,
b. another transmitter-receiver means at said junction coupled to said main channel for transmitting and receiving functions to and from said office,
c. retransmission means at said junction coupled between the several transmitter-receiver means for transmitting functions received from said office to the stations connected to said diverging channels and functions received from any station to said office, and
d. priority enforcement means at said junction also coupled between said other transmitter-receiver means and the several diverging channel transmitter-receiver means and controlled by said retransmission means for enforcing a preselected order of priority to the transmission of functions between said office and the remote stations along said plurality of diverging channels.

3,950,729
SHARED MEMORY FOR A FAULT-TOLERANT COMPUTER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of George C. Gilley, Torrance, Calif.

Filed Aug. 31, 1973, Ser. No. 393,524
Int. Cl.² G06F *11/00, 13/00*
U.S. Cl. 340—172.5 **8 Claims**



1. A system including a fault-tolerant computer containing a split-cycle read/write memory directly controlled and monitored by an error detecting and diagnostic unit, said computer including means for verifying that data passing between said computer and said memory is correctly encoded, the system further comprising:

a processor means, independent of the direct control of the error checking and diagnostic unit of said fault-tolerant computer, for processing information independent of said fault-tolerant computer;

access means responsive to said processor means for reading and writing data from and into said read/write memory at times when said computer does not have access to said memory;

data bus means for carrying data between the processor and said access means;

means controlled by said processor for monitoring the memory words exchanged between said processor and said memory and verifying that such words are correctly encoded; and

means for transmitting a fault-indicating signal from said monitoring means to said fault-tolerant computer, when said monitoring means detects an incorrectly encoded memory word.

3,950,730
APPARATUS AND PROCESS FOR THE RAPID PROCESSING OF SEGMENTED DATA

Jacques Michel Jean Bienvenu, and Michel Lecuyer, both of Paris, France, assignors to Compagnie Honeywell Bull (Societe Anonyme), Paris, France

Filed Sept. 19, 1973, Ser. No. 398,737
Claims priority, application France, Sept. 26, 1972, 72.34019
Int. Cl.² G06F *13/00*
U.S. Cl. 340—172.5 **16 Claims**

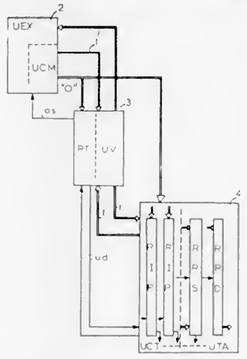
1. Apparatus for the rapid processing of segmented data in a data processing system wherein the memory unit is divided into *m* addressable segments, each segment being assigned an identification number, wherein the characteristics of each segment are stored in a respective segment descriptor forming part of a general descriptor table, said table being stored in registers of said system and wherefrom said descriptors are retrieved successively by means of the identification numbers of the corresponding segments, said identification numbers being provided successively by a processing unit of said system, said apparatus comprising:

an auxiliary table unit, having evolving contents, for *n* descriptors, *n* being relatively small compared to *m*,

a control unit, having evolving contents, and comprising two banks of indicators,

one of said banks comprising a presence indicator bank for denoting the presence of the *n* descriptors contained in said auxiliary table unit, and the other of said banks comprising a reference indicator bank for identifying A different segments called during the course of an addressing, wherein A is less than or equal to *n*,

means including a transfer network and an enabling unit, said means being operatively connected to said auxiliary table unit, said control unit, and said processing unit, said

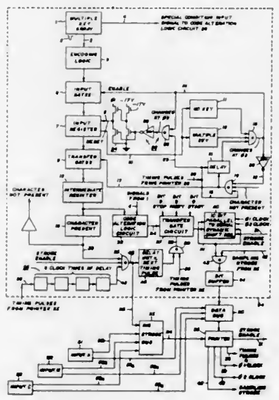


transfer network being responsive to commands emitted in sequence by the command unit of said processing unit for enabling the validation of the presence of predetermined segment descriptors in the auxiliary table unit, by testing the state of the presence indicator bank and the state of the reference indicator bank, to determine the need for transferring said descriptors into said auxiliary table unit, and said enabling unit being responsive to said validation for steering the entry of said descriptors into said auxiliary table unit.

3,950,731
DATA PROCESSING ARRANGEMENT FOR PRINTERS

Maurice J. Quellette, Waynesboro, Va., assignor to General Electric Company, Waynesboro, Va.

Filed Dec. 26, 1973, Ser. No. 428,366
Int. Cl.² G06F *3/12*
U.S. Cl. 340—172.5 **12 Claims**



1. An arrangement for selectively transferring character representing signals from a plurality of sources to a printer for utilization thereby comprising means for providing a strobe

enable signal indicating that the printer is to receive a character representing signal,

a source of system timing pulses,

means responsive to said system timing pulses for providing a respective priority signal for each signal source wherein such priority signals are of substantially brief duration and occur at different non-overlapping discrete time periods during the interval between two successive system timing pulses,

means coupled to each source for providing a character present signal in response to the availability therefrom of a character representing signal,

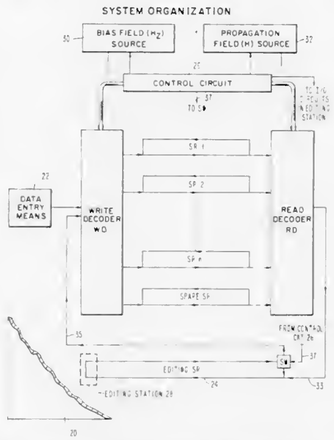
means responsive after each system timing pulse to a following strobe enable signal and a character present signal associated with the priority signal occurring closest in time to said last named mentioned timing pulse for removing said strobe enable signal,

and means for transferring the character representing signals associated with said last named priority signal to said printer following the occurrence of the next system timing pulse.

3,950,732
SINGLE TECHNOLOGY TEXT EDITING SYSTEM

Hsu Chang, Yorktown Heights, N.Y.; Tien C. Chen, San Jose, Calif.; Share-Young Lee, Lake Mohegan, N.Y., and Chin Tung, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 14, 1974, Ser. No. 469,926
Int. Cl.² G11C *19/00, 11/14*
U.S. Cl. 340—172.5 **11 Claims**



1. A text editing apparatus for manipulation of data bits representing said text, comprising:

storage means for dynamically storing said data bits in a single host medium,

deletion means for deleting portions of said data bits in a line of data bits in said host medium,

insertion means for inserting new data bits into said line of data bits in said host medium,

adjusting means for adjusting a gap between data bits of said line of data bits in said host medium,

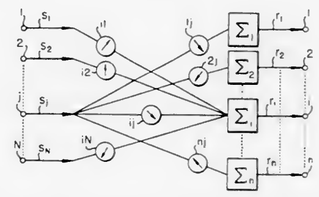
propagation means for moving said data bits in said host medium,

drive means for providing a fixed repetitive sequence of drive fields for moving said data bits in said host medium, said sequence of drive fields being unchanged during the operation of said storage means, deletion means, insertion means, adjusting means, propagation means, and drive means.

3,950,733
INFORMATION PROCESSING SYSTEM

Leon N. Cooper, and Charles Elbaum, both of Providence, R.I., assignors to Nestor Associates, New York, N.Y.

Filed June 6, 1974, Ser. No. 477,080
Int. Cl.² G05B *13/02;* **G06G** *7/12*
U.S. Cl. 340—172.5 **103 Claims**



1. An information processing module comprising, in combination:

a. a plurality (N) of input terminals **1, 2** . . . , *j* . . . , N adapted to receive N input signals $s_1, s_2 \ldots, s_j \ldots, s_N$, respectively;

b. a plurality (*n*) of output terminals **1, 2** . . . , *i* . . . , *n* adapted to present n output responses $r_1, r_2 \ldots, r_i \ldots, r_n$, respectively;

c. a plurality of junction elements, called mnemonders, each mnemonder coupling one of said input terminals (input *j*) with one of said output terminals (output *i*) and providing a transfer of information from input *j* to output *i* in dependence upon the signal s_j appearing at the input *j* and upon the mnemonder transfer function A_{ij}; and

d. means for modifying the transfer function A_{ij} of at least one of said mnemonders, when in a learning mode, in dependence upon the product of at least one of said input signals and one of said output responses;

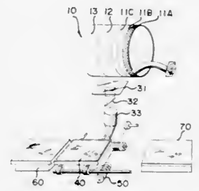
whereby modifications to the transfer functions of the mnemonders, when in a learning mode, take the form:

$$\epsilon A_{ij} = f(s_1, s_2 \ldots, s_j \ldots, s_N; r_1, r_2 \ldots, r_i \ldots, r_n).$$

3,950,734
LANGUAGE PROCESSING SYSTEM

Tzu-Hung Li, 362 Ying-Chu Five Ts'un, Nei Hu, Taipei, China /Taiwan

Filed Aug. 16, 1973, Ser. No. 388,957
Int. Cl.² G06F *3/02*
U.S. Cl. 340—172.5 **3 Claims**



1. An ideographic character selection system, comprising keyboard means for indicating an operator's selection of a four-digit number composed of four consecutive decimal integers, means responsive to said keyboard means for generating a prefix code, corresponding to the first two digits, and a suffix code, corresponding to the second two digits, together designating a specific ideographic character having a corresponding prefix portion and suffix portion each of which is composed of two subportions etymologically related to re-

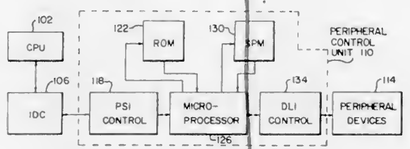
spective ones of 10 primary character elements which are mnemonically suggestive of the respective decimal integers indicated by the operator, and electrical output means responsive to said prefix and suffix code for selecting and displaying in a predetermined location a graphic representation of said designated character.

3,950,735

METHOD AND APPARATUS FOR DYNAMICALLY CONTROLLING READ/WRITE OPERATIONS IN A PERIPHERAL SUBSYSTEM

Shirish Patel, Waltham, Mass., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Jan. 4, 1974, Ser. No. 430,837
Int. Cl.² G06F *3/06*
U.S. Cl. 340—172.5 **11 Claims**



1. In a data processing system which includes a central processing unit for issuing commands, a peripheral subsystem comprising

a plurality of data storage devices, each for operating at a certain speed to record and reproduce data and including means responsive to an interrogation signal for producing a signal indication of the operating speed of the device,

means responsive to a command issued by the central processing unit for applying an interrogation signal to a selected one of said data storage devices,

data register means, and

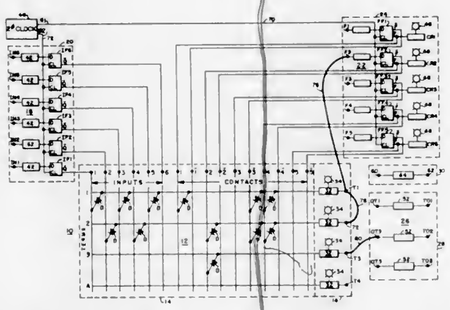
means responsive to the signal indication produced by the selected device for transferring data between the selected device and the data register means at a rate specified by the signal indication for execution of said commands.

3,950,736

PROGRAMMABLE SOLID STATE CONTROL FOR MACHINE TOOL OR PROCESS CONTROL SYSTEMS

James A. Dix, Greenfield, and James J. Eckl, Milwaukee, both of Wis., assignors to Square D Company, Park Ridge, Ill.

Filed Feb. 7, 1975, Ser. No. 548,117
Int. Cl.² G06F *15/46, 9/02*
U.S. Cl. 340—172.5 **12 Claims**



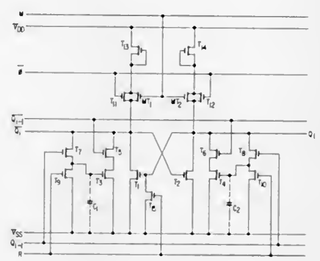
1. A programmable signal processor for controlling the state of a plurality of output signals of the processor in response to the state of a plurality of input signals to the processor, said processor comprising: a programmed AND logic memory having: a plurality of inputs, a plurality of outputs and logic gates interconnecting each output with selected inputs for causing each output to provide an ON signal when all of the inputs associated therewith are ON and an OFF signal when any input associated therewith is OFF, a plurality of gated input memories with each input memory providing a signal to one of the inputs of the AND memory corresponding to the state of one of the input signals to the processor, a plurality of gated feedback memories with each feedback memory providing an ON signal to one of a pair of inputs of the AND memory and an OFF signal to the other input of said pair of inputs when its input is in an OFF state and reversing the signals to the pair of inputs of the AND memory when its input is in an ON state, a plurality of jumpers selectively interconnecting the outputs of the AND memory and the inputs of the feedback memories for causing the feedback memories to switch in an OR logic manner in response to the ON output signals of the AND memory, and a clock providing a pair of phase displaced gating signals to the input memories and the feedback memories for switching the input memories simultaneously and the feedback memories simultaneously at non concurrent instants.

3,950,737

NONVOLATILE COUNTER CIRCUIT

Yukimasa Uchida; Isao Nojima, and Yoshiaki Matsuno, all of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Sept. 26, 1974, Ser. No. 509,490
Claims priority, application Japan, Sept. 28, 1973, 48-109005
Int. Cl.² G11C *11/40, 13/00*
U.S. Cl. 340—173 FF **13 Claims**



1. A nonvolatile counter circuit, comprising:

a power supply;

flip-flop circuit means for temporarily storing information coupled to said power supply;

a nonvolatile insulated gate type field effect memory transistor coupled to said flip-flop circuit;

a switching element coupled in parallel with said nonvolatile memory transistor;

transferring means coupled to said power supply for sensing a first state of said power supply and for transferring information stored in said nonvolatile memory transistor to said flip-flop circuit means upon detecting said first state of said power supply;

erasing means coupled to said nonvolatile memory transistor for erasing information stored therein;

short circuiting means coupled to said switching element for rendering said switching element conductive and

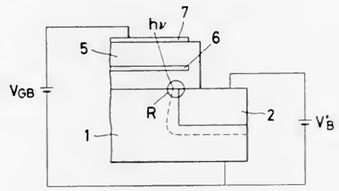
writing means coupled to said power supply for writing information stored in said flip-flop circuit means into said nonvolatile memory transistor upon detecting a second state of said power supply.

3,950,738

SEMI-CONDUCTOR NON-VOLATILE OPTICAL MEMORY DEVICE

Yutaka Hayashi, Houya; Kiyoko Nagai, Chofu, and Yasuo Tarui, Higashi-Kurume, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed July 12, 1974, Ser. No. 487,963
Claims priority, application Japan, July 13, 1973, 48-78410
Int. Cl.² G11C *11/42*
U.S. Cl. 340—173 LS **19 Claims**



1. A semiconductor non-volatile optical memory device for visible and infrared light comprising,

a first semiconductor region,

a second region forming a rectifying junction with the surface of said first semiconductor region,

an insulating layer provided on said two regions,

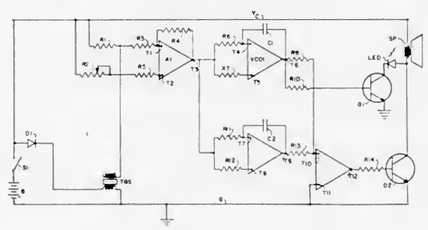
light-permeable charge retention means provided in said insulating layer on said two regions for retaining carriers generated by light-irradiation on said first semiconductor region and a means for applying reverse bias voltage smaller than breakdown voltage of said rectifying junction to said rectifying junction.

3,950,739

DETECTOR FOR DETECTING AND LOCATING THE SOURCE OF A CONTAMINATING GAS OR SMOKE IN THE ATMOSPHERE

James P. Campman, 12900 Broadmoore Road, Silver Spring, Md. 20907

Filed Oct. 30, 1974, Ser. No. 519,252
Int. Cl.² G08B *17/10*
U.S. Cl. 340—237 R **2 Claims**



2. Apparatus for detecting and indicating variations in density of a contaminant in the free and unconfined atmosphere comprising in combination;

A sensory element responsive to variations in the density of the contaminant in the free and unconfined atmosphere in the region of the same and for producing a voltage which varies inversely with said variations in density;

An amplifier for inverting and amplifying said voltage variations;

A pulse generator connected to and controlled by the variations in the voltage from said amplifier to produce pulses whose frequency varies with said voltage from said amplifier;

A light emitting diode connected to and controlled by said pulse generator for producing pulsations of light from said light emitting diode in step with pulses from said pulse generator;

An audio frequency oscillator connected to said amplifier and controlled thereby to produce an audio frequency voltage which varies with the voltage variations in the output of said amplifier;

A speaker for converting audio frequencies to an audible tone whose frequency varies with said audio frequency; and

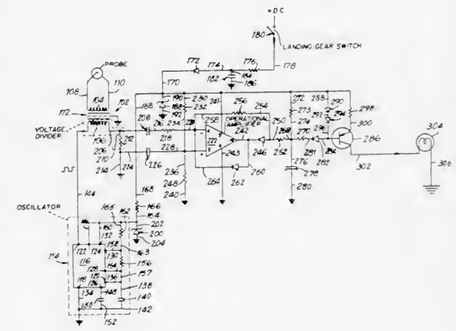
A gating means connected to said pulse generator and controlled thereby and operable to connect said audio frequency oscillator to said speaker to produce pulses in the varying tone whereby an audible signal will be produced whose pitch and pulsations vary with variations of the density of the contaminant.

3,950,740

SUMP WATER DETECTOR WITH ISOLATED PROBE HAVING AC APPLIED TO ITS ELECTRODES

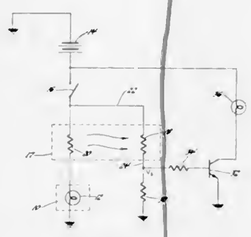
Leonard M. Greene, Chappaqua, N.Y., assignor to Safe Flight Instrument Corporation, White Plains, N.Y.

Filed Feb. 4, 1974, Ser. No. 439,260
Int. Cl.² G08B *21/00*
U.S. Cl. 340—244 C **4 Claims**



1. A system for detecting the presence of water in aircraft fuel comprising a probe having two electrodes, reservoir means in fluid communication with a portion of an aircraft fuel system, said reservoir means positioned below said portion, means locating said probe so that said two electrodes are exposed in said reservoir means, an electrically activatable warning device, a DC source of power, an electronic inverter including output terminals and having an output between 300 to 30,000 Hz., a transformer having two windings, a load resistor, means connecting one of said output terminals of said electronic inverter to ground, means connecting the other of said output terminals through one of said windings of said transformer and said load resistor to ground, said other of said transformer windings having two ends, means connecting said ends of said other transformer winding respectively to said electrodes of said probe, and means connecting said warning device across said load resistor so as to activate said warning device when the resistance between said electrodes drops upon both electrodes contacting water, said load resistor being of sufficient value to limit current flow through said other of said transformer windings to prevent accidental ignition of fuel within said fuel system.

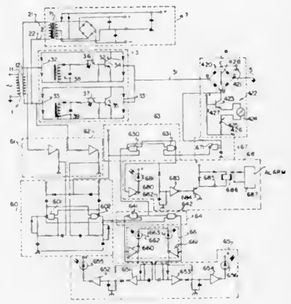
3,950,741
ACCESSORY OUTAGE MONITORING CIRCUITRY
Thaddeus Schroeder, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 29, 1974, Ser. No. 518,519
Int. Cl.² G08B 21/00
U.S. Cl. 340—251 **3 Claims**



1. A load monitoring circuit comprising:
a series network including a d-c voltage source, a load and load controlling switch means;
a current sensor including a positive temperature coefficient of resistance (PTC) and a heater resistor, said PTC resistor exhibiting an abrupt change of resistance above a predetermined anomaly temperature, said heater resistor connected in said series network and thermally coupled with said PTC resistor;
a third resistor connected in series with and forming a voltage divider network with said PTC resistor, said voltage divider network being connected with said source through said switch means and in parallel electrical circuit relationship with said heater resistor and said load, the resistance of said third resistor being substantially larger than the resistance of said PTC resistor below the anomaly temperature of said PTC resistor to prevent any substantial self-heating of said PTC resistor whereby the voltage level at a junction of said voltage divider network between said PTC resistor and said third resistor is initially high upon closure of said switch means and subsequently goes low if said load is operable, and
means responsive to the voltage at said junction for monitoring the operation of said load.

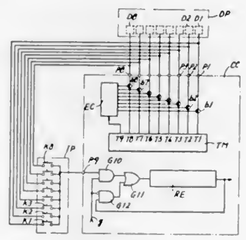
3,950,742
ADJUSTABLE LINE ISOLATION MONITOR
Malcolm P. MacMartin, and Norbert L. Kusters, both of Ottawa, Canada, assignors to Canadian Patents and Development Limited, Ontario, Canada
Filed Oct. 21, 1974, Ser. No. 516,149
Claims priority, application Canada, Feb. 22, 1974, 193301
Int. Cl.² G08B 21/00
U.S. Cl. 340—255 **6 Claims**

2. An apparatus for monitoring line faults to ground in an isolated system having N individual lines comprising:
N switch means each having an input termimal and an output terminal, the input terminal of each switch means connected to one of said lines, the output terminals connected to one another;
detector means connected between said output terminals and said ground, said detector means exhibiting a non-linear impedance to provide a substantially zero impedance between the output terminal and ground for currents below a predetermined level and a high impedance between the output terminal and ground for currents above said predetermined level, said detector being further adapted to generate a control signal in response to current flow to ground above said predetermined level;
control circuit means having first control means and second control means, said first control means coupled to said N switch means to successively close each of said switch means connecting each of said lines to the detector means for a duration T, said second control means coupled to said detector means to receive said control signal;



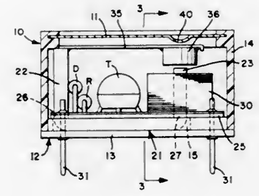
alarm circuit means, said second control means adapted to operate said alarm in response to said control signal.

3,950,743
KEYING INPUT APPARATUS HAVING A REDUCED NUMBER OF OUTPUT TERMINALS
Isao Hatano, Kyoto; Akira Nagano, Nagaokakyo, and Kazuaki Urasaki, Muko, all of Japan, assignors to Omron Tateisi Electronics Co., Japan
Filed Apr. 1, 1974, Ser. No. 456,817
Claims priority, application Japan, Apr. 3, 1973, 48-38368
Int. Cl.² G09F 9/32
U.S. Cl. 340—336 **17 Claims**



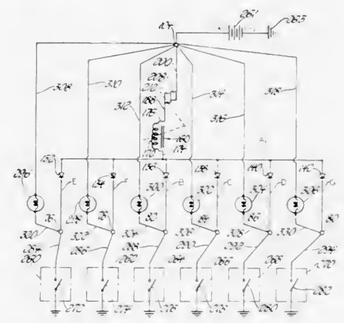
1. A keying input apparatus comprising:
means for displaying information selectively at each of a plurality of display positions,
means for providing a first timing signal in a first timing period and a second timing signal in a second timing period, said first timing signal comprising a plurality of individual display position select signals generated in time sequence for individually defining each of said display positions in said information displaying means,
means for providing a plurality of information signal units, each unit identifying the information to be displayed in a corresponding digit display position, in said time sequence, said information signal units each comprising a plurality of information constituent signals,
a plurality of output terminals for receiving respectively associated ones of said display position select signals and said information constituent signals, from the respective providing means thereof,
a common terminal,
said information displaying means being responsive to said display position select signals and said information constituent signals as provided at said plurality of output terminals for displaying the information identified by said information signal units in the corresponding display positions as identified by said display position select signals in said time sequence,
means responsive to said second timing signal for individually providing to at least some of said output terminals during said second timing period a plurality of different bit serial coded signals,
a plurality of keying input means corresponding to said coded signals, each having one terminal connected individually to a corresponding one of said output terminals and the other terminal connected to said common terminal and operable when activated to supply the corresponding bit serial coded signals from the corresponding output terminal to said common terminal, and
means connected to said common terminal of said keying input means for storing said bit serial coded signal as supplied to said common terminal as a result of operation of said keying input means.

3,950,744
MODULAR BUZZER WITH DIAPHRAGM MOLDED INTO HOUSING
Gerald D. Stephens, Vandalia, and Ivan L. Clark, Dayton, both of Ohio, assignors to Projects Unlimited, Inc., Dayton, Ohio
Filed June 14, 1974, Ser. No. 479,273
Int. Cl.² G10K 9/12
U.S. Cl. 340—392 **1 Claim**



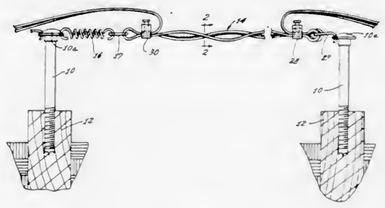
1. A buzzer for providing an audible warning, comprising
a housing including a rectangular base corresponding in size and shape to a standard dual-in-line electronic package configuration,
said housing having side walls hermetically sealed to and extending from said base defining an elongated enclosure and a thin stiff top wall molded and sealed to said side walls opposite said base in spaced relation to said base,
an U-shaped armature of magnetic material such as iron,
said base having a recess receiving the bottom of said armature with the legs of said armature projecting upward within said housing,
a striker arm secured to one of said legs and extending lengthwise of said housing directly beneath said top wall to a location above the other said leg,
said arm being arranged to oscillate toward and away from said other leg and to strike said top wall to produce an audible sound,
electronic oscillator circuit means including a board fitted over the bottom of said armature and about at least said other leg of said armature,
said circuit means also comprising electronic components supported on said board including induction coils surrounding said other leg to induce current in said armature to cause oscillation of said arm,
mounting pins projecting from said base according to standard dual-in-line package configuration, some of said pins being connected to said circuit means internally of said housing, and
said pins being fastened to said board holding said armature in position between said base and said board.

3,950,745
ELECTRICAL WARNING AND SWITCHING MEANS AND SYSTEM
Gerald K. Miller, Hersey, Mich., assignor to Nartron Corporation, Reed City, Mich.
Filed Aug. 27, 1974, Ser. No. 500,895
Int. Cl.² G08B 7/00
U.S. Cl. 340—412 **12 Claims**



1. A warning assembly, comprising an auditory signal generating means, a plurality of first terminals adapted for connection to a plurality of associated condition sensing means, second terminals means adapted for connection to an associated source of electrical potential, first circuit means effective for electrically interconnecting said first terminals to a first electrical terminal of said auditory signal generating means, second circuit means effective for electrically interconnecting said second terminal means to a second electrical terminal of said auditory signal generating means, and diode means in said first circuit means situated generally between said first electrical terminal of said auditory signal generating means and said first terminals, said first and second circuit means being effective for electrical connection to associated electrically energizable visual warning means in a manner whereby one electrical side of said visual warning means is electrically connected to said source of electrical potential and an other electrical side of each of said visual warning means is electrically connected to said first circuit means at locations situated as to cause said diode means to be generally between said locations and said auditory signal generating means.

3,950,746
ELECTRICALLY ENERGIZED FIRE AND/OR INTRUSION DETECTION SYSTEM INCLUDING SPRING-BIASED SWITCHING MEANS
John S. Davies, 1010 Norumbega, Monrovia, Calif. 91016
Filed Sept. 17, 1970, Ser. No. 72,976
Int. Cl.² G08B 13/12
U.S. Cl. 340—420 **6 Claims**



1. An electrical control system including: an elongated twisted heat-sensing cable comprising a plurality of electric

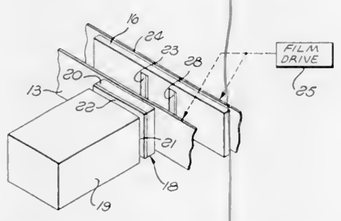
wires and temperature-sensitive insulating material normally holding said wires separated and insulated from one another; first and second spaced support members; means for mounting said twisted heat-sensing cable under tension between said first and second support members so as to cause said electric wires to contact one another upon the reaction of said insulating material to temperatures above a particular threshold; a spring-biased actuating member included in said mounting means; and an electric switch connected in circuit with the wires in said twisted heat-sensing cable and mounted adjacent said actuating member to be operated thereby upon a loss of tension in said cable.

3,950,747

OPTICAL PROCESSING SYSTEM FOR SYNTHETIC APERTURE RADAR

Ray O. Waddoups, Valencia, Calif., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

Filed Feb. 28, 1975, Ser. No. 553,969
Int. Cl.² G01S 9/02
U.S. Cl. 343—5 CM **2 Claims**



1. A sidelobe suppression optical processing system for synthetic aperture radar, said system comprising: a spatial filter having two slits extending therethrough and extending in a first predetermined lengthwise direction; a synthetic aperture radar exposed first film having a phase history recorded thereon, said first film having first and second sides, said first film second side being positioned approximately parallel to and adjacent to one side of said spatial filter adjacent said slits, said phase history being recorded in dashed lines on said first film approximately perpendicular to the length of said slits; at least a partially unexposed second film positioned on the other side of said spatial filter approximately parallel thereto and adjacent said slits; a source for producing a beam of monochromatic light having a plane wavefront moving in a second predetermined direction; and a graduated light filter in registration with the beam and positioned approximately in a plane parallel to and between said spatial filter and said source, said source being oriented to cause said wavefront to move toward said graduated light filter in positions parallel thereto, said graduated light filter having a peak transmission at a point midway between said slits and a transmission decreasing on both sides of said point in opposite directions away therefrom.

3,950,748

METHOD OF AND APPARATUS FOR STABILIZING THE DISPLAY RATE OF PERMANENT ECHOES IN A RADAR SYSTEM

Francis Busy, Paris, France, assignor to Thomson-CSF Visualisation et Traitement des Informations (T-VT), Paris, France

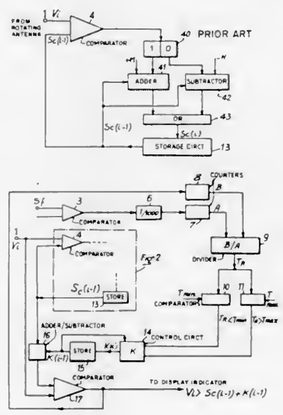
Filed June 17, 1974, Ser. No. 480,145
Claims priority, application France, June 19, 1973, 73.22308
Int. Cl.² G01S 9/02
U.S. Cl. 343—7 A **11 Claims**

5. In a radar system having a rotating antenna, receiving means for obtaining from said antenna an input signal resulting from reflected beam energy picked up in a recurrent sweep of a surveyed zone, and indicator means for displaying an echo pulse in response to an input signal exceeding a certain threshold, the combination therewith of:

storage means for registering said basic threshold determining the minimum value of an input signal to be displayed;

first comparison means connected to said receiving means and to said storage means for generating a first output signal depending upon the relative magnitudes of said input signal and said basic threshold;

updating means connected to said first comparison means for incrementing said basic threshold in said storage means by a fixed amount of a sign depending upon said first output signal to maintain said basic threshold close to a clutter level defined by permanent echoes from the swept zone;



modification means connected to said storage means for algebraically adding a supplemental parameter to said basic threshold;

second comparison means connected to said modification means and to said receiving means for producing a second output signal transmitted to said indicator means upon said input signal exceeding the algebraic sum of said basic threshold and said supplemental parameter;

a reference circuit including third comparison means for generating a third output signal upon a deviation of the recurrence rate of said second output signal from a predetermined standard; and

control means responsive to said third output signal inserted between said third comparison means and said modification means for varying the value of said supplemental parameter in a sense tending to eliminate said deviation.

3,950,749

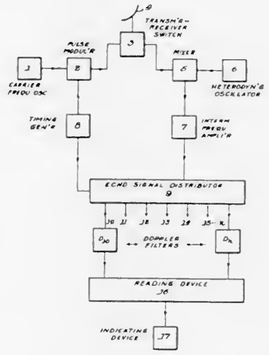
DOPPLER FREQUENCY IMPULSE RADAR SYSTEM WITH DISPLACED PULSE SEQUENCE

Kurt Wiedemann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Germany

Filed June 12, 1961, Ser. No. 116,431
Claims priority, application Germany, June 21, 1960, S 69,023
Int. Cl.² G01S 9/42
U.S. Cl. 343—7.7 **1 Claim**

1. A doppler frequency impulse radar system, comprising a transmitting circuit for transmitting an impulse modulated carrier wave and a receiving circuit for receiving reflected echo impulses, said transmitting circuit including means for transmitting a first pulse sequence and means for transmitting a second pulse sequence having identical period durations, means for effecting a time displacement between the transmission of the respective pulse sequences which displacement is so selected that periodically recurring gaps appear in the spectral line spectrum of the transmitted signals, and doppler

frequency filters operatively disposed in the signal path of the receiving circuit having a pass range corresponding to at least



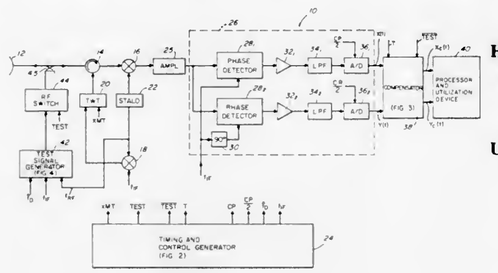
one of said gaps and having a pass width which is somewhat smaller than the width of a gap.

3,950,750

RADAR SYSTEM HAVING QUADRATURE PHASE DETECTOR COMPENSATOR

Frederick E. Churchill, Carlisle; George W. Ogar, Wakefield, and Bernard J. Thompson, Concord, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 3, 1974, Ser. No. 511,552
Int. Cl.² G01S 7/40
U.S. Cl. 343—17.7 **4 Claims**



2. In a digital processing radar system wherein a quadrature phase detector is provided to demodulate radar return signals, such demodulated radar signals then being sampled and converted into a set of complex digital words, at a predetermined rate M, an improved apparatus for correcting imbalances between channels of such quadrature phase detector, comprising:

a. means for periodically impressing a test signal having a frequency component $\hat{f}_D$ on the quadrature phase detector, the frequency f_D being an integral submultiple of M, such phase detector producing an output signal in response thereto; and

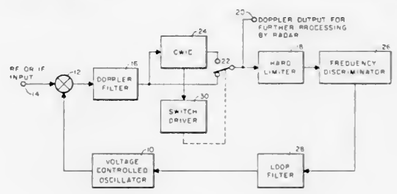
b. a compensator responsive to the set of complex digital words and the output signal for deriving correction coefficients.

3,950,751

CW INTERFERENCE CANCELLER (CWIC)

Roger D. Orr, China Lake, and George H. Nitta, Pomona, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 18, 1969, Ser. No. 4,498
Int. Cl.² G01S 7/36
U.S. Cl. 343—18 E **2 Claims**



1. In an AFC loop tracking system in the presence of interference signals, the combination comprising:

a. input terminal means,

b. mixer circuit means coupled to said input terminal means producing output doppler signal,

c. filter circuit means coupled to said mixer circuit means for passing signals within a predetermined frequency range,

d. a switch having a first position for coupling the output of said filter circuit means to an output terminal and to the feedback loop controlling said mixer circuit means and having a second position,

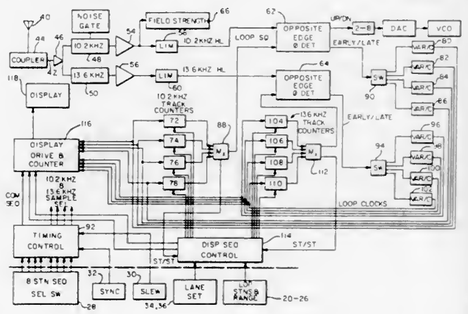
e. interference signal detecting circuit means coupled to said filter circuit means and being responsive to the presence of a false target doppler signal to switch said switch to said second position and to generate a near replica of the true target doppler signal.

3,950,752

NAVIGATION RECEIVER SYSTEM FOR SYNCHRONIZING TO NOISY, ASYMMETRICAL SIGNALS

Harold P. Zitzow, Reading, and Alan C. Marshall, Framingham, both of Mass., assignors to EPSCO, Incorporated, Westwood, Mass.

Filed June 1, 1973, Ser. No. 366,023
Int. Cl.² G01S 1/30
U.S. Cl. 343—105 R **6 Claims**





6. In an Omega navigation receiver, a system for synchro-

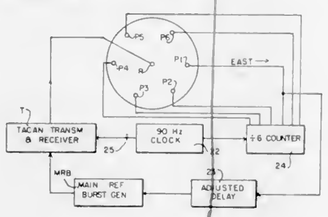
nizing an internally generated signal to received Omega broadcasts including:

means for receivingg Omega braodcasts to provide a generally asymmetrical, hard limited signal for each received station with noise variations in the rising and falling edges thereof having a distribution which exceeds the variations in said edges due to asymmetry;

A plurality of tracking loops each asociated with an Omega station broadcast and one of said internally generated signals with a substantially longer period than said hard limited signal, the period of said hard limited signal being an odd harmonic of said internally generated signal period;

means for comparing a plurality of falling edges of said hard limited signal for each uninterrupted Omega station broadcast with a predetermining point of the internally generated signal from a corresponding tracking loop to develop a plurality of first control signals indicating the relative timing of each falling edge with respect to the predetermined point, and for comparing a plurality of rising edges of said hard limited signal in alternating sequence with the compared falling edges for each uninterrupted Omega station broadcast with a further predetermined point of that internally generated signal to develop a plurality of second control signals indicating the relative timing of each rising edge with respect to the further predetermined point; and means for controlling each tracking loop to adjusting the phasing of each corresponding internally generated signal in response to each corresponding first and second control signal whereby the corresponding hard limits signals and internally generated signals become synchronized with the predetermined and further predetermined points of the internally generated signal separated from respective falling and rising edges of said hard limited signal by substantially equal time intervals.

3,950,753
STEPPED CARDIOID BEARING SYSTEM
John P. Chisholm, 16 Joy st., Boston, Mass. 02114
Filed Dec. 13, 1973, Ser. No. 424,458
Int. Cl.² G01S 1/56
U.S. Cl. 343—106 R **11 Claims**



1. A system for determining bearing between a unit transmitting a signal and a signal receiving unit, comprising:

a. an antenna array at one of said units having a central active antenna element and having a predetermined number of parasitic elements including at least three which are spaced in a ring around the active element, and including commutating means having discrete outputs respectively connected to sequentially activate said parasitic elements to provide the antenna array with a rotary stepped pattern having a fundamental sinusoid component;

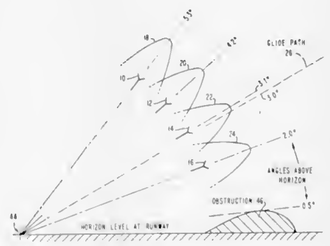
b. means for generating a reference marker signal associated with each passing of the fundamental sinusoid of said stepped pattern through a predetermined bearing orientation;

c. means for synchronizing said reference marker generating means and said commutating means and operative to inititate the generation of each reference marker signal to coincide with said passing of the sinusoid component through said orientation;

d. means at the receiver unit responsive to amplitude samples of said transmitted signal corresponding with each commutation and providing therefrom a reconstituted sinusoid representing said fundamental sinusoid of the rotary stepped pattern but delayed by a constant delay which is a function of the number of parasitic elements commutated, and including means for determining said bearing with respect to said predetermined orientation from the phase relationship between a point on said reconstituted sinusoid and the occurrence of said reference marker signal; and

e. siad synchronizing means being coupled with a selected one of said discrete outputs which is activated prior to said component passing through said preselected orientation, and said synchronizing means being operative to delay said generation for a fixed interval including an interval compensating for said constant delay.

3,950,754
METHOD OF TRANSMITTING GLIDE SLOPE NAVIGATION SIGNALS FOR AIRCRAFT
Donald J. Toman, Pleasantville, N.Y., assignor to Tull Aviation Corporation, Armonk, N.Y.
Filed May 28, 1974, Ser. No. 473,408
Int. Cl.² G01S 1/18, 1/44
U.S. Cl. 343—108 R **10 Claims**



1. A method of transmitting radio guidance signals for defining a glide slope path for aircraft comprising

aligning a multiple element antenna array to provide a separate beam of carrier signal radiation from each element in a pattern of beams spaced at different angles above the horizon in the general direction in which the glide slope path is to be defined,

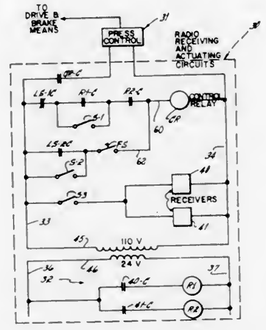
mechanically adjusting the angular position of the entire multiple element antenna array so that the element producing the lowermost beam is aimed high enough to avoid any substantial line-of-sight obstruction to the lowermost beam to minimize reflections from the obstruction while substantially filling the air space above the obstruction with a guidance signal,

applying radio carrier frequency energy to the antenna elements,

applying a program of modulation to the radio carrier energy for each of the elements to define the glide slope path,

the program of modulation being selected to establish a glide slope path having a desired glide slope angle while compensating for the mechanical adjustment of the antenna array to avoid line-of-sight obstructions.

3,950,755
RADIO CONTROL FOR PRESS
Robert L. Westbrook, Sr., Cincinnati, Ohio, assignor to Rotex, Inc., Cincinnati, Ohio
Filed Mar. 11, 1975, Ser. No. 557,266
Int. Cl.² H04B 7/00; H04Q 7/00
U.S. Cl. 343—225 **20 Claims**



1. Apparatus for actuating a press or the like including,

a radio receiver connected to means for actuating said press upon receipt of a predetermined radio signal,

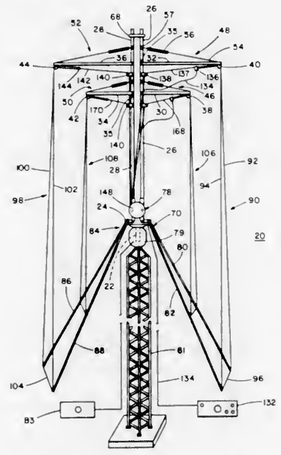
a belt adapted to be worn by a press operator,

a radio transmitter mounted on said belt, said transmitter adapted upon actuation to transmit said predetermined signal, and

two sets of manually operable contacts connected to said transmitter for actuating said transmitter to transmit said signal when said contacts are manually and simultaneously closed,

said two sets of contacts being mounted on said belt in spaced apart positions, such that they are not in a position to be simultaneously operated with one hand.

3,950,756
TUNABLE ANTENNA HAVING ADJUSTABLE LOOP CONFIGURATIONS
Marshall Stebbins Tisler, 826 Best St., Marseilles, Ill. 61341
Filed Apr. 28, 1975, Ser. No. 572,558
Int. Cl.² H01Q 7/02
U.S. Cl. 343—766 **16 Claims**



1. An antenna assembly comprising an element, a plurality of support points for supporting said element, at least one of said support points being yieldably movable, and means for controlling the physical dimensions of said element to achieve tuning of said element to a predetermined frequency, said element comprising a plurality of flexible conductors defining a multi-sided configuration having a plurality of corners, each corner being supported by one of said support points, two of said flexible conductors having free ends converging toward each other and toward one of said corners to define a feedpoint passing through and beyond said corner, said control means being securable to said free ends to control tension applied thereto to vary the lengths of said flexible conductors between said support points.

3,950,757
BROADBAND WHIP ANTENNAS
Judd Blass, Herzliah Petuach, Israel, assignor to Beam Systems Israel Ltd., Nof Yam, Israel
Filed Mar. 12, 1975, Ser. No. 557,836
Int. Cl.² H01Q 9/30
U.S. Cl. 343—791 **7 Claims**



1. A broadband whip antenna having a generally constant impedance across an octave band of radio frequencies and attachable to an insulated antenna mounting base having an antenna connection terminal therein, comprising:

a first whip section having a cylindrical conductor of a length equal to one quarter-wavelength at a particular frequency generally in the top quarter of said octave frequency band;

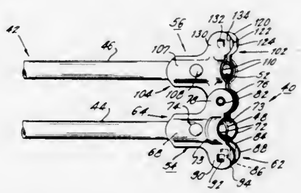
a second whip section having a cylindrical conductor of length equal to one quarter-wavelength at said particular frequency and having one end thereof axially attached to an end of said first whip section;

load resistance means having a first resistance value and having one terminal attached to the free end of said first whip section;

means coupled to the remaining terminal of said load resistance means and cooperating with said first whip section to transform said resistance means to a higher resistance value appearing in series connection at the junction between said first and second whip sections; and

means for mounting said load resistance means a spaced distance from said mounting base with said antenna connection terminal electrically coupled to said remaining terminal of said resistance means.

3,950,758
SELF-LOCKING HINGE FOR ANTENNA ELEMENT
James J. Mirrione, Franklinton, N.C., and Jerome Berger, New York, N.Y., assignors to JFD Electronics Corporation, Brooklyn, N.Y.
Filed Nov. 25, 1974, Ser. No. 526,710
Int. Cl.² H01Q 1/08
U.S. Cl. 343—881 **21 Claims**



1. A self-locking hinge for an elongated element, wherein the elongated element has a longitudinal axis and is comprised

of two generally coaxially alignable sections joined by said hinge;

said hinge comprising a lockable portion at an end of one elongated element section and locking means at an adjoining end of the other elongated element section;

said lockable portion comprising a first semi-cylindrical ferrule section fastened around said end of said one elongated element section, said ferrule section having a first hinge extension projecting in a first direction radially away from said one elongated element section and a first lockable means holding extension projecting radially away from said one elongated element section in a second direction opposite said first direction; said first hinge extension and said first lockable means holding extension both lying substantially in a first plane;

said locking means comprising a second semi-cylindrical ferrule section fastened around said end of said other elongated element section and having a second hinge extension projecting radially away from said other elongated element section, a first locking means holding extension projecting radially away from said other elongated element section and immovably secured at substantially an opposite edge of said second ferrule section; said second hinge extension and said locking means holding extension both lying substantially in a second plane;

said first and second hinge extensions respectively comprising a first and a second planar ear, each having a respective first surface in slidable engagement with and overlaid on the first surface of the other one of said first and second planar ears; said first surfaces being generally parallel to said element axis;

a hinge pin securing the overlaid hinge extension first surfaces together in a manner enabling relative pivoting of said ferrules with respect to each other;

said first lockable means holding extension and said first locking means holding extension respectively comprising a third and a fourth planar ear, each having confronting surfaces that are slidably engageable with one another upon pivoting of said ferrules to bring said ears into facewise engagement; said confronting surfaces being generally parallel to said element axis;

first lockable means on said lockable means holding extension; first lock means, lockable with said first lockable means, on said locking means holding extension; said lock means and said lockable means being so positioned on their respective said extensions that upon said second surfaces being pivoted into facewise engagement around said hinge pin, said lock means and said lockable means snappingly lock together.

3,950,759

PORTABLE INSTRUMENT FOR RECORDING ELECTRICAL LOAD CURRENT AND OPERATING DURATION

Edwin K. Ziegenfuss, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jan. 8, 1975, Ser. No. 539,477

Int. Cl.² G01D *9/00, 15/16*

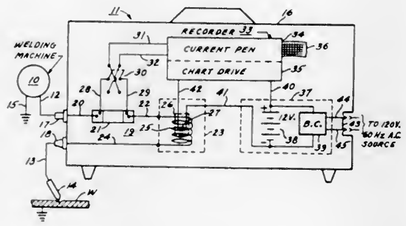
U.S. Cl. 346—33 R **20 Claims**

1. Portable apparatus for recording electrical load current and operating duration, comprising:

a. a portable housing adapted to accommodate elements of said apparatus,

b. means operatively associated with said electrical load for producing separate load current and operating duration signals,

c. means for recording said load current signal and including a record drive movable only under control of said operating duration signal, and



d. a source within said housing for powering said recorder record driver.

3,950,760

DEVICE FOR WRITING WITH LIQUID INK

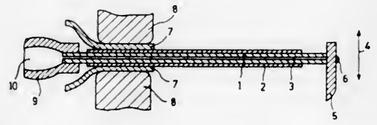
Ilse-Dore Stromberger-d'Alton Rauch, and Klaus Witter, both of Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 4, 1974, Ser. No. 529,340

Claims priority, application Germany, Dec. 12, 1973, 2361781

Int. Cl.² G01D *15/16*

U.S. Cl. 346—140 A **5 Claims**



1. A device for writing with liquid ink in which the transfer of the ink to the record carrier is electrically controlled, characterized in that the device comprises an elongated flexible beam having a major axis extending in the direction of elongation, said beam including a piezoelectric element and electrodes, said element being made of a piezoelectric material having at least two regions oppositely polarized, said regions being disposed to bend said beam in a direction transverse to the major axis of said beam responsive to an associated electric potential applied to said electrodes, said beam further including electrodes being disposed on the surface of said element, said element including walls defining a plurality of ducts which extend in the longitudinal direction of the beam, said device including a writing stylus being secured to the end face of the beam, said stylus including means for conveying liquid ink, said means being in fluid communication with at least one of said ducts.

3,950,761

INK PRESSURIZING APPARATUS FOR AN INK JET RECORDER

Toshio Kashio, Yamato, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 320,953, Jan. 4, 1973, abandoned. This application July 19, 1974, Ser. No. 490,026

Int. Cl.² G01D *15/18*

U.S. Cl. 346—140 R **9 Claims**

1. In an ink pressurizing apparatus for an ink jet recorder wherein ink is supplied in a predetermined amount under a substantially uniform pressure from an ink tank to a fine nozzle thereby forming a meniscus at the tip of the nozzle, the ink being ejected in fine particles by the electrostatic attraction caused by a high voltage impressed on an electrode provided in front of said nozzle, whereby a desired printing is effected on the recording medium,

the improvement comprising:

an ink storage means arranged between the ink tank and the nozzle, said ink storage means including:

an ink inlet port coupled to the ink tank and through which ink is sucked from the ink tank;

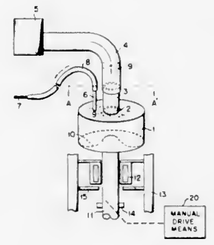
an ink outlet port coupled to the nozzle and through which ink is supplied to the nozzle; and

an elastic member defining a bottom of a chamber in the ink storage means, the chamber being in communication with the ink inlet and outlet ports;

a plunger mechanism including a movable rod bearing on said elastic member and deforming same to form an inwardly extending substantially central portion thereof which extends toward the interior of said chamber and an outwardly extending portion around the central portion, said rod being operable for depressing the substantially central portion of said elastic member a small further distance in a direction toward the interior of said chamber, whereby the pressure on the ink is increased to further outwardly displace the outwardly extending portion so as to displace through said outlet port an amount of ink which is very small as compared to the ink capacity of the chamber, to thereby build up said substantially uniform pressure by the sucking in of ink from the ink tank due to recovering force of said elastic member, said pressure being sufficient to maintain the meniscus of ink at the nozzle tip but being insufficient to actually pump a flow of ink out of and through said nozzle;

a valve in communication with the ink flow between the ink tank and the ink storage means for preventing ink from flowing back into the ink tank when said elastic member is depressed; and

a spring mounted within the ink storage means and bearing directly on said movable rod via said elastic member interposed therebetween, said spring being depressed jointly with said elastic member by said plunger mechanism for quickly pushing back said elastic member to its rest state when the plunger mechanism ceases to depress said elastic member, said spring having a diameter smaller than that of said movable rod where said spring bears on said movable rod.



3,950,762

DRAWING METHOD AND DRAWING INSTRUMENT

Gerold Anderka, Ellerbek, Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed June 18, 1975, Ser. No. 587,921

Claims priority, application Germany, June 18, 1974, 2429115; May 17, 1975, 2522012

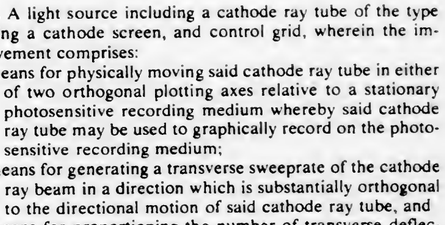
Int. Cl.² G01D *15/16;* **B67D** *5/08;* **B05B** *12/08*

U.S. Cl. 346—140 R **15 Claims**

1. A method for automatic drawing with an automatic drawing machine including at least one tubular pen having a cylindrical body which supports a writing tubule at its front region comprising the steps of:

A. supporting said at least one tubular pen within a carriage assembly;

B. sensing the actual value of pressure for writing fluid within said at least one pen;



C. comparing said actual fluid pressure with a given nominal value for said fluid pressure; and

D. actuating a writing fluid feed mechanism to adjust said sensed actual fluid pressure when said sensed value differs from said nominal value.

3,950,763

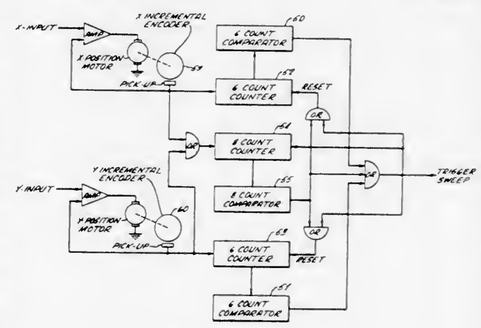
CATHODE RAY TUBE LIGHTHEAD

Robert G. Parks, Mission Viejo, and Howard E. Brewer, Santa Ana, both of Calif., assignors to California Computer Products, Inc., Anaheim, Calif.

Filed Oct. 29, 1974, Ser. No. 518,713

Int. Cl.² G03B *41/00, 19/00*

U.S. Cl. 354—4 **3 Claims**



1. A light source including a cathode ray tube of the type having a cathode screen, and control grid, wherein the improvement comprises:

means for physically moving said cathode ray tube in either of two orthogonal plotting axes relative to a stationary photosensitive recording medium whereby said cathode ray tube may be used to graphically record on the photosensitive recording medium;

means for generating a transverse sweeprate of the cathode ray beam in a direction which is substantially orthogonal to the directional motion of said cathode ray tube, and

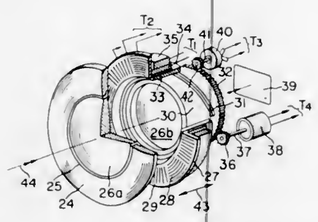
means for proportioning the number of transverse deflections of the beam so as to correspond with the relative velocity of said cathode ray tube, said means comprising:

logic means responsive to the said means for physically moving said cathode ray tube, for adjusting the frequency of the transverse sweep rate in response to signals indicative of whether said cathode ray tube is being moved parallel to a major plotting axis or whether it is executing a combination move at 45° with respect to a major plotting axis.

3,950,764
SYSTEM FOR AUTOMATICALLY FOCUSING AN OBJECT IN A CAMERA OR THE LIKE

Kazuya Hosoe, Machida; Selichi Matsumoto, Tokyo, and Noritaka Mochizuki, Kamakura, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 294,931, Oct. 4, 1972, abandoned.
This application May 20, 1974, Ser. No. 471,708
Claims priority, application Japan, Oct. 8, 1971, 46-79228
Int. Cl.² G03B 3/10, 3/02
U.S. Cl. 354—25 6 Claims



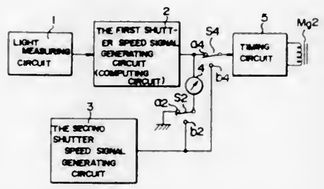
1. An automatic focusing system for focusing an object image on a focal plane comprising:
an annular photocell means of photoconductive type having a light receiving surface, said photocell means having a non-linear characteristic relation between the output thereof and the intensity distribution of illumination of said object image so as to assume an extreme value thereof when the image of the object is focused on the light receiving surface;
an annular cylindrical lens disposed forwardly of the light receiving surface of the photocell, said cylindrical lens having a fixed focal length defining a focal plane;
first drive means for periodically varying the distance between said annular cylindrical lens and said photocell means;
second drive means, a phototaking lens drivingly connected to said second drive means, said phototaking lens being displaceable along the axis thereof through said second drive means;
control circuit means including an extreme value detecting circuit having the input thereof connected to said photocell means for detecting an extreme value derived when the object image is focused on the light receiving surface of said photocell means, and a drive circuit electrically connected to said second drive means, said drive circuit being associated with said detecting circuit so as to control, in accordance with the output of said detecting circuit, the cut-off of a drive current applied to said second drive means through said drive circuit;
whereby said phototaking lens is automatically focused until the extreme value of said photocell means is detected.

3,950,765
EXPOSURE CONTROL DEVICES FOR PHOTOGRAPHIC CAMERAS

Yasuhiro Nanba, Sakai; Kayoshi Tsujimoto, Osaka, and Seiji Yamada, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Filed July 9, 1974, Ser. No. 486,849
Claims priority, application Japan, July 17, 1973, 48-81087; July 17, 1973, 48-81088
Int. Cl.² G03B 7/08
U.S. Cl. 354—29 21 Claims

1. An exposure control device for a photographic camera having an objective lens and an adjustable diaphragm, comprising:
a light measuring circuit for measuring the scene light transmitted through said objective lens and said diaphragm and for generating a measured light output commensurate with the brightness of said scene light;
a first circuit for generating a first output signal to control shutter speed commensurate with said measured light output;
means for manually selecting shutter speed;
a second circuit for generating a second output signal commensurate with the shutter speed selected by said manual shutter speed selecting means;

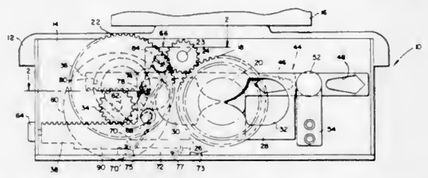


a timing circuit for controlling the shutter speed;
means for selectively connecting said first and second output signals to said timing circuit;
detecting means for detecting the difference between said first and second output signals; and
means for controlling the diaphragm aperture in response to the difference detected by said detecting means.

3,950,766
EXPOSURE CONTROL SYSTEM EMPLOYING BLADE SENSING FOLLOW FOCUS ARRANGEMENT

Irving Erlichman, Wayland, and Christopher R. Rice, Wakefield, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 22, 1974, Ser. No. 526,390
Int. Cl.² G03B 7/14
U.S. Cl. 354—29 15 Claims

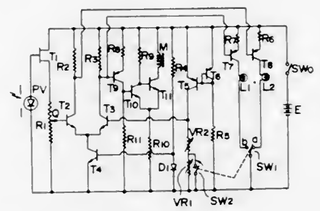


10. A photographic exposure control system for regulating the transmission of image-carrying rays from a scene along a given optical path to photographic material mounted at a given focal plane, said system comprising at least one blade member, means for mounting said blade member for displacement along a given blade path between one and another position, said blade member blocking the optical path when said blade member is in said one position and unblocking the optical path when said blade member is in said other position and providing progressively changing aperture values within a given range of aperture values through which scene light may pass to the focal plane as said blade member is displaced from said one position, each of said aperture values being in correspondence with a respective position of said blade member along said blade path, sensor means for determining when said blade member has reached a predetermined position, said sensor means including a sensor having an actuator portion, said sensor providing a given output signal when said blade member is displaced to within a predetermined vicinity of said actuator portion, means for mounting at least said actuator portion for displacement along a sensor path at least substantially parallel to said blade path, drive means operative for displacing said blade member between its said positions, and actuating means for activating said drive means to displace said blade member from its said one position toward its said other position to initiate an exposure interval during which scene light is directed to the focal plane and for then at least temporarily terminating further activation of said drive means so as to interrupt said displacement of said blade member responsive to said given output signal to thereby select an aperture value in operative relation to the optical path in accordance with the location of said actuator portion along said sensor path.

3,950,767
CAMERA INDICATING DEVICE WITH DIAPHRAGM CONTROL

Toru Matsui, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Japan

Filed Sept. 10, 1974, Ser. No. 504,763
Claims priority, application Japan, Sept. 13, 1973, 48-106641
Int. Cl.² G03B 7/08, 9/07, 17/20
U.S. Cl. 354—41 20 Claims

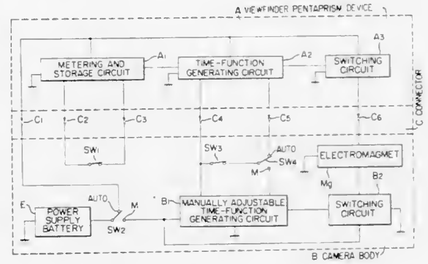


9. A camera comprising:
an objective lens having a diaphragm;
means for stopping-down said diaphragm in response to a shutter release operation;
manual means for selecting a shutter speed and setting a film speed;
means for measuring the intensity of light transmitted through said objective lens and said diaphragm and producing an output signal indicative of such measurement;
manual means for presetting a diaphragm aperture value in a range from a maximum aperture value to a minimum aperture value, to which preset aperture value said diaphragm can be stopped-down to a maximum extent upon actuation of an exposure operation;
first signal producing means for producing an output signal commensurate with the selected shutter speed and the set film speed;
means for arresting the stop-down operation of said diaphragm to determine the diaphragm aperture value in comparison with the output signal from said light measuring means and the output signal from said first signal producing means; and,
indicating means for indicating a possibility of under-exposure and a possibility of over-exposure including:
second signal producing means for producing an output signal commensurate with the difference between the maximum diaphragm aperture value and the preset diaphragm aperture value;
third signal producing means for producing a first indicating signal when the output signal from said light measuring means is lower in level than the output signal from said first signal producing means, said third signal producing means being activated prior to the actual stop-down operation of said diaphragm;
fourth signal producing means for producing a second indicating signal when the output signal from said light measuring means is higher in level than the sum of the output signals from said first and second signal producing means, said fourth signal producing means being activated prior to the actual stop-down operation of said diaphragm; and
indicating means responsive to the first and second indicating signals for respectively indicating that an under-exposure will occur even if said diaphragm is set to the maximum aperture value and that an over-exposure will occur even if said diaphragm is stopped-down to the preset diaphragm aperture value.

3,950,768
CAMERAS EMPLOYING INTERCHANGEABLE AUTOMATIC EXPOSURE CONTROL DEVICES

Kenji Toyoda, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 3, 1974, Ser. No. 529,074
Claims priority, application Japan, Dec. 6, 1973, 48-135695
Int. Cl.² G03B 7/08, 17/00
U.S. Cl. 354—51 14 Claims



1. In a camera comprising an interchangeable automatic exposure control device in combination with a camera body removably connected thereto, said camera body containing a shutter, shutter-releasing means actuatable to open said shutter, manually adjustable exposure time control means which is responsive to actuation of said shutter-releasing means to produce a first electrical signal and which includes first switching means responsive to said first electrical signal for producing a first control signal representative of a selected exposure time interval, and shutter-closing means responsive to said first control signal for closing said shutter at the end of said selected exposure time interval; said interchangeable device containing light-responsive automatic exposure time control means responsive to actuation of said shutter-releasing means to produce a second electrical signal and which includes second switching means responsive to said second electrical signal for producing a second control signal representative of the exposure time interval required for proper exposure, said shutter-closing means being responsive to said second control signal for closing said shutter at the end of said required exposure time interval; said camera further comprising change-over means for causing said first and second control signals to be applied selectively to said shutter-closing means; the improvement comprising means for individually adjustably setting the switching thresholds of said first and second switching means required for the production of said first and second control signals in response to said electrical signals, respectively, whereby exposure times may readily be standardized irrespective of variations of said switching means.

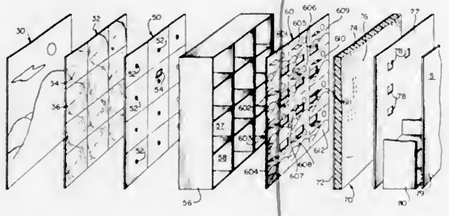
3,950,769
COMPACT CAMERA AND VIEWER APPARATUS

George Johannus Yevick, Leonia, N.J., assignor to Personal Communications, Inc., Stamford, Conn.

Filed Oct. 16, 1974, Ser. No. 515,343
Int. Cl.² G03B 35/08
U.S. Cl. 354—115 8 Claims

1. A combination projector and camera projection apparatus including,

a. a generally planar array of objective lenses,
b. an opaque scene mask, said mask being at a distance from said lenses equal to the image distance of said lenses,
c. septa extending from said objective lenses to said scene mask, said septa defining cells, the septa forming with their intersection with said scene mask a plurality of identical zones on said scene mask, each zone corresponding to a single lens of the array,



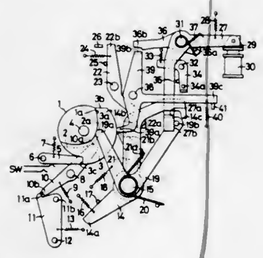
d. said scene mask having apertures, there being an aperture for and corresponding to each of said objective lenses and to each of said zones, the optic axis of each objective lens intersecting a corresponding, single one of said zones on said scene mask, the apertures of said scene mask being non-homologously positioned with respect to the said zones of the scene mask so that no two apertures of said scene mask have the same homologous position in their respective zones.

3,950,770

SINGLE-LENS REFLEX CAMERA HAVING ELECTRONIC SHUTTER

Toshinori Imura, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed June 20, 1974, Ser. No. 481,277
Claims priority, application Japan, June 29, 1973, 48-79397
Int. Cl.² G03B *19/12, 9/58*
U.S. Cl. 354—152 **5 Claims**



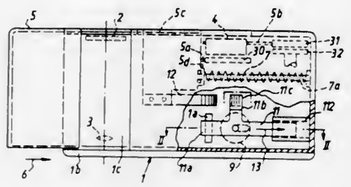
1. A single lens reflex camera having an electronic shutter comprising:
a focal plane shutter including a shutter opening member and a shutter closing member,
control means for electrically controlling exposure time, the control means including an electromagnet having a normally operable condition for controlling actuation of the closing member and a power source for the electromagnet,
a mirror moveable between an observing position and a photographing position,
means for driving the mirror to each of the positions,
means including an attraction member having an attraction piece holdable and attractable to the attracting surface of the electromagnet when said electromagnet is energized and spring biased in a direction to move the attraction piece away from the electromagnet for moving the shutter closing member when said electromagnet is deenergized,
means for switching between electronic exposure time control and mechanical exposure time control,
means including a control member moveable in operative relation to the movement of the mirror to the photographing position for actuating the shutter opening member after permitting, in the course of its movement, the attraction member under the influence of the spring bias thereon to move the attraction piece from the electromagnet,
a mechanical latch member selectively transferrable by said switching means between a first position where the latch member can latch the attraction member before the attraction member actuates the shutter closing member and a second position where the latch member is independent of the movement of the attraction member, the latch member, when in the first position, being moveable to the second position in operative relation to the travel of the opening member, and
a regulating member moveable in operative relation to the switching means to retain the mechanical latch member in the second position when the switching means is set in position for electronic exposure time control.

3,950,771

PHOTOGRAPHIC APPARATUS WITH EXPANSIBLE HOUSING

Alfred Winkler, Munich, Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Germany

Continuation of Ser. No. 344,366, March 23, 1973, Pat. No. 3,864,705. This application Oct. 16, 1974, Ser. No. 515,420
Claims priority, application Germany, Mar. 27, 1972, 2214955
The portion of the term of this patent subsequent to Feb. 4, 1992, has been disclaimed.
Int. Cl.² G03B *17/04, 19/04*
U.S. Cl. 354—187 **5 Claims**



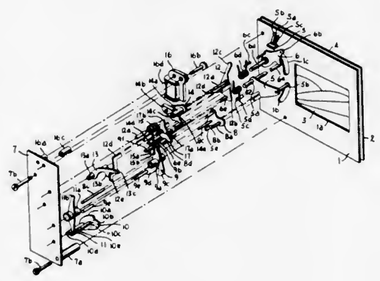
1. In a photographic apparatus, a combination comprising an elongated housing including a first section and a second section supported by and reciprocable relative to said first section in the longitudinal direction of said housing between first and second positions in which one of said sections respectively conceals and exposes at least a portion of the other of said sections; a picture taking lens mounted in said other section and having an optical axis normal to said direction; resilient means reacting against said first section and arranged to bias said second section to said second position so that said second section invariably tends to assume said second position; film transporting means in said other section, said one section having means for actuating said film transporting means simultaneously with and as a result of a portion of movement of said second section from said second to said first and back to said second position thereof; and detent means for releasably holding said second section in said first position, including first and second locking portions respectively mounted on said first and second sections, one of said locking portions being movable to and from an operative position in which said one locking portion engages with the other of said locking portions to maintain said second section in said first position when the movement of said one locking portion to said operative position takes place while said second section occupies said first position and to automatically hold said second section against movement from said first position when the movement of said one locking portion to said operative position precedes the movement of said second section to said first position, said detent means further comprising displacing means mounted on said housing and being operable by hand to move said one locking portion not only to but also from said operative position in each and every position of said second section relative to said first section so that said one locking portion remains in the position selected therefor by said displacing means unless said displacing means is again operated by hand to move said one locking portion from said selected position.

3,950,772

SHUTTER FOR A CAMERA

Tadashi Nakagawa; Mitsuo Koyama, and Eiichi Onda, all of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Apr. 30, 1974, Ser. No. 465,590
Claims priority, application Japan, May 2, 1973, 48-52301
Int. Cl.² G03B *9/08, 9/28*
U.S. Cl. 354—234 **1 Claim**



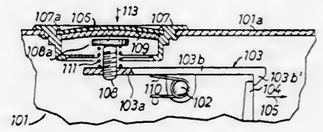
1. A shutter comprising a shutter-opening actuation member actuatable for opening the shutter to take an exposure, a first locking pawl releasably locking said shutter-opening actuation member, a shutter-closing actuation member actuatable for closing the shutter, a second locking pawl releasably locking said shutter-closing actuation member, an electromagnet energizable while an exposure is being taken and de-energized to terminate the exposure, a control member for controlling release of said shutter-closing actuation member for closing the shutter when the electro-magnet is de-energized, said control member having means attractable by said electromagnet when energized, a pretravelling member pivotally mounted for rotation and rotatably driven before initiation of an exposure when the shutter is released, and means comprising a single spring and said pretravelling member developing a spring force in a direction directed by said pretravelling member toward applying said control member into contact with said electromagnet when the shutter is cocked and developing a spring force by said spring to bias the control member in a direction away from said electromagnet by said pretravelling member and toward a direction for releasing said second locking pawl and actuating said shutter-closing actuation member when the shutter is released.

3,950,773

OPERATING MEANS FOR PHOTOGRAPHIC CAMERAS

Alfred Winkler, Munich, and Dieter Engelsmann, Unterhaching, both of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Continuation of Ser. No. 749,170, July 31, 1968, abandoned. This application Mar. 24, 1972, Ser. No. 237,986
Claims priority, application Germany, Feb. 16, 1968, 1622174
Int. Cl. G03b *17/00*
U.S. Cl. 354—266 **31 Claims**



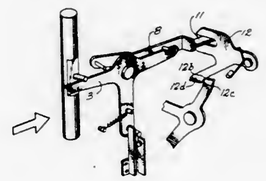
1. In a photographic camera, a combination comprising a housing; a camera mechanism mounted in said housing and comprising a motion receiving portion movable between first and second positions; operating means for moving said motion receiving portion, comprising a substantially plane flexible diaphragm mounted on said housing and being deformable from a first position to a second position to thereby effect a movement of said motion receiving portion between said first and second positions of said motion receiving portion, said diaphragm having a central portion and said first and second positions of said diaphragm being separated by a distance which is sufficiently small to produce no appreciable camera shake at slow shutter speeds; and stop means mounted in said housing to limit the extent of deformation of said diaphragm, said stop means being adjacent to said central portion at one side of said diaphragm and being adjustable with reference to said diaphragm in directions toward and away from said one side.

3,950,774

APPARATUS FOR HOLDING CLOSED A POWER SWITCH FOR AN ELECTRIC SHUTTER

Kunio Mita, Wako, and Hiroshi Kurei, Kawagoe, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 13, 1974, Ser. No. 478,852
Claims priority, application Japan, June 21, 1973, 48-73896
Int. Cl.² G03B *17/38*
U.S. Cl. 354—266 **1 Claim**



1. In a camera having an exposure control circuit for controlling an electric shutter, the circuit being switchably connected by a power switch to an electrical power source, the camera further having a shutter button and a shutter rod that, upon commencement of actution of the shutter button, begins to translate along a line of travel from a start position to a shutter-actuated position, apparatus for closing the power switch comprising:
a first rotatable release member that is torqued to rotate from a normal position past a power-switch-closing position in response to translation of the shutter rod past a

predetermined point between its start and shutter-actuated positions;

first means, engaged with the first rotatable release member, operative to close the power switch when the first rotatable release member rotates past its power-switch-closing position;

second means, operative in the event that actuation of the shutter button is interrupted before the shutter rod reaches its shutter actuated position, for urging the first rotatable release member to return to its normal position so that the first means ceases to be operative to close the power switch; and

third means, operative in the event that actuation of the shutter button progresses to the point at which the shutter rod reaches its shutter-actuated position, for starting the operation of the shutter and thereafter preventing the first release member from returning to its normal position so that the first means continues to be operative to close the power switch as long as the shutter is open notwithstanding release of the shutter button and return of the shutter rod to its start position, the third means comprising:

a second rotatable release member;

an arresting lever biased to rotate about a first axis in a first direction and having an engaging portion engaged with a portion of the second rotatable release member;

the second rotatable release member being positioned to be engaged by the first rotatable release member so as to be rotatably driven by rotation of the first rotatable release member past the power-switch-closing position so as to transmit torque to the engaged portion of the arresting lever for rotatably driving the arresting lever in the second, opposite direction toward a predetermined angular position occupied when the shutter rod is at its shutter-actuated position;

a shutter starting member biased to rotate, about a second axis parallel to the first axis, in the first direction from a wound-up position to a released position;

the arresting lever and the shutter starting member having slidably engaging portions including first slidably engaging portions defining arresting means and second slidably engaging portions defining cam means, the arresting means and the cam means being operative in a sequence with the arresting means being first operative to initially retain the shutter starting member in its wound-up position and then release the arresting lever to allow it to be displaced in the direction toward which it is biased, and with the cam means becoming operative when the arresting means releases the shutter starting member so that the cam means causes the arresting lever to reach its said predetermined angular position and be retained there as a result of the displacement of the released shutter starting member; and

means operative when the arresting lever is retained at its said predetermined position for preventing the first rotatable release member from returning to its normal position.

3,950,775

INFORMATION DISPLAYING APPARATUS FOR A CAMERA

Masamichi Toyama; Tomoshi Takigawa, both of Machida; Noritsugu Hirata; Keiichi Sakaguchi, both of Yokohama, and Toshikazu Ichiyanagi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1974, Ser. No. 472,893

Claims priority, application Japan, May 28, 1973, 48-59620

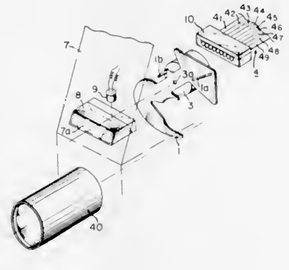
Int. Cl.² G03B *9/02*

U.S. Cl. 354—273 **22 Claims**

1. An information displaying apparatus incorporated in a camera having an exposure control mechanism, which comprises in combination:

a. information displaying means for optically displaying information corresponding to photographic conditions of said camera, and having marks for discriminating information, by which optical displaying of said information is performed, said means being disposed at a position where the displayed information is made observable by an operator of the camera;

b. an optical system for optically transmitting said information to be displayed by said information displaying means, and comprising flexible light transmitting means, wherein light entering through a portion of a first end surface thereof is emitted from a portion of a second end surface thereof, said second end surface of said light transmitting means being disposed in contiguity to said information discriminating marks, and said marks being illuminated by the light emitted from said second end surface; and



c. means for optically setting information to be displayed by said information displaying means, said information setting means being operatively connected to said exposure control mechanism to optically set information concerning the exposure value corresponding to a photographic operation of said camera by varying the light receiving portion of said first end surface of said light transmitting means in accordance with the exposure value information as determined by said exposure control mechanism, and being further provided with a colored filter to cause colored light to be supplied to said first end surface of said light transmitting means, when the exposure value to be determined by said exposure control mechanism deviates from a predetermined exposure value range, to indicate improper exposure conditions by means of said information displaying means, whereby the information corresponding to the photographic conditions of said camera is displayed optically by said information displaying means.

3,950,776

SKI POSITION SIMULATOR

Malcolm Corrigan, P.O. Box 167, Southhampton, L.I., N.Y. 11968

Filed Mar. 26, 1975, Ser. No. 562,094

Int. Cl.² G03B *15/00*

U.S. Cl. 354—291 **5 Claims**

2. A ski position simulator comprising:

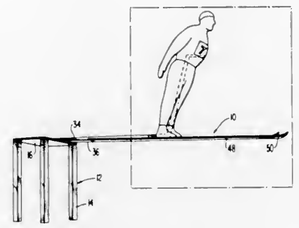
a supporting stand having an elevated top;

at least one prong member projecting forwardly from the elevated top of the supporting stand;

a cross plate fixedly secured to the prong members;

a pair of skis secured at midlength locations to the cross plate;

a rest plate boom adjustably pivotedly mounted on said cross plate and lockable at angles simulative of the posi-



tion of a skier doing a ski jump; and

a rest plate on said boom.

3,950,777

FIELD-EFFECT TRANSISTOR

Yasuo Tarui, Kurume; Yutaka Hayashi, Hoya, and Toshihiro Sekigawa, Yokohama, all of Japan, assignors to Kogyo Gijutsuin, Japan

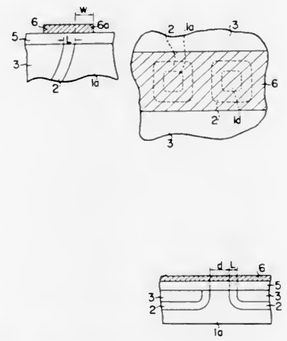
Continuation of Ser. No. 61,906, Aug. 7, 1970, abandoned.

This application Mar. 15, 1973, Ser. No. 341,755

Claims priority, application Japan, Aug. 12, 1969, 44-63257; Sept. 18, 1969, 44-73849; Oct. 14, 1969, 44-81501; Oct. 14, 1969, 44-81502; Oct. 14, 1969, 44-81503; Oct. 20, 1969, 44-83209

Int. Cl.² H01L *29/78*

U.S. Cl. 357—23 **1 Claim**



1. In a field effect transistor comprising a semiconductive wafer including at least first, second and third regions comprising drain, base and source regions respectively, said third region having the same conducivity type as said first region and having a higher impurity concentration than that of said first region, said second region having a conductivity type opposite to that of said first region and being disposed between said first and third regions to form p-n junctions with said first region and with said third region, said first region having at least one surface zone emerging at one surface of said wafer, said zone separating portions of said second region emerging at the surface of the wafer, a conductive material overlying said surface zone, said portions of the second region emerging at the surface of the wafer and a part of said third region, a dielectric coating separating said conductive material from said wafer and electrical contacts connected to said regions; the improvement comprising: said first region comprising silicon having an impurity concentration N atoms/cm³ satisfying the following relationship:

$$4 \times 10^7 \text{ cm}^{-1/2} / \sqrt{N} \geq L_D$$

where L_D is a lateral dimension in microns of said surface zone of the first region, whereby a depletion region is formed in said surface zone underlying said conductive material thereby decreasing a capacitance between said first region and said conductive material.

3,950,778

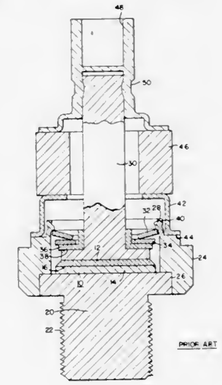
SEMICONDUCTOR DEVICE AND CASE MEMBER

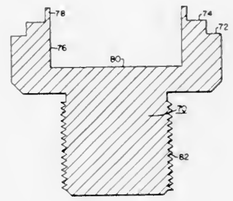
Edward G. Pomper, and Raymond J. Koval, both of Greensburg, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 30, 1974, Ser. No. 510,822

Int. Cl.² H01L *23/02, 23/42*

U.S. Cl. 357—74 **4 Claims**





1. A semiconductor device comprising

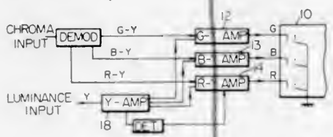
a. a semiconductor element, said semiconductor element comprising a wafer of semiconductor material and at least one electrical contact affixed to a major surface of the wafer, said wafer having at least one pn junction therein;

b. a case member, said case member having a composition by weight of 69 to 85 percent iron, 15 to 25 percent copper, and 0.10 to 0.25 percent carbon, said case member being in electrical and thermal contact with a first major surface of the semiconductor element;

c. an upper contact member pressing upon and making electrical and thermal contact to a second major surface of the semiconductor element; and,

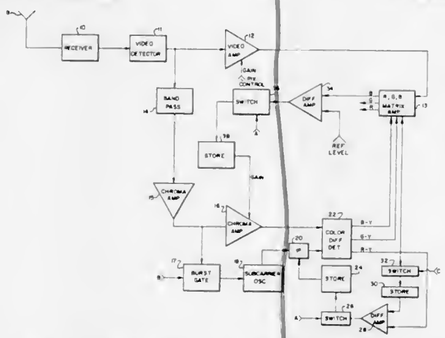
d. compression means retained by a portion of the case member and acting upon the upper contact member so as to apply a predetermined force to the semiconductor element.

3,950,779
HUE CONTROL CIRCUIT FOR COLOR TELEVISION RECEIVERS
Kazuyuki Suenaga, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Japan
Filed Apr. 22, 1974, Ser. No. 463,093
Claims priority, application Japan, Apr. 25, 1973, 48-46995
Int. Cl.² H04N 9/535
U.S. Cl. 358—28 16 Claims



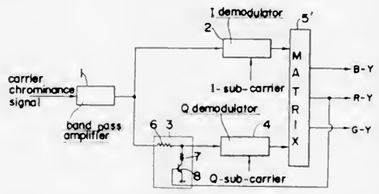
1. In a color television receiver adapted to receive a composite color television signal including chrominance and luminance signals and including a tri-color cathode ray tube having first, second and third control electrodes adapted to receive the red, green and blue signals, respectively, derived from said chrominance signal, a hue control circuit comprising, means for detecting the level of said luminance signal to produce a control signal when said signal is above a predetermined level, and gain controlled amplifier means coupled to said third control electrode and arranged to reduce its gain of amplification in response to said control signal so that the red content in a reproduced image is suppressed.

3,950,780
VIR CHROMA SYSTEM
Harry T. Freestone, Portsmouth, Va., assignor to General Electric Company, Portsmouth, Va.
Filed Aug. 23, 1974, Ser. No. 500,082
Int. Cl.² H04N 9/12
U.S. Cl. 358—28 12 Claims



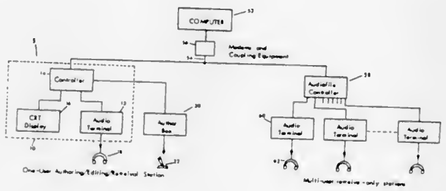
1. In a color television receiver an automatic hue control circuit responsive to a VIR signal included in the broadcasted video wave and containing a chroma reference portion of such phase that one color difference signal is zero and another portion having zero chroma content, said automatic hue control circuit comprising:
- means responsive to said VIR signal a first time during said another portion to establish a hue null reference for said automatic hue control circuit,
- means responsive to said VIR signal a second time during said chroma reference portion to recognize a difference indication, if any, between said zero color difference signal and said hue null reference,
- and hue control means responsive to said difference indication to control the hue setting of the receiver until said difference indication is reduced to zero.

3,950,781
HUE CONTROL CIRCUIT
Seiji Miyamoto, Osaka, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan
Filed Sept. 18, 1974, Ser. No. 506,999
Claims priority, application Japan, Sept. 18, 1973, 48-109033[U]; July 10, 1974, 49-82140[U]
Int. Cl.² H04N 9/535
U.S. Cl. 358—28 2 Claims



1. A hue control circuit for use in a color television system to reproduce a normal flesh tone, including means for reducing the Q component of a color signal, said means comprising a sub-carrier oscillator, a (B−Y) demodulator means for deriving a (B−Y) color difference signal from a carrier chrominance signal in accordance with the (B−Y) sub-carrier, an (R−Y) demodulator means for deriving an (R−Y) color difference signal from a carrier chrominance signal in accordance with the (R−Y) sub-carrier, matrix circuit means for receiving the outputs of said demodulator circuit means and deriving (B−Y), (R−Y) and (G−Y) signals therefrom, and a phase shifting circuit means coupled between the sub-carrier oscillator and both said demodulator means and said phase shifting circuit means being controlled by said (R−Y) output signal from said matrix circuit means, wherein the phase difference between demodulation axes (R−Y) and (B−Y) when the (R−Y) output signal is positive, is larger than 90°, such that the Q component is decreased to provide compensation for a normal flesh tone, and when said (R−Y) output signal is negative, is 90°, whereby said Q component is not decreased.

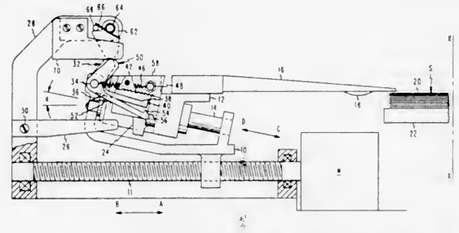
3,950,782
DATA STORAGE AND RETRIEVAL SYSTEMS FOR USE WITH PLURAL TRACK STORAGE MEDIUM
Peter Majendie Carey, Beaconsfield, and Norman Christopher John Tate, Montreal, both of Canada, assignors to Lektromedia Ltd., Pointe Claire, Canada
Filed Aug. 6, 1973, Ser. No. 385,805
Int. Cl.² G11B 15/18
U.S. Cl. 360—72 4 Claims



1. A system for the storage and retrieval of information including at least one address message and one data message on a movable multi-track tape storage medium and which tape medium has a leader portion and a message recording portion; said system comprising:

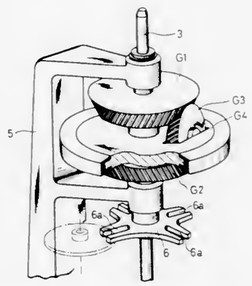
a. at least one information handling terminal capable of recording information on said tape storage medium and including a tape transport and a terminal processor and memory means,
b. controller means operatively connected to each terminal processor of each information handling terminal,
c. pulse generating means operatively associated with said tape transport of said information handling terminal to generate an index pulse and an index number therefrom for each data message recorded on the message recording portion of said storage medium, and which index number is related to the location of the address message on the storage medium,
d. recording means operatively associated with said information handling terminal for recording each address message and data message on the message recording portion of said tape medium and thereafter recording the index number for each address message on the leader portion of said tape medium,
e. terminal storage means forming part of each said terminal processor for introducing and storing the index numbers in said terminal storage means and forming a general index of such index numbers,
f. means permitting operative connection between said information handling terminal and controller means to said storage means to receive the index numbers at the storage means,
g. said information handling terminal also including reading means for reading an index number on the leader portion of the tape medium and introducing said index number into said terminal storage means as an instruction for reproducing a data message associated with a particular address message,
h. means operatively associated with said information handling terminal to access the storage means for the index number associated with a particular desired address message from the general index and cross-referencing the index number read from the leader portion against a like index number in the general index for retrieving the address message on said tape storage medium at said information handling terminal with such index number,
i. a central computer operatively connected to said controller means and each said information handling terminal being remote to said computer, and
j. a video display terminal operatively connected to said controller means and being located at said information handling terminal.

3,950,783
DISK FILE ACCESS MECHANISM
George Deems Herring, San Jose, Calif., and David Ronald Wilson, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 6, 1975, Ser. No. 538,627
Int. Cl.² G11B 21/08, 21/12, 21/02, 5/55
U.S. Cl. 360—78 6 Claims



1. An access mechanism for a stack of rotatable disks comprising a first carriage, a first way defining means moveably mounting said carriage for movement in opposite directions toward and away from said disk stack, an access arm and a magnetic head carried thereby for entering the disk stack, a second carriage on which said arm is fixed, second way defining means carried by said first carriage and mounting said second carriage for movement with respect to said first carriage, said second way defining means extending at an acute angle with respect to said first way defining means and the directions of movement of said first carriage, means for selectively moving said first carriage toward and away from said disk stack along said first way defining means, and a fixed stop in the path of movement of said second carriage as said two carriages move together away from said disk stack, said stop being placed so that said second carriage contacts said stop only after said two carriages have moved sufficiently away from said disk stack so that said access arm is outside of the disk stack, and means for fixing said second carriage and thereby said access arm with respect to said first carriage just subsequent to said second carriage contacting said stop and as said first carriage reverse its direction of movement to move toward said disk stack, whereby upon movement of said first carriage away from said disk stack said second carriage contacts said stop and is moved along said second way defining means to move said access arm axially of said disk stack and whereby upon subsequent movement of said first carriage toward said disk stack said second carriage is fixed with respect to said first carriage, and said access arm and said magnetic head move to a selected place in said disk stack.

3,950,784
APPARATUS FOR AUTOMATICALLY ADJUSTING THE PLAYBACK POSITION OF MAGNETIC DATA RECORDING DEVICE
Masayoshi Koizumi, Urawa, and Satoshi Tamura, Tokyo, both of Japan, assignors to Nippon Data Recorder Co., Ltd. and Nippon Pulsmotor Co., Ltd., both of Tokyo, Japan
Filed Aug. 6, 1974, Ser. No. 495,114
Claims priority, application Japan, Aug. 6, 1973, 48-88661
Int. Cl.² G11B 21/12, 19/26, 15/48
U.S. Cl. 360—84 1 Claim



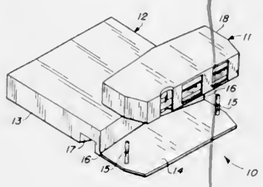
1. An apparatus for automatically adjusting the playback position in a magnetic data recording device having a capstan shaft with a capstan thereon comprising a first bevel gear fitted to the capstan shaft of the recording device, a Maltese cross wheel shaft coaxial with said capstan shaft, a second bevel gear fitted to the Maltese cross wheel shaft, a planetary bevel gear meshing with said second bevel gear for transmitting Maltese cross wheel rotation to the capstan shaft, and a counter driving wheel arranged intermediate said first and second bevel gears and carrying said planetary bevel gear so that the latter meshes with and travels along the peripheral teeth of said first and second bevel gears, said counter driving wheel, when rotating, operating to accelerate or decelerate the rotation of said capstan shaft of the recording device.

3,950,785

MINIATURE TAPE CARTRIDGE WITH ADAPTOR FOR USE WITH EIGHT TRACK CARTRIDGE MACHINES

Roger Findley, 302 Gentry, Spring, Tex. 77373

Filed Nov. 21, 1974, Ser. No. 525,721
Int. Cl.² G11B 23/04, 15/18
U.S. Cl. 360—94 20 Claims



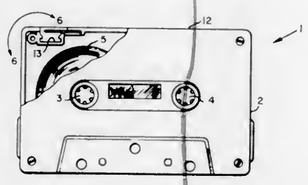
1. A magnetic tape cartridge assembly for use with a conventional eight-track tape machine comprising:
   a. a cartridge adaptor unit for carrying at least one tape cartridge element;
   b. a tape cartridge element containing a length of magnetic recording tape; and
   c. mounting means on said adaptor unit for removably mounting said cartridge element on said adaptor unit, said adaptor unit and cartridge element, when assembled, having dimensions permitting said magnetic recording tape to be physically connected with the playback and/or recording head of said eight-track tape machine.

3,950,786

MAGNETIC TAPE CASSETTE WITH SLIDING DOOR TO INHIBIT RECORDING

Bruce D. Shapley, Cupertino, Calif., assignor to K/Tronic, Inc., Santa Clara, Calif.

Filed Feb. 7, 1975, Ser. No. 547,770
Int. Cl.² G11B 15/04, 23/04
U.S. Cl. 360—132 6 Claims



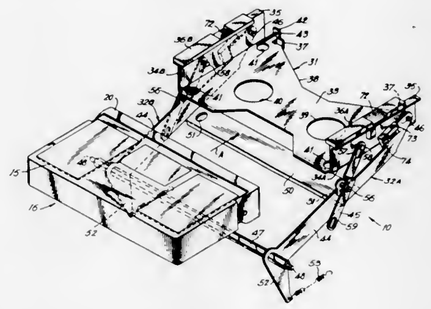
1. In a magnetic tape cassette, said cassette having a rear wall in which is provided a first cavity for receiving a recording control element mounted internally in a magnetic tape recording apparatus, the improvement comprising:
   means forming a second cavity in said rear wall, said second cavity being entirely enclosed except for an opening at an edge of said first cavity; and
   a movable member slidably mounted in said second cavity and movable between a first and a second position through said opening for covering said first cavity.

3,950,787

CASSETTE HOLDING DEVICE FOR TAPE RECORDING AND/OR REPRODUCING APPARATUS

Motohiko Hosaka, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 1, 1974, Ser. No. 520,347
Claims priority, application Japan, Nov. 8, 1973, 48-12585
Int. Cl.² G11B 15/00
U.S. Cl. 360—137 12 Claims



1. In a cassette-type recording and/or reproducing apparatus including a chassis, and cassette engaging members extending from said chassis and being engageable with a cassette for locating the latter in an operative position at which the apparatus can perform signal recording and reproducing operations on a magnetic tape wound on at least one reel rotatable in a housing of the cassette, and in which engagement and disengagement of said cassette engaging members with the cassette requires movement of the latter toward and away from said operative position with said cassette housing in substantially parallel orientation to the plane of said chassis: a cassette holding device comprising a cassette holder adapted to contain the cassette housing for movement of the latter with the holder relative to said chassis between said operative position and a cassette receiving and discharging position relatively remote from said chassis and at which a cassette in said holder is spaced from said cassette engaging members; and mounting assemblies at the opposite sides of said holder mounting the latter for said movement relative to said chassis, each of said mounting assemblies including relatively long first lever means pivotally connected, at one of its ends, to a first pivot point at the respective side of said holder and at the other of its ends to a second pivot point at said chassis, respectively, for swinging about said second pivot point in a plane perpendicular to said plane of the chassis, said first lever means extending substantially parallel to said plane of the chassis in said operative position of the holder and being inclined relative to said plane in said cassette receiving and discharging position so that said first lever means moves said holder relative to said chassis between said operative position and said cassette receiving and discharging position, and relatively short second lever means having three pivotal connections, at spaced apart locations therealong, connecting said second lever means to said chassis, said first lever means and said respective side of the holder, respectively, said second lever means being angularly displaced relative to said first lever means in response to said swinging of the first lever means, said pivotal connection of said second lever means to said respective side of the holder being spaced from said first pivot point so that said angular displacement of the second lever means causes said holder to pivot about said first point while said holder is moved by said first lever means as said first ever means swings relative to the chassis.

DESIGN PATENTS

GRANTED APRIL 13, 1976

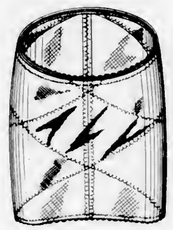
ERRATA

For CLASS	See PATENT NO.
001–008	239,509
029–023 A	239,534

DESIGNS

APRIL 13, 1976

239,475
GIRDLE
Jack J. Lo Cascio, Bayonne, N.J., assignor to International Playtex, Inc., New York, N.Y.
Filed Oct. 3, 1974, Ser. No. 511,865
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—2



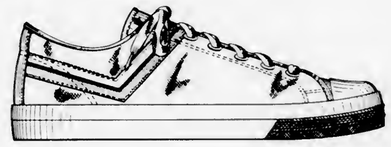
239,476
TROUSERS OR THE LIKE
Arlette Julie Angele Ben Choubane, nee Baudart, 62 Rue Francois 1 er, 75008 Paris, France
Filed Apr. 3, 1973, Ser. No. 347,567
Claims priority, application France Oct. 6, 1972
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—28



239,477
HAT COVER
Eloise Ellis, 320 SE. 89th St. 73149, and Anita F. Kilgore, 8500 S. Shartel 73139, both of Oklahoma City, Okla.
Filed Jan. 21, 1974, Ser. No. 435,240
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl, D2—260



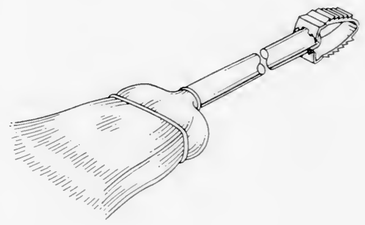
239,478
SPORT SHOE
Jonas Senter, New York, N.Y., assignor to CITC Industries Inc., New York, N.Y.
Filed Nov. 8, 1974, Ser. No. 522,246
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310



239,479
SPORT SHOE
Jonas Senter, New York, N.Y., assignor to CITC Industries Inc., New York, N.Y.
Filed Nov. 8, 1974, Ser. No. 522,248
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310



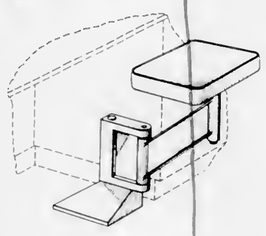
239,480
BROOM WITH COMBINATION SUPPORT HOOK AND SCRAPER BLADE
Annie R. Thomas, 700 E. Emily, Longview, Tex. 75601
Filed June 14, 1973, Ser. No. 370,184
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—6



239,481
POLE RACK
Mary D. Beatty, 148 W. 94th St., New York, N.Y. 10025
Filed Nov. 12, 1973, Ser. No. 414,967
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—28



239,482
PIVOTAL AUXILIARY SEAT OR SIMILAR ARTICLE
Rodney G. Sparrow, 37 Pierce Road, Watertown, Mass. 02172, and Richard S. Sparrow, 8 Wingate Road, Lexington, Mass. 02173
Filed Oct. 9, 1973, Ser. No. 404,161
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—49



239,483
CHAIR
Giorgio Rinaldi, Via Tombelle 9, Saonara, Padova, Italy
Filed Nov. 6, 1974, Ser. No. 521,320
Claims priority, application Italy Aug. 5, 1974
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



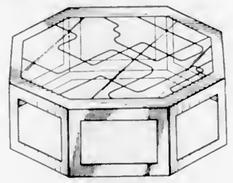
239,484
CUSHIONED CHAIR
Germana Narduzzi, Via Tombelle 9, Saonara, Padova, Italy
Filed Oct. 11, 1974, Ser. No. 513,961
Claims priority, application Italy June 12, 1974
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—66



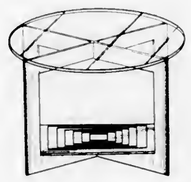
239,485
COMBINED CHAIR AND LUGGAGE RACK THEREFOR
Morton I. Thomas, Monroe, N.Y., assignor to Temco Products, Inc., Passaic, N.J.
Filed June 4, 1973, Ser. No. 366,971
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



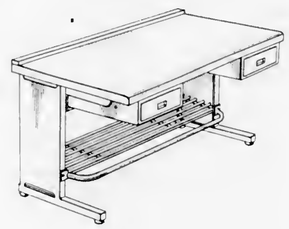
239,486
TABLE
Jack H. Hysten, 1402 Chandler St., Topeka, Kans. 66607
Filed Dec. 17, 1973, Ser. No. 425,639
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



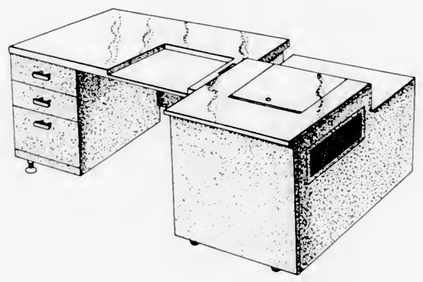
239,487
TABLE
Jack H. Hysten, 1402 Chandler St., Topeka, Kans. 66607
Filed Dec. 17, 1973, Ser. No. 425,640
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



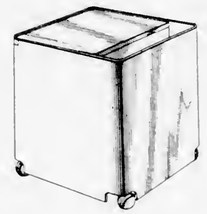
239,488
WORK BENCH
Douglas M. Sandefur, Culver City, Calif. (14507 S. Hawthorne Blvd., Lawndale, Calif. 90260)
Filed Sept. 9, 1974, Ser. No. 504,181
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—159



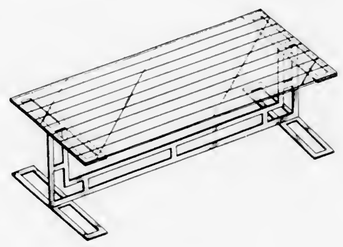
239,489
COMPUTER TERMINAL DESK
Aaron B. Remley III, San Jose, Calif. (8112 Cypress Ave., Fort Smith, Ark. 72901)
Filed Jan. 11, 1974, Ser. No. 432,464
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—162



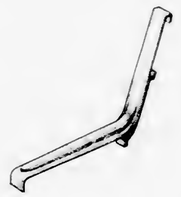
239,490
COMBINED MOBILE BAR REFRIGERATOR AND TABLE
Aldo Pellegrini, 22069 Piazza Stazione, Rovellasca, Italy
Filed July 19, 1974, Ser. No. 490,104
Term of patent 14 years
Int. Cl. D6—*04;* D12—*02;* D15—*07*
U.S. Cl. D6—168



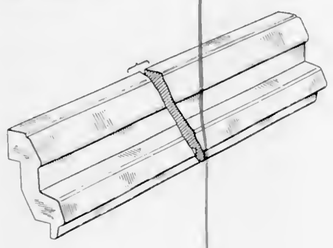
239,491
TABLE OR SIMILAR ARTICLE
Jack H. Hysten, 1402 Chandler St., Topeka, Kans. 66607
Filed Dec. 17, 1973, Ser. No. 425,611
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—175



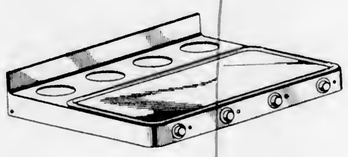
239,492
COMBINED ARMREST, BACKREST SUPPORT AND CLAMP DOWN ELEMENT FOR A STADIUM SEAT
Wilmer R. Schultz, Emmaus, Pa. 18049
Filed Apr. 1, 1974, Ser. No. 456,637
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—195



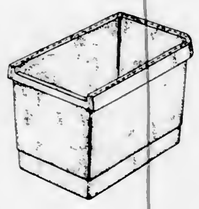
239,493
PICTURE FRAME MOULDING
Johannes Vihma, Toronto, Ontario, Canada, assignor to Artistic Woodwork Co. Ltd., Downsview, Ontario, Canada
Filed July 22, 1974, Ser. No. 490,263
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—246



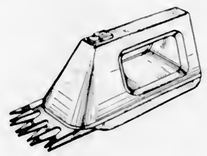
239,494
TOP FOR A HOT PLATE TYPE HEATING UNIT OR SIMILAR ARTICLE
J. Peyton Barnes, 1000 St. Joseph Professional Bldg., Houston, Tex. 77002
Filed May 6, 1974, Sr. No. 467,194
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—123



239,495
LITTER BASKET
Donald J. Shanklin, Granada Hills, Calif., assignor to Orion Industries, Inc.
Filed Nov. 27, 1974, Ser. No. 527,746
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—189



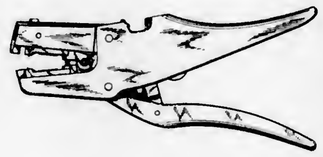
239,496
GRASS SHEAR
Dieter Raffler and Franco Clivio, Ulm, West Germany, assignors to Gardena Kress + Kastner GmbH
Filed Apr. 3, 1974, Ser. No. 457,712
Claims priority, application Germany Oct. 4, 1973
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—8



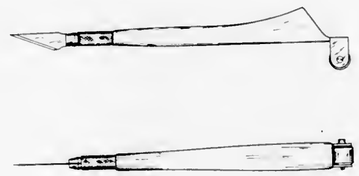
239,497
PAIR OF SCISSORS
Salvatore J. Megna, Sacramento, Calif., assignor to Professional Instruments, Inc., Cincinnati, Ohio
Original design application Nov. 19, 1973, Ser. No. 417,041. Divided and this application Feb. 10, 1975, Ser. No. 548,772
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—57



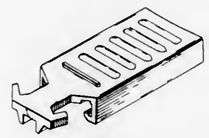
239,498
ELECTRICIAN'S INSULATION STRIPPING PLIERS
Hans Wiener, Taby, Sweden, assignor to Pressmaster Ltd., Stockholm, Sweden
Filed Aug. 2, 1974, Ser. No. 494,274
Claims priority, application Switzerland Feb. 4, 1974
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—52



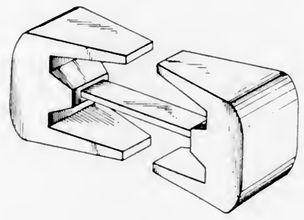
239,499
COMBINED CUTTING AND ROLLING TOOL
Morris L. Souders, R.R. 1, Box 251, Prairie Drive, Bloomington, Ind. 47401
Filed Aug. 29, 1974, Ser. No. 501,771
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—98



239,500
SLIDE HOOK
Allen J. Rose, Chicago, Ill., assignor to ACCO International Inc., Chicago, Ill.
Filed Sept. 23, 1974, Ser. No. 508,465
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—109



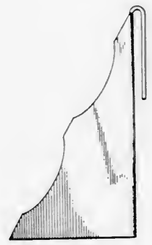
239,501
SKI CLAMP
Rune Joon, Gardesvagen 40, 793 00 Leksand, Sweden
Filed Sept. 27, 1974, Ser. No. 510,132
Claims priority, application Sweden June 27, 1974
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—246



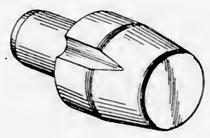
239,502
DRAPERY SLIDE FOR A CURTAIN ROD
Samuel Galietti, 1360 NE. 204th Terrace, North Miami Beach, Fla. 33162
Filed Aug. 6, 1975, Ser. No. 602,475
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—248



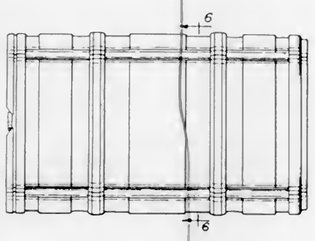
239,503
GUTTER ACCESSORY
Boynton C. Hagaman, 6520 Elmhirst Drive, Falls Church, Va. 22043
Filed Oct. 18, 1973, Ser. No. 407,560
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—251



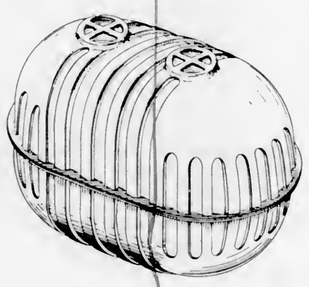
239,504
LOCKING LUG NUT
Arthur Duane Hale, Sr., Rolling Hills, Calif. (800 Santiago, Long Beach, Calif. 90804)
Filed Aug. 9, 1974, Ser. No. 496,043
Term of patent 14 years
The term of this patent subsequent to Mar. 18, 1989, has been disclaimed
Int. Cl. D8—*08*
U.S. Cl. D8—273



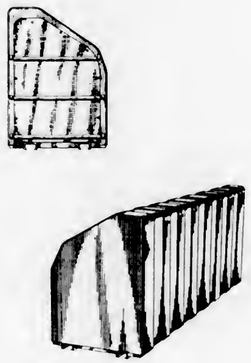
239,505
BARREL
Dennis H. Ward, 1 Garvock Drive, Kippington Road, Sevenoaks, England
Filed July 6, 1973, Ser. No. 377,096
Claims priority, application Great Britain Jan. 19, 1973
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—170



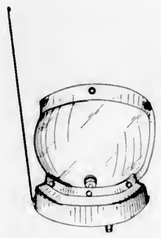
239,506
STORAGE TANK FOR LIQUIDS OR THE LIKE
George M. Myers, 3148 N. 47th Drive, Phoenix, Ariz. 85013
Filed June 19, 1974, Ser. No. 480,953
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—175



239,507
SHIPPING CONTAINER
Vasken Setrakian, Boston, Mass., assignor to Plastal Manufacturing Ltd., Granby, Quebec, Canada
Filed Apr. 23, 1974, Ser. No. 463,280
Claims priority, application Canada Mar. 8, 1974
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—246



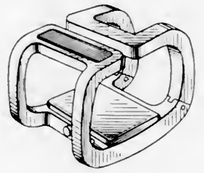
239,508
COMBINED FACE SHIELD AND MICROPHONE
Allan J. Weltman, Gates Mills, Ohio, assignor to Audio Link, Inc., Richmond Heights, Ohio
Filed Feb. 27, 1974, Ser. No. 446,483
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233



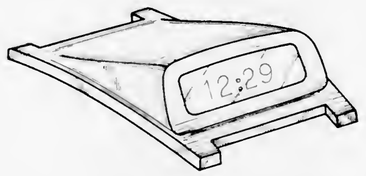
239,509
CLOCK
Robert C. Burroughs, 11208 Evans Trail, Apt. 102, Beltsville, Md. 20705
Filed June 7, 1973, Ser. No. 368,034
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—8



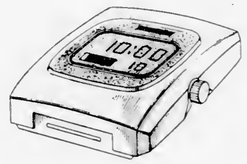
239,510
DIGITAL-DISPLAY ELECTRONIC WRISTWATCH
Jean-Samuel Wuhl, Geneva, Switzerland, assignor to Bulova Watch Co., Inc., New York, N.Y.
Filed Aug. 15, 1974, Ser. No. 497,762
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38



239,511
DIGITAL WATCH CASE
Tandy Plez Watson, 2711 Minert, 268, Dallas, Tex. 75219
Filed July 15, 1974, Ser. No. 488,283
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38



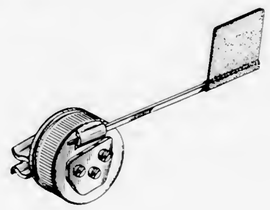
239,512
WRISTWATCH
Shigeru Tsukui, Yokohama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Jan. 10, 1975, Ser. No. 540,228
Claims priority, application Japan July 26, 1974
Term of patent 14 years
Int. Cl. D10—*02*
Int. Cl. D10—38



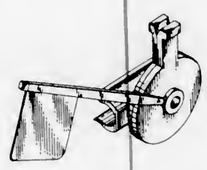
239,513
HEM MEASURING STICK
Eva De Luca, 310 West End Ave., New York, N.Y. 10023
Filed Nov. 16, 1973, Ser. No. 416,609
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—71



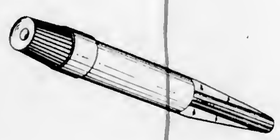
239,514
FISHING SIGNAL DEVICE
Theodore Montgomery, Box 43, and Wayne T. Wise, Box 175, both of Frankfort, S. Dak. 57440
Filed Feb. 10, 1975, Ser. No. 548,622
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109



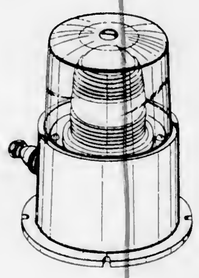
239,515
FISHING SIGNAL DEVICE
Theodore Montgomery, Box 43, and Wayne T. Wise, Box 175, both of Frankfort, S. Dak. 57440
Filed Aug. 14, 1975, Ser. No. 604,873
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109



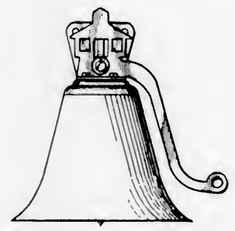
239,516
LIGHT FOR BICYCLE SAFETY STAFF
Mike C. Blume, P.O. Box 1125, Kissimmee, Fla. 32741
Filed July 10, 1974, Ser. No. 487,247
Term of patent 3½ years
Int. Cl. D10—*06*; D26—*02*
U.S. Cl. D10—111



239,517
SAFETY WARNING LAMP
Roy Basil Walter Lowndes, 79 Hollie Lucas Road, Kings Heath, Birmingham, England
Filed Dec. 23, 1974, Ser. No. 535,677
Claims priority, application Great Britain July 19, 1974
Term of patent 14 years
Int. Cl. D10—*06*; D26—*02*
U.S. Cl. D10—114



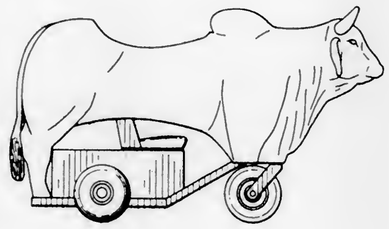
239,518
PATIO BELL
Donald J. Beneteau, 1333 Front St. S., Amherstburg, Ontario, Canada
Filed Jan. 6, 1975, Ser. No. 538,818
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—116



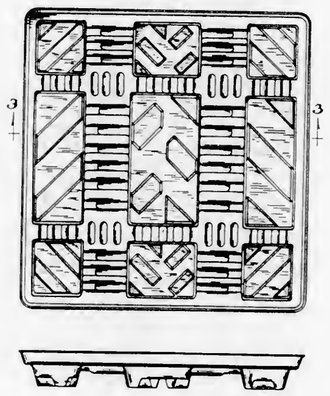
239,519
STRIPPER ELEMENT FOR MEAT SKINNING MACHINE
Ray T. Townsend, 3131 Fleur Drive, Des Moines, Iowa 50321
Filed Aug. 19, 1974, Ser. No. 498,255
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D11—1 A



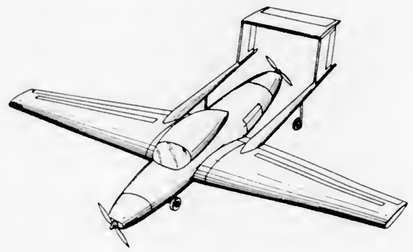
239,520
SELF PROPELLED VEHICLE FOR TRAINING CUTTING HORSES
Zeke C. Smith, Star Rte., Box 103, Louise, Tex. 77455
Filed Dec. 11, 1974, Ser. No. 531,539
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D12—1



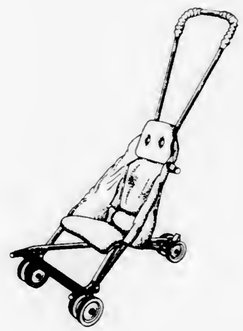
239,521
PALLET
Charles E. Griffin, Jr., High Point, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed Oct. 18, 1974, Ser. No. 516,274
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D12—53



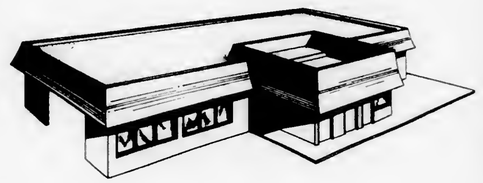
239,522
GENERAL AVIATION AIRCRAFT
Ronald B. Wheatley, 1280 21st St. NW., Washington, D.C. 20036
Filed June 20, 1975, Ser. No. 588,830
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—76



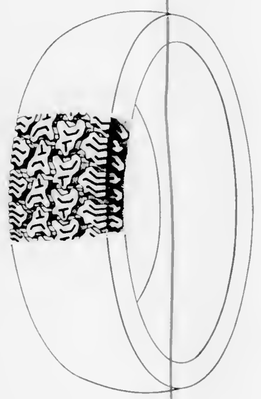
239,523
COLLAPSIBLE BABY CARRIAGE
Angus Christopher Firth and Frederick John Sheldon, Shipley, England, assignors to Lawrence Wilson & Son Limited, Leeds, England
Filed Mar. 4, 1974, Ser. No. 447,569
Claims priority, application Great Britain Dec. 19, 1973
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—129



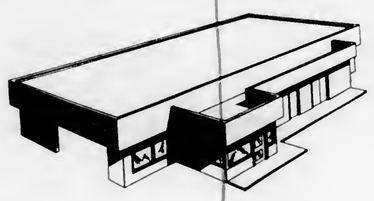
239,524
SERVICE STATION FOR AUTOMOBILES
Albert A. Perata, 48 Freeman Court, Walnut Creek, Calif. 94596, and Robert L. Sylvester, 200 Alice Lane, Orinda, Calif. 94563
Filed Jan. 11, 1974, Ser. No. 432,432
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B



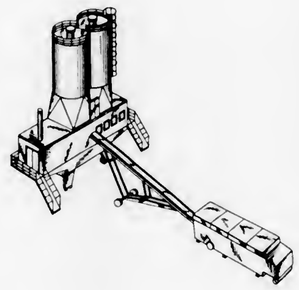
239,525
PNEUMATIC TIRE TREAD AND BUTTRESS
Gerassimos C. Candiliotis, Agawam, Mass., assignor to Uniroyal, Inc.
Filed Jan. 20, 1975, Ser. No. 542,525
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



239,526
AUTOMOBILE SERVICE STATION
Robert L. Sylvester, 200 Alice Lane, Orinda, Calif. 94563, and Albert A. Perata, 48 Freeman Court, Walnut Creek, Calif. 94596
Filed Jan. 14, 1974, Ser. No. 432,863
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B



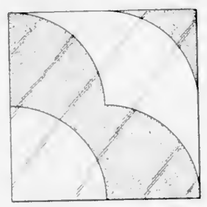
239,527
MOBILE CONCRETE PLANT
Sture Bostrom and Bertil Bostrom, both of Skravelsjovagen, S–90256 Umea, Sweden
Filed May 20, 1974, Ser. No. 471,771
Claims priority, application Sweden Nov. 20, 1973
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R



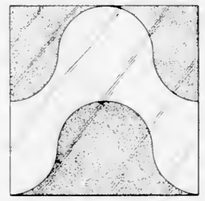
239,528
AUTOMOTIVE SERVICE CENTER
H. Stewart Thompson, St. Louis, Mo., assignor to Eaton Corporation
Filed Sept. 6, 1974, Ser. No. 503,840
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B



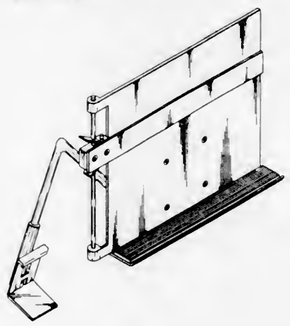
239,529
DECORATIVE ARCHITECTURAL PANEL
Emory L. Mead, Oak Park, Ill., assignor to Design Works, Inc., Oak Brook, Ill.
Filed Nov. 29, 1974, Ser. No. 527,966
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 B



239,530
DECORATIVE ARCHITECTURAL PANEL
Emory L. Mead, Oak Park, Ill., assignor to Design Works, Inc., Oak Brook, Ill.
Filed Nov. 29, 1974, Ser. No. 527,967
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 B



239,531
COPY HOLDER OR SIMILAR ARTICLE
Robert A. Clowe, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 29, 1974, Ser. No. 518,551
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—91





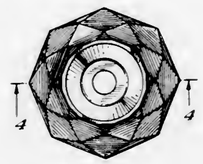
239,532
HOLSTER
Earl J. Clark, Frederick, Md., assignor to Tandy Brands, Inc., Fort Worth, Tex.
Filed Apr. 28, 1975, Ser. No. 572,149
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—13

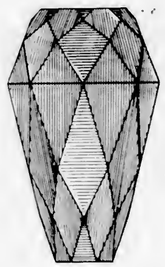


239,533
BELT ATTACHED FISH ROD HOLDER
Leon A. Polzin, P.O. Box 54, Cuero, Tex. 77954
Filed Dec. 19, 1974, Ser. No. 534,567
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—14

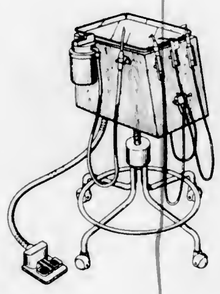


239,534
ORNAMENT FOR STEMWARE OR THE LIKE
Amnon Michaeli, 135—03 73rd Terrace, Kew Gardens Hills, Queens, New York, N.Y.
Filed Sept. 16, 1974, Ser. No. 506,408
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A

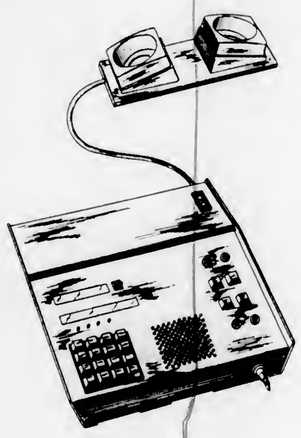




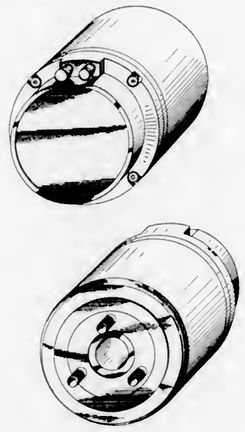
239,535
PORTABLE DENTAL STAND
John J. Germek, 2937 Pinewick Road, Ellicott City, Md. 21043
Filed Mar. 28, 1972, Ser. No. 239,010
Term of patent 7 years
Int. Cl. D24—*01*
U.S. Cl. D24—1 B



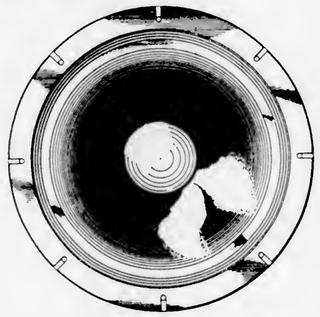
239,536
ACOUSTIC COUPLED REMOTE DATA ENTRY TERMINAL OR SIMILAR ARTICLE
George E. Chadima, Jr., Cedar Rapids, and Robert A. Bruce, Marion, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa
Filed Aug. 21, 1974, Ser. No. 499,541
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

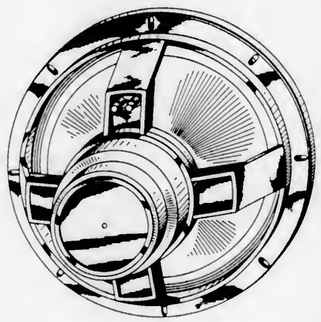


239,537
LOUDSPEAKER DRIVER UNIT
George R. Wagner, Santa Ana, Calif., assignor to Altec Corporation, Anaheim, Calif.
Filed Oct. 25, 1974, Ser. No. 518,107
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G

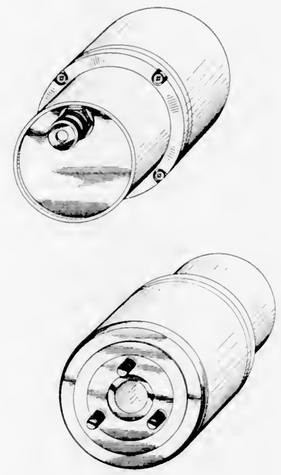


239,538
LOUDSPEAKER
George R. Wagner, Santa Ana, Calif., assignor to Altec Corporation, Anaheim, Calif.
Filed Oct. 25, 1974, Ser. No. 518,109
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G

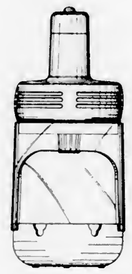




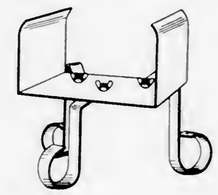
239,539
LOUDSPEAKER DRIVER UNIT
George R. Wagner, Santa Ana, Calif., assignor to Altec Corporation, Anaheim, Calif.
Filed Oct. 29, 1974, Ser. No. 518,615
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



239,540
VACUUM-OPERATED SMOKE ABSORBING ASHTRAY
Jeannette V. Orel, 522 Warner Ave., Los Angeles, Calif. 90024
Filed July 15, 1974, Ser. No. 488,226
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—15



239,541
STAND FOR A FIREPLACE MATCH BOX
Carl-Erik Hagberg, Stockholm, Sweden, assignor to Svenska Tandsticksbolagets Forsaljningsaktiebolag, Stockholm, Sweden
Filed Apr. 8, 1974, Ser. No. 458,577
Claims priority, application Sweden Oct. 15, 1973
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—31



239,542
FENCE WIRE SPACER
Jack L. Jackson, Phoenix, Ariz. (Rte. 1, Box 101, Columbus, Mont. 59101)
Filed Sept. 13, 1973, Ser. No. 397,089
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D28—1 R



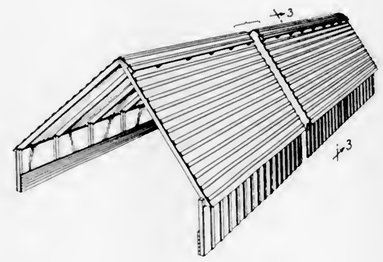
239,543
SWINGING GATE
Frank Kratky, Bellvue, Colo., assignor to Westguard Products, Inc., Fort Collins, Colo.
Filed Mar. 18, 1974, Ser. No. 451,791
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D28—1 B



239,544
ANIMAL SCULPTURE
Isom J. Henry, 921 S. Lyon St., Santa Ana, Calif. 92705
Filed Apr. 22, 1974, Ser. No. 462,956
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 B



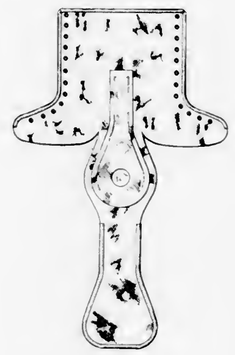
239,545
A-FRAME POULTRY CAGE SHELTER
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Continuation-in-part of design application Ser. No. 149,093, June 1, 1971, now Patent No. 228,557. This application Oct. 9, 1973, Ser. No. 404,727
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D30—1



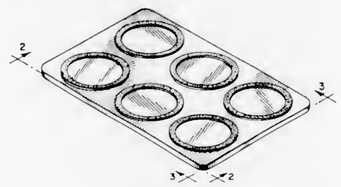
239,546
ANIMAL FEED FLOW MONITOR
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Filed Oct. 9, 1973, Ser. No. 404,701
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



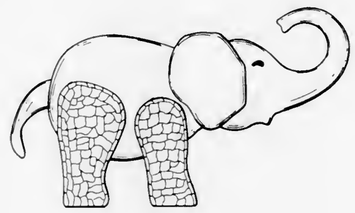
239,547
BLANK FOR AN ANIMAL SHOE
Mary C. Henry, 921 S. Lyon St., Santa Ana, Calif. 92705
Filed Apr. 15, 1974, Ser. No. 461,161
Term of patent 14 years
Int. Cl. D30—*01*
U.S. Cl. D30—34



239,548
DIAGNOSTIC SLIDE
Robert Schiff, Mission Viejo, and John C. Wilson, Anaheim, Calif., assignors to Baxter Laboratories, Inc., Deerfield, Ill.
Filed Mar. 25, 1974, Ser. No. 454,209
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D32—1 R



239,549
TOY ELEPHANT FIGURE
Lynn Benner Northrop, Strykersville, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 2, 1974, Ser. No. 430,022
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



239,550
GOLF CLUB HEAD
Henry C. Timbrook, 3078 Alton Road, Miami Beach, Fla. 33140
Filed Apr. 25, 1974, Ser. No. 464,130
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



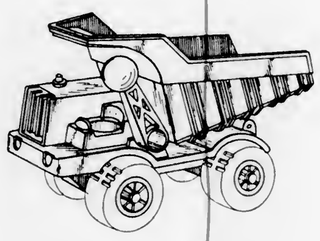
239,551
SKI
Rudolf Ferch, Salzburg, Austria, assignor to Kastle GmbH, Ried im Innkreis, Austria
Original design application Apr. 23, 1974, Ser. No. 463,375. Divided and this application Mar. 28, 1975, Ser. No. 563, 203
Claims priority, application Austria Oct. 24, 1973
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 D



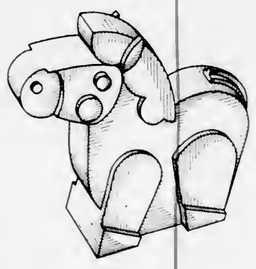
239,552
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Clifford Duane Hitterdal, P.O. Box 3, Hitterdal, Minn. 56552
Filed Jan. 14, 1974, Ser. No. 433,225
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 N



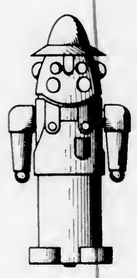
239,553
TOY TRUCK
Jack L. Breneman, Orchard Park, and Jeffrey T. Samson, East Aurora, N.Y., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Aug. 5, 1974, Ser. No. 494,626
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



239,554
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Palmer J. Schoenfield, Evanston, and Marcy L. Baer, Chicago, Ill., assignors to Marvin Glass & Associates. Chicago, Ill.
Filed Feb. 3, 1975, Ser. No. 546,252
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 B



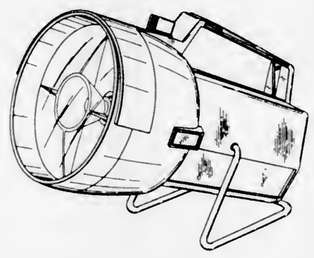
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Filed Feb. 3, 1975, Ser. No. 546,253
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AD



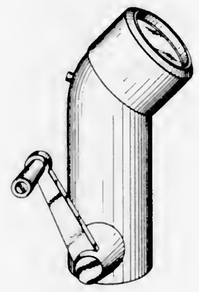
239,556
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Charles Braff, Belgielei 151, Antwerp, Belgium, and Josephus Meeus, Alfons Schneiderlaan 124, Deurne, Belgium
Filed Aug. 26, 1974, Ser. No. 500,794
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—1 A



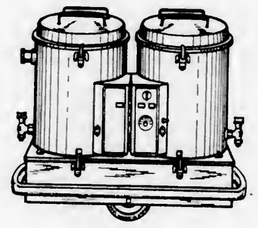
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Thomas H. Nicholl, 1204 W. 27th St., Kansas City, Mo. 64108
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Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



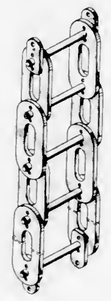
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Alexander W. Hughes, Jr., 19 Wardell Circle, Oceanport, N.J. 07757
Filed Dec. 31, 1974, Ser. No. 537,831
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Int. Cl. D26—*02*
U.S. Cl. D48—24 A



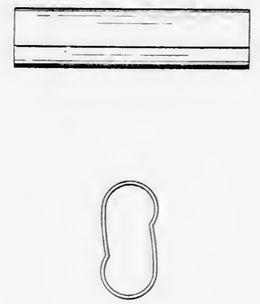
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Bengt Olof Crener, Taby, Bolik Anders Gottfrid Eriksson, Johanneshov, and Milos Vukotic, Tumba, Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Oct. 9, 1974, Ser. No. 513,225
Claims priority, application Sweden Apr. 9, 1974
Term of patent 14 years
Int. Cl. D7—*05;* D15—*05*
U.S. Cl. D49—11



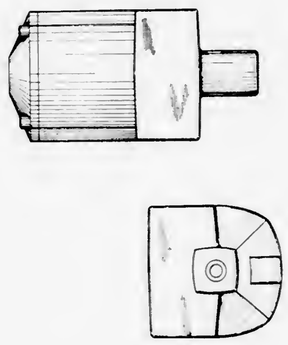
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Richard A. Edinger, St. Joseph, Mich., assignor to Sea-Link, Inc., St. Joseph, Mich.
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Term of patent 14 years
Int. Cl. D6—*99;* D12—*06*
U.S. Cl. D54—1 A



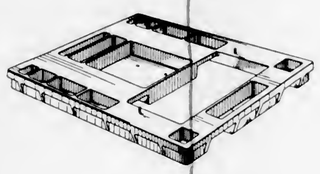
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Anthony Roberts Harris, Hanworth, England, assignor to Dunhill Lighters Limited, London, England
Filed Apr. 4, 1975, Ser. No. 565,265
Claims priority, application Great Britain Oct. 22, 1974
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D54—7



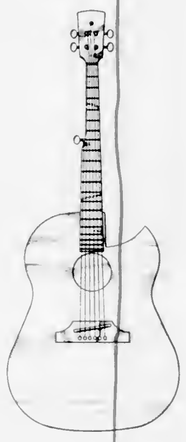
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Stephen Matousek and Ulrich H. Koch, Moraga, Calif., assignors to Whitey Research Tool Co., Emeryville, Calif.
Filed May 19, 1975, Ser. No. 578,408
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 G



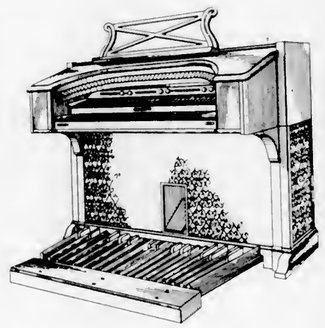
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Charles William Dunmire, 4485 N. Lorna Ave., Fresno, Calif. 93705
Continuation-in-part of abandoned design application Ser. No. 412,512, Nov. 2, 1973. This application Feb. 18, 1975, Ser. No. 550,232
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D55—1 R



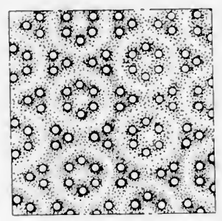
239,564
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Felton Lee Bevill, Box 99, Castlewood Estates, Stone Mountain, Ga. 30083
Filed June 7, 1974, Ser. No. 477,267
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1 A



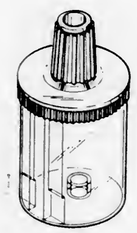
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Thomas E. Kimble, Covington, Ky., assignor to D. H. Baldwin Co.
Filed Apr. 30, 1974, Ser. No 465,521
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—2



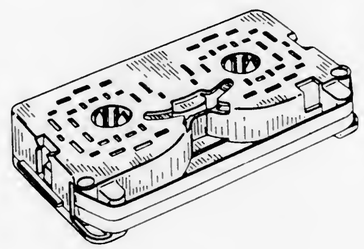
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Clifford M. Vogt, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Oct. 29, 1974, Ser. No. 518,710
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 R



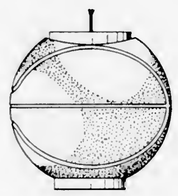
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Sigeru Okayama, Tokyo, Japan, assignor to Medica Co., Ltd., Tokyo, Japan
Filed Jan. 30, 1974, Ser. No. 437,824
Claims priority, application Japan Sept. 25, 1973
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1 Q



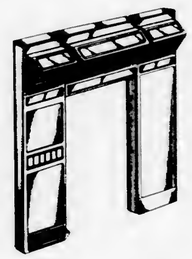
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Ettore Sottsass, Jr., Milan, Italy, assignor to Ing. C. Olivetti & Co., S.p.A.
Filed June 11, 1974, Ser. No. 478.268
Claims priority, application Italy Dec. 18, 1973
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 A



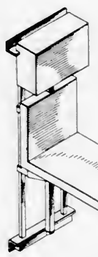
239,569
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James E. Eker, 1715 18th St., Woodward, Okla. 73801
Filed Feb. 19, 1974, Ser. No. 443,239
Term of patent 3½ years
Int. Cl. D26—*01*
U.S. Cl. D73—1 B



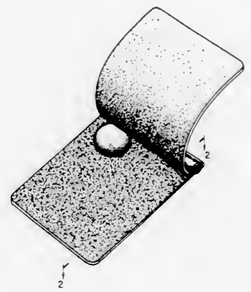
239,570
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William R. Hall, 10573 Lauriston Ave., Los Angeles, Calif. 90064
Filed Jan. 17, 1974, Ser. No. 434,011
Term of patent 3½ years
Int. Cl. D24—*01*
U.S. Cl. D83—1 F



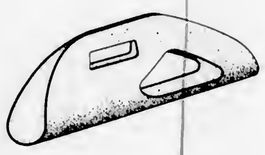
239,571
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Alden C. Dirck, 1020 W. Winona Ave., Warsaw, Ind. 46580
Filed Apr. 25, 1974, Ser. No. 464,252
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U.S. Cl. D83—1 D



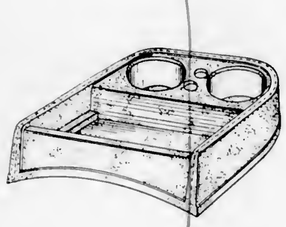
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Norbert Leopoldi, 4180 Marine Drive, Chicago, Ill. 60613
Filed Sept. 21, 1973, Ser. No. 399,324
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 A



239,573
SKI CARRIER
Patrick R. Drouillard, Windsor, Ontario, Canada, assignor to Michael J. Galla and Donald E. Rose
Filed Oct. 31, 1974, Ser. No. 519,510
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



239,574
SNACK TRAY
Donald J. Shanklin, Granada Hills, Calif., assignor to Orion Industries, Inc.
Filed Nov. 18, 1974, Ser. No. 524,639
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



239,575
COIN HOLDER
Watson Powell, Jr., Des Moines, Iowa, assignor to American Republic Insurance Company, Des Moines, Iowa
Filed Jan. 31, 1974, Ser. No. 438,441
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Int. Cl. D6—*99*
U.S. Cl. D87—8.4



239,576
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John J. Casparro, 23326 Sandalwood St., Canoga Park, Calif. 91304
Filed Jan. 28, 1974, Ser. No. 437,030
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 R



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Clachan, Margaret Loudon; Kennedy, David Rankine; Shephard, Basil Robert, deceased; and Shephard, Doreen, executrix, B 453,960.
Shephard, Doreen, executrix: *See—*
Clachan, Margaret Loudon; Kennedy, David Rankine; Shephard, Basil Robert, deceased; and Shephard, Doreen, executrix, B 453,960.
Sherbeck, Leander Adair: *See—*
Baird, Bennett Ray; and Sherbeck, Leander Adair, B 519,355.
Siemens Aktiengesellschaft: *See—*
Roth, Arthur; and Schmidt, Otto, B 446,956.
Smith, Herchel: *See—*
Hughes, Gordon Alan; and Smith, Herchel, B 561,365.
Spencer, Lloyd. Irrigation emitter tube. B 570,382, Cl. 239-288.300.
Spooner, James E. Method for producing champagne. B 394,742, Cl. 426-8.000.
Sugino, Hiromu: *See—*
Kakinuma, Atsushi; Sugino, Hiromu; Moriya, Norihiko; and Isono, Masao, B 328,077.
Sumitomo Chemical Company, Limited: *See—*
Aoki, Yasuhiko; Suzuki, Hiroyuki; Akiyama, Hisao; and Okano, Shigeru, B 532,477.
Suzuki, Hiroyuki: *See—*
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Taylor, Glenn R.: *See—*
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Textron, Inc.: *See—*
Lemos, Walter G., B 540,703.
Trozzolo, Anthony Marion: *See—*
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Tyrone Hydraulics, Inc.: *See—*
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Virgin, Alan Geoffrey: *See—*
Randell, Donald Richard; Holt, Brian; and Virgin, Alan Geoffrey, B 408,123.
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Lundberg, Robert D.; Makowski, Henry S.; and Westerman, Lowell, B 487,467.
Western Electric Company, Inc.: *See—*
McPherson, Charles Allen, B 465,376.
Westinghouse Electric Corporation: *See—*
Kimmel, Donald S.; Gary, Wardell; and Taylor, Glenn R., B 504,405.
Woodward, Henry Edwin, to National Research Development Corporation. Injectors for the fuel injection systems of internal combustion engines. B 541,501, Cl. 239-533.000.

CLASSIFICATION OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM

DATE PUBLISHED APRIL 13, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 8			
1E	B 407,205	C	Mar. 16, 1976
10.2	B 430,334	C	Jan. 27, 1976
14	B 460,388	C	Jan. 27, 1976
	B 497,473	C	Feb. 3, 1976
17	B 458,060	C	Jan. 13, 1976
21A	B 424,410	C	Mar. 30, 1976
62	B 507,476	C	Feb. 10, 1976
74	B 354,959	C	Feb. 17, 1976
84	B 495,903	C	Feb. 17, 1976
94.24	B 520,995	C	Mar. 23, 1976
115.5	B 372,232	C	Mar. 16, 1976
115.7	B 389,304	C	Jan. 27, 1976
142	B 423,867	C	Feb. 3, 1976
161	B 461,352	C	Jan. 13, 1976
169	B 497,571	C	Mar. 23, 1976
173	B 537,058	C	Mar. 23, 1976
174	B 344,967	C	Feb. 3, 1976
178R	B 389,155	C	Mar. 30, 1976
Class 11			
1AD	B 576,385	M	Mar. 30, 1976
Class 15			
53A	B 419,364	M	Mar. 30, 1976
147A	B 502,667	M	Feb. 24, 1976
229A	B 523,885	M	Feb. 17, 1976
256.53	B 579,116	M	Feb. 3, 1976
302	B 553,629	M	Feb. 24, 1976
Class 16			
125	B 589,687	M	Mar. 23, 1976
128R	B 594,871	M	Mar. 16, 1976
129	B 565,754	M	Mar. 30, 1976
Class 17			
23	B 519,599	M	Feb. 17, 1976
2502	B 541,496	E	Jan. 27, 1976
Class 19			
155	B 569,501	M	Mar. 9, 1976
Class 21			
2.7R	B 527,999	C	Feb. 3, 1976
Class 23			
230B	B 554,039	C	Feb. 24, 1976
273SP	B 431,785	C	Feb. 24, 1976
273V	B 563,165	C	Mar. 9, 1976
277R	B 510,682	C	Mar. 30, 1976
285F	B 565,180	C	Jan. 27, 1976
288S	B 517,668	C	Apr. 6, 1976
Class 24			
75	B 532,476	M	Feb. 3, 1976
Class 28			
1.6	B 497,292	M	Feb. 3, 1976
Class 29			
96	B 546,911	M	Jan. 13, 1976
127	B 510,855	M	Jan. 27, 1976
180SS	B 421,975	C	Mar. 2, 1976
183.5	B 519,680	C	Mar. 30, 1976
237	B 503,436	M	Feb. 24, 1976
415	B 504,061	M	Mar. 16, 1976
428	B 520,928	M	Jan. 13, 1976
578	B 561,732	M	Feb. 3, 1976
580	B 492,301	M	Jan. 13, 1976
591	B 506,760	M	Apr. 13, 1976
Class 30			
133	B 581,843	M	Mar. 16, 1976
Class 32			
10A	B 491,501	M	Jan. 13, 1976
Class 33			
143F	B 540,888	M	Mar. 30, 1976
174S	B 498,820	M	Mar. 9, 1976
252	B 471,681	M	Apr. 13, 1976
Class 35			
17	B 546,097	M	Mar. 23, 1976
36	B 511,454	M	Feb. 24, 1976
Class 37			
8	B 558,819	M	Feb. 3, 1976
57	B 531,753	M	Mar. 2, 1976
142A	B 511,099	M	Feb. 3, 1976
Class 40			
28C	B 493,981	M	Mar. 9, 1976
159	B 456,153	M	Mar. 9, 1976
Class 43			
129	B 442,866	M	Feb. 24, 1976
Class 44			
2	B 496,792	C	Feb. 17, 1976
62	B 407,812	C	Mar. 23, 1976
Class 47			
1.7	B 491,776	M	Mar. 16, 1976
57.6	B 548,028	M	Feb. 3, 1976
Class 48			
73	B 541,376	C	Feb. 17, 1976
192	B 593,781	C	Mar. 16, 1976
358	B 576,859	M	Feb. 24, 1976
Class 51			
358	B 576,859	M	Feb. 24, 1976
Class 52			
207	B 459,597	M	Feb. 17, 1976
225	B 591,615	M	Mar. 30, 1976
484	B 522,354	M	Jan. 20, 1976
Class 53			
77	B 508,878	M	Feb. 3, 1976
Class 55			
70	B 456,905	C	Mar. 23, 1976
71	B 570,925	C	Mar. 23, 1976
105	B 490,806	C	Feb. 3, 1976
352	B 543,941	C	Jan. 13, 1976
417	B 502,151	C	Mar. 23, 1976
Class 56			
13.4	B 494,167	M	Mar. 23, 1976
14.5	B 549,244	M	Jan. 27, 1976
15.9	B 558,973	M	Feb. 10, 1976
Class 57			
77.4	B 487,078	M	Mar. 30, 1976
140BY	B 495,124	M	Mar. 9, 1976
Class 58			
21.13	B 516,825	M	Feb. 3, 1976
Class 60			
39.63	B 491,774	M	Mar. 30, 1976
226A	B 445,459	M	Feb. 3, 1976
299	B 551,133	M	Mar. 2, 1976
304	B 502,540	M	Jan. 13, 1976
349	B 541,464	M	Feb. 17, 1976
422	B 526,445	M	Jan. 20, 1976
424	B 584,520	M	Jan. 27, 1976
425	B 535,386	M	Jan. 13, 1976
431	B 551,809	M	Feb. 24, 1976
445	B 400,871	M	Feb. 17, 1976
592	B 465,145	M	Jan. 27, 1976
645	B 538,472	M	Feb. 3, 1976
660	B 556,496	M	Mar. 16, 1976
667	B 464,027	M	Mar. 16, 1976
690	B 505,689	M	Mar. 2, 1976
706	B 509,238	M	Feb. 24, 1976
Class 61			
.5	B 554,283	M	Jan. 27, 1976
49	B 504,439	M	Mar. 16, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 62			
306	B 522,009	M	Feb. 17, 1976
353	B 564,314	M	Jan. 20, 1976
Class 64			
27L	B 509,043	M	Feb. 24, 1976
Class 65			
3A	B 532,969	C	Jan. 13, 1976
11W	B 557,721	C	Mar. 23, 1976
49	B 517,858	C	Feb. 17, 1976
239	B 545,777	C	Jan. 27, 1976
Class 66			
116	B 438,882	M	Feb. 24, 1976
190	B 522,227	M	Mar. 30, 1976
Class 71			
28	B 141,968	C	Mar. 30, 1976
67	B 425,285	C	Apr. 13, 1976
113	B 535,076	C	Jan. 20, 1976
Class 72			
43	B 546,631	M	Feb. 3, 1976
56	B 489,290	M	Feb. 17, 1976
88	B 575,757	M	Jan. 27, 1976
238	B 563,932	M	Mar. 23, 1976
391	B 516,537	M	Feb. 17, 1976
Class 73			
9	B 573,994	M	Mar. 23, 1976
24	B 506,744	M	Jan. 13, 1976
29	B 557,153	M	Feb. 3, 1976
37.7	B 532,319	M	Feb. 3, 1976
40.5R	B 530,709	M	Apr. 6, 1976
61.1R	B 511,909	M	Feb. 17, 1976
67.5H	B 522,309	M	Feb. 3, 1976
116	B 569,859	M	Mar. 9, 1976
147	B 521,620	M	Jan. 27, 1976
154	B 513,791	M	Mar. 30, 1976
190R	B 480,350	M	Feb. 10, 1976
199	B 565,275	M	Apr. 6, 1976
302	B 463,473	M	Mar. 23, 1976
	B 464,290	M	Feb. 3, 1976
362AR	B 510,026	M	Apr. 13, 1976
422GC	B 490,547	M	Feb. 24, 1976
432R	B 415,021	M	Mar. 2, 1976
437	B 528,401	M	Feb. 3, 1976
557	B 523,080	M	Feb. 17, 1976
Class 74			
18.2	B 501,975	M	Mar. 2, 1976
242.1A	B 567,854	M	Feb. 3, 1976
243C	B 558,818	M	Jan. 13, 1976
424.8VA	B 499,786	M	Mar. 16, 1976
479	B 509,586	M	Feb. 3, 1976
481	B 497,021	M	Jan. 13, 1976
482	B 525,809	M	Feb. 24, 1976
527	B 470,170	M	Jan. 13, 1976
546	B 518,999	M	Feb. 3, 1976
765	B 500,945	M	Feb. 24, 1976
Class 75			
.5BA	B 385,631	C	Jan. 27, 1976
84.1R	B 538,491	C	Feb. 17, 1976
101BE	B 452,938	C	Feb. 17, 1976
135	B 525,961	C	Jan. 13, 1976
156.5	B 411,471	C	Feb. 17, 1976
165	B 483,256	C	Feb. 10, 1976
Class 83			
61	B 570,862	M	Feb. 24, 1976
425	B 545,935	M	Jan. 27, 1976
Class 84			
1.1	B 476,568	E	Mar. 16, 1976
1.16	B 556,897	M	Feb. 3, 1976
275	B 504,169	M	Jan. 13, 1976
Class 86			
1R	B 356,187	M	Jan. 20, 1976
Class 89			
142	B 470,853	M	Mar. 23, 1976
Class 91			
40	B 410,694	M	Mar. 23, 1976
Class 92			
163	B 425,193	M	Mar. 23, 1976
Class 93			
58.3	B 548,978	M	Mar. 9, 1976
Class 96			
1R	B 423,883	C	Jan. 27, 1976
1.4	B 200,759	C	Feb. 3, 1976
33	B 437,894	C	Mar. 2, 1976
35	B 524,026	C	Feb. 10, 1976
35.1	B 420,176	C	Mar. 16, 1976
	B 462,893	C	Feb. 24, 1976
	B 530,873	C	Feb. 17, 1976
36.1	B 359,901	C	Jan. 13, 1976
45	B 455,759	C	Feb. 24, 1976
50PT	B 481,190	E	Mar. 30, 1976
54	B 367,305	C	Mar. 2, 1976
66.3	B 417,498	C	Mar. 23, 1976
75	B 453,960	C	Apr. 13, 1976
78	B 503,029	C	Jan. 27, 1976
Class 99			
162B	B 432,991	M	Mar. 2, 1976
335	B 557,299	M	Feb. 3, 1976
485	B 311,450	M	Mar. 9, 1976
Class 100			
35	B 561,165	M	Mar. 30, 1976
48	B 561,166	M	Mar. 30, 1976
Class 101			
19	B 402,328	M	Apr. 6, 1976
93.13	B 496,999	M	Jan. 27, 1976
93.14	B 481,600	M	Jan. 27, 1976
115	B 395,554	M	Mar. 9, 1976
129	B 416,589	M	Jan. 27, 1976
401.3	B 494,234	M	Feb. 10, 1976
Class 102			
32	B 405,726	M	Jan. 13, 1976
38	B 279,415	M	Mar. 16, 1976
39	B 417,349	M	Mar. 9, 1976
42R	B 443,163	M	Feb. 3, 1976
69	B 412,068	M	Jan. 13, 1976
Class 106			
1	B 466,419	C	Mar. 23, 1976
27	B 452,883	C	Jan. 27, 1976
47R	B 581,564	C	Mar. 23, 1976
57	B 502,773	C	Jan. 13, 1976
58	B 480,287	C	Mar. 30, 1976
	B 750,679	C	Mar. 23, 1976
213	B 432,265	C	Mar. 23, 1976
288	B 564,255	C	Mar. 30, 1976
309	B 311,779	C	Feb. 10, 1976
316	B 503,776	C	Mar. 23, 1976
Class 109			
1SB	B 358,427	E	Feb. 3, 1976
Class 110			
8P	B 567,207	M	Apr. 13, 1976
8R	B 512,324	M	Feb. 17, 1976
Class 114			
.5A	B 472,591	M	Apr. 6, 1976
16.6	B 546,922	M	Mar. 16, 1976
67A	B 489,550	M	Mar. 16, 1976
144R	B 529,659	M	Feb. 24, 1976
230	B 484,769	M	Mar. 16, 1976
	B 503,456	M	Mar. 23, 1976
235B	B 532,679	M	Apr. 6, 1976
Class 116			
124L	B 469,228	M	Feb. 17, 1976
124.4	B 467,412	M	Jan. 13, 1976
Class 118			
637	B 563,301	M	Feb. 17, 1976
Class 123			
8.45	B 570,172	M	Feb. 3, 1976
25R	B 447,440	M	Feb. 17, 1976
32SP	B 467,486	M	Mar. 16, 1976
75B	B 563,780	M	Feb. 3, 1976
119A	B 405,899	M	Mar. 23, 1976
122AC	B 498,951	M	Mar. 2, 1976
139AW	B 480,251	M	Mar. 23, 1976
148E	B 480,473	M	Mar. 2, 1976
182	B 558,251	M	Jan. 13, 1976
191S	B 466,906	M	Mar. 16, 1976
325T	B 425,588	M	Jan. 13, 1976
Class 126			
271	B 512,745	M	Jan. 13, 1976
350A	B 537,903	M	Jan. 20, 1976

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		CAT.	PUB. DATE
Class 128			
2.6R	B 534,574	M	Feb. 24, 1976
260	B 520,277	M	Feb. 17, 1976
	B 524,121	M	Feb. 3, 1976
419P	B 535,466	M	Jan. 27, 1976
419PG	B 533,259	M	Feb. 24, 1976
Class 131			
144	B 586,387	M	Feb. 3, 1976
514.4	B 586,380	M	Mar. 2, 1976
Class 132			
7	B 464,491	M	Mar. 30, 1976
Class 136			
6LF	B 512,818	C	Apr. 6, 1976
26	B 511,665	C	Mar. 2, 1976
86R	B 505,126	C	Feb. 10, 1976
	B 574,128	C	Feb. 17, 1976
89	B 510,677	C	Feb. 24, 1976
138	B 509,819	C	Apr. 13, 1976
148	B 524,464	C	Feb. 10, 1976
202	B 378,513	C	Jan. 27, 1976
205	B 399,632	C	Mar. 9, 1976
Class 137			
220	B 554,833	M	Mar. 30, 1976
255	B 508,940	M	Feb. 17, 1976
596.12	B 514,687	M	Jan. 27, 1976
608	B 490,623	M	Mar. 2, 1976
614.11	B 530,605	M	Feb. 3, 1976
625.46	B 528,756	M	Feb. 3, 1976
627.5	B 432,594	M	Mar. 30, 1976
798	B 430,172	M	Jan. 13, 1976
Class 138			
177	B 530,263	C	Mar. 30, 1976
Class 139			
122R	B 527,171	M	Mar. 9, 1976
Class 140			
92.1	B 590,158	M	Feb. 10, 1976
	B 590,159	M	Feb. 3, 1976
Class 141			
294	B 473,813	M	Mar. 9, 1976
Class 144			
32R	B 484,332	M	Mar. 2, 1976
34R	B 521,793	M	Feb. 24, 1976
241	B 545,630	M	Jan. 27, 1976
Class 148			
1.5	B 518,226	C	Feb. 10, 1976
23	B 527,972	C	Mar. 9, 1976
36	B 459,381	C	Mar. 9, 1976
174	B 561,405	C	Mar. 30, 1976
175	B 105,006	C	Mar. 23, 1976
187	B 554,164	C	Mar. 9, 1976
Class 150			
3	B 461,250	M	Mar. 16, 1976
8	B 459,190	M	Mar. 30, 1976
52R	B 513,134	M	Mar. 23, 1976
Class 152			
213R	B 445,690	M	Feb. 3, 1976
379S	B 522,537	M	Mar. 30, 1976
Class 156			
3	B 453,031	C	Mar. 16, 1976
	B 563,722	C	Jan. 13, 1976
66	B 497,584	C	Feb. 24, 1976
71	B 456,148	C	Jan. 13, 1976
73.6	B 414,481	C	Jan. 20, 1976
143	B 462,386	C	Jan. 13, 1976
159	B 339,446	C	Feb. 24, 1976
167	B 452,293	C	Mar. 30, 1976
220	B 480,591	C	Mar. 30, 1976
435	B 475,385	C	Mar. 9, 1976
446	B 515,368	C	Apr. 6, 1976
461	B 288,757	C	Mar. 30, 1976
608	B 584,997	C	Mar. 9, 1976
Class 160			
229R	B 505,813	M	Jan. 13, 1976
Class 162			
5	B 491,673	C	Feb. 17, 1976
133	B 431,072	C	Jan. 20, 1976
198	B 150,142	C	Jan. 27, 1976
	B 552,629	C	Mar. 23, 1976
258	B 507,166	C	Apr. 13, 1976
274	B 468,421	C	Mar. 30, 1976
290	B 478,739	C	Feb. 17, 1976
Class 164			
4	B 546,677	M	Apr. 6, 1976
26	B 499,227	M	Jan. 27, 1976
57	B 488,756	M	Mar. 16, 1976
60	B 511,885	M	Jan. 27, 1976
282	B 396,916	M	Mar. 2, 1976
330	B 522,038	M	Feb. 3, 1976
Class 165			
4	B 328,116	M	Mar. 9, 1976
13	B 543,078	M	Feb. 17, 1976
32	B 529,194	C	Mar. 23, 1976
162	B 488,836	M	Mar. 30, 1976
Class 166			
224	B 492,120	M	Feb. 24, 1976
250	B 575,761	M	Apr. 13, 1976
272	B 569,519	M	Feb. 3, 1976
273	B 562,519	M	Mar. 30, 1976
303	B 529,836	M	Feb. 3, 1976
311	B 511,156	M	Jan. 27, 1976
Class 172			
719	B 97,259	M	Mar. 9, 1976
Class 173			
104	B 537,709	M	Jan. 13, 1976
170	B 567,058	M	Jan. 13, 1976
Class 174			
52R	B 492,902	E	Feb. 24, 1976
68.5	B 509,772	E	Mar. 16, 1976
Class 176			
20R	B 384,330	C	Jan. 27, 1976
36R	B 367,621	C	Feb. 3, 1976
68	B 396,164	C	Feb. 3, 1976
Class 178			
6	B 520,227	E	Mar. 30, 1976
	B 546,426	E	Jan. 27, 1976
7.1	B 468,100	E	Mar. 9, 1976
	B 519,979	E	Feb. 3, 1976
7.3D	B 442,970	E	Feb. 3, 1976
7.3DC	B 561,770	E	Mar. 16, 1976
7.5R	B 508,817	E	Feb. 3, 1976
58R	B 399,908	C	Jan. 13, 1976
66R	B 498,775	E	Mar. 2, 1976
70R	B 559,631	E	Mar. 23, 1976
88	B 561,764	E	Jan. 27, 1976
Class 179			
1A	B 513,756	E	Feb. 3, 1976
1CN	B 475,681	E	Jan. 20, 1976
1SM	B 476,577	E	Jan. 20, 1976
1G	B 554,594	E	Jan. 20, 1976
1.5FS	B 504,899	E	Mar. 9, 1976
2DP	B 462,030	E	Mar. 23, 1976
7.1R	B 545,050	E	Jan. 20, 1976
15AL	B 496,500	E	Feb. 3, 1976
15BA	B 497,293	E	Mar. 30, 1976
81R	B 472,284	E	Jan. 13, 1976
90K	B 432,049	E	Mar. 23, 1976
111E	B 557,274	E	Mar. 23, 1976
170D	B 541,415	E	Feb. 3, 1976
Class 180			
5R	B 499,171	M	Jan. 27, 1976
44F	B 432,969	M	Mar. 2, 1976
49	B 433,094	M	Jan. 27, 1976
53R	B 551,527	M	Jan. 13, 1976
79.2R	B 526,279	M	Apr. 13, 1976
	B 533,968	M	Jan. 27, 1976
103	B 490,647	M	Feb. 24, 1976
108	B 511,907	M	Mar. 30, 1976
Class 187			
1R	B 436,724	M	Feb. 24, 1976
Class 188			
71.1	B 535,411	M	Feb. 24, 1976
73.6	B 533,056	M	Jan. 13, 1976
165	B 567,435	M	Feb. 3, 1976
218XL	B 562,698	M	Jan. 13, 1976
Class 192			
3.57	B 548,719	M	Feb. 17, 1976
4A	B 531,267	M	Feb. 24, 1976
46	B 522,080	M	Mar. 16, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 193			
35A	B 580,379	M	Apr. 6, 1976
Class 195			
1.8	B 530,255	E	Mar. 2, 1976
	B 514,839	C	Mar. 2, 1976
29	B 418,489	C	Jan. 13, 1976
31R	B 493,463	C	Mar. 23, 1976
65	B 566,585	C	Mar. 2, 1976
	B 592,146	C	Mar. 2, 1976
68	B 395,975	C	Mar. 2, 1976
	B 430,213	C	Mar. 30, 1976
80R	B 527,040	C	Mar. 23, 1976
103.5R	B 452,879	C	Mar. 16, 1976
Class 196			
14.52	B 520,384	M	Jan. 27, 1976
Class 197			
17	B 501,122	M	Feb. 17, 1976
18	B 535,391	M	Jan. 27, 1976
Class 198			
25	B 452,944	M	Mar. 30, 1976
38	B 495,402	M	Feb. 17, 1976
129	B 503,521	M	Mar. 16, 1976
	B 569,646	M	Jan. 13, 1976
179	B 424,989	M	Feb. 3, 1976
202	B 499,352	M	Jan. 27, 1976
Class 200			
5R	B 579,104	E	Jan. 27, 1976
11TC	B 531,425	E	Feb. 3, 1976
16C	B 480,740	E	Mar. 2, 1976
38FA	B 494,383	E	Feb. 3, 1976
61.41	B 506,286	E	Jan. 20, 1976
67D	B 585,247	E	Feb. 3, 1976
83SA	B 428,877	E	Jan. 27, 1976
84C	B 453,533	E	Feb. 17, 1976
309	B 470,899	E	Mar. 2, 1976
339	B 466,390	E	Feb. 24, 1976
Class 202			
185A	B 328,065	C	Mar. 30, 1976
227	B 513,280	C	Jan. 20, 1976
Class 203			
1	B 361,954	C	Apr. 6, 1976
59	B 466,304	C	Mar. 23, 1976
73	B 441,543	C	Mar. 23, 1976
Class 204			
9	B 462,424	C	Feb. 24, 1976
15	B 542,135	C	Feb. 10, 1976
129.43	B 446,956	C	Apr. 13, 1976
158HA	B 550,744	C	Feb. 17, 1976
159.16	B 476,776	C	Mar. 23, 1976
159.18	B 498,205	C	Feb. 10, 1976
159.22	B 423,404	C	Mar. 2, 1976
162R	B 354,222	C	Mar. 23, 1976
163R	B 526,447	C	Feb. 24, 1976
181	B 167,470	C	Mar. 2, 1976
186	B 589,179	C	Mar. 23, 1976
192	B 231,416	C	Mar. 30, 1976
	B 433,892	C	Apr. 6, 1976
195P	B 511,002	C	Mar. 2, 1976
195S	B 843,038	C	Feb. 3, 1976
224M	B 534,314	C	Feb. 10, 1976
252	B 542,258	C	Mar. 23, 1976
Class 206			
1.5	B 536,923	M	Mar. 30, 1976
451	B 371,912	M	Mar. 2, 1976
455	B 490,067	M	Jan. 27, 1976
Class 208			
15	B 437,596	C	Jan. 27, 1976
33	B 516,625	C	Mar. 30, 1976
59	B 508,118	C	Feb. 17, 1976
78	B 467,250	C	Feb. 3, 1976
93	B 499,370	C	Mar. 30, 1976
208R	B 508,119	C	Feb. 17, 1976
210	B 501,317	C	Jan. 13, 1976
253	B 438,916	C	Jan. 13, 1976
323	B 476,542	C	Mar. 30, 1976
Class 210			
22R	B 525,204	C	Mar. 16, 1976
23H	B 364,797	C	Feb. 17, 1976
	B 524,806	C	Mar. 2, 1976
24	B 452,501	C	Mar. 16, 1976
84	B 356,470	C	Mar. 23, 1976
114	B 401,221	C	Apr. 6, 1976
130	B 532,901	C	Jan. 13, 1976
168	B 449,989	C	Mar. 30, 1976
189	B 492,716	C	Mar. 2, 1976
199	B 449,988	C	Mar. 30, 1976
321A	B 470,601	C	Mar. 9, 1976
500M	B 433,930	C	Mar. 23, 1976
	B 493,474	C	Mar. 23, 1976
512R	B 330,719	C	Mar. 16, 1976
Class 214			
1C	B 453,238	M	Mar. 2, 1976
18N	B 373,344	M	Feb. 3, 1976
58	B 555,772	M	Jan. 13, 1976
90R	B 536,403	M	Mar. 23, 1976
152	B 480,604	M	Jan. 13, 1976
Class 215			
216	B 541,015	M	Jan. 27, 1976
347	B 337,023	M	Mar. 30, 1976
Class 219			
69M	B 426,227	E	Mar. 2, 1976
121EM	B 479,502	E	Mar. 16, 1976
201	B 451,248	E	Mar. 2, 1976
233	B 463,388	E	Feb. 10, 1976
273	B 403,507	E	Feb. 10, 1976
553	B 513,027	E	Feb. 17, 1976
Class 220			
23.83	B 529,156	M	Jan. 13, 1976
66	B 223,678	M	Mar. 9, 1976
288	B 516,032	M	Jan. 27, 1976
337	B 578,447	M	Jan. 20, 1976
Class 221			
75	B 510,281	M	Mar. 9, 1976
Class 222			
43	B 497,853	M	Feb. 17, 1976
56	B 559,697	M	Mar. 16, 1976
67	B 521,480	M	Jan. 13, 1976
136	B 487,260	M	Jan. 27, 1976
181	B 562,601	M	Mar. 16, 1976
306	B 559,954	M	Feb. 3, 1976
325	B 515,303	M	Jan. 20, 1976
512	B 532,976	M	Mar. 23, 1976
Class 226			
1	B 506,624	M	Mar. 9, 1976
21	B 504,778	M	Feb. 24, 1976
68	B 506,926	M	Feb. 17, 1976
Class 227			
83	B 540,703	M	Apr. 13, 1976
Class 228			
190	B 473,972	M	Jan. 13, 1976
Class 229			
2.5	B 537,990	M	Jan. 13, 1976
17R	B 461,257	M	Jan. 13, 1976
62.5	B 429,157	M	Jan. 27, 1976
Class 235			
61.11E	B 477,892	E	Mar. 30, 1976
151	B 491,650	E	Mar. 9, 1976
151.1	B 520,063	E	Mar. 2, 1976
	B 520,075	E	Feb. 24, 1976
	B 520,076	E	Mar. 2, 1976
	B 520,082	E	Mar. 23, 1976
	B 535,268	C	Mar. 30, 1976
151.11	B 540,767	E	Mar. 16, 1976
151.12	B 504,156	E	Mar. 23, 1976
151.34	B 492,946	E	Jan. 27, 1976
152	B 484,121	E	Mar. 16, 1976
	B 559,737	E	Jan. 20, 1976
153AK	B 563,419	E	Mar. 23, 1976
153AM	B 587,936	E	Mar. 23, 1976
154	B 534,016	E	Feb. 3, 1976
156	B 536,009	E	Jan. 27, 1976
175	B 560,488	E	Mar. 16, 1976
181	B 520,924	E	Jan. 27, 1976
Class 236			
13	B 502,652	M	Feb. 24, 1976
15A	B 558,813	M	Feb. 3, 1976
Class 239			
265.39	B 567,892	M	Mar. 16, 1976
288.3	B 570,382	M	Apr. 13, 1976
424	B 580,921	M	Jan. 13, 1976
	B 586,215	M	Jan. 20, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
533	B 541,501	M	Apr. 13, 1976
652	B 520,534	M	Feb. 17, 1976
Class 240			
41.35R	B 454,283	E	Feb. 3, 1976
Class 241			
46.11	B 462,828	M	Mar. 9, 1976
81	B 425,462	M	Mar. 9, 1976
Class 242			
25A	B 420,321	M	Mar. 30, 1976
36	B 492,373	M	Mar. 30, 1976
43R	B 521,600	M	Jan. 27, 1976
56R	B 535,448	M	Mar. 16, 1976
107.4A	B 487,427	M	Mar. 2, 1976
129.8	B 506,167	M	Feb. 10, 1976
Class 244			
3.27	B 510,521	M	Mar. 2, 1976
134R	B 535,928	M	Jan. 13, 1976
140	B 419,173	M	Mar. 9, 1976
169	B 423,441	M	Feb. 17, 1976
	B 511,346	M	Jan. 27, 1976
Class 248			
49	B 398,488	M	Feb. 24, 1976
73	B 494,806	M	Feb. 3, 1976
205R	B 520,952	M	Mar. 16, 1976
309R	B 527,333	M	Mar. 23, 1976
Class 249			
135	B 548,155	M	Jan. 13, 1976
Class 250			
210	B 515,908	E	Jan. 20, 1976
227	B 522,577	E	Jan. 27, 1976
	B 560,765	E	Feb. 3, 1976
231SE	B 503,618	E	Mar. 9, 1976
291	B 500,981	E	Jan. 27, 1976
303	B 536,082	E	Mar. 16, 1976
310	B 485,926	E	Mar. 23, 1976
328	B 71,613	E	Mar. 16, 1976
345	B 374,553	E	Mar. 30, 1976
364	B 526,190	E	Feb. 17, 1976
397	B 569,293	E	Mar. 30, 1976
402	B 451,534	E	Jan. 13, 1976
445T	B 574,616	E	Mar. 2, 1976
564	B 566,572	E	Mar. 16, 1976
577	B 507,396	E	Feb. 10, 1976
Class 251			
1B	B 541,710	M	Feb. 24, 1976
28	B 480,384	M	Mar. 23, 1976
58	B 429,434	M	Feb. 17, 1976
129	B 534,333	M	Feb. 17, 1976
319	B 490,589	M	Feb. 3, 1976
Class 252			
12	B 559,142	C	Mar. 2, 1976
12.2	B 380,137	C	Mar. 23, 1976
25	B 468,603	C	Mar. 23, 1976
33.6	B 441,723	C	Mar. 16, 1976
62.1L	B 376,749	E	Mar. 30, 1976
105	B 479,969	C	Mar. 9, 1976
106	B 530,303	C	Mar. 23, 1976
156	B 520,546	C	Mar. 2, 1976
182	B 471,405	C	Feb. 10, 1976
301.1W	B 548,058	C	Feb. 17, 1976
301.2W	B 528,297	C	Mar. 16, 1976
301.4S	B 535,813	C	Jan. 27, 1976
364	B 370,309	C	Jan. 20, 1976
404	B 569,125	C	Feb. 24, 1976
408R	B 544,476	C	Feb. 24, 1976
429R	B 457,850	C	Feb. 10, 1976
432	B 509,640	C	Feb. 17, 1976
454	B 450,967	C	Jan. 13, 1976
455R	B 390,979	C	Mar. 23, 1976
500	B 479,242	C	Feb. 17, 1976
514	B 553,421	C	Mar. 23, 1976
518	B 585,731	C	Feb. 3, 1976
543	B 403,766	C	Feb. 10, 1976
544	B 433,707	C	Mar. 23, 1976
545	B 458,819	C	Apr. 13, 1976
Class 254			
186R	B 511,407	M	Feb. 10, 1976
188	B 437,559	M	Feb. 3, 1976
190R	B 489,685	M	Feb. 24, 1976
Class 256			
65	B 523,129	M	Apr. 13, 1976
Class 259			
4	B 486,614	N	Feb. 17, 1976
8	B 547,016	M	Mar. 23, 1976
191	B 397,674	M	Mar. 16, 1976
	B 556,057	M	Jan. 13, 1976
Class 260			
2.5AC	B 497,194	C	Feb. 3, 1976
	B 537,102	C	Jan. 13, 1976
2.5AJ	B 557,856	C	Feb. 10, 1976
2.5AM	B 422,063	C	Feb. 3, 1976
2.5AR	B 483,606	C	Jan. 27, 1976
	B 502,589	C	Jan. 27, 1976
2.5AV	B 460,441	C	Jan. 13, 1976
2.5AW	B 483,762	C	Feb. 10, 1976
	B 486,828	C	Mar. 2, 1976
2.5B	B 554,380	C	Mar. 9, 1976
2.5R	B 471,579	C	Jan. 13, 1976
17R	B 510,998	C	Feb. 10, 1976
	B 519,487	C	Feb. 17, 1976
17.2	B 519,355	C	Apr. 13, 1976
17.4ST	B 530,580	C	Mar. 2, 1976
18TN	B 528,303	C	Feb. 10, 1976
23H	B 54,859	C	Feb. 17, 1976
23XA	B 483,865	C	Jan. 13, 1976
28P	B 489,331	C	Feb. 17, 1976
28R	B 507,456	C	Mar. 9, 1976
28.5AS	B 501,540	C	Jan. 13, 1976
29.2EP	B 455,686	C	Mar. 2, 1976
	B 522,629	C	Mar. 16, 1976
	B 526,997	C	Jan. 13, 1976
29.2TN	B 414,266	C	Feb. 10, 1976
29.6F	B 567,076	C	Mar. 23, 1976
29.6HN	B 494,439	C	Apr. 13, 1976
29.6N	B 494,440	C	Feb. 17, 1976
29.6TA	B 494,450	C	Feb. 17, 1976
29.7PT	B 358,260	C	Mar. 30, 1976
29.7T	B 573,114	C	Apr. 6, 1976
30.4R	B 485,060	C	Feb. 17, 1976
31.8N	B 592,658	C	Mar. 23, 1976
32.6R	B 596,692	C	Feb. 17, 1976
33.4R	B 487,467	C	Apr. 13, 1976
33.6AQ	B 470,945	C	Apr. 13, 1976
	B 520,658	C	Mar. 9, 1976
	B 657,438	C	Jan. 20, 1976
33.6R	B 479,175	C	Feb. 17, 1976
33.6UA	B 559,441	C	Mar. 23, 1976
33.8UA	B 497,780	C	Feb. 24, 1976
	B 570,721	C	Mar. 23, 1976
37EP	B 423,365	C	Feb. 17, 1976
	B 441,605	C	Feb. 3, 1976
37R	B 465,955	C	Feb. 3, 1976
37PC	B 520,878	C	Apr. 6, 1976
40P	B 485,188	C	Mar. 16, 1976
40R	B 590,502	C	Mar. 23, 1976
42.15	B 257,143	C	Mar. 16, 1976
	B 415,122	C	Feb. 10, 1976
42.18	B 519,095	C	Feb. 24, 1976
45.75H	B 487,529	C	Mar. 30, 1976
45.75W	B 561,387	C	Feb. 10, 1976
45.8N	B 506,648	C	Feb. 3, 1976
45.8NZ	B 500,959	C	Apr. 13, 1976
45.8R	B 479,556	C	Mar. 23, 1976
45.85R	B 236,342	C	Feb. 10, 1976
46.5UA	B 528,962	C	Feb. 24, 1976
	B 528,966	C	Feb. 24, 1976
47EP	B 440,633	C	Feb. 10, 1976
47EQ	B 444,078	C	Mar. 23, 1976
47UP	B 493,537	C	Mar. 23, 1976
63UY	B 470,576	C	Feb. 24, 1976
67.6R	B 530,437	C	Apr. 13, 1976
75N	B 521,125	C	Feb. 10, 1976
	B 521,126	C	Feb. 10, 1976
	B 521,127	C	Feb. 17, 1976
	B 521,128	C	Feb. 10, 1976
	B 552,489	C	Feb. 10, 1976
	B 559,700	C	Mar. 23, 1976
	B 559,701	C	Mar. 23, 1976
75R	B 236,266	C	Mar. 23, 1976
77.5AN	B 474,645	C	Mar. 2, 1976
77.5CR	B 306,668	C	Feb. 3, 1976
78S	B 451,308	C	Feb. 17, 1976
78.5R	B 437,209	C	Feb. 3, 1976
78UA	B 497,490	C	Mar. 23, 1976
79.5P	B 546,149	C	Mar. 2, 1976
80M	B 522,446	C	Mar. 30, 1976
80.73	B 505,221	C	Mar. 30, 1976
80.78	B 271,743	C	Mar. 16, 1976
82.1	B 443,563	C	Feb. 24, 1976
88.2B	B 456,384	C	Apr. 6, 1976
88.2C	B 417,014	C	Jan. 13, 1976

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		CAT.	PUB. DATE
88.2F	B 632,416	C	Mar. 9, 1976
93.5A	B 530,174	C	Feb. 24, 1976
112R	B 328,077	C	Apr. 13, 1976
112.5R	B 471,617	C	Feb. 10, 1976
	B 485,972	C	Mar. 23, 1976
	B 503,817	C	Jan. 13, 1976
	B 520,514	C	Mar. 9, 1976
117	B 333,247	C	Mar. 16, 1976
140R	B 503,579	C	Feb. 10, 1976
143	B 419,582	C	Mar. 2, 1976
147	B 383,697	C	Feb. 17, 1976
156	B 411,624	C	Mar. 16, 1976
157	B 476,267	C	Apr. 6, 1976
	B 591,141	C	Mar. 23, 1976
167	B 444,294	C	Mar. 30, 1976
210AB	B 554,291	C	Mar. 9, 1976
220B	B 326,211	C	Mar. 23, 1976
239A	B 349,370	C	Jan. 27, 1976
239B	B 470,900	C	Mar. 2, 1976
239BC	B 403,326	C	Mar. 23, 1976
239D	B 382,120	C	Mar. 23, 1976
	B 487,423	C	Mar. 2, 1976
	B 520,256	C	Jan. 13, 1976
	B 536,935	C	Jan. 13, 1976
239.1	B 371,095	C	Mar. 23, 1976
	B 372,016	C	Mar. 9, 1976
	B 538,753	C	Feb. 10, 1976
	B 547,208	C	Feb. 24, 1976
239.3A	B 506,148	C	Feb. 3, 1976
239.5	B 561,365	C	Apr. 13, 1976
240A	B 484,067	C	Feb. 17, 1976
240G	B 482,709	C	Feb. 24, 1976
240R	B 491,711	C	Mar. 23, 1976
243C	B 442,810	C	Feb. 24, 1976
	B 473,039	C	Feb. 10, 1976
	B 473,040	C	Feb. 10, 1976
	B 516,047	C	Feb. 10, 1976
	B 516,296	C	Feb. 3, 1976
	B 526,096	C	Feb. 3, 1976
244R	B 348,453	C	Feb. 3, 1976
247.1R	B 457,931	C	Mar. 16, 1976
247.7T	B 468,052	C	Feb. 10, 1976
248AS	B 514,259	C	Mar. 23, 1976
248NS	B 537,711	C	Jan. 13, 1976
248.5	B 332,442	C	Mar. 30, 1976
249.6	B 344,669	C	Mar. 16, 1976
250BC	B 491,883	C	Feb. 3, 1976
250P	B 498,288	C	Mar. 23, 1976
251A	B 480,625	C	Feb. 24, 1976
256.4C	B 435,617	C	Mar. 16, 1976
256.4Q	B 503,345	C	Feb. 24, 1976
256.5R	B 531,096	C	Feb. 10, 1976
268BF	B 490,946	C	Feb. 17, 1976
268TR	B 539,374	C	Mar. 9, 1976
	B 563,070	C	Mar. 9, 1976
274SA	B 494,944	C	Feb. 17, 1976
283CN	B 461,685	C	Mar. 30, 1976
285.5	B 530,318	C	Jan. 13, 1976
287C	B 492,039	C	Feb. 24, 1976
287D	B 571,638	C	Mar. 9, 1976
288CF	B 402,657	C	Apr. 6, 1976
288R	B 402,162	C	Mar. 2, 1976
290HL	B 537,053	C	Mar. 23, 1976
290R	B 445,493	C	Mar. 2, 1976
293.52	B 552,508	C	Mar. 16, 1976
293.54	B 545,464	C	Feb. 10, 1976
293.56	B 447,000	C	Feb. 3, 1976
293.57	B 426,802	C	Feb. 17, 1976
293.79	B 403,243	C	Mar. 30, 1976
293.84	B 408,123	C	Apr. 13, 1976
294.8D	B 526,510	C	Jan. 20, 1976
294.8G	B 445,166	C	Mar. 2, 1976
294.9	B 494,339	C	Mar. 16, 1976
295.5A	B 515,642	C	Feb. 24, 1976
	B 545,299	C	Feb. 24, 1976
295.5B	B 458,617	C	Feb. 3, 1976
296R	B 429,027	C	Mar. 23, 1976
	B 477,252	C	Jan. 13, 1976
306.7C	B 385,024	C	Feb. 10, 1976
307D	B 486,280	C	Feb. 3, 1976
307G	B 568,405	C	Mar. 30, 1976
307H	B 471,836	C	Feb. 24, 1976
	B 554,848	C	Feb. 24, 1976
308A	B 488,111	C	Jan. 13, 1976
308D	B 532,005	C	Feb. 24, 1976
308R	B 471,494	C	Mar. 16, 1976
309.2	B 407,014	C	Mar. 16, 1976
	B 522,567	C	Feb. 17, 1976
	B 542,158	C	Jan. 13, 1976
309.6	B 521,025	C	Mar. 23, 1976
309.7	B 532,477	C	Apr. 13, 1976
310R	B 535,437	C	Feb. 24, 1976
314.5	B 426,266	C	Mar. 2, 1976
325PH	B 440,548	C	Mar. 16, 1976
325R	B 427,946	C	Mar. 23, 1976
326E	B 512,779	C	Apr. 13, 1976
326HL	B 536,322	C	Mar. 23, 1976
326R	B 486,678	C	Mar. 2, 1976
	B 398,084	C	Feb. 3, 1976
326.5B	B 276,026	C	Feb. 3, 1976
	B 490,812	C	Mar. 30, 1976
326.5FN	B 484,269	C	Feb. 10, 1976
326.9	B 477,481	C	Feb. 3, 1976
326.12R	B 446,107	C	Mar. 9, 1976
326.13R	B 456,869	C	Mar. 9, 1976
327C	B 480,452	C	Feb. 10, 1976
330.5	B 552,498	C	Jan. 13, 1976
	B 574,996	C	Feb. 17, 1976
340.5	B 504,877	C	Feb. 24, 1976
340.9	B 476,372	C	Feb. 24, 1976
	B 521,643	C	Mar. 2, 1976
343.2R	B 491,032	C	Feb. 10, 1976
343.3	B 536,675	C	Jan. 20, 1976
343.3R	B 495,550	C	Feb. 3, 1976
	B 495,554	C	Feb. 3, 1976
345.9	B 450,701	C	Mar. 16, 1976
	B 450,708	C	Mar. 9, 1976
346.2M	B 440,858	C	Feb. 3, 1976
	B 302,160	C	Feb. 3, 1976
346.3	B 392,798	C	Mar. 30, 1976
346.4	B 485,051	C	Feb. 17, 1976
346.8R	B 369,373	C	Mar. 23, 1976
347.3	B 359,768	C	Mar. 30, 1976
348.5L	B 521,324	C	Jan. 27, 1976
348.6	B 546,295	C	Jan. 20, 1976
378	B 431,713	C	Feb. 10, 1976
397.4	B 450,693	C	Mar. 9, 1976
	B 484,068	C	Mar. 2, 1976
408	B 442,953	C	Mar. 23, 1976
429.7	B 464,587	C	Feb. 3, 1976
429.9	B 455,481	C	Feb. 24, 1976
438.1	B 518,656	C	Feb. 17, 1976
448R	B 495,781	C	Mar. 23, 1976
448.2H	B 390,408	C	Feb. 3, 1976
448.2N	B 412,830	C	Mar. 30, 1976
	B 551,463	C	Feb. 17, 1976
449M	B 521,985	C	Mar. 23, 1976
449R	B 526,942	C	Mar. 30, 1976
453PH	B 518,076	C	Mar. 30, 1976
456NS	B 484,419	C	Mar. 9, 1976
465H	B 573,991	C	Mar. 30, 1976
465.3	B 159,570	C	Mar. 23, 1976
465.5R	B 747,785	C	Feb. 10, 1976
465.7	B 564,252	C	Mar. 2, 1976
465.9	B 456,900	C	Feb. 3, 1976
	B 530,925	C	Feb. 24, 1976
471C	B 367,092	C	Apr. 13, 1976
471R	B 385,483	C	Feb. 17, 1976
	B 388,521	C	Jan. 13, 1976
472	B 472,256	C	Jan. 13, 1976
	B 491,052	C	Mar. 2, 1976
473S	B 532,140	C	Mar. 2, 1976
479C	B 483,746	C	Mar. 23, 1976
483	B 410,074	C	Feb. 24, 1976
493	B 351,455	C	Feb. 24, 1976
501.12	B 544,899	C	Feb. 17, 1976
513R	B 494,669	C	Feb. 3, 1976
514D	B 494,138	C	Mar. 23, 1976
514J	B 442,431	C	Mar. 23, 1976
515A	B 390,031	C	Jan. 13, 1976
516	B 386,828	C	Feb. 3, 1976
527R	B 467,328	C	Mar. 9, 1976
534R	B 301,143	C	Jan. 27, 1976
535P	B 426,157	C	Mar. 23, 1976
543F	B 504,582	C	Mar. 30, 1976
544C	B 471,116	C	Feb. 17, 1976
545R	B 357,526	C	Mar. 23, 1976
553R	B 391,473	C	Mar. 2, 1976
554	B 529,974	C	Feb. 17, 1976
557R	B 386,257	C	Feb. 3, 1976
561R	B 513,781	C	Feb. 24, 1976
562B	B 413,379	C	Mar. 9, 1976
563R	B 391,828	C	Apr. 6, 1976
565	B 533,652	C	Mar. 23, 1976
566A	B 513,014	C	Feb. 10, 1976
566R	B 421,373	C	Mar. 23, 1976
567.6M	B 480,114	C	Mar. 2, 1976
568	B 529,974	C	Feb. 17, 1976
570.6	B 472,760	C	Apr. 13, 1976
578	B 449,837	C	Mar. 2, 1976
580	B 503,742	C	Feb. 17, 1976
586C	B 438,484	C	Feb. 17, 1976

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		CAT.	PUB. DATE
591	B 416,257	C	Mar. 16, 1976
593R	B 468,350	C	Jan. 13, 1976
598	B 465,202	C	Feb. 24, 1976
	B 524,849	C	Mar. 23, 1976
601R	B 208,916	C	Jan. 13, 1976
604HF	B 472,241	C	Feb. 17, 1976
606.5P	B 518,326	C	Mar. 23, 1976
609E	B 474,573	C	Jan. 20, 1976
610A	B 845,044	C	Mar. 30, 1976
615A	B 409,310	C	Mar. 23, 1976
621H	B 501,128	C	Feb. 24, 1976
621K	B 470,348	C	Jan. 13, 1976
632R	B 553,584	C	Feb. 17, 1976
637R	B 519,446	C	Feb. 24, 1976
643R	B 480,662	C	Mar. 2, 1976
647	B 394,248	C	Jan. 27, 1976
648F	B 330,736	C	Feb. 3, 1976
665R	B 460,846	C	Feb. 24, 1976
668D	B 430,157	C	Feb. 17, 1976
674SA	B 426,274	C	Jan. 20, 1976
683.15D	B 428,103	C	Feb. 10, 1976
683.48	B 526,027	C	Feb. 17, 1976
831	B 440,632	C	Apr. 13, 1976
859R	B 519,485	C	Feb. 10, 1976
873	B 388,675	C	Mar. 30, 1976
	B 465,688	C	Jan. 27, 1976
	B 519,486	C	Feb. 17, 1976
876B	B 575,851	C	Feb. 10, 1976
876R	B 589,966	C	Feb. 17, 1976
	B 461,184	C	Feb. 17, 1976
	B 580,826	C	Feb. 17, 1976
	B 589,966	C	Feb. 17, 1976
878R	B 469,468	C	Mar. 16, 1976
880B	B 510,458	C	Feb. 10, 1976
884	B 456,579	C	Feb. 10, 1976
890	B 495,408	C	Feb. 3, 1976
900	B 564,902	C	Mar. 23, 1976
927N	B 369,221	C	Feb. 24, 1976
	B 484,437	C	Mar. 30, 1976
929	B 502,993	C	Feb. 17, 1976
937	B 512,373	C	Feb. 10, 1976
940	B 496,430	C	Feb. 10, 1976
942	B 386,673	C	Feb. 3, 1976
948	B 534,591	C	Feb. 17, 1976
984	B 455,486	C	Mar. 16, 1976
Class 261			
39A	B 562,462	C	Jan. 13, 1976
98	B 480,702	C	Jan. 27, 1976
Class 264			
11	B 335,783	C	Mar. 30, 1976
36	B 308,659	C	Jan. 27, 1976
37	B 579,153	C	Mar. 30, 1976
49	B 417,164	C	Mar. 2, 1976
51	B 506,144	C	Feb. 10, 1976
	B 508,369	C	Jan. 13, 1976
140	B 214,925	C	Mar. 9, 1976
150	B 455,806	C	Mar. 23, 1976
161	B 555,437	C	Feb. 3, 1976
225	B 453,759	C	Jan. 27, 1976
315	B 485,169	C	Mar. 16, 1976
Class 270			
62	B 516,609	M	Feb. 24, 1976
Class 271			
180	B 435,481	M	Mar. 9, 1976
Class 274			
37	B 526,388	M	Feb. 3, 1976
Class 277			
27	B 519,623	M	Apr. 6, 1976
	B 544,034	M	Feb. 17, 1976
34.6	B 430,326	M	Mar. 23, 1976
81P	B 515,216	M	Feb. 17, 1976
184	B 426,819	M	Feb. 17, 1976
Class 280			
11.35R	B 435,570	M	Mar. 16, 1976
124F	B 471,706	M	Mar. 16, 1976
	B 550,810	M	Mar. 23, 1976
150AB	B 520,341	M	Mar. 16, 1976
150SB	B 363,565	M	Mar. 30, 1976
150.5	B 583,051	M	Feb. 3, 1976
236	B 572,642	M	Feb. 10, 1976
Class 281			
25R	B 491,618	M	Mar. 16, 1976
Class 285			
110	B 313,280	M	Apr. 6, 1976
Class 290			
17	B 477,597	E	Feb. 17, 1976
Class 292			
254	B 549,964	M	Feb. 24, 1976
Class 293			
71P	B 552,932	M	Feb. 3, 1976
Class 296			
35R	B 443,647	M	Feb. 17, 1976
	B 463,671	M	Jan. 13, 1976
137A	B 452,034	M	Mar. 23, 1976
Class 297			
304	B 597,410	M	Mar. 30, 1976
Class 298			
35M	B 510,588	M	Jan. 27, 1976
Class 299			
31	B 499,209	M	Feb. 24, 1976
Class 303			
21BE	B 575,583	M	Mar. 16, 1976
71	B 545,856	M	Mar. 30, 1976
Class 305			
27	B 506,566	M	Jan. 20, 1976
Class 307			
88.3	B 540,872	E	Jan. 20, 1976
137	B 466,444	E	Jan. 20, 1976
205	B 444,437	E	Mar. 9, 1976
	B 513,368	E	Feb. 3, 1976
232	B 540,078	E	Jan. 13, 1976
251	B 503,371	E	Mar. 30, 1976
	B 506,840	E	Mar. 23, 1976
	B 548,302	E	Feb. 17, 1976
252B	B 523,226	E	Mar. 23, 1976
255	B 492,688	E	Jan. 20, 1976
262	B 525,133	E	Mar. 23, 1976
270	B 497,960	E	Jan. 20, 1976
293	B 519,932	E	Feb. 3, 1976
296	B 512,849	E	Feb. 3, 1976
300	B 530,285	E	Apr. 6, 1976
Class 308			
9	B 391,797	M	Mar. 9, 1976
36.3	B 562,413	M	Mar. 16, 1976
207R	B 507,661	M	Mar. 2, 1976
Class 310			
4R	B 539,746	E	Feb. 17, 1976
9.6	B 501,482	E	Jan. 13, 1976
41	B 561,784	E	Jan. 27, 1976
90	B 458,500	E	Feb. 24, 1976
155	B 592,143	C	Jan. 27, 1976
168	B 526,289	E	Feb. 24, 1976
254	B 521,045	E	Feb. 24, 1976
	B 521,046	E	Feb. 24, 1976
259	B 521,044	E	Feb. 24, 1976
Class 313			
42	B 534,443	E	Jan. 27, 1976
60	B 513,706	M	Jan. 13, 1976
94	B 517,762	E	Mar. 16, 1976
99	B 518,859	E	Feb. 3, 1976
231.4	B 571,659	E	Apr. 13, 1976
273	B 531,929	E	Jan. 20, 1976
330	B 504,056	C	Feb. 24, 1976
	B 520,884	E	Mar. 16, 1976
366	B 515,455	E	Jan. 27, 1976
404	B 523,696	E	Jan. 13, 1976
452	B 160,045	E	Jan. 13, 1976
477	B 279,969	E	Jan. 13, 1976
Class 315			
169TV	B 463,322	E	Jan. 20, 1976
	B 520,613	E	Mar. 16, 1976
241P	B 501,503	E	Mar. 2, 1976
371	B 483,615	E	Jan. 27, 1976
379	B 422,156	E	Mar. 23, 1976
388	B 516,002	E	Jan. 13, 1976
399	B 467,971	E	Jan. 13, 1976
408	B 516,564	E	Feb. 17, 1976
Class 317			
9R	B 488,634	E	Jan. 20, 1976
18D	B 340,170	E	Mar. 30, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
	B 534,915	E	Mar. 23, 1976
36TD	B 504,404	E	Feb. 24, 1976
	B 504,405	E	Apr. 13, 1976
100	B 508,639	E	Mar. 23, 1976
101A	B 420,472	E	Feb. 24, 1976
120	B 527,187	E	Feb. 17, 1976
	B 531,566	M	Mar. 16, 1976
124	B 509,606	E	Feb. 3, 1976
259	B 506,461	E	Jan. 20, 1976
Class 318			
98	B 475,801	E	Mar. 30, 1976
119	B 505,582	E	Mar. 23, 1976
139	B 475,236	E	Feb. 3, 1976
231	B 511,886	E	Feb. 3, 1976
257	B 502,973	E	Jan. 27, 1976
467	B 452,915	E	Mar. 30, 1976
481	B 451,396	E	Apr. 13, 1976
574	B 412,023	E	Apr. 6, 1976
593	B 476,967	E	Mar. 9, 1976
Class 321			
2	B 533,734	E	Jan. 27, 1976
7	B 509,185	E	Feb. 3, 1976
61	B 495,759	E	Feb. 3, 1976
Class 322			
25	B 466,318	E	Mar. 9, 1976
Class 323			
1	B 430,276	E	Jan. 20, 1976
17	B 459,811	E	Jan. 20, 1976
	B 583,089	E	Jan. 27, 1976
22T	B 501,181	E	Feb. 10, 1976
Class 324			
13	B 79,099	E	Jan. 13, 1976
15	B 495,331	E	Mar. 16, 1976
51	B 534,767	E	Feb. 3, 1976
60C	B 540,218	E	Feb. 10, 1976
62	B 465,393	E	Jan. 27, 1976
83D	B 458,010	E	Mar. 16, 1976
158R	B 483,268	E	Mar. 9, 1976
Class 325			
38A	B 478,234	E	Mar. 30, 1976
40	B 558,220	E	Jan. 27, 1976
468	B 544,961	E	Jan. 13, 1976
Class 328			
129	B 78,315	E	Feb. 10, 1976
155	B 550,693	E	Jan. 20, 1976
167	B 532,326	E	Mar. 23, 1976
168	B 573,033	E	Mar. 23, 1976
Class 329			
2	B 565,717	E	Apr. 13, 1976
Class 330			
15	B 530,813	E	Feb. 17, 1976
17	B 531,686	E	Mar. 23, 1976
33	B 439,542	E	Jan. 27, 1976
110	B 381,006	E	Apr. 6, 1976
207P	B 553,460	E	Feb. 3, 1976
Class 331			
44ST	B 527,669	E	Jan. 13, 1976
51	B 538,686	E	Jan. 13, 1976
94.5C	B 549,931	E	Jan. 20, 1976
94.5G	B 442,295	E	Mar. 16, 1976
94.5L	B 506,916	E	Feb. 3, 1976
94.5M	B 384,654	E	Feb. 24, 1976
94.5P	B 394,350	E	Jan. 13, 1976
116R	B 527,693	E	Feb. 3, 1976
117R	B 571,219	E	Feb. 24, 1976
Class 332			
9R	B 507,087	E	Feb. 17, 1976
Class 333			
10	B 535,256	E	Mar. 23, 1976
30R	B 453,616	E	Jan. 27, 1976
31A	B 568,770	E	Feb. 10, 1976
72	B 534,991	E	Jan. 27, 1976
73W	B 339,194	E	Feb. 3, 1976
81A	B 493,370	E	Mar. 16, 1976
Class 335			
7	B 509,165	E	Mar. 2, 1976
186	B 526,654	E	Mar. 23, 1976
210	B 541,517	E	Jan. 13, 1976
253	B 515,452	E	Feb. 10, 1976
Class 336			
65	B 523,952	E	Mar. 23, 1976
Class 338			
166	B 489,526	E	Feb. 3, 1976
202	B 528,761	E	Feb. 10, 1976
Class 339			
5M	B 566,556	C	Mar. 23, 1976
Class 340			
8L	B 270,274	E	Feb. 17, 1976
146.1AB	B 428,408	E	Mar. 2, 1976
167B	B 568,226	E	Feb. 24, 1976
171R	B 529,925	E	Mar. 30, 1976
172.5	B 391,844	E	Mar. 16, 1976
	B 428,271	E	Mar. 23, 1976
	B 432,140	E	Mar. 23, 1976
	B 452,138	E	Mar. 23, 1976
	B 461,336	E	Feb. 3, 1976
	B 482,907	E	Jan. 20, 1976
	B 485,575	E	Feb. 24, 1976
	B 503,780	E	Mar. 16, 1976
	B 506,839	E	Mar. 23, 1976
	B 533,454	E	Mar. 2, 1976
173FF	B 495,185	E	Mar. 9, 1976
173LM	B 453,067	E	Mar. 23, 1976
173R	B 545,945	M	Jan. 27, 1976
174DC	B 443,712	E	Jan. 27, 1976
174TF	B 429,018	C	Feb. 10, 1976
	B 455,425	E	Feb. 3, 1976
	B 472,276	E	Mar. 9, 1976
	B 476,681	E	Jan. 13, 1976
	B 499,718	E	Jan. 27, 1976
198	B 546,665	E	Jan. 20, 1976
347AD	B 507,647	E	Jan. 27, 1976
	B 526,106	E	Jan. 27, 1976
347CC	B 498,500	E	Jan. 20, 1976
347SY	B 270,351	E	Mar. 30, 1976
Class 343			
7A	B 248,240	E	Jan. 13, 1976
7.7	B 484,029	E	Feb. 10, 1976
8	B 497,702	E	Mar. 2, 1976
100LE	B 488,395	E	Jan. 27, 1976
	B 496,502	E	Jan. 20, 1976
786	B 547,994	E	Jan. 20, 1976
815	B 563,244	E	Jan. 27, 1976
840	B 494,691	E	Mar. 16, 1976
Class 346			
35	B 545,344 6E		Mar. 30, 1976
75	B 450,413	E	Mar. 23, 1976
	B 512,964	E	Feb. 10, 1976
139C	B 560,261	E	Mar. 16, 1976
Class 350			
7	B 469,036	M	Mar. 16, 1976
96WG	B 381,985	M	Feb. 3, 1976
	B 537,722	M	Feb. 3, 1976
103	B 586,663	M	Feb. 3, 1976
150	B 384,225	M	Mar. 16, 1976
160LC	B 527,054	M	Feb. 17, 1976
173	B 469,947	M	Jan. 20, 1976
310	B 520,543	M	Jan. 27, 1976
320	B 548,440	M	Feb. 3, 1976
Class 354			
23D	B 492,774	E	Mar. 9, 1976
46	B 515,135	E	Feb. 17, 1976
70	B 533,580	E	Feb. 3, 1976
156	B 507,131	E	Mar. 2, 1976
174	B 502,161	E	Mar. 2, 1976
288	B 559,111	E	Feb. 24, 1976
298	B 489,328	E	Jan. 20, 1976
Class 355			
8	B 509,474	M	Feb. 17, 1976
11	B 500,171	M	Mar. 30, 1976
16	B 481,048	M	Mar. 16, 1976
17	B 493,501	M	Feb. 3, 1976
Class 356			
103	B 517,504	M	Mar. 9, 1976
110	B 492,093	M	Mar. 23, 1976
201	B 450,521	M	Feb. 17, 1976
239	B 530,569	M	Mar. 16, 1976
Class 357			
15	B 281,162	E	Mar. 23, 1976
16	B 496,487	E	Jan. 20, 1976
22	B 480,749	E	Mar. 9, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
	B 504,503	E	Mar. 9, 1976
23	B 516,060	E	Feb. 17, 1976
36	B 508,961	E	Feb. 3, 1976
52	B 520,115	E	Mar. 23, 1976
55	B 480,292	E	Mar. 16, 1976
59	B 535,209	E	Mar. 16, 1976
65	B 470,798	E	Jan. 20, 1976
72	B 481,930	E	Feb. 24, 1976
Class 358			
8	B 554,939	E	Feb. 10, 1976
28	B 73,017	E	Mar. 9, 1976
41	B 502,289	E	Jan. 13, 1976
Class 360			
1	B 484,365	E	Jan. 27, 1976
15	B 283,941	E	Feb. 3, 1976
17	B 461,874	E	Jan. 27, 1976
27	B 427,883	E	Jan. 20, 1976
35	B 347,661	E	Mar. 16, 1976
49	B 516,069	E	Mar. 16, 1976
60	B 453,432	E	Mar. 16, 1976
	B 491,111	E	Feb. 17, 1976
78	B 487,411	E	Feb. 24, 1976
80	B 403,477	E	Feb. 3, 1976
81	B 500,176	E	Feb. 3, 1976
85	B 501,253	E	Feb. 3, 1976
98	B 484,482	E	Mar. 23, 1976
102	B 458,964	E	Mar. 2, 1976
104	B 483,247	E	Apr. 13, 1976
125	B 59,512	E	Mar. 16, 1976
130	B 579,806	E	Feb. 3, 1976
137	B 449,892	E	Mar. 23, 1976
	B 470,305	M	Apr. 6, 1976
Class 401			
219	B 557,621	M	Feb. 3, 1976
Class 403			
107	B 513,789	M	Feb. 3, 1976
318	B 540,632	M	Jan. 13, 1976
341	B 510,278	M	Mar. 30, 1976
Class 404			
71	B 452,672	M	Jan. 13, 1976
77	B 434,206	M	Feb. 3, 1976
Class 408			
124	B 501,993	M	Jan. 13, 1976
146	B 521,986	M	Feb. 3, 1976
Class 415			
14	B 471,735	M	Feb. 3, 1976
115	B 561,712	C	Feb. 17, 1976
136	B 563,412	M	Feb. 24, 1976
213R	B 512,547	M	Jan. 13, 1976
214	B 552,006	M	Feb. 3, 1976
Class 416			
61	B 549,394	M	Jan. 27, 1976
145	B 567,158	M	Mar. 23, 1976
157B	B 513,346	M	Mar. 9, 1976
Class 417			
274	B 570,615	M	Mar. 23, 1976
Class 423			
15	B 372,722	C	Mar. 9, 1976
27	B 369,379	C	Mar. 30, 1976
238	B 485,401	C	Jan. 27, 1976
242	B 66,272	C	Feb. 24, 1976
244	B 499,324	C	Mar. 16, 1976
249	B 402,553	C	Feb. 17, 1976
	B 428,386	C	Mar. 23, 1976
283	B 521,984	C	Feb. 17, 1976
315	B 471,221	C	Jan. 13, 1976
390	B 549,198	C	Jan. 13, 1976
393	B 491,455	C	Feb. 3, 1976
406	B 111,130	C	Mar. 16, 1976
448	B 414,028	C	Feb. 17, 1976
462	B 336,754	C	Mar. 16, 1976
471	B 521,612	C	Mar. 9, 1976
573G	B 481,778	C	Mar. 30, 1976
580	B 379,177	C	Jan. 27, 1976
Class 424			
9	B 426,424	C	Feb. 3, 1976
45	B 181,208	C	Mar. 9, 1976
62	B 464,593	C	Mar. 9, 1976
70	B 438,048	C	Mar. 23, 1976
115	B 482,660	C	Feb. 10, 1976
118	B 542,226	C	Feb. 24, 1976
122	B 482,058	C	Mar. 2, 1976
	B 524,179	C	Jan. 13, 1976
129	B 848,336	C	Mar. 30, 1976
177	B 490,995	C	Feb. 3, 1976
203	B 576,903	C	Feb. 3, 1976
219	B 510,836	C	Mar. 23, 1976
230	B 487,133	C	Jan. 27, 1976
243	B 337,823	C	Mar. 23, 1976
245	B 493,955	C	Mar. 9, 1976
246	B 399,098	C	Feb. 24, 1976
251	B 450,870	C	Mar. 16, 1976
257	B 374,588	C	Jan. 27, 1976
258	B 426,639	C	Feb. 3, 1976
263	B 466,929	C	Jan. 27, 1976
267	B 307,698	C	Feb. 3, 1976
	B 407,737	C	Feb. 3, 1976
270	B 521,711	C	Feb. 10, 1976
273	B 459,408	C	Mar. 23, 1976
	B 566,464	C	Feb. 3, 1976
274	B 496,431	C	Jan. 13, 1976
	B 547,547	C	Feb. 24, 1976
281	B 587,786	C	Feb. 17, 1976
311	B 457,862	C	Jan. 27, 1976
317	B 510,850	C	Feb. 3, 1976
321	B 516,804	C	Mar. 23, 1976
326	B 510,957	C	Mar. 30, 1976
362	B 495,489	C	Feb. 3, 1976
Class 425			
222	B 163,463	M	Jan. 27, 1976
237	B 431,334	M	Mar. 16, 1976
339	B 555,456	M	Mar. 30, 1976
384	B 562,813	C	Feb. 3, 1976
521	B 411,765	M	Feb. 24, 1976
	B 548,688	M	Mar. 9, 1976
Class 426			
3	B 583,712	C	Feb. 10, 1976
8	B 394,742	C	Apr. 13, 1976
73	B 493,950	C	Mar. 2, 1976
239	B 572,726	C	Feb. 24, 1976
276	B 535,944	C	Jan. 13, 1976
281	B 48,560	C	Mar. 30, 1976
	B 481,989	C	Mar. 23, 1976
	B 493,686	C	Mar. 23, 1976
332	B 441,789	C	Mar. 30, 1976
535	B 560,717	C	Feb. 10, 1976
548	B 439,778	C	Feb. 3, 1976
561	B 389,605	C	Mar. 23, 1976
594	B 333,838	C	Mar. 23, 1976
	B 431,797	C	Mar. 30, 1976
656	B 478,759	C	Mar. 16, 1976
	B 480,987	C	Mar. 30, 1976
Class 427			
39	B 476,837	C	Jan. 20, 1976
54	B 421,608	C	Mar. 23, 1976
70	B 381,709	C	Jan. 13, 1976
93	B 371,635	C	Mar. 23, 1976
123	B 552,709	C	Mar. 23, 1976
145	B 457,547	C	Feb. 17, 1976
186	B 537,085	C	Feb. 17, 1976
207	B 501,415	C	Jan. 13, 1976
343	B 160,099	C	Jan. 13, 1976
372	B 409,848	C	Jan. 27, 1976
389	B 519,377	C	Jan. 27, 1976
Class 428			
73	B 481,737	C	Jan. 13, 1976
132	B 333,110	C	Mar. 16, 1976
175	B 468,330	M	Mar. 16, 1976
224	B 378,760	C	Mar. 9, 1976
289	B 402,929	C	Feb. 3, 1976
315	B 373,354	C	Jan. 27, 1976
341	B 450,196	C	Feb. 10, 1976
378	B 415,590	C	Mar. 23, 1976
411	B 498,208	C	Apr. 13, 1976
412	B 501,379	C	Mar. 30, 1976
418	B 465,376	C	Apr. 13, 1976
428	B 554,655	C	Feb. 24, 1976
434	B 457,886	C	Jan. 13, 1976
447	B 456,069	C	Mar. 9, 1976
469	B 403,883	C	Mar. 23, 1976
515	B 474,747	C	Feb. 24, 1976
523	B 463,591	C	Mar. 30, 1976
537	B 459,821	C	Mar. 30, 1976
Class 431			
1	B 412,124	M	Mar. 23, 1976
175	B 534,313	M	Jan. 27, 1976
264	B 398,220	M	Feb. 3, 1976
Class 432			
49	B 536,511	M	Mar. 9, 1976

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF APRIL, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See*—
Bomball, William A.; and Swift, Thomas G., 3,950,593.
Drury, Raymond L., Jr.; Nevin, Charles S.; and Hines, James W., 3,950,290.

A. J. Antunes & Co.: *See*—
Miller, Dye O.; Antunes, August J.; and Antunes, Jerome, 3,949,733.

A. R. Wood Manufacturing Company (Entire): *See*—
Lippi, Dominic M., 3,949,863.

A/S E. Rasmussen: *See*—
Thastrup, Ove, 3,949,461.

Aalpoel, Marten Geert, to Arenco-P.M.B. B.V. Device for manufacturing a flap box. 3,949,652, Cl. 93-36.0MM.

AB Akerlund & Rausing: *See*—
Christensen, Tom; Wendel, Ove; and Sandstrom, Carl-Erik, 3,949,871.

Abbey, Antony F.; and Hatfield, James, to British Gas Corporation. Electronic device for determining the average temperature of a flow of gas. 3,949,608, Cl. 73-344.000.

Abbott Laboratories: *See*—
Dodge, John Dennis; and Koschalk, Robert Francis, 3,949,771.

Abdel-Monem, Mahmoud M., to Zinpro Corporation. 1:1 Manganese alpha amino acid complexes. 3,950,372, Cl. 260-429.00R.

Aberer, James B.: *See*—
McLean, Robert E.; Aberer, Leo F.; and Aberer, James B., 3,949,468.

Aberer, Leo F.: *See*—
McLean, Robert E.; Aberer, Leo F.; and Aberer, James B., 3,949,468.

Abitibi Paper Company, Ltd.: *See*—
Butler, Paul A., 3,950,574.

Abonnenc, Jean. Automatic volumetric device for taking samples of fluid material. 3,949,614, Cl. 73-422.0TC.

Abraham, William F.: *See*—
Jones, Clarence O., Jr.; and Abraham, William F., 3,950,623.

Abu El-Haj, Marwan J.; and Dominy, Beryl William, to Pfizer Inc. Inhibiting the growth of weeds with 2-substituted pyrdidopyimidines and salts thereof. 3,950,160, Cl. 71-92.000.

Ace, Franklin S., to Ethicon, Inc. Sutures with notch near needle-suture junction. 3,949,756, Cl. 128-339.000.

ACF Industries, Incorporated: *See*—
Pietsch, Ervin I., 3,949,610.

Actron Industries, Inc.: *See*—
Malueg, Richard M., 3,950,099.

Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Voltage controlled type electronic musical instrument. 3,949,639, Cl. 84-1.270.

Adachi, Takeshi: *See*—
Inoue, Ichizo; Adachi, Takeshi; and Kondo, Kazuhiko, 3,950,325.

Adachi, Tomio; Mitsuishi, Yukio; Miura, Rikuo; and Kawakami, Hideaki, to Teijin Limited. Method for heat-bonding polyester films or sheet-like structures and said polyester films or sheet-like structures. 3,950,206, Cl. 156-272.000.

Adair, James G., to Phillips Petroleum Company. Control of temperature profile across a heat exchanger. 3,950,118, Cl. 425-144.000.

Adams, Anthony L.; and Fenn, Darien, to Texas Instruments Incorporated. Multichannel drainage system. 3,950,184, Cl. 134-10.000.

Adams, Charles D. Alkyl 4-(o-aminophenyl)-3-thioallophanates. 3,950,391, Cl. 260-470.000.

Adams, Geoffrey Philip, to Lever Brothers Company. Conditioning shampoo containing a water-insoluble hair cosmetic agent. 3,950,510, Cl. 424-70.000.

Adams, James M.; Hopper, Randall R.; Pease, Robert R.; and Raley, Garland E., to Ethyl Corporation. Method for embossing plastic material. 3,950,480, Cl. 264-284.000.

Adams, Kenneth Douglas, to Singer Company, The. Automatic backtack mechanism. 3,949,691, Cl. 112-210.000.

Adleman, Larry G.: *See*—
Pearson, Vernon W.; and Adleman, Larry G., 3,949,584.

Aero-Go Engineering & Development Co.: *See*—
Wood, Kenneth G., 3,950,038.

Aeschlimann, Jean Philippe; Ravussin, Pierre Emile; and Vuille, Jean Pierre, to Alcyon Electronique & Physique S.A. Device for the automatic measurement of tunnel sections. 3,950,096, Cl. 356-1.000.

Agency of Industrial Science & Technology: *See*—
Hayashi, Yutaka; Nagai, Kiyoko; and Tarui, Yasuo, 3,950,738.
Takasaki, Yoshiyuki, 3,950,222.

AGFA-Gevaert, A.G.: *See*—
Winkler, Alfred, 3,950,771.
Winkler, Alfred; and Engelsmann, Dieter, 3,950,773.

AGFA-GEVAERT N.V.: *See*—
Timmerman, Daniel Maurice; and De Winter, Walter Frans, 3,950,169.

Agridustrial Electronics, Inc.: *See*—
Kirkpatrick, William J., 3,950,653.

Air Cushion Equipment Limited: *See*—
Hopkins, Leslie Arthur, 3,949,953.

Air Pollution Research System: *See*—
Martin, Robert Thomas, 3,950,151.

Aisin Seiki Kabushiki Kaisha: *See*—
Kazaoka, Kenichi; Hirose, Kimiharu; Takeshita, Yasuo; and Matsumoto, Hisao, 3,949,825.
Murakami, Noboru, 3,949,627.

Aizawa, Tatsuo: *See*—
Nihyakumen, Kouzi; Ueda, Yasui; Kamezawa, Yasutoki; and Aizawa, Tatsuo, 3,950,171.
Washio, Takaji; and Aizawa, Tatsuo, 3,950,090.

Ajinomoto Co., Inc.: *See*—
Yugari, Yasumi; and Takezawa, Kenji, 3,950,223.

Akhmedov, Mansur Ilal ogly, deceased: *See*—
Aliev, Vagab Safarovich; Altman, Natalia Borisovna; Galonsky, Pavel Petrovich; Guterman, Alexandr Davidovich; Malina, Lia Vasilievna; Mingareev, Rafkhat Shagimardanovich; Suleimanov, Alekper Bagirovich; Akhmedov, Mansur Ilal ogly, deceased; and Ramazanova, Elmira Mamed Emin kyzy, administrator, 3,950,245.

Akopov, Ernest Mikhailovich; Kapitanov, Nikolai Nikolaevich; Strekopytov, Alexei Alexeevich; Ogoltsova, Evgenia Sergeevna; and Paches, Alexandr Ilich. Surgical suturing instrument. 3,949,923, Cl. 227-19.000.

Aktiebolaget IRO: *See*—
Jacobsson, Kurt Arne Gunnar, 3,949,573.

Akzona Incorporated: *See*—
Batelaan, Jan Gerardus, 3,950,397.
Fontijn, Wilhelmus Johannes, 3,950,476.
van der Burg, Willem Jacob, 3,950,425.

Aladdin Industries, Incorporated: *See*—
Bridges, John A.; and Storrs, Harold W., 3,949,876.

Albrecht, Gunther, to Daimler-Benz Aktiengesellschaft. Turbine blade. 3,950,113, Cl. 416-97.00A.

Albrecht, Harry A.; Diver, Michael; Fowle, Norman F.; and Knight, Edwin E., to United Technologies Corporation. Engine exhaust flow diverter. 3,949,550, Cl. 60-229.000.

Albrecht, Konrad; and Frensch, Heinz, to Hoechst Aktiengesellschaft. Dispersions of 2-alkyl-4,6-dinitrophenol esters. 3,950,265, Cl. 252-311.000.

Alburger, James R. Open-loop water-washable inspection penetrant process. 3,949,601, Cl. 73-104.000.

Alcan Aluminio Do Brasil S.A.: *See*—
Scalabrin, Domingos, 3,949,781.

Alcyon Electronique & Physique S.A.: *See*-
Aeschlimann, Jean Philippe; Ravussin, Pierre Emile; and Vuille, Jean Pierre, 3,950,096.

Alexeff, Alexander V., to Alexeff-Snyder Enterprises, Inc. Fabric splice. 3,950,598, Cl. 428-61.000.

Alexeff-Snyder Enterprises, Inc.: *See*—
Alexeff, Alexander V., 3,950,598.

Aliev, Vagab Safarovich; Altman, Natalia Borisovna; Galonsky, Pavel Petrovich; Guterman, Alexandr Davidovich; Malina, Lia Vasilievna; Mingareev, Rafkhat Shagimardanovich; Suleimanov, Alekper Bagirovich; Akhmedov, Mansur Ilal ogly, deceased; and by Ramazanova, Elmira Mamed Emin kyzy, administrator. Method of breaking down oil emulsions. 3,950,245, Cl. 208-187.000.

Allard, Roger Sidney: *See*—
Harber, Gerald; Young, Leslie Albert; Allard, Roger Sidney; Marshall, Alan James; and Montgomery, Michael John, 3,949,886.

Allen & Hanburys Limited: *See*—
Nielsen, Carl Philip, 3,949,737.

Allen, R. H., to Eastex Packaging, Inc. Carton with heat shrinkable window and blank for producing same. 3,949,868, Cl. 206-45.340.

Allen, Robert K.: *See*—
Morrison, Howard J.; and Allen, Robert K., 3,949,658.

Allied Chemical Corporation: *See*—
Hamilton, Brian K., 3,950,009.
Linares, Robert C.; Nienart, Louis F.; and Toelcke, George A., 3,950,271.

Allis-Chalmers Corporation: *See*—
Moe, Richard G., 3,949,889.
Plate, John R., 3,949,783.

Allison, James F.: *See*—
Lindmayer, Joseph; and Allison, James F., 3,949,463.

Allmanna Svenska Elektriska Aktiebolaget: *See*—
Syvakari, Pertti, 3,949,583.

Alps Motorola, Inc.: *See*—
Takei, Yoshiyuki, 3,949,919.

Altman, Natalia Borisovna: *See*—
Aliev, Vagab Safarovich; Altman, Natalia Borisovna; Galonsky, Pavel Petrovich; Guterman, Alexandr Davidovich; Malina, Lia Vasilievna; Mingareev, Rafkhat Shagimardanovich; Suleimanov, Alekper Bagirovich; Akhmedov, Mansur Ilal ogly, deceased; and

Ramazanova, Elmira Mamed Emin kyzy, administrator, 3,950,245.
Alvarez-Calderon, Alberto. Parametrically shaped leading ed · flaps. 3,949,956, Cl. 244-42.0CA.
Amacoil Machinery, Inc.: *See—*
Broomfield, John, 3,949,945.
American Aniline Products, Inc.: *See—*
Renfrew, Edgar Earl; and Pons, Henry Wolfgang, 3,950,130.
American Chain and Cable Company, Inc.: *See—*
Farmer, Donald Allen; and Kops, Lucian, 3,950,042.
American Colloid Company: *See—*
Clem, Arthur G., 3,949,560.
American Cyanamid Company: *See—*
Floyd, Middleton Brawner, Jr.; McGahren, William James; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,950,406.
Landi, Henry Patrick; and Perciaccante, Vincent Anthony, 3,950,261.
Waite, Jack Peter, 3,950,515.
American Electromedics Corporation: *See—*
Klar, Irwin; and Rochussen, Arthur W., 3,949,735.
American Home Products Corporation: *See—*
Santilli, Arthur A.; and Scotese, Anthony C., 3,950,339.
American Hospital Supply Corporation: *See—*
Fischer, Josef E.; Yoshimura, Norman N.; Westman, Thomas L.; and Deindoerfer, Fred H., 3,950,529.
American Medical Products Company: *See—*
Gossett, Rodger L., 3,950,158.
American Microsystems, Inc.: *See—*
Broedner, Walter F.; Bhatnagar, Ravinder K.; Hill, W. Eugene; and Tjoa, Daniel W., 3,950,654.
American Optical Corporation: *See—*
Deeg, Emil W.; Graf, Robert E.; and Landry, Robert J., 3,950,176.
Amey Roadstone Corporation Limited: *See—*
Farahar, Robert M., 3,950,465.
AMP Incorporated: *See—*
Groft, James Leon; Redslob, Jean Jacques; and Yeager, Marvin Leo, 3,950,070.
Reavis, Robert Philmore, Jr., 3,950,062.
Renn, Robert Maurice, 3,950,065.
Amstar Corporation: *See—*
Skole, Richard David; and Rizzuto, Anthony Benny, 3,950,225.
Anacker, Charles D. Dual purpose sofa bed. 3,949,434, Cl. 5-12.00R.
Analog Devices, Incorporated: *See—*
Brefka, Paul C., 3,950,603.
Anderka, Gerold, to Koh-I-Noor Rapidograph, Inc. Drawing method and drawing instrument. 3,950,762, Cl. 346-140.00R.
Anderson, George A., III: *See—*
Butler, Robert M.; and Anderson, George A., III, 3,949,891.
Anderson, Paul L., to Sandoz, Inc. α-(N-Substituted amino-N-nitrosoamino)acetamides. 3,950,332, Cl. 260-247.20A.
Anderson, Perry W.: *See—*
Glabe, Elmer F.; Anderson, Perry W.; Laftsidis, Stergios; and Grothus, Phillip G., 3,950,551.
Anderson, Trevor James; and Laughton, Graham, to Feedback Instruments Limited. Remote writing apparatus. 3,950,614, Cl. 178-18.000.
Andersson, Sven Gerhard. Apparatus for automatically manufacturing an annular ribbon. 3,949,688, Cl. 112-121.260.
Ando, Moriyasu: *See—*
Imamura, Juichi; Ando, Moriyasu; Sasaki, Kazuo; and Iio, Takumi, 3,950,437.
Andou, Kenji: *See—*
Fukaya, Hirokazu; Andou, Kenji; and Nakashima, Akio, 3,950,672.
Andreica, Vasile. A.C. Motor winding. 3,950,664, Cl. 310-203.000.
Andrews, Paul A.; and Raia, Richard M., to Polaroid Corporation. Novel identification card. 3,949,501, Cl. 40-2.200.
Anhalt, John W.; and Curley, James H., to International Telephone & Telegraph Corporation. Zero force electrical connector. 3,950,059, Cl. 339-75.00M.
Animal Systems, Inc.: *See—*
Wallach, Mark, 3,949,746.
Antolak, Thomas J.: *See—*
Mayala, Arne H.; and Antolak, Thomas J., 3,949,467.
Antos, George J., to Universal Oil Products Company. Hydrocarbon conversion with an acidic sulfur-free multimetallic catalytic composite. 3,950,243, Cl. 208-139.000.
Antos, John M.: *See—*
Miller, Marshall W.; Henke, Arthur W.; and Antos, John M., 3,949,430.
Antrim, Rodney M.: *See—*
Bellanca, Joseph M.; Sargert, Lewis D.; and Antrim, Rodney M., 3,949,719.
Antunes, August J.: *See—*
Miller, Dye O.; Antunes, August J.; and Antunes, Jerome, 3,949,733.
Antunes, Jerome: *See—*
Miller, Dye O.; Antunes, August J.; and Antunes, Jerome, 3,949,733.
Aoki, Atsushi; Fukuda, Rikiya; Nakayabu, Toshio; Ishibashi, Keijiro; Takeichi, Chiyoko; and Ishida, Mitsuo, to Sankyo Company Limited. Antibiotic substances. 3,950,360, Cl. 260-343.20R.
Aoki, Kaoru. Bottom drain valve construction. 3,949,963, Cl. 251-63.600.
Aoyagi, Takaaki: *See—*
Okano, Atsuji; Kadoya, Shizuo; Naito, Takeo; Aoyagi, Takaaki; and Shimizu, Masao, 3,950,405.
Appel, Rolf; and Gilak, Ahmad, to Appel, Rolf. Process for the production of sulfur tetrafluoride. 3,950,498, Cl. 423-469.000.
Arakawa, Hideo; Hasebe, Tatsuo; and Sato, Shigeru, to Japan Eng. Co., Ltd.; and Nippon Iron Powder Co., Ltd. Process for producing activated carbon. 3,950,267, Cl. 252-425.000.
Arawa, Kiyoshi; and Ishikawa, Seiji, to Mitsubishi Kasei Kogyo Kabushiki Kaisha. Coulometric titrating devices. 3,950,237, Cl. 204-195.00T.
Ardis, Alfred J. Fireman's composite tool. 3,949,439, Cl. 7-1.00G.
Arenco-P.M.B. B.V.: *See—*
Aalpoel, Marten Geert, 3,949,652.
Argelich Termes Y CIA., Sociedad Anonima: *See—*
Trullas, Isidro Folch, 3,949,580.
Armstrong Cork Company: *See—*
Ball, Kirby L.; Darr, J. Clyde; and Harrison, Theodore F., Jr., 3,949,636.
Armstrong, William R.; and Kounkel, Gerald L., to Confinement Livestock Systems, Inc. Livestock watering system. 3,949,707, Cl. 119-73.000.
Artajo, Jose Ignacio Martin. Machine with rotary articulated pistons. 3,950,117, Cl. 418-150.000.
Arthur D. Little Inc.: *See—*
O'Brien, John L.; Johnson, Philip C.; and Lee, D. William, 3,949,466.
Artisan Industries Inc.: *See—*
Donovan, James; and Bagdasarian, Alex, 3,950,254.
Asahi Denka Kogyo K.K.: *See—*
Suzuki, Hirosi; Matsui, Akira; and Inoue, Tsunekazu, 3,950,451.
Asahi Glass Company, Ltd.: *See—*
Suzuki, Yoshiro; Ishiyama, Masahiko; and Chiba, Jiro, 3,950,174.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Kominami, Naoya; Tamura, Nobuhiro; and Yamamoto, Etsuo, 3,950,434.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Mita, Kunio; and Kurei, Hiroshi, 3,950,774.
Ashland Oil, Inc.: *See—*
Coats, Carlton E.; and Watts, Golden F., 3,950,287.
Associated Electrical Industries Limited: *See—*
Evans, Sydney; and Merren, Thomas Oliver, 3,950,641.
Astec Industries, Inc.: *See—*
Mize, Erbie Gail 3,949,907.
Astrid Corporation, Limited: *See—*
Carr, Ronald Ray; and Nisevich, Stephen Dale, 3,950,596.
Ateliers de la Motobecane: *See—*
Jaulmes, Eric, 3,949,725.
Aten, Robert M. Instrument panel reflecting apparatus. 3,950,072, Cl. 350;110-.
Athey, Stuart E.; Lee Vore, Alan; and Swihart, Donald E., to Hobart Corporation. Control circuit for dishwasher. 3,949,782, Cl. 137-565.000.
Atkinson, Robert E.: *See—*
Sykes, Langthorne; Russell, Duane J.; and Atkinson, Robert E., 3,949,955.
Atlantic Richfield Company: *See—*
Baillie, Lloyd A., 3,949,908.
Wolgemuth, Larry G., 3,950,285.
Ato Inc.: *See—*
Lipsey, Elmer M., 3,949,954.
Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Novel process for producing 2-ketoethylbenzomorphan derivatives and salts thereof. 3,950,346, Cl. 260-293.540.
Aumuller, Walter: *See—*
Hitzel, Volker; Weyer, Rudi; and Aumuller, Walter, 3,950,524.
Aurich, Christopher W.: *See—*
Turner, James Keith; Sturkey, William Cleere; and Aurich, Christopher W., 3,949,575.
Austral-Erwin Engineering Company: *See—*
Erwin, Ransome W., 3,950,211.
Automatic Material Handling, Inc.: *See—*
Keller, Alex Jacques, 3,949,890.
Automation Industries, Inc.: *See—*
McElroy, Jerry T., 3,950,660.
Automobiles Peugeot: *See—*
Rivere, Jean Pierre, 3,949,713.
Auzary, Louis; Pluta, Leon; and Pourrat, Maurice, to La Soudure Autogene Francaise. Electrical arc-welding torches. 3,950,629, Cl. 219-75.000.
Avnet, Inc.: *See—*
Guha, Dwipendra Nath, 3,949,995.
Awano, Tsuneo: *See—*
Onishi, Kazutoshi; Awano, Tsuneo; and Masuzawa, Isao, 3,949,696.
Awata, Yoriyoshi: *See—*
Ichigaya, Koji; Machida, Hiromasa; Sudoh, Masayuki; Mizuno, Masami; and Awata, Yoriyoshi, 3,950,671.
Ayerst, McKenna and Harrison Ltd.: *See—*
Philipp, Adolf H.; Demerson, Christopher A.; and Humber, Leslie G., 3,950,343.
Ayusawa, Saburo; Nagashima, Takeo; and Tsutsumi, Masaya, to Nippon Steel Corporation. Method for the manufacture of a hot-rolled coil having excellent adaptability for pickling. 3,950,572, Cl. 427-156.000.

Badaev, Boris Nikolaevich: *See—*
Boreskov, Georgy Konstantinovich; Kuklina, Valentina Nikclaevna; Levitsky, Emmanuil Aronovich; Badaev, Boris Nikolaevich; and Balashov, Vladimir Alexandrovich, 3,950,507.
Badger Manufacturing Corporation: *See—*
Bryant, William Sebert, Jr.; and Garbutt, Cornelius Durham, Jr., 3,949,815.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Schefczik, Ernst, 3,950,340.
Stastny, Fritz; Trieschmann, Hans Georg; Gaeth, Rudolf; and Haardt, Udo, 3,950,471.
Bagalini, Dante; and Towianski, Alexander, to Fuchs Electrical Industries. Circuit breaker with improved trip means. 3,950,715, Cl. 335-35.000.
Bagdasarian, Alex: *See—*
Donovan, James; and Bagdasarian, Alex, 3,950,254.
Bagley, Rodney D.: *See—*
Lachman, Irwin M.; and Bagley, Rodney D., 3,950,175.
Bailey, Brian Charles, to F. A. Power Limited. Wire bale tire and method of making the same. 3,949,450, Cl. 24-27.000.
Baillie, Lloyd A., to Atlantic Richfield Company. Apparatus and method for distributing particulate material over a zone. 3,949,908, Cl. 222-193.000.
Bain, Peter James Stratford; Foster, William Rees; and Neale, Alan Jeffrey, to Monsanto Chemicals Limited. Nitrogen polymer compositions having thermally reversible cross-links resulting from treatment with organometallic compounds. 3,950,313, Cl. 260-79.50C.
Baker, Lamar T.: *See—*
Rubinstein, Richard B.; and Baker, Lamar T., 3,950,709.
Baker, Phillip E. Ice cream and fruit confectionery product. 3,950,548, Cl. 426-91.000.
Balashov, Vladimir Alexandrovich: *See—*
Boreskov, Georgy Konstantinovich; Kuklina, Valentina Nikclaevna; Levitsky, Emmanuil Aronovich; Badaev, Boris Nikolaevich; and Balashov, Vladimir Alexandrovich, 3,950,507.
Balchunas, Charles A.: *See—*
Schaeffer, Robert L.; and Balchunas, Charles A., 3,949,499.
Baldoni, Carlo. Electromechanical speed variator. 3,949,617, Cl. 74-206.000.
Baldwin, LeRoy: *See—*
Jackson, Earl V.; Teumer, Roger G.; and Baldwin, LeRoy, 3,950,088.
Ball, Kirby L.; Darr, J. Clyde; and Harrison, Theodore F., Jr., to Armstrong Cork Company. Saw guard. 3,949,636, Cl. 83-478.000.
Ballocci, Giovanni; and Brollo, Aurelio, to Industrie Pirelli S.p.A. Handrail for passenger conveyors and the like. 3,949,858, Cl. 198-16.00R.
Balog, Karl J.; and Craft, Donald I., to General Electric Company. Light stabilized polyester resin composition. 3,950,301, Cl. 260-40.00R.
Baranowski, Joyce; and Malinowski, Stanley, to Warnaco Inc. Movement-compensating brassiere. 3,949,760, Cl. 128-425.000.
Barber, Gerald L., to Venture Ride Mfg., Inc. Amusement ride. 3,949,679, Cl. 104-63.000.
Barer, Sol Joseph; Stockel, Richard Frederick; and Valenti, Peter Carl. N,N-Dichloro substituted aminocarboxylic acids as bactericides and fungicides. 3,950,536, Cl. 424-319.000.
Barlow, Charles Brian, to Imperial Chemical Industries Limited. Diphenylamine derivatives. 3,950,377, Cl. 260-465.00E.
Baroody, Anas J. Trim adjustment for a jet boat. 3,949,700, Cl. 115-12.00R.
Barringer, Anthony Rene, to Barringer Research Limited. Geophysical prospecting method utilizing correlation of received waveforms with stored reference waveforms. 3,950,695, Cl. 324-3.000.
Barringer Research Limited: *See—*
Barringer, Anthony Rene, 3,950,695.
Barry Wright Corporation: *See—*
Frochaux, Alain, 3,949,828.
Barton, Lucian Anthony: *See—*
Ross, Daniel Louis; and Barton, Lucian Anthony, 3,950,173.
Bartos, Donald M., to Dow Corning Corporation. Safety tire. 3,949,796, Cl. 152-158.000.
Bartram, Nial C.; and Scheid, William J., to Schick Incorporated. Hair dryer. 3,949,487, Cl. 34-99.000.
BASF Aktiengesellschaft: *See—*
Bressel, Ulrich, 3,950,415.
Broecker, Franz Josef; Zirker, Guenter; Triebskorn, Bruno; Marosi, Laszlo; Schwarzmann, Matthias; Dethlefsen, Winfried; and Kaempfer, Knut, 3,950,368.
Dehnert, Johannes; and Lamm, Gunther, 3,950,321.
Sander, Bruno; Bonitz, Eckhard; Berbner, Heinz; and Hoffmann, Manfred, 3,950,293.
Vogel, Hans-Henning; Weitz, Hans-Martin; and Pfeiffer, Toni, 3,950,442.
BASF Wyandotte Corporation: *See—*
Patton, John T., Jr.; Ramlow, Gerhard G.; and Pizzini, Louis C., 3,950,317.
Bastide, Paul. Special submarine devices using a novel integrated lift, propulsion and steering system. 3,949,694, Cl. 114-16.00R.
Batelaan, Jan Gerardus, to Akzona Incorporated. Process for the preparation of citric acid esters, citric acid or citric acid salts. 3,950,397, Cl. 260-484.00P.
Bates, Wayne C.; and Wallin, Wilbert C., to Truth Incorporated. Window lock structure. 3,949,525, Cl. 49-395.000.
Battelle Development Corporation: *See—*
Dixon, Norman E.; and Jolly, William D., 3,950,659.
Battis, Larry J. Tennis simulating table game. 3,949,992, Cl. 273-134.0CB.
Bauer, Johann: *See—*
Kurz, Dieter; Kandler, Herbert; Sabel, Alex; and Bauer, Johann, 3,950,312.
Bauer, Peter; and Klimek, Rudolf, to ERNO Raumfahrttechnik GmbH. Partially submerged floating platform. 3,949,693, Cl. 114-.50D.
Baumann, Hans-Peter; and Karmann, Hans-Georg, to Sandoz Ltd., (Sandoz AG). Aromatic carboxylic acid esters and amides as fixing agents. 3,950,419, Cl. 260-559.00R.
Baxter Laboratories, Inc.: *See—*
Giambrone, Harry J.; and Naas, Robert L., 3,949,933.
Bayer Aktiengesellschaft: *See—*
Botta, Artur, 3,950,367.
Geks, Franz-Josef; and Schmidt-Kastner, Gunter, 3,950,509.
Harnisch, Horst; and Brack, Alfred, 3,950,347.
Hartmann, Peter, 3,950,381.
Hoffmann, Hellmut; and Hammann, Ingeborg, 3,950,337.
Horstmann, Harald; Meng, Karl; and Wehinger, Egbert, 3,950,528.
Kolling, Heinrich; Widdig, Arno; Thomas, Herbert; and Schulz, Hans Peter, 3,950,395.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,950,336.
Radlmann, Eduard; Schramm, Jurgen; and Nischk, Gunter, 3,950,311.
Riebel, Hans-Jochem; Rohe, Lothar; Hammann, Ingeborg; and Behrenz, Wolfgang, 3,950,334.
Weber, Horst; Gruhl, Siegfried; and Endlich, Karl-Heinz, 3,950,183.
Wenzelburger, Jurgen; Buchel, Karl Heinz; Plempel, Manfred; and Meiser, Werner, 3,950,354.
Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y., to Rohm and Haas Company. 2-Cyano-diphenyl ethers. 3,950,379, Cl. 260-465.00F.
Beam Systems Israel Ltd.: *See—*
Blass, Judd, 3,950,757.
Beckman Instruments, Inc.: *See—*
Sharples, Thomas D.; and Taylor, John T., 3,949,965.
Becorit Grubenausbau GmbH: *See—*
Wertelewski, Wilhelm; and Schade, Jorg, 3,949,563.
Becton, Dickinson & Company: *See—*
Hopkins, Brian Martin, 3,950,610.
Beesch, Otto, to Robert Bosch GmbH. Air pre-heating arrangement for combustion engines. 3,949,723, Cl. 123-179.00H.
Begidzhanova, Anzhelika Petrovna: *See—*
Rotenberg, Vladimir Adolfovich; Khruschova, Kira Markovna; Zilberg, Jury Yakovlevich; Begidzhanova, Anzhelika Petrovna; Gulyaev, Anatoly Sergeevich; Protasova, Irina Vladimirovna; Shapochkin, Alexei Ivanovich; Pavlov, Vladislav Ivanovich; Mirakov, Eduard Sergeevich; Izotov, Arseny Emelyanovich; Serikov, Ivan Alexandrovich; and Ignatiev, Not Vasilievich, 3,950,164.
Behrenz, Wolfgang: *See—*
Riebel, Hans-Jochem; Rohe, Lothar; Hammann, Ingeborg; and Behrenz, Wolfgang, 3,950,334.
Belding, Jeffrey H.; and Letzgus, Erwin A., to Quigley Company, Inc. Process for producing magnesium aluminate spinel. 3,950,504, Cl. 423-600.000.
Bell Telephone Laboratories, Incorporated: *See—*
Joel, Amos Edward, Jr., 3,950,619.
Rode, Daniel Leon; and Schumaker, Norman Edwin, 3,950,195.
Tammaru, Tarmo, 3,950,616.
Bell, Wilson A.; and MacLeod, Douglas W., to USM Corporation. Direct acting hydraulic dust stop. 3,949,972, Cl. 259-104.000.
Bellanca, Joseph M.; Sargert, Lewis D.; and Antrim, Rodney M., to Kar Products Inc. Volumetric control valve unit for crankcase ventilation system. 3,949,719, Cl. 123-119.00B.
Bellinga, Hendrik, to N.V. Nederlandse Gasunie. Method and device for taking gas samples. 3,950,136, Cl. 23-232.00R.
Belzer, Joseph F.: *See—*
Menzel, Harry R.; and Belzer, Joseph F., 3,949,441.
Benasutti, Louis D.; and Sucro, Jost S., to General Motors Corporation. Water and beverage concentrate dispenser. 3,949,903, Cl. 222-129.200.
Bendix Corporation, The: *See—*
Covington, Martin B., Jr., 3,950,710.
Benecke, Theodor: *See—*
Korsten, Andreas; Benecke, Theodor; Korndorfer, Eugen; Petersen, Fritz; and Wiebke, Gunter, 3,950,602.
Benkowski, John. Plaque with repositionable ornamental team units. 3,949,506, Cl. 40-160.000.
Bennett, Sydney, to Joshua Shaw & Sons Limited. Drive arrangements for mechanical handling vehicles. 3,949,824, Cl. 180-66.00R.
Bennett, William E., to Hardcast, Inc. Method for making sealing tapes. 3,950,573, Cl. 427-208.000.
Benninger, Siegfried, to Hoechst Aktiengesellschaft. Electrolytic method of producing branched perfluoro-alkanes. 3,950,235, Cl. 204-59.00F.
Bent, John H., to H. F. Wilson Engineering Company. Air powered rotary wire cutting and wrapping tool. 3,949,944, Cl. 242-7.170.
Beranger, Jean; and Perrin, Pierre, to La Vermiculite et la Perlite S.A. Method for making a substantially planar structure constituted by jointed building elements. 3,950,197, Cl. 428-311.000.

Berbner, Heinz: *See—*
Sander, Bruno; Bonitz, Eckhard; Berbner, Heinz; and Hoffmann, Manfred, 3,950,293.

Berger, Gunvald Magnus Svante. Loading vehicle. 3,950,007, Cl. 280-124.00R.

Berger, Jerome: *See—*
Mirrione, James J.; and Berger, Jerome, 3,950,758.

Bergeron, Alfred. Piston ring structure. 3,949,997, Cl. 277-221.000.

Bergstrand, Gunnar Magnus. Method and means for indicating a leakage through the wall of a vessel. 3,949,598, Cl. 73-49.200.

Bergwerksverband GmbH: *See—*
Meyer, Frank, 3,949,559.

Berlinger, Bernard E., Jr.; and Sulzer, Harry, to Quaker City Gear Works, Inc. Differential gear system and actuator assembly. 3,949,626, Cl. 74-626.000.

Berney, Jean Claude. Apparatus for measuring the running of watches. 3,949,592, Cl. 73-6.000.

Berry, Fred M. Burner ignitor arrangement. 3,950,124, Cl. 431-254.000.

Bertele, Erhard; and Schudel, Peter, to Givaudan Corporation. Process for preparation of terpene flavorants and novel intermediates therefor. 3,950,430, Cl. 260-601.00R.

Bertin & Cie: *See—*
Duthion, Louis; and Verneau, Alain, 3,949,784.

Bertoldi, Attilio. Apparatus for fabric processing. 3,949,579, Cl. 68-152.000.

Bertsch, Klaus: *See—*
Rittmannsberger, Norbert; Hoelle, Hermann; and Bertsch, Klaus, 3,949,717.

Besso, Michael M.: *See—*
Edelman, Robert; and Besso, Michael M., 3,950,590.

Bethlehem Steel Corporation: *See—*
Ziegenfuss, Edwin K., 3,950,759.

Beurer, Robert John, to United Technologies Corporation. Leakproof connection for polyethylene tubing. 3,950,017, Cl. 285-137.00R.

Beusink, Bernard Joseph, deceased (by Beusink, Johanna Margaretha Maria, heiress); Cuypers, Marinus Hubertus; and Horowitz, Alexandre, to Varitrac AG. Endless belt with trapezoidal section constituted by supporting members. 3,949,621, Cl. 74-231.00M.

Beusink, Johanna Margaretha Maria, heiress: *See—*
Beusink, Bernard Joseph, deceased; Cuypers, Marinus Hubertus; and Horowitz, Alexandre, 3,949,621.

Bhatnagar, Ravinder K.: *See—*
Broedner, Walter F.; Bhatnagar, Ravinder K.; Hill, W. Eugene; and Tjoa, Daniel W., 3,950,654.

Bielstein, Georg Paul Richard: *See—*
Nightingale, Colin Walter; Bielstein, Georg Paul Richard; Taylor, David Alexander; and Nelson, William, 3,950,232.

Bienert, Horst, to Webasto-Werk W. Baier KG. Lifting linkage for roof vent panels of automobiles. 3,949,624, Cl. 74-520.000.

Bienert, Horst, to Webasto-Werk W. Baier KG. Actuating mechanism for openable automobile roof panel. 3,949,625, Cl. 74-543.000.

Bienvenu, Jacques Michel Jean; and Lecuyer, Michel, to Compagnie Honeywell Bull (Societe Anonyme). Apparatus and process for the rapid processing of segmented data. 3,950,730, Cl. 340-172.500.

Bienwald, Wolfgang F., to Leviton Manufacturing Co., Inc. Covered electrical receptacle with snap-in mounting. 3,950,066, Cl. 339-128.000.

Bierwirth, Egon: *See—*
Looman, Wolfgang; Pungs, Wolfgang; Bierwirth, Egon; and Buning, Robert, 3,950,482.

Bilodeau, Richard D., to Monsanto Company. Apparatus for removing articles from a molding machine and depositing them on a conveyor. 3,949,860, Cl. 198-25.000.

Bio-Med Devices Inc.: *See—*
Stewart, Jeffrey L., 3,949,749.

Biondetti, Mario, to Escher Wyss Limited. Flexure-compensating roll. 3,949,455, Cl. 29-116.0AD.

Birch, Leslie William; Dean, Desmond Alfred; and Howell, Harry, deceased (by Gray, Eunice Cockburn, executor), to Fisons Limited. Method and device for dispensing medicament to the body. 3,949,751, Cl. 128-266.000.

Birchall, James Derek; and Cassidy, John Edward, to Imperial Chemical Industries Limited. Refractory compositions. 3,950,177, Cl. 106-55.000.

Bishop, Thomas G.; and Flickinger, William T., to Koehring Company. Undercut feed section screw. 3,949,973, Cl. 259-191.000.

Bittle, James Long: *See—*
Emery, Jerrell Bemis; and Bittle, James Long, 3,950,512.

Bittman, Jesse Clarence, to Wean United, Inc. Stranded wire forming method and apparatus. 3,949,543, Cl. 57-34.00R.

Biviano, Mary H.: *See—*
Catania, Anthony V.; and Biviano, Mary H., 3,949,875.

Black and Decker Manufacturing Company, The: *See—*
Dietzen, William H.; and Ehrlich, Stephen J., 3,949,998.

Blanc, Michel, to Forges Stephanoises. Bolt cutter. 3,949,473, Cl. 30-191.000.

Blancett, Joe H. Fluid meter and adapter units therefor. 3,949,606, Cl. 73-229.000.

Blass, Judd, to Beam Systems Israel Ltd. Broadband whip antennas. 3,950,757, Cl. 343-791.000.

Blatt, Leland F.; and Fox, Gordon J. Equal area displacement hydraulic cylinder. 3,949,650, Cl. 92-108.000.

Blazek, Jan: *See—*
Rauterkus, Karl Josef; Blazek, Jan; and Zimmermann, Wolfgang, 3,950,302.

Bleck-Mann, Hans-Wilhelm: *See—*
Fink, Werner; Kircher, Dieter; von Grunberg, Hubertus; and Bleck-Mann, Hans-Wilhelm, 3,950,036.

Bliven, Thomas G.; and Hugill, John R., to Motorola, Inc. Combination strip frame for semiconductive device and gate for molding. 3,950,140, Cl. 29-193.500.

Bloisi, Albertoni de Lemos. System for public opinion research. 3,950,618, Cl. 179-2.0AS.

Blumenthal, Gunter; and Gebehart, Ernst, to Bochumer Eisenhutte Heintzmann & Co. Apparatus for preventing cave-ins of excavations. 3,949,562, Cl. 61-45.00D.

Blunck, Otto, to H. Maihak AG. Non-dispensive infrared gas analyzer. 3,950,644, Cl. 250-343.000.

Board, David A., Jr., to New Hampshire Ball Bearings, Inc. Low-friction laminate liner for bearings. 3,950,599, Cl. 428-236.000.

Bochumer Eisenhutte Heintzmann & Co.: *See—*
Blumenthal, Gunter; and Gebehart, Ernst, 3,949,562.

Bodig, Bernd: *See—*
Linstedt, Hans; Roth, Helmut; Bundschuh, Gotz; Hohne, Gerd; Bodig, Bernd; Strelow, Gert; Schmidt, Peter; Sohner, Gerhard; Roozenbeek, Herman; and Michel, Hartmut, 3,949,722.

Boehringer Ingelheim GmbH: *See—*
Engel, Wolfhard; Nickl, Josef; Teufel, Helmut; Engelhardt, Gunther; Seeger, Ernst; and Trummlitz, Gunter, 3,950,427.
Keck, Johannes; Noll, Klaus-Reinhold; Pieper, Helmut; Kruger, Gerd; and Puschmann, Sigfrid, 3,950,393.
Schromm, Kurt; Renth, Ernst-Otto; Mentrup, Anton; and Reichl, Richard, 3,950,335.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Hoefke, Wolfgang, 3,950,523.

Boeren, Johannes Carolus Adrianus, to U.S. Philips Corporation. Variable capacitor. 3,950,679, Cl. 317-249.00R.

Boesch, Karl: *See—*
Nussbaumer, Manfred; and Boesch, Karl, 3,949,859.

Boettler, James Herbert: *See—*
Gardner, James Dennis; and Boettler, James Herbert, 3,949,798.

Bohner, Beat; Dawes, Dag; and Meyer, Willy, to Ciba-Geigy Corporation. 1-Phenyl-1-p-propargyloxyphenyl-2-nitro-ethane derivatives. 3,950,433, Cl. 260-612.00R.

Boillot, Pierre, to Institut de Recherches de la Siderurgie Francaise (IRSID). Method and apparatus for measuring gases in a metal sample. 3,949,590, Cl. 73-19.000.

Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, to Hoffmann-La Roche Inc. Vitamin A acid amides. 3,950,418, Cl. 260-557.00R.

Bomball, William A.; and Swift, Thomas G., to A. E. Staley Manufacturing Company. Pregummed remoistenable tape having long open time and short tack time. 3,950,593, Cl. 428-476.000.

Bommaraju, Tilak V.: *See—*
Cookfair, Arthur S.; Stephens, Donald E.; and Bommaraju, Tilak V., 3,950,240.

Bonacci, John C.; and Garwood, William E., to Mobil Oil Corporation. Method for upgrading a wide cut naphtha to full range gasoline. 3,950,241, Cl. 208-64.000.

Bonanno, Anthony J.: *See—*
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., 3,950,230.

Bonitz, Eckhard: *See—*
Sander, Bruno; Bonitz, Eckhard; Berbner, Heinz; and Hoffmann, Manfred, 3,950,293.

Boockmann, Gerhard: *See—*
Schmidt, Karl; and Boockmann, Gerhard, 3,950,452.

Boosen, Karl-Josef, to Lonza Ltd. Method for the production of haloacetoacetic acids. 3,950,412, Cl. 260-539.00R.

Borden, Inc.: *See—*
D'Amato, Anthony S.; and Gattenby, Miles N., Jr., 3,950,289.
Golner, Jerold Julius; and Strout, Russell Brown, 3,949,918.
Pavuk, Frank Eugene; Steiner, Roger Henry; Feinstein, Sumner Sheldon; and Venuti, Richard Joseph, 3,950,208.

Boreskov, Georgy Konstantinovich; Kuklina, Valentina Nikclaevna; Levitsky, Emmanuil Aronovich; Badaev, Boris Nikolaevich; and Balashov, Vladimir Alexandrovich. Method for producing granulated porous corundum. 3,950,507, Cl. 423-626.000.

Borg-Warner Corporation: *See—*
Fogelber, Mark J., 3,949,848.
Hopkins, Neil E., 3,949,566.

Borlai, Oszkar: *See—*
Nemecz, Erno; Ujhidy, Aurel; Polinszky, Karoly; Szepvolgyi, Janos; Borlai, Oszkar; Kapolyi, Laszlo; and Szekely, Tamas, 3,950,485.

Bosch, Paul, to Robert Bosch G.m.b.H. Adjusting apparatus for hydraulic pumps or motors. 3,949,649, Cl. 91-506.000.

Bossert, Friedrich: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,950,336.

Boswell, George Albert, Jr.; Brittelli, David R.; and Middleton, William J., to Du Pont de Nemours, E. I., and Company. Fluorinated cephalosporins. 3,950,329, Cl. 260-243.00C.

Botta, Artur, to Bayer Aktiengesellschaft. Preparation of N-chloroformyl-carbamic acid amides and esters. 3,950,367, Cl. 260-455.00A.

Bouboulis, Constantine J., to Exxon Research & Engineering Co. Polyamides from cyclohexane bis(ethylamine). 3,950,310, Cl. 260-78.00R.

Boudet, Pierre Louis Emile. Means for displaying the address on letters and parcels with a view to their dispatch. 3,950,580, Cl. 428-41.000.

Bouillon, Claude; and Colin, Michel, to L'Oreal. Topical application of cis of trans 3,4-thiolanediol to reduce the greasy appearance of hair and skin. 3,950,532, Cl. 424-275.000.

Bouwhuis, Gijsbertus, to U.S. Philips Corporation. Apparatus for optically reading a reflecting record carrier. 3,950,621, Cl. 179-100.30G.

Bouygues, Jean; and Gerard, Rene, to Thomson-CSF. Positioning device for a flat rectangular workpiece. 3,950,095, Cl. 355-72.000.

Bowe Bohler & Weber KG, Firma: *See—*
Fuhring, Heinrich; and Sieber, Johannes Helmut, 3,949,485.

Bowen, Roger. Releasable retention means for electrical contacts in a connector. 3,950,056, Cl. 339-59.00M.

Bower, Robert W., to TRW Inc. Method of patterning polysilicon. 3,950,188, Cl. 148-1.500.

Boyer, Charles; and Pemenidis, Michael. Control system for boilers furnishing steam for heating. 3,949,936, Cl. 236-26.00A.

BP Chemicals International Limited: *See—*
Park, Anthony John; Sturt, Alan Charles; and Williams, Richard Harvey, 3,950,318.

BPB Industries Limited: *See—*
Pilgrim, Thomas Albert, 3,950,181.

Brack, Alfred: *See—*
Harnisch, Horst; and Brack, Alfred, 3,950,347.

Brack, Jacques, to Olin Ski A.G. Fastening gun. 3,949,921, Cl. 227-9.000.

Bramley, Anthony. Composite net. 3,950,584, Cl. 428-113.000.

Brandt-Pra, Inc.: *See—*
Mclnerny, George P., 3,949,981.

Braun Aktiengesellschaft: *See—*
Brauss, Helmut Balthasar, 3,949,469.

Braun, Ben. Embouchure pen. 3,950,106, Cl. 401-256.000.

Brauss, Helmut Balthasar, to Braun Aktiengesellschaft. Electric shaver comprising a rotatable cylindrical shearing foil. 3,949,469, Cl. 30-43.910.

Brefka, Paul C., to Analog Devices, Incorporated. Enclosure case for potless immobilization of circuit components. 3,950,603, Cl. 174-52.00R.

Brehon, Pierre: *See—*
Schmidt, Jean; and Brehon, Pierre, 3,950,631.

Breidenbach, Heinz, to Varta Batterie Aktiengesellshaft. Envelope for the tubular electrodes of storage batteries. 3,950,186, Cl. 136-54.000.

Bremi, Paolo: *See—*
Mucci, Rinaldo; and Bremi, Paolo, 3,949,643.

Bremus, Norbert: *See—*
Jeromin, Lutz; Bremus, Norbert; Friederici, Georg; and Peiffer, Peter, 3,950,371.

Brenan, Robert R.; and Smith, Robert W., to GTE Sylvania Incorporated. Lead assembly for semiconductive device. 3,950,142, Cl. 29-191.000.

Breslow, Jeffrey D., to Marvin Glass & Associates. Rotatable card carrying game apparatus. 3,949,986, Cl. 273-1.00R.

Breslow, Jeffrey D., to Marvin Glass & Associates. Operator propelled toy vehicle. 3,949,999, Cl. 280-1.11R.

Bressel, Ulrich, to BASF Aktiengesellschaft. Decreasing the amount of dichloroacetyl chloride contained in monochloroacetyl chloride. 3,950,415, Cl. 260-544.00Y.

Breuer, Hermann: *See—*
Treuner, Uwe D.; and Breuer, Hermann, 3,950,330.

Breveteam, S.A.: *See—*
Colijn, Johannes Jakobus Vincent; and Tesch, Gunter Horst, 3,950,587.

Brewer, Howard E.: *See—*
Parks, Robert G.; and Brewer, Howard E., 3,950,763.

Brewer, Kenyon Edwin. Timelock for bank vault doors and the like. 3,950,678, Cl. 317-134.000.

Bridges, John A.; and Storrs, Harold W., to Aladdin Industries, Incorporated. Articles for beverage service. 3,949,876, Cl. 206-427.000.

Bridgestone Tire Company Limited: *See—*
Fujikawa, Akira; Takusagawa, Takashi; Matsuda, Akira; and Goshima, Norio, 3,950,726.
Ueda, Shigeo, 3,949,697.

Brighenti, Norberto, to Zeus Rapizzi S.p.A. Assembling unit for modular electrical apparatus. 3,950,053, Cl. 339-34.000.

Bristol-Myers Company: *See—*
Miyaki, Takeo, 3,950,516.

British Copper Refiners Limited: *See—*
Nightingale, Colin Walter; Bielstein, Georg Paul Richard; Taylor, David Alexander; and Nelson, William, 3,950,232.

British Gas Corporation: *See—*
Abbey, Antony F.; and Hatfield, James, 3,949,608.

British Lely Limited: *See—*
Harber, Gerald; Young, Leslie Albert; Allard, Roger Sidney; Marshall, Alan James; and Montgomery, Michael John, 3,949,886.

British Secretary of State for Defence: *See—*
McLennan, Donald John; Mavor, John; Vanstone, Gary Francis; and Windle, Donald James, 3,950,655.

Brittelli, David R.: *See—*
Boswell, George Albert, Jr.; Brittelli, David R.; and Middleton, William J., 3,950,329.

Broecker, Franz Josef; Zirker, Guenter; Triebskorn, Bruno; Marosi, Laszlo; Schwarzmann, Matthias; Dethlefsen, Winfried; and Kaempfer, Knut, to BASF Aktiengesellschaft. Manufacture of methane. 3,950,368, Cl. 260-449.00M.

Broedner, Walter F.; Bhatnagar, Ravinder K.; Hill, W. Eugene; and Tjoa, Daniel W., to American Microsystems, Inc. Power-on initializing circuit for a calculator system. 3,950,654, Cl. 307-208.000.

Brollo, Aurelio: *See—*
Ballocci, Giovanni; and Brollo, Aurelio, 3,949,858.

Brooke, Edric Raymond, to Xerox Corporation. Apparatus for controlling movement of a carriage. 3,950,091, Cl. 355-8.000.

Broomfield, John, to Amacoil Machinery, Inc. Bobbin terminator. 3,949,945, Cl. 242-7.170.

Brotzmann, Karl: *See—*
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans-Georg, 3,950,161.

Brouant, Michel, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Device for measuring a signal having a very high noise level. 3,950,699, Cl. 324-76.00A.

Brovelli, Loredana, to M. Scaglia S.p.A. Yarn winding bobbin. 3,949,950, Cl. 242-118.600.

Brown, Carl A.; and Kleine, Martin K., to Parker-Hannifin Corporation. Fluid filtering device. 3,950,248, Cl. 210-90.000.

Brown, Frank E., to SmithKline Corporation. Metered spray device. 3,949,939, Cl. 239-350.000.

Brown, James D.: *See—*
Spencer, William H.; Dorius, John O.; and Brown, James D., 3,949,533.

Brownlee, Robert R.; and Tyers, G. Frank O., to Research Corporation. Cardiac pacing apparatus. 3,949,759, Cl. 128-419.0PG.

Broxholm, Thomas M.; and Elmore, Lester C., to Pulsepower Systems, Inc. Modular liquid propellant gun. 3,949,642, Cl. 89-7.000.

Bruner, Robert D.: *See—*
Ward, Calvin B.; and Bruner, Robert D., 3,950,224.

Bruns, Lester E., to United States of America, Energy Research and Development Administration. Falling film evaporator. 3,950,216, Cl. 159-13.00R.

Bruun, Herta: *See—*
Feit, Peter Werner; Nielsen, Ole Bent Tvaermose; and Bruun, Herta, 3,950,376.
Feit, Peter Werner; Nielsen, Ole Bent Tvaermose; and Bruun, Herta, 3,950,380.

Bryant, William Sebert, Jr.; and Garbutt, Cornelius Durham, Jr., to Badger Manufacturing Corporation. Shallow-hole kerf boring machine with auger on side-arm elevating assembly. 3,949,815, Cl. 173-23.000.

Bryson, Clayton M.: *See—*
Double, Paul B.; and Bryson, Clayton M., 3,949,527.

Buchel, Karl Heinz: *See—*
Wenzelburger, Jurgen; Buchel, Karl Heinz; Plempel, Manfred; and Meiser, Werner, 3,950,354.

Buckley, Alan John; Gazzard, Edward George; Singer, Michael; and Taylor, John Anthony, to Imperial Chemical Industries Limited. N-(N^3-1^1-Benzisothiazolin-3^1-3^1-onylcarbonylthio)-1,2-benzisothiazolin-3-one. 3,950,349, Cl. 260-304.00A.

Buckman, Thomas P. Two piece check valve. 3,949,780, Cl. 137-525.000.

Buffa, Aldo; and Holliger, Adolf, to United Nations Childrens' Fund; Buffa, Aldo; and Gebrueder Buehler AG. Process for making foods and feeds. 3,950,543, Cl. 426-18.000.

Bullmann, Rolf, to Continental Gummi-Werke Aktiengesellschaft. Tire building machine. 3,950,212, Cl. 156-398.000.

Bundschuh, Gotz: *See—*
Linstedt, Hans; Roth, Helmut; Bundschuh, Gotz; Hohne, Gerd; Bodig, Bernd; Strelow, Gert; Schmidt, Peter; Sohner, Gerhard; Roozenbeek, Herman; and Michel, Hartmut, 3,949,722.

Bundy, Gordon L., to Upjohn Company, The. Prostaglandin cyclic ethers. 3,950,363, Cl. 260-347.300.

Buning, Robert: *See—*
Looman, Wolfgang; Pungs, Wolfgang; Bierwirth, Egon; and Buning, Robert, 3,950,482.

Bunn, Hugh. Safety snap hook assembly. 3,949,451, Cl. 24-241.0CH.

Bunting, William M.: *See—*
Paynter, John D.; and Bunting, William M., 3,950,270.

Buratovich, Prosper. Tensioning devices. 3,949,802, Cl. 160-374.100.

Burhans, Edna K. Waist attachment for handbag including shoulder bag. 3,949,915, Cl. 224-26.00K.

Burlington Industries, Inc.: *See—*
Lide, Theodore E., Jr., 3,949,885.

Burr, Robert Page; and Keogh, Raymond J., to Photocircuits Division of Kollmorgen Corporation. Self-commutating motor and printed circuit armature therefor. 3,950,662, Cl. 310-46.000.

Burroughs Corporation: *See—*
Faulkner, John P.; and Morton, Dennis S., 3,950,234.

Burroughs Wellcome Co.: *See—*
Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,950,378.
Gorvin, John Henry, 3,950,342.

Busy, Francis, to Thomson-CSF Visualisation et Traitement des Informations (T-VT). Method of and apparatus for stabilizing the display rate of permanent echoes in a radar system. 3,950,748, Cl. 343-7.00A.

Butler, Paul A., to Abitibi Paper Company, Ltd. Humidification of panels of cellulosic material. 3,950,574, Cl. 427-209.000.

Butler, Robert M.; and Anderson, George A., III, to Micro Glass Inc. Semiconductor wafer transfer device. 3,949,891, Cl. 214-301.000.

Butler, William E. Foldable hunting stool. 3,949,835, Cl. 182-187.000.

Cadmus, Harold, Jr. Device for mounting interchangeable type. 3,949,672, Cl. 101-368.000.

Caine, Harold A. Safe distance visual warning device. 3,950,098, Cl. 356-3.000.
Caird (Dundee) Limited: *See—*
Somers, Jack; and Cuthbert, Elias, 3,950,132.
Calabro, Anthony D. Composite printed circuit card guide and holding device. 3,950,057, Cl. 339-65.000.
Caldwell, Edward N., to Robertshaw Controls Company. Valve construction and system utilizing the same. 3,949,777, Cl. 137-271.000.
California Computer Products, Inc.: *See—*
Parks, Robert G.; and Brewer, Howard E., 3,950,763.
Callis, James W.; and Chambers, William A., to Hughes Aircraft Company. Gated video centroid tracker. 3,950,611, Cl. 178-6.800.
Campbell, Lester W.: *See—*
Smith, Gus T.; Gregory, Clifton; and Campbell, Lester W., 3,949,913.
Campbell, Marcus E., to Kresser, Joseph L., a part interest. Layout instrument for sheet-material fabrication. 3,949,481, Cl. 33-75.00R.
Campbell, Richard D., to Westinghouse Air Brake Company. Fail-safe reference voltage source. 3,950,690, Cl. 321-10.000.
Campman, James P. Detector for detecting and locating the source of a contaminating gas or smoke in the atmosphere. 3,950,739, Cl. 340-237.00R.
Canadian Patents and Development Limited: *See—*
Hill, Kenneth O.; Watanabe, Akira; and Chambers, John G., 3,950,707.
MacMartin, Malcolm P.; and Kusters, Norbert L., 3,950,742.
Schmidt-Weinmar, Heinz Gunter, 3,950,103.
Canamer Leasing Services Inc.: *See—*
Double, Paul B.; and Bryson, Clayton M., 3,949,527.
Candor, James T. Golfer's aid. 3,949,987, Cl. 273-176.00L.
Cannon, Earl R., to General Motors Corporation. Catalytic converter having catalyst reservoir means. 3,950,139, Cl. 23-288.00F.
Cannon, Joseph A.; Pysz, John F., Jr.; and Renshaw, James T., to Monsanto Company. Fusion of vinyl plastisol to heat-sensitive backing. 3,950,198, Cl. 156-79.000.
Canon Kabushiki Kaisha: *See—*
Hosoe, Kazuya; Matsumoto, Seiichi; and Mochizuki, Noritaka, 3,950,764.
Kano, Ichiro; and Yoshinari, Hideki, 3,950,094.
Murata, Minoru; and Harada, Yuji, 3,950,627.
Tanaka, Hiroshi; and Soma, Ikuo, 3,950,595.
Toyama, Masamichi; Takigawa, Tomoshi; Hirata, Noritsugu; Sakaguchi, Keiichi; and Ichiyanagi, Toshikazu, 3,950,775.
Capelli, Alfred J., to Sargent Industries, Inc. Bearing material with microencapsulated lubricant. 3,950,047, Cl. 308-238.000.
Cardwell, Paul H.; and Kane, William S., to Deepsea Ventures, Inc. Method for separating metal constituents from ocean floor nodules. 3,950,486, Cl. 423-24.000.
Cardwell, Paul H.: *See—*
Schobert, Harold H.; Field, Roger C.; and Cardwell, Paul H., 3,950,162.
Carey, Peter Majendie; and Tate, Norman Christopher John, to Lektromedia Ltd. Data storage and retrieval systems for use with plural track storage medium. 3,950,782, Cl. 360-72.000.
Carl Schenck AG, Firma: *See—*
Voigtlaender, Herbert, 3,949,862.
Carlson, Curt S. Snapable and removeable safety reflector. 3,950,076, Cl. 350-97.000.
Carmichael, Robert J.: *See—*
Hazelett, Robert William; Wood, John Frederick Barry; and Carmichael, Robert J., 3,949,805.
Carr, James E. Sales display and method for selling selected meat cuts. 3,949,502, Cl. 40-126.00R.
Carr, Ronald Ray; and Nisevich, Stephen Dale, to Astrid Corporation, Limited. Altering the appearance of corundum crystals. 3,950,596, Cl. 428-539.000.
Carrier Corporation: *See—*
Cobb, George E., 3,949,810.
Carson, John Robert, to McNeil Laboratories, Inc. 5-Chlorocarbonyl. 3,950,355, Cl. 260-326.200.
Carter, James W.: *See—*
Schulman, Herbert; Russo, Francis P.; Carter, James W.; and Parry, John L., 3,950,086.
Carter, Merle Francis: *See—*
Hutton, James Cameron; and Carter, Merle Francis, 3,949,507.
Cartner, Jack O. Hydraulic mower attachment. 3,949,539, Cl. 56-10.400.
Case, Herbert M.: *See—*
Hawkins, Albert W.; O'Shea, Ronald J.; and Case, Herbert M., 3,950,205.
Casio Computer Co., Ltd.: *See—*
Kashio, Toshio, 3,950,761.
Caso, Adolph. Spring type spear fishing guns. 3,949,731, Cl. 124-27.000.
Casparian, Robert E.: *See—*
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., 3,950,230.
Cassand, Jean; and Fail, Jean-Pierre, to Institut Francaise de Petrole, des Carburants et Lubrifiants. Device for generating acoustic waves in a liquid medium. 3,949,831, Cl. 181-120.000.
Cassella Farbwerke Mainkur Akt: *See—*
Greve, Heinz Gunter; and Resag, Klaus, 3,950,383.
Cassidy, John Edward: *See—*
Birchall, James Derek; and Cassidy, John Edward, 3,950,177.
Catania, Anthony V.; and Biviano, Mary H. Shampoo neck strip. 3,949,875, Cl. 206-390.000.
Caterpillar Tractor Co.: *See—*
Herr, Charles H., Jr., 3,949,823.
Hoehn, Richard F., 3,949,847.
Larson, Donald J.; and Schexnayder, Lawrence F., 3,949,844.
Miers, Bruce Walter; and Taylor, James Lloyd, 3,949,975.
Ohms, Edward J., 3,949,892.
Cauffiel, Ford B. Slitter line. 3,949,633, Cl. 83-210.000.
Caule, Elmer J., to Olin Corporation. Tarnish resistant copper and copper alloys. 3,950,193, Cl. 148-31.500.
Cavendish, Michael Edward; and Wright, John Thomas Matthew, to National Research Development Corporation. Prosthetic bone joint devices. 3,949,428, Cl. 3-1.911.
Caveney, Jack E.; and Moody, Roy A., to Panduit Corporation. Integral one-piece cable tie. 3,949,449, Cl. 24-16.0PB.
Cavier, Raymond: *See—*
Rossignol, Jean-Francois; and Cavier, Raymond, 3,950,351.
Cawley, Leo P. Process and means for gel cutting. 3,949,471, Cl. 30-123.300.
Celanese Corporation: *See—*
Edelman, Robert; and Besso, Michael M., 3,950,590.
Cellerini, Albert R.; Skalka, Paul; and Stephenson, William I., Jr., to Westinghouse Electric Corporation. Multi-pole circuit breaker with adjustable thermal trip unit. 3,950,716, Cl. 335-45.000.
Cellerini, Albert R.; and Ricci, Louis N., to Westinghouse Electric Corporation. Multi-pole circuit breaker with adjustable thermal trip unit. 3,950,717, Cl. 335-45.000.
Center, Dale: *See—*
McBride, La Vaughn R.; Clark, Jack D.; and Center, Dale, 3,950,571.
Central Soya Company, Inc.: *See—*
Puski, Gabor; and Konwinski, Arthur H., 3,950,564.
Centre for Industrial Research Ltd.: *See—*
Fridman, Eliahu, 3,950,544.
Centro de Estudios Tecnicos de Materiales Especiales-Instituto Nacional de Industria: *See—*
Voss, Gunther, 3,949,677.
Cervencl, Milan: *See—*
Vrana, Jiri; and Cervencl, Milan, 3,949,736.
Ceskoslovenska akademie ved: *See—*
Labsky, Jiri; and Exner, Josef, 3,950,399.
Cetus Corporation: *See—*
Ward, Calvin B.; and Bruner, Robert D., 3,950,224.
Chamberlin, Earl M.; Russ, Warren K., Jr.; and Hazen, George G., to Merck & Co., Inc. Process for preparing [1-oxo-2-cyclopentyl (or 2-isopropyl)-2-methyl-6,7-dichloro-5-indanyloxy] acetic acid. 3,950,408, Cl. 260-520.00D.
Chambers, John G.: *See—*
Hill, Kenneth O.; Watanabe, Akira; and Chambers, John G., 3,950,707.
Chambers, William A.: *See—*
Callis, James W.; and Chambers, William A., 3,950,611.
Chandler, Jasper S.; and McNair, Hugh R., to Eastman Kodak Company. Film cartridge and associated drive means. 3,949,952, Cl. 242-194.000.
Chandler, Michael John. Vacuum cleaner heads. 3,949,442, Cl. 15-1.700.
Chang, Hsu; Chen, Tien C.; Lee, Share-Young; and Tung, Chin, to International Business Machines Corporation. Single technology text editing system. 3,950,732, Cl. 340-172.500.
Chang, Moon Ki. Novel reagent and method for the determination of urea in biological fluids. 3,950,226, Cl. 195-103.50R.
Chang, Stephen S.; Ostric-Matijasevic, Biserka; Huang, Cheng-Li; and Hsieh, An-Li, to Rutgers Research and Educational Foundation. Method of producing an antioxidant composition from rosemary and sage. 3,950,266, Cl. 252-398.000.
Chapel, William I. Chemical dispenser. 3,949,900, Cl. 222-54.000.
Chapman, Roger S. Soil grouting apparatus. 3,949,561, Cl. 61-36.00R.
Charland, Terrence D.; and Klett, Stanley D., to Xerox Corporation. Magnetic brush developing apparatus. 3,949,704, Cl. 118-637.000.
Charlton, John Cecil, to Radiochemical Centre Ltd., The. Automatic volume counting. 3,950,643, Cl. 250-303.000.
Chase, Michael Dennis. Board game apparatus. 3,949,991, Cl. 273-134.0AC.
Chemiebau Dr. A. Zieren Gesellschaft mit beschrankter Haftung & Co. KG: *See—*
Furkert, Herbert, 3,950,502.
Chen, Tien C.: *See—*
Chang, Hsu; Chen, Tien C.; Lee, Share-Young; and Tung, Chin, 3,950,732.
Chenausky, Peter P.; DeMaria, Anthony J.; Fradin, David W.; and Freiberg, Robert J., to United Technologies Corporation. Unstable laser resonator having radial propagation. 3,950,712, Cl. 331-94.50C.
Chevalier, Marcel, to Etablissements M. Chapuis. Guiding device for an automatic bag-filling machine. 3,949,536, Cl. 53-187.000.
Chevron Research Company: *See—*
Spars, Byron G., 3,950,503.
Chiang, Ching: *See—*
Monte, Alexander A.; and Chiang, Ching, 3,950,133.
Chiang, Robert; and Perry, Eli, to Monsanto Company. Separation procedure. 3,950,247, Cl. 210-23.00R.
Chiba, Jiro: *See—*
Suzuki, Yoshiro; Ishiyama, Masahiko; and Chiba, Jiro, 3,950,174.
Chicago Rawhide Manufacturing Company: *See—*
Reichenbach, Jerry D., 3,950,119.

Chien, Luther C.; Nyquist, Jack K.; and Yembrick, Charles, Jr. Production of high-purity chlorine from hydrogen chloride. 3,950,501, Cl. 423-507.000.
Chihara, Hiroyuki, to Kabushiki Kaisha Suwa Seikosha. Quartz crystal timepiece. 3,949,545, Cl. 58-23.0BA.
Chinuki, Takashi: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,950,431.
Chisholm, John P. Stepped cardioid bearing system. 3,950,753, Cl. 343-106.00R.
Chisso Corporation: *See—*
Iwahori, Eitaro; Kurita, Mitsuo; and Uno, Mitsumasa, 3,950,473.
Chloride Group Limited: *See—*
Peters, Kenneth; Gordon, Robin; and Sands, Gilbert, 3,949,793.
Christensen, Tom; Wendel, Ove; and Sandstrom, Carl-Erik, to AB Akerlund & Rausing, Package tube. 3,949,871, Cl. 206-229.000.
Christopherson, Herman P.; Witt, Robert H.; and Pavlik, Dennis J., to Toro Company, The. Mower discharge interlock apparatus. 3,949,540, Cl. 56-202.000.
Christy, Marcia Elizabeth, to Merck & Co., Inc. 10,11-Dihydro-10,10,11,11-tetrafluoro-5H-dibenzo[a,d]cycloheptene-5-methylamines. 3,950,423, Cl. 260-570.900.
Chu, Tzong Jeng; and Konii, Susumu, to Hitachi Chemical Co., Ltd. Novel thermosetting resins and process for preparing the same comprising reacting a novolak with a titanic acid ester. 3,950,309, Cl. 260-51.00R.
Chuang, Chin-Chih: *See—*
Liou, Shu-Lien, 3,949,433.
Chudley, William Henry: *See—*
Farrow, Harold Frederick; and Chudley, William Henry, 3,949,669.
Chun, Sun W.; Cronauer, Donald C.; and Leslie, Thomas W., to Gulf Research & Development Company. Process for treating a solid-containing liquid hydrocarbon oil. 3,950,244, Cl. 208-143.000.
Churchill, Frederick E.; Ogar, George W.; and Thompson, Bernard J., to Raytheon Company. Radar system having quadrature phase detector compensator. 3,950,750, Cl. 343-17.700.
Churchwell, Harry B.; Quearry, Warner; and Verzi, Thomas K. Stud remover. 3,950,111, Cl. 408-204.000.
Ciba-Geigy AG: *See—*
Nikles, Erwin, 3,950,533.
Oswald, Alexis A.; and Valint, Paul L., 3,950,520.
Ciba-Geigy Corporation: *See—*
Bohner, Beat; Dawes, Dag; and Meyer, Willy, 3,950,433.
Eggensperger, Heinz; Franzen, Volker; Diehl, Karl-Heinz; and Kloss, Wilfred, 3,950,382.
Eschenmoser, Albert, 3,950,327.
Greber, Gerd; Darms, Roland; and Lohmann, Dieter, 3,950,308.
Haug, Theobald; and Schmitter, Andre, 3,950,279.
Karrer, Friedrich, 3,950,328.
Rys, Paul; and Vogelsanger, Rolf, 3,950,403.
Woodward, Robert Burns, 3,950,362.
Cilloniz Oberti, Manuel. Mechanical remote control device for operating the channel selector of a television receiver. 3,949,616, Cl. 74-10.00A.
Ciric, Julius, to Mobil Oil Corporation. Synthetic zeolite ZSM-18. 3,950,496, Cl. 423-328.000.
Cities Service Company: *See—*
Newcombe, Jack, 3,950,456.
Claassens, Johannes E. L.: *See—*
Schaafsma, Sijbrandus E.; Claassens, Johannes E. L.; and Verheijen, Egidius J. M., 3,950,438.
Clairol Incorporated: *See—*
Halasz, Alexander; and Cohen, David, 3,950,127.
Walter, Henry J.; and Springer, William E., 3,950,052.
Clampitt, Richard L.: *See—*
Threlkeld, Curtis B.; Hessert, James E.; Clampitt, Richard L.; and Needham, Riley B., 3,949,811.
Clark Equipment Company: *See—*
Holcomb, Orla L., Jr., 3,949,843.
Shealy, Noah A., 3,949,826.
Clark, Ivan L.: *See—*
Stephens, Gerald D.; and Clark, Ivan L., 3,950,744.
Clark, Jack D.: *See—*
McBride, La Vaughn R.; Clark, Jack D.; and Center, Dale, 3,950,571.
Clarke, Ellis Whiteside. Apparatus for the administration of liquids. 3,949,744, Cl. 128-214.00R.
Cleaver, Charles S., to Du Pont de Nemours, E. I., and Company. Contact lens having an optimum combination of properties. 3,950,315, Cl. 260-86.10E.
Clem, Arthur G., to American Colloid Company. Method and composition for preventing water contaminated with industrial waste from seeping through soil containing said water. 3,949,560, Cl. 61-36.00R.
Cleveland Machine Controls, Inc.: *See—*
Lamson, Wade Petherbridge, 3,950,683.
Clifford, John Michael, to South African Inventions Development Corporation. Non-circular compaction roller, and a mounting therefor. 3,950,110, Cl. 404-124.000.
Cluley, Edward Samuel; and Heaps, Christopher, to English Electric Company Limited, The. Vertical movement detection systems. 3,949,484, Cl. 33-367.000.
Coats, Carlton E.; and Watts, Golden F., to Ashland Oil, Inc. Production of thermoset water-in-oil emulsions. 3,950,287, Cl. 260-22.0CB.
Cobb, George E., to Carrier Corporation. Air conditioning system. 3,949,810, Cl. 165-30.000.
Cofer, Robert E. Tractor stands. 3,949,976, Cl. 269-17.000.
Coffey, Gerald P.: *See—*
Hensley, Linda W.; Li, George S.; and Coffey, Gerald P., 3,950,454.
Cogley, Jeremiah Richard, to Knouse Foods Cooperative, Inc. Method for producing a pome fruit sauce with electronic inspection of diced fruit. 3,950,552, Cl. 426-231.000.
Cohen, David: *See—*
Halasz, Alexander; and Cohen, David, 3,950,127.
Cohen, Edward Stone: *See—*
Youngquist, Robertson; Green, Donald; and Cohen, Edward Stone, 3,949,947.
Cohen, Morton; and Silverman, Elliott. Orthodontic method and apparatus. 3,949,477, Cl. 32-14.00A.
Coles, Donald K. Electronic musical instrument. 3,949,638, Cl. 84-1.010.
Colgate-Palmolive Company: *See—*
Fischer, Charles F., 3,950,122.
Grand, Paul Sheldon, 3,950,276.
Colijn, Johannes Jakobus Vincent; and Tesch, Gunter Horst, to Breveteam, S.A. Non-woven textile fiber products having a relief-like structure. 3,950,587, Cl. 428-234.000.
Colin, Michel: *See—*
Bouillon, Claude; and Colin, Michel, 3,950,532.
Collins, Donald M., to Pillsbury Company, The. Shortening chip manufacture. 3,950,561, Cl. 426-417.000.
Colorado Video, Inc.: *See—*
Southworth, Glen R.; Lewallen, Roy W.; and Sparks, John E., 3,950,607.
Communications Satellite Corporation (Comsat): *See—*
Lindmayer, Joseph; and Allison, James F., 3,949,463.
Compagnie Generale des Establissements Michelin: *See—*
Lejeune, Daniel, 3,949,800.
Montagne, Jean Bernard, 3,949,799.
Compagnie Honeywell Bull (Societe Anonyme): *See—*
Bienvenu, Jacques Michel Jean; and Lecuyer, Michel, 3,950,730.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Brouant, Michel, 3,950,699.
Confinement Livestock Systems, Inc.: *See—*
Armstrong, William R.; and Kounkel, Gerald L., 3,949,707.
Connelly, William; Khan, Hamid Iqbal; and McEwan, Ian Hugh. Aqueous coating compositions of dispersions of thermoplastic addition polymers with low molecular weight plasticizers. 3,950,294, Cl. 260-29.60R.
Connors, Dorothy. Adjustable needlepoint holding frame. 3,949,500, Cl. 38-102.500.
Constant, James Nickolas. Digital matched filter and correlator using random access memory. 3,950,635, Cl. 235-156.000.
Contico Industries Ltd.: *See—*
Pott, Richard, 3,949,866.
Continental Can Company, Inc.: *See—*
Patel, Anil U.; DePhillips, James V.; and Peyser, Harry A., 3,949,898.
Su, Cheh Jen, 3,950,472.
Continental Gummi-Werke Aktiengesellschaft: *See—*
Bullmann, Rolf, 3,950,212.
Continental Oil Company: *See—*
Oertle, Donald H., 3,949,593.
Cook, Thomas A.; and Hudson, Marshall C., to Corning Glass Works. Light source for optical waveguide bundle. 3,950,075, Cl. 350-96.00C.
Cookfair, Arthur S.; Stephens, Donald E.; and Bommaraju, Tilak V., to Hooker Chemicals & Plastics Corporation. Anode for electrolytic processes. 3,950,240, Cl. 204-290.00F.
Cools, Antoon Sylvain: *See—*
Mortier, Frans Henri; and Cools, Antoon Sylvain, 3,949,761.
Coon, William G., Jr. Combined hay carrier and feeder. 3,949,706, Cl. 119-60.000.
Cooper, Leon N.; and Elbaum, Charles, to Nestor Associates. Information processing system. 3,950,733, Cl. 340-172.500.
Cooper, William T., to Phillips Petroleum Company. Resinous solution radial block copolymer/solution rubbery copolymer blend. 3,950,292, Cl. 260-23.70R.
Coordination et Developpement de l'Innovation Societe Anonyme, en Abrege CORDI: *See—*
Davidovits, Joseph, 3,950,470.
Copeland, George G., to Copeland Systems, Inc. Method for oxidation of sulfur-containing substances. 3,949,684, Cl. 110-1.00J.
Copeland Systems, Inc.: *See—*
Copeland, George G., 3,949,684.
Cornell, Richard Henry, to General Electric Company. Fuel supply and distribution system. 3,949,775, Cl. 137-118.000.
Corning Glass Works: *See—*
Cook, Thomas A.; and Hudson, Marshall C., 3,950,075.
Lachman, Irwin M.; and Bagley, Rodney D., 3,950,175.
Coronet Container Corporation: *See—*
Heavner, Larry W., 3,949,874.
Corrigan, Malcolm. Ski position simulator. 3,950,776, Cl. 354-291.000.
Cosand, Neal H.: *See—*
DeJong, Arthur E.; and Cosand, Neal H., 3,950,667.
Costes, Genevieve: *See—*
Mony, Claude; and Costes, Genevieve, 3,950,508.

Cotton Incorporated: *See—*
Willcutt, M. Herbert; and Jones, Joseph K., 3,949,448.
Cournoyer, Georges A. Musical chords teaching and indicating devices. 3,949,640, Cl. 84-473.000.
Covington, Martin B., Jr., to Bendix Corporation, The. Wide band, in-line, microwave amplifier. 3,950,710, Cl. 330-49.000.
Cozzolino, Luigi Antonio. Gyroscopic device for locating the geodetic point of route. 3,949,597, Cl. 73-178.00R.
CPC International Inc.: *See—*
Parker, Wilbur A.; and Melnick, Daniel, 3,950,568.
Craft, Donald L.: *See—*
Balog, Karl J.; and Craft, Donald L., 3,950,301.
Craig, Dwin R.; and Sirkis, Marvin Phillip, to Insite Corporation. Intra packet film processing method and apparatus. 3,950,172, Cl. 96-61.00M.
Craig, John C., Jr.: *See—*
Turner, Carlton E.; and Craig, John C., Jr., 3,950,518.
Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., to Burroughs Wellcome Co. Preparation of β-anilino-α-benzylacrylonitriles. 3,950,378, Cl. 260-465.00E.
Crist, Eugene A.: *See—*
Kehl, Donald K.; and Crist, Eugene A., 3,949,522.
Cronauer, Donald C.: *See—*
Chun, Sun W.; Cronauer, Donald C.; and Leslie, Thomas W., 3,950,244.
Cronin, Michael J., to Lockheed Aircraft Corporation. Programmable wiring system and junction box for use therein. 3,950,058, Cl. 339-75.00M.
Crooke, Robert C.; and Person, Abraham, to Global Marine Inc. Hydraulically operated heavy lift system for vertically moving a string of pipe. 3,949,883, Cl. 214-1.00P.
Crosby, Samuel C.: *See—*
Eger, Leroy O.; and Crosby, Samuel C., 3,950,249.
Croy, Peter Severin; and Zelenka, Rudolf. Interkeyed panel edge corner joint. 3,949,534, Cl. 52-753.00D.
Crump, Ben L., to Trippensee Corporation. Releasable latching apparatus for a benthic grab. 3,949,497, Cl. 37-71.000.
Crump, Robert F.; and Susemichel, Andrew H., to Crump, Robert F.; and Susemichel, Andrew H., part interest to each. Fluid moving devices with modular chamber-forming means and multiple outlets. 3,950,112, Cl. 415-206.000.
CTS Corporation: *See—*
Hufford, James N.; and Zdanys, John, 3,950,722.
Culbertson, George S., to Standard Oil Company. 1-Amino-2-propenyl and 1-amino-2-methylpropenyl alkane hydrocarbon. 3,950,426, Cl. 260-583.00P.
Culbertson Industries Inc.: *See—*
Taylor, Steven C., 3,950,622.
Cumbo, Charles C. Process for the preparation of an olated chromium (III) nitrate. 3,950,506, Cl. 423-607.000.
Cumming, James C.; and Holmes, Alton B., to Rockwell International Corporation. Cam brake automatic slack adjusting mechanism. 3,949,840, Cl. 188-79.50K.
Cunningham, Ernest Ray, to Grip-Pak, Inc. Method of manufacturing container package. 3,950,474, Cl. 264-147.000.
Curley, James H.: *See—*
Anhalt, John W.; and Curley, James H., 3,950,059.
Cuthbert, Elias: *See—*
Somers, Jack; and Cuthbert, Elias, 3,950,132.
Cuypers, Marinus Hubertus: *See—*
Beusink, Bernard Joseph, deceased; Cuypers, Marinus Hubertus; and Horowitz, Alexandre, 3,949,621.
Cyanamid Australia Pty. Limited: *See—*
Evers, Roy James; and Perrett, Darcy Glen, 3,949,447.
Czabanski, Boleslaw, to Jarocinska Fabryka Obrabiarek Przedsiebiorstwo Panstwowe. System for elimination of consequences of angular clearances in driving gears, especially for machine tool driving gears. 3,949,622, Cl. 74-409.000.
Daicel Ltd.: *See—*
Ishii, Kiyoshi; and Konomi, Shobu, 3,950,255.
Ishii, Kiyoshi; and Honda, Zenjiro, 3,950,257.
Daikoku, Takashi: *See—*
Oda, Teishiro; and Daikoku, Takashi, 3,950,165.
Daimler-Benz Aktiengesellschaft: *See—*
Albrecht, Gunther, 3,950,113.
Dajani, Esam Z.: *See—*
De Benneville, Peter L.; Moss, Jack N.; and Dajani, Esam Z., 3,950,537.
D'Alelio, Gaetano F. Unsaturated ester-amides of halogenated alkenes. 3,950,392, Cl. 260-482.00R.
D'Alelio, Gaetano F. Polymers of halogenated esters of phosphorus-containing acids. 3,950,457, Cl. 260-928.000.
D'Amato, Anthony S.; and Gattenby, Miles N., Jr., to Borden, Inc. Antifogging polymeric film. 3,950,289, Cl. 260-23.0XA.
Daniels, Dennis, to U.S. Amada, Ltd. Punching, contouring, handling apparatuses and method. 3,949,635, Cl. 83-405.000.
Dao, Tich T., to Signetics Corporation. High speed multiplier logic circuit. 3,950,636, Cl. 235-164.000.
Darms, Roland: *See—*
Greber, Gerd; Darms, Roland; and Lohmann, Dieter, 3,950,308.
Darr, J. Clyde: *See—*
Ball, Kirby L.; Darr, J. Clyde; and Harrison, Theodore F., Jr., 3,949,636.
DAV: *See—*
Sancey, Francois; and Petit, Joel, 3,950,688.
Davey, Norman, to National Research Development Corporation. Electrical insulator materials for use in micro-circuit construction. 3,950,586, Cl. 428-195.000.
Davich, Theodore B.: *See—*
Mitchell, Earl B.; Hardee, Dicky D.; and Davich, Theodore B., 3,949,515.
Davidovits, Joseph, to Coordination et Developpement de l'Innovation Societe Anonyme, en Abrege CORDI. Process for the fabrication of sintered panels and panels resulting from the application of this process. 3,950,470, Cl. 264-113.000.
Davies, John S. Electrically energized fire and/or intrusion detection system including spring-biased switching means. 3,950,746, Cl. 340-420.000.
Davis, Royston H.; and Searle, Robert J. G., to Shell Oil Company. Cyanobenzyl cyclopropane carboxylates. 3,950,535, Cl. 424-304.000.
Dawes, Dag: *See—*
Bohner, Beat; Dawes, Dag; and Meyer, Willy, 3,950,433.
Dean, Desmond Alfred: *See—*
Birch, Leslie William; Dean, Desmond Alfred; and Howell, Harry, deceased, 3,949,751.
Dean, Harlan B.: *See—*
Stevens, John R., 3,949,445.
De Angelis, Gerald George; and Hess, Hans-Jurgen Ernst, to Pfizer Inc. Relaxation of smooth muscle in a mammal. 3,950,525, Cl. 424-251.000.
De Benneville, Peter L.; Moss, Jack N.; and Dajani, Esam Z., to Rohm and Haas Company. Gastrointestinally active thioureas. 3,950,537, Cl. 424-322.000.
deCaussin, David Edward, to Fadel Engineering Company, Inc. Removable attachment for automating milling machines. 3,949,462, Cl. 29-568.000.
Deeg, Emil W.; Graf, Robert E.; and Landry, Robert J., to American Optical Corporation. Semiconducting glasses and the method of preparation thereof. 3,950,176, Cl. 106-47.00R.
Deepsea Ventures, Inc.: *See—*
Cardwell, Paul H.; and Kane, William S., 3,950,486.
Schobert, Harold H.; Field, Roger C.; and Cardwell, Paul H., 3,950,162.
Dehnert, Johannes; and Lamm, Gunther, to BASF Aktiengesellschaft. Disperse azo dyes of the 2,6-diaminopyridine series. 3,950,321, Cl. 260-156.000.
Deindoerfer, Fred H.: *See—*
Fischer, Josef E.; Yoshimura, Norman N.; Westman, Thomas L.; and Deindoerfer, Fred H., 3,950,529.
Deiss, Jaroslav: *See—*
Kopal, Jaroslav; Jansa, Milos; and Deiss, Jaroslav, 3,949,572.
DeJong, Arthur E.; and Cosand, Neal H., to Hughes Aircraft Company. Magnetic deflection cathode ray tube system with electron gun having focus structure of a deposited resistive material. 3,950,667, Cl. 313-450.000.
De Jong, Eduard: *See—*
Raabe, Fritz; and De Jong, Eduard, 3,950,297.
de Konig, Jan; van der Veen, Romke; and Wolters, Tjako Aaldrik. Wave compensating system for suction dredgers. 3,949,496, Cl. 37-58.000.
DeLine, John W.; and Ida, Nobel N., to Entech Corporation. Container lid and method of manufacture. 3,949,692, Cl. 113-121.00C.
della Porta, Paolo; Giorgi, Tiziano Anselmo; and Rosai, Livio, to S.A.E.S. Getters S.p.A. Method of manufacturing nuclear fuel elements. 3,949,460, Cl. 29-428.000.
DeLong, Robert J., to Spectrol Electronics Corporation. Indicating device. 3,949,702, Cl. 116-124.00A.
Deltrol Corporation: *See—*
Harris, John L., 3,950,624.
DeMaria, Anthony J.: *See—*
Chenausky, Peter P.; DeMaria, Anthony J.; Fradin, David W.; and Freiberg, Robert J., 3,950,712.
Demerson, Christopher A.: *See—*
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DePhillips, James V.: *See—*
Patel, Anil U.; DePhillips, James V.; and Peyser, Harry A., 3,949,898.
Derderian, George; and Mohon, Windell Neil, to United States of America, Navy. Simulator including improved holographic heads up display system. 3,949,490, Cl. 35-12.00N.
Derible, Pierre Henri; Guillaume, Jacques; and Dumont, Claude, to Roussel-UCLAF. N-[ω-(4'-(3''-indolyl)-piperidino)-alkyl]-benzamides. 3,950,527, Cl. 424-267.000.
Despalmes, Friedrich, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Transporting and lifting vehicle for heavy loads. 3,949,884, Cl. 214-1.00D.
Desverchere, Jean, to Societe Anonyme dite: Cefilac. Method of locally impregnating sealing materials with a fluid-tight impregnant. 3,950,576, Cl. 427-284.000.
Dethlefsen, Winfried: *See—*
Broecker, Franz Josef; Zirker, Guenter; Triebskorn, Bruno; Marosi, Laszlo; Schwarzmann, Matthias; Dethlefsen, Winfried; and Kaempfer, Knut, 3,950,368.
DeThomas, Waldo: *See—*
Rudoff, Stanley; and DeThomas, Waldo, 3,950,441.
Dewey, C. Forbes, Jr., to Thermo Electron Corporation. Measuring the heating value of a fuel in the gaseous state: method and apparatus. 3,950,101, Cl. 356-51.000.

De Winter, Walter Frans: *See—*
Timmerman, Daniel Maurice; and De Winter, Walter Frans, 3,950,169.
de Zuloaga Amat, Eusebio, to Texsa S.A. Process for the manufacture of multilayer impermeable strips. 3,950,207, Cl. 156-308.000.
Diamond International Corporation: *See—*
Perkins, William H., 3,949,928.
Diamond Shamrock Corporation: *See—*
Sochol, Irving, 3,950,505.
Diehl, Francis Louvaine: *See—*
Stewart, Robert Lee; McCune, Homer Wallace; and Diehl, Francis Louvaine, 3,950,277.
Diehl, Karl-Heinz: *See—*
Eggensperger, Heinz; Franzen, Volker; Diehl, Karl-Heinz; and Kloss, Wilfred, 3,950,382.
Diepeveen, John C. Apparatus for incremental movement of die frame. 3,949,926, Cl. 228-44.10A.
Dietrich, Warren R.: *See—*
McEvoy, Charles J.; and Dietrich, Warren R., 3,950,201.
Dietzen, William H.; and Ehrlich, Stephen J., to Black and Decker Manufacturing Company, The. Tool chuck. 3,949,998, Cl. 279-62.000.
Di Giacomo, Philip A. Process for artificially forming rocks. 3,950,477, Cl. 264-226.000.
Dildy, Clell A., Jr., to United States of America, Navy. Helium speech unscrambler with pitch synchronization. 3,950,617, Cl. 179-1.50H.
Dionne, David James, to Roberts, Terry, a part interest. Support for use with bed ridden patients. 3,949,435, Cl. 5-327.00R.
Diveley, William R., to Hercules Incorporated. Metal salts of 1,1,5,5-tetrasubstituted dithiobiurets. 3,950,366, Cl. 260-429.900.
Diver, Michael: *See—*
Albrecht, Harry A.; Diver, Michael; Fowle, Norman F.; and Knight, Edwin E., 3,949,550.
Diversified Electronics, Inc.: *See—*
Weber, Clement J.; and Normet, Henno, 3,950,675.
Dix, James A.; and Eckl, James J., to Square D Company. Programmable solid state control for machine tool or process control systems. 3,950,736, Cl. 340-172.500.
Dixon, Norman E.; and Jolly, William D., to Battelle Development Corporation. Method of producing transducers with phase, area and depth controlled polarization. 3,950,659, Cl. 310-8.000.
Dmytriw, Walter. Fishing float. 3,949,513, Cl. 43-44.930.
Doane, Tuthill. Apparatus for protectively mounting an object. 3,949,878, Cl. 206-521.000.
Dockhorn, Rolf. Apparatus for supplying aseptic fluids. 3,949,753, Cl. 128-303.00R.
Dr. Beck & Co. AG: *See—*
Schmidt, Karl; and Boockmann, Gerhard, 3,950,452.
Dr. C. Otto & Comp. G.m.b.H.: *See—*
Drebes, Friedrich-Wilhelm, 3,950,228.
Haese, Egon, 3,950,492.
Dodge, John Dennis; and Koschalk, Robert Francis, to Abbott Laboratories. Combined washer and aspirator. 3,949,771, Cl. 134-94.000.
Dohanich, George J., Jr., to International Business Machines Corporation. Digital DC motor velocity control system. 3,950,682, Cl. 318-314.000.
Dohgane, Iwao: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,950,431.
Dominy, Beryl William: *See—*
Abu El-Haj, Marwan J.; and Dominy, Beryl William, 3,950,160.
Donovan, James; and Bagdasarian, Alex, to Artisan Industries Inc. Solids concentrator with a rotor having ploughs thereon. 3,950,254, Cl. 210-297.000.
Donovan, Robert G. Retainer for multi-leafed devices. 3,950,012, Cl. 281-46.000.
Doremus, Bernard: *See—*
Goldschild, Pierre; and Doremus, Bernard, 3,950,021.
Dorius, John O.: *See—*
Spencer, William H.; Dorius, John O.; and Brown, James D., 3,949,533.
Dorn, Michael Thomas: *See—*
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Dornseifer, Karl Friedrich; Kirch, Hans-Joachim; Levacher, Friedrich; and Nolting, Karl Heinz, to Felten & Guilleaume Carlswerk Aktiengesellschaft. Transmission line-communications equipment coupling unit having short-circuit and overvoltage protection. 3,950,676, Cl. 317-14.00R.
Dorr, Karl-Heinz; Reh, Lothar; Grimm, Hugo; and Vydra, Karel, to Metallgesellschaft Aktiengesellschaft. Process for absorbing SO_3. 3,950,493, Cl. 423-242.000.
Double, Paul B.; and Bryson, Clayton M., to Canamer Leasing Services Inc. Material supported cover and method for securing said cover to the ground. 3,949,527, Cl. 52-4.000.
Doubleday, Eric G. Suction pipe for dust or liquid suction device. 3,950,014, Cl. 285-7.000.
Doughty, Howard E. Vehicle track and vehicle. 3,949,680, Cl. 104-124.000.
Dow Chemical Company, The: *See—*
Hohlfeld, Ronald W.; and Klein, Dieter H., 3,950,594.
Kangas, Donald A.; and Neuendorf, W. Robert, 3,950,296.
Pews, R. Garth; and Gunsher, Jeffrey A., 3,950,306.
Shea, Philip J., 3,950,538.
Dow Corning Corporation: *See—*
Bartos, Donald M., 3,949,796.
Dow, James; Lloyd, Ronald; and Patchell, Albert George, to Smith & Nephew Polyfabrik Limited. Method of producing banded fibers from a thermoplastic sheet. 3,950,475, Cl. 264-154.000.
Downs, John D.; and Massa, Andrew Leo, to Mobil Oil Corporation. Epoxy exterior coating for lap-seam beverage cans. 3,949,895, Cl. 220-64.000.
Doyle, Barbara J. Device for assisting in the care of dentures. 3,949,768, Cl. 132-84.00B.
Drass, Patrick E. Cabinet mounting structure. 3,950,049, Cl. 312-245.000.
Drebes, Friedrich-Wilhelm, to Dr. C. Otto & Comp. G.m.b.H. Leveling arrangement for coke ovens. 3,950,228, Cl. 202-270.000.
Dreher, Karl D.; and Gogarty, William B., to Marathon Oil Company. High fluidity liquid for pipelining solids. 3,950,034, Cl. 302-66.000.
Dreier, Gustav H.: *See—*
Stein, Bernard; and Dreier, Gustav H., 3,949,615.
Dresser Industries, Inc.: *See—*
Miglierini, Raul A., 3,950,041.
Driskell, Carl R.: *See—*
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Drury, Raymond L., Jr.; Nevin, Charles S.; and Hines, James W., to A. E. Staley Manufacturing Company. Aqueous coating and printing compositions. 3,950,290, Cl. 260-23.0EM.
Dufaylite Developments, Ltd.: *See—*
White, Desmond Deverell, 3,950,215.
Dugan, Thomas J. Chain door fastener. 3,950,019, Cl. 292-264.000.
Dumont, Claude: *See—*
Derible, Pierre Henri; Guillaume, Jacques; and Dumont, Claude, 3,950,527.
Dunges, Wolfgang. Method and apparatus for refluxation in microliter scale. 3,949,806, Cl. 165-2.000.
Du Pont de Nemours, E. I., and Company: *See—*
Boswell, George Albert, Jr.; Brittelli, David R.; and Middleton, William J., 3,950,329.
Cleaver, Charles S., 3,950,315.
Koch, Theodore A., 3,950,414.
Lipscomb, Robert DeWald, 3,950,303.
Lyerly, William Marcelle, 3,949,673.
Mastrangelo, Sebastian Vito Rocco; and Nelson, Jerry Allen, 3,950,460.
Scheiber, David Hitz, 3,950,597.
Setterquist, Robert Alton, 3,950,269.
Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, to Smith Kline & French Laboratories Limited. Pharmacologically active guanidine compounds. 3,950,333, Cl. 260-250.00A.
Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, to Smith Kline & French Laboratories Limited. Pharmacologically active thiourea and urea compounds. 3,950,353, Cl. 260-309.000.
Duthion, Louis; and Verneau, Alain, to Bertin & Cie. Air cushion vehicle fluid flow system. 3,949,784, Cl. 137-608.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Looman, Wolfgang; Pungs, Wolfgang; Bierwirth, Egon; and Buning, Robert, 3,950,482.
Vahlensieck, Hans-Joachim; Seiler, Claus-Dieter; and Kotzsch, Hans-Joachim, 3,950,364.
Dynek Corporation: *See—*
Stern, Emanuel, 3,950,253.
E. R. Squibb & Sons, Inc.: *See—*
Treuner, Uwe D.; and Breuer, Hermann, 3,950,330.
Eastex Packaging, Inc.: *See—*
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Eastman Kodak Company: *See—*
Chandler, Jasper S.; and McNair, Hugh R., 3,949,952.
Eaton, Homer L.; and Felber, Walter F., to Eaton-Leonard Corporation. Positioning servo and controlled mechanism. 3,949,582, Cl. 72-8.000.
Eaton-Leonard Corporation: *See—*
Eaton, Homer L.; and Felber, Walter F., 3,949,582.
Ebauches S.A.: *See—*
Schneiter, Ali, 3,949,547.
Eckerle, William A., to General Electric Company. Mounting means for compactor refuse receptacle. 3,949,663, Cl. 100-229.00A.
Eckl, James J.: *See—*
Dix, James A.; and Eckl, James J., 3,950,736.
Edahiro, Takao: *See—*
Horiguchi, Masaharu; Edahiro, Takao; Masuno, Kunio; Miyashita, Tadashi; and Takahashi, Shiro, 3,950,073.
Eddison, Christopher Richard: *See—*
Jason, Henry; and Eddison, Christopher Richard, 3,949,537.
Edelman, Robert; and Besso, Michael M., to Celanese Corporation. Production of improved polyester fibers for use in tires. 3,950,590, Cl. 428-395.000.
Edgar, John B. Coin controlled golf ball washer. 3,949,443, Cl. 15-21.00A.
Edwards, Max M.: *See—*
Hill, Robert L.; and Edwards, Max M., 3,950,546.
Edwards, Miles Lowell; and Taatjes, Eugene G. Fluid pump control system. 3,949,734, Cl. 128-1.00D.
Efthymiou, Constantine, to St. John's University. Batch method of establishing and maintaining a controlled aerobic environment for a microbial culture. 3,950,227, Cl. 195-109.000.
Eger, Leroy O.; and Crosby, Samuel C., to Thetford Corporation. Sanitary waste treatment plant. 3,950,249, Cl. 210-104.000.

Eggensperger, Heinz; Franzen, Volker; Diehl, Karl-Heinz; and Kloss, Wilfred, to Ciba-Geigy Corporation. Bis(4-hydroxy-3,5-dialkylbenzyl)cyano-carboxylic acid esters. 3,950,382, Cl. 260-465.00D.
Egli, Ernst A., to Standard Oil Company. Method for injection molding a foamed thermoplastic polymer article substantially free from swirl-patterns in its surface. 3,950,484, Cl. 264-45.500.
Ehrlich, Stephen J.: *See—*
Dietzen, William H.; and Ehrlich, Stephen J., 3,949,998.
Eichler, Dieter; Remmele, Walter; and Rosenzopf, Gunter, to Robert Bosch G.m.b.H. Method and system for reducing noxious components in the exhaust emission of internal combustion engine systems and particularly during the warm-up phase of the engine. 3,949,551, Cl. 60-274.000.
Eickhorst, Manfred. Analysis lamp, particularly for the examination of precious stones. 3,950,102, Cl. 356-73.000.
Eickmann, Karl. Rotary radial piston machine with radial extension on the piston shoe ends. 3,949,648, Cl. 91-492.000.
Eisenwerk-Gesellschaft Maximilianshutte mbH: *See—*
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans-Georg, 3,950,161.
Elbaum, Charles: *See—*
Cooper, Leon N.; and Elbaum, Charles, 3,950,733.
Eldib, Ibrahim Andrew. Polyacrylates of selective viscosity as detergent builders. 3,950,260, Cl. 252-89.00R.
Eldred, Roger J., to General Motors Corporation. Radiation cured acrylonitrile-butadiene elastomers. 3,950,238, Cl. 204-159.150.
Electricity Council, The: *See—*
Jones, Ivor Wynn, 3,950,463.
Electro-Matic Staplers Inc.: *See—*
Manganaro, George F., 3,950,721.
Elektroschmelzwerk Kempten GmbH: *See—*
Korsten, Andreas; Benecke, Theodor; Korndorfer, Eugen; Petersen, Fritz; and Wiebke, Gunter, 3,950,602.
Elkas, Louis, to Emhart Corporation. Firing mechanism. 3,949,508, Cl. 42-69.00B.
Elkem-Spigerverket A/S: *See—*
Jahnsen, Knut Waldeman, 3,950,250.
Elliott, Franklin P.: *See—*
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Elmore, Lester C.: *See—*
Broxholm, Thomas M.; and Elmore, Lester C., 3,949,642.
Emery, Jerrell Bemis; and Bittle, James Long, to Pitman-Moore, Inc. Animal vaccines. 3,950,512, Cl. 424-89.000.
Emhart Corporation: *See—*
Elkas, Louis, 3,949,508.
Emigh, Stuart G.: *See—*
Noble, Jack E.; Riggle, Peter; Emigh, Stuart G.; and Martini, William R., 3,949,554.
Emmett, John Colin: *See—*
Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,950,333.
Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,950,353.
Encoline (Process) Limited: *See—*
Farrow, Harold Frederick; and Chudley, William Henry, 3,949,669.
Endersen, William Christian, to F. L. Smidth & Co. Support of rotary drums such as kilns. 3,950,043, Cl. 308-15.000.
Endlich, Karl-Heinz: *See—*
Weber, Horst; Gruhl, Siegfried; and Endlich, Karl-Heinz, 3,950,183.
Engel, Wolfhard; Nickl, Josef; Teufel, Helmut; Engelhardt, Gunther; Seeger, Ernst; and Trummlitz, Gunter, to Boehringer Ingelheim GmbH. Araliphatic ketones and carbinols. 3,950,427, Cl. 260-590.00D.
Engelhardt, Gunther: *See—*
Engel, Wolfhard; Nickl, Josef; Teufel, Helmut; Engelhardt, Gunther; Seeger, Ernst; and Trummlitz, Gunter, 3,950,427.
Engelsmann, Dieter: *See—*
Winkler, Alfred; and Engelsmann, Dieter, 3,950,773.
English, David C.; and Holmstrom, Godfrey A., to McCauley, Jerry L. Vehicle wheel weighing system. 3,949,822, Cl. 177-126.000.
English Electric Company Limited, The: *See—*
Cluley, Edward Samuel; and Heaps, Christopher, 3,949,484.
Enomoto, Masao: *See—*
Yamashita, Makoto; Kushida, Masagoro; Niitsuma, Fumio; Enomoto, Masao; and Miyamoto, Akira, 3,950,081.
Enso-Gutzeit Osakeyitio: *See—*
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Entech Corporation: *See—*
DeLine, John W.; and Ida, Nobel N., 3,949,692.
EPSCO, Incorporated: *See—*
Zitzow, Harold P.; and Marshall, Alan C., 3,950,752.
Erchoff, Jean-Paul, to GAF Corporation. Slide projector for receiving alternate slide trays of different configurations. 3,950,087, Cl. 353-116.000.
ERCO Envirotech Ltd.: *See—*
Reeve, Douglas W., 3,950,217.
Erhardt, Peter Franklin; Richards, William Conrad; and Pochan, John Michael, to Xerox Corporation. Fixing powder images. 3,950,168, Cl. 96-1.400.
Erlichman, Irving; and Rice, Christopher R., to Polaroid Corporation. Exposure control system employing blade sensing follow focus arrangement. 3,950,766, Cl. 354-29.000.
ERNO Raumfahrttechnik GmbH: *See—*
Bauer, Peter; and Klimek, Rudolf, 3,949,693.
Erwin, Curtis L., Jr. Fuel use rate meter for engines. 3,949,602, Cl. 73-114.000.
Erwin, Ransome W., to Austral-Erwin Engineering Company. Heat bonding fluorocarbon and other plastic films to metal surfaces. 3,950,211, Cl. 156-382.000.
Eschenmoser, Albert, to Ciba-Geigy Corporation. New nitrones, their manufacture and their use for the manufacture of N-substituted araliphatic aldehyde-nitrones. 3,950,327, Cl. 260-240.00G.
Escher Wyss Limited: *See—*
Biondetti, Mario, 3,949,455.
Eskeli, Michael. Turbine. 3,949,557, Cl. 60-682.000.
Etablissements M. Chapuis: *See—*
Chevalier, Marcel, 3,949,536.
Etat Français: *See—*
Melchior, Jean, 3,949,555.
Etchison, Alan D.; and Higgins, William E., to Westinghouse Air Brake Company. Coded carrier remote control system. 3,950,728, Cl. 340-147.0LP.
Ethicon, Inc.: *See—*
Ace, Franklin S., 3,949,756.
Ethyl Corporation: *See—*
Adams, James M.; Hopper, Randall R.; Pease, Robert R.; and Raley, Garland E., 3,950,480.
Jones, John T.; Ludt, William C.; and Kellogg, Hudson W., 3,949,595.
Niebylski, Leonard M., 3,950,145.
Euler, August Hanns Leonhard, to Societe Nationale Industrielle Aerospatiale. Plastics rotor blade. 3,950,115, Cl. 416-226.000.
Evans, Sydney; and Merren, Thomas Oliver, to Associated Electrical Industries Limited. Methods of mass spectrometry and mass spectrometers. 3,950,641, Cl. 250-283.000.
Evers, Roy James; and Perrett, Darcy Glen, to Cyanamid Australia Pty. Limited. Separation of animal intestines. 3,949,447, Cl. 17-61.000.
EVT Energie-und Verfahrenstechnik GmbH: *See—*
Schuler, Udo; Hess, Herbert; and Klotz, Gunter, 3,949,943.
Exner, Josef: *See—*
Labsky, Jiri; and Exner, Josef, 3,950,399.
Exxon Research & Engineering Co.: *See—*
Bouboulis, Constantine J., 3,950,310.
Patton, Tad L., 3,950,416.
Paynter, John D.; and Bunting, William M., 3,950,270.
Worley, Arthur C., 3,950,016.
F. A. Power Limited: *See—*
Bailey, Brian Charles, 3,949,450.
F. L. Smidth & Co.: *See—*
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Horning, Bent, 3,949,940.
Fabalon, Inc.: *See—*
Scott, Howard L., 3,949,764.
Fabish, Donald Clayton, to Robertshaw Controls Company. Variable constant flow selector valve. 3,949,966, Cl. 251-206.000.
Fachbach, Heinz: *See—*
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Fadel Engineering Company, Inc.: *See—*
deCaussin, David Edward, 3,949,462.
Fail, Jean-Pierre: *See—*
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Faix, Louis J.; Price, Robert T.; and Spaulding, James R., to General Motors Corporation. Manifold construction for an internal combustion engine. 3,949,715, Cl. 123-52.0MC.
Falck, J. Russell: *See—*
Miller, Larry L.; Stermitz, Frank R.; and Falck, J. Russell, 3,950,236.
Fall, Herbert S. Thin-line circulating ball drawer slide. 3,950,040, Cl. 308-6.00C.
Fanson, James L. Hollow cored concrete slab and method of making the same. 3,949,531, Cl. 52-380.000.
Farahar, Robert M., to Amey Roadstone Corporation Limited. Concrete pipes. 3,950,465, Cl. 264-69.000.
Farbenfabriken Bayer Aktiengesellschaft: *See—*
Schmidt, Delf; and Puls, Walter, 3,950,319.
Farmer, Donald Allen; and Kops, Lucian, to American Chain and Cable Company, Inc. Means for stabilizing a rotary member. 3,950,042, Cl. 308-9.000.
Farrow, Harold Frederick; and Chudley, William Henry, to Encoline (Process) Limited. Process and method in printing. 3,949,669, Cl. 101-151.000.
Fassbinder, Hans-Georg: *See—*
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Faubl, Hermann, to Pfizer Inc. 1-Hydroxy-3-cyclopentene carboxylic acid. 3,950,390, Cl. 260-468.00K.
Faul, Josef: *See—*
Gessler, Hans; and Faul, Josef, 3,949,888.
Faulkner, John P.; and Morton, Dennis S., to Burroughs Corporation. Method for electrodeposition of ferromagnetic alloys and article made thereby. 3,950,234, Cl. 204-43.00P.
Fawcett Engineering Limited: *See—*
Read, Brian, 3,950,256.
Fawess, Edward, to Lawrence Peska Associates, Inc., a part interest. Torso support. 3,949,436, Cl. 5-327.00R.
Feasey, Ronald George; and Rose, John Brewster, to Imperial Chemical Industries Limited. Aromatic polymers. 3,950,428, Cl. 260-591.000.

Feed Recycling Co.: *See—*
Senior, Franklin C., 3,950,562.
Feedback Instruments Limited: *See—*
Anderson, Trevor James; and Laughton, Graham, 3,950,614.
Feinmechanische Werke Mainz GmbH: *See—*
Schneider, Wolf Giselher, 3,949,553.
Feinstein, Sumner Sheldon: *See—*
Pavuk, Frank Eugene; Steiner, Roger Henry; Feinstein, Sumner Sheldon; and Venuti, Richard Joseph, 3,950,208.
Feit, Peter Werner; Nielsen, Ole Bent Tvaermose; and Bruun, Herta, to Leo Pharmaceutical Products Ltd. A/S. Sulfamylbenzoic acid derivatives. 3,950,376, Cl. 260-415.00D.
Feit, Peter Werner; Nielsen, Ole Bent Tvaermose; and Bruun, Herta, to Leo Pharmaceutical Products Ltd. A/S. Phenyl-benzoic acid derivatives. 3,950,380, Cl. 260-465.00D.
Felber, Walter F.: *See—*
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Feld, Paul G., to Metal Improvement Company, Inc. Method of inspecting shot peened surfaces for extent of coverage. 3,950,642, Cl. 250-302.000.
Felten & Guilleaume Carlswerk Aktiengesellschaft: *See—*
Dornseifer, Karl Friedrich; Kirch, Hans-Joachim; Levacher, Friedrich; and Nolting, Karl Heinz, 3,950,676.
Fenn, Darien: *See—*
Adams, Anthony L.; and Fenn, Darien, 3,950,184.
Fernholz, Hans; Wunder, Friedrich; and Schmidt, Hans-Joachim, to Hoechst Aktiengesellschaft. Process for the oxacylation of olefins in the gaseous phase. 3,950,400, Cl. 260-497.00A.
Ferro, Nicholas J., to Ferro Novelty Company, Inc. Self-piercing ear wire. 3,949,754, Cl. 128-330.000.
Ferro Novelty Company, Inc.: *See—*
Ferro, Nicholas J., 3,949,754.
Field, Roger C.: *See—*
Schobert, Harold H.; Field, Roger C.; and Cardwell, Paul H., 3,950,162.
Figueras, Wilfredo E., to Hooker Chemicals & Plastics Corporation. Electrical connector for bipolar electrodes. 3,950,239, Cl. 204-254.000.
Filby, Gordon; Gunther, Kirsten; and Penzhorn, Ralf-Dieter, to Gesellschaft fur Kernforschung mbH. Method for preparation of sulfinic acids. 3,950,404, Cl. 260-513.700.
Findley, Roger. Miniature tape cartridge with adaptor for use with eight track cartridge machines. 3,950,785, Cl. 360-94.000.
Fink, Werner; Kircher, Dieter; von Grunberg, Hubertus; and Bleckmann, Hans-Wilhelm, to ITT Industries, Inc. Method and apparatus to generate an electric antiskid control signal for an antiskid system. 3,950,036, Cl. 303-21.0BE.
Finke, Manfred; and Kleiner, Hans-Jerg, to Hoechst Aktiengesellschaft. Process for the preparation of phosphonic acid dihalides. 3,950,413, Cl. 260-543.00P.
Firestone Tire & Rubber Company, The: *See—*
Gardner, James Dennis; and Boettler, James Herbert, 3,949,798.
Firmenich & Cie: *See—*
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First Foundation, The: *See—*
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Fischer, Charles F., to Colgate-Palmolive Company. Apparatus for finishing soap bars. 3,950,122, Cl. 425-380.000.
Fischer, Donald J.: *See—*
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Fischer, Edgar: *See—*
Noetzel, Siegfried; Jastrow, Horst; and Fischer, Edgar, 3,950,458.
Fischer Gesellschaft m.b.H.: *See—*
Staufer, Adolf, 3,949,988.
Fischer, Josef E.; Yoshimura, Norman N.; Westman, Thomas L.; and Deindoerfer, Fred H., to Massachusetts General Hospital; and American Hospital Supply Corporation. Amino acid formulations for patients with liver disease and method of using same. 3,950,529, Cl. 424-273.000.
Fischer & Porter Co.: *See—*
Roop, Robert N., 3,949,565.
Fisons Limited: *See—*
Birch, Leslie William; Dean, Desmond Alfred; and Howell, Harry, deceased, 3,949,751.
Flament, Ivon: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 3,950,566.
Flanagan, Joseph E.; and Haury, Vernon E., to Rockwell International Corporation. Cool-burning gun propellant containing triaminoquanidine ethylene dinitramine. 3,950,196, Cl. 149-92.000.
Fleissner, Hans, to Vepa AG. Apparatus for the continuous steaming of textile material of man-made fiber material. 3,949,577, Cl. 68-5.00D.
Flickinger, William T.: *See—*
Bishop, Thomas G.; and Flickinger, William T., 3,949,973.
Flocee, Rune E. Method and an arrangement for defining a radiation treatment field. 3,950,651, Cl. 250-505.000.
Flohr, Henry. Power hay fork. 3,950,022, Cl. 294-88.000.
Floris, Telemaco: *See—*
Girotti, Pierleone; Tesei, Renato; and Floris, Telemaco, 3,950,449.
Floyd, Middleton Brawner, Jr.; McGahren, William James; Schaub, Robert Eugene; and Weiss, Martin Joseph, to American Cyanamid Company. Hydroxylated 15-deoxy derivatives of 9-hydroxy-13-trans-prostenoic acid. 3,950,406, Cl. 260-514.00D.
FMC Corporation: *See—*
Vadas, Leslie, 3,949,791.
Woomer, William H., 3,949,662.
Focht, John Richard, to Precision Valve Corporation. Dispensing pump. 3,949,910, Cl. 222-321.000.
Fogelber, Mark J., to Borg-Warner Corporation. Gear changing mechanism. 3,949,848, Cl. 192-38.000.
Folger, Edward C.: *See—*
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Fong, Willie: *See—*
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Fontijn, Wilhelmus Johannes, to Akzona Incorporated. Manufacture of unique synthetic film and yarn. 3,950,476, Cl. 264-171.000.
Food Automation-Service Techniques, Inc.: *See—*
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Food Technology, Inc.: *See—*
Glabe, Elmer F.; Anderson, Perry W.; Laftsidis, Stergios; and Grothus, Phillip G., 3,950,551.
Fooladi, Mike Mehdi. m-Phenylene-dicarbamate. 3,950,394, Cl. 260-471.00C.
Ford Motor Company: *See—*
Pembleton, James D.; and Pratt, Keith C., 3,950,037.
Forenade Fabriksverken: *See—*
Larsson, Sven Gunnar Olof, 3,949,509.
Forges Stephanoises: *See—*
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Fort, Emil M.: *See—*
Schneider, Mark H.; Fort, Emil M.; Simmonds, Leonard B.; and Kultzow, Robert J., 3,950,665.
Fortsch, William A. Means and method for branching wire bundles. 3,949,457, Cl. 29-203.0MW.
Fortunato, Vincent, to Henschel-Steinau, Inc. Shelf extender. 3,949,880, Cl. 211-86.000.
Foseco International Limited: *See—*
Hiroishi, Makoto; Mitsunaga, Kazuo; and Fujisawa, Yoshiyuki, 3,949,803.
Foster, Ralph L.: *See—*
Pray, Robert W.; and Foster, Ralph L., 3,950,650.
Foster Wheeler Energy Corporation: *See—*
Gillette, Robert P., 3,950,144.
Foster, William Rees: *See—*
Bain, Peter James Stratford; Foster, William Rees; and Neale, Alan Jeffrey, 3,950,313.
Fowle, Norman F.: *See—*
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Fox, Gordon J.: *See—*
Blatt, Leland F.; and Fox, Gordon J., 3,949,650.
Fox, Richard; and Oldland, Hubert Charles, to ICI Australia Limited. Products and processes. 3,950,159, Cl. 71-11.000.
Fradin, David W.: *See—*
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Fraley, John D.: *See—*
Gasser, Rupert J.; Franklin, James G.; and Fraley, John D., 3,950,553.
Franklin, James G.: *See—*
Gasser, Rupert J.; Franklin, James G.; and Fraley, John D., 3,950,553.
Frant, Martin S.; Riseman, John H.; and Krueger, John A., to Orion Research Incorporated. Method of determining hydrogen cyanide. 3,950,231, Cl. 204-1.00R.
Franz, John E., to Monsanto Company. Process for producing N-phosphonomethyl glycine. 3,950,402, Cl. 260-502.500.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
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Franzen, Volker: *See—*
Eggensperger, Heinz; Franzen, Volker; Diehl, Karl-Heinz; and Kloss, Wilfred, 3,950,382.
Fraser, Lawrence J.; Parker, Delmer G.; and Scaletta, Joseph L., to Xerox Corporation. Coated roll for magnetic brush development and cleaning systems. 3,950,089, Cl. 355-3.0DD.
Freedman, Jules, to Richardson-Merrell Inc. Cis or trans-6-substituted-11-aminoalkylidenemorphanthridines. 3,950,326, Cl. 260-239.00D.
Freeman, Jerre M. Punctum plug and method for treating keratoconjunctivitis sicca (dry eye) and other ophthalmic aliments using same. 3,949,750, Cl. 128-260.000.
Freeman, Willie B., to Westinghouse Electric Corporation. Electromechanically-operated valve. 3,949,964, Cl. 251-76.000.
Freestone, Harry T., to General Electric Company. VIR chroma system. 3,950,780, Cl. 358-28.000.
Freiberg, Robert J.: *See—*
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Fridman, Eliahu, to Centre for Industrial Research Ltd. Preparation of yogurt from soybean meal. 3,950,544, Cl. 426-46.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Hoffmeister, Bernhard, 3,950,020.
Friederici, Georg: *See—*
Jeromin, Lutz; Bremus, Norbert; Friederici, Georg; and Peiffer, Peter, 3,950,371.
Friedman, Mendel; and Fong, Willie, to United States of America, Agriculture. Flame-resistant wool. 3,950,129, Cl. 8-17.000.

Frigitronics, Inc.: *See*—
Nowakowski, Bogdan, 3,949,742.
Fritsch, Werner: *See*—
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Frochaux, Alain, to Barry Wright Corporation. Fluid exhaust silencer. 3,949,828, Cl. 181-36.00A.
Fry, Harry J., to Koppers Company, Inc. Compression impregnation of wood veneers. 3,950,577, Cl. 427-365.000.
Fuchs Electrical Industries: *See*—
Bagalini, Dante; and Towianski, Alexander, 3,950,715.
Fuerherm, Arthur E., to Tull Aviation Corporation. Noise rejection method and apparatus for digital data systems. 3,950,705, Cl. 328-108.000.
Fuhring, Heinrich; and Sieber, Johannes Helmut, to Bowe Bohler & Weber KG, Firma. Method of and apparatus for drying articles in contact with an organic solvent. 3,949,485, Cl. 34-15.000.
Fuhrman, Delmar L., to Huffman Manufacturing Company, The. Bicycle with self-aligning disc brakes. 3,949,838, Cl. 188-26.000.
Fuji Oil Co., Ltd.: *See*—
Katayama, Tsutomu; and Ishiwatari, Yoshiro, 3,950,550.
Fujii, Takeshi: *See*—
Hirose, Isao; Funabashi, Kazutoshi; Fujii, Takeshi; and Kawajiri, Kiyoshi, 3,950,440.
Fujikawa, Akira; Takusagawa, Takashi; Matsuda, Akira; and Goshima, Norio, to Bridgestone Tire Company Limited. Low tire pressure alarm system for pneumatic tires. 3,950,726, Cl. 340-58.000.
Fujikawa, Hiroyuki: *See*—
Shiokawa, Nobumasa; Maeda, Masakazu; Harada, Takashi; Takehara, Tsuguo; Fujikawa, Hiroyuki; and Yokokawa, Akio, 3,949,974.
Fujikawa, Kanichi: *See*—
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Toki, Tadaaki; and Someya, Shinzo, 3,950,435.
Fujisawa, Yoshiyuki: *See*—
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Fujiwara, Yasuhiko; and Hirashima, Kenzo, to Nissan Motor Co., Ltd. Steering column assembly. 3,949,623, Cl. 74-492.000.
Fukaya, Hirokazu; Andou, Kenji; and Nakashima, Akio, to Nippon Electric Co., Ltd. Circuit for producing correctly timed vertical blanking pulses from a vertical sweep circuit. 3,950,672, Cl. 315-389.000.
Fukuda, Heijiro. Laminated three-layer resinoid wheels having core layer of reinforcing material and method for producing same. 3,950,148, Cl. 51-297.000.
Fukuda, Heijiro. Method for continuously producing resinoid wheels. 3,950,149, Cl. 51-298.00R.
Fukuda, Rikiya: *See*—
Aoki, Atsushi; Fukuda, Rikiya; Nakayabu, Toshio; Ishibashi, Keijiro; Takeichi, Chiyoko; and Ishida, Mitsuo, 3,950,360.
Fukuda, Tadanori; Takahashi, Masao; and Kawamura, Keiko, to Toray Industries, Inc. Polymer dispersed liquid. 3,950,284, Cl. 260-17.00A.
Fukuda, Takeshi: *See*—
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Fukuma, Daizo; Maruizumi, Haruki; and Nagaoka, Tadahiko, to Nissan Motor Co., Ltd. Gas cooling and filtering agent for air bag gas generator. 3,950,263, Cl. 252-193.000.
Fukunaga, Ichiro: *See*—
Muramoto, Shoichi; Fukunaga, Ichiro; and Ikeda, Haruyuki, 3,950,200.
Fukushi, Saburo: *See*—
Koyano, Takashi; and Fukushi, Saburo, 3,950,436.
Fukushima, Seitaro, to Mitsubishi Kinzoku Kabushiki Kaisha. Chlorine treatment of titaniferous ores. 3,950,489, Cl. 423-74.000.
Funabashi, Kazutoshi: *See*—
Hirose, Isao; Funabashi, Kazutoshi; Fujii, Takeshi; and Kawajiri, Kiyoshi, 3,950,440.
Funk, Erwin D., to Kamyr, Inc. Continuous process for energy conserving cooperative coal feeding and ash removal of continuous, pressurized coal gasifiers and the like, and apparatus for carrying out the same. 3,950,146, Cl. 48-69.000.
Funk, Erwin D.; Laakso, Oliver A.; and Prough, James R., to Kamyr, Inc. Process for feeding coal to a fluidized bed or suspended particle pressurized processing chamber and apparatus for carrying out the same. 3,950,147, Cl. 48-86.00R.
Funke, Gabi, nee Honsel, to Gebr. Funke Metallwarenfabrik. Onion slicer. 3,949,637, Cl. 83-570.000.
Furkert, Herbert, to Chemiebau Dr. A. Zieren Gesellschaft mit beschrankter Haftung & Co. KG. Process for working up the scrubbing solution obtained in the scrubbing of So_2-containing waste gases. 3,950,502, Cl. 423-541.00A.
Furse, John H., to Smith International, Inc. Underreamer cutter arm. 3,949,820, Cl. 175-286.000.
Gaeth, Rudolf: *See*—
Stastny, Fritz; Trieschmann, Hans Georg; Gaeth, Rudolf; and Haardt, Udo, 3,950,471.
GAF Corporation: *See*—
Erchoff, Jean-Paul, 3,950,087.
Rudoff, Stanley; and DeThomas, Waldo, 3,950,441.
Gaffal, Karl; Martens, Rolf; and Havekost, Peter. Pump construction. 3,949,971, Cl. 259-95.000.
Gagnier, Keith M.: *See*—
Zipprich, Charles F.; Prins, Harvey R.; and Gagnier, Keith M., 3,949,720.
Gakhar, Ved P.: *See*—
Waugh, Richard A.; and Gakhar, Ved P., 3,949,576.
Gallagher, Helen H. Bouquet ring. 3,949,568, Cl. 63-1.00A.
Gallucci, Frank. Psychological teaching apparatus. 3,949,489, Cl. 35-9.00C.
Galonsky, Pavel Petrovich: *See*—
Aliev, Vagab Safarovich; Altman, Natalia Borisovna; Galonsky, Pavel Petrovich; Guterman, Alexandr Davidovich; Malina, Lia Vasilievna; Mingareev, Rafkhat Shagimardanovich; Suleimanov, Alekper Bagirovich; Akhmedov, Mansur Ilal ogly, deceased; and Ramazanova, Elmira Mamed Emin kyzy, administrator, 3,950,245.
Galya, William; and Shuffield, Jack E. Sewing machine fabric edge flip-up guide. 3,949,689, Cl. 112-151.000.
Ganellin, Charon Robin: *See*—
Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,950,333.
Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,950,353.
Ganiaris, Neophytos, to Struthers Scientific and International Corporation. Orange juice. 3,949,486, Cl. 34-5.000.
Garbutt, Cornelius Durham, Jr.: *See*—
Bryant, William Sebert, Jr.; and Garbutt, Cornelius Durham, Jr., 3,949,815.
Gardner, James Dennis; and Boettler, James Herbert, to Firestone Tire & Rubber Company, The. Pneumatic tire. 3,949,798, Cl. 152-330.0RF.
Gardner, John Nicholson; and Whitesides, George McClelland, to Hoffmann-La Roche Inc. Process for producing ethynylating agents. 3,950,446, Cl. 260-665.00R.
Garrett Corporation, The: *See*—
Morrow, David, 3,949,774.
Garwood, William E.; Nace, Donald M.; and Owen, Hartley, to Mobil Oil Corporation. Fluid catalytic cracking plus selective upgrading of cracked gasoline. 3,950,242, Cl. 208-70.000.
Garwood, William E.: *See*—
Bonacci, John C.; and Garwood, William E., 3,950,241.
Gasser, Rupert J.; Franklin, James G.; and Fraley, John D., to Societe d'Assistance Technique pour produits Nestle S.A. Process for preparing a soluble tea product. 3,950,553, Cl. 426-262.000.
Gaston County Dyeing Machine Company: *See*—
Turner, James Keith; Sturkey, William Cleere; and Aurich, Christopher W., 3,949,575.
Gattenby, Miles N., Jr.: *See*—
D'Amato, Anthony S.; and Gattenby, Miles N., Jr., 3,950,289.
Gaudry, Daniel; and Precausta, Pierre, to Institut Merieux. Vaccine for viral pericardite in barbary ducks. 3,950,511, Cl. 424-89.000.
Gautschi, Fritz: *See*—
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 3,950,566.
Gay, Walter A., to Olin Corporation. Process for preparing ortho substituted aryl fluorides. 3,950,444, Cl. 260-650.00F.
Gazzard, Edward George: *See*—
Buckley, Alan John; Gazzard, Edward George; Singer, Michael; and Taylor, John Anthony, 3,950,349.
Gebehart, Ernst: *See*—
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Gebr. Funke Metallwarenfabrik: *See*—
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Gebrs. ter Braak B.V.: *See*—
ter Braak, Johannes Gerardus, 3,949,970.
Gebrueder Buehler AG: *See*—
Buffa, Aldo; and Holliger, Adolf, 3,950,543.
Geks, Franz-Josef; and Schmidt-Kastner, Gunter, to Bayer Aktiengesellschaft. Method of controlling perspiration odor with a biological protease inhibitor. 3,950,509, Cl. 424-65.000.
General Electric Company: *See*—
Balog, Karl J.; and Craft, Donald I., 3,950,301.
Cornell, Richard Henry, 3,949,775.
Eckerle, William A., 3,949,663.
Freestone, Harry T., 3,950,780.
Hartmann, Stanley G., 3,949,772.
Klein, Keith William; Howell, Edward Keith; and Palmieri, Joseph Michael, 3,950,677.
May, John E., 3,950,274.
McGann, James Edward; and Naas, Rodney Laban, 3,950,071.
Quellette, Maurice J., 3,950,731.
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General Instrument Corporation: *See*—
Rubinstein, Richard B.; and Baker, Lamar T., 3,950,709.
General Motors Corporation: *See*—
Benasutti, Louis D.; and Sucro, Jost S., 3,949,903.
Cannon, Earl R., 3,950,139.
Eldred, Roger J., 3,950,238.
Faix, Louis J.; Price, Robert T.; and Spaulding, James R., 3,949,715.
Hammer, Dale F., 3,949,849.
Helms, Harold E., 3,950,114.
Mitchell, Harry R., 3,949,714.
Schroeder, Thaddeus, 3,950,741.
Thaler, Konrad, 3,949,712.
Gent, Alan Edward Alford, to Imperial Chemical Industries Limited. Methanol production. 3,950,369, Cl. 260-449.500.
George, Georgia A. Conforming ladies garments having smooth lines. 3,949,426, Cl. 2-73.000.

George Koch Sons, Inc.: *See*—
Muehlbauer, James H.; and Wandtke, Larry A., 3,949,830.
Gerard, Rene: *See*—
Bouygues, Jean; and Gerard, Rene, 3,950,095.
Gerena, William, to Government of the Commonwealth of Puerto Rico. Game to be played with cards and pieces. 3,949,993, Cl. 273-135.00B.
Gertsch AG: *See*—
Schweizer, Gottfried; Koos, Josef; and Smolka, Thomas G., 3,950,002.
Weigl, Erwin, 3,950,001.
Gesellschaft fur Kernforschung mbH: *See*—
Filby, Gordon; Gunther, Kirsten; and Penzhorn, Ralf-Dieter, 3,950,404.
Gessler, Hans; and Faul, Josef, to Schwabische Huttenwerke Gesellschaft mit beschrankter Haftung. Silo, especially for heavy flowing chemical and mineral substances. 3,949,888, Cl. 214-17.00D.
Gey, Karl Friedrich; Kiss, Joseph; Lengsfeld, Hans; Wyss, Pierre-Charles; and Schuep, Willy, to Hoffmann-La Roche Inc. D-glucose-1-0-nicotinoyl-2-deoxy-2-nictinamido derivatives. 3,950,324, Cl. 260-211.00R.
Giambrone, Harry J.; and Naas, Robert L., to Baxter Laboratories, Inc. Collapsible container. 3,949,933, Cl. 229-50.000.
Giannoni, Ilvio. Children's shoe. 3,949,494, Cl. 36-2.50F.
Gibbs, David A.; and Sarcia, Domenico S., to Seal Incorporated. Vacuum press. 3,950,210, Cl. 156-367.000.
Gilak, Ahmad: *See*—
Appel, Rolf; and Gilak, Ahmad, 3,950,498.
Gilbarco Limited: *See*—
Woodford, Peter David; and Jackson, John Alan, 3,949,778.
Gilbert, Richard D.; Stannett, Vivian T.; and Kim, Soojaa L. Polyanhydroglucose biodegradable polymers and process of preparation. 3,950,282, Cl. 260-9.000.
Gilles, Theodore C., to Lennox Industries, Inc. Air conditioning apparatus. 3,949,808, Cl. 165-22.000.
Gilles, Theodore C., to Lennox Industries, Inc. Air processing apparatus. 3,949,809, Cl. 165-22.000.
Gillette, Robert P., to Foster Wheeler Energy Corporation. Coal processing system. 3,950,144, Cl. 44-2.000.
Gilley, George C.: *See*—
United States of America, National Aeronautics and Space Administration; and Gilley, George C., 3,950,729.
Gilmour, George A., to Westinghouse Electric Corporation. Sonar apparatus. 3,950,723, Cl. 340-3.00R.
Ginsburg, Milton, to Ginsey Industries, Inc. Cushioned toilet seat. 3,949,432, Cl. 4-237.000.
Ginsey Industries, Inc.: *See*—
Ginsburg, Milton, 3,949,432.
Giordano, David J., to Slater Paper Box, Inc. Article carrier. 3,949,930, Cl. 229-28.00R.
Giorgi, Tiziano Anselmo: *See*—
della Porta, Paolo; Giorgi, Tiziano Anselmo; and Rosai, Livio, 3,949,460.
Girauldon, Jean-Claude, to Societe Anonyme D.B.A. Fixed support for a disc brake. 3,949,839, Cl. 188-73.300.
Girden, Barney. Underwater mining. 3,950,030, Cl. 299-9.000.
Girling Limited: *See*—
Newstead, Charles; and Wright, Andrew Charles Walden, 3,949,845.
Girotti, Pierleone; Tesei, Renato; and Floris, Telemaco, to Snam Progetti S.p.A. Production of liquid polymers having a very high viscosity. 3,950,449, Cl. 260-683.15D.
Givaudan Corporation: *See*—
Bertele, Erhard; and Schudel, Peter, 3,950,430.
Lamparsky, Dietmar; and Schudel, Peter, 3,950,429.
Glabe, Elmer F.; Anderson, Perry W.; Laftsidis, Stergios; and Grothus, Phillip G., to Food Technology, Inc. Composite sugar syrup article and process. 3,950,551, Cl. 426-103.000.
Gliemeroth, Georg; and Meckel, Lothar, to Jenaer Glaswerk Schott & Gen. Glassy or crystalline material for phototropic thin layers. 3,950,591, Cl. 428-432.000.
Global Marine Inc.: *See*—
Crooke, Robert C.; and Person, Abraham, 3,949,883.
Glover, Richard Donovan. Sublimatic printing machine. 3,949,574, Cl. 68-5.00C.
Glyco-Metall-Werke Daden & Loos GmbH: *See*—
Roemer, Erich B., 3,950,141.
Gneuss, Detlef; Strutzel, Hans; and Meintzschel, Wolfgang, to Hoechst Aktiengesellschaft. Process for the production of a plastic tube to be used as an artificial sausage casing. 3,950,469, Cl. 264-95.000.
Goegelman, Robert T.: *See*—
Kahan, Jean S.; Kahan, Frederick M.; Stapley, Edward O.; Goegelman, Robert T.; and Hernandez, Sebastian, 3,950,357.
Goetze, Ulrich: *See*—
Wolf, Axel; and Goetze, Ulrich, 3,950,138.
Goffe, William L.: *See*—
Tutihasi, Simpei; and Goffe, William L., 3,950,167.
Gogarty, William B.: *See*—
Dreher, Karl D.; and Gogarty, William B., 3,950,034.
Goglio, Luigi. Container having a valve movable between one-way flow and closed positions. 3,949,934, Cl. 229-62.500.
Gold, Ramon D., to United States Box Corporation. Synchronization apparatus for box making machine. 3,949,655, Cl. 93-49.0AC.
Goldhaft, Morris. Key holders for instant fishing. 3,949,511, Cl. 43-20.000.
Goldman, Irving M.: *See*—
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 3,950,566.
Goldman, Rubin; and Meyerkopf, Morris, to Goldman, Rubin. Punching holes in thin sheet material. 3,949,631, Cl. 83-98.000.
Goldschild, Pierre; and Doremus, Bernard, to Schlumberger Technology Corporation. Pulling and running tool. 3,950,021, Cl. 294-86.280.
Golland, David I.; Harakas, Nicholas K.; Mottern, John W.; O'Connor, Gary E.; and Runkle, Charles J., to Monsanto Company. Continuous carburizing method. 3,950,192, Cl. 148-16.500.
Golner, Jerold Julius; and Strout, Russell Brown, to Borden, Inc. Machine for dispensing uniform lengths of thick plastic film. 3,949,918, Cl. 225-11.000.
Gomi, Yoshifumi: *See*—
Shimodaira, Tadayoshi; and Gomi, Yoshifumi, 3,949,664.
Goodinge, Mark Wallinger, to Plessey Handel und Investments A.G. Fuel atomizers. 3,949,938, Cl. 239-102.000.
Goodyear Aerospace Corporation: *See*—
Underwood, Theodore A., 3,949,894.
Goodyear Tire & Rubber Company, The: *See*—
McEvoy, Charles J.; and Dietrich, Warren R., 3,950,201.
Gopfert, Wolfgang M.; and Read, Alvin A., to Iowa State University Research Foundation, Inc. Method and apparatus for contour mapping and orthophoto mapping. 3,950,097, Cl. 356-2.000.
Gordon, Robin: *See*—
Peters, Kenneth; Gordon, Robin; and Sands, Gilbert, 3,949,793.
Gorvin, John Henry, to Burroughs Wellcome Co. Acridone-dicarboxylic acids. 3,950,342, Cl. 260-279.00R.
Goshima, Norio: *See*—
Fujikawa, Akira; Takusagawa, Takashi; Matsuda, Akira; and Goshima, Norio, 3,950,726.
Gossett, Rodger L., to American Medical Products Company. Urea cold pack having an inner bag provided with a perforated seal. 3,950,158, Cl. 62-4.000.
Goto, Yoshio: *See*—
Imai, Takaichi; Ii, Motohiko; and Goto, Yoshio, 3,950,258.
Government of the Commonwealth of Puerto Rico: *See*—
Gerena, William, 3,949,993.
Graf, Martin, to Grob & Co. Aktiengesellschaft. Heddle frame stave with closed T-rail. 3,949,789, Cl. 139-91.000.
Graf, Robert E.: *See*—
Deeg, Emil W.; Graf, Robert E.; and Landry, Robert J., 3,950,176.
Graff, Robert M., to Rohm and Haas Company. Process for improving thermoformability of methyl methacrylate polymers and the improved compositions. 3,950,314, Cl. 260-80.730.
Graham, Robert P.: *See*—
Huxsoll, Charles C.; Weaver, Merle L.; and Graham, Robert P., 3,950,556.
Grand, Paul Sheldon, to Colgate-Palmolive Company. Sulfonate detergent compositions. 3,950,276, Cl. 252-536.000.
Graphic Sciences, Inc.: *See*—
Rand, Ralph K., 3,949,869.
Graser, Earl J., to Olinkraft, Inc. Reusable wrap-basket carrier. 3,949,870, Cl. 206-141.000.
Gray, Bob P.; and Gray, James A. Thermoplastic waste converter. 3,949,941, Cl. 241-41.000.
Gray, Eunice Cockburn, executor: *See*—
Birch, Leslie William; Dean, Desmond Alfred; and Howell, Harry, deceased, 3,949,751.
Gray, James A.: *See*—
Gray, Bob P.; and Gray, James A., 3,949,941.
Greber, Gerd; Darms, Roland; and Lohmann, Dieter, to Ciba-Geigy Corporation. Crosslinked polymers containing siloxane groups. 3,950,308, Cl. 260-46.50E.
Green, David Thomas, to United States Surgical Corporation. Surgical stapling instrument. 3,949,924, Cl. 227-132.000.
Green, Donald: *See*—
Youngquist, Robertson; Green, Donald; and Cohen, Edward Stone, 3,949,947.
Greene, Leonard M., to Safe Flight Instrument Corporation. Sump water detector with isolated probe having AC applied to its electrodes. 3,950,740, Cl. 340-244.00C.
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., to Hanover Research Corporation. Process and apparatus for recovering residual oil from solids dehydrated in an oil medium and grossly deoiled. 3,950,230, Cl. 203-47.000.
Greenhut, Joseph. Rotary centrifugally-operated electrical switch for motors. 3,950,626, Cl. 200-80.00R.
Greenlee Bros. & Co.: *See*—
Pearson, Vernon W.; and Adleman, Larry G., 3,949,584.
Gregg Engineering Corporation: *See*—
Gregoire, Clyde G., 3,949,591.
Gregoire, Clyde G., to Gregg Engineering Corporation. Bender for die cutters and perforators for the printing industry. 3,949,591, Cl. 72-310.000.
Gregory, Clifton: *See*—
Smith, Gus T.; Gregory, Clifton; and Campbell, Lester W., 3,949,913.
Gregory, Peter, to Imperial Chemical Industries Limited. Disazo dyestuffs. 3,950,128, Cl. 8-26.000.
Greider, Charles Austin, to Townsend Engineering Company. Safety means for a skinning and/or slashing machine. 3,949,661, Cl. 99-589.000.
Greif Bros. Corporation: *See*—
Santoni, Cesar, 3,949,877.

Gretag Aktiengesellschaft: *See—*
Schneider, Bruno, 3,950,093.

Greve, Heinz Gunter; and Resag, Klaus, to Cassella Farbwerke Mainkur Akt. Cyanoalkylamino-amido benzophenones. 3,950,383, Cl. 260-465.00D.

Gries, Robert Joseph, to RCA Corporation. Gating circuit for television SCR deflection system. 3,950,673, Cl. 315-408.000.

Grimm, Gerhard, to Krones-Transyscop GmbH. Optical transformation drawing apparatus. 3,950,085, Cl. 353-44.000.

Grimm, Hugo: *See—*
Dorr, Karl-Heinz; Reh, Lothar; Grimm, Hugo; and Vydra, Karel, 3,950,493.

Grip-Pak, Inc.: *See—*
Cunningham, Ernest Ray, 3,950,474.

Gritsch, Franz S., to Lawrence Peska Associates, Inc., a part interest. Hair-do protecting head rest. 3,949,437, Cl. 5-338.000.

Grob & Co. Aktiengesellschaft: *See—*
Graf, Martin, 3,949,789.

Groft, James Leon; Redslob, Jean Jacques; and Yeager, Marvin Leo, to AMP Incorporated. Flat flexible cable terminal and electrical interconnection system. 3,950,070, Cl. 339-217.00S.

Gronert, Ronald. Toy building assembly. 3,949,516, Cl. 46-17.000.

Grosholz, Rainer, to Licentia Patent-Verwaltungs-G.m.b.H. Method of photographic transfer using partial exposures to negate mask defects. 3,950,170, Cl. 96-27.00E.

Grothus, Phillip G.: *See—*
Glabe, Elmer F.; Anderson, Perry W.; Laftsidis, Stergios; and Grothus, Phillip G., 3,950,551.

Gruhl, Siegfried: *See—*
Weber, Horst; Gruhl, Siegfried; and Endlich, Karl-Heinz, 3,950,183.

Gryaznov, Vladimir Mikhailovich. Method for carrying out simultaneously the catalytic reactions involving hydrogen evolution and consumption. 3,950,447, Cl. 260-667.000.

GTE Automatic Electric Laboratories Incorporated: *See—*
Ward, Ronald C.; and Love, James M., 3,950,054.

GTE Sylvania Incorporated: *See—*
Brenan, Robert R.; and Smith, Robert W., 3,950,142.
Johnson, Robert R.; Jones, Robert E.; and Zwald, John A., 3,949,589.

Guenst, William C., Jr.; and Litschi, Gerold, to W. R. Grace & Co. Plate conveying apparatus. 3,949,865, Cl. 198-131.000.

Guenthner, Richard A., to Minnesota Mining and Manufacturing Company. Suppression of volatilization of noxious acidic vapors. 3,950,494, Cl. 423-270.000.

Guerra, Delio A., to Raymond Lee Organization, Inc., The, a part interest. Combined tree saw, pruner and paint sprayer. 3,949,440, Cl. 7-13.00R.

Guha, Dwipendra Nath, to Avnet, Inc. Record player needle control mechanism. 3,949,995, Cl. 274-23.00R.

Guillaume, Jacques: *See—*
Derible, Pierre Henri; Guillaume, Jacques; and Dumont, Claude, 3,950,527.

Gulf Research & Development Company: *See—*
Chun, Sun W.; Cronauer, Donald C.; and Leslie, Thomas W., 3,950,244.

Gulyaev, Anatoly Sergeevich: *See—*
Rotenberg, Vladimir Adolfovich; Khruschova, Kira Markovna; Zilberg, Jury Yakovlevich; Begidzhanova, Anzhelika Petrovna; Gulyaev, Anatoly Sergeevich; Protasova, Irina Vladimirovna; Shapochkin, Alexei Ivanovich; Pavlov, Vladislav Ivanovich; Mirakov, Eduard Sergeevich; Izotov, Arseny Emelyanovich; Serikov, Ivan Alexandrovich; and Ignatiev, Not Vasilievich, 3,950,164.

Gunsher, Jeffrey A.: *See—*
Pews, R. Garth; and Gunsher, Jeffrey A., 3,950,306.

Gunther, Kirsten: *See—*
Filby, Gordon; Gunther, Kirsten; and Penzhorn, Ralf-Dieter, 3,950,404.

Guon, Jerold, to Rockwell International Corporation. Filter vapor trap. 3,950,152, Cl. 55-96.000.

Gustafsson, Arne, to Stiga AB. Clay pigeon throwing device. 3,949,728, Cl. 124-8.000.

Guterman, Alexandr Davidovich: *See—*
Aliev, Vagab Safarovich; Altman, Natalia Borisovna; Galonsky, Pavel Petrovich; Guterman, Alexandr Davidovich; Malina, Lia Vasilievna; Mingareev, Rafkhat Shagimardanovich; Suleimanov, Alekper Bagirovich; Akhmedov, Mansur Ilal ogly, deceased; and Ramazanova, Elmira Mamed Emin kyzy, administrator, 3,950,245.

Gutschneider, Jack, to Jack Gutschneider Jewelry Co., Inc. Ring with bezel secured by the decorative member it surrounds. 3,949,569, Cl. 63-15.000.

H. A. Brown Limited: *See—*
Sherlock, Russell J. W.; and Maynard, James Gordon, 3,949,526.

H. F. Wilson Engineering Company: *See—*
Bent, John H., 3,949,944.

H. Maihak AG: *See—*
Blunck, Otto, 3,950,644.

Haapala, Marvin H.: *See—*
Snellman, Donald L.; Vaughn, Wade C.; and Haapala, Marvin H., 3,949,982.

Haardt, Udo: *See—*
Stastny, Fritz; Trieschmann, Hans Georg; Gaeth, Rudolf; and Haardt, Udo, 3,950,471.

Haas, Helmut; and Haude, Freidhelm, to Klockner-Humboldt-Deutz Aktiengesellschaft. Vibrating ball mill with heat insulated grinding chamber. 3,949,942, Cl. 241-179.000.

Habert, William C.; and Phillips, Philip A., to Uniroyal Inc. Fabric alignment apparatus. 3,949,920, Cl. 226-198.000.

Haede, Werner: *See—*
Stache, Ulrich; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, 3,950,323.

Haese, Egon, to Dr. C. Otto & Comp. G.m.b.H. Process for removal of ammonia, hydrogen sulfide and hydrogen cyanide from gases containing these substances. 3,950,492, Cl. 423-220.000.

Hahn, Ernest A.; and Sirkoch, Robert J., to PPG Industries, Inc. Method of coating a metal substrate and the coated substrate. 3,950,592, Cl. 428-463.000.

Hajos, Zoltan George, to Hoffmann-La Roche Inc. Stereospecific total steroidal synthesis via substituted C/D-trans indanones. 3,950,389, Cl. 260-468.00G.

Halasz, Alexander; and Cohen, David, to Clairol Incorporated. Hair dye compositions containing nitrodiphenylamine dyes and method for dyeing hair therewith. 3,950,127, Cl. 8-10.100.

Halcon International, Inc.: *See—*
Onsager, Olav Torgeir, 3,950,370.

Hale, Jesse R. Sandwich panel structure. 3,950,585, Cl. 428-181.000.

Hall, Charles L. Safety razor. 3,949,470, Cl. 30-50.000.

Hall, James Robert, to RCA Corporation. Gain-controlled amplifier. 3,950,708, Cl. 330-29.000.

Hall, John O. Animal commode. 3,949,429, Cl. 4-10.000.

Hall, Richard A., to Willamette Industries, Inc. Tamper-proof container. 3,949,931, Cl. 229-36.000.

Hamburger Stahlwerke GmbH: *See—*
Wagner, Manfred, 3,949,585.

Hamilton, Brian K., to Allied Chemical Corporation. Pyrotechnic formulation. 3,950,009, Cl. 280-150.0AB.

Hammann, Ingeborg: *See—*
Hoffmann, Hellmut; and Hammann, Ingeborg, 3,950,337.
Riebel, Hans-Jochem; Rohe, Lothar; Hammann, Ingeborg; and Behrenz, Wolfgang, 3,950,334.

Hammar, Walton J., to Riker Laboratories, Incorporated. Process for preparing dibenzo[a,d]cycloheptenes. 3,950,407, Cl. 260-515.00R.

Hammen, Philip D.; and Massett, Stephen S., to Pfizer Inc. Penam-dimethylsulfoxide complex. 3,950,350, Cl. 260-306.70C.

Hammer, Dale F., to General Motors Corporation. Viscous fluid clutch. 3,949,849, Cl. 192-58.00B.

Hammerslag, Julius G. Resistance thermometer and disposable probe. 3,949,609, Cl. 73-362.0AR.

Hampshire-Designers, Inc.: *See—*
Hinkle, Harry J.; Wilson, Mack E.; and Wade, Jack H., 3,949,571.

Hannam, Stephen J., to Sun Chemical Corporation. Cyclic compounds synthesis. 3,950,386, Cl. 260-468.00J.

Hanover Research Corporation: *See—*
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., 3,950,230.

Hara, Noboru: *See—*
Toyoda, Sadao; Takenouchi, Kuniyoshi; Hara, Noboru; and Kondo, Fusao, 3,950,275.

Harada, Takashi: *See—*
Shiokawa, Nobumasa; Maeda, Masakazu; Harada, Takashi; Takehara, Tsuguo; Fujikawa, Hiroyuki; and Yokokawa, Akio, 3,949,974.

Harada, Yuji: *See—*
Murata, Minoru; and Harada, Yuji, 3,950,627.

Harakas, Nicholas K.: *See—*
Golland, David I.; Harakas, Nicholas K.; Mottern, John W.; O'Connor, Gary E.; and Runkle, Charles J., 3,950,192.

Harber, Gerald; Young, Leslie Albert; Allard, Roger Sidney; Marshall, Alan James; and Montgomery, Michael John, to British Lely Limited. Stacking of bales. 3,949,886, Cl. 214-6.00B.

Hardcast, Inc.: *See—*
Bennett, William E., 3,950,573.

Hardee, Dicky D.: *See—*
Mitchell, Earl B.; Hardee, Dicky D.; and Davich, Theodore B., 3,949,515.

Harlow Chemical Company Limited: *See—*
Sellars, Keith; and Laybourn, Peter, 3,950,283.

Harnisch, Horst; and Brack, Alfred, to Bayer Aktiengesellschaft. Naphtholactam dyestuffs. 3,950,347, Cl. 260-294.80B.

Harris, Clarke E.: *See—*
Keene, Wayne H.; Harris, Clarke E.; Jelalian, Albert V.; Miller, Christopher R.; and Seavey, Richard E., 3,950,100.

Harris, Hugh R.: *See—*
Keizer, Alan S.; and Harris, Hugh R., 3,949,925.

Harris, John L., to Deltrol Corporation. Automatic reset timer with latch controlled cam operator. 3,950,624, Cl. 200-39.00R.

Harris Press & Shear Corporation: *See—*
Thompson, Wallace M., 3,949,634.

Harrison, Theodore F., Jr.: *See—*
Ball, Kirby L.; Darr, J. Clyde; and Harrison, Theodore F., Jr., 3,949,636.

Hart, Bernard Eaton. Jet and spray producing apparatus. 3,950,045, Cl. 308-36.00R.

Harte, James Richard. Mathematical teaching aid. 3,949,491, Cl. 35-31.00R.

Hartger, Harold V.: *See—*
Hartger, Richard W.; and Perry, John M., II, 3,949,528.

Hartger, Richard W.; and Perry, John M., II, to Hartger, Harold V., a part interest. Storage enclosure for bicycles, motorcycles, or the like. 3,949,528, Cl. 52-79.000.

Hartka, Theodore J., to Wm. C. Staley Machinery Corporation. Metering means for blanks. 3,949,980, Cl. 271-134.000.

Hartley, Robert R.: *See—*
Stallworth, Lewis A.; and Hartley, Robert R., 3,949,605.

Hartmann, Peter, to Bayer Aktiengesellschaft. Preparation of aroyl acidic esters. 3,950,381, Cl. 260-465.00D.

Hartmann, Stanley G., to General Electric Company. Door type dishwasher. 3,949,772, Cl. 134-99.000.

Harvath, Frank B. Utility impact wrench. 3,949,816, Cl. 173-93.000.

Hasebe, Tatsuo: *See—*
Arakawa, Hideo; Hasebe, Tatsuo; and Sato, Shigeru, 3,950,267.

Hasewaga, Gentaro: *See—*
Iwata, Hisao; Hasewaga, Gentaro; and Shimizu, Kameichi, 3,949,498.

Hashimoto, Harukichi; and Omiya, Shuichi, to Idemitsu Petrochemical Co., Ltd. Process for producing 4-methyl-1-pentene. 3,950,450, Cl. 260-683.15E.

Hashimoto, Sho: *See—*
Yagihara, Tomio; Miyazaki, Koshin; Hashimoto, Sho; and Wakai, Akira, 3,950,534.

Hasler, Robin, to Imperial Chemical Industries Limited. Stabilising sleeve. 3,950,466, Cl. 264-89.000.

Hastwell, Peter J.: *See—*
Smith, Ian Edward; Scroggs, Dennis I.; and Hastwell, Peter J., 3,949,703.

Hatano, Isao; Nagano, Akira; and Urasaki, Kazuaki, to Omron Tateisi Electronics Co., Ltd. Keying input apparatus having a reduced number of output terminals. 3,950,743, Cl. 340-336.000.

Hatfield, James: *See—*
Abbey, Antony F.; and Hatfield, James, 3,949,608.

Haude, Freidhelm: *See—*
Haas, Helmut; and Haude, Freidhelm, 3,949,942.

Haug, Theobald; and Schmitter, Andre, to Ciba-Geigy Corporation. Mixtures, containing polyimides, which can be converted to heat-resistant foamed plastics. 3,950,279, Cl. 260-2.50N.

Hauni-Werke Korber & Co. KG: *See—*
Wochnowski, Waldemar, 3,950,698.

Haury, Vernon E., to Rockwell International Corporation. Method of producing triaminoguanidine nitrate. 3,950,421, Cl. 260-564.00F.

Haury, Vernon E.: *See—*
Flanagan, Joseph E.; and Haury, Vernon E., 3,950,196.

Havekost, Peter: *See—*
Gaffal, Karl; Martens, Rolf; and Havekost, Peter, 3,949,971.

Hawk, Lawrence S., to United States of America, Energy Research and Development Administration. Leak test fixture and method for using same. 3,949,596, Cl. 73-40.700.

Hawkins, Albert W.; O'Shea, Ronald J.; and Case, Herbert M., to Union Carbide Corporation. Rotary heat sealer. 3,950,205, Cl. 156-251.000.

Hay, George P. Fire extinguishing system. 3,949,812, Cl. 169-61.000.

Hayashi, Yutaka; Nagai, Kiyoko; and Tarui, Yasuo, to Agency of Industrial Science & Technology. Semi-conductor non-volatile optical memory device. 3,950,738, Cl. 340-173.0LS.

Hayashi, Yutaka: *See—*
Tarui, Yasuo; Hayashi, Yutaka; and Sekigawa, Toshihiro, 3,950,777.

Hayashida, Yoshihiro, to Tokico Ltd. Plural actuator for disc brakes. 3,949,846, Cl. 188-345.000.

Hayssen Manufacturing Company: *See—*
Jason, Henry; and Eddison, Christopher Richard, 3,949,537.

Hayward, James R.; Keyser, William L.; Swanson, Paul W.; and Zielinski, Walter J., to Quaker Oats Company, The. Baked product containing protein and vitamins and process for preparing same. 3,950,545, Cl. 426-72.000.

Hazelett, Robert William; Wood, John Frederick Barry; and Carmichael, Robert J., to Hazelett Strip-Casting Corporation. Symmetrical belt tensioning system and apparatus for twin-belt continuous casting machines. 3,949,805, Cl. 164-278.000.

Hazelett Strip-Casting Corporation: *See—*
Hazelett, Robert William; Wood, John Frederick Barry; and Carmichael, Robert J., 3,949,805.

Hazen, George G.: *See—*
Chamberlin, Earl M.; Russ, Warren K., Jr.; and Hazen, George G., 3,950,408.

Heaps, Christopher: *See—*
Cluley, Edward Samuel; and Heaps, Christopher, 3,949,484.

Heavner, Larry W., to Coronet Container Corporation. Reinforced collapsible container. 3,949,874, Cl. 206-386.000.

Heberlein & Co.: *See—*
Raschle, Josef, 3,949,618.

Hechtl, Wolfgang: *See—*
Hittmair, Paul; Hechtl, Wolfgang; Louis, Eckhart; and Wohlfarth, Ernst, 3,950,300.

Heerlein, Horst, to Puppenfabrik Hans Gotz. Walking doll with sitting capability. 3,949,521, Cl. 46-247.000.

Heese, William E.; and Sutton, John R., to HydraPower Inc.; and Offshore Equipment Development Co. Method and apparatus for connecting a tug with a barge. 3,949,699, Cl. 114-235.00A.

Hein-Werner Corporation: *See—*
Suechting, William G., 3,949,644.

Heldreth, Robert L., to White-Westinghouse Corporation. Pump with self-cleaning lint filter. 3,949,578, Cl. 68-18.00F.

Helms, Harold E., to General Motors Corporation. Turbine blade. 3,950,114, Cl. 416-97.00A.

Henderson, Joseph H.: *See—*
Henderson, Terry; and Henderson, Joseph H., 3,950,154.

Henderson, Margaret Y., to New Venture Engineering, Inc. Yarn sorting device. 3,949,452, Cl. 28-1.00R.

Henderson, Terry; and Henderson, Joseph H. Regenerating drying system. 3,950,154, Cl. 55-179.000.

Hendrickson, Carl E. Epoxy gun. 3,949,904, Cl. 222-135.000.

Henke, Arthur W.: *See—*
Miller, Marshall W.; Henke, Arthur W.; and Antos, John M., 3,949,430.

Henkel & Cie G.m.b.H.: *See—*
Jeromin, Lutz; Bremus, Norbert; Friederici, Georg; and Peiffer, Peter, 3,950,371.
Singer, Helmut; and Stein, Werner, 3,950,365.

Henry, Keith V. Rotary mower blade with detachable end members. 3,949,541, Cl. 56-295.000.

Henschel-Steinau, Inc.: *See—*
Fortunato, Vincent, 3,949,880.

Hensley, Linda W.; Li, George S.; and Coffey, Gerald P., to Standard Oil Company. Polymerizates of olefinic nitriles and diene rubbers. 3,950,454, Cl. 260-879.000.

Herbst, Willy; Rudolphy, Albert; and Simson, Hans Peter, to Hoechst Aktiengesellschaft. Pigment compositions in paste or powder form for use in printing inks. 3,950,288, Cl. 260-22.0CB.

Hercules Incorporated: *See—*
Diveley, William R., 3,950,366.
Torrans, David James, 3,950,121.

Hernandez, Sebastian: *See—*
Kahan, Jean S.; Kahan, Frederick M.; Stapley, Edward O.; Goegelman, Robert T.; and Hernandez, Sebastian, 3,950,357.

Herr, Charles H., Jr., to Caterpillar Tractor Co. Lock-out device for final drive of a track-type vehicle. 3,949,823, Cl. 180-9.620.

Herring, George Deems; and Wilson, David Ronald, to International Business Machines Corporation. Disk file access mechanism. 3,950,783, Cl. 360-78.000.

Hess, Hans-Jurgen Ernst: *See—*
De Angelis, Gerald George; and Hess, Hans-Jurgen Ernst, 3,950,525.

Hess, Herbert: *See—*
Schuler, Udo; Hess, Herbert; and Klotz, Gunter, 3,949,943.

Hessert, James E.: *See—*
Threlkeld, Curtis B.; Hessert, James E.; Clampitt, Richard L.; and Needham, Riley B., 3,949,811.

Hevesy, William K. Biopsy set. 3,949,747, Cl. 128-2.00B.

Higashi, Susumu: *See—*
Kokusho, Yoshitaka; Higashi, Susumu; Machida, Haruo; and Iwasaki, Shinjiro, 3,950,221.

Higgins, William E.: *See—*
Etchison, Alan D.; and Higgins, William E., 3,950,728.

Higuchi, Takeru; and Hussain, Anwar, to Interx Research Corporation. Administration of alkali metal salicylamide salts. 3,950,521, Cl. 424-233.000.

Higuma, Toyonori: *See—*
Yoshimura, Hirofumi; Higuma, Toyonori; and Itoo, Noriaki, 3,950,083.

Hill, Kenneth O.; Watanabe, Akira; and Chambers, John G., to Canadian Patents and Development Limited. Quantum amplifier having passive core and active cladding providing signal gain by interaction of evanescent-wave components of signal and pump beams propagating along the core. 3,950,707, Cl. 330-4.300.

Hill, Robert L.; and Edwards, Max M., to Music City Supplement Company. Pulverulent vitamin and mineral-fortified clay product for farrowing house floor. 3,950,546, Cl. 426-72.000.

Hill, W. Eugene: *See—*
Broedner, Walter F.; Bhatnagar, Ravinder K.; Hill, W. Eugene; and Tjoa, Daniel W., 3,950,654.

Hiller, Donald E., to Rayne International. Filter with quick-connect coupling. 3,950,251, Cl. 210-232.000.

Hindel, Robert: *See—*
Martone, Ronald J.; Mueller, Peter G.; and Hindel, Robert, 3,950,648.

Hines, James W.: *See—*
Drury, Raymond L., Jr.; Nevin, Charles S.; and Hines, James W., 3,950,290.

Hinkle, Harry J.; Wilson, Mack E.; and Wade, Jack H., to Hampshire-Designers, Inc. Elastic yarn binder and cutter. 3,949,571, Cl. 66-140.00S.

Hinnen, Alain, to Saint-Gobain Industries. Synthesis of photochromic indolinespiropyrans. 3,950,356, Cl. 260-326.11S.

Hino, Seiichi: *See—*
Inomata, Jihei; Michishima, Susumu; Kasahara, Kanji; Hino, Seiichi; Igarashi, Satoru; and Tani, Tatsuo, 3,950,304.

Hirano, Masachika: *See—*
Ueda, Minoru; Ooba, Shigehiro; Hirano, Masachika; and Takeda, Hisami, 3,950,374.

Hirashima, Kenzo: *See—*
Fujiwara, Yasuhiko; and Hirashima, Kenzo, 3,949,623.

Hirata, Noritsugu: *See—*
Toyama, Masamichi; Takigawa, Tomoshi; Hirata, Noritsugu; Sakaguchi, Keiichi; and Ichiyanagi, Toshikazu, 3,950,775.

Hiroishi, Makoto; Mitsunaga, Kazuo; and Fujisawa, Yoshiyuki, to Foseco International Limited. Method of casting molten metal using mold additives. 3,949,803, Cl. 164-56.000.

Hirokane, Sigeru: *See—*
Yokota, Yoshiro; Ueda, Toshihiko; Nakano, Osamu; Hirokane, Sigeru; and Hisatomi, Yoshiro, 3,950,409.
Hirono, Yoshihiko: *See—*
Sawaki, Mikio; Iwataki, Isao; Hirono, Yoshihiko; and Ishikawa, Hisao, 3,950,420.
Hirooka, Masaaki: *See—*
Usamoto, Teruyoshi; Okita, Taisuke; Yoshida, Nobuyuki; Hirooka, Masaaki; Taniguchi, Isoji; and Imai, Shyozaburo, 3,950,281.
Hirose, Isao; Funabashi, Kazutoshi; Fuji, Takeshi; and Kawajiri, Kiyoshi, to Teijin Ltd. Process for oxidizing olefins. 3,950,440, Cl. 260-635.00H.
Hirose, Kimiharu: *See—*
Kazaoka, Kenichi; Hirose, Kimiharu; Takeshita, Yasuo; and Matsumoto, Hisao, 3,949,825.
Hirota, Hozumi; and Tawara, Yoshio, to Matsushita Electrical Industrial Co., Ltd. Permanent magnet materials. 3,950,194, Cl. 148-31.570.
Hirschberg, Hans: *See—*
Lange, Gerhardt; and Hirschberg, Hans, 3,950,189.
Hirschmann, Ralph F.; and Veber, Daniel F., to Merck & Co., Inc. Process for preparing e-pyridyl-4-methyloxycarbonyllysine. 3,950,348, Cl. 260-295.00R.
Hisatomi, Yoshiro: *See—*
Yokota, Yoshiro; Ueda, Toshihiko; Nakano, Osamu; Hirokane, Sigeru; and Hisatomi, Yoshiro, 3,950,409.
Hitachi Chemical Co., Ltd.: *See—*
Chu, Tzong Jeng; and Konii, Susumu, 3,950,309.
Hittmair, Paul; Hechtl, Wolfgang; Louis, Eckhart; and Wohlfarth, Ernst, to Wacker-Chemie GmbH. Dental impression materials. 3,950,300, Cl. 260-37.0SB.
Hitzel, Volker; Weyer, Rudi; and Aumuller, Walter, to Hoechst Aktiengesellschaft. Hypoglycemic benzenesulfonamido pyrimidines. 3,950,524, Cl. 424-251.000.
Hobart Corporation: *See—*
Athey, Stuart E.; Lee Vore, Alan; and Swihart, Donald E., 3,949,782.
Hodges, William E. Method of making a composite natural stone veneer product. 3,950,202, Cl. 156-154.000.
Hodil, Elmer R., to Olin Corporation. Powder-actuated tool. 3,949,922, Cl. 227-10.000.
Hoechst Aktiengesellschaft: *See—*
Albrecht, Konrad; and Frensch, Heinz, 3,950,265.
Benninger, Siegfried, 3,950,235.
Fernholz, Hans; Wunder, Friedrich; and Schmidt, Hans-Joachim, 3,950,400.
Finke, Manfred; and Kleiner, Hans-Jerg, 3,950,413.
Gneuss, Detlef; Strutzel, Hans; and Meintzschel, Wolfgang, 3,950,469.
Herbst, Willy; Rudolphy, Albert; and Simson, Hans Peter, 3,950,288.
Hitzel, Volker; Weyer, Rudi; and Aumuller, Walter, 3,950,524.
Militzer, Hans; Winkelmann, Erhardt; and Raether, Wolfgang, 3,950,539.
Neumaier, Hubert; Vogt, Wilhelm; Sennewald, Kurt; Schuller, Richard; and Lenz, Gunther, 3,950,384.
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Hoehn, Richard F., to Caterpillar Tractor Co. Lock-up clutch flow-limiting and pressure-reducing valve. 3,949,847, Cl. 192-3.300.
Hoelle, Hermann: *See—*
Rittmannsberger, Norbert; Hoelle, Hermann; and Bertsch, Klaus, 3,949,717.
Hoenel, Herbert; and Lackner, Heinrich, to Vianova Kunstharz, A.G. Coating process and composition. 3,950,286, Cl. 260-19.00R.
Hoffmann, Hellmut; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. O-pyrazolopyrimidine-(thiono)-phosphoric(phosphonic) acid esters. 3,950,337, Cl. 260-256.40E.
Hoffmann-La Roche Inc.: *See—*
Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, 3,950,418.
Gardner, John Nicholson; and Whitesides, George McClelland, 3,950,446.
Gey, Karl Friedrich; Kiss, Joseph; Lengsfeld, Hans; Wyss, Pierre-Charles; and Schuep, Willy, 3,950,324.
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Hoffmeister, Bernhard, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Gripping device. 3,950,020, Cl. 294-86.00A.
Hofmann, Ross E. Wrinkle-reducing method. 3,949,741, Cl. 128-76.00B.
Hohlfeld, Ronald W.; and Klein, Dieter H., to Dow Chemical Company, The. Dielectric coating composition. 3,950,594, Cl. 428-511.000.
Hohne, Gerd: *See—*
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Holcomb, Orla L., Jr., to Clark Equipment Company. Brake adjuster. 3,949,843, Cl. 188-196.00R.
Holl, Raymond, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Aircraft gas turbine engine turbine blade cooling. 3,949,549, Cl. 60-226.00R.
Holliger, Adolf: *See—*
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Hollmann, Arthur E. Anti-skidding device for shoes. 3,949,495, Cl. 36-62.000.
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Cumming, James C.; and Holmes, Alton B., 3,949,840.
Holmstrom, Godfrey A.: *See—*
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Honda Giken Kogyo Kabushiki Kaisha: *See—*
Honda, Soichiro; Morioka, Minoru; and Tukahara, Takeshi, 3,949,829.
Honda, Keisuke. Horizontal fish detection sonar. 3,950,724, Cl. 340-3.00R.
Honda, Soichiro; Morioka, Minoru; and Tukahara, Takeshi, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust silencer for motorcycle. 3,949,829, Cl. 181-36.00D.
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Jaszka, Daniel J., 3,950,500.
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Hopkins, Brian Martin, to Becton, Dickinson & Company. Image analysers. 3,950,610, Cl. 178-6.000.
Hopkins, Leslie Arthur, to Air Cushion Equipment Limited. Fluid-propelled transporters. 3,949,953, Cl. 243-3.000.
Hopkins, Neil E., to Borg-Warner Corporation. Purge arrangement for absorption refrigeration systems. 3,949,566, Cl. 62-475.000.
Hopper, Randall R.: *See—*
Adams, James M.; Hopper, Randall R.; Pease, Robert R.; and Raley, Garland E., 3,950,480.
Hori, Osamu; and Yamanaka, Teruo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Distributor for an internal combustion engine containing an apparatus for suppressing noise. 3,949,721, Cl. 123-146.50A.
Hori, Yutaka; Honda, Zenzo; Suzuki, Kenji; Nakamoto, Keiji; and Yamamoto, Yoshiharu, to Nitto Electric Industrial Co., Ltd. Metal foil-plastic laminate and method of preparing the same. 3,950,605, Cl. 174-107.000.
Horiguchi, Masaharu; Edahiro, Takao; Masuno, Kunio; Miyashita, Tadashi; and Takahashi, Shiro, to Nippon Telegraph & Telephone Public Corporation. Eccentric core optical waveguide. 3,950,073, Cl. 350-96.0WG.
Horne, Charles A., Jr., to Shell Oil Company. Pyrrolidine insect control agents. 3,950,530, Cl. 424-274.000.
Horning, Bent, to F. L. Smidth & Co. Tube mill. 3,949,940, Cl. 241-30.000.
Horowitz, Alexandre: *See—*
Beusink, Bernard Joseph, deceased; Cuypers, Marinus Hubertus; and Horowitz, Alexandre, 3,949,621.
Horstmann, Harald; Meng, Karl; and Wehinger, Egbert, to Bayer Aktiengesellschaft. 1-Substituted-3-amino-pyrazol-5-ones. 3,950,528, Cl. 424-273.000.
Horvath, Laszlo. Sailplane storage system. 3,949,887, Cl. 214-16.10A.
Hosaka, Hirokazu: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,950,431.
Hosaka, Motohiko, to Sony Corporation. Cassette holding device for tape recording and/or reproducing apparatus. 3,950,787, Cl. 360-137.000.
Hoshi, Hiroshi: *See—*
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Hoshidenkiseizo Kabushikikaisha: *See—*
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Hosoe, Kazuya; Matsumoto, Seiichi; and Mochizuki, Noritaka, to Canon Kabushiki Kaisha. System for automatically focusing an object in a camera or the like. 3,950,764, Cl. 354-25.000.
Hottinger Baldwin Measurements: *See—*
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Houston, William T. Automatic combination check valve. 3,949,786, Cl. 137-460.000.
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Birch, Leslie William; Dean, Desmond Alfred; and Howell, Harry, deceased, 3,949,751.
Howell, William L. Parenteral fluid administration set. 3,949,745, Cl. 128-214.00C.
Hruda, Robert M., to Westinghouse Electric Corporation. Bellows type shorting switch. 3,950,628, Cl. 200-302.000.
Hruda, Robert M., to Westinghouse Electric Corporation. Electrodeless discharge adaptor system. 3,950,670, Cl. 315-344.000.
Hsieh, An-Li: *See—*
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Chang, Stephen S.; Ostric-Matijasevic, Biserka; Huang, Cheng-Li; and Hsieh, An-Li, 3,950,266.
Huber, Wolfgang; and Schrecke, Horst G., to SKF Industrial Trading and Development Company, B.V. Textile machine bearings. 3,950,039, Cl. 308-3.00R.
Hudson, Marshall C.: *See—*
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Huffman Manufacturing Company, The: *See—*
Fuhrman, Delmar L., 3,949,838.
Hufford, James N.; and Zdanys, John, to CTS Corporation. Variable resistance control. 3,950,722, Cl. 338-150.000.
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Callis, James W.; and Chambers, William A., 3,950,611.
DeJong, Arthur E.; and Cosand, Neal H., 3,950,667.
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Hull, Donald G. Sink clip inserting device. 3,949,795, Cl. 145-52.000.
Humber, Leslie G.: *See—*
Philipp, Adolf H.; Demerson, Christopher A.; and Humber, Leslie G., 3,950,343.
Humpherys, Bernarr H., to United States of America, Navy. Video retimer system. 3,950,704, Cl. 328-55.000.
Hunt, David F. Apparatus for processing meat. 3,949,659, Cl. 99-348.000.
Hunter, Cloyce R. Portable fire escape. 3,949,832, Cl. 182-7.000.
Hussain, Anwar: *See—*
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Hutton, James Cameron; and Carter, Merle Francis, to Remington Arms Company, Inc. Top lock mechanism for break-open firearm. 3,949,507, Cl. 42-44.000.
Huxsoll, Charles C.; Weaver, Merle L.; and Graham, Robert P., to United States of America, Agriculture. Process for peeling fruits and vegetables. 3,950,556, Cl. 426-287.000.
HydraPower Inc.: *See—*
Heese, William E.; and Sutton, John R., 3,949,699.
Ichigaya, Koji; Machida, Hiromasa; Sudoh, Masayuki; Mizuno, Masami; and Awata, Yoriyoshi, to Sony Corporation. Beam misslanding correcting system for color cathode ray tube. 3,950,671, Cl. 315-368.000.
Ichikoh Industries Limited: *See—*
Yamashita, Makoto; Kushida, Masagoro; Niitsuma, Fumio; Enomoto, Masao; and Miyamoto, Akira, 3,950,081.
Ichiyanagi, Toshikazu: *See—*
Toyama, Masamichi; Takigawa, Tomoshi; Hirata, Noritsugu; Sakaguchi, Keiichi; and Ichiyanagi, Toshikazu, 3,950,775.
ICI Australia Limited: *See—*
Fox, Richard; and Oldland, Hubert Charles, 3,950,159.
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Idemitsu Petrochemical Co., Ltd.: *See—*
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Rotenberg, Vladimir Adolfovich; Khruschova, Kira Markovna; Zilberg, Jury Yakovlevich; Begidzhanova, Anzhelika Petrovna; Gulyaev, Anatoly Sergeevich; Protasova, Irina Vladimirovna; Shapochkin, Alexei Ivanovich; Pavlov, Vladislav Ivanovich; Mirakov, Eduard Sergeevich; Izotov, Arseny Emelyanovich; Serikov, Ivan Alexandrovich; and Ignatiev, Not Vasilievich, 3,950,164.
Ii, Motohiko: *See—*
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Usamoto, Teruyoshi; Okita, Taisuke; Yoshida, Nobuyuki; Hirooka, Masaaki; Taniguchi, Isoji; and Imai, Shyozaburo, 3,950,281.
Imai, Takaichi; Ii, Motohiko; and Goto, Yoshio, to Sanyo Chemical Industries, Ltd. Aqueous lubricants. 3,950,258, Cl. 252-33.000.
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Ito, Kenji; Takahashi, Isao; Ito, Yo; Imai, Takuo; Kosumi, Fumio; and Kuguminato, Hideo, 3,950,191.
Imamura, Juichi; Ando, Moriyasu; Sasaki, Kazuo; and Iio, Takumi, to Oxirane Chemical Co. Method for manufacture of dihydric phenols. 3,950,437, Cl. 260-621.00G.
Imme, Helmut; and Moser, Werner, to SKF Industrial Trading and Development Company, B.V. Method for the production of concentric machine elements. 3,950,044, Cl. 308-23.000.
Imperial Chemical Industries Limited: *See—*
Barlow, Charles Brian, 3,950,377.
Birchall, James Derek; and Cassidy, John Edward, 3,950,177.
Buckley, Alan John; Gazzard, Edward George; Singer, Michael; and Taylor, John Anthony, 3,950,349.
Feasey, Ronald George; and Rose, John Brewster, 3,950,428.
Gent, Alan Edward Alford, 3,950,369.
Gregory, Peter, 3,950,128.
Hasler, Robin, 3,950,466.
Kapoor, Jatinder Kumar; and Turner, John Norman, 3,950,559.
Kenworthy, Jeffrey Stuart; Morton, Michael John; and Taylor, Michael David, 3,950,478.
Lopez-Merono, Jose, 3,950,410.
Moore, Colin; and Thornton, Michael Joseph, 3,950,229.
Steel, Margaret Lilian; and Holt, Frank, 3,950,182.
Imperial Paper Box Corporation: *See—*
Platt, Joseph, 3,949,873.
Imura, Toshinori, to Minolta Camera Kabushiki Kaisha. Single-lens reflex camera having electronic shutter. 3,950,770, Cl. 354-152.000.
Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Quinazoline derivatives in pharmaceutical compositions for treating pain and inflammation. 3,950,526, Cl. 424-251.000.
Inamoto, Yoshiaki; Nakayama, Hirokazu; Takenaka, Hidetsugu; and Kadono, Takeji, to Kao Soap Co., Ltd. Diesters of tricyclic alcohols. 3,950,396, Cl. 260-475.00R.
Industra Products, Inc.: *See—*
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Industrial Devices, Inc.: *See—*
Kausen, Theodore, 3,950,061.
Industrie Pirelli S.p.A.: *See—*
Ballocci, Giovanni; and Brollo, Aurelio, 3,949,858.
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Lubbersmeyer, Karl, 3,950,046.
Ing. C. Olivetti & C., S.p.A.: *See—*
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Ingenjorsfirma B. Nord AB: *See—*
Nord, Bernt Ivar, 3,949,564.
Inomata, Jihei; Michishima, Susumu; Kasahara, Kanji; Hino, Seiichi; Igarashi, Satoru; and Tani, Tatsuo, to Mitsubishi Chemical Industries Ltd. Curable composition used for an electrical insulating material. 3,950,304, Cl. 260-42.370.
Inoue, Gentei; Sato, Chuichi; Tanaka, Mamoru; and Matsuo, Nobuhiro, to Nippon Seiko Kabushiki Kaisha. Fluid pressure seal arrangement. 3,949,996, Cl. 277-15.000.
Inoue, Ichizo; Adachi, Takeshi; and Kondo, Kazuhiko, to Tanabe Seiyaku Co., Ltd. Novel process for preparing 2,2'-cyclocytidine or 1-β-D-arabinofuranosyl cytosine. 3,950,325, Cl. 260-211.50R.
Inoue, Masakazu: *See—*
Okamoto, Takehiko; Kishimoto, Akihiko; Inoue, Masakazu; Nagai, Ikuo; and Otani, Mitsunobu, 3,950,455.
Inoue, Tsunekazu: *See—*
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Insite Corporation: *See—*
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Institut de Recherches de la Siderurgie Francaise (IRSID): *See—*
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Institut Francaise de Petrole, des Carburants et Lubrifiants: *See—*
Cassand, Jean; and Fail, Jean-Pierre, 3,949,831.
Institut Merieux: *See—*
Gaudry, Daniel; and Precausta, Pierre, 3,950,511.
Institute po Metaloznanie i Technologia na Metalite: *See—*
Nikolov, Ivan Dimov; Semerdjiev, Stefan Georgiev; Nenov, Dragan Iliev; and Popov, Nikolay Tihomirov, 3,949,905.
Institutul de Cercetare si Proietare Pentru Industria Eletrotehnica: *See—*
Lazaroiu, Dumitru Felician; Sleiher, Sigmund; and Mihaiescu, Gheorghe Mihai, 3,950,666.
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International Business Machines Corporation: *See—*
Chang, Hsu; Chen, Tien C.; Lee, Share-Young; and Tung, Chin, 3,950,732.
Dohanich, George J., Jr., 3,950,682.
Herring, George Deems; and Wilson, David Ronald, 3,950,783.
Mattson, Gary LeVerne, 3,950,658.
Porter, Townsend Henry, Jr.; and Schopp, Robert Ellsworth, 3,949,951.
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International Standard Electric Corporation: *See—*
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International Telephone & Telegraph Corporation: *See—*
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Interx Research Corporation: *See—*
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Iowa State University Research Foundation, Inc.: *See—*
Gopfert, Wolfgang M.; and Read, Alvin A., 3,950,097.

Irwin, Malcolm F., to Textured Yarn Co., Inc. Treatment of textile film strands. 3,949,454, Cl. 28-72.140.

Irwin, Malcolm F., to Pro-Tech Inc. Liquid sampling. 3,949,613, Cl. 73-421.00B.

Irwin, Malcolm F.: *See—*
List, Ralph W.; Irwin, Malcolm F.; and Stanley, Robert K., 3,949,453.
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Ishibashi, Keijiro: *See—*
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Ishida, Mitsuo: *See—*
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Ishiguro, Minoru; Takeuchi, Yuzo; and Shiozaki, Shozo, to Nippon Zeon Co., Ltd. Process for preparing petroleum resins. 3,950,453, Cl. 260-878.00B.

Ishihara Sangyo Kaisha Ltd.: *See—*
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Toki, Tadaaki; and Someya, Shinzo, 3,950,435.

Ishii, Kiyoshi; and Konomi, Shobu, to Daicel Ltd. Supported semipermeable membranes. 3,950,255, Cl. 210-490.000.

Ishii, Kiyoshi; and Honda, Zenjiro, to Daicel Ltd. Semipermeable membrane and process for the preparation thereof. 3,950,257, Cl. 210-500.00M.

Ishii, Mitsuaki: *See—*
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Ishikawa, Hisao: *See—*
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Ishikawa, Seiji: *See—*
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Ishiwatari, Yoshiro: *See—*
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Ishiyama, Masahiko: *See—*
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Ishizumi, Kikuo: *See—*
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Matuoka, Nozomu; Kitatani, Harumi; Isogami, Shuzo; Ishibashi, Masaaki; and Uemura, Tomohiko, 3,950,701.

ITEK Corporation: *See—*
Madigan, Thomas M., 3,949,671.

Ito, Kenji; Takahashi, Isao; Ito, Yo; Imai, Takuo; Kosumi, Fumio; and Kuguminato, Hideo, to Kawasaki Steel Corporation. Cold rolled steel sheets having an excellent enamelability and a method for producing said cold rolled steel sheets. 3,950,191, Cl. 148-12.100.

Ito, Toshio: *See—*
Toyama, Mitsuo; Ito, Toshio; Kobayashi, Eiji; and Kosaka, Hideo, 3,950,185.

Ito, Yo: *See—*
Ito, Kenji; Takahashi, Isao; Ito, Yo; Imai, Takuo; Kosumi, Fumio; and Kuguminato, Hideo, 3,950,191.

Itoh, Kunio; Kuga, Naoyoshi; and Fukuda, Takeshi, to Shin-Etsu Chemical Co., Ltd. Heat-curable silicone rubber compositions. 3,950,299, Cl. 260-37.0SB.

Itoo, Noriaki: *See—*
Yoshimura, Hirofumi; Higuma, Toyonori; and Itoo, Noriaki, 3,950,083.

ITT Industries, Inc.: *See—*
Fink, Werner; Kircher, Dieter; von Grunberg, Hubertus; and Bleck-Mann, Hans-Wilhelm, 3,950,036.
Oberthur, Heinrich, 3,949,456.

Iwahori, Eitaro; Kurita, Mitsuo; and Uno, Mitsumasa, to Chisso Corporation. Process for producing synthetic pulp from a film of a mixture of polypropylene and low density polyethylene. 3,950,473, Cl. 264-141.000.

Iwasaki, Shinjiro: *See—*
Kokusho, Yoshitaka; Higashi, Susumu; Machida, Haruo; and Iwasaki, Shinjiro, 3,950,221.

Iwasaki, Shozo, to Kabushiki Kaisha Akashi Seisakusho. Load application mechanism of Rockwell hardness tester. 3,949,600, Cl. 73-83.000.

Iwata, Hisao; Hasewaga, Gentaro; and Shimizu, Kameichi, to Mitsubishi Seiko Kabushiki Kaisha. Grab bucket for dredging sludge. 3,949,498, Cl. 37-187.000.

Iwataki, Isao: *See—*
Sawaki, Mikio; Iwataki, Isao; Hirono, Yoshihiko; and Ishikawa, Hisao, 3,950,420.

Izawa, Yasushi: *See—*
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Rotenberg, Vladimir Adolfovich; Khruschova, Kira Markovna; Zilberg, Jury Yakovlevich; Begidzhanova, Anzhelika Petrovna; Gulyaev, Anatoly Sergeevich; Protasova, Irina Vladimirovna; Shapochkin, Alexei Ivanovich; Pavlov, Vladislav Ivanovich; Mirakov, Eduard Sergeevich; Izotov, Arseny Emelyanovich; Serikov, Ivan Alexandrovich; and Ignatiev, Not Vasilievich, 3,950,164.

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J. I. Case Company: *See—*
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Jack Gutschneider Jewelry Co., Inc.: *See—*
Gutschneider, Jack, 3,949,569.

Jackson, Earl V.; Teumer, Roger G.; and Baldwin, LeRoy, to Xerox Corporation. Velocity compensation for bead bypass with speed reduction. 3,950,088, Cl. 355-3.00P.

Jackson, John Alan: *See—*
Woodford, Peter David; and Jackson, John Alan, 3,949,778.

Jacobs, M. Neal; and Mainzer, Richard. Child resistant sliding panel container. 3,949,899, Cl. 220-346.000.

Jacobsson, Kurt Arne Gunnar, to Aktiebolaget IRO. Thread delivery device for textile machines. 3,949,573, Cl. 66-132.00T.

Jade Corporation, The: *See—*
Keizer, Alan S.; and Harris, Hugh R., 3,949,925.

Jahnsen, Knut Waldeman, to Elkem-Spigerverket A/S. Apparatus for purification of industrial waste water. 3,950,250, Cl. 210-208.000.

Jaklin, Hans. Concrete containing sparingly soluble barium compounds. 3,950,178, Cl. 106-89.000.

Jakob Muller Forschungs-und Finanz AG: *See—*
Speich, Francisco, 3,949,788.

Jamison, Robert M. Method and apparatus for charging and discharging a battery. 3,950,689, Cl. 320-5.000.

Janome Sewing Machine Co., Ltd.: *See—*
Komiyama, Uichi, 3,950,155.

Jansa, Milos: *See—*
Kopal, Jaroslav; Jansa, Milos; and Deiss, Jaroslav, 3,949,572.

Japan Eng. Co., Ltd.: *See—*
Arakawa, Hideo; Hasebe, Tatsuo; and Sato, Shigeru, 3,950,267.

Jarco Services Ltd.: *See—*
Raugust, Theodore Arthur, 3,949,821.

Jarocinska Fabryka Obrabiarek Przedsiebiorstwo Panstwowe: *See—*
Czabanski, Boleslaw, 3,949,622.

Jasinski, Raymond J., to Texas Instruments Incorporated. Lead reference and counter electrode for an electrochromic display. 3,950,077, Cl. 350-160.00R.

Jason, Henry; and Eddison, Christopher Richard, to Hayssen Manufacturing Company. Apparatus for packaging. 3,949,537, Cl. 53-226.000.

Jastrow, Horst: *See—*
Noetzel, Siegfried; Jastrow, Horst; and Fischer, Edgar, 3,950,458.

Jaszka, Daniel J., to Hooker Chemicals & Plastics Corporation. Method of producing chlorine dioxide. 3,950,500, Cl. 423-480.000.

Jaulmes, Eric, to Ateliers de la Motobecane. Improvements made to the lubrication of engines. 3,949,725, Cl. 123-196.00R.

Jelalian, Albert V.: *See—*
Keene, Wayne H.; Harris, Clarke E.; Jelalian, Albert V.; Miller, Christopher R.; and Seavey, Richard E., 3,950,100.

Jenaer Glaswerk Schott & Gen.: *See—*
Gliemeroth, Georg; and Meckel, Lothar, 3,950,591.

Jenoptik Jena G.m.b.H.: *See—*
Ropte, Gunther, 3,949,785.

Jensen, Villy Johannes, to Novo Terapeutisk Laboratorium A/S. Process of stabilizing therapeutically useful plasmin solutions. 3,950,513, Cl. 424-94.000.

Jeromin, Lutz; Bremus, Norbert; Friederici, Georg; and Peiffer, Peter, to Henkel & Cie G.m.b.H. Method of separating mixtures of fatty substances. 3,950,371, Cl. 260-419.000.

Jet Aeration Company: *See—*
Jordan, Edward J.; and Snyder, John R., 3,950,252.

JFD Electronics Corporation: *See—*
Mirrione, James J.; and Berger, Jerome, 3,950,758.

Jirak, Thomas L., to Medtronic, Inc. Automatic threshold following cardiac pacer. 3,949,758, Cl. 128-419.0PG.

Joel, Amos Edward, Jr., to Bell Telephone Laboratories, Incorporated. Message charge control telephone answering device. 3,950,619, Cl. 179-6.00C.

Johansson, Ronald C., to Minnesota Mining and Manufacturing Company. Connector for looped wire. 3,950,063, Cl. 339-97.00R.

John Cooper and Sons Limited: *See—*
Sandbrook, Dennis Ronald; and Melling, Harry, 3,949,474.

Johns-Manville Corporation: *See—*
Pallo, John M.; and Fischer, Donald J., 3,950,259.

Johnson, Betty. Method of cutting and storing garment-pattern shaped pieces of textile material. 3,949,629, Cl. 83-27.000.

Johnson & Johnson: *See—*
Levesque, Yvon George, 3,950,218.

Levesque, Yvon George, 3,950,219.
Verdicchio, Robert J.; and Walts, John M., 3,950,417.

Johnson, Kenneth J. Device for retrieving minnows. 3,949,510, Cl. 43-4.000.

Johnson, LeRoy E. Grain field marker. 3,949,686, Cl. 111-1.000.

Johnson, Philip C.: *See—*
O'Brien, John L.; Johnson, Philip C.; and Lee, D. William, 3,949,466.

Johnson, Robert R.; Jones, Robert E.; and Zwald, John A., to GTE Sylvania Incorporated. Removable subdie. 3,949,589, Cl. 72-413.000.

Jolly, William D.: *See—*
Dixon, Norman E.; and Jolly, William D., 3,950,659.

Jones, Clarence O., Jr.; and Abraham, William F., to Niagara Machine & Tool Works. Automation switching apparatus. 3,950,623, Cl. 200-31.00R.

Jones, Colin Stanley, to International Standard Electric Corporation. Medium temperature thermistor. 3,950,273, Cl. 252-517.000.

Jones, Freeman B., Jr., to Rockwell International Corporation. Schiff-base liquid crystals doped to raise dynamic scattering cutoff frequency. 3,950,264, Cl. 252-299.000.

Jones, Herbert; and Dorn, Michael Thomas, to Simon-Barron Limited. Pelletising machines. 3,950,120, Cl. 425-314.000.

Jones, Ivor Wynn, to Electricity Council, The. Production of β-alumina ceramic tubes. 3,950,463, Cl. 264-57.000.

Jones, John T.; Ludt, William C.; and Kellogg, Hudson W., to Ethyl Corporation. Automatic antiknock adjustment. 3,949,595, Cl. 73-35.000.

Jones, Joseph K.: *See—*
Willcutt, M. Herbert; and Jones, Joseph K., 3,949,448.

Jones, Robert E.: *See—*
Johnson, Robert R.; Jones, Robert E.; and Zwald, John A., 3,949,589.

Jonsson, Olov; and Milaszewski, Edward. Sandwich-type building panel and mounting assembly therefor. 3,949,532, Cl. 52-404.000.

Joosten, Louis Geradus Josephus; and Verbeij, Oswald Johannes, to U.S. Philips Corporation. Circuit arrangement for generating a sawtooth deflection current through a line deflection coil. 3,950,674, Cl. 315-389.000.

Jordan, Edward J.; and Snyder, John R., to Jet Aeration Company. Upflow filter. 3,950,252, Cl. 210-281.000.

Joshua Shaw & Sons Limited: *See—*
Bennett, Sydney, 3,949,824.

Joullie, Maurice; Lakah, Lucien; Maillard, Gabriel; and Muller, Pierre, to Recherches Pharmaceutiques et Scientifiques. Cysteine derivatives. 3,950,387, Cl. 260-468.00L.

Jovick, Raymond John; and Malott, Roger James, to Rockwell International Corporation. Wheel speed sensor for drive axle. 3,949,841, Cl. 188-181.00R.

Julien, Howard B. Device for use with buttonhole attachment. 3,949,687, Cl. 112-77.000.

Jurrens, Lawrence D., to Phillips Petroleum Company. Hot-melt adhesive composition. 3,950,291, Cl. 260-23.70R.

K S B Kernkraftwerkspumpen GmbH: *See—*
Stech, Peter, 3,949,567.

K/Tronic, Inc.: *See—*
Shapley, Bruce D., 3,950,786.

Kablaoui, Mahmoud; and Love, Richard F., to Texaco Inc. Preparation of nitronitrates. 3,950,385, Cl. 260-466.000.

Kabushiki Kaisha Akashi Seisakusho: *See—*
Iwasaki, Shozo, 3,949,600.

Kabushiki Kaisha Ricoh: *See—*
Yamashita, Hajime, 3,950,652.

Kabushiki Kaisha Suwa Seikosha: *See—*
Chihara, Hiroyuki, 3,949,545.
Saito, Toshiaki, 3,949,546.
Shimodaira, Tadayoshi; and Gomi, Yoshifumi, 3,949,664.

Kabushiki Kaisha Toyota Chuo Kenkysusho: *See—*
Masaki, Hideyuki, 3,950,464.

Kabushiki Kaisha Yashika: *See—*
Yoshimura, Hirofumi; Higuma, Toyonori; and Itoo, Noriaki, 3,950,083.

Kadono, Takeji: *See—*
Inamoto, Yoshiaki; Nakayama, Hirokazu; Takenaka, Hidetsugu; and Kadono, Takeji, 3,950,396.

Kadoya, Shizuo: *See—*
Okano, Atsuji; Kadoya, Shizuo; Naito, Takeo; Aoyagi, Takaaki; and Shimizu, Masao, 3,950,405.

Kaempfer, Knut: *See—*
Broecker, Franz Josef; Zirker, Guenter; Triebskorn, Bruno; Marosi, Laszlo; Schwarzmann, Matthias; Dethlefsen, Winfried; and Kaempfer, Knut, 3,950,368.

Kahan, Frederick M.: *See—*
Kahan, Jean S.; Kahan, Frederick M.; Stapley, Edward O.; Goegelman, Robert T.; and Hernandez, Sebastian, 3,950,357.

Kahan, Jean S.; Kahan, Frederick M.; Stapley, Edward O.; Goegelman, Robert T.; and Hernandez, Sebastian, to Merck & Co., Inc. Antibiotics. 3,950,357, Cl. 260-326.270.

Kahn, Henry. Device useful in dental crown procedures and method of using the same. 3,949,476, Cl. 32-12.000.

Kakuda, Minoru: *See—*
Sugano, Junichiro; Kakuda, Minoru; and Tsuiki, Tokuzo, 3,950,126.

Kall, Horst, to L. & C. Steinmuller GmbH. Device for separating liquids from gaseous media. 3,950,156, Cl. 55-440.000.

Kalopissis, Gregoire; and Manoussos, Georges, to L'Oreal. Cysteamine derivatives for oral treatment of seborrhea. 3,950,542, Cl. 424-316.000.

Kamezawa, Yasutoki: *See—*
Nihyakumen, Kouzi; Ueda, Yasui; Kamezawa, Yasutoki; and Aizawa, Tatsuo, 3,950,171.

Kamyr, Inc.: *See—*
Funk, Erwin D., 3,950,146.
Funk, Erwin D.; Laakso, Oliver A.; and Prough, James R., 3,950,147.

Kandler, Herbert: *See—*
Kurz, Dieter; Kandler, Herbert; Sabel, Alex; and Bauer, Johann, 3,950,312.

Kane, William S.: *See—*
Cardwell, Paul H.; and Kane, William S., 3,950,486.

Kaneko, Yasuhisa; Morita, Akiyoshi; Nemoto, Yasuo; and Nagataki, Junichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Heat insulating castings. 3,949,552, Cl. 60-282.000.

Kaneko, Yasuhisa; Komiyama, Yoshiro; Kondo, Katsumi; Noda, Fumiyoshi; Murakami, Hideki; and Uchida, Kunihiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of manufacturing a metal-impregnated body. 3,949,804, Cl. 164-62.000.

Kangas, Donald A.; and Neuendorf, W. Robert, to Dow Chemical Company, The. Reversible coacervation of anion-containing aqueous disperse systems with amphoteric polyelectrolytes. 3,950,296, Cl. 260-29.6PT.

Kano, Ichiro; and Yoshinari, Hideki, to Canon Kabushiki Kaisha. Both-side printing device. 3,950,094, Cl. 355-45.000.

Kao Soap Co., Ltd.: *See—*
Inamoto, Yoshiaki; Nakayama, Hirokazu; Takenaka, Hidetsugu; and Kadono, Takeji, 3,950,396.

Kapaan, Hendrikus Jan, to SKF Industrial Trading and Development Company, B.V. Tube cut-off machine. 3,949,632, Cl. 83-188.000.

Kapitanov, Nikolai Nikolaevich: *See—*
Akopov, Ernest Mikhailovich; Kapitanov, Nikolai Nikolaevich; Strekopytov, Alexei Alexeevich; Ogoltsova, Evgenia Sergeevna; and Paches, Alexandr Ilich, 3,949,923.

Kaplan, Nathan O., to University of California, The Regents of the. 6-Amino-isoproterenol. 3,950,422, Cl. 260-570.600.

Kapolyi, Laszlo: *See—*
Nemecz, Erno; Ujhidy, Aurel; Polinszky, Karoly; Szepvolgyi, Janos; Borlai, Oszkar; Kapolyi, Laszlo; and Szekely, Tamas, 3,950,485.

Kapoor, Jatinder Kumar; and Turner, John Norman, to Imperial Chemical Industries Limited. Method for delaying ripening of harvested bananas. 3,950,559, Cl. 426-335.000.

Kar Products Inc.: *See—*
Bellanca, Joseph M.; Sargert, Lewis D.; and Antrim, Rodney M., 3,949,719.

Karayannis, Nicholas M.; and Lee, Sam S., to Standard Oil Company. Catalyst for the polymerization of olefins. 3,950,268, Cl. 252-429.00B.

Karll, Robert E.: *See—*
Petrille, Dennis G.; and Karll, Robert E., 3,950,401.

Karmann, Hans-Georg: *See—*
Baumann, Hans-Peter; and Karmann, Hans-Georg, 3,950,419.

Karrer, Friedrich, to Ciba-Geigy Corporation. New terpene aryl ethers. 3,950,328, Cl. 260-240.00H.

Kasahara, Kanji: *See—*
Inomata, Jihei; Michishima, Susumu; Kasahara, Kanji; Hino, Seiichi; Igarashi, Satoru; and Tani, Tatsuo, 3,950,304.

Kashio, Toshio, to Casio Computer Co., Ltd. Ink pressurizing apparatus for an ink jet recorder. 3,950,761, Cl. 346-140.00R.

Katayama, Tsutomu; and Ishiwatari, Yoshiro, to Fuji Oil Co., Ltd. Fried tofu product and method for making the same. 3,950,550, Cl. 426-94.000.

Kato, Bunichi. Quickly interchangeable slide mounts. 3,949,505, Cl. 40-152.000.

Kato, Chuzo, to Mitsubishi Kinzoku Kabushiki Kaisha. Coloring composites. 3,950,180, Cl. 106-288.00Q.

Katsevich, Leonid Savvich: *See—*
Popov, Alexandr Nikolaevich; Katsevich, Leonid Savvich; and Rozenberg, Vladimir Lvovich, 3,950,601.

Katsuji, Akiyama. Multicolour offset press. 3,949,670, Cl. 101-177.000.

Kaufer, Carl. Cable winch. 3,949,969, Cl. 254-175.700.

Kausen, Theodore, to Industrial Devices, Inc. Socket for wedge base lamp. 3,950,061, Cl. 339-93.00L.

Kawajiri, Kiyoshi: *See—*
Hirose, Isao; Funabashi, Kazutoshi; Fujii, Takeshi; and Kawajiri, Kiyoshi, 3,950,440.

Kawakami, Hideaki: *See—*
Adachi, Tomio; Mitsuishi, Yukio; Miura, Rikuo; and Kawakami, Hideaki, 3,950,206.

Kawamura, Keiko: *See—*
Fukuda, Tadanori; Takahashi, Masao; and Kawamura, Keiko, 3,950,284.

Kawasaki Steel Corporation: *See—*
Ito, Kenji; Takahashi, Isao; Ito, Yo; Imai, Takuo; Kosumi, Fumio; and Kuguminato, Hideo, 3,950,191.
Shiokawa, Nobumasa; Maeda, Masakazu; Harada, Takashi; Takehara, Tsuguo; Fujikawa, Hiroyuki; and Yokokawa, Akio, 3,949,974.

Kazaoka, Kenichi; Hirose, Kimiharu; Takeshita, Yasuo; and Matsumoto, Hisao, to Aisin Seiki Kabushiki Kaisha. Safety belt for vehicles. 3,949,825, Cl. 180-82.00C.

Keck, Johannes; Noll, Klaus-Reinhold; Pieper, Helmut; Kruger, Gerd; and Puschmann, Sigfrid, to Boehringer Ingelheim GmbH. Aminobenzyl-amides and salts thereof. 3,950,193, Cl. 260-471.00R.

Keene, Wayne H.; Harris, Clarke E.; Jelalian, Albert V.; Miller, Christopher R.; and Seavey, Richard E., to Raytheon Company. Laser heterodyne system. 3,950,100, Cl. 356-28.000.

Kehl, Donald K.; and Crist, Eugene A. Greenhouse. 3,949,522, Cl. 47-17.000.

Keizer, Alan S.; and Harris, Hugh R., to Jade Corporation, The. Outer lead bonder. 3,949,925, Cl. 228-5.500.

Kelch, Heinz; and Mueller, Helmut, to Kienzle Apparate GmbH. Damped transfer arrangement for a counter. 3,950,633, Cl. 235-133.00R.

Keller, Alex Jacques, to Automatic Material Handling, Inc. Bale handing method and apparatus. 3,949,890, Cl. 214-152.000.

Keller, Wolfgang: *See*—
Reuschel, Konrad; Kersting, Arno; and Keller, Wolfgang, 3,950,479.

Kellogg, Hudson W.: *See*—
Jones, John T.; Ludt, William C.; and Kellogg, Hudson W., 3,949,595.

Kelsey-Hayes Company: *See*—
Tribe, Leonard T., 3,950,035.

Kennecott Copper Corporation: *See*—
Pemsler, J. Paul; and Litchfield, John K., 3,950,487.
Skarbo, Roald R.; and Natwig, David L., 3,950,488.

Kenney, John Thomas, to Western Electric Company, Inc. Method of depositing a metal on a surface. 3,950,570, Cl. 427-98.000.

Kent, S. Leonard; Lemons, Thomas M.; and MacLeod, Robert B., Jr., to Lam Incorporated. High intensity indirect lighting fixture. 3,950,638, Cl. 240-41.100.

Kenworthy, Jeffrey Stuart; Morton, Michael John; and Taylor, Michael David, to Imperial Chemical Industries Limited. Process for producing alumina fiber. 3,950,478, Cl. 264-234.000.

Keogh, Raymond J.: *See*—
Burr, Robert Page; and Keogh, Raymond J., 3,950,662.

Keoseian, Richard S.: *See*—
Laumann, David H. E., 3,950,578.

Kern, Donald F., to Square D Company. Control system for an electric vehicle incorporating a brake switch. 3,950,681, Cl. 318-139.000.

Kerr, David S.: *See*—
Sortwell, Edwin T.; and Kerr, David S., 3,949,937.

Kersting, Arno: *See*—
Reuschel, Konrad; Kersting, Arno; and Keller, Wolfgang, 3,950,479.

Keuchel, Herbert W., to PNC Company. Fibrillated textile structure and process of producing same. 3,950,582, Cl. 428-85.000.

Key, Columbus B., Jr.; and Spaulding, Vincent M. Bicycle spoke tension gauge and adjuster. 3,949,604, Cl. 73-144.000.

Keyes, Robert J.: *See*—
Rotstein, Jacob; and Keyes, Robert J., 3,950,645.

Keyser, William L.: *See*—
Hayward, James R.; Keyser, William L.; Swanson, Paul W.; and Zielinski, Walter J., 3,950,545.

Khan, Hamid Iqbal: *See*—
Connelly, William; Khan, Hamid Iqbal; and McEwan, Ian Hugh, 3,950,294.

Kheng, Chong Sue. Separation and collection of egg components. 3,950,557, Cl. 426-299.000.

Khruschova, Kira Markovna: *See*—
Rotenberg, Vladimir Adolfovich; Khruschova, Kira Markovna; Zilberg, Jury Yakovlevich; Begidzhanova, Anzhelika Petrovna; Gulyaev, Anatoly Sergeevich; Protasova, Irina Vladimirovna; Shapochkin, Alexei Ivanovich; Pavlov, Vladislav Ivanovich; Mirakov, Eduard Sergeevich; Izotov, Arseny Emelyanovich; Serikov, Ivan Alexandrovich; and Ignatiev, Not Vasilievich, 3,950,164.

Kiehn, Mogens. Free fall safety device. 3,949,842, Cl. 188-189.000.

Kienzle Apparate GmbH: *See*—
Kelch, Heinz; and Mueller, Helmut, 3,950,633.

Kim, Soojaa L.: *See*—
Gilbert, Richard D.; Stannett, Vivian T.; and Kim, Soojaa L., 3,950,282.

Kinder, John W. Gear driven linkage for moving members between limit positions. 3,950,050, Cl. 312-247.000.

King, Derek Anthony: *See*—
West, Anthony Alfred; and King, Derek Anthony, 3,949,762.

King, John O., Jr. Coldworked joint held by seamless tubular member. 3,949,535, Cl. 52-758.00D.

Kingsford Company, The: *See*—
Pyle, Owen, 3,950,143.

Kirch, Hans-Joachim: *See*—
Dornseifer, Karl Friedrich; Kirch, Hans-Joachim; Levacher, Friedrich; and Nolting, Karl Heinz, 3,950,676.

Kircher, Dieter: *See*—
Fink, Werner; Kircher, Dieter; von Grunberg, Hubertus; and Bleck-Mann, Hans-Wilhelm, 3,950,036.

Kirkpatrick, Allen R., to Simulation Physics, Inc. Method and apparatus involving pulsed electron beam processing of semiconductor devices. 3,950,187, Cl. 148-1.500.

Kirkpatrick, William J., to Agridustrial Electronics, Inc. Instrument for sensing level of granular materials. 3,950,653, Cl. 307-116.000.

Kishimoto, Akihiko: *See*—
Okamoto, Takehiko; Kishimoto, Akihiko; Inoue, Masakazu; Nagai, Ikuo; and Otani, Mitsunobu, 3,950,455.

Kiss, Joseph: *See*—
Gey, Karl Friedrich; Kiss, Joseph; Lengsfeld, Hans; Wyss, Pierre-Charles; and Schuep, Willy, 3,950,324.

Kitadono, Kaoru: *See*—
Wada, Motomu; Kitadono, Kaoru; and Oishi, Akira, 3,950,278.

Kitajima, Masaichi. Automobile detecting and announcing device. 3,950,725, Cl. 340-31.00R.

Kitatani, Harumi: *See*—
Matuoka, Nozomu; Kitatani, Harumi; Isogami, Shuzo; Ishibashi, Masaaki; and Uemura, Tomohiko, 3,950,701.

Kitayama, Minoru; Yamaguchi, Susumu; and Odashima, Hisao, to Nippon Steel Corporation. Heat treatment of metals in a controlled surface atmosphere. 3,950,575, Cl. 427-226.000.

Kitazawa, Shin-ich; Negishi, Takao; and Susami, Kozo, to Toray Industries, Inc. Process for producing high bulky yarn by false-twisting system. 3,949,544, Cl. 57-157.0TS.

Klar, Irwin; and Rochussen, Arthur W., to American Electromedics Corporation. Method and apparatus for an ipsilateral reflex test. 3,949,735, Cl. 128-2.00Z.

Klebe, Elmer C., Jr.; and Looper, Timothy J., to Singer Company, The. Safety switch for drill press using chuck key. 3,950,625, Cl. 200-61.58R.

Klefisch, Dieter G. A. Dredge units. 3,950,246, Cl. 209-44.000.

Klein, Dieter H.: *See*—
Hohlfeld, Ronald W.; and Klein, Dieter H., 3,950,594.

Klein, Keith William; Howell, Edward Keith; and Palmieri, Joseph Michael, to General Electric Company. Housing mounting arrangement for ground fault circuit interrupter. 3,950,677, Cl. 317-120.000.

Klein, Max, to Normac, Inc. Methacrylic acid addition salt of 2-mono(-lower)alkyl amino ethyl methacrylate. 3,950,398, Cl. 260-486.00R.

Klein, Schanzlin & Becker Aktiengesellschaft: *See*—
Holz, Hans, 3,950,220.

Kleine, Martin K.: *See*—
Brown, Carl A.; and Kleine, Martin K., 3,950,248.

Kleiner, Hans-Jerg: *See*—
Finke, Manfred; and Kleiner, Hans-Jerg, 3,950,413.

Klett, Stanley D.: *See*—
Charland, Terrence D.; and Klett, Stanley D., 3,949,704.

Klimek, Rudolf: *See*—
Bauer, Peter; and Klimek, Rudolf, 3,949,693.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Haas, Helmut; and Haude, Freidhelm, 3,949,942.

Kloss, Wilfred: *See*—
Eggensperger, Heinz; Franzen, Volker; Diehl, Karl-Heinz; and Kloss, Wilfred, 3,950,382.

Klotz, Gunter: *See*—
Schuler, Udo; Hess, Herbert; and Klotz, Gunter, 3,949,943.

Knarr, Raymond L. Three dimensional interlocking puzzles. 3,949,994, Cl. 273-160.000.

Knight, Edwin E.: *See*—
Albrecht, Harry A.; Diver, Michael; Fowle, Norman F.; and Knight, Edwin E., 3,949,550.

Knirsch, Franco; Lavagna, Dino; and Rossi, Giorgio, to Ing. C. Olivetti & C., S.p.A. Thermosensitive element, and its employ in the thermographic reproduction or record systems. 3,950,600, Cl. 428-327.000.

Knouse Foods Cooperative, Inc.: *See*—
Cogley, Jeremiah Richard, 3,950,552.

Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans-Georg, to Eisenwerk-Gesellschaft Maximilianshutte mbH. Process for increasing the life of basic refractory linings in hearth-type furnaces. 3,950,161, Cl. 75-52.000.

Kobayashi, Eiji: *See*—
Toyama, Mitsuo; Ito, Toshio; Kobayashi, Eiji; and Kosaka, Hideo, 3,950,185.

Kobayashi, Kenji: *See*—
Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamamoto, Hisao, 3,950,346.

Koch, Theodore A., to Du Pont de Nemours, E. I., and Company. Preparation of aromatic diacid chlorides. 3,950,414, Cl. 260-544.00D.

Koehring Company: *See*—
Bishop, Thomas G.; and Flickinger, William T., 3,949,973.

Kogyo Gijutsuin: *See*—
Tarui, Yasuo; Hayashi, Yutaka; and Sekigawa, Toshihiro, 3,950,777.

Koh-I-Noor Rapidograph, Inc.: *See*—
Anderka, Gerold, 3,950,762.

Koizumi, Masayoshi; and Tamura, Satoshi, to Nippon Data Recorder Co., Ltd.; and Nippon Pulsmotor Co., Ltd. Apparatus for automatically adjusting the playback position of magnetic data recording device. 3,950,784, Cl. 360-84.000.

Kokusho, Yoshitaka; Higashi, Susumu; Machida, Haruo; and Iwasaki, Shinjiro, to Meito Sangyo Kabushiki Kaisha. Process for improving the quality of microbial rennet. 3,950,221, Cl. 195-65.000.

Kolling, Heinrich; Widdig, Arno; Thomas, Herbert; and Schulz, Hans Peter, to Bayer Aktiengesellschaft. Benzoylphenylguanidines. 3,950,395, Cl. 260-471.00C.

Kominami, Naoya; Tamura, Nobuhiro; and Yamamoto, Etsuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for producing biphenyls. 3,950,434, Cl. 260-613.00R.

Komiyama, Uichi, to Janome Sewing Machine Co., Ltd. Automatic air-purifying system. 3,950,155, Cl. 55-210.000.

Komiyama, Yoshiro: *See*—
Kaneko, Yasuhisa; Komiyama, Yoshiro; Kondo, Katsumi; Noda, Fumiyoshi; Murakami, Hideki; and Uchida, Kunihiko, 3,949,804.

Kondo, Fusao: *See*—
Toyoda, Sadao; Takenouchi, Kuniyoshi; Hara, Noboru; and Kondo, Fusao, 3,950,275.

Kondo, Katsumi: *See*—
Kaneko, Yasuhisa; Komiyama, Yoshiro; Kondo, Katsumi; Noda, Fumiyoshi; Murakami, Hideki; and Uchida, Kunihiko, 3,949,804.

Kondo, Kazuhiko: *See*—
Inoue, Ichizo; Adachi, Takeshi; and Kondo, Kazuhiko, 3,950,325.

Konii, Susumu: *See*—
Chu, Tzong Jeng; and Konii, Susumu, 3,950,309.

Konomi, Shobu: *See*—
Ishii, Kiyoshi; and Konomi, Shobu, 3,950,255.

Konwinski, Arthur H.: *See*—
Puski, Gabor; and Konwinski, Arthur H., 3,950,564.

Koos, Josef: *See*—
Schweizer, Gottfried; Koos, Josef; and Smolka, Thomas G., 3,950,002.

Kopal, Jaroslav; Jansa, Milos; and Deiss, Jaroslav, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. High impact knitting needle. 3,949,572, Cl. 66-115.000.

Koppe, Herbert: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Hoefke, Wolfgang, 3,950,523.

Koppers Company, Inc.: *See*—
Fry, Harry J., 3,950,577.

Kops, Lucian: *See*—
Farmer, Donald Allen; and Kops, Lucian, 3,950,042.

Korger, Heinz, to Marker, Hannes. Method and apparatus for releasing a ski boot from a ski. 3,950,003, Cl. 280-11.35K.

Korndorfer, Eugen: *See*—
Korsten, Andreas; Benecke, Theodor; Korndorfer, Eugen; Petersen, Fritz; and Wiebke, Gunter, 3,950,602.

Korsten, Andreas; Benecke, Theodor; Korndorfer, Eugen; Petersen, Fritz; and Wiebke, Gunter, to Elektroschmelzwerk Kempten GmbH. Furnace installation operated by direct electrical heating according to the resistance principle in particular for preparation of silicon carbide. 3,950,602, Cl. 13-20.000.

Kosaka, Hideo: *See*—
Toyama, Mitsuo; Ito, Toshio; Kobayashi, Eiji; and Kosaka, Hideo, 3,950,185.

Kosaka, Yujiro; Uemura, Masaru; Saito, Mitsutaka; and Suzuki, Yuji, to Toyo Soda Manufacturing Co., Ltd. Process for preparing carboxylated polymer composition. 3,950,209, Cl. 156-333.000.

Koschalk, Robert Francis: *See*—
Dodge, John Dennis; and Koschalk, Robert Francis, 3,949,771.

Koshiba, Masao: *See*—
Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; and Yamamoto, Hisao, 3,950,526.

Kosumi, Fumio: *See*—
Ito, Kenji; Takahashi, Isao; Ito, Yo; Imai, Takuo; Kosumi, Fumio; and Kuguminato, Hideo, 3,950,191.

Kotuby, Paul M.: *See*—
Pettersen, Edward A.; and Kotuby, Paul M., 3,949,906.

Kotzsch, Hans-Joachim: *See*—
Vahlensieck, Hans-Joachim; Seiler, Claus-Dieter; and Kotzsch, Hans-Joachim, 3,950,364.

Kounkel, Gerald L.: *See*—
Armstrong, William R.; and Kounkel, Gerald L., 3,949,707.

Koval, Raymond J.: *See*—
Pomper, Edward G.; and Koval, Raymond J., 3,950,778.

Koyama, Mitsuo: *See*—
Nakagawa, Tadashi; Koyama, Mitsuo; and Onda, Eiichi, 3,950,772.

Koyano, Takashi; and Fukushi, Saburo, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for preparing vicinal dialkoxyalkanes. 3,950,436, Cl. 260-615.00R.

Kozai, Tetsuo, to Morita Pump Kabushiki Kaisha. Safety device for lifter-equipped extensible ladder vehicle. 3,949,833, Cl. 182-19.000.

Krafthefer, Kerry M.: *See*—
Stipanuk, John M.; and Krafthefer, Kerry M., 3,950,060.

Kramer, Melvin G., to LRC, Inc. DC motor position controller. 3,950,685, Cl. 318-561.000.

Kratfel, Edward R., to Scientific Research Instruments. Off axis rotary valve. 3,949,967, Cl. 251-314.000.

Krekeler, Claude B. Trim chain take-up sprocket assembly for mining machines and the like. 3,950,031, Cl. 299-76.000.

Kresser, Joseph L.: *See*—
Campbell, Marcus E., 3,949,481.

Krones-Transyscop GmbH: *See*—
Grimm, Gerhard, 3,950,085.

Krueger, John A.: *See*—
Frant, Martin S.; Riseman, John H.; and Krueger, John A., 3,950,231.

Kruger, Gerd: *See*—
Keck, Johannes; Noll, Klaus-Reinhold; Pieper, Helmut; Kruger, Gerd; and Puschmann, Sigfrid, 3,950,393.

Kruishoop, Johan Christiaan Willem, to U.S. Philips Corporation. Method of quantitave analysis. 3,949,599, Cl. 73-61.10R.

Kuehl, Guenther L., to Resid-Trans., Inc. Residual gearing transmission including satellite carrier provided with inverted continuous chain loop. 3,949,619, Cl. 74-225.000.

Kuga, Naoyoshi: *See*—
Itoh, Kunio; Kuga, Naoyoshi; and Fukuda, Takeshi, 3,950,299.

Kuguminato, Hideo: *See*—
Ito, Kenji; Takahashi, Isao; Ito, Yo; Imai, Takuo; Kosumi, Fumio; and Kuguminato, Hideo, 3,950,191.

Kuhlman, Harvey G. Apparatus for forming shells of dough. 3,949,660, Cl. 99-352.000.

Kuiper, Jan Lucas, to Stork Amsterdam B.V. Device for changing the direction of movement of an advancing row of cylindrical containers with respect to their main axis of symmetry. 3,949,867, Cl. 198-271.000.

Kuklina, Valentina Nikclaevna: *See*—
Boreskov, Georgy Konstantinovich; Kuklina, Valentina Nikclaevna; Levitsky, Emmanuil Aronovich; Badaev, Boris Nikolaevich; and Balashov, Vladimir Alexandrovich, 3,950,507.

Kultzow, Robert J.: *See*—
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Kummer, Werner: *See*—
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Kumoda, Masashi: *See*—
Miyashin, Noboru; Kumoda, Masashi; Nishonomiya, Makoto; Nakayama, Katsumi; and Izawa, Yasushi, 3,950,499.

Kuo, Ted L. C., to Thomas & Betts Corporation. Modular connector. 3,950,064, Cl. 339-97.00C.

Kupchan, Solomon Morris; and Liepa, Andris J., to University of Virginia, The. Non-phenol oxidative coupling. 3,950,344, Cl. 260-289.00A.

Kupersmit, Julius B. Collapsible container construction having hook and pile interconnecting means. 3,949,929, Cl. 229-23.00C.

Kurei, Hiroshi: *See*—
Mita, Kunio; and Kurei, Hiroshi, 3,950,774.

Kurihara, Kazuhiko: *See*—
Yazawa, Masahide; Kurihara, Kazuhiko; Narikawa, Kenichi; and Yazawa, Hirosi, 3,950,467.

Kurita, Mitsuo: *See*—
Iwahori, Eitaro; Kurita, Mitsuo; and Uno, Mitsumasa, 3,950,473.

Kurz, Dieter; Kandler, Herbert; Sabel, Alex; and Bauer, Johann, to Wacker-Chemie GmbH. Vinyl chloride terpolymers soluble in aromatic compounds and method for their production. 3,950,312, Cl. 260-78.5CL.

Kushida, Masagoro: *See*—
Yamashita, Makoto; Kushida, Masagoro; Niitsuma, Fumio; Enomoto, Masao; and Miyamoto, Akira, 3,950,081.

Kusters, Norbert L.: *See*—
MacMartin, Malcolm P.; and Kusters, Norbert L., 3,950,742.

Kyker, Glendon D.: *See*—
Richter, Sidney B.; and Kyker, Glendon D., 3,950,307.

L. & C. Steinmuller GmbH: *See*—
Kall, Horst, 3,950,156.

La Soudure Autogene Francaise: *See*—
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La Vermiculite et la Perlite S.A.: *See*—
Beranger, Jean; and Perrin, Pierre, 3,950,197.

Laakso, Oliver A.: *See*—
Funk, Erwin D.; Laakso, Oliver A.; and Prough, James R., 3,950,147.

Labbe, Francis Auguste Maurice; and Marritt, Clifford Russell, to Molins Limited. Cigarette making machines. 3,949,763, Cl. 131-84.00B.

Laboratoire Roger Bellon: *See*—
Pesson, Marcel, 3,950,338.

Laboratoires Servier: *See*—
Mony, Claude; and Costes, Genevieve, 3,950,508.

Labsky, Jiri; and Exner, Josef, to Ceskoslovenska akademie ved. 1,4-Diacyloxy-2,3-butendiol. 3,950,399, Cl. 260-486.00R.

Lachman, Irwin M.; and Bagley, Rodney D., to Corning Glass Works. Pore size control in cordierite ceramic. 3,950,175, Cl. 106-40.00R.

Lackner, Heinrich: *See*—
Hoenel, Herbert; and Lackner, Heinrich, 3,950,286.

Laftsidis, Stergios: *See*—
Glabe, Elmer F.; Anderson, Perry W.; Laftsidis, Stergios; and Grothus, Phillip G., 3,950,551.

Lahr, Roy Jeremy; and Weller, Frank M., Jr., to Xerox Corporation. Proportional-spaced character print wheel. 3,949,853, Cl. 197-53.000.

Laimins, Eric, to Hottinger Baldwin Measurements. Strain gage transducer. 3,949,603, Cl. 73-141.00A.

Laing, Graham Stirling: *See*—
Willis, Wesley Nelson; and Laing, Graham Stirling, 3,949,504.

Lakah, Lucien: *See*—
Joullie, Maurice; Lakah, Lucien; Maillard, Gabriel; and Muller, Pierre, 3,950,387.

Lake, Peter B., to Youngstown Sheet and Tube Company. Recovery-annealed cold-reduced plain carbon steels and methods of producing. 3,950,190, Cl. 148-12.00R.

Lalancette, Jean-Marc, to Ventron Corporation. Graphite intercalated antimony pentafluoride. 3,950,262, Cl. 252-187.00R.

Lam Incorporated: *See*—
Kent, S. Leonard; Lemons, Thomas M.; and MacLeod, Robert B., Jr., 3,950,638.

Lamar, Percie L., III; Marks, Robert M.; and Piggott, Andrew, to Syntex (U.S.A.) Inc. Dietary composition and methods of preparing. 3,950,547, Cl. 426-74.000.

Lamberti, Vincent, to Lever Brothers Company. Sulfosuccinate derivatives as detergent builders. 3,950,331, Cl. 260-247.10E.

Lamm, Gunther: *See—*
Dehnert, Johannes; and Lamm, Gunther, 3,950,321.
Lamparsky, Dietmar; and Schudel, Peter, to Givaudan Corporation. 2-Methylthio-myrtanal. 3,950,429, Cl. 260-598.000.
Lamson, Wade Petherbridge, to Cleveland Machine Controls, Inc. Motor control system having dead band control. 3,950,683, Cl. 318-327.000.
Landi, Henry Patrick; and Perciaccante, Vincent Anthony, to American Cyanamid Company. Anhydrous liquid iodophor solution. 3,950,261, Cl. 252-106.000.
Landry, Robert J.: *See—*
Deeg, Emil W.; Graf, Robert E.; and Landry, Robert J., 3,950,176.
Lane, Russell W.: *See—*
Larson, Thurston E.; Lane, Russell W.; and Neff, Chester H., 3,950,137.
Lange, George L. Process for inverting an endless belt-type recording belt. 3,950,481, Cl. 264-294.000.
Lange, Gerd, to Rudolf Baresel-Bofinger. Structural members for furniture assemblies. 3,950,051, Cl. 312-263.000.
Lange, Gerhardt; and Hirschberg, Hans, to Messer Griesheim GmbH. Method for cutting out a work piece by a plasma jet or similar cutting arrangement. 3,950,189, Cl. 148-9.00R.
Langmuir, Robert V., to Occidental Petroleum Corporation. Linear induction motor with artificial transmission line. 3,950,661, Cl. 310-12.000.
Lannert, Kent P., to Monsanto Company. Process for making hydroxyether carboxylates. 3,950,388, Cl. 260-468.00K.
Laptev, Nikolai Nikolaevich: *See—*
Smolnikov, Leonid Evgenievich; and Laptev, Nikolai Nikolaevich, 3,950,692.
Larson, Donald J.; and Schexnayder, Lawrence F., to Caterpillar Tractor Co. Brake cooling system with a common fluid mixing chamber. 3,949,844, Cl. 188-264.00P.
Larson, Thurston E.; Lane, Russell W.; and Neff, Chester H., to Illinois State Water Survey of the Department of Registration and Education. Apparatus for measuring the presence of a weak acid or a weak base in a liquid. 3,950,137, Cl. 23-253.00R.
Larsson, Sven Gunnar Olof, to Forenade Fabriksverken. Firing mechanism with adjustable trigger-sear overlap and safety mechanism. 3,949,509, Cl. 42-70.00R.
Laughton, Graham: *See—*
Anderson, Trevor James; and Laughton, Graham, 3,950,614.
Laumann, David H. E., to Keoseian, Richard S. Water-disintegratable sheet material. 3,950,578, Cl. 427-378.000.
Lavagna, Dino: *See—*
Knirsch, Franco; Lavagna, Dino; and Rossi, Giorgio, 3,950,600.
Lawrence Peska Associates, Inc.: *See—*
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Laybourn, Peter: *See—*
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Lazaroiu, Dumitru Felician; Sleiher, Sigmund; and Mihaiescu, Gheorghe Mihai, to Institutul de Cercetare si Proietare Pentru Industria Eletrotehnica. Disk or cup rotor with stamped-out winding elements for a low-inertia electric machine. 3,950,666, Cl. 310-268.000.
Leavesley, Brian, to TRW Inc. Electrical connection means. 3,950,067, Cl. 339-176.0MF.
Lebensfeld, Steven Allen. Parachute toy. 3,949,520, Cl. 46-86.00R.
Lecuyer, Michel: *See—*
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Lee, D. William: *See—*
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Lee, Sam S.: *See—*
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Lee, Share-Young: *See—*
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Lee Vore, Alan: *See—*
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Lefevre, Jean Pierre Gaston: *See—*
Najer, Henry; Pascal, Yves Robert Alain; and Lefevre, Jean Pierre Gaston, 3,950,345.
Lehtipuu, Tauno, to Enso-Gutzeit Osakeyitio. Cell structure for the raising of seedlings. 3,949,523, Cl. 47-34.130.
Lejeune, Daniel, to Compagnie Generale des Etablissements Michelin. Tire with package bead ring. 3,949,800, Cl. 152-362.00R.
Lektromedia Ltd.: *See—*
Carey, Peter Majendie; and Tate, Norman Christopher John, 3,950,782.
LeLand Stanford Junior University, The Board of Trustees of the: *See—*
Miles, Laughton E. M., 3,950,134.
Lemons, Thomas M.: *See—*
Kent, S. Leonard; Lemons, Thomas M.; and MacLeod, Robert B., Jr., 3,950,638.
Lengsfeld, Hans: *See—*
Gey, Karl Friedrich; Kiss, Joseph; Lengsfeld, Hans; Wyss, Pierre-Charles; and Schuep, Willy, 3,950,324.
Lennox Industries, Inc.: *See—*
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Gilles, Theodore C., 3,949,809.
Lenz, Gunther: *See—*
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Lenza, Vincent V. Missile launching toy. 3,949,518, Cl. 46-74.00B.
Leo Pharmaceutical Products Ltd. A/S: *See—*
Feit, Peter Werner; Nielsen, Ole Bent Tvaermose; and Bruun, Herta, 3,950,376.
Feit, Peter Werner; Nielsen, Ole Bent Tvaermose; and Bruun, Herta, 3,950,380.
Leslie, Thomas W.: *See—*
Chun, Sun W.; Cronauer, Donald C.; and Leslie, Thomas W., 3,950,244.
Less, Albert J. Writing guide. 3,949,492, Cl. 35-38.000.
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Levacher, Friedrich: *See—*
Dornseifer, Karl Friedrich; Kirch, Hans-Joachim; Levacher, Friedrich; and Nolting, Karl Heinz, 3,950,676.
Levens, Joseph A., to Nipak, Inc. Pipe repair apparatus and method. 3,950,461, Cl. 264-46.500.
Lever Brothers Company: *See—*
Adams, Geoffrey Philip, 3,950,510.
Lamberti, Vincent, 3,950,331.
Newton, Kenneth; and Sale, Anthony John Hanson, 3,950,549.
van den Ouweland, Godefridus Antonius Maria, 3,950,565.
Levesque, Yvon George, to Johnson & Johnson. Method of manufacturing stabilized fluffy batts of fibers and resulting product therefrom. 3,950,218, Cl. 162-201.000.
Levesque, Yvon George, to Johnson & Johnson. Method of manufacturing a stabilized fluffy batt of fibers and products resulting therefrom. 3,950,219, Cl. 162-201.000.
Leviton Manufacturing Co., Inc.: *See—*
Bienwald, Wolfgang F., 3,950,066.
Levitsky, Emmanuil Aronovich: *See—*
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Lewis, Daniel: *See—*
Whitesides, George M.; McCreary, Michael; and Lewis, Daniel, 3,950,135.
Lewis, Meirion Francis, to National Research Development Corporation. Acoustic wave devices. 3,950,713, Cl. 333-30.00R.
Li, George S.: *See—*
Hensley, Linda W.; Li, George S.; and Coffey, Gerald P., 3,950,454.
Li, Tzu-Hung. Language processing system. 3,950,734, Cl. 340-172.500.
Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Grosholz, Rainer, 3,950,170.
Lide, Theodore E., Jr., to Burlington Industries, Inc. Carrier loading device. 3,949,885, Cl. 214-1.00B.
Liebherr, Hans: *See—*
Reich, Elmar, 3,949,882.
Liederman, David; and Voltz, Sterling E., to Mobil Oil Corporation. Reactivation of automobile exhaust oxidation catalyst. 3,950,491, Cl. 423-213.500.
Liepa, Andris J.: *See—*
Kupchan, Solomon Morris; and Liepa, Andris J., 3,950,344.
Linares, Robert C.; Nienart, Louis F.; and Toelcke, George A., to Allied Chemical Corporation. Nuclear shields. 3,950,271, Cl. 252-478.000.
Lindmayer, Joseph; and Allison, James F., to Communications Satellite Corporation (Comsat). Method of applying an anti-reflective coating to a solar cell. 3,949,463, Cl. 29-572.000.
Lindner, Ernst: *See—*
Stache, Ulrich; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, 3,950,323.
Lindsay, David Gordon; and Shall, Sydney, to National Research Development Corporation. Insulin derivatives. 3,950,517, Cl. 424-178.000.
Linstedt, Hans; Roth, Helmut; Bundschuh, Gotz; Hohne, Gerd; Bodig, Bernd; Strelow, Gert; Schmidt, Peter; Sohner, Gerhard; Roozenbeek, Herman; and Michel, Hartmut, to Robert Bosch G.m.b.H. Semiconductor controlled ignition systems for internal combustion engines. 3,949,722, Cl. 123-148.00E.
Lion Fat & Oil Co., Ltd.: *See—*
Toyoda, Sadao; Takenouchi, Kuniyoshi; Hara, Noboru; and Kondo, Fusao, 3,950,275.
Liou, Shu-Lien, to Chuang, Chin-Chih, a part interest. Drain closure assembly. 3,949,433, Cl. 4-295.000.
Lippi, Dominic M., to A. R. Wood Manufacturing Company (Entire). Combination auger system. 3,949,863, Cl. 198-104.000.
Lipscomb, Robert DeWald, to Du Pont de Nemours, E. I., and Company. Polyolefin/chromium modified mineral compositions and process for their preparation. 3,950,303, Cl. 260-42.140.
Lipsey, Elmer M., to Ato Inc. Loran guidance for remote bomb. 3,949,954, Cl. 244-3.150.
List, Hans. Internal combustion engine with encasing. 3,949,726, Cl. 123-198.00E.
List, Hans: *See—*
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List, Ralph W.; Irwin, Malcolm F.; and Stanley, Robert K., to Textured Yarn Co., Inc. Strand treatment. 3,949,453, Cl. 28-72.0HR.

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Little, Amos J. Tailgate regulators. 3,950,025, Cl. 296-56.000.
Litton Business Systems, Inc.: *See—*
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Madison, Theodore N., 3,949,855.
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Richter, Heinz K., 3,949,958.
Lockwood, Hanford N., Jr. Gas turbine regeneration system. 3,949,548, Cl. 60-39.150.
Loev, Bernard, to SmithKline Corporation. Pharmaceutical compositions and methods of inhibiting gastric acid secretion. 3,950,522, Cl. 424-248.000.
Lohmann, Dieter: *See—*
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Lohmann, Otto Schafer, to Volkswagenwerk Aktiengesellschaft. Air outlet grill for ventilating the passenger compartment of a motor vehicle. 3,949,656, Cl. 98-40.0VM.
Lonza Ltd.: *See—*
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Ryf, Kurt, 3,950,445.
Looman, Wolfgang; Pungs, Wolfgang; Bierwirth, Egon; and Buning, Robert, to Dynamit Nobel Aktiengesellschaft. Method of rotational molding vinylchloride-alkylene copolymer. 3,950,482, Cl. 264-310.000.
Looper, Timothy J.: *See—*
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L'Oreal: *See—*
Bouillon, Claude; and Colin, Michel, 3,950,532.
Kalopissis, Gregoire; and Manoussos, Georges, 3,950,542.
Louie, Edward. Apparatus for making a food product. 3,950,123, Cl. 425-500.000.
Louis, Eckhart: *See—*
Hittmair, Paul; Hechtl, Wolfgang; Louis, Eckhart; and Wohlfarth, Ernst, 3,950,300.
Love, James M.: *See—*
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Love, Richard F.: *See—*
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LRC, Inc.: *See—*
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Lubbersmeyer, Karl, to Industriewerk Schaeffler OHG. Bearing plate. 3,950,046, Cl. 308-190.000.
Luc, Penelope Jane Vesey. Seamed article. 3,949,896, Cl. 220-75.000.
Lucas, Howard R., to Owens-Illinois, Inc. Bottle coating method. 3,950,199, Cl. 156-86.000.
Ludt, William C.: *See—*
Jones, John T.; Ludt, William C.; and Kellogg, Hudson W., 3,949,595.
Luke, Frank A., to United States of America, Army. Projectile. 3,949,675, Cl. 102-80.000.
Lyerly, William Marcelle, to Du Pont de Nemours, E. I., and Company. Semi-rigid sinuous blasting charge and borehole loading method. 3,949,673, Cl. 102-24.00R.
M. Scaglia S.p.A.: *See—*
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Maas, Michael, to Siemens Aktiengesellschaft. Installation for the detection and processing of electrical signals. 3,950,694, Cl. 323-16.000.
Maassen, Wilhelm: *See—*
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Macaluso, Anthony, Sr., to Texaco Inc. Production of linear primary alcohols. 3,950,439, Cl. 260-632.0HF.
MacEwen, George E.: *See—*
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Kent, S. Leonard; Lemons, Thomas M.; and MacLeod, Robert B., Jr., 3,950,638.
MacMartin, Malcolm P.; and Kusters, Norbert L., to Canadian Patents and Development Limited. Adjustable line isolation monitor. 3,950,742, Cl. 340-255.000.
Macovski, Albert. X-ray encoding and decoding system. 3,950,613, Cl. 178-6.800.
Madigan, Thomas M., to ITEK Corporation. System for transporting inked paper from a printing station to a stacker station by means of pressurized air. 3,949,671, Cl. 101-232.000.
Madison, Theodore N., to Litton Business Systems, Inc. Typewriter carriage construction. 3,949,854, Cl. 197-63.000.
Madison, Theodore N., to Litton Business Systems, Inc. Typewriter carriage jam precluding and action jam release mechanisms. 3,949,855, Cl. 197-91.000.
Maeda, Masakazu: *See—*
Shiokawa, Nobumasa; Maeda, Masakazu; Harada, Takashi; Takehara, Tsuguo; Fujikawa, Hiroyuki; and Yokokawa, Akio, 3,949,974.
Magnet, Anton: *See—*
Moss, Arnold T.; Therkleson, Steele Quinton; and Magnet, Anton, 3,950,105.
Mahoney, James D. Side wall construction for a cargo transporting and handling vehicle. 3,950,023, Cl. 296-28.00M.
Maier, Alfred E.: *See—*
Mrenna, Stephen A.; and Maier, Alfred E., 3,950,714.
Maillard, Gabriel: *See—*
Joullie, Maurice; Lakah, Lucien; Maillard, Gabriel; and Muller, Pierre, 3,950,387.
Mainzer, Richard: *See—*
Jacobs, M. Neal; and Mainzer, Richard, 3,949,899.
Malcik, Frank John: *See—*
Unti, Louis Aloyious; Michaelis, Jack Harold; and Malcik, Frank John, 3,950,048.
Malina, Lia Vasilievna: *See—*
Aliev, Vagab Safarovich; Altman, Natalia Borisovna; Galonsky, Pavel Petrovich; Guterman, Alexandr Davidovich; Malina, Lia Vasilievna; Mingareev, Rafkhat Shagimardanovich; Suleimanov, Alekper Bagirovich; Akhmedov, Mansur Ilal ogly, deceased; and Ramazanova, Elmira Mamed Emin kyzy, administrator, 3,950,245.
Malinowski, Stanley: *See—*
Baranowski, Joyce; and Malinowski, Stanley, 3,949,760.
Mallick, George T.: *See—*
Miller, Robert C.; and Mallick, George T., 3,950,696.
Mallinckrodt, Inc.: *See—*
Monte, Alexander A.; and Chiang, Ching, 3,950,133.
Malmin, Oscar. Endodontic operating and sealing method and apparatus therefor. 3,949,479, Cl. 32-15.000.
Malmin, Oscar. Injection syringe having aspirating and metering capabilities. 3,949,748, Cl. 128-218.0DA.
Malott, Roger James: *See—*
Jovick, Raymond John; and Malott, Roger James, 3,949,841.
Malueg, Richard M., to Actron Industries, Inc. Two-axis image motion detector. 3,950,099, Cl. 356-28.000.
Manganaro, George F., to Electro-Matic Staplers Inc. Nested bobbins for an electro-magnetic stapling machine. 3,950,721, Cl. 335-278.000.
Manitowoc Company, The: *See—*
Morrow, James G., Sr.; and Pech, David J., 3,949,881.
Mann, John R. Automobile note pad assembly. 3,949,917, Cl. 224-29.00D.
Manoussos, Georges: *See—*
Kalopissis, Gregoire; and Manoussos, Georges, 3,950,542.
Manufacture Francaise des Chaussures "Eram": *See—*
Maurin, Aristide, 3,950,581.
Maquinaria de Impresion Textil, S.A.: *See—*
Montsant, Jose Aragones, 3,949,864.
Marathon Oil Company: *See—*
Dreher, Karl D.; and Gogarty, William B., 3,950,034.
Mardix, Shmuel; McIlvaine, Paul M.; and Nudelman, Sol. Method of preparing Conductron-type photoconductors and their use as target materials for camera tubes. 3,950,272, Cl. 252-501.000.
Marenchin, John A. Transmission tools. 3,949,459, Cl. 29-427.000.
Marescalco, Anthony E. Convertible tip for crutch or the like. 3,949,773, Cl. 135-57.000.
Marker, Hannes: *See—*
Korger, Heinz, 3,950,003.
Marks, Robert M.: *See—*
Lamar, Percie L., III; Marks, Robert M.; and Piggott, Andrew, 3,950,547.
Marosi, Laszlo: *See—*
Broecker, Franz Josef; Zirker, Guenter; Triebskorn, Bruno; Marosi, Laszlo; Schwarzmann, Matthias; Dethlefsen, Winfried; and Kaempfer, Knut, 3,950,368.
Marritt, Clifford Russell: *See—*
Labbe, Francis Auguste Maurice; and Marritt, Clifford Russell, 3,949,763.
Marshall, Alan C.: *See—*
Zitzow, Harold P.; and Marshall, Alan C., 3,950,752.
Marshall, Alan James: *See—*
Harber, Gerald; Young, Leslie Albert; Allard, Roger Sidney; Marshall, Alan James; and Montgomery, Michael John, 3,949,886.
Marshall, Don J. Wheel stand. 3,949,794, Cl. 144-288.00A.
Martens, Rolf: *See—*
Gaffal, Karl; Martens, Rolf; and Havekost, Peter, 3,949,971.
Martin, Louis E., to Societe Anonyme: Poclain. Hydraulic mechanism, such as a motor or a pump, having radial pistons adapted to perform a plurality of strokes per revolution. 3,949,647, Cl. 91-485.000.
Martin, Raymond S., to Smith, James W.; Stevenson, William E.; and McGill, Arthur P. Apparatus for carrying disc-shaped articles. 3,950,024, Cl. 294-34.000.

Martin, Robert Thomas, to Air Pollution Research System. Pollution control apparatus and method. 3,950,151, Cl. 55-95.000.
Martin-Thomas Limited: *See—*
Mattinson, Frederick, 3,949,444.
Martini, William R.: *See—*
Noble, Jack E.; Riggle, Peter; Emigh, Stuart G.; and Martini, William R., 3,949,554.
Martone, Ronald J.; Mueller, Peter G.; and Hindel, Robert, to Picker Corporation. Scintillation camera. 3,950,648, Cl. 250-369.000.
Maruizumi, Haruki: *See—*
Fukuma, Daizo; Maruizumi, Haruki; and Nagaoka, Tadahiko, 3,950,263.
Marvel Specialty Company: *See—*
Smith, Gus T.; Gregory, Clifton; and Campbell, Lester W., 3,949,913.
Marvin Glass & Associates: *See—*
Breslow, Jeffrey D., 3,949,986.
Breslow, Jeffrey D., 3,949,999.
Meyer, Burton C., 3,949,519.
Morrison, Howard J.; and Allen, Robert K., 3,949,658.
Masaki, Hideyuki, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method for producing a sintered silicon nitride base ceramic and said ceramic. 3,950,464, Cl. 264-65.000.
Masclet, Jean, to Messier Hispano. Distributing unit for a dual action hydraulic electro-distributor. 3,949,645, Cl. 91-459.000.
Massa, Andrew Leo: *See—*
Downs, John D.; and Massa, Andrew Leo, 3,949,895.
Massachusetts General Hospital: *See—*
Fischer, Josef E.; Yoshimura, Norman N.; Westman, Thomas L.; and Deindoerfer, Fred H., 3,950,529.
Massachusetts Institute of Technology: *See—*
Rotstein, Jacob; and Keyes, Robert J., 3,950,645.
Whitesides, George M.; McCreary, Michael; and Lewis, Daniel, 3,950,135.
Massett, Stephen S.: *See—*
Hammen, Philip D.; and Massett, Stephen S., 3,950,350.
Mastrangelo, Sebastian Vito Rocco; and Nelson, Jerry Allen, to Du Pont de Nemours, E. I., and Company. Process for making rigid, electrically conductive, cellular structures. 3,950,460, Cl. 264-44.000.
Masuda, George K., to Steel Company of Canada, Limited, The. Self-drilling screw. 3,949,641, Cl. 85-41.000.
Masuno, Kunio: *See—*
Horiguchi, Masaharu; Edahiro, Takao; Masuno, Kunio; Miyashita, Tadashi; and Takahashi, Shiro, 3,950,073.
Masuzawa, Isao: *See—*
Onishi, Kazutoshi; Awano, Tsuneo; and Masuzawa, Isao, 3,949,696.
Matney, Dorrance Henry. Ram air filter for light aircraft. 3,950,157, Cl. 55-490.000.
Matsuda, Akira: *See—*
Fujikawa, Akira; Takusagawa, Takashi; Matsuda, Akira; and Goshima, Norio, 3,950,726.
Matsui, Akira: *See—*
Suzuki, Hirosi; Matsui, Akira; and Inoue, Tsunekazu, 3,950,451.
Matsui, Toru, to Minolta Camera Kabushiki Kaisha. Camera indicating device with diaphragm control. 3,950,767, Cl. 354-41.000.
Matsumoto, Hisao: *See—*
Kazaoka, Kenichi; Hirose, Kimiharu; Takeshita, Yasuo; and Matsumoto, Hisao, 3,949,825.
Matsumoto, Seiichi: *See—*
Hosoe, Kazuya; Matsumoto, Seiichi; and Mochizuki, Noritaka, 3,950,764.
Matsumoto, Shoji: *See—*
Obara, Kunio; Nishino, Yoshio; and Matsumoto, Shoji, 3,950,166.
Matsuno, Yoshiaki: *See—*
Uchida, Yukimasa; Nojima, Isao; and Matsuno, Yoshiaki, 3,950,737.
Matsuo, Nobuhiro: *See—*
Inoue, Gentei; Sato, Chuichi; Tanaka, Mamoru; and Matsuo, Nobuhiro, 3,949,996.
Matsushita Electric Industrial Co., Ltd.: *See—*
Noda, Katsuhiko; Watanabe, Taisuke; and Niyada, Katsuyuki, 3,950,608.
Tanaka, Yutaka; and Ogawara, Sumio, 3,950,609.
Matsushita Electric Works, Ltd.: *See—*
Nagamoto, Mitsuki, 3,950,718.
Matsushita Electrical Industrial Co., Ltd.: *See—*
Hirota, Hozumi; and Tawara, Yoshio, 3,950,194.
Matsushita Graphic Communication Systems, Inc.: *See—*
Tanaka, Yutaka; and Ogawara, Sumio, 3,950,609.
Mattinson, Frederick, to Martin-Thomas Limited. Castors. 3,949,444, Cl. 16-35.00R.
Mattis, James J.; and Tecotzky, Melvin, to U.S. Radium Corporation. Cathode ray tube containing silicon sensitized rare earth oxysulfide phosphors. 3,950,668, Cl. 313-468.000.
Mattson, Gary LeVerne, to International Business Machines Corporation. Data separator with compensation circuit. 3,950,658, Cl. 307-269.000.
Matuoka, Nozomu; Kitatani, Harumi; Isogami, Shuzo; Ishibashi, Masaaki; and Uemura, Tomohiko, to Hoshidenkiseizo Kabushikikaisha. Rear view mirror for a two-wheeled vehicle. 3,950,701, Cl. 325-312.000.
Maurin, Aristide, to Manufacture Francaise des Chaussures "Eram". Manufacture of prefabricated panels. 3,950,581, Cl. 428-49.000.
Mavor, John: *See—*
McLennan, Donald John; Mavor, John; Vanstone, Gary Francis; and Windle, Donald James, 3,950,655.
Maw, Wayne E.: *See—*
Smith, Ernest L.; Maw, Wayne E.; and MacEwen, George E., 3,949,927.
Maxwell, Palmer M. Proximity actuated magnetic button-contactor assembly for switches. 3,950,719, Cl. 335-205.000.
May, John E., to General Electric Company. Process for making a low voltage varistor. 3,950,274, Cl. 252-519.000.
Mayala, Arne H.; and Antolak, Thomas J., to Minnesota Mining and Manufacturing Company. Solderless electrical connector element application method and apparatus. 3,949,467, Cl. 29-628.000.
Maynard, James Gordon: *See—*
Sherlock, Russell J. W.; and Maynard, James Gordon, 3,949,526.
McBride, La Vaughn R.; Clark, Jack D.; and Center, Dale. Method for rehabilitating scored and marred surfaces. 3,950,571, Cl. 427-142.000.
McCauley, Jerry L.: *See—*
English, David C.; and Holmstrom, Godfrey A., 3,949,822.
McCown, Joseph D.; and Pike, Myron T., to Minnesota Mining and Manufacturing Company. Fluoroaliphatic terpolymers. 3,950,298, Cl. 260-33.60F.
McCreary, Michael: *See—*
Whitesides, George M.; McCreary, Michael; and Lewis, Daniel, 3,950,135.
McCune, Homer Wallace: *See—*
Stewart, Robert Lee; McCune, Homer Wallace; and Diehl, Francis Louvaine, 3,950,277.
McDougal, Janice E., to Minnesota Mining and Manufacturing Company. Coating of silanol-reactive surfaces with di-silyl poly(perfluorooxyalkylenes). 3,950,588, Cl. 428-288.000.
McElroy, Jerry T., to Automation Industries, Inc. Ultrasonic contact-type search unit. 3,950,660, Cl. 310-9.100.
McEvoy, Charles J.; and Dietrich, Warren R., to Goodyear Tire & Rubber Company, The. Tire manufacture. 3,950,201, Cl. 156-126.000.
McEwan, Ian Hugh: *See—*
Connelly, William; Khan, Hamid Iqbal; and McEwan, Ian Hugh, 3,950,294.
McGahren, William James: *See—*
Floyd, Middleton Brawner, Jr.; McGahren, William James; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,950,406.
McGann, James Edward; and Naas, Rodney Laban, to General Electric Company. Multiple stab electrical connector. 3,950,071, Cl. 339-258.00F.
McGill, Arthur P.: *See—*
Martin, Raymond S., 3,950,024.
McGugan, John Drummond, to Noralco Overseas, Inc. Burners. 3,950,125, Cl. 431-352.000.
McIlvaine, Paul M.: *See—*
Mardix, Shmuel; McIlvaine, Paul M.; and Nudelman, Sol, 3,950,272.
McInerny, George P., to Brandt-Pra, Inc. Mechanism for stacking sheets. 3,949,981, Cl. 271-178.000.
McKee, Clyde M.; and Scott, Ward. Rear view mirror actuating device. 3,950,080, Cl. 350-302.000.
McKee, Donald S., to Scott & Fetzer Company, The. Bracket system for mounting retractable awnings. 3,949,960, Cl. 248-225.000.
McKee, Peter M.; and Wagle, Uday D., to Pennwalt Corporation. Continuous manufacture of peroxydicarbonates. 3,950,375, Cl. 260-463.000.
McLean, Robert E.; Aberer, Leo F.; and Aberer, James B., to Rival Manufacturing Company. Compact power operated can opener with compound piercing lever, power pierce, and removable cutter mounting plate. 3,949,468, Cl. 30-4.00R.
McLennan, Donald John; Mavor, John; Vanstone, Gary Francis; and Windle, Donald James, to British Secretary of State for Defence. Charge coupled device with plural taps interposed between phased clock. 3,950,655, Cl. 307-221.00D.
McNair, Hugh R.: *See—*
Chandler, Jasper S.; and McNair, Hugh R., 3,949,952.
McNeil Corporation: *See—*
Pamer, Karl A., 3,949,961.
McNeil Laboratories, Inc.: *See—*
Carson, John Robert, 3,950,355.
McNett, John P.: *See—*
Reiner, Lawrence L.; and McNett, John P., 3,949,517.
Mead Corporation, The: *See—*
Seaborn, Paul E., 3,950,107.
Mead, John A. Inline motor iron and windings. 3,950,663, Cl. 310-49.00R.
Mecano Quimica, S.A.: *See—*
Ramoneda Sibidi, Juan, 3,949,792.
Meckel, Lothar: *See—*
Gliemeroth, Georg; and Meckel, Lothar, 3,950,591.
Medtronic, Inc.: *See—*
Jirak, Thomas L., 3,949,758.
Meeks, David L. Ear tag for controlling hog louse. 3,949,708, Cl. 119-156.000.
Meintzschel, Wolfgang: *See—*
Gneuss, Detlef; Strutzel, Hans; and Meintzschel, Wolfgang, 3,950,469.
Meiser, Werner: *See—*
Wenzelburger, Jurgen; Buchel, Karl Heinz; Plempel, Manfred; and Meiser, Werner, 3,950,354.

Meito Sangyo Kabushiki Kaisha: *See—*
Kokusho, Yoshitaka; Higashi, Susumu; Machida, Haruo; and Iwasaki, Shinjiro, 3,950,221.
Melchior, Jean, to Etat Francais. Internal combustion engines equipped with a turbocompressor unit with heating upstream of the turbine and methods of starting up their turbocompressor units. 3,949,555, Cl. 60-606.000.
Melling, Harry: *See—*
Sandbrook, Dennis Ronald; and Melling, Harry, 3,949,474.
Melnick, Daniel: *See—*
Parker, Wilbur A.; and Melnick, Daniel, 3,950,568.
Meng, Karl: *See—*
Horstmann, Harald; Meng, Karl; and Wehinger, Egbert, 3,950,528.
Mentha, John W.: *See—*
Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,950,378.
Mentrup, Anton: *See—*
Schromm, Kurt; Renth, Ernst-Otto; Mentrup, Anton; and Reichl, Richard, 3,950,335.
Menzel, Harry R.; and Belzer, Joseph F., to United States of America, Navy. Shallow water moored buoy. 3,949,441, Cl. 9-8.00R.
Merck & Co., Inc.: *See—*
Chamberlin, Earl M.; Russ, Warren K., Jr.; and Hazen, George G., 3,950,408.
Christy, Marcia Elizabeth, 3,950,423.
Hirschmann, Ralph F.; and Veber, Daniel F., 3,950,348.
Kahan, Jean S.; Kahan, Frederick M.; Stapley, Edward O.; Goegelman, Robert T.; and Hernandez, Sebastian, 3,950,357.
Reinhold, Donald F., 3,950,411.
Wendler, Norman L.; and Taub, David, 3,950,359.
Merges, Heinz. Hair curl clip. 3,949,766, Cl. 132-46.00A.
Merren, Thomas Oliver: *See—*
Evans, Sydney; and Merren, Thomas Oliver, 3,950,641.
Meshberg, Emil David: *See—*
Meshberg, Philip; and Meshberg, Emil David, 3,949,912.
Meshberg, Philip; and Meshberg, Emil David. Dispenser having a stepped mounting cup. 3,949,912, Cl. 222-394.000.
Messer Griesheim GmbH: *See—*
Lange, Gerhardt; and Hirschberg, Hans, 3,950,189.
Messier Hispano: *See—*
Masclet, Jean, 3,949,645.
Metal Improvement Company, Inc.: *See—*
Feld, Paul G., 3,950,642.
Metallgesellschaft Aktiengesellschaft: *See—*
Dorr, Karl-Heinz; Reh, Lothar; Grimm, Hugo; and Vydra, Karel, 3,950,493.
Meyer, Burton C., to Marvin Glass & Associates. Toy glider. 3,949,519, Cl. 46-79.000.
Meyer, Frank, to Bergwerksverband GmbH. Process for isolating aqueous brine layers in underground gas-storage caverns. 3,949,559, Cl. 61-.500.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. 2,6-Diamino-1,4-dihydropyridine derivatives. 3,950,336, Cl. 260-256.40C.
Meyer, Willy: *See—*
Bohner, Beat; Dawes, Dag; and Meyer, Willy, 3,950,433.
Meyerhoefer, Carl E. Self cleaning dry-shaver. 3,949,472, Cl. 30-41.500.
Meyerkopf, Morris: *See—*
Goldman, Rubin; and Meyerkopf, Morris, 3,949,631.
Micafil A.G.: *See—*
Nussbaumer, Manfred; and Boesch, Karl, 3,949,859.
Michaelis, Jack Harold: *See—*
Unti, Louis Aloyious; Michaelis, Jack Harold; and Malcik, Frank John, 3,950,048.
Michaels, Thomas B.; and Place, George H., Jr., to Xerox Corporation. Electrostatographic diagnostics system. 3,950,680, Cl. 317-262.00A.
Michel, Hartmut: *See—*
Linstedt, Hans; Roth, Helmut; Bundschuh, Gotz; Hohne, Gerd; Bodig, Bernd; Strelow, Gert; Schmidt, Peter; Sohner, Gerhard; Roozenbeek, Herman; and Michel, Hartmut, 3,949,722.
Michishima, Susumu: *See—*
Inomata, Jihei; Michishima, Susumu; Kasahara, Kanji; Hino, Seiichi; Igarashi, Satoru; and Tani, Tatsuo, 3,950,304.
Mickelson, Richard C. Planter. 3,949,524, Cl. 47-34.00R.
Micro Glass Inc.: *See—*
Butler, Robert M.; and Anderson, George A., III, 3,949,891.
Middleton, William J.: *See—*
Boswell, George Albert, Jr.; Brittelli, David R.; and Middleton, William J., 3,950,329.
Miers, Bruce Walter; and Taylor, James Lloyd, to Caterpillar Tractor Co. Vibration damping means for the roll-over protection canopy of a heavy vehicle. 3,949,975, Cl. 267-136.000.
Miglierini, Raul A., to Dresser Industries, Inc. Rock bit bearing system for carrying out thrust. 3,950,041, Cl. 308-8.200.
Mihaiescu, Gheorghe Mihai: *See—*
Lazaroiu, Dumitru Felician; Sleiher, Sigmund; and Mihaiescu, Gheorghe Mihai, 3,950,666.
Milaszewski, Edward: *See—*
Jonsson, Olov; and Milaszewski, Edward, 3,949,532.
Miles, Laughton E. M., to LeLand Stanford Junior University, The Board of Trustees of the. Assay machine and method. 3,950,134, Cl. 23-230.00B.
Militzer, Hans; Winkelmann, Erhardt; and Raether, Wolfgang, to Hoechst Aktiengesellschaft. Substituted diaminoguanidines. 3,950,539, Cl. 424-324.000.
Miller, Christopher R.: *See—*
Keene, Wayne H.; Harris, Clarke E.; Jelalian, Albert V.; Miller, Christopher R.; and Seavey, Richard E., 3,950,100.
Miller, Dye O.; Antunes, August J.; and Antunes, Jerome, to A. J. Antunes & Co. Steam heating apparatus. 3,949,733, Cl. 126-348.000.
Miller, Eugene J. Inner rim wedge lock mount wheel. 3,950,032, Cl. 301-18.000.
Miller, Gerald K., to Nartron Corporation. Electrical warning and switching means and system. 3,950,745, Cl. 340-412.000.
Miller, Larry L.; Stermitz, Frank R.; and Falck, J. Russell, to United States of America, Health, Education and Welfare. Production of angular alkylated polycyclides by electrochemical annelation. 3,950,236, Cl. 204-78.000.
Miller, Marshall W.; Henke, Arthur W.; and Antos, John M., to Thetford Corporation. Portable toilet. 3,949,430, Cl. 4-76.000.
Miller, Robert C.; and Mallick, George T., to Westinghouse Electric Corporation. Trapezoidal coil configuration for metal detector in the shape of an inverted U. 3,950,696, Cl. 324-41.000.
Miller, Roy W., to Pullman Incorporated. Motor actuated railway hopper car door mechanism. 3,949,681, Cl. 105-284.000.
Milo, August, to Universal Valve Company, Inc. Pipe cap. 3,949,787, Cl. 138-89.000.
Mingareev, Rafkhat Shagimardanovich: *See—*
Aliev, Vagab Safarovich; Altman, Natalia Borisovna; Galonsky, Pavel Petrovich; Guterman, Alexandr Davidovich; Malina, Lia Vasilievna; Mingareev, Rafkhat Shagimardanovich; Suleimanov, Alekper Bagirovich; Akhmedov, Mansur Ilal ogly, deceased; and Ramazanova, Elmira Mamed Emin kyzy, administrator, 3,950,245.
Minka, Karlis. Dental floss holder. 3,949,769, Cl. 132-91.000.
Minnesota Mining and Manufacturing Company: *See—*
Guenthner, Richard A., 3,950,494.
Johansson, Ronald C., 3,950,063.
Mayala, Arne H.; and Antolak, Thomas J., 3,949,467.
McCown, Joseph D.; and Pike, Myron T., 3,950,298.
McDougal, Janice E., 3,950,588.
Minolta Camera Kabushiki Kaisha: *See—*
Imura, Toshinori, 3,950,770.
Matsui, Toru, 3,950,767.
Nanba, Yasuhiro; Tsujimoto, Kayoshi; and Yamada, Seiji, 3,950,765.
Tanaka, Atsuyuki, 3,950,074.
Mirakov, Eduard Sergeevich: *See—*
Rotenberg, Vladimir Adolfovich; Khruschova, Kira Markovna; Zilberg, Jury Yakovlevich; Begidzhanova, Anzhelika Petrovna; Gulyaev, Anatoly Sergeevich; Protasova, Irina Vladimirovna; Shapochkin, Alexei Ivanovich; Pavlov, Vladislav Ivanovich; Mirakov, Eduard Sergeevich; Izotov, Arseny Emelyanovich; Serikov, Ivan Alexandrovich; and Ignatiev, Not Vasilievich, 3,950,164.
Mirrione, James J.; and Berger, Jerome, to JFD Electronics Corporation. Self-locking hinge for antenna element. 3,950,758, Cl. 343-881.000.
Mirtain, Henri Jean; and Vervin, Jacques, to Uniroyal. Pneumatic tire and tread therefor having variable rolling contact with the ground. 3,949,797, Cl. 152-209.00R.
Mita Industrial Co. Ltd.: *See—*
Nihyakumen, Kouzi; Ueda, Yasui; Kamezawa, Yasutoki; and Aizawa, Tatsuo, 3,950,171.
Mita, Kunio; and Kurei, Hiroshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Apparatus for holding closed a power switch for an electric shutter. 3,950,774, Cl. 354-266.000.
Mitchell, Earl B.; Hardee, Dicky D.; and Davich, Theodore B., to United States of America, Agriculture. In-field boll weevil trap. 3,949,515, Cl. 43-121.000.
Mitchell, Harry R., to General Motors Corporation. Fuel-air metering and induction system. 3,949,714, Cl. 123-32.0EA.
Mitsubishi Chemical Industries Ltd.: *See—*
Inomata, Jihei; Michishima, Susumu; Kasahara, Kanji; Hino, Seiichi; Igarashi, Satoru; and Tani, Tatsuo, 3,950,304.
Okano, Atsuji; Kadoya, Shizuo; Naito, Takeo; Aoyagi, Takaaki; and Shimizu, Masao, 3,950,405.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Mitsuoka, Hiroshi, 3,950,693.
Sumida, Shizuo; Nii, Kazuo; Shimizu, Osamu; Ueda, Atsushi; and Ishii, Mitsuaki, 3,950,656.
Mitsubishi Gas Chemical Co. Inc.: *See—*
Sugano, Junichiro; Kakuda, Minoru; and Tsuiki, Tokuzo, 3,950,126.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Yamanaka, Akira, 3,950,011.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Oda, Teishiro; and Daikoku, Takashi, 3,950,165.
Mitsubishi Kasei Kogyo Kabushiki Kaisha: *See—*
Arawa, Kiyoshi; and Ishikawa, Seiji, 3,950,237.
Mitsubishi Kinzoku Kabushiki Kaisha: *See—*
Fukushima, Seitaro, 3,950,489.
Kato, Chuzo, 3,950,180.
Mitsubishi Metal Corporation: *See—*
Obara, Kunio; Nishino, Yoshio; and Matsumoto, Shoji, 3,950,166.
Mitsubishi Seiko Kabushiki Kaisha: *See—*
Iwata, Hisao; Hasewaga, Gentaro; and Shimizu, Kameichi, 3,949,498.

Mitsui Petrochemical Industries, Ltd.: *See*—
Yokota, Yoshiro; Ueda, Toshihiko; Nakano, Osamu; Hirokane, Sigeru; and Hisatomi, Yoshiro, 3,950,409.
Mitsui Toatsu Chemicals, Incorporated: *See*—
Yamaguchi, Tadashi; Ono, Takayuki; and Hoshi, Hiroshi, 3,950,295.
Mitsuishi, Yukio: *See*—
Adachi, Tomio; Mitsuishi, Yukio; Miura, Rikuo; and Kawakami, Hideaki, 3,950,206.
Mitsunaga, Kazuo: *See*—
Hiroishi, Makoto; Mitsunaga, Kazuo; and Fujisawa, Yoshiyuki, 3,949,803.
Mitsuoka, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Ignition apparatus for thyristors. 3,950,693, Cl. 321-27.00R.
Miura, Rikuo: *See*—
Adachi, Tomio; Mitsuishi, Yukio; Miura, Rikuo; and Kawakami, Hideaki, 3,950,206.
Mix, Reinhard: *See*—
Peters, Hinderikus; and Mix, Reinhard, 3,949,857.
Miyaki, Takeo, to Bristol-Myers Company. Process for preparing cirramycin A_1. 3,950,516, Cl. 424-123.000.
Miyamoto, Akira: *See*—
Yamashita, Makoto; Kushida, Masagoro; Niitsuma, Fumio; Enomoto, Masao; and Miyamoto, Akira, 3,950,081.
Miyamoto, Seiji, to Sanyo Electric Co., Ltd. Hue control circuit. 3,950,781, Cl. 358-28.000.
Miyashin, Noboru; Kumoda, Masashi; Nishonomiya, Makoto; Nakayama, Katsumi; and Izawa, Yasushi, to Nippon Soda Company, Ltd. Process for production of calcium hypochlorite. 3,950,499, Cl. 423-474.000.
Miyashita, Tadashi: *See*—
Horiguchi, Masaharu; Edahiro, Takao; Masuno, Kunio; Miyashita, Tadashi; and Takahashi, Shiro, 3,950,073.
Miyazaki, Koshin: *See*—
Yagihara, Tomio; Miyazaki, Koshin; Hashimoto, Sho; and Wakai, Akira, 3,950,534.
Mize, Erbie Gail, to Astec Industries, Inc. Storage bin with liquid sealed discharge opening. 3,949,907, Cl. 222-188.000.
Mizuno, Masami: *See*—
Ichigaya, Koji; Machida, Hiromasa; Sudoh, Masayuki; Mizuno, Masami; and Awata, Yoriyoshi, 3,950,671.
Mobil Oil Corporation: *See*—
Bonacci, John C.; and Garwood, William E., 3,950,241.
Ciric, Julius, 3,950,496.
Downs, John D.; and Massa, Andrew Leo, 3,949,895.
Garwood, William E.; Nace, Donald M.; and Owen, Hartley, 3,950,242.
Liederman, David; and Voltz, Sterling E., 3,950,491.
Timmins, Thomas H., 3,950,029.
Mochizuki, Noritaka: *See*—
Hosoe, Kazuya; Matsumoto, Seiichi; and Mochizuki, Noritaka, 3,950,764.
Moe, Richard G., to Allis-Chalmers Corporation. Front end loader. 3,949,889, Cl. 214-131.00A.
Mohon, Windell Neil: *See*—
Derderian, George; and Mohon, Windell Neil, 3,949,490.
Molex Incorporated: *See*—
Stipanuk, John M.; and Krafthefer, Kerry M., 3,950,060.
Molins Limited: *See*—
Labbe, Francis Auguste Maurice; and Marritt, Clifford Russell, 3,949,763.
Monroe, Robert Grier, to Thermo Electron Corporation. Peak ventilatory flow indicator. 3,949,738, Cl. 128-2.080.
Monsanto Chemicals Limited: *See*—
Bain, Peter James Stratford; Foster, William Rees; and Neale, Alan Jeffrey, 3,950,313.
Monsanto Company: *See*—
Bilodeau, Richard D., 3,949,860.
Cannon, Joseph A.; Pysz, John F., Jr.; and Renshaw, James T., 3,950,198.
Chiang, Robert; and Perry, Eli, 3,950,247.
Franz, John E., 3,950,402.
Golland, David I.; Harakas, Nicholas K.; Mottern, John W.; O'Connor, Gary E.; and Runkle, Charles J., 3,950,192.
Lannert, Kent P., 3,950,388.
Reilly, Joseph R.; and Schon, Lars G., 3,949,628.
Montagne, Jean Bernard, to Compagnie Generale des Etablissements Michelin. High-speed radial tire with folded metal belt. 3,949,799, Cl. 152-361.0FP.
Monte, Alexander A.; and Chiang, Ching, to Mallinckrodt, Inc. Reagent formulations for assaying biological specimens and methods of preparing and using same. 3,950,133, Cl. 23-230.00B.
Montgomery, Michael John: *See*—
Harber, Gerald; Young, Leslie Albert; Allard, Roger Sidney; Marshall, Alan James; and Montgomery, Michael John, 3,949,886.
Montsant, Jose Aragones, to Maquinaria de Impresion Textil, S.A. Fabric printing machine. 3,949,864, Cl. 198-110.000.
Mony, Claude; and Costes, Genevieve, to Laboratoires Servier. Process for obtaining pharmaceutical sustained releases. 3,950,508, Cl. 424-19.000.
Moody, Roy A.: *See*—
Caveney, Jack E.; and Moody, Roy A., 3,949,449.
Moore, Colin; and Thornton, Michael Joseph, to Imperial Chemical Industries Limited. Purification of adiponitrile. 3,950,229, Cl. 203-38.000.
Mora, Rene M. Composition and method of treating asthma. 3,950,519, Cl. 424-195.000.
Morane, Bruno P., to Societe Anonyme dite: L'Oreal. Pressurizable container by heat activation. 3,949,911, Cl. 222-386.500.
Morgan, Charles R., to W. R. Grace & Co. Method for preparing coatings with solid curable compositions containing styrene-allyl alcohol copolymer based polythiols. 3,950,569, Cl. 427-36.000.
Morgan, Peter Roger, to Technical Innovation Company for Commerce and Industry (TICCI). Latrines. 3,949,431, Cl. 4-85.000.
Mori, Kazuo: *See*—
Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; and Yamamoto, Hisao, 3,950,526.
Morioka, Minoru: *See*—
Honda, Soichiro; Morioka, Minoru; and Tukahara, Takeshi, 3,949,829.
Morita, Akiyoshi: *See*—
Kaneko, Yasuhisa; Morita, Akiyoshi; Nemoto, Yasuo; and Nagataki, Junichi, 3,949,552.
Morita Pump Kabushiki Kaisha: *See*—
Kozai, Tetsuo, 3,949,833.
Morrison, Howard J.; and Allen, Robert K., to Marvin Glass & Associates. Potato chip maker. 3,949,658, Cl. 99-341.000.
Morrow, David, to Garrett Corporation, The. Valve. 3,949,774, Cl. 137-1.000.
Morrow, James G., Sr.; and Pech, David J., to Manitowoc Company, The. Swing drive assembly. 3,949,881, Cl. 212-68.000.
Mortier, Frans Henri; and Cools, Antoon Sylvain, to Sperry Rand Corporation. Concave adjusting means for combine. 3,949,761, Cl. 130-27.00L.
Morton, Dennis S.: *See*—
Faulkner, John P.; and Morton, Dennis S., 3,950,234.
Morton, Michael John: *See*—
Kenworthy, Jeffrey Stuart; Morton, Michael John; and Taylor, Michael David, 3,950,478.
Moser, Werner: *See*—
Imme, Helmut; and Moser, Werner, 3,950,044.
Moss, Arnold T.; Therkleson, Steele Quinton; and Magnet, Anton. Portable ski wax applicator. 3,950,105, Cl. 401-1.000.
Moss, Jack N.: *See*—
De Benneville, Peter L.; Moss, Jack N.; and Dajani, Esam Z., 3,950,537.
Motorola, Inc.: *See*—
Bliven, Thomas G.; and Hugill, John R., 3,950,140.
Mottern, John W.: *See*—
Golland, David I.; Harakas, Nicholas K.; Mottern, John W.; O'Connor, Gary E.; and Runkle, Charles J., 3,950,192.
Moulton Developments, Limited: *See*—
Uncles, Philip Basil, 3,950,008.
Mrenna, Stephen A.; and Maier, Alfred E., to Westinghouse Electric Corporation. Self-adjusting circuit breaker with rotating trip assembly. 3,950,714, Cl. 335-35.000.
Mucci, Rinaldo; and Bremi, Paolo. Profiling device. 3,949,643, Cl. 90-24.00R.
Muehlbauer, James H.; and Wandtke, Larry A., to George Koch Sons, Inc. Fan silencer. 3,949,830, Cl. 181-50.000.
Mueller, Hans W.; and Shattuck, Richard E., to SCM Corporation. Typebar support. 3,949,852, Cl. 197-42.000.
Mueller, Helmut: *See*—
Kelch, Heinz; and Mueller, Helmut, 3,950,633.
Mueller, Peter G.: *See*—
Martone, Ronald J.; Mueller, Peter G.; and Hindel, Robert, 3,950,648.
Muller, Gerhard: *See*—
Ulber, Armin; and Muller, Gerhard, 3,949,856.
Muller, Pierre: *See*—
Joullie, Maurice; Lakah, Lucien; Maillard, Gabriel; and Muller, Pierre, 3,950,387.
Muller, Wolfgang; and Witzke, Lothar, to Th. Goldschmidt AG. Process for the treatment of carburizing salt wastes. 3,950,490, Cl. 423-155.000.
Munk, Miner N., to Varian Associates. Refractive index and flow rate detector and method. 3,950,104, Cl. 356-128.000.
Murakami, Hideki: *See*—
Kaneko, Yasuhisa; Komiyama, Yoshiro; Kondo, Katsumi; Noda, Fumiyoshi; Murakami, Hideki; and Uchida, Kunihiko, 3,949,804.
Murakami, Noboru, to Aisin Seiki Kabushiki Kaisha. Fluid pressure control system for automatic fluid transmissions. 3,949,627, Cl. 74-867.000.
Muramoto, Shoichi; Fukunaga, Ichiro; and Ikeda, Haruyuki, to Nippon Toki Kabushiki Kaisha. Method of fabricating thermal printing head. 3,950,200, Cl. 156-89.000.
Murase, Katsuo, to Ricoh Co., Ltd. Chronic interline phase error from an image scanner generating plural successive image signals in a single scanning motion is electronically corrected. 3,950,615, Cl. 178-69.50F.
Murata, Minoru; and Harada, Yuji, to Canon Kabushiki Kaisha. Push button switch. 3,950,627, Cl. 200-159.00R.
Music City Supplement Company: *See*—
Hill, Robert L.; and Edwards, Max M., 3,950,546.
Myers, John A. Animal spray machine. 3,949,709, Cl. 119-159.000.
Naas, Robert L.: *See*—
Giambrone, Harry J.; and Naas, Robert L., 3,949,933.
Naas, Rodney Laban: *See*—
McGann, James Edward; and Naas, Rodney Laban, 3,950,071.

Nace, Donald M.: *See*—
Garwood, William E.; Nace, Donald M.; and Owen, Hartley, 3,950,242.
Nafziger, Ralph Hamilton, to United States of America, Interior. Quaternary fluxes for electroslag remelting ferrous alloys and superalloys. 3,950,163, Cl. 75-94.000.
Nagai, Ikuo: *See*—
Okamoto, Takehiko; Kishimoto, Akihiko; Inoue, Masakazu; Nagai, Ikuo; and Otani, Mitsunobu, 3,950,455.
Nagai, Kiyoko: *See*—
Hayashi, Yutaka; Nagai, Kiyoko; and Tarui, Yasuo, 3,950,738.
Nagamoto, Mitsuki, to Matsushita Electric Works, Ltd. Electromagnetic device. 3,950,718, Cl. 335-79.000.
Nagano, Akira: *See*—
Hatano, Isao; Nagano, Akira; and Urasaki, Kazuaki, 3,950,743.
Nagaoka, Tadahiko: *See*—
Fukuma, Daizo; Maruizumi, Haruki; and Nagaoka, Tadahiko, 3,950,263.
Nagashima, Takeo: *See*—
Ayusawa, Saburo; Nagashima, Takeo; and Tsutsumi, Masaya, 3,950,572.
Nagataki, Junichi: *See*—
Kaneko, Yasuhisa; Morita, Akiyoshi; Nemoto, Yasuo; and Nagataki, Junichi, 3,949,552.
Naito, Takeo: *See*—
Okano, Atsuji; Kadoya, Shizuo; Naito, Takeo; Aoyagi, Takaaki; and Shimizu, Masao, 3,950,405.
Najer, Henry; Pascal, Yves Robert Alain; and Lefevre, Jean Pierre Gaston, to Synthelabo. Process for the preparation of cis-vincamine. 3,950,345, Cl. 260-293.520.
Nakagawa, Tadashi; Koyama, Mitsuo; and Onda, Eiichi, to Seiko Koki Kabushiki Kaisha. Shutter for a camera. 3,950,772, Cl. 354-234.000.
Nakamoto, Keiji: *See*—
Hori, Yutaka; Honda, Zenzo; Suzuki, Kenji; Nakamoto, Keiji; and Yamamoto, Yoshiharu, 3,950,605.
Nakano, Osamu: *See*—
Yokota, Yoshiro; Ueda, Toshihiko; Nakano, Osamu; Hirokane, Sigeru; and Hisatomi, Yoshiro, 3,950,409.
Nakao, Yukimichi: *See*—
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,950,434.
Nakashima, Akio: *See*—
Fukaya, Hirokazu; Andou, Kenji; and Nakashima, Akio, 3,950,672.
Nakashima, Tamotsu: *See*—
Togo, Masayuki; Takahashi, Jiyuuro; Nakashima, Tamotsu; and Ikenaga, Shizuyoshi, 3,950,589.
Nakayabu, Toshio: *See*—
Aoki, Atsushi; Fukuda, Rikiya; Nakayabu, Toshio; Ishibashi, Keijiro; Takeichi, Chiyoko; and Ishida, Mitsuo, 3,950,360.
Nakayama, Hirokazu: *See*—
Inamoto, Yoshiaki; Nakayama, Hirokazu; Takenaka, Hidetsugu; and Kadono, Takeji, 3,950,396.
Nakayama, Katsumi: *See*—
Miyashin, Noboru; Kumoda, Masashi; Nishonomiya, Makoto; Nakayama, Katsumi; and Izawa, Yasushi, 3,950,499.
Nalco Chemical Company: *See*—
Sortwell, Edwin T.; and Kerr, David S., 3,949,937.
Nanba, Yasuhiro; Tsujimoto, Kayoshi; and Yamada, Seiji, to Minolta Camera Kabushiki Kaisha. Exposure control devices for photographic cameras. 3,950,765, Cl. 354-29.000.
Narikawa, Kenichi: *See*—
Yazawa, Masahide; Kurihara, Kazuhiko; Narikawa, Kenichi; and Yazawa, Hirosi, 3,950,467.
Nartron Corporation: *See*—
Miller, Gerald K., 3,950,745.
National Marineplastic, Ltd.: *See*—
Tokita, Shinko, 3,949,901.
National Research Development Corporation: *See*—
Cavendish, Michael Edward; and Wright, John Thomas Matthew, 3,949,428.
Davey, Norman, 3,950,586.
Lewis, Meirion Francis, 3,950,713.
Lindsay, David Gordon; and Shall, Sydney, 3,950,517.
Natwig, David L.: *See*—
Skarbo, Roald R.; and Natwig, David L., 3,950,488.
Navara, Joseph. Breathing exerciser. 3,949,984, Cl. 272-57.00F.
Neale, Alan Jeffrey: *See*—
Bain, Peter James Stratford; Foster, William Rees; and Neale, Alan Jeffrey, 3,950,313.
Needham, Riley B.: *See*—
Threlkeld, Curtis B.; Hessert, James E.; Clampitt, Richard L.; and Needham, Riley B., 3,949,811.
Neff, Chester H.: *See*—
Larson, Thurston E.; Lane, Russell W.; and Neff, Chester H., 3,950,137.
Negishi, Takao: *See*—
Kitazawa, Shin-ich; Negishi, Takao; and Susami, Kozo, 3,949,544.
Nelson, Jerry Allen: *See*—
Mastrangelo, Sebastian Vito Rocco; and Nelson, Jerry Allen, 3,950,460.
Nelson, William: *See*—
Nightingale, Colin Walter; Bielstein, Georg Paul Richard; Taylor, David Alexander; and Nelson, William, 3,950,232.
Nemecz, Erno; Ujhidy, Aurel; Polinszky, Karoly; Szepvolgyi, Janos; Borlai, Oszkar; Kapolyi, Laszlo; and Szekely, Tamas, to Toth Aluminum Corporation. Production of aluminum chloride from raw materials containing coal. 3,950,485, Cl. 423-136.000.
Nemoto, Yasuo: *See*—
Kaneko, Yasuhisa; Morita, Akiyoshi; Nemoto, Yasuo; and Nagataki, Junichi, 3,949,552.
Nemzow, Simon: *See*—
Shore, Michael B., 3,949,932.
Nenov, Dragan Iliev: *See*—
Nikolov, Ivan Dimov; Semerdjiev, Stefan Georgiev; Nenov, Dragan Iliev; and Popov, Nikolay Tihomirov, 3,949,905.
Nesmeyanov, Alexandr Nikolaevich; Rybinskaya, Margarita Iosifovna; and Shulpin, Georgy Borisovich. Method for isolating organometallic compounds and thiourea adducts with organometallic compounds. 3,950,373, Cl. 260-429.0CY.
Nestor Associates: *See*—
Cooper, Leon N.; and Elbaum, Charles, 3,950,733.
Neuendorf, W. Robert: *See*—
Kangas, Donald A.; and Neuendorf, W. Robert, 3,950,296.
Neumaier, Hubert; Vogt, Wilhelm; Sennewald, Kurt; Schuller, Richard; and Lenz, Gunther, to Hoechst Aktiengesellschaft. Process for the manufacture of nitrilotriacetonitrile. 3,950,384, Cl. 260-465.50A.
Neumann, Klaus. Rolling mill frame, in particular a universal rolling mill frame. 3,949,586, Cl. 72-238.000.
Nevin, Charles S.: *See*—
Drury, Raymond L., Jr.; Nevin, Charles S.; and Hines, James W., 3,950,290.
New Hampshire Ball Bearings, Inc.: *See*—
Board, David A., Jr., 3,950,599.
New Venture Engineering, Inc.: *See*—
Henderson, Margaret Y., 3,949,452.
New World Container Corporation: *See*—
Youngquist, Robertson; Green, Donald; and Cohen, Edward Stone, 3,949,947.
Newcombe, Jack, to Cities Service Company. Flame-retardant composition. 3,950,456, Cl. 260-880.00R.
Newport News Shipbuilding & Drydock Co: *See*—
Watson, James F., Jr., 3,950,687.
Newstead, Charles; and Wright, Andrew Charles Walden, to Girling Limited. Thrust transmitting assemblies. 3,949,845, Cl. 188-331.000.
Newton, Kenneth; and Sale, Anthony John Hanson, to Lever Brothers Company. Sweetening agents. 3,950,549, Cl. 426-96.000.
Niagara Machine & Tool Works: *See*—
Jones, Clarence O., Jr.; and Abraham, William F., 3,950,623.
Nichiban Co., Ltd.: *See*—
Toyama, Mitsuo; Ito, Toshio; Kobayashi, Eiji; and Kosaka, Hideo, 3,950,185.
Nickl, Josef: *See*—
Engel, Wolfhard; Nickl, Josef; Teufel, Helmut; Engelhardt, Gunther; Seeger, Ernst; and Trummlitz, Gunter, 3,950,427.
Nickly, Jean. Cylinder head units for internal combustion engines. 3,949,724, Cl. 123-193.00H.
Niebylski, Leonard M., to Ethyl Corporation. Fuel compositions and additive mixtures containing methanetricarboxylates for reducing exhaust gas catalyst plugging. 3,950,145, Cl. 44-68.000.
Niederer, Kurt W., to W. Schlafhorst & Co. Method and means for forming knit fabric incorporating a weft stitch weave. 3,949,570, Cl. 66-10.000.
Nielsen, Carl Philip, to Allen & Hanburys Limited. Spirometer. 3,949,737, Cl. 128-2.080.
Nielsen, Ole Bent Tvaermose: *See*—
Feit, Peter Werner; Nielsen, Ole Bent Tvaermose; and Bruun, Herta, 3,950,376.
Feit, Peter Werner; Nielsen, Ole Bent Tvaermose; and Bruun, Herta, 3,950,380.
Nienart, Louis F.: *See*—
Linares, Robert C.; Nienart, Louis F.; and Toelcke, George A., 3,950,271.
Nightingale, Colin Walter; Bielstein, Georg Paul Richard; Taylor, David Alexander; and Nelson, William, to British Copper Refiners Limited. Process for removing electrodeposits. 3,950,232, Cl. 204-12.000.
Nihyakumen, Kouzi; Ueda, Yasui; Kamezawa, Yasutoki; and Aizawa, Tatsuo, to Mita Industrial Co. Ltd. Diazotype multicolor reproduction process. 3,950,171, Cl. 96-49.000.
Nii, Kazuo: *See*—
Sumida, Shizuo; Nii, Kazuo; Shimizu, Osamu; Ueda, Atsushi; and Ishii, Mitsuaki, 3,950,656.
Niitsuma, Fumio: *See*—
Yamashita, Makoto; Kushida, Masagoro; Niitsuma, Fumio; Enomoto, Masao; and Miyamoto, Akira, 3,950,081.
Nikles, Erwin, to Ciba-Geigy AG. Pyrocatechol carbamates and o-mercaptophenol carbamates and their use for combating pests. 3,950,533, Cl. 424-300.000.
Nikolov, Ivan Dimov; Semerdjiev, Stefan Georgiev; Nenov, Dragan Iliev; and Popov, Nikolay Tihomirov, to Institute po Metaloznanie i Technologia na Metalite. Device for the production of articles with a compact smooth skin and a cellular core from polymer materials. 3,949,905, Cl. 222-146.0HE.
Nipak, Inc.: *See*—
Levens, Joseph A., 3,950,461.
Nippon Data Recorder Co., Ltd.: *See*—
Koizumi, Masayoshi; and Tamura, Satoshi, 3,950,784.

Nippon Electric Co., Ltd.: *See—*
Fukaya, Hirokazu; Andou, Kenji; and Nakashima, Akio, 3,950,672.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Adachi, Takeshi, 3,949,639.
Nippon Iron Powder Co., Ltd.: *See—*
Arakawa, Hideo; Hasebe, Tatsuo; and Sato, Shigeru, 3,950,267.
Nippon Kogaku K.K.: *See—*
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Nippon Pulsmotor Co., Ltd.: *See—*
Koizumi, Masayoshi; and Tamura, Satoshi, 3,950,784.
Nippon Seiko Kabushiki Kaisha: *See—*
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Nippon Soda Company, Ltd.: *See—*
Miyashin, Noboru; Kumoda, Masashi; Nishonomiya, Makoto; Nakayama, Katsumi; and Izawa, Yasushi, 3,950,499.
Sawaki, Mikio; Iwataki, Isao; Hirono, Yoshihiko; and Ishikawa, Hisao, 3,950,420.
Yagihara, Tomio; Miyazaki, Koshin; Hashimoto, Sho; and Wakai, Akira, 3,950,534.
Nippon Steel Corporation: *See—*
Ayusawa, Saburo; Nagashima, Takeo; and Tsutsumi, Masaya, 3,950,572.
Kitayama, Minoru; Yamaguchi, Susumu; and Odashima, Hisao, 3,950,575.
Nippon Telegraph & Telephone Public Corporation: *See—*
Horiguchi, Masaharu; Edahiro, Takao; Masuno, Kunio; Miyashita, Tadashi; and Takahashi, Shiro, 3,950,073.
Nippon Toki Kabushiki Kaisha: *See—*
Muramoto, Shoichi; Fukunaga, Ichiro; and Ikeda, Haruyuki, 3,950,200.
Nippon Zeon Co., Ltd.: *See—*
Ishiguro, Minoru; Takeuchi, Yuzo; and Shiozaki, Shozo, 3,950,453.
Nischk, Gunter: *See—*
Radlmann, Eduard; Schramm, Jurgen; and Nischk, Gunter, 3,950,311.
Nisevich, Stephen Dale: *See—*
Carr, Ronald Ray; and Nisevich, Stephen Dale, 3,950,596.
Nishino, Yoshio: *See—*
Obara, Kunio; Nishino, Yoshio; and Matsumoto, Shoji, 3,950,166.
Nishonomiya, Makoto: *See—*
Miyashin, Noboru; Kumoda, Masashi; Nishonomiya, Makoto; Nakayama, Katsumi; and Izawa, Yasushi, 3,950,499.
Nissan Motor Co., Ltd.: *See—*
Fujiwara, Yasuhiko; and Hirashima, Kenzo, 3,949,623.
Fukuma, Daizo; Maruizumi, Haruki; and Nagaoka, Tadahiko, 3,950,263.
Nitta, George H.: *See—*
Orr, Roger D.; and Nitta, George H., 3,950,751.
Nitto Electric Industrial Co., Ltd.: *See—*
Hori, Yutaka; Honda, Zenzo; Suzuki, Kenji; Nakamoto, Keiji; and Yamamoto, Yoshiharu, 3,950,605.
Nixdorf Computer AG: *See—*
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Niyada, Katsuyuki: *See—*
Noda, Katsuhiko; Watanabe, Taisuke; and Niyada, Katsuyuki, 3,950,608.
Noble, Jack E.; Riggle, Peter; Emigh, Stuart G.; and Martini, William R., to United States of America, Health. Heat engine. 3,949,554, Cl. 60-521.000.
Noda, Fumiyoshi: *See—*
Kaneko, Yasuhisa; Komiyama, Yoshiro; Kondo, Katsumi; Noda, Fumiyoshi; Murakami, Hideki; and Uchida, Kunihiko, 3,949,804.
Noda, Katsuhiko; Watanabe, Taisuke; and Niyada, Katsuyuki, to Matsushita Electric Industrial Co., Ltd. Electronic engraving and recording system. 3,950,608, Cl. 178-6.60B.
Nodolf, Keith M., to Honeywell Inc. Enthalpy control apparatus for air conditioning. 3,949,607, Cl. 73-336.000.
Noetzel, Siegfried; Jastrow, Horst; and Fischer, Edgar, to Hoechst Aktiengesellschaft. Bromine containing telomeric phosphonic acid esters. 3,950,458, Cl. 260-961.000.
Nojima, Isao: *See—*
Uchida, Yukimasa; Nojima, Isao; and Matsuno, Yoshiaki, 3,950,737.
Noll, Klaus-Reinhold: *See—*
Keck, Johannes; Noll, Klaus-Reinhold; Pieper, Helmut; Kruger, Gerd; and Puschmann, Sigfrid, 3,950,393.
Nolting, Karl Heinz: *See—*
Dornseifer, Karl Friedrich; Kirch, Hans-Joachim; Levacher, Friedrich; and Nolting, Karl Heinz, 3,950,676.
Noralco Overseas, Inc.: *See—*
McGugan, John Drummond, 3,950,125.
Nord, Bernt Ivar, to Ingenjorsfirma B. Nord AB. Floating platforms with a wharf belonging thereto. 3,949,564, Cl. 61-46.000.
Noren, Tore H. Arcuate-shaped modulars for a commercial dishwashing machine. 3,949,770, Cl. 134-60.000.
Norfin, Inc.: *See—*
Snellman, Donald L.; Vaughn, Wade C.; and Haapala, Marvin H., 3,949,982.
Normac, Inc.: *See—*
Klein, Max, 3,950,398.
Normet, Henno: *See—*
Weber, Clement J.; and Normet, Henno, 3,950,675.
Northern Electric Company, Limited: *See—*
Willis, Wesley Nelson; and Laing, Graham Stirling, 3,949,504.
Novo Terapeutisk Laboratorium A/S: *See—*
Jensen, Villy Johannes, 3,950,513.
Nowakowski, Bogdan, to Frigitronics, Inc. Medical dressing. 3,949,742, Cl. 128-155.000.
Nu-Way Marketing and Packaging Co., Inc.: *See—*
Scholtens, Simon A.; and Scholtens, Albert, 3,949,861.
Nudelman, Sol: *See—*
Mardix, Shmuel; McIlvaine, Paul M.; and Nudelman, Sol, 3,950,272.
Numata, Tatuo, to Pioneer Electronic Corporation. Electric circuit containing an integral phase-locked loop. 3,950,620, Cl. 179-15.0BT.
Numata, Yukio: *See—*
Saikaishi, Noboru; Numata, Yukio; and Yamada, Tsuneo, 3,950,702.
Nusbaum, Arthur. Safety net and adjustable support therefor. 3,949,834, Cl. 182-138.000.
Nussbaumer, Manfred; and Boesch, Karl, to Micafil A.G. Apparatus for grabbing, holding and transporting workpieces on a conveyor chain. 3,949,859, Cl. 198-19.000.
N.V. Bekaert S.A.: *See—*
Verhelst, Romain, 3,949,968.
N.V. Nederlandse Gasunie: *See—*
Bellinga, Hendrik, 3,950,136.
Nyquist, Jack K.: *See—*
Chien, Luther C.; Nyquist, Jack K.; and Yembrick, Charles, Jr., 3,950,501.
Oakland Corporation, The: *See—*
Wallace, Richard B., 3,950,579.
Obara, Kunio; Nishino, Yoshio; and Matsumoto, Shoji, to Mitsubishi Metal Corporation. Process for producing a sintered article of a titanium alloy. 3,950,166, Cl. 75-213.000.
Oberthur, Heinrich, to ITT Industries, Inc. Brake force distributor valve. 3,949,456, Cl. 29-157.10R.
O'Brien, John L.; Johnson, Philip C.; and Lee, D. William, to Arthur D. Little Inc. Process for forming an aluminum electrical conducting wire junction end piece. 3,949,466, Cl. 29-628.000.
Occidental Petroleum Corporation: *See—*
Langmuir, Robert V., 3,950,661.
O'Connor, Gary E.: *See—*
Golland, David I.; Harakas, Nicholas K.; Mottern, John W.; O'Connor, Gary E.; and Runkle, Charles J., 3,950,192.
Oda, Teishiro; and Daikoku, Takashi, to Mitsubishi Jukogyo Kabushiki Kaisha. Method of liquid-phase sintering ferrous material with iron-titanium alloys. 3,950,165, Cl. 75-200.000.
Odashima, Hisao: *See—*
Kitayama, Minoru; Yamaguchi, Susumu; and Odashima, Hisao, 3,950,575.
ODEC Computer Systems, Inc.: *See—*
Perry, Richard Anthony, 3,949,665.
Oertle, Donald H., to Continental Oil Company. Diffusion monitoring apparatus. 3,949,593, Cl. 73-19.000.
Offshore Equipment Development Co.: *See—*
Heese, William E.; and Sutton, John R., 3,949,699.
Ogar, George W.: *See—*
Churchill, Frederick E.; Ogar, George W.; and Thompson, Bernard J., 3,950,750.
Ogawara, Sumio: *See—*
Tanaka, Yutaka; and Ogawara, Sumio, 3,950,609.
Ogoltsova, Evgenia Sergeevna: *See—*
Akopov, Ernest Mikhailovich; Kapitanov, Nikolai Nikolaevich; Strekopytov, Alexei Alexeevich; Ogoltsova, Evgenia Sergeevna; and Paches, Alexandr Ilich, 3,949,923.
Ohba, Shunjiro. High-output solid state DC-AC inverter with improved overload protection and control logic circuitry. 3,950,691, Cl. 321-11.000.
Ohkawa, Motokazu, to Tokyo Shibaura Electric Co., Ltd. Frequency characteristics-controlling device. 3,950,711, Cl. 330-85.000.
Ohms, Edward J., to Caterpillar Tractor Co. Cushioned mast for lift trucks. 3,949,892, Cl. 214-674.000.
Oishi, Akira: *See—*
Wada, Motomu; Kitadono, Kaoru; and Oishi, Akira, 3,950,278.
Okamoto, Nobukazu; and Tokashiki, Michihide, to Toa Nenryo Kogyo Kabushiki Kaisha. Reaction product of a polyalkenyl succinic acid or its anhydride, a hindered alcohol and an amine. 3,950,341, Cl. 260-268.00C.
Okamoto, Takehiko; Kishimoto, Akihiko; Inoue, Masakazu; Nagai, Ikuo; and Otani, Mitsunobu, to Toray Industries, Inc. Method for graft polymerization of diene polymer. 3,950,455, Cl. 260-880.00R.
Okano, Atsuji; Kadoya, Shizuo; Naito, Takeo; Aoyagi, Takaaki; and Shimizu, Masao, to Mitsubishi Chemical Industries Ltd. Trans-4-aminomethylcyclohexane-1-carboxylic acid. 3,950,405, Cl. 260-514.00J.
Okita, Taisuke: *See—*
Usamoto, Teruyoshi; Okita, Taisuke; Yoshida, Nobuyuki; Hirooka, Masaaki; Taniguchi, Isoji; and Imai, Shyozaburo, 3,950,281.
Oldland, Hubert Charles: *See—*
Fox, Richard; and Oldland, Hubert Charles, 3,950,159.
Olin Corporation: *See—*
Caule, Elmer J., 3,950,193.
Gay, Walter A., 3,950,444.
Hodil, Elmer R., 3,949,922.

Olin Ski A.G.: *See—*
Brack, Jacques, 3,949,921.
Olinkraft, Inc.: *See—*
Graser, Earl J., 3,949,870.
Olmsted, Peter B., to Olmsted Products Co. Flow shut off valve. 3,949,779, Cl. 137-493.000.
Olmsted Products Co.: *See—*
Olmsted, Peter B., 3,949,779.
Olsson, Tage. Arrangement for garden barrows. 3,950,004, Cl. 280-47.180.
Olympus Optical Co., Ltd.: *See—*
Yonekubo, Ken, 3,950,649.
Omiya, Shuichi: *See—*
Hashimoto, Harukichi; and Omiya, Shuichi, 3,950,450.
Omron Tateisi Electronics Co., Ltd.: *See—*
Hatano, Isao; Nagano, Akira; and Urasaki, Kazuaki, 3,950,743.
Omura, Sadafumi: *See—*
Sawada, Jiro; Omura, Sadafumi; Shibata, Michinori; and Machida, Sadao, 3,950,514.
Onda, Eiichi: *See—*
Nakagawa, Tadashi; Koyama, Mitsuo; and Onda, Eiichi, 3,950,772.
Onishi, Kazutoshi; Awano, Tsuneo; and Masuzawa, Isao, to Tokyo Keiki Company Limited. Marine steering arrangement. 3,949,696, Cl. 114-144.00E.
Ono, Takayuki: *See—*
Yamaguchi, Tadashi; Ono, Takayuki; and Hoshi, Hiroshi, 3,950,295.
Onsager, Olav Torgeir, to Halcon International, Inc. Process of dimerization. 3,950,370, Cl. 260-465.80D.
Ooba, Shigehiro: *See—*
Ueda, Minoru; Ooba, Shigehiro; Hirano, Masachika; and Takeda, Hisami, 3,950,374.
Optimum Inc.: *See—*
White, Wilfrid Gordon, 3,949,483.
Orion Research Incorporated: *See—*
Frant, Martin S.; Riseman, John H.; and Krueger, John A., 3,950,231.
Orr, Roger D.; and Nitta, George H., to United States of America, Navy. CW Interference canceller (CWIC). 3,950,751, Cl. 343-18.00E.
O'Shea, Ronald J.: *See—*
Hawkins, Albert W.; O'Shea, Ronald J.; and Case, Herbert M., 3,950,205.
Ostric-Matijasevic, Biserka: *See—*
Chang, Stephen S.; Ostric-Matijasevic, Biserka; Huang, Cheng-Li; and Hsieh, An-Li, 3,950,266.
Ostroll, Henry D., to J. C. Penney Company, Inc. Size marker assembly. 3,949,914, Cl. 223-85.000.
Oswald, Alexis A.; and Valint, Paul L., to Ciba-Geigy AG. Asymmetric O,S-dialkyll-O-[(phenyl)-vinyl]-thlophosphates as insecticides. 3,950,520, Cl. 424-219.000.
Otani, Mitsunobu: *See—*
Okamoto, Takehiko; Kishimoto, Akihiko; Inoue, Masakazu; Nagai, Ikuo; and Otani, Mitsunobu, 3,950,455.
Owen, Hartley: *See—*
Garwood, William E.; Nace, Donald M.; and Owen, Hartley, 3,950,242.
Owen, Joseph R.; and Driskell, Carl R., to United States of America, Navy. Synthetic motion generator. 3,950,612, Cl. 178-6.800.
Owens-Corning Fiberglas Corporation: *See—*
Witherspoon, Charles R., 3,949,827.
Owens-Illinois, Inc.: *See—*
Lucas, Howard R., 3,950,199.
Oxirane Chemical Co.: *See—*
Imamura, Juichi; Ando, Moriyasu; Sasaki, Kazuo; and Iio, Takumi, 3,950,437.
Oy Wartsila AB: *See—*
Tomma, Kauko, 3,949,948.
Paches, Alexandr Ilich: *See—*
Akopov, Ernest Mikhailovich; Kapitanov, Nikolai Nikolaevich; Strekopytov, Alexei Alexeevich; Ogoltsova, Evgenia Sergeevna; and Paches, Alexandr Ilich, 3,949,923.
Page, Richard W. Mobile dental console. 3,949,480, Cl. 32-22.000.
Pallo, John M.; and Fischer, Donald J., to Johns-Manville Corporation. Pourable granulated siliceous insulation. 3,950,259, Cl. 252-62.000.
Palmieri, Joseph Michael: *See—*
Klein, Keith William; Howell, Edward Keith; and Palmieri, Joseph Michael, 3,950,677.
Pamer, Karl A., to McNeil Corporation. Material handling apparatus. 3,949,961, Cl. 248-317.000.
Panduit Corporation: *See—*
Caveney, Jack E.; and Moody, Roy A., 3,949,449.
Papeteries de Pont-Audemer: *See—*
Patin, Claude, 3,950,583.
Park, Anthony John; Sturt, Alan Charles; and Williams, Richard Harvey, to BP Chemicals International Limited. Production of polymers. 3,950,318, Cl. 260-92.80A.
Parker, Delmer G.: *See—*
Fraser, Lawrence J.; Parker, Delmer G.; and Scaletta, Joseph L., 3,950,089.
Parker-Hannifin Corporation: *See—*
Brown, Carl A.; and Kleine, Martin K., 3,950,248.
Parker, Wilbur A.; and Melnick, Daniel, to CPC International Inc. Chunk style peanut butter. 3,950,568, Cl. 426-633.000.
Parks, Robert G.; and Brewer, Howard E., to California Computer Products, Inc. Cathode ray tube lighthead. 3,950,763, Cl. 354-4.000.
Parry, John L.: *See—*
Schulman, Herbert; Russo, Francis P.; Carter, James W.; and Parry, John L., 3,950,086.
Pascal, Yves Robert Alain: *See—*
Najer, Henry; Pascal, Yves Robert Alain; and Lefevre, Jean Pierre Gaston, 3,950,345.
Patchell, Albert George: *See—*
Dow, James; Lloyd, Ronald; and Patchell, Albert George, 3,950,475.
Patel, Anil U.; DePhillips, James V.; and Peyser, Harry A., to Continental Can Company, Inc. Non-detachable easy open flap and tab assembly. 3,949,898, Cl. 220-277.000.
Patel, Shirish, to Honeywell Information Systems, Inc. Method and apparatus for dynamically controlling read/write operations in a peripheral subsystem. 3,950,735, Cl. 340-172.500.
Patin, Claude, to Papeteries de Pont-Audemer. Method of and apparatus for manufacturing a net of non-woven threads. 3,950,583, Cl. 428-105.000.
Patterson, Wayne C. Brake apparatus for a manually propelled material handling vehicle. 3,950,005, Cl. 280-47.310.
Patton, John T., Jr.; Ramlow, Gerhard G.; and Pizzini, Louis C., to BASF Wyandotte Corporation. Process for the preparation of graft copolymer dispersions. 3,950,317, Cl. 260-88.30A.
Patton, Tad L., to Exxon Research and Engineering Company. Synthesis of dicyanoformamides. 3,950,416, Cl. 260-545.00R.
Paudras, Francis. Individual case for phonograph records. 3,949,872, Cl. 206-310.000.
Pavlik, Dennis J.: *See—*
Christopherson, Herman P.; Witt, Robert H.; and Pavlik, Dennis J., 3,949,540.
Pavlov, Vladislav Ivanovich: *See—*
Rotenberg, Vladimir Adolfovich; Khruschova, Kira Markovna; Zilberg, Jury Yakovlevich; Begidzhanova, Anzhelika Petrovna; Gulyaev, Anatoly Sergeevich; Protasova, Irina Vladimirovna; Shapochkin, Alexei Ivanovich; Pavlov, Vladislav Ivanovich; Mirakov, Eduard Sergeevich; Izotov, Arseny Emelyanovich; Serikov, Ivan Alexandrovich; and Ignatiev, Not Vasilievich, 3,950,164.
Pavuk, Frank Eugene; Steiner, Roger Henry; Feinstein, Sumner Sheldon; and Venuti, Richard Joseph, to Borden, Inc. Method of making egg cartons. 3,950,208, Cl. 264-156.000.
Paynter, John D.; and Bunting, William M., to Exxon Research and Engineering Company. Promoted platinum-iridium-containing reforming catalysts. 3,950,270, Cl. 252-464.000.
Pearson, Ronald L.; and Schneider, Charles A., to Sherwin-Williams Company, The. Aromatic amine inhibited by antioxidants and metal complexers. 3,950,424, Cl. 260-575.000.
Pearson, Vernon W.; and Adleman, Larry G., to Greenlee Bros. & Co. Bending apparatus having a roller support unit for E.M.T., conduit and thin wall tubing. 3,949,584, Cl. 72-149.000.
Pease, Robert R.: *See—*
Adams, James M.; Hopper, Randall R.; Pease, Robert R.; and Raley, Garland E., 3,950,480.
Pech, David J.: *See—*
Morrow, James G., Sr.; and Pech, David J., 3,949,881.
Peiffer, Peter: *See—*
Jeromin, Lutz; Bremus, Norbert; Friederici, Georg; and Peiffer, Peter, 3,950,371.
Pembleton, James D.; and Pratt, Keith C., to Ford Motor Company. Brake proportioning valve for a motor vehicle responsive to both the rate of vehicle deceleration and vehicle load variation. 3,950,037, Cl. 303-24.00F.
Pemenidis, Michael: *See—*
Boyer, Charles; and Pemenidis, Michael, 3,949,936.
Pemsler, J. Paul; and Litchfield, John K., to Kennecott Copper Corporation. Solvent-in-pulp extraction of copper and nickel from ammoniacal leach slurries. 3,950,487, Cl. 423-24.000.
Penneck, Richard J., to Raychem Limited. Heat-shrinkable articles having non-linear electrical resistance characteristics. 3,950,604, Cl. 174-68.00A.
Pennwalt Corporation: *See—*
McKee, Peter M.; and Wagle, Uday D., 3,950,375.
Sanchez, Jose, 3,950,432.
Penzhorn, Ralf-Dieter: *See—*
Filby, Gordon; Gunther, Kirsten; and Penzhorn, Ralf-Dieter, 3,950,404.
Perciaccante, Vincent Anthony: *See—*
Landi, Henry Patrick; and Perciaccante, Vincent Anthony, 3,950,261.
Perkins, William H., to Diamond International Corporation. Carton construction. 3,949,928, Cl. 229-19.000.
Perrett, Darcy Glen: *See—*
Evers, Roy James; and Perrett, Darcy Glen, 3,949,447.
Perrin, Pierre: *See—*
Beranger, Jean; and Perrin, Pierre, 3,950,197.
Perry, Eli: *See—*
Chiang, Robert; and Perry, Eli, 3,950,247.
Perry, John M., II: *See—*
Hartger, Richard W.; and Perry, John M., II, 3,949,528.
Perry, Richard Anthony, to ODEC Computer Systems, Inc. Belt and carrier for high speed printer. 3,949,665, Cl. 101-111.000.
Person, Abraham: *See—*
Crooke, Robert C.; and Person, Abraham, 3,949,883.

Personal Communications, Inc.: *See—*
Yevick, George Johannus, 3,950,769.

Persson, Jan; and Sodergren, Ulf, to Stal-Laval Turbin AB. Disk valve. 3,949,776, Cl. 137-219.000.

Perusse, Norman J.: *See—*
Rejeski, William E.; and Perusse, Norman J., 3,950,213.

Pesson, Marcel, to Laboratoire Roger Bellon. 8-Alkyl-5-oxo-5,8-dihydro-pyrido(2,3-d)pyrimidine-6-carboxylic acids and their preparation. 3,950,338, Cl. 260-256.40F.

Peters, Hinderikus; and Mix, Reinhard, to Nixdorf Computer AG. Electromechanical writing device. 3,949,857, Cl. 197-186.00A.

Peters, Kenneth; Gordon, Robin; and Sands, Gilbert, to Chloride Group Limited. Manufacture of tubular type battery plates. 3,949,793, Cl. 141-234.000.

Petersen, Fritz: *See—*
Korsten, Andreas; Benecke, Theodor; Korndorfer, Eugen; Petersen, Fritz; and Wiebke, Gunter, 3,950,602.

Peterson, Dean M.; and Elliott, Franklin P., to Honeywell Inc. Protective packing product. 3,949,879, Cl. 206-522.000.

Peterson, Robert S., to Westinghouse Electric Corporation. Direct current motor speed control apparatus. 3,950,684, Cl. 318-338.000.

Petit, Joel: *See—*
Sancey, Francois; and Petit, Joel, 3,950,688.

Petrille, Dennis G.; and Karll, Robert E., to Standard Oil Company. Olefin sulfonates. 3,950,401, Cl. 260-504.00R.

Petrolite Corporation: *See—*
Wilson, Homer M., 3,950,706.

Pettersen, Edward A.; and Kotuby, Paul M., to Risdon Manufacturing Company, The. Liquid dispensing pump selectively sealable against leakage. 3,949,906, Cl. 222-153.000.

Pews, R. Garth; and Gunsher, Jeffrey A., to Dow Chemical Company, The. Tris-(polyhalophenoxy)-s-triazine flame retardants. 3,950,306, Cl. 260-45.8NT.

Peyser, Harry A.: *See—*
Patel, Anil U.; DePhillips, James V.; and Peyser, Harry A., 3,949,898.

Pfeiffer, Toni: *See—*
Vogel, Hans-Henning; Weitz, Hans-Martin; and Pfeiffer, Toni, 3,950,442.

Pfizer Inc.: *See—*
Abu El-Haj, Marwan J.; and Dominy, Beryl William, 3,950,160.
De Angelis, Gerald George; and Hess, Hans-Jurgen Ernst, 3,950,525.
Faubl, Hermann, 3,950,390.
Hammen, Philip D.; and Massett, Stephen S., 3,950,350.

Pfotenhauer, James M. Elastic band guided article projecting device. 3,949,729, Cl. 124-20.00B.

Phelan, Roy Lawrence, to Victor Comptometer Corporation. Motion translation means for high speed printer print head. 3,949,851, Cl. 197-1.00R.

Philip Morris Incorporated: *See—*
Taylor, George W. B., 3,949,646.

Philipp, Adolf H.; Demerson, Christopher A.; and Humber, Leslie G., to Ayerst, McKenna and Harrison Ltd. Pyrroloisoquinoline derivatives. 3,950,343, Cl. 260-288.0CF.

Phillips Petroleum Company: *See—*
Adair, James G., 3,950,118.
Cooper, William T., 3,950,292.
Jurrens, Lawrence D., 3,950,291.
Seefluth, Charles L., 3,950,459.
Smith, Ernest L.; Maw, Wayne E.; and MacEwen, George E., 3,949,927.
Thompson, James K., 3,949,949.
Threlkeld, Curtis B.; Hessert, James E.; Clampitt, Richard L.; and Needham, Riley B., 3,949,811.
Witt, Donald R., 3,950,316.

Phillips, Philip A.: *See—*
Habert, William C.; and Phillips, Philip A., 3,949,920.

Photo Marketing Systems Company: *See—*
Stackig, Sven Goran, 3,949,935.

Photocircuits Division of Kollmorgen Corporation: *See—*
Burr, Robert Page; and Keogh, Raymond J., 3,950,662.

Picker Corporation: *See—*
Martone, Ronald J.; Mueller, Peter G.; and Hindel, Robert, 3,950,648.

Pickering, John J. Bolt locks for freight car, trailer truck and air cargo doors. 3,950,018, Cl. 292-144.000.

Pieper, Helmut: *See—*
Keck, Johannes; Noll, Klaus-Reinhold; Pieper, Helmut; Kruger, Gerd; and Puschmann, Sigfrid, 3,950,393.

Pietsch, Ervin I., to ACF Industries, Incorporated. Pressure indicator for railway cars. 3,949,610, Cl. 73-406.000.

Piggott, Andrew: *See—*
Lamar, Percie L., III; Marks, Robert M.; and Piggott, Andrew, 3,950,547.

Pike, Myron T.: *See—*
McCown, Joseph D.; and Pike, Myron T., 3,950,298.

Pilgrim, Thomas Albert, to BPB Industries Limited. Granulating method and apparatus. 3,950,181, Cl. 106-306.000.

Pillsbury Company, The: *See—*
Collins, Donald M., 3,950,561.

Piltingsrud, Harley V. Detection instrument for plutonium-americium. 3,950,647, Cl. 250-361.000.

Pioneer Electronic Corporation: *See—*
Numata, Tatuo, 3,950,620.

Pitman-Moore, Inc.: *See—*
Emery, Jerrell Bemis; and Bittle, James Long, 3,950,512.

Pizzini, Louis C.: *See—*
Patton, John T., Jr.; Ramlow, Gerhard G.; and Pizzini, Louis C., 3,950,317.

Place, George H., Jr.: *See—*
Michaels, Thomas B.; and Place, George H., Jr., 3,950,680.

Plate Bonn Gesellschaft mit beschrankter Haftung: *See—*
Raabe, Fritz; and De Jong, Eduard, 3,950,297.

Plate, John R., to Allis-Chalmers Corporation. Dual Pump draft control valve. 3,949,783, Cl. 137-596.120.

Platt, Joseph, to Imperial Paper Box Corporation. Cardboard and paper record jacket. 3,949,873, Cl. 206-311.000.

Plempel, Manfred: *See—*
Wenzelburger, Jurgen; Buchel, Karl Heinz; Plempel, Manfred; and Meiser, Werner, 3,950,354.

Pless, John H. Multi-hull sailing vessels. 3,949,695, Cl. 114-66.50H.

Plessey Handel und Investments A.G.: *See—*
Goodinge, Mark Wallinger, 3,949,938.

Pluta, Leon: *See—*
Auzary, Louis; Pluta, Leon; and Pourrat, Maurice, 3,950,629.

PNC Company: *See—*
Keuchel, Herbert W., 3,950,582.

Pochan, John Michael: *See—*
Erhardt, Peter Franklin; Richards, William Conrad; and Pochan, John Michael, 3,950,168.

Polaroid Corporation: *See—*
Andrews, Paul A.; and Raia, Richard M., 3,949,501.
Erlichman, Irving; and Rice, Christopher R., 3,950,766.

Polinszky, Karoly: *See—*
Nemecz, Erno; Ujhidy, Aurel; Polinszky, Karoly; Szepvolgyi, Janos; Borlai, Oszkar; Kapolyi, Laszlo; and Szekely, Tamas, 3,950,485.

Polonyi, Joseph. Rotating disk toy. 3,949,990, Cl. 273-118.00A.

Polymer Processing Research Institute Ltd.: *See—*
Yazawa, Masahide; Kurihara, Kazuhiko; Narikawa, Kenichi; and Yazawa, Hirosi, 3,950,467.

Pomper, Edward G.; and Koval, Raymond J., to Westinghouse Electric Corporation. Semiconductor device and case member. 3,950,778, Cl. 357-74.000.

Pons, Henry Wolfgang: *See—*
Renfrew, Edgar Earl; and Pons, Henry Wolfgang, 3,950,130.

Pool, Danny L.; and Pool, Robert R. Hand masking machine. 3,950,214, Cl. 156-527.000.

Pool, Robert R.: *See—*
Pool, Danny L.; and Pool, Robert R., 3,950,214.

Popov, Alexandr Nikolaevich; Katsevich, Leonid Savvich; and Rozenberg, Vladimir Lvovich. Electric furnace. 3,950,601, Cl. 13-9.00R.

Popov, Nikolay Tihomirov: *See—*
Nikolov, Ivan Dimov; Semerdjiev, Stefan Georgiev; Nenov, Dragan Iliev; and Popov, Nikolay Tihomirov, 3,949,905.

Portalis, Mariano Gaston Rousseau. Manually operable vacuum milking system. 3,949,705, Cl. 119-14.430.

Porter, Townsend Henry, Jr.; and Schopp, Robert Ellsworth, to International Business Machines Corporation. Tape cartridge drive. 3,949,951, Cl. 242-192.000.

Porter, William H., to W. H. Porter, Inc. Insulating structural assembly and stud member for forming same. 3,949,529, Cl. 52-281.000.

Portier, Serge, to Societe Nationale Industrielle Aerospatiale. Actuating system for wing leading-edge slats. 3,949,957, Cl. 244-42.0CA.

Pott, Richard, to Contico Industries Ltd. Conveyer scraper with continuously applied constant surface pressure. 3,949,866, Cl. 198-230.000.

Pourrat, Maurice: *See—*
Auzary, Louis; Pluta, Leon; and Pourrat, Maurice, 3,950,629.

PPG Industries, Inc.: *See—*
Hahn, Ernest A.; and Sirkoch, Robert J., 3,950,592.

Prahl, Walter H. Utilization of waste products containing chlorine in the production of chlorinated organic compounds by combination of oxychlorination with combustion. 3,950,443, Cl. 260-650.00R.

Pratt, Keith C.: *See—*
Pembleton, James D.; and Pratt, Keith C., 3,950,037.

Pray, Robert W.; and Foster, Ralph L., to Thermogenics of New York, Inc. Ink curing and drying apparatus. 3,950,650, Cl. 250-504.000.

Precausta, Pierre: *See—*
Gaudry, Daniel; and Precausta, Pierre, 3,950,511.

Precision Valve Corporation: *See—*
Focht, John Richard, 3,949,910.

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Prince, Emanuel C., to Southeastern Laboratories, Inc. Treatment of mastitis in bovine udders. 3,950,554, Cl. 424-273.000.

Prins, Harvey R.: *See—*
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Puski, Gabor; and Konwinski, Arthur H., to Central Soya Company, Inc. Process of making a soy-based meat substitute. 3,950,564, Cl. 426-516.000.

Pyle, Owen, to Kingsford Company, The. Process for producing solid industrial fuel. 3,950,143, Cl. 44-1.00C.

Pysz, John F., Jr.: *See—*
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Raabe, Fritz; and De Jong, Eduard, to Plate Bonn Gesellschaft mit beschrankter Haftung. Copolyamides containing caprolactam, lauriclactam and hexamethylene diamine adipate. 3,950,297, Cl. 260-30.80R.

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Radlmann, Eduard; Schramm, Jurgen; and Nischk, Gunter, to Bayer Aktiengesellschaft. Process for the preparation of polycaprolactam which can be dyed with cationic dyes. 3,950,311, Cl. 260-78.00L.

Raether, Wolfgang: *See—*
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Rahman, Abdul R.; and Schafer, Glenn R., to United States of America, Army. Method of producing compacted, dehydrated, vegetable products of increased density. 3,950,560, Cl. 426-385.000.

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Ramazanova, Elmira Mamed Emin kyzy, administrator: *See—*
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Rambauske, Werner R., to Raytheon Company. Steerable catoptric arrangements. 3,950,079, Cl. 350-285.000.

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Ramsey, Frank J. Snare. 3,949,514, Cl. 43-87.000.

Rand, Ralph K., to Graphic Sciences, Inc. Document tray. 3,949,869, Cl. 206-73.000.

Randall, James Clyde, to TRW Inc. Series redundant drive system. 3,950,686, Cl. 318-564.000.

Raschle, Josef, to Heberlein & Co. Friction disc for driving twist tubes rotating at high revolution speeds. 3,949,618, Cl. 74-215.000.

Rass, Alfred; Rass, Walter; and Schneider, Rudolf. Apparatus for joining two coils of wire. 3,949,790, Cl. 140-112.000.

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Rauch, Ilse-Dore Stromberger-d'Alton; and Witter, Klaus, to U.S. Philips Corporation. Device for writing with liquid ink. 3,950,760, Cl. 346-140.00A.

Raugust, Theodore Arthur, to Jarco Services Ltd. Drill string jarring and bumping tool with piston disconnect. 3,949,821, Cl. 175-297.000.

Rauterkus, Karl Josef; Blazek, Jan; and Zimmermann, Wolfgang, to Hoechst Aktiengesellschaft. Dispersible copolymer powder. 3,950,302, Cl. 260-42.520.

Ravussin, Pierre Emile: *See—*
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Reavis, Robert Philmore, Jr., to AMP Incorporated. Wire slot terminal double beam system. 3,950,062, Cl. 339-97.00R.

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Redslob, Jean Jacques: *See—*
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Reichenbach, Jerry D., to Chicago Rawhide Manufacturing Company. Apparatus for molding fluid seal elements. 3,950,119, Cl. 425-251.000.

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Reilly, Joseph R.; and Schon, Lars G., to Monsanto Company. Method and apparatus improvements for trimming plastic articles. 3,949,628, Cl. 82-48.000.

Reindel, John, to United States of America, Navy. Microcircuit reverse-phased hybrid ring mixer. 3,950,703, Cl. 325-446.000.

Reiner, Lawrence L.; and McNett, John P., to Reiner, Lawrence L. Power supply toy and motorized vehicle. 3,949,517, Cl. 46-45.000.

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Reines, Robert G. Solar heated building. 3,949,732, Cl. 126-270.000.

Reinhold, Donald F., to Merck & Co., Inc. Processes for asymmetric conversion of 3-fluoro-L-alanine and 2-deutero-3-fluoro-L-alanine to their D-isomers. 3,950,411, Cl. 260-534.00C.

Reinsch, Herbert, to Robert Bosch Photokino G.m.b.H. Cinematographic apparatus with adjustable shutter means. 3,950,084, Cl. 352-169.000.

Reisacher, Raimund, to Siemens Aktiengesellschaft. Steam generator. 3,949,710, Cl. 122-34.000.

Rejeski, William E.; and Perusse, Norman J., to Wiremold Company, The. Machine for manufacturing insulated duct. 3,950,213, Cl. 156-461.000.

Remington Arms Company, Inc.: *See—*
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Renfrew, Edgar Earl; and Pons, Henry Wolfgang, to American Aniline Products, Inc. Thiazole-azo dyes and the coloration of polyester textile fibers therewith. 3,950,130, Cl. 8-41.00C.

Renn, Robert Maurice, to AMP Incorporated. Connecting device having integral conductor retaining means. 3,950,065, Cl. 339-98.000.

Renshaw, James T.: *See—*
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Rhee, Jhoon Goo. Protective shoe. 3,949,493, Cl. 36-2.00R.
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Rhoton, Richard S.; and Woods, David H., to Westinghouse Electric Corporation. Antenna apparatus for vehicle track rail signals. 3,949,959, Cl. 246-34.0CT.
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Richter, Sidney B.; and Kyker, Glendon D., to Velsicol Chemical Corporation. Halobenzoyl tetrahalophthalimides. 3,950,307, Cl. 260-45.75B.
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Riebel, Hans-Jochem; Rohe, Lothar; Hammann, Ingeborg; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. O-Alkyl-S-alkyl-O-[6-alkyl- or 6-halo-pyridazin-(3)-yl]-(thiono)thiol-phosphoric acid esters. 3,950,334, Cl. 260-250.0AP.
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Rivere, Jean Pierre, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Electronic fuel injection system for internal combustion engines. 3,949,713, Cl. 123-32.0EA.
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Jones, Freeman B., Jr., 3,950,264.
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Rodder, Jerome A. Spirometer. 3,949,739, Cl. 128-2.080.
Rode, Daniel Leon; and Schumaker, Norman Edwin, to Bell Telephone Laboratories, Incorporated. LPE technique for reducing edge growth. 3,950,195, Cl. 148-171.000.
Rodin, Vincent L. Artificial light source and attached growing area. 3,950,637, Cl. 240-10.00P.
Roemer, Erich B., to Glyco-Metall-Werke Daden & Loos GmbH. Sliding friction bearings. 3,950,141, Cl. 29-196.200.
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Rolls-Royce Motors Limited: *See—*
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Rosenzopf, Gunter: *See—*
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Ross, Bobby Lane. Power unit. 3,949,558, Cl. 60-721.000.
Ross, Cecil Jack, to W. R. Weaver Company. Gun sight and method of making the same. 3,949,482, Cl. 33-241.000.
Ross, Daniel Louis; and Barton, Lucian Anthony, to RCA Corporation. Electron beam recording article with o-quinone diazide compound. 3,950,173, Cl. 96-75.000.
Rossi, Giorgio: *See—*
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Rossignol, Jean-Francois; and Cavier, Raymond, to S.P.R.L. Phavic. New derivatives of 2-benzamido-5-nitro thiazoles. 3,950,351, Cl. 260-306.80R.
Rosvold, Warren C., to Signetics Corporation. Method for fabricating a semiconductor structure. 3,950,233, Cl. 204-15.000.
Rotenberg, Vladimir Adolfovich; Khruschova, Kira Markovna; Zilberg, Jury Yakovlevich; Begidzhanova, Anzhelika Petrovna; Gulyaev, Anatoly Sergeevich; Protasova, Irina Vladimirovna; Shapochkin, Alexei Ivanovich; Pavlov, Vladislav Ivanovich; Mirakov, Eduard Sergeevich; Izotov, Arseny Emelyanovich; Serikov, Ivan Alexandrovich; and Ignatiev, Not Vasilievich. Aluminium-based alloy. 3,950,164, Cl. 75-138.000.
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Russo, Adolph D., to Russo Ornamental Iron Products, Inc. Ladder structure. 3,949,836, Cl. 182-194.000.
Russo, Francis P.: *See—*
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Saidel, William R. Method of forming pallet structure. 3,949,458, Cl. 29-416.000.
Saikaishi, Noboru; Numata, Yukio; and Yamada, Tsuneo, to Trio Electronics Incorporated. Circuits for detecting trigger signals for use in synthesizing type receivers. 3,950,702, Cl. 325-335.000.
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Sampey, Gladys LeBlanc. Garment with drop seat. 3,949,427, Cl. 2-79.000.
Samuels, Allen J.; and Wiley, Roy O., to Westinghouse Electric Corporation. Weatherproof electrical receptacle with cover holdup feature. 3,950,055, Cl. 339-44.00R.
Sancey, Francois; and Petit, Joel, to DAV. Portable auxiliary current source including a battery and charger. 3,950,688, Cl. 320-2.000.
Sanchez, Jose, to Pennwalt Corporation. Di- and tetra-(peroxy)ketals and acetals and improved curing and polymerizing process employing same. 3,950,432, Cl. 260-610.00R.
Sandbrook, Dennis Ronald; and Melling, Harry, to John Cooper and Sons Limited. Cutting implement. 3,949,474, Cl. 30-260.000.
Sander, Bruno; Bonitz, Eckhard; Berbner, Heinz; and Hoffmann, Manfred, to BASF Aktiengesellschaft. Production of non-foaming aqueous suspensions of polyethylene or polypropylene fibrids. 3,950,293, Cl. 260-29.6RW.
Sandoz, Inc.: *See—*
Anderson, Paul L., 3,950,332.
Sandoz Ltd., (Sandoz AG): *See—*
Baumann, Hans-Peter; and Karmann, Hans-Georg, 3,950,419.
Sands, Gilbert: *See—*
Peters, Kenneth; Gordon, Robin; and Sands, Gilbert, 3,949,793.
Sandstrom, Carl-Erik: *See—*
Christensen, Tom; Wendel, Ove; and Sandstrom, Carl-Erik, 3,949,871.
Sankyo Company Limited: *See—*
Aoki, Atsushi; Fukuda, Rikiya; Nakayabu, Toshio; Ishibashi, Keijiro; Takeichi, Chiyoko; and Ishida, Mitsuo, 3,950,360.
Santilli, Arthur A.; and Scotese, Anthony C., to American Home Products Corporation. Substituted-2-(pyrimidinylthio)acetamidoximes and acetonitriles. 3,950,339, Cl. 260-256.50R.
Santoni, Cesar, to Greif Bros. Corporation. Nestable drum. 3,949,877, Cl. 206-519.000.
Sanyo Chemical Industries, Ltd.: *See—*
Imai, Takaichi; Ii, Motohiko; and Goto, Yoshio, 3,950,258.
Sanyo Electric Co., Ltd.: *See—*
Miyamoto, Seiji, 3,950,781.
Sarbach, Raymond Francois, to Institut de Recherche Scientifique I.R.S. Medicine comprising the benzilic ester of (dimethyl-2',5' pyrrolidino)-2-ethanol. 3,950,531, Cl. 424-274.000.
Sarcia, Domenico S.: *See—*
Gibbs, David A.; and Sarcia, Domenico S., 3,950,210.
Sargent Industries, Inc.: *See—*
Capelli, Alfred J., 3,950,047.
Sargert, Lewis D.: *See—*
Bellanca, Joseph M.; Sargert, Lewis D.; and Antrim, Rodney M., 3,949,719.
Sasaki, Giichi. Device for automatically closing a folding door. 3,949,801, Cl. 160-229.00R.
Sasaki, Kazuo: *See—*
Imamura, Juichi; Ando, Moriyasu; Sasaki, Kazuo; and Iio, Takumi, 3,950,437.
Sato, Chuichi: *See—*
Inoue, Gentei; Sato, Chuichi; Tanaka, Mamoru; and Matsuo, Nobuhiro, 3,949,996.
Sato, Shigeru: *See—*
Arakawa, Hideo; Hasebe, Tatsuo; and Sato, Shigeru, 3,950,267
Saucy, Gabriel: *See—*
Rosenberger, Michael; and Saucy, Gabriel, 3,950,358.
Savin Business Machines Corporation: *See—*
Smith, Ian Edward; Scroggs, Dennis I.; and Hastwell, Peter J., 3,949,703.
Sawada, Jiro; Omura, Sadafumi; Shibata, Michinori; and Machida, Sadao, to Taisho Pharmaceutical Co., Ltd. Antibiotic TM-481 derived from microorganism of the *streptomyces ribosidificus* group. 3,950,514, Cl. 424-121.000.
Sawaki, Mikio; Iwataki, Isao; Hirono, Yoshihiko; and Ishikawa, Hisao, to Nippon Soda Company, Ltd. Cyclohexane derivatives. 3,950,420, Cl. 260-563.00C.
Scalabrin, Domingos, to Alcan Aluminio Do Brasil S.A. Exhaust valve. 3,949,781, Cl. 137-532.000.
Scales, John Tracey. Inflatable support appliance. 3,949,438, Cl. 5-348.00R.
Scaletta, Joseph L.: *See—*
Fraser, Lawrence J.; Parker, Delmer G.; and Scaletta, Joseph L., 3,950,089.
Schaafsma, Sijbrandus E.; Claassens, Johannes E. L.; and Verheijen, Egidius J. M., to Stamicarbon B.V. Preparation of resorcinol and alkyl-substituted derivatives thereof. 3,950,438, Cl. 260-621.00R.
Schade, Jorg: *See—*
Wertelewski, Wilhelm, and Schade, Jorg, 3,949,563.
Schaeffer, Robert L.; and Balchunas, Charles A., to General Electric Company. Removable tank iron. 3,949,499, Cl. 38-77.300.
Schafer, Glenn R.: *See—*
Rahman, Abdul R.; and Schafer, Glenn R., 3,950,560.
Schaub, Robert Eugene: *See—*
Floyd, Middleton Brawner, Jr.; McGahren, William James; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,950,406.
Schefczik, Ernst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Quinazoline dyes. 3,950,340, Cl. 260-256.40Q.
Scheiber, David Hitz, to Du Pont de Nemours, E. I., and Company. Powder compositions of polynary oxides and copper. 3,950,597, Cl. 428-539.000.
Scheid, William J.: *See—*
Bartram, Nial C.; and Scheid, William J., 3,949,487.
Scheu-Dental, Inhaber Rudolf Scheu Herstellung und Vertrieb von Dentalbedarf, Firma: *See—*
Schinhammer, Karl, 3,949,478.
Schexnayder, Lawrence F.: *See—*
Larson, Donald J.; and Schexnayder, Lawrence F., 3,949,844.
Schick Incorporated: *See—*
Bartram, Nial C.; and Scheid, William J., 3,949,487.
Shanbrom, Edward, 3,949,743.
Schinhammer, Karl, to Scheu-Dental, Inhaber Rudolf Scheu Herstellung und Vertrieb von Dentalbedarf, Firma. Process and apparatus for fitting orthodontic brackets to teeth. 3,949,478, Cl. 32-14.00A.
Schlegel Corporation: *See—*
Williams, Fred; and Yackiw, Charles, 3,949,530.
Schlumberger Technology Corporation: *See—*
Goldschild, Pierre; and Doremus, Bernard, 3,950,021.
Schmidt, Delf; and Puls, Walter, to Farbenfabriken Bayer Aktiengesellschaft. Amylase inhibitor from wheat gluten using alcohol. 3,950,319, Cl. 260-112.00G.
Schmidt, Erwin, to Hoechst Aktiengesellschaft. Stabilized polyvinyl butyral and stabilizer for polyvinyl butyral. 3,950,305, Cl. 260-45.70P.
Schmidt, Fritz, to Siemens Aktiengesellschaft. Apparatus and method for cooling a superconducting cable. 3,950,606, Cl. 174-15.00S.
Schmidt, Hans-Joachim: *See—*
Fernholz, Hans; Wunder, Friedrich; and Schmidt, Hans-Joachim, 3,950,400.
Schmidt, Jean; and Brehon, Pierre, to U.S. Philips Corporation. Device for welding a wire by means of thermo-compression bonding. 3,950,631, Cl. 219-107.000.

Schmidt, Joseph A.; and Stone, W. James, to United States of America, Navy. Load actuated electro-ignition circuit switch. 3,949,676, Cl. 102-89.000.
Schmidt, Karl; and Boockmann, Gerhard, to Dr. Beck & Co. AG. Polyurethane high-voltage insulator appliance. 3,950,452, Cl. 260-859.00R.
Schmidt-Kastner, Gunter: *See—*
Geks, Franz-Josef; and Schmidt-Kastner, Gunter, 3,950,509.
Schmidt, Peter: *See—*
Linstedt, Hans; Roth, Helmut; Bundschuh, Gotz; Hohne, Gerd; Bodig, Bernd; Strelow, Gert; Schmidt, Peter; Sohner, Gerhard; Roozenbeek, Herman; and Michel, Hartmut, 3,949,722.
Schmidt-Weinmar, Heinz Gunter, to Canadian Patents and Development Limited. Method and apparatus to determine spatial distribution of magnitude and phase of electro-magnetic fields especially optical fields. 3,950,103, Cl. 356-106.00R.
Schmieg, Gerhard, to Siemens Aktiengesellschaft. Electrical quick disconnect plug. 3,950,068, Cl. 339-176.00M.
Schmitter, Andre: *See—*
Haug, Theobald; and Schmitter, Andre, 3,950,279.
Schneider, Bruno, to Gretag Aktiengesellschaft. Method and apparatus for printing coloured originals. 3,950,093, Cl. 355-37.000.
Schneider, Charles A.: *See—*
Pearson, Ronald L.; and Schneider, Charles A., 3,950,424.
Schneider, Gordon L. Stabilization composition. 3,950,179, Cl. 106-208.000.
Schneider, Mark H.; Fort, Emil M.; Simmonds, Leonard B.; and Kultzow, Robert J., to Westinghouse Electric Corporation. Liquid-cooled conductors for dynamoelectric machines. 3,950,665, Cl. 310-260.000.
Schneider, Rudolf: *See—*
Rass, Alfred; Rass, Walter; and Schneider, Rudolf, 3,949,790.
Schneider, Wolf Giselher, to Feinmechanische Werke Mainz GmbH. Hydraulic step-motor. 3,949,553, Cl. 60-325.000.
Schneiter, Ali, to Ebauches S.A. Escapement or counting mechanism for a timepiece having a balance-wheel. 3,949,547, Cl. 58-116.00R.
Schnepel, Marguerite S. Chair. 3,950,028, Cl. 297-445.000.
Schobert, Harold H.; Field, Roger C.; and Cardwell, Paul H., to Deep-sea Ventures, Inc. Reduction to manganese metal using metal transporting compounds. 3,950,162, Cl. 75-80.000.
Schoenberger, Simon Ray. Archery bow with fishing peel supporting bracket. 3,949,730, Cl. 124-24.00R.
Scholtens, Albert: *See—*
Scholtens, Simon A.; and Scholtens, Albert, 3,949,861.
Scholtens, Simon A.; and Scholtens, Albert, to Nu-Way Marketing and Packaging Co., Inc. Packaging weighted groups of articles. 3,949,861, Cl. 198-39.000.
Schon, Lars G.: *See—*
Reilly, Joseph R.; and Schon, Lars G., 3,949,628.
Schopp, Robert Ellsworth: *See—*
Porter, Townsend Henry, Jr.; and Schopp, Robert Ellsworth, 3,949,951.
Schoppe, Wayne F.: *See—*
Taylor, Thomas N.; and Schoppe, Wayne F., 3,949,979.
Schramm, Jurgen: *See—*
Radlmann, Eduard; Schramm, Jurgen; and Nischk, Gunter, 3,950,311.
Schrecke, Horst G.: *See—*
Huber, Wolfgang; and Schrecke, Horst G., 3,950,039.
Schroeder, Russell G., II: *See—*
Webb, Douglas E.; and Schroeder, Russell G., II, 3,950,640.
Schroeder, Thaddeus, to General Motors Corporation. Accessory outage monitoring circuitry. 3,950,741, Cl. 340-251.000.
Schromm, Kurt; Renth, Ernst-Otto; Mentrup, Anton; and Reichl, Richard, to Boehringer Ingelheim GmbH. 1-(3'-Trifluoromethyl-4'-chloro-phenyl)-2-amino-propanes and salts thereof. 3,950,335, Cl. 260-253.000.
Schroter, Friedrich. Apparatus for breaking out scrap pieces from die-cut or punched sheets. 3,949,653, Cl. 93-36.00A.
Schudel, Peter: *See—*
Bertele, Erhard; and Schudel, Peter, 3,950,430.
Lamparsky, Dietmar; and Schudel, Peter, 3,950,429.
Schuep, Willy: *See—*
Gey, Karl Friedrich; Kiss, Joseph; Lengsfeld, Hans; Wyss, Pierre-Charles; and Schuep, Willy, 3,950,324.
Schuler, Udo; Hess, Herbert; and Klotz, Gunter, to EVT Energie-und Verfahrenstechnik GmbH. Mill bowl lining construction. 3,949,943, Cl. 241-183.000.
Schuller, Richard: *See—*
Neumaier, Hubert; Vogt, Wilhelm; Sennewald, Kurt; Schuller, Richard; and Lenz, Gunther, 3,950,384.
Schulman, Herbert; Russo, Francis P.; Carter, James W.; and Parry, John L. Dental light reflector and visual-audio analgesic assembly. 3,950,086, Cl. 353-74.000.
Schulz, Hans Peter: *See—*
Kolling, Heinrich; Widdig, Arno; Thomas, Herbert; and Schulz, Hans Peter, 3,950,395.
Schumaker, Norman Edwin: *See—*
Rode, Daniel Leon; and Schumaker, Norman Edwin, 3,950,195.
Schumm, H. Dale. Spout construction for grain elevators and the like. 3,949,850, Cl. 193-25.00E.
Schwabische Huttenwerke Gesellschaft mit beschrankter Haftung: *See—*
Gessler, Hans; and Faul, Josef, 3,949,888.
Schwarzmann, Matthias: *See—*
Broecker, Franz Josef; Zirker, Guenter; Triebskorn, Bruno; Marosi, Laszlo; Schwarzmann, Matthias; Dethlefsen, Winfried; and Kaempfer, Knut, 3,950,368.
Schweizer, Gottfried; Koos, Josef; and Smolka, Thomas G., to Gertsch AG. Front jaws for ski bindings. 3,950,002, Cl. 280-11.35T.
Scientific Research Instruments: *See—*
Kratfel, Edward R., 3,949,967.
SCM Corporation: *See—*
Mueller, Hans W.; and Shattuck, Richard E., 3,949,852.
Scotese, Anthony C.: *See—*
Santilli, Arthur A.; and Scotese, Anthony C., 3,950,339.
Scott & Fetzer Company, The: *See—*
McKee, Donald S., 3,949,960.
Scott, Howard L., to Fabalon, Inc.; First Foundation, The; and Wragg, Charles L., a part interest to each. Treatment of natural and synthetic hair with a heat-settable composition. 3,949,764, Cl. 132-7.000.
Scott, Ward: *See—*
McKee, Clyde M.; and Scott, Ward, 3,950,080.
Scroggs, Dennis I.: *See—*
Smith, Ian Edward; Scroggs, Dennis I.; and Hastwell, Peter J., 3,949,703.
Seaborn, Paul E., to Mead Corporation, The. Binder ring. 3,950,107, Cl. 402-22.000.
Seal Incorporated: *See—*
Gibbs, David A.; and Sarcia, Domenico S., 3,950,210.
Seaman, Russell L.: *See—*
Cresswell, Ronald M.; Mentha, John W.; and Seaman, Russell L., 3,950,378.
Searle, Robert J. G.: *See—*
Davis, Royston H.; and Searle, Robert J. G., 3,950,535.
Seavey, Richard E.: *See—*
Keene, Wayne H.; Harris, Clarke E.; Jelalian, Albert V.; Miller, Christopher R.; and Seavey, Richard E., 3,950,100.
Seefluth, Charles L., to Phillips Petroleum Company. Continuous process for producing, reheating, and blow molding parisons. 3,950,459, Cl. 264-25.000.
Seeger, Ernst: *See—*
Engel, Wolfhard; Nickl, Josef; Teufel, Helmut; Engelhardt, Gunther; Seeger, Ernst; and Trummlitz, Gunter, 3,950,427.
Seiko Koki Kabushiki Kaisha: *See—*
Nakagawa, Tadashi; Koyama, Mitsuo; and Onda, Eiichi, 3,950,772.
Seiler, Claus-Dieter: *See—*
Vahlensieck, Hans-Joachim; Seiler, Claus-Dieter; and Kotzsch, Hans-Joachim, 3,950,364.
Sekigawa, Toshihiro: *See—*
Tarui, Yasuo; Hayashi, Yutaka; and Sekigawa, Toshihiro, 3,950,777.
Sell, James F. Adjustable ski hitch. 3,949,698, Cl. 114-235.0WS.
Sellars, Keith; and Laybourn, Peter, to Harlow Chemical Company Limited. Multicoloured paints from two or more pigmented aqueous polymer emulsions. 3,950,283, Cl. 260-17.00R.
Sells, Gary L. Ventilated cap for the ridge of a roof. 3,949,657, Cl. 98-42.00A.
Semerdjiev, Stefan Georgiev: *See—*
Nikolov, Ivan Dimov; Semerdjiev, Stefan Georgiev; Nenov, Dragan Iliev; and Popov, Nikolay Tihomirov, 3,949,905.
Senior, Franklin C., to Feed Recycling Co. Process and apparatus for removing ash and inorganic compounds from cattle manure. 3,950,562, Cl. 426-431.000.
Sennewald, Kurt: *See—*
Neumaier, Hubert; Vogt, Wilhelm; Sennewald, Kurt; Schuller, Richard; and Lenz, Gunther, 3,950,384.
Seo, Naonori, to Towo Seiki Co. Ltd. Straightening press for rod-like workpiece. 3,949,588, Cl. 72-389.000.
Serikov, Ivan Alexandrovich: *See—*
Rotenberg, Vladimir Adolfovich; Khruschova, Kira Markovna; Zilberg, Jury Yakovlevich; Begidzhanova, Anzhelika Petrovna; Gulyaev, Anatoly Sergeevich; Protasova, Irina Vladimirovna; Shapochkin, Alexei Ivanovich; Pavlov, Vladislav Ivanovich; Mirakov, Eduard Sergeevich; Izotov, Arseny Emelyanovich; Serikov, Ivan Alexandrovich; and Ignatiev, Not Vasilievich, 3,950,164.
Setterquist, Robert Alton, to Du Pont de Nemours, E. I., and Company. Olefin polymerization catalyst system and process for polymerization of olefins. 3,950,269, Cl. 252-430.000.
Shaffer, Clifford K.; and Weiss, Joe B., to United States of America, Navy. Method for making a resilient storage insert. 3,950,462, Cl. 264-46.800.
Shall, Sydney: *See—*
Lindsay, David Gordon; and Shall, Sydney, 3,950,517.
Shanbrom, Edward, to Schick Incorporated. Medicated vapor production method and apparatus. 3,949,743, Cl. 128-173.100.
Shapley, Bruce D., to K/Tronic, Inc. Magnetic tape cassette with sliding door to inhibit recording. 3,950,786, Cl. 360-132.000.
Shapochkin, Alexei Ivanovich: *See—*
Rotenberg, Vladimir Adolfovich; Khruschova, Kira Markovna; Zilberg, Jury Yakovlevich; Begidzhanova, Anzhelika Petrovna; Gulyaev, Anatoly Sergeevich; Protasova, Irina Vladimirovna; Shapochkin, Alexei Ivanovich; Pavlov, Vladislav Ivanovich; Mirakov, Eduard Sergeevich; Izotov, Arseny Emelyanovich; Serikov, Ivan Alexandrovich; and Ignatiev, Not Vasilievich, 3,950,164.
Sharples, John, to Rolls-Royce Motors Limited. Engine housings. 3,950,116, Cl. 418-83.000.

Sharples, Thomas D.; and Taylor, John T., to Beckman Instruments, Inc. Ball valve. 3,949,965, Cl. 251-171.000.
Shattuck, Richard E.: *See—*
Mueller, Hans W.; and Shattuck, Richard E., 3,949,852.
Shaw, Eva: *See—*
Shaw, James Anthony Carpenter; and Shaw, Eva, 3,949,897.
Shaw, James Anthony Carpenter; and Shaw, Eva. Closure for container. 3,949,897, Cl. 220-231.000.
Shea, Philip J., to Dow Chemical Company, The. Anti-inflammatory methods utilizing certain thioureas. 3,950,538, Cl. 424-322.000.
Shealy, Noah A., to Clark Equipment Company. Lubrication system for trunnion mounted axle. 3,949,826, Cl. 180-88.000.
Shell Oil Company: *See—*
Davis, Royston H.; and Searle, Robert J. G., 3,950,535.
Horne, Charles A., Jr., 3,950,530.
Sheng, Abel Ching Nam; and Hoover, Merle Vincent, to RCA Corporation. Timer circuits. 3,950,657, Cl. 307-252.0UA.
Sherlock, Russell J. W.; and Maynard, James Gordon, to H. A. Brown Limited. Door construction. 3,949,526, Cl. 49-501.000.
Sherwin-Williams Company, The: *See—*
Pearson, Ronald L.; and Schneider, Charles A., 3,950,424.
Shibata, Michinori: *See—*
Sawada, Jiro; Omura, Sadafumi; Shibata, Michinori; and Machida, Sadao, 3,950,514.
Shimizu, Kameichi: *See—*
Iwata, Hisao; Hasewaga, Gentaro; and Shimizu, Kameichi, 3,949,498.
Shimizu, Masao: *See—*
Okano, Atsuji; Kadoya, Shizuo; Naito, Takeo; Aoyagi, Takaaki; and Shimizu, Masao, 3,950,405.
Shimizu, Osamu: *See—*
Sumida, Shizuo; Nii, Kazuo; Shimizu, Osamu; Ueda, Atsushi; and Ishii, Mitsuaki, 3,950,656.
Shimodaira, Tadayoshi; and Gomi, Yoshifumi, to Kabushiki Kaisha Suwa Seikosha; and Shinshu Seiki Kabushiki Kaisha. Compact flying printer. 3,949,664, Cl. 101-93.310.
Shin-Etsu Chemical Co., Ltd: *See—*
Itoh, Kunio; Kuga, Naoyoshi; and Fukuda, Takeshi, 3,950,299.
Shinshu Seiki Kabushiki Kaisha: *See—*
Shimodaira, Tadayoshi; and Gomi, Yoshifumi, 3,949,664.
Shiokawa, Nobumasa; Maeda, Masakazu; Harada, Takashi; Takehara, Tsuguo; Fujikawa, Hiroyuki; and Yokokawa, Akio, to Kawasaki Steel Corporation. Apparatus for preventing raw mix from being unevenly sintered by a sintering machine. 3,949,974, Cl. 266-21.000.
Shiozaki, Shozo: *See—*
Ishiguro, Minoru; Takeuchi, Yuzo; and Shiozaki, Shozo, 3,950,453.
Shobert, Erle I., II, to Stackpole Carbon Company. Rotary engine with graphite housing. 3,949,711, Cl. 123-8.010.
Shore, Michael B., to Nemzow, Simon, a part interest. End box for packaging articles. 3,949,932, Cl. 229-40.000.
Shrader, Terry Monroe, to RCA Corporation. Adjustable spring mount for a cathode ray tube yoke. 3,950,720, Cl. 335-210.000.
Shrock, Cecil C. Negotiable instrument. 3,950,015, Cl. 283-7.000.
Shuffield, Jack E.: *See—*
Galya, William; and Shuffield, Jack E., 3,949,689.
Shulpin, Georgy Borisovich: *See—*
Nesmeyanov, Alexandr Nikolaevich; Rybinskaya, Margarita Iosifovna; and Shulpin, Georgy Borisovich, 3,950,373.
Sieber, Johannes Helmut: *See—*
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Siemens Aktiengesellschaft: *See—*
Maas, Michael, 3,950,694.
Reisacher, Raimund, 3,949,710.
Reuschel, Konrad; Kersting, Arno; and Keller, Wolfgang, 3,950,479.
Schmidt, Fritz, 3,950,606.
Schmieg, Gerhard, 3,950,068.
Ulber, Armin; and Muller, Gerhard, 3,949,856.
Wiedemann, Kurt, 3,950,749.
Signetics Corporation: *See—*
Dao, Tich T., 3,950,636.
Rosvold, Warren C., 3,950,233.
Silverman, Elliott: *See—*
Cohen, Morton; and Silverman, Elliott, 3,949,477.
Simmonds, Leonard B.: *See—*
Schneider, Mark H.; Fort, Emil M.; Simmonds, Leonard B.; and Kultzow, Robert J., 3,950,665.
Simmons, Roscoe H., Sr. Front and rear magnetic gauges for a press brake and the method of operating same. 3,949,587, Cl. 72-379.000.
Simon-Barron Limited: *See—*
Jones, Herbert; and Dorn, Michael Thomas, 3,950,120.
Simson, Hans Peter: *See—*
Herbst, Willy; Rudolphy, Albert; and Simson, Hans Peter, 3,950,288.
Simulation Physics, Inc.: *See—*
Kirkpatrick, Allen R., 3,950,187.
Singer Company, The: *See—*
Adams, Kenneth Douglas, 3,949,691.
Klebe, Elmer C., Jr.; and Looper, Timothy J., 3,950,625.
Weisz, William, 3,949,690.
Singer, Helmut; and Stein, Werner, to Henkel & Cie G.m.b.H. Method for purification of fatty acid mixtures. 3,950,365, Cl. 260-419.000.
Singer, Michael: *See—*
Buckley, Alan John; Gazzard, Edward George; Singer, Michael; and Taylor, John Anthony, 3,950,349.
Singleton, Henry M., to Southland Corporation, The. Thermoplastic can end sealant composition. 3,950,280, Cl. 260-4.00R.
Sirkis, Marvin Phillip: *See—*
Craig, Dwin R.; and Sirkis, Marvin Phillip, 3,950,172.
Sirkoch, Robert J.: *See—*
Hahn, Ernest A.; and Sirkoch, Robert J., 3,950,592.
Sittmann, Brigitte, to Vereinigte Baubeschlagfabriken Gretsch and Co. GmbH. Device in ski bindings with pivotal sole support. 3,950,000, Cl. 280-11.35C.
Skalka, Paul: *See—*
Cellerini, Albert R.; Skalka, Paul; and Stephenson, William I., Jr., 3,950,716.
Skarbo, Roald R.; and Natwig, David L., to Kennecott Copper Corporation. Process for recovering copper from basic carbonate mixtures. 3,950,488, Cl. 423-24.000.
SKF Industrial Trading and Development Company, B.V.: *See—*
Huber, Wolfgang; and Schrecke, Horst G., 3,950,039.
Imme, Helmut; and Moser, Werner, 3,950,044.
Kapaan, Hendrikus Jan, 3,949,632.
Skole, Richard David; and Rizzuto, Anthony Benny, to Amstar Corporation. Medium, component thereof and process employing same for the production of microbial insecticides, such as *Bacillus popilliae* spores and the like, for the control of Japanese beetles and other insects. 3,950,225, Cl. 195-96.000.
Slater Paper Box, Inc.: *See—*
Giordano, David J., 3,949,930.
Sleiher, Sigmund: *See—*
Lazaroiu, Dumitru Felician; Sleiher, Sigmund; and Mihaiescu, Gheorghe Mihai, 3,950,666.
Smith, David W., to Townsend Engineering Company. Stuffing horn. 3,949,446, Cl. 17-41.000.
Smith, Edgar Merle, to RCA Corporation. Erasing method for storage tube employing raster scan. 3,950,669, Cl. 315-12.00R.
Smith, Ernest L.; Maw, Wayne E.; and MacEwen, George E., to Phillips Petroleum Company. Impact resistant container bottom structure. 3,949,927, Cl. 229-14.0BL.
Smith, Gus T.; Gregory, Clifton; and Campbell, Lester W., to Marvel Specialty Company. Hosiery handling system with U-shaped form. 3,949,913, Cl. 223-43.000.
Smith, Ian Edward; Scroggs, Dennis I.; and Hastwell, Peter J., to Savin Business Machines Corporation. Self-cleaning developer applicator. 3,949,703, Cl. 118-637.000.
Smith International, Inc.: *See—*
Furse, John H., 3,949,820.
Smith, James W.: *See—*
Martin, Raymond S., 3,950,024.
Smith Kline & French Laboratories Limited: *See—*
Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,950,333.
Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,950,353.
Smith & Nephew Polyfabrik Limited: *See—*
Dow, James; Lloyd, Ronald; and Patchell, Albert George, 3,950,475.
Smith, Paul H. Fold-away rear turn indicators for motorcycles. 3,950,727, Cl. 340-134.000.
Smith R.P.M. Corporation: *See—*
Smith, Roy R., Jr., 3,949,668.
Smith, Robert W.: *See—*
Brenan, Robert R.; and Smith, Robert W., 3,950,142.
Smith, Roy R., Jr., to Smith R.P.M. Corporation. Liquid feed for offset press dampening system. 3,949,668, Cl. 101-148.000.
Smith, Wayburn S. Coupling for angularly related beams. 3,950,109, Cl. 403-403.000.
SmithKline Corporation: *See—*
Brown, Frank E., 3,949,939.
Loev, Bernard, 3,950,522.
Smolka, Thomas G.: *See—*
Schweizer, Gottfried; Koos, Josef; and Smolka, Thomas G., 3,950,002.
Smolnikov, Leonid Evgenievich; and Laptev, Nikolai Nikolaevich. Method and device for D.C. voltage regulation across load. 3,950,692, Cl. 321-27.00R.
Smorenburg, Johannes Jacobus, to Stork Amsterdam B.V. Method and device for removing water vapor. 3,950,150, Cl. 55-30.000.
Snam Progetti S.p.A.: *See—*
Girotti, Pierleone; Tesei, Renato; and Floris, Telemaco, 3,950,449.
Snellman, Donald L.; Vaughn, Wade C.; and Haapala, Marvin H., to Norfin, Inc. Articulated arm sheet jogging mechanism. 3,949,982, Cl. 271-222.000.
Snyder, John R.: *See—*
Jordan, Edward J.; and Snyder, John R., 3,950,252.
Sochol, Irving, to Diamond Shamrock Corporation. Preparation of manganous hydroxide. 3,950,505, Cl. 423-605.000.
Societe Anonyme D.B.A.: *See—*
Girauldon, Jean-Claude, 3,949,839.
Societe Anonyme dite: Cefilac: *See—*
Desverchere, Jean, 3,950,576.
Societe Anonyme dite: L'Oreal: *See—*
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Societe Anonyme: Poclain: *See—*
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Societe d'Assistance Technique pour produits Nestle S.A.: *See—*
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Societe Nationale Industrielle Aerospatiale: *See—*
Euler, August Hanns Leonhard, 3,950,115.
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Somers, Jack; and Cuthbert, Elias, to Caird (Dundee) Limited. Method for dyeing and continuous heat setting of textile yarns. 3,950,132, Cl. 8-149.000.
Someya, Shinzo: *See—*
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Sony Corporation: *See—*
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Ichigaya, Koji; Machida, Hiromasa; Sudoh, Masayuki; Mizuno, Masami; and Awata, Yoriyoshi, 3,950,671.
Sortwell, Edwin T.; and Kerr, David S., to Nalco Chemical Company. System for handling and applying a non-suspended refractory slurry. 3,949,937, Cl. 239-70.000.
South African Inventions Development Corporation: *See—*
Clifford, John Michael, 3,950,110.
Southeastern Laboratories, Inc.: *See—*
Prince, Emanuel C., 3,950,554.
Southland Corporation, The: *See—*
Singleton, Henry M., 3,950,280.
Southworth, Glen R.; Lewallen, Roy W.; and Sparks, John E., to Colorado Video, Inc. Bandwidth compression system and method. 3,950,607, Cl. 178-6.000.
Sparks, John E.: *See—*
Southworth, Glen R.; Lewallen, Roy W.; and Sparks, John E., 3,950,607.
Spars, Byron G., to Chevron Research Company. Calcination-desulfurization of green coke with concurrent sulfur production. 3,950,503, Cl. 423-574.00R.
Spaulding, James R.: *See—*
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Spaulding, Vincent M.: *See—*
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Spectrol Electronics Corporation: *See—*
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Speich, Francisco, to Jakob Muller Forschungs-und Finanz AG. Web weaving machine with several heald shafts. 3,949,788, Cl. 139-57.000.
Speiser, Meyer. Keyboards. 3,950,634, Cl. 235-145.00R.
Spencer, Victor Vernon. Method of making filter media. 3,949,651, Cl. 93-1.00H.
Spencer, William H.; Dorius, John O.; and Brown, James D., to Trend Ceiling Systems, Co. Modular ceiling system. 3,949,533, Cl. 52-758.00A.
Sperry Rand Corporation: *See—*
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Spier, I Martin. Injection molding process. 3,950,483, Cl. 264-328.000.
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Square D Company: *See—*
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Stache, Ulrich; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, to Hoechst Aktiengesellschaft. Digoxigenine-3-[2′,3′-didesoxy-glycosides] and a process for their manufacture. 3,950,323, Cl. 260-210.500.
Stackig, Sven Goran, to Photo Marketing Systems Company. Photographic print envelope having adhesive transfer tabs. 3,949,935, Cl. 229-68.00R.
Stackpole Carbon Company: *See—*
Shobert, Erle I., II, 3,949,711.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; and Hoefke, Wolfgang, to Boehringer Ingelheim GmbH. Pharmaceutical compositions containing a 5-oxo-2,3-dihydro-imidazo[1,2-a]-s-triazine and method of use. 3,950,523, Cl. 424-249.000.
Stal-Laval Turbin AB: *See—*
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Stallworth, Lewis A.; and Hartley, Robert R., to United States of America, Navy. Acoustic current/flow measuring system. 3,949,605, Cl. 73-194.00A.
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Schaafsma, Sijbrandus E.; Claassens, Johannes E. L.; and Verheijen, Egidius J. M., 3,950,438.
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Stampfli, Louis. Playing implement. 3,949,985, Cl. 272-60.00R.
Standard Oil Company: *See—*
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Egli, Ernst A., 3,950,484.
Hensley, Linda W.; Li, George S.; and Coffey, Gerald P., 3,950,454.
Karayannis, Nicholas M.; and Lee, Sam S., 3,950,268.
Petrille, Dennis G.; and Karll, Robert E., 3,950,401.
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Stech, Peter, to K S B Kernkraftwerkspumpen GmbH. Centrifugal pump assembly. 3,949,567, Cl. 64-9.00R.
Steel Company of Canada, Limited, The: *See—*
Masuda, George K., 3,949,641.
Steel, Margaret Lilian; and Holt, Frank, to Imperial Chemical Industries Limited. Treatment process. 3,950,182, Cl. 106-308.00C.
Stegemeyer, Kenneth. Fishing device. 3,949,512, Cl. 43-43.130.
Stehlin, Hubert, to S. A. Martin. Assembly for use in a machine for processing sheet or similar material. 3,949,654, Cl. 93-58.20R.
Stein, Bernard; and Dreier, Gustav H., to Instrumentation Laboratory, Inc. Analysis apparatus. 3,949,615, Cl. 73-423.00A.
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Stempel, Arthur; and Westley, John, to Hoffmann-La Roche Inc. Phenylazo derivatives of antibiotic X-537A. 3,950,320, Cl. 260-152.000.
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Stephens, Gerald D.; and Clark, Ivan L., to Projects Unlimited, Inc. Modular buzzer with diaphragm molded into housing. 3,950,744, Cl. 340-392.000.
Stephenson, William I., Jr.: *See—*
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Stermitz, Frank R.: *See—*
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Stern, Emanuel, to Dynek Corporation. Domestic water filtration apparatus. 3,950,253, Cl. 210-282.000.
Sterner, Karl Thore. Animal food dispensing apparatus. 3,949,909, Cl. 222-199.000.
Stevens, John R., to Dean, Harlan B. Connector leaf and leaf assembly. 3,949,445, Cl. 16-128.00R.
Stevenson, William E.: *See—*
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Stewart, Jeffrey L., to Bio-Med Devices Inc. Pediatric respirator. 3,949,749, Cl. 128-145.800.
Stewart, Robert Lee; McCune, Homer Wallace; and Diehl, Francis Louvaine, to Procter & Gamble Company, The. Laundry pre-soak compositions. 3,950,277, Cl. 252-541.000.
Stiga AB: *See—*
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Stipanuk, John M.; and Krafthefer, Kerry M., to Molex Incorporated. Connector assembly. 3,950,060, Cl. 339-91.00R.
Stockel, Richard Frederick: *See—*
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Stoepel, Kurt: *See—*
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Stone, W. James; Ripley, Michael J.; and Stayton, Leroy M., to United States of America, Navy. Towline thermal protection system. 3,949,682, Cl. 102-89.000.
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Stromberg, Bengt. Method of tenderizing and improving the flavor of food. 3,950,555, Cl. 426-281.000.

Strout, Russell Brown: *See—*
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Su, Cheh Jen, to Continental Can Company, Inc. Molding wood articles from ammonium salt-wood particle mixtures. 3,950,472, Cl. 264-122.000.
Sucro, Jost S.: *See—*
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Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, to Sumitomo Chemical Company, Limited. Process for removing impurities in an oxidation mixture. 3,950,431, Cl. 260-610.00A.
Sudoh, Masayuki: *See—*
Ichigaya, Koji; Machida, Hiromasa; Sudoh, Masayuki; Mizuno, Masami; and Awata, Yoriyoshi, 3,950,671.
Suechting, William G., to Hein-Werner Corporation. Pneumatic-hydraulic pumping device. 3,949,644, Cl. 91-304.000.
Suenaga, Kazuyuki, to Victor Company of Japan, Limited. Hue control circuit for color television receivers. 3,950,779, Cl. 358-28.000.
Sugano, Junichiro; Kakuda, Minoru; and Tsuiki, Tokuzo, to Mitsubishi Gas Chemical Co. Inc. Method for promoting bleaching employing chloro-s-triazines. 3,950,126, Cl. 8-111.000.
Suleimanov, Alekper Bagirovich: *See—*
Aliev, Vagab Safarovich; Altman, Natalia Borisovna; Galonsky, Pavel Petrovich; Guterman, Alexandr Davidovich; Malina, Lia Vasilievna; Mingareev, Rafkhat Shagimardanovich; Suleimanov, Alekper Bagirovich; Akhmedov, Mansur Ilal ogly, deceased; and Ramazanova, Elmira Mamed Emin kyzy, administrator, 3,950,245.
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Sumitomo Chemical Company, Limited: *See—*
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Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; and Yamamoto, Hisao, 3,950,526.
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Suzuki, Kenji: *See—*
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Suzuki, Yoshiro; Ishiyama, Masahiko; and Chiba, Jiro, to Asahi Glass Company, Ltd. Electrically insulating coating glass. 3,950,174, Cl. 106-39.600.
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Sykes, Langthorne; Russell, Duane J.; and Atkinson, Robert E., to United States of America, Navy. Monopulse receiver circuit for an anti-radar missile tracking system. 3,949,955, Cl. 244-3.190.
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Lamar, Percie L., III; Marks, Robert M.; and Piggott, Andrew, 3,950,547.
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Syvakari, Pertti, to Allmanna Svenska Elektriska Aktiebolaget. Press containing a pressure cell with a flexible diaphragm and a forming pad influenced by said diaphragm. 3,949,583, Cl. 72-63.000.
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Tagliaferri, Dominick P. System for preventing unauthorized cashing of travelers checks or the like. 3,950,013, Cl. 283-6.000.
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Tammaru, Tarmo, to Bell Telephone Laboratories, Incorporated. Alignment of bytes in a digital data bit stream. 3,950,616, Cl. 178-69.50R.
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Tanaka, Atsuyuki, to Minolta Camera Kabushiki Kaisha. Image-transmitting light-conducting fibre array. 3,950,074, Cl. 350-96.00B.
Tanaka, Hiroshi; and Soma, Ikuo, to Canon Kabushiki Kaisha. Transferring paper for electrophotography. 3,950,595, Cl. 428-511.000.

Tanaka, Kunihiko: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,950,431.
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Taneda, Yasuo; and Tsutada, Tadakazu, to Teijin Ltd. Process for purifying beta-lactones. 3,950,361, Cl. 260-343.900.
Tani, Tatsuo: *See—*
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Tanov, Evgeny Ivanovich. Soil sampling device. 3,949,819, Cl. 175-243.000.
Tansky, Michael. Beverage base and method of making the same. 3,950,558, Cl. 426-309.000.
Tarui, Yasuo; Hayashi, Yutaka; and Sekigawa, Toshihiro, to Kogyo Gijutsuin. Field-effect transistor. 3,950,777, Cl. 357-23.000.
Tarui, Yasuo: *See—*
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Tate, Norman Christopher John: *See—*
Carey, Peter Majendie; and Tate, Norman Christopher John, 3,950,782.
Taub, David: *See—*
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Taylor, David Alexander: *See—*
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Taylor, George W. B., to Philip Morris Incorporated. Control device for air cylinder unit. 3,949,646, Cl. 91-461.000.
Taylor, James Lloyd: *See—*
Miers, Bruce Walter; and Taylor, James Lloyd, 3,949,975.
Taylor, John Anthony: *See—*
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Taylor, Michael David: *See—*
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Taylor, Steven C., to Culbertson Industries Inc. Line fault locating system. 3,950,622, Cl. 179-175.31R.
Taylor, Thomas N.; and Schoppe, Wayne F., to Xerox Corporation. Sheet feeding apparatus. 3,949,979, Cl. 271-10.000.
Technical Innovation Company for Commerce and Industry (TICCI): *See—*
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Tecotzky, Melvin: *See—*
Mattis, James J.; and Tecotzky, Melvin, 3,950,668.
Teijin Limited: *See—*
Adachi, Tomio; Mitsuishi, Yukio; Miura, Rikuo; and Kawakami, Hideaki, 3,950,206.
Hirose, Isao; Funabashi, Kazutoshi; Fujii, Takeshi; and Kawajiri, Kiyoshi, 3,950,440.
Taneda, Yasuo; and Tsutada, Tadakazu, 3,950,361.
Teixeira, Jean Marc. Safety marker. 3,949,701, Cl. 116-63.00P.
ter Braak, Johannes Gerardus, to Gebrs. ter Braak B.V. Mixer. 3,949,970, Cl. 259-4.0AB.
Tesch, Gunter Horst: *See—*
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Tesei, Renato: *See—*
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Teumer, Roger G.: *See—*
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Williams, Warren D., 3,950,204.
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Irwin, Malcolm F., 3,949,454.
List, Ralph W.; Irwin, Malcolm F.; and Stanley, Robert K., 3,949,453.
Th. Goldschmidt AG: *See—*
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Thaler, Konrad, to General Motors Corporation. Rotary-piston internal combustion engine having a combustion antechamber. 3,949,712, Cl. 123-8.090.
Thastrup, Ove, to A/S E. Rasmussen. Methods for joining insulated pipe lengths. 3,949,461, Cl. 29-460.000.
Therkleson, Steele Quinton: *See—*
Moss, Arnold T.; Therkleson, Steele Quinton; and Magnet, Anton, 3,950,105.
Thermo Electron Corporation: *See—*
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Miller, Marshall W.; Henke, Arthur W.; and Antos, John M., 3,949,430.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Method for tamping and leveling track. 3,949,678, Cl. 104-12.000.
Thien, Gerhard; and Fachbach, Heinz, to List, Hans. Carburetor engine with sound-proof encasing. 3,949,727, Cl. 123-198.00E.
Thomas & Betts Corporation: *See—*
Kuo, Ted L. C., 3,950,064.
Thomas, Herbert: *See—*
Kolling, Heinrich; Widdig, Arno; Thomas, Herbert; and Schulz, Hans Peter, 3,950,395.
Thomas, John J.; and Folger, Edward C., to Research Corporation. Fluorogenic substrate glycosides. 3,950,322, Cl. 260-210.00R.
Thomas, Paul P., to Winzeler Stamping Company. Adjustable broom block clamp. 3,950,108, Cl. 403-192.000.
Thompson, Bernard J.: *See—*
Churchill, Frederick E.; Ogar, George W.; and Thompson, Bernard J., 3,950,750.
Thompson, Frank B. Portable dispensing bar. 3,949,902, Cl. 222-129.100.
Thompson, James K., to Phillips Petroleum Company. Web tension control. 3,949,949, Cl. 242-75.430.
Thompson, Richard R.; and Irwin, Malcolm F., to Pro-Tech Inc. Liquid sampling. 3,949,612, Cl. 73-421.00B.
Thompson, Wallace M., to Harris Press & Shear Corporation. Apparatus for charging a scrap metal shear. 3,949,634, Cl. 83-278.000.
Thomson-CSF: *See—*
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Thornton, Michael Joseph: *See—*
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Threlkeld, Curtis B.; Hessert, James E.; Clampitt, Richard L.; and Needham, Riley B., to Phillips Petroleum Company. Method for reducing the permeability of subterranean formations to brines. 3,949,811, Cl. 166-294.000.
Timex Corporation: *See—*
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Timmerman, Daniel Maurice; and De Winter, Walter Frans, to AGFA-GEVAERT N.V. Electrophotographic element with polymeric conductive layer. 3,950,169, Cl. 96-1.500.
Timmins, Thomas H., to Mobil Oil Corporation. In situ retorting of oil shale. 3,950,029, Cl. 299-2.000.
Tisler, Marshall Stebbins. Tunable antenna having adjustable loop configurations. 3,950,756, Cl. 343-766.000.
Tjoa, Daniel W.: *See—*
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Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
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Togo, Masayuki; Takahashi, Jiyuuro; Nakashima, Tamotsu; and Ikenaga, Shizuyoshi, to Toray Industries, Inc. Melt-resistant synthetic fiber and process for preparation thereof. 3,950,589, Cl. 428-394.000.
Tokarz, Joseph, to Textron, Inc. Chain saw guide bar. 3,949,475, Cl. 30-387.000.
Tokashiki, Michihide: *See—*
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Tokita, Shinko, to National Marineplastic, Ltd. Shipping bag. 3,949,901, Cl. 222-94.000.
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Tokyo Shibaura Electric Co., Ltd.: *See—*
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Uchida, Yukimasa; Nojima, Isao; and Matsuno, Yoshiaki, 3,950,737.
Toman, Donald J., to Tull Aviation Corporation. Method of transmitting glide slope navigation signals for aircraft. 3,950,754, Cl. 343-108.00R.
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Tomizu, Yutaka: *See—*
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Tomlinson, Barnard E. Method of making a popcorn confection. 3,950,567, Cl. 426-625.000.
Tomma, Kauko, to Oy Wartsila AB. Device for web cutting. 3,949,948, Cl. 242-56.200.
Tommasino, Ralph P., to Raymond Lee Organization, Inc., The, a part interest. Prone board for pediatric physical therapy. 3,949,983, Cl. 272-57.00R.
Toray Industries, Inc.: *See—*
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Toth Aluminum Corporation: *See—*
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Toyama, Masamichi; Takigawa, Tomoshi; Hirata, Noritsugu; Sakaguchi, Keiichi; and Ichiyanagi, Toshikazu, to Canon Kabushiki Kaisha. Information displaying apparatus for a camera. 3,950,775, Cl. 354-273.000.
Toyama, Mitsuo; Ito, Toshio; Kobayashi, Eiji; and Kosaka, Hideo, to Nichiban Co., Ltd. Film removing compositions. 3,950,185, Cl. 134-38.000.
Toyama, Shigeo; and Tomizu, Yutaka, to Toyota Jidosha Kogyo Kabushiki Kaisha. Steering lock assembly for diesel motor vehicles. 3,949,581, Cl. 70-239.000.
Toyo Kogyo Co., Ltd.: *See—*
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Toyo Soda Manufacturing Co., Ltd.: *See—*
Kosaka, Yujiro; Uemura, Masaru; Saito, Mitsutaka; and Suzuki, Yuji, 3,950,209.
Toyoda, Kenji, to Nippon Kogaku K.K. Cameras employing interchangeable automatic exposure control devices. 3,950,768, Cl. 354-51.000.
Toyoda, Sadao; Takenouchi, Kuniyoshi; Hara, Noboru; and Kondo, Fusao, to Lion Fat & Oil Co., Ltd. Method of manufacturing granular detergents. 3,950,275, Cl. 252-527.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
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Kaneko, Yasuhisa; Morita, Akiyoshi; Nemoto, Yasuo; and Nagataki, Junichi, 3,949,552.
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Treaftis, Harry N.; and Tomb, Thomas F., to United States of America, Interior. Two-stage disposable particle sampling head. 3,949,594, Cl. 73-28.000.
Tremblay, Theodore C. Self-centering lubricating tool. 3,949,837, Cl. 184-105.00R.
Trend Ceiling Systems, Co.: *See—*
Spencer, William H.; Dorius, John O.; and Brown, James D., 3,949,533.
Treuner, Uwe D.; and Breuer, Hermann, to E. R. Squibb & Sons, Inc. 3-Alkylthio and 3-heterothio derivatives of [[(thioalkoxy)thiocarbonyl]oxy]acetyl cephalosporins. 3,950,330, Cl. 260-243.00C.
Tribe, Leonard T., to Kelsey-Hayes Company. Relay valve operated skid control system. 3,950,035, Cl. 303-21.00F.
Triebskorn, Bruno: *See—*
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Trippensee Corporation: *See—*
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Trullas, Isidro Folch, to Argelich Termes Y CIA., Sociedad Anonima. Apparatus for the wet treatment of cloths. 3,949,580, Cl. 68-177.000.
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Turner, Carlton E.; and Craig, John C., Jr., to University of Mississippi, The. Hypoglycemic composition and method of use. 3,950,518, Cl. 424-180.000.
Turner, James E. Engine spark ignition system corona coupler. 3,949,718, Cl. 123-119.00E.
Turner, James Keith; Sturkey, William Cleere; and Aurich, Christopher W., to Gaston County Dyeing Machine Company. Jet machine and processing method. 3,949,575, Cl. 68-5.00C.
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Twentier, Max E., to Products International Marketing. Disposable speculum for tympanic thermometer. 3,949,740, Cl. 128-9.000.
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Tyler, Hugh Jean, to Robertshaw Controls Company. Air conditioning system with integral energy conserving elements. 3,949,807, Cl. 165-16.000.
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Ueda, Atsushi: *See—*
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Ueda, Minoru; Ooba, Shigehiro; Hirano, Masachika; and Takeda, Hisami, to Sumitomo Chemical Company, Limited. Carbamate pesticide. 3,950,374, Cl. 260-453.00R.
Ueda, Shigeo, to Bridgestone Tire Company Limited. Marine fender assembly having a multistage shock-absorbing performance. 3,949,697, Cl. 114-219.000.
Ueda, Toshihiko: *See—*
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Uhlig, Gerhardt E. Safety closure container. 3,949,893, Cl. 215-216.000.
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Ulber, Armin; and Muller, Gerhard, to Siemens Aktiengesellschaft. System to detect abnormal paper feed in printers. 3,949,856, Cl. 197-133.00R.

Uncles, Philip Basil, to Moulton Developments, Limited. Control systems. 3,950,008, Cl. 280-124.00F.
Underwood, Theodore A., to Goodyear Aerospace Corporation. Laminated container. 3,949,894, Cl. 220-63.00A.
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Gilley, George C. Shared memory for a fault-tolerant computer. 3,950,729, Cl. 340-172.500.
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Joosten, Louis Geradus Josephus; and Verbeij, Oswald Johannes, 3,950,674.
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Usamoto, Teruyoshi; Okita, Taisuke; Yoshida, Nobuyuki; Hirooka, Masaaki; Taniguchi, Isoji; and Imai, Shyozaburo, to Sumitomo Chemical Company, Limited. Elastomeric compositions containing olefin-acrylic ester copolymer. 3,950,281, Cl. 260-4.00R.
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Vadas, Leslie, to FMC Corporation. Piston type liquid filler valve. 3,949,791, Cl. 141-5.000.
Vahlensieck, Hans-Joachim; Seiler, Claus-Dieter; and Kotzsch, Hans-Joachim, to Dynamit Nobel Aktiengesellschaft. Process for the preparation of organic silicon compounds. 3,950,364, Cl. 260-347.800.
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Vallis, Joseph. Brush for use with hairdryers. 3,949,765, Cl. 132-11.00R.
van den Ouweland, Godefridus Antonius Maria, to Lever Brothers Company. Flavoring foods. 3,950,565, Cl. 426-536.000.
van der Burg, Willem Jacob, to Akzona Incorporated. Amino-substituted tetracyclic compounds. 3,950,425, Cl. 260-576.000.
van der Lely, Cornelis. Soil cultivators. 3,949,813, Cl. 172-59.000.
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de Konig, Jan; van der Veen, Romke; and Wolters, Tjako Aaldrik, 3,949,496.
Van der Wal, Auke, to Vereenigde Metaalverpakking en Hechtdraad Industrie B.V.MVM-Endra. Methods of applying a tape around an object or a stack of objects and devices for carrying out said method. 3,950,203, Cl. 156-213.000.
Van Meter, James A. Bristled dart and spiked board. 3,949,989, Cl. 273-95.00R.
Van Seenus, Robert Johannes. Chair or a wheeled chair. 3,950,026, Cl. 297-328.000.
Van Stee, Beverly. Menstrual device for an animal. 3,949,752, Cl. 128-270.000.
Van Steenhoven, Frank, to Westinghouse Electric Corporation. High beam low brightness luminaire. 3,950,639, Cl. 240-92.000.
Vanstone, Gary Francis: *See—*
McLennan, Donald John; Mavor, John; Vanstone, Gary Francis; and Windle, Donald James, 3,950,655.
Varian Associates: *See—*
Munk, Miner N., 3,950,104.
Varitrac AG: *See—*
Beusink, Bernard Joseph, deceased; Cuypers, Marinus Hubertus; and Horowitz, Alexandre, 3,949,621.
Varta Batterie Aktiengesellshaft: *See—*
Breidenbach, Heinz, 3,950,186.
Vater, Wulf: *See—*
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Vaughn, Wade C.: *See—*
Snellman, Donald L.; Vaughn, Wade C.; and Haapala, Marvin H., 3,949,982.
Vauquois, Paul, to Rhone-Poulenc-Textile. Surgical ligature. 3,949,755, Cl. 128-335.500.
Veber, Daniel F.: *See—*
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Velsicol Chemical Corporation: *See—*
Richter, Sidney B.; and Kyker, Glendon D., 3,950,307.
Ventron Corporation: *See—*
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Venture Ride Mfg., Inc.: *See—*
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Venuti, Richard Joseph: *See—*
Pavuk, Frank Eugene; Steiner, Roger Henry; Feinstein, Sumner Sheldon; and Venuti, Richard Joseph, 3,950,208.
Vepa AG: *See—*
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Verbeij, Oswald Johannes: *See—*
Joosten, Louis Geradus Josephus; and Verbeij, Oswald Johannes, 3,950,674.
Verdicchio, Robert J.; and Walts, John M., to Johnson & Johnson. High-lathering non-irritating detergent compositions. 3,950,417, Cl. 252-545.000.
Vereenigde Metaalverpakking en Hechtdraad Industrie B.V.MVM-Endra: *See—*
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Vereinigte Baubeschlagfabriken Gretsch and Co. GmbH: *See—*
Sittmann, Brigitte, 3,950,000.
Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft: *See—*
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Verheijen, Egidius J. M.: *See—*
Schaafsma, Sijbrandus E.; Claassens, Johannes E. L.; and Verheijen, Egidius J. M., 3,950,438.
Verhelst, Romain, to N.V. Bekaert S.A. Stretcher for wires, ropes and similar flexible elements for use in fences or suchlike. 3,949,968, Cl. 254-162.000.

Verneau, Alain: *See—*
Duthion, Louis; and Verneau, Alain, 3,949,784.
Verstegen, Johannes D. M., to Stamicarbon B.V. Process for preparing alkali metal and alkaline-earth metal cyanates. 3,950,497, Cl. 423-365.000.
Vervin, Jacques: *See—*
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Verzi, Thomas K.: *See—*
Churchwell, Harry B.; Quearry, Warner; and Verzi, Thomas K., 3,950,111.
Vianova Kunstharz, A.G.: *See—*
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Victor Company of Japan, Limited: *See—*
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Victor Comptometer Corporation: *See—*
Phelan, Roy Lawrence, 3,949,851.
Vogel, Hans-Henning; Weitz, Hans-Martin; and Pfeiffer, Toni, to BASF Aktiengesellschaft. Manufacture of t-butanol. 3,950,442, Cl. 260-641.000.
Vogelsanger, Rolf: *See—*
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Vogt, Wilhelm: *See—*
Neumaier, Hubert; Vogt, Wilhelm; Sennewald, Kurt; Schuller, Richard; and Lenz, Gunther, 3,950,384.
Voigtlaender, Herbert, to Carl Schenck AG, Firma. Feed regulating conveyor bin. 3,949,862, Cl. 198-57.000.
Volk, David. Ophthalmic lens for presbyopia and aphakia. 3,950,082, Cl. 351-169.000.
Volkswagenwerk Aktiengesellschaft: *See—*
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Voltz, Sterling E.: *See—*
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von Berckheim, Constantin Graf. Electrostatic precipitator. 3,950,153, Cl. 55-138.000.
von Grunberg, Hubertus: *See—*
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Voss, Gunther, to Centro de Estudios Tecnicos de Materiales Especiales-Instituto Nacional de Industria. Small caliber projectile with an asymmetrical point. 3,949,677, Cl. 102-92.100.
Vrana, Jiri; and Cervencl, Milan, to Vyvojova a provozni zakladna vyz-kumnych ustavu. Circuit for automatically deriving and measuring relative voltages associated with impedance components of a biological object. 3,949,736, Cl. 128-2.10Z.
Vuille, Jean Pierre: *See—*
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Vydra, Karel: *See—*
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Vyvojova a provozni zakladna vyzkumnych ustavu: *See—*
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W. H. Porter, Inc.: *See—*
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Morgan, Charles R., 3,950,569.
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W. Schlafhorst & Co.: *See—*
Niederer, Kurt W., 3,949,570.
Rohner, Joachim; Maassen, Wilhelm; and Reiners, Franz-Josef, 3,949,946.
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Kurz, Dieter; Kandler, Herbert; Sabel, Alex; and Bauer, Johann, 3,950,312.
Wolf, Axel; and Goetze, Ulrich, 3,950,138.
Wada, Motomu; Kitadono, Kaoru; and Oishi, Akira, to Sumitomo Chemical Company, Limited. Process for producing a crosslinked foam of polyolefin resin having open cells. 3,950,278, Cl. 260-2.5HA.
Waddoups, Ray O., to International Telephone & Telegraph Corporation. Optical processing system for synthetic aperture radar. 3,950,747, Cl. 343-5.0CM.
Wade, Jack H.: *See—*
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Wagle, Uday D.: *See—*
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Wagner, Manfred, to Hamburger Stahlwerke GmbH. Process for cooling rolled wire. 3,949,585, Cl. 72-201.000.
Waite, Jack Peter, to American Cyanamid Company. Animal feeds containing antibiotic AV290. 3,950,515, Cl. 424-115.000.
Wakai, Akira: *See—*
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Waldstein, David A. Aqueous compositions containing tertiary amine oxides for treatment of rectal itching and lessening of irritation and swelling of prolapsed and swollen external hemorrhoids. 3,950,540, Cl. 424-325.000.
Waldstein, David A. Aqueous compositions containing quaternary ammonium salts for treatment of rectal itching and lessening of irritation and swelling of prolapsed and of irritated and swollen external hemorrhoids. 3,950,541, Cl. 424-329.000.
Walker, Robert G., to Industra Products, Inc. Contemporaneous insertion of overlapping coils. 3,949,464, Cl. 29-596.000.
Wallace, Richard B., to Oakland Corporation, The. Method of coating surface. 3,950,579, Cl. 427-379.000.
Wallach, Mark, to Animal Systems, Inc. Animal injector apparatus. 3,949,746, Cl. 128-218.00G.
Wallin, Wilbert C.: *See—*
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Wallis, Marvin E. Modular engine assembly. 3,949,556, Cl. 60-709.000.
Walter, Henry J.; and Springer, William E., to Clairol Incorporated. Swivelling electrical connection. 3,950,052, Cl. 339-8.00R.
Walts, John M.: *See—*
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Wandtke, Larry A.: *See—*
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Ward, Calvin B.; and Bruner, Robert D., to Cetus Corporation. Method for cloning filamentous microorganisms. 3,950,224, Cl. 195-76.000.
Ward, Ronald C.; and Love, James M., to GTE Automatic Electric Laboratories Incorporated. Adapter bracket for connecting blocks. 3,950,054, Cl. 339-36.000.
Waress, Edward T. Emergency warning device. 3,949,503, Cl. 40-129.00C.
Warnaco Inc.: *See—*
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Warner, Allan S. Commutator terminal machine and method. 3,950,630, Cl. 219-91.000.
Washio, Takaji; and Aizawa, Tatsuo. Electrophotographic copying machine. 3,950,090, Cl. 355-8.000.
Watanabe, Akira: *See—*
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Watanabe, Taisuke: *See—*
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Watson, James F., Jr., to Newport News Shipbuilding & Drydock Co. Servo-mechanism for controlling velocity and position of a controlled member. 3,950,687, Cl. 318-588.000.
Watt, Donald M. Sample collecting system. 3,949,611, Cl. 73-421.00B.
Watts, Golden F.: *See—*
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Waugh, Richard A.; and Gakhar, Ved P., to General Electric Company. Liquid flow diversion arrangement. 3,949,576, Cl. 68-12.00R.
Wean United, Inc.: *See—*
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Weaver, Merle L.: *See—*
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Bienert, Horst, 3,949,625.
Webb, Douglas E.; and Schroeder, Russell G., II, to Xerox Corporation. Lamp control and lamp switch circuit for controlling light balance. 3,950,640, Cl. 250-205.000.
Weber, Clement J.; and Normet, Henno, to Diversified Electronics, Inc. Motor protection device. 3,950,675, Cl. 317-13.00A.
Weber, Horst; Gruhl, Siegfried; and Endlich, Karl-Heinz, to Bayer Aktiengesellschaft. Production of annealed pigments. 3,950,183, Cl. 106-309.000.
Wehinger, Egbert: *See—*
Horstmann, Harald; Meng, Karl; and Wehinger, Egbert, 3,950,528.
Weigl, Erwin, to Gertsch AG. Adjusting mechanism for ski bindings. 3,950,001, Cl. 280-11.35K.
Weisbart, Emanuel S. Vehicle performance control system. 3,950,700, Cl. 324-177.000.
Weiss, Joe B.: *See—*
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Weiss, Martin Joseph: *See—*
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Weisz, William, to Singer Company, The. Interposer hook drive for sewing machines. 3,949,690, Cl. 112-184.000.
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Welch, Venus Lorraine. Educational associativity doll. 3,949,488, Cl. 35-8.00A.
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Wendel, Ove: *See—*
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Wendler, Norman L.; and Taub, David, to Merck & Co., Inc. Prostaglandins and methods of making same. 3,950,359, Cl. 260-340.900.
Wenzelburger, Jurgen; Buchel, Karl Heinz; Plempel, Manfred; and Meiser, Werner, to Bayer Aktiengesellschaft. Imidazolylacetic acid amides. 3,950,354, Cl. 260-309.000.
Wertelewski, Wilhelm; and Schade, Jorg, to Becorit Grubenausbau GmbH, DT. Mine roof shield. 3,949,563, Cl. 61-45.00D.
West, Anthony Alfred; and King, Derek Anthony. Fibres. 3,949,762, Cl. 131-2.000.

Westbrook, Robert L., Sr., to Rotex, Inc. Radio control for press. 3,950,755, Cl. 343-225.000.
Western Electric Company, Inc.: *See—*
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Wheaton, Donald S. Method for making a bun. 3,950,563, Cl. 426-505.000.
White, Desmond Deverell, to Dufaylite Developments, Ltd. Honeycomb materials. 3,950,215, Cl. 156-558.000.
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Whitesides, George M.; McCreary, Michael; and Lewis, Daniel, to Massachusetts Institute of Technology. Method of sepctral analysis using NMR shift reagents. 3,950,135, Cl. 23-230.00R.
Whitesides, George McClelland: *See—*
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Whitlock, Gerald David. Portable apparatus for measurement of nuclear radiation. 3,950,646, Cl. 250-361.000.
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Wiedemann, Kurt, to Siemens Aktiengesellschaft. Doppler frequency impulse radar system with displaced pulse sequence. 3,950,749, Cl. 343-7.700.
Wilcox, Raymond J. Vehicle wheel. 3,950,033, Cl. 301-66.000.
Wiley, Roy O., to Westinghouse Electric Corporation. Electrical angle plug. 3,950,069, Cl. 339-196.00M.
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Willcutt, M. Herbert; and Jones, Joseph K., to Cotton Incorporated. Air manifold for automatic gin feeder. 3,949,448, Cl. 19-80.00R.
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Williams, Fred; and Yackiw, Charles, to Schlegel Corporation. Corner formation for architectural glazing strip. 3,949,530, Cl. 52-288.000.
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Williams, Warren D., to Texas Instruments Incorporated. Low pressure, thin film bonding. 3,950,204, Cl. 156-235.000.
Willis, Wesley Nelson; and Laing, Graham Stirling, to Northern Electric Company, Limited. Lighted display for a console. 3,949,504, Cl. 40-132.00D.
Wilson, Arnold. Collapsible umbrella concrete form. 3,949,962, Cl. 249-18.000.
Wilson, David Barry, to Sybron Corporation. Armrest for dental chair. 3,950,027, Cl. 297-416.000.
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Wilson, Homer M., to Petrolite Corporation. Voltage sweep generator with bistable current source providing linear sweep voltages. 3,950,706, Cl. 328-181.000.
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Winkler, Alfred, to AGFA-Gevaert, A.G. Photographic apparatus with expansible housing. 3,950,771, Cl. 354-187.000.
Winkler, Alfred; and Engelsmann, Dieter, to AGFA-Gevaert, A.G. Operating means for photographic cameras. 3,950,773, Cl. 354-266.000.
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., to Firmenich & Cie. Flavoring agent. 3,950,566, Cl. 426-534.000.
Winzeler Stamping Company: *See—*
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Wirch, Charles E. Method of bracing studs in framed wall sections. 3,949,465, Cl. 29-432.000.
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Witherspoon, Charles R., to Owens-Corning Fiberglas Corporation. Acoustical panel assembly. 3,949,827, Cl. 181-33.0GB.
Witt, Donald R., to Phillips Petroleum Company. Catalyst support formed by adding acidic material to silica containing titanium. 3,950,316, Cl. 260-88.20R.
Witt, Paul A., to Universal Oil Products Company. Detergent-grade alkylate production. 3,950,448, Cl. 260-671.00B.
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Wolf, Axel; and Goetze, Ulrich, to Wacker-Chemie GmbH. Apparatus for conducting chemical reactions, particularly polymerization, continuously. 3,950,138, Cl. 23-283.000.
Wolfe, Saul, to Queen's University. 2,2-Dimethyl-3R-carboxy-6S-phenyl(or phenoxy)acetamido-1-oxa-4-aza-5R-bicyclo[3,2,0]heptan-7-one and processes for their production. 3,950,352, Cl. 260-307.0FA.
Wolgemuth, Larry G., to Atlantic Richfield Company. Preparation of polymeric urethanes from dicarbamates. 3,950,285, Cl. 260-18.0TN.
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Woodford, Peter David; and Jackson, John Alan, to Gilbarco Limited. Petrol dispensing. 3,949,778, Cl. 137-355.160.
Woodruff, Dale K. Animal training halter. 3,949,538, Cl. 54-24.000.
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Woomer, William H., to FMC Corporation. Pallet strapper with projectable lance. 3,949,662, Cl. 100-4.000.
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500M 3,950,257
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CLASS 212
68 3,949,881
144 3,949,882
CLASS 214
1B 3,949,885
1D 3,949,884
1P 3,949,883
6B 3,949,886
16.1A 3,949,887
17D 3,949,888
131A 3,949,889
152 3,949,890
301 3,949,891
674 3,949,892
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216 3,949,893
CLASS 219
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91 3,950,630
107 3,950,631
523 3,950,632
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63A 3,949,894
64 3,949,895
75 3,949,896
231 3,949,897
277 3,949,898
346 3,949,899
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94 3,949,901
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129.2 3,949,903
135 3,949,904
146HE 3,949,905
153 3,949,906
188 3,949,907
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199 3,949,909
321 3,949,910
386.5 3,949,911
394 3,949,912
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CLASS 224
26K 3,949,915
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19 3,949,923
132 3,949,924
CLASS 228
5.5 3,949,925
44.1A 3,949,926
CLASS 229
14BL 3,949,927
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23C 3,949,929
28R 3,949,930
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40 3,949,932
50 3,949,933
62.5 3,949,934
68R 3,949,935
CLASS 235
133R 3,950,633
145R 3,950,634
156 3,950,635
164 3,950,636
CLASS 236
26A 3,949,936
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70 3,949,937
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92 3,950,639
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3.19 3,949,955
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83R 3,949,958
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34CT 3,949,959
CLASS 248
225 3,949,960
317 3,949,961
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18 3,949,962
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205 3,950,640
283 3,950,641
302 3,950,642
303 3,950,643
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369 3,950,648
458 3,950,649
504 3,950,650
505 3,950,651
570 3,950,652
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171 3,949,965
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106 3,950,261
187R 3,950,262
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464 3,950,270
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519 3,950,274
527 3,950,275
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541 3,950,277
545 3,950,417
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306.8R 3,950,351
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343.9 3,950,361
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598 3,950,429
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613R 3,950,434
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3,950,467
95 3,950,469

97 3,950,468
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154 3,950,475
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171 3,950,476
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CLASS 267
136 3,949,975
CLASS 269
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CLASS 270
54 3,949,978
CLASS 271
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11.35T 3,950,002
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445 3,950,028
CLASS 299
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9 3,950,030
76 3,950,031
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18 3,950,032
66 3,950,033
CLASS 302
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21BE 3,950,036
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24F 3,950,037
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9 3,950,042
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36R 3,950,045
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238 3,950,047
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9.1 3,950,660
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46 3,950,662
49R 3,950,663
203 3,950,664
260 3,950,665
268 3,950,666
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184 3,950,048
245 3,950,049
247 3,950,050
263 3,950,051
CLASS 313
450 3,950,667
468 3,950,668
CLASS 315
11 Re.28,773
12R 3,950,669
344 3,950,670
368 3,950,671
389 3,950,672
3,950,674
408 3,950,673
CLASS 317
13A 3,950,675
14R 3,950,676
120 3,950,677
134 3,950,678
249R 3,950,679
262A 3,950,680
CLASS 318
139 3,950,681
314 3,950,682
327 3,950,683
338 3,950,684
561 3,950,685
564 3,950,686
588 3,950,687

CLASS 320
2 3,950,688
5 3,950,689
CLASS 321
10 3,950,690
11 3,950,691
27R 3,950,692
3,950,693
CLASS 323
16 3,950,694
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3 3,950,695
41 3,950,696
57R 3,950,697
61R 3,950,698
76A 3,950,699
177 3,950,700
CLASS 325
312 3,950,701
335 3,950,702
446 3,950,703
CLASS 328
55 3,950,704
108 3,950,705
181 3,950,706
CLASS 330
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29 3,950,708
35 3,950,709
49 3,950,710
85 3,950,711
CLASS 331
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30R 3,950,713
CLASS 335
35 3,950,714
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45 3,950,716
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205 3,950,719
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278 3,950,721
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150 3,950,722
CLASS 339
8R 3,950,052
34 3,950,053
36 3,950,054
44R 3,950,055
59M 3,950,056
65 3,950,057
75M 3,950,058
3,950,059
91R 3,950,060
93L 3,950,061
97C 3,950,064
97R 3,950,062
3,950,063
98 3,950,065
128 3,950,066
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176M 3,950,068
196M 3,950,069
217S 3,950,070
258F 3,950,071
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3R 3,950,724
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31R 3,950,725
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134 3,950,727
147LP 3,950,728
172.5 3,950,729
3,950,730
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3,950,735
3,950,736
173FF 3,950,737

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237R 3,950,739
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251 3,950,741
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336 3,950,743
392 3,950,744
412 3,950,745
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7.7 3,950,749
17.7 3,950,750
18E 3,950,751
105R 3,950,752
106R 3,950,753
108R 3,950,754
225 3,950,755
766 3,950,756
791 3,950,757
881 3,950,758
CLASS 346
33R 3,950,759
140A 3,950,760
140R 3,950,761
3,950,762
CLASS 350
96WG 3,950,073
96B 3,950,074
96C 3,950,075
97 3,950,076
160LC 3,950,078
160R 3,950,077
285 3,950,079
302 3,950,080
3,950,081
CLASS 351
169 3,950,082
CLASS 352
25 3,950,083
169 3,950,084
CLASS 353
44 3,950,085
74 3,950,086
116 3,950,087
CLASS 354
4 3,950,763
25 3,950,764
29 3,950,765
3,950,766
41 3,950,767
51 3,950,768
115 3,950,769
152 3,950,770
187 3,950,771
234 3,950,772
266 3,950,773
3,950,774
273 3,950,775
291 3,950,776
CLASS 355
3DD 3,950,089
3P 3,950,088
8 3,950,090
3,950,091
15 3,950,092
37 3,950,093
45 3,950,094
72 3,950,095
84 Re.28,770
CLASS 356
1 3,950,096
2 3,950,097
3 3,950,098
28 3,950,099
3,950,100
51 3,950,101
73 3,950,102
106R 3,950,103
128 3,950,104
175 Re.28,771
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23 3,950,777

74 3,950,778
CLASS 358
28 3,950,779
3,950,780
3,950,781
29 Re.28,774
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72 3,950,782
78 3,950,783
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CLASS 402
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CLASS 404
124 3,950,110
CLASS 408
204 3,950,111
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206 3,950,112
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97A 3,950,113
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226 3,950,115
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220 3,950,492
242 3,950,493
270 3,950,494
306 3,950,495
328 3,950,496
365 3,950,497
469 3,950,498
474 3,950,499
480 3,950,500
507 3,950,501
541A 3,950,502
574R 3,950,503
600 3,950,504
605 3,950,505
607 3,950,506
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70 3,950,510
89 3,950,511
94 3,950,513
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123 3,950,516
178 3,950,517
180 3,950,518
195 3,950,519
219 3,950,520
233 3,950,521
248 3,950,522
249 3,950,523
251 3,950,524
3,950,525
3,950,526
267 3,950,527
273 3,950,528
3,950,529
3,950,554

274 3,950,530
3,950,531
275 3,950,532
300 3,950,533
3,950,534
304 3,950,535
316 3,950,542
319 3,950,536
322 3,950,537
3,950,538
324 3,950,539
325 3,950,540
329 3,950,541
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251 3,950,119
314 3,950,120
326R 3,950,121
380 3,950,122
500 3,950,123
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72 3,950,545
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74 3,950,547
91 3,950,548
94 3,950,550
96 3,950,549
103 3,950,551
231 3,950,552
262 3,950,553
281 3,950,555
287 3,950,556
299 3,950,557
309 3,950,558
335 3,950,559
385 3,950,560
417 3,950,561
431 3,950,562
505 3,950,563
516 3,950,564
534 3,950,566
536 3,950,565
625 3,950,567
633 3,950,568
CLASS 427
36 3,950,569
98 3,950,570
142 3,950,571
156 3,950,572
208 3,950,573
209 3,950,574
226 3,950,575
284 3,950,576
365 3,950,577
378 3,950,578
379 3,950,579
CLASS 428
41 3,950,580
49 3,950,581
61 3,950,598
85 3,950,582
105 3,950,583
113 3,950,584
181 3,950,585
195 3,950,586
234 3,950,587
236 3,950,599
288 3,950,588
311 3,950,197
327 3,950,600
394 3,950,589
395 3,950,590
432 3,950,591
463 3,950,592
476 3,950,593
511 3,950,594
3,950,595
539 3,950,596
3,950,597
CLASS 431
254 3,950,124
352 3,950,125

Classification of Designs

D2—	2	239,475		175	239,491	D10—	8	239,509			239,526	D29—	23A	239,534	D54—	1A	239,560
	28	239,476		195	239,492		38	239,510			239,528		B	239,544		7	239,561
	233	239,508		246	239,493			239,511		R	239,527	D30—	1	239,545	D55—	1G	239,562
	260	239,477	D7—	123	239,494			239,512	D18—	2B	239,529		13	239,546		R	239,563
	310	239,478		189	239,495		71	239,513			239,530	D32—	1R	239,548	D56—	A	239,564
		239,479	D8—	8	239,496		109	239,514	D19—	91	239,531	D34—	2	239,549		2	239,565
D4—	6	239,480		52	239,498			239,515	D22—	13	239,532		5GH	239,550	D59—	R	239,566
D6—	28	239,481		57	239,497		111	239,516		14	239,533		14D	239,551	D61—	1Q	239,567
	49	239,482		98	239,499		114	239,517	D24—	1B	239,535		15AD	239,555	D64—	11A	239,568
	56	239,483		109	239,500		116	239,518	D26—	5C	239,536		AJ	239,553	D73—	1B	239,569
	66	239,484		246	239,501	D11—	1A	239,519		14G	239,537		B	239,554	D83—	D	239,571
	67	239,485		248	239,502	D12—		239,520			239,538		N	239,552		F	239,570
	146	239,486		251	239,503		53	239,521			239,539	D35—	34	239,547	D87—	R	239,573
		239,487		273	239,504		76	239,522	D27—	15	239,540	D45—	1A	239,556			239,574
	159	239,488	D9—	170	239,505		129	239,523		31	239,541	D48—	24	239,558		3A	239,572
	162	239,489		175	239,506		147	239,525	D28—	1B	239,543		R	239,557		8.4	239,575
	168	239,490		246	239,507	D13—	1B	239,524		R	239,542	D49—	11	239,559	D96—	12R	239,576

Classification of Plants

P. —	35	3,864	P. —	38	3,862	P. —	68	3,861	P. —	71	3,865	P. —	74	3,863

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California	6	Michigan	26	South Dakota	46
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Delaware	10	Montana	30	Vermont	50
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Patents

1 : 3,949,542	3,950,033	3,950,763	3,950,648	3,949,844	3,949,848
3,950,054	3,950,047	3,950,783	3,950,650	3,949,847	3,949,889
4 : 3,949,740	3,950,056	3,950,786	3,950,677	3,949,874	3,949,900
3,949,774	3,950,058	8 : 3,949,492	3,950,712	3,949,892	3,950,040
3,949,887	3,950,059	3,949,502	10 : 3,949,487	3,949,895	3,950,114
3,950,140	3,950,072	3,949,503	3,950,269	3,949,898	3,950,392
3,950,214	3,950,099	3,949,692	3,950,303	3,949,908	3,950,457
3,950,562	3,950,104	3,949,879	3,950,315	3,949,937	3,950,462
5 : 3,949,700	3,950,105	3,949,960	3,950,329	3,949,975	3,950,480
3,950,111	3,950,107	3,950,034	3,950,366	3,949,978	3,950,495
3,950,727	3,950,109	3,950,236	3,950,391	3,949,984	3,950,596
6 : 3,949,462	3,950,123	3,950,259	3,950,414	3,949,986	3,950,673
3,949,465	3,950,129	3,950,607	3,950,460	3,949,999	3,950,675
3,949,470	3,950,133	3,950,660	3,950,506	3,950,015	3,950,722
3,949,500	3,950,134	9 : Re.28,766	3,950,597	3,950,023	19 : 3,949,446
3,949,524	3,950,152	3,949,452	11 : 3,949,604	3,950,032	3,949,587
3,949,533	3,950,188	3,949,475	3,949,745	3,950,048	3,949,661
3,949,548	3,950,196	3,949,561	12 : 3,949,490	3,950,060	3,949,707
3,949,556	3,950,224	3,949,605	3,949,522	3,950,076	3,949,709
3,949,582	3,950,226	3,949,628	3,949,550	3,950,119	3,949,808
3,949,601	3,950,233	3,949,716	3,949,630	3,950,131	3,949,809
3,949,609	3,950,234	3,949,742	3,949,741	3,950,137	3,949,814
3,949,642	3,950,251	3,949,749	3,949,915	3,950,154	3,950,097
3,949,676	3,950,264	3,949,760	3,950,249	3,950,158	3,950,653
3,949,682	3,950,421	3,949,854	3,950,322	3,950,243	20 : 3,949,471
3,949,687	3,950,422	3,949,855	3,950,519	3,950,268	3,949,668
3,949,702	3,950,477	3,949,860	3,950,554	3,950,290	3,949,916
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3,949,768	3,950,571	3,949,924	3,949,634	3,950,448	21 : 3,949,576
3,949,770	3,950,585	3,949,972	3,950,005	3,950,472	3,949,663
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3,949,791	3,950,622	3,950,042	17 : 3,949,449	3,950,551	3,950,112
3,949,807	3,950,635	3,950,052	3,949,458	3,950,564	3,950,143
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3,949,883	3,950,642	3,950,071	3,949,506	3,950,593	3,950,561
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April 20, 1976

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UNITED STATES PATENT and TRADEMARK OFFICE

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PATENT AND TRADEMARK OFFICE NOTICES

Second Trial Voluntary Protest Program

A Second Trial Voluntary Protest Program will be conducted during the coming months. It will be increased in scale and somewhat modified in procedure from the first such program. Announcement of and description of the rules for the first program appeared in 923 O.G. 2 on June 4, 1974.

As before, the objective is to gain experience in carrying out such a program and to determine the extent of interest by the public in participating and in supplying pertinent references. To the extent there is participation, the program should be beneficial by bringing new art to the attention of the Office, preventing inadvertent issuance of invalid patents, and increasing confidence in the strength of those patents which survive the protest proceedings.

The first Trial Voluntary Protest Program showed a considerable interest by applicants and the public in taking part in protest proceedings. A summary of the results will be published soon in this Gazette. The second Trial Voluntary Protest Program is designed to gain additional information as to public participation and also to follow more closely the procedures which would be required in a continuing, permanent protest program.

Applications Involved

In the second Trial Voluntary Protest Program, a Request to Participate and Waiver of Confidentiality form (PTOL–224 Temp.) will be sent to each applicant to whom a Notice of Allowance is mailed during a selected three week period, probably in October, 1975. The total number of requests mailed will be about 4,500. Applications for plant patents will be excluded from the program. The reason for this exclusion is the high cost of printing colored drawings and the relatively limited prior art available. No other applications will be excluded from the trial program, regardless of subject matter, type of application or earlier proceedings.

Waiver of Confidentiality

Two copies of the form letter requesting voluntary waiver of confidentiality (form PTOL–224 Temp.) will be mailed in the same envelope along with the Notice of Allowance. An additional copy of the form letter will be made of record in each application at the time of mailing. The applicant will have three months from the notice of allowance date in which to either (1) elect to participate in the Trial Voluntary Protest Program by filing a signed waiver of confidentiality, or (2) elect not to participate in the program by paying the issue fee. If he does neither, the application will become abandoned, as provided in 37 C.F.R. 1.316. The waiver of confidentiality is a part of form PTOL–224 Temp. This procedure will avoid any increase in pendency time for those applications in which an election is made not to participate in the program. An early filing of a waiver of confidentiality by the applicant will result in early publication of the application.

Publication

If the applicant decides not to participate in the protest program and payment of the issue fee is timely made, the patent will issue routinely without delay.

If the applicant elects to participate in the protest program and a signed waiver of confidentiality is filed in the Office within 3 months of the notice of allowance date, the Notice of Allowance will be vacated. In such a case the issue fee should not be filed, as it will not be accepted and applied if filed with a signed waiver of confidentiality. An additional Notice of Allowance will be issued after the protest proceedings have been completed if only allowable claims remain in the application.

After a signed waiver has been filed, the application will be printed in the form of a patent and be available for sale as in the first Trial Voluntary Protest Program. At least one claim and a drawing figure, if any, will be printed in the OFFICIAL GAZETTE. These published applications will appear in about 6 to 9 issues of the OFFICIAL GAZETTE early in 1976. Advance notice will be given in the OFFICIAL GAZETTE of the dates on which applications will be published under this program.

Inspection of Files

The Patent and Trademark Office files of the published applications will be available for inspection by the public for a period of three months after publication. The application files will be retained in a single location in the Patent Issue Division during the protest period. This single location will be staffed with personnel to process papers directed to these files, supervise inspection of the files by the public, provide copies of file contents when ordered, and perform other related duties. A coin operated copying machine will also be available at this location.

Filing of Protests

Protests relating to the patentability of any published application must be filed in writing in the Patent and Trademark Office no later than three months after publication of the application. No extension of the three month protest period will be granted. Each protest must be filed in duplicate (one copy will be forwarded to the applicant and the other copy will be placed in the application file) and must indicate the grounds for protesting the allowance of any claim contained in the published application. If the protest involves prior art not of record in the application, two copies of the alleged prior art, together with an explanation of the relevance of such prior art to the allowed claims, should be included. The protester may also comment on the prior art record in the application and the manner in which it was applied.

In those applications where prima facie evidence of prior public use or sale the claimed invention is presented in accordance with 37 C.F.R. 1.292, public use proceedings will give the protester an opportunity to present evidence.

Should claims be copied from a published application for interference purposes, the applicant copying claims must also file a notice of such copying in the file of the published application to avoid the possibility of inadvertent issuance of the published application as a patent before conclusion of any interference proceedings.

For easy identification, all protests should be headed, "Protest Under Trial Voluntary Protest Program" and be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

The protester should fully identify himself and include his mailing address so that communications may be addressed to him. In view of administrative problems encountered in the first Trial Voluntary Protest Program in protecting the confidentiality of the identity of protesters, no attempt will be made by the Office to maintain the confidentiality of any protester under the new program.

If no protests are received during the protest period, the application file will be rerouted for the mailing of a new Notice of Allowance. The file will not be returned to the examining group except for consideration of matters which normally require return of an allowed file.

If one or more protests are filed in an application, the application file and the protest(s) will be returned to the examining group for consideration.

Consideration of Protest

The examining group will acknowledge receipt of all protests. The authority for deciding whether or not the evidence submitted constitutes a prima facie showing of unpatentability of any allowed claim will reside with the Group Director. If the Group Director decides that no such showing has been made, the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. Protesters will be notified in such cases that prosecution has not been reopened, and the applicant will be sent a duplicate copy of all protests. The decision of the Group Director will be final and will not be subject to petition by a protester.

If the Group Director decides that the submitted evidence constitutes a prima facie showing of unpatentability of any allowed claim, prosecution of the application will be reopened. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim considered unpatentable. The duplicate copy of each protest will be mailed to the applicant with the Office action. Protesters who submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

Response by the Applicant to Subsequent Office Actions

During this period, the applicant may present amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters who submitted evidence on which a rejection in the Office action is based to participate in later prosecution and to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response filed, including any appeal brief. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

Comment on Applicant's Response by the Protester

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent and Trademark Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

Any appeal by the applicant to the Board of Appeals in a protested application will be made special and will be taken up out of order.

Conclusion of Prosecution

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified and the application will be forwarded to the Patent Issue Division for mailing of a new Notice of Allowance. A decision of the primary examiner to allow an application will not be subject to petition or appeal by any protester.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Sept. 16, 1975.

[938 O.G. 945]

Registration to Practice

The following are names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before May 21, 1976.

Kaliko, Joseph J., 971 Clubview Blvd. South, Worthington, Ohio 43085

Pear, Leon, 7904 Horseshoe Lane, Potomac, Md. 20854

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,274,906, Worson and Dill, JOINT INSTALLATION APPARATUS, **filed** Feb. 7, 1974, D.C., C.D. Calif. (Los Angeles) Doc. 74–334–R, *Edoco Technical Products, Inc.* v. *Griffith Co.* Filed stipulation and consent judgment and order thereon that plaintiff is owner of said patent and said patent is valid, that defendant is permanently enjoined from further infringement of said patent and defendant's counterclaims are dismissed, entered Dec. 17, 1975.

3,309,484, C. J. Frenzel, TRIGGER ACTUATED SWITCH DEVICE, **filed** Apr. 22, 1974, D.C., N.D. Ill. (Chicago) Doc. 74c1106, *Skil Corp.* v. *The Singer Co.* Stipulation and order of dismissal under Rule 41(a)(1), F.R.C.P. that the complaint herein be dismissed with prejudice, May 22, 1975.

3,347,411, Rouillard and Vertut, ARTICULATION DEVICES WITH TRANSMISSION OF MOVEMENTS, **filed** June 30, 1972, D.C. (District of Columbia) Doc. 1301–72, *Owens-Illinois, Inc.* v. *The Dow Chemical Company.*

3,400,227, Lear and Auld, COMBINED RADIO AND MAGNETIC TAPE PLAYER; **3,403,868,** W. P. Lear, MAGNETIC TAPE CARTRIDGE SYSTEM; **3,437,762,** Lear and Auld, MULTI-TRACK TAPE CARTRIDGE PLAYER; **3,560,126,** W. P. Lear, MAGNETIC TAPE CARTRIDGE PLAYER SYSTEM, **filed** Apr. 26, 1972, D.C. Del. (Wilmington) Doc. 4370, *Motorola, Inc.* v. *Gates Lear Jet Corporation.* Case transferred, pursuant to 28 U.S.C. Section 1404(a) to the United States District Court for the District of Colorado, Nov. 24, 1972; case dismissed by consent of the parties, Nov. 6, 1975. **Same, filed** May 12, 1972, D.C. Colo. (Denver) Doc. C–4003, *The Gates Rubber Company* v. *Motorola, Inc. and Applied Appliances, Inc.* The above matter is dismissed, by consent of the parties, Nov. 6, 1975.

3,403,868. (See 3,400,227.)

3,407,778, Epstein and Obert, MARINE TOWING PLATE, **filed** Oct. 8, 1975, D.C., W.D. Wash. (Seattle) Doc. 75–715, *Washington Chain & Supply Co.* v. *Obert Marine Supply, Inc.*

3,424,524, Akiyama and Stockwell, MICRO-IMAGE DISPLAY APPARATUS, **filed** June 30, 1975, D.C., N.D. Ill. (Chicago) Doc. 75c2122, *NCR Corporation* v. *Eastman Kodak Co.*

3,431,598, Lueddeke and Lueddeke, MACHINE ORGANIZATION FOR MANUFACTURING TRAGET DISCS, **filed** May 20, 1975, D.C.N.J. (Newark) Doc. 75–868, *Eastern Target Co.* v. *Remington Arms Co., Inc.*

3,437,762. (See 3,400,227.)

3,475,623, R. A. Moog, ELECTRONIC HIGH-PASS AND LOW-PASS FILTERS EMPLOYING THE BASE TO EMITTER DIODE RESISTANCE OF BIPOLAR TRANSISTORS, **filed** Aug. 15, 1975, D.C. Del. (Wilmington) Doc. 75–242, *Moog Music, Inc.* v. *ARP Instruments, Inc.*

3,482,906, D. Volk, ASPHERIC CORNEAL CONTACT LENS SERIES, **filed** July 18, 1975, D.C., N.D. Ill. (Chicago) Doc. 75c2410, *Wesley-Jessen Inc.* v. *David Volk.*

3,495,866, L. J. Bontrager, COLLAPSIBLE TRAILER, **filed** July 25, 1975, D.C., N.D. Ind. (South Bend) Doc. S75–131, *Lloyd J. Bontrager* v. *Steury Corporation.*

3,515,979, M. J. E. Golay, MAGNETIC FIELD CONTROL APPARATUS, **filed** Sept. 1, 1972, D.C.N.J. (Newark) Doc. C–1495–72, *The Perkin-Elmer Corporation* v. *Nihon Denshi Kabushiki Kaisha and Jeolco (U.S.A.), Inc.* Order of dismissal of action, Apr. 22, 1975.

3,553,737, J. Bauman, METHOD OF APPLYING HAIR, **filed** Sept. 29, 1975, D.C., C.D. Calif. (Los Angeles) Doc. CV 75–3296–WPG, *Dura-Hair International, Inc.* v. *Plus Hair Center of Beverly Hills, Inc.* Patent was duly issued to plaintiff, defendant has infringed on said patent, that defendant is enjoined from further infringement of plaintiff's patent, entered Dec. 15, 1975.

3,560,126. (See 3,400,227.)

3,567,117, W. E. Eustis, ICE NUCLEI FORMATION; **3,733,029,** Eustis and Howell, SNOW PRECIPITATOR; **3,774,842,** W. E. Howell, METHOD OF PRESERVING ICE NUCLEI FOR SNOW FORMATION, **filed** Jan. 9, 1976, D.C., N.D. Ill. (Chicago) Doc. 76c67, *Hedco, Inc.* v. *Villa Olivia Country Club, Inc.*

3,586,270, Loffler and Kruger, MULTIPLE STAGE EXTENSIBLE BOOM, **filed** Oct. 28, 1975, D.C., N.D. Calif. (San Francisco) Doc. C–75–2262–RFP, *Electro-Motion Pacific, Inc.* v. *John Tate Co., Inc.*

3,588,095, Ward, Ward and Bachmann, SUCTION TABLE SYSTEM FOR FEEDING OF WARPED SHEETS, **filed** July 14, 1972, D.C.N.J. (Newark) Doc. C–1195–72, *The Ward Machinery Company (formerly The Ward-Turner Machinery Company)* v. *W. C. Hawthorne and Association.* Stipulation and order of dismissal of the complaint and counterclaims, Apr. 14, 1975.

3,590,472. Nix, Sargent and Kaarlela, COMPOSITE MATERIAL FOR MAKING CUTTING AND ABRADING TOOLS, **filed** Feb. 4, 1975, D.C., N.D. Ill. (Chicago) Doc. 75c360, *General Dynamics Corporation* v. *Barnes Drill Company*. Order of dismissal, complaint is hereby dismissed with prejudice, July 21, 1975.

3,602,431, G. H. Lockwood, SPRINKLES DEVICE FOR FLUID DISTRIBUTION, **filed** Jan. 13, 1976, D.C., C.D. Calif. (Los Angeles) Doc. CV 76-135-RF, *Rain Bird Sprinkler Mfg. Corp.* v. *Safe-T-Lawn, Inc.*

3,733,029. (See 3,567,117.)

3,774,842. (See 3,567,117.)

3,785,391, B. C. Miller, SEQUENCING VALVE, **filed** Feb. 4, 1975, D.C., S.D. Fla. (Fort Lauderdale) Doc. 75-60-C-NCR, *Fimco Manufacturing, Inc.* v. *Bob C. Miller*. Judgment is entered for defendant, patent is valid, Jan. 16, 1976.

3,078,172, L. L. Libby, PREPARED FROZEN FOOD FOR COOKING AND METHOD OF PREPARING THE SAME, **filed** Dec. 9, 1975, D.C., S.D. Fla. (Miami) Doc. 75-2902-C-CF, *Tra-Way Corp.* v. *Mrs. Paul's Kitchen, Inc. et al.*

3,146,368, Flore and Kaplan, CATHODE-RAY TUBE WITH COLOR DOTS SPACED BY LIGHT ABSORBING AREAS, **filed** June 6, 1973, D.C., Del. (Wilmington), Doc. 4672, *Tokyo Shibaura Electric Co., Ltd.* v. *Toshiba America Inc. and Toshiba Hawaii, Inc.* Final judgment, claims 1 through 6 and 9 of said patent are invalid for obviousness under 35 U.S.C. 103, Dec. 12, 1975.

3,332,617, Higonnet and Moyroud, TIME COMPOSING APPARATUS, **filed** Nov. 21, 1975, D.C., N.D. Calif. (San Francisco) Doc. 2455, *Automix Keyboards, Inc.* v. *Dymo Industries, Inc.*

3,445,324, Curler and Lineburg, FLEXIBLE WRAPPING MATERIAL **filed** Jan. 8, 1971, D.C., N.D. Ill. (Chicago) Doc. 71-C-53, *Curwood, Inc.* v. *Standard Packaging Corporation*. Enter order motion for entry of final order and consent judgment, defendant has infringed patent in suit. Counterclaim dismissed, etc., entered Dec. 16, 1975.

3,552,303, D. R. Parrish, CAKE PAN ASSEMBLY, **filed** Dec. 29, 1975, D.C., N.D. Ill. (Chicago) Doc. 75c4400, *Parrish's Cake Decorating Supplies, Inc.* v. *Wilton Enterprises, Inc. et al.*

3,565,454, R. L. Stevenson, SKATEBOARD WITH INCLINED FOOT-DEPRESSIBLE LEVER, **filed** Dec. 12, 1975, D.C., C.D. Calif. (Los Angeles) Doc. CV-75-4155, *Richard Laurence Stevenson* v. *Wayne Brown*.

3,615,087, R. P. Hickman, WORKBENCHES, **filed** Dec. 29, 1975, D.C., E.D. Wis. (Milwaukee) Doc. 75-745, *Black & Decker Mfg. Co. and Inventec International, Ltd.* v. *Hempe Manufacturing Company, Inc.*

3,657,005, Brown and Blumenthal, ELECTROGRAPHIC RECORD MEDIUM; **3,711,859,** same, ELECTROGRAPHIC RECORD SYSTEM HAVING A SELF SPACING MEDIUM, **filed** Dec. 17, 1975, D.C., N.D. Ill. (Chicago) Doc. 75c4275, *Gould Inc.* v. *Graphic Controls Corporation*.

3,711,859. (See 3,657,005.)

3,714,383, Leonard and Quick, KEY OPERATED ELECTRIC CIRCUIT BREAKER, **filed** Dec. 22, 1975, D.C., W.D.N.Y. (Buffalo) Doc. C-75-551, *Sykes Datatronics, Inc.* v. *Sperry Rand Corp. and Neisner Bros. Inc.*

3,756,939, S. Hurwitt, TARGET MOUNTING DEVICE SEQUENTIAL SPUTTERING, **filed** Mar. 15, 1974, D.C. Del. (Wilmington) Doc. 74-50, *Materials Research Corporation* v. *Perkin-Elmer Ultek Inc.* Stipulation and order dismissing this action with prejudice, Dec. 12, 1975.

3,873,130, W. P. Whitley, Jr., GUIDE AND SUPPORT MECHANISM FOR BOAT TRAILERS; **3,885,146,** same, DETACHABLE TAIL LIGHT ASSEMBLY FOR BOAT TRAILERS; **Reg. No. 885,333** (FLOAT-ON), Southeastern Fabricators, Inc., **filed** Dec. 12, 1975, D.C., S.D. Fla. (Miami) Doc. 75-2934-C-JE, *William P. Whitley, Jr. and Southeastern Fabricators, Inc.* v. *Road Corporation, doing business as Hitch-Hiker Trailers and "Drive On" Aluminum Boat Trailers.*

3,885,146. (See 3,873,130.)

Reg. No. 885,333. (See 3,873,130.)

PATENT NOTICES

Certificates of Correction for the Week of Apr. 20, 1976

Re. 28,610	3,893,456	3,920,158	3,930,829
Re. 28,632	3,893,526	3,920,457	3,930,838
D. 228,830	3,893,859	3,920,700	3,931,027
D. 237,506	3,893,860	3,920,791	3,931,032
D. 237,682	3,894,152	3,920,864	3,931,038
D. 238,172	3,896,056	3,921,212	3,931,166
3,318,545	3,896,130	3,921,613	3,931,177
3,383,578	3,896,208	3,921,719	3,931,189
3,550,014	3,896,296	3,921,782	3,931,448
3,629,258	3,897,478	3,922,196	3,931,484
3,655,727	3,898,675	3,922,256	3,931,547
3,698,610	3,899,188	3,922,350	3,931,624
3,741,086	3,899,590	3,922,564	3,931,811
3,742,118	3,899,956	3,922,821	3,931,860
3,780,144	3,900,801	3,923,011	3,931,893
3,790,791	3,902,524	3,923,209	3,931,970
3,800,452	3,902,730	3,923,351	3,932,207
3,801,616	3,903,017	3,923,451	3,932,498
3,804,886	3,903,092	3,923,508	3,932,719
3,806,410	3,903,205	3,923,768	3,932,761
3,811,337	3,903,856	3,923,903	3,932,836
3,824,612	3,905,550	3,924,322	3,933,103
3,825,321	3,905,650	3,924,723	3,933,219
3,831,017	3,906,021	3,925,093	3,933,593
3,838,160	3,906,121	3,925,236	3,933,785
3,844,299	3,906,712	3,925,453	3,933,811
3,845,247	3,906,900	3,925,787	3,934,171
3,846,476	3,907,723	3,925,788	3,934,380
3,846,615	3,908,442	3,925,789	3,934,604
3,848,593	3,909,424	3,925,801	3,934,797
3,848,742	3,909,713	3,926,169	3,934,834
3,851,516	3,910,512	3,926,510	3,934,937
3,854,214	3,910,790	3,926,605	3,935,128
3,855,252	3,911,105	3,926,702	3,935,411
3,861,360	3,911,186	3,926,830	3,935,657
3,862,075	3,911,417	3,926,865	3,935,700
3,862,128	3,911,943	3,927,395	3,935,763
3,870,176	3,912,654	3,927,806	3,935,798
3,872,166	3,912,701	3,927,924	3,935,877
3,872,253	3,912,862	3,927,993	3,935,931
3,874,440	3,912,934	3,928,137	3,935,966
3,876,459	3,913,029	3,928,321	3,936,231
3,877,007	3,913,526	3,928,462	3,936,519
3,877,571	3,914,191	3,928,487	3,936,695
3,878,464	3,914,721	3,928,837	3,936,713
3,882,084	3,914,923	3,929,636	3,936,966
3,882,434	3,915,509	3,929,663	3,937,374
3,883,272	3,915,701	3,929,872	3,937,479
3,885,204	3,916,535	3,930,055	3,937,579
3,886,217	3,916,648	3,930,228	3,937,800
3,888,726	3,916,661	3,930,376	3,937,821
3,889,707	3,916,915	3,930,377	3,937,959
3,890,942	3,917,055	3,930,473	3,938,189
3,892,304	3,917,484	3,930,684	
3,892,705	3,917,793	3,930,752	

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 27, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-30-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	3-12-75
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-13-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-5-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-5-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	2-19-75
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-14-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-22-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Tesing; Indicating.	9-26-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-19-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-9-75
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	4-17-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	8-8-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-11-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-15-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-10-75

Expiration of patents: The patents within the range of numbers indicated below expire during April 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,880,419 to 2,884,633 inclusive
Plant Patents..... Numbers 1,825 to 1,828 inclusive

PATENT APPLICATIONS

PUBLISHED APRIL 20, 1976

UNDER THE SECOND TRIAL VOLUNTARY PROTEST PROGRAM

NOTE- A copy of the notice setting forth the details of the Second Trial Voluntary Protest Program may be found in the Patent and Trademark Notices section of this issue.

Any protests relating to the patentability of these published applications must be filed in writing before July 20, 1976. These applications are available for inspection in the Allowed Files Branch, Crystal Plaza, Room 2-10C28. All correspondence should be addressed to:

Commissioner of Patents and Trademarks
Box TVPP
Washington, D.C. 20231

Printed copies of the published applications may be purchased from the Patent and Trademark Office at 50 cents each.

An "Index of Applicants and Assignees of Published Applications" and a concordance entitled "Classification of Published Patent Applications" are located in the back of this issue.

GENERAL AND MECHANICAL APPLICATIONS

B 529,214

INK MIST TYPE HIGH SPEED PRINTER

Akinori Watanabe; Katsuhide Tanoshima, and Matsusaburo Noguchi, all of Tokyo, Japan, assignors to Oki Electric Industry Company, Ltd., Tokyo, Japan

Filed Dec. 3, 1974, Ser. No. 529,214

Claims priority, application Japan, Dec. 10, 1973, 48-136885

Int. Cl.² G03G *15/04*

U.S. Cl. 101—1 **3 Claims**

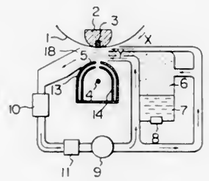
References Cited

UNITED STATES PATENTS

3,370,212	2/1968	Frank	317/262
3,370,529	2/1968	Michalchik	101/1
3,402,658	9/1968	Opdycke	101/129
3,521,558	7/1970	Fisher et al.	101/114
3,625,604	12/1971	Pressman	355/3
3,647,291	3/1972	Pressman	355/3
3,689,935	9/1972	Pressman	101/DIG. 13
3,779,166	12/1973	Pressman	101/426

FOREIGN PATENTS OR APPLICATIONS

719,239	12/1954	United Kingdom	101/DIG. 13



1. An ink mist type printer for use in printing information on a printing medium, comprising means for generating an ion stream including a pair of spaced electrodes to which a high voltage is applied; means positioned between said electrodes for modulating said ion stream including an electrically controlled aperture board having a plurality of apertures therein, said apertures being positioned in at least one aligned row through which the ion stream passes and is modulated, means for supplying an ink mist between said aperture board and one of said electrodes whereby the modulated ion stream charges the mist according to the pattern to be printed on a printing medium arranged parallel to the flow of said ink mist between said one electrode and the aperture board whereby characters are printed on said medium by the attraction to said one electrode of the charged ink mist; and a conductive corona discharge shield board located between the other of said electrodes and said aperture board, said shield board having a narrow slit formed therein located generally in parallel alignment with the other of said electrodes and the rowo of apertures in said aperture board.

B 555,146

LIQUID METAL LEVEL INDICATOR

Martin H. Wahl, Evans City, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Continuation of Ser. No. 392,965, Aug. 30, 1973, abandoned. This application Mar. 4, 1975, Ser. No. 555,146

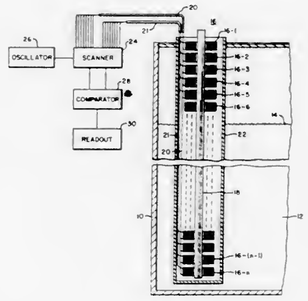
Int. Cl.² G01F *23/26*

U.S. Cl. 73—290 R **2 Claims**

References Cited

UNITED STATES PATENTS

3,157,048	11/1964	Williams	73/304 R
3,326,043	6/1967	Roeske	73/290 R
3,343,415	9/1967	Johnston	73/304 C
3,370,466	2/1968	Chang	73/304 R
3,443,438	5/1969	Martin et al.	73/304 R
3,777,257	12/1973	Geisselmann	73/304 C
3,777,566	12/1973	Marinaccio	73/290 R



1. A liquid metal level indicator comprising a plurality of substantially identical unshielded coils, means for supporting said coils in a vertical coaxial array extending over substantially the full depth of liquid metal to be measured, means for comparing the impedance of each coil to the impedance of the next adjacent coil successively from one end of the array to the other, and a common magnetic core on which said coils are supported.

B 575,776

METHOD FOR OBTAINING INFORMATION FROM A WELL BY USE OF A GAS OPERATED HYDRAULICALLY ACTUATED WIRE LINE PACKER

Stanley O. Hutchison, Bakersfield, and Neal L. Mitchell, Taft, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 510,264, Sept. 30, 1974. This application May 8, 1975, Ser. No. 575,776

Int. Cl.² E21B *47/00, 47/10*

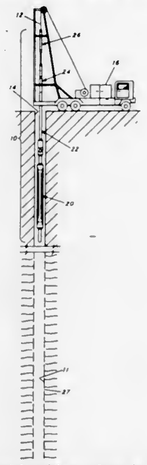
U.S. Cl. 166—250 **1 Claim**

References Cited

UNITED STATES PATENTS

2,416,441	2/1947	Grant et al.	73/151
2,645,289	7/1953	Leas	166/64
2,653,474	9/1953	Santiago	73/151
3,046,601	7/1962	Hubbert et al.	166/250 X
3,049,752	8/1962	Jorda et al.	73/151 X
3,364,993	1/1968	Skipper	166/250
3,855,854	12/1974	Hutchinson et al.	73/151
3,855,855	12/1974	Hutchinson et al.	73/151
3,855,856	12/1974	Hutchinson et al.	73/151

1. The method of obtaining impression information from a well comprising activating an operating gas and causing said operating gas to flow a noncompressible liquid through an orifice, running into a well a wire line packer having an impression sleeve connected to the outside of an inflatable sleeve of said packer, lowering said inflatable packer down said well before the elapse of a predetermined time as determined by flow of said liquid through said orifice to position the impression sleeve at a predetermined depth in said well, inflating said inflatable sleeve of said packer in response to said flow of fluid through said orifice to press said impression sleeve against the wall of said well, maintaining said inflatable sleeve in inflated condition for a predetermined time while continuing to flow



said liquid through said orifice, then in response to said flow of said liquid deflating the inflatable sleeve of said packer to remove said impression sleeve from said well wall and removing said inflatable packer from said well.

CHEMICAL APPLICATIONS

B 534,680

SUBSTITUTED DIHYDRO BENZOFURANYL ESTERS

Adolf Fischer, deceased, late of Mutterstadt, Germany, by Caecilia Emma Fischer, administratrix; Wolfgang Rohr, Mannheim, and Christian Reitel, Ziegelhausen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Dec. 20, 1974, Ser. No. 534,680

Int. Cl.² C07D *307/83*

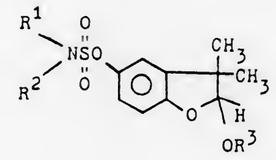
U.S. Cl. 260—346.2 R **12 Claims**

References Cited

UNITED STATES PATENTS

3,689,507	9/1972	Gates et al.	260/346.2 R

1. A compound of the formula



wherein:

R^1 denotes hydrogen, unsubstituted or chloro- or methoxy-substituted alkyl of 1–4 carbon atoms, allyl, methallyl, propargyl or butynyl;

B 559,394

ELECTRO-OPTICAL DEVICE

Masahide Tsukamoto, Neyagawa; Tetsuro Ohtsuka, Takatsuki; Kazuhisa Morimoto, Settsu, and Yoshinobu Murakami, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Mar. 17, 1975, Ser. No. 559,394

Claims priority, application Japan, June 7, 1974, 49-65287; June 7, 1974, 49-65288; June 10, 1974, 49-66404; June 11, 1974, 49-66904

Int. Cl.² G02F *1/16*; **C09K** *3/34*; **G02F** *1/13*

U.S. Cl. 252—299 **7 Claims**

References Cited

UNITED STATES PATENTS

3,650,603	3/1972	Heilmeier et al.	252/408
3,703,331	11/1972	Goldmacher et al.	252/299
3,773,747	11/1973	Steinstrasser	252/299
3,776,615	12/1973	Tsukamoto et al.	350/160 LC
3,779,751	12/1973	Haas et al.	252/408
3,781,088	12/1973	Tsukamoto et al.	350/160 LC
3,792,915	2/1974	Oh et al.	252/408
3,806,230	4/1974	Haas	252/299
3,819,531	6/1974	Sheva et al.	252/299
3,833,287	9/1974	Taylor et al.	350/160 LC
3,891,307	6/1975	Tsukamoto et al.	350/160 LC

FOREIGN PATENTS OR APPLICATIONS

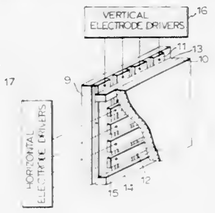
2,026,280	12/1970	Germany	252/299
2,121,085	12/1971	Germany	252/299

OTHER PUBLICATIONS

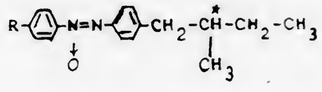
Gray, G. W., et al., Liquid Crystals & Plastic Crystals, Vol. 1, Ellis Horwood Ltd., London, pp. 170–171 (Jan. 1974).

Gray, G. W., et al., Electronics Letters, Vol. 9, No. 26, pp. 616–617 (1973).

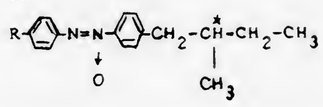
1. In an electro-optical device having a cell for containing a liquid crystal and consisting of two light-transparent plates opposed to each other and having light-transparent and electrically conductive electrodes on the inner surfaces thereof, and spacer means between said opposed electrodes; and a power supply coupled to said electrodes for applying an electric voltage to said electrodes, the improvement comprising a liquid crystal in said cell between said electrodes consisting of



99.9 to 30 wt. % of at least one nematic liquid crystal and 0.1 to 70 wt. % of at least one optically active liquid crystal compound of the formula;



or



wherein R is a methoxy, ethoxy, propoxy or butoxy radical.

B 403,076

AMINOMETHYLENEMALONITRILES

Peter Laurence Carter, Bishop's Startford, England, assignor to Fisons Limited, London, England

Filed Oct. 3, 1973, Ser. No. 403,076

Claims priority, application United Kingdom, Oct. 6, 1972, 46180/72

Int.Cl.² C07C *121/78*

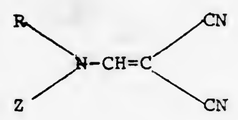
U.S. Cl. 260—465 E **8 Claims**

References Cited

UNITED STATES PATENTS

3,309,396	3/1967	Shulgin	260/465 XR
3,551,573	12/1970	Baker et al.	260/465 XR

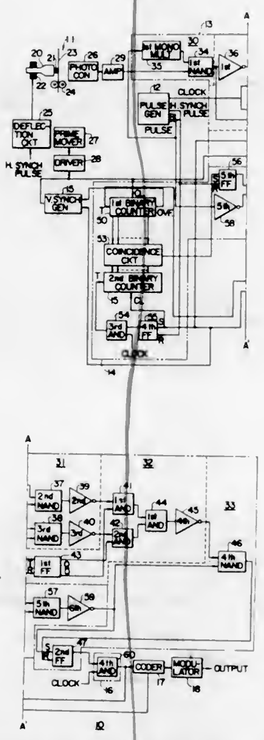
1. An aminomethylenemalonitrile compound of the formula



(I)

in which R represents phenyl; naphthyl; phenyl or naphthyl substituted by one or more substituents selected from halogen, alkyl of 1–4 carbon atoms and alkoxy of 1–4 carbon atoms; phenylalkyl; or phenylalkyl whose phenyl group is substituted by one or more substitutents selected from halogen and alkyl of 1–4 carbon atoms; and Z represents trichloromethylthio or dichloro-fluoromethylthio.

B 437,986
PHOTOGRAPHIC IMAGE PICK-UP AND CODING SYSTEM OF RUN-LENGTH TYPE
Hiroyoshi Tsuchiya; Yukifumi Tsuda; Heijiro Hayami, and Hiroaki Kotera, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan
Filed Jan. 30, 1974, Ser. No. 437,986
Claims priority, application Japan, Feb. 1, 1973, 48-13264
Int. Cl.² H04N *7/12*
U.S. Cl. 178—6 **2 Claims**

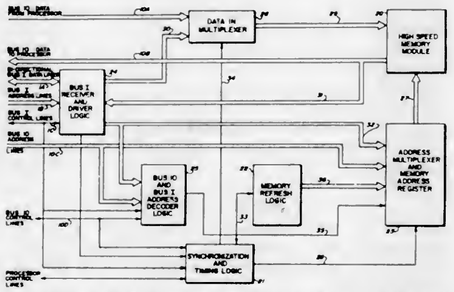


1. A photographic image information pick-up and coding system for picking up and coding photographic image information carried on a recording medium, which comprises:
a record medium having photographic image information thereon;
a facsimile signal generator (**11**) including scanning means for repeatedly producing facsimile signals representing a part of said image information lying on a horizontal scanning line, each of said facsimile signals including at lest one space signal;
a pulse generator (**12**) for producing a clock pulse signal consisting of clock pulses consecutively appearing at a constant rate and a blanking pulse signal consisting of blanking pulses appearing during the blanking period between two consecutive facsimile signals;
a run-length gate (**16**) for passing therethrough said clock pulse signal during a time period that a run-length gate trigger pulse lasts;
a start signal generator (**14**) for producing a start signal;
a run-length gate controller (**13**) for producing said run-length gate trigger pulse in accordance with said facsimile signals. clock pulse signal and blanking pulse signal, said run-length gate controller including a space signal superposeer for superposing a space signal on a leading edge of each of said facsimile signals, a sampling circuit for sampling said mark and space signals with said clock pulse signal, a mark-space selector (**32**) triggered by said start signal for selectively passing therethrough one of the sampled mark and space signals, and run-length trigger pulse generating means for producing said run-length trigger pulse generating means for producing said run-length gate trigger pulse, said run-length gate trigger pulse rising at the rise of said start signal and decaying at the rise of the first pulse of the sampled one signal passed through said mark-space selector, said run-length gate trigger pulse generating means including a first gate (**46**) for passing therethrough said one of the sampled mark and space signals from said mark-space selector when triggered by said start signal, an error eliminating pulse generator (**72, 73, 74**) connected to the output of said first gate for producing an error eliminating pulse lasting from the rise of said start signal for a predetermined duration slightly longer than the repetition rate of said clock pulse train, a second gate (**75**) connected to the output of said first gate for allowing pulses from said first gate to pass therethrough while preventing said pulses from passing therethrough when energized by an error eliminating pulse, and a flip-flop circuit for producing said run-length gate trigger pulse rising at the rise of said start signal and decaying at the rise of the leading pulse of the pulses from said second gate; and
a coder (**17**) for coding the clock pulse passed through said run-length gate.

B 461,752
MEMORY UNIT FOR CONNECTION TO CENTRAL PROCESSOR UNIT AND INTERCONNECTING BUS
Bruce A. Delagi, Acton; Joseph Paul Zeh, Maynard, and Rony Elia-Shaoul, Belmont, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Continuation of Ser. No. 295,810, Oct. 10, 1972, abandoned. This application Apr. 17, 1974, Ser. No. 461,752
Int. Cl.² G06F *3/00*
U.S. Cl. 340—172.5 **4 Claims**

References Cited
UNITED STATES PATENTS

3,810,114	5/1974	Yamada et al.	340/172.5
3,828,325	8/1974	Stafford et al.	340/172.5
3,845,425	10/1974	Clements et al.	340/172.5



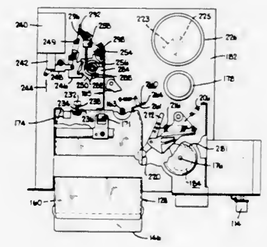
1. A random access memory unit for connection to a digital computer system including a central processor unit and a bidirectional bus with data, control and address lines, the bus having a characteristic finite propogation delay time, said memory unit comprising:
A. addressable storage means, said memory unit storing and retrieving data from said addressable storage means during memory cycle operations each having a duration which is less than the characteristic propogation delay time for the bus,
B. a first port with data, control and address lines for connection to the corresponding lines in the bus,
C. a second port with data, control and address lines for direct connection to corresponding lines in the central processor unit,
D. an address multiplexer responsive to signals from said address lines at said first and second ports for passing a selected address therethrough to identify a unique location in said storage means,
E. data connection means for coupling data to and from said storage means and to and from data lines at said first and second ports,
F. control means responsive to control and address signals on the control and address lines from said first and second ports for controlling said address multiplexer.

B 496,964
TAPE CARTRIDGE PLAYER WITH CARTRIDGE PULL-IN MECHANISM
Dallas Roy Andrews, Kirklin, Ind., assignor to RCA Corporation, New York, N.Y.
Continuation of Ser. No. 306,398, Nov. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 103,552, Jan. 4, 1971, abandoned. This application Aug. 13, 1974, Ser. No. 496,964
Int. Cl.² G11B *23/04, 5/008, 15/29*
U.S. Cl. 360—92 **22 Claims**

References Cited
UNITED STATES PATENTS

3,643,962	2/1972	White	360/92
3,733,078	5/1973	Staar	360/92

1. A tape cartridge player comprising:
a plurality of receptacles each adapted to receive a tape cartridge of the type including a detent notch;
cartridge player tape operating means spaced apart from each of the tape cartridges when said cartridges are inserted into said receptacles in a first position;
means associated with each of said receptacles for engaging each respective tape cartridge notch when the cartridge is initially inserted in said first position in said receptacle to hold the tape cartridge in said first position and for moving the cartridge from said first position to a second position where the cartridge is in engagement with said cartridge player operating means; and
means for automatically sequentially actuating each of said engaging means to move the tape cartridge in its associated receptacle from said first position to said second position.



REISSUE PATENTS

GRANTED APRIL 20, 1976

ERRATA

For Class	See PATENT NO.
106-090	28,780
424-346	28,778
101-415.1	28,785

REISSUES

APRIL 20, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,775

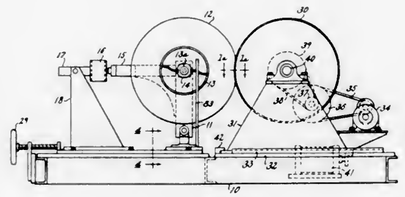
HARMONIC SIGNAL ANALYZER SYSTEM FOR TESTING TIRES

Haig D. Tarpinian, Grosse Pointe, Mich., and Harry Friedmann, Barrington, R.I., assignors to Uniroyal Inc., New York, N.Y.

Original No. 3,479,867, dated Nov. 25, 1969, Ser. No. 644,965, June 9, 1967. Application for reissue Mar. 1, 1971, Ser. No. 119,970

Int. Cl.² G01M *17/02*; **B60C** *19/10*

U.S. Cl. 73—146 **16 Claims**



12. A tire radial force variation determining apparatus comprising means to support and rotate a pneumatic tire, a rotatable load wheel exerting a radial load thereon, means mounting the load wheel and the tire for relative deflection in response to radial force variations of the tire, means responsive to said deflections to produce an electrical signal representative of said deflections, circuit means to convert said signal to a plurality of pulses each of which represents the location of the maximum of a predetermined harmonic component of the radial force variation of the tire in a single revolution thereof, and means responsive to said pulses to indicate with reference to the circumference of the tire tested the position of the maximum of said predetermined harmonic component of the radial force variation.

Re. 28,776

FRANGIBLE ELEMENTS IN SHEET MATERIAL

William Cookson, Fareham, England, assignor to Cookson Sheet Metal Developments Limited, Southampton, England

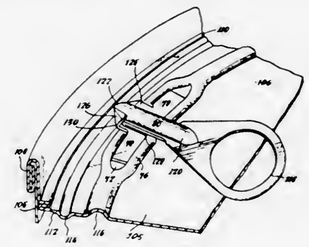
Original No. 3,698,590, dated Oct. 17, 1972, Ser. No. 156,294, June 24, 1971. Continuation-in-part of Ser. Nos. 796,975, Feb. 6, 1969, and Ser. No. 28,880, April 15, 1970, which is a continuation-in-part of Ser. No. 796,975,. Application for reissue Oct. 7, 1974, Ser. No. 513,036

Claims priority, application United Kingdom, Mar. 16, 1968, 7698/68; Jan. 24, 1969, 4248/69; Nov. 26, 1970, 56335/70; Ireland, Jan. 15, 1970, 58/70; United Kingdom, June 15, 1970, 28024/70; Australia, Jan. 22, 1970, 10545/70

Int. Cl.² B65D *41/32*

U.S. Cl. 220—270 **25 Claims**

1. Sheet material having a first portion, a rounded step in the top surface of the first portion of the sheet leading to a frangible element comprising material of smaller thickness than the first portion, a rounded formation in a surface of the sheet leading from the frangible element to a second portion of the sheet material, the second portion having a thickness



greater than that of the frangible element and having formed therein at least one hollow indentation.

Re. 28,777

REFINING OF VEGETABLE MATTER AND DELIGNIFICATION OF THE REFINED MATTER WITH CHLORINE DIOXIDE

Harry D. Wilder, Midlothian, Va., assignor to Ethyl Corporation, Richmond, Va.

Original No. 3,591,451, dated July 6, 1971, Ser. No. 797,209, Feb. 6, 1969. Application for reissue June 28, 1974, Ser. No. 484,082

Int. Cl.² D21B *1/16*; **D21C** *3/18*

U.S. Cl. 162—25 **30 Claims**

1. A process for the delignification of *lignocellulosic* vegetable matter comprising, in combination, the steps of:

(a) pretreating said vegetable matter to obtain a refined vegetable matter in a yield of about 64% to about 100% by weight, based upon the dry weight of said vegetable matter,

(b) *delignifying* [reacting] said refined vegetable matter *by reacting it in at least two stages* with [at least about 2% to about 15%] *preformed* chlorine dioxide, *each successive stage using less chlorine dioxide than its preceding stage, and the total chlorine dioxide used being from about 1 to about 15 based upon said dry weight; and*

(c) [treating] *extracting* said vegetable matter *between successive chlorine dioxide stages* with a water-soluble caustic material at a temperature of from about 50° C. to about 75° C; wherein said water soluble material is an alkali metal hydroxide, alkali metal carbonate, ammonium hydroxide or ammonia gas [; and

(d) reacting said vegetable matter with chlorine dioxide]

Re. 28,778

PHENOLIC SYNTHETIC DETERGENT-DISINFECTANT

Murray W. Winicov, Flushing, and William Schmidt, Sea Cliff, both of N.Y., assignors to West Laboratories, Inc., Long Island City, N.Y.

Original No. 3,824,190, dated July 16, 1974, Ser. No. 348,112, Apr. 5, 1973. Continuation-in-part of Ser. No. 205,346, Dec. 6, 1971, abandoned, which is a continuation of Ser. No. 887,748, Dec. 23, 1969, abandoned. Application for reissue Apr. 2, 1975, Ser. No. 564,316

Int. Cl.² C11D *3/48*

U.S. Cl. 252—106 **16 Claims**

1. A phenolic synthetic detergent-disinfectant composition comprising an aqueous alkaline solution having a pH of about 10 to 13 and containing a mixture of phenolics and at least 0.2

parts, per part by weight of said phenolic mixture, of anionic synthetic surface active agent, said phenolic mixture consisting essentially of ortho phenylphenol in the amount of at least about 5% by weight of said composition and the balance of the other phenolics in said mixture being a member selected from the group consisting of *the high activity phenolics* 4-chloro-2-cyclopentylphenol, *and* 4-chloro-2-benzylphenol, *the intermediate activity phenolics* 4-chloro-2-phenylphenol [y], 6-chloro-2-phenylphenol, 4-[5] *t*-amylphenol, 4-n-amylphenol, 2,4-dichloro-3,5-dimethylphenol, 4-chloro-3,5-dimethylphenol, 5-methyl-2-isopropylphenol, *and* ortho chloro-p-phenylphenol, and mixtures thereof, the weight ratio of ortho phenylphenol to said other phenolics being from about [4:1 to 1.1:1] *2.5:1 to 1.5:1 when said other phenolics include only high activity phenolics, from about 2:1 to 1.25:1 when said other phenolics include only intermediate activity phenolics, and being proportioned between these limits when said other phenolics are mixtures of high and intermediate activity phenolics according to the relative amounts of each.*

Re. 28,779

OIL-CONTAINING MICROCAPSULES AND METHOD FOR THEIR PRODUCTION

Shizuo Katayama; Hiroharu Matsukawa, both of Fujimiya; Junichi Matsuyama, Minami-ashigara, and Masaya Yamamoto, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Original No. 3,687,865, dated Aug. 29, 1972, Ser. No. 848,411, Aug. 4, 1969. Application for reissue Aug. 30, 1973, Ser. No. 393,254

Claims priority, application Japan, Aug. 3, 1968, 43-55014; Sept. 13, 1968, 43-65939; Sept. 17, 1968, 43-67130; Apr. 25, 1969, 44-32221; Apr. 25, 1969, 44-32222; May 10, 1969, 44-35900; May 10, 1969, 44-35901

Int. Cl.[2] B01J *13/02;* **B44D** *1/44*

U.S. Cl. 252—316 **31 Claims**

10. Oil-containing microcapsules produced according to the method of claim [1] *32.*

32. In a method for producing oil-containing microcapsules by:

(a) emulsifying a water-immiscible oil and an aqueous solution containing gelatin and another hydrophilic colloid, or

(b) emulsifying a water-immiscible oil and an aqueous solution of a hydrophilic colloid to obtain a first sol, ionizable in water and admixing said first sol and an aqueous solution of a hydrophilic colloid to obtain a second sol, ionizable in water and having an electric charge opposite to that of said first sol, one of said colloids being gelatin,

(c) adding water to either emulsion derived from (a) or (b) and/or adjusting the pH thereof to cause coacervation, thus to obtain coacervates, wherein the complex colloids are deposited around the individual oil drops,

(d) cooling the coacervates to cause gelation thereof, and converting the pH to alkalinity, and

(e) adding a hardening agent to the system and adjusting the pH thereof to a range of from 7 to 11, the improvement which comprises:

adding an aqueous solution of a polyelectrolyte having anionic functional groups to the dispersion containing said coacervates at a temperature lower than the gelling point of the gelatin, in an amount sufficient to prevent a rise in viscosity thereof,

said addition being made after gelation of the coacervates has occurred and before the adjustment of said pH to a range of from 7 to 11 and the adding of said hardening agent to the system has occurred, and

said adjusting of said pH occurring before, after, or simultaneously with the addition of said hardening agent,

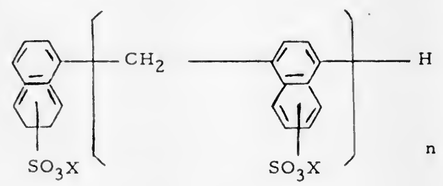
said polyelectrolyte being a member selected from the group consisting of

a modified cellulose comprising polysaccharides having beta-1,4-glucoside bonds of glucoses and having anionic functional groups,

an anionic starch derivative composed of a linear polysaccharide amylose formed by only alpha-1,4 bonds of D-glucose, and a branched polysaccharide amylopectin formed by mainly alpha-1,4 bonds of D-glucose and a partially side chain branched by alpha-1,6 bonds,

an anionic acid polysaccharide, obtained by polycondensing linearly D-galacturonic acid between the alpha-1,4 bonds thereof, said acid polysaccharide containing pectin, pectic acid, and pectinic acid,

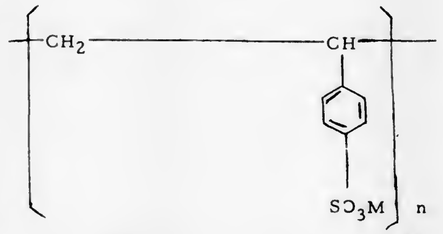
a condensate of naphthalene sulfonic acid and formalin, which condensate is represented by the formula:



wherein X is a hydrogen atom, an alkali metal, or an ammonium group, and n is a positive integer,

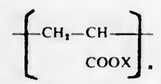
a hydroxyethyl cellulose derivative selected from the group consisting of the carboxymethyl ether of hydroxyethyl cellulose, hydroxyethyl cellulose sulfate, and hydroxyethyl cellulose phosphate,

a vinyl-benzene sulfonate copolymer selected from the group consisting of a vinylbenzene sulfonate-acryloylmorpholine copolymer, a vinylbenzene sulfonate-morpholino-methylacrylamide copolymer, a vinylbenzene sulfonate acrylamide copolymer, a vinylbenzene sulfonate-vinylpyrrolidone copolymer, and a vinylbenzene sulfonate-methyloxymethylacrylamide; said copolymer having the following group within its molecular structure:



wherein M is an alkali metal and n is a positive integer, and

an acrylic acid copolymer selected from the group consisting of an acrylic acid acryloylmorpholine copolymer, an acrylic acid-morpholinomethylacrylamide copolymer, an acrylic acid-acrylamide copolymer, an acrylic acid-vinylpyrrolidone copolymer, and an acrylic acid-methoxymethylacrylamide copolymer, said copolymer having the following group within its molecular structure:



wherein X is a hydrogen atom or an alkali metal and n is a positive integer.

Re. 28,780

PROCESS FOR THE PREPARATION OF FREE-FLOWING, LUMP-FREE REDISPERSIBLE, SYNTHETIC RESIN POWDERS

Eduard Bergmeister; Paul-Gerhard Kirst, and Heinz Winkler, all of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Original No. 3,784,648, dated Jan. 8, 1974, Ser. No. 185,807, Oct. 1, 1971. Application for reissue Dec. 5, 1974, Ser. No. 529,625

Int. Cl.[2] C08L *61/28*

U.S. Cl. 260—856 **7 Claims**

1. A process for the preparation of free-flowing lump-free, water-redispersible synthetic resin powder which consists essentially in spraydrying an aqueous polymerizate dispersion of a water-insoluble synthetic resin having a softening point of between 0°C and 40°C and selected from the group consisting of polymers of acrylic acid esters, copolymers of styrene and acrylic or methacrylic acid esters, copolymers of styrene and butadiene, terpolymers of styrene, butadiene and acrylic acid esters, polymers of vinyl esters, copolymers of vinyl acetate and straight-chain vinyl esters, copolymers of vinyl acetate and branched vinyl esters, [polymers of vinyl chloride, polymers of olefins, copolymers of vinyl chloride and olefins, copolymers of vinyl chloride, acrylic acid esters and vinyl acetate] *copolymers of vinyl esters and vinyl chloride, copolymers of vinyl esters and olefins, terpolymers of vinyl esters, vinyl chloride and olefins, terpolymers of vinyl chloride, acrylic acid esters and vinyl acetate,* and copolymers of vinylidene chloride and acrylic acid esters, and having added thereto from 2% to 30% by weight, based on the solids content of said polymerizate dispersion, of a water-soluble condensation product of melamine and formaldehyde containing sulfonate groups in the molar ratio of melamine:formaldehyde:sulfonate groups of 0.5 to 2:2 to 4:0.5 to 2, under customary spray-drying conditions of exposure to warm gases at tamperatures of from 30°C to 50°C and recovering said free-flowing, lump-free, water redispersible synthetic resin powder.

Re. 28,781

CARBOHYDRATE AGENT OF HIGH WATER RETENTION POWER, PROCESS OF MAKING SAME, AND COMPOSITION CONTAINING SAME

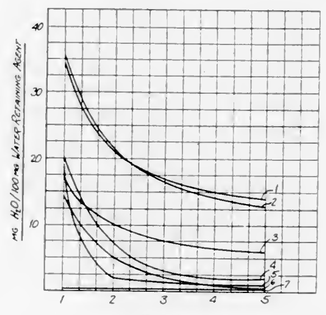
Joachim König, and Günter Padberg, both of Hamburg-Rahlstadt, Germany, assignors to Byk Gulden Lomberg Chemische Fabrik GmbH, Constance, Germany

Original No. 3,578,655, dated May 11, 1971, Ser. No. 661,110, Aug. 16, 1967. Application for reissue Apr. 23, 1973, Ser. No. 354,157

Claims priority, application Germany, Aug. 19, 1966, C39,914

Int. Cl.[2] A61K *7/02;* **C07H** *3/02;* **C13K** *1/00*

U.S. Cl. 424—361 **18 Claims**



15. A cosmetic composition having ingredient means for normalizing the water content of the stratum corneum and carrier therefor, the composition containing an effective concentration of the ingredient means for rendering skin, to which it is applied, smooth and flexible, the ingredient means having a pH of about 6.0 having high-water-retention power and being a reaction product of glucose and/or lactose with an alkaline agent.

Re. 28,782

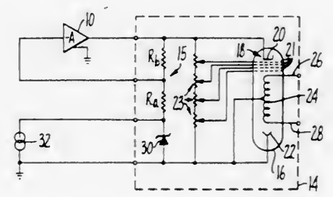
TRAVELING-WAVE TUBE PACKAGE WITH INTEGRAL VOLTAGE REGULATION CIRCUIT FOR REMOTE POWER SUPPLY

John W. Caldwell, Fort Walton Beach, Fla., and Edward M. Smith, San Jose, Calif., assignors to Teledyne, Inc., Los Angeles, Calif.

Original No. 3,697,799, dated Oct. 10, 1972, Ser. No. 2,589, Jan. 13, 1970. Application for reissue Oct. 9, 1974, Ser. No. 513,700

Int. Cl.[2] H01J *25/34*

U.S. Cl. 315—3.5 **20 Claims**



1. A traveling-wave tube assembly having voltage control for use with an associated remote power supply having a high gain amplifier providing sufficient voltages for the electrodes of the traveling-wave tube comprising:

a tube package housing;

a vacuum envelope located within said housing;

a beam generating assembly for generating and projecting a beam of electrons from one position within said envelope to another position therein and including a cathode;

a collector assembly located at said other position for collecting said beam of electrons,

a slow-wave structure located between said positions for providing interaction between said beam and a radio frequency wave propagating along said slow-wave structure; and

circuit means connected to said tube package housing and remote from the power supply including at least part of a voltage regulation circuit comprising electronic components for operatively cooperating with the high gain amplifier for automatically establishing a predetermined voltage across said cathode and said collector assembly.

Re. 28,783

CONTROL SYSTEM FOR TERMINATING THE DISCHARGE OF A FLASH LAMP

Karl Ackermann, Hellsberger Dreieck, Germany, assignor to Robert Bosch Elektronik GmbH, Berlin, Germany

Original No. 3,541,387, dated Nov. 17, 1970, Ser. No. 794,254, Jan. 27, 1969. Application for reissue May 1, 1972, Ser. No. 249,418

Claims priority, application Germany, Apr. 23, 1968, 1764204

Int. Cl. H05b *37/02*

U.S. Cl. 315—151 **13 Claims**

12. An electronic flash arrangement for a photographic process, comprising in combination, flash generating means for generating a flash; ignition means connected to said flash generating means for igniting said flash generating means upon external activation, thereby initiating said flash, said external activation creating a current flow in said ignition means, said ignition means further comprising means for furnishing a D.C. voltage

only after the start of said current flow; light measuring means operative only after application of an operating voltage thereto, for responding to light during an exposure and furnishing a terminating signal when said light has reached a predetermined



light quantity; means connecting said ignition means to said light measuring means in such a manner that said D.C. voltage constitutes said operating voltage; and means connected to said light measuring means for terminating said flash upon receipt of said terminating signal.

Re. 28,784

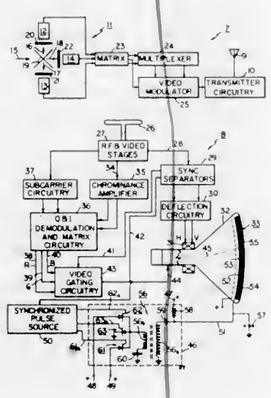
HIGH-VOLTAGE SWITCHING FOR THREE-COLOR LINE-SEQUENTIAL COLOR TELEVISION

Leonard A. Ferrari, San Dimas, Calif., assignor to Polaroid Corporation, Cambridge, Mass.

Original No. 3,452,245, dated June 24, 1969, Ser. No. 573,902, Aug. 22, 1966. Application for reissue June 1, 1970, Ser. No. 42,609

Int. Cl.[2] H01J *29/80;* **307** *227*

U.S. Cl. 315—376 **37 Claims**



26. Television apparatus wherein scanning electrons in a picture tube are modulated by different accelerating potentials, comprising inductive means in resonant-circuit combination with capacitance, at least three control means each electrically energizable to conduct current and thereby change the effective inductance of said inductance means, means for coupling electrical energy into said resonant-circuit combination synchronously with the change in effective inductance of said inductance means by at least one of said control means, means for electrically [coupling] *transferring* energy [out of] *within* said resonant-circuit combination synchronously with the change in effective inductance of said inductance means by at least one other of said control means, means energizing said control means to conduct currents in a predetermined repeated sequence in synchronism with the line-scanning frequency for the picture tube, and means applying electrical signals from said resonant-circuit combination to the picture tube in control of the modulation of the scanning electrons thereof, [said means for coupling energy coupling] substantially the same amount of energy *being coupled* into and [out of] *transferred within* said resonant-circuit combination during each said sequence.

Re. 28,785

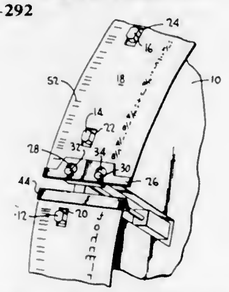
FONT STRIP STRUCTURE

Ellis P. Hanson, Jaffrey, N.H., and George J. H. Sausele, Lynnfield, Mass., assignors to Compugraphic Corporation, Wilmington, Mass.

Original No. 3,710,707, dated Jan. 16, 1973, Ser. No. 184,357, Sept. 28, 1971. Division of Ser. No. 804,466, March 5, 1969, Pat. No. 3,610,121. Application for reissue Oct. 8, 1974, Ser. No. 513,051

Int. Cl.[2] G03B *15/00*

U.S. Cl. 354—292 **12 Claims**



1. [A font strip] *Structure* for mounting *a font strip* to a frame support in phototypesetting machines, comprising;

guide apertures for mounting said font strip to said frame support, negative font characters and timing slits located along respective opposite sides of said font strip in aligned relationship with respect to each other.

one end of said font strip includes means for engaging said frame support and the other end of said font strip includes end apertures, and said frame support further includes resilient means engaging said end apertures to secure said font strip to said frame support.

6. A font strip adapted to be mounted on the rotatable font wheel of a phototypesetting machine, comprising an elongated strip of substantially dimensionally stable material having opposed side margins, two free ends and font characters spaced along its length, fastening means at one of said free ends for attaching said one end to said font wheel and including at least one aperture therein being adapted to engage at least one post attached to said font wheel, and fastening means at the other of said free ends including a bent portion forming an acute interior angle with the remainder of said last-named fastening means and adapted to engage a part of the font wheel that forms an exterior angle substantially mating with said acute angle, so that said font strip can be releasably held on said font wheel in stable position between both said fastening means.

PLANT PATENTS

GRANTED APRIL 20, 1976

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,866

AZALEA PLANT

James W. Hines, Jr., Corona Del Mar, Calif., assignor to Hines Wholesale Nurseries, Santa Ana, Calif.

Filed Nov. 25, 1974, Ser. No. 526,620

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—56 **1 Claim**

1. A new and distinct variety of azalea plant which is a hybrid of the Belgian Indica strain, and the Southern Indica strain, and characterized in particular to novelty by its ability to grow and flower in full sun or light shade in the southern California area without tip burning of the leaves or blasting of the flowers; by its abundant and rich green foliage and compact and dense habit of growth; by the unique coloring of its flowers; and by its profuse flowering; and by its greater salts tolerance, making it less subject to root diseases common to other varieties grown in the same general area of the Irvine Ranch in southern California.

3,867

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Jan. 17, 1975, Ser. No. 541,952

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivator of chrysanthemum characterized particularly by the combination of decorative type inflorescence of informal form; diameter of face of inflorescence up to 5½ inches at maturity; golden yellow ray floret color devoid of bronze tinging and with minimal color oxidation; flowering response which is uniform and consistent, resulting in a flowered plant approximately 8 weeks from the beginning of short day treatment; growth habit which is strong and semi-spreading; tall height which is responsive to daylength and B–9 for adaptability to various pot sizes; foliage which is dark green and glossy; durability of the flowered plant which ranges up to 21 days at average home temperatures of 68° F. to 75° F., and peduncles which became brittle and weak during low light periods of the year (November thru April).

3,868

BEGONIA PLANT

Margarete Rohde-Rieger, Nurtingen, Germany, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Jan. 24, 1975, Ser. No. 543,911

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of begonia plant characterized particularly as to uniqueness by its apricot-orange flower color which gradually fades to yellow-orange; double flowers with odd number of tepals; very fast growing habit which requires growth regulation for height control in high light and high temperature conditions; long lasting individual flowers which last up to two months, and by its tendency to fade in flower color under outdoor flowering conditions.

3,869

MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Jan. 30, 1975, Ser. No. 545,723

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, rounded, much branched, bush type, as illustrated and described, characterized by buds and flowers resembling the Dian miniature rose (Plant Pat. 1,808) in general form of bud and flower, the color, generally, being a lighter shade of pink with often a magenta or lavender tint and the petals tending to be more numerous, the general color effect being medium to lighter pink; and further characterized by a plant which is vigorous in growth, of dense compact habit, tending to become more wide than tall, easy to propagate from cuttings; with small, glossy, disease resistant foliage; the plant tending to flower profusely, in clusters, even when very small.

3,870

GRAPEVINE

Harold P. Olmo, Davis, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Feb. 3, 1975, Ser. No. 546,383

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—47 **1 Claim**

1. The new and distinct variety of grapevine herein described and illustrated and identified by the characteristics enumerated above.

PATENTS

GRANTED APRIL 20, 1976

ERRATA

For CLASS	See PATENT NO.
211-124	3,950,829
012-146 D	3,950,864
066-086 C	3,950,942
165-065	3,951,198
179-081 C	3,951,248
098-001.5	3,951,336
241-101.1	3,951,351
431-352	3,951,584
428-116	3,951,730
308-187	3,951,783
526-072	3,951,925
526-232	3,951,926
526-066	3,951,928
526-328	3,951,929
526-082	3,951,930
526-085	3,951,932
526-025	3,951,933
526-083	3,951,934
526-129	3,951,935
526-116	3,951,936

PATENTS

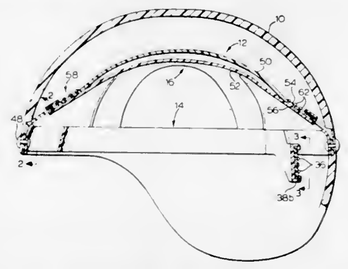
GRANTED APRIL 20, 1976

GENERAL AND MECHANICAL

3,950,788
HEAD AND CROWN SUSPENSION FOR PROTECTIVE HELMET

Charles Carlisle T. Lamb, 22 Reynolds St., Oakville, Ontario, Canada

Division of Ser. No. 430,297, Jan. 2, 1974, Pat. No. 3,878,562.
This application Nov. 18, 1974, Ser. No. 524,422
Claims priority, application Canada, May 17, 1973, 171686
Int. Cl.² A42B *1/08*
U.S. Cl. 2—3 R **3 Claims**

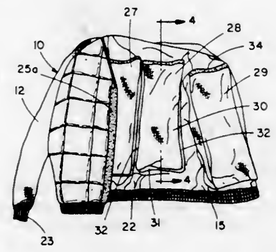


1. A crown suspension for use within a protective helmet having a shell adapted to encircle a wearer's head and in spaced relationship thereto, said crown suspension consisting of upper and lower dome-shaped elements each consisting of a one-piece member having a central portion and radially outwardly extending legs integral with said central portion, the legs of the upper element extending to and adapted to be secured to said shell, the legs of the lower element extending along and in contact with said upper element legs but terminating short of said shell, means for removably connecting each of said lower element legs to a respective said upper element leg, said connecting means being the one and only means by which said lower and upper element legs are interconnected and having means for adjusting the location of the connection between said lower and upper element legs to enable the lower element to be fitted to various sized heads.

3,950,789
DRY ICE COOLING JACKET

Stephan A. Konz, and Jerry R. Duncan, both of Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed July 22, 1975, Ser. No. 598,079
Int. Cl.² A41D *1/02*
U.S. Cl. 2—93 **11 Claims**

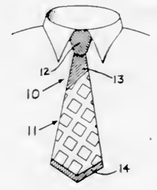


1. A garment for cooling the body of a person wearing the garment, the garment having an inner surface which faces the body of the person when the garment is worn and which defines a space between the garment and a portion of the body, a pocket on the inner surface of the garment for holding dry ice, the pocket being provided with means for venting gaseous carbon dioxide through the pocket to said space as the dry ice sublimates whereby gaseous carbon dioxide in said space cools the body by convection.

3,950,790
NECKTIE

Robert H. Adler, Oceanside, N.Y., assignor to Norvell Corporation, New York, N.Y.

Filed Sept. 2, 1975, Ser. No. 609,391
Int. Cl.² A41D *25/00*
U.S. Cl. 2—144 **4 Claims**



1. A necktie having a frontal long end composed of a lower long end section and an upper long end section, said upper section comprising a first piece constituted of a first fabric having an exposed given facing surface and formed to enable a slipknot to be made therewith, said lower section comprising an inner second piece constituted of said first fabric and an outer third piece superimposed on said second piece and constituted of a second fabric having an exposed facing surface different from that of said first fabric, means connecting said second and third pieces together and said second and third pieces to the lower edge of said first piece to form the long end of the necktie, the portion of said inner second piece covered by said outer third piece having its facing surface directed inwardly and said second piece having a portion thereof extending beyond an edge of said outer third piece and being folded to form along such third piece edge a border having an exposed facing surface different from the exposed facing surface of said third piece and similar to the exposed facing surface of said first piece.

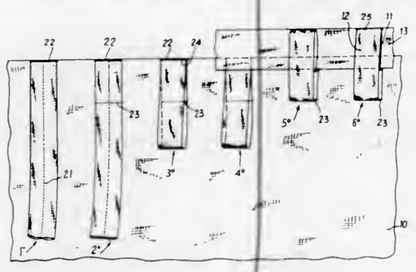
3,950,791
BELT LOOP FOR GARMENTS

Joseph Domenéch, Paris, France, assignor to Societe Industrielle des Vetements Merignac, Paris, France

Filed Mar. 31, 1975, Ser. No. 563,442
Claims priority, application France, Apr. 2, 1974, 74.11641
Int. Cl.² A41F *9/00*
U.S. Cl. 2—236 **4 Claims**

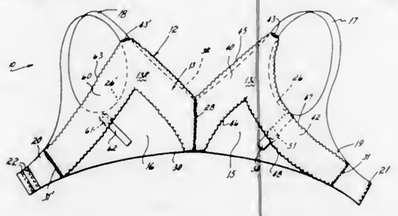
1. A belt loop in combination with a garment, such as skirts and trousers, comprising a band of material fitted vertically to the garment by sewing, characterized in that it comprises a first loop of material, and a second loop of material overlapping said first loop and extending vertically beyond it, the single piece constituting the two loops being disposed in the

form of a flattened band having two end folds, the ends of the band being sewn together to the garment, and each of the end



folds being sewn to the garment, respectively above and below the stitching of the ends joined together.

3,950,792
MASTECTOMY ACCESSORY FOR BRA
Marguerite R. Williams, 500 Plattsville Road, Trumbull, Conn. 06611
Filed Feb. 7, 1975, Ser. No. 548,161
Int. Cl.² A61F 1/00; A41C 3/10
U.S. Cl. 3—36 **18 Claims**



17. A mastectomy accessory for converting into a mastectomy bra a bra of conventional design having first and second interconnected cup-containing front panels adapted to overlie the wearer's right and left breast regions, respectively, and first and second rear panels connected to and extending rearwardly from said first and second front panels, respectively, to at least the wearer's back and adapted to be positioned under the right and left arms, both said front and rear panels having an upper edge, said accessory comprising:

a detachable overlay located to overlie a substantial portion of the upper edge of said front panels and associated connected rear panels, and

adjustable fastening means permanently secured to said overlay and connectable to said panels for adjustably and temporarily fastening said overlay to extend above said upper edge of said panels varying amounts depending upon the amount of scar tissue and/or other chest disfigurement to be covered.

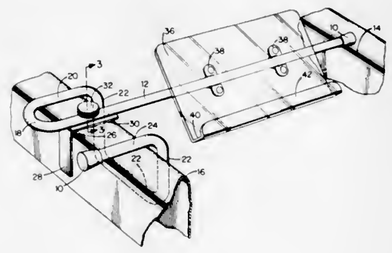
3,950,793
BATHTUB BOOK STAND
John F. Adams, 55 Lee Road, Chestnut Hill, Mass. 02167
Filed Oct. 21, 1974, Ser. No. 516,760
Int. Cl.² F16M 13/00
U.S. Cl. 4—1 **7 Claims**

1. A bathtub book stand comprising:

a. a horizontal support beam disposed across at least one-half of the width of a bathtub;

b. means for securing one end of said horizontal support beam to at least one bathtub rim to stabilize the book stand thereon, said securing means including two downwardly extending clamping jaws adapted to grip a bathtub rim therebetween, one of said jaws being adjustably movable towards the other of said jaws;

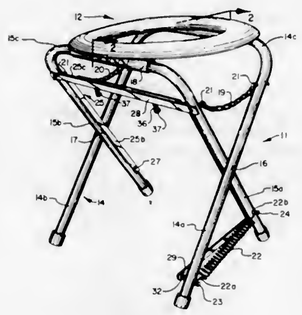
c. a substantially planar book support member including a rigid flat sheet having an upturned edge at its lower margin, said edge extending substantially perpendicular to said sheet, said upturned edge having a page retaining lip



at its upper margin, said page retaining lip extending substantially perpendicular to said upturned edge, and extending substantially parallel to and being spaced from said sheet; and

d. means for attaching said book support member to said horizontal beam, and for adjustably varying the angle of the position of said book support member.

3,950,794
CAMP TOILET
Gerald J. Dalton, 459 N. 250 East, Kaysville, Utah 84037
Filed Oct. 25, 1974, Ser. No. 517,817
Int. Cl.² E03D 13/00; A47K 11/02
U.S. Cl. 4—110 **7 Claims**



1. A camp toilet comprising

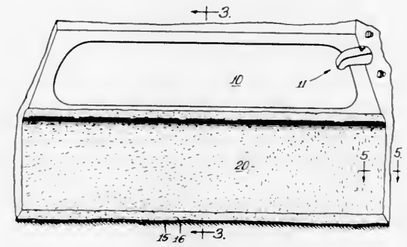
a support frame;

a ring shaped toilet seat carried by said support frame;

means for releasably suspending a bag-type receptacle having an upper inlet end beneath the toilet seat;

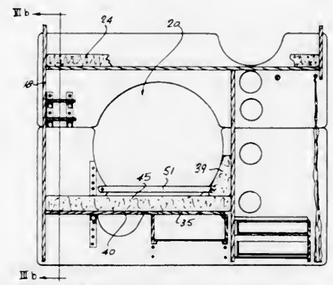
means for securing one side of the inlet end with respect to the ring and seat; and means for pivotally opening and closing the inlet end of the bag-type receptacle beneath the toilet seat including, means for supporting and swinging an opposite side of the inlet end toward said secured side to close the bag beneath the seat, and away from said secured side to open the bag beneath the seat.

3,950,795
BATHTUB COVER
Seymour S. Dolnick, Milwaukee, Wis., assignor to Glen Mfg. Inc., Milwaukee, Wis.
Filed May 9, 1975, Ser. No. 576,187
Int. Cl.² A47K 3/00; B65B 11/00
U.S. Cl. 4—173 R **1 Claim**



1. A decorative cover of the character described for use with a bathtub comprising a piece of textile material corresponding generally to the size of the outer side of the bathtub with the width of said textile material being slightly greater than the height of said side so as to overlie at least a portion of the ledge at the top of said side, a sheet of vapor barrier plastic material adhesively secured to the back side of said cover, said plastic material having a size equal to the size of said textile material, a coating of adhesive on the other side of said sheet of plastic material, and a protective sheet of release material covering said adhesive on said other side said sheet being peelable from said other side to expose said adhesive whereby the latter may be applied to the side wall and ledge of the bathtub adhesively to secure the cover thereto.

3,950,796
ARTICLE OF FURNITURE
Gary R. Hollingsworth, Ottawa, Canada, assignor to Novel Furnishings Ltd., Ottawa, Canada
Filed Feb. 3, 1975, Ser. No. 546,703
Int. Cl.² A47C 13/38
U.S. Cl. 5—2 R **14 Claims**



1. An article of furniture comprising

a. vertical wall panels defining an enclosure for occupancy by a child,

b. an access passageway to said enclosure formed in at least one of said panels,

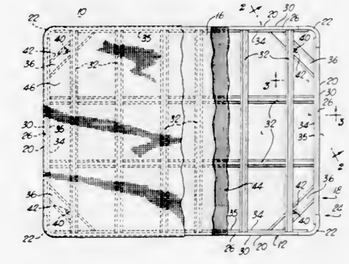
c. a seat assembly in said enclosure,

d. a shelf forming a working surface disposed in said enclosure facing said seat assembly,

e. an upper bed extending horizontally along an upper portion of the article to form a ceiling for said enclosure, and

f. means for adjusting the height of said shelf relative to said vertical wall panels to align the shelf horizontally with the seat assembly to form therewith a second, lower bed shorter than the upper bed.

3,950,797
MATTRESS BASE
Edward L. Bronstien, Jr., St. Paul, Minn., assignor to The United States Bedding Company, St. Paul, Minn.
Filed Aug. 22, 1974, Ser. No. 499,552
Int. Cl.² A47C 23/05
U.S. Cl. 5—200 R **26 Claims**



1. An upholstered mattress base for supporting a mattress in a generally horizontally extending condition above a floor comprising

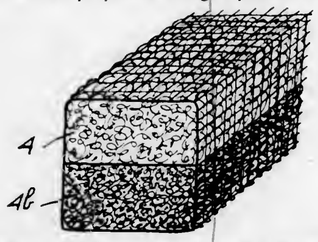
a rigid frame assembly having a plurality of elongated frame members fastened together to form a rigid base member, said frame assembly comprising means for selectively mounting thereto a solid resilient cushion to form a foundation for supporting said mattress when said frame assembly is disposed in a first condition or mounting a spring assembly formed by a plurality of generally vertically extending coil springs to form a box spring for supporting said mattress when said frame assembly is disposed in a second, inverted condition, said selectively mounting means comprising a plurality of support struts extending across said rigid base member and supported by said frame members and disposed at the upper surface of said frame assembly for supporting said resilient cushion thereabove when said frame assembly is disposed in said first condition or disposed at the lower surface of said frame assembly for supporting said plurality of generally vertically extending coil springs thereabove when said frame assembly is disposed in said second condition, said spring assembly being absent when said frame assembly is disposed in said first condition, and

a fabric cover disposed over either said resilient cushion when said frame assembly is disposed in said first condition or said spring assembly when said frame assembly is disposed in said second condition and secured to said frame assembly to thereby form said upholstered mattress base for supporting said mattress.

3,950,798
EASILY WASHABLE AND RECONSTRUCTABLE MATTRESS
Latino Borsini, viale Campania 5, Milan, Italy (20133)
Continuation of Ser. No. 302,436, Oct. 31, 1972, abandoned. This application Aug. 26, 1974, Ser. No. 500,827
Claims priority, application Italy, Nov. 18, 1971, 31258/71
Int. Cl.² A47G 9/00
U.S. Cl. 5—337 **1 Claim**

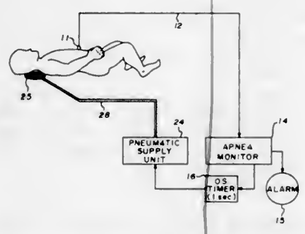
1. Washable reconstructable mattress, comprising a flexible tick of substantially parallelpiped shape when filled and having a lengthwise extension, a widthwise extension and a thickness extension, the tick having further a top and a bottom cover portion with peripheral edges and a peripheral flap portion extending over the sides of the tick and detachably connecting said peripheral edges of the top and bottom cover

portions to allow at least one of said top and cover portions to be opened for insertion therein and extraction therefrom of stuffing elements, inserted within said tick juxtaposed independent prismatic stuffing elements of square cross-section and having its longitudinal extension extending over the entire widthwise extension of the tick and having the length of a side of said square cross-section corresponding to said thickness extension of the tick, each of said stuffing elements comprising a reticulate enclosure surrounding a prismatic space corresponding to the shape of said prismatic stuffing elements and within said reticulate enclosure a first stuffing material of selected thermal properties filling a portion of said space



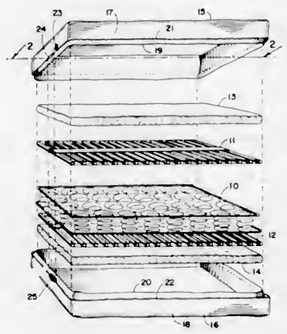
surrounded by said reticulate enclosure, said space portion extending over the entire longitudinal extension of the prismatic stuffing element, and leaving free the remaining superposed portion of said space likewise extending over the entire longitudinal extension of the prismatic stuffing elements and within said remaining space portion a second stuffing material of different thermal properties as compared to said first stuffing material, thereby to obtain a stuffing element having two layers of different stuffing material and allowing the stuffing elements to be selectively rotated at least once through 90° with respect to each other in order to expose towards the top cover portion of the tick selectively the desired stuffing material of each stuffing element.

3,950,799
RESPIRATORY DISTRESS STIMULATOR SYSTEM
Ulrich Anton Frank, Yardley, Pa., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 239,264, March 29, 1972, abandoned. This application Dec. 13, 1975, Ser. No. 424,385
Int. Cl.² A47C *27/08*
U.S. Cl. 5—369 **5 Claims**



1. An inflatable pneumatic unit of the air mattress configuration for use in a respiratory stimulator system comprising:
a unitary inflatable casing constructed of an elastomeric material and having a plurality of open-ended intercommunicating elongated segments, said segments opening via at least one end thereof into the interior of the casing proximate at least one side of the casing; and
a singular relatively rigid apertured pneumatic tube extending into and along the interior of said at least one side of said casing and proximate the one ends of said segments, the apertures of said tube being predeterminably located to be in close communication with said segments, said tube being arranged within said casing for preventing said casing from becoming folded over and for providing uniform rapid momentary inflation and deflation thereof.

3,950,800
MODULAR MATTRESS STRUCTURE
Arthur H. Garshfield, Los Angeles, Calif., assignor to Debra Karen Garshfield; Gary Neil Garshfield, both of Los Angeles, Calif.
Filed Mar. 25, 1975, Ser. No. 561,849
Int. Cl.² A47C *23/04*
U.S. Cl. 5—351 **5 Claims**

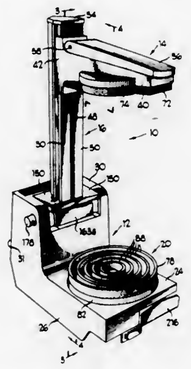


1. A modular mattress structure made up of separable component parts including, in combination:
a. a central core; and
b. a cover defined by top and bottom panels of cloth-like material, each panel including a peripheral skirt about its entire perimeter and at least one panel having an annular flange secured to the inside edges of the panel where the panel connects to the skirt, the flange extending beyond the end of the skirt and including within its free extending end an inextensible cord of perimeter less than the perimeter of the panel, the free hanging ends of the skirts of the top and bottom panels having cooperating zipper closure means about a major portion of their perimeters, one portion of the skirt on the top panel being secured to a corresponding portion on the skirt of the bottom panel, the bottom panel being turned upside down relative to the top panel so that its skirt extends upwardly, whereby the top and bottom panels may be received over the top and bottom of the central core, the free extending end of the flange being received over and tucked inwardly of the central core over the entire perimeter of the core so as to secure the panels in position on the core, closure of the zipper closure means securing the cover in place to provide a mattress structure which can be disassembled by hand to enable replacement of any one or more of its component parts.

3,950,801
COMBINATION JAR AND CAN OPENER
Howard J. Morrison, Deerfield, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Dec. 6, 1974, Ser. No. 530,290
Int. Cl.² B25B *7/44*
U.S. Cl. 7—14.25 **19 Claims**

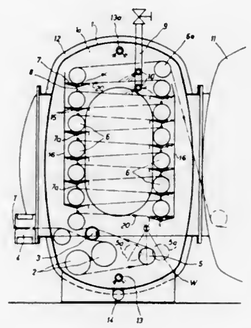
1. An apparatus for loosening or tightening threaded lids from containers or jars, comprising:
a housing;
a generally vertical upwardly extending chuck support column mounted on the housing;
a rotatable platform mounted on the housing for supporting a container in an upright position and rotating the container;

a chuck vertically movably mounted on the support column above the rotatable platform for selective vertical positioning along the support column and for frictionally engaging a threaded lid on the container;
manually operable clamp means operatively associated with the support column and the chuck to bias the chuck downwardly into engagement with the lid; and



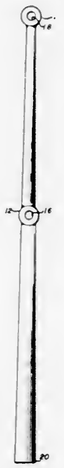
drive means mounted on the housing in driving relationship with said support platform whereby actuation of the drive means causes the platform and the container thereon to rotate relative to the lid and chuck and thereby break the seal between the lid and rim of the container.

3,950,802
PROCESS OF CONTINUOUSLY WASHING TEXTILE WEB
Günter Schiffer, Krefeld-Bockum, and Karl Peter Lopata, Krefeld, both of Germany, assignors to Kleinewefers Industrie Companie GmbH, Germany
Filed July 13, 1973, Ser. No. 379,076
Claims priority, application Germany, July 20, 1972, 2235617
Int. Cl.² D06B *3/02, 21/02*
U.S. Cl. 8—149.1 **15 Claims**



1. A process of continuously washing textile web, comprising the steps of:
guiding a textile web in a closed wash tower chamber to travel in generally zig-zag fashion progressively upwardly between laterally spaced series of vertically spaced guide rolls within the chamber so that successive sections of said web extend substantially horizontally in traveling between the series of rolls;
supplying washing liquid onto the web in the upper part of the chamber adjacent to the tops of said series of rolls to travel generally downwardly countercurrent to the generally upward progress of the web; and
successively washing each web section below said supplying of washing liquid with said washing liquid, comprising collecting and concurrently pressing the liquid successively through the web sections as the liquid progressively descends from section-to-section of the traveling web.

3,950,803
BOAT STANCHION
Clarke Reynolds, 535 Hillary Drive, Tiburon, Calif. 94920, and Richard J. Quigley, 25538 Adobe Lane, Los Altos Hills, Calif. 94022
Filed Jan. 20, 1975, Ser. No. 542,161
Int. Cl.² E04H *17/20*
U.S. Cl. 9—1 D **3 Claims**

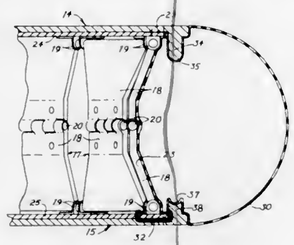


1. A boat stanchion having a first hole between the ends thereof and a second hole in one end thereof, comprising
a. a continuous strand of fiberglass extending a multiplicity of times between two extremes which define the ends of the stanchion and forming a partial loop at one of said ends, which loop encompasses the second hole, with approximately one half of the overlapping portions of said strand positioned on one side of the first hole and the remainder thereof positioned on the other side of the first hole, and
b. a quantity of hardened resin disposed between and around the overlapping continuous strand and formed around the first and second holes.

3,950,804
COLLAPSIBLE RAFT
James W. Brumfield, 404 Benham St., Richland, Wash. 99352
Filed Nov. 27, 1974, Ser. No. 527,681
Int. Cl.² B63B *7/06*
U.S. Cl. 9—2 C **7 Claims**

1. A collapsible raft, comprising:
a rigid deck member;
a rigid hull member;
hinge means connecting the deck and hull member for enabling relative movement of the hull and deck members between a compact condition wherein the hull and deck members are adjacent one another and an expanded condition wherein the hull and deck members are spaced apart to define an occupant receiving area;
a continuous flexible watertight skirt extending about and joining the hull and deck members along their respective peripheral edges to encompass the occupant receiving area; and

an inflatable toroidal tube mounted between the hull and deck members adjacent the peripheral edges of the hull and deck members, exterior of the watertight skirt for



moving the hull and deck members from the compact condition to the expanded condition as the tube is inflated and for providing added buoyancy and protecting the watertight skirt when the tube is inflated.

3,950,805

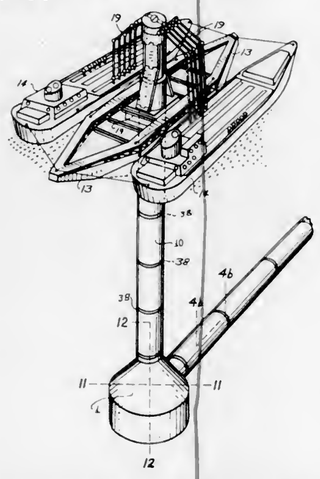
COMBINATION PROVIDING SAFETY BERTHING, UNLOADING OF OIL, AND CONDUIT CARRIAGE TO REFINERIES ON LAND, OF LARGE DEEP-SEA-REQUIRING TANKERS

Christopher J. Murphy, Douglaston, N.Y., assignor to Parson, Brinkerhoff, Quade & Douglas, Inc., New York, N.Y.

Filed Jan. 14, 1974, Ser. No. 432,857

Int. Cl.² B63B *21/52*

U.S. Cl. 9—8 P **6 Claims**



1. A combination of elements providing safety seep-sea berthing of large tankers and discharge therefrom to subaqueous conduit provision which is adapted to lead to a land terminal, comprising a stanchion having a footing for securing said stanchion to a deep-sea bed and with the stanchion rising to a height above the sea level, oil receiving means including piping internally carried by the stanchion at its top area and adaped for connection to tanker oil discharge conduits, in combination with two pontoons embracing the stanchion at opposite sides and forming a "camel," ballast means within the pontoons of the "camel" and pumping means therefor, so that the buoyancy of the pontoons can be adjusted to correspond with the buoyancy of the tanker, whereby response to the action of the sea swells by both will be in accord, and the stresses on the mooring lines from tanker to "camel" will be the same.

3,950,806

MOORING BUOY

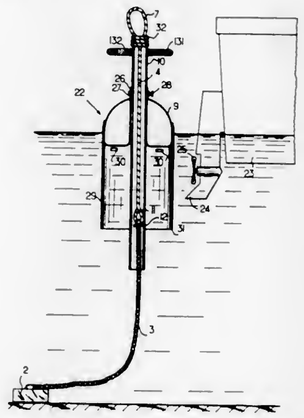
Gilbert F. Puchois, 83, rue Florent Evrard, 59162 Ostricourt, France

Filed June 26, 1974, Ser. No. 483,104

Claims priority, application France, June 27, 1974, 74.24485

Int. Cl.² B63B *21/52*

U.S. Cl. 9—8 R **10 Claims**



1. In a mooring buoy having mooring means for a ship:
a. a floating body,
b. a passage extending through the floating body, said passage being disposed in a generally vertical direction when the floating body is at rest in the water,
c. a tube disposed within the passage, said tube having an upper end extending above the floating body and lower end extending below the floating body into the water to a depth below a propeller of the ship, said lower extension of the tube serving to ballast the buoy so that the tube remains generally vertical when the floating body is at rest in the water,
d. the mooring means being disposed slidably in the tube, said mooring means being connected to a weighted line and having an upper end provided with a shackle,
e. gripping means affixed to the upper end of the tube and
f. means disposed proximate the gripping means for arresting the sliding movement of the mooring means relative to the tube, in the direction of the water, whereby the shackle is maintained above the water, when the buoy is not in use,
g. the tube being adjustable axially within the passage, and being selectively immobilizable with its upper end disposed above the floating body at a distance sufficient to present the gripping means and shackle at a height above the water at which they can be grasped easily by a crewman.

3,950,807

WATER SKI

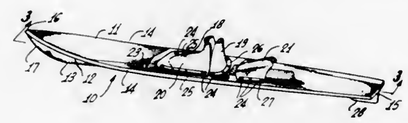
Roderick P. Sharpe, Los Angeles, Calif.

Continuation-in-part of Ser. No. 416,387, Nov. 16, 1974, abandoned. This application Apr. 4, 1975, Ser. No. 564,881

Int. Cl.² A63C *15/00*

U.S. Cl. 9—310 A **5 Claims**

1. A water ski, comprising:
an elongated, relatively narrow body having the length and width of a conventional water ski, the width being substantially uniform along the length of the ski, and only slightly wider than a skier's foot, and said body having a fore section, a mid section and an aft section, the fore and mid sections of said body being of V-shaped transverse cross-section;
said body being formed by two longitudinal sidewalls that are substantially flat in transverse cross-section and have laterally separated upper edges, and are joined together to form a relatively sharp keel along the bottom of said ski, the forward end portions of said sidewalls being curved upwardly to form a relatively sharp, upturned bow on said ski;



and a footrest in the mid section of said ski between said sidewalls and secured to the ski;
the angle of said sidewalls being a relatively small angle on the order of 90° to 110° in said fore section, increasing progressively through said mid section, and becoming substantially 180° in said aft section, whereby said ski has a substantially flat bottom surface in said aft section.

3,950,808

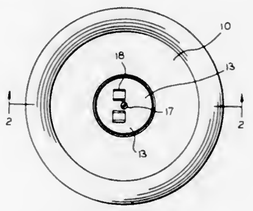
BUOYANCY CIRCULAR WATER SKI

Hugh E. Sorenson, 7005 W. Southridge Drive, Greenfield, Wis. 53220

Filed May 3, 1974, Ser. No. 466,538

Int. Cl.² A63C *15/00*

U.S. Cl. 9—310 G **5 Claims**



1. A circular water ski comprising an upper surface and a lower surface, a centrally located revolving platform on the upper surface with stirrups thereon, and space between said upper and lower surfaces filled with buoyant means, the lower surface having a generally concave surface presented to the surface of the water, said surface having a periphery which is smooth and unbroken to capture an air bubble when parallel to the surface, and rounded in cross-section to form a bow when the ski is tipped back on an edge.

3,950,809

COMBINATION SWEEPER AND VACUUM CLEANER FOR SWIMMING POOLS

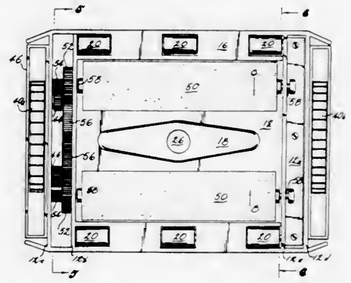
Rudolf Emil Schatzmann, 1502 Longmont Place, Santa Ana, Calif. 92705

Filed Nov. 8, 1974, Ser. No. 522,031

Int. Cl.² E04H *3/20*

U.S. Cl. 15—1.7 **2 Claims**

1. In combination with a hollow housing having an open lower portion in communication with the interior of said housing, a pair of spaced parallel shafts rotatably supported in said housing, which shafts have a pair of elongate cylindrical sweeping brushes supported therefrom in parallel spaced alignment to contact and clean a surface over which said housing is moved, an assembly for concurrently driving said brushes whereby the surface contacting portions of said brushes move towards one another irrespective of the direction in which said housing moves over said surface, said assembly including:
a. supporting means, including a plurality of guide rollers, supporting said housing in a spaced relationship with respect to the inner surface of a pool;
b. a carrier reciprocable in said housing between a first position and a second position, along an axis parallel to said direction of motion; and
c. drive means operatively associated with said supporting means and said pair of brushes for impelling said brushes into opposing rotational motion upon motion of said housing over said surface to discharge foreign material removed from said surface by said brushes into said interior of said housing, said drive means including:



1. a pair of drive gears, rigidly affixed to the shafts of said sweeping brushes, and a pair of idler gears interconnecting said pair of drive gears, rotatably mounted in said housing;
2. a pair of drive pinions, each one coaxial with one of said drive gears and rigidly keyed thereto; and
3. a pair of transfer pinions, each one coaxial with one of said idler pulleys and rigidly keyed thereto, whereby one of said transfer pinions is in mesh with one of said drive pinions in said first position of said carrier, and the other of said transfer pinions is in mesh with the other of said drive pinions in said second position of said carrier.

3,950,810

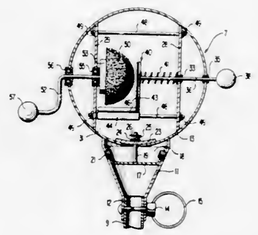
GOLF CLUB CLEANING APPARATUS

James Robert Harkess, 4777 Moran Ave., Cheyenne, Wyo. 82001

Filed June 23, 1975, Ser. No. 589,593

Int. Cl.² A63B *57/00*; **A46B** *13/04*

U.S. Cl. 15—21 C **17 Claims**



1. A golf club cleaning apparatus, comprising:
a housing having access means through which a golf club may be inserted for cleaning the head thereof;
receiving means within said housing for receiving the head of a golf club inserted through said access means and for

establishing a cleaning position when the head of said golf club is in a predetermined position with respect to said receiving means;

first brush means fixed to a portion of said receiving means to contact at least the bottom of a club head when said club head is in said cleaning position;

second brush means mounted for movement within said housing and contacting the face of a club head when said club head is in said cleaning position; and

actuating means for causing movement of said second brush means to clean the face of said club head and cause limited movement thereof, said limited movement of said club head causing said first brush means to clean the bottom of said club head while the face is being cleaned by said second brush means.

3,950,811

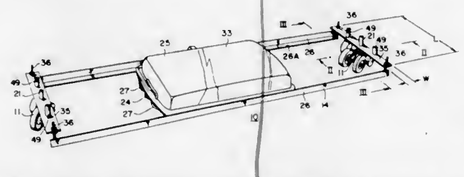
SWEEPER ATTACHMENT FOR A FACTORY FORK LIFT TRUCK

Harold J. Larson, Williston Park, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed July 7, 1975, Ser. No. 593,828

Int. Cl.² E01H *1/04*; A47L *11/24*

U.S. Cl. 15—49 C **2 Claims**



1. A device attachable to the undersides of a vehicle for sweeping the surface on which the vehicle travels comprising

a frame fitted with a sweeper brush rotatably linked to wheels which rotate the brush when the said wheels are rotated,

said frame mounted on a plurality of free swiveling caster wheel units, together with

means to elevate the frame and the sweeper brush when the caster wheel units swivel to orient the caster wheels in a plane at an angle to the plane of the wheels linked to the sweeper brush.

3,950,812

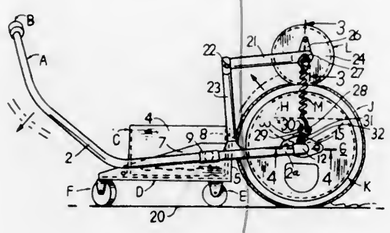
PORTABLE WIPING MACHINE FOR WET SURFACES

Harold R. Mohr, 3489 Saddle Drive, Hayward, Calif. 94541

Filed Nov. 22, 1974, Ser. No. 526,318

Int. Cl.² A47L *11/292*; E01H *1/00*

U.S. Cl. 15—98 **2 Claims**



1. A device of the type described, comprising:

a. a carriage movable over a wet surface that is to be dried and including supports for a frame;

b. a frame associated with said carriage and having side members pivotally connected to said supports;

c. a drum rotatably carried between said side members and having a perforated cylindrical wall covered by a layer of water absorbing compressible material that normally rolls over the wet surface as the device is moved for absorbing and removing any water on the surface;

d. a wringer roller substantially coextensive in length with the length of said drum and means for causing said roller to bear against the water absorbing material along a line lying in a diametrical plane of the drum that also extends through the portion of said material contacting with the wet surface, whereby any water picked up by the material as it contacts the surface will be squeezed out by said roller and will drop by gravity into the drum interior by passing through the perforated cylindrical wall;

e. a water receiving tray mounted within said drum for catching the water squeezed from said material, said tray being supported to prevent its rotation within said drum;

f. the side members of said frame having said drum disposed on one side of the pivot for said frame;

g. the side members of said frame having a handle disposed on the opposite side of the pivot for said frame;

h. whereby the handle may be swung downwardly for causing said frame side members to swing about their pivots and to lift the drum above the surface over which the carriage moves;

i. the carriage being provided with caster wheels that permit the ready turning of the carriage and raised drum in a small radius if desired.

3,950,813

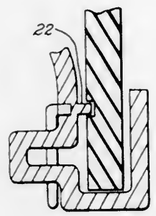
SQUEEGEE

S. Keith Buck, 7711 Rosemead Blvd. No. 68, Pico Rivera, Calif. 90660

Continuation-in-part of Ser. No. 371,373, June 19, 1973, abandoned. This application Oct. 9, 1974, Ser. No. 513,246

Int. Cl.² A47L *1/06*

U.S. Cl. 15—245 **24 Claims**



1. An improved squeegee comprising:

a wiping blade holder of a generally U-shaped channel configuration having a wide upper leg and a narrower lower leg interconnected at one side thereof by a web portion, said legs being spaced apart so as to receive a flat wiping blade, said upper leg having longitudinally extending blade engaging means in the inside face thereof intermediate the longitudinal edges of the leg for slidably engaging mating holder engaging means on the blade to hold the wiping blade along a longitudinal axis so as to provide a wiping edge of the squeegee, said blade engaging means being dimensioned relative to the holder engaging means to provide a slight floating movement of the blade in the holder to precisely align the blade to a working position supported by direct face contact with the upper leg and contact with the web portion at the edge opposite the wiping edge;

an elongated resilient flat blade defining at least one sharp wiping edge along the longitudinal extent thereof; said blade having holder engaging means located on at least one wide face thereof for matingly engaging the blade engaging means of the holder along the longitudinal extent of the blade; and

handle means attached to said holder.

3,950,814

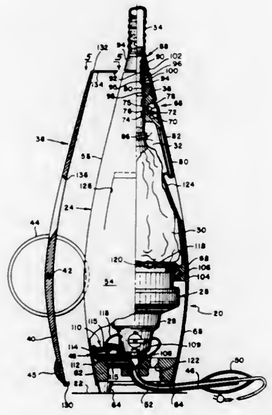
VACUUM CLEANERS

Eugene T. Fleischhauer, 176 W. Lane, Revonah Woods, Stamford, Conn. 06905

Division of Ser. No. 320,055, Jan. 2, 1973, Pat. No. 3,883,922. This application Dec. 13, 1974, Ser. No. 532,613

Int. Cl.² A47L *5/36*

U.S. Cl. 15—327 E **4 Claims**



1. A canister type vacuum cleaner, which comprises: an elongated outer casing; a motor housed in said casing adjacent one end thereof; a pump housed in said casing and drive-connected to said motor; a suction hose having one end thereof communicating with the interior of the casing, there being a compartment for a bag in the region of said casing into which said hose extends; a power cord extending from said motor through said casing to the exterior thereof; and means for controlling the flow of current through said power cord to said motor which comprises a fluid pressure-actuatable switch in said casing, a foot-activatable pneumatic actuator exteriorly of said casing, and a pneumatic conduit providing fluid communication between said switch and said actuator, said switch being of the sequential type whereby successive activations of the foot-activatable pneumatic actuator will alternately close and open said switch to allow current to flow to said motor and interrupt the flow of current thereto.

2. The vacuum cleaner of claim 1, wherein said power cord comprises a pair of leads connected to said motor and said switch comprises contact means interposed in one of said leads, an actuator member for controlling the opening and closing of said contact means to thereby interrupt and permit the flow of current through said lead, and a diaphragm engageable with said actuator, said pneumatic conduit being in fluid communication with the side of said diaphragm opposite said actuator member.

3,950,815

SUCTION PORT DEVICE FOR A VACUUM CLEANER

Akinori Fukuchi, Mito, and Kazuo Kubota, Hitachi, both of Japan, assignors to Hitachi, Ltd., Japan

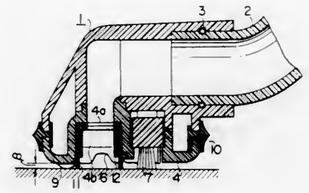
Filed Mar. 18, 1974, Ser. No. 452,271

Claims priority, application Japan, Mar. 28, 1973, 48-34575

Int. Cl.² A47L *9/06*

U.S. Cl. 15—399 **18 Claims**

13. A suction port device for a vacuum cleaner comprising a suction port body having a suction joint for connecting said suction port body to a device for applying suction pressure, a carpet sled mounted on the underside of said suction port body and provided with an opening for introducing dust and dirt sucked from a surface being cleaned into said suction joint and with suction passageways in the form of grooves disposed oppositely lengthwise of said opening, means for maintaining a gap (β) at a predetermined level between the carpet sled and



the surface being cleaned, and a suction adjusting member for forming a gap (α) of a smaller size than that of said gap (β) along the edges of the opening and suction passageways and between the suction adjusting member and the surface being cleaned, said gap (α) formed between the surface being cleaned and the suction adjusting member being adapted to be reduced in size as the air flow rate through said suction port means is decreased.

3,950,816

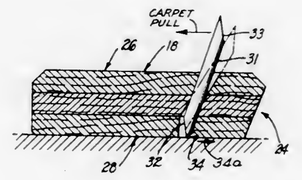
CARPET GRIPPER WITH HEADLESS CARPET ANCHORING PINS

Harvey J. Hill, Monterey Park, Calif., assignor to Roberts Consolidated Industries, Inc., City of Industry, Calif.

Filed Dec. 6, 1974, Ser. No. 530,187

Int. Cl.² A47G *27/04*

U.S. Cl. 16—16 **5 Claims**



1. In a carpet gripper, the combination of:

a. a strip having upper and lower surfaces and inner and outer edges;

b. a headless carpet anchoring prong extending upwardly through said strip from said lower surface of said strip through and to a level above said upper surface of said strip;

c. said prong being inclined upwardly and outwardly toward said outer edge of said strip from the lower end of said prong to its upper end;

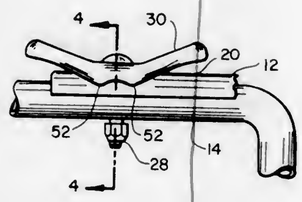
d. said lower end of said prong being bevelled and having a surface which is obliquely oriented relative to the axis of said prong, which is at least generally perpendicular to said upper and lower surfaces of said strip, which faces generally inwardly toward said inner edge of said strip, and which is in a plane extending generally longitudinally of said strip; and

e. the apex of said bevelled lower end being crimped toward said outer edge of said strip and being embedded in said lower surface thereof.

3,950,817
COLLAPSIBLE HANDLE FOR LAWN MOWER OR THE LIKE

Russel Marius McKaig, Bramalea, Canada, assignor to Gilson Brothers Company (Canada) Ltd., Mississauga, Canada

Filed May 2, 1975, Ser. No. 573,938
Int. Cl.² B62B 3/00
U.S. Cl. 16—111 A 6 Claims



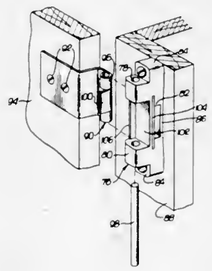
6. In a lawn mower handle of the type consisting of a lower U-shaped tubular component adapted to be pivotably mounted at its free ends on a mower body, and an upper U-shaped tubular component the free ends of which are swagged to an arcuate form having an inwardly directed concave curvature and an outwardly directed convex curvature, the concave curvature being complementary to the convex curvature of the surface of the lower tubular component, the free ends of the upper tubular component being pivotably mounted in an outwardly overlying relationship with respect to the arms of the lower component adjacent the upper ends of the lower component, said concave curvature of said upper component being alignable with the convex curvature of the lower component when the upper and lower components are aligned to provide the full extension of the handle, pivot pin means pivotably connecting the components with respect to one another for movement between a fully extended position and a folded position, the improvement of a quick release mechanism for releasably clamping the components with respect to one another comprising,

a. a clamping nut pivotably mounted on each of said pivot pin means, said clamping nut having an underside directed towards said arcuate surface of said upper component, said underside being formed to provide a clamping surface of a concave curvature corresponding to the convex curvature of the upper component and a release recess angularly disposed with respect to the clamping surface and extending inwardly with respect to the nut above the clamping surface of the clamping nut, said clamping nut being mounted for rotation about said pivot pin means between a clamping position in which the clamping surface of the nut is aligned with the clamping surface of the upper component and a second release position in which the release recess is aligned with the convex surface of the upper component, the pivot pin being of a length to apply a clamping force firmly securing the components and clamping nut with respect to one another when the clamping nut is disposed in the first clamping position, the recess being of a sufficient width and depth to release the clamping force when the nut is in the second position to permit relative movement between said components, the assembly being sufficiently resilient to permit the clamping nut to be rotated between the first clamping position and the second release position.

3,950,818
SELF LATCHING CABINET HINGE HAVING A RESILIENT TENSION STRAP

Frank A. Holmes, Sherman Oaks, Calif., assignor to Jaybee Manufacturing Corporation, Los Angeles, Calif.

Filed Dec. 6, 1974, Ser. No. 530,193
Int. Cl.² E05F 1/12
U.S. Cl. 16—180 5 Claims



1. In a self-latching hinge structure:

a. a pair of hinge members;

b. one of said hinge members being made of resilient plastic material and having a base having provisions at spaced portions thereof for rigid attachment to a cabinet;

c. said one hinge member having a strap, the ends of said strap being anchored adjacent said spaced portions with the intermediate portion of said strap normally extending straight between its ends but free resiliently to deflect laterally;

d. the other of said hinge members being relatively rigid and pin connected to said one hinge member for angular movement therebetween from a closed position to an open position;

e. said other hinge member having a cam part opposed to and engageable with said strap upon relative angular movement between said hinge members;

f. said cam part being located to bow and thereby longitudinally stress said strap to a maximum when said hinge members are near, but spaced from, the closed position of said hinge members;

g. the longitudinal stress generated in said strap being transmitted to the said one hinge member and to the corresponding cabinet member, said stress being substantially larger when the said one hinge member is rigidly attached to said cabinet than otherwise whereby the rigidity of said cabinet imparts high spring constant characteristics to said hinge structure.

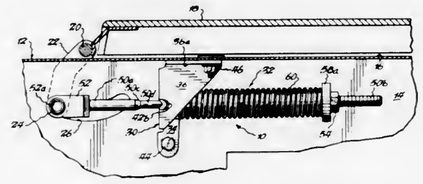
3,950,819
LID COUNTER-BALANCE MECHANISM

Carl H. Little, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.

Filed Jan. 16, 1975, Ser. No. 541,612
Int. Cl.² E05F 1/12
U.S. Cl. 16—190 4 Claims

1. A lid counterbalance mechanism for a lid hingedly supported on a cabinet for vertical swinging movements between a closed position and open position about a horizontally disposed hinge axis, said mechanism being mounted within the confines of said cabinet and being connected to said lid by means coupled to said lid for conjunctive swinging movement about said hinge axis and coupling means carried by said means and extending therefrom into the confines of said cabinet for movement along an arcuate path about said hinge axis conjunctively with vertical swinging movements of said lid, said mechanism comprising:

a bracket mounted within said cabinet, said bracket having an opening extending therethrough and bearing means adjacent said opening for defining a tilt axis disposed essentially parallel to said hinge axis, a bolt extending through said opening in a direction transversely of said tilt axis, said bolt having first and second ends disposed adjacent opposite sides of said bracket, a connector fixed to said first end and connected to said coupling means for relative pivotal movement about an axis disposed parallel to said hinge and tilt axes, an abutment fixed to said second end, a friction brake assembly disposed concentrically of said bolt intermediate said bracket and said second end and in bearing engagement with said bearing means, a compression spring disposed concentrically of

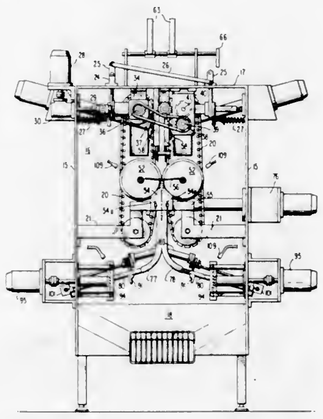


said bolt and bearing adjacent opposite ends thereof on said assembly and abutment, said spring tending to maintain said assembly in engagement with said bearing means and to push said second end of bolt through said opening for establishing a spring force induced counterbalance movement opposing gravity induced torque effects on said lid during movement thereof between said closed and open positions, and said assembly bearing in friction braking engagement with said bolt during at least a portion of said movements of said lid for opposing movements of said lid towards both said closed and open positions.

3,950,820
POULTRY CUTTER

William D. Duncan; Carolyn L. Duncan; Richard O. Stants, all of Kokomo; James J. Sims, and David C. Staley, both of Marion, all of Ind., assignors to Duncan Creations, Inc., Marion, Ind.

Filed Jan. 24, 1974, Ser. No. 436,361
Int. Cl.² A22C 21/00
U.S. Cl. 17—11 2 Claims

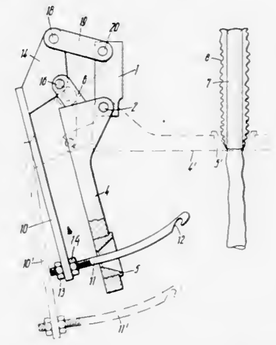


1. In a poultry cutting machine for severing the thigh portion from the rib cage of a centrally split carcass, comprising a surface for supporting said half section with the previously severed area in contact therewith, cutting means disposed in a plane transverse to the plane of said surface reciprocating pusher means for advancing said half section towards said cutting means and means for positively positioning the thigh and rib portions of opposite sides of said cutting means during said advancing to ensure severing of the respective portions comprising stop means for limiting said advancing of the half section, and second reciprocating means for moving said stop means in a direction to engage the half section with said cutting means.

3,950,821
SAUSAGE STUFFING DEVICE

Manfred Plewa, Verden, Germany, assignor to VEMAG Verdener Maschinen und Apparatebau GmbH, Verden, Germany

Filed Aug. 26, 1974, Ser. No. 500,464
Claims priority, application Germany, Aug. 27, 1973, 2343103
Int. Cl.² A22C 11/02
U.S. Cl. 17—41 7 Claims



1. Apparatus for stuffing plastic material into a casing or the like comprising a tube-like socket over which said casing is fed, a nozzle, means pivotally mounting said nozzle for movement about a first pivot between filling position and idle position, said nozzle in filling position being substantially coaxial with said socket and providing an annular opening between said socket and said nozzle and through which said casing is fed, said nozzle in idle position being remote from said socket, a threading device, means pivotally mounting said threading device for pivoting about a second pivot, and linkage means interconnecting said nozzle mounting means, said second pivot and said threading device whereby said threading device extends through said nozzle in idle position and automatically retracts therefrom during pivoting of said nozzle to filling position to thread a casing through said nozzle, said second pivot shifting laterally of itself during said pivoting of said nozzle, said threading device being farther from said socket with said nozzle in filling position than with said nozzle in idle position.

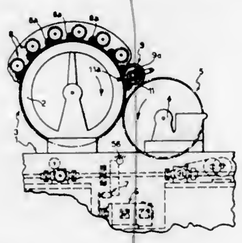
3,950,822
DEVICE FOR MANUFACTURING A SILVER USED TO PRODUCE JASPE YARN

Giuseppe Bolli, Campore di Vallemosso, Vercelli, Italy

Filed May 3, 1974, Ser. No. 466,649
Claims priority, application Italy, May 11, 1973, 68353/73
Int. Cl.² D01G 15/70
U.S. Cl. 19—155 5 Claims

1. Apparatus for the preparation of a web of textile fibers slivers having varying thickness along their lengths, used for the production of jaspe, comprising a carding engine having a drive motor, a carding drum and a plurality of worker rolls cooperating with said drum, to comb fibers thereon wherein the last worker roll acts as a fancy roll, and including support means supporting opposite ends of said fancy roll, and means

to automatically and alternately displace said support means towards and away from the carding drum to effect controlled displacement of said fancy roll relative to said carding drum to vary the distance between the peripheral surface of said



fancy roll and that of said carding drum, and means to remove said fibers from said carding drum to thereby cause a corresponding variation in the thickness of the fibers on said carding drum.

3,950,823

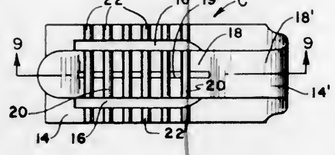
TIE CLASP

Arnold H. Schreter, 3310 Labyrinth Road, Baltimore, Md. 21215

Filed June 6, 1975, Ser. No. 584,455

Int. Cl.² A44B *5/00*; **A41D** *25/04*

U.S. Cl. 24—49 C **5 Claims**



1. A tie clasp of resilient metal having a base portion of elongated form and having an elongated slot extending longitudinally through the central portion thereof to a point adjacent one end of the base, a spring clip formed integrally with the base portion on the opposite end of the base portion and folded over the said slot adapted to engage the fabric of the open side of a shirt, the clip being substantially narrower than the slot and extending inwardly into the slot to a point where the clip is at least in a plane with the remaining portion of the base portion, a fabric strip for supporting the said clasp, the fabric strip having a slot adjacent one end thereof for receiving the spring clip, adhesive means for securing the outer side of the base portion of the clasp to one side of the fabric strip and means for securing the fabric strip to a necktie, the spring clip being of such width as to allow space for the shirt fabric to be forced into the slot about the lateral edges of the spring clip, the material forced into the slot being at least as far as the plane of the remainder of the base portion.

3,950,824

PRESSURE SENSITIVE DIAPER FASTENER

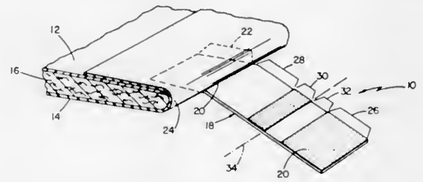
Hamzeh Karaml, Crystal Lake, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Nov. 12, 1974, Ser. No. 523,033

Int. Cl.² A61F *13/00*; **B42F** *1/00*

U.S. Cl. 24—67 AR **12 Claims**

1. A fastener for a diaper comprising a length of web having a surface comprising a plurality of longitudinally aligned zones including a first end zone secured to a first portion of said diaper, a second end zone coated with an adhesive and securable to a second portion of said diaper, and third, fourth, and fifth intermediate zones, said fifth zone coated with an adhesive, each of said third and fourth zones being release treated to have a limited affinity for said adhesive, said web being folded such that said second and third zones are in contact and



said fourth and fifth zones are in contact whereby the web portion comprising said second and fourth zones is releasably retained on the web portion comprising said third and fifth zones.

3,950,825

CLAMP FOR SECURING AN ELEMENT ON A SUPPORT PROVIDED WITH ALVEOLI AND ASSEMBLY THUS OBTAINED

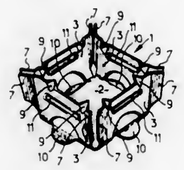
Raymond Jeam Manhes, Ruell-Malmaison, France, assignor to Rapid S.A., Paris, France

Filed Apr. 7, 1975, Ser. No. 565,842

Claims priority, application France, Apr. 11, 1974, 74.12817

Int. Cl.² A44B *21/00*; **B65D** *25/02*

U.S. Cl. 24—73 B **9 Claims**



1. In an open-topped clamp adapted to secure an element in a socket formed in a support member which socket is substantially U-shaped in cross-section, the base portion of which clamp is adapted to rest at the bottom of said socket and the clamp having means for anchoring the element in the socket, the improvement comprising: a polygonal base portion having substantially the same shape as the socket in the support member; side walls integral with and equal in number to the number of sides of the base portion and extending upwardly therefrom, the external faces of said side walls being slightly concave so as to allow the vertical edges of the side walls to be pressed within the internal corners of the socket; and anchoring means on said side walls for anchoring the said element in said clamp and said clamp in said socket.

3,950,826

RESTRAINT HARNESS ADJUSTER

Frank Knoll, Huntington Station, and George Skridul, Huntington, both of N.Y., assignors to East/West Industries, Inc., Farmingdale, N.Y.

Filed Aug. 7, 1975, Ser. No. 602,650

Int. Cl.² A44B *11/10*; **A47C** *31/00*

U.S. Cl. 24—171 **30 Claims**

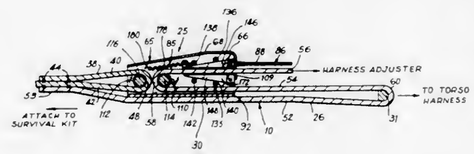
1. A restraint adjuster for a belt, comprising:

A. housing means including a front end through which a belt may extend,

B. support means including a base and spaced apart upwardly extending flanges removeably secured to said housing means,

C. guide means mounted in fixed spaced apart position between said flanges of said support means, said guide means defining an upper angular bearing surface and a lower angular bearing surface, the angle of each of said respective bearing surfaces increasing towards the front end of said housing means,

D. clamping means mounted in said housing means between said guide means, said clamping means including a pair of spaced apart clamping members positioned in overlapping relation to each other, said clamping members each including a substantially horizontally extending front surface, and a spaced apart upper surface inclined rela-



tive to said lower surface at an angle substantially equal to the bearing surface angle defined by said guide means and adapted for engagement therewith,

E. friction means secured to the lower surface of each of said clamping members for engagement with the belt extending therebetween,

F. mounting means for maintaining said clamping members in manipulatable spaced relation to each other, said mounting means including:

1. a pair of spaced apart guide plates adjacent each of said flanges in a substantially vertical plane,
2. a vertically extending channel at one end of each of said guide plates adjacent the front end of said housing means,
3. means for engaging the opposite end of said guide plates, and
4. means extending beyond the sides of each of said clamping members and contained within said channels to permit vertical displacement of each of said support members at one end thereof relative to each other, wherein said clamping members are movable between a first direction toward their clamping position and in a second direction toward their release position, and said guide plates inter-connect said clamping members so a motion of said guide plates in the first direction moves the upper surface of each of said clamping members against said bearing surfaces and toward each other, and motion of said guide plates in the second direction releases the clamping members from its clamping position,

G. biasing means for urging said mounting means in the first direction towards the rear of said housing means, said biasing means including:

1. fastening means associated with each of said flanges,
2. a pair of spaced apart springs each connected at one end to said fastening means, and at the opposite end to said means for engaging the opposite end of said guide plates, wherein said clamping members are urged by said biasing means in the first direction against a belt contained between said overlapping front surfaces of said clamping members, and
3. wherein said biasing means is operative in conjunction with the angular relationship defined between said inclined bearing surfaces and the upper surfaces of said clamping members to maintain said clamping members in their clamping position to wedge the belt therebetween,

H. release means co-acting with said clamping members to retract said clamping members to the release position to permit relative movement of the belt with respect thereto,

I. holding means in said housing means for supporting the belt relative to the clamping members about which the belt is played, said holding means registering substantially with the space between the adjacent front surfaces of said clamping members, and

J. means in said casing for anchoring the belt at substantially one end thereof, with the adjustable belt played through the restraint adjuster and around said holding means and extnding through said clamping means and exciting from said housing means at the front end thereof.

3,950,827

SLIDER FOR ADJUSTABLE FASTENING DEVICE

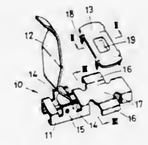
Yoshihiro Kanzaka, Nyuzen, and Tunetaka Aoki, Kamiichi, both of Japan, assignors to Yoshida Kogyo Kabushiki Kaisha, Japan

Filed Nov. 7, 1974, Ser. No. 521,863

Claims priority, application Japan, Nov. 17, 1973, 48-133051[U]

Int. Cl.² A44B *19/00*

U.S. Cl. 24—206 B **3 Claims**



1. In an adjustable fastening device of the type having a slider attached to a first part and slidable over a rack attached to a second part, said slider including a releasable locking member adapted to lock said slider in any selected position on said rack for adjustably fastening said first and second parts together, the improvement wherein said slider further comprises a body having a top wall, a pair of ears projecting laterally from said top wall of said body, a separate anchoring member placed over said ears and the portion of said top wall intervening therebetween via said first part, and a plurality of piercing fingers extending downwardly from said anchoring member to pierce said first part, said piercing fingers being clinched against said ears to secure said anchoring member to said body and hence to effect positive anchorage of said slider onto said first part.

3,950,828

CHAIN CLASP

Edmund Szamborski, Scarsdale, N.Y., assignor to American Gold Chain Company, Inc., Blauvelt, N.Y.

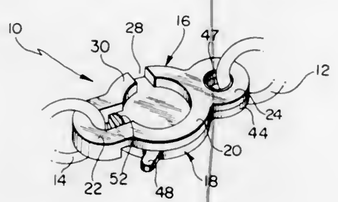
Filed Feb. 3, 1975, Ser. No. 546,827

Int. Cl.² A44B *13/00*

U.S. Cl. 24—232 R **10 Claims**

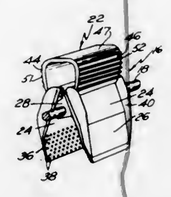
1. A clasp for an ornamental chain, comprising a base member having a central portion to which end portions are joined, one end of said chain being permanently connected to an end portion, said central portion having an opening formed therein that defines a marginal edge, a portion of which is cut out to form a space, the portion of said marginal edge adjacent to said space defining a hook on which the other end of said chain is releasably received for interconnecting the other end of the chain to said base member, and a lock member including a main body to which an extension is joined, said extension being pivotally connected to said base member at an end portion thereof so that the pivot connection is offset with respect to the axis of said central portion, said lock member being pivotally movable from an open position, wherein the

main body of the lock member is offset with respect to the central portion of the base member and the opening in said central portion and the space in the marginal portion thereof are exposed, to a closed position, wherein the main body of



the lock member is locatable in overlying relation with respect to said opening in the base member and space formed in the marginal edge thereof for preventing exterior access to the space, and thereby locking the other end of said chain to said base member.

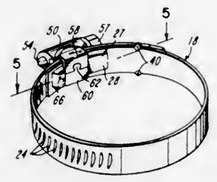
3,950,829
HANGER CLIP
Maurice Cohen, 3580 NW. 52nd St., Miami, Fla. 33142
Filed June 3, 1974, Ser. No. 476,096
Int. Cl.² A47H *13/00*; A41D *27/22*
U.S. Cl. 211—124 **16 Claims**



1. A clip for suspending an article thereform, comprising a pair of jaw members that are hingedly mounted about a common hinge axis and that are pivotally movable to a closed position for clamping an article therebetween, and a spring member mounted on said jaw members for relative movement with respect thereto and having leg elements that are urged inwardly toward each other and that overlie said jaw members in the closed position for urging said jaw members into the closed position for clamping said article therebetween, means formed on said spring member cooperating with means formed on said jaw members for positively moving said jaw members in a pivotal movement to a fully open position when said spring member is pulled outwardly relative to said jaw members, wherein the article clamped between said jaw member is released therefrom, each of said jaw members including a pair of longitudinally spaced and aligned hinge clamps through which a hang rod extends for pivotally mounting said jaw members thereon, said hang rod defining the hinge axis of said jaw members.

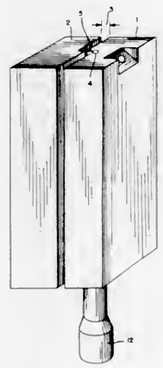
3,950,830
QUICK ATTACHMENT AND RELEASE WORM GEAR TYPE HOSE CLAMP
Wayne R. Duprez, West Newton, Mass., assignor to Standard-Thomson Corporation, Waltham, Mass.
Filed Sept. 3, 1974, Ser. No. 502,816
Int. Cl. B65d *63/00*
U.S. Cl. 24—274 R **32 Claims**

1. A hose clamp comprising:
an elongate band having a portion provided with an inclined ramp, the ramp having a portion of greater extension and a portion of lesser extension with a portion of increasing extension therebetween, another portion of the band having a series of teeth,
a housing including retainer means at least partially encompassing the band to retain the housing upon the band, the retainer means partially encompassing the ramp, the portion of the band which has the series of teeth being positionable within the housing, the housing having a carrier portion,
a threaded member rotatably carried by the carrier portion of the housing,



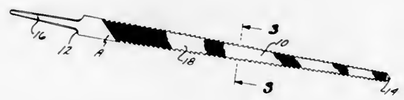
the housing being movable along the ramp to the portion of greater extension so that the retainer means in engagement with the ramp urges the carrier portion of the housing toward the portion of the band which has the series of teeth, forcing the threaded member into meshed relation with the teeth so that rotative movement of the threaded member causes linear movement of the portion of the band which is within the housing, the housing being movable along the ramp to the portion of lesser extension, permitting the carrier portion of the housing to be spaced from the portion of the band which has the series of teeth, so that the portion of the band which is within the housing is linearly movable with respect to the housing without rotative movement of the threaded member.

3,950,831
APPARATUS FOR THE MANUFACTURE OF CRIMPED FILAMENTS
Wolfgang Bauer, Heidelberg; Dieter Herion, Frankenthal; Wolfgang Martin, Ludwigshafen, and Klaus Metzger, Mutterstadt, all of Germany, assignors to BASF Farben and Fasern AG, Ludwigshafen (Rhine), Germany
Filed July 1, 1974, Ser. No. 484,436
Claims priority, application Germany, July 6, 1973, 2334381
Int. Cl.² D02G *1/16*
U.S. Cl. 28—1.4 **3 Claims**



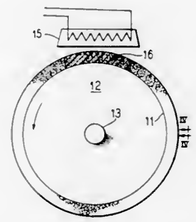
1. An apparatus for the manufacture of crimped filaments by means of heated fluids, said apparatus comprising:
a first and a second component in releasable contact with one another having defined therebetween a process channel in which said filaments travel and into which said fluid is passed;
the parting face between said first and second component having two surfaces parallel to the axis of said process channel and which intersect said process channel at an angle;
said parting face between said first and second component being mated so as to provide a substantial seal about said process channel.

3,950,832
SAW SHARPENING FILE
Troy F. Blane, 6312 Specht Ave., Bell Gardens, Calif. 90201
Filed Nov. 18, 1974, Ser. No. 524,980
Int. Cl.² B23D *71/04*
U.S. Cl. 29—78 **2 Claims**



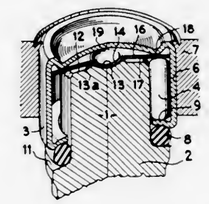
1. A saw sharpening file of elongate shape and triangular transverse cross section that has first and second elongate side surfaces on which filing serrations are defined, said first and second side surfaces angularly disposed relative to one another to the same degree as the angle between teeth on the saw that is to be sharpened and said first and second side surfaces merging at a first longitudinally extending apex, wherein the improvement comprises:
a plurality of longitudinally spaced teeth of triangular transverse cross section defined on said first apex, with each of said teeth being roughly triangular in shape and defined by a concave leading edge and a convex trailing edge.

3,950,833
ROLL COVERING COMPOSITION
Richard J. Adams, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
Filed Jan. 28, 1975, Ser. No. 544,675
Int. Cl.² B21B *31/08*
U.S. Cl. 29—132 **14 Claims**



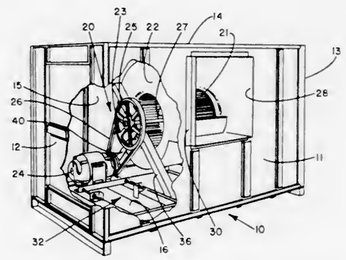
1. In a roller of the type comprising a cylindrical body and shaft means at opposed ends thereof adapting said cylindrical body for rotational movements, the improvements which comprises a layer continuously covering in face-to-face engagement circumferential surface portions of said cylindrical body, said layer being comprised of organic plastic and being further characterized by having a generally continuous, seamless matrix phase, and a generally circumferentially extending open-celled foam structure which is distributed throughout said matrix phase circumferentially.

3,950,834
PROCESS FOR PROVIDING BEARING SURFACES ON TRUNNIONS OF A UNIVERSAL JOINT
Alfred Pitner, Paris, France, assignor to Nadella, France, a part interest
Filed May 23, 1974, Ser. No. 472,703
Claims priority, application France, May 25, 1973, 73.19156
Int. Cl.² B21D *53/10*
U.S. Cl. 29—149.5 R **10 Claims**



1. A process for producing an assembly of a cup on a metal trunnion of a universal joint cross member, which comprises forming said trunnion with the distance between the centre of said cross member and a centre region of the end face of the trunnion which differs from the value of the desired distance in the completed universal joint, engaging the end of said trunnion with a tool to effect a cold upsetting of the metal of said centre region to form at the centre of the end face of the trunnion a bearing surface which is at a distance from the centre of the cross member equal to said desired distance, forming a cup comprising an end wall having at its centre an axially offset portion defining a centre surface of the inner face of said end wall and assembling said cap on said trunnion with said centre surface of the cup bearing on said bearing surface of said trunnion, said bearing surface being formed as a depression in the end face of the trunnion and the end wall of said cup being formed with a central inward projection which seats in said depression.

3,950,835
FAN ASSEMBLY AND METHOD OF MANUFACTURING SAME
William D. Bennink, Kirkville, and Charles K. Griffin, Auburn, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Oct. 2, 1974, Ser. No. 511,333
Int. Cl.² F04D *29/44*; B23P *15/00*
U.S. Cl. 29—156.4 R **2 Claims**



1. A method of manufacturing a fan assembly of a type disposed within a housing having a peripheral wall defined by sides of a rectangle and having a fan scroll disposed therein comprising the steps of:
rotating the fan assembly on a support member so that the discharge opening and the fan scroll is positioned to

direct the air in a preselected direction; out one of the peripheral side walls of the rectangle;

providing a first housing peripheral side wall having an opening in alignment with the discharge opening in the fan scroll;

providing first and second housing side panels, the shaft of the fan assembly being disposed off center relative to the center of said side panels, the position of the fan shaft being intersecting diagonals fixed about the circumference of an imaginary circle whose center is coincident with the center of the diagonals of the side panels, the imaginary circle defining the locus of all positions of said fan shaft, with the radius of the imaginary circle being determined substantially in accordance with the following equation:

$$R = \frac{2F - S}{1.414}$$

where:

F is the major radius of the fan scroll; and

S is the length of a side of a square circumscribed about the fan scroll and equals $F + B$

where:

B is the radius of the fan scroll in axial alignment with F; and

fixing the position of said fan shaft on said imaginary circle in accordance with the position of said discharge opening in one of the sides of the rectangular housing.

3,950,836

METAL-CERAMIC SOLDERING CONNECTION

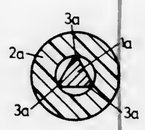
Rudolf Friedel, Erlangen-Bruck, and Hans Ebersberger, Markt-Erlbach, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 12, 1974, Ser. No. 450,484

Claims priority, application Germany, May 23, 1973, 2326373

Int. Cl.² B32B *15/04, 1/08*

U.S. Cl. 29—191.6 **7 Claims**



1. A soldering connection between a metal part and a ceramic part, one of said parts having the shape of a plug with an elongated axis, the other one having the shape of a socket and receiving the plug, wherein only portions of opposed surfaces of the plug and the socket are soldered to each other, the intermediate portions between said soldered portions being hollow and extending parallel to the axis of the plug.

3,950,837

APPARATUS FOR PULLING A FORCE-FITTED POLE PIECE

Augustus J. D'Antoni, Sr., 6646 Hooper Road, Baton Rouge, La. 70811

Filed Nov. 6, 1974, Ser. No. 521,173

Int. Cl.² H02K *15/00*

U.S. Cl. 29—205 R **9 Claims**

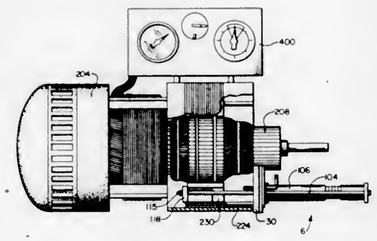
1. An apparatus for pulling a tight fitting pole piece from a generator housing comprising:

a. a first plate having at least two first plate apertures therethrough, said plate being a semicircular plate and including a semicircular indentation on the straight edge of said semicircular plate for accommodating the commutator of said generator, said semicircular indentation being concentric with the curved edge of said semicircular plate;

b. contact means for contacting said pole piece;

c. at least two substantially parallel elongated force transmittance means attached at one of their ends to said contact means and passing through said apertures;

d. connecting means connecting said force transmittance means at their other ends; and



e. force means contacting said plate on that side of said plate opposite said contact means and contacting said connecting means whereby an outward force applied by said force means causes said connecting means to move away from said plate and said contact means to move towards said plate.

3,950,838

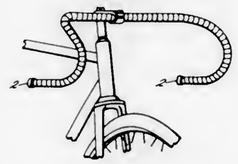
PROCESS FOR MANUFACTURE OF GRIPS FOR HAND POWERED AND HAND GUIDED EQUIPMENT

Herbert B. Oseroff, 9800 Bay Harbor Drive, Bay Harbor Islands, Fla. 33154, and William J. Sparks, 5129 Granada Blvd., Coral Gables, Fla. 33146

Continuation-in-part of Ser. No. 329,944, Feb. 5, 1973, Pat. No. 3,848,480. This application June 3, 1974, Ser. No. 475,387

Int. Cl.² B23Q *17/00*

U.S. Cl. 29—407 **10 Claims**



1. A process for making a grip for the hand control area of a hand operated device for hand powered and hand guided equipment which comprises the steps of

a. selecting as grip material a reversible thermoplastic rubber composition which has the properties:

1. Shore A hardness in the range of about 35 to about 65, as determined by ASTM standard D2240-68;
2. Tear resistance of about 120 to about 175 pounds pull, as determined by ASTM standard D624-70; and
3. Modulus at 300% elongation in the range of about 100 to about 600 pounds per square inch pull, as determined by ASTM standard D2433-70;

b. subjecting said selected composition of step (a) to a test for solvent resistance which is correlated with the environmental stability of said grip in service,

1. the compositions having high solvent resistance being useful for grips which in use require high environmental stability; and

2. the compositions having little or no solvent resistance being useful for grips which in use require less environmental stability, and for coatings;

c. manufacturing grips for a particular use only from a composition having the environmental stability required for that particular use, as determined by the test of step (b); and

d. installing said grip on said hand operated device.

3,950,839

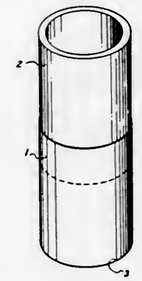
METHOD OF MAKING AN ELECTROFORMING MANDREL

Donald G. DuPree, Alta Loma, Calif.; Raymond E. Balley, and Chester H. K. Ling, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 265,918, June 23, 1972, Pat. No. 3,905,500, which is a continuation-in-part of Ser. No. 89,215, Nov. 13, 1970, abandoned. This application July 12, 1974, Ser. No. 488,128

Int. Cl.² B23P *11/02*

U.S. Cl. 29—447 **1 Claim**



1. A method of making a cylindrical shaped, hollow, permanent mandrel suitable for surficial electrodeposition of a xerographic belt substrate of nickel comprising,

a. providing a cylindrical, hollow, core member consisting essentially of a material selected from the group consisting of aluminum and aluminum alloys,

b. providing a removable sleeve consisting essentially of nickel and stainless steel with a thickness of about 10 to 60 mils, which will conform to the dimensions of said core member, said outer surface of said sleeve containing aa chromium coating from about 100×10^{-6} to 2000×10^{-6} inches thick, and

c. shrink fitting said sleeve over said core member to achieve an interference fit of said sleeve with said core while said sleeve remains removable from said core.

3,950,840

METHOD OF ANCHORING A RING TENSIONING MEMBER IN A CIRCULAR CONTAINER, ESPECIALLY A CONCRETE TANK OR A CONCRETE TUBE

Hans Dietrich, Bolligen, Switzerland, assignor to Losinger AG, Bern, Switzerland

Filed Nov. 21, 1973, Ser. No. 417,727

Claims priority, application Switzerland, Nov. 22, 1972, 17032/72

Int. Cl.² B21D *39/00*

U.S. Cl. 29—452 **8 Claims**

1. A method of tensioning and anchoring a ring tensioning member within an annular container wall, especially a wall of a concrete tank or tube, comprising of steps of:

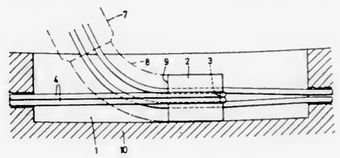
providing a circumferential passageway within said annular container wall;

forming at least one recess within said annular container wall which communicates with said circumferential passageway;

disposing at least one ring tensioning cable within said circumferential passageway so as to be freely movable longitudinally therein in the circumferential direction, said cable being folded in half along its length so as to form a closed loop at one end thereof and have two free ends at the other end thereof;

inserting an anchoring body within said at least one recess and placing said cable loop about one end of said anchoring body;

inserting a removable stretching device within said recess so as to be in abutment with said anchoring body;



inserting said free ends of said cable into one end of said anchoring body and withdrawing said free ends of said cable from the other end of said anchoring body and through said stretching device;

pulling said free ends of said cable through said anchoring body so as to stress or tension said cable; and

fixedly securing said free ends of said cable within said anchoring body while under said stressed or tensioned condition.

3,950,841

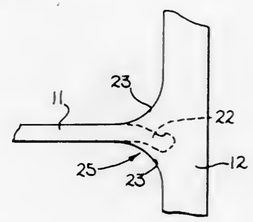
METHOD OF LOCAL PLASTIC FLOW DIFFUSION BONDING OF METALLIC MEMBERS

Charles E. Conn, Santa Ana, Calif., assignor to TRE Corporation, Beverly Hills, Calif.

Continuation-in-part of Ser. No. 357,359, May 4, 1973, which is a continuation-in-part of Ser. No. 280,645, Aug. 14, 1972. This application Feb. 11, 1974, Ser. No. 441,441

Int. Cl.² B23K *31/02*

U.S. Cl. 228—125 **43 Claims**



1. A method for fabricating a structure containing a filleted solid state homogeneous bond at the juncture between at least two metallic members to be joined comprising the steps of:

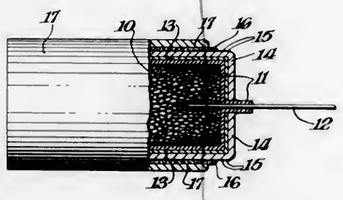
a. determining the flow volume of material required to achieve the desired filleting and blending geometry at the juncture;

b. providing on at least one of said metallic members to be joined, in the area of the desired juncture, an excess of about 5% to 10% of said flow volume required to achieve the desired filleting and blending geometry at the juncture, said entire flow volume being disposed on a portion of one of said members with simple machine cuts which is configurated to receive the other member to be therewith and said excess volume providing positive die fill at the juncture;

c. providing a die assembly including a single direction ramming tool, said die assembly being arranged and configured to hold, form and bond said members in proper spatial relation so that when a force is applied to said die

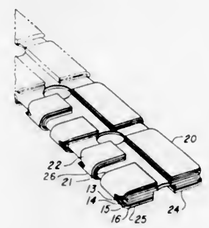
assembly said metallic members will be plastic flowed at the juncture to achieve the required intimate contact for diffusion bonding said metallic members and to form a filleted juncture with the desired finished geometry;
d. cleaning said metallic members to be joined and said die to remove surface oxides and other foreign contaminants;
e. placing said metallic members in said die assembly in proper spatial relationship to allow said flow volume and excess material to be plastic flowed at said juncture upon the application of sufficient force;
f. heating said dies assembly and said metallic members in an inert atmosphere to a temperature in the plastic flow region of the metal and below the transformation temperature of said members;
g. applying a pressure force of sufficient magnitude to said die assembly to plastic flow said flow volume and said excess volume of material in said die assembly causing high localized pressure and intimate contact of the metallic members at the juncture thereof without close tolerance fitup of said metallic members;
h. holding said pressure for a sufficient time to allow the material plastic flowed to creep flow to achieve the desired juncture fillets and finished geometry and the complete diffusion of material across said juncture, said juncture being substantially free of voids;
i. cooling said joined metallic members in said inert atmosphere; and
j. removing said joined metallic members with the desired filleting and finished juncture geometry from said inert atmosphere.

3,950,842
METHOD FOR MAKING A SOLID ELECTROLYTE CAPACITOR
Lawrence E. Fournier, Penacook; Martin J. Daigneault, Plymouth, and Frederick G. Tarbin, West Franklin, all of N.H., assignors to Sprague Electric Company, North Adams, Mass.
Filed Apr. 21, 1975, Ser. No. 569,713
Int. Cl.² B01J *17/00*
U.S. Cl. 29—570 **11 Claims**



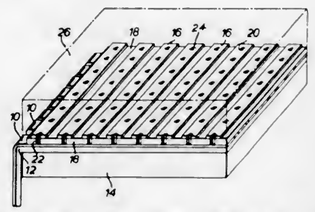
1. A method for making a solid electrolytic capacitor comprising:
a. forming on the surfaces of a porous valve-metal pellet a dielectric oxide film;
b. impregnating the porous pellet with a solution of a manganese salt;
c. heating the impregnated pellet to pyrolyze and convert the manganese salt to a manganese dioxide layer that lies adjacent to the dielectric oxide film;
d. applying to the pellet a thixotropic coating of a mixture comprised of a manganese salt solution and finely divided solid particles;
e. immersing the coated pellet while wet into a fluidized bed containing coarse manganese dioxide particles having an average particle size greater than 30 microns;
f. heating the coated pellet to pyrolyze and convert the manganese salt coating to an essentially uniform solid manganese dioxide coating so that the outer surface of the coating is made rough by the coarse manganese dioxide particles being bonded to and projecting from the coating; and
g. depositing a conductive counterelectrode in tightly bonded relationship to the rough outer surface of the coated pellet.

3,950,843
CONTINUOUS FILM TRANSISTOR FABRICATION PROCESS
Arthur E. Horton, Richardson; Jordan W. Brantley, Hurst; Paul R. Smith, Dallas; Cecil W. Lightfoot, Dallas, and Richard L. Hanneman, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 887,892, Dec. 24, 1969, Pat. No. 3,843,911. This application Sept. 15, 1971, Ser. No. 180,824
Int. Cl.² B01J *17/00*
U.S. Cl. 29—574 **16 Claims**



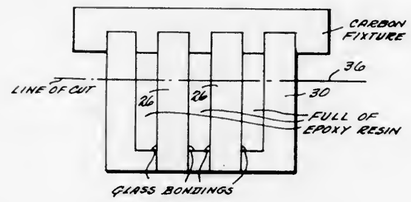
1. A continuous film transistor fabrication process comprising the steps of:
a. forming a plurality of groups of electrically conductive contacts adherently patterned on one surface of a polymer film coiled into a roll thereby forming a continuous roll of substrate film;
b. turning the edges of said substrate film under so that a portion of each contact extends on both the upper and the lower portions of said one surface of the substrate film to facilitate the ohmic connection of a portion of each contact to a metal contact on a support member; and
c. forming a hole in the polymer film between each contact pattern as an indexing means for continuously feeding the roll of substrate film through a series of processing stations.

3,950,844
METHOD OF MAKING L.E.D. ARRAYS
Philip Henry Wisbey, Colchester, England, assignor to The Marconi Company Limited, Chelmsford, England
Filed Dec. 19, 1974, Ser. No. 534,647
Claims priority, application United Kingdom, Dec. 21, 1973, 59445/73
Int. Cl.² H01L *21/00*, *27/00*
U.S. Cl. 29—577 **12 Claims**



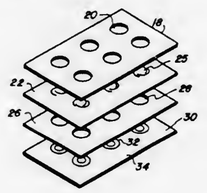
1. A method of manufacturing an array of light omitting diodes which comprises the steps of bonding a first insulating sheet carrying a first set of mutually isolated conductors to a sheet of thermally conductive material, bonding, a second, perforated sheet carrying a second set of mutually isolated conductors to the first insulating sheet with the perforations overlying the conductors of the first sheet and the two sets of conductors crossing one another, positioning light emitting diodes in the perforations and effecting electrical contact between one electrode of each diode and a conductor of the first set and between the other electrode of each diode and a conductor of the second set.

3,950,845
METHOD FOR MAKING RECORDING HEAD
Robert L. Huntt, 25007 Woodfield Road, Damascus, Md. 20750
Filed June 24, 1974, Ser. No. 482,604
Int. Cl.² G11B *5/42*
U.S. Cl. 29—603 **7 Claims**



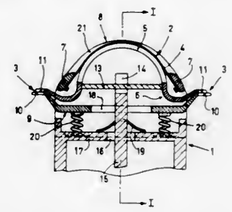
1. A method of making a multi-core magnetic head comprising the steps of:
joining two blocks of magnetic, ceramic material together including bonding together two opposing block surfaces defining a magnetic gap, said joined blocks having a central aperture extending therethrough,
cutting said joined blocks along lines extending roughly transverse to said aperture axis to form a plurality of magnetic pieces each having a central aperture,
placing a number of said pieces in grooves cut in the bottom of a U-shaped non-magnetic holder having sides extending upward from said holder so that said pieces extend into the region bounded by said sides,
bonding said pieces placed in said grooves to said holder,
potting the region between said sides of said holder into which said pieces extend with potting material,
cutting along a line passing through the central aperture to leave upwardly extending pole legs and
removing said potting material.

3,950,846
METHOD OF FORMING A DEFORMED, INTEGRAL SWITCHING DEVICE
Wendell C. Johnson, Topanga, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Sept. 23, 1974, Ser. No. 508,486
Int. Cl.² H01R *9/00*
U.S. Cl. 29—630 R **2 Claims**



1. A method of making a switching device from a continuous, planar sheet of metallic material with the switching device characterized by a substantially planar, movable central portion coupled to a substantially planar peripheral supporting portion by a plurality of non-planar support legs with the central portion retaining its shape while effecting a switching action, the steps of:
forming in a planar sheet of metallic material a plurality of curved, unconnected slots of substantially uniform width, each of said slots having a smooth curvature and each of said slots radiating outwardly from a central portion of said sheet of metallic material to a peripheral portion of said sheet of metallic material, at least a portion of each of said slots being adjacent at least a portion of at least another of said slots, and
plastically deforming into the shape of heliclines only the portions of said sheet of metallic material between said adjacent slots such that said central portion of said sheet of metallic material is supported above the peripheral portion of said sheet of metallic material by said portions of said sheet of metallic material between said adjacent slots with said central portion of said sheet of metallic material being in a plane parallel to the plane of said peripheral portion of said sheet of metallic material.

3,950,847
DRY SHAVER
Herbert Duda, Wels, Austria, assignor to U.S. Philips Corporation, New York, N.Y.
Filed July 9, 1974, Ser. No. 486,771
Claims priority, application Austria, July 10, 1973, 6051/73
Int. Cl.² B26B *19/10*
U.S. Cl. 30—34.1 **7 Claims**



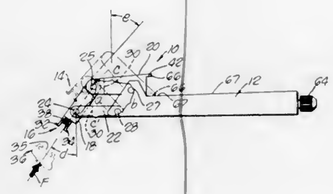
1. In a dry shaver including a casing with a drive means extending outward therefrom, a shaver housing attachable to said casing adjacent said drive means, said housing including a shear plate mounted thereon with an inward facing cutting surface, the improvement in combination therewith comprising a reciprocally movable cutter member having a shaver part engaging said cutting surface of the shear plate and a trimmer part extending transversely therefrom, a counter-cutter having a trimmer comb part inward of and engaging said trimmer part of the cutter, and spring means engaging and resiliently urging said counter-cutter and the trimmer comb part thereof outward from said casing, with said trimmer comb part of the counter-cutter thus urged outward resiliently against said trimmer part of the cutter member, said cutter member and the shaver part thereof thus being urged resiliently outward, with said shaver part urged resiliently against said shear plate.

3,950,848
SAFETY RAZOR
Michael Goldstein, 11810 Mayfield, Los Angeles, Calif. 90049
Filed Mar. 18, 1974, Ser. No. 441,007
Int. Cl.² B26B *21/14*
U.S. Cl. 30—47 **15 Claims**

1. A safety razor for retaining a razor blade comprising:
a. a handle;
b. a razor blade support member for supporting said razor blade with the center line of said razor blade substantially perpendicular to the center line of said handle;

c. means for connecting said razor blade support member to said handle, the razor blade support member being movable in relation to the handle in a non-circular path between a first position, in the absence of pressure on said razor blade, and a second position, in the presence of pressure on said razor blade; and
d. biasing means for urging said razor blade support member to its said first position;
e. said means for connecting said razor blade support member to said handle comprises a linkage assembly, said linkage assembly comprising two linkage arms having two ends, one end of each of said linkage arms being pivotably connected to said razor blade support member and the other end of each of said linkage arms being pivotably connected to said handle.

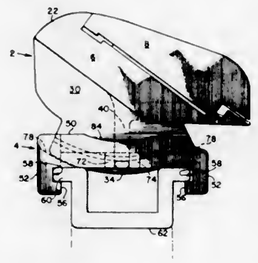
15. A safety razor comprising:
a. a handle;
b. a razor blade support member for supporting a razor blade;



c. means for movably connecting said razor blade support member to said handle;
d. said razor blade support member movable in a non-circular path between a first position and a second position;
e. said razor blade support member movable in response to pressure applied to said razor blade whereby said razor blade support member is moved in the direction of said force from said first position to said second position;
f. means for biasing said razor blade support member toward said first position;
g. said razor blade support member comprises an inverted T-shaped member having a central member and a bottom member, the longitudinal axis of said bottom member being perpendicular to the longitudinal axis of said handle;
h. said angle between the center line of the handle and the center line of the central member remains constant as said razor blade support member moves from its said first position to its said second position.

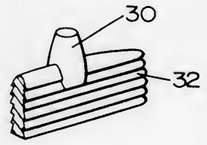
3,950,849
RAZOR WITH ROTATABLY MOUNTED SHAVING UNIT
Roger L. Perry, Lynnfield Center, Mass., assignor to The Gillette Company, Boston, Mass.
Filed July 23, 1974, Ser. No. 490,930
Int. Cl.² B26B *21/14*
U.S. Cl. 30—47 **12 Claims**

10. A razor blade assembly comprising a razor blade shaving unit, said shaving unit comprising a substantially rigid member to which a razor blade is secured in a permanent manner with said rigid member having a forward edge providing a guard surface spaced from a cutting edge of said razor blade, and a connector member attached to said shaving unit such that said shaving unit is movable relative to said connector member, and biasing structure tending to maintain said razor blade shaving unit in preferred orientation relative to said connector member, said biasing structure including a post and leaf spring arrangement extending between said razor blade shaving unit and said connector member, said connector



member having a plurality of surfaces forming a channel therein for receiving supporting surfaces of a holder.

3,950,850
DENTAL PROSTHETIC IMPLANTS
Thomas D. Driskell; Alfred L. Heller, both of Worthington, and Joseph F. Koenigs, Columbus, all of Ohio, assignors to Miter, Inc., Worthington, Ohio
Filed Feb. 25, 1974, Ser. No. 445,567
Int. Cl.² A61C *13/00*
U.S. Cl. 32—10 A **18 Claims**

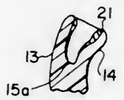


1. A dental, prosthetic, endostial implant comprising:
a. a base formed of relatively high purity, high density, low porosity alumina, said base in an implanted operable position having opposite ends and having side walls integrally formed with outwardly projecting protrusions which include substantially flat horizontal surface areas facing in the direction of the implanted end, said surface areas being produced by a series of steps having undersurfaces whereby a significant area facing toward the implanted end is produced to transfer the axial loading over a greater area; and
b. a post extending generally vertically from the other end of said base and contoured in a generally rounded, horizontal cross sectional configuration for attachment of at least one prosthetic crown.

3,950,851
ORTHODONTIC POSITIONER AND METHOD FOR IMPROVING RETENTION OF TOOTH ALIGNMENT THEREWITH
Earl O. Bergersen, 950 Linden Ave., Winnetka, Ill. 60093
Filed Mar. 5, 1975, Ser. No. 555,553
Int. Cl.² A61C *7/00*
U.S. Cl. 32—14 B **16 Claims**

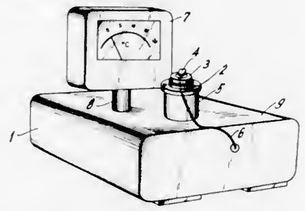
9. An orthodontic tooth positioning and retaining appliance which is generally U-shaped in plan view and which has a tooth receiving trough generally of a size and shape for reception of a patient's teeth, said trough being of an elastomeric material, and said trough having one or more selected depressions therein shaped substantially precisely to the outer contour of its respective tooth sufficiently to hold its respective tooth in a fixed position relative to the positioner,

said positioner comprising a substrate in the shape of a conventional positioner shaped to correct and retain teeth within the patient's mouth, and including a liner



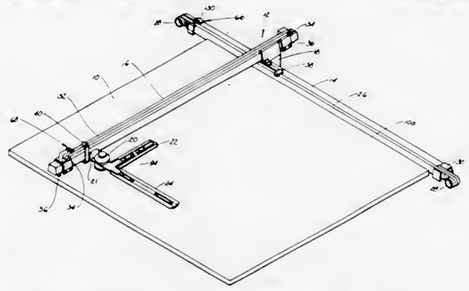
forming a discontinuous phase with respect to the substrate within the selected one or more depressions to form the portion of outer contour of the said selected teeth.

3,950,852
TRAINING INSTRUMENT FOR DENTAL PROCEDURES
Gerd F. Henning, D-785 Lorrach 6, Taubenacker 7, Germany
Filed Apr. 18, 1975, Ser. No. 569,224
Int. Cl.² A61C *19/00*
U.S. Cl. 32—71 **8 Claims**



1. A training device for dental procedures used in measuring thermal effects of dental treatment as in preparation of teeth, said device comprising a base member upon which the tooth is to be treated, a work head member being freely accessibly, removably mounted on said base member, the tooth being embedded in a supporting receptacle disposed on said work head member, thermo-element means being apically positioned in the tooth in contact with pulp wall of the tooth to obtain temperature thereof, said thermo-element means being connected to at least one of a temperature indicator and registering instrument for visually indicating the temperature.

3,950,853
TRACK TYPE DRAFTING MACHINE
William H. Andrew, 382 Knollwood Drive, Highland Heights, Ky. 41076
Filed Feb. 12, 1975, Ser. No. 549,327
Int. Cl.² B43L *13/02*
U.S. Cl. 33—79 R **3 Claims**



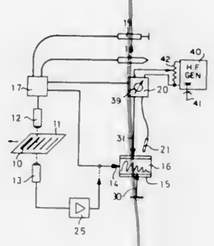
1. The combination of a drafting board and track type drafting machine mounted for motion over the surface of the drawing board comprising:
a. a horizontal track mounted on the top of said drawing board;
b. a vertical track running from the top to the bottom of said drawing board perpendicular to said horizontal track;
c. a first carriage attached to the top of said board which rolls in said horizontal track for movement along the length of said horizontal track, said first carriage carrying said vertical track and maintaining said vertical track at all time perpendicular to said horizontal track;
d. a second carriage movable along the length of said vertical track;
e. a drafting machine head mounted on said second carriage movable along the length of said vertical track;
f. right-angled rules fitted to said head for laying dimensions, measuring and as straight edges for drawing lines, said right-angled rules comprising a unitary, integral, one piece L-shaped scale with abutting rules of common origin;
g. a first endless graduated tape and rollers mounted at the ends of said horizontal track, said first tape running about said rollers and having a zero point from which positive numbers progress in one direction and negative numbers progress in the others;
h. a second endless graduated tape and rollers mounted at the ends of said vertical track, said second tape running about said rollers and having a zero point from which positive numbers progress in one direction and negative numbers progress in the other;
i. a first hairline indicator mounted on said first carriage and extending transversely of said first tape for movement along said first tape as said first carriage is moved along said horizontal track;
j. a second hairline indicator mounted on said second carriage and extending transversely of said second tape for movement along said second tape as said second carriage, and thus said head, is moved along the length of said vertical track;
k. means for rotating said first endless tape about its respective rollers to adjust the position thereof comprising at least one of said respective rollers of said first tape, said at least one roller having an extension by which it may be manually turned;
l. means to lock said first tape in an adjusted position comprising clamping means mounted on said horizontal track, said clamping means comprising spaced elements extending transversely of said first tape and through which said first tape freely passes, the uppermost one of said elements being provided with a threaded hole, and a set screw adjustably received within said hole for locking said tape in position;
m. means for rotating said second endless tape about its respective rollers to adjust the position thereof comprising at least one of said respective rollers of said second tape, said at least one roller having an extension by which it may be manually turned; and
n. means to lock said second tape in an adjusted position comprising clamping means mounted on said vertical track, said clamping means comprising spaced elements extending transversely of said second tape and through which said second tape freely passes, the uppermost one of said elements being provided with a threaded hole, and a set screw adjustably received within said hole for locking said second tape in position;

whereby any movement of said machine head, horizontally or vertically, is indicated on said first and second tapes, respectively, and when the origin of said common origin scale is at a starting point and said first and second tapes are adjusted so that the zero point on each said tape is located under that tapes respective hairline indicator and said first and second tapes are locked, the exact location of another point on said drawing board to which said common origin scales or said drafting machine head are moved in relation to the starting point is immediately known.

3,950,854
METHOD AND APPARATUS FOR MEASURING AREA UNDER A CURVE

Karl Hoyer, Leinfelden, and Heinrich Stöckle, Hemmingen, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Nov. 20, 1974, Ser. No. 525,490
Claims priority, application Germany, Dec. 8, 1973, 2351334
Int. Cl.² G01B *7/32*
U.S. Cl. 33—123 **5 Claims**



1. A method of evaluating electrophoresis results embodied in matter electrophoretically distributed on a slide, comprising the steps of:

scanning a slide bearing an electrophoretically treated distribution of matter thereon to produce an electric signal representing the density of said matter as a function of position along a line of scan;

recording said signal in the form of a curve representative of said density as a function of said position by causing said signal to produce a burnout trace (**22**) on a first metal layer having the characteristics of a vapor-deposited metal layer and located on a recording medium composed of an insulating web of uniform thickness having a metal layer on each of the two sides thereof, by applying electric current to said first metal layer through a writing arm (**14**) movable relative to said recording medium in contact therewith, and responsive to said signal for one dimension of said relative mobility, which current is sufficient to interrupt the continuity of said first metal layer by vaporization thereof at the location of contact of said writing arm with said recording medium;

tracing also a base line for said curve by burning out a substantially straight trace (**26**) on said recording medium representative of a reference density for material on said slide by means of a second writing arm (**18**) through which current is applied to said first metal layer of said recording medium, said second writing arm being positioned for its tracing operation so that the resulting base line is offset to one side of said curve, said base line being drawn, or being provided with connecting trace line(s), so as to intersect or connect with said curve trace at its end portions and thereby isolate electrically an area of said first metal layer between said curve trace and said base line;

forming an electric circuit by connecting said isolated area of said first layer with said second layer;

measuring the capacitance of said electrically isolated area with respect to the second metal layer affixed to the other side of said web of said recording medium by means of a device in said electric circuit having an indicating meter and an adjustment capable of proportionally affecting readings of said meter;

normalizing the reading of said meter by means of said adjustment so that it provides a predetermined meter reading value when measuring the capacitance of said electrically isolated area, whereby fractions of said area may be subsequently measured directly in proportional units with said device;

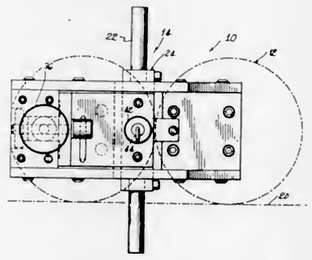
thereafter tracing lines (**24**) substantially perpendicular to said base line by means of a writing arm having the same current-applying and local burnout effect as said first and second writing arms by moving said lastmentioned writing arm in a path on said first metal layer of said recording medium such that said perpendicular lines intersect said curve at minima of the distance between said curve and said base line and subdivide the area between said curve and said base line, and then

forming an electric circuit by connecting said subdivided areas successively in circuit with said device and said second layer and measuring areas isolated by said traces in proportional units by measuring the capacitance between the metal layer portions isolated by said traces and said second metal layer by means of said device.

3,950,855
GAGING APPARATUS FOR DOUBLE DISC GRINDER OR THE LIKE

Edward Peonski, West Dundee, Ill., assignor to American Gage & Machine Company, Elgin, Ill.

Filed May 6, 1974, Ser. No. 467,202
Int. Cl.² G01B *7/02*
U.S. Cl. 33—143 L **11 Claims**



1. Gaging apparatus for gaging the thickness of workpieces discharged in a stream from a double disc grinder or other machine,

comprising guide means for conducting the stream of workpieces in a predetermined direction past a gaging station therealong,

a movable carriage disposed opposite said guide means at said gaging station,

an elongated contact bar mounted on said carriage and movable therewith toward and away from said guide means for engaging the opposite side of each workpiece,

said contact bar having a length substantially greater than the transverse dimensions of said bar,

said contact bar extending generally parallel to said guide means and transversely to said predetermined direction of movement of said workpieces,

support means supporting said carriage for movement of said contact bar toward and away from said guide means and for rocking movement of said contact bar about a rocking axis generally parallel to said predetermined direction to vary the angular relationship of said contact bar to said guide means,

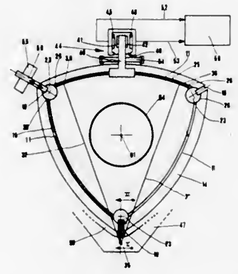
said support means including resilient means acting upon said carriage for applying pressure between said contact bar and the successive workpieces while accommodating said rocking movement of said contact bar so that said contact bar will align itself with each workpiece,

and a gaging head for detecting movement of said contact bar toward and away from said guide means to gage the thickness of each workpiece.

3,950,856
METHOD AND RELEVANT APPARATUS FOR MEASURING THROUGH MOBILE ELEMENTS, THE LONGITUDINAL DEVELOPMENT OF SEATS OF GROOVES IN MECHANICAL WORKPIECES

Gastone Albertazzi, Bologna, Italy, assignor to Finike Italiana Marposs,Soc. In Accomandita Semplice di Mario Possati & C., Bentivoglio, Italy

Filed Aug. 28, 1974, Ser. No. 501,339
Claims priority, application Italy, Sept. 4, 1973, 3490/73
Int. Cl.² G01B *5/00, 5/02, 7/00*
U.S. Cl. 33—174 R **13 Claims**



1. An apparatus to measure the longitudinal development of seats or grooves of mechanical workpieces, said seats or grooves having a width small in comparison with their length, comprising:

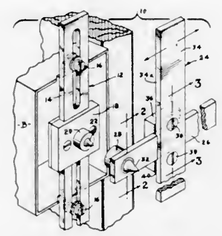
an elongated element having a length slightly smaller than the nominal development of the seat and cross-section and shape permitting the element to be at least partially inserted in the seat to be measured;

position transducer means coupled to said elements; control means coupled to said element for displacing it from a first position in which one of its ends is in correspondence with one end of the seat to a second position in which the other end is in correspondence with the other end of the seat; and processing means connected to said transducer means for providing a signal indicative of the length of said seat.

3,950,857
LAYOUT TOOL

Joseph J. Zanavich, 69 Woodruff Ave., Watertown, Conn. 06795

Filed Jan. 27, 1975, Ser. No. 544,214
Int. Cl.² B27C *1/00*
U.S. Cl. 33—174 G **5 Claims**

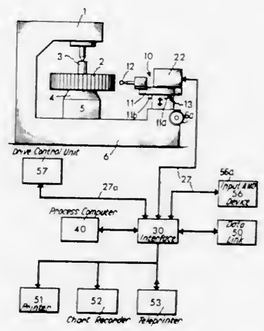


1. A layout tool for use in marking for cutout the outline of an electrical box and the like on sheet material such as panelling to be installed over the box, comprising in combination a bridge member and means for securing it across the mouth of the electrical box, the bridge member having an outwardly-facing circular boss terminating in an outwardly-facing first point means, and a layout bar having at one end on one lateral face opening means for swivelly and removably receiving the circular boss of the bridge member and having second point means on the opposite lateral face aligned with said opening means, the second point means being oriented to point in the same direction as the first point means when the opening means receives the circular boss, and a layout blade means adjustably disposed along the layout bar and disposed transversely with respect thereto whereby the first point means can be used to make an impression on the rear face of the panelling, and an outline of the box can be marked on the rear face of the panelling using the second point means in the impression with the blade means set on the bar distances corresponding to the distances from the boss to the respective sides of the box when the opening on the bar receives the boss.

3,950,858
ELECTRONIC PITCH TESTER FOR GEARS

Meinrad Donner, Nuolen; Urs Walliser, Bronschhofen, and Guy-Francois Blanc, Zurich, all of Switzerland, assignors to Maag Gear-Wheel & Machine Company Limited, Zurich, Switzerland

Filed Sept. 13, 1974, Ser. No. 505,905
Claims priority, application Germany, Mar. 15, 1974, 2412574
Int. Cl.² G01B *5/20, 7/28*
U.S. Cl. 33—179.5 R **11 Claims**



1. Gear pitch testing apparatus comprising: a base, a mounting on said base, two probe elements arranged side-by-side on said mounting, means for displacing the mounting on the base to introduce the elements into a respective pair of tooth spaces of a gear to be tested, a support on said base for a gear to be tested, means for causing relative displacement between said support and said mounting for displacement of the gear under test transversely relative to said probe elements in a linear or rotary path, respective signal transmission means in operative association with the probe elements to produce electrical signals in dependence upon the deflection of the elements by the gear tooth flanks, measurement value means connected to said signal transmission means to derive, from said signals, further signals to actuate displacements of the mounting and to provide measurement values corresponding to the relative separate or circular pitch errors, the apparatus further comprising a counter and time base generation means coupled with said counter, a digital process computer being connected to said means providing the measurement values and to said counter and comprising means for controlling the operation of said counter in synchronism with predetermined displacement steps of the mounting for obtaining time settings for said displacement steps of said mounting in sequence with said transverse relative displacement between the gear and the probe elements, a store in said process computer for said measurement values and for said timing settings and the com-

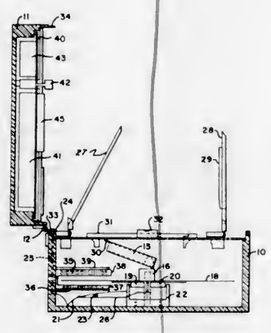
puter including means for computing from the stored data, deviations in pitch in the gear under test.

3,950,859

ANGULAR DISPLACEMENT MEASURING APPARATUS

Melvin G. Kramer, Riverton, Wyo., assignor to The Brunton Company, Riverton, Wyo.

Filed Jan. 9, 1975, Ser. No. 539,820
Int. Cl.² G01C *23/00*
U.S. Cl. 33—352 **27 Claims**



3. Apparatus selectably positionable between a vertically balanced orientation and a vertical reference defining orientation relative to an axis comprising:

container means,

a mass positioned within said container means for movement therein between first and second spaced positions within said container means,

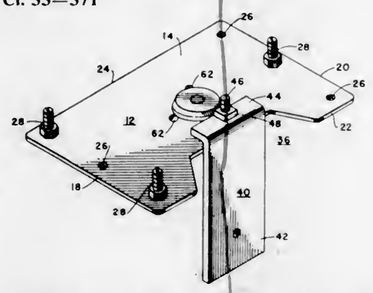
means pivotally mounting said container means for rotation about an axis for symmetrically distributing the weight of said container and said mass around said axis when said axis is oriented substantially vertically and for permitting said mass to establish a vertical reference relative to said axis when said mass is in said second position and said axis is oriented other than substantially vertically.

3,950,860

BUILDING BLOCK LAYING LEVEL INDICATING DEVICE

Richard L. Holcombe, 202 Center St. P.O. Box 247, Dushore, Pa. 18614

Continuation-in-part of Ser. No. 505,275, Sept. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 408,564, Oct. 23, 1973, abandoned. This application Mar. 21, 1975, Ser. No. 560,722
Int. Cl.² G01C *9/28*
U.S. Cl. 33—371 **7 Claims**



1. A block laying level indicating device adapted for use with a building block of general rectangular configuration having a top and a bottom face, front and rear walls, and opposing end faces, said front and rear walls being connected by webs spaced from each other to provide a plurality of holes extending from the top through the bottom faces, said device comprising:

a planar base;

a plurality of support members on said planar base, said support members being adapted to bear against the top face of the block on which the device is mounted;

level detecting means on said planar base for visually indicating the complete horizontal level position of the block on which the device is mounted when the block is laid; and

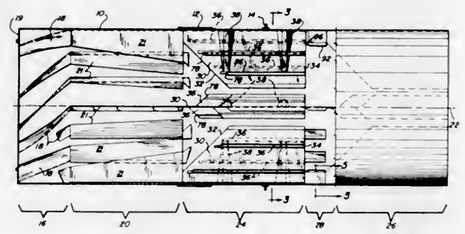
a positioning member connected to the planar base and extending perpendicularly and downwardly therefrom, said positioning member having an inside face forming the 90° angle between the planar base and the positioning member and an opposite outside face, said positioning member having a length and weight such that when the block is placed in a vertical position with one of the end faces directed upwardly and the device is placed on the block by inserting the positioning member into one of the block holes until the support members bear against the top of the block and the outside face of the positioning member bears upon the block web forming the hole, said planar base will be maintained in position with the support members engaging the top face of the block thus orienting the planar base in a vertical plane and the positioning member in a horizontal plane.

3,950,861

ROTARY DRYER FOR STRINGY MATERIAL

Ervin C. Weimer; Stuart M. Porter, and Clark G. Hayes, all of Denver, Colo., assignors to Stearns-Roger Corporation, Denver, Colo.

Filed Nov. 29, 1974, Ser. No. 528,336
Int. Cl.² F26B *11/04*
U.S. Cl. 34—130 **6 Claims**



1. A rotary dryer comprising the combination of:

an elongate generally horizontally disposed rotatable tubular shell divided into at least a forward zone and a rear zone;

a plurality of material handling blades located in the forward zone and secured to the inner wall of the shell in longitudinally extending peripherally spaced relation and extending inward toward the axis of the shell in radial planes containing the axis of the shell;

the trailing edges of the blades lying substantially in a common plane normal to the axis of the shell, and having a predetermined radial length;

and a plurality of flight support blades located in the rear zone and secured to the inner wall of the shell in longitudinally extending peripherally spaced relation and extending inward toward the axis of the shell in radial planes containing the axis of the shell, with the forward portion of each blade being in longitudinal alignment with the aft portion of a corresponding blade in the forward zone and coplanar therewith;

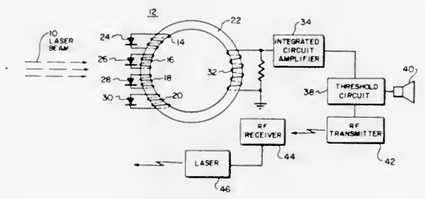
the forward end of each blade in the rear zone having a first leading edge portion extending inward from the shell wall substantially in a common plane normal to the axis of the shell immediately aft of the trailing edge of a corresponding blade in the forward zone, with a radial extent substantially less than that of the trailing edge of the forward blade, and having a second leading edge portion extending from the inner end of the first leading edge portion rearward and inward toward the axis of the shell into conjunction with the longitudinally extending inner marginal edge of the blade.

3,950,862

SOLAR CELL DETECTOR ARRAY FOR ENGAGEMENT SIMULATION

Ernst J. Schiel, and Rudolph R. Gammarino, both of Ocean, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 3, 1974, Ser. No. 511,857
Int. Cl.² F41C *27/00*
U.S. Cl. 35—25 **3 Claims**



1. A solar cell detection system for simulated fire arm engagement between combatants comprising:

a radiation source means for emitting light pulses in selected directions under the control of one of said combatants;

at least one solar cell, said cell being activated by impingement of said radiation source means;

a transformer having a ferrite core, at least one primary winding and a secondary winding coupled to said core;

each said solar cell connected directly across said primary winding;

means connected across the output of said secondary winding for damping oscillations in said secondary winding;

an alarm means for producing an output signal when activated; and

a threshold circuit means coupled to the output of said secondary winding and said alarm means for activating said alarm means upon receipt of a signal having a predetermined value from said secondary winding.

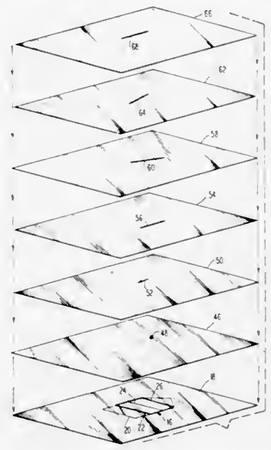
3,950,863

METHOD AND MEANS FOR TEACHING ALPHABET RECOGNITION AND LEARNING HANDWRITING

Sylvia Minka Pallishusky, P.O. Box 384, Cape May Courthouse, N.J. 08210

Filed Mar. 24, 1975, Ser. No. 561,205
Int. Cl.² G09B *11/00*
U.S. Cl. 35—36 **10 Claims**

1. A method of teaching alphabet recognition and handwriting comprised of providing a base transparent sheet having a figure thereon with vertically spaced horizontal letter framing lines, projecting the base sheet, providing additional transparent sheets each having thereon a component portion of a letter of the complete alphabet, both lower and upper case, in a predetermined position, superimposing and projecting one of the additional sheets on the base sheet with the letter component thereof within selected horizontal framing lines, and then superimposing and projecting the remaining additional sheets sequentially and in stepwise intervals in the manner in which the letter is to be written so that the component portions cooperate to ultimately form and project the complete letter framed within selected horizontal lines of the figure of the



base sheet, and so that a pupil can visualize the developmental manner of constructing, proportioning and writing the letter.

3,950,864

SHOE REINFORCING METHOD

Henry E. Cooper, III, Waltham, and Edward E. Gendreau, Dracut, both of Mass., assignors to The Terrell Corporation, Wilmington, Mass.

Division of Ser. No. 423,714, Dec. 11, 1973, which is a continuation of Ser. No. 236,220, March 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 42,554, June 1, 1970, abandoned. This application June 20, 1975, Ser. No. 588,808
Int. Cl.² A43D *00/00*
U.S. Cl. 12—146 D **6 Claims**

1. A method of stiffening a selected portion of a shoe upper which comprises

providing a stiffening element in flat unskived form, said element consisting essentially of a thermoplastic resin having a melt flow rate of at least 1 gram in 10 minutes at 100° C. and 250 p.s.i. as defined, intimately admixed with from 5 to 30 per cent by weight of the total composition of randomly dispersed short inert fibers,

assembling said element with a selected portion of said shoe upper to form a shoe upper assembly,

heating said assembly to an elevated temperature at which said stiffening element becomes flaccid and moldable,

forming and molding said assembly to the shape of a foot form by the application of pressure while said stiffening element is at said elevated temperature, causing said stiffening element to acquire the shape of that portion of the form with which it is associated, at least one free edge of said stiffening element flowing sufficiently to form a tapered or skived edge,

and permitting said assembly to cool sufficiently for said stiffening element to regain its normal hardened condition while in contact with said form.

3,950,865

SAFETY BOX TOE

B. Everett Gray, St. Louis, Mo., assignor to Bata Shoe Company, Inc., Belcamp, Md.

Filed Apr. 8, 1975, Ser. No. 566,606
Int. Cl.² A43C *13/14*
U.S. Cl. 36—77 R **6 Claims**

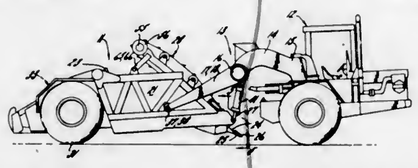
1. In a safety box toe for use in shoes and the like including a relatively rigid stiffener element having a closed front end

portion and an open rear end portion terminating in a back edge, the distance between the lower-most portions of said back edge defining the overall width of said element and the longitudinal center of said back edge defining the highest point of said element, said element being of a generally inverted U-shaped in transverse cross-section and including lower edge portions extending generally horizontally in use with flange means extending inwardly from said lower edge portions, and an imaginary test axis extending transversely of



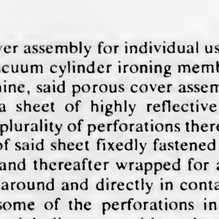
said element spaced forwardly of said highest point of said back edge by a predetermined amount in accordance with American National Standards, the improvement which comprises the total of the horizontally projected areas of said flange means rearwardly of said test axis being at least equal to the total of the horizontally projected areas of said flange means forwardly of said test axis, and the maximum transverse width of said flange means on each side of said element being no more than 20 percent of said overall width of said element.

3,950,866
ELEVATING-TYPE SCRAPER HAVING FORWARDLY SWINGABLE APRON AND FULL WIDTH PIVOTED STRIKER
John H. Hyler, Peoria, Ill., assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.
Filed Dec. 23, 1974, Ser. No. 535,943
Int. Cl.² B60P 1/36
U.S. Cl. 37—8 **24 Claims**



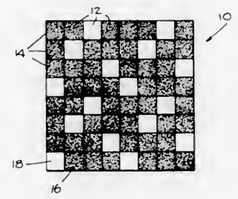
1. In an elevating type scraper for earth moving purposes, the combination comprising an open-fronted bowl including a pair of spaced vertical side sheets and a back wall as well including a pair of spaced vertical side sheets and a back wall as well as a floor extending between the side sheets at the rear of the bowl, ground wheels for supporting the bowl and mounted behind the back wall, a tractor-supported draft frame, a pair of draft members pivotally secured at their rear ends to the side sheets and extending forwardly and upwardly with rigid connection at their forward ends to the draft frame, actuator means coupled to the front end of the bowl for selectively supporting it at a predetermined level with respect to the draft frame, an apron extending transversely between the side sheets in the front portion of the bowl in a normal enclosing position, a scraper blade at the front edge of the apron, an endless elevator at the front of the bowl having its lower end in proximity to the blade and inclined upwardly and rearwardly over the apron for conveying loosened soil from the blade into the bowl, a pivoted strike-off member at the front edge of the floor and having a striker blade extending therealong substantially the full width of the bowl, means for hinging the strike-off member to the front edge of the floor for movement between a horizontal enclosing position and a downwardly angled working position, the floor, strike-off member and apron serving together to enclose the bottom of the bowl, the apron having vertical side plates lying adjacent the side sheets and pendulously pivoted thereto, actuator means for forwardly swinging the apron from its enclosing position to an open position to create a discharge opening ahead of the floor, first camming means interposed between the apron and the strike-off member actuated incident to the initial forward swinging movement of the apron for moving the striker blade to its working position for leveling of the material discharged through the opening, and second camming means interposed between the apron and the elevator for raising the elevator only slightly during the initial movement of the apron but for raising the elevator into a position in which the elevator flights are fully clear of the apron upon continued movement of the apron to its fully open position.

3,950,867
REFLECTOR SHEET AND PAD FOR IRONER ROLL
Dan D. Mazzolla, 2464 Raleigh Drive, York, Pa. 17402
Filed July 23, 1975, Ser. No. 598,804
Int. Cl.² D06F 71/36
U.S. Cl. 38—66 **5 Claims**



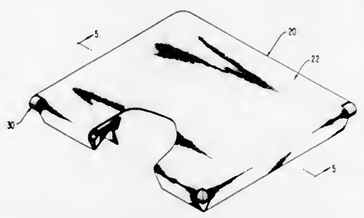
1. A porous cover assembly for individual use upon a perforated rotatable vacuum cylinder ironing member of an industrial ironing machine, said porous cover assembly comprising in combination, a sheet of highly reflective metallic sheet material having a plurality of perforations therein and adapted to have one end of said sheet fixedly fastened directly to said vacuum cylinder and thereafter wrapped for at least one full convolution therearound and directly in contact therewith to dispose at least some of the perforations in said reflective metallic sheet in axial alignment with a plurality of vacuum perforations in said vacuum cylinder, a resilient porous compressive pad member, means fastening one end of said compressive pad member to the opposite end of said reflective metallic sheet to constitute a sub-assembly therewith and said compressive pad member being adapted to be wrapped around said reflective metallic sheet for at least one full convolution, a flexible air and steam permeable cover member, and means connecting one end of said permeable cover member to the opposite end of said compressive pad member, said permeable cover member being adapted to be wrapped around said compressive pad member for more than one full convolution, whereby the reduced pressure atmosphere created in said vacuum cylinder may be effective through the perforations therein and through said porous cover assembly to the ironing area of said ironing machine to withdraw by vacuum steam generated during the ironing process and the heat absorbed by the compressive pad and permeable cover members of said porous cover assembly is reflected radially outward therefrom by said sheet of highly reflective metallic material while said compressive pad and permeable cover members remain resilient and porous and free from moisture after ironing use due to the evaporation of condensed moisture therein by said reflected heat.

3,950,868
COVER CLOTH FABRIC
George C. Holroyd, and Dennis T. Austin, both of Hogansville, Ga., assignors to Uniroyal Inc., New York, N.Y.
Continuation of Ser. No. 175,933, Aug. 30, 1971, abandoned.
This application Mar. 25, 1974, Ser. No. 454,494
Int. Cl.² D06F 71/36
U.S. Cl. 38—66 **12 Claims**



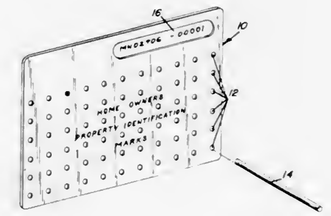
1. In combination, an ironer roll and a cover cloth fabric wound thereabout, said cover cloth fabric comprising:
a plurality of staple fiber spun synthetic yarns; and
a plurality of glass yarns, each of said plurality of glass yarns being individually pre-coated with a resin, said plurality of pre-coated glass yarns being interwoven with said synthetic yarns so that the major portion of the back surface of the fabric is formed of said pre-coated glass yarns and the major portion of the work engaging surface of the fabric is formed of said synthetic yarns to thereby impart a controlled smoothness to the work engaging surface thereof which does not impress its weave upon an article being ironed.

3,950,869
STRETCHER FRAME
John Jacob Samarin, 7273 Adkins Road, Mentor, Ohio 44060
Filed July 30, 1975, Ser. No. 600,395
Int. Cl.² D06C 3/08
U.S. Cl. 38—102.91 **4 Claims**



1. A stretching device for fabric, the fabric having corner cut-outs providing side edge portions and end edge portions, the stretching device comprising:
a substantially rectangular stretcher frame having detachable side and end frame portions;
one of said side frame portions and one of said end frame portions constituting gripper frame portions, and the other of said side and end frames constituting stretcher frame portions;
the respective frame portions having abutting mitered edges;
means releasably securing the respective frame sections to one another at said mitered edges;
the gripper frame portions each comprising a substantially flat main body having an inner edge and an outer edge, around it, outwardly and downwardly extended gripper bead extending from the outer edge and having a terminal edge, a vertical wall with a serrated top projecting from the terminal edge, a slant wall extending upwardly and toward the bead from the inner edge, and a reverted handle on said slant wall;
the stretcher frame portions each comprising a substantially flat base having inside and outside edges, a rounded, outwardly and downwardly extended stretcher bead projecting from the outside edge and having a bead edge, a vertical stretcher wall with a smooth top extending from the bead edge, and an inside lock wall on the inside edge;
the lock walls of the stretcher frames each comprising a first angular section extending toward the stretcher wall, a downwardly inclined lip, and an upward release wall;
the stretcher frame portions each further including a rotor having an elongated tubular base pivotally positioned in the stretcher bead, and a radially projecting lever wall with a serrated outer end edge;
the lever walls extending substantially above the vertical stretcher wall;
fabric clips having clip arms engageable over the serrated tops of the vertical walls of the gripper frame portions, and over the serrated outer end edges of the rotors;
the fabric side and end edge portions being folded over said serrated tops and serrated outer end edges and maintained thereon by said fabric clips, the clips being engaged over the side and end edge portions of the fabric and over the said tops and outer end edges; and
the levers being pivotal with the clips and fabric portions from vertical connection locations to depressed stretching positions, and the clips thereof being engageable under the lips of the lock walls.

3,950,870
PERSONAL PROPERTY IDENTIFICATION LABELS
John C. Heegaard, 4900 E. Sunnyslope Road, Minneapolis, Minn. 55424
Filed Oct. 15, 1973, Ser. No. 406,184
Int. Cl.² A44C 3/00
U.S. Cl. 40—2 R **7 Claims**



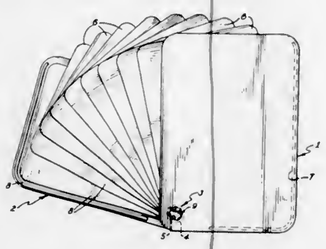
1. A set of micro-identification labels for attachment to articles of personal property for indicating ownership thereof, comprising:
a. a member having a plurality of punchable labels thereon;
b. said labels preprinted with identification indicia small enough so as to be substantially unreadable with the unaided human eye;
c. a pressure-sensitive adhesive material applied to one surface of said labels;
d. means for mounting said member, said mounting means having a plurality of holes spaced for alignment with said labels; and
e. means for attaching said member to said mounting means with said holes in alignment with said labels.

3,950,871

DEVICE FOR CONTAINING INFORMATION BEARING ARTICLES

Nils Rege, Hoganas, Sweden, assignor to Esselte Obergs AB, Stockholm, Sweden

Filed June 25, 1974, Ser. No. 482,702
Int. Cl.² G09F *11/06*
U.S. Cl. 40—67 **10 Claims**



1. A cassette device for containing information bearing articles, said device comprising:
   a. two substantially flat cover portions mounted to pivot with respect to each other about an axis of rotation that is normal to said cover portions and the information bearing articles being disposed between the cover portions,
   b. means projecting outwardly from each cover portion toward the other cover portion,
   c. each said projecting means being eccentrically located on the cover portions and interconnected with respect to each other and said information bearing articles at said axis of rotation thereby providing a pivot joint for the cover portions,
   d. edge protecting means extending substantially perpendicularly from each cover portion toward the other cover portion to protect the edges of the information bearing articles,
   e. each said edge protecting means including a first wall section extending along a first peripheral section of one cover portion and a second wall section extending along a second peripheral section of the other cover portion,
   f. said first peripheral wall section being in complementary relationship with respect to said second peripheral wall section to substantially enclose the information bearing articles when the cover portions are registered with respect to each other,
   g. said peripheral wall sections being at different non-overlapping locations around the periphery of the device whereby the information bearing articles may be selectively pivoted about said pivot joint,
   h. said cover portions being rectangular and having the same size with respect to each other.

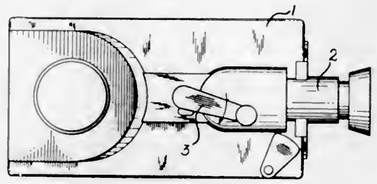
3,950,872

TOY FILM VIEWER

Felix Oginaga Goitia, Zaragoza, Spain, assignor to Nacoral, S.A., Zaragoza, Spain

Filed Aug. 28, 1974, Ser. No. 501,048
Claims priority, application Spain, May 16, 1974, 203094
Int. Cl.² G09F *11/26*
U.S. Cl. 40—96 **4 Claims**

1. In a toy film viewer comprising a hollow body having viewing means and moving means for moving film thereby, altering means for abruptly altering the rate of forward movement of film past said viewing means, said altering means comprising:
   a. means for tensioning the film;
   b. pivot means positioned upstream of said tensioning means relative to the direction of forward film movement, said pivot means including engaging means for slidably engaging the film and urging means for urging and moving the engaging means in a first pivoted direction, said pivot means being operative to be moved in a pivoted direction opposite to said first pivoted direction when the



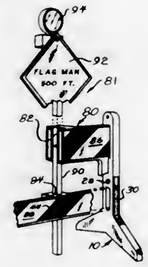
film tension overcomes said urging means, thereby being operative to abruptly move said engaging means and the film back into said first pivoted direction when the urging means overcomes a predetermined film tension; and
   c. preventing means for preventing reverse movement of the film.

3,950,873

SUPPORT POST FOR USE WITH A PLURALITY OF TRAFFIC WARNING DEVICES

John J. Stehle, Bensenville, and Robert E. Davis, Barrington, both of Ill., assignors to Best Barricade Company, Chicago, Ill.

Filed Apr. 22, 1975, Ser. No. 570,487
Int. Cl.² E01F *9/01*; **G09F** *7/18*
U.S. Cl. 40—125 H **14 Claims**



1. A support post member for selective use with a plurality of traffic warning devices, said support post member being formed of hollow molded plastic and including a pair of parallel, spaced apart planar side portions; said support post member being of a generally inverted Y-shape and having a pair of integral angled legs at its lower end and a post portion at its upper end containing at least two vertically elongated, vertically spaced apart apertures which are formed through said post member on its vertical axis in a direction generally normal to the plane of said planar side portions, each of said apertures being peripherally defined by a plurality of plastic walls which are integrally joined to each other and to said planar side portions so as to connect and space apart the planar side portions; said post member including at least one opening for permitting ballast material to be placed internally of said post member; a pair of said plurality of plastic walls which define the opposed vertical sides of at least one of said apertures having retaining portions for retaining a portion of a warning indicia carrying member which are closer to said vertical axis than are other portions of said pair of walls, at least one of said apertures having a pair of vertical opposed wall portions which define a wider opening through said retaining portions being adapted to be frictionally engaged and resiliently moved away from said vertical axis when a portion of said warning indicia carrying member having a greater

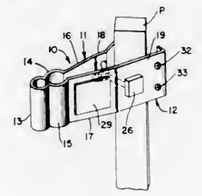
thickness than the distance between said retaining portions is moved through said at least one aperture.

3,950,874

UNIVERSAL MOUNTING BRACKET FOR SIGNS

Richard E. Diggs, 12 A Road, Carthage, Mo. 64836

Filed Feb. 13, 1975, Ser. No. 549,557
Int. Cl.² G09F *7/20*
U.S. Cl. 40—145 R **6 Claims**



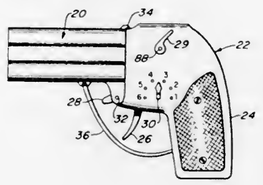
1. A universal mounting bracket for attachment to supports of various configurations and sizes, comprising opposite side portions integrally joined together at one of their ends with a first, substantially cylindrically shaped support gripping configuration for receiving a cylindrically shaped support therein and a second substantially cylindrically shaped gripping configuration of larger diameter than said first gripping configuration and adjoining same, said side portions being spaced apart at their other ends to grip different size and shape supports to enable the bracket to be quickly and easily mounted on various supports, and the side portions including essentially parallel gripping surfaces thereon, each having one free end forming one of said side portion other ends and having another end disposed toward said joined ends, and angularly disposed planar surfaces connected to said parallel gripping surfaces and extending toward said joined ends, said angularly disposed surfaces being connected to said second gripping configuration and carrying thereon desired insignia, whereby to increase the visibility of the insignia to approaching motorists and the like, and connecting means for connecting together said parallel gripping surfaces.

3,950,875

TRIGGER FOR SELECTIVELY DISCHARGING SIMULTANEOUSLY ANY NUMBER OF BARRELS ON A MULTIPLE-BARRELLED FIREARM

Michael Hirschfeld, Montevideo, Uruguay, assignor to Block Engineering, Inc., Cambridge, Mass.

Filed Jan. 26, 1971, Ser. No. 109,856
Int. Cl.² F41C *19/00*
U.S. Cl. 42—42 R **10 Claims**



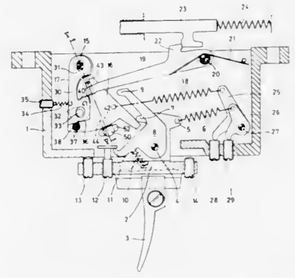
1. In a firearm comprising a barrel assembly, a breech frame assembly and connecting means for pivotally coupling said two assemblies so that when said firearm is opened by pivoting the barrel assembly apart from the breech frame assembly, cartridges can be loaded into said barrel assembly and removed therefrom, and when the firearm is closed by pivoting the barrel assembly into alignment with the breech frame assembly, the firearm can be discharged, and wherein said barrel assembly includes
   a plurality of substantially parallel barrels for containing a like number of cartridges; and
   wherein said breech frame assembly has a firing mechanism including a like plurality of firing assemblies, each assembly being associated with a respective one of said barrels when said firearm is closed, for selectively causing discharge of the cartridge contained in said respective barrel when the respective firing assembly is actuated;
   a trigger mechanism mounted for rotation about a pivot point, said mechanism comprising a manually-engageable trigger and discharge means for engaging and releasing said firing assemblies in sequence upon rotation of said trigger; and
   indicating means for adjustably controlling the extent of rotation of said trigger mechanism so that upon a single actuation of said trigger, a predetermined number of said firing assemblies can be released so as to discharge a corresponding number of cartridges.

3,950,876

TRIGGER DEVICE FOR FIRE ARMS PARTICULARLY COMPETITION FIRE ARMS

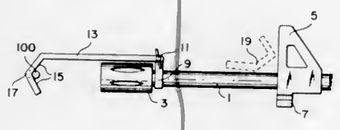
Hermann Wild, Ulm, and Ludwig Jaedicke, Thalfingen, both of Germany, assignors to J. G. Anschutz GmbH, Ulm, Germany

Filed Mar. 12, 1974, Ser. No. 448,787
Int. Cl.² F41C *19/00*
U.S. Cl. 42—69 A **21 Claims**



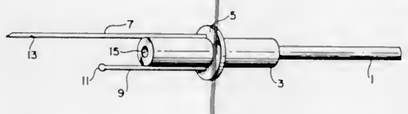
1. A trigger device for fire arms, particularly for competition fire arms, comprising an intercept latch having a contact surface pivotally connected in a trigger housing and releasably holding a firing element, a pivotally connected trigger latch having a contact surface and holding said intercept latch by its contact surface, a trigger lever, said trigger latch mechanically responsive to said trigger lever, a lowering device in said housing having a contact surface which engages the contact surface of said intercept latch and lowers said contact surface of said intercept latch onto the contact surface of said trigger latch so that said contact surface of said intercept latch rests on the contact surface of said trigger latch only just prior to complete actuation of said trigger lever which moves said trigger latch from out of engagement position with said intercept latch whereby said intercept latch is caused to drop out of holding position of said firing element whereby said firing element is released.

3,950,877
BALLISTIC CUTTING DEVICES
Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20731
Filed Nov. 11, 1974, Ser. No. 522,692
Int. Cl.² F41C *27/00*
U.S. Cl. 42—90 **7 Claims**



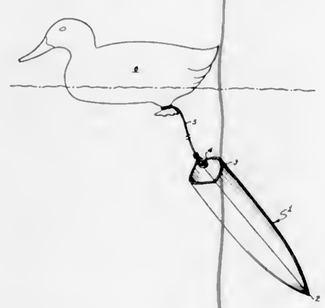
1. A ballistic cutter comprising: hook means mounted in front of a muzzle of a firearm with the open portion of said hook disposed toward said muzzle and positionally adapted for engaging material to be cut, and guide means for aligning said material with a trajectory of a bullet discharged from said firearm.

3,950,878
SUPPRESSIVE BALLISTIC CUTTERS
Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20731
Filed Dec. 27, 1974, Ser. No. 536,749
Int. Cl.² F41C *27/00*
U.S. Cl. 42—90 **2 Claims**



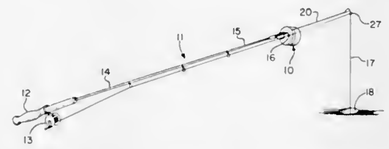
1. A suppressive ballistic cutter comprising: a firearm; a sound suppressor mounted at a muzzle of said firearm and having a passage aligned with a bore of said firearm; and hook means positionally adapted for aligning material to be cut with a path of a projectile discharged from said firearm via said passage thereby severing said material, said hook means being adapted for folding away from said path when not required for cutting.

3,950,879
DECOY WEIGHT-CARRIER
Stanley J. Kwako, Heaton, N. Dak. 58450
Filed Feb. 7, 1975, Ser. No. 547,945
Int. Cl.² A01M *31/06*
U.S. Cl. 43—3 **3 Claims**



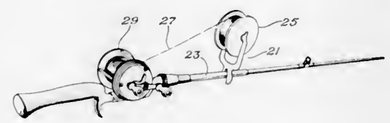
1. A collapsible decoy and a combined carrier and weight, said decoy and carrier connected to each other by string means, said decoy adapted to float on water, said carrier comprising body means open at one end and adapted to receive and contain said decoy and string means in a folded manner for carrying purposes, said carrier adapted to be immersed and filled with water thereby functioning as a weight, whereby said decoy is retained in place on the surface of the water.

3,950,880
BITE SIGNAL DEVICE FOR FISHING RODS
Frank John Polaszek, 445 Rae Ave., Lake Villa, Ill. 60046
Filed May 22, 1975, Ser. No. 579,958
Int. Cl.² A01K *97/12*
U.S. Cl. 43—17 **9 Claims**



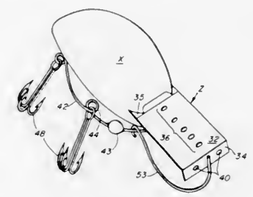
1. A bite signal device for a fishing rod comprising a housing having a pair of substantially circular end walls interconnected with a substantially cylindrical side wall, said side wall having a substantially semicircular slot therethrough, attaching means on said housing for mounting said device on the end of a fishing rod with the tip line guide of said fishing rod adjacent to and within the circumferential perimeter of one end of said end walls and with said semi-circular slot disposed substantially below the longitudinal axis of said rod, a wand, means rotatively mounting one end of said wand within said housing with said wand extending through said semi-circular slot and outwardly of said side wall of said housing, the outwardly extending end of said wand having a line guide thereon, and spring means in said housing for spring biasing the outwardly extending end of said wand in a direction upwardly of said rod when said device is mounted on said rod with the tip line guide of said rod adjacent to and within the circumferential perimeter of said one of said end walls and with said semi-circular slot disposed substantially below the longitudinal axis of said rod.

3,950,881
FISH LINE SPOOL HOLDER FOR TRANSFERRING FISHING LINE TO REEL
Leonard K. Hays, P.O. Box 8113, Fort Worth, Tex. 76112
Filed Feb. 10, 1975, Ser. No. 548,545
Int. Cl.² A01K *89/00*
U.S. Cl. 43—25 **5 Claims**



1. A spool holding device for use in winding a fish line from a spool to the reel of a fishing rod comprising:
- a first pair of spaced resilient spool holding arms extending in a first direction from a base portion in a given plane,
- a second pair of spaced resilient rod gripping arms extending from said base portion in said given plane in a direction opposite said first direction,
- said arms of said first and second pair being symmetrical about a midplane perpendicular to said given plane and which extends between the arms of said first pair and between the arms of said second pair,
- the inside portions of the free ends of said spool holding arms having shoulders of a given length which face each other and curve toward said midplane between the inner and outer ends of said shoulders as seen in said given plane,
- spool support members extending from said shoulders toward each other and having their free ends tapered towards said midplane for insertion into the axial bore of a spool for supporting the spool for rotation,
- each of said spool support members having its base at the junction thereof with its associated shoulder, spaced inward from said inner and outer ends of its associated shoulder as seen in said given plane,
- in the normal relaxed position of said spool holding arms, the distance between said spool holding arms gradually decreasing at increased distances from a given position near said base portion to the inner ends of said curved shoulders,
- said curved shoulders being closer to said midplane than the portion of said arms between the inner ends of said shoulders and said given position,
- in the normal relaxed position of said spool holding arms, said shoulders generally slanting toward said midplane from their inner ends toward their outer ends with their outer ends being closer to said midplane than their inner ends.

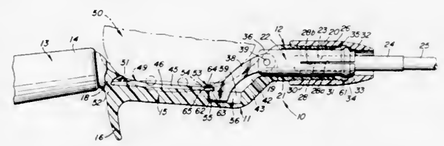
3,950,882
FIXED BILL FISHING LURE
Donald L. Monchil, 12965 SW. 112 Ave., Miami, Fla. 33176
Filed Feb. 21, 1974, Ser. No. 444,646
Int. Cl.² A01K *85/00*
U.S. Cl. 43—42.37 **9 Claims**



1. A fishing lure including a buoyant body and a bill joined to one end of said body,
- said lure having a center of gravity proximate the joinder of the body and bill so that the lure normally floats with the bill submerged,
- said bill depending acutely from said body to define a planar diaphragm,
- a skid connected between a forward end of the bill and a lower portion of the body and extending arcuately below the bill and the body,
- means for selectively attaching a line to the bill, and hook means carried by said lure.

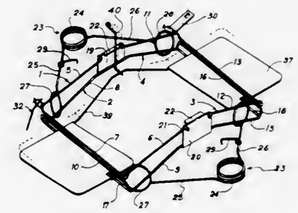
3,950,883
FISHING ROD HANDLE ASSEMBLY
Bob Gene Shepherd, West Columbia, S.C., assignor to Columbia Products Company, Columbia, S.C.
Filed May 14, 1974, Ser. No. 469,848
Int. Cl.² A01K *87/06*
U.S. Cl. 43—22 **8 Claims**

1. A fishing rod handle assembly comprising: a frame, a reel seat extending longitudinally along a portion of said frame, a tubular housing presented by said frame forwardly of said reel seat, a passageway extending through said housing, said passageway opening rearwardly toward said reel seat and opening forwardly through an annular stop face, a collet slidably received within said passageway, a rod receiving socket provided in the forward portion of said collet, a reel clamping pawl means connected to an extending rearwardly from said collet and outwardly of said housing to terminate along the longitudinal extent of said reel seat, said clamping pawl means being bifurcated to present a recess for receiving the mounting foot of a fishing reel, a guide slot in said reel seat, said guide slot extending longitudinally rearwardly from said housing, at least a portion of said pawl means being slidably received within said slot, flange means extending radially outwardly from the forward portion of said collet, means presented from said frame to limit the rearward extent to which said collet is slidable within said passageway, the forward portion of said



collet being longitudinally slotted to permit radially inwardly directed compressibility thereof, external thread means on said housing, a collet nut, internal thread means on said collet nut meshing with the external thread means on said housing, a cam means presented from said collet nut, said flange means being positioned between the cam means on said collet nut and the stop face on said housing, said cam means engaging said flange means upon selective rotation of said collet nut to effect translation of said collet rearwardly and to effect compression of the slotted end portion of said collet radially inwardly.

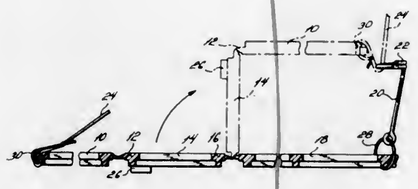
3,950,884
ANIMAL TRAP
Wilfrid Desrosiers, 6 Cournoyer St., Kapuskasing, Ontario, Canada
Filed Jan. 31, 1975, Ser. No. 546,103
Int. Cl.² A01M *23/30*
U.S. Cl. 43—81 **9 Claims**



1. An animal trap comprising a first and a second pairs of jaws connected in fixed back-to-back spatial relationship relative to each other and having each one pivoting jaw opening angularly away from the corresponding other jaw and toward the one pivoting jaw of the other pair of jaws, spring means connected to said one jaws and biasing the latter angularly away from each other toward closing thereof relative to the other jaws respectively, latch means selectively setting said one jaws in open adjoining relationship, a treadle positioned at the outline of each of said pairs of jaws, and trigger means connected to said treadles and releasably holding said latch means and releasing the latter in response to actuation of any of said treadles, thereby to allow an animal to trigger the closing of said pairs of jaws upon stepping on any of said treadles said latch means including a female latch member carried by the one jaw of said second pair of jaws, and a male latch member pivoted to the one jaw of said first pair of jaws about an axis extending lengthwise of the pivot axis of the latter one jaw, said male latch member including a first and a

second radial projection releasably engageable with said female latch member and with said trigger means respectively.

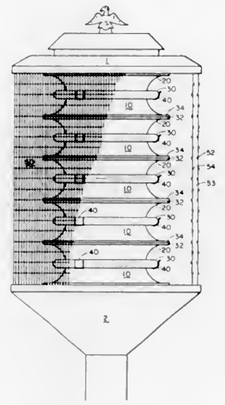
3,950,885
MOLDED ONE-PIECE PLASTIC CRAB TRAP WITH INTEGRAL OUTWARDLY BIASED HINGE ELEMENTS
Samuel Simeti, 228 N. Poplar St., North Massapequa, N.Y. 11758
Continuation-in-part of Ser. No. 504,806, Sept. 10, 1974, abandoned. This application July 7, 1975, Ser. No. 593,616
Int. Cl.² A01K *69/10*
U.S. Cl. 43—105 **3 Claims**



1. A molded one-piece plastic crab trap having a bottom member portion; a plurality of side member portions integrally joined to said bottom member portion along each edge thereof; a plurality of top member portions integrally joined to the top edge of each of said side members; a plurality of weights, at least one of which is positioned on each of said side members near the top edge thereof; means for integrally joining said members, said joining means constituting means for permanently biasing said side and top portions toward the open position; a center post element attached to said bottom member portion having a guide ring formed at the top thereof; and a plurality of closing strands, each one of which is attached to the top of a respective top member portion and which passes through said guide ring, whereby when said closing strands are free of tension, said side and top member portions assume the open position and are substantially coplanar with said bottom member portion and when tension is applied to said closing strands, said top and said side member portions are pulled into a closed position over said bottom member enclosing the contents of said trap.

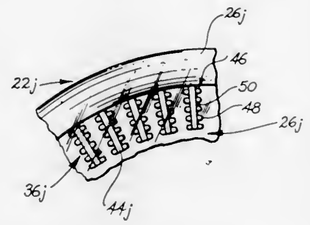
3,950,886
INSECT ELECTROCUTION DEVICE
Albert F. Newhall, Peabody, and Clinton Rule, Beverly Farms, both of Mass., assignors to Rule Industries, Inc., Gloucester, Mass.
Filed Jan. 13, 1975, Ser. No. 540,575
Int. Cl.² A01M *1/04, 1/22*
U.S. Cl. 43—112 **9 Claims**

1. In an insect electrocution device of the character described and comprising an electrocution cage, means to apply a high-voltage potential to said cage and an insect attracting light disposed within said cage, the improvement which comprises: said insect attraction light comprising at least one lighting arrangement, each said arrangement comprising an outwardly facing parabolic reflector and an insect attractant tubular light source disposed substantially within the focus of said parabolic reflector, the number and size of said arrangements disposed within said electrocution cage being sufficient to substantially completely fill the length thereof and to provide the visual effect of a single band of light of uniform



intensity emanating from substantially the entire length thereof.

3,950,887
BUBBLE-MAKING DEVICE
Fred Kort, c/o P.O. Box 18992, Dockweller Station, Los Angeles, Calif. 90007
Filed Apr. 4, 1973, Ser. No. 347,552
Int. Cl.² A63H *33/28*
U.S. Cl. 46—6 **7 Claims**

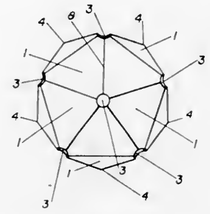


1. A bubble making device comprising
a. an annular film supporting ring member defining an open aperture;
b. a plurality of primary projections extending inwardly from the ring member in the plane of the open aperture, at least one of said primary projections having at least one secondary projection extending from a side of said primary projections in the plane of the open aperture.

3,950,888
HOMOHEDRAL MODULE
John P. Hogan, 704 Elm, Williamsburg, Iowa 52361
Filed Oct. 29, 1974, Ser. No. 518,529
Int. Cl.² A63H *33/08*
U.S. Cl. 46—25 **14 Claims**

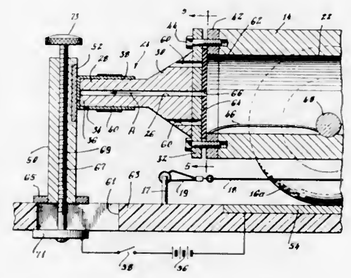
1. A toy block of convex-concave design which when joined to at least one identical block and an icosahedron block with surface edges identical in length to convex surface edges on said toy block, convex surfaces to concave surfaces, forms a surface pattern of at least a double truncated icosahedron that is joined along its planes of truncation to single truncated icosahedra, the truncations being formed by removal of a

cluster of five icosahedral faces which form a pentangular pyramid about a vertex, said double truncated icosahedron



being truncated about at least two non-adjacent and non-opposing vertices.

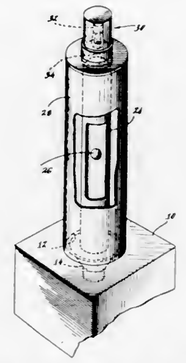
3,950,889
PRESSURIZED GAS DRIVEN VEHICLE AND METHODS FOR CHARGING AND LAUNCHING IT
William C. Dabney, 32-09 108th St., East Elmhurst, N.Y. 11369
Filed Apr. 3, 1975, Ser. No. 564,804
Int. Cl.² A63F *9/14*
U.S. Cl. 46—44 **7 Claims**



1. A pressurized gas driven vehicle comprising:
a body defining a pressure chamber;
inlet conduit means for conducting pressurized gas to said pressure chamber;
a jet outlet passage communicating with said pressure chamber, and being positioned to direct pressurized gas flowing therethrough in a direction generally opposite to the desired path of said vehicle; and
electrically conductive jet outlet passage cover means, disintegratable when electric current is conducted through it, for sealing said outlet passage prior to being disintegrated and for rapidly releasing pressurized gas stored in said pressure chamber through said outlet passage to propel said vehicle when disintegrated by electric current conducted through it.

3,950,890
BALL BOUNCING DEVICE
David H. Kittell, 42 Ardsley Road, Stamford, Conn. 06906
Filed Apr. 10, 1975, Ser. No. 566,964
Int. Cl.² A63H *5/00*
U.S. Cl. 46—45 **10 Claims**

1. Apparatus for sustainingly bouncing an object which comprises: an elastic diaphragm positioned to be deformed by the impact of said object and create an acoustic wave; a transducer positioned to receive said wave and generate an electrical pulse responsive thereto; and means for receiving and amplifying said pulse and exciting said transducer therewith to



produce an acoustic wave directed to impinge upon said diaphragm to propel said object therefrom.

3,950,891
SEED COATING COMPOSITION AND COATED SEED
Thomas M. Hinkes, Madison, Wis., assignor to Florida Celery Exchange, Orlando, Fla.
Filed Jan. 3, 1975, Ser. No. 538,246
Int. Cl.² A01C *1/06*
U.S. Cl. 47—57.6 **11 Claims**

1. A seed coated with an inorganic coating material which opens to expose the underlying seed when subjected to moisture, said coating composition comprising at least 50% by weight of an amorphous silica, the remainder including at least about 5% by weight montmorillonite and at least about 10% by weight attapulgite.

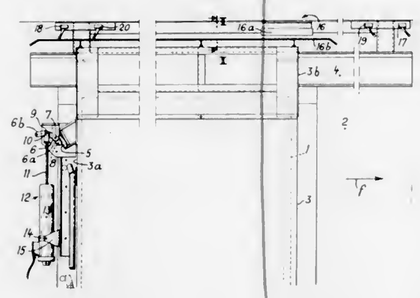
3,950,892
FREEZE DRYING OF SEEDS
Joseph Simkin, Lafayette Hill, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.
Continuation-in-part of Ser. No. 487,472, July 11, 1974, which is a continuation of Ser. No. 324,926, Jan. 19, 1973, abandoned. This application Dec. 3, 1974, Ser. No. 529,191
Int. Cl.² A23C *1/06*; A01C *1/00*
U.S. Cl. 47—58 **12 Claims**

1. A process for preparing seeds for planting which comprises freeze drying the seeds to decrease their moisture content below the normally stabilized moisture content thereof and to increase the viability of the treated seeds during storage, and then placing the freeze dried seeds in storage.

3,950,893
CONTROL APPARATUS FOR HERMETICALLY CLOSING AN OPENING IN A WALL
Bernard Calais, and Luis Vidal, both of Rambouillet, France, assignors to Societe Bernard Calais S.A.R.L., Rambouillet, France
Continuation-in-part of Ser. No. 373,636, June 26, 1973, abandoned. This application Feb. 5, 1975, Ser. No. 547,347
Claims priority, application France, July 3, 1972, 72.24565
Int. Cl.² E05D *15/10*
U.S. Cl. 49—224 **5 Claims**

1. Control apparatus associated with a device for hermetic closure of an opening formed in a wall, comprising: a leaf having seals positioned on a lower edge and on lateral and upper edges of its face which is turned towards the wall; a section rail rigidly attached to the wall; means for slidably mounting said leaf on said section rail; and movement and guiding means for moving and guiding said leaf between a

disengaged position permitting free sliding of said leaf along said rail and a hermetic closure position which is lower than the disengaged position and in which said leaf is applied against the wall in the position of the opening to hermetically close said opening, said movement and guiding means including drive means for moving said leaf from the hermetic closure position into the free sliding position, and a linear electric motor for powering the sliding of said leaf, said motor including a first element and a second element rigidly attached to said leaf and electrically coupled to said first element, wherein said first and second elements of said linear motor are arranged relative to each other to cooperate with each other



both when said leaf is in the disengaged position and when said leaf is in the hermetic closure position; wherein said drive means includes a double-arm lever having first and second arms and mounted to rock on an axis rigidly attached to the wall, and a rod pivotally connecting an end of said first arm to said first element of said linear motor, said second arm of said lever being arranged relative to said leaf to move said leaf from the hermetic closure position into the disengaged position; and further comprising two spaced apart stops attached to the wall; and a slide rigidly attached to the wall and parallel to the axis of sliding of the leaf, said first element being movably mounted along a limited path along said slide between said two stops.

3,950,894

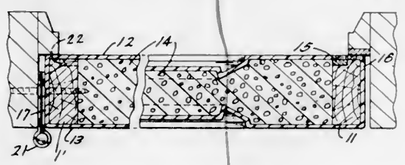
REINFORCED POLYESTER DOOR

Vincent DiMalo, Toledo, Ohio, assignor to Structural Plastics Incorporated, Toledo, Ohio

Filed Feb. 22, 1974, Ser. No. 444,980

Int. Cl.² E06B *3/22*

U.S. Cl. 49—501 **8 Claims**



1. A door structure, having a latch edge and a hinge edge, comprising in combination, an interior supporting frame, rigid front and back surface skins formed of polyester resin reinforced with glass fibers positioned in opposed relationship to one another adjacent said frame, an insulating foam layer bonded between said front and back skins within said frame, said supporting frame including a vertically extending recess adjacent said latch edge having a reinforcing member positioned within said recess extending and integrally bonded adjacent said front surface skin along said latch edge, and a plurality of magnetizable particles positioned along at least a portion of the periphery of said front surface skin.

3,950,895

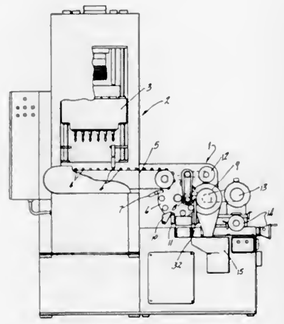
METHOD AND APPARATUS FOR GRINDING WORK PIECES

Roland Peter Dakin, Allesley, England, assignor to Olin Energy Systems Limited, Sunderland, England

Filed Mar. 21, 1975, Ser. No. 560,911

Int. Cl.² B24B *5/04, 1/00, 47/20*

U.S. Cl. 51—5 B **8 Claims**



1. An apparatus for grinding workpieces, said apparatus comprising:

a. a head rotatable about an axis;

b. a plurality of work-holders mounted on said head for receiving workpieces to be ground, said work-holders being equi-spaced about the axis of said head and movable along an arcuate path when said head is rotated about its axis;

c. grinding means mounted adjacent to said head said grinding means having a moving grinding surface positioned adjacent to said path to engage a workpiece moving along said path; and

d. first drive means connected to said head for rotating the latter in step-wise fashion about said axis, said drive means being operative to impart an initial period of relatively rapid rotational movement to said head to rapidly move one of said work-holders and a workpiece mounted thereon from a position remote from said grinding means to a position closely adjacent to said grinding means, and then to impart a subsequent period of relatively slow rotational movement to said head to slowly move the workpiece mounted on said one of said work-holders from said position closely adjacent to said grinding means toward and into engagement with said grinding means grinding surface and then to hold said head against rotational movement when said one of said work-holders is in a grinding position until grinding of the workpiece is completed, and then to impart to said head a period of relatively rapid rotational movement to move said one of said work-holders and the ground workpiece rapidly away from said grinding means.

3,950,896

SANDING ATTACHMENT FOR RECIPROCAL SAW MACHINES

Adam H. Ozero, 419 Walter Ave., Victoria, British Columbia, Canada

Filed Jan. 14, 1975, Ser. No. 540,988

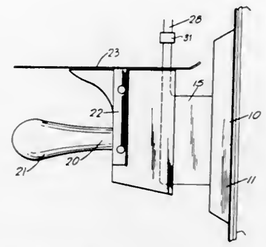
Int. Cl.² B24B *23/00*

U.S. Cl. 51—170 TL **1 Claim**

1. An attachment for converting a reciprocating saw machine to a reciprocating sanding machine comprising

a bracket member which may be fastened to a fixed shoe of a reciprocating saw machine,

a sanding plate fitted with a bracket of a shape to attach to the saw clamp of the saw machine, said bracket shaped to slidably ride in a groove in the said bracket member, and



a handle fixed to the bracket member, located to project away from the bracket member for manual application of a bearing force to the sanding plate.

3,950,897

MULTI-CHAMBERED FLUID BALANCING APPARATUS

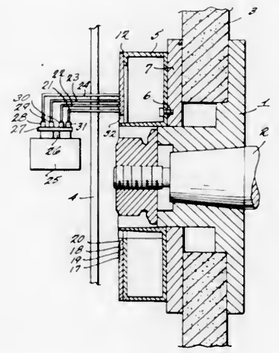
Dieter Birkenstack, Braunshardt, and Otto Jager, Reinheim-Ueberau, both of Germany, assignors to Gebr. Hofmann KG, Darmstadt, Germany

Filed Nov. 12, 1974, Ser. No. 523,121

Claims priority, application Germany, Nov. 19, 1973, 2357629

Int. Cl.² B25B *41/04*

U.S. Cl. 51—169 **8 Claims**



1. In an apparatus for compensating for the unbalance of a rotating body including a machine tool, with several chambers arranged around the axis of rotation, which rotate together with the rotor and into which, controlled by a control unit, a balancing fluid may be injected, the improvement wherein the chambers are disposed in a ring-shaped container at one side of which fluid inlets are provided, arranged on different radii, whereby each inlet on a certain radius is assigned to a certain chamber and one fluid feed pipe is provided for each radius.

3,950,898

SAFETY RAZOR BLADE WATER HONER

Hilary T. Bowen, 6116 Chanceford Road, Baltimore, Md. 21228

Filed Feb. 13, 1975, Ser. No. 549,471

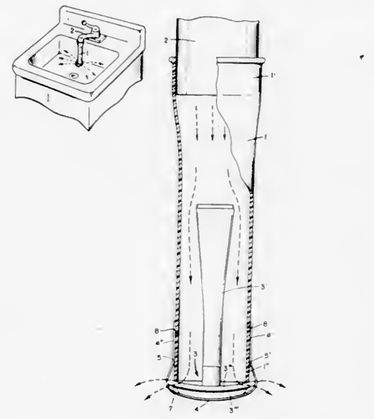
Int. Cl.² B24B *3/48;* **B24C** *3/32, 7/00*

U.S. Cl. 51—216 R **1 Claim**

1. A device for supporting a razor during a water honing operation for sharpening razor blade edges, said device comprising:

a. a flexible tube element, open at both ends, for containing a razor handle, said element having an elastically extensible first end for mounting on a water faucet outlet;

b. a narrow band element affixed near and extending across a second end of said tube element to form a support surface for a blade-holding razor head affixed to said handle, said support surface extending outwardly beyond



the periphery of the second end to support the head against the second end;

whereby a razor held by the device with the head extending across the lower end thereof and supported thereagainst by the narrow band element while the first tube end is elastically engaged with a water faucet, will have the razor blade honed by water flowing through the tube and out the second tube end across the blade edges.

3,950,899

BLADE HOLDER FOR USE WHEN SHARPENING

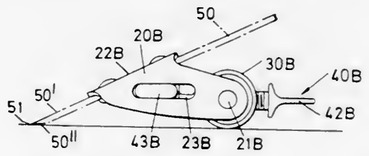
Richard Gilbert, Sheffield, England, assignor to Stanley Tools Limited, Sheffield, England

Filed May 23, 1974, Ser. No. 472,616

Claims priority, application United Kingdom, June 1, 1973, 26353/73

Int. Cl.² B24B *19/00*

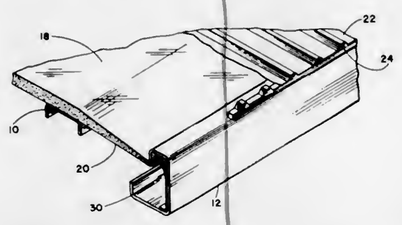
U.S. Cl. 51—221 R **7 Claims**



1. In a blade holder for holding a blade at an acute angle to an abrasive surface for sharpening and honing a ground surface of the blade comprising a frame member having a substantially planar blade locating portion with a front edge beyond which the blade extends and an integral roller mounting portion projecting from said locating portion in fixed relationship thereto, at least one roller mounted on the mounting portion for rotation about an axis extending parallel to the plane of said locating portion, and a movable clamp mounted on the frame for clamping the blade against said locating portion, the combination wherein the blade locating portion of the frame is disposed at an acute angle to the plane defined by said front edge and said axis and is provided with a blade locating surface facing generally toward said axis in fixed

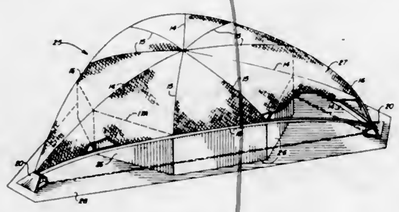
relationship to said roller, and said movable clamp is mounted on the frame in confronting relationship with said fixed blade locating surface for movement toward and away from said locating surface in a direction defined by the axis of the roller and the front edge for clamping a blade therebetween with the face of the blade opposite said ground surface being in intimate engagement with said planar blade locating surface whereby the angle defined by the ground surface and opposite face of the blade is independent of the thickness of the blade and dependent on the length of said opposite face projecting from the blade locating portion of the frame beyond said front edge.

3,950,900
METHOD AND CLIP FOR INSTALLATION OF INSULATION
Ronnie C. Simpson, Rte. 1 Box 294, Carl Junction, Mo. 64834
Filed Aug. 22, 1974, Ser. No. 499,445
Int. Cl.² E04B *7/00*
U.S. Cl. 52—22 **7 Claims**



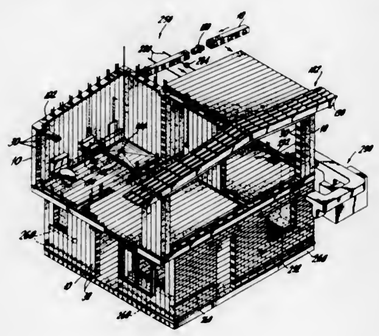
1. In combination with a metal structure roof having an eave strut along the edge thereof, said eave strut having a substantially cross-sectional C-shape, the open face thereof directed inwardly, and having insulation on the inside surface of the roof, the edge of the insulation terminating within the open face of the eave strut; a deformable clamp means removably insertable within the inside surface of the eave strut, a portion of said clamp means being adaptable for contacting the edge of the insulation thereby securing the edge of the insulation to the inside surface of the eave strut, said portion of the clamp means for contacting the insulation being blunted to prevent damage to the insulation.

3,950,901
DOMICAL STRUCTURE WITH NOVEL BEAM INTERLOCKING CONNECTIONS
John S. Sumner, 728 N. Sawtelle, Tucson, Ariz. 85716
Filed Nov. 4, 1974, Ser. No. 520,480
Int. Cl.² E04B *1/32*
U.S. Cl. 52—80 **6 Claims**



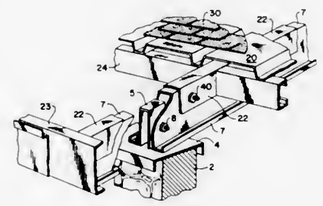
1. A domical structure comprising,
a plurality of bases,
a first plurality of arcuately shaped beams carried on at least one end by said bases and extending therefrom in a substantially vertical plane,
a first means for connecting said first beams at the apex of said structure,
a plurality of arcuately shaped edge beams having their ends supported by adjacent bases and extending upwardly and outwardly therebetween to define the perimeter of said structure,
a second means for firmly attaching said first beams and said edge beams as an integrated structure with each of said bases,
said second means comprising a connecting surface attached to and angularly positioned to a reference level within each of said bases,
said connecting surface being parallel to and in abutting arrangement with an end surface of said first beam carried by said bases,
a second plurality of beams mounted between said first beams to interconnect at one end with said first means at the apex of said structure and forming with said first beams a domical shape, and
a third means for connecting the other ends of said second beams and the associated edge beams together,
said connecting surface of each of said second means being substantially perpendicular to the line of thrust through the engaging first beam.

3,950,902
CONCRETE STRUCTURE INCLUDING MODULAR CONCRETE BEAMS
Robert K. Stout, Hamburgo 75 Pent House Suite, Mexico City, 6 Mexico
Division of Ser. No. 399,087, Sept. 20, 1973, Pat. No. 3,908,324. This application Feb. 18, 1975, Ser. No. 550,172
Int. Cl.² E04B *1/38*
U.S. Cl. 52—91 **9 Claims**



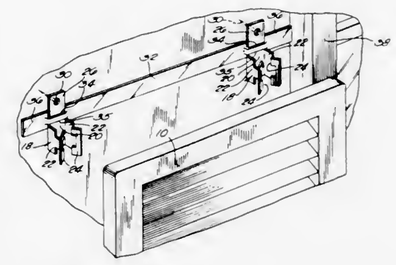
1. A concrete structure comprising a foundation, upstanding exterior and interior walls, and a roof, each of which is formed by interconnecting a plurality of modular concrete beams, each modular concrete beam being of integral construction having a generally rectangular cross-section to define two opposite sides, a top surface, and a bottom surface, said concrete structure having a central longitudinal aperture extending along the entire length of the beam, and further including a plurality of transverse aligned round holes extending through the opposite sides thereof, with the longitudinal aperture and the transverse holes intersecting to define a labyrinth of passageways within the concrete structure, elongated reinforcing bars extending along the entire length of the beam, one of said bars in each of the corners of the modular concrete beam;
mechanical bolting means for securing the foundation to the external and internal upstanding walls; said mechanical bolting means including bolt means rigidly connected to said foundation along the peripheral edge thereof and extending upwardly thereof; slotted plate means secured to the respective ends of the upstanding modular concrete beam forming said upstanding exterior and interior walls; an elongated channel shaped member having openings therein, said upstanding bolt extending through said opening in the elongated channel shaped members and the slotted plate member; and nut means for securing said modular concrete beams of the upstanding walls to the modular concrete beams of the foundation;
an elongated U-shaped channel member secured to the upper end of each upstanding wall to maintain same in alignment; and
securing means for securing the roof portion of the concrete structure to the upstanding walls so as to complete the concrete structure.

3,950,903
ROOF CONSTRUCTION
Adolph F. Lerch, Valencia; Nick C. Otis, Monroeville, and John D. Montgomery, Washington, all of Pa., assignors to Advance Housing Corporation, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 339,152, March 8, 1973, Pat. No. 3,812,638, which is a division of Ser. No. 160,846, July 8, 1971, Pat. No. 3,771,269. This application Nov. 12, 1973, Ser. No. 414,720
The portion of the term of this patent subsequent to Nov. 13, 1990, has been disclaimed.
Int. Cl.² E04B *7/04*
U.S. Cl. 52—93 **9 Claims**



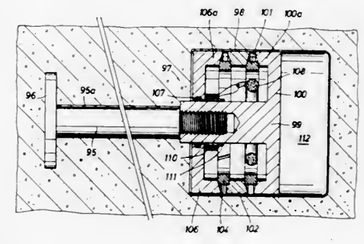
1. In a building having spaced opposed side walls, the invention comprising:
a. cap members in the form of inverted channels set astraddle and extending along the top edge of each side wall,
b. said cap members having upstanding projections fixed thereto with the projections on one side wall being transversely aligned with those on the other side wall,
c. several spaced primary rafter assemblies each separate from the others from one end to the other in the form of inverted channels spanning the space between the two side walls with their opposite ends fitted over each two transversely-aligned projections and secured on said projections and defining the roof contour and slope,
d. roof panels extending transversely of the primary rafters carried by said plurality of rafter assemblies having secondary rafter elements thereon extending thereacross, these secondary rafter elements comprising inverted channels that fit over the primary rafter assemblies and in so doing connect the several rafter assemblies in fixed parallel relation, the said panel having a deck to the underside of which the secondary rafters are secured,
e. means below the deck securing the secondary rafters to the primary ones, and
f. means securing the inverted channel form cap members to the side walls of the building.

3,950,904
SHUTTER FASTENING DEVICE
Bruce A. Littman, Highland Park, Ill., assignor to Benson Mfg. Corporation, Menomonee Falls, Wis.
Filed Nov. 25, 1974, Ser. No. 526,884
Int. Cl.² E06B *7/08*
U.S. Cl. 52—105 **4 Claims**



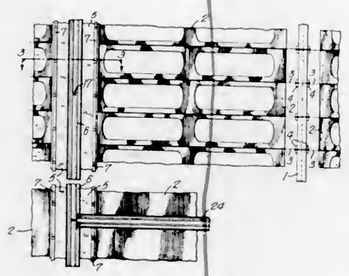
1. A fastening device for securing a shutter to a building wall adjacent to a window frame, comprising two fastening elements adapted to be secured to two spaced apart fastening portions on the rear of said shutter, and a pliable plastic spacer strip attached at opposite ends to said fastening elements and extending therebetween to space the fastening elements at a predetermined distance from each other to match the distance between said shutter fastening portions, said spacer strip being sufficiently pliable to permit said strip to be carried in a pocket prior to installation, said spacer strip having extended portions which extend past said fastening elements by a distance equal to the desired spacing between the edge of the window frame and the edge of the shutter to afford uniform spacing of shutters from window frames, without the necessity of measuring the distance from the window frame to the nearest fastening element.

3,950,905
METHOD FOR PRESTRESSING A STRUCTURAL MEMBER
John D. Jeter, P.O. Box 30293, Dallas, Tex. 75230
Division of Ser. No. 247,783, April 26, 1972, Pat. No. 3,855,742. This application May 22, 1974, Ser. No. 472,143
Int. Cl.² E04C *2/08*
U.S. Cl. 52—741 **7 Claims**



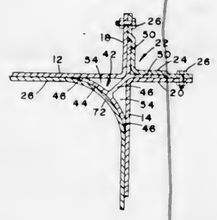
1. A method of producing a prestressed structural member from a body of hardenable material, such as concrete, comprising the steps of embedding an elongated reinforcing member with stress anchors connected to each end in the material of the structural member before it hardens, allowing the material of the structural member to harden, and using energy from a confined combustible material embedded with the reinforcing member and the stress anchors to place the portion of the material of the structural member between the stress anchors in compression to prestress the structural member.

3,950,906
FLEXIBLE CURTAIN WALL
Sebastian Mollinger, P.O. Box 127, Roxboro 9003 Quebec, Canada
Filed Mar. 26, 1974, Ser. No. 454,955
Int. Cl.² E04H *1/00*
U.S. Cl. 52—235 **6 Claims**



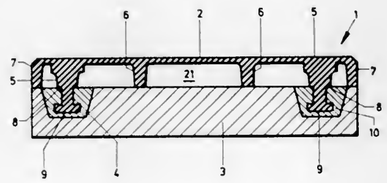
1. A flexible, daylight transmitting and insulated curtain wall having the shape of an elongated rectangular sandwich, one layer of said sandwich consisting of a perforated sheet metal and having a set of spaced apart wire ropes extending parallel across its width, said wire ropes extending on either side beyond the width of said perforated sheet metal and connected to said sheet metal, said wire ropes constituting the main load carrying elements in said curtain wall.

3,950,907
RADIUS MEANS FOR THE CORNERS OF SWIMMING POOLS
Donald E. Dahowski, York, Pa., assignor to Fox Pools, Inc., York, Pa.
Continuation-in-part of Ser. No. 101,876, Dec. 28, 1970, abandoned. This application Apr. 24, 1972, Ser. No. 246,569
Int. Cl.² E02D *27/00*; **E04B** *2/06*
U.S. Cl. 52—287 **9 Claims**



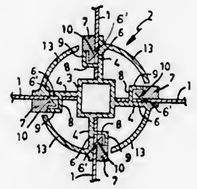
1. Fillet-type radius for use in vertical angular corners of the walls of swimming pools comprising in combination, an initially substantially flat elongated radius strip of substantially uniform thickness and formed from reasonably stiff material to render said strip semi-rigid but of limited flexibility and sufficiently thin to permit said strip to be flexed about a vertical axis from said substantially flat condition substantially into a transversely smoothly curved configuration subtending an arc of approximately 90° to adapt the edges thereof for resilient spring loaded tangential engagement firmly against the surfaces of a pair of angularly related sidewalls of a swimming pool and extend arcuately between said walls when said strip is flexed and the flexed concave surface of said strip being outermost to provide a smoothly rounded concave corner surface adapted to be engaged by and support a flatly overlying waterproof liner sheet for said pool, and attaching means on said radius strip comprising an elongated web fixed along one edge thereof to and extending longitudinally along and projecting radially from midway between the edges of the surface of said strip which is convex when flexed and having securing means comprising flat ribs extending longitudinally along the opposite edge of said elongated web and adapted to be positively clamped to the ends of the sidewalls of a swimming pool at a corner thereof to affix said strip in operative position therewith and hold said strip flexed and concaved and the side edges thereof in firm and smooth resilient tangential engagement with said walls of said pool adjacent a corner thereof due to the inherent resilience of said strip.

3,950,908
FLOOR OR WALL COVERING PANEL
Johannes Felix Etienne Van Eyk, Tegelen, Netherlands, assignor to B.V. Betonfabriek Het Zuiden, Tegelen, Netherlands
Filed Apr. 8, 1974, Ser. No. 459,231
Claims priority, application Germany, Apr. 10, 1973, 7313497[U]; June 9, 1973, 2329542
Int. Cl.² E04F *13/08*; **E04C** *02/80*
U.S. Cl. 52—436 **4 Claims**



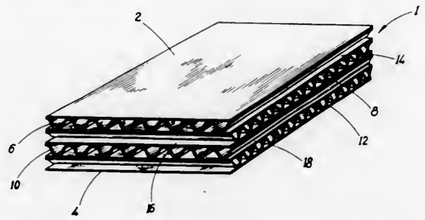
1. A panel assembly particularly suitable as covering for the surfaces of playgrounds or other similar areas, comprising:
a carrier element consisting essentially of rigid material and having a generally planar configuration;
means defining a plurality of spaced recesses formed as receptacles opening on one side only of said carrier element;
a covering element formed as a unitary integral body consisting essentially of resilient material and having a generally planar configuration substantially congruent with said carrier element, said covering element comprising:
a generally planar cover wall,
a plurality of mounting projections extending integrally from said cover wall, and substantially perpendicularly thereto and having back-cut portions, the number of said recesses provided being at least as many as the number of said projections and coincident therewith,
a plurality of spacer elements extending integrally from said cover wall substantially perpendicularly therefrom on the same side thereof as said mounting projections; and
a rim extending completely about the periphery of said covering element generally perpendicularly therefrom terminating into abutting relationship with said carrier element against said one side thereof about the entire periphery of said panel assembly;
said recesses being dimensioned to receive therein said mounting projections to an extent at least including said back-cut portions; and
hardened binder material filling said recesses in said carrier element;
said carrier element and said covering element being affixed together in a spaced apart relationship by said binder material with said mounting projections extending into said recesses and imbedded in said binder material and with said spacer elements abutting directly against said carrier element in contact therewith to define hollow spaces between said carrier element and said cover wall of said covering element.

3,950,909
SCREEN CEILING
Johannes Antonius Henricus Brugman, Rotterdam, Netherlands, assignor to Hunter Douglas International N.V., Willemstad, Netherlands Antilles
Filed Apr. 10, 1974, Ser. No. 459,805
Claims priority, application Netherlands, Apr. 13, 1973, 7305185
Int. Cl.² E04B *5/52*; **E06B** *3/54*
U.S. Cl. 52—483 **16 Claims**



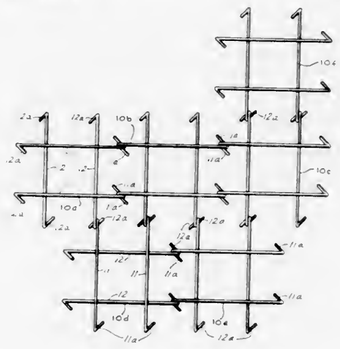
1. A screen ceiling comprising a plurality of elongated panels, a plurality of gusset joints, each of said gusset joints having a central wall portion, each gusset joint having a panel support for each panel to be supported thereby, each of said panel supports being integral with and extending outwardly from the wall portion of its associated gusset joint, each of said panels having a portion adjacent an end thereof lying against a panel support, an opening in said portion of each of said panels and intermediate the length thereof that lies against said support, a projection integral with each of said supports and extending laterally of their associated support from intermediate the length thereof, each said projection extending through the opening of a panel lying against said associated support, a locking member for each of said openings, said locking members each being engaged with a projection on the opposite side of a panel from the panel's associated support and bearing against a face of said panel for securing said panel between said panel support and said locking member, each of said locking members having a locking element for positively locking said member in place other than solely by friction.

3,950,910
SHELTER PANEL
Walter Kent Pobanz, Ballwin, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed Sept. 24, 1974, Ser. No. 508,818
Int. Cl.² F16B *5/02*; **E04C** *2/32*
U.S. Cl. 52—618 **4 Claims**



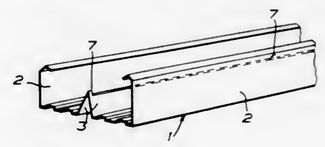
1. A wall panel comprising a generally flat face member and a generally flat back member with a plurality of elongated corrugated sheets of metal foil disposed in a plurality of superimposed layers with the corrugations of adjacent layers extending in cross relation to each other and with said corrugated sheets sandwiched between said face member and said back member; and, fastening means attaching said flat face member to said flat back member with said corrugated sheets disposed therebetween, said fastening means including a male portion in nesting communication with a female portion, said male portion including internal threads therein for mounting equipment thereto, at least one of the portions having a head and a plurality of teeth on the underside thereof engaging with one of the surface members.

3,950,911
APPARATUS FOR REINFORCING CONCRETE
Carl B. Fox, Jr., 10 Hedwig Circle, Houston, Tex. 77024
Filed Sept. 16, 1974, Ser. No. 506,268
Int. Cl.² E04C *2/42*, *5/04*
U.S. Cl. 52—664 **6 Claims**



1. Reinforcing mesh apparatus comprising two crossed pluralities of spaced longitudinal elements welded together to form a mesh section, the ends of said longtudinal elements extending outward from edges of said mesh section and terminating in downturned end portions adapted to be hooked to identical downturned end portions of longitudinal elements of other said mesh sections without use of any other connection means, the ends of said downturned end portions terminating at a suitable distance transverse to said mesh section to support said mesh section at a suitable reinforcing distance from a surface against which concrete is to be poured.

3,950,912
SOUND ATTENUATING WALLS
Borje Lundberg, Bandhagen, and Bjorn Samuelsson, Solna, both of Sweden, assignors to BPA Byggproduktion AB, Stockholm, Sweden
Filed June 20, 1974, Ser. No. 481,549
Claims priority, application Sweden, June 21, 1973, 7308798
Int. Cl.² E04C *3/30*; **E04B** *1/82*
U.S. Cl. 52—727 **9 Claims**

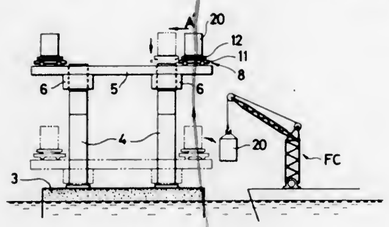


1. A sound attenuating wall including members defining a skeleton frame, and surface coverings fixed on each side of said frame, wherein at least one of the members defining the skeleton frame comprises a pair of separately acting elements interconnected by portions of material which are weakened or slender in a direction at right angles to the plane of the wall, and wherein each element has a flange portion projecting essentially in a direction parallel to the plane of the wall, the edges of said flanges remote from the element being interconnected by the weakened or slender material portions.

3,950,913
METHOD AND APPARATUS FOR CONSTRUCTING A SUSPENSION BRIDGE TOWER

Shigeru Mori, Yokohama, Japan, assignor to Mitsui Shipbuilding & Engineering Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 422,976, Dec. 7, 1973, abandoned. This application July 16, 1975, Ser. No. 596,108
Claims priority, application Japan, Dec. 8, 1972, 47-123178
Int. Cl.² E04D *15/00*; **B65G** *47/00*
U.S. Cl. 52—747 **5 Claims**



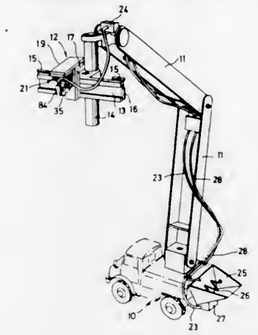
1. Apparatus for erecting a tower comprising:
pre-erected base means adapted to receive blocks superimposed one upon another,
a platform extending laterally with respect to the base means, said platform having a block loading station lateral of said base means and a block unloading station directly overlying said base means,
climbing means connected to said platform and engaging said base means to displace said platform vertically relative to said base means,
a carriage mounted on said platform for movement thereon forwardly from said block loading station to said block unloading station for transporting one of said blocks to said block unloading station,
means on said carriage for lowering said one block onto said pre-erected base means after said carriage has been displaced into said unloading station, and
means for releasing said carriage from said one block at said unloading station onto said pre-erected base means to afford rearward return of said carriage unloaded to said loading station, said releasing means including a frame adapted to surround and support a lower portion of said one block and a gate at the forward end of the frame sized to permit passage of said carriage rearwardly relative to said one block for return to said loading station after said block has been lowered onto said base means.

3,950,914
BUILDING ELEMENTS

Michael David Lowen, Berkhamsted, England, assignor to John Laing & Son Limited, London, England

Filed Sept. 12, 1974, Ser. No. 505,337
Claims priority, application United Kingdom, Sept. 20, 1973, 44128/73
Int. Cl.² E04F *21/18*; **E04G** *21/22*
U.S. Cl. 52—749 **13 Claims**

1. An apparatus for positioning building elements comprising
a first guideway;
a bracket mounted for movement along said guideway and having a second guideway extending at a right angle to said first guideway;
a cross-traverse member slidably mounted on said second guideway;
an indexing mechanism fixedly mounted on said cross-transverse member;
an element laying and mortar applying head rotatably mounted on said indexing mechanism about a vertical axis and connected to said mechanism for rotation thereby about said vertical axis, said indexing mechanism having first means for indexing said head in angular increments of motion about said vertical axis, said head including a bracket assembly, an element handling mechanism including a pair of gripper arms pivotally mounted on said bracket assembly, second means for moving said gripper arms horizontally towards each other to grip an element

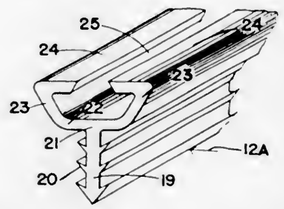


therebetween, third means for pivoting said gripper arms in unison in a vertical plane, a mortar applying nozzle pivotally mounted on said bracket assembly, and a drive arrangement mounted on said bracket assembly for pivoting said nozzle in a plane parallel to said vertical plane; and
fourth means for supplying jointing material to said nozzle.

3,950,915
ATTACHING MEANS FOR MEMBERS AT AN ANGLE TO ONE ANOTHER

Wayne C. T. Cole, Winnipeg, Canada, assignor to Empire Sheet Metal Mfg. Co. Ltd., Winnipeg, Canada

Filed Sept. 4, 1974, Ser. No. 503,139
Int. Cl.² F16B *5/06*
U.S. Cl. 52—753 D **17 Claims**

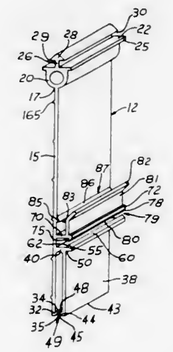


1. In a construction which includes a first planar panel part and a second planar part detachably secured to one side of said first panel part by one edge thereof and held at an angle thereto, said first panel part having an elongated undercut slot formed in said one side thereof, said second panel part having a substantially parallel sided, elongated groove formed in said one edge thereof; an integral, one piece means detachably, rigidly securing said second panel part to said first panel part, said means comprising an elongated anchor portion elongated in cross section for substantially non-detachable, force fit frictional engagement within the substantially parallel sided groove of said second panel part and having an upper edge substantially flush with said one edge of said panel part when installed thereon, and an elongated resilient attaching portion extending longitudinally from and integral with said anchor portion on said upper edge of said anchor portion and including a base portion extending substantially transverse to and beyond each side of said anchor portion, the external cross sectional shape and dimensions of said attaching portion being similar to and slightly wider than the cross sectional shape and dimensions of said undercut slot such that said attaching portion slidably and removably engages said undercut slot axially and resiliently secures said panel parts rigidly together in a direction other than axially with respect to said undercut slot.

3,950,916
CEILING PANEL SUSPENSION SYSTEM CLIP

David P. Kasprzak, Largo, Fla., assignor to The Celotex Corporation, Tampa, Fla.

Filed July 5, 1974, Ser. No. 485,830
Int. Cl.² F16B *7/04*
U.S. Cl. 52—760 **3 Claims**

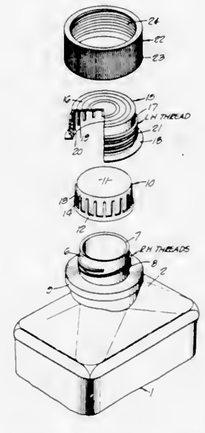


1. In a ceiling panel support system in which there are support clips for direct attachment to a building member, said clips being affixable in a variety of orientations to support inverted T-shaped runners having upstanding webs, and at least one integral, longitudinal flange on said web, the improvement in which said clip comprises:
a generally planar, resilient member having a length greater than its width and being relatively thin with respect to either of its other dimensions,
said planar member having a male connecting means on one end generally coplanar with the plane of said planar member,
said planar member further having a female connecting means at its end opposite said male connecting means,
said female connecting means comprising three female receptacles,
each of said three female receptacles being on the same side of said planar member, a wall of said planar member forming one side of each receptacle,
each of said female receptacles having spaced parallel sidewalls, the spaced sidewalls of each of said receptacles defining a plane of entrance intermediate and parallel to the said sidewalls defining each receptacle,
each of said receptacles being arranged along said planar member sequentially from the end opposite said male member, the planes of entrance of the two end female receptacles being substantially parallel to the axial plane of said coplanar member, the plane of entrance of said intermediate female receptacle being substantially perpendicular to said axial plane of said coplanar member, and
retention means extending inwardly from the sidewalls defining each said receptacle,
said retention means of each female receptacle being adapted to grasp said longitudinal flange on said web or said male connecting means of another clip.

3,950,917
METHOD OF OPENING A DOUBLE SCREW CAP SYSTEM FOR STERILE MEDICAL CONTAINER

Pradip V. Choksi, North Hollywood, and Roy B. Steidley, Seal Beach, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Division of Ser. No. 338,671, March 7, 1973, Pat. No. 3,923,184. This application Sept. 15, 1975, Ser. No. 613,321
Int. Cl.² B65B *43/00*
U.S. Cl. 53—3 **6 Claims**

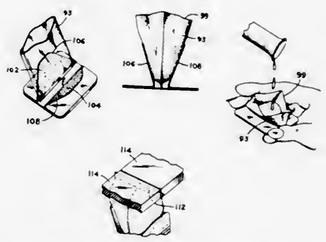


1. A method of opening a double closure cap system that includes a threaded inner cap screwed onto a container, and an outer cap that has left-handed threads, said outer cap being fused to the container and an annular jacking ring internally threaded with left-handed threads screwed onto said outer cap, comprising the steps of: rotating the jacking ring in a counterclockwise direction until the jacking ring contacts an abutting surface of the outer cap and container combination; rotating the jacking ring in a further counterclockwise movement for fracturing the outer cap; and simultaneously removing the inner and outer caps through still further counterclockwise rotation of the jacking ring.

3,950,918
METHOD OF MAKING A DISPOSABLE PACKAGE

Darrell R. Morrow, 7 Pamela Court, Old Bridge, N.J. 08857, and Michael Schuler, 62C Old New Brunswick Road, Piscataway, N.J. 08854

Filed July 30, 1974, Ser. No. 493,178
Int. Cl.² B65B *1/02*, *3/02*
U.S. Cl. 53—14 **10 Claims**



1. A method for making a container adapted for administering unit dosages comprising the steps of:
folding a foldable blank along folding guide means to form a pair of arms upwardly extending from a base surface;

fastening a segment of tubing to and between said arms extending from said base surface said segment of tubing sealed at one end thereof to form a first sealing line, said segment of tubing disposed with said first sealing line adjacent said base surface;

simultaneously spacing said arms and opening the unsealed end of said segment of tubing to form means for holding a unit dosage;

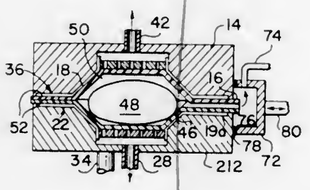
filling said tubing segment with a unit dosage from the unsealed upper end of said segment of tubing; and

sealing the open upper end of said segment of tubing to form a second sealing line transverse said first sealing line to form a tetrahedral chamber supported by said arms.

3,950,919
APPARATUS AND PROCESS FOR VACUUM SKIN PACKAGING

Richard Russell Perdue, Greer, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Aug. 22, 1974, Ser. No. 499,701
Int. Cl.² B65B *31/02*
U.S. Cl. 53—22 A **24 Claims**



9. A process for vacuum skin packaging an article between two flexible web layers, comprising

A. providing a first layer of flexible web material having a first substantially concave-shape inner portion with a peripheral portion of said first layer disposed outwardly of said first inner portion;

B. providing a second layer of flexible web material having a second substantially concave-shape inner portion with a peripheral portion of said second layer disposed outwardly of said second inner portion;

each layer of web material adapted to bond to the other layer of form a hermetic seal;

C. placing the article on the substantially concave portion of at least one of said web layers;

D. registering said concave-shape web layers to provide a partially enclosed packaging cavity about the article with at least a portion of the outwardly disposed portion of one of the web layers spaced from the other web layer and establishing differential fluid pressure across at least one of said peripheral portions to define a passageway means extending from the cavity to a periphery of at least one of the web layers;

E. while maintaining the web layers in registered relation, removing a sufficient portion of gaseous composition from the packaging cavity through the passageway means to reduce the gas pressure in the cavity to below atmospheric pressure;

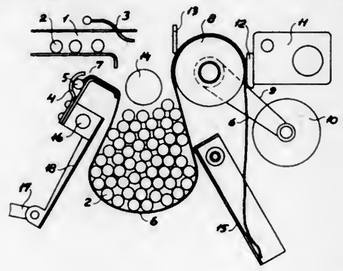
F. while the pressure in the packaging cavity is reduced, moving the web layers to collapse first portions of the layers into substantially conforming relation with the overall periphery of the article and to collapse second portions of the layers into layer-to-layer engagement peripherally of the article; and

G. bonding said engaged web portions to form a hermetically sealed packaged article.

3,950,920
COLLECTING SYSTEM FOR BATCHWISE COLLECTION OF ROD-SHAPED OBJECTS

Jorgen Thyrsted Thomsen, and Aage Juul, both of Fredericia, Denmark, assignors to J. P. Schmidt Jun. A/S, Fredericia, Denmark

Filed Feb. 28, 1974, Ser. No. 446,776
Claims priority, application Denmark, Feb. 28, 1973, 1076/73
Int. Cl.² B65G *1/08*
U.S. Cl. 53—59 R **5 Claims**



1. A collecting system for batchwise collection of rod-shaped objects, particularly cigars and cheroots, said collecting system comprising a collecting band releasably suspended at one end; a roller; means for rotating said roller; counter-backing means located adjacent to said roller for receiving the other end of said collecting band therebetween, said counter-backing means being biased toward said roller for retaining said other end to form a portion of said band between said releasably suspended end and retained end into a downwardly closed and upwardly open receptacle; a duct communicating with the upwardly open portion of said receptacle for feeding the rod-shaped objects into said receptacle; means for ascertaining the presence of the rod-shaped objects at the upwardly open portion of said receptacle and for controlling said rotating means for increasing the length of said receptacle-defining portion of said band when the rod-shaped objects in said receptacle are above a predetermined level; boundary walls on each side of said receptacle outwardly of said collecting band, at least one of said boundary walls being pivotally mounted at its upper end; and driving means for periodic oscillation of said pivotally mounted boundary walls.

3,950,921
COIN PACKAGING APPARATUS WITH SELF-ADJUSTMENT TO WRAPPER PAPER WIDTH

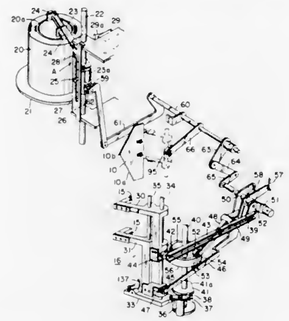
Masaru Itoda; Shiro Nakai; Masatoshi Ushio; Hirokuni Matono, and Takao Baba, all of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Himeji, Japan

Filed July 8, 1975, Ser. No. 594,078
Claims priority, application Japan, July 19, 1974, 49-82246; Jan. 31, 1975, 50-13105
Int. Cl.² B65B *11/04*
U.S. Cl. 53—67 **8 Claims**

1. In a coin packaging apparatus of the type which comprises stacking means for arranging each preselected number of coins of the same denomination into a neat stack, cutter means for severing a wrapper strip as the same is unwound from its roll, coin wrapping means for winding the severed piece of wrapper strip around the circumference of the stack of coins, and a pair of crimping hooks for crimping the opposite lateral marginal edges of the piece of wrapper strip over both ends of the stack of coins, the combination thereof with:

means for rotatably holding the roll of wrapper strip having a width selected in accordance with the height of the stack of coins to be wrapped, in such a manner that one of the opposite marginal edges of the wrapper roll will always lie in a predetermined position thereon regardless of its width;

wrapper width sensing means including a wrapper width sensing member which is movable in the transverse direction of the wrapper roll on said holding means into and out of contact with the other marginal edge thereof; and

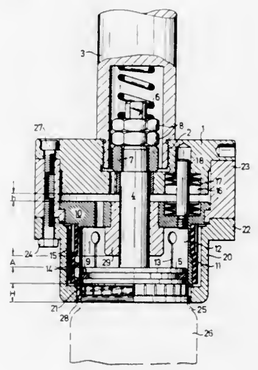


hook adjusting means responsive to the motion of said wrapper width sensing member into contact with said other marginal edge of the wrapper roll on said holding means for adjustably moving one of said crimping hooks in the direction of the other crimping hook in accordance with the width of the wrapper roll.

3,950,922
SEALING HEAD

Heinrich Eberhardt, Konigsberger Allee 56, Itzehoe, Germany (221)

Filed Dec. 4, 1974, Ser. No. 529,530
Claims priority, application Germany, Dec. 7, 1973, 2361067; Nov. 15, 1974, 2454200
Int. Cl.² B65B *7/28;* **B67B** *3/02*
U.S. Cl. 53—356 **7 Claims**

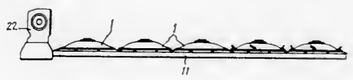


1. A sealing head for applying a cover having an exterior substantially cylindrical skirt to a container, comprising a support adapted to move vertically, a flange plate secured to said support adjacent the lower end thereof, a rigid substantially cylindrical external shell connected to said flange plate and having a lower shell flange portion with a bottom opening of a size to accommodate the cover therein, a head plate movable between said shell flange portion and said flange plate, a shaft portion extending through said flange plate and terminating in a press plate portion within said shell below said head plate and engageable with the cover to press it onto the container, spring means biasing said head plate toward engagement with said cylindrical shell, said head plate having a ring of a plurality of circumferentially arranged and downwardly extending resilient yieldable pressure fingers located within said shell and biased against said pressure plate portion, a rubber sleeve engaged over said fingers, a substantially cylindrical steel sleeve engaged over said fingers, said shaft portion and said pressure plate being displaceable upwardly and downwardly in respect to said yieldable fingers between the lower end of said lower flange portion and said head plate and being further displaceable with said head plate upwardly against said biasing means.

3,950,923
ROTARY MOWER

Uwe Martensen, Soisy-sur-Seine; Jacques Eugenes Bouet, Villeneuve d'Asco, and Arthur Louis Cottenier, Roubiax, all of France, assignors to International Harvester Company, Chicago, Ill.

Continuation of Ser. No. 460,666, April 12, 1974. This application Sept. 11, 1975, Ser. No. 612,507
Claims priority, application France, May 11, 1973, 73.17127
Int. Cl.² A01D *75/30*
U.S. Cl. 56—6 **20 Claims**



1. In a rotary mower of the type having a plurality of side-by-side cutter discs rotatably mounted on shafts supported on an elongated beam structure, the beam structure having an inboard and an outboard end extending transversely with respect to the direction of travel, the cutter discs having upper and lower sides, the lower sides carrying at least two diametrically aligned cutting blades, the outboard of the beam structure carrying at least two cutter discs which are adapted to rotate in the same direction, and a conveyor means on at least the outermost disc of the two cutter discs for conveying cut crop rearwardly and towards the inboard side of the beam structure, wherein the improvement comprises:

four paddles carried on the upper side of the outermost disc of the two cutter discs, the paddles are arranged quadrantally on the outermost cutter disc, and each paddle having a broadside lying on one respective plane of four planes defining an inverted right square prism where the apex lies on the extended axis of the outermost cutter disc below the lower side, each paddle further having a leading edge with respect to the direction of rotation of the outermost cutter disc ascending along the respective plane rearwardly to a point above the periphery of the outermost cutter disc.

3,950,924
STICK FEEDING ROLLER FOR SUGAR CANE HARVESTERS
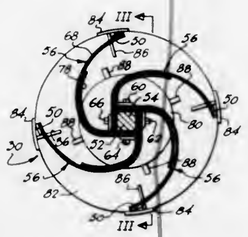
Donald Jonathon Quick, Bundaberg, Australia, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Oct. 4, 1974, Ser. No. 512,272
Claims priority, application United Kingdom, Oct. 13, 1973, 47912/73
Int. Cl.² A01D *45/10*
U.S. Cl. 56—13.9 **4 Claims**

1. A sugar cane harvester having a cane feed element mounted for rotation, and a drive for said feed element, said drive being capable of transmitting drive to rotate said feed element from a power source on the sugar cane harvester, said feed element comprising:

a support member including a central shaft mounted for rotation and being connected to said drive;

cane engaging means including at least three feed members extending axially with respect to the feed element mounted on said support member and being rotatable therewith and being capable of engagement with harvested cane during such rotation to feed the cane;



biasing means including leaf springs acting between the support member and the cane engaging means and being capable of urging said cane engaging means away from the axis of rotation of the feed element; and a blanking plate mounted between the central shaft and each feed member to prevent the passage of sugar cane sticks therebetween.

3,950,925

METHOD AND APPARATUS FOR AUTOMATIC RE-ATTACHMENT OF THREAD IN SPINNING MACHINES

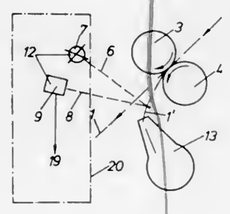
Wolfgang Igel, Ebersbach, Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach, Germany

Filed Aug. 5, 1974, Ser. No. 494,906

Claims priority, application Germany, Aug. 4, 1973, 2339654

Int. Cl.² D01H *13/16, 13/14*

U.S. Cl. 57—34 R **3 Claims**



2. Apparatus for the automatic re-attachment of threads to the roving in spinning machines having a draw frame and draw-off rollers, said apparatus comprising:

a. suction means, disposed adjacent to the normal position of the roving and capable of exerting a lateral suction force on the roving for deviating the roving from a first, normal position to a second position;

b. an electric light source, for illuminating the roving in said second position;

c. photoelectric sensor means, capable of providing a signal when light is reflected from the roving in said second position; and

d. thread re-attachment means, responsive to said signal for re-attaching thread if roving is present in said second position.

3,950,926

OPEN-END SPINNING MACHINE WITH A SHIFTABLE APPARATUS FOR START-SPINNING

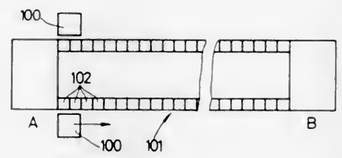
Fritz Stahlecker, Bad Uberkingen, Germany, assignor to Fritz Stanlecker and Hans Stahlecker, both of, Germany

Filed Sept. 30, 1974, Ser. No. 510,564

Claims priority, application Germany, Oct. 10, 1973, 2350840

Int. Cl.² D01H *15/00, 1/12*

U.S. Cl. 57—34 R **14 Claims**



1. An open-end spinning machine comprising: a plurality of spinning units arranged one beside the other, and at least one apparatus for start-spinning a thread at a respective spinning unit, means for mounting said at least one apparatus on the spinning machine so as to be selectively displaceable to respective spinning units of said plurality of spinning units, said at least one apparatus includes a first means for interrupting the spinning operation of the spinning machine and for preparing the spinning machine for a further spinning operation, and second means for restarting the spinning operation subsequent to the preparation of the spinning machine by said first means, said first means and said second means being independently operable and selectively successively advanced to a respective spinning unit whereby the preparation of the spinning machine for a further spinning operation and the restarting of the spinning machine is performed in at least two independent steps.

3,950,927

APPARATUS AND METHOD FOR MEASURING YARN STORAGE AT A SPINDLE ASSEMBLY STATION IN A TEXTILE YARN PROCESSING MACHINE

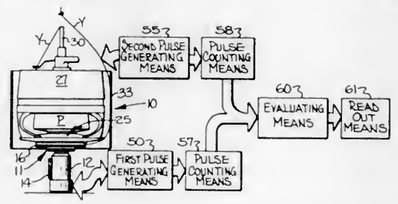
Jurgen Kallman, Willich, Germany, assignor to Palitex Project-Company G.m.b.H., Germany

Filed Apr. 4, 1975, Ser. No. 565,060

Claims priority, application Germany, Apr. 13, 1974, 2418246

Int. Cl.² D01H *1/10, 13/32*

U.S. Cl. 57—34 R **10 Claims**



1. In a textile yarn processing machine, such as a two-for-one twister or the like, having spindle assembly stations for the processing of yarn and each including a spindle assembly for carrying a package of yarn to be withdrawn and processed while producing a rotating balloon of the yarn around the package and having a hollow carrier mechanism for supporting the package of yarn to be processed and providing a passageway for receiving the yarn as it is withdrawn from the package, and a driven rotor mechanism supporting said carrier mechanism and rotating relative thereto and including a yarn reserve disc providing a passageway for the yarn therethrough from the carrier mechanism and for storing a length of yarn therearound prior to the formation of the balloon of yarn; the combination therewith of means for measuring the yarn storage on said reserve disc of said rotor mechanism comprising:

first electrical pulse generating means responsive to the frequency of rotation of said rotor mechanism for generating electrical pulses;

second electrical pulse generating means responsive to the frequency of rotation of the balloon of yarn for generating electrical pulses; and

means connected with said pulse generating means for counting the pulses generated by each of said pulse generating means, for evaluating the time t_R required for said first pulse generating means to generate a predetermined number of pulses and the time t_S required for said second pulse generating means to generate a predetermined number of pulses and for calculating and displaying the time difference $\Delta t = t_R - t_S$ as a measure of yarn storage on said reserve disc.

3,950,929

METHOD OF FEEDING A SLIVER INTO A COMBING SECTION OF AN OPEN END SPINNING MACHINE AND A PRESSER THEREFOR

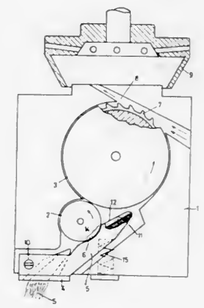
Takashi Morikawa, Amagasaki; Hidetoshi Kihara, Hirakata; Tooru Urifu, Itami, and Hisateru Takahashi, Fukui, all of Japan, assignors to Dalwa Boseki Kabushiki Kaisha, Minamiyutaro and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, both of, Japan

Filed Oct. 8, 1974, Ser. No. 513,164

Claims priority, application Japan, Oct. 17, 1973, 48-117134

Int. Cl.² D01H *1/12, 7/00*

U.S. Cl. 57—58.95 **2 Claims**



2. An apparatus for feeding a sliver into a combing section in an open end spinning machine including a feed roller and a combing roller which are arranged side by side on parallel axes within a main body, said apparatus comprising a presser having a nip surface for a sliver consisting of a curved surface of a radius which is a little larger than that of the feed roller, a flat fiber guide surface extending from said nip surface toward the combing roller substantially linearly relative to the nip surface to guide the sliver fed out from the feed roller to the combing roller, and guide walls extending along the fiber guide surface for limiting spreading of the fiber bundle passing along the guide surface, the guide surface of the presser being oriented to transfer the fibers to a raking point substantially at a point of contact between the combing roller and a tangent common to the feed roller and the combing roller and lying on the same side of said parallel axes, and said guide surface being at an angle of 0° to 15° with said common tangent taken as the reference line.

3,950,928

DRAW-TEXTURING APPARATUS

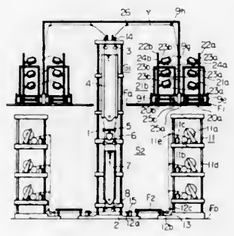
Shiro Murakami, and Kikuo Hori, both of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 477,368, June 7, 1974, abandoned. This application May 6, 1975, Ser. No. 574,891

Claims priority, application Japan, June 12, 1973, 48-68635[U]; Apr. 10, 1974, 49-40757[U]

Int. Cl.² D02G *1/02*

U.S. Cl. 57—34 HS **6 Claims**



1. In a draw-texturing apparatus for synthetic fibers comprising a roller for supplying an undrawn yarn, a first heater, a false-twisting means for imparting twist to the yarn, a first delivery roller rotating at a peripheral speed greater than that of the supply roller and drawing and supplying the yarn, a second heater and a second delivery roller advancing the yarn to a take-up means, a main body having a supporting frame at said first heater, said false twisting means, said first delivery roller, and said second heater, an intermediate horizontal floor disposed at substantially middle level of said main body, and a base floor for installing said apparatus; the improvement comprising package supply means located on said intermediate floor in opposing relation in the upper portion of said main body, a first floor between said package supply means and the upper portion of said main body for forming a first operational space, take-up means on the apparatus base floor in opposing relation in the lower portion of said main body and a second operational space between the lower portion of said main body and said take-up means, a yarn passage between said main body and said take-up means formed under said second operational space , said base floor having an intermediate portion formed between said main body and said take-up means; said yarn passage being beneath said intermediate portion, said package supply means being composed of at least one creel truck and a truck transferring passage mounted on said intermediate floor on which said creel truck moves.

3,950,930

FALSE TWISTING DEVICE

Noboru Shindo, Maikata; Hiroshi Hashizume, Kyoto, and Shuichi Kikuchi, Nagaokakyo, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Aug. 6, 1974, Ser. No. 495,113

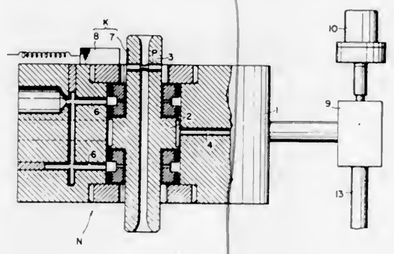
Claims priority, application Japan, Aug. 10, 1973, 48-90163

Int. Cl.² D01H *7/92;* **D02G** *1/04*

U.S. Cl. 57—77.45 **1 Claim**

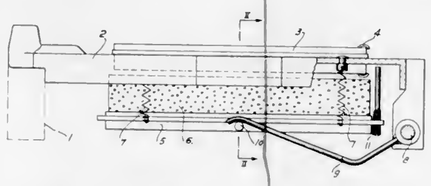
1. A false twisting device comprising a plurality of false twisting spindles each including a turbine, said turbines being rotatable in response to a fluid passing therethrough, said turbine having a hollow shaft and the false twisting spindle including a twister pin mounted in said hollow shaft extending transversely thereof, a turbine rotation number detector operably associated with each false twisting spindle turbine for detecting turbine rotation and providing electrical pulses corresponding to the speed of rotation of the associated turbine, a rotation number prescribing device for prescribing the speed of the turbines in terms of a rotation number, a scanner for scanning the rotation number detectors associated with the

false twisting spindles separately, a comparator for receiving the signals from the rotation number prescribing device and the turbine rotation number detectors and comparing the information from the rotation number prescribing device and the individual turbine number detectors separately, a controller connected to the scanner and comparator for providing an output signal in response to differences in the signals compared in the comparator, and a servo valve connected to each



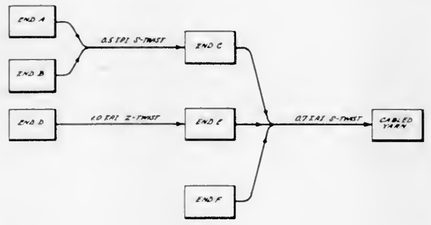
of the false twisting spindles responsive to the controller for varying the fluid passed to the particular false twisting spindle associated therewith in response to signals from the controller for regulating the fluid to the false twisting spindle to regulate the speed of the spindle in accordance with the rotation number prescribing device whereby the spindles are caused to rotate at a speed determined by the rotation number prescribing device.

3,950,931
TRAVELER BRAKES FOR RING-TWINING AND RING-SPINNING MACHINES
Heinz Bleeck, Probstried, Germany, assignor to Saurer-Allma GmbH, Allgaeuer Maschinenbau, Kempten, Germany
Filed Oct. 30, 1974, Ser. No. 519,251
Claims priority, application Germany, Nov. 4, 1973, 2355065
Int. Cl.² D01H *1/20*
U.S. Cl. 57—113 **10 Claims**



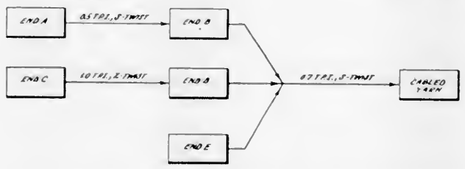
1. A spinning or twining apparatus, comprising:
twining ring means having annular guide means thereon;
support means for supporting said twining ring means;
a traveler movably mounted on said annular guide means and guided for movement thereon;
an annular brake ring coaxially positioned relative to said twining ring means, said brake ring being composed of an elastically flexible material;
resilient means for resiliently suspending said brake means beneath said twining ring and for continuously urging said brake ring into braking engagement with the underside of said traveler, said material of said brake ring thereby minimizing wear on said traveler when said brake ring engages said traveler; and
brake release means engaging said brake ring for urging said brake ring away from said braking engagement with said traveler against the urging of said resilient means.

3,950,932
CABLED STUFFER BOX CRIMPED YARN AND METHOD OF PRODUCING THE SAME
William Woodbridge Durling, Annapolis, Md., assignor to Concorde Fibers Inc., Columbia, Md.
Filed Dec. 30, 1974, Ser. No. 537,616
Int. Cl.² D02G *3/02*, *3/28*
U.S. Cl. 57—140 R **9 Claims**



5. A multicolored, cabled, stuffer box crimped yarn containing filaments of respectively at least two non-contrasting colors and a contrasting color, the filaments of the two non-contrasting colors imparting a heather appearance to the yarn and the filaments of the contrasting color imparting color accents to the yarn, the yarn being constituted of at least three stuffer box crimped multifilament ends cabled together, each of said three ends containing filaments of two non-contrasting colors and one of said three ends containing said filaments of the contrasting color in a proportion greater than the proportion in the same end of filaments of any individual non-contrasting color and being twisted in a discrete grouping.

3,950,933
CABLED OR WRAPPED, STUFFER BOX CRIMPED YARN AND METHOD OF PRODUCING THE SAME
Royal P. Tuthill, Newton, Pa., assignor to Concorde Fibers Inc., Columbia, Md.
Filed Feb. 15, 1974, Ser. No. 443,059
Int. Cl.² D02G *3/28*, *3/02*
U.S. Cl. 57—140 R **17 Claims**

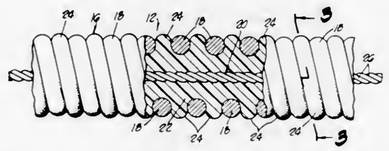


14. A wrapped yarn of lengthwise uniform appearance comprising two stuffer box crimped multifilament ends twisted together at least one of the ends containing twist in addition to that imparted by the twisting together of the ends and the ends being of different appearance.

3,950,934
PLUMBERS SNAKE
Lawrence F. Irwin, Calabasas Park, Calif., assignor to Auger-scope, Inc., San Fernando, Calif.
Filed Mar. 13, 1975, Ser. No. 557,930
Int. Cl.² D07B *1/16*
U.S. Cl. 57—149 **8 Claims**

1. A flexible plumbers snake comprising:
a. a hollow outer body formed of a length of helically coiled spring steel wire the turns of which are coiled in an axially spaced apart relation;

b. an inner concentrically aligned flexible metal core disposed within said outer body and extending longitudinally thereof;
c. a longitudinally extending resilient nonmetallic intermediate body carried within said outer body in gripping

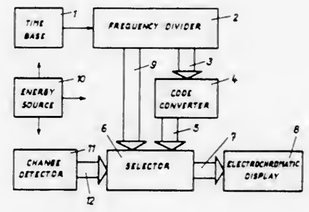


engagement with said core having along its periphery a spiral shaped compressible prominence adapted to extend between and cooperatively engage the turns of said helically coiled spring steel wire of said outer body whereby said prominence will yieldably resist any bending of said outer body along its longitudinal axis.

3,950,935
CHRONOGRAPH WRISTWATCH
Okito Naito, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Sept. 24, 1973, Ser. No. 399,040
Claims priority, application Japan, Sept. 22, 1972, 47-94574
Int. Cl.² G04F *8/02*; G04B *19/30*; G04F *7/04*; G04B *47/06*
U.S. Cl. 58—39.5 **8 Claims**

1. An electronic timepiece comprising oscillator means for generating a relatively high frequency time standard signal; chronographic divider means coupled to said oscillator means and adapted to produce low frequency chronographic signals representative of elapsed time in response to said time standard signal; timekeeping divider means coupled to said oscillator means and adapted to produce low frequency timekeeping signals representative of present time in response to said time standard signal; first selector means coupled to said chronographic divider means for receiving said chronographic signals and to said timekeeping divider means for receiving said timekeeping signals, said first selector means having an output to which one of said chronographic signals or timekeeping signals are selectively applied; digital display means coupled to the output of said first selector means for displaying either elapsed or present time dependent on the signals applied to said first selector means; at least one manually operable control switch; and second selector means for selectively coupling said control switch to either said chronographic divider means or said timekeeping divider means, said divider means both being adapted for control by said control switch when coupled thereto by said second selector means, and a single, manually operable mode switch operably coupled to both said first and second selector means for coordinately setting said selector means so that said control switch is coupled to one of said divider means when said display means displays a time representative of the signal produced by said one divider means.

3,950,936
DEVICE FOR PROVIDING AN ELECTRO-OPTICAL DISPLAY OF TIME
Henri J. Oguey, Peseux, and Eric Andre Vittoz, Cernier, both of Switzerland, assignors to Centre Electronique Horloger S.A., Switzerland
Continuation of Ser. No. 339,375, March 8, 1973, abandoned. This application Nov. 11, 1974, Ser. No. 522,947
Claims priority, application Switzerland, Mar. 8, 1972, 3382/72
Int. Cl.² G04C *3/00*
U.S. Cl. 58—23 R **15 Claims**

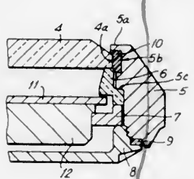


1. In a device for providing an electro-optical display of time comprising an electronic timekeeper fed by a voltage source and including a time base and a frequency divider connected to said base, and an electro-optical display formed of cells containing electrochromic materials able to take two different visual aspects, the cells controlled by a code converter connected to said divider and having outputs supplying state variables each defining the aspect that a display cell must have, one of the aspects of a cell corresponding to a stable state, the other aspect of a cell corresponding to a quasi-stable state which requires at most a very low power to be maintained, and transition of a cell from one state to the other requiring precisely determined amounts of energy, the improvement comprising a change detector means including a memory means connected at its inputs to the outputs of said code converter and a selector means connected at its inputs to the outputs of said memory means and said code converter, and means, connected at its inputs to said divider and at its outputs to said memory means and said selector means, for providing control variables to determine phases of writing and reading the memory means and to activate in the selector means operations of inscriptions and erasures, said selector means generating control signals at its outputs for dispensing the required amounts of energy to each display cell to ensure correspondence between the visual aspect of each cell and the state variables delivered by the code converter in a manner to minimize the mean power consumption.

3,950,937
STRUCTURE OF WATER-TIGHT WATCH CASE
Yoshiaki Fujimori, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Dec. 26, 1974, Ser. No. 536,523
Claims priority, application Japan, Dec. 25, 1973, 49-5284
Int. Cl.² G04B *37/08*
U.S. Cl. 58—90 R **6 Claims**

1. A watertight watch case comprising a case body, a crystal mounted in one end thereof, a back cover connectable to the other end thereof, said crystal having a substantially vertical surface between top and undersurfaces thereof, said case body having a recess therein substantially adjacent said vertical surface of said crystal, said recess comprising a gasket seat and defining a peripheral flange in said case body which overlies the periphery of said top crystal surface, a gasket mounted in said gasket seat in said case body, said vertical edge of said crystal being compressively engaged therewith, a supporting flange releasably mounted within said case body for supporting said crystal along a marginal portion of said underside

surface thereof, a frame releasably mounted within said case body, said frame underlying and supporting said flange for



securing said flange position, and means in said back cover for supporting said frame.

3,950,938

TWO CONDUCTOR HAIRSPRING-HUB ARRANGEMENT FOR ELECTRIC WATCHES

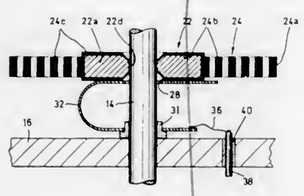
Wilhelm Tilse, Birkenfeld, Germany; Jean Suard, Besancon, France, and Patrick de Havilland Champion, Bucks, England, assignors to Timex Corporation, Waterbury, Conn.

Filed Feb. 24, 1975, Ser. No. 552,469

Claims priority, application Germany, May 6, 1974, 2421751

Int. Cl.² G04C *3/04*; **G04B** *17/06*

U.S. Cl. 58—114 **6 Claims**



1. A two conductor hairspring-hub arrangement for an electric watch of the type having a hairspring fastened at an inner end to a hub, wherein the improvement comprises:

a unitary hub;

a hairspring being fastened to said unitary hub, said hairspring and hub comprising an inner conductor of said arrangement;

a joint insulating mantle surrounding said inner conductor and having an aperture therein at least in an area of said hub and at an outer end of said hairspring; and

means coating said joint insulating mantle for forming an outer conductor insulated from said inner conductor, said outer conductor being so formed such that separate electrical connection can be made with said inner and outer conductors at least in the areas of said hub and outer end of said hairspring wherein said apertures are being provided.

3,950,939

DIGITAL DISPLAY WITH STEPPING DEVICE

Alfred Meisner; Oskar Oellig, both of Nurnberg; Josef Neubauer, Grossschwarzenlohe; Walter Trimpler, Lupburg, Opf., and Erwin Potthof, Rothebach, P., all of Germany, assignors to DIEHL, Nurnberg, Germany

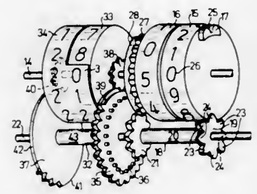
Filed Feb. 6, 1975, Ser. No. 547,882

Claims priority, application Germany, Feb. 22, 1974, 2408539

Int. Cl.² G04B *19/02*; **G09F** *9/00*

U.S. Cl. 58—125 C **4 Claims**

1. A digital 24-hour display comprising, in combination, a 10-minute barrel (**16**), a one-hour barrel (**33**), and a 10-hour barrel (**34**), each bearing numerals for the display, a visor (**3**) constituting part of said 10-hour barrel and covering said one-hour barrel part of the time, also bearing numerals for indicating single-digit hours during said part of the time, a mechanism (**32**) for incrementally advancing said barrels part of the time upon advancement of said 10-minute barrel, also serving as a locking mechanism for at least one of said hour barrels, said advancing mechanism including on said 10-minute barrel a continuous first gear (**27**), a locking ring (**28**) with at least two interruptions (**29, 30**) therein and a switching



tooth (**31**), said advancing mechanism further including a second gear (**35**), associated with said one-hour barrel, being mounted for incremental rotaion out-of axis with said barrels, partly facing said 10-minute barrel with a planar surface, and having a plurality of pin teeth (**36**) uniformly divided over a circular radius on said planar surface of the second gear, and means for continuously transferring hourly steps from said 10-minute barrel onto said advancing mechanism, and subsequently to at least one of said hour barrels by means of said switching tooth and said locking ring with its interruptions, acting on said pin teeth of the second gear.

3,950,940

ELECTRONIC TIMEPIECE

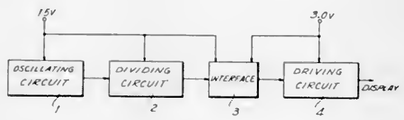
Izuhiko Nishimura, and Satoshi Fushimi, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Aug. 2, 1974, Ser. No. 494,680

Claims priority, application Japan, Aug. 2, 1973, 48-87155

Int. Cl.² G04C *3/00*; **G04B** *19/30*

U.S. Cl. 58—23 A **6 Claims**



1. In an electronic timepiece having the operative circuits thereof monolithically integrated into a single circuit chip, said circuit chip including complementary coupled MOS transistors, the improvement comprising a circuit chip including a first complementary coupled MOS transistor operative circuit portion adapted to be energized by a first potential to thereby operate at a first logic level and a second complementary coupled MOS transistor circuit portion energized at a second potential higher than said first potential to operate at a second logic level, and interface means between said first and second complementary coupled MOS transistor portions, said interface means interfacing said first and second logic levels, and electrically insulating said first and second circuit portions.

3,950,941

LIFT CHAIN WITH END CONNECTOR

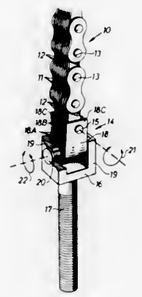
Gosta Ohrn, Eskilstuna, Sweden, assignor to Bulten-Kanthal AB, Sweden

Continuation-in-part of Ser. No. 427,583, Dec. 26, 1973, abandoned. This application Nov. 26, 1974, Ser. No. 527,375

Claims priority, application Sweden, Jan. 12, 1973, 7300405; June 6, 1973, 7307969

Int. Cl.² F16G *15/02*

U.S. Cl. 59—93 **6 Claims**



1. A lift chain comprising:

a. a string of links, each link comprising a plurality of juxtaposed parallel link plates, adjacent link plates of alternate links being separated by individual link plates of the adjacent links;

b. transverse parallel link pins extending through and pivotally interconnecting adjacent links;

c. an end connector including a head;

d. a clevis having limbs and a bight portion interconnecting the limbs;

e. a first connector pin parallel to the link pins and pivotally connecting a first portion of the clevis to an end link of the string of links;

f. a second connector pin extending through the head perpendicularly to the link pins and the first connector pin and pivotally engaging another portion of the clevis; and

g. said clevis comprising a plurality of nested clevis members formed from bent-over sheet metal strips, the number of clevis members being dependent on the number of link plates of the end link, the bight portions of adjacent clevis members engaging each other and the ends of adjacent limbs of the clevis members straddling a portion of a link plate of the end link.

3,950,942

CONTROL APPARATUS FOR A WARP KNITTING MACHINE

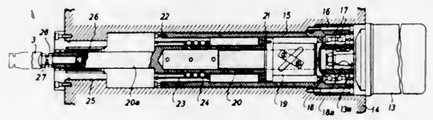
Yukio Namura, Fukui; Tooru Mashimo; Tadao Kosaka, both of Gukui, and Kooichi Ofude, Komatu, all of Japan, assignors to Kabushiki Kaisha Matsuura Kikai Seisakusho, Japan

Filed Apr. 22, 1974, Ser. No. 463,111

Claims priority, application Japan, Apr. 26, 1973, 48-480747

Int. Cl.² D04B *23/00, 27/00, 15/66*

U.S. Cl. 66—86 C **17 Claims**



1. A control apparatus for controlling the movement of the guide bars of a warp knitting machine, having a main shaft, in accordance with a desired pattern and in synchronism with the rotation of the main shaft, said control apparatus comprising, in combination, a memory operable to store information corresponding to successive courses of a pattern to be knit; a pulse distributor connected to said memory; means, including a shaft rotation angle detector connected to said main shaft, operable, responsive to rotation of said main shaft in a predetermined angular range, to produce a plurality of pulse trains and to supply the same to said pulse distributor; control means connected to said memory and operable, responsive to input of an instruction, to control said memory to supply successive pattern course signals to said pulse distributor; and a number of servo mechanisms, equal to the number of guide bars, connected to said pulse distributor and each including a rotatable servo motor and means for converting the rotary output of the associated servo motor into a linear movement of a respective guide bar; said pulse distributor, responsive to such pattern course signals supplied thereto from said memory, supplying respective pulse trains to said servo mechanism to move the associated guide bars respective distances corresponding to the respective pattern course to be knit; said servo drive mechanisms each comprising a stepping motor and means for converting a rotary movement into a linear movement and which converts the angle of rotation of an output shaft of the respective stepping motor into a corresponding magnitude linear movement of the associated guide bar; said means for converting the rotary movement into a linear movement comprising a threaded shaft, a nut threadedly mounted on said threaded shaft and guided by a fixed frame for linear sliding motion, and means transmitting the linear recipricatory movement of said nut to a push rod connected to the associated guide bar.

3,950,943

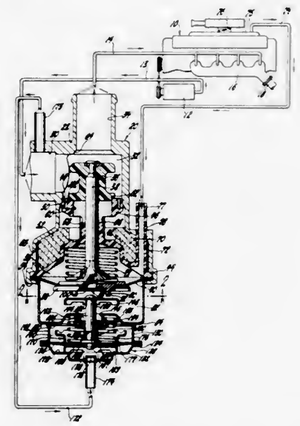
AIR DIVERTER VALVE

Gordon R. Paddock, Rochester, N.Y., and Ernst L. Ranft, Sudbury, Mass., assignors to General Motors Corporation, Detroit, Mich.

Filed May 20, 1974, Ser. No. 471,360

Int. Cl.² F02B *75/10*; **H01M** *6/00*

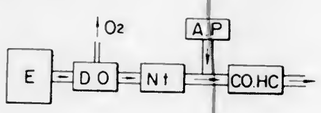
U.S. Cl. 60—290 **1 Claim**



1. An air diverter valve assembly for use on an internal combustion engine having an induction system for air flow to the engine, a throttle in said induction system for controlling air flow therethrough, an exhaust system for exhaust gas flow from the engine, and a pump for delivering air to the exhaust system, said air diverter valve assembly comprising an upper housing defining a passage having an inlet for receiving air from said pump, a main outlet for discharging air to said

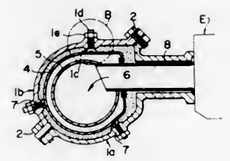
exhaust system, and a diversion outlet aligned with said main outlet for diverting air away from said exhaust system, a diverter valve member reciprocable between a full flow position obstructing air flow through said diversion outlet and directing the entire air flow through said main outlet and a full divert position obstructing air flow through said main outlet and diverting the entire air flow through said diversion outlet, a spring biasing said valve member to said full flow position, a lower housing secured to said upper housing, an actuating diaphragm connected to said valve member and secured between said housings to define a vacuum chamber between said diaphragm and said upper housing and a control chamber between said diaphragm and said lower housing, said vacuum chamber having means adapted to sense the vacuum in said induction passage downstream of said throttle, said diaphragm having a bleed permitting restricted flow from said control chamber to said vacuum chamber, a servomotor housing secured to said lower housing, a cover secured to said servomotor housing, a regulating diaphragm secured between said servomotor housing and said cover to define an atmospheric chamber between said diaphragm and said servomotor housing and a pressure chamber between said diaphragm and said cover, said pressure chamber having a conduit sensing the pressure in said passage, means secured to said regulating diaphragm and effective when the pressure in said passage exceeds a selected value to engage said actuating diaphragm and move said valve member to a partial divert position between said full flow position and said full divert position for dividing the air flow between said outlets to divert excess air through said diversion outlet and maintain said pressure at a substantially constant value, and stop means preventing said regulating diaphragm from moving said valve member to said full divert position, and wherein said actuating diaphragm moves said valve member to said full divert position upon a sudden increase in said vacuum irrespective of the pressure in said passage.

3,950,944
EXHAUST GAS CLEANING SYSTEM FOR THE INTERNAL COMBUSTION ENGINE
Yasuhiro Shidahara, and Yoshinori Miura, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan
Filed Nov. 14, 1973, Ser. No. 415,712
Int. Cl.² F01N *3/16*
U.S. Cl. 60—301 **2 Claims**



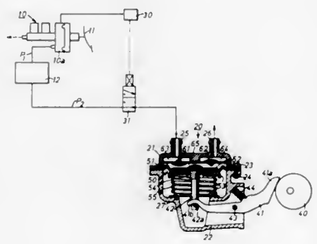
1. A system for cleaning the exhaust gas emanating from an internal combustion engine, said exhaust gas including at least oxygen and nitrous oxides, said system comprising:
   a. a solid-ion electrolytic device for electrically separating oxygen from said exhaust gas, said device having an inlet for receiving said exhaust gases and an outlet for passing said exhaust gas after separation, and
   b. nitrogen oxide detoxification means, having an inlet connected to receive said exhaust gas after separation, and an outlet, for reducing the nitrogen oxides in said exhaust gas into non-toxic gas;
   said oxygen-ion electrolytic device comprising a chamber having an inlet and first and second outlets, separator elements in said chamber positioned to physically isolate said second outlet from said inlet whereby gas entering said inlet will flow to said first outlet but will be blocked from said second outlet, said separator elements comprising a solid oxygen-ion electrolyte having a pair of electrodes attached thereto, and means for applying a voltage between said electrodes.

3,950,945
ADJUSTABLE MOUNTING FOR THE CORE OF A MANIFOLD REACTOR
Kazumasa Futamura, Toyota, and Masami Yamazaki, Toyokawa, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyoto, Japan
Filed May 6, 1975, Ser. No. 574,869
Claims priority, application Japan, Nov. 6, 1974, 49-133728[U]
Int. Cl.² F01N *7/00, 7/10*
U.S. Cl. 60—322 **4 Claims**



1. A manifold reactor for use in an internal combustion engine, which includes; a reactor casing; an outer core and inner core disposed in said reactor casing, said outer core and inner core defining therebetween a recombustion chamber for exhaust gas; an inlet port for introducing exhaust gas from an engine into said inner core; and outlet port connected to said outer core and discharging exhaust gas to an exhaust pipe; the improvements comprising;
   a heat insulating material filled between said reactor casing and said outer core; and,
   a plurality of outer core fixing screws piercing the wall of said reactor casing, said outer core fixing screws each having a screw-head adjustably urged on the outer surface wall of said outer core in slidingly contacting relation thereto, whereby the outer core is protected from stress either in the longitudinal direction or in the radial direction by adjusting said outer core fixing screws.

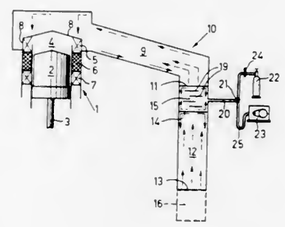
3,950,946
VACUUM PRODUCING SYSTEM
Toshimitsu Sakai, Toyota, and Isamu Suzuki, Aichi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisan Kogyo Kabushiki Kaisha, Obu, both of, Japan
Filed Mar. 4, 1975, Ser. No. 555,094
Claims priority, application Japan, May 23, 1974, 49-58907[U]
Int. Cl.² F15B *15/18*
U.S. Cl. 60—407 **6 Claims**



1. In a control system for a diaphragm vacuum pump driv-

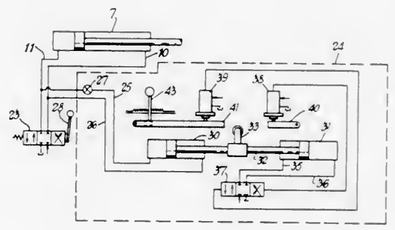
ingly connected to a power source to ensure operation of a pneumatically operated device, the improvement comprising,
   a vacuum sensor in communication with the vacuum chamber of said device for detecting a predetermined vacuum pressure to ensure the operation of said device and generating an output signal therefrom,
   means for pneumatically connecting the suction port of said pump to said vacuum chamber of said device, and
   a switchover means disposed within said pneumatic connection between said suction port and said vacuum chamber to be activated in response to said output signal from said sensor to selectively open the pumping chamber of said pump to the air through said suction port and close said vacuum chamber of said device.

3,950,947
HOT-GAS MACHINE COMPRISING A HEAT TRANSFER DEVICE
Adrianus Petrus Dirne; George Albert Apolonia Asselman, and Herman Henricus Maria Van Der, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 285,476, Aug. 31, 1972, abandoned. This application Oct. 25, 1974, Ser. No. 517,967
Claims priority, application Netherlands, Dec. 24, 1969, 6919338
Int. Cl. F03g *7/06*
U.S. Cl. 60—524 **3 Claims**



1. In a hot-gas engine including a heater, the improvement in combination therewith of a heat transfer device for controlling transfer of heat from a heat source to said heater comprises two closed spaces which are first and second heat pipes containing first and second heat-transporting mediums respectively, and arranged one after the other in the direction of heat transport, the distal ends of which are provided with heat-passing walls through which heat from the heat source can be supplied to the first transporting medium and the second transporting medium can give off heat to the heater whereas the proximal ends of said spaces comprise further heat-passing walls, between which a switching element is provided for establishing a thermal contact between said further heat-passing walls, said switching element is a third heat pipe comprising a reservoir for containing a third heat transporting medium that is a vaporizable liquid, a quantity of said third medium in said reservoir, a source of inert gas, means for flowing said gas into and out of said reservoir and for controlling the quantity and pressure of said gas in said reservoir, whereby higher pressure gas raises the vaporization point of said third medium which reduces vaporization thereof, and consequently reduces heat transfer through said switching element.

3,950,948
AUTOMATIC REMOTE CONTROL APPARATUS
William George Luke, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England
Division of Ser. No. 349,463, April 9, 1973, Pat. No. 3,836,084. This application Sept. 13, 1974, Ser. No. 505,845
Claims priority, application United Kingdom, Apr. 14, 1972, 17418/72
Int. Cl.² F15B *7/02*
U.S. Cl. 60—538 **8 Claims**

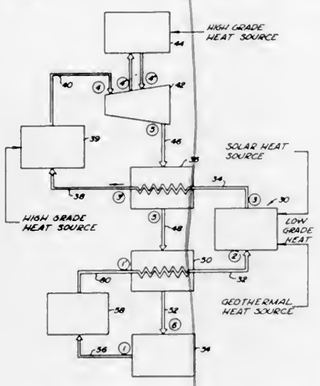


1. Hydraulic actuating system comprising a reciprocating double-acting hydraulic actuating ram, including a piston and cylinder, and hydraulic control means for the automatic remote control of the reciprocating movement of the hydraulic actuating ram, the hydraulic control means comprising a first double-acting ram including a slave piston and slave cylinder, opposite ends of the slave cylinder being connected hydraulically to respective opposite ends of the cylinder of the actuating ram such that reciprocating movement of the slave piston causes reciprocating movement of the actuating ram, a second double-acting ram including a master piston and master cylinder, the slave piston and the master piston being connected by a common piston rod, directional valve means for controlling the hydraulic pressure supply to the master cylinder, the directional valve means being arranged to reverse automatically the direction of movement of the master piston, pilot means adapted to control the directional valve means, and limit switch means adapted to actuate the pilot means for determining the desired length of stroke of the actuating ram.

3,950,949
METHOD OF CONVERTING LOW-GRADE HEAT ENERGY TO USEFUL MECHANICAL POWER
Cecil G. Martin, and Paul F. Swenson, both of Cleveland, Ohio, assignors to Energy Technology Incorporated, Cleveland, Ohio
Filed Mar. 26, 1974, Ser. No. 455,020
Int. Cl.² F01K *19/00, 25/00*
U.S. Cl. 60—641 **10 Claims**

1. A method of operating a vapor cycle engine of the type wherein a vaporizable fluid is circulated in a closed loop serially through a first heat source, a second heat source, an expansion vapor engine, a condenser, and back to the first heat source, comprising the steps of:
   a. heating the fluid in the first heat source to a relatively low temperature *t* to vaporize at least a major portion of the fluid:
   b. conducting the fluid from said first heat source to said second heat source to superheat the fluid and raise its temperature to T: and, thereafter,
   c. passing the superheated fluid through the expansion vapor to extract useful energy therefrom and then ex-

hausting the fluid from the engine at a temperature T_2 which is greater than t and thereafter conducting said

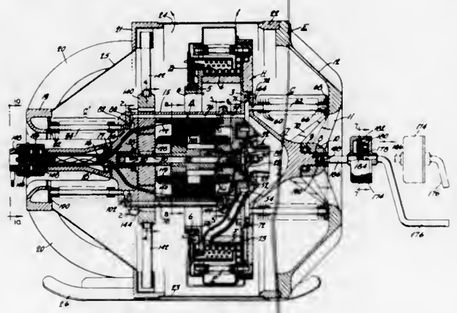


fluid through said condenser and back to said first heat source.

3,950,950
ROTARY RANKINE ENGINE POWERED ELECTRIC GENERATING APPARATUS

William A. Doerner, and Oral R. Van Buskirk, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 5, 1975, Ser. No. 565,635
Int. Cl.² F01K *11/04*
U.S. Cl. 60—657 **28 Claims**

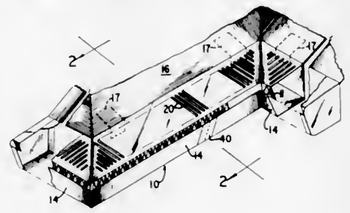


1. Rotary closed Rankine cycle engine powered electric generating apparatus comprising:
- a housing mounted for rotation about an axis and including an internal annular coaxial power fluid boiler operable for generating pressure power fluid vapor,
- a power fluid expander in said housing including a coaxial driving member and shaft rotatably driven at a first predetermined speed by the power fluid generated in the boiler,
- condenser means rotatable with the housing for condensing the exhaust power fluid vapor from the expander,
- an alternator mounted coaxially in the housing having the stator thereof rotatable with said housing and the armature thereof on said shaft,
- gas bearings rotatably supporting the power fluid driving member and shaft,
- means for conducting a portion of the power fluid condensate from the condenser means in heat exchange relation with the alternator to cool the same and be vaporized by heat exchange therewith to provide low pressure power fluid vapor for lubricating the gas bearings,
- means for conducting the low pressure vapor to said gas bearings,
- means for returning the other portion of the power fluid condensate from the condenser means directly to the boiler,
- drive means to rotationally drive said housing and condenser means at a second predetermined speed slower than said first speed operable to maintain the liquid power fluid in the boiler uniformly distributed circumferentially therein with a liquid/vapor interface disposed at a predetermined radius from the rotation axis of the boiler,
- and means for conducting the electric current generated by the alternator to a load located exteriorly of the apparatus.

3,950,951
COVERED GUTTER

Raymond Zukauskas, 99 Chippewa Road, Yonkers, N.Y. 10710

Filed July 8, 1974, Ser. No. 486,473
Int. Cl.² E02B *9/04*; **E04D** *13/00*
U.S. Cl. 61—15 **7 Claims**



1. In a gutter, the combination including a downwardly inclined top surface means for receiving water thereon, a first inclined front surface means joined to said top surface means with an abrupt longitudinally extending edge therebetween, a second front surface means spaced from said first inclined front surface means and in front thereof, a plurality of closely spaced vertical deflectors in the space between said first and second front surface means for deflecting solids away from said space and to the outside of said second front surface, so that water will be directed from said top surface means to the space between said first and second front surface means into the interior of said gutter, said abrupt edge assisting in separating any solids being carried by the water so that the solids pass outside of said second front surface.

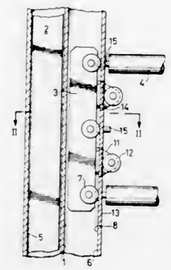
3,950,952
GUIDED HEAD FOR A TRENCH BRACE OF TRENCH SHEETING DEVICES

Josef Krings, Hans-Boeckler-Str. 23, D 5138 Heinsberg Oberbruch, Germany

Filed Nov. 22, 1974, Ser. No. 526,266
Claims priority, application Germany, Nov. 24, 1973, 2358621; Oct. 24, 1974, 2450505
Int. Cl.² E21D *7/00*, *15/50*
U.S. Cl. 61—41 A **16 Claims**

1. A guiding head for a bracing strut of a trench revetment device of the type including a supporting post having a slotted wall with inner and outer surfaces, said guiding head comprising a head member, at least two pairs of inner rollers carried by said head member, said pairs of inner rollers being spaced longitudinally of said head member and inner rollers of each pair being transversely spaced, support bracket means carried by said head member for projection through a slotted wall, at least one pair of transversely spaced outer rollers carried by said support bracket means in spaced relation to said inner roller, the axes of rotation of said inner and outer rollers being

in generally parallel relationship to each other, at least one support element means disposed generally in alignment with said support bracket means for attaching a bracing stud to said head member, and said support bracket means projecting

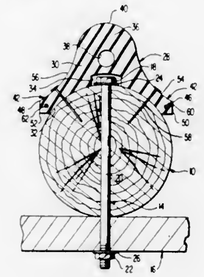


beyond said inner rollers in a direction away from said at least one support element means whereby said support bracket means is adapted to be received within a slotted wall of a trench revetment device.

3,950,953
PILING FENDER

Joseph E. Matthews, 4017 N. Witchduck, Virginia Beach, Va. 23455

Filed Nov. 18, 1974, Ser. No. 525,025
Int. Cl.² B63B *59/02*
U.S. Cl. 61—48 **1 Claim**

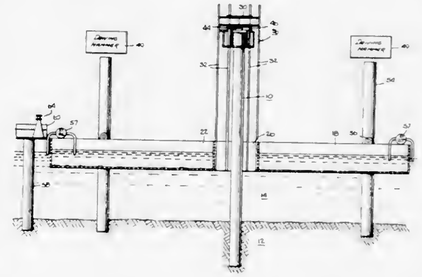


1. A piling fender for use on a piling of substantially cylindrical form, the piling having a series of bolts extending therethrough, the piling fender comprising:
- an elongated fender body portion formed of flexible material;
- the fender body portion having a concave inner face adapted for engagement against the piling;
- the fender body portion having an elongated vertically extending chamber formed therein opening on said inner face, with said bolts projecting into the chamber;
- the fender body portion having an enlarged outer crown portion, there being a vertically extending bore formed in the fender body portion between the crown portion and the inner face to permit compression of said crown portion upon impact;
- the crown portion having a rounded outer surface;
- outwardly extending wing flap portions on opposite sides of said crown portion, each of said wing flap portions having an outwardly extended corner;
- the wing flap portions having outer surfaces and being concave between the crown portion outer surface and the outwardly extended corners;
- a series of nails extending through the wing flap portions and into the piling;
- rigidifying rods embedded in the wing flap portions adjacent said outwardly extending corners, and extending vertically in said wing flap portions; and
- said nails extending through the wing flap portions inboard of the rigidifying rods and outwardly extending corners whereby watercraft are protected from contact with said nails.

3,950,954
METHOD AND APPARATUS FOR APPLYING LOADS TO PILES DRIVEN UNDER WATER

Stanley C. Haug, Brooklyn, N.Y., assignor to Raymond International, Inc.

Filed Dec. 20, 1974, Ser. No. 535,084
Int. Cl.² E02D *7/20*; **E02B** *17/00*
U.S. Cl. 61—53.5 **12 Claims**

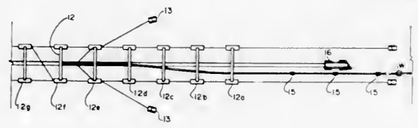


1. Apparatus for loading piles driven into the earth under water, said apparatus comprising a buoyant vessel, at least one spud driven into the earth adjacent said vessel, means on said vessel for pinning said vessel to said driven spud, a rigid assembly secured to said vessel and extending out therefrom to be brought into position over a pile to be loaded, means for variably adjusting the buoyancy of said vessel to impose a variable load on said spud and load transfer means to shift said variable load imposed by said vessel from said spud to said pile.

3,950,955
UNDERWATER PIPELAYING SYSTEM

Richard Donald Meeres, Leduc, Canada, assignor to Banister Continental Ltd., Mississauga, Canada

Filed Feb. 20, 1974, Ser. No. 444,252
Int. Cl.² F16L *1/00*
U.S. Cl. 61—72.3 **16 Claims**



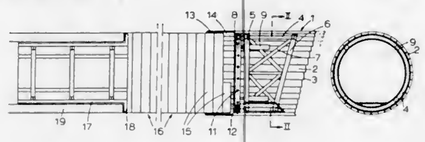
1. A system for the underwater laying of pipe from an ice surface through a channel cut in the ice, comprising an underwater pipe laying guideway; an above-ice supporting means; ice contacting undercarriage means for mounting said supporting means operatively on the ice surface; said supporting means including means to adjustably support the guideway through said channel at a series of points and increasing depths beneath the ice surface, to cause said guideway to conform to a predetermined shape capable of supporting the pipe and including means to pick up the pipe and feed it into the guideway; means to monitor the configuration of the guideway; and means for moving the system along the ice.

3,950,956

DRIVING OF TUNNELS

Armin Lobbe, Oberaden, Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Wethmar near Lunen, Germany

Division of Ser. No. 180,961, Sept. 16, 1971, Pat. No. 3,818,713. This application Dec. 6, 1973, Ser. No. 422,384
Claims priority, application France, Sept. 24, 1970, 70.34576
Int. Cl.² E01G *3/02*
U.S. Cl. 61—85 2 Claims



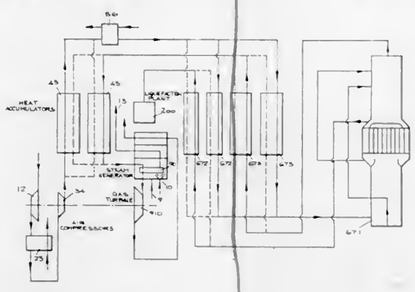
1. A method of driving a tunnel or the like, said method comprising the steps of:
a. driving a knife shield composed of elongate cutting implements into material to be removed;
b. inserting a tube section into a space defined by a rear shield attached to said knife shield when said knife shield has advanced sufficiently to permit the insertion of said tube section, said tube section being of a size to support the wall of the tunnel produced by said implements after said knife shield and said rear shield have been advanced beyond said tube section;
c. repeating the previous step so as to form an advanceable lining of tube sections arranged end-to-end;
d. inserting concrete into a space defined by a revetment located at the rear of said advanceable lining to form permanent tunnel lining, the inserting of the concrete being effected independently of the driving of said knife shield; and
e. removing the rearmost tube sections and advancing said revetment when the concrete is set.

3,950,957

THERMODYNAMIC INTERLINKAGE OF AN AIR SEPARATION PLANT WITH A STEAM GENERATOR

Tsadok Zakon, 10, Mapu Ave., Ahuza, Haifa, Israel

Continuation-in-part of Ser. No. 196,940, Nov. 9, 1971, abandoned. This application May 6, 1974, Ser. No. 467,252
Claims priority, application Israel, Apr. 30, 1971, 36741
Int. Cl.² F25J *13/02*
U.S. Cl. 62—30 28 Claims



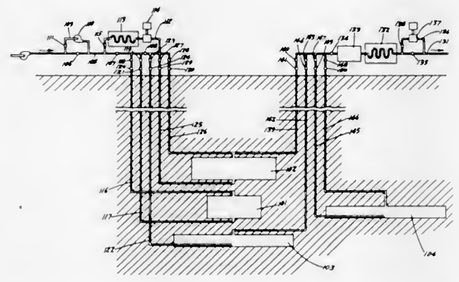
1. In double fractionation of air at low temperatures in an air separation plant, operating at elevated pressures on a compressed main air feed and producing a nitrogen product, the method for thermodynamically interlinking said air separation plant with a steam generator so that irreversibility of heat transfer within said steam generator is reduced and total efficiency of said interlinked plants is increased, consisting essentially of:
A. accumulatively and indirectly heating said nitrogen product with said compressed main air feed to form a hot nitrogen product containing a low-grade heat;
B. indirectly heating said hot nitrogen product with high-grade heat generated by combusting an air-fuel mixture to form combustion products at a high temperature level in connection with said steam generator, without contaminating said nitrogen product with said combustion products, to form a very hot nitrogen product;
B'. preheating at least a portion of the air of the air-fuel mixture by indirect heat exchange with a portion of said compressed main air feed prior to any further heat exchange;
C. work-expanding said very hot nitrogen product to obtain energy therefrom and cool said nitrogen product to a lower temperature level;
D. indirectly cooling said work-expanded nitrogen product to a temperature that is close to ambient by transferring low-grade heat within said steam generator; and
E. disposing of said cooled nitrogen product, uncontaminated by said combustion products, outside of said interlinked plants.

3,950,958

REFRIGERATED UNDERGROUND STORAGE AND TEMPERING SYSTEM FOR COMPRESSED GAS RECEIVED AS A CRYOGENIC LIQUID

Robert L. Loofbourow, 3601 Park Center Blvd., Room 225, St. Louis Park, Minn. 55416

Continuation-in-part of Ser. No. 119,623, March 1, 1971, Pat. No. 3,848,427. This application Oct. 29, 1974, Ser. No. 518,400
Int. Cl.² F17C *1/00*
U.S. Cl. 62—45 15 Claims



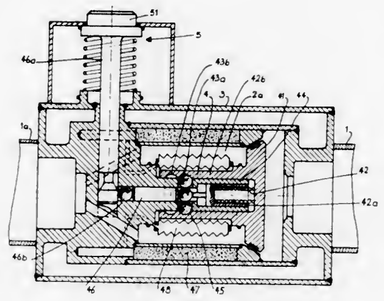
1. A method of storage and tempering of large volumes of compressed gas received as a cryogenic liquid in an underground storage facility deep in the earth including at least one underground rock chamber, which method comprises:
A. receiving liquefied gas at about −260° F and at about atmospheric pressure into a cryogenic pipeline for charging to said storage facility,
B. introducing heat into said storage facility to warm the gas therein,
C. maintaining the storage facility at a temperature between about 0° F to about −110° F and moderately elevated pressure up to about 2500 psi to maintain the gas predominantly in the gaseous state to store between about 75 and 475 cubic feet of gas to each cubic foot of storage space,
D. withdrawing gas from said storage facility for consumption as needed,
E. heating said withdrawn gas to between about 32° F and −40° F, and
F. discharging the warmed gas to a pipeline for distribution.

3,950,959

DEVICE FOR TRANSFERRING LIQUIFIED GAS

Jean-Claude Coureau, 18 Le Clos Perrault, 91200 Athis Mons, France

Filed Feb. 22, 1973, Ser. No. 334,610
Claims priority, application France, Feb. 22, 1972, 72.05841
Int. Cl.² F17C *17/02*
U.S. Cl. 62—55 11 Claims



1. A device for controlling the flow of a liquefied gas comprising:
a. means defining a flowpath;
b. a valve actuatable to an open condition and a closed condition for opening and closing said means defining a flowpath;
c. means comprising a gas-filled closed circuit comprising an expandible and contractible hollow elastic member connected in said flow path directly to said valve and responsive to the temperature of said flow liquefied gas for biasing said valve to said open condition when said valve is closed and biasing said valve to said closed condition when said valve is open;
d. means having a normally operative state and an inoperative state for locking said valve in said open condition and for locking said valve in said closed condition; and
e. means controllable for rendering said means for locking said valve inoperative whereby said valve changes condition.

3,950,960

PROCESS FOR STORING A LIQUEFIED GAS FOR ITS DISTRIBUTION IN GASEOUS FORM

Antoine Kawam, Washington, D.C., assignor to S.T. Dupont, Paris, France

Filed Nov. 21, 1974, Ser. No. 525,974
Claims priority, application France, Nov. 22, 1973, 73.41626
Int. Cl.² F17C *11/00*
U.S. Cl. 62—48 9 Claims



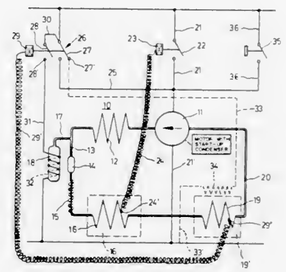
1. In a process for storing a liquefied gas in the presence of an adsorbant support in a chamber provided with at least one discharge orifice for the distribution of the gas into an environment at a pressure lower than the storage pressure, an improvement wherein said adsorbant support is constituted of hollow capillary fibers providing means whereby said fibers can adsorb a greater quantity of liquefied gas with substantially smaller volume as compared to solid fibers for release of the gas exclusively in gaseous form into said environment.

3,950,961

COOLING SYSTEM FOR A TWO-TEMPERATURE REFRIGERATOR

Helmut Lotz, Giengen, Germany, assignor to Bosch-Siemens Hausgerate GmbH, Munich, Germany

Filed Oct. 10, 1974, Ser. No. 513,938
Claims priority, application Germany, Oct. 11, 1973, 2350998
Int. Cl.² F25B *45/00*
U.S. Cl. 62—149 11 Claims



1. In a refrigerator having a lower-temperature cooling compartment and a higher-temperature cooling compartment, a cooling system, comprising, in combination, a circuit for the flow of cooling medium and including a compressor, a condenser downstream of said compressor, flow restrictor means downstream of said condenser, a first evaporator section downstream of said flow restrictor means and operative for cooling said lower-temperature compartment, and a second evaporator section downstream of said first evaporator section and operative for cooling said higher-temperature compartment; an accumulator communicating with said circuit upstream of said flow restrictor means; heating means for heating liquid cooling medium in said accumulator to cause evaporation of part of such liquid cooling medium and concomitant pushing of the liquid remainder of the liquid cooling medium in said accumulator out of said accumulator and into said second evaporator section; first regulator means operative for controlling the operation of said compressor and the energization of said heating means in dependence upon the temperature of said higher-temperature compartment; and second regulator means operative independently of the operation of said first regulator means for initiating operation of said compressor when the temperature of said lower-temperature compartment exceeds a preselected maximum value.

3,950,962

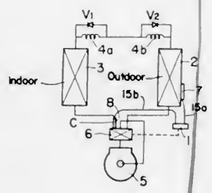
SYSTEM FOR DEFROSTING IN A HEAT PUMP

Takeshi Odashima, Tokorozawa, Japan, assignor to Kabushiki Kaisha Saginomiya Seisakusho, Tokyo, Japan

Filed Apr. 29, 1974, Ser. No. 465,007
Claims priority, application Japan, May 1, 1973, 48-47573; June 11, 1973, 48-64766
Int. Cl.² F25D *21/06*
U.S. Cl. 62—156 6 Claims

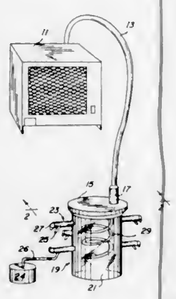
1. In a heat pump system having indoor and outdoor heat exchanger means associated therewith and functioning respectively as a condenser and an evaporator during a heating cycle, expansion valve means connected between said indoor and outdoor heat exchanger means, compressor means asso-

ciated with said indoor and outdoor heat exchanger means for controlling flow to and from same, shiftable flow control valve means associated with said compressor means for controlling the flow from said compressor means to and from said indoor and outdoor heat exchanger means, conduit means connected between said indoor heat exchanger means and said flow control valve means, and defrosting means associated with said outdoor heat exchanger means for defrosting same, said defrosting means causing said system to operate in reverse whereby said indoor and outdoor heat exchanger means respectively operate as an evaporator and a condenser, said defrosting means including first heat sensing means for detecting the temperature of the surface of said outdoor heat exchanger means and second heat sensing means for detecting



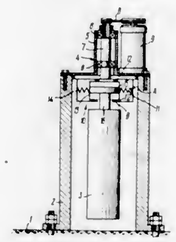
the temperature of the surrounding air, and means responsive to said first and second heat sensing means for actuating the flow control valve means to terminate the defrosting cycle upon sensing a predetermined temperature difference between said first and second heat sensing means, the improvement comprising controlling means for terminating the defrosting cycle irrespective of the actual temperature difference between said first and second heat sensing means, said controlling means including a third heat sensing means disposed adjacent the conduit means connected between the shiftable flow control valve means and the indoor heat exchanger means for terminating the defrosting cycle when a sufficient temperature difference exists between said first and third heat sensing means.

3,950,963
PORTABLE REFRIGERATING UNIT FOR FREEZE DRYING APPARATUS
David Theodore Sutherland, Woodstock, N.Y., assignor to The Virtis Company, Gardiner, N.Y.
Filed Aug. 5, 1974, Ser. No. 494,385
Int. Cl.² F25B *19/00*
U.S. Cl. 62—268 **17 Claims**



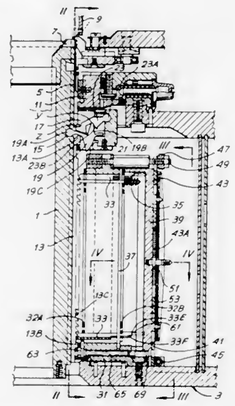
1. A portable refrigerating unit for freeze drying apparatus, which has a container forming a drying chamber, comprising:
a compressor;
a flexible tube to convey refrigerant to said compressor and extending out from said compressor;
a closure member having an opening therethrough and adapted to removably enclose the drying chamber of the freeze drying apparatus with a vacuum-tight seal;
a condenser unit to be inserted directly into the drying chamber; and
connecting means to releasably maintain said closure member in a unitary structure with said flexible tube and said condenser unit to permit replacement of said closure member without disconnecting said flexible tube and said condenser unit, said connecting means conveying the refrigerant between said flexible tube and said condenser unit through said opening of said closure member and closing said opening to provide a vacuum-tight seal between the drying chamber and the ambient environment.

3,950,964
SUPPORT ASSEMBLY OF VERTICAL ROTOR
Natalia Ilinichna Alexeeva, prospekt Shvernika 6, kv. 12; Edgar Evelevich Bogorad, ulitsa Polyarnikov, 19, kv. 41, both of Leningrad; Georgy Borisovich Vexler, Gruzinsky pereulok 4, korpus 12, kv. 65, Moscow; Anatoly Saulovich Kelzon, ulitsa Orbelli, 27, korpus 4, kv. 16; Boris Fedorovich Klochkov, Lesnol prospekt, 61, kv. 63, both of Leningrad; Igor Avshnovich Fainerman, ulitsa K. Marxa, 28/2, kv. 33, Moscow; Valentin Ivanovich Yakovlev, Nalichny pereulok 2, kv. 26, Leningrad; Robert Alexeevich Yaroslavtsev, Butyraskaya ulitsa, 6, kv. 81, Moscow; Valery Viktrovich Vishnyakov, Otkrytoe shosse 29, korpus 1, kv. 32, Moscow; Nina Ivanovna Gutina, 1 Lazarevksy pereulok 20, kv. 16, Moscow; Vadim Ivanovich Pryadilov, Budapeshtskaya ulitsa 31/1, kv. 16; Nikolai Vladimirovich Yanvarev, Avtovskaya ulitsa 52, kv. 28, both of Leningrad; Vasily Dmitrievich Vasiliev, ulitsa Gorkogo 45, kv. 7, Sumy, and Vladimir Alexandrovich Rachitsky, Beskudnikovsky bulvar, 20, korpus 5, kv. 24, Moscow, all of U.S.S.R.
Filed May 14, 1973, Ser. No. 360,168
Int. Cl.² F16C *3/00*
U.S. Cl. 64—1 V **15 Claims**



1. A support assembly of the vertical rotor of a centrifuge, comprising: a housing; a drive shaft installed in said housing in a vertical position; an elastic support coupling said drive shaft with the shaft of said rotor and maintaining said rotor in an upright position; a first group of elastic elements of said elastic support consisting of at least three elastic elements which, in the course of rotation of said rotor, are only responsive to rotor radial oscillations relative to the rotor axis; a second group of elements of said elastic support consisting of at least three elastic elements which, in the course of rotation of said rotor, are only responsive to the axial oscillations of the rotor, and a rigid element of said elastic support interconnecting the elastic elements of said first and second groups.

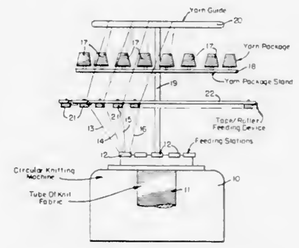
3,950,965
AUXILIARY LINKAGE FOR AMPLIFYING NEEDLE MOVEMENT IN CIRCULAR KNITTING MACHINES
Benito Manini, Florence, Italy, assignor to Billi S.p.A., Florence, Italy
Filed Apr. 29, 1974, Ser. No. 465,129
Claims priority, application Italy, Apr. 27, 1973, 9436/73
Int. Cl.² D04B *9/00*
U.S. Cl. 66—50 R **3 Claims**



1. In a circular knitting machine having a needle cylinder, at least one feed station and a plurality of vertically extending grooves circumferentially arranged about said needle cylinder for the reception of vertically movable knitting needles and vertically movable jacks positioned beneath at least some of said needles and means for imparting a given amount of upward movement to certain of said jacks at said feed station, the combination of an auxiliary linkage between the upper ends of the jacks and the lower ends of corresponding needles, said auxiliary linkage comprising two pivoted levers having separate pivot points, said levers extending across the vertical path of travel of a respective jack and cooperating with each other and with said jack and corresponding needle in a given groove, a first of said levers being positioned for engagement by the jack in its upward movement at a point spaced radially from said groove to impart movement to the second of said levers positioned for responsive engagement with the needle to impart thereto an amplified movement with respect to said given amount of upward movement of the jack.

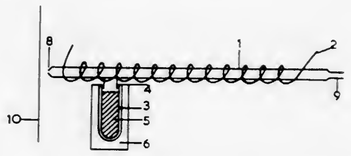
3,950,966
DEMAND RESPONSIVE POSITIVE FEED DEVICE FOR KNITTING MACHINE
Joseph Scotto di Carlo, Cornwells Heights, Pa., assignor to Scorpio Industries Inc., Neponsit, N.Y.
Filed May 12, 1975, Ser. No. 576,408
Int. Cl.² D04B *15/48*
U.S. Cl. 66—132 T **8 Claims**

1. In a knitting machine of the demand type comprising a plurality of yarn packages for supplying yarns upon demand to a plurality of feeding stations via a plurality of positive feed devices, and wherein said positive feed devices comprise a plurality of rotatable rollers associated with a driven tape running along the surfaces of said rollers, the width of said tape being less than the axial dimension of the running surface of each roller whereby a yarn supplied to one of said rollers at a first position between said tape and the running surface of the roller is positively fed to one of said feeding stations whereas a yarn supplied to said one of said rollers at a second position on the running surface of said roller axially displaced from the tape is not positively fed to said one of said feeding stations, and wherein each of said positive feed devices further includes a bracket having inlet and outlet eyelets disposed at spaced locations adjacent the running surface of said roller, said bracket being selectively displaceable between said first and second positions to locate a length of yarn which extends along said running surface from one to the other of said eyelets for positive feed or nonfeed in dependence upon the position of said bracket, the improvement wherein each of said brackets in each of said feed devices is mounted for free pivotal movement through a limited arc adjacent its associated roller, counterbalance means comprising a pair of counterbalance weights, said counterbalance means including mounting means on said bracket comprising a pair of arms located on opposite sides of the pivot point of said bracket, each of said arms including one of said counterbalance weights, said pair of said weights being arranged to normally urge said bracket and its eyelets into said second, nonfeed position adjacent said



associated roller under the influence of gravity, and yarn guide means carried by said mounting means for engagement with the yarn in said positive feed device, said yarn guide means being responsive to the presence of a preselected tension in said yarn resulting from a yarn demand by one of said feeding stations for pivoting said bracket against the force of said counterbalance means thereby to displace said bracket and its associated eyelets into said first, positive feed position, whereby the occurrence of tension in a particular yarn due to a demand for said particular yarn by one of said feeding stations automatically positions the demanded yarn in proper position relative to its feed device for positive feed to said feeding station whereas absence of demand for said particular yarn by said one of said feeding stations causes said counterbalance means to automatically position the nondemanded yarn in a different proper position relative to its feed device for nonfeed to said feeding station.

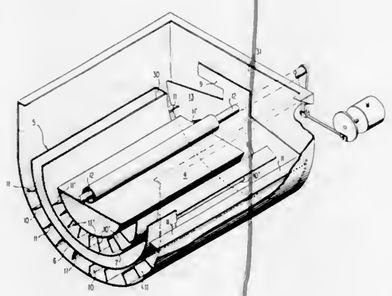
3,950,967
COLOURATION PROCESS
Johnson York Davies; Guillaume Ward Jamin; Thomas Renshaw; Roy Anthony Saunders; Geoffrey Taylor, all of Manchester, England, and John Prys Williams, Col Roma, Mexico, assignors to Imperial Chemical Industries Limited, London, England
Filed Jan. 25, 1974, Ser. No. 436,791
Claims priority, application United Kingdom, Jan. 31, 1973, 4768/73
Int. Cl.² D06B *1/08*
U.S. Cl. 68—5 D **5 Claims**



1. An apparatus for the colouration of textile materials with a gaseous stream containing a dyestuff in vapour form, which

comprises a reservoir containing an inert gas under pressure connected to a tube fitted with heaters, said tube being in communication with a receptacle for the dyestuff, and one end of the tube being fitted with a jet the exit of which is in close proximity to the piece of textile material which is to be coloured.

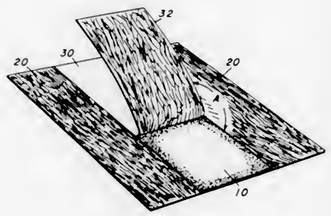
3,950,968
FABRIC WASHING MACHINE WITH CONTINUOUS FEED SYSTEM
Gino Dalla Vecchia, Santorso, Italy, assignor to Rimar S.p.A., Trissino, Italy
Filed Nov. 20, 1974, Ser. No. 525,456
Claims priority, application Italy, Nov. 21, 1973, 31503/73
Int. Cl.² D06B *3/10*
U.S. Cl. 68—53 **9 Claims**



1. A fabric washing machine comprising a stationary tank for containing a solvent or other liquid detergent and in part defined by spaced stationary upper and lower walls respectively, a stationary washing drum carried by said machine and disposed in the interspace between and space from the upper and lower walls of said tank, said drum including two spaced perforated upper and lower walls, respectively, a first fixed set of blades carried by said machine and disposed between the spaced upper walls of said tank and said drum respectively, a second fixed set of blades carried by said machine and disposed between the spaced lower walls of said tank and said drum respectively, first and second groups of a plurality of blades each, said first group of blades being located between the upper wall of said tank and the upper wall of said washing drum and substantially interleaved with said first set of blades, said second group of blades being located between the lower wall of said tank and the lower wall of said washing drum and substantially interleaved with said second set of blades, and means for supporting and oscillating said blade groups whereby the blades of each blade group move along paths between the blades of the corresponding sets of blades.

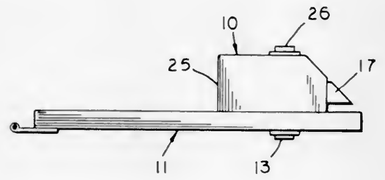
3,950,969
ADHESIVE GUARD HAIR REMOVAL
Henry E. Hull, Columbus, Ohio, assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.
Filed Dec. 4, 1967, Ser. No. 687,510
Int. Cl.² C14B *15/00*
U.S. Cl. 69—22 **4 Claims**

1. A process for removing guard hair from a fur seal skin without substantial removal of fur therefrom, said process comprising applying a gripping substance to the guard hair while avoiding substantial contact between the gripping substance and the fur, and parting the skin from the gripping



substance, said substance, upon parting, pulling guard hairs out of the skin and leaving the fur on the skin.

3,950,970
PRE-SHIPMENT PROTECTIVE DEVICE
William O. Fortin, 71 Montello St., Lewiston, Maine 04240
Filed Aug. 20, 1974, Ser. No. 498,931
Int. Cl.² E05B *65/52, 63/14, 35/08*
U.S. Cl. 70—63 **8 Claims**



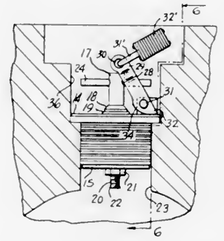
1. A locking means adapted to be mounted on a receptacle in such a manner as to releasably hold the closure thereof in closed position, said locking means including;

A. latching means mountable on the inner side of a receptacle wall (including the closure), said latching means including a latch bolt, an inside actuating knob for said latch bolt, and means to releasably hold back said latch bolt when retracted,

B. an exterior lock interconnected with said latch bolt in such a manner that it will function only to retract said latch bolt and including a key opening, said exterior lock being mountable on the receptacle wall with said key opening accessible from the outer side thereof, said exterior lock further including a stop means cooperating with a key controlled portion of this lock to limit retraction of said latch bolt to a position wherein it is held by said hold back means, and

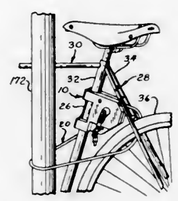
C. an interior lock including a housing mountable over and, in combination with the receptacle wall, enclosing said latching means and having an opening in a wall thereof through which said latch bolt operates, said interior lock further including cam means within said housing and associated with said inside actuating knob in such a manner that it will function only to release said latch bolt from said hold back means, and additionally including key controlled means carried by said housing and interconnected with said cam means for controlling movement thereof, this key controlled means including a key opening accessible from the exterior of said housing.

3,950,971
EXPANSION PLUG LOCK
Albert J. Karls, Greenville, Miss., assignor to Moeller Mfg. Co., Inc., Greenville, Miss.
Filed Dec. 4, 1974, Ser. No. 529,557
Int. Cl.² B65D *55/14*
U.S. Cl. 70—164 **7 Claims**



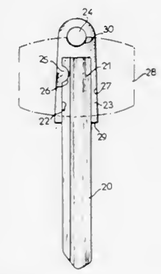
1. A lockable closure plug comprising a resilient compressible body, inner and outer compression elements engaging the opposite ends of the body, an axial stem member extending through the compression elements and said body, means to exert squeezing pressure on said compression elements responsive to movement of said stem member, a transversely extending handle on said stem member, locking means on said plug adjacent said handle comprising a pair of link arms extending transversely of said stem member with said stem member located between said arms, said link arms being mounted for longitudinal movement with respect to said stem member, said link arms being spaced apart substantially throughout their entire length to receive said stem whereby said arms are movable from a non-locking position out of the path of movement of said handle to a locking position wherein said arms are in the path of movement of said handle.

3,950,972
BICYCLE LOCK
Andrew Y. Bleier, Chicago; Philip J. Burnstein, Skokie, and John J. Aiken, Bolingbrook, all of Ill., assignors to Bik-Lok, Inc., Chicago, Ill.
Filed May 5, 1975, Ser. No. 574,425
Int. Cl.² B62H *5/00*
U.S. Cl. 70—234 **12 Claims**



1. A bicycle lock, comprising: a housing, a mount for securing the housing to a portion of a bicycle, a shackle receptacle rotatably mounted in the housing, an elongated flexible shackle having one end fixed to the shackle receptacle and the other end being free, said elongated flexible shackle being windable upon the shackle receptacle for storage thereon, a ratchet wheel fixedly connected to the shackle receptacle for rotation therewith, a lock pin connected to the free end of the flexible shackle and being releasably positionable in the housing, said lock pin having a dog selectively cooperative with the ratchet wheel to limit rotation of the ratchet wheel and the shackle receptacle to one direction for winding the flexible shackle onto the receptacle, and a lock mounted in said housing and being selectively engageable with the lock pin to hold the lock pin in the housing with the dog in a position for engagement with the ratchet wheel.

3,950,973
FLAT KEY
Serge Grasnianski, Grenoble, France, assignor to Kis France, France
Division of Ser. No. 418,223, Nov. 23, 1973. This application Feb. 3, 1975, Ser. No. 546,759
Claims priority, application France, Apr. 24, 1973, 73.14753; June 20, 1973, 73.22467
Int. Cl.² E05B *19/04*
U.S. Cl. 70—395 **5 Claims**



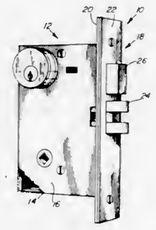
1. A flat key comprising;

a shank which comprises a flat and narrow profile section and a substantially similarly flat and narrow shank head;

an intermediate component which has at least one face and a groove therein having edges which engage the shank head, said component being wedge-shaped, with a very gradual taper, on outer surfaces thereof; and

a key head surrounding the intermediate component, the key being thicker and wider than said component, having an aperture extending through the key head and slightly tapering to fit the slightly tapering component, with wedge action, to interconnect said key head tightly but removably with said component and thereby with said shank.

3,950,974
LOCK CASE HAVING ADJUSTABLE FRONT
Gordon A. Alexander, Newington, Conn., assignor to Emhart Corporation, Farmington, Conn.
Filed May 19, 1975, Ser. No. 578,997
Int. Cl.² E05B *9/08*
U.S. Cl. 70—450 **9 Claims**



1. In a lock case for supporting a bolt and a bolt operating mechanism and having a body including top and bottom walls, an angularly adjustable front assembly adapted to be secured to an edge of a door and including a front having an opening therein for receiving the bolt therethrough and upper and lower tabs connected to the front and projecting rearwardly therefrom, and a pair of fasteners, one of said fasteners secur-

ing said upper tab to said top wall, the other of said fasteners securing said lower tab to said bottom wall, the improvement comprising at least one of said walls having a forwardly projecting tongue including fulcrums at opposite sides thereof, said front having a slot therein partially defined by opposing side surfaces for receiving said tongue therein, each of said fulcrums being engageable with an associated one of said slot side surfaces.

3,950,975

PROCESS OF COLD PLASTIC DEFORMATION OF METALS

Kaichi Izumi, Tokyo, and Hiroshi Kono, Funabashi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 403,084, Oct. 3, 1973, abandoned. This application June 7, 1974, Ser. No. 477,512

Claims priority, application Japan, Oct. 11, 1972, 47-101780

Int. Cl.² B21B *45/02*; **B21J** *3/00*; **B21D** *22/00*

U.S. Cl. 72—42 **4 Claims**

1. In a process which comprises effecting cold plastic deformation of a deformable metal workpiece, the improvement which comprises: coating said metal workpiece, prior to the cold plastic deformation thereof, with an adherent solid film of a composition consisting essentially of a mixture of (A) from 95 to 20 percent by weight of a ketone component consisting of a ketone or a mixture of ketones having the formula R'COR'', wherein R' and R'', which can be the same or different, are saturated or unsaturated aliphatic hydrocarbon radicals having 5 to 25 carbon atoms, provided that each of R' and R'' has zero to 2 double bonds, said ketone component containing up to 35 weight percent of free fatty acids having the formulas R'COOH and R''COOH, wherein R' and R'' have the same meanings as defined above, (B) from 5 to 80 percent by weight of paraffin having a melting point higher than about 43°C, and (C) from zero to 25 percent by weight of a material selected from the group consisting of polybutene, lecithin, dialkyl phthalates, dialkyl adipates and mixtures thereof.

3,950,976

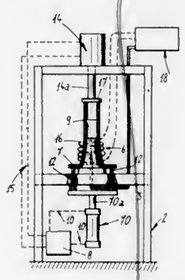
METHOD AND DEVICE FOR FORMING TUBES

Michel Roger DeHove, Mantes-la-Jolie, France, assignor to General Electronic Seet - G. E. S., Mantes-la-Jolie, France

Filed Dec. 12, 1974, Ser. No. 531,880

Int. Cl.² B21D *37/16*, *41/02*

U.S. Cl. 72—128 **15 Claims**



1. A device for forming metal tubes, comprising a metal mandrel with a flared body mounted on a support and having a configuration corresponding to the intended configuration of the tube, means for heating said mandrel to a temperature sufficient to permit expansion of the tube on the mandrel and means for producing a relative sliding movement between the mandrel and the tube, wherein said device comprises a medium-frequency electric circuit for heating the mandrel, wherein said circuit comprises an inductor having a plurality of turns, said turns surrounding the flared body of the mandrel at a distance therefrom which is substantially greater than the thickness of the tube to be formed, and wherein means are provided for regulating the temperature of the mandrel at a predetermined value during the tube-forming operation.

3,950,977

DRAWING OF ELONGATED STOCK

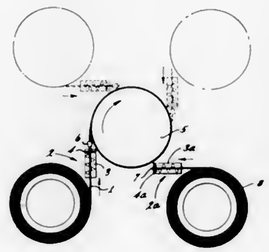
Otto Uhlmann, Burgdorf, and Norbert Stephan, Ahlem, both of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Jan. 23, 1975, Ser. No. 543,442

Claims priority, application Germany, Jan. 28, 1974, 2403910

Int. Cl.² B21C *1/02*

U.S. Cl. 72—281 **3 Claims**



1. Apparatus for drawing elongated tubular stock comprising:

a single pulling drum with means for fastening one end of such tubular stock to be drawn;

a plurality of drawing dies disposed around the periphery of said drum respectively for drawing tubular stock taken from one of a plurality of different stores, through only one of said dies at a time and as said tubular stock is being uncoiled from one of said stores and coiled onto the rotating drum, whereby tubular stock drawn by different ones of the dies is coiled onto the drum at different locations, the other die or dies are being prepared for drawing uncoiled tubular stock from a different store or the plurality of stores; and

a plurality of sets of straightening rolls, the sets being respectively disposed in front of the dies, the set of rolls in front of the one die straightening the tubular stock prior to drawing by the one die, another one of the sets of the plurality holding the beginning of tubular stock from the different store in the respective die prior to being used next following exhaustion of the one store.

3,950,978

STRETCH-FORMING OF LONG TUBES

Johann Wassen, Brackwede, Germany, assignor to Mannesmannrohren-Werke AG, Dusseldorf, Germany

Filed Jan. 7, 1975, Ser. No. 539,231

Claims priority, application Germany, Jan. 9, 1974, 2401345

Int. Cl.² B21C *1/24*

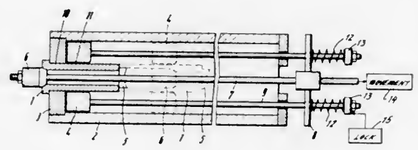
U.S. Cl. 72—283 **8 Claims**

1. Apparatus for stretch-forming of a tube from a tubular blank under utilization of a drawing die and a drawing mandrel, and including means for holding one end of the tubular blank throughout the stretch-forming, the improvement comprising:

the drawing die being relatively short and of tubular configuration with a cylindrical interior surface, said die being disposed for movement along the axis of the tube;

the drawing mandrel disposed for movement relative to the die and having a cylindrical working surface;

first means for holding the die adjacent said one end during an initial phase of drawing as the mandrel is inserted into the blank; and



second means for moving the mandrel into the blank at said one end as the first means holds the die until the mandrel is at least approximately radially aligned with the die, wherein said cylindrical surfaces face each other and for moving the mandrel and the die in unison so as to complete stretch-forming the tubular blank.

3,950,979

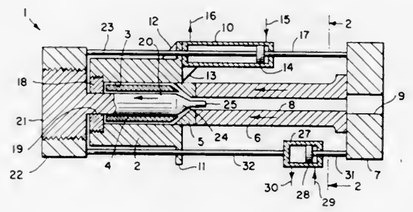
APPARATUS AND METHOD FOR TUBE EXTRUSION

Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 4, 1974, Ser. No. 512,270

Int. Cl.² B21B *17/02*

U.S. Cl. 72—370 **14 Claims**



1. Method of producing tubing from a billet having an aperture extending longitudinally therethrough, said method comprising:

a. placing said billet in a chamber;

b. inserting through a first end of said chamber into the aperture in said billet a mandrel;

c. positioning through a second end of said chamber a die in close proximity to said mandrel, said mandrel and said die cooperating to form an annular passageway having an entrance end and an exit end, said annular passageway converging from the entrance end toward the exit end thereof, the width of said annular passageway at the entrance end being larger than the width at the exit end;

d. advancing said die into said chamber against said billet while simultaneously retracting at the same velocity from the first end of said chamber said mandrel, whereby to advance said annular passageway into said chamber against said billet and extrude said billet through said annular passageway thereby to discharge tubing from the exit end of said annular passageway, said tubing having a smaller diameter and wall thickness than the billet; and

e. maintaining the geometry of said annular passageway constant during extrusion of said billet therethrough.

3,950,980

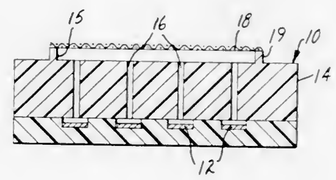
VAPOR SAMPLING DEVICE

David L. Braun, Lake Elmo, and John A. Trine, Landfall, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 27, 1974, Ser. No. 455,211

Int. Cl.² G01N *27/04*, *31/06*

U.S. Cl. 73—23 **3 Claims**



1. Device useful for measuring the amounts of at least one selected vapor in an ambient gas mixture, comprising:

a flat substrate having a shallow cavity therein;

a flat, elongated detector layer capable of interacting with the vapor to be measured contained within, coextensive with and in contact with the bottom of said cavity;

multiple flat, porous gas-flow attenuating layers superimposed on, and overlying each other, said cavity and said detector layer and being substantially coextensive with said substrate, at least one of said gas-flow attenuating layers being spaced a short distance apart from and parallel to said detector layer or from another one of said gas-flow attenuating layers so as to form layers of substantially placid gas between all of the layers of said device, whereby the effect of turbulence, velocity of movement or other disturbance in the ambient gas mixture is minimized and the amount of vapor to be measured is caused to be a function of diffusion through the said thin layer of placid gas and is substantially independent of velocity of the ambient gas mixture at the interface between the device and the ambient gas mixture.

3,950,981

AUTOMATIC SYSTEM FOR SUPPRESSING THE GROUND NOISE OF APPARATUS FOR MEASURING THE KNOCKING

Virgilio Arrigoni, San Donato Milanese; Bruno Gaetani, Milan, and Afro Manotti, San Donato Milanese, all of Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed Sept. 23, 1974, Ser. No. 508,166

Claims priority, application Italy, Sept. 24, 1973, 29254/73

Int. Cl.² G01N *33/22*

U.S. Cl. 73—35 **8 Claims**

1. A system for automatically suppressing any ground noise present in the detection of periodic phenomena, comprising:

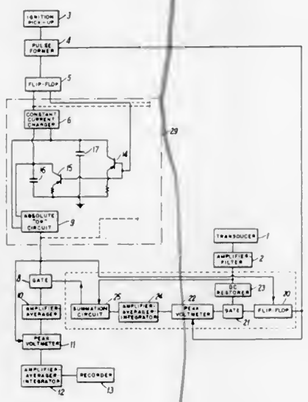
detecting means for detecting the signal occurring just prior to the occurrence of the periodic phenomena which signal is representative of ground noise;

converting means for converting the sensed signal to a usable D.C. level signal;

sampling means for sampling the signal resulting from the occurrence of the periodic phenomena; and

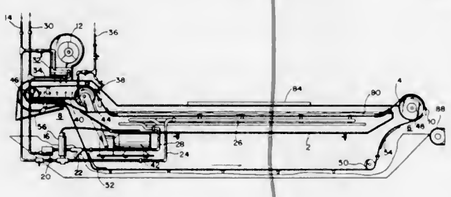
summation means for algebraically adding the converted

D.C. signal to the sampled signal for eliminating any ground noise present in the sampled signal, thereby pro-



viding an output signal representative of the periodic output phenomena free of any ground noise.

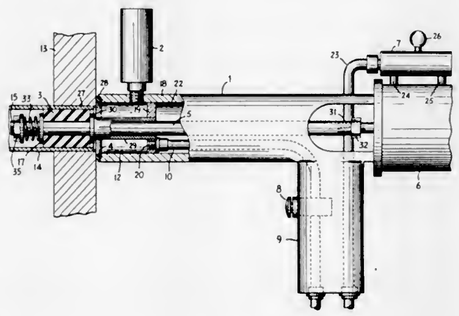
3,950,982
AEROSOL WATER BATH
Louis W. Bade, Pompton Lakes, and Eric Avensbo, Ramsey, both of N.J., assignors to Houbigant, Inc., Ridgefield, N.J.
Filed Apr. 9, 1975, Ser. No. 566,472
Int. Cl.² G01M *3/10*
U.S. Cl. 73—41.2 **7 Claims**



1. In an aerosol can pressure testing apparatus for testing aerosol cans of varying heights and diameters, said cans having an upper neck portion including a peripheral flange thereabout, including heated liquid bath means through which an endless conveyor belt conveys said cans, said conveyor comprising an endless belt trained in a vertical plane of movement around roller means including rollers having horizontal axes of rotation, said rollers disposed above and at each end of said liquid bath, the improvement comprising:

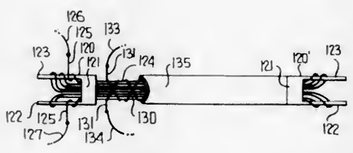
a plurality of can suspending members carried upon said endless conveyor belt and operable to suspend said cans while traversing around and between said rollers, each member being pivotably mounted upon said belt and further comprising a vertical plate which is substantially parallel to and displaced from said vertical plane of said endless belt, means to allow said plate to pivot and remain vertical and substantially parallel to said plane of said endless belt while traversing around and between said rollers, a first stationary finger and a second resiliently movable finger mounted upon, and in a plane substantially perpendicular to, said vertical plate wherein said second finger is normally urged towards said first finger, whereby each of said plurality of can suspending means are operable to suspend aerosol cans of varying sizes in constant vertical orientation through resilient engagement of said fingers under said peripheral flange on said upper neck portions.

3,950,983
AIR LEAK DETECTOR
William R. Slinger, Kearney, N.J., assignor to Treadwell Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 376,745, July 5, 1973, Pat. No. 3,882,715. This application Feb. 24, 1975, Ser. No. 552,134
Int. Cl.² G01M *3/28*
U.S. Cl. 73—46 **5 Claims**



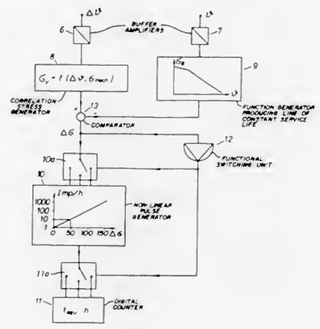
1. A device for detecting leaks in a joint between a tube sheet and a tube end fitted into an opening in said sheet comprising a barrel having a near end adjacent one side of said sheet; sealing means between said near end and said face, said sealing means surrounding said joint, a draw rod axially mounted in said barrel for reciprocal motion toward and away from said sheet, one end of said rod adapted to project into said tube, means for reciprocating said rod, a radially expandable plug adjacent said one end, and resilient means mounted between said plug and said one end of said rod, means for expanding said plug radially when said rod is moved in a first direction away from said sheet, said rod being movable in said first direction against said resilient means after said plug has expanded, to urge the barrel against said tube sheet, a chamber in said barrel adjacent said near end, means for introducing vacuum or pressure into said chamber, a gauge in communication with said chamber whereby the pressure in said chamber can be measured, means for isolating said chamber from the source of said vacuum or pressure.

3,950,984
FORCE TRANSDUCER FOR STRAIN GAGE
John D. Russell, 26878 Sea Vista Drive, Malibu, Calif. 90265
Division of Ser. No. 399,487, Sept. 21, 1973, abandoned, which is a continuation of Ser. No. 573,089, April 30, 1975. This application Sept. 27, 1974, Ser. No. 509,784
Int. Cl.² G01L *1/22*
U.S. Cl. 73—88.5 R **4 Claims**



1. A resistance type strain gage which comprises a pair of spaced apart load attaching elements, each of said load attaching elements having means for detachably connecting the same to a load, a plurality of insulated self-supporting conductive resistance elements mechanically connecting said load attaching elements, said resistance elements being insulated from said load attaching elements and from each other and being conductively connected at their alternate ends in series and means for connecting the ends of said serially connected resistance elements to an electric circuit, said resistance elements connecting said load attaching elements forming a first coil of resistance wire, a second independent coil of resistance wire mounted on said first coil of resistance wire connecting said spaced apart load attaching elements in such manner as to be free of any load applied to said first coil when said load attaching elements are connected to a load, and means for attaching the ends of the wire of said second coil to said electric circuit.

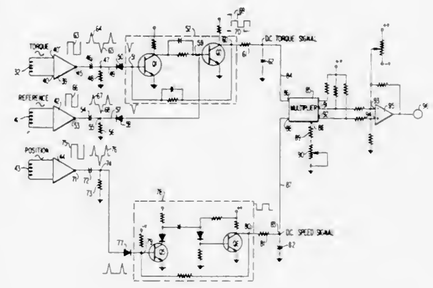
3,950,985
METHOD OF AND APPARATUS FOR MONITORING THE DURABILITY OF COMPONENTS OF THERMAL POWER PLANTS
Kurt Buchwald, Ilvesheim, and Ludwig Busse, Leutershausen, both of Germany, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland
Filed Mar. 25, 1974, Ser. No. 454,366
Claims priority, application Germany, Mar. 26, 1973, 2314954
Int. Cl.² G01L *3/00*
U.S. Cl. 73—116 **4 Claims**



1. A method for monitoring the service life of components of a thermal power plant by counting hours equivalent to those of actual operation of the component at a given correlated mechanical and thermal stress value which comprises the steps of

a. determining from a constant service life graph the effect of a change in stress for a given temperature relative to a reference service life,
b. measuring the temperature of the component,
c. determining from the measured temperature the corresponding stress which would give the reference service life,
d. measuring the temperature difference between two points in the component corresponding to the thermal stress,
e. calculating from the measured temperature difference and known essential mechanical parameters of operation a correlated stress,
f. comparing the respective stress values produced by steps c) and e) to
g. the difference therebetween, determining from said stress difference and from the effect of the change in stress produced by step a) a weighted factor,
h. utilizing said weighted factor to modify the actual measured time, and
i. integrating said modified measured time to provide an equivalent time which corresponds to the hours equivalent of that portion of useful life which has been consumed relative to said reference service life.

3,950,986
NON-CONTACTING SHAFT HORSEPOWER MEASUREMENT SYSTEM
James R. Parkinson, Vergennes, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.
Filed June 26, 1972, Ser. No. 266,480
Int. Cl.² G01L *3/10*
U.S. Cl. 73—136 A **9 Claims**



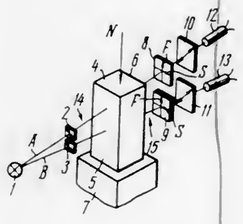
1. A non-contacting sensing system for continuously measuring the horsepower output of a driven shaft member adapted to be rotatably driven comprising, in combination:

a. first sensing means associated with said shaft member for generating a reference signal,
b. second sensing means associated with said shaft member for generating a torque responsive signal,
c. third sensing means associated with said shaft member for generating a speed responsive signal,
d. first circuit means connected to said first sensing means and said second sensing means and operative in response to the reference and torque responsive signals therefrom for developing a first D.C. analog signal proportional to the torque of said shaft member,
e. second circuit means connected to said third sensing means and operative in response to the speed responsive signal therefrom for developing a second D.C. analog signal proportional to the speed of said shaft member, and a multiplier circuit connected to receive said first and said second D.C. analog signals, said multiplier circuit being operative to develop at its output a D.C. signal proportional to the product of the first and second D.C. analog signals and corresponding to the horsepower of the driven shaft member, and wherein said first and said second sensing means each include a pair of cooperating wheel members, one of said wheel members being mounted to the shaft member, the other of said wheel members being mounted on a driven shaft and in the plane of said one of said wheel members, and a pick-up assembly for generating said reference and said torque responsive signal.

3,950,987
PIEZO-OPTIC MEASURING TRANSDUCER AND ACCELEROMETER, PRESSURE GAUGE, DYNAMOMETER, AND THERMOMETER BASED THEREON

Isaak Isaevich Slezinger, ulitsa Kirova, 40a, kv. 41; Georgy Mironovich Belitsky, Pervomaiskaya ulitsa, 74, kv. 101; Vladimir Alexandrovich Shiryaev, ulitsa Iskra, 7, kv. 34; Jury Vasilievich Mironov, Nagornaya ulitsa, 68, korpus 14, kv. 34, and Natalia Lvovna Kaplinskaya, ulitsa Dovatora, 1/28, kv. 70, all of Moscow, U.S.S.R.

Filed May 13, 1975, Ser. No. 577,005
Int. Cl.² G01L *1/24, 9/00*; G01K *5/18*
U.S. Cl. 73—141 A 18 Claims

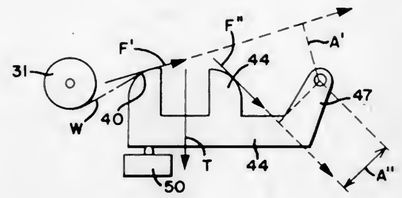


1. A piezo-optic measuring transducer comprising: at least one light source; a first polarization-optical channel having a first optical axis, with a first portion of a luminous flux produced by said light source passing therethrough; a second polarization-optical channel having a second optical axis, with a second portion of the luminous flux produced by said light source passing therethrough; a first polarizer of said first polarization-optical channel, arranged therein so that said first portion of said luminous flux is incident thereupon; a second polarizer of said second polarization-optical channel, arranged therein so that said second portion of said luminous flux is incident thereupon; an elastic element sensitive to a stress variation therein caused by a variation in the measurand, said elastic element forming part of both first and second polarization-optical channels and being arranged therein downstream of said first and second polarizers with respect to said luminous flux; a first analyzer of said first polarization-optical channel, arranged therein downstream of said elastic element with respect to said first portion of said luminous flux; a second analyzer of said second polarization-optical channel, arranged therein downstream of said elastic element with respect to said second portion of said luminous flux; a means of varying the intensity of said second portion of said luminous flux in said second polarization-optical channel, said intensity variation being opposite in polarity to that in said first portion of said luminous flux in said first polarization-optical channel, said luminous flux passing through said means; a first photocell of said first polarization-optical channel, arranged therein downstream of said first analyzer with respect to said first portion of said luminous flux and converting the light incident thereupon into an electrical signal; a second photocell of said second polarization-optical channel, arranged therein in a differential relationship with said first photocell downstream of said second analyzer with respect to said second portion of said luminous flux, and converting the light incident thereupon into an electrical signal; the difference in said electrical signals at the outputs of said first and second photocell being representative of the measurand.

3,950,988
APPARATUS FOR MEASURING TENSION IN A MOVING WEB

Heinz K. Nowisch, and Richard W. Phelps, both of Fulton, N.Y., assignors to The Black Clawson Company, Middletown, Ohio

Continuation-in-part of Ser. No. 462,248, April 19, 1974, abandoned. This application Jan. 11, 1975, Ser. No. 549,066
Int. Cl.² G01L *5/04*
U.S. Cl. 73—144 4 Claims

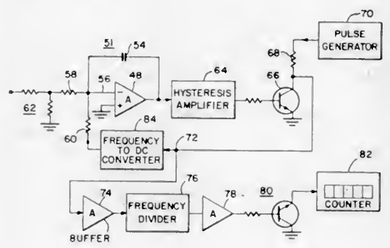


1. Apparatus for sensing the tension of a moving web traveling from one roll to another, comprising:
a. a drag board assembly extending the full width of the web and arranged to deflect the web out of the direct path between said rolls,
b. said drag board assembly having two surface areas adapted for frictional engagement with the moving web,
c. fixed base means including pivot means extending across the path of the web,
d. means pivotally mounting said drag board assembly on said pivot means whereby the tension in the web produces a turning moment on said assembly in a predetermined direction about said pivot means,
e. load sensing means positioned to sense any turning moment on said drag board assembly about said pivot means, and
f. said mounting means being so positioned and arranged that forces developed by friction between the web and said surface areas and tending to create turning moments of said assembly about said pivot means are of substantially equal values and of opposite directions with respect to said pivot means.

3,950,989
DC TO FREQUENCY CONVERSION CIRCUIT

Richard L. Meirowitz, 135-10th St., Hicksville, N.Y. 11802

Filed July 30, 1974, Ser. No. 493,088
Int. Cl.² G01F *1/05*
U.S. Cl. 73—231 R 13 Claims

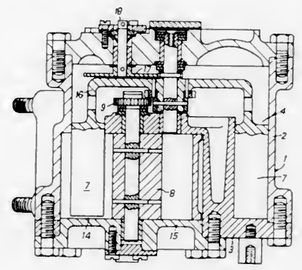


11. A fuel flow measuring system comprising, in combination, turbine flow transmitter means adapted to be inserted in a fuel line and producing an output frequency representing the amount of fuel passing therethrough, control circuit means receiving said output frequency and converting it into a DC value representing the flow rate of the fuel, and totalizing signal circuit means receiving said DC value and producing a pulse signal representing the total fuel consumed, and wherein said totalizing signal circuit means further comprises:
integration circuit means receiving a composite DC input signal and providing an integrated output, hysteresis amplifier means receiving said integrated output and in response thereto providing a binary level output signal;
switch means having two states and receiving said binary level output signal and in response thereto respectively switching between its two states;
pulse generating means coupled to said switch means for providing a sequence of fixed pulses at a pre-determined, not necessarily periodic rate, said switch means transmitting said pulses only during one of its states;
output circuit means including counting means coupled to said switch means for receiving said transmitted fixed pulses and counting them; and
frequency to DC conversion means coupled between said switch means and said integration circuit means for receiving said transmitted pulses and converting them into a DC level, said DC level in combination with said DC value forming said composite DC input signal, whereby the total number of pulses counted is dependent upon said composite DC input signal.

3,950,990
BULK FLOW METER

Alan George Butcher, Bracknall, England, assignor to Dresser Europe, S.A., Brussels, Belgium

Filed Sept. 30, 1974, Ser. No. 510,865
Claims priority, application United Kingdom, Oct. 3, 1973, 46262/73
Int. Cl.² G01F *3/08*
U.S. Cl. 73—253 10 Claims

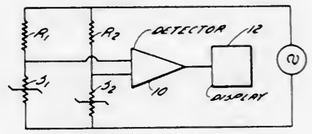


2. A liquid flow meter comprising a housing having inner and outer cylindrical walls defining an annular cylindrical chamber, the outer cylindrical wall of the housing having therein an inlet port and an outlet port spaced around the chamber from the inlet port, a rotor comprising an annular plate portion and a plurality of blades which depend from the plate portion and which fit the annular chamber in sealing relationship so that fluid passing along a forward path from the inlet port to the outlet port around the chamber drives the rotor by way of the blades, an idler between the outlet port and the inlet port, and gearing coupling the idler to the rotor to rotate therewith about an axis parallel with and offset from the rotor axis, the idler being basically cylindrical and having longitudinal pockets in its sides, the pockets each accommodating a rotor blade as the blade returns from the outlet port to the inlet port and the pocket providing a liquid seal for the rotor blade, the idler running in sealing relationship with the portion of the housing wall lying along the return path between the inlet and outlet ports, the floor of the annular cylindrical chamber being higher along the portion where it seals with the blades as compared with the portion where it seals with the idler, and the gearing rotating the idler faster than the rotor and synchronization between the rotor and the idler being maintained.

3,950,991
APPARATUS FOR MEASURING AN ABSOLUTE TEMPERATURE OR A TEMPERATURE DIFFERENTIAL WITH REGENERATIVE SWITCHING SENSORS

Ben Grass, Dollard des Ormeaux, Canada, assignor to Multi-State Devices Ltd., Dorval, Canada

Filed June 9, 1975, Ser. No. 585,443
Int. Cl.² G01K *7/00*
U.S. Cl. 73—342 7 Claims

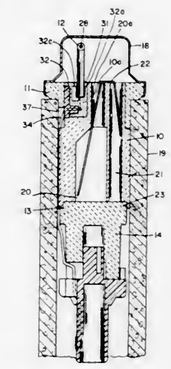


1. A temperature measuring apparatus comprising:
a. a first and a second temperature sensitive switching devices exhibiting regenerative switching action at a power level which is dependent on the temperature sensed by said switching devices;
b. means for simultaneously applying an increasing voltage to said first and second switching devices to make them switch;
c. a detector connected to said first and second switching devices for measuring the time interval between switching of the first and second switching devices and for providing an output which is proportional to the absolute temperature or the temperature differential sensed by said switching devices; and
d. a display device for providing a visual indication of the output of said detector.

3,950,992
IMMERSION SAMPLER FOR MOLTEN METAL

Richard James Hance, Philadelphia, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed Aug. 27, 1975, Ser. No. 608,138
Int. Cl.² G01N *1/12*
U.S. Cl. 73—354 14 Claims



1. A multi-body, molten-metal, end-fill sampler for immersion into a bath of molten metal for obtaining a solidified sample of said metal for laboratory analysis to determine the composition of the molten metal comprising
a first substantially cylindrical monolithic body member constructed of a smooth surfaced, high density, gas impervious, ceramic material having a chamber extending the length of said first body member with at least a thick

walled entrance passage for collection of a sample of the molten metal and the rapid cooling of said sample to produce quick freezing of said sample;

a second substantially cylindrical body member constructed of a gas permeable, liquid impermeable ceramic material having a high gas transfer rate capable of allowing gas to pass readily therethrough and blocking passage of said molten metal and constructed of a material that is gaseous inert at the temperature of said molten metal and has a coefficient of thermal expansion substantially the same as the material of said first body member,

adhesive material means for joining said first and second body member means together in a gas sealed joint whereby said second body member means serves as the sole gas venting means for said chamber in said first body means; and

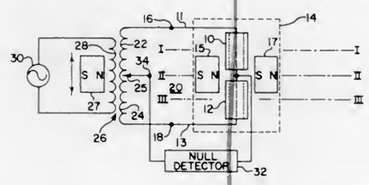
insertion means for immersion of said sampler below the level of molten metal to be sampled.

3,950,993

TEMPERATURE SENSORS WITH IMPROVED OPERATING CHARACTERISTICS UTILIZING MAGNETIC ELEMENTS

Edward F. Sidor, Lombard, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Apr. 2, 1975, Ser. No. 564,578
Int. Cl.² G01K *7/38*
U.S. Cl. 73—362 R **10 Claims**



1. A temperature sensor comprising first and second inductively wound magnetic cores having different inductance vs. temperature characteristics so that the inductance vs. temperature characteristics of the two cores intersect at the temperature which is to be sensed, a source of voltage coupled to said inductively wound cores, sensing means coupled to said cores to detect when said inductances of said cores are approximately equal and permanent magnet means positioned adjacent said cores and adjustable with respect to the position of said cores so that said sensor will sense temperature over a range of temperatures.

3,950,994

TEMPERATURE MEASURING DEVICE

Mark Gart, San Francisco, Calif., assignor to T. M. Saigh Venture Financial Ltd., San Francisco, Calif.

Filed Oct. 15, 1973, Ser. No. 398,335
Int. Cl.² G01K *3/02*
U.S. Cl. 73—371 **8 Claims**



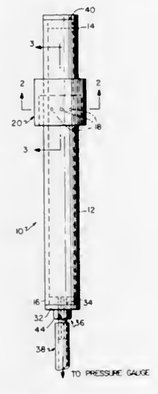
1. A permanent-display Temperature Measuring Device comprising a fluid reservoir for thermal contact with the object whose temperature is to be measured, a generally tubular fluid-expansion chamber, a controllable one-way valve unit disposed between said reservoir and said chamber, and a working fluid contained within said reservoir; said control unit in a first position of orientation obstructing the flow of said fluid from said reservoir into said chamber and isolating said fluid in said reservoir and in a second position of orientation putting said reservoir in fluid flow communication with said chamber, the fluid pressure in said reservoir being greater than the pressure in said chamber while said valve-unit is in said second position of orientation; said valve unit being only moveable from said first position to said second position.

3,950,995

AMBIENT PRESSURE PROBE

Richard D. Marshall, Poolesville, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Feb. 4, 1975, Ser. No. 546,968
Int. Cl.² G01L *7/00*
U.S. Cl. 73—388 R **1 Claim**



1. An omnidirectional, weatherproof ambient pressure probe adapted for use in an undisturbed, predominantly horizontal wind field, comprising:

a vertically mounted tube having a closed top and a ring of pressure ports intermediate its ends;

a solid shroud adjustably sealed at its top about said tube and positioned over said ring of pressure ports to form a weatherproof, downwardly opening annular cavity about said ring of pressure ports, said shroud being positioned along said tube relative to said ports so that the pressure transmitted through said cavity and ports into said tube equals the true ambient pressure; and

means for measuring said true ambient pressure in said tube.

3,950,996

FLUID PRESSURE TRANSDUCER

George E. Lewis, Arcadia, Calif., assignor to Hydril Company, Los Angeles, Calif.

Filed Feb. 4, 1974, Ser. No. 439,379
Int. Cl.² G01L *7/08, 9/04*
U.S. Cl. 73—407 R **8 Claims**

1. In a transducer for responding to both relatively high and relatively low fluid pressures to produce a corresponding output signal, the combination comprising

a. a housing,

b. an axially movable shaft within the housing,

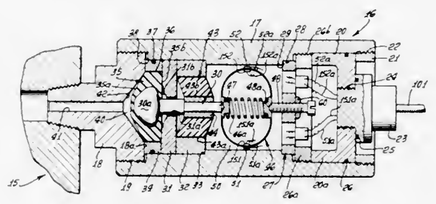
c. an annular flange within the housing and forming an opening through which the shaft projects,

d. a first elastomer diaphragm having a radially outer portion operatively connected with the housing and a radially inner portion attached to the shaft for axial movement therewith at one side of the flange, said first diaphragm having one side exposed to pressure application by said fluid communicated to the interior of the housing, the opposite side of the first diagram facing one side of said

flange and having engagement with the flange to progressively limit axial displacement of the diaphragm inner portion as the shaft is displaced axially forwardly,

e. a second elastomer diaphragm at the opposite side of said flange and operatively connected with the shaft to guide shaft axial movement, and to resist axially forward movement of the shaft, and

f. means operatively connected with the shaft to produce a signal which varies in correspondence with shaft axial movement,



g. there being means to limit rearward travel of at least one of said diaphragms,

h. said shaft having an enlarged reinforcing head centrally embedded within the radially inner portion of the first diaphragm which is thickened to receive the head,

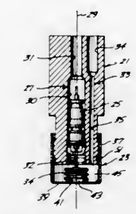
i. said one side of the flange tapering inwardly and forwardly relative to the first diaphragm and forwardly of the head to progressively seat said opposite side of the diaphragm that lies directly between said head and said one side of the diaphragm.

3,950,997

PRECISION PNEUMATIC NULL BALANCE PRESSURE TRANSDUCER

Ernest Norman Hernandez, Seattle, and Charles Robert Dantzler, Issaquah, both of Wash., assignors to Terra Technology Corporation, Seattle, Wash.

Filed Oct. 29, 1974, Ser. No. 518,376
Int. Cl.² G01L *7/06*
U.S. Cl. 73—410 **3 Claims**



1. A pneumatic null balance pressure transducer comprising:

a cylindrical elongated valve body having a longitudinal aperture located along the longitudinal axis of said cylindrical elongated valve body, said longitudinal aperture including a threaded access opening located on one end thereof;

a stem operated, threaded pneumatic tire valve threaded into said aperture in said valve body such that the outer end of said stem of said stem operated pneumatic tire valve extends slightly outwardly from the outer end of said threaded access opening in said valve body so that the tip of said stem lies beyond said one end of said cylindrical elongated valve body; and

a cylindrical metal cap affixed to and surrounding said one end of said elongated valve body, said metal cap including an inwardly projecting metal bellows that defines a bellows chamber, said bellows chamber being coaxially aligned with the longitudinal axis of said stem, the end of said bellows chamber nearest said stem being closed by an end plate adapted to impinge on the outer tip of said stem in a manner such that said pneumatic tire valve is held slightly open when the same pressure is simultaneously applied to both sides of said metal bellows, the end of said bellows chamber furthest from said stem being open to allow the entry of a medium whose pressure is to be sensed by said pneumatic null balanced pressure transducer, said inwardly projecting metal bellows positioned such that the impingement of said end plate on the stem of said stem operated pneumatic tire valve controls the longitudinal position of said stem, the region between the outer surface of said inwardly projecting bellows, the inner surface of bellows surrounding portions of said metal cap and said one end of said valve body defining a transducer chamber;

said valve body including a first duct in communication with the end of said longitudinal aperture remote from the end thereof from which said stem of said stem operated pneumatic tire valve projects and a second duct in communication with said transducer chamber;

said valve structure being formed such that the reading on a pressure gauge affixed to said second duct created by a gas source affixed to said first duct and the pressure of said medium whose pressure is to be sensed are equated by the following equation:

$$\frac{P_g}{A_B} = \frac{P_f}{A_B} + (k_b - k_s)x_c$$

where:

P_g equals the gauge pressure;

P_f equals the actual fluid pressure applied to the bellows chamber by the medium whose pressure is to be sensed;

A_B equals the area of the bellows;

k_b equals the spring constant of the bellows;

k_s equals the spring constant of the stem operated pneumatic tire valve; and,

x_c equals the distance of movement of the valve stem between the slightly open position created when atmospheric pressure is simultaneously applied to both sides of said metal bellows and the closed state of said stem operated pneumatic tire valve.

3,950,998

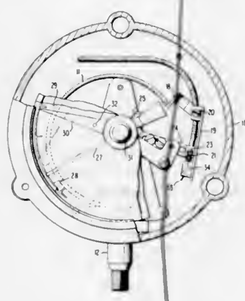
PRESSURE GAGE AND VENTING MEANS FOR USE WITH MACHINERY

Frank W. Murphy, Jr., and J. David Nunneley, both of Tulsa, Okla., assignors to Frank W. Murphy Manufacturer, Inc., Tulsa, Okla.

Filed Sept. 17, 1975, Ser. No. 613,976
Int. Cl.² G01L *7/04*
U.S. Cl. 73—411 **8 Claims**

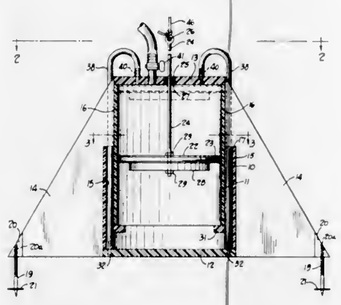
1. A venting pressure gage comprising a Bourdon tube having a connection with an external pressure device requiring monitoring, a carrier link secured to the moving end of the Bourdon tube to travel therewith, a rotary gage pointer and drive mechanism including a pivoted arm, means forming a lost motion connection between said arm and carrier link, a manually adjustable gage pointer stop on said gage operable to establish an upper safe pressure limit and preventing movement of said pointer beyond said limit, a normally closed bleeder valve on said carrier link including an actuator element movable with the carrier link into engagement with an abutment element on said arm when said arm is locked due to engagement of said pointer with said stop, a booster valve casing on said gage having a low pressure chamber and a low pressure input port leading to said chamber, tube means interconnecting said low pressure chamber and said bleeder valve, a piston in said low pressure chamber, said booster valve casing having a high pressure input port and a high pressure

venting port on the side of the piston remote from said bleeder valve, and the effective area of the piston nearest the bleeder valve being larger than the effective area of the piston nearest



the high pressure input port, whereby opening and venting of the bleeder valve reduces pressure in the low pressure chamber sufficiently to enable moving of said piston away from the high pressure input port.

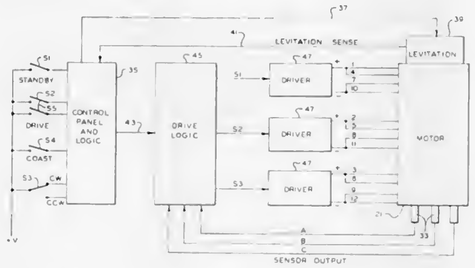
3,950,999
SAMPLING APPARATUS FOR LIQUIDS
Vernon T. Edwards, 797 Babbitt Road, Cleveland, Ohio 44123
Filed Aug. 6, 1975, Ser. No. 602,282
Int. Cl.² G01N *1/12*
U.S. Cl. 73—425.4 R **18 Claims**



1. Apparatus of the class described including cup-shaped members fixed to one another in partial telescoping relation with their closed end portions opposed, a piston member disposed within the inner cup-shaped member in contact with the walls thereof and adapted for reversible travel longitudinally of said inner member, sampling one-way valve means carried by the apparatus and adapted to open for intake only, and conduit means connecting said one-way valve means to the interior of said inner cup-shaped member between its closed end portion and said piston member.

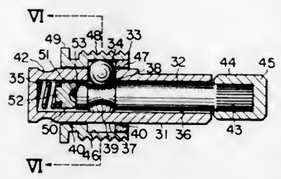
3,951,000
ELECTROSTATIC MOTOR
Lincoln S. Ferriss, Madison, and Robert M. Hohenstein, Glen Ridge, both of N.J., assignors to The Singer Company, Little Falls, N.J.
Filed Apr. 4, 1974, Ser. No. 458,005
Int. Cl.² G01C *19/28*
U.S. Cl. 74—5.6 D **15 Claims**

1. An electrostatic motor arrangement comprising:
a. a rotor made up of conductor segments, each segment subtending an angle of approximately 360°/2n;
b. means electrically coupling all said segments together;
c. a stator made up of m conductive segments each subtending an angle of slightly less than 360°/m so that each segment is electrically isolated from the other;
d. a plurality of electro-optical pickoffs arranged at gaps between said stator elements and adapted to sense the presence of a rotor segment, radial passing through said gap whereby said pick-offs will output a pulse train as said rotor rotates with respect to said stator to sense the position of said rotor segments relative to said stator segments and to provide an output indicative thereof;



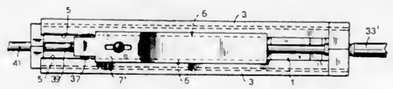
e. means for energizing opposite pairs of said stator segments with a D.C. potential, said means being responsive to said output;
f. means to generate a reference pulse train; and
g. a frequency and phase comparator having as inputs said reference pulse train and a pulse train which is a function of the pulse train output by said electro-optical pick-offs for comparing the angular rate of the rotor with respect to the stator with a predetermined angular rate, said frequency and phase comparator providing an output to said means to energize, said means to energize being further adapted to be responsive to said output to energize said stator so as to just maintain said angular rate.

3,951,001
VERNIER DRIVE MECHANISM
Takayoshi Saito, and Taro Saito, both of 18-23, Kaminoge 1-chome, Setagaya, Tokyo, Japan
Filed May 21, 1974, Ser. No. 471,990
Int. Cl.² F16H *35/18*
U.S. Cl. 74—10.52 **11 Claims**



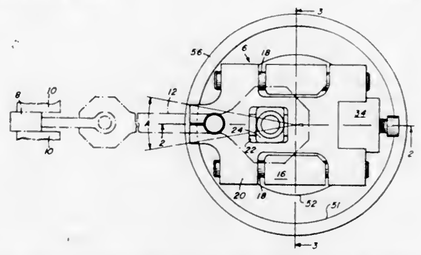
1. A vernier drive mechanism comprising:
a spring-biased vernier shaft disposed within a hollow part of a main shaft, and a housing disposed outside the main shaft, in a freely rotatable manner, respectively;
a part having at least three planes, equiangularly disposed about the axis of the main shaft, formed at the center of the main shaft, and holes open to the hollow part provided within the three planes, the axes of said holes being disposed along radial lines of said part; and
balls disposed within the holes for contacting a small diameter part of the vernier shaft and the inner surface of the housing under the influence of the biasing force of the spring so as to rotate planetarily in response to the rotation of the vernier shaft and to turn the main shaft at a speed slower than that of the vernier shaft.

3,951,002
CONTROL DEVICE FOR ACTIVATING A CONTROL ELEMENT BY THE ALTERNATIVE ACTIVATION OF ONE OF TWO OPERATING ELEMENTS
Carlo Gilardi, Lugano, Switzerland, assignor to Anstalt Egra, Vaduz, Liechtenstein
Filed Aug. 2, 1974, Ser. No. 494,122
Claims priority, application Switzerland, Sept. 26, 1973, 13769/73
Int. Cl.² F16H *19/04*
U.S. Cl. 74—29 **3 Claims**



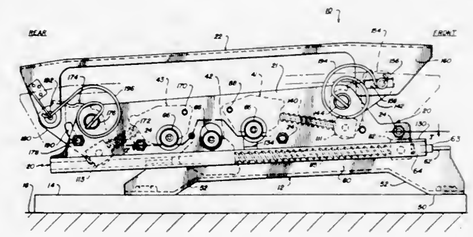
1. A control device which, as a result of the alternative movement of one of two operating elements, moves a control element connected to a member to be controlled by the device, comprising:
a frame;
first and second saddles movable axially on said frame and each formed with a rack;
a gear member disposed between said saddles and having first and second discs each formed with a ring gear arranged to cooperate with the rack of each of said saddles to rotate said gear member on the rack of one saddle when the other saddle is moved axially, and the gear member also having a cylindrical part disposed between said first and second discs;
a third saddle movable axially on said frame and having the control element fixed thereto, and being disposed between said first and second discs; and first and second deformable elements each wound at least partially around said cylindrical part and having one end rigid with said frame and its other end rigid with said third saddle, the arc through which each of said elements is wound being substantially 180° and the two ends of said first element being on the opposite side of said gear member with respect to the two ends of said second element.

3,951,003
CRANK MECHANISM
Neil S. White, and George R. Schindler, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 17, 1974, Ser. No. 506,824
Int. Cl.² B21B *45/02*
U.S. Cl. 74—44 **8 Claims**



1. In a crank mechanism for imparting reciprocal movement to a member through forward and reverse strokes and providing dwell periods for the member at one end of at least one of its strokes, the combination comprising:
a rotatable crank shaft having an axis;
means comprising a bracket mounted for slidable radial movement relative to the axis of said crank shaft and slidably coupled to and rotatably driven by said crank shaft, said bracket further including an eccentric crank pin having an axis radially spaced a normal predetermined throw distance from the axis of said crankshaft, said crank pin further being drivingly connected to said member for imparting reciprocal movement to said member through forward and reverse strokes; and
means for moving said crank pin relative to said crankshaft for altering said normal predetermined throw distance to provide a dwell period for said member at one end of at least one of said forward and reverse strokes.

3,951,004
MULTIPLE POSITION SEAT ADJUSTMENT MECHANISM
Max Otto Heesch, Brooklyn, Mich., assignor to International Telephone & Telegraph Corporation, New York, N.Y.
Filed Mar. 20, 1974, Ser. No. 452,687
Int. Cl.² F16H *27/02*
U.S. Cl. 74—89.15 **4 Claims**



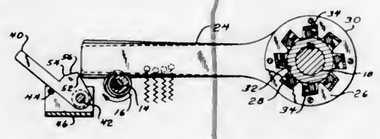
1. A seat adjuster mechanism comprising mechanical structure for slidably moving a seat longitudinally and elevating the front and rear ends thereof, said structure including an elongated seat supporting member, an elongated carriage member over which the seat supporting member is mounted, means tracking said carriage member for longitudinal movement relative to a stationary support, vertically extending longitudinally spaced apart brackets mounted for pivotal motion relative to said carriage member at each end thereof for carrying said seat supporting member with said carriage member, a separate lever centrally pivotally mounted between each bracket and the adjacent end of the seat support member, one end of one of said levers being directly pivotally connected to one end of the seat supporting member, a lost motion pivot connection connecting one end of the other of said levers to the other end of the seat supporting member, a threaded receiver on the other end of the levers, lead screws extending longitudinally of the seat supporting member and inclined inwardly and upwardly for engagement with said threaded receivers to individually pivot said levers to elevate the ends of said seat support member, and a carriage sliding control including a third lead screw engaging a third threaded receiver for controlling the longitudinal advance of said carriage member and said seat support member relative to said stationary support.

3,951,005
MULTIPLE ARM SPEED REDUCER
Arvid Dahlstrom, Chicago, Ill., assignor to Dahltron Corporation, Oak Brook, Ill.
Filed Sept. 16, 1974, Ser. No. 506,594
Int. Cl.² F16D *27/10*
U.S. Cl. 74—125.5 **7 Claims**

1. A speed reducer mechanism for drivably connecting a rotating power shaft to a driven shaft comprising:

eccentric means coupled to said power shaft;

a series of arm means having first and second end section means, said first end being operatively engaged to said eccentric means for effecting intermittent rocking movement of said arm means upon rotation of said power shaft, said second end being pivotly mounted about an axis coaxial to the longitudinal axis of the driven shaft;



clutch means operatively imposed between said second end and said driven shaft for transferring said rocking movement to rotate said driven shaft;

a respective uncoupling means operatively coupled to each of said arm means, and

said uncoupling means operative to selectively disengage each of said arm means to vary the output speed of said power shaft dependent on the number of said series of arm means being disengaged.

3,951,006

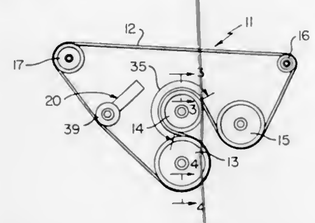
ENDLESS POWER TRANSMISSION BELT DRIVE SYSTEM

David G. Fisher, and Robert G. Gladden, both of Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio

Continuation of Ser. No. 390,448, Aug. 22, 1973, abandoned. This application Feb. 20, 1975, Ser. No. 551,477

Int. Cl.² F16G *5/16, 5/00, 1/22, 5/10*

U.S. Cl. 74—233 **15 Claims**



1. In combination: an engine having a plurality of sheaves including a driving sheave and a plurality of driven sheaves, said driving sheave and at least one of said driven sheaves each having a plurality of grooves therein, at least another of said driven sheaves having a right circular cylindrical surface free of side flanges, and an endless power transmission belt operatively associating with said sheaves and having a flat driving portion and an oppositely arranged driving portion provided with a plurality of spaced projections, said flat driving portion operatively engaging said right circular cylindrical surface through a substantial arc of at least 180° and said projections of said oppositely arranged driving portion being received in said grooves of said grooved sheaves, said driving sheave and said one driven sheave each having a plurality of circumferential annular grooves therein which are arranged in parallel relation along the axis of each of said sheaves and said projections of said oppositely arranged driving portion are in the form of a plurality of spaced longitudinal ribs extending along the length of the belt with each rib being received in an associated circumferential groove of each of the grooved sheaves, each of said ribs being of substantially uniform cross section at each location throughout its entire length and extending in a continuous uninterrupted manner along the full endless path of said belt, each of said sheaves being arranged on said engine so that said belt operates in a single plane, said belt having a comparatively thin cross section which increases belt life by reducing hysteresis, reduces belt weight which reduces centrifugal tension loss, allows easy flexing around said sheaves, and allows backside bending enabling easy engagement of said flat driving portion against said right circular cylindrical surface through said substantial arc to assure the driven sheave which has said right circular cylindrical surface is driven in a non-slipping manner.

3,951,007

CAMS

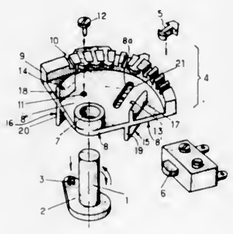
Michel Naulin, Angouleme, France, assignor to La Telemecanique Electrique, Nanterre, France

Filed Dec. 26, 1974, Ser. No. 536,586

Claims priority, application France, Jan. 3, 1974, 74.00158

Int. Cl.² F16H *53/00*

U.S. Cl. 74—568 R **3 Claims**



1. A component for a rotary cam assembly, comprising:

i. a plate including a bearing hole to receive a rotary shaft, and an oblong opening,

ii. an annular portion on said plate coaxial with said hole, said annular portion projecting axially from the plate and including a plurality of circumferentially-spaced notches to receive cam elements,

iii. a first pair of ribs projecting axially from a first major face of said plate, said first pair of ribs being parallel and each presenting towards the other rib of the pair a surface opposed to and spaced by a distance from said surface of the other rib,

iv. a second pair of ribs projecting axially from the second major face of said plate, said second pair of ribs being parallel and each presenting away from the other rib of the pair a surface remote from and spaced by that same distance from said surface of the other rib, said second pair of ribs being parallel to said first pair of ribs, said first and second pairs of ribs being parallel to said oblong opening of said plate, said first pair of ribs and said second pair of ribs extending respectively from said first and second major faces of said plate to the extent that, when two of said components are placed with the plate of one such component overlying and abutting the annular portion of the other component, said first pair of ribs of one such component may engage by said surfaces between said second pair of ribs of the other such component, said oblong opening being of such length that with a securing member engaged therein said components can be moved relatively to the extent that the plate of one component no longer overlies the annular portion of the other component.

3,951,008

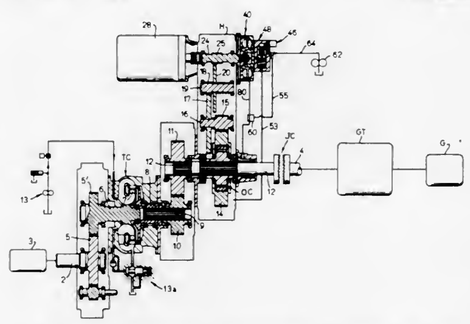
POWER TRANSMITTING MECHANISM FOR STARTING A HIGH INERTIA LOAD AND HAVING RETARDER MEANS FOR AUXILIARY STARTING MOTOR

Raymond C. Schneider, Rockford; Robert W. Meyer, Pecatonica, and Gerald C. Borgelt, Rockford, all of Ill., assignors to Twin Disc, Incorporated, Racine, Wis.

Filed Jan. 8, 1975, Ser. No. 539,320

Int. Cl.² F16H *37/06, 47/00*

U.S. Cl. 74—661 **14 Claims**



1. A power transmitting mechanism for starting a load and comprising, a main power input shaft adapted for connection to a main power source; main drive transmitting means connected at its input side in driven relation with said main power input shaft, and a disconnect clutch connected at the output side of said drive transmitting means; an auxiliary power input shaft adapted for connection with an auxiliary starting motor, and one-way drive establishing connecting means operatively interposed between said auxiliary power input shaft and said main drive transmitting means, a hydraulic fluid coupling having a first portion stationarily anchored and a second portion connected with and driven by said auxiliary power input shaft, and fluid control means for controlling the amount of fluid fill of said hydraulic coupling whereby said coupling can act as a retarder for said auxiliary starting motor, said one-way drive establishing connecting means having an input side connected with said auxiliary power input shaft and said hydraulic fluid coupling and an output side drivingly connected with said main drive transmitting means.

3,951,009

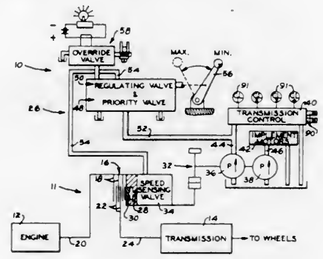
OVERRIDE CONTROL SYSTEM FOR A CONTROLLED SLIPPABLE CLUTCH

Sidney J. Audifferd, Jr., and James L. Schmitt, both of Washington, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 237,254, March 23, 1972, abandoned. This application Feb. 21, 1974, Ser. No. 444,511

Int. Cl. F16h *47/00;* **B60k** *41/22;* **F16d** *67/00*

U.S. Cl. 74—732 **3 Claims**



1. A control system for a drive train having an engine-driven power input member and auxiliary equipment coupled with the power input member for operation by the prime mover and having at least momentarily substantial power requirements relative to available power from the prime mover, a power output member and a hydraulically-operated slippable clutch operatively coupling the power input member and power output member in order to vary torque transmission therebetween, comprising

a source of fluid under pressure,

a control valve arranged in communication with said source and the hydraulically-operated clutch, said control valve including a spool means for alternately providing a fixed flow condition of fluid at a predetermined maximum pressure for fully engaging the clutch and a variable flow condition of fluid at an adjusted pressure lower than the predetermined maximum pressure for variably engaging the clutch,

manually operable override means operatively coupled with said spool means in said control valve, said spool means in said control valve means including means responsive to operation of said override means for operating said spool means to alternately communicate to the clutch the predetermined maximum pressure in the fixed flow condition and the adjusted pressure in the variable flow condition, and

adjustment means operatively coupled with said spool means in said control valve means for selectively establishing the adjusted pressure independent from response of said spool means to said override means, said adjustment means comprising a load piston means resiliently coupled with said spool means and a manual control element coupled with said load piston means to vary resilient force applied upon said spool means by said load piston means.

3,951,010

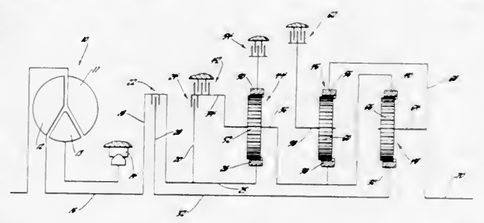
EXTENDED RANGE FOUR SPEED TRANSMISSION

James C. Polak, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1974, Ser. No. 526,593

Int. Cl.² F16H *57/10*

U.S. Cl. 74—759 **1 Claim**



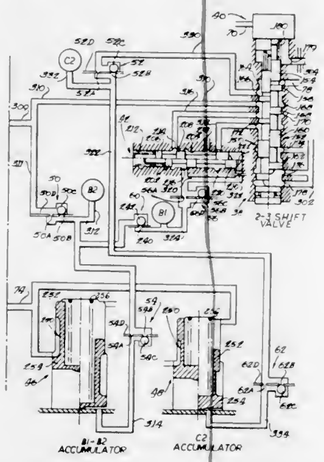
1. A planetary transmission having four forward drive ranges and two reverse drive ranges comprising; an input shaft; an output shaft; a first simple planetary gear set having a sun gear member continuously drivingly connected to said input shaft, a carrier member, and a ring gear member; a second simple planetary gear set having a ring gear member continuously drivingly connected to said output shaft, a sun gear member, and a carrier member; a third simple planetary gear set having a carrier member continuously drivingly connected to said output shaft, a ring gear member, and a sun gear member; drive transmitting means continuously drive connecting said carrier; sun gear, ring gear members of said first, second and third planetary gear sets respectively; an intermediate shaft drivingly connected to said sun gear member of said third planetary gear set; first selectively operable brake means for selectively preventing rotation of said carrier member of said second planetary gear set; second selectively operable brake means for selectively preventing rotation of said ring gear member of said first planetary gear set; third selectively operable brake means for selectively preventing rota-

tion of said drive transmitting means; first selectively operable clutch means for selectively providing a drive connection between said input shaft and said intermediate shaft; and second selectively operable clutch means for selectively providing a drive connection between said input shaft and said drive transmitting means; said first clutch means and said first brake means being engaged to establish a first forward high torque-low speed ratio through the action of said second and third planetary gear sets; said first clutch means and said third brake means being engaged to establish a second forward speed ratio through the action of said third planetary gear set, said first clutch means and said second brake means being engaged to establish a third forward speed ratio through the action of said first and third planetary gear sets; said first brake means and said second brake means being engaged to establish a first reverse high torque-low speed ratio through the action of said first and second planetary gear sets; said second clutch means and said first brake means being engaged to establish a second reverse speed ratio through the action of said second planetary gear set.

3,951,011
HYDRAULIC CONTROL MECHANISM FOR PLANETARY TRANSMISSION

Robert W. Lemon, Farmington, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 30, 1974, Ser. No. 501,926
Int. Cl.² B60K *21/00*; F16H *3/74*
U.S. Cl. 74—869 **9 Claims**



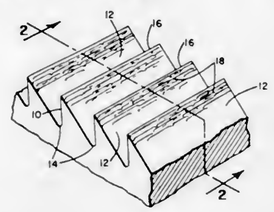
1. A hydraulic control system for an automatic transmission including input and output shafts and a gear set connected between said shafts, a plurality of fluid actuatable engageable devices adapted to produce a plurality of drive ratios by selective engagement thereof, two of said devices being engageable to establish a particular drive ratio, a source of pressure for said control system, a hydraulic accumulator, conduit means between said source and said two engageable devices, said conduit means being connected to said accumulator, a logic valve means in said conduit means adapted to interconnect said two engageable devices with one another and with said accumulator whereby the pressure buildup in said engageable devices will be equalized.

8. A hydraulic control system for an automatic transmission including input and output shafts and a gear set connected between said shafts, a plurality of fluid actuatable engageable devices adapted to produce a plurality of drive ratios by selective engagement thereof, two of said devices being engageable to establish a particular drive ratio, a source of pressure for said control system, a hydraulic accumulator, conduit means between said source and said engageable devices, said conduit means having first and second branches each connecting to one of said engageable devices, logic valve means in said conduit means between said first and second branches adapted to interconnect same, an accumulator device connected to said first branch, a pressure reducing valve being provided in the second branch acting to reduce the pressure in the second branch when said two engageable devices are engaged, and said logic valve acting to interrupt the connection between said branches when the pressure in said second branch is exhausted.

3,951,012
PROCESS FOR MAKING A FILE AND ARTICLE RESULTING THEREFROM

Edward W. Staley, Jr., Cambridge, Ohio, assignor to Wallace-Murray Corporation

Filed Jan. 16, 1975, Ser. No. 541,627
Int. Cl.² B23D *73/12*; B24C *1/02*; B23D *71/00*
U.S. Cl. 76—24 R **10 Claims**

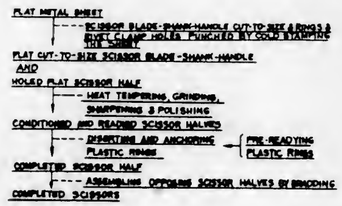


1. In a process for making a cleaned and finished file wherein crowned teeth, each having a front cutting side and a back side, are formed by chisel blows against a file blank and wherein sharp serrations extending longitudinally of each said tooth are formed on the back side of each said tooth adjacent the cutting edge thereof and then are hardened by heat treating, the improvement of preserving said serrations without substantial removal thereof during the subsequent cleaning and finishing steps of said process.

3,951,013
MULTI-THICKNESS PLASTIC HANDLED SCISSORS

Italo Marco Levi-Laurenti, 432 Park Ave. South, New York, N.Y. 10016

Division of Ser. No. 438,253, Jan. 31, 1974, Pat. No. 3,840,990, and a continuation-in-part of Ser. No. 379,585, July 16, 1973, Pat. No. 3,827,316. This application June 14, 1974, Ser. No. 479,207
The portion of the term of this patent subsequent to Aug. 6, 1991, has been disclaimed.
Int. Cl.² B21K *11/06*
U.S. Cl. 76—104 A **1 Claim**

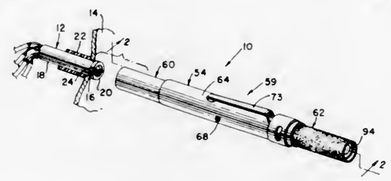


1. A process comprising in combination providing a flat-faced metal sheet, the sheet having predetermined thickness for a scissor blade to be formed therefrom, cold stamping to obtain a scissor element having a blade, shank and handle thereof extending in a common plane and with defined rings in the handle and with pivotable-anchoring shank hole defined therein, conditioning and readying each scissor half, forming upper and lower plastic ring inserts respectively for each of upper and lower faces of the structure of the defined rings, said forming including making one of the plastic ring inserts thicker than the other for each scissor half, mounting a thinner one of the inserts on the top face of the upper scissor half and a thicker one of the inserts on the bottom face of the upper scissor half on the ring structure thereof, and mounting a thicker one of the inserts on the top face of the lower scissor half and a thinner one of the inserts on the bottom face of the lower scissor half, and anchoring together in operative relationship to one-another the upper and lower scissor halves by mounting an anchoring element within the pivotable-anchoring shank holes of the respective upper and lower scissor halves with the shank holes in substantial alignment with one-another.

3,951,014
MAGNETIC RESET TOOL

Frank W. Stellwagen, Clearwater, Fla., and Thomas G. Bain, Trumbull, Conn., assignors to General Time Corporation, Thomaston, Conn.

Filed Nov. 21, 1974, Ser. No. 525,816
Int. Cl.² B25B *9/00*
U.S. Cl. 81—3 R **6 Claims**

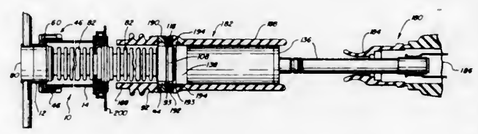


1. A portable magnetic tool device adapted for adjusting the position of a movable magnetic member or the like comprising a portable support means, at least a first magnetic means connected to said portable support means having a first magnetic field which enables selective adjusting of the position of the movable member, and shield means operatively connected to said portable support means and at least partially surrounding and shielding said first magnetic means for movement between first and second positions, such that whenever in the second position said first magnetic field is able to appropriately adjust the position of the movable magnetic member, and a second magnetic means connected to said support means and having a second magnetic field which is opposite to the first magnetic field for repositioning of the movable magnetic member.

3,951,015
FUSE HANDLING TOOL

David M. Evans, Palatine, and Edward J. Rogers, Chicago, both of Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Apr. 1, 1975, Ser. No. 564,023
Int. Cl.² B25B *27/14*
U.S. Cl. 81—3.8 **18 Claims**



1. A tool for use to remove and install fuses in high voltage metalenclosed switchgear, the switchgear including at least one fuse, at least one isolating switch and operating mechanism for isolating each fuse from a high voltage supply circuit, disengageable contacts for connecting each fuse between the supply circuit and a load circuit, a grounded metal front panel having an access port formed therethrough aligned to provide access to each of the fuses, and a tool receiving receptacle mounted on the front panel adjacent the access port; said tool comprising:

an operating portion including:

a handle;

engaging means for engaging the fuse when said engaging means is moved against said fuse and said operating portion is rotated in a first direction so that said fuse can be removed from the contacts and disengaging the fuse when said operating portion is rotated in an opposite second direction;

switch operating means for causing the isolating switch operating mechanism to open the isolating switch to isolate the fuse from the supply circuit when the operating portion is rotated in the first direction and for causing the isolating switch to close when the operating portion is rotated in the second direction;

insulating means for electrically insulating said engaging means from said handle;

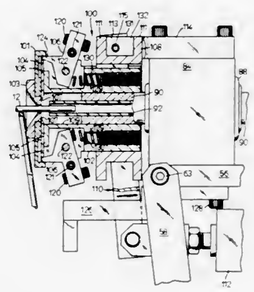
a hollow metal housing having a hollow interior and having a receptacle engaging means mounted at one end thereof for engaging the tool receiving receptacle mounted on the front panel and being electrically connected to the grounded front panel, said hollow metal housing dimensioned to receive said operating portion in its hollow interior and allow said operating portion to be moved through the hollow interior through said access port so that said engaging means can engage the fuse;

connecting means for grounding said handle to said hollow metal housing.

3,951,016
ROTARY WIRE STRIPPING APPARATUS

Ragnar Gudmestad, West Allis; Leon J. Gorski, New Berlin, and Gerald E. Blaha, Waukesha, all of Wis., assignors to Artos Engineering Company, New Berlin, Wis.

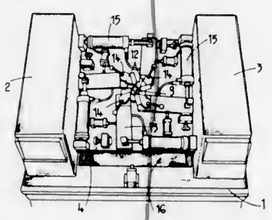
Filed Sept. 2, 1975, Ser. No. 609,298
Int. Cl.² H02G *1/12*
U.S. Cl. 81—9.51 **9 Claims**



1. A rotary stripping machine for stripping insulation from a wire said machine comprising a rotary stripping head supported for movement between a first position spaced a predetermined distance from an end of said wire having insulation material thereon to a second position adjacent to said end of said wire, said rotary stripping head being rotatable about an axis in general alignment with the axis of said wire, said head member including a chamber therein for receiving an end of said wire when said head is in said second position, blade means slideably supported in said member for rotation therewith, said blade means being radially movable into said chamber, and actuating means for forcing said blade means into cutting engagement with said insulation material, said actuating means including a collar slideably received upon said rotary stripping head member and camming means for forcing said blades into cutting engagement, said camming means

including adjusting means for controlling the radial movement of said blades, said collar being axially slideable with respect to said rotary stripping head for actuating said camming means.

3,951,017
MACHINE-TOOL, ESPECIALLY AUTOMATIC LATHE
Andre Willemin, Rue du Paddock 46, Bassecourt, Switzerland (2854)
Filed Dec. 3, 1974, Ser. No. 529,075
Claims priority, application Switzerland, Dec. 10, 1973, 17262/73
Int. Cl.² B23B *3/00*
U.S. Cl. 82—2 R **2 Claims**



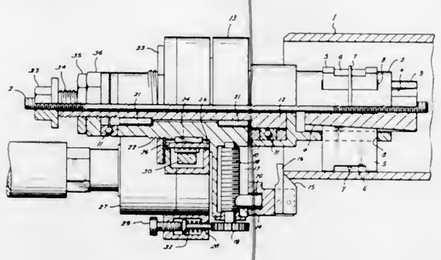
1. A machine-tool, especially an automatic lathe, having a spindle for rotating workpieces as well as at least one tool disposed for working engagement with a workpiece on said spindle,

a substantially planar rocking plate on which said spindle as well as said tool are carried, said plate being mounted for rotation about a horizontal axis parallel to its plane,

said rocking plate being tiltable about said axis to an inclined position in which its tool-carrying face faces downwardly, such that the chips from a workpiece on said spindle fall freely from the workpiece without being retained by said rocking plate

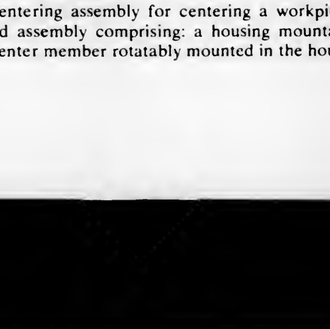
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3,951,018
PIPE BEVELING DEVICE
Guy T. Gilmore, 9214 Albaren, Houston, Tex. 77036
Filed Dec. 6, 1974, Ser. No. 530,436
Int. Cl.² B23B *5/16, 5/08*
U.S. Cl. 82—4 C **1 Claim**



1. A pipe beveling device having a longitudinal axial shaft, said shaft being externally threaded adjacent the respective ends thereof, an anchor assembly mounted on one end of said shaft having transversely movable slips, means for yieldably maintaining said slips in retracted position, an inner housing mounted on said shaft and one end of which abuts said anchor assembly, a cutter head assembly mounted on said inner housing having a driving mechanism for rotating said cutter head and having a cutter holder and cutter feeding means, cutters in said cutter holder adjustable to simutaneously cut a bevel and a flat face on the end of a pipe, wherein said feeder means consists of a spring loaded pin mounted on said driving means, one end of said pin being constantly urged in one direction and a screw having one end abutting the other end of said pin and adopted to move said pin longitudinally, a threaded shaft rotatably mounted in said cutter head, one end of which has fixedly mounted thereon an enlarged toothed wheel, adapted to be engaged and rotated by said pin upon each revolution of the cutter head and a pawl having one end in mesh with the threads of said shaft and the other end mounted in a cutter to move said cutter into the pipe to be cut.

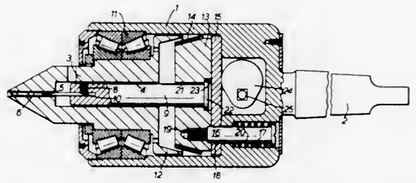
3,951,019
MACHINE TOOLS
Reginald Francis Johnson, Leicester; Thomas James Potts, Littleover, and Gordon Bridgman Jennings, Mansfield, all of England, assignors to Rolls-Royce (1971) Limited, London, England
Filed Feb. 25, 1975, Ser. No. 553,063
Claims priority, application United Kingdom, Mar. 22, 1974, 12851/74
Int. Cl.² B23B *21/00, 25/06*
U.S. Cl. 82—24 R **4 Claims**



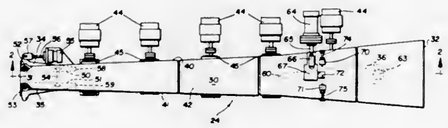
1. A machine tool comprising: a lathe bed, a tool post movable mounted on said lathe bed, a tool mounted on said tool post for cutting a workpiece end face upon rotation of the workpiece, a source of localized heat arranged to be directed onto the workpiece end face so as to heat a local area thereof immediately prior to cutting the local area with said tool, and a cam arrangement for causing relative movement between said heat source and said tool, said cam arrangement including a cam plate having a cam profile, said cam plate being fixed relative to said movable tool post, an elongated cam follower slideably mounted on said tool post and relative movement transmitting means, the arrangement being such that one end of said cam follower engages with the cam profile on said cam plate and the other end of said cam follower operatively engages said relative movement transmitting means whereby during operational movement of said tool post and said cam follower relative to said fixed cam plate causes a further movement of said cam follower, which further movement is transmitted by said relative movement transmitting means to said heat source to move said heat source relative to said tool so that the local area immediately prior to cutting receives full effect of heat from said heat source.

3,951,020
CENTERING ASSEMBLIES FOR LATHES
George Abdelmalak Makarem, c/o Department of Mechanical Engineering, Ahmadu Bello University, Zaria, Nigeria
Filed Dec. 27, 1974, Ser. No. 536,823
Claims priority, application United Kingdom, Jan. 14, 1974, 1667/74
Int. Cl.² B23B *23/02, 39/00*
U.S. Cl. 82—33 R **9 Claims**

1. A centering assembly for centering a workpiece on a lathe, said assembly comprising: a housing mountable in a lathe; a center member rotatably mounted in the housing and having an opening along its axis of rotation; a drill; a movable support member supporting the drill fast with the housing and in said opening; moving means for moving the support member so as to move the drill along said axis between a retracted position within the center member and an extended position for drilling a workpiece; and brake means comprising a cup-shaped surface formed on the center member, a conical surface formed on the moving means, and a brake lining on said conical surface, operation of the moving means to move the drill to said extended position being arranged to engage said brake lining with the cup-shaped surface, thereby preventing rotation of the center member.



3,951,021
SWITCHING APPARATUS FOR ELONGATED, HOT ROLLED ARTICLES
Holton C. Easter, Munster, Ind., assignor to Inland Steel Company, Chicago, Ill.
Filed Oct. 29, 1974, Ser. No. 518,263
Int. Cl.² B26D *7/06*
U.S. Cl. 83—81 **10 Claims**



1. An apparatus for handling elongated, hot rolled articles, said apparatus comprising:

an elongated trough having opposed side walls, an entry and an exit;

means for conveying an elongated hot rolled article through said trough from said entry to said exit;

persuader means on said trough and located upstream of said exit;

a knife switch on said trough and located between said persuader means and said exit;

said knife switch being disposed between said opposed side walls of the trough to define therewith a pair of elongated paths extending along said trough between said entry and said exit thereof;

means mounting said persuader means for movement between first and second positions thereof;

first deflecting means on said persuader means, operable when the persuader means is in said first position thereof, for deflecting an article, passing said entry, toward a first of said two paths;

second deflecting means on said persuader means, operable when the persuader means is in said second position thereof, for deflecting an article, passing said entry, toward a second of said two paths;

means actuable to move said persuader means from one to another of its two positions in response to a predetermined occurrence;

said knife switch including a nose portion located farther upstream than any other portion of the knife switch;

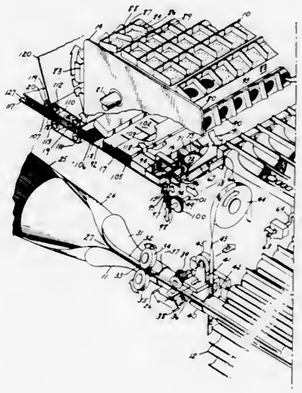
means mounting said knife switch for movement between (1) a first position in which the knife switch and one trough side wall define a wide mouth for the first path and in which the knife switch and the other trough side wall constrict the second path and (2) a second position in which said knife switch and the other trough side wall define a wide mouth for the second path and in which the knife switch and said one trough side wall constrict the first path;

said knife switch comprising first and second guide for guiding an article, moving through said trough, along said first and second paths respectively;

means for initially setting said knife switch in a position defining a wide mouth for the path toward which an article is deflected by said persuader means;

and means, responsive to movement of a deflected article downstream of the nose portion of the knife switch, for moving the knife switch to a position constricting the path along which said deflected article is moving.

3,951,022
DEVICE FOR CUTTING AND TRANSPORTING PLURAL ALIGNED FIBERS
Walter Hurtes, 433 W. 34th St., New York, N.Y. 10001
Division of Ser. No. 331,658, Feb. 12, 1973, Pat. No. 3,850,713. This application Nov. 14, 1974, Ser. No. 523,849
Int. Cl.² B26D *3/16, 7/06*
U.S. Cl. 83—152 **4 Claims**



2. Apparatus for cutting fibers, comprising

a. a porous surface;

b. means for applying suction through the porous surface;

c. means for advancing a substantially axially aligned array of fibers, having substantially coplanar free ends and held together only by lateral compression applied to the periphery of the array, into endwise engagement with said surface so as to be held by suction applied therethrough; and

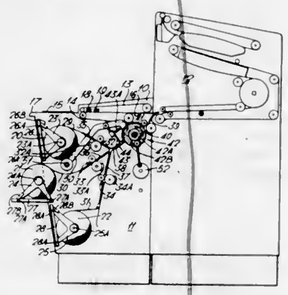
d. means for transversely cutting the fibers of the array while the fibers are held by suction in endwise engagement with the surface.

3,951,023

TRANSPORT GUIDE FOR PLIABLE SHEET MATERIAL

Adi Kalkhushiroo Ashburner, Hargrave, England, assignor to Harper & Tunstall Limited, Wellingborough, England

Filed June 11, 1973, Ser. No. 368,665
Claims priority, application United Kingdom, June 12, 1972, 27419/72
Int. Cl.² G03B 29/00
U.S. Cl. 83—110 23 Claims



1. Reprographic apparatus for reproducing marking on a master sheet onto a sheet of photo-sensitive pliable sheet material, comprising:

an exposure and developing means;

transport guide means for guiding the pliable sheet material so as to allow a forward portion of the pliable sheet material and the master sheet to be continuously fed forward into the exposure and developing means while a rear portion of the sheet material is maintained stationary, said transport guide means including loop forming means coacting with said sheet material for forming a loop of a preselected size in said sheet material;

said loop forming means including a pair of opposed guide members defining a predetermined non-linear first path therebetween which results in formation of said loop when said sheet material is fed between said guide members, said loop being closely confined on opposite sides thereof by said guide members;

said transport guide means also including means for holding the rear portion of said sheet material stationary; and

drive means connected to one of said guide members to positively displace said one guide member in a direction permitting reduction in the size of the loop so that the intermediate portion of the sheet material follows a second shorter path while the rear portion is maintained stationary, said drive means causing positive displacement of said one guide member independently of the tension in said sheet material.

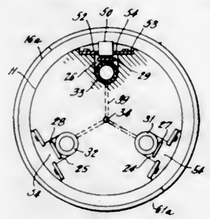
3,951,024

GANG LOCKING MEANS FOR SLITTER HEADS

Gunther Weiskopf, New York, N.Y., assignor to S&S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,012
Int. Cl.² B26D 1/24
U.S. Cl. 83—498 11 Claims

1. Apparatus for longitudinally slitting a web traveling along a feed path, said apparatus including a drive shaft extending transverse to said path, a plurality of tool supporting heads mounted on said shaft to be rotated thereby, each of said heads having an individual means movable therewith longitudinally along said shaft and projecting into a longitudinally extending slot means in said shaft, and locking means for maintaining said heads in adjusted positions along the length of said shaft; said locking means including a pressure bar mounted within said slot means and selectively actuable fluid operated means within said slot means which when actuated drives said pressure bar into operative locking engagement



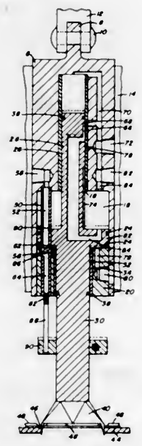
with said individual means of at least a first and second of said plurality of heads.

3,951,025

OVERLOAD SAFETY DEVICE

Neil S. White, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 17, 1974, Ser. No. 506,924
Int. Cl.² B26D 7/22
U.S. Cl. 83—543 10 Claims



1. In an overload safety device for a reciprocally movable tool operating on a work-piece, the combination comprising:

a housing reciprocally movable between initial and final positions for reciprocally moving a tool into and out of engagement with a work-piece, said housing having a cylinder;

a piston coupled to the tool, said piston being mounted within said cylinder for movement relative to said housing between a normal extended position in which the tool operates on a work-piece upon reciprocal movement of said housing and piston as a unit, and a retracted position in which the tool is retracted from the work piece and does not operate thereon upon reciprocal movement of said housing and piston as a unit; and

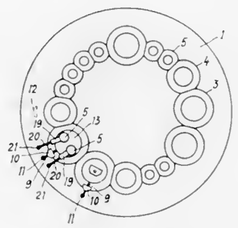
fluid supply passage means defined by said housing for supplying fluid under pressure to one side of said piston when said piston is in said normal extended position for releasably holding said piston in said extended position for reciprocal movement with said housing as a unit for operating the tool on the work-piece, and to discontinue supplying fluid under pressure to said one side of said piston and to supply fluid under pressure to the opposite side of said piston when the tool engages an obstruction between the work-piece and the tool causing incremental movement of said piston relative to said housing and away from said normal extended position for moving said piston to said retracted position for reciprocal movement with the housing as a unit with the tool retracted from and not operating on the work-piece.

3,951,026

PUNCHING AND NIBBLING DEVICE FOR A PRESS HAVING A TURRET

Philippe L. Beauplat, 44, rue de Montmorency, 95230 Soisy-sous-Montmorency, France

Filed Sept. 9, 1974, Ser. No. 504,145
Claims priority, application France, Sept. 13, 1973, 73.32969
Int. Cl.² B21D 37/04
U.S. Cl. 83—552 3 Claims



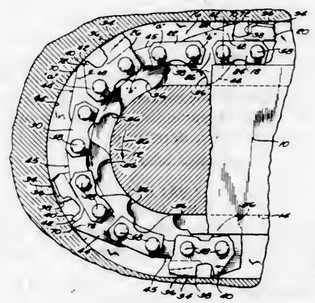
3. In a punch press apparatus having indexible turret means, and housings in said turret means disposed to carry punch sets and die sets of designated sizes, the improvement which comprises a first intermediate member inserted into a housing of the turret means designated for a punch set of a given size; means in said first intermediate member defining a plurality of housings each disposed to receive and carry a punch set of smaller size; a second intermediate member inserted into a housing of the turret means designated for a die set of size matching said given size punch set; means in said second intermediate member defining a plurality of housings each disposed to receive and carry a die set of smaller size.

3,951,027

SAW CHAIN

Uwe F. Arff, Peterborough, Canada, assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed May 9, 1974, Ser. No. 468,456
Int. Cl.² B27B 33/14
U.S. Cl. 83—834 12 Claims



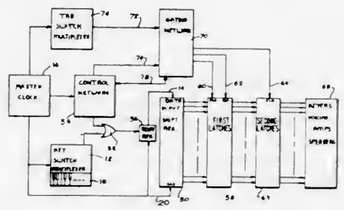
1. A saw chain comprising a first center link having leading and trailing portions, a first pair of opposed side links each having a leading portion pivotally connected to the trailing portion of said first center link, a second pair of opposed side links each having a leading portion and trailing portion with means defining a trailing pivot axis, only one of said second pair of side links comprising a cutting link including a cutting tooth projecting from the trailing portion thereof and a depth gauge projecting from the leading portion thereof, and a second center link interposed said first and second pairs of side links and having a main body including a leading portion pivotally connected to the trailing portions of said first pair of side links and a trailing portion pivotally connected to the leading portions of said second pair of side links, said second center link including an upper tang projecting upwardly from said body in laterally adjacent relation with said depth gauge and extending in the direction toward said cutting tooth beyond a plane extending from the leading pivot axis of said second pair of side links and perpendicularly to a line connecting the leading and trailing pivot axes of said cutting link.

3,951,028

ELECTRONIC ORGAN AND METHOD OF OPERATION

John William Robinson, Jasper, Ind., assignor to Kimball International, Inc., Jasper, Ind.

Filed Oct. 23, 1974, Ser. No. 517,215
Int. Cl.² G10F 5/00; G10H 1/00
U.S. Cl. 84—1.01 13 Claims



1. In an electronic organ having a predetermined number of depressable playing keys and a greater number of keyers, each keyer when actuated keying a respective pitch, multiplexing means including a source of clock pulses for scanning said keys, means for interrupting the scanning of said keys at the end of a complete scan thereof, each said scan generating a data stream in which key down signals corresponding to depressed keys appear in respective time slots, a shift register continuously clocked by said source and having a stage for each keyer and connected to receive said data stream at one end and to shift the received data stream bodily therealong, first storage means connected to each stage of the shift register for receiving and storing each key down signal in the shift register in selected shifted positions thereof during said bodily movement of the data stream in the shift register, second storage means connected to each first storage means for receiving the stored key down signals therefrom, each said second storage means upon receiving a key down signal actuating the respective keyer, and means for clearing the key down signals from said first storage means and for initiating a new scan of said keys after the item of said data stream first entered into said one end of said shift register has reached the other end thereof.

3,951,029

AUTOMATIC ACCOMPANIMENT SYSTEM FOR USE WITH AN ELECTRONIC MUSICAL INSTRUMENT

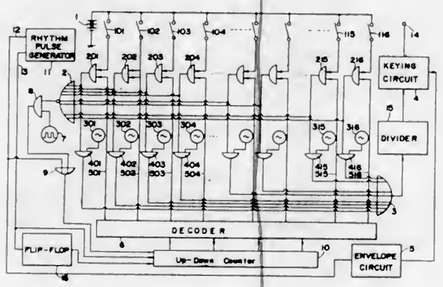
Masao Tsukamoto, Katano; Makito Kawai, Hirakata, and Tomiji Munehiro, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 13, 1974, Ser. No. 497,134

Claims priority, application Japan, Aug. 24, 1973, 48-94365; Aug. 24, 1973, 48-94366

Int. Cl.² G10H *1/00, 5/06*

U.S. Cl. 84—1.03 **9 Claims**



1. An automatic accompaniment system for use with an electronic musical instrument having a plurality of keys, which comprises:

a plurality of key switches corresponding in number to the number of said keys and respectively operatively associated with said keys, each of said key switches being closed when a corresponding one of said keys is depressed,

a plurality of tone sources corresponding in number to the number of said keys for generating individual signals indicative of tones of different pitches which correspond to respective pitches of tones which it is desired to provide by depression of said keys,

means for generating rhythm pulses in accordance with a predetermined rhythm of a selected music,

means for generating high frequency pulses of a predetermined high frequency,

a binary counter having n-bits and adapted to count the number of high frequency pulses applied thereto from said high frequency pulse generating means,

decoding means for converting binary-coded pulses, that have been fed thereto from said binary counter, into 2^n-radix coded pulses, said decoding means having a plurality of output lines,

means for detecting depression of one or more of said keys, said detecting means including a plurality of logical gating elements corresponding to the number of keys and each having a pair of input terminals respectively connected to a corresponding one of said output lines of decoding means and a corresponding one of said key switches,

means for causing said binary counter to cease its counting operation by providing a barrier to passage of said high frequency pulses from said high freqeuency pulse generating means therethrough when said detecting means detects that one or more of the keys that have been depressed and the pulse applied to output terminals of said decoding means which are associated with the depressed key or keys coincide with each other,

a plurality of separate switching means corresponding to the number of said tone sources, each switching means being coupled to a corresponding tone generator and a corresponding detecting means operable to permit passage of a tone signal therethrough from the associated tone source when the corresponding key is depressed and a pulse is received from said decoding means,

means coupled between said rhythm pulse generating means and said binary counter for resetting the latter to cause said binary counter to perform its counting operation until one of depressed keys which is responsible for the lowest pitch and a pulse on one of the output lines of said decoding means coincide with each other, and

means for generating a bass to be sounded and coupled to said switching means, said bass being sounded on the basis of the tone signals received from said tone sources.

3,951,030

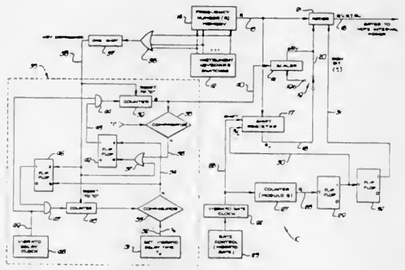
IMPLEMENTATION OF DELAYED VIBRATO IN A COMPUTOR ORGAN

Ralph Deutsch, Sherman Oaks, Calif., assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Sept. 26, 1974, Ser. No. 509,704

Int. Cl.² G10H *1/04, 5/00*

U.S. Cl. 84—1.25 **9 Claims**



1. In an electronic musical instrument of the type wherein musical tones are generated in accordance with a frequency number R supplied thereto, the fundamental frequency of the generated tone being proportional to the value of said supplied frequency number, said musical instrument comprising a keyboard and circuitry connected to said keyboard for supplying to the tone generating components of said instrument the specific frequency number R corresponding to the nominal frequency of a note selected by depression of a keyboard key, the improvement for introducing delayed vibrato in the generated tone, comprising:

first means, connected to receive from said circuitry said specific frequency number R, for adding to said supplied specific frequency number R a periodically varying fractional frequency number R_r, said first means also being connected to the tone generating components of said instrument for supplying the sum to said tone generating components instead of said frequency number itself so that the generated tone exhibits vibrato, the maximum value of said fractional frequency number establishing the maximum depth of vibrato, the period of said fractional frequency number establishing the vibrato period, and

second means, connected to said keyboard and to said first means, for delaying the production of vibrato for a preselected delay time beginning at the initiation of tone generation when said key is depressed.

3,951,031

BRIDGE

Lester M. Barcus, 252 Tivoli Drive, Long Beach, Calif. 90803, and John F. Berry, 3392 St. Albans Drive, Los Alamitos, Calif. 90720

Filed Dec. 16, 1974, Ser. No. 533,221

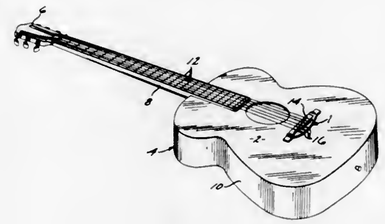
Int. Cl.² G10D *3/04*

U.S. Cl. 84—307 **5 Claims**

1. For use in a musical instrument of the guitar-type having strings and a sound resonant body, a bridge comprising:

an upper saddle member in contact with said strings,

a lower decoupling member for damping flexural vibration transmissions between the strings and the resonant body but transmitting sonic compressional wave energy, said



decoupling member having an upper portion in contact with said saddle member and a lower portion in contact with said resonant body, substantially all of said upper and lower portions of said decoupling member forming an integrally, continuous body comprising primarily lead.

3,951,032

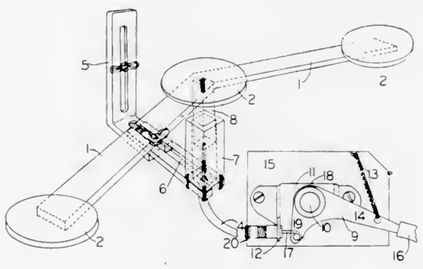
MUFFLER-BRAKES FOR DRUMS

Louis F. LaPorta, 11421 S. Western Ave., Chicago, Ill. 60643, and David S. Goldsmith, 8359 S. Crandon Ave., Chicago, Ill. 60617

Filed July 23, 1974, Ser. No. 490,989

Int. Cl.² G10D *13/04*

U.S. Cl. 84—419 **9 Claims**



1. An apparatus for use by an instrumentalist wishing to silence a timpano without using his hands, said timpano having a shell portion and a head portion, said apparatus comprising, in combination, means spaced from the surface of said timpano head for arresting movement of said head at least at spaced apart points on the surface of said timpano head, means fixedly mounting at least a portion of said arresting means with respect to said shell portion of said timpano, a movably positionable remote actuator unit including foot control element adapted to be engaged by the foot of an instrumentalist, and means operatively connecting said remote actuator unit to at least a portion of said arresting means, whereby actuation of said foot control element causes operation of said arresting means and consequent silencing of said timpano head.

3,951,033

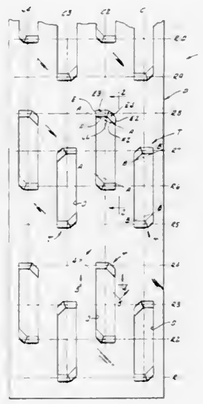
CONNECTOR PLATE

Walter George Moehlenpah, 9906 Old Warson Road, St. Louis, Mo. 63124

Filed Jan. 16, 1975, Ser. No. 541,606

Int. Cl.² F16B *15/00*

U.S. Cl. 85—13 **11 Claims**



1. A connector for securing together adjacent wood members of a wood structure comprising a plate of mild commercial steel or the like having a plurality of elongate openings arranged in columns extending longitudinally of the plate, each said opening having elongate struck-out portions of the plate extending generally perpendicular to one face of the plate at each end of the opening, the struck-out portions constituting elongate teeth, said openings in each said column being spaced at substantially equal intervals relative to one another in the direction of the column and said columns being spaced transversely across the plate at substantially equal intervals, each said tooth having a shank portion and a pointed tip portion terminating at the free end of the tooth and being generally channel-shaped in cross section with the side edges of the shank portion being substantially parallel, both teeth of certain openings being so oriented relative to the longitudinal axes of their respective columns that vertical planes tangent to portions of said teeth side edges toward said certain openings are skewed in one direction at a first predetermined angle with respect to said longitudinal axes of their respective columns and both of the teeth of certain others of said openings being so oriented relative to the longitudinal axes of their respective columns that vertical planes tangent to portions of the side edges of these latter teeth are skewed at a second predetermined angle substantially equal in magnitude but opposite in direction to said first predetermined angle, each said tooth being substantially a mirror image of the tooth at the opposite end of its respective opening with both teeth in one opening being skewed at the same angle and in the same direction.

3,951,034

STRADDLING DOWEL

Franz Chromy, Feldkirch-Levis, Austria, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed June 25, 1974, Ser. No. 482,859

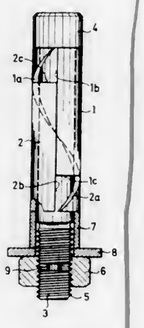
Claims priority, application Germany, July 5, 1973, 2334283

Int. Cl.² F16B *13/04*

U.S. Cl. 85—79 **13 Claims**

1. An axially extending straddling dowel comprising an axially extending shell, said shell comprising at least two axially extending expanding shell members displaceable relative

to one another in the axial direction along common contact surfaces, wherein the improvement comprises that each said shell member has a first contact surface and a second contact surface with each of said first and second contact surfaces extending generally in the axial direction of the dowel, said first contact surfaces being disposed in contact with one another and extending helically relative to the axis of the dowel and extending for at least a major part of the axial length of



said shell members and said second contact surfaces being disposed in contact with one another and in parallel relation with the axis of the dowel and extending for at least a major part of the axial length of said shell members and means in cooperative engagement with at least one of said shell members for axially displacing the at least one of said shell members relative to the other with said shell members arranged to expand radially outwardly relative to the axis of said shell for affording an expanding anchoring effect.

3,951,035

METHOD OF MAKING DUMMY BULLETS

Norbert Dautzenberg, Meerbusch; Josef Hewing, Monchen-Gladbach; Max Michalke, Rheydt, and Henri Weber, Monchem-Gladbach, all of Germany, assignors to Nederlandsche Wapen-en Munitiefabriek De Kruithoorn N.V., 's Hertogenbosch, Netherlands and Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Nov. 27, 1972, Ser. No. 309,866

Claims priority, application Germany, Dec. 1, 1971, 2160187

Int. Cl.² F42B *5/22*

U.S. Cl. 86—10 **5 Claims**

1. In a method for preparation of disintegrating dummy bullets by press-forming powder into a bullet core and, possibly, jacketing the core in plastic or the like, the improvement of using a powder made by atomizing a nonalloyed molten mass of steel having a low carbon content by means of pressurized water in the order of **30** atomospheres to form an iron powder having particle dimensions below 1.5 mm;

dehydrating and drying said thus-pulverized iron powder;

reducibly annealing said iron powder, the heating temperature involved in this step ranging between 900° – 1050°C;

breaking up said annealed iron powder as caked during annealing and subjecting the powder to a beating and scrubbing process;

sieving said thus-treated iron powder to obtain a powder at particle sizes of 0.2 – 1 mm at a density of 3.7 to 3.9 grams powder per cm^3; and compressing the resulting powder to obtain the dummy bullets with a density in excess of 7 g/cm^3.

3,951,036

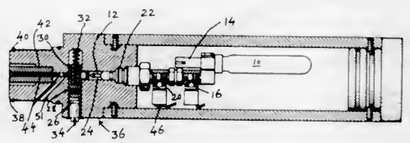
SAFE AND ARM DEVICE

David L. Ramstad, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 22, 1974, Ser. No. 490,522

Int. Cl.² F42C *3/00*

U.S. Cl. 89—1 B **6 Claims**



1. A safe and arm device for igniting a propellant charge in a deep water embedment anchor which comprises:

a block having a first end and a second end and including an elongated chamber centrally disposed therein, said block being demountably coupled at said first end thereof to the deep water embedment anchor and being detachable at said second end thereof, said block further having a longitudinal opening at said first end extending up to said elongated chamber and a lateral opening away from said first end and dividing said longitudinal opening into a first section and a second section;

an out-of-line slider adjustably positioned in said lateral opening in said block, said slider being selectively moveable relative to said first and second sections of said longitudinal opening, said first section being adjacent the elongated chamber;

a firing pin being moveably mounted in said first section of said longitudinal opening;

a shearing disc being housed in said longitudinal opening, said shearing disc being in communication with said firing pin at the end of said firing pin away from said lateral opening;

a three-way valve having an inlet, a first outlet, and a second outlet and being housed in said elongated chamber and mounted in said longitudinal opening of said block in said first section of said longitudinal opening of said block, said three-way valve being in communication with said shearing disc at said first outlet thereof and in communication with atmosphere at said second outlet thereof;

a two-way valve having an inlet and an outlet and being housed in said elongated chamber, said two-way valve being in communication with the inlet of said three-way valve at the outlet thereof;

an inflator having a first end and a second end, said inflator being in communication with said two-way valve at the inlet thereof; and

a cartridge of an inert gas under pressure, said cartridge being in communication with the second end of said inflator.

3,951,037

PROJECTILE LAUNCHING DEVICE

Robert M. Bornand, Meyrin, Switzerland, assignor to Valinor Anstalt, Vaduz, Liechtenstein

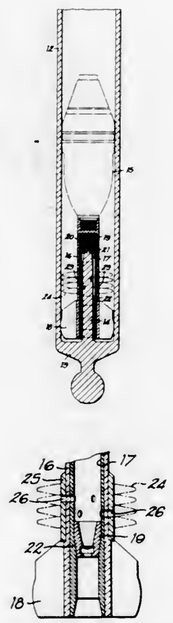
Filed Oct. 16, 1973, Ser. No. 406,926

Claims priority, application Switzerland, Oct. 10, 1973, 14409/73

Int. Cl.² F42B *13/26*

U.S. Cl. 89—1 F **2 Claims**

1. In combination, a projectile and a launching tube therefor, the projectile having a tubular tail portion housing a first explosive charge and a primer for detonating said first explosive charge, a piston axially movable in said tubular tail portion over a limited length under the effect of said first charge when fired, said launching tube slidably receiving said projectile, an axially extending central guiding rod upstanding from the bottom of said launching tube and receivable in said tubular tail portion of said projectile, said guiding rod being slightly longer than the free inner space of said tail portion and having a firing pin at its end to strike said primer, said tail portion having lateral vents therethrough at a height between the ends



of the path of movement of said piston in said tubular tail portion, a second charge carried by said projectile surrounding said tail portion and ignitible by said first charge through said vents, and a sleeve rotatable on said tubular tail portion and having holes therethrough registrable with said vents selectively to open or close said vents by simple rotation of said sleeve.

3,951,038

AIR OPERATED PROJECTILE FIRING APPARATUS

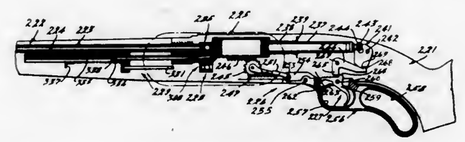
Jules Edmond Van Langenhoven, Benton County, Ark., assignor to Victor Comptometer Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 189,621, April 23, 1962, abandoned. This application July 7, 1965, Ser. No. 473,556

Claims priority, application Belgium, May 3, 1961, 606313

Int. Cl.² F47F *1/04*

U.S. Cl. 89—7 **48 Claims**



47. A device for firing a projectile from a firing position comprising:

a barrel for guiding the projectile from the device,

firing means operatively associated with the projectile in the firing position and being operative to fire the projectile through the barrel and being mounted in spaced relationship to the barrel,

said firing means comprising an air cylinder and a firing chamber and an air flow passage connecting said cylinder to said firing chamber,

one of said barrel and said firing means being axially movable relative to the other between a firing position and a loading position,

a separate movable connecting member mounted between and in line with said barrel and said firing means and connecting said barrel to said firing means in the firing position,

and means for moving said member transversely between the firing position in line with said barrel and a loading position spaced outwardly therefrom.

3,951,039

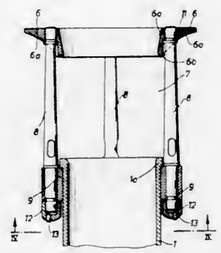
FIREARM WITH MUZZLE AND SMOOTH-BORE BARREL FOR FIRING FINNED PROJECTILES

Paavo Erkki Manninen, and Niilo Asikainen, both of Tampere, Finland, assignors to Oy Tampella Ab, Tampere, Finland

Continuation-in-part of Ser. No. 836,892, June 26, 1969, abandoned. This application Oct. 22, 1971, Ser. No. 191,825

Int. Cl.² F41F *17/12*

U.S. Cl. 89—14 C **2 Claims**



1. A firearm for firing fin-stabilized projectiles with improved accuracy comprising

a. a smooth-bore barrel and

b. a muzzle assembly secured to the end of said barrel,

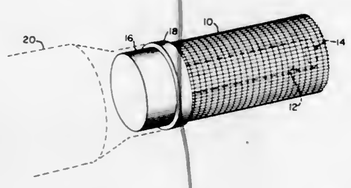
c. said muzzle assembly comprising a ring assembly secured about said barrel adjacent the end thereof, a plurality of spaced parallel, elongated support members arranged about the periphery of said barrel and extending from said ring assembly in a direction substantially parallel to the axis of said barrel beyond the end of said barrel, and a single, annular, complete ring member mounted on said support member spaced from the end of said barrel, providing a plurality of apertures, each defined by a pair of said support members, the end of said barrel and said ring member to exhaust firing gas therethrough,

d. the diameter of the inner surface of said ring member being substantially equal to the internal diameter of said smooth-bore barrel and the minimum length of said apertures, considered in an axial direction, being one and one-quarter times the internal diameter of the barrel, and

e. said ring member having an annular concave deflection surface adjacent said apertures extending in a direction radially with respect to the axis of the barrel and oblique in the downstream direction considering the direction of flow of gases through the barrel, no part of said deflection surface being at an acute angle in the upstream direction with respect to the axis of the barrel,

f. whereby exhaust firing gases which continue to flow in a generally axial direction after passing through said apertures are deflected by said ring member in a generally oblique-radial direction to provide an unimpeded escape velocity for the fin-stabilized projectile and avoid turbulence beyond the end of the barrel, and the trajectory of the fin-stabilized projectile is maintained accurate by said ring member.

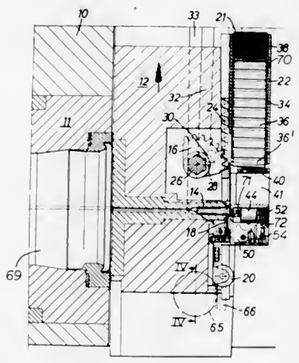
3,951,040
AMMUNITION PROJECTILE
Richard T. Ziemba, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.
Continuation of Ser. No. 63,688, Aug. 14, 1970, abandoned. This application July 9, 1973, Ser. No. 379,514
Int. Cl.² F41F *17/10*; F42B *13/50*
U.S. Cl. 89—14 R **17 Claims**



1. A weapon system comprising:
a gun including
a barrel having a bore with a twist rifling groove; and
a round of ammunition including
a cartridge case, and
a projectile carried by and projecting from said case, said projectile including
a plurality of substantially flat disks, each of said disks having an outer annulus with an outside diameter substantially equal to the diameter of said rifling groove, providing a characteristic of operation whereby said outer annulus is engaged, engraved and rotationally accelerated by said rifling during passage of said projectile through said bore of said gun barrel, and
frangible bond means securing said disks together in a cohesive, frangible stack;
whereby during passage of said projectile through said bore the acceleration provided by said twist rifling disintegrates said frangible bond means and separates each of said disks from the others.

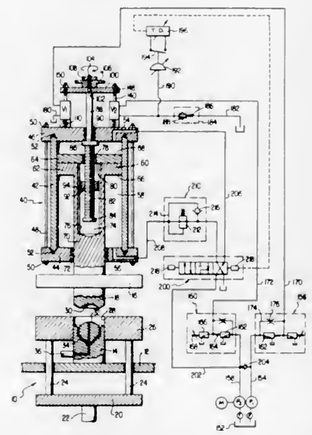
3,951,041
BREECH MECHANISM WITH SEPARATE CLEARANCE FOR MISFIRED PRIMER CARTRIDGE
Rolf Bartolles, Ratingen, Germany, assignor to Rheinmetall G.m.b.H., Dusseldorf, Germany
Filed Dec. 9, 1974, Ser. No. 531,177
Claims priority, application Germany, Dec. 14, 1973, 2362131
Int. Cl.² F41F *11/02*
U.S. Cl. 89—27 B **6 Claims**

1. A breech mechanism for a gun, said mechanism comprising:
a slidable breech block engageable over the ammunition chamber of said gun and having a primer-cartridge chamber, said block being slidable between a firing position with said chambers aligned and an unloading position with said block uncovering said ammunition chamber;
a slider on said block having a primer-cartridge magazine and formed with an ejection opening alignable with said primer chamber;
means for automatically displacing said slider on said block in directions opposite to the directions of sliding of said block between a first slider position corresponding to said firing position and with said magazine aligned with said primer chamber and a second slider position corresponding to said unloading position and with said ejection opening aligned with said primer chamber;
means for removing a spent primer cartridge from said primer chamber when said slider is in said second slider position and for charging a fresh primer cartridge from said magazine into said primer chamber when said slider is in said first slider position; and



manually operable means for displacing said slider without displacement of said block between said slider positions with said block in said firing position to clear a misfired primer cartridge from said primer chamber.

3,951,042
APPARATUS FOR STROKE CONTROL IN HIGH PRESSURE MACHINERY
Adolf F. Weiss, 645 Arndt Road, Easton, Pa. 18042
Filed Mar. 29, 1974, Ser. No. 456,361
Int. Cl.² F15B *9/09*
U.S. Cl. 91—363 R **27 Claims**



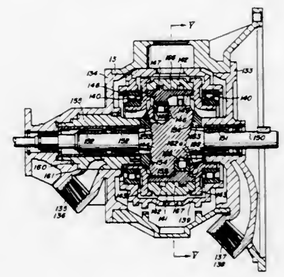
1. Stroke controlling apparatus for a movable member in a high pressure hydraulic machine, comprising:
a cylinder and piston assembly including:
cylinder means, and
a piston movable within said
cylinder means;
an elongated member having a first portion engageable with said piston and having a second portion spaced from said first portion;
hydraulic supply means for supplying hydraulic fluid to said cylinder and piston assembly;
first valve means and second valve means connected with said hydraulic supply means;

valve actuating means connected to said second portion of said elongated member;
said elongated member and said valve actuating means connected therewith being movable relatively to said first valve means and said second valve means as the hydraulic fluid moves the piston within said cylinder and piston assembly;
said valve actuating means being operative, upon movement, to initially operate said first valve means and to subsequently operate said second valve means;
said first valve means, when operated, serving to significantly reduce movement of said piston and of said elongated member;
said second valve means, when operated, serving to terminate movement of said piston and said elongated member, thereby accurately fixing the position of said movable member; and
adjustment means connecting said elongated member with said piston, said adjustment means including a nut and said elongated member first portion having screw threads thereon for receiving said nut.

3,951,043
BRAKE BOOSTER FOR MOTOR VEHICLE FLUID POWER CIRCUIT
Frederick D. Keady, Arlington, Mass., assignor to The Weatherhead Company, Cleveland, Ohio
Division of Ser. No. 353,248, April 23, 1973, Pat. No. 3,834,162. This application May 6, 1974, Ser. No. 467,000
Int. Cl.² F15B *9/10*
U.S. Cl. 91—372 **6 Claims**

1. In a motor vehicle fluid power circuit, a brake booster comprising an input rod, a power piston slidably disposed in a bore in axially aligned relation to said input rod, said power piston and said bore defining a fluid power chamber on one side of said power piston adjacent said input rod, an output rod on the other side of said power piston, a fluid inlet port, a fluid outlet port, a passage extending axially through said input rod establishing fluid pressure communication between said fluid power chamber and said outlet port, an annular valve seat surrounding one end of passage, a poppet disposed at a first predetermined position in said bore and spaced from said valve seat when said input rod is in a deactuated position, said valve seat axially engaging said poppet to close said passage and isolate said fluid power chamber from said outlet port when said input rod is axially displaced from said deactuated position, valve means including a valve member movable by said input rod from a closed postion to an open position for establishing fluid pressure communication between said inlet port and said fluid power chamber after said passage is closed by said engagement of said poppet and said valve seat, and valve member being disposed at a second predetermined position in said bore when said input rod is in said deactuated position, a first spring biasing said poppet to said first predetermined position in said bore when said input rod is in said deactuated position, a second spring biasing said valve member to said second predetermined position in said bore when said input rod is in said deactuated position, and lost motion connecting means for mechanically interconnecting said input rod and said valve member, said lost motion connecting means including an abutment surface means carried by said poppet for engaging said valve member to open said valve means only when said poppet is engaged by said valve seat and is displaced from said first predetermined position against the bias of said first spring by said movement of said input rod from said deactuated position.

3,951,044
ROTARY RADIAL PISTON MACHINES WITH FLUIDFLOW SUPPLY IN SUBSTANTIAL AXIAL DIRECTION
Karl Eickmann, 2420 Isshiki, Hayama, Kanagawa, Japan
Continuation-in-part of Ser. No. 749,028, July 31, 1968, abandoned, which is a continuation-in-part of Ser. No. 461,483, June 4, 1965, Pat. No. 3,398,698. This application Jan. 13, 1970, Ser. No. 2,624
Claims priority, application Switzerland, June 11, 1964, 7664/64; June 11, 1964, 7665/64; July 10, 1964, 9137/64
Int. Cl.² F01B *13/06*
U.S. Cl. 91—485 **2 Claims**



1. In a rotary fluid machine, in combination, a housing; rotor means including a shaft supported in said housing for rotation about a longitudinal rotor axis and a rotor having substantially radial working chambers; movable displacement means in said working chamber; actuator ring means actuating said displacement means in said working chambers for periodically increasing and decreasing the volume of the respective working chambers; a substantially stationary annular control body surrounding said shaft and having a stationary control face, said control body having entrance and exit passage means extending into control ports in said stationary control face of said control body; said rotor means being formed with a rotary control face on one axial end and having rotor passages extending each from said rotary control face of said rotor means into a cooperating working chamber in said rotor means; said rotary control face slidably abutting said stationary control face and forming therewith a small clearance preventing escape of large amounts of leakage; said housing including two bearing bodies surrounding said shaft and having axially inner annular end faces axially supporting said rotor on one side and abutting on the other side said control body, respectively, one of said bearing bodies being fixed and the other bearing body including an elongated sleeve mounting therein said shaft for limited axial movement, and having said inner annular end face at the axially inner end thereof, said bearing sleeve having at the axially outer end thereof a stepped annular outer shoulder surface; and closure means fixedly mounted on said housing and including a tubular portion surrounding and axially guiding said sleeve, and a stepped annular inner shoulder surface cooperating with said stepped annular outer shoulder surface to form at least two annular balancing chambers sealed from each other by slidingly engaged cylindrical surface portions of said inner and outer shoulder surfaces, and respectively containing high pressure

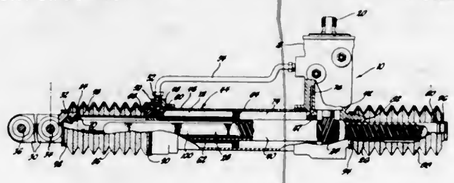
fluid and low pressure fluid for urging said sleeve, guided by said tubular portion, in axial direction against said control body whereby said inner annular end face of said sleeve is perpendicular to said shaft and to said rotor axis when abutting said control body, whereby leakage between said stationary control face and the respective rotor control face is reduced.

3,951,045

POWER ASSISTED RACK AND PINION STEERING GEAR

William R. Frei, and Ernest M. Plant, II, both of Frankenmuth, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 9, 1974, Ser. No. 504,139
Int. Cl.² B62D *5/10*; **F15B** *11/08, 13/04*
U.S. Cl. 91—467 **3 Claims**



1. A power assisted rack and steering gear assembly comprising an elongated and toothed rack, a tubular support member supporting said rack for axial movement therein, first and second flexible seal means forming expansible and contractible chambers operatively connected to opposite ends of steering gear assembly and pneumatically communicating with each other through said tubular support member, said rack having opposite end portions extending outwardly from opposite ends of said tubular support member into said flexible seal means, a pinion gear meshing with the teeth of said rack, rotatable drive means drivingly connected to said pinion gear for moving said rack axially, a fluid actuated power cylinder for power assisting movement of said rack, said power cylinder comprising a cylindrical housing disposed around a portion of said tubular support member, a piston slidably mounted in said power cylinder and on said support tube dividing said power cylinder into separate fluid chambers, piston rod means drivingly connecting said piston to an end portion of said rack, fluid control valve means operatively connected to said power cylinder for supplying pressure fluid to and exhausting fluid from each of said separate fluid chambers in response to predetermined rotation of said drive means, first fluid passage means operatively connecting said first fluid chamber to said valve means and second fluid passage means operatively connected to said second chamber and fluid control valve means, and tie rod connector means connected to one end of said piston rod means and said rack.

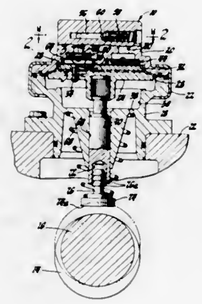
3,951,046

PUSH ROD AND TAPPET ASSEMBLY

Robert L. Lochmann, Grand Blanc, and Daniel C. MacManus, Owosso, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 10, 1974, Ser. No. 468,757
Int. Cl.² F16J *3/00*; **F01B** *19/00*
U.S. Cl. 92—113 **4 Claims**

1. A push rod and tappet assembly for use in a cam actuated pump mechanism including a housing means providing a pump cavity with a piston means movably positioned in the pump cavity and a cam rotatably positioned adjacent the housing means, said push rod and tappet assembly including a push rod having an axial extending bore of a predetermined diameter and length in one end thereof adapted to be journalled in the housing and fixed at its other end to the piston means and, a tappet having a shank integral therewith, a portion of said shank being in press fit engagement part-way in said bore of said push rod to provide a push rod and tappet assembly of a predetermined as assembled length, said tappet being adapted to be further axially moved in said bore upon the application of a predetermined axial applied force against



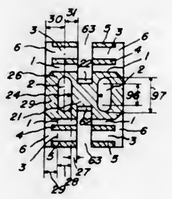
said tappet relative to said push rod to a position providing a push rod and tappet assembly having a working length which is less than said as assembled length, said tappet as press fitting to said push rod being adapted to be engaged by the cam.

3,951,047

RADIAL PISTON MACHINE WITH PISTON SHOES

Karl Eickmann, 2420 Isshiki, Hayama, Kanagawa, Japan

Filed June 6, 1974, Ser. No. 477,085
Claims priority, application Austria, June 28, 1973, 5672/73
Int. Cl.² F01B *1/00*
U.S. Cl. 92—157 **8 Claims**



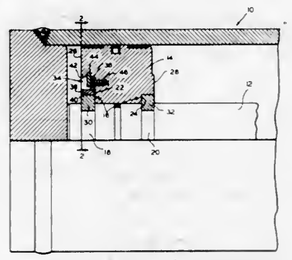
1. In a radial piston machine, a combination comprising a rotor which turns within the confines of a surrounding annular control face and is provided with substantially radial cylinder bores; a radially slidable piston in each cylinder bore and having an outer end provided with a piston shoe which has a contact face in sliding engagement with said control face and is formed with a middle portion and two guide portions located at opposite sides of said middle portion and projecting circumferentially of said rotor beyond the associated piston, said guide portions each having a recess extending toward said middle portion and subdividing the respective guide portion into two sections which are spaced from one another in axial direction of said rotor; a recess extending axially of said rotor between each of said guide portions and said middle portion; a hydrostatic bearing in each of said contact faces and constituted of at least one depression which is surrounded by a sealing land and a further depression beyond at least a portion of said sealing land.

3,951,048

PISTON AND ROD CONNECTION

John J. Bloom, Jr.; Paul F. McAdams, both of St. Joseph; Gene F. Hand, Stevensville, and Ronald F. Katowich, St. Joseph, all of Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Jan. 26, 1973, Ser. No. 326,901
Int. Cl.² F16J *1/12*
U.S. Cl. 92—258 **19 Claims**



1. A piston and rod assembly comprising; a rod; a piston disposed on said rod; locking means for locking said piston on said rod; said locking means including a first groove in said rod, a first recess in said piston, at least two locking members disposed in said groove and extending into said recess and retaining means disposed in said recess for retaining said locking members in said groove, all of said first groove, said first recess, said locking members and said retaining means being aligned radially outwardly of the axis of said rod, said retaining means being disposed radially outwardly of said locking members for retaining said locking members in said groove, said retainer means including a retainer member disposed in said recess between a radially outwardly facing axially extending surface of each of said locking members and a radially inwardly facing axially extending surface of said recess and connector means for maintaining said retainer member in said recess, said retainer member having an axially extending surface engaging said axially extending surface of said locking members so that said connector means is free of axial loads.

3,951,049

METHOD AND APPARATUS FOR FORMING PACKAGING STRUCTURES

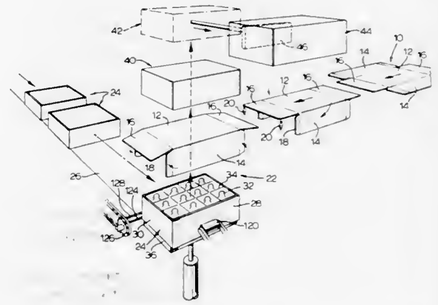
Warren A. Brackmann, Cooksville; Daniel DiIanni, Toronto; Arthur K. Bunnell, and Karel Hrboticky, both of Etobicoke, all of Canada, assignors to Carling O'Keefe Limited, Toronto, Canada

Filed June 5, 1975, Ser. No. 584,000
Int. Cl.² B31B *17/02*
U.S. Cl. 93—39 R **21 Claims**

1. A method of forming a packaging structure, which comprises

feeding an integrally-formed planar blank for a disposable cardboard sleeve of said packaging structure in a first linear horizontal path to an assembly zone with the plane of said blank being situated substantially horizontally;

said blank comprising a rectangular central panel having first and second longitudinal side edges and first and second lateral side edges, a first rectangular side panel having a longitudinal side edge coextensive with one of said longitudinal side edges of said center panel and joined thereto by a first crease line, a second rectangular side panel having a longitudinal side edge coextensive with the other of said longitudinal side edges of said center panel and joined thereto by a second crease line, said first and second rectangular side panels each having first and second lateral side edges and a free longitudinal side edge, a first rectangular end panel having a longitudinal edge coextensive with one of said lateral side edges of said center panel and joined thereto by a third crease line, a second rectangular end panel having a longitudinal side edge coextensive with the other of said lateral side edges of said center panel and joined thereto by a fourth line, each of said rectangular end panels having a free longitudinal side edge and free lateral side edges, a first pair of flaps each of which has a side edge coextensive with one lateral side edge of said first rectangular side panel and joined thereto through a fifth crease line, a second pair of flaps each of which has a side edge coextensive with one lateral side edge of said second rectangular side panel and joined thereto through a sixth crease line, the lateral width of said side panels and said end panels being substantially equal, said blank being oriented to move longitudinally in said first horizontal path,



separately feeding a substantially rigid tray in a second linear horizontal path to said assembly zone;

said tray including a rectangular bottom wall arranged with its length transverse to the direction of said second horizontal path and rectangular side walls and rectangular end walls upwardly extending from said bottom wall and terminating in an open top, the open top corresponding substantially in dimensions to said centre panel of said blank, said side walls corresponding substantially in dimensions to said side panels of said blank and said end walls corresponding substantially in dimension to said end panels of said blank;

at said assembly zone said first and second linear horizontal paths being vertically spaced-apart from each other with said first path being above said second path,

bending said first and second side panels downwardly about said first and second crease lines respectively while retaining said centre panel and said end panels in said planar horizontal position during said feeding of said blank to said assembly zone,

applying adhesive to the lower surface of said end panels adjacent said free lateral side edges thereof during said feeding of said blank to said assembly zone;

bending inwardly each member of each of said pairs of flaps about the fifth and sixth crease lines to a position substantially perpendicular to the respective side panel at said assembly zone;

elevating said tray in a substantially vertical path in said assembly zone to engage the lower surface of the centre panel of said blank;

elevating said tray and blank together in said vertical path while sequentially biasing said side panels into gripping engagement with the side walls of the tray and bending said end panels downwardly about said third and fourth crease lines grippingly to engage the respective end wall of the tray and to engage the respective flaps;

adhesively connecting said folded end panels to said respective flaps to provide said packaging structure wherein said side panels and said end panels grippingly engage said

respective side walls and end walls of the tray to inhibit removal of said sleeve from said tray and said side panels and said end panels extend downwardly substantially the height of the respective side walls and end walls of the tray; and

recovering said packaging structure.

3,951,050

TUBE FORMING PROCESS

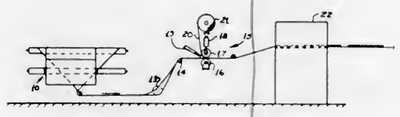
Robert Norman Poole, Kingston, Canada, assignor to Du Pont of Canada, Ltd., Montreal, Canada

Filed Oct. 16, 1974, Ser. No. 515,313

Claims priority, application Canada, Dec. 13, 1973, 188086

Int. Cl.² B31B *1/72, 23/60*

U.S. Cl. 93—35 R **1 Claim**



1. A continuous process for producing tubes for heavy duty industrial bags, said process essentially comprising the steps of:

1. supplying a sheeting to a folding means, said sheeting being of fabric woven from tapes of oriented polyolefin film which is coated on one side with a lower density polyolefin that melts at a lower temperature than the fabric and said sheeting being transported continuously through an apparatus for producing said tubes,
2. folding the sheeting longitudinally so that its edges are in juxtaposition in the same plane and the coating on the sheeting is on at least the exterior of the folded sheeting,
3. supplying a sealing ribbon of the same fabric as said sheeting coated with the same composition, said composition being heat sealable to the composition coating the sheeting, and directing said sealing ribbon to lie over the juxtaposed edge of the folded sheeting, the coated surface of the sealing ribbon being adjacent to the coated surface of the folded sheeting, said ribbon being transported continuously through said apparatus for producing said tubes,
4. directing hot air towards the line of contact of the coated surfaces of the sheeting and the sealing ribbon in volumne and temperature sufficient to soften the coatings of both the ribbon and the folded sheeting in the vicinity of the edges of the folded sheeting,
5. immediately pressing the ribbon to the folded sheeting with sufficient pressure to form a seal, and
6. cutting the tube so formed into predetermined lengths.

3,951,051

DAMPERS

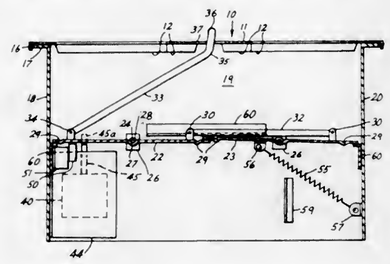
Hal Dry, Winters, Tex., assignor to Wallace-Murray Corporation, New York, N.Y.

Filed July 2, 1974, Ser. No. 485,122

Int. Cl.² F24F *7/06, 13/10*

U.S. Cl. 98—42 R **18 Claims**

1. Damper apparatus, comprising a housing having a gas flow passage therethrough, two vanes movable between open and closed positions with respect to said gas flow passage, means for holding one of said vanes in one of said open and closed positions, means for biasing one of said vanes toward the other of said open and closed positions, and actuator means for moving the vane held thereby away from said holding means whereby said vane is released by said holding means so that said biasing means then moves the vane biased thereby toward said other of said open and closed positions, and



means linking said two vanes together to move to said open and closed positions simultaneously.

3,951,052

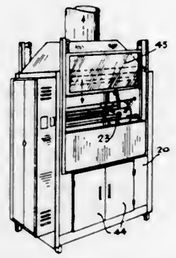
BARBECUING APPARATUS

Acey Ringo, 320 E. 47th St., Chicago, Ill. 60653

Division of Ser. No. 267,643, June 29, 1972, Pat. No. 3,861,290. This application Sept. 25, 1974, Ser. No. 509,301

Int. Cl.² A47J *37/04*

U.S. Cl. 99—427 **4 Claims**



1. Barbecuing apparatus comprising a casing, a rotary shaft therein, a plurality of trays disposed within the casing about the shaft so as to extend radially outward from the shaft in circumferentially spaced relation to one another, each tray being formed of a basket with an openable top, means removably connecting the trays to the shaft so as to enable the trays to rotate with the shaft, a bed of burning charcoal located within the casing below and spaced from the rotary shaft, means located in the casing for supplying water to the charcoal fire on the bed for controlling the fire by quenching, a screen located in the casing adjacent its top, means for directing smoke coming from the burning charcoal and the trays through the screen, and means for delivering a high-velocity water mist at the side of the screen at which the smoke exits from the screen.

3,951,053

PIE CRUST PROTECTOR

Margaret A. Kirkpatrick, Kelseyville, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed June 21, 1974, Ser. No. 481,688

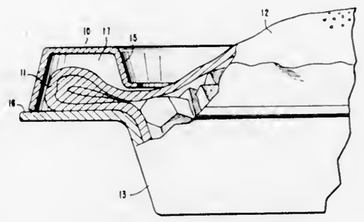
Int. Cl.² A21B *3/13*

U.S. Cl. 99—433 **1 Claim**

1. A circular pie plate and a device for protecting the lip of a crust of a pie in the pie plate from burning during the baking process of the pie, said pie plate formed with a flange that extends about the top periphery of the plate in a plane parallel to the bottom of the plate,

said device comprising a shaped ring formed of heat reflective material, with the outer diameter of said rim of less

magnitude than the outer diameter of the flange of the pie plate so as to rest on the flange in the installed position,



and with said ring formed with a continuous recess in its under surface to fit about the lip of a pie crust also resting on the said flange in the installed position.

3,951,054

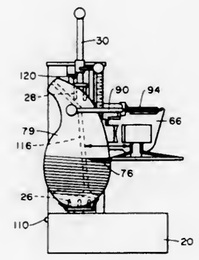
MEAT SLICER

Herman E. Frentzel, Kentfield, Calif., assignor to Collins Foods International, Inc., Los Angeles, Calif.

Filed Sept. 24, 1974, Ser. No. 508,798

Int. Cl.² A22C *17/00, 17/02, 17/12*

U.S. Cl. 99—538 **10 Claims**



1. In a meat slicer having holder means for rotatably mounting a cut of meat,

carriage means,

drive means for effectuating relative movement between said holder means and said carriage means in a direction paralleling the rotative axis of said holder means,

blade support means pivotally mounted on said carriage means for rotation about an axis parallel to said rotative axis of said holder means,

blade means mounted on said support means and movable therewith toward and away from said holder means axis upon pivoting of said support means,

a manually manipulatable arm pivotally mounted to said carriage means,

stop means on said support means engagable by said arm,

biasing means connecting said manipulatable arm to said support means for biasing said arm toward said stop means,

whereby said blade means may be selectively moved toward and away from said holder means axis by arcuately manipulating said arm, the force which the arm is capable of applying to said blade means in the direction of said holder means axis being limited by the stress developable in said biasing means.

3,951,055

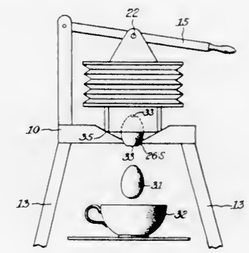
EGG BLOWER

Raymond Woebbeking, Conrath, Wis., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Feb. 11, 1975, Ser. No. 549,007

Int. Cl.² A47J *43/14*

U.S. Cl. 99—568 **2 Claims**



1. A device for ejecting the contents of an egg out of an egg shell, comprising

a shelf formed with an opening of a size smaller than the size of an egg, on which an egg may be placed

a bellows formed of flexible tubing, closed at a first end and formed with a mouth opening at a second end, said mouth opening bordered by a rim of a size to freely fit about an egg,

lever means joined to the shelf to move the bellows in the axial direction of the bellows to or from the opening of the shelf,

said lever means adaptable to compress the rim of the mouth opening of the bellows against the shelf and about an egg located on the shelf opening, in a first position of the lever means, with further movement of the lever means from said first position to a second position, acting to compress the tubing of the bellows and compress the air inside the bellows so as to blow the contents of the egg through the opening in the shelf.

3,951,056

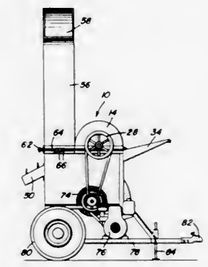
PORTABLE PECAN CLEANER

Roger N. McGehee, Star Rte., San Saba, Tex. 76877

Filed Feb. 26, 1974, Ser. No. 446,025

Int. Cl.² A23N *5/00, 7/00*

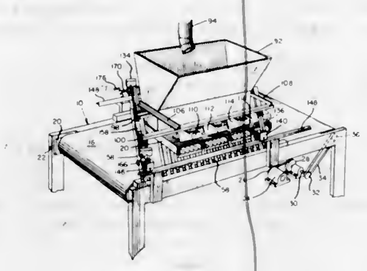
U.S. Cl. 99—569 **4 Claims**



1. A pecan cleaner comprising a housing defining a closed hulling chamber, an inlet into said chamber for the introduction of pecans thereto, an outlet from the chamber for the discharge of pecans therefrom, pecan contacting and moving means operative in said chamber in cooperation with the housing to effect a hulling of introduced pecans, a separation chamber outward of the hulling chamber for reception of pecans and hulls from the hulling chamber through said outlet,

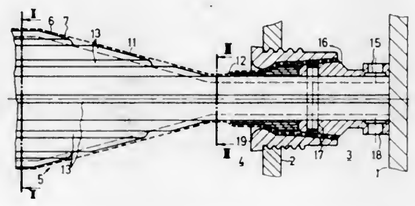
and means in said separation chamber for separating the pecans from the hulls and other foreign matter, said pecan contacting and moving means comprising a rotating drum centrally within said housing, said drum including a plurality of radially projecting resilient flexible fingers thereabout, said fingers having a length greater than the distance between the drum and housing thereby being flexed and in dragging contact with the housing about the hulling chamber as the drum rotates, at least a portion of the housing being defined by a roughened area across which introduced pecans are moved by the fingers to effect a removal of the hulls therefrom wherein each of said fingers engages the housing and the roughened area therein over a substantial portion of its length, each finger being continuously flexible along the entire unsupported length thereof and including a plurality of nubs projecting therefrom along a major portion of the length thereof for assisting in gripping and turning pecans is they are dragged, rolled, and moved across the roughened area.

3,951,057
NUT BLANCHING APPARATUS
James W. Gardner, 309 Washington Ave., Tyrone, Pa. 16686
Filed Oct. 21, 1974, Ser. No. 516,182
Int. Cl.² A23N *5/01*
U.S. Cl. 99—629 **6 Claims**



1. Apparatus for blanching shelled edible nuts, comprising
a. an endless belt conveyor having a substantially flat horizontal upper surface,
b. drive means connected to said belt for moving said upper surface in a forward direction,
c. a plurality of relatively long, straight, flat abrasive baffles extending diagonally across and slightly spaced from said upper surface,
d. said baffles being disposed in spaced parallel relation to one another with one end of each baffle terminating within the path of said conveyor and forwardly of the other end,
e. a first pair of parallel tracks extending lengthwise to said belt along each side thereof,
f. a second pair of parallel tracks rigidly connected to one another in spaced parallel relation, said second tracks disposed parallel to said baffles,
g. first rollers mounted to said second tracks and riding on said first tracks,
h. a first lead screw and follower operatively connected to said first and second tracks for moving said second tracks along said first tracks,
i. a carriage disposed between said first and second tracks,
j. second rollers mounted to said carriage and riding on said second tracks,
k. a second lead screw and follower operatively connected to said second tracks and said carriage for moving said carriage along said second tracks,
l. nut dispensing means mounted to said carriage for delivering individual streams of nuts onto said belt between adjacent baffles,
m. each of said baffles being mounted for rotation about its longitudinal axis, and,
n. adjustable actuating means connected to all of said baffles whereby movement of said actuating means will simultaneously adjust all of said baffles to the same angular position.

3,951,058
DRAINAGE SYSTEM FOR PRESSES FOR OBTAINING JUICE FROM FRUIT, GRAPES AND SIMILAR PRESSED MATERIAL
Hans Ulrich Hauser, Niederweningen, Switzerland, assignor to Bucher-Guyer, AG, Maschinenfabrik, Niederweningen, Switzerland
Filed Apr. 16, 1975, Ser. No. 568,576
Claims priority, application Germany, Apr. 16, 1974, 2418341
Int. Cl.² B30B *9/02, 9/06*
U.S. Cl. 100—107 **5 Claims**

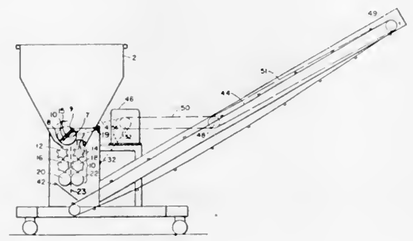


1. In a drainage system for presses for obtaining juice from fruit, grapes and similar pressed material, comprising a pressing cylinder and a pressure plate and a back pressure plate movable relative towards each other, flexible traction means clamped between said plates and comprising an elongate flexible core and a flexible perforated casing for allowing juice to pass therethrough surrounding said core for filtering the pressed juice, said core having ends, one of which ends is clamped adjacent each of said plates, said core having a substantially larger cross-sectional area along a major central part of its length than it has at its said ends, and longitudinal channels defined by said core and extending along the major part of the core length, and longitudinal channels defined by said ends, and connective channels interconnecting said major part channels and said end channels.

3,951,059
APPARATUS FOR CRUSHING MATERIAL
Drew W. Morris, Hampton, N.H., assignor to Drew-It Corporation, Hampton Falls, N.H.
Continuation-in-part of Ser. No. 400,179, Sept. 24, 1973, abandoned, which is a continuation-in-part of Ser. No. 230,302, Feb. 29, 1972, Pat. No. 3,776,128. This application Jan. 20, 1975, Ser. No. 542,557
Int. Cl.² B30B *3/04*
U.S. Cl. 100—173 **14 Claims**

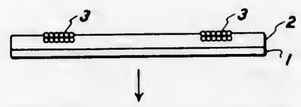
1. An apparatus for crushing material comprising, in combination:
A. a plurality of pairs of opposed counter-rotating rollers having parallel axes of rotation, said plurality forming a two column downwardly converging array, said array being symmetrical about a plane passing between said two columns, and wherein each roller rotates in a direction so that points on that roller surface closest to said plane move in a downward direction,
B. a downwardly converging feed chute disposed above said array for receiving material-to-be-crushed, and
C. a feeder disposed within said feed chute for orienting and feeding said material-to-be-crushed into said array, said feeder including:

i. a rotating element having an axis of rotation parallel to the rotational axes of said rollers, said rotating element including two opposed elongated feed members, said feed members having corresponding longitudinal axes parallel to and equidistant from said rotating element axis of rotation,
ii. means for pivotally mounting said rotating element in a manner permitting displacement of said rotating



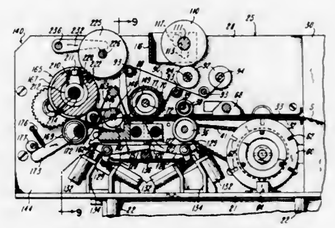
element rotational axis between upper and lower predetermined limits along a segment of a cylindrical surface of revolution, said surface having an axis of revolution parallel to and above said roller axes, and wherein said segment lies on one side of said array plane of symmetry, and wherein further the direction of rotation of said rotating element is the same as that for the rollers on the same side of said plane as said segment.

3,951,060
PROCESS FOR PREPARING WATERLESS LITHOGRAPHIC MASTERS
Richard G. Crystal, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 27, 1973, Ser. No. 428,961
Int. Cl.² B41M *1/10*
U.S. Cl. 101—150 **20 Claims**



1. A process for preparing a printing master comprising:
a. providing a suitable substrate;
b. providing a silicone which becomes nontacky when cured and contains a low temperature catalyst and a high temperature catalyst independently reactable,
c. coating said substrate with said silicone,
d. curing said silicone at least on its surface to render it nontacky by means of said low temperature catalyst,
e. providing particles comprising a material which at elevated temperatures can combine with said high temperature catalyst to degrade the cured silicone,
f. depositing said particles and forming an image pattern on said cured silicone,
g. heating the composite of (a), (c) and (f) to said high temperature and thus degrading the silicone below the image pattern and rendering the nonimaged silicone areas ink releasing to the extent said silicone was not previously rendered ink releasing, and
h. providing an ink accepting rough topography by removing the particulate image pattern.

3,951,061
LABEL PRINTING APPARATUS
David F. Bremmer, Jr., Bellbrook; Ray D. Deeter; Daniel L. Goetz, both of Kettering; William L. Behnken, Dayton, and Julian F. Madden, Springboro, all of Ohio, assignors to Custom Printers, Inc., Dayton, Ohio
Filed May 17, 1974, Ser. No. 470,749
Int. Cl.² B41J *1/38*
U.S. Cl. 101—93.12 **13 Claims**

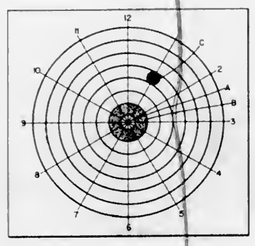


1. Apparatus for printing a series of labels and adapted for use with a computing scale system, said apparatus comprising a frame, means in substantially fixed relation to said frame for supporting a strip of labels in a supply roll, electrically operated first drive means for advancing the strip along a predetermined path in predetermined increments each corresponding to a printing cycle, a print drum including a plurality of circumferentially spaced printing positions, each of said printing positions including a plurality of the same printing character forming an axially extending row of common printing characters, means on said frame for rotatably supporting said drum for presenting each said row of common printing characters to a printing station adjacent the path of the strip, means for inking said rows of printing characters, electrically operated second drive means for producing high speed indexing of said print drum and including a stepping motor, said stepping motor being effective to step said print drum through a revolution for each said printing cycle to position sequentially each row of common printing characters at said printing station, means for holding said stepping motor and said print drum at a home position after each printing cycle, a plurality of hammer members arranged in a row adjacent said print drum on the opposite side of said path, each of said hammer members corresponding to one of said printing characters in each of said rows on said print drum, a corresponding plurality of electrically actuated solenoids connected for selectively moving said hammer members and cooperating with said stepping motor to print a line of different information across each label during each said printing cycle, a printing mechanism positioned to receive each label printed with different information by said print drum, and said printing mechanism includes means for printing interchangeable common information across each label after the label arrives at said printing station for receiving the different information whereby when the common information is changed, the next successive label printed with different information also receives the new common information to avoid the need for purging labels after the common information is changed.

3,951,062
METHOD OF RECORDING MEDICAL AND SURGICAL PATIENT INFORMATION
Daniel J. Abramson, 2800 Greenvale St., Chevy Chase, Md. 20015
Filed Dec. 18, 1974, Ser. No. 533,997
Int. Cl.² B41M *3/00*
U.S. Cl. 101—426 **7 Claims**

1. A method of recording in a patient's record, medical examination findings or surgical information involving anatomical considerations, which comprises reproducing in said

record in the desired appropriate space thereof, an anatomical chart, diagram or graphic representation of the body area involved, having superimposed thereon a series of concentric circles and equidistant radial line extensions from a center representing an anatomical point of reference of said body



area, by means of a reusable ink print transfer reproducing device and thereafter completing the record by making appropriate markings on said imprint and adjacent thereto, to record the location, size and kind of any abnormality or anatomical consideration, so as to depict accurately the aforesaid medical and surgical findings.

3,951,063

PROCESS FOR PREPARING REVERSIBLE CURE WATERLESS LITHOGRAPHIC MASTERS

Richard L. Schank, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 30, 1973, Ser. No. 420,402
Int. Cl.² B41C *1/10*
U.S. Cl. 101—466 **20 Claims**



1. A process for preparing a printing master comprising, providing a non-tacky rubbery uncured silicone polymer, forming a particulate image pattern, depositing said particulate image pattern on said non-tacky rubbery uncured silicone polymer, converting the non-tacky polymer into a softened tacky uncured state thereby adhering the particulate image pattern and curing said softened polymer to fix the particulate image pattern thereto.

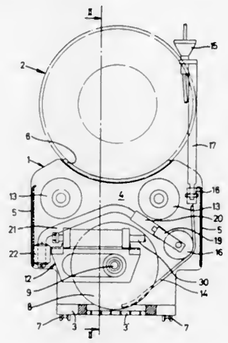
3,951,064

MINE ANCHOR

Jan Bjork, Bjarred, and Kjell Åke Bertil Holmgren, Trelleborg, both of Sweden, assignors to Aktiebolaget Thulinverken, Landskrona, Sweden

Filed May 7, 1974, Ser. No. 467,668
Claims priority, application Sweden, May 10, 1973, 7306566
Int. Cl.² F42B *22/14*
U.S. Cl. 102—13 **7 Claims**

1. A mine anchor assembly for anchoring a submarine buoyant mine at a predetermined depth under the water surface, comprising in combination, means for connecting a mine to an anchor by a cable, means for letting the anchor carry the cable to the bottom with the mine being afloat near the surface, cable pulling means, an energy source for driving said pulling means, start control means for initiating the cable pulling means after launching the mine at the surface of the water when the anchor is on the bottom thereby to pull the mine toward the anchor by said cable, and stop control means for breaking off the cable pulling after pulling in a measured length of cable identifying a predetermined depth of the mine wherein the cable is wound on a drum and the cable pulling



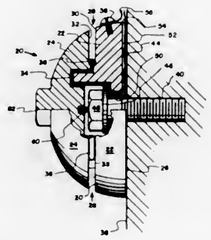
means is a pneumatic driving assembly for said drum, and the source of energy is a compressed air tank.

3,951,065

EXPLOSIVE DEVICE AND METHOD FOR REMOVING ICE FROM RAILROAD TUNNELS

Loren E. Macnab, c/o Peter Macnab, Star Rte., Wasco, Oreg. 97065

Filed Jan. 27, 1975, Ser. No. 544,233
Int. Cl.² F42D *3/00*
U.S. Cl. 102—22 **11 Claims**



1. An explosive device, for removing accumulated ice from the interior surfaces of a railroad tunnel or other underground cavity, comprising:

a. a rigid, shock-resistant, blast-directing assembly including a base member and mating cap member and having means defining an outwardly facing groove around its periphery at the juncture between the base and cap members;

b. first fastening means for attaching said base member to the interior surface of an underground cavity;

c. second fastening means for attaching said cap member to said base member;

d. an explosive substance formed in the shape of a loop and captively seated within said groove; and

e. means for detonating said explosive substance.

3,951,066

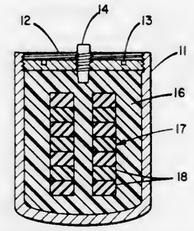
INCENDIARY FRAGMENTATION DEVICE

Fred Schroeder, Lakeview Terrace, Calif., assignor to Dow Corning Corporation, Midland, Mich.

Filed July 11, 1974, Ser. No. 487,477
Int. Cl.² F42B *27/04*
U.S. Cl. 102—65 **2 Claims**

1. An incendiary fragmentation device comprising

a casing defining an enclosed void,
a high explosive charge filling said void,
detonating means in said casing for detonation of said high explosive charge, and
a hollow cylindrical body having an outside diameter less than the diameter of said void, said body being of frangi-



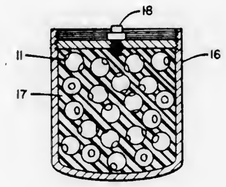
ble incendiary material comprising magnesium powder and an oxidizer in a silicone rubber binder, said body further being capable of ignition by said high explosive charge upon detonation thereof and being disposed in said high explosive charge and having said charge in contact with both the inside and outside walls of said body.

3,951,067

WIDE DISPERSION INCENDIARY DEVICE

Fred Schroeder, Lakeview Terrace, Calif., assignor to Dow Corning Corporation, Midland, Mich.

Filed July 11, 1974, Ser. No. 487,476
Int. Cl.² F42B *13/46*
U.S. Cl. 102—65 **8 Claims**



1. An incendiary device comprising
a casing defining an enclosed void,
a high explosive charge filling said void,
detonating means in said casing for detonation of said high explosive charge, and
a plurality of hollow metallic objects imbedded in said high explosive charge, the hollow in said objects communicating with at least one aperture in the exterior of said objects and being substantially filled with incendiary material whereby said incendiary material is ignited and dispersed by detonation of said high explosive charge and wherein said incendiary material extends outwardly beyond the periphery of said metallic objects to thereby increase the surface area exposed to said high explosive.

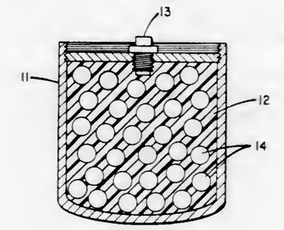
3,951,068

INCENDIARY DEVICE

Fred Schroeder, Lakeview Terrace, Calif., assignor to Dow Corning Corporation, Midland, Mich.

Filed July 11, 1974, Ser. No. 487,475
Int. Cl.² F42B *27/04*
U.S. Cl. 102—65 **1 Claim**

1. In an incendiary device comprising a casing defining an enclosed void, a high explosive charge filling said void, a plurality of incendiary bodies encapsulated in said high explosive charge, and detonating means in said casing for initiating detonation of the high explosive charge, the improvement which comprises:



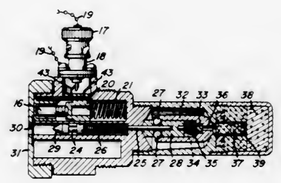
said incendiary bodies being spherical molded bodies at least one-half inch in diameter of magnesium and an oxidizer in a silicone rubber binder.

3,951,069

METHOD OF PAYLOAD DELIVERY AT LOW ALTITUDE

Aaron S. Berlin, Wilmington, Del., and Vincent C. Little, Fallston, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 163,201, July 16, 1971, abandoned, which is a division of Ser. No. 757,298, Sept. 4, 1968, Pat. No. 3,618,524. This application Feb. 21, 1974, Ser. No. 444,579
Int. Cl.² F42C *15/12*
U.S. Cl. 102—70.2 R **2 Claims**

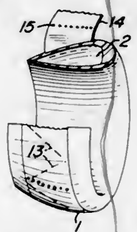


1. A method of assembling and delivering a payload munition to a target comprising the steps of: providing a munition housing; providing a payload in the housing; mounting an electrically armed fuse means in said housing for impact activation and dissemination of the payload from the munition housing; affixing to said housing an initiator means having a safety pin means locking a lanyard activatable locking pin means in the unarmed position and having electrical energy means for connection to said fuse means; electrically connecting the electrical energy means to the fuse means for electrically arming said fuse means when the said safety pin means and the said locking pin means are sequentially removed whereby the removal of the locking pin means in turn ignites a primer on a conventional fuse delay to activate the electrical energy means; placing the electrically connected munition in a delivery means and attaching one end of a lanyard to the delivery means and the other end to the said locking pin means of said initiating means; removing the safety pin means to thereby enable the locking pin means to be removed by said lanyard; ejecting the munition from the delivery means towards the target and removing the said locking pin means by way of said lanyard thereby enabling the said electrical energy means to supply electrical current to the said fuse means; and activating the fuse means upon impact of said munition.

3,951,070
NON-HAZARDOUS RING AIRFOIL PROJECTILE OF NON-LETHAL MATERIAL

Abraham Flatau, 2003 Stockton Road, Joppa, Md. 21085; Donald N. Olson, 38 Atherton Road, Lutherville, Md. 21093, and Miles C. Miller, 504 Haverhill Road, Joppa, Md. 21085

Continuation-in-part of Ser. No. 310,626, Nov. 29, 1972, Pat. No. 3,898,932. This application Dec. 6, 1973, Ser. No. 422,493
The portion of the term of this patent subsequent to Aug. 12, 1992, has been disclaimed.
Int. Cl.² F42B *13/46, 11/32*
U.S. Cl. 102—92.4 **19 Claims**

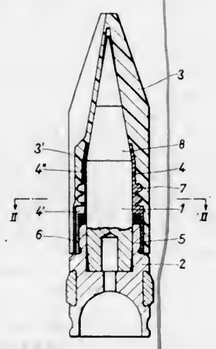


1. A non-lethal projectile comprising: an annular ring shaped, closed structure having a substantial tear drop airfoil cross-section; said structure being of substantially resilient material and defined externally by major annular inner and outer surfaces defining the diametric extent of said structure, and being terminated by leading and trailing edges defining the longitudinal extent of said structure; said structure defining at least one hollow portion therein; an incapacitating agent payload disposed within said hollow portion; and a rupturable portion on the exterior of said structure.

3,951,071
DRIVE CAGE SUB-CALIBER PROJECTILE

Raimund Germershausen, Kaarst, Germany, assignor to Rheinmetall G.m.b.H., Dusseldorf, Germany

Filed July 18, 1974, Ser. No. 489,484
Claims priority, application Germany, July 20, 1973, 2336904
Int. Cl.² F42B *13/16*
U.S. Cl. 102—93 **8 Claims**

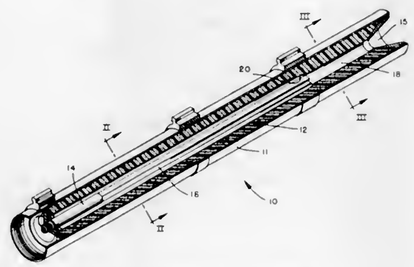


1. A subcaliber drive cage projectile comprising:
a projectile having a forwardly tapering forward end and a heel at the other end;
a drive cage having a bottom part receiving said heel and an adjoining synthetic-resin releasable cap enclosing said forward end; and
a circularly-shaped metal jacket made of longitudinal circular-arc wall segments surrounding said projectile along at least part of the length of said projectile, said cap being attached to said bottom part of said drive cage by means of said jacket.

3,951,072
PROPELLANT GRAIN

Roland E. Baker, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 12, 1968, Ser. No. 761,011
Int. Cl.² F02K *9/04*
U.S. Cl. 102—99 **4 Claims**

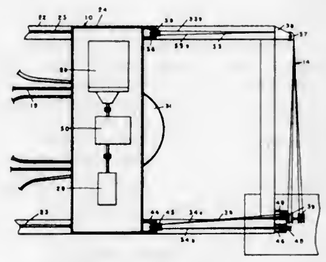


1. An improved propellant grain comprising:
an elongated solid propellant material having a central cavity;
said central cavity having a forward initiation section and an after end section;
said forward section having a cross sectional configuration characterized by a plurality of lands and grooves;
said after end section having a cross section of circular configuration;
the vertices of said lands and said grooves defining, respectively, two concentric circles; and the circle formed by the internal boundary of a cross section of the after end is concentric to said two concentric circles and intermediate thereto.

3,951,073
SELF CENTERING TENSION DRIVE TERMINAL FOR TRAMWAY

Tony R. Sowder, E. 814 Grace, Spokane, Wash. 99205

Filed Dec. 4, 1974, Ser. No. 529,387
Int. Cl.² B61B *12/00*; E01B *25/18*
U.S. Cl. 104—117 **3 Claims**



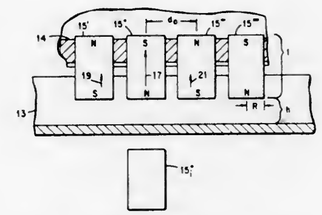
1. A means of biasing a mechanical element, subject to torque forces, lineally movable along a support for a limited distance and biased toward one end of that support, to eliminate any reactive couple between the mechanical element and its support, comprising, in combination:
a biasing weight, positioned for potential movement responsive to gravity, communicating with the mechanical element by

biasing weight linkage comprising two elongate tensile elements, each tensile element communicating by one end with the mechanical element at one of two laterally spaced points, one point being on each side of a vertical plane midway between the mechanical elements supports, each tensile element extending away from the mechanical element, substantially parallel to its line of motion for some discrete distance to communicate with the biasing weight at the same point, and each tensile element being of such length that the moments caused in the mechanical element by the biasing weight linkage are equal.

3,951,074
SECONDARY LIFT FOR MAGNETICALLY LEVITATED VEHICLES

Richard K. Cooper, Hayward, Calif., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Continuation-in-part of Ser. No. 322,646, Jan. 11, 1973, abandoned. This application Sept. 27, 1974, Ser. No. 509,972
Int. Cl.² B61B *13/08*
U.S. Cl. 104—148 MS **9 Claims**

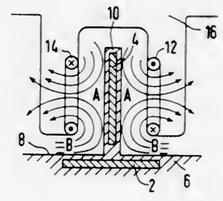


1. In a system for magnetic levitation of a high-speed vehicle, the combination of:
a sheet of continuous nonferromagnetic electrically conductive material;
a plurality of magnets for producing a corresponding plurality of magnetic fields;
means for securing said magnets in said vehicle in positions adjacent said sheet so as to direct said fields to penetrate said sheet; and
means for propelling said vehicle with respect to said sheet to cause said fields to induce eddy currents that repel the inducing magnets to thereby provide primary lift for said vehicle to raise it above said sheet;
said plurality of magnets being oriented so that adjacent magnets direct fields of unlike polarities into said sheet, said plurality of magnets being spaced apart an optimum distance at which there is a maximum vertical repulsive force between each magnet and the induced eddy currents due to an adjacent magnet to thereby provide secondary lift for said vehicle;
said plurality of magnets being cylindrical and the ratio of said optimum distance to the radius of said magnets being 2.3 ± 0.3.

3,951,075
ELECTRO DYNAMIC SUSPENSION AND GUIDANCE SYSTEM FOR A MOVING VEHICLE

Jürgen Miericke, Nurnberg; Hans Hieronymus, Erlangen; Franz Pawlitschek, Neunhof, and Laxmikant Urankar, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 9, 1974, Ser. No. 530,967
Claims priority, application Germany, Jan. 14, 1974, 2401625
Int. Cl.² B61B *13/08*
U.S. Cl. 104—148 SS **9 Claims**



1. A system for the contactless suspension and guidance of a vehicle which moves along a track, the system including a plurality of superconducting primary conductor loops connected to the vehicle and arranged parallel to each other which cooperate with secondary conductor means located on the roadbed to generate suspension and guidance forces using the electrodynamic principle wherein the improvement comprises at least one combined arrangement for generating both suspension and guidance forces comprising:
a. primary conductor magnet loops arranged in a parallel spaced relationship on the vehicle in pairs the spacing of the magnet loops in each pair being such that they together form one single magnetic field, and the currents in the two magnet loops of a pair flowing in opposite directions;
b. a single first secondary conductor means mounted to the roadbed disposed parallel to and between said primary conductor loops in said single magnetic field; and
c. a single second secondary conductor means perpendicular to said first secondary conductor means at a point opposite the ends of said primary conductor loops whereby said primary conductor loops will cooperate with said first secondary conductor means to form a zero flux system acting in one direction and said primary conductor loops will cooperate with said second secondary conductor means to form a normal flux system acting in a direction perpendicular thereto.

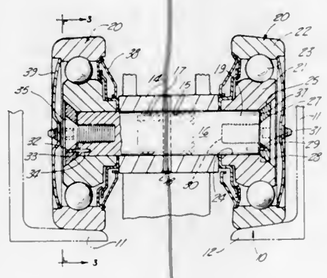
3,951,076
TROLLEY CONSTRUCTION

Kenneth F. Knudsen, St. Clair Shores, and George O. Nienhold, Kentwood, both of Mich., assignors to American Chain & Cable Company, Inc., Bridgeport, Conn.

Filed Sept. 20, 1974, Ser. No. 507,852
Int. Cl.² B61B *3/00*
U.S. Cl. 105—155 **18 Claims**

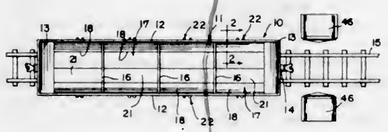
1. In a trolley, the combination comprising
a trolley body;
a shaft fixed on said trolley body and having ends projecting outwardly along the sides of the trolley body,
a wheel on each end of the shaft,
each wheel comprising an inner race, an outer race and bearing means between the inner and outer races,
said inner face having an opening through which the end of the shaft extends,
said inner race having a frusto conical surface adjacent the end of the opening,

a conical washer,
said washer having its outer surface complementary to the frusto conical surface of the inner race,
interengaging means between the washer and the shaft end preventing rotation therebetween,



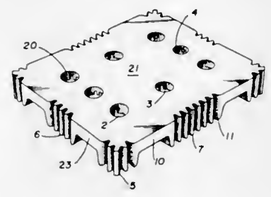
each end of the shaft having a threaded opening extending axially therein,
and a cap screw threaded into said opening and engaging said conical washer to hold said washer against said inner race.

3,951,077
RAILWAY HOPPER CAR DOOR AND LATCH ACTUATING MEANS
Roy W. Miller, Highland, Ind., assignor to Pullman Incorporated, Chicago, Ill.
Filed Mar. 13, 1975, Ser. No. 558,086
Int. Cl.² B61D *7/04, 7/06, 7/18, 7/30*
U.S. Cl. 105—241 C **7 Claims**



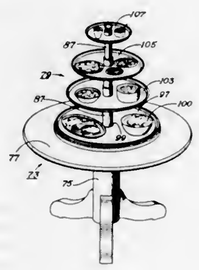
1. For a railway hopper car having a body structure and a hopper and bottom dump door means for discharging materials from said hopper,
door actuatinng mechanism for moving said door means between open and closed positions including a bell shaped crank arm pivotally mounted on said structure and having an arm portion pivotally connected to said door,
cam follower means are solid arm, the improvement comprising a cam structure positioned adjacent a railway track on which said car is travelling, said structure including a base having an upright pedestal,
a horizontally extending cam member supported on said pedestal and including a vertical cam surface adapted to be engaged by said cam follower means,
a latching element movably connected to said body structure,
a latch engageable element on said crank arm,
said latch element in one position engaging said engageable element to lock said arm in a position wherein said door means is closed,
disengaging means on said cam structure engaging said latching element during movement of said car to initially disengage the same from latch engageable element, and
said cam follower means then engaging said vertical cam surface to move said crank arm whereby said door means is released to an open position.

3,951,078
PLASTIC PALLETS
Timothy J. Fowler, St. Louis, Mo., and John R. Long, Decatur, Ala., assignors to Monsanto Company, St. Louis, Mo.
Filed May 26, 1972, Ser. No. 257,300
Int. Cl.² B65D *19/00*
U.S. Cl. 108—51 **2 Claims**



1. A hollow unitary plastic pallet comprising
a. an upper surface free from reinforcing grooves and protrusions;
b. a lower surface disposed at least 2 inches from said upper surface;
c. an exterior edge wall at least 2 inches in height extending between said upper surface and said lower surface and connecting the two surfaces;
d. legs integrally associated with said lower surface and extending downwardly from said lower surface;
e. at least one aperture through said upper and lower surfaces within the perimeter of said exterior edge wall, said aperture bounded by an interior wall extending between and connecting said upper and lower surfaces of the pallet;
f. reinforcing grooves disposed on said lower surface extending from said apertures to said legs and downwardly along the length of said legs to their bases; and
g. at least two reinforcing grooves disposed on each leg integrally associated with an exterior edge wall, which grooves are also integrally associated with said exterior edge wall, said grooves extending from said upper surface to the base of said legs.

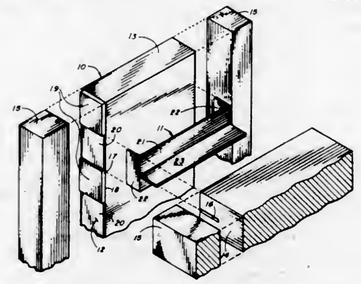
3,951,079
TIERED SPACE SAVER FOR DINING TABLE AND THE LIKE
Morris L. Tolleson, 1224 W. Hammond, Fort Worth, Tex. 76115
Continuation-in-part of Ser. No. 502,301, Aug. 30, 1974, abandoned. This application May 14, 1975, Ser. No. 577,223
Int. Cl.² A47B *57/00*
U.S. Cl. 108—94 **5 Claims**



1. A combination comprising a table having a top carried by a supporting structure and carrying a tiered table top; said tiered table top including:

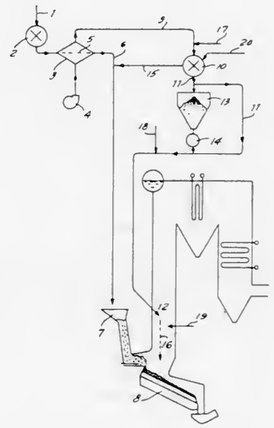
a stand carried nonrotatably on the top of the table; being of circular configuration; and having a side wall at its perimeter;
a vertical shaft fixed to the center of the stand, said shaft having a plurality of shoulders at selected intervals, each defining a portion of diameter less than the succeeding lower one;
a circular base tray having a flat upper surface for the placement of food dishes, said base tray having an aperture at its center for the insertion of the shaft, said base tray being rotatably carried by the lowermost shoulder and the side wall of the stand;
a plurality of upper trays having flat upper surfaces for the placement of food dishes, each upper tray having an aperture at its center for the insertion of the shaft, each aperture being of a lesser diameter than the aperture of the succeeding next lower tray, and each upper tray being individually rotatable on the respective shoulders whereby rotation of one tray will not rotate another tray;
a plurality of tubular members each rigidly connected to an upper tray and extending upwardly therefrom, each tubular member being of a size to closely fit about the shaft to prevent tipping if the tray is eccentrically loaded.

3,951,080
CONCEALED HARDWARE FOR ADJUSTABLE SHELVING
Wallace M. Roberts, 508 North Ave. East, Missoula, Mont. 59801
Filed Oct. 6, 1975, Ser. No. 619,665
Int. Cl.² A47F *5/00;* **E06B** *7/28*
U.S. Cl. 108—109 **3 Claims**



1. In a shelving structure having similar spaced cooperating normally vertical stanchions adjustably supporting plural normally horizontal shelves therebetween, substantially concealed hardware adjustably connecting the shelves and stanchions, comprising, in combination:
plural elongate bracket supports of a width not greater than stanchion thickness, with a planar back and with plural spaced grooves in the face thereof defined by sides perpendicular to the longer dimension of the bracket support to receive a supporting leg of a shelf bracket in a slidable fit, one of said supports being mechanically fastened to each side edge of each vertical stanchion in such position that the grooves of all cooperating bracket supports on a set of cooperating stanchions are substantially co-planar when the stanchions are in supporting position, and;
plural shelf brackets, each having a relatively thin planar body of length substantially equal to the distance between the oppositely facing surfaces of opposed cooperating grooves of the bracket supports carried by one stanchion, with similar paired opposed supporting legs extending perpendicularly from the ends of the body, said supporting legs configured to slidably fit within cooperating grooves of the opposed bracket supports on a vertical stanchion and with a relatively thin planar tenon extending perpendicularly away from the body in the opposite direction from the supporting leg extension, the length of said tenon being no greater than the width of the body and the orientation of its major aerial surface being substantially horizontal when the shelf bracket be carried by a stanchion in normal vertical supportative position;
a plurality of horizontal shelves of width substantially equal to that of the vertical stanchion, each shelf having a groove in the medial part of each end, said grooves being configured to slidably receive the tenons of opposed cooperating shelf brackets carried by opposed cooperating vertical stanchions when the shelf be interposed therebetween; and
plural trim pieces configured to cover and mechanically fasten to each bracket support and the exposed edges of shelves to cover said surfaces.

3,951,081
METHOD AND APPARATUS FOR INCINERATING OF REFUSE
Walter Josef Martin, and Heinz Weiand, both of Munich, Germany, assignors to Josef Martin Feuerungsbau GmbH, Munich, Germany
Filed June 26, 1974, Ser. No. 482,975
Claims priority, application Germany, June 27, 1973, 2332661
Int. Cl.² F23G *5/02*
U.S. Cl. 110—8 P **10 Claims**

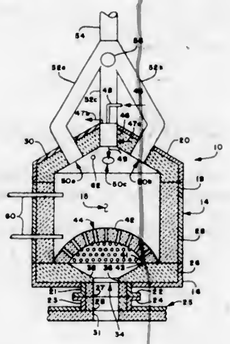


1. A refuse incinerator for unclassified refuse, comprising combustion chamber means having a lower end provided with a fire grate; first comminuting means for receiving and comminuting incoming unclassified refuse to convert it into a mix of particles of different sizes; classifying means for classifying said mix into a first fraction composed of heavier particles and a second fraction composed of lighter particles; first conduit means for conducting said first fraction from said classifying means directly onto said grate; second comminuting means connected with said classifying means for receiving said second fraction therefrom, and for comminuting it into fine particles of still smaller size; and second conduit means for conducting said fine particles into said combustion chamber means upwardly of said grate for incineration in floating state.

3,951,082
COUNTERCURRENT FLOW AFTERBURNER

Ronald L. Leggett, Louisville; Donald E. Presse, Wheatridge; Carl J. Smith, Louisville, and Alton R. Teter, Westminster, all of Colo., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 22, 1975, Ser. No. 570,981
Int. Cl.² F23G 5/12
U.S. Cl. 110—8 A **6 Claims**



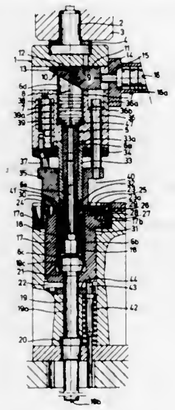
1. Apparatus for treating products of combustion from an incinerator, comprising a housing having an end wall with inlet opening for receiving said products of combustion and an oppositely disposed generally conical end portion, a dome member extending over said inlet opening having throughout its area penetrating apertures for directing said products of combustion toward said end portion and throughout said housing intermediate said dome and end portion, gas supply means carried by said end portion for directing combustible gas toward said dome and throughout said housing intermediate said dome and said end portion, and a plurality of outlet conduits penetrating said end portion for conducting gases and products of combustion from said housing.

3,951,083
DEVICE FOR FORMING A SMOOTH, I.E. IN PARTICULAR A CREASE- AND UNDULATION-FREE INWARDS CONVEX FLANGE-BEARING EDGE-GROOVE OR -CORRUGATION ONTO THE OPEN END OF A METAL HOLLOW BODY OR CONTAINER FORMED IN A PRESS

Wilhelm Hörtig, Auerbach, Germany, assignor to KM-Engineering AG, Basel, Switzerland

Filed Nov. 21, 1974, Ser. No. 525,782
Claims priority, application Switzerland, Nov. 21, 1973, 16367/73
Int. Cl.² B21D 51/26
U.S. Cl. 113—7 A **16 Claims**

1. A device for forming a smooth, crease- and undulation-free, inwardly convex flange-bearing edge-groove or -corrugation onto the open end of a metal hollow body, and particularly a metal container, formed in a press, comprising a tool top-part arranged to be periodically reciprocally driven, a housing, at least one resiliently prestressed deflector member having a bore with a mouth at one end thereof, a punch in said housing and supported by said tool top-part and arranged to move axially towards said deflector member, a receiver having a bore with a mouth at one end thereof for receiving said hollow body, at least two cheeks arranged in the zone of the mouth of the receiver bore, the working surfaces of which face the axis of the punch and bear the profile of the groove to be formed in the edge of the hollow body and which are slidable in the radial direction on a sliding surface on the face of the receiver, a pressure-transfer member arranged in said housing, at least one shaping-part arranged at the periphery of the punch between a part of said punch and said pressure-transfer member, and a holddown supported slidingly above the bottom part of the tool and arranged coaxially with the punch and which bears by its top face via prestressed forced-transfer members against the tool top-part, whereby the cheeks and

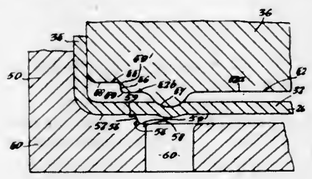


the shaping part during the working stroke of the punch are pressed from the outside and inside respectively against the top edge of the hollow body and shape the edge-groove or -corrugation, the pressure-transfer member performing a relative movement with respect to the punch during the pressing against the cheeks and the shaping part.

3,951,084
MANUFACTURE OF A FRANGIBLE ELEMENT IN SHEET MATERIAL

William Cookson, Fareham, England, assignor to Cookson Sheet Metal Developments Limited, Southampton, England

Continuation of Ser. No. 395,252, Sept. 7, 1973, abandoned, which is a continuation of Ser. No. 156,295, June 24, 1971, abandoned, which is a continuation-in-part of Ser. Nos. 796,975, Feb. 6, 1969, abandoned, and Ser. No. 28,880, April 15, 1970, abandoned. Said Ser. No. 28,880 being a continuation-in-part of said Ser. No. 796,975. This application Sept. 20, 1974, Ser. No. 507,669
Claims priority, application United Kingdom, Mar. 16, 1968, 7698/68; Jan. 24, 1969, 4248/69; Nov. 26, 1970, 56335/70; June 15, 1971, 28024/71; Ireland, Jan. 15, 1970, 58/70
Int. Cl.² B21D 51/26
U.S. Cl. 113—121 C **16 Claims**



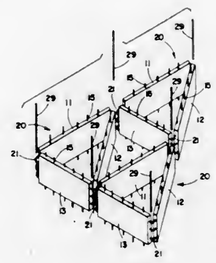
1. Press tooling for forming a frangible element in sheet metal including two press tool dies which have
mutually opposed narrow elongate surfaces in the respective dies which opposed surfaces are adapted to engage and squeeze a line in sheet metal lying between the dies when the dies are closed together to form a frangible element in the sheet metal along the said line,

a part of each die extending adjacent to and recessed relative to the said opposed surface in that die, the two said recessed parts being respectively on opposite sides of the opposed surfaces,
a surface in each die joining the said recessed part of that die to the said opposed surface of that die and being curved in cross-section so as to merge smoothly with a convex curve into the said opposed surface of that die, the two said curved surfaces being spaced apart and the frangible element extending between them in the closed position of the dies,
and at least one means for forming a hollow deformation in the sheet to one side of the said line, said means comprising a projection in one die to one side of the said opposed surface in that die and a recess in the other die opposed to the projection, the projection and recess being adapted to co-operate to form the said hollow deformation in the sheet metal during closure of the dies, thereby to take up excess metal from the line extruded past one of the said curved surface in the dies.

3,951,085
FLOATING STRUCTURE ARRANGEMENT

Don E. Johnson, 256 N. Fraser West, Mesa, Ariz. 85203, and Robert M. Jones, 531 E. Las Palmas, Fullerton, Calif. 92631

Continuation of Ser. No. 385,689, Aug. 6, 1973, abandoned. This application Apr. 2, 1975, Ser. No. 564,419
Int. Cl.² B63B 35/00
U.S. Cl. 114—.5 F **19 Claims**



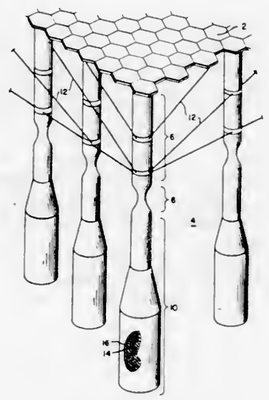
1. A buoyant structure comprising a plurality of elements, each of said elements including three walls arranged in an edge-to-edge relationship to define a triangular shape,
said elements being arranged in an assembly of a plurality of rows of said elements,
with the bases of said elements being in end-to-end alignment in each of said rows,
with the bases in one row being intermediate and interconnecting the apexes of the elements in the row adjacent thereto,
said rows containing progressively one less of said elements from one side of said assembly to the other, thereby to provide said assembly with an overall triangular configuration, and to define triangular spaces between adjacent elements,
said elements including means defining apertures at the apexes thereof,
attaching means extending through said apertures for securing said elements to each other, and skin means covering at least a portion of said assembly.

3. A buoyant structure comprising a plurality of elements, each of said elements including three walls arranged in an edge-to-edge relationship to define a triangular shape,
said elements being arranged in an assembly of a plurality of rows of said elements,
with the bases of said elements being in end-to-end alignment in each of said rows,
with the bases in one row being intermediate and interconnecting the apexes of the elements in the row adjacent thereto,
said rows containing progressively one less of said elements from one side of said assembly to the other, thereby to provide said assembly with an overall triangular configuration, and to define triangular spaces between adjacent elements,
and skin means covering at least a portion of said assembly, said skin means including
a concrete sheet extending over said elements,
and reinforcement within said concrete sheet,
said reinforcement including portions projecting outwardly beyond the edges of said sheet for attachment to other structures, said reinforcement including
a plurality of rods, there being at least one of said rods extending from each apex of said assembly to the side opposite said apex and beyond the edge of said opposite side for providing said portions for attachment to other structures.

3,951,086
FLOATING SUPPORT STRUCTURE

Eldon C. Lown, Munroe Falls, and Alanson D. Topping, Akron, both of Ohio, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 31, 1973, Ser. No. 365,822
Int. Cl.² B63B 35/44
U.S. Cl. 114—.5 D **7 Claims**



1. A floating, vertical support structure for a substantially horizontal platform comprising at least one unitary inflatable column having hollow upper, central and lower portions, the platform being supported at the upper end of said column, said central portion having a cross-section appreciably smaller than said upper and lower portions for permitting relative motion between said uper and lower portions thereby minimizing the transmission of bending moments therebetween.

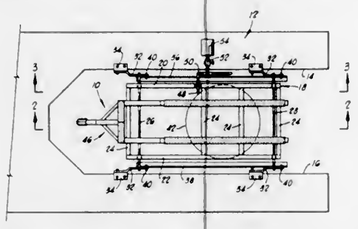
3,951,087
BOAT DRY DOCKING APPARATUS

Bobbie D. Carson, 2300 S. Gessner No. 202, Houston, Tex. 77042

Filed May 2, 1975, Ser. No. 573,976
Int. Cl.² B63C 1/6
U.S. Cl. 114—45 **6 Claims**

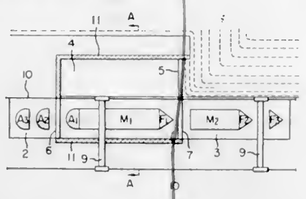
1. Boat dry docking apparatus for installation in a boat dock having substantially parallel sides comprising:

an elongated frame adapted to be disposed horizontally in said boat dock;
a boat supporting cradle mounted on said frame;
a flotation tank attached to said frame;
a pair of spaced apart arm members pivotally attached at the lower ends thereof to each side of said frame, said arm members being of substantially equal lengths;
means connected to the upper ends of said arm members for pivotally attaching the upper ends thereof to the sides of said boat dock;
said arm members being of a length such that when said means for pivotally attaching the upper ends thereof to



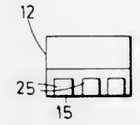
said boat dock are attached to said dock in a manner whereby the upper pivotal connections of said arm members are positioned substantially vertically above the lower pivotal connections thereof to said frame, said frame is free to swing between a lower horizontal position beneath the water level in said boat dock so that a floating boat can be positioned above said boat cradle, and an upper horizontal position whereby said boat cradle is above said water level; and
means for selectively filling said flotation tank with air to raise said frame to said upper position or exhausting air therefrom to lower said frame to said lower position.

3,951,088
BUILDING EQUIPMENT FOR SHIPS' HULLS
Akio Hikai, Shimizu, and Kazuo Nishikawa, Yokohama, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed May 27, 1975, Ser. No. 580,706
Claims priority, application Japan, July 9, 1974, 49-77867
Int. Cl.² B63B *3/02*
U.S. Cl. 114—65 R **2 Claims**



1. Building equipment for a ship's hull located on land adjacent a body of water, comprising: a hull joining stage having a substantially horizontal bottom surface level substantially flush with the ground level of the site and having a first longitudinal side facing the body of water and a second longitudinal side facing the land; a stern building stage having a substantially horizontal bottom surface level substantially flush with the bottom surface of said hull joining stage, provided at a longitudinal end of said hull joining stage so as to be adjacent thereto through a gate; a bow and parallel body building stage having a substantially horizontal bottom surface level substantially flush with the bottom surface of said hull joining stage, provided at the other longitudinal end of said hull joining stage so as to be adjacent thereto through another gate; a pond provided longitudinally and substantially in parallel with and adjacent to said hull joining stage on the water side, a longitudinal end of said pond being open to the body of water through still another gate, and the bottom surface of said pond being sufficiently lower than the bottom surface of said hull joining stage to enable a hull in said pond to float completely when the water level in said pond becomes flush with the level of the body of water by introducing water from the body of water into said pond; cranes travelling substantially linearly along said hull joining stage, said stern building stage, and said bow and parallel body building stage; and partition walls comprehensively enclosing said hull joining stage and said pond in a water-tight manner in conjunction with said three gates, said partition walls and said three gates being sufficiently higher than the ground level and the level of the body of water to enable a hull in said hull joining stage to float completely on introducing water from the body of water into both said hull joining stage and said pond.

3,951,089
ROLL-DAMPING TANKS FOR WATERBORNE VESSELS
Ewan Christian Brew Corlett, Basingstoke, England, assignor to Hydroconic Limited, England
Filed May 2, 1974, Ser. No. 466,460
Claims priority, application United Kingdom, May 4, 1973, 21406/73
Int. Cl.² B63B *39/03*
U.S. Cl. 114—125 **7 Claims**

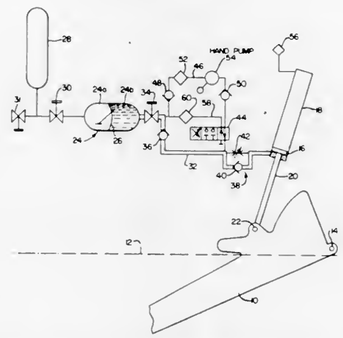


1. A ship's roll-damping tank, provided with means at the bottom and ends, port and starboard of the tank, that are operative to modulate the wave velocity energy of the liquid in the tank, said means including at least one row of low spaced discrete protuberances upstanding from the tank floor gaps between said protuberances that extend down to the tank floor said row being parallel to and substantially at the fore and aft center line of the ship, said low protuberances being totally submerged under all conditions of operation.

3,951,090
HYDRAULIC SYSTEM FOR RAISING AND LOWERING KEEL
John T. Potter, Locust Valley, N.Y., assignor to Potter Instrument Company, Inc., Plainview, N.Y.
Continuation-in-part of Ser. No. 420,864, Dec. 3, 1973, abandoned, which is a continuation-in-part of Ser. No. 279,836, Aug. 11, 1972, abandoned. This application Nov. 8, 1974, Ser. No. 522,223
Int. Cl.² B63B *41/00*
U.S. Cl. 114—141 **8 Claims**

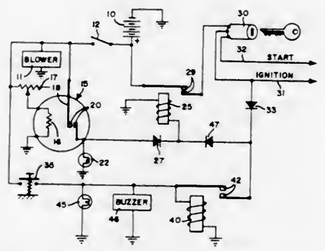
1. A hydraulic system for raising and lowering a heavy keel, comprising;
a cylinder;
a piston connected to the keel and operatively movable in the cylinder;
pressure means for supplying hydraulic fluid to the cylinder on the side of the piston for raising the keel, the fluid being at a positive pressure below that necessary to raise the keel;
pump means for supplying hydraulic fluid to said side of the piston at a pressure great enough to raise the keel;
means for allowing hydraulic fluid to flow from the pressure means to the cylinder should an external force cause the keel to move toward the raised position;

valve means for selectively preventing the flow of hydraulic fluid from the cylinder on said side of the piston when the keel is away from its lowered position so that the keel can be prevented from moving toward the lowered position;
first regulating means for regulating the speed at which the keel can move toward the lowered position, and;
second regulating means for regulating the speed at which the keel can move toward the raised position;



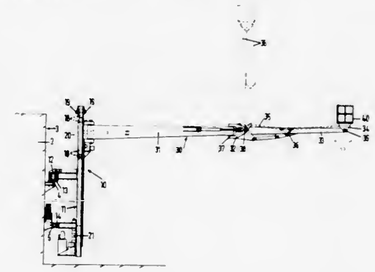
wherein the pressure means is an accumulator with two reciprocally expandable and contractable compartments therein formed with a gas-impervious diaphragm therebetween, one of said compartments being adapted to contain gas under pressure and the other being adapted to contain said hydraulic fluid.

3,951,091
BILGE BLOWER IGNITION INTERCEPTOR
Thomas Judson Doench, Dayton, Ohio, assignor to Omnifac Corporation, Dayton, Ohio
Filed Apr. 16, 1975, Ser. No. 568,704
Int. Cl.² B63J *2/06*
U.S. Cl. 114—211 **8 Claims**



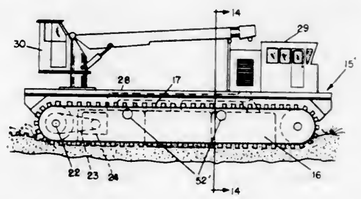
1. For use in a boat having at least one engine, an engine compartment, an ignition circuit including a manually actuated ignition switch for the engine, a blower system for ventilating the engine compartment, and at least one blower switch for controlling the blower system, an ignition interceptor for the ignition circuit comprising:
a. a timer actuated by a blower switch for timing a predetermined interval, said timer including a timer switch which is closed by said timer after said timer has timed said interval,
b. first switch means, said first switch means including a first switch connected in series with the ignition switch for interrupting power to the ignition circuit,
c. means connecting said first switch means to said timer switch for closing said first switch when said timer switch is closed, and
d. means connecting the manually actuated ignition switch to said first switch means for controlling said first switch means to hold said first switch closed when the ignition switch is also closed.

3,951,092
ARRANGEMENT FOR TREATING A SHIP'S HULL
Bernardus Cornelis van den Broek, Weert, Netherlands, assignor to Maastrichtse Machinefabriek Delnoz B.V., Maastricht, Netherlands
Filed Dec. 9, 1974, Ser. No. 531,143
Claims priority, application Netherlands, Dec. 11, 1973, 7316929
Int. Cl.² B63B *59/00*
U.S. Cl. 114—222 **9 Claims**



1. Apparatus for cleaning and conserving the hull of a docked ship adjacent a dock wall comprising frame means movable horizontally along the dock wall, said frame means having vertical guide means and carriage means movable along said guide means, said carriage means carrying means for treating a ship's hull, said carriage means being provided with a two-part arm consisting of a first or upper arm portion which is connected at one end to the carriage means for pivotal movement in a horizontal plane about a vertical pivot and a second or lower arm portion which is connected at one end thereof to the upper arm portion for pivotal movement in the horizontal as well as in the vertical plane about two rightangled pivots and at the other end, said lower arm portion having bracket and platform means on which the treating means is mounted for pivotal movement.

3,951,093
AMPHIBIOUS AIR TRACK VEHICLE
John M. Poche, 6317 Franklin Ave., New Orleans, La. 70122
Filed Oct. 4, 1974, Ser. No. 512,367
Int. Cl.² B60F *3/00*
U.S. Cl. 115—1 R **6 Claims**



1. An amphibious air track vehicle of the character described, comprising a plurality of floatable bodies, two of the said floatable bodies being rectangular in shape and having ends that are rounded when viewed from the side, the two said floatable bodies being in equal and parallel spaced relation to each other and one of the said floatable bodies being located on each side of the said vehicle, the said floatable bodies being

adapted to both support the said vehicle in water and on land as well as to have variable speed controlled hydraulic motors in order to provide forward motion as well as directional control of the said vehicle, and one of the said motors being located in each floatable body which is provided with an endless steel belt around the periphery thereof and having floatable cleats thereon, and structure adapted to carry not only the components of the said vehicle but also operating personnel and payload, the said structure being a rectangular deck structure that rests just above said floatable cleats of the said floatable bodies, and the said rectangular deck having a cab mounted on the front portion thereof in which personnel and an operator of the said vehicle is located along with the controls of the said vehicle and a crane, and the said floatable cleats being secured to the said endless steel belt in spaced parallel and laterally disposed relation to each other around the said steel belt in order to compress the terrain on which the said vehicle is traveling as well as to compact the said terrain and the vehicle is also provided with two wide rear wheels having low pressure pneumatic tires mounted thereon, the said wheels being end to end in a box-like structure and having their axles each rotated by one of said hydraulic motors at variable speed and the said hydraulic motors being the same source of power that rotates the said endless steel belts around the floatable bodies; the said vehicle is also provided with two wide front wheels each having a steel face, each front wheel having an end configuration of a polygon and both front wheels being mounted end to end in a box-like structure and the axle of each front wheel projecting outwardly and connected to a front sprockets axle of one of the rectangular floatable bodies, and the said rectangular deck structure is also provided with a plurality of equally spaced, parallel and laterally disposed and downwardly extending air ducts, air lift chambers, and curtains of semiflexible material that divides the space between the front and rear box-like structures that support the said wheels and also between the inside vertical side surface of each of the said floatable elongated bodies into a plurality of air lift chambers, the floatable bodies and two box-like structures providing four outer support rigid walls for the said air lift chambers.

5. An amphibious rectangular air track vehicle of the character described, that is provided with, and powered with, four ground contact buoyant bodies that are traction bodies, two of the said bodies being longitudinally extending in spaced parallel and laterally disposed relation to each other and provided with floatable tracks; the other two of the said bodies being floatable box-like wheel structures that are positioned in between the two longitudinally disposed traction bodies; the box-like wheel structures being located one at each end of the vehicle.

3,951,094

GAS-DRIVEN, PULSATING WATER JET PROPULSIVE DUCT DRIVE FOR WATERCRAFT

Claus Jastram, Hamburg; Fritz Weiss, Ahrensburg, and Hans Voss, Hamburg, all of Germany, assignors to Jastram-Werke GmbH KG, Hamburg, Germany

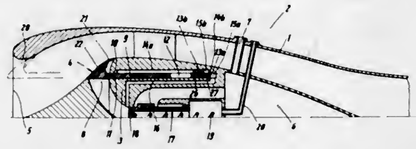
Filed Oct. 15, 1974, Ser. No. 514,147

Claims priority, application Germany, Oct. 15, 1973, 2351750; Sept. 19, 1974, 2444749

Int. Cl.² B63H *11/06*

U.S. Cl. 115—15 **12 Claims**

1. A propulsive duct for driving floatable craft comprising a longitudinal housing having a substantially circular cross-section and provided with a restricted inlet opening and an outlet opening at opposed ends thereof, a longitudinal insert body disposed coaxially within said housing and spaced therefrom to provide an annular duct diverging from the inlet opening and converging at the outlet opening, a hollow cylindrical sleeve-like member mounted coaxially within said insert body and slidable coaxially therein toward the restricted inlet opening in said housing, the diameter of said sleeve-like member being substantially the same as the inner diameter of the restricted inlet opening so that the end of the sleeve-like member will engage the restricted inlet opening to close the diverging annular passage between said housing and said



insert body and means operable by a compressed gas for sliding said sleeve-like member to close the annular passage and for admitting the compressed gas into the annular passage to expel the liquid therein through the outlet opening.

3,951,095

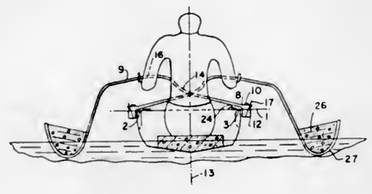
CROSSBAR WITH OAR GUIDES FOR BOATS HAVING FRONTWARD-ROWING BOAT-SPANNING OARS

Harold A. Jewett, 5451-42nd St., NW., Washington, D.C. 20015

Division of Ser. No. 451,563, March 15, 1974, Pat. No. 3,879,779, which is a division of Ser. No. 383,379, July 27, 1973, Pat. No. 3,857,356. This application Apr. 17, 1975, Ser. No. 568,931

Int. Cl.² B63H *16/00*

U.S. Cl. 115—24.1 **5 Claims**



1. A crossbar for placement athwart the gunnels of a row-boat, canoe, kayak, skiff or like craft,

a pair of oar pivot pins disposed in spaced-apart relationship on said crossbar,

a pair of carom-type shields for said pins also disposed in spaced-apart relationship on said crossbar and respectively adjacent to said pins,

each of said shields comprising a rearwardly-upwardly slanting portion located farther frontward than the one of said pins to which it is respectively adjacent and in the path, during use, of the rearwardly moving loom of a frontward-rowing boat-spanning oar pivoted on the other of said pins,

intercontact of such loom with said one of said pins consequently being precluded by said rearwardly-upwardly slanting portion lying in the path of such loom as aforesaid.

3,951,096

MARINE DRIVE SYSTEM

Clifford E. Dunlap, 437 Lola St., Pasadena, Calif. 91107

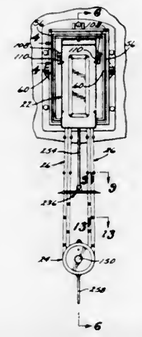
Filed Mar. 14, 1974, Ser. No. 451,133

Int. Cl.² B63H *1/14*

U.S. Cl. 115—34 R **21 Claims**

1. A stern drive which comprises a generally upright housing having an upper portion adapted to be mounted on the stern of a boat, a lower hub portion, and a pair of generally parallel, vertically elongated, longitudinally wide, laterally thin intermediate fin portions extending between said upper and lower portions, said housing portions all defining therein communicating cavities; a drive pulley rotatably supported in

said upper housing portion and having rotary power input means drivingly connected thereto; a driven pulley rotatably supported in said lower hub portion and drivingly connected to a prop shaft mounted in said hub portion and projecting rearwardly therefrom; a laterally thin, longitudinally wide drive belt operatively engaged over said pulleys and extending through said fin cavities for transmitting power between said pulleys; said housing being split into forward and rearward



housing sections at a generally transverse, vertical interface that communicates with all of said housing cavities, said housing sections being separable to provide access to said cavities for installation or removal of said drive belt; and a generally horizontal cavitation plate supported on said housing, said cavitation plate extending between said intermediate housing fins at a position intermediate the vertical lengths of said fins and projecting rearwardly beyond the fins so as to overlie a prop mounted on said prop shaft.

3,951,097

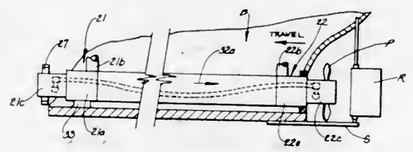
HYDRAULIC MOTOR OR PUMP

Wallace Clark, 1830 S. German Church Road, Indianapolis, Ind. 46239

Filed May 1, 1975, Ser. No. 573,535

Int. Cl.² B63H *5/06*

U.S. Cl. 115—34 A **23 Claims**



1. A hydraulic motor or pump device comprising a helical gear pair constituted by an inner member having an external helical thread, and a cooperating outer member having one more internal helical thread than the number of external helical threads on said inner member, the outer member being secured to one of the sections of a water swivel having a rotating and a stationary section, the stationary section constituting a mounting means for said device, and means associated with an end of said inner member and with the other of said sections to prevent rotation while permitting gyration of said inner member relative to said outer member; whereby when rotation is imparted to that member connected to the rotating section of said water swivel, the helical gear pair acts as a pump, the direction of flow through said device depending on the direction of said rotation; and when fluid is pumped through said device by means of an external pump, that member connected to the rotating section of said swivel is caused to rotate and constitute a motor, the direction of rotation of said motor depending on the direction in which fluid is pumped through said device.

3,951,098

HOUSE PLANT WATER CONTENT INDICATOR

Edward F. Meyers, Stony Brook, N.Y., assignor to Enviro-Gro, Inc., Smithtown, N.Y.

Filed Feb. 12, 1975, Ser. No. 549,314

Int. Cl.² G01N *25/56*

U.S. Cl. 116—114 AM **8 Claims**



1. A moisture indicator comprising

a. an elongated body having two opposed walls joined along the periphery thereof to form a cavity therebetween, the lower end of said body defining means for inserting said body into substances whose moisture content is to be monitored and the upper end thereof defining a moisture indicator chamber, the lower end of said wick having a sample obtaining opening;

b. wick means disposed in said cavity and extending from the lower end thereof upwardly into said indicator chamber;

c. the upper end of said wick means having an opening therein defining a sub-chamber within said moisture indicator chamber;

d. a moisture sensitive, color changeable signal element being adhered to an inner face of one of said opposed walls at a transparent portion thereof and being spaced from said wick means within said sub-chamber;

e. a moisture admission opening formed in said lower end of said housing in registry with said sample obtaining opening in said wick means; and

f. a plurality of registered spaced vent openings formed in upper portions of said wick means and in said opposed housing walls, said vent openings being generally uniformly spaced from and surrounding said sub-chamber.

3,951,099

AUTOMATIC FEED FLUIDIZED BED SYSTEM

G. Mark Minckler, Guilford, Conn., assignor to Electrostatic Equipment Corporation, New Haven, Conn.

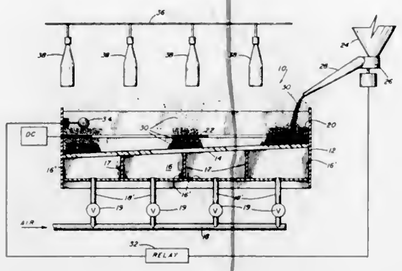
Filed Apr. 11, 1974, Ser. No. 459,885

Int. Cl.² B05B *7/14, 5/02*

U.S. Cl. 118—7 **10 Claims**

1. An automatic feed, fluidized bed coating system comprising, in combination: a fluidized bed unit including a housing having an inclined, substantially planar porous plate member disposed therein to define a coating chamber thereabove and a plenum therebelow; means for introducing a gas under pressure into said plenum; feed means for dispensing a particulate coating material and depositing it upon said plate member at a location adjacent the upper end thereof; means for sensing the level of the coating material within said coating chamber at a subjacent location of said plate member spaced from said end location; and means responsive to said sensing means for the control of discharge of coating material from said feed means, the inclination of said plate member promot-

ing the flow of coating material upon said plate member from said upper end location to said subjacent location thereof, so



that said sensing means may thereby provide an accurate indication of the coating material needs of said unit.

3,951,100

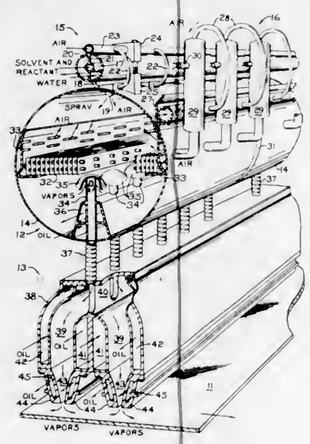
CHEMICAL VAPOR DEPOSITION OF COATINGS

John F. Sopko, New Kensington, Pa., and Krishna Simhan, Fischbach, Germany, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 315,393, Dec. 15, 1972, Pat. No. 3,850,679. This application Sept. 18, 1974, Ser. No. 507,656

Int. Cl.² C23C *13/08*

U.S. Cl. 118—48 **14 Claims**



1. An apparatus for applying a coating to a substrate by directing a gaseous mixture comprising at least one coating reactant through a nozzle against a substrate comprising

a. An enclosed chamber having inlet means for receiving a vaporizable coating reactant and a gaseous carrier for mixing the coating reactant with the gaseous carrier to provide a resulting gaseous mixture at a specified first pressure,

b. conduit means interconnecting said chamber and a nozzle for distributing the resulting gaseous mixture to said nozzle,

c. a nozzle comprising an elongated slot having an entrance end and an exit end that is smaller than the entrance end and having interior surfaces of increasing radii of curvature from the entrance end to the exit end to accelerate flow of the gaseous mixture adjacent the interior surfaces of the nozzle,

d. said nozzle connected at its entrance to said conduit means for directing the resulting gaseous mixture against the substrate at a second specified pressure less than the first specified pressure,

e. said nozzle entrance and exit flow areas being sized for directing the resulting gaseous mixture at an exit Reynolds Number of at least about **2500** when the resulting gaseous mixture exits said enclosed chamber at the first specified pressure, and

f. means for supporting a substrate in facing relationship to said nozzle exit whereby said coating is applied.

3,951,101

APPARATUS FOR COATING BOTTLES WITH RESIN

Kouichi Karakawa, Chibashi; Akiharu Yamada; Hajime Kanbeshiyama, both of Tamanoshi, and Yasunori Ishii, Ichiharashi, all of Japan, assignors to Mitsui Shipbuilding & Engineering Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1974, Ser. No. 518,105

Claims priority, application Japan, Oct. 26, 1973, 48-120474

Int. Cl.² B05C *5/00, 13/02*

U.S. Cl. 118—301 **3 Claims**



1. Apparatus for coating bottles with resin comprising an endless conveyer chain provided to pass through a resin spraying zone, a series of spaced apart bottle holders provided on said conveyer chain, resin spraying guns provided in said zone, and cover plates provided in said zone to shield the mouth portion and bottom of the bottle, each bottle holder comprising a housing provided on the conveyer chain, a tube extending in the perpendicular direction to the moving direction of the conveyer chain and rotatably supported in said housing, said tube having a diameter permitted to be inserted into the bottle, a shaft slidably provided in said tube, inner holding means comprising a link mechanism provided on one end of said tube and shaft, said link mechanism being adapted to be opened by sliding of the shaft to be engaged with the inner wall of the bottle and to be closed to permit the insertion thereof into the bottle, mouth gripping means provided on said tube, means for rotating said tube during the movement of the conveyer chain, means for sliding said shaft for opening and closing said inner holding means, and means for actuating said mouth gripping means.

3,951,102

ROLLER COATING APPARATUS

Roger Anthony Allen, Prestwood, Gt. Missenden, England, assignor to Wiggins Teape Research & Development Limited, London, England

Filed Nov. 15, 1973, Ser. No. 416,083

Claims priority, application United Kingdom, Nov. 27, 1972, 54620/72

Int. Cl.² B05C *1/08*

U.S. Cl. 118—249 **1 Claim**

1. Apparatus for applying a coating to a web of material, the apparatus comprising:

a coating application system means for controlling the evenness of the coating applied to the web of material, and comprising:

a rotatable applicator roll, and

a rotatable backing roll disposed adjacent said rotatable applicator roll to form a nip through which the web of material is passed;

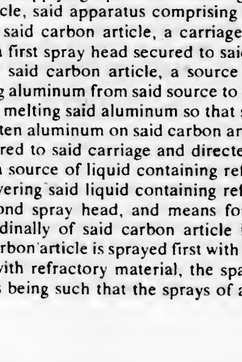
a coating metering system means for controlling the weight of the coating applied to the web of material independently of the control of evenness by said coating application system, and comprising:

a rotatable gravure roll dipping into a bath of liquid coating material for picking up said liquid coating material, and

a rotatable transfer roll that is in contact with and receives coating material from said gravure roll;

said gravure roll being operable to apply a predetermined amount of coating liquid material to said transfer roll;

said transfer roll being in contact with said applicator roll and operable to transfer liquid coating material to said coating applicator roll; and



said rotatable coating applicator roll having drive means such that said applicator roller is driven in contact with said transfer roll for rotation in the same direction as said backing and transfer rolls and independently of the speed of rotation of said transfer and gravure rolls,

whereby the metering system comprised of said gravure roll and said transfer roll is operable to control the speed of pick-up of coating material independently of the speed at which the web is coated by the application system comprised of said applicator roll and said backing roll so that wet, low weight coats are evenly applicable to the web.

3,951,103

APPARATUS FOR CREATING PROTECTIVE COATINGS ON CARBON ARTICLES

Alan Hinchcliffe, Sheffield, and Kenneth Johnson, Doncaster, both of England, assignors to British Steel Corporation, London, England

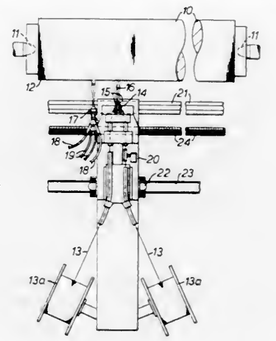
Division of Ser. No. 299,455, Oct. 20, 1972. This application Sept. 16, 1974, Ser. No. 506,581

Claims priority, application United Kingdom, Oct. 22, 1971, 49261/71

Int. Cl.² B05C *9/06*

U.S. Cl. 118—315 **1 Claim**

1. Apparatus for applying a protective coating to the surface of a carbon article, said apparatus comprising means to support and rotate said carbon article, a carriage adjacent said carbon article, a first spray head secured to said carriage and directed toward said carbon article, a source of aluminum, means delivering aluminum from said source to said first spray head, means for melting said aluminum so that said first spray head sprays molten aluminum on said carbon article, a second spray head secured to said carriage and directed toward said carbon article, a source of liquid containing refractory material, means delivering said liquid containing refractory material to said second spray head, and means for moving said carriage longitudinally of said carbon article in a direction such that said carbon article is sprayed first with molten aluminum and then with refractory material, the spacing between said spray heads being such that the sprays of aluminum and refractory material reach the carbon article without interference with each other and such that heat from molten aluminum sprayed by said first spray head does not dry out the refractory material before it reaches said carbon article.



3,951,104

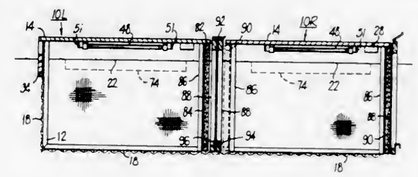
COLLECTION AND FEEDING OF INSECTS TO ANIMALS AND THE SORTING OF AQUATIC ANIMALS

Gregor N. Neff, 85 Myrtle Ave., Dobbs Ferry, N.Y. 10522

Continuation-in-part of Ser. No. 460,619, April 12, 1974, which is a continuation-in-part of Ser. Nos. 213,966, Dec. 30, 1971, abandoned, and Ser. No. 477,839, June 10, 1974. This application Aug. 14, 1974, Ser. No. 497,540

Int. Cl.² A01K *61/00*

U.S. Cl. 119—3 **3 Claims**



1. A method of grading caged fish as to size, comprising the steps of providing first and second fish cages, at least said first cage containing large and small fish, each cage having walls which are free of any openings large enough to allow the escape of either the large or the small fish therein, moving said cages together while in the water, placing a barrier with graded openings between said cages, said openings being too small for the largest fish in said cages to pass through but small enough for the smallest fish in said cages to pass through, providing temporary access openings in the cage walls large enough and positioned so as to permit all of the fish in said cages to reach said barrier, and urging the fish in one of said cages towards said barrier and towards the other cage.

3,951,105

ANIMAL CAGE LID

Robert P. Mehn, Cleveland, Wis., assignor to IPCO Hospital Supply Corporation, White Plains, N.Y.

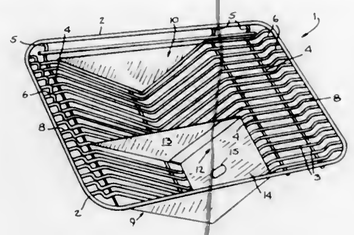
Filed Jan. 9, 1974, Ser. No. 431,894

Int. Cl.² A01K *31/00*

U.S. Cl. 119—18 **11 Claims**

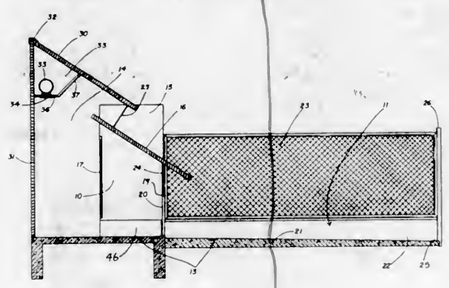
1. An animal cage lid having a top portion and a portion extending below the level of the top portion to form a food trough, the said food trough having a front wall and a bottom wall, a separator unit pivotly mounted in said trough for separating the trough into two sections, said separator unit being pivotly mounted on the bottom wall of said trough and mov-

able from the upright position to a prone position and support means extending transversely from the separator unit and



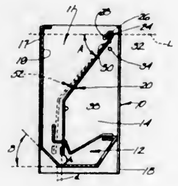
having a portion adapted to abut the said bottom wall of the trough for holding said separator in its upright position.

3,951,106
KENNEL
William L. Wright, 5230 Guilford, Indianapolis, Ind. 46220
Filed Oct. 29, 1974, Ser. No. 518,520
Int. Cl.² A01K *1/00*
U.S. Cl. 119—19 **4 Claims**



1. A modular kennel unit comprising:
several enclosures linearly arranged in a row having a first end and a second end, there being vertical walls separating each individual enclosure from other of said enclosures, each of said enclosures being covered by a first roof;
exercise housings adjacent said enclosures with a separate exercise housing provided for each of said enclosures;
each of said enclosures having a first opening into said exercise housing adapted to allow a dog to pass through;
each of said enclosures having a second opening, each of said second openings;
1. being adapted to allow a dog to pass through; and
2. having gate means to open or close the corresponding one of said second openings, said gate means permitting entrance to and exit from each individual enclosure of said several enclosures;
a wall spaced from said several enclosures and said second openings, so as to define a corridor between said wall and some of said enclosures and second openings, said corridor providing access to the second openings of some of said enclosures, said wall extending from said first end partially along the length of said row and terminating between said first end and said second end with said corridor extending only from said first end to the termination of said wall with an open common area provided from the termination of said wall to said second end;
a second roof over said corridor between said wall and said several enclosures, said second roof extending for the combined length of said several enclosures;
one of said roofs extending out from above said several enclosures for drainage purposes; and
the kennel unit being adapted to be combined with three additional kennel units of similar design in a pinwheel configuration.

3,951,107
ANIMAL FEEDER
Harry D. Doty, R No. 2 Box 174, Harrison, Ohio 45030
Filed Dec. 12, 1974, Ser. No. 532,196
Int. Cl.² A01K *5/00*
U.S. Cl. 119—52 R **12 Claims**

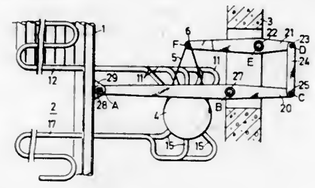


1. An animal feeder for delivering feed comprising:
a. a pair of opposedly facing side walls each having an upper and a lower end,
b. a trough extending between said side walls and secured thereto at said lower ends, said trough having a substantially horizontal base portion with front and rear portions projecting upwardly and outwardly therefrom,
c. a vertical rear wall extending between said side walls and upwardly from the outermost edge of said trough rear portion,
d. stop means secured to at least one of said side walls, and
e. a partition extending between said side walls, said partition having an upper section and a lower section, said upper section being hingedly secured to said side walls at a position near said upper ends thereof and opposite said vertical rear wall, said partition having a normal position when no external forces are applied thereto wherein the side thereof facing away from said vertical rear wall is in abutment with said stop means such that said upper section is angularly disposed downwardly and rearwardly from a horizontal through said hinged position, said lower section extending downwardly from the rearwardmost edge of said upper section in parallel spaced relationship with said vertical rear wall part way into said trough such that it would intersect said trough base portion at a point near said trough rear portion whereby, said partition is swingable between said normal position and a second position wherein said partition approaches said rear wall.

3,951,108
MEANS FOR SUPPORTING A DISPLACEABLE MASS ON A STATIONARY FRAME
Karl Rees, Ruti, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Mar. 26, 1975, Ser. No. 562,001
Claims priority, application Switzerland, Apr. 29, 1974, 5824/74
Int. Cl.² F22B *37/24*
U.S. Cl. 122—510 **8 Claims**

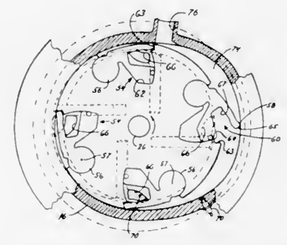
1. In combination with a stationary frame, a first displaceable member mounted in displaceable relation to said frame, and a second member mounted in projecting relation from said first member;
a support means including at least a first lever hinged at one end to said first member and at a second point to said frame, and at least a second lever hinged at one end to said second member and at a second point to said frame,

said levers being hingedly connected to each other at set points thereof, this last-named connection is at the same



side in relation to the points where the levers are hinged to the frame.

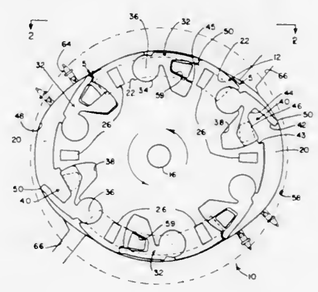
3,951,109
ROTARY INTERNAL COMBUSTION ENGINE
Robert A. Chappellier, 22 E. 80th St., New York, N.Y. 10021
Filed Dec. 6, 1974, Ser. No. 530,178
Int. Cl.² F02B *53/08*
U.S. Cl. 123—8.23 **12 Claims**



11. A rotary internal combustion engine having intake and exhaust means and a rotor mounted for rotation about a predetermined axis, said rotor being of split construction with power and compression portions in side-by-side closely spaced relation along said axis of rotation, said portions being separated by a relatively thin sealing plate movable with and forming part of said rotor, stator means housing said rotor, means including movable members carried by the compression portion effective in cooperation with the stator to produce a compressed gas charge incident to rotation of the rotor, passageway means in said sealing plate to convey said charge to a region of said power portion, means including movable members carried by the power portion to receive said charge from said passageway means and cooperating with the stator to produce a power function, this last named means having a recess therein to receive said charge, said recess occupying a radial inner position to receive the charge and a radial outer position during the power function, and means to fire a combustible mixture in said recess.

3,951,110
ROTARY ENGINE ARRANGEMENT
Robert A. Chappellier, 22 E. 80th St., New York, N.Y. 10021
Filed Dec. 6, 1974, Ser. No. 530,179
Int. Cl.² F02B *53/08*
U.S. Cl. 123—8.33 **9 Claims**

1. A rotary internal combustion engine comprising in combination,
a. a stator having an inner peripheral wall;
b. a rotor disposed within said stator for rotation about a predetermined axis in a predetermined direction having an outer peripheral wall;
c. said rotor and stator being shaped relative to each other to provide expansion and compression chambers with the expansion chambers being disposed radially between the rotor and the stator while the compression chambers are positioned laterally on opposite sides of the rotor;
d. each of the compression chambers having an inlet for gas at the forward end relative to rotation of the rotor;
e. pairs of vanes mounted within suitable laterally extending recesses in the rotor at predetermined circumferentially spaced locations;
f. means for biasing these vanes outwardly into the compression chambers with the compression chambers being shaped relative to the vanes such that as the rotor rotates in said predetermined direction it is effective to compress a gas charge before it and to draw gas into the chamber in back of it through the inlet;
g. piston members mounted in the rotor in number and space relation similar to the vane pairs with there being

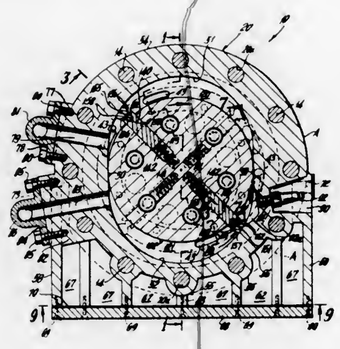


one such piston member disposed immediately in front of each vane pair, the piston members being urged radially outwardly of said axis into engagement with said inner peripheral wall of the stator during operation of the engine;
h. each such piston member having a rearwardly directed recess so dimensioned that a pressurized gas in the recess produces a resultant outwardly directed force to urge the member into engagement with the stator wall;
i. the construction of the rotor and the stator being such that as the compression vanes reach the end of the compression chamber the compressed gas charge in front thereof is forced into the adjacent recess of the piston member;
j. means for firing the compressed gas charge received in the compression pocket of the piston member; and
k. exhaust means for exhausting the spent gas charge from the expansion chamber.

3,951,111
ENERGY CONVERTER
William M. Lester, 8 Brayton Road, Livingston, N.J. 07039
Filed July 10, 1974, Ser. No. 487,007
Int. Cl.² F02B *53/08*
U.S. Cl. 123—8.41 **33 Claims**

33. An energy converter comprising a casing having a cavity, a rotor rotatably mounted in said cavity, said cavity having an internal continuous surface, said internal surface of said cavity comprising opposed surface portions contacting diametrically opposed portions of the periphery of said rotor, and curved end portions merging with said opposed portions and spaced from said rotor, said rotor and internal surface forming a chamber on each side of the rotor, an inlet and an outlet for each chamber, said rotor being formed with diametrically opposed slots, diametrically opposed pistons slidable radially in said slots, spring means on said rotor to bias said pistons radially outwardly, and means swivelled to the outer ends of said pistons for movement through limited angles and having wiping contact with the internal surface of said cacity, and a pair of rings rotatably mounted in said casing on opposite sides

of said rotor, coaxially thereof, means to fix said rings to the opposite sides of said rotor, for rotation therewith, and the



side edges of said pistons having radial sliding contact with said rings.

3,951,112

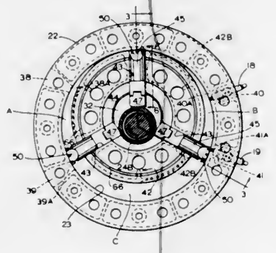
ROTARY INTERNAL COMBUSTION ENGINE WITH ROTATING CIRCULAR PISTON

Lee Hunter, 13501 Ladue Road, Creve Coeur, Mo. 63141

Filed Nov. 21, 1974, Ser. No. 525,762

Int. Cl.² F02B *55/14*; **F01C** *1/02*, *19/00*

U.S. Cl. 123—8.45 **8 Claims**



1. In a rotary internal combustion engine the combination of a frame having an internal circular peripheral wall and opposed axially spaced side walls defining an annular chamber, combustible fluid inlet port and an exhaust port located at a common side of said frame and opening through said peripheral wall to the chamber, an opening through said peripheral wall spaced from said inlet and exhaust port opening, spark ignition means in said opening, a rotary piston in said annular chamber and having a generally circular face, bearings in said frame concentric with said peripheral wall, a crankshaft carried by said frame bearings and formed with an eccentric element engaged in said piston, said eccentric element directing said piston into an orbiting path of rotation in said chamber, and sealing means carried by said piston at circumferentially spaced positions, each of said sealing means being carried by said piston in position to slide therein and remain in radially directed alignment with said piston while extending to engage said circular peripheral wall and having a width, as measured in the direction of said circular peripheral wall, sufficient to bridge said inlet port, exhaust port and opening for said spark ignition means, and each of said sealing means having an inner end abutting and movable into and out of radial alignment with said one frame bearing.

3,951,113

FUEL INJECTION SYSTEM

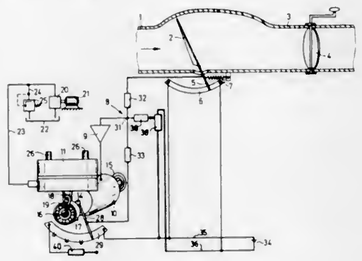
Wolf Wessel, Schwieberdingen; Wilfried Sautter, Ditzingen; Dieter Handtmann, Sindelfingen, and Jurgen Abt, Stuttgart, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Mar. 28, 1975, Ser. No. 562,918

Claims priority, application Germany, Apr. 25, 1974, 2420032

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 EA **9 Claims**



1. A fuel injection system for continuous fuel delivery to an internal combustion engine which includes a fuel line, a battery, an induction tube and, seriatim therein, an airflow measuring member and an arbitrarily actuatable throttle valve, comprising:

a. a first measuring transducer, associated with said airflow measuring member and capable of providing a first electrical signal;

b. a control amplifier, connected to said first measuring transducer to receive said first electrical signal and energized by said battery;

c. a servo-motor electrically connected to said control amplifier to receive a control signal therefrom, and including a rotating shaft;

d. a fuel metering valve assembly, disposed in the fuel line of the internal combustion engine and including a fuel control slide valve;

e. eccentric means mounted on said rotating shaft of said servo-motor;

f. further means associated with said eccentric means and also associated with said fuel control slide valve for transmitting the rotary motion of said shaft of said servo-motor to said fuel control slide valve for influencing the fuel quantity delivered by said fuel metering valve assembly; and

g. a second measuring transducer, associated with said servo-motor and actuated by said shaft of said servo-motor and capable of providing a second electrical signal;

circuit means whereby said first electrical signal and said second electrical signal are mediately supplied to the input of said control amplifier, thereby constituting a feedback control loop which tends to act so as to vary said second electrical signal substantially corresponding to said first electrical signal.

3,951,114

COOLING OF INTERNAL COMBUSTION ENGINES WITH SOUND-PROOF ENCASINGS

Heinz Fachbach; Gerhard Thien, and Karl Kirchweger, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Sept. 19, 1974, Ser. No. 507,524

Claims priority, application Austria, Mar. 22, 1974, 2408/74

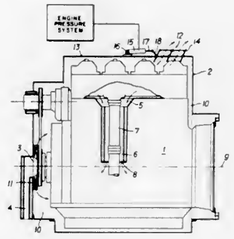
Int. Cl.² F01P *1/02*

U.S. Cl. 123—41.7 **2 Claims**

1. In an internal combustion engine comprising a sound absorbing casing surrounding the outer surfaces of the engine

in spaced relation thereto and having one cooling air inlet, one cooling air outlet provided in a top wall of the casing, a cooling air blower arranged within the casing between the cooling air inlet and the cooling air outlet and driven by the engine, in combination:

a series of drivingly interconnected flaps arranged on the top wall of the casing in the area of the cooling air outlet;



a pressure actuated working cylinder arranged on the top wall of the casing in the vicinity of the cooling air outlet and drivingly connected with said flaps;

said working cylinder being actuated by a pressure system of the engine, which is pressureless when the engine stops.

3,951,115

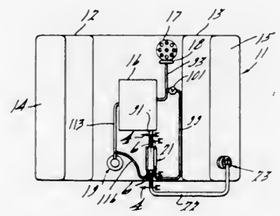
POLLUTION CONTROL DEVICE

Frank Brisko, Box 38, Ojibwa, Wis. 54862

Filed May 15, 1974, Ser. No. 470,262

Int. Cl.² F02M *7/00*

U.S. Cl. 123—119 B **12 Claims**



1. In an internal combustion engine having an induction system, a crankcase vacuum system having its discharge communicating with the induction system, a distributor having a vacuum advance communicating with the induction system, and means for precluding the exertion of vacuum from the induction system to the distributor vacuum advance under predetermined conditions, the improvement including valve means interposed in a conduit connecting the discharge of the crankcase vacuum system with the induction system for controlling the communication therebetween in response to the vacuum in the induction system and in a conduit between the induction system and the distributor vacuum advance for providing a vacuum advance signal to the distributor independent of the means for precluding the exertion of vacuum from the induction system to the distributor vacuum advance.

3,951,116

MIXTURE GAS HEATING DEVICE FOR USE IN INTERNAL COMBUSTION ENGINE

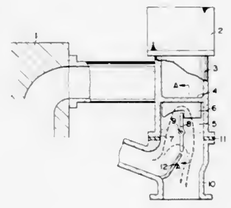
Masahiko Nakada, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kr.bushiki Kaisha, Toyota, Japan

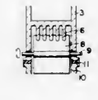
Filed Nov. 27, 1974, Ser. No. 527,805

Claims priority, application Japan, July 22, 1974, 49-86034

Int. Cl.² F02M *31/00*

U.S. Cl. 123—122 AC **1 Claim**





1. In a mixture gas heating device for use in an internal combustion engine being so constructed that a suction manifold, through which the mixture gas is introduced into the engine is heated by exhaust gases from an exhaust manifold, and the mixture gas is heated consequently, the improvement which comprises:

an extension which is an extended portion of said suction manifold and is separated therefrom by a mixture gas heating portion or partition wall, said extension defining a heating space and communicating with said exhaust manifold thereby to introduce the exhaust gases into said heating space;

a change-over flap valve for controlling the exhaust gases introduced into said heating space in the vicinity of said heating portion, said change-over flap valve having a valve stem positioned within said extension;

at least one fin disposed on said heating portion and extending therefrom into the space occupied by said change-over flap valve when in its open position, said fin having a cut-out portion which is shaped to form an abutment surface for the valve flap when the flap is in its open position; and

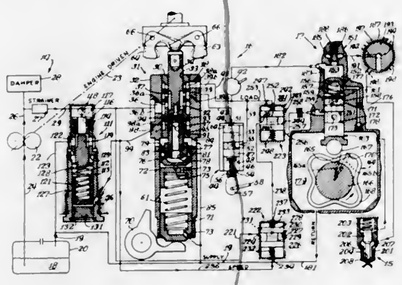
a guide plate positioned in said exhaust manifold so as to guide said exhaust gases onto said heating portion;

whereby when said flap valve is in its open position before the engine warm-up run, the exhaust gases from said engine impinge on said guide plate, circulate above and over said flap valve passing said fin and said heating portion to be heated thereby, and then into said exhaust manifold, and on the other hand, when said flap valve is in its closed position after the engine warm-up run, the exhaust gases from said engine are directly fed into said exhaust manifold.

3,951,117
FUEL SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Julius P. Perr, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed May 30, 1974, Ser. No. 474,528
Int. Cl.² F02M *39/00*; **F02D** *1/04*
U.S. Cl. 123—139 AQ **31 Claims**



1. Fuel supply apparatus for controlling the time of injection of fuel in a compression-ignition engine, comprising a housing, a charge chamber and a timing chamber formed in said housing, said chambers being in pressure communication, a timing piston reciprocably mounted in said charge chamber and separating said charge and timing chambers, a plunger reciprocably mounted in said housing and movable in said timing chamber, charge fuel flow passage means in said housing for supplying charge fuel to said charge chamber, timing fluid flow passage means in said housing for supplying timing fluid to said timing chamber, variable means for supplying timing fluid to said timing fluid flow passage means, said variable means being variable through a plurality of steps to vary the pressure of said timing fluid, the quantity of said timing fluid flowing into said timing chamber being a function of the pressure of the timing fluid and said quantity forming a hydraulic link between said plunger and said piston, a fuel outlet passage from said charge chamber, said plunger being movable in an injection stroke to move said link and said timing piston through said charge chamber and thereby force said charge fuel out of said charge chamber through said outlet passage, and means for automatically releasing the pressure of said timing fluid in said timing chamber after each injection stroke.

3,951,118
ENGINE TIMING DEVICE

Ralph B. Henson, Creve Coeur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 19, 1974, Ser. No. 534,251
Int. Cl.² F02M *39/00*
U.S. Cl. 123—139 AP **2 Claims**

1. An engine timing device for adjusting the relative angular position between a fuel pump actuating shaft and a drive gear, comprising;

a housing having a threaded aperture extending therethrough;

a hollow driving member rotatably disposed within said housing and operatively associated with and driven by the drive gear;

an annular sleeve disposed in axial alignment with said hollow driving member and operatively associated with and drivingly connected to the fuel pump actuating shaft;

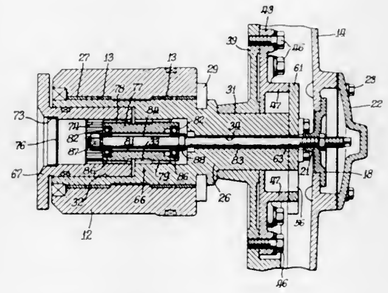
a coupling member axially slidably connected to said driving member and said annular sleeve;

a helical spline connecting said coupling member to the driving member to vary the relative angular position therebetween upon axial adjustment of the coupling member;

a spline connection linking the annular sleeve with the coupling member;

a tie rod extending through the hollow driving member and having opposite ends with one of said ends being rotatably fastened to the coupling member for relative rotation therebetween, a threaded portion formed on the other of said ends with the threaded portion screw threadably extending through said threaded aperture in the housing so that manually selectively rotating the tie rod relative to the housing results in axial movement of the tie rod and the coupling member relative to the hollow driving member for changing the angular position of the driving member and annular sleeve while the engine is running;

a lock nut threaded onto the threaded portion of the tie rod and having a first position in abutment with the housing for locking the tie rod in a selected rotational and axial position for maintaining the adjusted angular position of the driving member and the annular sleeve, and a second



position spaced from the housing for permitting said manual rotation of the tie rod; and

an automatic timing mechanism operatively drivingly connecting the drive gear to said driving member and responsive to engine speed to vary the relative angular position between the drive gear and the driving member, said automatic timing mechanism including gear means rotatably disposed on said driving member, a transverse guide slot carried by said gear means, a pair of flyweights slidably disposed in said guide slot, spring means resiliently urging said flyweights towards said driving member, a driving plate fixed to said driving member, a pair of cam slots formed in said driving plate with the relative angularity of the cam slots and guide slots being relatively small, driving pin means fastened to said flyweights and extending into said cam slots to alter the relative angular position of the gear and driving member for advancing the timing when the flyweights move outwardly in response to a speed increase.

3,951,119
FUEL INJECTION SYSTEM

Günther Jäggle, Stuttgart; Klaus-Jürgen Peters, Affalterbach; Volkhard Stein, Stuttgart, and Herbert Scharl, Ditzingen, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

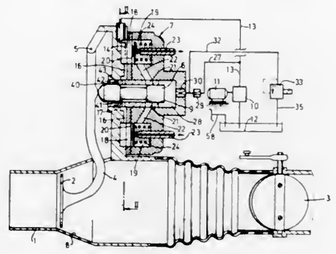
Filed Apr. 17, 1974, Ser. No. 461,623
Claims priority, application Germany, June 9, 1973, 2329667
Int. Cl.² F02M *39/00*
U.S. Cl. 123—139 AW **8 Claims**

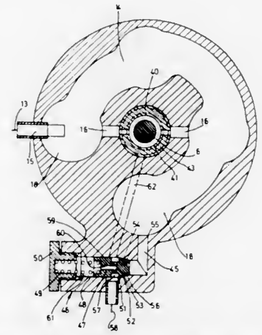
1. A fuel injection system for substantially continuous injection into the suction tube of a mixture-compressing, spark plug-ignited internal combustion engine comprising, in combination:

a. a fuel line;

b. a fuel pump;

c. a measuring member and an arbitrarily actuatable throttle flap disposed, one behind the other, in the suction tube, said measuring member being displaceable in proportion to air quantity and against a resetting force which is normally constant but which is changeable in dependence on engine parameters;





d. a metering valve, having a movable part and disposed in said fuel line, coupled to said measuring member which actuates said movable part for metering fuel quantity in desired proportion with respect to air quantity; and

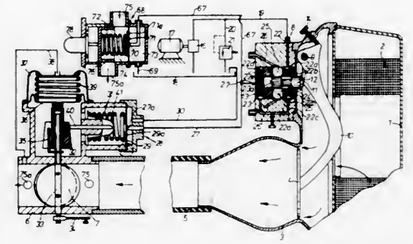
e. regulating means including a piston which is actuated in dependence on fuel pressure prevailing downstream from said fuel pump and which serves to regulate said fuel pressure and a spring means against the force of which said piston acts.

3,951,120
DIAPHRAGM-CONTROLLED PRESSURE CONTROL VALVE ASSEMBLY

Walter Schlott, Feilbach, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Aug. 6, 1974, Ser. No. 495,251
Claims priority, application Germany, Aug. 10, 1973, 2340480
Int. Cl.² F02M *39/00*
U.S. Cl. 123—139 AW **5 Claims**

1. In a pressure control valve assembly, in a fuel injection system of an internal combustion engine, the engine including a suction tube through which air is aspirated into the engine, the fuel injection system including: an air measuring member, disposed within the suction tube, said air measuring member being moved by the aspirated air against a resetting force; a pressure line operatively connected to the air measuring member, the resetting force being supplied by a pressurized fluid, delivered through the pressure line, which continually acts upon the air measuring member at a pressure which is normally constant but which can be arbitrarily changed by at least one pressure control valve, the improvement residing in the pressure control valve assembly wherein the pressure control valve assembly includes said at least one pressure control valve which is embodied as a flat-seat valve having a fixed valve seat, a movable valve member and means for applying a pre-load to said movable member such that the pre-loading

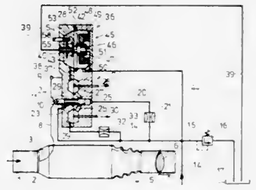


may be changed in dependence on at least one engine parameter, and wherein said movable valve member includes a first diaphragm on whose side pointing away from the fixed valve seat there is disposed a second diaphragm in positive areal contact with said first diaphragm.

3,951,121
FUEL INJECTION SYSTEM

Walter Passera, deceased, late of Stuttgart, Germany (by Ludwig Passera, heir), and Volkhard Stein, Stuttgart, Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed July 29, 1974, Ser. No. 492,828
Claims priority, application Germany, Aug. 3, 1973, 2339370
Int. Cl.² F02M *39/00*
U.S. Cl. 123—139 AW **7 Claims**



1. In a fuel injection system for a mixture-compressing, externally ignited, internal combustion engine, which includes a fuel line; a suction tube through which air for combustion is aspirated and into which continuous fuel injection occurs; an air-flow measuring member located within the suction tube; an arbitrarily actuatable butterfly valve located within the suction tube downstream of said air-flow measuring member; a first, electromagnetically controlled, differential pressure diaphragm valve including a diaphragm and a spring; a fuel metering and quantity divider valve located in the fuel line and serving to meter out a fuel quantity proportional to the air quantity, said fuel metering and divider valve including a fuel-flow control slide which is displaced against a resetting force by a part of the air-flow measuring member as a function of the air quantity flowing through the suction tube and second differential pressure diaphragm valves for maintaining a normally constant pressure difference prevailing at said metering and divider valve and for regulating the amount of fuel delivered by the fuel metering valve; and a hysteresis-free electromagnetic assembly including a permanent magnet and a moving coil armature, said electromagnetic assembly being arranged to act upon said first differential pressure valve and

in response to at least one engine parameter to change the normally constant pressure difference prevailing at said fuel metering and divider valve, wherein the diaphragm of said first differential pressure diaphragm valve is displaced in an opening direction by the interaction of the forces exerted by said spring and said electromagnetic assembly, the improvement comprising:

a. a single diaphragm, common to both said first and said second differential pressure diaphragm valves and located within the housing of said fuel metering and quantity divider valve within which the spring of said first differential pressure diaphragm valve is located; and

b. means mounted to the housing of said fuel metering and quantity divider valve for permitting external adjustment of the tension in said spring of said first differential pressure diaphragm valve.

3,951,122

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE AND METHOD TO GENERATE IGNITION PULSES

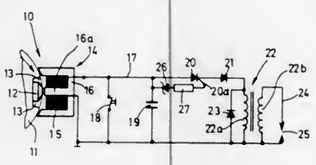
Georg Haubner, Berg, and Kurt Zimmermann, Ludwigsburg, both of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Filed June 18, 1974, Ser. No. 480,581

Claims priority, application Germany, July 7, 1973, 2334610

Int. Cl.² F02P *1/17*

U.S. Cl. 123—148 CC **15 Claims**



1. Ignition system in combination with an internal combustion engine having a charge capacitor (**19**), an ignition transformer (**22**) and a controlled switch (**20,20'**), said controlled switch having its main switching path connected to discharge the capacitor (**19**) through the primary of the ignition transformer (**22**), the controlled switch being triggered into conduction when the voltage across the capacitor reaches a predetermined level;

inductive means (**15, 22**) connected to the capacitor (**19**) to form therewith an oscillatory circuit;

and means (**12, 13, 16**) applying to said oscillatory circuit, including said capacitor (**19**), for each revolution of the engine, a sequence of temporally spaced pulses of respective alternating polarity,

in which the first pulse is of a level insufficient to raise the voltage across the capacitor to the level which triggers the controlled switch into conduction, said first pulse setting the oscillatory circuit into oscillation and effecting recharging of the capacitor in opposite direction;

and in which the second pulse of opposite polarity has a higher amplitude than the first, the energy of the second pulse being added to the pre-charge on the now reversely recharged capacitor to provide a voltage level across the capacitor sufficient to trigger the controlled switch into conduction and to discharge the charge on the capacitor through the ignition transformer.

3,951,123

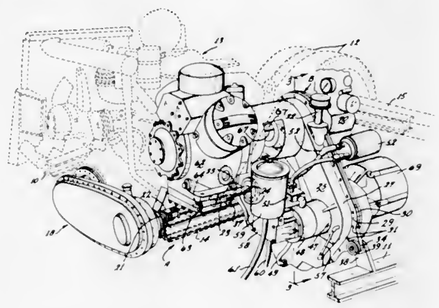
ENGINE DRIVEN ACCESSORY MOUNTING AND DRIVE SYSTEM FOR BUSES AND OTHER VEHICLES

Charles C. Hill, La Jolla, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Nov. 27, 1974, Ser. No. 527,599

Int. Cl.² F02B *77/14*

U.S. Cl. 123—195 A **11 Claims**



1. In a bus or similar vehicle having a vehicle frame and with the propulsion engine of the vehicle mounted to the vehicle frame with a clear space of required size alongside such engine, an engine accessory drive mechanism comprising:

an accessory drive casing mounted to the vehicle frame in such space,

a plurality of shafts journaled in the casing with at least one end of each of said shafts projecting beyond the casing,

an accessory mounting boss integral with the casing, adjacent each of a plurality of the projecting shaft end portions,

first drive means operatively connecting one of said shafts, designated the "power input shaft", to a power driven element of the vehicle's propulsion engine for rotation thereby, and

an engine accessory mounted on each of said bosses, each of said accessories having driven connection with the projecting shaft end portion adjacent which it is mounted.

3,951,124

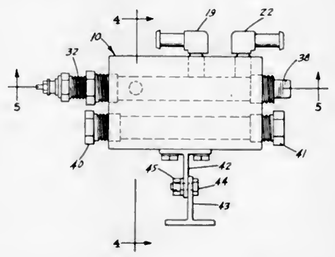
POLLUTION REDUCING AND FUEL SAVING DEVICE

Eugene A. Fairbanks, Callaway, Minn., and Robert D. Fairbanks, Haines, Alaska, assignors to Robert D. Fairbanks, Haines, Alaska

Filed Apr. 29, 1974, Ser. No. 464,747

Int. Cl.² F02M *31/00*

U.S. Cl. 123—122 E **8 Claims**



1. A pollution reducing and fuel saving device in combination with a liquid-cooled internal combustion engine including a carburetor and a fuel supply tube for conducting fuel to the carburetor, a radiator, and flow lines extending from the

radiator to the liquid circulating jacket of the engine, said device comprising:

A. a housing formed of a unitary solid block of metal having good heat conductive properties,

B. a plurality of longitudinal substantially parallel spaced apart generally circular cross-section fuel passage chambers formed integrally in said housing,

each adjacent pair of said chambers being interconnected adjacent one end to provide a serpentine fuel flow path through said chambers,

C. a fitting communicating with the first of said chambers and a further fitting communicating with the last of said chambers to connect said chambers to said fuel supply line,

D. at least one further longitudinal generally circular cross section radiator liquid passage chamber formed integrally in said housing,

said further chamber being substantially parallel to said fuel chambers and closely spaced apart therefrom in heat exchanging relation therewith,

E. fittings communicating with said further chamber to connect said chamber into the radiator liquid flow of said radiator, and

F. means for mounting said device on said internal combustion engine.

3,951,125

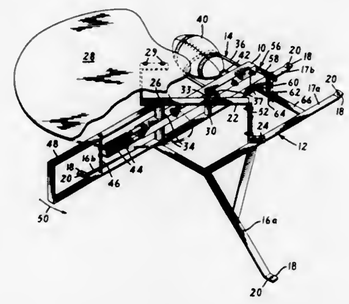
FOOTBALL PASSER

Jack R. Dixon, Miami, Okla., assignor to Indian Head Inc., New York, N.Y.

Filed Sept. 23, 1974, Ser. No. 508,348

Int. Cl.² F41B *3/04*

U.S. Cl. 124—8 **19 Claims**



1. A football passer comprising a frame, an elongated throwing arm mounted adjacent one end on the frame for pivotal movement about a pivot axis and having adjacent its other end a holder for a football, a movable cocking member mounted on the frame for pivotal movement about said axis adjacent one end and having a hand engageable portion adjacent its other end, tension spring means coupled under tension between said one end of the throwing arm at a location thereon on the opposite side of the pivot axis from the holder and a location on the cocking arm intermediate said pivot axis and said other end thereof such that said spring means tends to position the throwing arm and the cocking member in first predetermined relative positions with the spring means imposing a minimum tension force on the throwing arm and the cocking member, latch means for releasably coupling the cocking member to the frame, and trigger means for releasably coupling the throwing arm to the frame, said latch means and triggr means releasably coupling respectively the cocking member and the throwing arm to the frame in second predetermined relative positions and generating a maximum propulsion force in said spring means acting between the throwing arm and the cocking member upon release of said trigger means and the cocking member being latched, the spring means causes the throwing arm to be driven from said second predetermined relative positions to said first predetermined relative positions in pivotal movement about the pivot axis to move the holder in an arc and to impart centrifugal and tangential forces to a football in the holder and propel a football from the holder without an impact that arrests movement of the holder.

3,951,126

COMPRESSED AIR FIREARM CONSTRUCTION

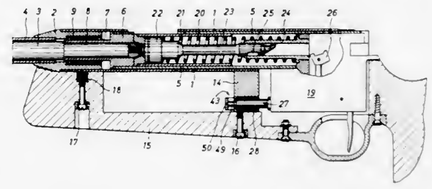
Arthur Rau, Westerstetten, Germany, assignor to J. G. Anschütz GmbH, Ulm, Germany

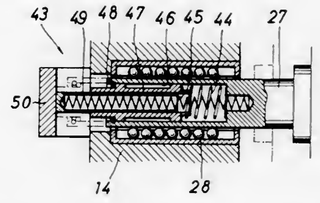
Filed June 3, 1974, Ser. No. 475,998

Claims priority, application Germany, June 8, 1973, 2329425

Int. Cl.² F41B *11/00*; **F41F** *1/04*

U.S. Cl. 124—67 **11 Claims**



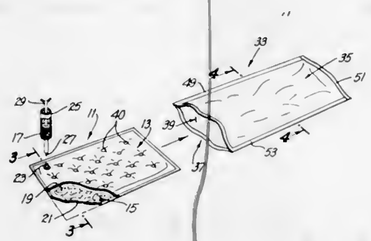


7. A compressed gas operated firearm comprising an air gun housing having a bearing head, roller bearing means in said bearing head, a gun barrel having a barrel bore, a breech housing secured to said gun barrel, said gun barrel with said breech housing being supported on said roller bearing means for axial movement relative to said gun housing, a compression cylinder on said breech housing communicating with the bore of said gun barrel, a biased compression piston movable in said compression cylinder and carried by said breech housing, and power accumulator means connected between said breech housing and said air gun housing and providing a biasing force between said breech housing and said air gun housing acting to orient said housings in a selected equilibrium position, said gun housing having a gun sleeve, said breech housing having a tubular breech housing portion located within said sleeve and having a trigger mechanism housing portion located exteriorly of the gun housing sleeve, said bearing head comprising a tubular member secured to said gun sleeve, a jacket tube secured to said bearing head extending forwardly thereof around said gun barrel and being radially spaced from said gun barrel, said power accumulator means including a bearing block secured to said gun sleeve, a pin extending forwardly of the trigger mechanism of said breech housing and being relatively movable in said bearing block, said bearing block having linear bearings supporting said pin for relative movement in said bearing block.

3,951,127
CONSTANT TEMPERATURE DEVICE

Susan Steves Watson, and William Keith Ross Watson, both of San Diego, Calif., assignors to Kay Laboratories, Inc., San Diego, Calif.

Continuation of Ser. No. 374,406, June 28, 1973, abandoned. This application Sept. 25, 1974, Ser. No. 509,261
Int. Cl.² A61F 7/06; F24J 1/00
U.S. Cl. 126—206 **37 Claims**



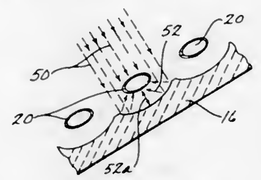
1. In combination:
an airtight container;
a first chemical disposed interiorly of the container and having characteristics for being crystallized at a substantially constant melting temperature to generate heat and for providing a sandy texture when crystallized in a particular form, the first chemical having further characteristics for providing a liquid state when heated to a temperature greater than the melting temperature and for being supercooled to maintain the liquid state when cooled to a temperature less than the melting temperature, the first chemical being selected from a group including sodium thiosulfate pentahydrate and sodium acetate trihydrate; and
means for introducing a second chemical to the first chemical interiorly of the container to initiate the crystallization of the first chemical in the supercooled state at the substantially constant melting temperature of the first chemical and in the α-pentahydrate crystalline form, the second chemical being selected from a group including sodium borate pentahydrate and sodium sulfite.

20. A method for providing a recyclable constant temperature device, including the steps of:
providing a container;
enclosing in the container a first chemical having a particular melting temperature and characteristics for being supercooled to maintain a liquid state below the melting temperature and for being triggered at a controlled instant of time into a crystalline state of the α-pentahydrate form to release heat at the particular temperature, the first chemical being selected from a group including sodium thiosulfate pentahydrate and sodium acetate trihydrate;
introducing a second chemical into the container to initiate the crystallization of the first chemical into the crystals with the sandy texture and to obtain the generation of heat for an extended period of time at the substantially constant temperature during such period of crystallization, the second chemical being selected from a group including sodium borate pentahydrate and sodium sulfite; and
recycling the first chemical to provide the first chemical in the liquid state so that the device can be used subsequently to provide a source of substantially constant temperature by crystallizing at the particular temperature into the crystals of the α-pentahydrate form.

3,951,128
COMBINED FLAT PLATE - FOCAL POINT SOLAR HEAT COLLECTOR

James L. Schoenfelder, Iowa City, Iowa, assignor to Sun Power, Inc., Iowa City, Iowa

Filed May 10, 1974, Ser. No. 468,913
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **8 Claims**

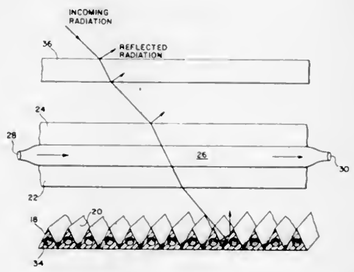


1. A solar heat collector system comprising,
in generally laminar construction,
an exteriorly exposed transparent member,
a focal point reflector plate spaced apart from and behind said transparent member to provide a space therebetween, said reflector plate comprising a material having a plurality of concave parabolic surfaces each of said surfaces being of a sunray reflective material, and
a conduit for heat exchange fluid in said space of elliptical cross section positioned in said space forwardly of said concave parabolic surfaces to intercept solar rays reflected from each of said parabolic surfaces of said reflector plate, said conduit being comprised of a heat absorbing material, the elliptical cross section of said conduit having a major axis and a minor axis with said major axis being parallel to the chord formed by the extremities of the arc of each parabolic surface whereby the amount of direct sunlight impingement on said conduit is maximized, said major axis being of sufficient width such that said conduit will directly intercept all reflected rays from said parabolic surfaces of said focal point reflector plate.

3,951,129
SOLAR ENERGY ABSORBER

Lott W. Brantley, Jr., Union Grove, Ala., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 29, 1974, Ser. No. 518,684
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **3 Claims**



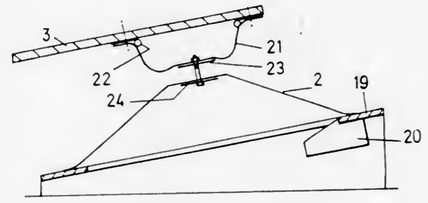
1. An apparatus for absorbing electromagnetic radiation waves emitted from the sun and for converting said radiation waves into thermal energy for heating a fluid comprising:
a source of fluid;
an absorbing base structure for absorbing the visible spectrum of electromagnetic radiation and for conversion of said radiation into thermal energy;

said absorbing base structure having an upper surface exposed to receive solar radiation, said surface having a high absorption factor for absorbing the visible spectrum of electromagnetic radiation;
said base structure further comprising fluid conduits below said upper surface;
a plurality of spaced transparent plates aligned above and parallel with said absorbing base structure in adjacent layers for transmitting said visible spectrum of electromagnetic radiation toward said absorbing structure and for trapping within said layers of plates heat from the infrared radiation reradiated from said absorbing base structure;
means for circulating fluid from said source between intermediate layers of said spaced plates for removing the heat from said plates;
means for conveying fluid from said source through said conduits in heat exchange relationship with said absorbing base structure for permitting said thermal energy to be absorbed by said fluid;
whereby the absorbing base structure absorbs the visible spectrum of the electromagnetic radiation transmitted through said plates for conversion into thermal energy and the heat loss through reradiation from said absorbing base structure is reduced by circulating said fluid between intermediate layers of said plates to carry away said reradiated heat.

3,951,130
ISOLATING DAMPER FOR CLOSING A DUCT

Walter Max Lowe, London, England, assignor to Thermo-Technical Development Limited, London, England

Filed Nov. 14, 1973, Ser. No. 415,535
Claims priority, application United Kingdom, Nov. 24, 1972, 54474/72
Int. Cl.² F23L 3/00, 11/02, 13/10
U.S. Cl. 126—285 B **15 Claims**

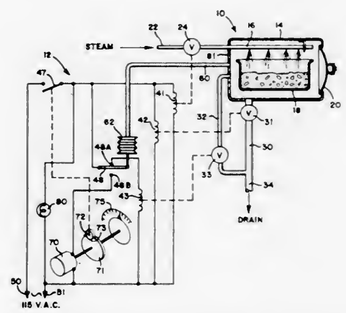


1. An isolating valve for closing a duct, comprising, in combination:
a duct;
a frame fitted in said duct;
a closure member operable between an open position, in which said duct is open, and a closed position in which said member closes said duct;
said closure member being a light weight low-inertia body comprising a hollow cone;
a seating connected to said frame;
said cone having an inside surface of an outer edge cooperating with said seating when said closure member is in said closed position; and
said cone having such an angle at its apex and being formed from a thin material that has such a tensile strength to permit elastic deformation of said cone outer edge by said seating to increase said angle at the apex of said cone.

3,951,131
PRESSURE VESSEL WITH MULTIPLE OUTLET CONNECTIONS

Lyman Joseph Houfek, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Oct. 11, 1974, Ser. No. 514,021
Int. Cl.² A47J 27/04
U.S. Cl. 126—369 **8 Claims**

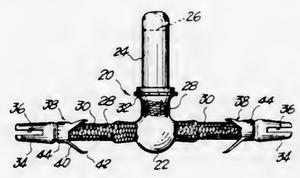


1. In a steam pressure cooker including a pressure treatment vessel, an inlet connected to a source of pressurized steam, an exhaust and drain system, and a control means for controlling the flow of steam into and the flow of steam plus collected liquid and/or food particles out of said vessel whereby foods can be automatically preheated, defrosted, and cooked during consecutive periods, the improvement in said exhaust and drain system comprising:
a drain pipe connected to the bottom of said vessel and having a valve therein through which is drained liquids and/or food particles,
said valve being controlled by said control means so that it remains closed during the preheating, defrosting, and cooking periods,
and a restricted exhaust means connected to said vessel and having a separate valve therein which is maintained open by said control means during the preheating or defrosting periods,
said restricted exhaust means allowing the pressure in said vessel to increase at the end of the defrosting period, and
said control means operating at the end of the defrosting period to close said separate valve for the cooking period.

3,951,132
IMPLANT AND IMPLANTING METHOD

Louis Bucalo, Holbrook, N.Y., assignor to Investors in Ventures, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 359,429, May 11, 1973, Pat. No. 3,815,578. This application Apr. 15, 1974, Ser. No. 461,009
Int. Cl.² A61B 19/00
U.S. Cl. 128—1 R **10 Claims**



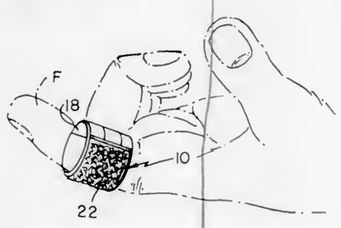
1. In a method for introducing an implant into the interior of a tubular body organ, the steps of connecting to the implant

inwardly of a free end thereof which is to be introduced first into the tubular organ in advance of the remainder of the implant a plurality of flexible barbs circumferentially distributed about the implant and inclined inwardly away from the free end thereof while being capable of flexing substantially radially toward and away from the part of the implant which carries the barbs, and then introducing the implant into the interior of a tubular organ with the free end of the implant entering first in advance of the barbs while simultaneously placing in engagement with the tubular organ at the exterior thereof a tool which is capable of being manipulated for pulling the tubular organ over the implant to an extent sufficient to situate an interior surface of the tubular organ inwardly beyond the barbs while deflecting the latter radially toward the part of the implant which carries the barbs, so that the barbs will oppose longitudinal retraction of the tubular organ from the implant without injuring the tubular organ during introduction of the implant, said tool having teeth which are inserted into the tubular organ at the exterior thereof, and situating said teeth out of circumferential alignment with barbs so that when the barbs and teeth move past each other, the teeth of the tool will be aligned with the spaces between the barbs.

3,951,133
DEVICE TO DISPLAY SKIN TEMPERATURE CHANGES BY CHANGES IN COLOR

John P. Reese, 400 Governors Drive, No. 9, Winthrop, Mass. 02152

Filed Sept. 12, 1974, Ser. No. 505,357
Int. Cl.² A61B *10/00*; G01K *11/16*
U.S. Cl. 128—2 H **1 Claim**



1. A device that displays skin temperature changes and that is worn by a person about a finger or toe, said device comprising:

a plurality of relatively thin color-changing liquid crystal thermal film sheets,

a first of said film sheets being color responsive to changes in the temperature of the skin of the person between a limited range of temperatures of the skin, a second of said film sheets being responsive to changes in the temperature of the skin of the person between a second limited range of temperatures of the skin that is higher than said first range of temperatures and a third of said film sheets being responsive to changes in the skin temperature of a person at a temperature higher than said second range of temperatures,

a relatively thin metal heat conductor sheet,

means for attaching a face surface of said film sheets to the conductor sheet with the three film sheets being disposed abutting each other, extending substantially parallel to each other and each being of somewhat elongate rectangular shape substantially totally covering the conductor sheet with said first, second and third film sheets being disposed in successive order, said film sheets changing color substantially mutually exclusively and in a reversible manner with the total area covered by all sheets being about the same as the area covered by the conductor sheet,

and retaining means attached to the assembly of film sheets and conductor sheet to hold the conductor sheet to the surface of the skin of the person,

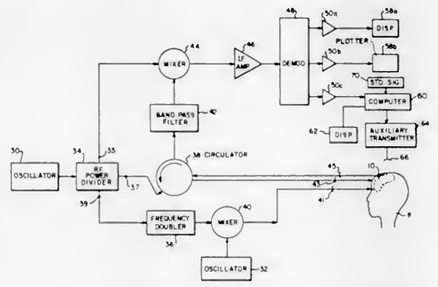
said retaining means including two separate retainer strips and means for securing the strips respectively, to opposite relative thin borders of the assembly wherein the borders are each defined by successive ends of the film sheets with each retainer strip being slightly overlapped with each such border of the film sheets,

wherein said retainer strips attached to a side of said film sheets opposite to said conductor sheet.

3,951,134
APPARATUS AND METHOD FOR REMOTELY MONITORING AND ALTERING BRAIN WAVES

Robert G. Malech, Plainview, N.Y., assignor to Dorne & Margolin Inc., Bohemia, N.Y.

Filed Aug. 5, 1974, Ser. No. 494,518
Int. Cl.² A61B *5/04*
U.S. Cl. 128—2.1 B **11 Claims**



1. Brain wave monitoring apparatus comprising

means for producing a base frequency signal,

means for producing a first signal having a frequency related to that of the base frequency and at a predetermined phase related thereto,

means for transmitting both said base frequency and said first signals to the brain of the subject being monitored,

means for receiving a second signal transmitted by the brain of the subject being monitored in response to both said base frequency and said first signals,

mixing means for producing from said base frequency signal and said received second signal a response signal having a frequency related to that of the base frequency, and

means for interpreting said response signal.

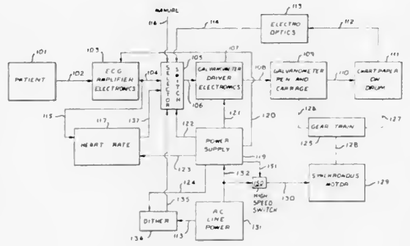
3,951,135
COMPRESSED DATA DISPLAY SYSTEM

Herbert Emanuel Goldberg, Concord; Robert Lee Cannon, Waltham, and David L. Smith, Bedford, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 441,684, Feb. 11, 1974, Pat. No. 3,893,453. This application Apr. 4, 1975, Ser. No. 565,306
Int. Cl.² A61B *5/04*
U.S. Cl. 128—2.06 G **17 Claims**

1. A system for displaying vital signs of a patient, said system comprising: means for sensing said vital signs and for providing analogous electrical signals, means for amplifying said electrical signals, a chassis, means axially-rotatably mounted to said chassis for providing a writing surface, looped paper fitted to and supported by said writing surface means, means supported by said chassis for rotating said writing surface means thereby advancing and re-cycling said paper, galvanometer pen means for scribing on said paper in scribing directions transverse to the direction of motion of said paper, means connected to said chassis for supporting said pen means and for translationally moving said pen means in one of said

scribing directions from an initial position towards a final position, means for extending said signals to said galvanometers pen means, and wherein said writing surface means comprises a cylinder having axially directed slit means in the surface of said cylinder and extending the entire length of said cylinder for receiving two substantially parallel edges of said paper and for clamping said edges to create a smooth overlapping of said paper around said cylinder.



3,951,136
MULTIPLE PURPOSE ESOPHAGEAL PROBE

Terence D. Wall, Ridgewood, N.J., assignor to Vital Signs, Inc., Ridgewood, N.J.

Continuation-in-part of Ser. No. 404,896, Oct. 10, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 512,875
Int. Cl.² A61B *5/02*
U.S. Cl. 128—2.06 E **9 Claims**

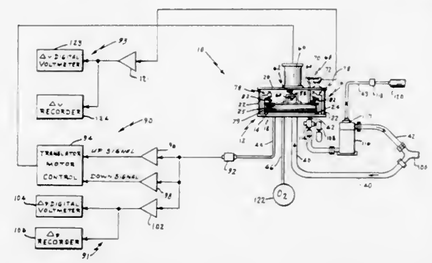


1. An endo-esophageal probe for monitoring acoustic heart and/or lung sounds and internal body temperatures comprising a tube having an upper segment and a lower end, said lower end adapted to be inserted into a lower portion of the esophagus through a body cavity, the portion of the tube adapted to be inserted into the body being sealed and including a thin wall segment and a thick wall, relatively rigid segment, at least a portion of said thin wall segment forming a diaphragm having a relatively low acoustic impedance relative to the thick wall segment for coupling the acoustic sounds to the interior of the tube, and temperature transducer means for monitoring the body temperature through the thin wall segment, electrical conductor means connected to said transducer means and extending to said upper segment, said transducer means being located inside the sealed tube in close proximity to the thin wall segment, said thin wall segment which is in close proximity to the transducer means being located on said lower end of the tube where the tube is normally situated in the lower mediastinum, below the pulmonary veins and between the heart and the descending part of the aorta, said thin wall segment located in close proximity to the temperature transducer means having a fast temperature response time relative to the thick wall segment for rapidly coupling internal body temperature variations to the transducer means.

3,951,137
REBREATHING SYSTEM

James P. Conkle; Marvin A. Rosenbusch, and Doyle D. White, all of San Antonio, Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 20, 1974, Ser. No. 525,711
Int. Cl.² A61B *5/08*; A61M *16/00*
U.S. Cl. 128—2.08 **11 Claims**



1. A rebreathing system comprising a supporting structure, a container having a variable volume mounted within said structure, a pair of conduits operably connected to said container and adapted to be connected to a person for allowing air to enter and escape from said container, means operably connected to said conduits for controlling the flow of air therethrough, means operably connected to said container for sensing a pressure change within said container and providing a signal in accordance therewith, means operably connected to said container for varying the volume thereof, means operably connected between said pressure change sensing means and said volume varying means for transmitting said signal to said volume varying means to control said volume varying means in accordance with said signal, a rod fixedly secured to said container, said rod having one portion thereof inclined at an angle, a potentiometer mounted on said supporting structure, said potentiometer having a slideable element, said slideable element being in engaging relationship with said inclined portion of said rod whereby a volumetric change of said container causes movement of said slideable element thereby causing said potentiometer to emit a signal in accordance with said volumetric change, means for recording said volume change signal, means operably connected to said bellows for detecting a preselected volume change therein and emitting a signal in accordance therewith, said preselected volume detecting means being operably connected to said transmitting means for controlling the activation or deactivation of said system whereby a constant volume is maintained between said system and said person.

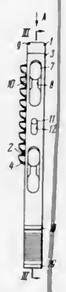
3,951,138
DEVICE FOR GRIPPING SOFT TISSUES DURING SURGICAL INTERVENTION

Ernest Mikhallovich Akopov, Dubninskaya ulitsa, 61, kv. 88, Moscow, U.S.S.R.

Filed July 24, 1974, Ser. No. 491,515
Claims priority, application U.S.S.R., July 26, 1973, 1954521
Int. Cl.² A61B *1/32*, *17/08*, *17/00*
U.S. Cl. 128—17 **9 Claims**

1. A device for gripping soft tissues during surgical intervention, which comprises: two elongated plates adjoining each other along their side faces and connected to each other and having substantially flat edges normal to said side faces of said elongated plates, said plates being movable longitudinally relative to each other; straight fixing needles secured on the face of one longitudinal edge of one of said plates at equal intervals and arranged in approximately perpendicular relationship with said face; fixing needles secured on the face of

the longitudinal edge of the other of said plates, disposed proximate to said face of the former plate which carries said straight fixing needles, and curved in one and the same direction opposite to the supposed direction of withdrawal of said



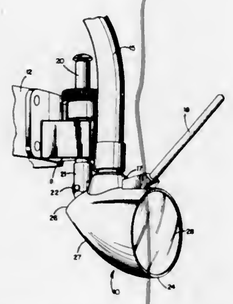
device from the operation wound, said curved fixing needles being spaced at the same equal intervals as said straight fixing needles; and as one of said plates displaces along the other, said fixing needles transfix the surface layers and grip the soft tissues to be clamped.

3,951,139

FIBEROPTIC HEADLIGHT

Jacobus Kloots, Sturbridge, Mass., assignor to Applied Fiberoptics, Incorporated, Southbridge, Mass.

Filed Oct. 7, 1974, Ser. No. 512,627
Int. Cl. A61b *1/06*
U.S. Cl. 128—23 **5 Claims**



1. A manipulatable fiberoptic headlamp in which the optical unit is positionable in close proximity to the bridge of the wearer's nose and is rotatably adjustable about two perpendicular axes by a joystick comprising:

a. an optical unit comprising:
1. a housing having a wall, a front aperture and a back;
2. a connector in the wall of said housing for receiving a fiberoptic light conducting cable.
3. lens means mounted in said front aperture for transmission of light received through said connector;
4. a control rod mounted to said wall adjacent said connector angling toward said front aperture and away from said housing; and,
5. a hinge connection at the back of said housing;

b. a support member comprising:
1. a flange portion for mounting to a headband;
2. a body portion defining a cylindrical passage;
3. a recess around an end of said passage carrying an annular elastomeric ring; and,
4. threadably adjustable means mounted to said body portion and compressibly bearing against said ring;

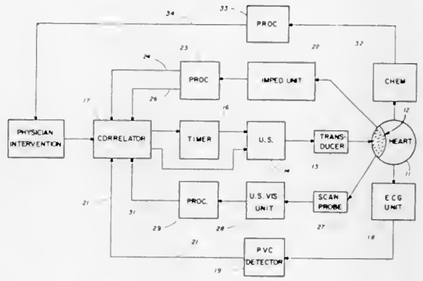
c. a cylindrical post connected at one end to said hinge connection and passing through said cylindrical passage being frictionally retained in said passage by said elastomeric ring, whereby said control rod can be manipulated to rotate said optical unit up and down about said hinge connection and to rotate said optical unit back and forth about the axis of said post.

3,951,140

ULTRASONIC THERAPY APPARATUS AND METHOD

Reginald C. Eggleton, and Francis J. Fry, both of Indianapolis, Ind., assignors to Indianapolis Center for Advanced Research, Indianapolis, Ind.

Filed Nov. 13, 1974, Ser. No. 523,268
Int. Cl.² A61B *6/00*; **A61N** *5/00*
U.S. Cl. 128—24 A **9 Claims**



7. A method of applying ultrasound to the heart of a subject in the treatment of post-myocardial infarct comprising the steps of:

positioning an ultrasonic transducer near the heart of the subject such that ultrasonic energy from the transducer is acoustically coupled to the infarcted area of the heart;

monitoring the condition of the heart of the subject; and

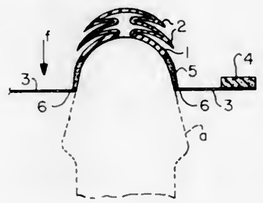
activating the transducer to produce ultrasonic energy directed to the infarcted area of the heart of the subject in response to needs indicated by said monitoring.

3,951,141

PRESERVATIVE OF ELASTIC MATERIAL

Alberto Kopelowicz, Helguera 4556, Buenos Aires, Argentina

Filed Dec. 19, 1974, Ser. No. 534,345
Claims priority, application Argentina, May 7, 1974, 253622
Int. Cl.² A61F *5/42*
U.S. Cl. 128—294 **4 Claims**



1. A contraceptive and sanitary protective device comprising:

a cap element formed of elastic material and having an open end and a closed end;

said closed end having annular folds forming a bellows;

said cap element having on the interior thereof, adjacent said open end, a band of adhesive material for adhering said cap element to the glans of a male organ;

said cap element having integral therewith, at said open end thereof, a planar base in the form of an annular flange extending outwardly from said cap element;

the area of juncture between said open end of said cap element and said flange having therein a plurality of perforations; and

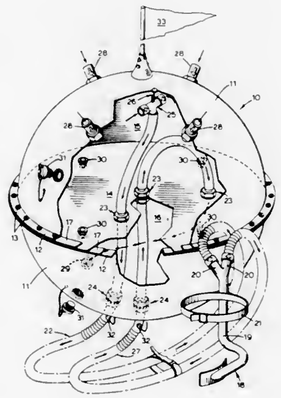
ring means, formed or rigid material and attached to said flange, for separating said flange from said cap element along said perforations after said cap element is adhered in place.

3,951,142

UNDERWATER BREATHING APPARATUS

Robert Martin, 25 St. Dennis Drive, Apartment 1115, Don Mills, Ontario, Canada

Filed Mar. 19, 1975, Ser. No. 559,805
Claims priority, application Canada, Feb. 3, 1975, 219225
Int. Cl.² B63C *11/16*
U.S. Cl. 128—145 A **11 Claims**



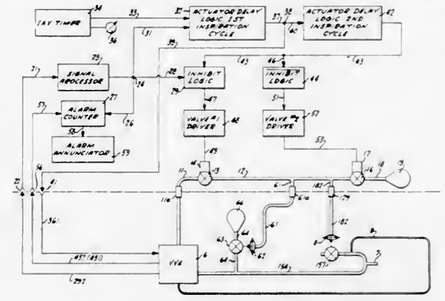
1. Underwater breathing apparatus comprising a hollow float member having a topmost part and a lowermost part, a substantially horizontal partition mounted within the float member between the topmost part on lowermost part and dividing the interior thereof into an upper compartment disposed above the partition and a lower compartment disposed below the partition, a face member for mounting on the face of a user in communication with the respiratory system of the user, an inlet conduit through which the upper compartment is in communication with the face member, and an outlet conduit through which the face member is in communication with the lower compartment, air inlet means being provided in the float member for passage of atmospheric air to the upper compartment, valve means being incorporated in the inlet conduit and the outlet conduit for permitting flow of air therethrough only in the direction from the upper compartment to the face member and in the direction from the face member to the lower compartment respectively, and an air outlet being provided in the float member in said lower compartment for discharge of air from the lower compartment with check valve means being incorporated in said air outlet for permitting flow therethrough only in the direction from the lower compartment.

3,951,143

INTERMITTENT DEMAND VENTILATOR

Sotiris Kitrilakis, and Thomas C. Robinson, both of Berkeley, Calif., assignors to Searle Cardio-Pulmonary Systems Inc., Emeryville, Calif.

Filed Nov. 20, 1974, Ser. No. 525,291
Int. Cl.² A61N *16/00*
U.S. Cl. 128—145.8 **8 Claims**



1. An intermittent demand ventilator comprising a ventilator having a patient airway, an exhalation valve in said patient airway controlling opening of said airway to the atmosphere, an accumulator, a pipe at one end connected to said ventilator to receive air under pressure therefrom and at the other end open to said accumulator, a first valve in said pipe for controlling air flow from said ventilator into said pipe, a second valve in said pipe for controlling air flow between said pipe and said accumulator, means connected to said pipe between said valves for operating said exhalation valve, means responsive to pressure in said airway for providing one of a pair of signals indicative of a sensed lower pressure in said airway due to a patient starting inhalation, a timer means for providing the other of said pair of signals indicative of time intervals between deep breaths delivered to the patient, means responsive to the concurrent existence of said pair of signals for actuating said first valve in an open position and said second valve in a closed position, whereby said exhalation valve is actuated in a closed position and said ventilator delivers a volume of gas equivalent to a deep breath to the patient and responsive to a non-concurrent existence of said pair of signals for actuating said first valve in a closed position and said second valve in an open position whereby said exhalation valve is partially closed by a relatively low pressure in said pipe and accumulator, and means for operating said exhalation valve thereby providing a positive end expiratory pressure in said airway.

3,951,144

MOTOR IGNITION DISTRIBUTION SYSTEM WITH CONTROLLABLE AUXILIARY GAPS

Gert Siegle, Hildesheim, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

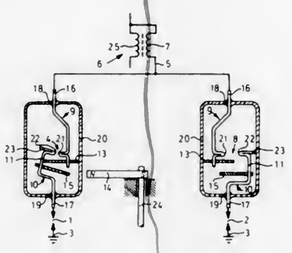
Filed Nov. 14, 1974, Ser. No. 523,866
Claims priority, application Germany, Nov. 16, 1973, 2357261
Int. Cl.² H01H *19/00*
U.S. Cl. 123—148 E **18 Claims**

1. In an ignition distribution system of the flashover distribution type for an internal combustion engine having a plurality of sparkplugs arranged to receive their ignition voltage selectively from a common source comprising the secondary of an ignition transformer, the improvement comprising:

an auxiliary spark gap device interposed in series between each sparkplug and said ignition transformer secondary and each having two electrodes (**9** and **10**) at least one of which is movable by magnetic force, and

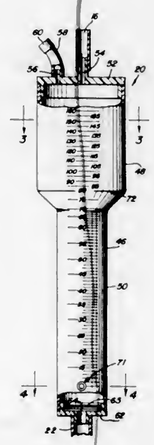
means for selectively moving the movable electrodes of the respective auxiliary spark gap devices by magnetic force

in sequence in such a way that the gap (**4,8**) between the electrodes (**9** and **10**) of the auziliary spark gap device in series with the spark plug (**1,2**) that is to be ignited is



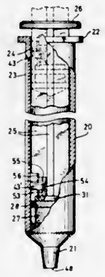
narrowed but not thereby closed for a period including the moment of application of an ignition voltage pulse by said transformer secondary.

3,951,145
INTRAVENOUS MEASURING CHAMBER
Bob Lee Smith, 438 El Rancho, Santa Cruz, Calif. 95060
Filed Oct. 25, 1973, Ser. No. 409,635
Int. Cl.² A61M *5/14*
U.S. Cl. 128—214 R **6 Claims**



1. A measuring chamber for use in an intravenous feeding set comprising a rigid chamber having a top and a bottom and side walls connecting said top and bottom; said chamber having a larger cross-sectional area near its top than near its bottom with the side walls of the upper portion of said chamber being substantially vertically oriented and the side walls of said lower portion being substantially vertically oriented; an inlet fluid passageway in said top for placing said chamber in fluid communication with a source of parenteral fluid; an outlet fluid passageway in said bottom for placing said chamber in fluid communication with an intravenous needle; and indicia on said chamber extending from near said bottom to near said top for indicating the amount of fluid in said chamber; said measuring chamber further including an injection site for injecting medication into said chamber below the liquid level of parenteral fluid in said chamber, said injection site being formed in the lower portion of said side walls.

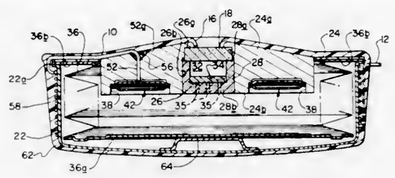
3,951,146
DISPOSABLE SELF-DESTRUCTIBLE SYRINGES WHICH RENDER THEMSELVES UNREUSABLE
Marcelo Chiquiar-Arias, Insurgentes sur 403-5, Mexico City 11, Mexico
Continuation-in-part of Ser. No. 302,690, Nov. 1, 1972, abandoned. This application May 29, 1974, Ser. No. 474,283
Claims priority, application Mexico, Aug. 15, 1973, 145570
Int. Cl.² A61M *5/00*
U.S. Cl. 128—218 R **6 Claims**



1. A disposable syringe which renders itself non-reusable, which comprises a rigid cylinder coupled at one end to a bottom wall with an opening for the exit of the solution to be injected, and having the other end open, said end being integrally coupled to support flanges which extend outwardly and perpendicularly to the axis of the cylinder, and a plunger with a piston at the extreme end coupled to the cylinder, and a circular disk positioned on said plunger so as to permit sliding and moving of said plunger within said cylinder, wherein the cylinder has a longitudinal groove partially penetrating the wall of said cylinder and adjacent said partially penetrating groove a longitudinally extending section of the wall penetrable by a knife, said plunger having flaps extending outwardly of the axis of said plunger, there being a support disk of a semi-rigid piston at the extreme end opposite the circular disk, one of said flaps being oppositely aligned with the weakening groove of the cylinder, there being a recess in said flap immediately adjacent said support disk of said piston, said recess providing a transversely extending housing, there being a compressible spring having one of its ends attached to the wall of said housing and a cutting blade in said housing fixed to the other end of said compressible spring, said cutting blade being guided by a cover of said housing having a slot with a width slightly greater than the thickness of said blade, whereby to prevent twisting of said blade, said cutting blade being positioned so that upon injection of a solution, said weakened groove of the wall is cut along the length thereof as the injection proceeds, said cylinder having guide means for one of said flaps other than one which contains said blade to prevent rotation of the piston rod about its axis.

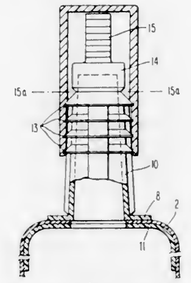
3,951,147
IMPLANTABLE INFUSATE PUMP
Elton M. Tucker, Medfield, Mass.; Elwood F. Kamperman, Belle Mead, N.J.; Richard W. Hatch, Jr., Norwell, Mass.; Charles Carswell, Wrentham, Mass., and Frank Prosl, Duxbury, Mass., assignors to Metal Bellows Company, Sharon, Mass.
Filed Apr. 7, 1975, Ser. No. 565,798
Int. Cl.² A61M *5/00*
U.S. Cl. 128—260 **12 Claims**

1. An implantable infusate pump of the type having an infusate chamber, an inlet to the chamber, a self-sealing septum closing the inlet, an outlet from the chamber, and a power cell for forcing infusate from the chamber through the outlet, the improvement comprising an antechamber in the fluid stream between the pump inlet and the chamber and filter means in the fluid path between the antechamber and the chamber so that when the pump is refilled via its inlet by injecting infusate fluid through the septum, any foreign matter



entrained in the incoming fluid is trapped in the antechamber and cannot enter the chamber and possibly clog its outlet.

3,951,148
BLOOD COMPONENT STORAGE BAG AND GLYCEROLIZING SET THEREFOR
John R. Herb, Easton, Pa., assignor to Pharmachem Corporation, Bethlehem, Pa.
Filed May 29, 1974, Ser. No. 474,182
Int. Cl.² A61M *5/14*
U.S. Cl. 128—272 **1 Claim**

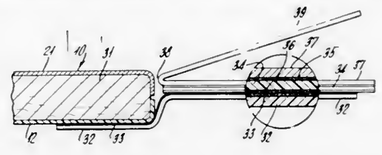


1. Bag for storing blood components, consisting of a sterilizable, flexible closed container with means for hanging said container including an inlet-outlet fitment at the top thereof forming part of said closed container, said filament including

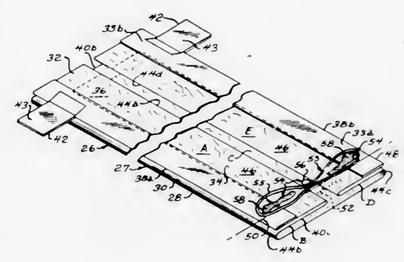
a. an outlet consisting of a first hollow outward protrusion with a releasably secured cap, said first hollow outward protrusion including a plurality of circumferential ridges on its outer surface for sealingly engaging said cap, said cap being provided with mating annular grooves for engaging said plurality of circumferential ridges and stop means for limiting penetration of said first hollow outward protrusion therein, said ridges providing an interference fit with the interior of said cap, and
b. at least one inlet consisting of a second hollow outward protrusion having on its outer diameter a circumferential raised portion.

3,951,149
TAPE TAB SYSTEM FOR OPENING AND REFASTENING DISPOSABLE DIAPERS
Irving Stanley Ness, Princeton, and Philip Surowitz, Middlesex, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed Mar. 6, 1975, Ser. No. 555,910
Int. Cl.² A61F *13/16;* **A43C** *11/00*
U.S. Cl. 128—287 **7 Claims**

1. In a disposable tape tab diaper having an inside surface, an outside surface and an absorbant section between said surfaces, an improved tape tab fastening system comprising: a first strip of tape with adhesive material on one surface thereof, having a segment at one end attached only to a surface of the diaper and having a second segment unattached to said surface; a second strip of tape with adhesive material on one surface thereof, the non-adhesive surface of said second strip releasably fastened to the adhesive surface to the unattached segment of said first strip; and a cover strip releasably attached to the adhesive surface of said second strip.



3,951,150
DIAPER WITH ELASTIC WAIST MEANS
Charles H. Schaar, Lake Zurich, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Oct. 31, 1974, Ser. No. 519,493
Int. Cl.² A61F *13/16;* **A41B** *13/02*
U.S. Cl. 128—287 **36 Claims**



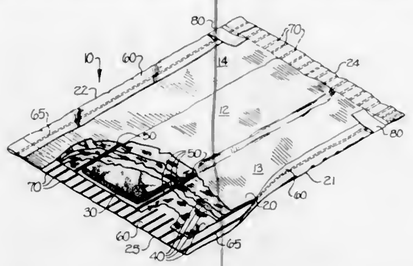
1. A disposable diaper, comprising: an adsorbent pad assembly having an absorbent pad, a pair of side edges, front and back waistline portions, a plurality of longitudinally extending folds defining a pair of laterally expandable pleats adjacent opposed sides of the folded diaper, with each of said plates of the folded pad assembly having at least three layers, and means for resisting lateral unfolding of the pad assembly pleats comprising, elastic band means in at least one of said waistline portions, said band means being connected to said pleats in said one waistline portion and extending from said pleats toward a lateral central portion of the pad assembly without crossing either of said side edges of the pad assembly, said band means laterally constraining the pleats against expansion in said one waistline portion during placement of the diaper to provide a snug fit of the diaper about the waistline of the infant.

3,951,151
DISPOSABLE DIAPER
Richard K. Teed, Greenwood, S.C., assignor to Riegel Textile Corporation, New York, N.Y.
Filed Apr. 15, 1974, Ser. No. 460,916
Int. Cl.² A61F *13/16*
U.S. Cl. 128—287 **3 Claims**

1. In a disposable diaper having longitudinal and transverse edges comprising a fluid permeable top sheet, a fluid impermeable bottom sheet, a fluid absorbent pad of less length than said top and bottom sheets and being disposed between said top and bottom sheets and terminating in outside ends short of said transverse edges of said diaper, and means for securing said top and bottom sheet along said longitudinal edges; the improvement of:

a plurality of short, spaced-apart, generally longitudinally-extending glue lines extending from each of said outer transverse edges of said diaper inwardly between said top

cover sheet and said bottom cover sheet and at least slightly inwardly of said outside ends of said absorbent pad and being spaced along substantially the entire length of said transverse edges of said diaper for securing said



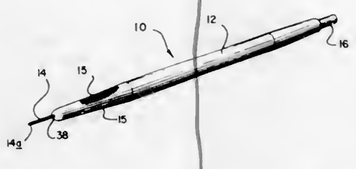
top cover layer and said bottom cover layer together at said glue lines only and for securing said interior pad thereto along the transverse edges of said diaper for providing soft, flexible, transverse edges to said diaper for comfort when placed in position on the wearer.

3,951,152

CRYOSURGICAL PROBE

William H. Crandell, Lexington, Mass.; Wayne F. Lisenbee, Simi, and Keith E. Nelson, Rolling Hills Estates, both of Calif., assignors to Dynatech Corporation, Cambridge, Mass.

Division of Ser. No. 475,787, June 3, 1974, Pat. No. 3,910,278.
This application Feb. 14, 1975, Ser. No. 550,124
Int. Cl.² A61B *17/36*
U.S. Cl. 128—303.1 **3 Claims**



3. The method of sustaining cooling of the hollow tip of a small disposable cryosurgical probe having a self-contained refrigerant supply with a volume less than 12cc comprising the steps of

A. flowing liquid refrigerant into the probe tip at a mass flow rate such that the refrigerant evaporates inside the tip and thereby cools the tip directly to a temperature in a room temperature below 0°C environment in less than 6 seconds, and

B. continuing the refrigerant flow for at least 1.5 minutes.

3,951,153

SAFETY DEVICE FOR CATHETERS AND THE LIKE

Gino Leucci, Medford & Academy Roads, Philadelphia, Pa. 19154

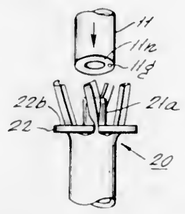
Filed Feb. 4, 1975, Ser. No. 546,934
Int. Cl.² A61M *25/00*
U.S. Cl. 128—349 R **6 Claims**

1. In combination, first and second resilient tubular sections and means for coupling the ends of said first and second resilient tubular sections, said first section having a plurality of axially aligned slits for dividing the end portion thereof into a plurality of strips, said means comprising:

a rigid tubular member adapted to have the opposite ends thereof press-fitted into the ends of the tubular sections to be joined;

a thin flange surrounding and extending outwardly from the exterior surface of said rigid member, said flange being located intermediate the ends of said rigid member;

said flange having a plurality of narrow notches extending inwardly from the periphery of said flange each being adapted to force-fittingly receive an associated one of said strips to anchor said coupling means to said first tubular section;



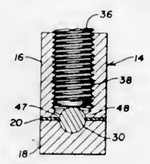
the press-fitting connection between said coupling means and said second tubular section being adapted to be released when said first and second sections are displaced from one another to prevent any displacement of said first tubular section as a result of any pulling force exerted upon said second tubular section.

3,951,154

LEAD CONNECTOR FOR ELECTRO-MEDICAL DEVICE

Jerome T. Hartlaub, New Brighton, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 30, 1974, Ser. No. 465,526
Int. Cl.² A61B *1/36*
U.S. Cl. 128—419 P **5 Claims**



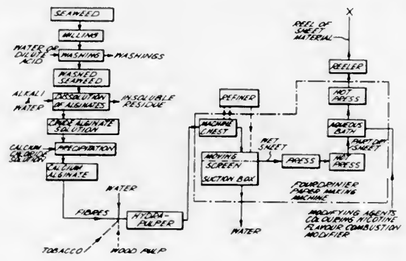
1. In combination with a tissue stimulator having pulse generator means electrically interconnected with a source of electrical energy for producing electrical tissue stimulation impulses, lead connector means electrically interconnected with said generator means, and electrically conductive lead means attachable to said lead connector means for conducting the stimulation impulses to remote body tissue, the improvement in lead connector means for inhibiting the production of the stimulation impulses which comprises electrical insulating means providing an insulating barrier between first and second electrically conductive portions of said lead connector means, said first and second portions and said insulating means defining a receptacle providing a cavity for insertion therein of said lead means, said first and second portions extending partially around the circumference of said cavity and said insulating means being circumferentially interposed between said first and second portions, and circuit means for electrically interconnecting said source of electrical energy with said first and second portions of said lead connector means and said generator means, whereby said electrical interconnection between said generator means and said source of electrical potential is only effective when said electrically conductive lead means is attached to said first and second portions of said lead connector means.

3,951,155

SMOKING MATERIALS

Ronald Ernest Prouse, Upminster; Anthony Alfred West, Basildon; Derek Anthony King, Ferrers, and Roger Poulson, Billericay, all of England, assignors to Carreras Rothmans Limited, Great Britain

Continuation-in-part of Ser. No. 159,741, July 6, 1971, abandoned. This application Aug. 6, 1973, Ser. No. 385,694
Claims priority, application United Kingdom, July 11, 1970, 33784/70; May 20, 1971, 16129/71
Int. Cl.² A24B *15/00*; **A24D** *1/18*
U.S. Cl. 131—2 **14 Claims**



1. A smokeable material comprising a base material consisting essentially of calcium-alginate fibers together with additional material which provides both a minor proportion of flavor-modifying agent and a combustion modifier, the additional material being incorporated so as to communicate selected flavor to and to allow the burning of the smokeable material in such manner as to render the smokeable material suitable for use in place of smoking tobacco.

3,951,156

CURL RETENTION AND MECHANICAL PROPERTIES OF HAIR BY GLYOXAL-PENTAERYTHRITOL COMPLEX

Antoni E. Gadzala, Oakville, Canada; James F. Kinney, Ramsey, N.J., and Gary H. Henderson, Middletown, N.Y., assignors to Avon Products, Inc., Suffern, N.Y.

Filed May 22, 1974, Ser. No. 472,364
Int. Cl.² A45D *7/04*
U.S. Cl. 132—7 **11 Claims**

1. A process of grooming hair to cause improved curl retention and mechanical properties while substantially maintaining the hair color comprising applying to the hair an effective amount of a hair grooming composition containing an inert cosmetic carrier and from about 1 to about 60 percent of the total composition of glyoxal-pentaerythritol complex having a molar ratio of about 2:1 to 1:2, said composition having a pH of from about 3 to about 8, and allowing said composition to remain thereon for a time sufficient to treat the hair.

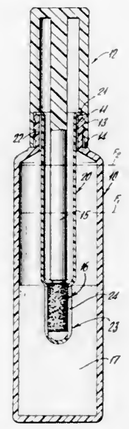
3,951,157

COMBINED CONTAINER AND APPLICATOR FOR COSMETIC OR THE LIKE MATERIAL

Eric J. Idec, Cheshire, Conn., assignor to Eyelet Specialty Co., Inc., Wallingford, Conn.

Filed Apr. 2, 1975, Ser. No. 564,331
Int. Cl.² A45D *40/26*
U.S. Cl. 132—88.7 **12 Claims**

1. A cosmetic or the like container for the controlled dispensing of powdered or other product contents, comprising an elongate container body closed at one end and having a reduced neck opening at the other end, an elongate tubular member secured at said neck end and extending substantially into the inner volume of said container body, whereby the inwardly projecting position of said tubular member is necessarily directly immersed in and exposed to product contents of the container body, the inwardly projected end portion of said tubular member having plural openings for restricted passage of container-product contents into said tubular member, and an elongate applicator removably enterable into the neck-



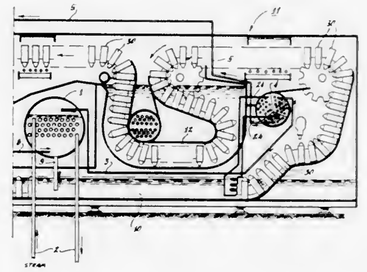
mounted end of said tubular member and having product-daubing formations at its lower end in axial registry with at least some of said openings when inserted into said tubular member.

3,951,158

APPARATUS FOR AUTOMATICALLY CLEANING REUSABLE FOODSTUFF CONTAINERS WITH REDUCED QUANTITIES OF FRESH WATER AND CHEMICALS

Erhard Tedden, D-423 Wesel 13, Am Moorbusch 1, Germany

Filed Apr. 7, 1975, Ser. No. 565,683
Int. Cl.² B08B *3/02*, *9/08*
U.S. Cl. 134—60 **4 Claims**



1. Apparatus for supplying and circulating liquid in an automatic cleaning machine for reusable foodstuff containers, said machine being of the type containing successive liquid cleaning and rinsing baths or stages for application of cleaning agent and rinse to the foodstuff containers traveling through the machine, said apparatus comprising:

evaporator means for heating liquid to form steam;

a heat exchanger in the machine;

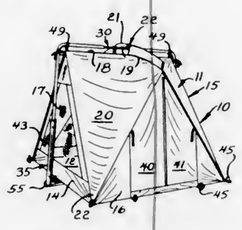
duct means for passing the steam to the heat exchanger to liberate heat for heating washing liquid in the machine and to form condensate; and

duct means for passing the condensate to a first rinse water contained in the machine, said machine rinsing the foodstuff containers with the condensate in the first rinse water container.

3,951,159
TENT STRUCTURE

Denis W. Robinson, Mercer Island, Wash., and George B. Madison, Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.

Filed Dec. 5, 1974, Ser. No. 529,742
Int. Cl.² A45F *1/16, 1/00*
U.S. Cl. 135—3 E **11 Claims**

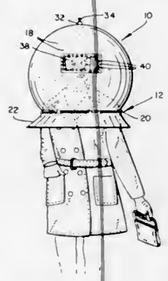


1. In a tent construction, the improvement comprising: a shell of flexible material forming two pairs of opposing upright side walls, each wall defining an uppermost corner, and an enclosing top extending between the sides of adjacent ones of said top defining a pair of intersecting ridges extending respectively between the upper corners of said pairs of side walls; first rigid ridge support means extending along a first of said ridges in said top; first connection means for connecting said shell to said first ridge support means along said first ridge; upright support means adapted to engage the ground for supporting said first ridge support means; second ridge support means carried by said first ridge support means and extending laterally thereof for supporting said shell along said second ridge; and second connection means connecting said shell to said second ridge support means along said second ridge.

3,951,160
BALL UMBRELLA

Jon E. Nitu, 155 Logan St., Brooklyn, N.Y. 11208

Filed Dec. 5, 1974, Ser. No. 529,795
Int. Cl.² A45B *11/02, 19/02*
U.S. Cl. 135—20 B **2 Claims**

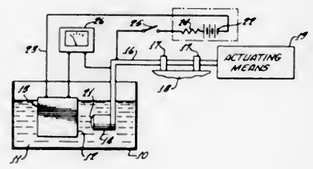


1. A ball umbrella comprising double, spaced apart layers of a flexible material welded together at random points throughout their extent and, adapted to be inflated into globular form, and worn over the head of the user, the umbrella in such form being open at the bottom and extending to the shoulder region of the user, an internal valve communicating with the space between the layers for producing such inflation, a cord annularly disposed about the umbrella above the bottom edge thereof, the ends of which are adapted to be tied together, an inflatable skirt portion formed between said cord and the bottom edge of the umbrella, said skirt being outwardly flaring after inflation and the tieing together of the ends of said cord with the layers adapted to snugly hug the shoulders of the user, whereby rain water is led away from the body of the user, and a transparent perforated window provided in the umbrella above said cord for venting purposes and to afford outside vision for the user.

3,951,161
METHOD OF DETECTING THE ONSET OF FORMATION OF ADHERENT PRECIPITATES ON SURFACES IMMERSED IN LIQUIDS, AND CONTROLLING THE FORMATION OF SUCH PRECIPITATES

Gilson H. Rohrback, Whittier, and Elmond A. Holmes, Fullerton, both of Calif., assignors to Magna Corporation, Santa Fe Springs, Calif.

Division of Ser. No. 335,676, Feb. 26, 1973, Pat. No. 3,848,187. This application Sept. 26, 1974, Ser. No. 509,328
Int. Cl.² G01R *27/02*
U.S. Cl. 137—3 **40 Claims**



1. A method of determining, in a relatively short period of time, the tendency of a liquid in an industrial system to precipitate adherent coatings onto surfaces in said system, which comprises:

a. exposing electrically conductive test surface means to substantially the same liquid present in an industrial system,

b. changing at least one condition present at said test surface means in such manner as to accelerate the rate of precipitation of an adherent coating from said liquid onto said test surface means,

c. periodically determining the electrical contact resistance of said test surface means,

said determinations of said electrical contact resistance being made by means of an electrical contacting element in engagement with said test surface means, and

d. employing the condition present at said test surface means, when step (c) first determines a significant change in the precipitation of adherent coating, as an index of the tendency of adherent precipitate to form on surfaces in said industrial system.

3,951,162
CONTROL VALVE WITH FLOW CONTROL MEANS

Raud A. Wilke, Brookfield, Wis., assignor to Koehring Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 195,145, Nov. 3, 1971, abandoned. This application Apr. 18, 1974, Ser. No. 462,038
Int. Cl.² F15B *11/08*
U.S. Cl. 137—106 **8 Claims**

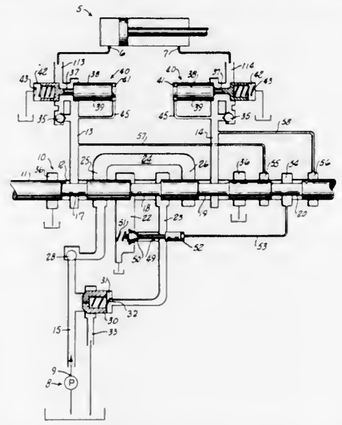
1. In combination with a control valve having a valve element which can be moved from a neutral position to an operating position connecting one of a pair of service passages with an inlet passage and the other service passage with motor exhaust passage means:

A. an exhaust flow control valve for said other service passage, having a valve member which is urged by a spring in one direction toward a position permitting substantially free flow of motor exhaust fluid in said other service passage but which is movable in the opposite direction toward a position restricting such motor exhaust flow in response to rise in exhaust fluid pressure in said other service passage to a predetermined value which exceeds the force of said spring;

B. valve means operative to bypass fluid from the inlet passage to the exhaust passage means both in said neutral position of the valve element and at times when a predetermined exhaust fluid pressure obtains in said other service passage;

C. said valve means comprising a bypass valve which is adapted to be opened under force exerted thereon by pressure of fluid in the inlet passage, and pilot valve means for said bypass valve;

D. said pilot valve means including a movable element, spring means biasing said movable element in one direction, and passage means communicating with said other service passage for causing movement of said movable element in the opposite direction when the force from the



fluid pressure in said other service passage exceeds the force from said spring means;

E. said bypass valve operating in a chamber which must be vented before the bypass valve can open under the action of inlet pressure fluid thereon; and

F. means defining two venting passages for said chamber, one of which is governed by said valve element to be closed thereby upon movement of the valve element out of its neutral position, and the other of which venting passages is governed by said movable element of said pilot valve means to be closed thereby except when said movable element is moved in said opposite direction by the force from the fluid pressure in said other service passage.

3,951,163
AUTOMATIC ANTI-SIPHON VALVE

Chester C. Rodieck, P.O. Box 1329, Porterville, Calif. 93257

Filed July 5, 1972, Ser. No. 269,145
Int. Cl.² F16K *31/22;* **E02B** *13/00*
U.S. Cl. 137—122 **6 Claims**

1. A float activated irrigation valve with anti-siphon action for use in an irrigation basin with a pressurized source of water comprising, in combination:

a hollow valve housing having a side wall, one open end and one closed end;

an inlet connected through the side wall of said valve housing for connection to a source of pressurized water;

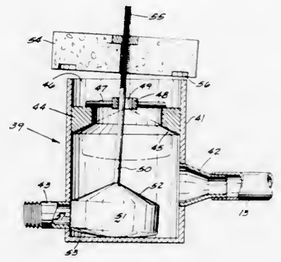
an outlet connected through said hollow valve housing at or near the closed end;

a valve gate freely fitting within the hollow of said valve housing, said valve gate having on one surface thereof a first valve seat and, on a second surface thereof, a second valve seat;

a third valve seat fixedly connected to said hollow valve housing at said open end, for mating with the first valve seat of said valve gate when said gate is in the closed position, to effectively close said open end to water flow;

a fourth valve seat formed integrally with said outlet for mating with the second valve seat of said valve gate when the pressurized source of water is turned off to effectively close said outlet, thereby preventing a siphoning action;

a float positioned outside the open end of said valve housing;



a rod connecting said valve gate to said float;

means for loosely guiding said rod for movement within said housing;

said outlet and said integral fourth valve seat being connected through the side wall of said valve housing at the closed end,

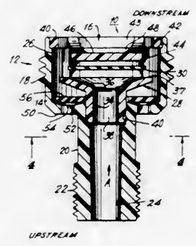
said second valve seat being formed continuously around the outer periphery of said valve gate, and

said valve gate moving sideways in said housing to effect a seal with said outlet.

3,951,164
ANTI-SIPHON AND BACKFLOW PREVENTION VALVE

Buckley Crist, Planfield, N.J., assignor to Jalco, Inc., Brooklyn, N.Y.

Filed Feb. 7, 1975, Ser. No. 547,934
Int. Cl.² F16K *24/00*
U.S. Cl. 137—218 **8 Claims**



1. A valve for preventing backflow and siphoning, comprising:

a. a valve body,

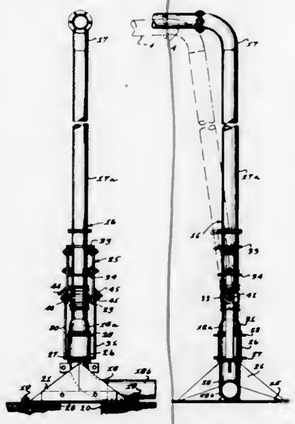
b. check valve means within the valve body, the check valve means including a seat, a diaphragm in alignment with the seat, and diaphragm retaining means, said retaining means including a plate and spaced legs depending from said plate and contacting the seat, the diaphragm being captured for limited movement between the plate and the seat, and

c. air valve means within the valve body and operating independently of the check valve means, said air valve means including at least one air port in the valve body, a seat surrounding the air port, and a closing member in alignment with the air port, the member normally mating with the air port seat and opening during a downstream low pressure condition to permit equalization.

3,951,165
IRRIGATION SYSTEM PIVOT SWIVEL

Gary V. Seger, Rte. 1, Monte Vista, Colo. 81144, and Wallace E. Fluhr, 1960 Alamosa Drive, Colorado Springs, Colo. 80907

Filed Aug. 12, 1974, Ser. No. 496,643
Int. Cl.² A01G *25/02*
U.S. Cl. 137—344 **4 Claims**



1. A free standing swivel pipe connector for a center pivot irrigation system comprising:

a first pipe elbow having at least one straight extension;

a base member attached to said first pipe elbow;

a second pipe elbow having at least one straight extension;

liquid sealing flexible coupler means swively interconnecting the straight extensions of the first and second pipe elbows;

a collar coaxial with and rotatably mounted on the straight extension of said first pipe elbow;

a pair of support arms attached at their respective ends to the said collar and the extension of the second pipe elbow and disposed bilaterally of the said coupling means.

4. An articulated pipe joint comprising:

first and second conduits spaced apart in axial alignment;

at least one rigid support member disposed parallel to the longitudinal axis of said first and second conduits wherein the said support includes a hinge intermediate its ends and where the hinge axis is perpendicular to the longitudinal axis of said conduits and disposed within the plane of the separation between the conduits;

flexible coupler means swively interconnecting the first and second conduits so that the first conduit may rotate about its longitudinal axis with respect to the second conduit;

means rigidly interconnecting one end of the support member to the first conduit; and

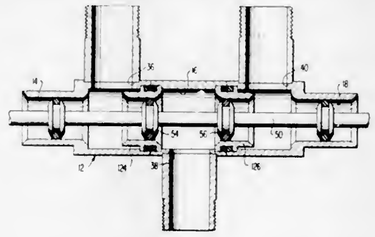
means attached to the other end of the support member to rotatingly engage the circumference of the second conduit.

3,951,166
RAPID ACTING VALVE ASSEMBLY

Robert V. Whitener, 20 Tall Tree Court, Huntington, Long Island, N.Y. 11743

Filed June 12, 1974, Ser. No. 478,628
Int. Cl.² F16K *11/00*
U.S. Cl. 137—625.27 **14 Claims**

1. A valve assembly, comprising: a body member defining at least first, second, and third substantially cylindrical bores therein, said first and third bores being axially aligned with said second bore and disposed on either side thereof in contiguous relationship, said first and third bores having a substantially equal diameter less than the diameter of said second bore; an annular protrusion in said second bore having an inner diameter substantially equal to the diameter of one of said first and third bores; first and second ports communicating with said second bore on opposite sides of said protrusion; a valve stem extending axially through said first, second and third bores; means connected with said stem for axially transposing the same; and at least three valve discs having substantially equal diameters, two of said discs disposed on said stem for continuous, sliding cooperation with said first and third

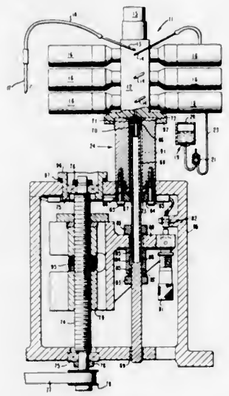


bores, respectively, to seal the interior of said valve assembly; and said third disc disposed on said stem for selective cooperation with said annular protrusion so as to control fluid flow between said first and second ports in response to movement of said stem by said transposing means, each of said discs defining a generally rectangular groove about the periphery thereof and having a resilient seal therein, wherein each of said discs defines at least one aperture extending axially therethrough and communicating with the bottom of said rectangular groove.

3,951,167
FLUID HANDLING ASSEMBLY

Gary W. Howell, Elkton, Md., and Danahey Ryan, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 5, 1974, Ser. No. 530,034
Int. Cl.² F16K *11/10*
U.S. Cl. 137—608 **11 Claims**



1. A fluid handling assembly comprising:

a. a housing;

b. a primary channel in said housing, a first end of which terminates at a pump orifice on the surface of said housing;

c. an output channel in said housing, a first end of which terminates at an intake/output orifice on the surface of said housing;

d. a first valve structure comprising

i. a first valve seat disposed in said housing and containing first and second closely spaced orifices, one orifice being connected to the second end of said primary channel and the other orifice being connected to the second end of said output channel;

ii. a flexible first diaphragm connected at its periphery to said housing and coacting with said first valve seat to form a leak-tight first chamber connecting the first and second orifices of said first valve seat; and

iii. first means to move said first diaphragm to close off the connection between the first and second orifices of said first valve seat;

e. at least one secondary valve structure comprising

i. a secondary valve seat located on the surface of said housing and containing two closely spaced orifices;

ii. a secondary channel, connecting one orifice of said secondary valve seat to said primary channel;

iii. an input channel, connecting the other orifice of said secondary valve seat to an input orifice located on the surface of said housing;

iv. a flexible secondary diaphragm connected at its periphery of said secondary valve seat to form a leak-tight secondary chamber connecting the orifices of said secondary valve seat;

v. secondary means to move said secondary diaphragm to close off the connection between the orifices of said secondary valve seat;

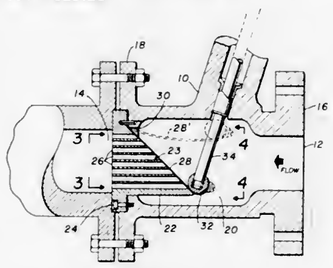
f. a relief channel having one end terminating in a drain orifice on the surface of said housing and the other end terminating in a third orifice in said first valve seat, said third orifice being within the periphery of said first diaphragm but spaced relatively distant from the first and second orifices of said first valve seat; and

g. delimiting means coacting with said first diaphragm to press the perpheral portions of said first diaphragm into contact with said valve seat and limit the extent of said first chamber so that it connects only the first and second orifices of said first valve seat, said delimiting means being resiliently mounted to retract under sufficient pressure and expand said first chamber to include the third orifices of said first valve seat.

3,951,168
CURTAIN VALVE

Bob R. Roberts, Marshalltown, Iowa, assignor to Fisher Controls Company, Inc., Marshalltown, Iowa

Filed Dec. 27, 1974, Ser. No. 536,776
Int. Cl.² F16K *47/00*
U.S. Cl. 137—625.28 **3 Claims**



1. A curtain valve, comprising:

a valve body having an inlet, an outlet, and a central body cavity communicating with said inlet and outlet;

a valve orifice member mounted in said body cavity, said orifice member including a plurality of flow passageways parallel to, and terminating adjacent to, said valve outlet providing communication for fluid flow between said body cavity and said outlet, and said orifice member further having a face within said body cavity inclined at an acute angle with respect to the direction of said passageways;

flexible impermeable curtain means for lying against said inclined face in sealing engagement therewith, said curtain means having a first side attached to said inclined face of said orifice block at a point nearest said valve outlet, and a second side opposite said first side; and

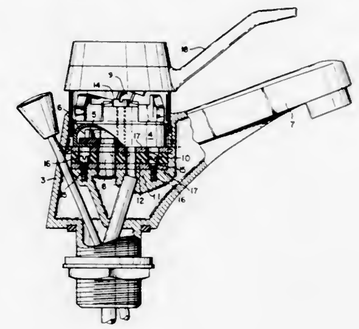
valve actuation means including first means extending into said body cavity and reciprocable toward and away from said inclined face from externally of said valve body, and second means connected to said first means and to said second side of said curtain member;

whereby by reciprocation of said first means, said second means is movable to withdraw said curtain means from said inclined face of said orifice block to expose a desired number of said flow passageways for fluid flow through said valve.

3,951,169
SANITARY WATER VALVE

Bernd Loose, Krove, Mosel, Germany, assignor to American Standard Inc., New York, N.Y.

Filed Apr. 19, 1974, Ser. No. 462,288
Int. Cl.² F16K *11/06*
U.S. Cl. 137—625.41 **9 Claims**



1. In a sanitary water faucet having a valve body with control elements formed by two discs, the first disc being stationary and having water inlet openings connected on one side to the valve manifold, and on the other side directed towards the second disc which is movably arranged on the first disc, the second disc having a surface cavity overlapping the inlet openings and an outlet opening formed in the first disc, the improvement comprising elastomeric noise isolating plate means disposed between the first disc and the valve body.

3,951,170
FLUID CONTROL VALVE

Ralph W. Hill, 2163 S. Sandusky, Tulsa, Okla. 74114

Filed Aug. 26, 1974, Ser. No. 500,759
Int. Cl.² F16K *11/07*
U.S. Cl. 137—625.48 **3 Claims**

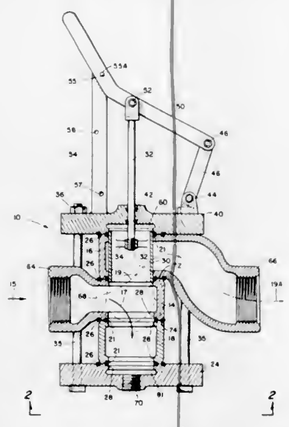
1. A fluid control valve comprising:

at least three flow chambers, each having an upper sealing surface and a paralleled lower sealing surface, having an upper opening in said upper sealing surface and a coaxial lower opening in said lower sealing surface and having an outlet opening spaced from and communicating with said upper and lower openings, said flow chambers being stacked in contiguous relationship whereby the sealing surface of adjacent flow chambers are in sealed engagement and said upper and lower openings are of equal diameter and are in axial alignment providing a valving bore hole through said stacked flow chambers;

an upper plate having a lower sealing surface engaging the upper sealing surface of the uppermost of said stacked flow chambers, said upper plate having an opening therein in alignment with said bore hole of said stacked flow chambers;

a lower plate having a lower sealing surface engaging the lower sealing surface of the lowermost of said stacked flow chambers;

bolts extending from said upper plate and said lower plate externally of said flow chambers to hold said flow chambers and plates in sealed aligned relationship;



a tubular gate means sealably and slidably positioned in said valving bore hole in said stacked flow chambers, the length of the tubular gate being greater than the distance between said upper and lower sealing surfaces of each of said flow chambers;

a valve stem slidably and sealably received in said opening in said upper plate having the lower end secured to said gate and the upper end extending above said upper plate; and

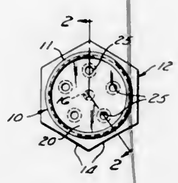
means of axially positioning said valve stem to selectably block any one of said flow chambers.

3,951,171

SELF-PRESSURE REGULATING AIR EJECTOR

Stephen J. Gibel, 5846 Edgerton Road, North Royalton, Ohio 44133

Filed July 15, 1971, Ser. No. 162,784
Int. Cl.² F15D *1/00*
U.S. Cl. 138—42 **7 Claims**



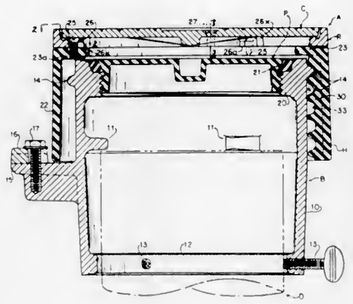
1. A pressure-regulating air ejector comprising a casing, means for connecting said casing to an air supply line, a closure for said casing having an orifice therein for restricting the flow of air from said line through said casing and reducing the pressure of air discharged through said orifice below that at which said air is supplied to said casing, and means adjacent and opposite the discharge outlet of said orifice to create a back-turbulence limiting flow through said orifice which turbulence increases as the flow through said orifice increases.

3,951,172

ADJUSTABLE CLEANOUT PLUMBING FITTING

George J. Flegel, Michigan City, Ind., assignor to Josam Manufacturing Co., Michigan City, Ind.

Filed Nov. 15, 1974, Ser. No. 524,209
Int. Cl.² F16L *55/10*
U.S. Cl. 138—89 **10 Claims**



1. An adjustable plumbing fitting adapted for use as a cleanout or access fitting on a drainage pipe access branch stub and to be set flush with the finish surface of surrounding environment, such as poured concrete, comprising:

a hollow body adapted to make a fluid tight joint with a said pipe stub, and having a body end portion

defining an access opening into the body and bearing on its outer end a removable closure for the access opening, thereby to form a sealed termination of the stub;

said end portion at an outer end thereof having an integral single-turn male thread about its exterior surface; and

a housing assembly including a hollow housing member adjustably threadedly telescoped over and onto said body end portion and bearing on its outboard end a cover removable for access to said closure and to be seated flush in said surface;

said housing member having, threaded on said male thread, an integral multi-turn interrupted female-thread of form and pitch accommodating said male thread,

said interrupted female thread provided by a plurality of at least three integral, multiply-transversely grooved, narrow vertical bar or pilaster-like formations equi-angularly spaced on, and extending over substantially the length of, the interior of the housing member, the grooves of each formation comprising a series of grooves sloped and equi-spaced over the formation length corresponding to, and the series successively offset from formation to formation to correspond to, the male thread pitch,

whereby said housing member is threadedly engaged with the body member for adjustment of the position of said cover relative to the body by rotation of the housing assembly.

3,951,173

METHOD AND APPARATUS FOR SEALING LARGE DIAMETER PIPES

Richard E. Larson, Minnetonka, Minn., assignor to Cherne Industrial, Inc., Edina, Minn.

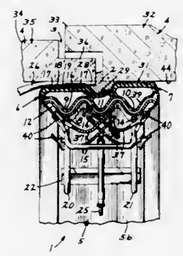
Filed Nov. 8, 1974, Ser. No. 522,303
Int. Cl.² F16L *55/18*
U.S. Cl. 138—97 **3 Claims**

1. An inflatable sealant packer for forcibly packing sealant into voids occurring at the interior surface of pipes, comprising:

a. at least two separate rim sections, each of said rim sections having opposed interior and exterior surfaces which are bounded by opposed ends and opposed lateral edges, said rim sections having an arcuate shape when viewed from the lateral edges;

b. said rim sections being attachable to one another to form an enclosed support rim having a generally circular shape when viewed from the lateral edges of said rim sections, said support rim having an exterior surface;

c. bracing means for fixedly attaching said rim sections to one another in end-to-end relationship to form an enclosed, generally circular support rim thus allowing said support rim to be inserted into the interior of a pipe in



sections and to subsequently be assembled into an enclosed support rim having a diameter greater than the physical dimension of any one support rim section;

d. first and second inflatable outer casings, each of said casings positionable around the exterior of said support rim generally coaxial with said support rim and spaced apart on the exterior rim surface to form an open channel there between which is suitable for positioning adjacent a void in the wall of a pipe which is intended to be filled with a sealant material, when inflated each of said outer casings having a curved contour with a protruding bottom lobe portion which provides a discontinuous surface to the exterior of said outer casing;

e. portion of the surface of each of said outer casings containing tread indentations to abut the interior surface of a pipe adjacent which said outer casing may be positioned, thereby increasing the friction between said outer casing and a pipe interior surface to resist lateral movement of the inflated outer casing when lateral forces act on said outer casing;

f. said upper rim exterior surface being a continuously curved surface, said curved surface defining first and second outer recesses and a third inner recess, each of said recesses having a curved contour to retain therein a portion of the curved contour of said inflatable casings to retard lateral movement of said casings, said inner and outer recesses positioned in side-by-side relationship, each of said inner and outer recesses extending circumferencially around the entire perimeter of said support rim, there being interspaced between each of said outer recesses and said inner recess a curved surface protrusion which serves to partially define said recesses;

g. conduit means in communication with said outer casings for conducting compressed gas from a source of compressed gas into said outer casings to allow the outer casings to be controllably inflated;

h. said outer casings each being inflatable to a size wherein the bottom lobe portion of each casing forcibly abuts the curved surface of said support rim outer recess and wherein the treaded surface portion of each casing forcibly abuts the interior surface of a pipe adjacent which said outer casing may be positioned to thereby create two annular seals between said support rim and a pipe interior surface portion which may be adjacent thereto and providing an open channel between said outer casings;

i. an inflatable inner casing being positionable in said open channel between said outer casings and being at least partially contained within said inner recess, said inner casing occupying only a portion of the depth of said open channel when uninflated, thereby permitting a sealant to be introduced into the unoccupied portion of the open channel;

j. conduit means in communication with said inner casing for conducting compressed gas from a source of compressed gas into said inner casing to allow said inner casing to be controllably inflated;

k. said inner casing being inflatable to a size wherein it fills said open channel between said outer casings, thereby expelling any sealant material which may be present in the open channel into a pipe void which may be positioned adjacent said inner casing;

l. a removable flexible sheet positionable over the portions of said inner and outer casings which are furthest removed from said support rim to prevent adherence to said inner and outer casings of any sealant material which may be injected in the open channel between said outer casings, said flexible sheet removeable and replaceable when contaminated with sealant;

m. means carried by said support rim for removably holding said flexible sheet in place over said inner and outer casings, said means including:

i. a plurality of cable-like members which are connected to said support rim; and

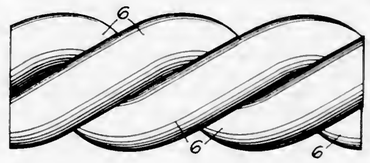
ii. a plurality of securing members connected to said cable-like devices, said securing members being removably attachable to portions of said flexible sheet to hold said flexible sheet in place over said inner and outer casings with respect to said support rim.

3,951,174

TUBE ORIFICE FOR PRESSURE DISPENSING CONTAINER

James E. Conant, P.O. Box 843, Bozeman, Mont. 59715

Continuation of Ser. No. 3,363, Jan. 16, 1970, abandoned. This application Apr. 25, 1972, Ser. No. 247,417
Int. Cl.² F16L *11/02*
U.S. Cl. 138—150 **7 Claims**



1. An elongate substantially tubular device for conducting fluids comprising:

a. a plurality of filaments, not more than four, constructed of substantially smooth impervious and ductile material, said filaments being uniformly and forcedly twisted together along their entire length to close the surface of said filaments to define a single axial passageway therebetween; and

b. a coating of material on the outer exposed surfaces of the twisted filaments, said coating being in sealing contact with the outer surfaces of the filaments throughout their length but not penetrating into said axial passage, and having a smooth cylindrical outer surface means for sealingly fitting into a cylindrical bore.

6. In a fluid dispensing device having a container portion provided with a top having a cylindrical bore through which fluid within the container portion is to be dispensed, the combination of:

a. a plurality of filaments, not more than four, constructed of substantially smooth impervious and ductile material, said filaments being uniformly and forcedly twisted together along their entire length to close the surface of said filaments to define a single axial passageway therebetween; and

b. a coating of material on the outer exposed surfaces of the twisted filaments, said coating being in sealing contact with the outer surfaces of the filaments throughout their length but not penetrating into said axial passage, and having a smooth cylindrical outer surface sealingly fitted into said cylindrical bore of the container portion so as to permit dispensing of said fluid through said axial passageway.

3,951,175

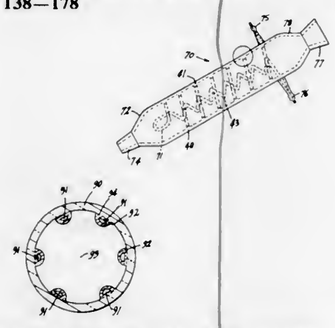
EXTERNAL INTERNAL CHANNELS IN GLASS TUBING

Wolfgang R. Eberhart, 1115 Jarvis St., Windsor, Ontario, Canada

Division of Ser. No. 288,971, Sept. 14, 1972, Pat. No. 3,837,830. This application Apr. 5, 1974, Ser. No. 458,097

Int. Cl.² F16L *9/10*

U.S. Cl. 138—178 **8 Claims**



1. The article of manufacture which comprises:

a. a first larger rounded wall tube of glass open at both ends; and

b. at least one second rounded wall smaller tube of glass having an internal channel and wherein an outside length of the wall of the second smaller tube is integrally fused as a fusion band along an inside length of the wall of the first larger tube, such that the fusion band has a thickness which is the sum of a cross-sectional thickness of the walls of the tubes and the first larger tube wall is at least about 1.5 mm. thick and the fusion band width is defined by an arcuate portion of the inside wall of the first larger tube without going around the circumference of the larger tube so as to form a ring seal between the tubes, the glass having a high softening temperature above about 500° C and being plastic for working without being fluid, and wherein the fusion band between the inside length of the first larger tube and the outside length of the second smaller tube is produced while heating the outside of the first larger tube to soften the tubes and while applying a reduced pressure inside the first larger tube.

3,951,176

HOOK CONNECTING APPARATUS IN A CHAIN DISC-TYPE DOBBY MACHINE

Akira Koyama, Nagoya, Japan, assignor to Yamada Dobby Co., Ltd., Nagoya, Japan

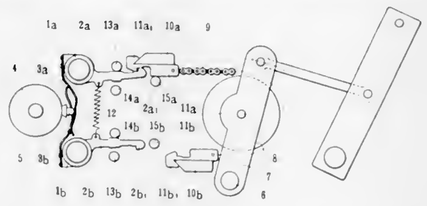
Filed Dec. 31, 1974, Ser. No. 537,740

Claims priority, application Japan, Jan. 9, 1974, 49-6241

Int. Cl.² D03D *1/06*

U.S. Cl. 139—68 **9 Claims**

1. A hook connecting apparatus of the chain disc-type as used in a compound dobby machine, comprising pivotally mounted supporting hooks, biasing means biasing said supporting hooks for pivotal movement in one rotational direction, reciprocally mounted hooks adapted to engage said supporting hooks, elongated flexible instruction receiving members each having one end portion secured to said supporting hook and an opposite end portion projecting from said supporting hook to thereby define a unitized pivotal structure having a flexible projection, and instruction means operable to engage said flexible projection of said flexible instruction



receiving members to effect rotation of said supporting hooks in a direction opposite to said one rotational direction, said supporting hooks being biased in said opposite rotational direction by the engagement of said flexible instruction receiving members with said instruction means such that said flexible instruction receiving members are thereby operable to effect a biasing connection between said supporting hooks and said reciprocally mounted hooks.

3,951,177

DEVICES FOR FOLDING INTO THE WARP SHED BOTH ENDS OF A WEFT THREAD IN A FABRIC MADE BY A SHUTTLELESS LOOM HAVING A CONTINUOUS WEFT SUPPLY MECHANISM

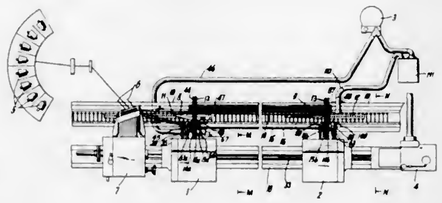
Nicola Santucci, Schio, Italy, assignor to Nuovo Pignone S.p.A., Florence, Italy

Filed Nov. 6, 1974, Ser. No. 521,527

Claims priority, application Italy, Nov. 6, 1973, 30955/73

Int. Cl.² D03D *47/48, 47/38*

U.S. Cl. 139—431 **5 Claims**



1. In a shuttleless loom having a continuous weft-supply mechanism, wherein the different weft threads are supplied by bobbins mounted outside the shed, said weft threads being presented by a weft selecting mechanism and remaining attached to the edge of the formed fabric to form a mingling of threads, means for cutting said weft threads only after they have been introduced into the shed by a thread carrier moving on the sley of the loom, wherein the movement comprises a device for folding both ends of a weft thread into the shed formed by the warp threads, said device having a first moveable pneumatic suction hose on one side of the loom, where the weft threads are attached to the fabric, for retaining the cut weft end of the thread extending from the fabric when said end is released from the mingling; first means operatively coupled to said hose for moving the hose in a plane perpendicular to the plane of the fabric and parallel to the warp threads to present the weft end adjacent the shed; a hooked needle; second means for moving said hooked needle in a plane inclined towards the sley relative to the plane of the fabric;

means for coordinating the movements of said first and second moving means such that said cut weft thread end is engaged by said hooked needle and folded into the shed prior to the beating of the weft thread against the fabric fell; a second pneumatic suction hose on the opposite side of the loom for grasping and tensioning the second weft thread end brought through the shed by said carrier; a mechanical clamping means for grasping said second weft thread end after beat-up; third means for moving said clamping means in the plane perpendicular to the plane of the fabric and parallel to the warp threads to present the weft end adjacent the shed; said clamping means including means for cutting said second weft thread end at a pre-determined length; a second hooked needle; fourth means for moving said second hooked needle along a path symmetrical with the first hooked needle; and means for coordinating the movement of said third and fourth moving means such that said second hooked needle engages and folds second weft thread end into the next shed.

3,951,178

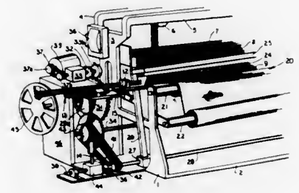
SHUTTLELESS LOOM

James W. Simmons, Jr., Atlanta, Ga., assignor to Cox Foundry and Machine Co., Atlanta, Ga.

Filed Dec. 13, 1974, Ser. No. 532,625

Int. Cl.² D03D *47/00*

U.S. Cl. 139—446 **3 Claims**



1. A shuttleless loom comprising means for sequentially forming warp sheds, fixedly mounted bearing means, a shaft rotatably mounted on said bearing means, lay means pivotally mounted on said shaft for oscillatory movement about the axis thereof and in synchronism with the formation of warp sheds, lay coupling means operably interconnecting said shaft and said lay means for imparting synchronous rotary movement to said shaft relative to oscillatory movement of said lay means, weft inserting means mounted on said lay means and including rotatable elements, and weft coupling means including a gear box mounted on and coupled with said shaft and a second rotatable shaft driven from said gear box and journally related with said lay means for imparting rotary motion to said rotatable elements of said weft inserting means which is in synchronism with oscillation of said lay means and with the formation of warp sheds whereby weft threads are inserted into the sheds.

3,951,179

DEVICE FOR SEVERING A THREAD IN A TEXTILE MACHINE

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Oct. 29, 1974, Ser. No. 518,982

Claims priority, application Switzerland, Nov. 2, 1973, 15421/73

Int. Cl.² D03D *47/36, 45/50*

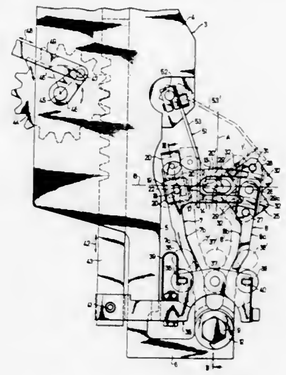
U.S. Cl. 139—302 **19 Claims**

1. A thread severing device for a loom having a drive comprising

an anvil element having a thread supporting surface;

a chisel-like severing element having a cutting edge for abutting against said supporting surface;

a holder supporting at least one of said elements relative to the other of said elements, said one element being pivot-



ally mounted on said holder on an axis parallel to a direction of thread travel across said supporting surface, said holder being adapted for actuation off said drive; and

a power storage means connected to at least said one element to absorb a force of impact of said elements on each other during severing of a thread therebetween.

3,951,180

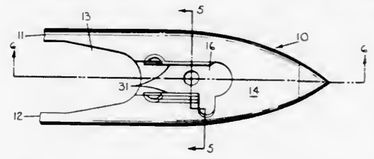
LOOM SHUTTLE

Marcel J. Dupre, Bellingham, and Walter C. Webster, Northbridge, both of Mass., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 19, 1975, Ser. No. 578,468

Int. Cl.² D03J *5/00*

U.S. Cl. 139—196.1 **2 Claims**



1. A shuttle for looms comprising:

a. side and end members defining a bobbin cavity therebetween;

b. a shuttle eye;

c. means defining a cavity in one of said end members to receive said shuttle eye; and

d. elastomeric means contained within said cavity to receive said shuttle eye to provide a cushion fit therefor and to permit said shuttle eye to be interchanged when desired.

3,951,181

CARRIER TAPE FOR SLIDING CLASP FASTENERS

Noritaka Tsubata, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan

Filed Jan. 20, 1975, Ser. No. 542,551

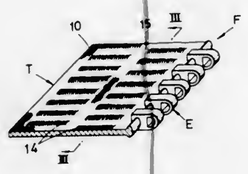
Claims priority, application Japan, Jan. 26, 1974, 49-11564[U]

Int. Cl.² D03D *3/00;* **A44B** *19/02*

U.S. Cl. 139—384 B **2 Claims**

1. A carrier tape for sliding clasp fasteners comprising: a weave foundation consisting of warp and weft threads made of a filamentary plastics material; and a plurality of inlaid threads

interwoven into said foundation and extending longitudinally in parallel with said warp threads, said inlaid threads being greater in thickness than the foundation threads and forming a multiplicity of ridges which project from and above at least one surface of said foundation and which are spaced longitudinally apart by a predetermined pitch substantially corresponding to a length of two teeth of a sewing machine feed dog, said



inlaid threads being arranged to alternately overlie and underlie a plurality of weft threads, said ridges being separated into two groups by a ridge-free region of the foundation, said groups of ridges being disposed for gripping engagement with such feed dog teeth to aid in the movement of the carrier tape thereby, and said ridge-free region being disposed to accommodate the passage of a sewing machine needle.

3,951,182

LOW-MOISTURE REGAIN MEAT SHROUDS

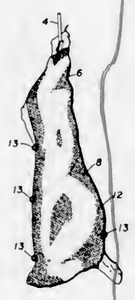
Witold R. Kocay, Creve Coeur, Mo., and James B. Denmark, Decatur, Ala., assignors to Monsanto Company, Decatur, Ala.

Continuation-in-part of Ser. No. 400,870, Sept. 26, 1973, Pat. No. 3,881,525. This application Feb. 24, 1975, Ser. No. 552,572

The portion of the term of this patent subsequent to May 6, 1992, has been disclaimed.

Int. Cl.² D03D *15/00*

U.S. Cl. 139—420 R **13 Claims**



1. Fabric meat shrouds, a major portion of which comprises a continuous filament yarn, a major portion of which comprises a low moisture regain filament, said fibers being otherwise characterized by:

a. a denier of from about 4 to 8;

b. a tenacity of at least about 4 gpd;

said fabric being characterized by:

a. a simulated carcass relative moisture retention capability of not lower than about 1;

b. a skewer strength of at least about 80 lbs. (36,288 g) in at least one direction;

c. a grab strength of at least about 200 lbs. (90,720 g) in both warp and fill direction; and,

d. a fabric moisture absorption of no more than about 70 percent.

3,951,183

FORMING TOOL FOR COIL-END COMPONENTS OF ELECTRIC MACHINES

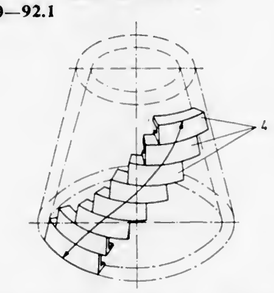
Günter Müller, Birr, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Dec. 27, 1974, Ser. No. 536,899

Claims priority, application Switzerland, Jan. 8, 1974, 167/74

Int. Cl.² B21F *1/00*

U.S. Cl. 140—92.1 **5 Claims**



1. A forming tool for use in shaping coil conductor ends to an involute configuration comprising an assembly of progressively different diametered ring segments of a cone, and means correspondingly connecting said ring segments together side-by-side and in a releasable manner to establish an involute surface for shaping the conductor end to the same contour.

3,951,184

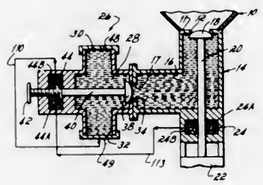
METHOD OF FILLING, SAMPLING AND SEALING AN ASEPTIC TANK WITH STERILE PRODUCT WITHOUT DESTROYING ASEPSIS OF EITHER THE STERILE PRODUCT OR THE TANK AND ITS ASSOCIATED VALVES AND FITTINGS

Steve A. Rechtsteiner, Cincinnati, Ohio; Philip E. Nelson, and John R. Heron, both of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Aug. 12, 1974, Ser. No. 496,654

Int. Cl.² B65B *3/04*

U.S. Cl. 141—1 R **8 Claims**



1. A method of aseptically sealing, sampling and filling an aseptic storage tank with sterile product comprising the steps of:

the tank having an opening to which are series-connected first and second aseptic valves,

closing the first valve to seal the tank interior from the cavity of the first valve to which the tank opening is connected,

filling with liquid chemical sterilant valve-closure cavities of the first and second aseptic valves which are connected in series with the opening in the aseptic tank to sterilize and establish first and second aseptic barriers between the tank opening and the environment, the second valve having at least one additional port not directly connected to said first valve,

closing the second valve to seal the second valve cavity from the first valve cavity, to establish an aseptic chemical block between the environment and said tank,

sealing said at least one additional port of said second valve to seal said second valve cavity from the environment,

disconnecting the second valve from the first valve and allowing the first cavity to drain of chemical sterilant,

connecting a third aseptic valve having a valve-closure cavity to said first valve and a fourth aseptic valve having a valve-closure cavity to said third valve,

filling the first, third and fourth valve-closure cavities of said first, third and fourth valves with liquid chemical sterilant to sterilize said valve cavities,

closing said third valve to seal the first valve cavity to establish a sealed chemical sterilant barrier between said tank opening and the environment,

connecting a fifth aseptic valve to said fourth valve via a sample port in said fifth valve which is normally sealed by said fourth valve, said fifth valve having a valve closure element establishing alternate liquid flow paths including (a) a first path between the environment and said sample port connecting to the fourth valve cavity, and (b) a second path between a sample container and the sample port connecting to said fourth valve cavity,

introducing liquid chemical sterilant into the first flow path of said fifth valve to sterilize the sample port connecting to said fourth valve cavity,

feeding sterile product into said third cavity,

opening said first and third valves to permit said tank to fill with product via said first valve and tank opening,

operating the valve closure of said fifth valve to establish said second flow path, and opening said fourth valve, which normally seals said fourth valve cavity from said fifth valve flow paths, to permit product to flow into said sample container via said second flow path, whereby a product sample is obtained while the previously sealed and empty aseptic tank is being filled.

3,951,185

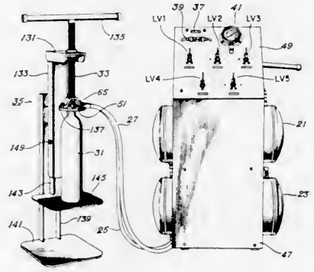
HYDROSTATIC TESTER FOR FIRE EXTINGUISHER

James C. Bower, Grapevine, and Sidney V. Roach, Fort Worth, both of Tex., assignors to Pyronauts, Inc., Fort Worth, Tex.

Filed May 28, 1974, Ser. No. 473,374

Int. Cl.² B65B *55/18*

U.S. Cl. 141—1 R **26 Claims**



1. A closed system for cleaning and pressure testing and drying a container adapted to contain a fluid under pressure and having an opening leading to its interior comprising:

two tanks for holding a volume of liquid less than a total volume of said two tanks and which liquid has good cleaning characteristics, vaporizes rapidly, and is nonflammable,

a liquid disposed in at least one of said two tanks; said liquid being nonflammable, having good cleaning characteristics for cleaning said container automatically when flowed thereinto for said pressure test, and vaporizing rapidly so as to dry said container rapidly and automatically when exposed to a gaseous fluid and ambient conditions following a pressure test,

first and second conduits having first ends adapted to be coupled in fluid communication with the interior of said container to be cleaned, pressure tested and dried, by way of its opening,

a first pair of flow lines comprising two lines separately coupled to the top ends of said two tanks,

first flow control means for separately coupling said first conduit with either of said lines of said first pair,

a second pair of flow lines comprising two lines separately coupled to the bottom ends of said two tanks,

second flow control means for separately coupling said second conduit with either of said lines of said second pair of flow lines,

means for effecting the flow of said liquid from one of either of said two tanks, by way of said second flow control means, to said container and from said container, by way of said first flow control means, to the other of said two tanks, said means for effecting the flow of said liquid being connected with at least one of said tanks,

means for pressurizing said container when filled with said liquid, and

pressure gauge means for indicating when a predetermined pressure has been achieved within said container, and

said means for pressurizing and said pressure gauge means being fluidly connnected with the interior of said container when said first and second conduits are coupled in fluid communication therewith during the pressure test thereof.

3,951,186

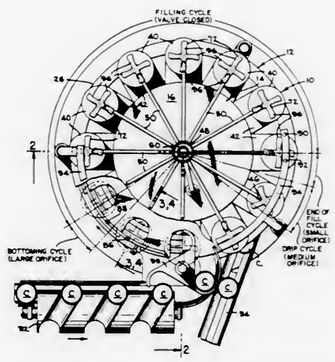
GAS FLUSHING SYSTEM FOR BEVERAGE FILLER

Samuel A. Mencacci, Saratoga, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed May 17, 1974, Ser. No. 471,093

Int. Cl.² B65B *31/00*

U.S. Cl. 141—5 **2 Claims**



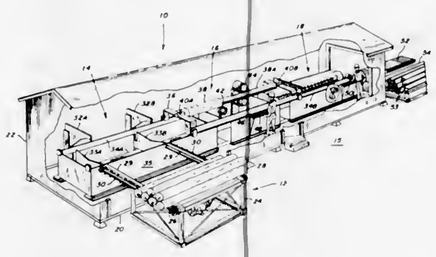
1. A method of filling a container with a liquid and flushing air from the container during the filling process to prevent the contamination of the liquid by the air, comprising the steps of: confining a quantity of liquid within a chamber, moving the chamber into the container to a position near the bottom thereof, releasing a quantity of inert gas into the container at the bottom thereof to cause said gas to flow upwardly to flush air therefrom, opening a filling valve at the bottom of the chamber to initially release the liquid into the container near the bottom thereof, moving the chamber out of the container while releasing the liquid into the container so as to purge therefrom through the upper end of the container the air and inert gas filling the container cavity, and directing a small amount of inert gas into the liquid just prior to the termination of the filling thereof into the container to create a small amount of foam at the liquid surface.

3,951,187

MACHINE TO PREPARE LOGS FOR LOG HOUSES

Finis Lavell Chisum, Rte. 5, Woodcrest Heights, Claremore, Okla. 74017

Filed Apr. 24, 1975, Ser. No. 571,373
Int. Cl.² B27C *1/08, 1/00*
U.S. Cl. 144—1 R **21 Claims**



1. A machine for the machining of logs, comprising:

a. longitudinal frame means and carriage means movable along the top of said frame means, said carriage means, including:

coaxial rotatable spaced center means for supporting a rough log at its ends;

b. log positioning means at a first end of said frame for positioning a rough log in said carriage centers, with the axis of said log coaxial with said centers;

c. means to move said carriage and rough log along said frame means toward the second end of said frame, and means for rotating said rough log;

d. at least one rotating cutter means supported by said frame means adjacent the path of said log, whereby as said log rotates, said cutter will cut away bark and wood until the log is a cylindrical semi-finished log;

e. two cutter means on self-centering means, one above and one below said semi-finished log in said carriage, said cutters adapted to cut at least one tongue along the top, and at least one groove along the bottom of said semi-finished log as the carriage carrying said semi-finished log is traversed past said two cutter means, while said semi-finished log is held rigid in said centers, whereby a nearly-finished log is provided;

f. vertically adjustable table means near the second end of said frame for supporting said nearly-finished log while the centers holding it to said carriage means are released; and means to clamp said nearly-finished log to said table means; and

g. means for lowering said table means so that said table and clamped log can be lowered below the level of said carriage, whereby said carriage can be moved to said first end.

18. The method of machining a rough log to form a finished log for building log buildings, comprising:

a. supporting a rough log with its axis horizontal and at a selected elevation;

b. clamping said rough log in centers in a carriage surrounding said log, said centers at the ends of the axis of said log;

c. rotating said log in said centers while moving said carriage longitudinally in the direction of said axis, while rotating at least one chip cutter spaced from said axis; whereby said log will be cut to a cylindrical surface;

d. holding said log fixed in its centers while moving said carriage longitudinally, while applying a first cutter to the top of said log and a second cutter to the bottom of said log, said cutters equally spaced above and below the axis of said log;

whereby said cutters cut a flat surface on top and bottom of said log, with at least one longitudinal tongue projecting from one surface and a corresponding groove cut into the second surface;

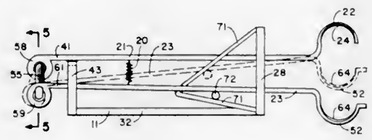
e. raising a table to support said log, while releasing said centers, to free said log from said carriage, and clamping said log to said table.

3,951,188

TREE DE-LIMBER

Kenneth R. Dawson, Rustburg, Va., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed July 28, 1975, Ser. No. 599,455
Int. Cl.² A01G *23/08*
U.S. Cl. 144—2 Z **4 Claims**



1. A device of cutting limbs from a tree trunk comprising a frame structure,

a first arm member fixed to the frame structure to project beyond the frame structure, and

a second arm member slidably mounted to the frame structure with an end projecting beyond the frame structure so as to be oriented adjacent the said projecting end of the first arm member,

the projecting ends of each arm member being formed in a circular arcuate shape about a generally common central point and with an edge of each said arcuate section sharpened so as to cut the limbs from a tree trunk passed through the central section of both arcuate shapes, together with

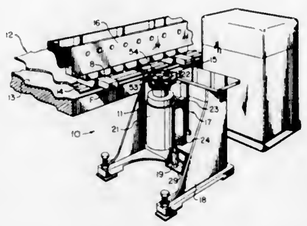
means to force the arcuate sections of both arms towards each other.

3,951,189

APPARATUS FOR INDEXING A CUTTING HEAD

Jeff Y. Cromeens, Mesquite, Tex., assignor to Industrial Woodworking Machine Co., Inc., Garland, Tex.

Filed Oct. 15, 1974, Ser. No. 514,631
Int. Cl.² B27F *1/16*
U.S. Cl. 144—91 **7 Claims**



1. An apparatus for indexing a rotary cutting head into selected cutting positions for engagement with the ends of successively presented work pieces conveyed along a path, comprising:

a support frame for positioning the cutting head adjacent the path of the work pieces;

elongated guide means mounted on the support frame;

means for slidably mounting the cutting head for rectilinear movement on the elongated guide means in parallel relation to the axis of rotation of the cutting head;

actuator means positioned to engage the slidable mounting means and impart reciprocal rectilinear movement to the cutting head between predetermined limits in opposite directions subsequent to each cutting operation; and

means for operating the actuator means in synchronism with the conveyance of successive work pieces.

3,951,190

HEAT-RESISTANT FUEL CELL

Charles A. Suter, Stow, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Continuation-in-part of Ser. No. 215,382, Jan. 4, 1972, abandoned. This application Aug. 16, 1974, Ser. No. 498,153
Int. Cl.² B65D *85/00;* **B64D** *37/02;* **B32B** *1/02*
U.S. Cl. 150—.5 **3 Claims**



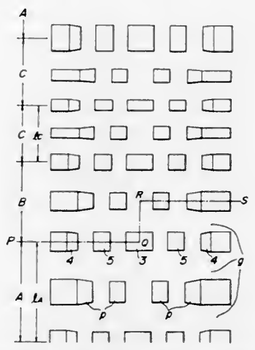
1. A container suitable for use at temperatures up to 350°F. maximum consisting of an innerlayer of polyurethane elastomer of 2 to 30 mils adhered to at least one ply of nitrile rubber coated fabric of polyester, said ply of nitrile rubber being adhered to an inner side of a barrier layer 0.25 to 5 mils thick with a tie coat of nitrile rubber compounded with a phenolic resin, an outer side of said barrier layer being adhered by said tie coat to at least one ply of a nitrile rubber coated polyester fabric, and the nitrile rubber coated fabric being coated on the outside thereof with a coat of polyurethane elastomer, said polyurethane comprising a reaction product of 4,4'-dicyclohexyl methane diisocyanate, and a reactive hydrogen material selected from the class consisting of polyester polyol and polyether polyol.

3,951,191

PNEUMATIC TIRE FOR TRAVEL ON VARIOUS KINDS OF GROUNDS

Masahiko Suzuki, Kodaira, and Yoshiichi Kasahara, Tokorozawa, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Nov. 1, 1974, Ser. No. 520,177
Claims priority, application Japan, Nov. 22, 1973, 48-130668
Int. Cl.² B60C *11/06*
U.S. Cl. 152—209 R **12 Claims**



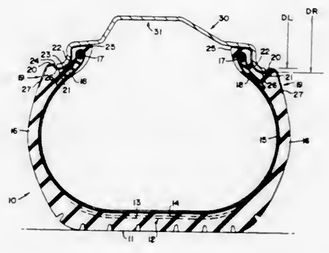
1. A pneumatic tire for two-wheeled vehicles for travel on various kinds of ground, comprising a tread pattern including a number of blocks each separated from adjacent blocks by transverse grooves and a plurality of circumferential grooves and constituting two kinds of block patterns, A and C, one block pattern A having an excellent slip resisting property for travel on muddy ground and block pattern C having a high steering stability for travel on hard ground, said blocks being uniformly arranged over one half of the tire circumference, the amount of tread rubber per unit length which corresponds to at least one tenth of the circumferential length of the tire being substantially uniformly distributed along the overall circumferential length of the tire, said tread patterns A and C being alternately arranged with each other along the overall circumferential length of the tire, and the width of a transverse groove g separating the blocks from each other in the block pattern A measured in the circumferential direction of the tire being made larger than the transverse groove g separating the blocks from each other in the block C.

3,951,192

PNEUMATIC TIRE

James Dennis Gardner, Akron; James Phlip Lawrence, Wadsworth, and Stephen Thomas Griebling, Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jan. 30, 1975, Ser. No. 545,263
Int. Cl.² B60C *17/00, 15/06, 13/00*
U.S. Cl. 152—379 R **5 Claims**



1. In combination, a pneumatic tire and a rim wherein said tire is designed to be mounted on said rim, said tire having a bead latch located in the lower sidewall area of each of its sidewalls, said rim having a drop center portion and two flange portions designed to receive the beads of said tire, said bead latch having a portion which extends axially outwardly and radially inwardly of said rim flange when said tire is mounted on said rim, said bead latch comprising a recessed portion adapted to fit said rim flange having a horizontal wall and a vertical wall, said rim flange contacting said horizontal wall along the entire outer periphery of said rim flange and not contacting said vertical wall when said tire is subjected to normal inflation pressure and load, said rim flange partially contacting said horizontal wall along said rim flange's outer periphery and not contacting said vertical wall when said tire is subjected to normal inflation pressure and not under load, said combination having the diameter of said bead latch less than the outer diameter of said rim flange so that said bead latch engulfs said rim flange when the tire is run uninflated and under load thereby preventing the tire bead from becoming unseated during said run-flat operation.

3,951,193

GROOVE IN THE TREAD OF A TIRE

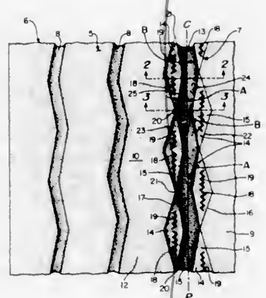
Robert W. Yeager, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 11, 1974, Ser. No. 487,695
Int. Cl.² B60C *11/06*
U.S. Cl. 152—209 R **26 Claims**

22. A tire comprising a tread, a pair of sidewalls extending from the tread and terminating at, at least one pair of beads,

the tread including a pattern of ribs and grooves, at least one circumferential groove comprising:

a. an upper groove portion having a zig-zag configuration; and



b. a lower groove portion spaced from the surface of the tread and having a zig-zag configuration which is opposite that of the upper groove portion, such that the upper groove portion figuratively zigs when the lower groove portion zags.

3,951,194

ANTI-SKID DEVICE

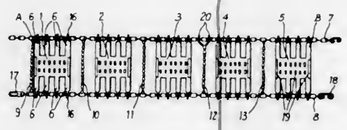
Alain J. M. Bourcier de Carbon de Previnquieres, 6, Boulevard Victor Hugo 06, Nice, France

Filed July 17, 1974, Ser. No. 489,166

Claims priority, application France, July 20, 1973, 73.28094; May 30, 1974, 74.19642

Int. Cl.² B60C *27/00*

U.S. Cl. 152—221 **9 Claims**



1. Anti-skid means for vehicle tires, comprising a plurality of shoes of pliant material adapted to ring each tire and adapted to be held thereon by two lengthwise link chains terminating in hooks, one of which is in contact with the tire outer side wall and the other with the tire inner side wall, arranged as ladder-type skid chains, said shoes being fabricated in one piece and having a ribbed and textured central portion for the tread of the tire and like side pieces, extending from either side of said central portion and embracing the tire side walls, each said side piece terminating in a shackle, interengaged in links of the lengthwise chains and adapted to hold the shoes removably in place, said shackles having a cross-sectional matching clear space in the links of the lengthwise chains and joining the side pieces by a portion of substantially square cross-section, the side of the square being substantially equal to the width of the link opening, said portion having a length at least equal to the thickness of the link, and the shackles being arranged perpendicular to the plane of the side piece.

3,951,195

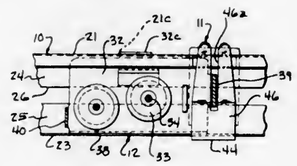
DRAPERY ROD AND BRACKETS

Ferdinand F. Salzmann, Middleton, Wis., assignor to Consolidated Foods Corporation, Chicago, Ill.

Filed May 2, 1975, Ser. No. 574,105

Int. Cl.² A47H *1/10, 5/032*

U.S. Cl. 160—345 **10 Claims**



1. In a traverse rod having top, front and bottom wall portions defining a face wall of generally U-shaped cross section and having upper and lower rear wall portions at the rear side of the rod spaced apart to define a trackway therebetween, at least one master carrier and a plurality of auxiliary drapery carriers mounted in the trackway for movement therealong, a pulley housing having cord guide means therein disposed in the rod, a cord opening in the bottom wall of the rod below the pulley housing, traverse cord means connected to said master slide and extending over said cord guide means and through said cord opening, and a rod support bracket for mounting the rod, the improvement comprising: said top and bottom wall portions of said rod respectively having top and bottom bracket receiving openings in approximate vertical alignment and spaced forwardly from the upper and lower rear wall portions, said rod bracket including a generally U-shaped saddle having a rear leg at the rear side of the rod, a lower leg extending forwardly from the rear leg and underlying the bottom wall of the rod, and a front leg extending from the lower leg upwardly through said bracket receiving opening in the bottom wall portion of the rod and through said rod and into said bracket receiving opening in said top wall portion of said rod, said pulley housing having a generally upright transverse wall extending crosswise of the rod, and said front leg on said bracket having means engaging said upright transverse wall on pulley housing at a location intermediate the top and bottom wall portions of the rod to anchor the pulley housing to the bracket.

3,951,196

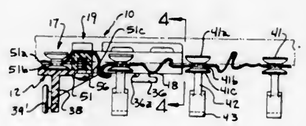
TRAVERSE ROD ASSEMBLY

Ferdinand F. Salzmann, Middleton, Wis., assignor to Consolidated Foods Corporation, Chicago, Ill.

Filed May 19, 1975, Ser. No. 578,920

Int. Cl.² A47H *5/02*

U.S. Cl. 160—345 **10 Claims**



1. A traverse rod assembly for draperies and the like including an elongated rigid rod structure having a downwardly opening carrier channel with inwardly directed flanges along the lower edge of the channel defining spaced carrier guide rails, at least one master carrier having means guidably mounting the same on the rod structure for movement therealong parallel to said carrier channel, said master carrier having at least one master drapery mounting means thereon, traverse cord guide means adjacent opposite ends of the rod, traverse cord means entrained over the traverse cord guide means and connected to the master carrier for moving the same along the rod structure, a string of carriers including a lead carrier at one end of an elongated flexible member and a plurality of auxiliary drapery carriers at preselected spaced locations along the flexible member, the lead and auxiliary carriers each including a rail engaging head shaped to guidably engage said carrier rails and having an upper head portion inside the channel and wider than the space between the guide rails; a neck portion extending downwardly between the guide rails; and a lower head portion wider than the space between the rails and underlying the same, at least the auxiliary drapery carrier having a pendant portion below the channel and auxiliary drapery mounting means on the pendant portion, the rod structure having carrier gate means adjacent at least one end of said guide rails to allow insertion and removal of the rail engaging heads on the lead and auxiliary carriers from the guide rails, said master carrier being constructed and arranged to allow sliding of the lead carrier along the guide rails into a preselected position relative to the master drapery mounting means on the master carrier while the latter is mounted on the rod, and clamp means engageable with the lead carrier and the master carrier when the lead carrier is moved along the guide rails to said preselected position relative to the master drapery mounting means for detachably securing the lead carrier to the master carrier for movement with the latter.

3,951,197

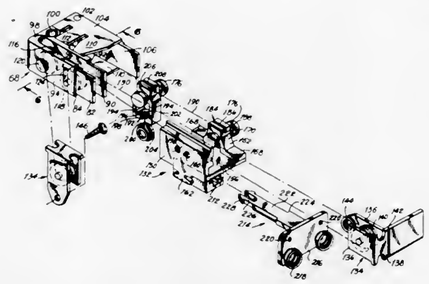
DRAPERY-SUPPORTING SYSTEM AND COMPONENTS THEREOF

Seymour Cohen, Plainview; Norman Klar, Brooklyn, and Alfred Cassell, West Hempstead, all of N.Y., assignors to Master Recessed Systems, Inc., Plainview, N.Y.

Filed Dec. 18, 1973, Ser. No. 425,810

Int. Cl.² A47H *5/032*

U.S. Cl. 160—346 **8 Claims**



1. In a drapery-supporting system, elongated channel means having a hollow interior adapted to be directed downwardly, elongated track means removably carried by said elongated channel means and extending into the hollow interior thereof, said elongated track means having a front longitudinally extending carrier portion formed at its lower region with a longitudinally extending opening adapted to be directed downwardly and a rear cord portion extending longitudinally along said track means behind said carrier portion thereof and having a hollow interior, said track means including a wall separating said front carrier portion from said rear cord portion thereof, a plurality of carrier means situated in said carrier portion of said track means, said track means supporting said plurality of carrier means for free movement longitudinally along said track means and said plurality of carrier means having portions extending downwardly through said opening at said lower region of said carrier portion of said track means, said plurality of carrier means respectively carrying below said track means a plurality of connecting means for connecting drapery portions to said plurality of carrier means to be carried thereby, and said plurality of carrier means including at least one end carrier means which is stationary and situated at the region of one end of said track means and at least one opposed master carrier means which is situated distant from said end carrier means with at least one additional carrier means situated between said master carrier means and said end carrier means, said master carrier means having an extension extending around a lower portion of said track means between said front carrier portion thereof and said rear cord portion thereof, said extension of said master carrier means extending into said cord portion of said track means, a pair of opposed end pulley means carried by said track means at opposed end regions of said elongated cord portion thereof, and elongated flexible cord means extending along said rear cord portion of said track means, around said pulley means, and connected to said extension of said master carrier means said flexible cord means extending downwardly from at least one of said pulley means to be accessible for manipulation, so that an operator may pull said cord means in one direction or the other for moving said master carrier means toward and away from said end carrier means, all of said carrier means respectively including roller members rotatable along said track means in response to movement of said master carrier means toward or away from said end carrier means, so that said plurality of carrier means have rolling contact with said track means, said track means including longitudinally extending limiting portions located closely adjacent to said roller members for limiting movement of said roller members in opposed directions both longitudinally and transversely of axes about which said roller members rotate, whereby said roller members are reliably maintained in engagement with said track means.

3,951,198

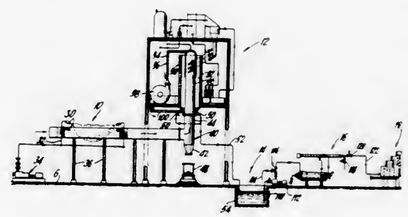
APPARATUS AND METHOD FOR RECOVERING PURE WATER FROM NATURAL SOURCES AND INDUSTRIAL POLLUTED WASTE SOURCES

Sigmund Lance Ross, Brooklyn, N.Y., and Oscar Shuffman, deceased, late of Scarsdale, N.Y., by Rose Shuffman, executrix, assignors to Rose Shuffman, executrix, Scarsdale, N.Y.

Filed Aug. 15, 1972, Ser. No. 280,933

Int. Cl.² F25B *29/00, 43/00;* **B01D** *3/00*

U.S. Cl. 165—65 **6 Claims**



1. Apparatus for purifying industrial waste gases and recovering comparatively pure water comprising, in combination:

in-line condenser means for cooling the waste gases;

gas cleaning means connected to said in-line condenser means and including:

1. a waste gas purifier of the cryogenic type, which purifier has an input connected to the output of the in-line condenser means, and an output, said purifier further including a liquid exhaust means;
2. an insulated jacket spaced from and surrounding said waste gas purifier so as to define a passageway therebetween;
3. waste gas circulating means connected to the output of the waste gas purifier and to the passageway in the vicinity of the input end of the purifier, with the oppo-

site end of the passageway exhausting to the atmosphere;

liquid collection means connected to the liquid exhaust means of the waste gas purifier for collecting the impure liquids produced during the purification of the waste gases;

thermal energy generator means connected to said liquid collection means and operative to produce superheated steam; and

a condensing box connected to the output of the thermal energy generator to produce comparatively pure water.

3,951,199

METHOD AND APPARATUS FOR LOW PRESSURE DIE CASTING

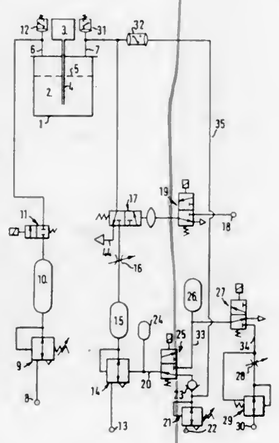
Joseph Augustine Terence Pereira, Shepperton, England, assignor to Soag Machinery Limited, Brentford, England

Filed July 26, 1974, Ser. No. 492,269

Claims priority, application United Kingdom, Aug. 2, 1973, 36724/73

Int. Cl.² B22D *17/32*

U.S. Cl. 164—4 **9 Claims**



1. A method of low pressure die casting of metal in which molten metal in a furnace is forced upwardly into a die through a riser tube depending into the molten metal by gas pressure applied to the surface of the metal from a pressure circuit, wherein changes in the time taken to exhaust the pressure gas from the furnace, on solidification of a casting, after each die filling, due to changes in the level of metal in the furnace, is utilised to produce an incremental change in pressure in the pressure circuit to compensate for said changes in level of the metal between sucessive casting operations.

3,951,200

VAPOR CASTING METHOD AND APPARATUS

Michael J. Paluchniak, and John T. Cummings, both of Downers Grove, Ill., assignors to Industrial Machinery Engineering Corporation, Highland Park, Ill.

Filed Mar. 6, 1975, Ser. No. 555,861

Int. Cl.² B22D *17/00, 27/14*

U.S. Cl. 164—119 **21 Claims**

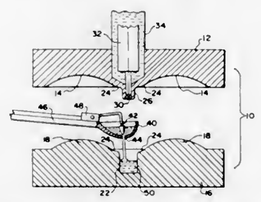
1. A method of die-casting which comprises

A. providing a well in association with a die which connects with the mold means of the die,

B. introducing a predetermined quantity of molten metal into the well to form a body having sufficient volume to fill the mold means and at least a portion of the connection means between the well and the mold means,

C. confining the well and mold means,

D. injecting a predetermined volume of vaporizable material into the body of molten metal below the surface thereof having a volume which when vaporized by the heat of the body of metal will expand and produce sufficient pressure to drive the metal from well into the mold means,



E. permitting the contents of said mold means to solidify and

F. removing the resulting solidified contents from the die.

3,951,201

METHOD OF CASTING OF MOLTEN METALS

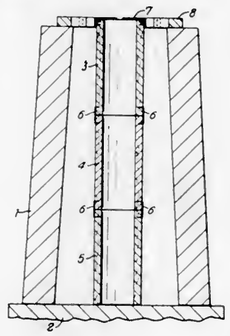
Francois Dunhem, and Andre Hettler, both of Donchery, France, assignors to Foseco International Limited, Birmingham, England

Filed Feb. 28, 1974, Ser. No. 447,053

Claims priority, application United Kingdom, Mar. 7, 1973, 11110/73

Int. Cl.² B22D *27/04, 7/12*

U.S. Cl. 164—123 **10 Claims**



1. A method of casting an ingot which comprises locating in an ingot mould a vertical tube of fibrous heat insulating inorganic silicate material, said tube having a melting point less than the casting temperature of the metal of the ingot, and teeming molten metal into the mould.

3,951,202

AUTOMATIC CASTING MACHINE

Victor O. Anderson, 17250 S. Main, Gardena, Calif. 90247

Filed Apr. 18, 1973, Ser. No. 352,126

Int. Cl.² B22D *17/20*

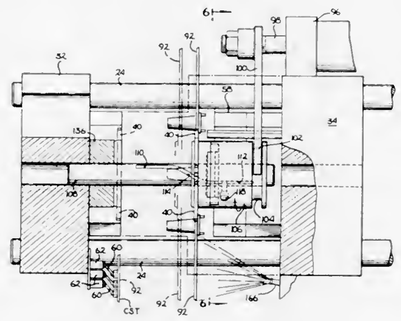
U.S. Cl. 164—262 **17 Claims**

1. For use in die casting and injection molding machines having a stationary platen and a moving platen, an improved indexing mechanism comprising:

a stationary first index means coupled to said stationary platen;

a second index means coupled to said moving platen, said second index means movable between first and second linear positions along the axis of said first index means, said first and second index means being for rotating said second index means through a predetermined angle with respect to said first index means upon the motion of said second index means from said first linear position to said second linear position and back to said first linear position, said second index means having a plurality of equally spaced casting engaging members each for engaging and temporarily retaining a portion of a casting;

a first die member coupled to said stationary platen and a second die member coupled to said moving platen, said first and second die members and each of said casting engaging means being cooperative for forming a closed mold cavity;



a casting spider removal means disposed at a predetermined angle around said first index means from said die members, said castings engaging said casting engaging members so as to be forceably removed therefrom in a direction parallel to the direction of movement of said moving platen, said removal means including a member coupled to said moving platen and disposed to engage said casting adjacent one of said casting engaging members to forceably remove said casting spider therefrom upon closure of the mold.

3,951,203

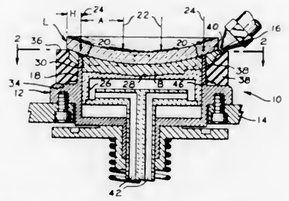
UNIVERSAL LENS BLOCKING FIXTURE

Louis J. Prunier, Charlton, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Dec. 16, 1974, Ser. No. 532,789

Int. Cl.² B22D *19/00*

U.S. Cl. 164—334 **9 Claims**



1. A fixture for blocking lenses comprising:

a cylindrical base;

an upstanding annular lens support on said base terminating with a plurality of circumferentially spaced lens supporting fingers, said support having a hollow interior of a maximum internal diametral dimension which is less than the minimum outer diametral size of a lens to be blocked;

an annular gasket having a hollow interior of a diametral size adjacent a first of its ends adapted to fit snugly but readily removably about said lens support, the hollow interior of said gasket adjacent its opposite second end being at least partially exposed in juxtaposition with said lens supporting fingers as an upper portion of an outer wall of a block casting cavity formed within said fixture when said gasket is fitted upon said annular lens support, the inner diameter of said upper portion being less than the minimum outer diameter of a lens to be blocked, a portion of said lens support beneath said fingers completing said outer wall of said casting cavity; and

means forming a casting cavity bottom within said lens support, said cavity being closed and defined on one side by said lens when placed upon said upstanding support and on all other sides by said gasket and cavity bottom, said gasket further having an open channel adjacent one of its ends forming an inlet to said cavity for use in dispensing a block forming medium thereinto.

3,951,204

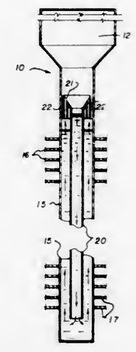
METHOD AND APPARATUS FOR THERMALLY CIRCULATING A LIQUID

Nyle O. Movick, 4600 Macky Way, Boulder, Colo. 80303

Filed July 22, 1974, Ser. No. 490,437

Int. Cl.² F28D *15/00*

U.S. Cl. 165—1 **6 Claims**



6. A method of transferring heat from an elevated location to a lower location, comprising: adding heat to a fluid contained in a stand pipe, ejecting the fluid upward as a result of the addition of the heat, collecting the fluid in another stand pipe, flowing the liquid through the other stand pipe into the first stand pipe at connected lower portions of the stand pipes, extracting heat from the fluid at a lower location, and flowing heat between the fluids in the stand pipes below the heat input means to provide substantial thermal equilibrium between the fluids at such positions.

3,951,205

AIR-CONDITIONING APPARATUS

Andre H. Zilbermann, Dallas, Tex., assignor to Brandt Engineering Co., Dallas, Tex.

Continuation of Ser. No. 281,993, Aug. 18, 1972, abandoned. This application May 28, 1974, Ser. No. 473,557

Int. Cl.² F25B *29/00*

U.S. Cl. 165—16 **16 Claims**

1. Apparatus for controlling the temperature of the air in a volume comprising:

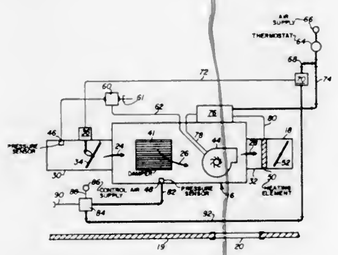
a supply of air,

chamber means having a first inlet means, second inlet means and an outlet, said supply of air being connected to said first inlet means,

first valve means for selectively regulating the flow of supply air into said chamber through said first inlet means,

first control means operatively connected to said first valve means for operating said first valve in response to the temperature of the air in the volume and the difference in static pressure between the air in said chamber means and said volume,

first means connecting said outlet to said volume for transporting air from said chamber to said volume,
said second inlet means being connected to said volume for transporting air from said volume to said chamber,
second valve means for selectively regulating the flow of air through said second inlet means from said volume into said chamber,
pump means for causing air to flow from said chamber through said first connecting means to said volume,



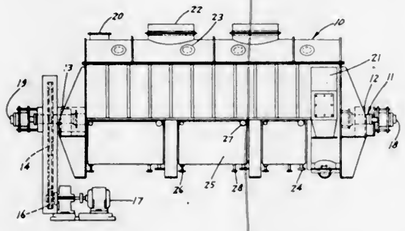
selectively operable air temperature conditioning means for altering the temperature of air flowing from said chamber through said first connecting means to said volume, and
second control means operably connected to said air temperature conditioning means to change the temperature of said air flowing through said first connecting means in response to the temperature of the air in said volume.

3,951,206

ROTARY DISC TYPE HEAT EXCHANGER

Norman E. Williams, St. Paul; David L. Phillips, Fridley; Richard A. Ley, Minneapolis; Bruce Beaubien, St. Paul, and Richard L. Brown, Eagan, all of Minn., assignors to The Strong-Scott Mfg. Co., Minneapolis, Minn.

Filed Aug. 2, 1974, Ser. No. 494,165
Int. Cl.² F28F *5/04*
U.S. Cl. 165—92 **6 Claims**



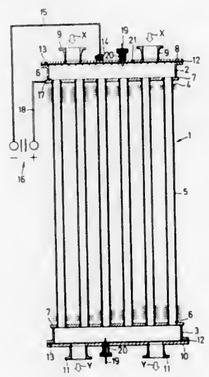
1. Heat exchange apparatus for the treatment of materials, said apparatus comprising:
A. a horizontally disposed housing having a material inlet adjacent one end and a material discharge adjacent the other end,
B. a rotor shaft extending longitudinally through said housing journaled for rotation on a horizontal axis and carrying a plurality of axially spaced apart hollow disc multiple chamber heat exchange elements for rotation therewith within the housing, said rotor shaft including:
1. an axial passage adjacent each end, and
2. a plurality of radial passages extending from said axial passages adjacent to the endmost disc heat exchange elements on said shaft in communication with the endmost chambers of said heat exchange elements,
C. a pair of facing generally parallel closely spaced apart annular plate side walls comprising each heat exchange element and extending generally perpendicular to the rotor axis,
1. the inner peripheral edges of the facing disc side walls of adjacent disc heat exchange elements being dished outwardly through about a **90°** turn and into abutment with each other, and
2. said peripheral edges being secured in sealed relation to a mounting ring surrounding said rotor and spaced outwardly therefrom,
D. an annular partition disposed between each pair of said side walls and generally parallel thereto, said partition being secured to said shaft and dividing said heat exchange element into chambers,
1. the inner peripheral edge of the partition within each disc heat exchange element being dished through about a **90°** turn concentrically with one of said disc side walls to define an arcuate annular unobstructed passage with that disc side wall, and
2. said peripheral edge being secured in sealed relation to said rotor,
E. substantially unobstructed annular passage means within each of said heat exchange elements adjacent the outer peripheral edge of each partition, said passage connecting adjacent chambers on opposite sides of said partitions,
F. substantially unobstructed annular passage means adjacent the inner peripheries of the endmost chambers of said heat exchange elements for introduction of heat exchange fluid to and withdrawal from said chambers and further substantially unobstructed axially spaced annular passage means through said mounting rings adjacent the inner peripheries of each adjacent pair of heat exchange elements on the opposite sides of said partitions, and
G. a plurality of uniformly spaced apart stay-bolt means spaced radially outwardly from the shaft and extending between said side walls and partition of each disc to maintain the walls in fixed rigid spaced apart relation.

3,951,207

HEAT EXCHANGE ARRANGEMENT

Hans Baumann, Essen; Manfred Halfmann, Ravolzhausen, and Rudolf Janke, Hagen-Halden, all of Germany, assignors to GEA Luftkuhlergesellschaft Happpel GmbH & Co. KG, Bochum, Germany

Continuation-in-part of Ser. No. 396,118, Sept. 10, 1973, abandoned. This application Mar. 5, 1974, Ser. No. 448,379
Claims priority, application Germany, Sept. 9, 1972, 2244331
Int. Cl.² F28F *19/02*; **C23F** *13/00*
U.S. Cl. 165—133 **20 Claims**



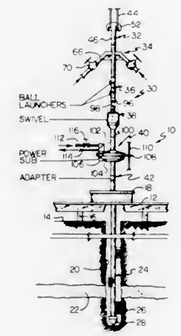
1. A heat exchange arrangement, particularly for use with chemically aggressive fluids such as sulfuric acid and the like, comprising a heat-exchange unit which includes at least one heat-exchange conduit for changing the temperature of a fluid, said heat-exchange conduit being constituted at least in part by metallic material, and said heat-exchange unit further including an electrically conductive cover member which is free of direct electrical contact with said metallic material of said heat-exchange conduit and which is arranged for electrical communication with said metallic material of said heat-exchange conduit through a fluid undergoing temperature change in said heat-exchange unit, said cover member comprising a plurality of electrically conductive ribs arranged to project into said heat-exchange unit; and a direct current source having a positive and a negative terminal, said metallic material of said heat-exchange conduit being connected with one of said terminals and said cover member being connected with the other of said terminals so that said cover member is able to constitute electrode means and provide protection for said metallic material of said heat-exchange conduit against chemical attack by a fluid undergoing temperature change in said heat-exchange unit.

3,951,208

TECHNIQUE FOR CEMENTING WELL BORE CASING

Charles G. Delano, 430 Sharon, Corpus Christi, Tex. 78412

Filed Mar. 19, 1975, Ser. No. 559,887
Int. Cl.² E21B *33/03*
U.S. Cl. 166—78 **5 Claims**



1. Apparatus for cementing a tubular string in a well bore comprising
swivel means having a stationary portion providing a fluid passage having an inlet thereto and means for attaching the swivel means to hoist means, and a rotatable portion including a fluid outlet in communication with the fluid passage;
a power unit having a conduit in communication with the fluid outlet, a torque applier for applying torque to the conduit and thereby rotating the same, means for controlling the torque output of the torque applier, and means for connecting the conduit to the tubular string; and
a sealing element launcher comprising a sealing element container in communication with the stationary fluid passage and means for launching at least one sealing element from the container into the stationary fluid passage.

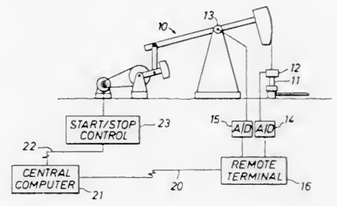
3,951,209

METHOD FOR DETERMINING THE PUMP-OFF OF A WELL

Sam G. Gibbs, Midland, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed June 9, 1975, Ser. No. 584,787
Int. Cl.² E21B *47/00*
U.S. Cl. 166—250 **4 Claims**

1. A method for monitoring a rod pumped well to determine when the well pumps-off comprising:
measuring the load on the rod;
measuring the displacement of the rod in a manner correlatible with the measurement of the load on the rod;



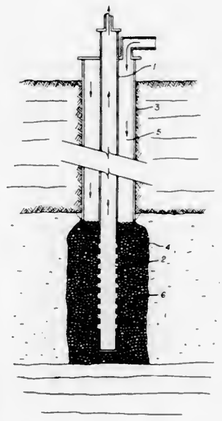
integrating measured load versus displacement to obtain the total power input to the well; and
detecting when the total power falls below a predetermined minimum to determine when the well has pumped-off.

3,951,210

SAND CONTROL METHOD EMPLOYING ASPHALTENES

Ching H. Wu; Alfred Brown, and Daniel T. Konopnicki, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 491,985, July 25, 1974, Pat. No. 3,910,351. This application Feb. 26, 1975, Ser. No. 553,417
Int. Cl.² E21B *43/04*, *43/24*
U.S. Cl. 166—288 **9 Claims**

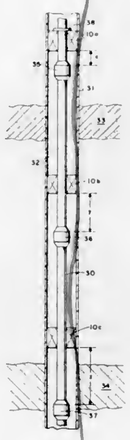


1. A method of treating a subterranean, asphaltic or bituminous petroleum containing formation, which formation contains unconsolidated sand, said formation being penetrated by at least one well in fluid communication with the subterranean formation, for the purpose of forming a sand restraining permeable barrier, comprising
a. introducing asphalt precipitating solvent selected from the group consisting of paraffinic hydrocarbons having from 3 to 10 carbon atoms, furfural, N-methyl-2-pyrrolidone and mixtures thereof; and
b. introducing a heating fluid into the formation to heat the formation contacted by the asphaltic precipitating solvent, to solidify the asphalt on the sand grains, so that a barrier is formed around the well bore.

3,951,211
METHOD FOR SELECTIVELY RETRIEVING A PLURALITY OF WELL PACKERS

Gary Dale Ellis, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed July 31, 1975, Ser. No. 601,121
Int. Cl.² E21B *33/12, 13/124*
U.S. Cl. 166—315 **4 Claims**



4. A method of selectively retrieving one or more of a plurality of packers set in a borehole and having relatively open bore passages therethrough, said method comprising:

lowering into the borehole through the bore passages of said packers a work or production string having located thereon in spaced relationship a retrieval tool for each said packer to be removed;

lowering each said retrieval tool through each said packer to be removed; and,

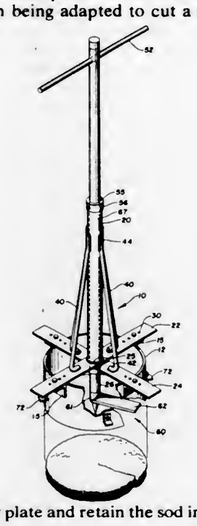
pulling said work or production string out of the borehole while manipulating said string to engage each said retrieval tool with its associated packer thereby unsetting and retrieving each said packer.

3,951,212
SOD CUTTER

Donald E. Hallman, 3333 - 47th Ave. South, Minneapolis, Minn. 55406

Filed Jan. 30, 1975, Ser. No. 545,341
Int. Cl.² A01B *45/04*
U.S. Cl. 172—19 **8 Claims**

1. The sod cutter comprising, an annular plate member having a cutting surface at one edge thereof, the elongated sleeve means mounted on the other edge of the elongated plate member, a shaft positioned through the sleeve means and journaled therein, a handle at one end of said shaft, a cutting blade positioned at the other end of said shaft and extending normal thereto with the blade surface being positioned at an angle to the axis of the shaft, and means for limiting relative movement of the shaft relative to the sleeve means along the axis concentric with the shaft and the sleeve means, said limiting means being included in part in the shaft and in part in the sleeve means, said annular plate being adapted to encircle and sever a peripheral cut of a sod plug upon depression of the plate into the sod and said shaft with the blade thereon being adapted to cut a spiral layer of sod

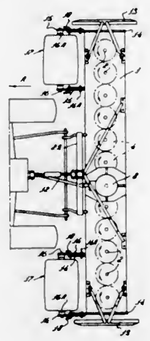


within the annular plate and retain the sod in the annular plate as it is withdrawn.

3,951,213
ROTARY HARROWS

Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Continuation of Ser. No. 350,200, April 11, 1973, abandoned. This application Sept. 30, 1974, Ser. No. 510,164
Claims priority, application Netherlands, Apr. 19, 1972, 7205221
Int. Cl.² A01B *33/06, 65/06*
U.S. Cl. 172—59 **8 Claims**

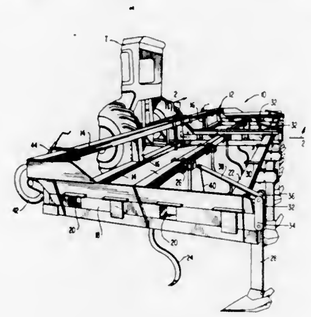


1. A rotary harrow comprising a frame having an elongated frame portion extending transverse to the normal direction of travel and a plurality of rotary soil-working members mounted on upwardly extending shafts in a row, said shafts being supported on said frame portion and drive means connected to the shafts to rotate said soil-working members, a supporting member on arm means being connected to said harrow adjacent each lateral end of the frame portion, said arm means with said supporting member extending forwardly of the front of said portion and providing substantially the sole ground engaging supporting surface of the harrow to control the working depth of said soil working members, said supporting member having a supporting ground engaging surface with a width that at least equals the distance between two adjacent shafts, said arm means including a pair of arms and each supporting member having an outer arm substantially in register with a corresponding lateral end of said frame portion, said supporting member being entirely and directly located in front of said frame portion.

3,951,214
APPARATUS FOR REMOVABLY SUPPORTING FARM TOOL BARS

Vernon Ramsower, Rte. 3, Plainview, Tex. 79072

Continuation-in-part of Ser. No. 332,872, Feb. 15, 1973, abandoned. This application Feb. 7, 1975, Ser. No. 548,090
Int. Cl.² A01B *51/00*
U.S. Cl. 172—274 **16 Claims**



1. In a farm tractor having

a. a **3-point** hitch with

b. means for raising and lowering the hitch,

c. The Improved Structure For Attaching Earthworking Tools Thereto Comprising:

d. a frame

i. extending laterally and

ii. attached to said **3-point** hitch;

e. support arms

i. parallel to one another,

ii. horizontally oriented,

iii. having at least one recessed portion in the upper surface of each support arm,

iv. attached to and extending rearwardly from the frame only, and

v. each arm unimpeded and free of obstructions from the forward edge of the recessed portion rearward,

f. a tool bar unit

i. extending laterally,

ii. having earth working tools attached thereto, and

iii. removably seated in the recessed portion of the support arms; and

g. a locking bar for each support arm

i. pivoted to the front of its support arm,

ii. extending over and locking the tool bar unit securely in the recessed portion, and

iii. latched to the rear of its support bar.

3,951,215
MOBILE DRILLING AND BOLTING MACHINE

Alex J. Galis, 507 Woodland Drive, Morgantown, W. Va. 26505

Filed Nov. 22, 1974, Ser. No. 526,218
Int. Cl.² E21C *11/02, 27/22*
U.S. Cl. 173—23 **10 Claims**

1. A mobile drilling and bolting machine comprising,

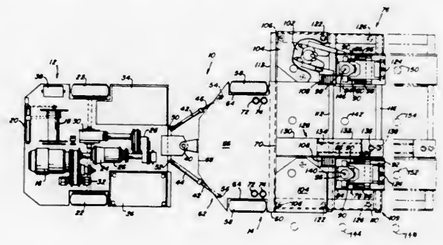
a mobile body portion having a frame portion,

means for propelling said mobile body portion, said propelling means pivotally connected to said mobile body portion,

a drilling assembly positioned for vertical movement on said mobile body portion,

extensible means connected to said mobile body portion and extending forwardly thereof for forwardly advancing a preselected distance said mobile body portion and said drilling assembly,

said extensible means including a telescoping member having a first end portion secured to said mobile body portion and a second end portion movably connected to said first end portion such that said second end portion is extensible relative to said first end portion,



means provided on said telescoping member second end portion for fixedly positioning said second end portion in an extended position such that retraction of said first end portion into said fixed second end portion forwardly advances said mobile body portion and said drilling assembly,

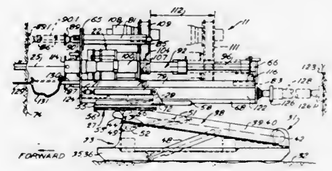
guide means movably positioned on said frame portion for supporting said drilling assembly for transverse movement on said mobile body portion, and

actuating means connecting said guide means to said frame portion for transversely moving said guide means together with said drilling assembly to a preselected position on said mobile body portion.

3,951,216
DIAMOND DRILL SUPPORTING APPARATUS

Richard Crawshay, North Vancouver; John Helmut Hradil, North Delta, and Charles Duncan MacDonald, Delta, all of Canada, assignors to Canadian Mine Services Ltd., Vancouver, Canada

Filed Nov. 8, 1974, Ser. No. 522,035
Int. Cl.² E21B *1/02, 5/00*
U.S. Cl. 173—32 **12 Claims**



1. A feed frame assembly for supporting and feeding a drill head, the drill head having a drill head axis and being adapted to grip and rotate a drill rod about a drill rod axis aligned with the drill head axis, the assembly including:

i. spaced front and rear end members,

ii. longitudinal means extending between the end members to secure the end members rigidly together,

iii. first and second double rod hydraulic feed cylinders extending between the end members, the feed cylinders including:

a. first and second piston rods disposed parallel to the rod axis and having opposite ends, each end being secured

to an adjacent end member, the piston rods having double-acting pistons,

b. first and second hydraulic cylinder bodies cooperating with the respective piston rods and pistons, the bodies being adapted to communicate with a hydraulic power means for moving the cylinder bodies along the respective piston rods, the first cylinder body being journalled for rotation on the first piston rod,

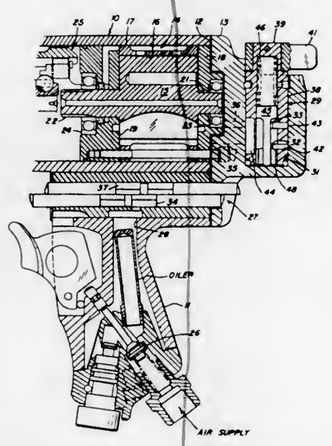
c. first and second drill head mounting means adapted to secure generally opposite sides of the drill head to the first and second cylinder bodies, the first drill head mounting means rigidly connecting the drill head to the first cylinder body to permit swinging of the drill head with the first cylinder body about the first piston rod, the first piston rod thus serving as a hinge pin to permit the drill head axis to be swung away from the drill rod axis to a non-aligned position to provide clearance; the second drill head mounting means including a connecting means adapted to secure releasably the drill head to the second cylinder body so that the drill head and drill rod axes are aligned, so that mutual actuation of the feed cylinders moves the drill head along the piston rods.

3,951,217

IMPACT AIR WRENCH HAVING A TWO POSITION PRESSURE REGULATOR

William K. Wallace, Barneveld, and Arthur E. Lammens, Whitesboro, both of N.Y., assignors to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Sept. 3, 1974, Ser. No. 502,545
Int. Cl.² B23B 45/04
U.S. Cl. 173—169 **3 Claims**



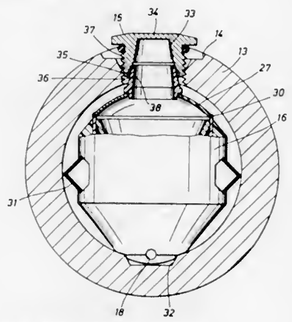
1. A pneumatically powered nut running tool comprising an air driven torque transmitting reversible motor, a throttle valve for admitting supply air to the tool to drive the motor, a reversible valve selectively manipulative to guide air from the throttle valve to drive the motor in either a forward or reverse direction; pressure air regulator means manipulative to a first position for conducting air from the reverse valve at full pressure to the motor, and manipulative to a second position for causing air from the reverse valve to flow at a regulated predetermined reduced pressure to the motor; and a cap closing over a back end of the housing of the tool in which cap the regulator means is housed; wherein a bore in the cap has a first inlet port connected with a forward flow groove of the reverse valve and has a first outlet port connected with a forward directional area of the motor; wherein the bore has a second inlet port connected with a reverse flow groove of the reverse valve and has a second outlet port connected with a reverse directional area of the motor; and the regulator means includes an angularly positionable bushing having a surface cavity registrable in a first position of the bushing to communicate the first inlet port with the first outlet port and registrable in a second position of the bushing to communicate the second inlet port with the second outlet port.

3,951,218

PERFORATING APPARATUS

Charles A. Sjogren, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 11, 1975, Ser. No. 567,457
Int. Cl.² E21B 43/117
U.S. Cl. 175—4.6 **12 Claims**



1. Perforating apparatus comprising:

a hollow carrier having a threaded port in a wall thereof providing access to the interior of said carrier;

perforating means including a shaped explosive charge in said carrier and facing said port; and

means retaining said shaped charge within said carrier in coincidental alignment with said port and including a charge-alignment member engaged with said shaped charge and having a central portion with an opening disposed over the forward end of said shaped charge in coincidental alignment therewith, a port-closure member cooperatively arranged for threaded reception within said port and having a rearwardly-opening recess defining a forwardly-converging tapered wall, and a tubular charge-retainer member having a base portion cooperatively engaged with said charge-alignment member in coincidental alignment with said opening therein and a yieldable nose portion cooperatively sized and arranged to be telescopically received in said recess and deformed inwardly by said tapered recess wall as said port-closure member is threaded into said port for imposing an axially-directed biasing force against said shaped charge before said port-closure member is fully tightened in said port.

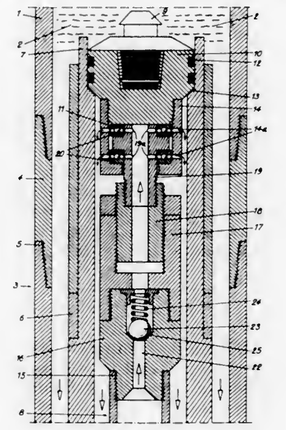
3,951,219

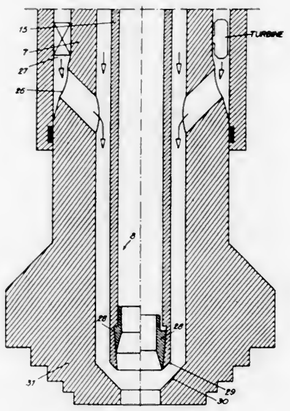
DRILL TOOL COMPRISING A CORE BARREL AND A REMOVABLE CENTRAL PORTION

Abel C. Cortes, Paris Cedex, France, assignor to Compagnie Francaise des Petroles, Paris Cedex, France

Filed Apr. 11, 1974, Ser. No. 459,990
Claims priority, application France, Apr. 17, 1973, 73.13967
Int. Cl.² E21B 3/12, 25/00
U.S. Cl. 175—107 **5 Claims**

1. In a drilling device having a core barrel and a removable central portion of a drilling tool that are interchangeable, and a drive turbine, the improvement comprising: a first bearer tube associated with the central portion of the drilling tool and a second bearer tube associated with the core barrel, a receiver tube revolving within said drilling device, said receiving tube having a seating thereon to hold said first or second bearer tube in a vertical position, sealing means on said bearer tubes and cooperating with said receiver tube for isolating the top ends of said first and second bearer tubes from the injection of drilling mud, said core barrel and the removable central portion of the drilling tool having channels for the circulation of drilling mud at a pressure lower than the pressure of the mud above the sealing means, and friction reducing means for suspending said core barrel inside said receiver tube, said friction reducing means being lubricated by said circulating drilling mud at a pressure lower than the pressure above the sealing means.





3,951,220

ARCHIMEDES SPIRAL DRILL BIT

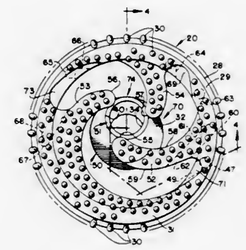
Edwin Leslie Phillips, Jr., and James David Carrigan, both of Odessa, Tex., assignors to Vance Industries, Inc., Odessa, Tex.

Filed Aug. 19, 1974, Ser. No. 498,747
Int. Cl.² E21B 9/16, 9/36
U.S. Cl. 175—393 **17 Claims**

1. A drill bit for borehole forming operations comprising a main body having a pin end for connection into a drill string, and a bit end having surfaces for engaging a formation;

a connector having a flow passageway therethrough, an inlet for said connector eccentrically arranged respective to the main body; said inlet being spaced from said formation engaging surface;

said formation engaging surface being formed of spaced lands each having a free end portion spaced from one another and terminating in close proximity of said inlet; each land being defined by opposed walls which follow a spiral about the inlet and join together to form said free end portion;



said formation engaging surface having a cone-shaped surface arranged concentrically respective to said main body; and,

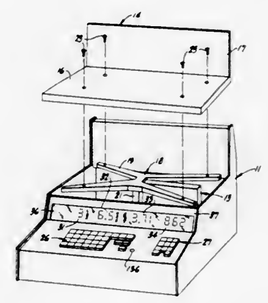
cutting means on said lands for engaging and cutting a formation.

3,951,221

COMPUTING POSTAL SCALE

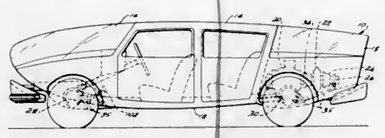
Frank C. Rock, Santa Rosa, Calif., assignor to National Controls, Inc., Santa Rosa, Calif.

Filed Sept. 30, 1974, Ser. No. 510,467
Int. Cl.² G01G 23/22
U.S. Cl. 177—1 **10 Claims**



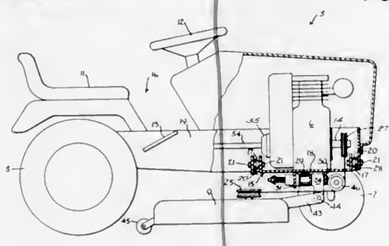
1. In a computing postal scale: a base, at least one load cell mounted on the base and adapted to provide an electrical signal corresponding to the force applied thereto, load receiving means mounted on the load cell and supported thereby, said load receiving means having an area substantially larger than the load cell for receiving objects to be posted, means responsive to the signal from the load cell for providing digital signals representative of the weight of an object received by the load receiving means, means for storing postal rate information in digital form, and means for combining the rate information with the signals representative of weight to provide a signal representative of the cost of sending the object.

3,951,222
LIGHTWEIGHT AUTOMOBILE
Maurice C. Fletcher, 4600 Roxbury Road, Corona Del Mar, Calif. 92625
Filed Dec. 23, 1974, Ser. No. 535,160
Int. Cl.² B60K *26/00*; **B62D** *25/00*
U.S. Cl. 180—1 R **11 Claims**



1. An automobile vehicle comprising a body having an internal framework and a stressed outer shell attached to the framework, the shell having an aerodynamic shape to provide negative lift when moving through air to increase the effective weight, a plurality of wheels partially recessed into the body, independent spring suspension means supporting the body on each of the wheels, means supported inside the body shell for driving and braking the vehicle through the wheels, means associated with each wheel suspension means for independently adjusting the level of the body relative to the ground at each wheel.

3,951,223
TRACTOR VEHICLE STRUCTURAL ARRANGEMENT THAT MINIMIZES VIBRATION
Igor Kamlukin, Mequon, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.
Filed Aug. 20, 1974, Ser. No. 499,085
Int. Cl.² B60K *5/10*
U.S. Cl. 180—11 **9 Claims**



1. A tractor vehicle comprising a front set of wheels, a rear set of wheels, an engine by which the vehicle is propelled and which is mounted substantially over one of said sets of wheels, hitch means for attaching to the vehicle a work performing unit to be propelled thereby, and operator accommodating means enabling an operator to ride on the vehicle and control the same, said tractor vehicle being characterized by:

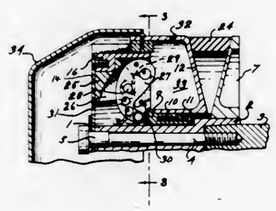
A. first structure comprising

1. a substantially rigid transversely extending member having the wheels of said one set so connected with its opposite ends as to partake of substantially all vibration thereof,
2. a frame member upon which the engine is mounted with its crankshaft axis oriented substantially fore and aft of the vehicle,
3. pivot means providing a connection between said frame member and the transversely extending member that is substantially rigid along and around a vertical axis and a horizontal axis transverse to said crankshaft axis, and which thus constrains said members to swinging motion relative to one another about a pivot axis parallel to that of the crankshaft while transmitting to said transversely extending member certain of the vibration forces generated by the engine, to be carried into the wheels of said one set, and
4. damping means operatively associated with said pivot means for frictionally retarding relative swinging motion of said members about said pivot axis and thus substantially absorbing such of the vibration forces of the engine as tend to induce such swinging motion;

B. second structure connecting the other set of wheels and said operator accommodating means; and

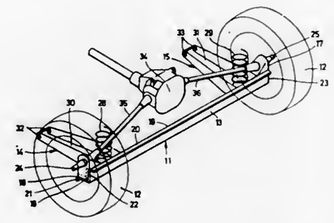
C. a plurality of substantially resilient vibration isolators, each connected between said first structure and said second structure, said vibration isolators being disposed at spaced apart locations such as to cooperate in holding the two structures in generally fixed relation to one another but by their resilience permitting the first structure to make small excursions relative to the second structure in response to vibration forces imposed upon the first structure, thus substantially isolating the operator accommodating means from such forces.

3,951,224
VARIABLE DIAMETER PULLEY (VENTILATING)
Guy Beaudoin, 1238 Chabenel St., Drummondville South, Quebec, and Marcel Vincent, 320 Hebert St., Wickham, Quebec, both of Canada
Filed Jan. 14, 1975, Ser. No. 541,071
Int. Cl.² B60K *11/06*
U.S. Cl. 180—54 A **3 Claims**



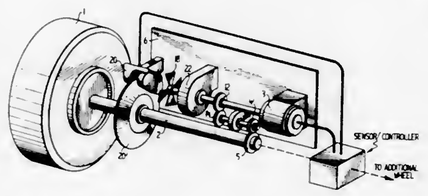
1. In a snowmobile including a chassis, an internal combustion engine having a drive shaft, a hood defining with said chassis a closed space in which said engine is located, and a variable diameter pulley to ventilate said closed space and comprising shaft means connected to said drive shaft and driven by the latter, a first and a second pulley flanges coaxially mounted on said shaft means, said first pulley flange being axially displaceable along said shaft means, a drive device secured to said shaft means for rotation therewith and forming an annular space in cooperation with said first pulley flange and on the opposite side of the latter relative to said second pulley flange, air intake port means and air outlet port means providing external communication with said annular space radially inward and outward respectively, relative to each other and with said air intake means communicating with the exterior of said closed space and said air outlet port means opening within said closed space, and centrifugally responsive members movably supported by said drive device in operative engagement with said first pulley flange for axial displacement of the latter in response to centrifugal action on said centrifugally responsive members, and the latter forming vanes radially projecting in said annular space and inducing air flow inwardly through said air intake port means and outwardly through said air outlet port means upon rotation of said drive device.

3,951,225
TORSION AXLE FOR MOTOR VEHICLES
Kurt Schwenk, Rontgenstr. 56, 318 Wolfsburg, Germany
Continuation of Ser. No. 96,794, Dec. 10, 1970, abandoned. This application Oct. 12, 1972, Ser. No. 298,552
Claims priority, application Germany, Dec. 12, 1969, 1962276
Int. Cl.² B60G *11/50*
U.S. Cl. 180—73 R **4 Claims**



1. A torsional axle for vehicles, especially motor vehicles, comprising a straight, transversely disposed and rotationally elastic axle element, longitudinal parallel arms rigidly secured to said axle element and spaced a distance from one another, said arms being resistant to bending and being rotationally elastic, carrier elements having wheel pivots for the mounting of wheels thereon, said carrier elements each being welded to said axle element at its opposite cross-sectional end surfaces, said end surfaces each lying perpendicular to the longitudinal axis of said axle element, characterized in that said axle element has such a cross-sectional shape that each of said cross-sectional end surfaces always remain planar during the application of torsional stress on said axle element, whereby any tension stresses between said axle element and said carrier elements are substantially avoided.

3,951,226
SKID-CONTROL SYSTEM
Thomas Holmes, Sutton Coldfield, England, assignor to Dunlop Limited, London, England
Filed Feb. 14, 1972, Ser. No. 226,073
Claims priority, application United Kingdom, Feb. 22, 1971, 5168/71
Int. Cl.² B60T *8/02*
U.S. Cl. 180—82 R **11 Claims**



1. An apparatus for preventing non-rotation of a wheel of a moving vehicle on the ground, said vehicle being driven by means other than said wheel, comprising:

means for positively driving said wheel up to a first predetermined speed of rotation thereof;

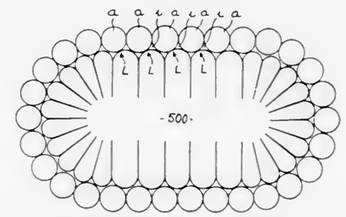
means for disengaging said driving means when the rotational speed of said wheel is above said first predetermined speed;

brake means coupled to said wheel for engagement therewith; and

means for sensing when the speed of rotation of said wheel falls below a second predetermined speed lower than said first speed of rotation, said sensing means being coupled to said brake means for releasing said brake means when said second predetermined speed is sensed;

wherein said sensing means is further coupled to said driving means for re-engaging said driving means with said wheel to drive said wheel up to said first predetermined speed, said sensing means thereafter sensing said first predetermined speed to disengage said driving means from said wheel.

3,951,227
GROUND-EFFECT VEHICLES
André Lafont, Paris, France, assignor to Societe d'Etudes et de Developpement des Aeroglisseurs Marins, Terrestres et Amphibies S.E.D.A.M., Paris, France
Filed Dec. 26, 1974, Ser. No. 536,522
Claims priority, application France, Jan. 4, 1974, 74.00247
Int. Cl.² B60V *1/16*
U.S. Cl. 180—121 **7 Claims**



1. An air-cushion vehicle comprising:

a platform,

an internal skirt assembly carried by said platform and defining a central air-cushion space, said internal skirt assembly being formed by a plurality of adjacent lobe-like skirts, and

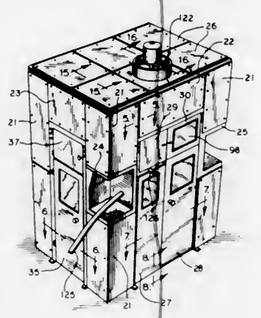
a peripheral skirt assembly defining a peripheral air-cushion space, said peripheral skirt assembly being formed by a plurality of separate tubular skirts each having a closed cross-sectional shape,

each skirt of said peripheral skirt assembly being in contact with two adjacent skirts of said peripheral skirt assembly and also in contact with two adjacent lobe-like skirts of said internal skirt assembly.

3,951,228
NOISE REDUCTION ENCLOSURE FOR A MACHINE
Albert C. Schnell, Hickory Hills, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Jan. 6, 1975, Ser. No. 538,908
Int. Cl.² E04B *1/99*
U.S. Cl. 181—33 K **19 Claims**

1. A noise reduction enclosure for enclosing a sound-producing machine supported on a floor to reduce the noise level in the area surrounding the machine, said enclosure including a plurality of interconnected side walls upstanding from the floor and a ceiling at the upper ends of the side walls, access means including an opening and a door therefor in at least one of the side walls providing access to the interior of the enclosure, said side walls including a plurality of interconnected vertical and horizontal tubular beams and sheet metal panels, vibration absorbing means between the vertical beams and the floor, means floatingly mounting the panels on the beams to inhibit transfer of vibrational energy from the beams to the panels, said ceiling including a plurality of support members connected to said beams and sheet metal panels, said means floatingly mounting said panels on the beams including fasteners and elastomeric isolation means between the fasteners and the panels, means floatingly mounting the panels on the support members to inhibit transfer of vibrational energy from the

support members to the panels, sealing means between the panels and the beams and the support members to inhibit noise transfer between the interior and exterior of the enclosure, sealing means between the panels and the floor to inhibit



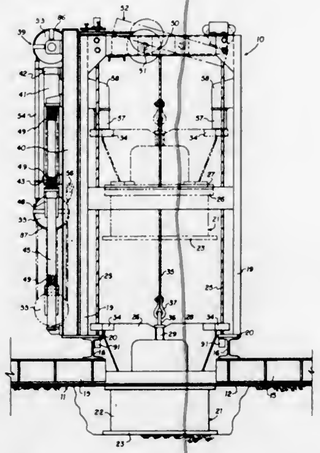
noise transfer between the interior and exterior of the enclosure, and sealing means between the door and opening thereof and the door and floor when the door is in closed position to prevent noise transfer between the interior and the exterior.

3,951,229

METHOD AND APPARATUS FOR IMPARTING A SEISMIC PULSE TO THE EARTH

Clifford D. Dransfield, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 26, 1973, Ser. No. 427,929
Int. Cl.² G01V *1/02*
U.S. Cl. 181—114 **22 Claims**



1. Apparatus for controlling the travel of a seismic gas exploder of the type adapted to apply a downwardly directed pulse to the earth and which is driven upwardly by the resultant reactive force comprising:

a. an upstanding frame within which said seismic gas exploder is adapted to move, and said frame not being unitary with said gas exploder,

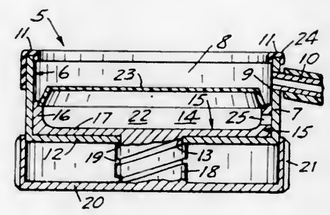
b. means connected between the top and the bottom of said frame for guiding said seismic gas exploder, said means being elastically yieldable in a transverse direction responsive to deviation of said seismic gas exploder from a selected path defined by said guiding means.

3,951,230

MULTI-SOUND CHAMBER STETHOSCOPE

David Littmann, Needham Township, Norfolk County, Mass., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 511,516, Oct. 3, 1974, abandoned. This application Jan. 31, 1975, Ser. No. 545,827
Int. Cl.² A61B *7/02*
U.S. Cl. 181—131 **7 Claims**



1. A stethoscope head comprising a housing having a tubular portion with a central opening, a first end defining a rim adapted for contacting a patient, and an aperture through said housing to said central opening and spaced a predetermined distance from said rim for transmission of sound from said central opening; and

a diaphragm sound chamber disposed within said central opening comprising a rigid wall member with a periphery in sliding engagement within said central opening and defining a cavity opening towards said rim, and a diaphragm on said wall member to cover said cavity opening, said wall member having an aperture therethrough to said cavity for transmission of sound from said cavity spaced from said diaphragm a distance approximately equal to said predetermined distance, said diaphragm sound chamber being slidable between a first position with said apertures in alignment and said diaphragm at said rim and a second position within said housing with said diaphragm spaced from said rim to afford communication between the aperture in said housing and the space between said rim and said diaphragm;

whereby said head may be used as a diaphragm sound chamber by positioning said diaphragm sound chamber at said first position and may be used as a bell sound chamber by positioning said diaphragm sound chamber at said second position.

3,951,231

SEISMIC EXPLORATION

Willie Burt Leonard, 5902 Royalton, Houston, Tex. 77036

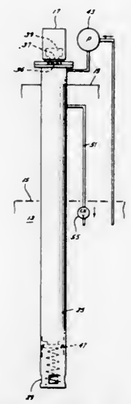
Continuation of Ser. No. 521,966, Nov. 8, 1974, which is a continuation of Ser. No. 338,306, March 5, 1973. This application Dec. 24, 1974, Ser. No. 536,237
Int. Cl.² G01K *10/00*
U.S. Cl. 181—140 **16 Claims**

1. Apparatus for seismic exploration from a boat over a body of water comprising

a seismic generator including a pressure chamber having an outlet and a closure therefore movable between open and closed positions relative to said outlet and providing means to release suddenly a quantity of high pressure gas at the generator's outlet when said closure opens, said generator being adapted for support (above water) from a boat with its outlet above water,

a pipe of low expansibility connected at one end to the generator around the outlet from the pressure chamber thereof and the closure therefor and adapted to extend downwardly from the generator so mounted on the boat to a level below the surface of the water in which the boat floats, and

filling means operative when the generator is supported from a boat with its outlet above water for filling the pipe with water to a level above the surface of the body of water in which the pipe is immersed and adjacent to said outlet, and



fluid passage means at the other end of the pipe for communicating same with the surrounding open water when the generator is mounted on a boat with the pipe extending downwardly to below the surface of the water as foresaid,

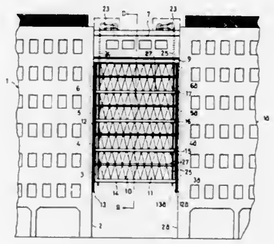
said one end of the pipe being in unrestrained communicating with said pressure chamber when said closure opens, thereby to admit high pressure gas to said one end of the pipe.

3,951,232

MULTIFLOOR-TYPE ESCAPE BRIDGE APPARATUS FOR USE IN MULTISTORY BUILDING

Satoshi Okada, Kashihara, Japan, assignor to Toyo Shutter Co., Ltd., Osaka, Japan

Filed Dec. 4, 1973, Ser. No. 421,738
Claims priority, application Japan, Dec. 5, 1972, 47-121145; May 8, 1973, 48-50289; May 8, 1973, 48-50290; May 8, 1973, 48-53300[U]; June 5, 1973, 48-62568
Int. Cl.² E04G *3/00*
U.S. Cl. 182—84 **14 Claims**



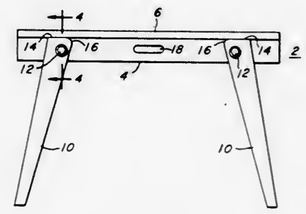
1. A multifloor-type escape bridge for use in adjacent multistory buldings which comprises opposed openings provided at the opposed walls of said adjacent buildings at various levels of said buildings, a supporting body fixedly connected between said buildings at a level at or above the upper opposed openings, a plurality of floor boards or platforms adapted to be suspended from said supporting body so that in its extended state, each of said platforms connect opposed openings of said adjacent buildings, guide rails attached to each building on opposite sides of said openings for guiding said plurality of suspended platforms, an up and down winding mechanism associated with said supporting body or the roof of said buildings, and a plurality of suspension ropes fixed to the bottom of the lower most platform and extending through the intermediate platforms and the supporting body and in operative association with said winding mechanism for lowering and raising said plurality of platforms.

3,951,233

COLLAPSIBLE SAWHORSE

Daniel Meyers, R.D. No. 6, Box 138, Somerset, Pa. 15501

Filed Sept. 22, 1975, Ser. No. 615,217
Int. Cl.² F16M *11/00*
U.S. Cl. 182—155 **5 Claims**



1. A collapsible sawhorse comprising:

a horizontally disposed support member of T-shaped cross section, having a vertical portion and a horizontal portion;

four wedges, attached in opposing pairs to the vertical portion of the support member, with the wider portion of each wedge disposed away from the horizontal portion of the support member;

pivotal connecting means attached to each of the wedges; and

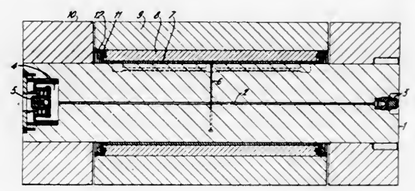
four tapered legs, each of said legs being pivotally attached to one of the wedges by the pivotal connecting means, at a point proximate the wider end of the leg, the wider end of each leg having an arcuate portion and a flat, beveled portion, such that when the marrower end of each leg is pivotally extended away from the support member, the flat, beveled portion of the leg is flush with the horizontal portion of the support member and gives support thereto.

3,951,234

PIN BEARINGS

Noel McNeill Fisher, Kuala Lumpur, Malaysia, assignor to Associated Mines (Malaya) Sendirian Berhad, Kuala Lumpur, Malaysia

Filed Jan. 30, 1975, Ser. No. 545,705
Claims priority, application United Kingdom, Feb. 5, 1974, 5354/74; Feb. 26, 1974, 8698/74
Int. Cl.² F16N *25/02*
U.S. Cl. 184—7 R **16 Claims**



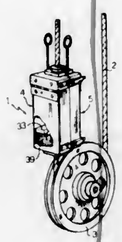
1. A pin bearing lubrication system comprising:

a pin bearing having a bush recessed each end thereof;

a sealing ring disposed in each recess in the bush;

a bearing pin passing through the bush and forming seals with the sealing rings;
a reservoir for lubricant formed in the bearing pin;
a duct formed in the bearing pin connecting the reservoir with bearing surfaces formed between the bush and the bearing pin; and
a diaphragm moveable in and relative to the reservoir biasing means causing reduced volume in the reservoir,
the arrangement being such that the diaphragm is acted upon by the pressure prevailing outside the bearing pin and by said biasing means so as to urge the diaphragm in a direction tending to reduce the volume of the reservoir.

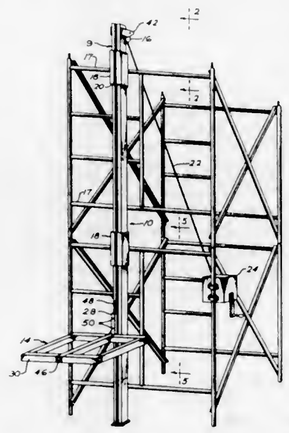
3,951,235
GREASING DEVICE FOR CABLES
Virgilio Acerbi, Via Francesco Crispi 39, La Spezia, Italy
Filed Mar. 26, 1974, Ser. No. 454,881
Claims priority, application Italy, Nov. 12, 1973, 70303/73
Int. Cl.² F16N *11/06*
U.S. Cl. 184—15 R **20 Claims**



1. Apparatus for providing a moving cable with a continuous tubular coating layer of grease of a substantially uniform predetermined thickness, said apparatus comprising:
wall means having walls for defining a grease chamber;
first aperture-defining means defining an aperture at one side of the chamber through which a cable enters the chamber, said first aperture-defining means bounding an annular clearance of predetermined size about the periphery of a cable;
second aperture-defining means defining an aperture at an opposite side of the chamber which is substantially aligned with the aperture at said one side of the chamber and through which a cable leaves the chamber, said second aperture-defining means bounding an annular clearance of predetermined size about the periphery of a cable; and
pressure means comprising a traveling member that presses through a distance continuously grease on in the chamber to force grease against a cable and also to press grease towards the annular clearance bounded by said first aperturedefining means during the passage of a cable through said apertures.

3,951,236
MOUNTABLE HOIST
Raymond H. Schreiber, 3242 Beals Branch Road, and James Lamont Hagan, Jr., 5520 Indian Oaks, both of Louisville, Ky. 40207
Filed Dec. 20, 1974, Ser. No. 534,673
Int. Cl.² B66B *9/18*
U.S. Cl. 187—2 **5 Claims**

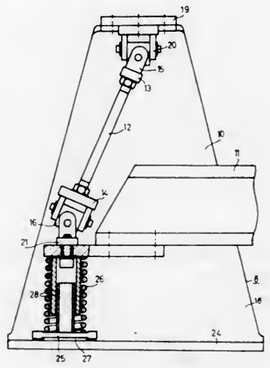
1. A mountable hoist designed to be easily affixed to the outside, and in the alternative, the inside of a scaffolding structure, the hoist comprising:
an outer principal channel member, having a longitudinal slot in one side extending the entire length thereof;
mounting means fitted exterior of said principal channel member, said mounting means including a channel shaped sleeve having a longitudinal slot in one side extending the entire length thereof and a swivel mount attached to said sleeve opposite said slot, said principal channel slot, and said sleeve slot being aligned to provide an opening into the interior of said principal channel;
an inner, secondary channel member of geometry conforming to said outer channel and sized to be movably received within the interior of said outer channel, for free sliding movement in a longitudinal direction relative thereto, said secondary channel also having a longitudinal slot in one side extending from the top at least a portion of the length of one side, said slot containing side of said secondary channel being diametrically opposed to said slot containing side of said principal channel when said principal and said secondary channels are in assembled relationship;
carriage means including a base and an L-shaped support arm, said arm having a vertical standard and being remov-



ably mounted to said secondary channel by mounting means extending through said longitudinal slot in said principal channel, said carriage thereby moving simultaneously with said secondary channel in a longitudinal direction over the entire length of said principal channel, said secondary channel being further described in that it is generally equal in height to said vertical standard;
a pulley means mounted to the principal channel at its upper end;
a tension means cooperable with said pulley means and extensible within said principal channel and attached interiorly of said secondary channel at a point below its uppermost end, said tension means being sized to pass through said slot in said secondary channel to permit said secondary channel to project above the uppermost end of said principal channel;
drive means for applying tension to said tension means to effect movement of said carriage.

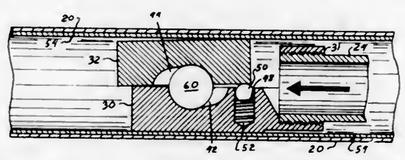
3,951,237
SHOCK ABSORBER
Dieter Noack; Joachim Diekmann; Horst Eggert, and Robert Kugler, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Sept. 19, 1974, Ser. No. 507,561
Claims priority, application Germany, Sept. 21, 1973, 2348135; Apr. 2, 1974, 2416319
Int. Cl.² F16F *7/08*
U.S. Cl. 188—1 B **7 Claims**

1. A shock absorber for absorbing vibrations acting between a first part and a second part of an apparatus such as a high-voltage circuit breaker which is intended to operate at a location where the apparatus can be subjected to vibrations caused by an earthquake or some other source comprising: a first component tightly attachable to the first part; a second component movable with respect to said first component and tightly connectable to the second part of the apparatus; and, a pendulum assembly for connecting said components together, said pendulum assembly including a pendulum member having longitudinal end portions at respective ends thereof; first coupling means for connecting one of said end portions of said pendulum member to said first component so as to enable said pendulum member to move in a wobble-like fashion with respect to said first component; second coupling means for connecting the other end portion of said pendulum



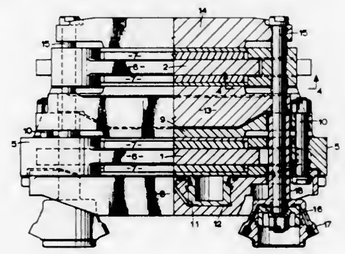
member to said second component so as to enable said pendulum member to move in a wobble-like fashion with respect to said second component; and, friction means disposed between said first component and said second component for absorbing the vibrational movements; each of said coupling means being a universal joint attached to a corresponding one of said end portions of said pendulum member, each of said universal joints including at least two fork members, a linkage head, and pins for pivotally connecting corresponding ones of said fork members to said linkage head, said friction means comprising: friction surface means at the interface of the linkage head and at least one of the fork members in at least one of said universal joints, and spring means for applying pressure at said interface.

3,951,238
LINEAR MOTION ARRESTING DEVICE
Robert K. Dent, Seattle, and Douglas K. DuBuque, Lynnwood, both of Wash., assignors to Tyee Aircarft, Inc., Everett, Wash.
Filed Dec. 16, 1974, Ser. No. 533,285
Int. Cl.² F16D *63/00*; **F16F** *7/08*
U.S. Cl. 188—1 B **8 Claims**



1. A linear motion arresting device comprising a relatively stationary sleeve having a friction reducing, internal, cylindrical bore; a piston slidingly mating said bore and formed of a plurality of piston parts, slidable relative to each other along a plane parallel to the axis of said cylindrical bore and movable radially toward and away from each other, said piston parts, each having an elongated groove, extending generally parallel to the axis of said cylindrical bore and providing therebetween and directly between piston parts, a ball-receiving channel extending generally parallel to the axis of the cylindrical bore in which a ball may travel and extending at an angle thereto with one end portion of each groove extending more radially inwardly of the direction of said cylindrical bore than the other end portion; a metallic ball means mounted for traveling movement in said ball-receiving channel; resilient means urging one of said piston parts radially and into contact with said cylindrical bore; and prime mover means connected with another of said piston parts and moving said other piston part longitudinally of the cylindrical bore and in turn, through said metallic ball, moving said one piston part relatively longitudinally and radially of said cylindrical bore.

3,951,239
PLURAL DISC BRAKE SYSTEMS
Charles Newstead, Walsall, England, assignor to Girling Limited, Birmingham, England
Filed May 30, 1974, Ser. No. 474,775
Claims priority, application United Kingdom, June 5, 1973, 26702/73
Int. Cl.² F16D *55/36*
U.S. Cl. 188—71.5 **3 Claims**



1. A disc brake assembly for a vehicle including first and second axially spaced rotatable discs, each disc having an inner face and an outer face, said inner face of said first disc facing said inner face of said second disc and said outer face of each disc facing outwardly away from the other disc, a first pair of friction pads for engagement with said inner and said outer faces of said first disc, a second pair of friction pads for engagement with said inner and said outer faces of said second disc, first and second fluid-pressure operated actuators for applying said first and second pairs of friction pads to said inner and outer faces of each respective said first and second disc, said first and second actuators being both located adjacent to said outer face of said first disc, a first pair of inner and outer axially movable pressure plates for urging said first pair of friction pads into engagement with said inner and outer faces of said first disc, a second pair of inner and outer axially movable pressure plates for urging said second pair of friction pads into engagement with said inner and outer faces of said second disc, wherein said first actuator comprises at least one hydraulic piston working in a blind bore in said outer pressure plate of said first pair of pressure plates and acting directly on the adjacent friction pad of said first pair to apply it to said outer face of said first disc, and a pair of circumferentially spaced draw-bars couple said last mentioned outer pressure plate to said inner pressure plate of said first pair so that the hydraulic reaction is transmitted to the friction pad for engagement with said inner face of said first disc, and wherein said second actuator comprises a pair of circumferentially spaced hydraulic cylinders, a piston working in each hydraulic cylinder, a tubular portion carried by each cylinder and acting on said inner pressure plate of said second pair to apply an adjacent friction pad to said inner face of said second disc, and a draw-bar guided through each tubular portion and through which said last mentioned piston acts on said outer pressure

plate of said second pair to apply the other friction pad of said second pair to said outer face of said second disc, all said pressure plates lying on a common chord, and said inner plates of both pairs being interdigitated.

3,951,240

FRICTIONAL DISC ARRANGEMENT FOR A DISC BRAKE

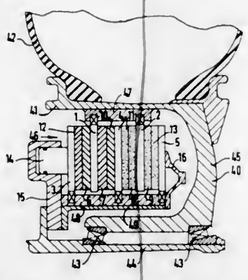
Frederick S. Dowell, and Benedict P. Healy, both of Coventry, England, assignors to Dunlop Limited, Birmingham, England

Continuation-in-part of Ser. No. 293,937, Oct. 2, 1972, abandoned. This application June 18, 1974, Ser. No. 480,415

Claims priority, application United Kingdom, Oct. 7, 1971, 46582/71

Int. Cl.² F16D *55/40*

U.S. Cl. 188—71.5 **4 Claims**



1. An aircraft disc brake comprising a pack of interleaved rotor and stator elements located within an aircraft wheel, the wheel having a rim which is closed at one end by a hub and which is open at its other end, a reaction member at the end of the disc pack nearer the wheel hub and a brake actuating thrust member at the end of the disc pack nearer the open end of the wheel rim for urging the pack against the reaction member to thereby urge the rotor and stator elements into frictional engagement with one another to apply the brake, the pack including friction surfaces of both a plurality of iron-based friction pairs, and a plurality of carbon-based friction pairs, all of the iron-based friction pairs being located nearer to the open end of the wheel rim than the carbon-based friction pairs.

3,951,241

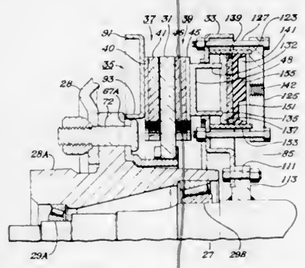
HYDRAULIC DISC BRAKE

Charles L. Baxendale, Burleson, Tex., assignor to Mechanics, Incorporated, Fort Worth, Tex.

Filed Apr. 23, 1975, Ser. No. 570,785

Int. Cl.² F16D *55/10*

U.S. Cl. 188—72.4 **7 Claims**



1. A disc brake assembly for a wheel of a vehicle comprising:

an annular disc means adapted to be coupled to a wheel for rotation with the wheel about its axis,

frame means adapted to be fixedly secured to the vehicle and including inner and outer housing means adapted to be located on opposite sides of said disc means with said outer housing means located on the outer side of said disc means and said inner housing means located on the inner side of said disc means,

brake shoe means adapted to be movably supported between said disc means and at least one of said housing means,

at least two spaced cylinders supported by said one housing means,

each cylinder having a forward end and a rear end with a fluid passage formed through its rear end,

piston means slidably located in each cylinder and having a portion extending through said forward end of its associated cylinder for moving said brake shoe means into engagement with said disc means,

means for admitting fluid under pressure to said cylinders through said fluid passages to move said piston means and hence said brake shoe means toward said disc means for engaging said brake shoe means with said disc means, and

flexible cup means slidably located in each cylinder between its piston means and its rear end for forming a movable seal between said cup means and the wall of said cylinder,

each cup means comprising:

a forward wall with an annular side wall extending rearward therefrom,

a central hub spaced inward from said annular side wall and extending rearward from said forward wall, and

a plurality of angularly spaced wall support means extending radially between said central hub and said annular side wall.

3,951,242

HYDRAULIC BRAKE FOR HEAVY VEHICLES

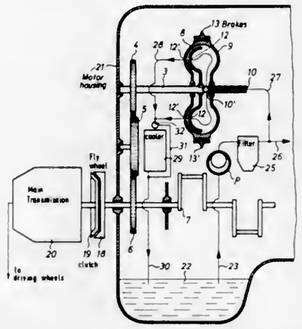
Hans Fischer, Zeiering, Post Bernhaupten, and Julius Liebel, Unterwossen, both of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg AG, Nurnberg, Germany

Continuation-in-part of Ser. No. 196,825, Nov. 4, 1971, abandoned. This application Nov. 21, 1974, Ser. No. 525,971

Claims priority, application Germany, Nov. 14, 1968, 1808798

Int. Cl.² F16D *57/02*

U.S. Cl. 188—296 **3 Claims**



1. In combination with a vehicle motor having a motor housing, a crankshaft, a reservoir for receiving and containing a liquid lubricant, and liquid lubricant circulating circuit means comprising oil pump means and communicating with said reservoir for circulating liquid lubricant to and through parts of said motor to be lubricated: a permanent brake which includes: a fluid-operable braking unit within said motor housing and interposed within said lubricant circulating circuit means and supplied by said pump means so as to be continuously and completely filled with liquid lubricant during operation of said motor; said braking unit comprising auxiliary shaft means, means operable to drivingly connect said crankshaft to said auxiliary shaft means for driving the latter, said braking unit having a pump wheel keyed to said auxiliary shaft means so as to be rotatable therewith, and follower means freely and substantially in a load-free manner rotatable about the axis of said auxiliary shaft means by lubricant in said braking unit in response to the rotation of said pump wheel; and friction brake means associated with said follower means and operable selectively to engage and arrest the latter to thereby cause the lubricant in said brake unit to absorb a considerable amount of rotary energy of said pump wheel and thus to impart upon the lubricant circulated through said brake unit and said circuit means a temperature sufficient to keep said motor uniformly warm even during a longer lasting downhill drive of a vehicle equipped with said motor even in winter time weather.

3,951,243

TORQUE LIMITATION DEVICE FOR A DRUM BRAKE

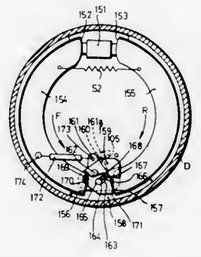
Leslie Cyril Chouings, Holly Croft, Bourton, near Rugby, Warwickshire, England

Filed Feb. 24, 1975, Ser. No. 552,107

Claims priority, application United Kingdom, Feb. 28, 1974, 9197/74

Int. Cl.² F16D *51/20*

U.S. Cl. 188—328 **8 Claims**



1. A drum brake comprising a drum, two shoes mounted within the drum for movement between operative and inoperative positions, spring means biasing the shoes to their inoperative positions, a shoe actuator interposed between adjacent one ends of the two shoes, a shoe abutment and torque limitation means arranged to provide a clearance having a predetermined value when the shoes are in their operative positions and the drum is rotating in one direction and to eliminate or substantially to eliminate said clearance in response to the reactive forces generated by the shoes due to their engagement with the drum when the shoes are in their operative positions and the drum is rotating in the opposite direction thereby producing a lower torque between said drum and said shoes than when said drum is rotating in said one direction so that, when the drum is rotating in said opposite direction, a greater movement apart is required of said one ends of the shoes by said actuator from the positions said ends occupy when the shoes are in their inoperative positions to obtain a given braking torque than is required to obtain said braking torque when the drum is rotating in the one direction and the torque limitation means being arranged so that, with the drum rotating in either of said directions and with the shoes in their operative positions, said reactive force generated by one of the shoes acts to tend to reduce said clearance, the torque limitation means comprising a lever mounted to pivot with respect to a fixed part of the brake and being connected, with the other ends of the shoes, the engagement of the lever with said shoe ends being at different radii about the lever pivot for the two shoe ends, the lever being biased to a rest position which it takes up when the shoes are in their inoperative positions, whereas when the shoes are in their operative positions said reactive forces (1) hold the lever substantially in its rest position when the drum is rotating in said one direction and (2) pivot the lever to eliminate or substantially eliminate the clearance when the drum is rotating in said opposite direction.

3,951,244

CLUTCH RELEASE BEARINGS

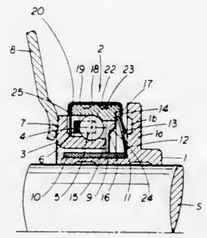
Günter Neder, Schweinfurt, Germany, assignor to SKF Industrial Trading and Development Company, B.V., Amsterdam, Netherlands

Filed Oct. 15, 1973, Ser. No. 406,231

Claims priority, application Germany, Oct. 18, 1972, 38171[U]

Int. Cl.² F16D *23/00*

U.S. Cl. 192—98 **8 Claims**



1. The combination of a sliding clutch actuating sleeve and a selfcentering clutch release bearing having an inner race ring rotatable about said sleeve, a plurality of roller means and an outer race ring, and means fixing said outer race ring with respect to said sleeve comprising an annular groove formed on the inner surface of said outer race ring adjacent one end thereof, and an annular dish-like spring washer secured to said sleeve and having a plurality of spokes radially extending with their outer ends resiliently within said annular groove.

3,951,245

NOISE SUPPRESSOR FOR A GRANULATING MACHINE

Hans Hench, Sr.; Friedrich Hunke, both of Grossostheim, and Kurt Pohan, Freigericht, all of Germany, assignors to Automatik Apparate-Maschinenbau Hans Hench GmbH, Grossostheim, Germany

Filed Aug. 5, 1974, Ser. No. 494,493

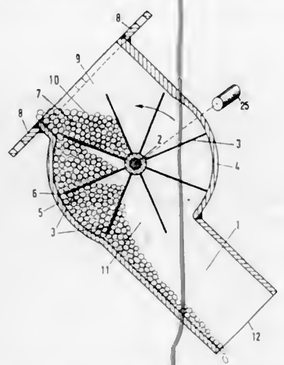
Claims priority, application Germany, Aug. 10, 1973, 2340682

Int. Cl.² B65G *11/20*

U.S. Cl. 193—32 **3 Claims**

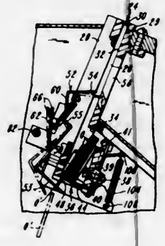
1. A noise reducing device for a granulating apparatus comprising a substantially closed discharge chute adapted to be secured to an output end of said granulating apparatus and flow direction deviating means located in said discharge chute for deviating the flow of granular material from a straight path, said discharge chute comprising a substantially cylindrical chamber at its upper end, said flow direction deviating means comprising a wing wheel having a horizontal axis supported for rotation in said chamber, said wing wheel being located off center in said chamber sufficiently to leave a passage for the granular material between the tips of the wheel wings and the bottom of said chamber, and so that the tips of said wheel pass the top surface of the chamber substantially without clearance, said passage having a height corresponding substantially to the size of the granular material, said passage having a downward inclination in the direction of material flow, and means for driving said wing wheel in a direction to move the granular material downwardly along said passage and with such a speed that a level of granular material is

maintained upstream of said wing wheel as viewed in the direction of material flow, whereby said granular material



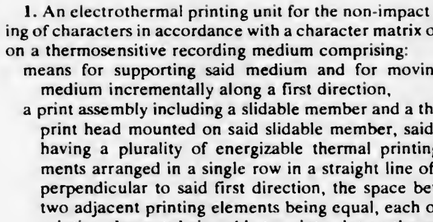
continually blocks direct sound wave propagation through said passage.

3,951,246
CIRCUIT-CLOSING DEVICE ACTUATED BY A PLURALITY OF COINS
Mitchell A. Hall, Fort Thomas, Ky., assignor to Monarch Tool & Manufacturing Company, Covington, Ky.
Filed Feb. 27, 1974, Ser. No. 446,234
Int. Cl.² G07F 5/12
U.S. Cl. 194—9 R **22 Claims**



1. A coin-actuated mechanism of the type requiring a predetermined number of coins to initiate closing of a normally open control circuit, comprising: a plurality of coin chutes each having a coin receptive slot at an upper end thereof and coin intercepting, retaining and accumulating means at a lower end thereof; a trip element associated with each chute and movable from a normal, coin-intercepting position to a non-intercepting position upon being struck by a coin passing through the chute; said coin accumulating means including means to retain and accumulate, on edge, a total of one less than a predetermined number of coins required to operate the trip element associated with the chute, whereby the next coin leaving the lower end of the chute after one coin less than the predetermined number of coins required to operate the trip element have been retained and accumulated in said coin accumulating means, is diverted past said accumulating means and strikes the trip elementt and moves it to its non-intercepting position; normally open switch means operable in response to the movement aforesaid of the trip element to close the switch means, all of the switch means of the plurality of chutes connected in series in said control circuit whereby when the predetermined number of coins required in each chute have been supplied thereto, and all of the series-connected switch means closed, closing of the control circuit is initiated; and reset means operable in response to closing of the control circuit to release all accumulated coins and to reset the trip elements to their coin-intercepting position.

3,951,247
ELECTROTHERMAL PRINTING UNIT
Lucio Montanari, Cascinette (Turin), Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy
Filed Nov. 29, 1974, Ser. No. 527,976
Claims priority, application Italy, Dec. 28, 1973, 70877/73
Int. Cl.² G01D 15/10
U.S. Cl. 197—1 R **7 Claims**



1. An electrothermal printing unit for the non-impact printing of characters in accordance with a character matrix of dots on a thermosensitive recording medium comprising:

means for supporting said medium and for moving the medium incrementally along a first direction,

a print assembly including a slidable member and a thermal print head mounted on said slidable member, said head having a plurality of energizable thermal printing elements arranged in a single row in a straight line of print perpendicular to said first direction, the space between two adjacent printing elements being equal, each of said printing elements being able to print a dot on the recording medium when energized, said slidable member being mounted for movement along said line of print with said elements in contact with the recording medium,

means for transporting said slidable member in an oscillating motion through a plurality of printing strokes along said line of print, the amplitude of each stroke being at least equal to the distance between two adjacent elements,

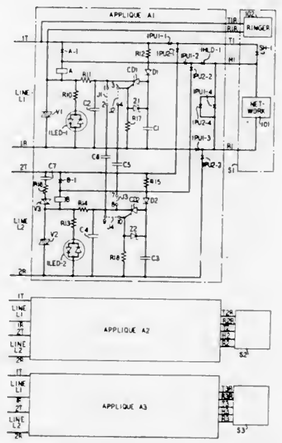
means for storing codes identifying a line of characters to be printed,

means, responsive to said storing means, for selectively energizing said printing elements to print dots on the recording medium in the line of characters configuration during each printing stroke, each of said printing elements being operational to print a portion of a line of dots simultaneously with the printing of other portions of the line by the other printing elements,

means coupled to said slidable member for sensing the position of said slidable member as it moves along said line of print and for enabling said selective energizing means to print dots on said recording medium only when said slidable member is in predetermined positions in its stroke across the medium,

said means for moving the recording medium having means for advancing said medium along said first direction by a predetermined amount after each printing stroke across the medium for positioning said medium to receive another line of dots.

3,951,248
TELEPHONE LINE VISUAL STATUS INDICATION CIRCUIT
Alexander Feiner; Dennis Bryan James, both of Rumson, and James Royce McEowen, Holmdel Township, Monmouth County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 7, 1974, Ser. No. 521,577
Int. Cl.² H04M 3/22
U.S. Cl. 179—81 C **19 Claims**



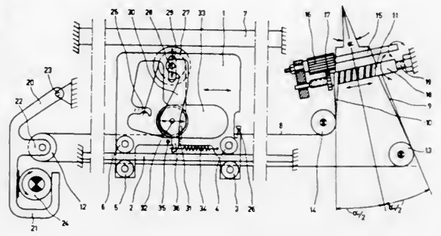
1. In a telephone arrangement where a telephone communication line is extended from a central switching machine to a plurality of physically separated locations, a plurality of idle line indicator circuits each connectable to said line at individual ones of said locations, each said idle line indicator circuit operable for providing a visual indication of the idle status of said line, and each said idle line indicator circuit comprising:

means for detecting the voltage across said communication line, said means operable when said voltage exceeds a preset value, said preset voltage value being the voltage value present when said communication line is idle; and

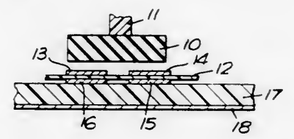
means operable in response to the continued enabling of said detecting means for generating a pulsating voltage level, said means operable from voltage supplied over said communication line and including a light emitting source arranged to turn on and off in response to said pulsating voltage.

3,951,249
DRIVE FOR THE MOVABLE PORTION OF A PRINTER
Dieter Nerbas, and Peter Engler, both of Siegen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 18, 1974, Ser. No. 524,704
Claims priority, application Germany, Nov. 24, 1973, 2358682
Int. Cl.² B41J 19/00
U.S. Cl. 197—82 **5 Claims**

1. A device for driving the movable portion of a printer by means of a tape secured on a drum so as to be capable of being wound around and unwound from the drum, and connected to the movable portion via guide rollers, the drum being driven in one direction of rotation or in the other depending upon a desired direction of movement, wherein said drum comprises a circular cylinder having an axis, and said tape has first and second portions wound around said cylinder arranged as a helix having a given angle such that upon rotation of the cylinder one portion is wound and the other is unwound, and said device comprises two guide rollers each arranged to guide a portion of said tape leading from said helical winding and so disposed that said tape forms an angle with respect to the cylinder equal to half said given angle, and means for mounting said cylinder for rotation about said axis and for axial displacement so as to maintain said angle with respect to the cylinder constant.



3,951,250
CAPACITIVE KEY FOR ELECTRONIC CIRCUIT
Peter Pointon; Ian Robert Prince, and Wolfgang Bial, all of West Molesey, England, assignors to Alphameric Keyboards Limited, England
Filed Apr. 8, 1974, Ser. No. 459,235
Claims priority, application United Kingdom, Apr. 6, 1973, 16644/73; July 17, 1973, 34032/73
Int. Cl.² B41J 5/12; H01H 3/12
U.S. Cl. 197—98 **4 Claims**



1. In a keyboard having keys each carrying a conductive elastomeric striker which striker is movable, by depression of the key, towards conductive elements on a fixed member to effect capacitive coupling therebetween; the improvement comprising the provision, over said conductive elements, of dielectric material coated with conductive material in regions on its upper surface to be directly contacted by the striker, said conductive elements being adjacent to the other surface of the dielectric material, at least one conductive element being located opposite one of said conductive regions.

3,951,251
DOCUMENT POSITIONING MEANS FOR PRINTING APPARATUS
Nicholas V. Zaccagnino, Jr., Stamford, Conn., assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Filed July 31, 1974, Ser. No. 493,399
Int. Cl.² B41J 13/00; G06K 19/06
U.S. Cl. 197—127 R **14 Claims**

1. A document positioning means for a printing apparatus having a print element which prints on a document positioned adjacent thereto comprising

a. a document holder for receiving a document to be printed on positioned therein and transported thereby,

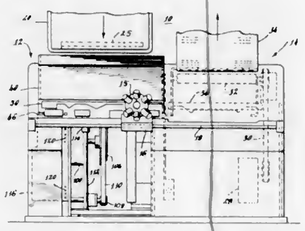
b. drive means coupled to said document holder for providing controlled movement of said document holder containing said document and positioning different lines of the document to be printed upon adjacent the print element,

c. at least one light sensor type element,

d. at least one light source type element,

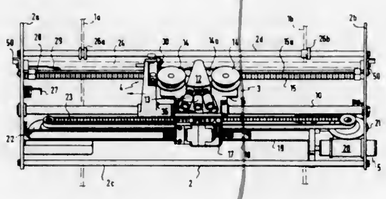
e. a plurality of one type of said elements being in alignment and spaced such that at least one of said one type of

elements is provided for each line to be printed on said document, said at least one light sensor type element and said at least one light source type element being positioned for relative movement with respect to each other in accordance with the relative movement between said document holder and said print element, one of the other type of said elements scanning said plurality of said one type of said elements when said document holder is driven by said drive means,



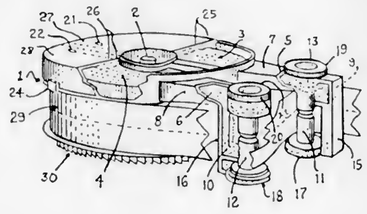
f. means for selectively illuminating said one type of said elements for identifying the line on the document to be printed, and
g. control means coupled to said drive means for supplying drive signals to said drive means for moving said document holder,
h. said control means stopping said drive means when said other type element is in light communication with an activated element, thereby positioning said document adjacent said print element so that a print operation can be performed on the selected line.

3,951,252
ELECTROMECHANICAL WRITING DEVICE
Reimund Selke, Detmold; Udo Obersteller, Neuss, and Kurt Richter, Rinteln, all of Germany, assignors to Nixdorf Computer AG, Germany
Filed Aug. 28, 1974, Ser. No. 501,282
Claims priority, application Germany, Aug. 30, 1973, 2343858
Int. Cl.² B41J *15/00*
U.S. Cl. 197—133 A **7 Claims**



1. An electromechanical writing device comprising:
a writing head;
carrier means for carrying the writing head;
guide means along which the carrier means is movable during a writing operation;
a writing platen over which during a writing operation a recording medium is moved;
a shearing edge forming part of the platen and extending in a direction parallel to the direction of movement of the writing head, said shearing edge being disposed beneath the writing area of said writing head;
a knife carrier slidably mounted on said guide means and having generally cylindrical roller knife rotatably mounted on said knife carrier and adapted to cooperate with said shearing edge to cut the recording medium; and coupling means to selectively lock said knife carrier to said carrier means so that upon actuation said knife carrier slides along said guide means in unison with said carrier means to cut the recording medium.

3,951,253
TYPEWRITER RIBBON RE-INKER
Eulogio C. Tibay, and Alfredo C. Tibay, both of 46 Costillo Park Subdivision, Almanza, Las Pinas, Rizal, Philippines
Filed Sept. 13, 1974, Ser. No. 505,692
Claims priority, application Philippines, Sept. 17, 1973, 15027
Int. Cl.² B41J *31/14*
U.S. Cl. 197—171 **4 Claims**

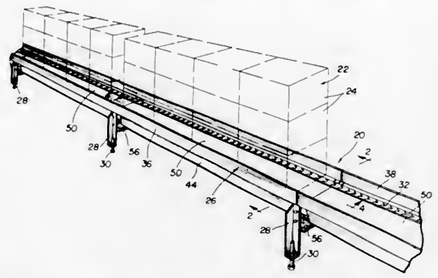


1. A typewriter ribbon re-inker for re-inking a ribbon on a typewriter having at least one ribbon spool wherein said spool has at least one exposed planar surface, said re-inker comprising:
a. a sub-base portion defining two separate and independent ink vessels therein;
b. means defining two extension channels formed with said sub-base portion such that one extension channel communicates with each ink vessel defined by the sub-base;
c. ink absorbing means disposed in each of said ink vessels and said extension channels;
d. at least one roller rotatably attached to a distal end of said extension channel defining means such that it contacts said ink absorbing means and the typewriter ribbon so as to transfer ink from said ink absorbing means to said typewriter ribbon;
e. means to attach said sub-base portion to the exposed planar surface of said typewriter ribbon spool such that said spool may rotate relative to said re-inker; and
f. means engaging the typewriter ribbon to prevent rotation of the re-inker as said ribbon spool rotates.

3,951,254
STACK ACCUMULATOR
Eugene F. Juhrend, Birmingham, Mich., assignor to Mojonnier Bros. Co., Chicago, Ill.
Filed Oct. 16, 1974, Ser. No. 515,292
Int. Cl.² B65G *43/08*
U.S. Cl. 198—37 **19 Claims**

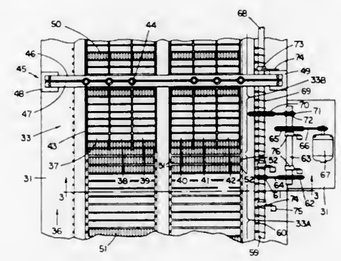
1. Conveyor apparatus of the type designed for the controlled application of driving forces to conveyed articles, said conveyor apparatus including: an elongate frame providing surface means adapted to have the conveyed articles supported thereon; drive means for applying the driving force to the conveyed articles to move said articles along the length of said frame; drive means support structure having said drive means supported thereon and being operatively positioned relative to said frame surface means; and mounting means for said support structure adapting said support structure and said drive means for movement relative to said frame, said mounting means including pressure actuated means, such that the relative positions of said drive means support structure is dependent upon the weight of conveyed articles resting thereon, whereby when said weight exceeds a preselected value, said drive means support structure will be lowered to

dispose the drive means below said frame surface means interrupting the driving engagement between said drive means and said conveyed articles, however, when said weight of con-



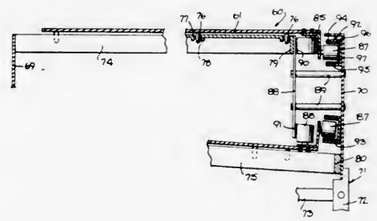
veyed articles is less than the preselected value said drive means will be supported for driving engagement with the conveyed articles.

3,951,255
CONVEYOR WITH DRIVEN SLIPPABLE ROLLERS
James J. Shuttleworth, and Carlton S. Sprague, both of Huntington, Ind., assignors to Shuttleworth, Inc., Huntington, Ind.
Continuation-in-part of Ser. No. 463,680, April 24, 1974, abandoned, which is a continuation of Ser. No. 233,027, March 9, 1972, abandoned. This application May 6, 1974, Ser. No. 467,090
Claims priority, application Italy, Feb. 19, 1974, 48470/74
Int. Cl.² B41J *13/00*
U.S. Cl. 198—127 R **31 Claims**



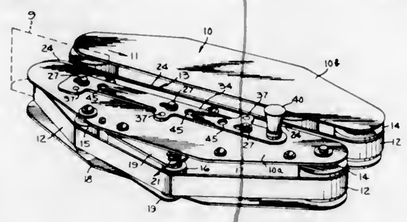
1. A conveyor for moving objects in multiple adjacent rows comprising:
a frame;
dividing means mounted on said frame defining a plurality of separate passageways each of which receives one of said rows of moving objects;
a plurality of cylindrical drive shafts rotatably mounted on said frame and each having an outer surface with an outside diameter;
a plurality of cylindrical rollers positioned in said passageways and mounted on each of said drive shafts in side-by-side relation, said rollers having cylindrical interior bearing surfaces of inside diameters enclosing said shafts, at least a portion of each of said interior surfaces contacting said outer surfaces whereby rotation of said shafts imparts rotation to said rollers, said inside diameters being greater than said outside diameters allowing said rollers in one of said passageways when exteriorly stopped to be stationary while said shafts rotate and said rollers in other passageways rotate;
all of the side-by-side rollers on each respective drive shaft being spaced apart from the side-by-side rollers on the other drive shafts, said spacing being accomplished by making the distance between the axes of adjacent drive shafts greater than the sum of the radius of any roller on one of said adjacent drive shafts and the radius of the roller opposite thereto on the other of said adjacent drive shafts;
said rollers projecting upwardly and being unobstructed to define a discontinuous supporting surface area for the moving objects, said discontinuous surface area extending other than vertically whereby gravity can hold the objects against said discontinuous surface area;
a motor for causing said drive shafts to rotate; and,
means connecting said drive shafts to an output of said motor.

3,951,256
POWER BELT TURN CONVEYOR
Samuel J. Gurewitz, 75-23 190th St., Flushing, N.Y. 11366
Continuation-in-part of Ser. No. 122,968, March 10, 1971, abandoned. This application Dec. 27, 1971, Ser. No. 212,305
Int. Cl.² B65G *15/00*
U.S. Cl. 198—182 **3 Claims**



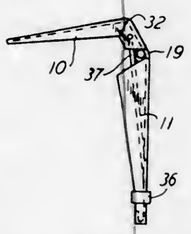
1. In a power turn conveyor having a curved endless conveyor belt mounted with an upper and a lower run on a curved belt supporting bed between tapered end rollers rotatably supported at opposite ends of the bed and with belt guide rollers mounted on the inner surface of the longer outer edge of said belt for engaging roller guiding mean on the bed, the improvement comprising:
said bed comprising a plurality of unitary sections;
said sections having lateral sides angularly aligned with each other;
the lateral sides of a plurality of identical first sections being coupled together forming a curved upper bed portion;
the lateral sides of a plurality of identical second sections being coupled together forming a corresponding curved lower bed portion;
said sections having integral downwardly depending stiffening flanges and spaced apertures for conveyor belt support rollers;
belt support rollers rotatably mounted in said apertures;
said bed sections mounting curved outwardly facing guide plates engaging the belt guide rollers on the upper and lower runs of said conveyor belt;
said belt guide rollers comprising a plurality of spaced roller guide assemblies mounted at spaced positions along said lower outer edge of said conveyor belt with each of said roller assemblies comprising a pair of rollers having their axles positioned at right angles to one another and with one axle having a generally vertical axis and the other axle having a generally horizontal axis;
said guide rollers having vertical axles being positioned to engage said guide plates; and
a pair of curved hold-down channels mounted outwardly of said guide plates with one channel being at the level of the upper run of said conveyor belt and with the other channel being at the level of the lower run of said conveyor belt and said guide rollers having horizontal axles being positioned for moving through said channels for holding the conveyor belt runs downwardly.

3,951,257
MAIL TRANSPORTING MECHANISM
Anthony Storace, Tarrytown, N.Y., and Paul R. Sette, Hamden, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Oct. 30, 1974, Ser. No. 519,090
Int. Cl.² B65G *23/44, 15/14*
U.S. Cl. 198—208 9 Claims



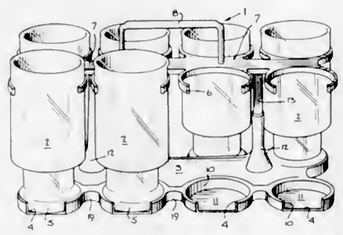
1. An adjustable mail transporting mechanism for conveying pieces of mail of different thicknesses, comprising:
a plurality of rotative mail transporting roller assemblies;
support means carrying said rotative transporting roller assemblies, each of said roller assemblies comprising a yoke member carrying a mail transporting roller, said yoke member rotatively supporting said roller at one end thereof, and being pivotably supported by said support means at an opposite end thereof;
bias means operatively engaged to each of said yoke members of said roller assemblies for biasing said yoke members with respect to said support means and consequently biasing each of said rollers towards a mail engaging position; and
release means carried by said support means and operatively engageable with each of said yoke members of said roller assemblies for pivoting each yoke member and hence, each roller assembly, with respect to said support means from a first mail engaging roller position to a second mail non-engaging roller position, said roller assemblies being otherwise automatically adjustable between said first and second positions to accommodate different thicknesses of mail.

3,951,258
MATCH BOOK SAFETY CASE
Herbert L. Burdick, 4312 - 17th St., Racine, Wis. 53405
Filed Sept. 8, 1975, Ser. No. 611,341
Int. Cl.² A24F *27/04*
U.S. Cl. 206—107 5 Claims



1. A match book safety case comprising a back piece and a front piece hingedly connected together for opening and closing said front piece relative to said back piece and with said pieces being arranged for retaining a match book which has a match striker surface thereon, a member movably disposed relative to said pieces and being movable to a position to cover the striker surface, and a connector attached between said front piece and said member to connect said member to said front piece and for moving said member in response to hinged movement of said front piece for covering the striker surface when said front piece is hingedly moved away from said back piece and thereby prevent use of the striker surface when said pieces are in the open position.

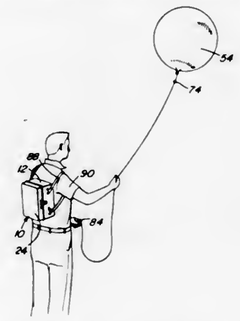
3,951,259
PACKAGE FOR TUMBLERS AND THE LIKE
Richard K. Oglesbee, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Mar. 12, 1975, Ser. No. 557,637
Int. Cl.² B65D *85/30, 85/62, 75/00*
U.S. Cl. 206—164 5 Claims



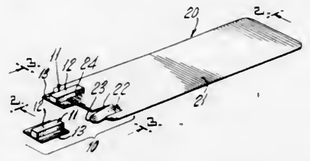
1. A molded plastic package for containing rows of tumblers comprising the combination of:
an elongated molded plastic base having an elongated panel which is channel-shaped in cross-section and which has rows of cup-like means for engaging bottoms of the packaged tumblers positioned on opposite sides of the panel;
a pair of hollow spaced pedestals on said base including apertures at their tops for receiving package top mounting arms;
flexible top members on the pedestals for releasably engaging package top mounting arm members;
a molded plastic top having an elongated panel and having a plurality of arcuate tumbler gripping clips arranged in rows on opposite sides of the panel;
a pair of package top mounting arm members depending from said elongated top panel with each one positioned for entering one of said pedestals;
a slot and detent lock with the slot being positioned on one of said members and the detent being positioned on the other of said members for releasably locking said arms and pedestals;
a recessible handle movably mounted on said top intermediate to said arm members; and
said handle being slidably mounted on said top for movement between a raised carrying position and a recessed position.

3,951,260
SURVIVAL KIT
Kenneth G. Frazee, 1193 Mojave, Idaho Falls, Idaho 83401
Filed Nov. 25, 1974, Ser. No. 527,169
Int. Cl.² B65D *79/00*
U.S. Cl. 206—223 3 Claims

1. A survival kit including an open top housing provided with upstanding peripheral side walls joined at their lower marginal portions by a bottom wall extending therebetween and further including a removable top wall provided with depending peripheral flanges telescoped over at least the upper marginal portions of said upstanding side walls with said top wall sealingly engaged with the open top of said housing rendering the latter waterproof, coacting releasable latch means carried by the exterior portions of corresponding flanges and side walls releasably securing said top wall in the closed position, said housing including interior baffle means dividing the interior of said housing into separate article receiving compartments, one of said compartments including gas supply means for discharging a gas lighter than air and a second of said compartments including a collapsed inflatable balloon therein capable of operative association with said gas supply means for inflating the balloon, and a winding member journaled from a central portion of the inner surface of said top wall having a length of flexible tether line wound thereon attachable to said balloon, when inflated, to tether said ballon to said top wall when the latter is removed from said housing and placed in inverted position upon a suitable support surface, said winding member occupying only a small portion of the plan area of said top wall, whereby the unoccupied areas of said top wall may be weighted with suitable weights, such as rocks, when the top wall is inverted, said one compartment including a portion thereof not occupied by said gas supply means and in which said winding member is received when said top wall is secured over said housing.



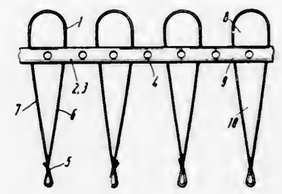
3,951,261
NEEDLED SUTURE MOUNTING AND DISPENSING DEVICE AND PACKAGE
Harvey B. Mandel, North Brunswick, and Eberhard Heinrich Thyen, Middlesex, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.
Filed Aug. 28, 1974, Ser. No. 501,372
Int. Cl.² A61L *17/06*; B65D *73/00, 85/24*
U.S. Cl. 206—227 19 Claims



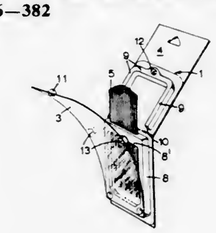
1. A needled suture mounting and dispensing device comprising;
a. a needle point comprising a three-dimensional, self-sustaining, resilient, pierceable body having support means; and
b. a carrier for said needle mount comprising a flat card member provided at one end with slot means co-operating with said needle mount support means for receiving and holding said needle mount on said carrier, said needle mount being readily removable from said carrier.

3,951,262
ASSEMBLY OF LOOPS FOR SUSPENDING SAUSAGES
Herbert Niedecker, Am Ellerhang 6, 6243 Falkenstein (Taunus), Germany
Filed Sept. 30, 1974, Ser. No. 510,834
Claims priority, application Germany, Oct. 17, 1973, 2352000
Int. Cl.² A22C *11/02*; B65D *85/00*
U.S. Cl. 206—343 6 Claims

1. An assembly of individual, individually closed loops for suspending sausages, which loops are adapted to be automatically supplied to automatic sausage-sealing machines, comprising a belt, a plurality of loops, and means securing each of said loops to said belt with predetermined fixed portions of each loop projecting on both sides of the belt.



3,951,263
HOLDERS FOR NEEDLES, PINS AND LIKE ARTICLES
Albert Hugh Vale, Cookhill, near Redditch, England, assignor to Abel Morrall Limited, England
Continuation of Ser. No. 305,219, Nov. 10, 1972, abandoned.
This application Apr. 14, 1975, Ser. No. 567,948
Claims priority, application United Kingdom, May 20, 1972, 23862/72
Int. Cl.² B65D *85/24*
U.S. Cl. 206—382 9 Claims





1. A holder for needles, pins and like elongated articles comprising in combination:
a generally planar base formed from sheet material which is basically stiff but has some degree of resilience for permitting temporary bending thereof, said base having a front surface, two opposite side edges, a medial elongated, forwardly projecting, hollow formation at said

front surface for supporting the articles and which extends transversely relative to said side edges, and spaced first and second portions at opposite sides of said hollow formation, said first portion being formed with elongated forwardly projecting, hollow stiffening formations and comprising longitudinal stiffening formations adjacent to and extending longitudinally with respect to said side edges and a transverse stiffening formation extending transversely with respect to said side edges at a position spaced from said hollow formation, which said stiffening formations restrain said first portion from bending and in combination with said hollow formation define an enclosed area at said first portion, and said second portion being manually bendable rearwardly away from said hollow formation, and said hollow formation having opposed side walls which permit the articles to be inserted therethrough transversely of said hollow formation and locate the articles side-by-side close to, and substantially parallel to, said front surface with one end of the articles disposed in said enclosed area and the other end overlying said bendable portion, a cover for enclosing the articles located by said hollow formation in use, being made of substantially rigid sheet material and having a central portion which extends over said hollow formation and said first and bendable portions, and opposite marginal portions having opposed channels which engage around and are slidable along said side edge, said cover being slidable relative to said base longitudinally of said side edges between a closed position in which it overlies said enclosed area and said bendable portion and said channels engage with said side edges at said bendable portion and thereby prevent said portion from being deflected, and an open position in which said cover is withdrawn from said bendable portion whilst still overlying said enclosed area, so that the ends of the articles which overlie said bendable portion are exposed for removal of the articles from said hollow formation and said channels are disengaged from said bendable portion, which is thereby able to be deflected rearwardly to facilitate access to the articles, and means on said central portion co-operable with said hollow formation and said transverse stiffening formation for limiting the sliding movement of said cover relative to said base.

9. A holder for needles, pin and like elongated articles comprising in combination:

a generally planar base formed from sheet material which is basically stiff but has some degree of resilience for permitting temporary bending thereof, said base having a front surface, two opposite side edges, a medial elongated, forwardly projecting, hollow formation at said front surface extending transversely relative to said side edges, and spaced first and second portions at opposite sides of said hollow formation, said first portion being formed with forwardly projecting, hollow stiffening formations comprising longitudinal stiffening formations adjacent to and extending longitudinally with respect to said side edges and a transverse stiffening formation extending transversely with respect to said side edges at a position spaced from said hollow formation, which said stiffening formations restrain said first portions from bending and in combination with said hollow formation define an enclosed area at said first portion, said second portion having a hinge part adjacent and parallel to said hollow formation about which said second portion is manually bendable rearwardly away from said hollow formation, and said second portion being formed with forwardly projecting, hollow stiffening formations which are spaced from said hollow formation and restrain said second portion from bending except at said hinge part, some of said stiffening formations in said two portions of said base having forwardly opening socket formations, and said hollow formation having opposed side walls which permit the articles to be inserted therethrough transversely of said hollow formation,

a mounting for the articles located in said hollow formation of complementary shape to said hollow formation, being formed by a pad of felt able to be penetrated by and frictionally to grip the articles inserted through said side walls so as to hold the articles side-by-side close to, and substantially parallel to said front surface with one end of the article disposed in said enclosed area and the other end overlying said bendable portion, and

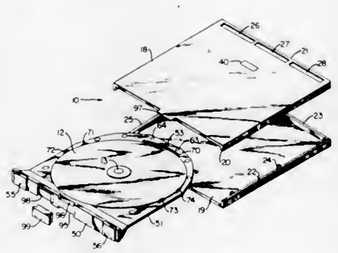
a cover for enclosing the articles held by said mounting in use, being made of sheet material and being of similar shape to said base and extending over said hollow formation and said first and second portions, and having rearwardly protruding, stud projections which releaseably engage with said socket formations whereby said cover is detachably fastened to said base in a closed position in which it overlies said enclosed area and said second portion, said cover being releasable from said second portion so as to expose the ends of the articles which overlie said second portion for removal of the articles from said mounting and allow said second portion to be deflected rearwardly to facilitate access to the articles.

3,951,264

FLEXIBLE DISC CARTRIDGE

Robert F. Heidecker, Longmont; Albin Kenneth Johnson, Arvada, and Galen B. Royer, Boulder, all of Colo., assignors to Dynastor, Inc., Denver, Colo.

Filed Oct. 29, 1974, Ser. No. 518,278
Int. Cl.² B65D *85/02*; **G11B** *5/16*, *17/00*
U.S. Cl. 206—444 **12 Claims**



1. Apparatus for retaining a flexible disc comprising:

a tray having an elongated outer edge and a flat plate perpendicular to said outer edge with a bore extending at least partially thereinto from the upper surface of said flat plate,

a hub centrally mounted on said disc adapted for nesting engagement in said bore, and

a housing for slidably receiving said tray and having upper and lower internal surfaces spaced for retaining said hub in said bore whenever said tray is inserted in said housing, said outer edge of said tray providing a complete enclosure of said tray in cooperation with said housing whenever said tray is inserted in said housing.

3,951,265

THREE-LEVEL STACKING CONTAINER

James C. Carroll, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

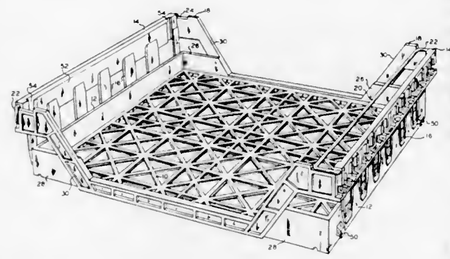
Filed July 29, 1974, Ser. No. 492,835
Int. Cl.² B65D *21/04*, *21/06*
U.S. Cl. 206—506 **18 Claims**

1. A generally rectangular container adapted for stacking with another like container at three levels, said container comprising, a generally horizontally disposed bottom, and first and second opposed wall structures projecting upwardly from opposing first and second sides of said bottom, respectively with each of said wall structures comprising, in combination:

a border flange extending along a said side of said bottom and projecting upwardly above the horizontal plane of said bottom in a first vertical plane located adjacent said side of said bottom;

an upper rim spaced from and disposed generally vertically above said border flange;

a plurality of spaced apart bar members extending vertically between the outer surface of said border flange and the inner surface of said upper rim, said bar members being disposed in a second vertical plane located adjacent but outside said first vertical plane, and said upper rim being disposed in a third vertical plane located adjacent but outside said second vertical plane, with the bar members and spacing thereof in one of said opposed wall structures being arranged with respect to the bar members and spacing thereof in the other of said wall structures so that an upper said container will stack in a low-stack position within a reversely oriented lower like container on the border flange of said lower container and with the bar members in the wall structures of said upper container occupying open spaces in the wall structures of said lower container, but will stack in an intermediate-stack position on a like oriented lower container as deescribed hereinafter;



a plurality of stacking saddles provided on the tops of a like plurality of said bar members;

a plurality of stacking feet provided on the bottoms of a like plurality of said bar members for registering in vertical alignment with a said plurality of stacking saddles on a said like oriented lower container and supporting a said upper container on a lower container in said intermediate-stack position;

an elongated generally U-shaped bail member pivotally mounted at the ends thereof in opposite ends of said upper rim and adapted to swing about its pivotal axis to occupy (a) a position internal of said container and resting on said support means described hereinafter so as to support an upper container stacked above a container or (b) a position adjacent the outer surface of said upper rim and external of said container so as to permit another container of like construction to be stacked within said container; and

at each end of said upper rim, a said support means extending inwardly and generally perpendicular therefrom for supporting said bail member in said position internal of said container.

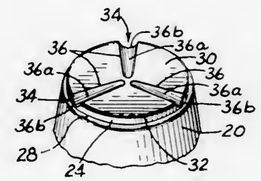
3,951,266

THIN WALLED CUP

Clarence T. Brewer, Oak Park, Ill., assignor to Solo Cup Company, Urbana, Ill.

Filed June 21, 1974, Ser. No. 481,506
Int. Cl.² B65D *21/02*, *1/46*
U.S. Cl. 206—520 **6 Claims**

1. A thin walled cup including a peripheral side wall open at its upper end and closed at its lower end by a bottom floor, said peripheral side wall having an upper tapered wall portion and a right-cylindrical wall portion terminating at its lower edge in said bottom floor, said peripheral side wall defining an internal stop-shoulder means between said tapered and right-cylindrical wall portions and defining external lower margin means at said lower edge of said right-cylindrical wall portion, said internal stop-shoulder means being adapted to support the lower margin means of a similar cup when disposed in nested relation therewith so as to maintain the tapered peripheral side wall portions of the nested cups in spaced relation, said bottom floor including reinforcing means comprising at



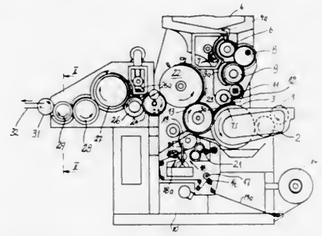
least one upwardly directed depression formed in said bottom floor and defining intersecting edges with said bottom floor and with said right-cylindrical side wall portion, said intersecting edge in said right-cylindrical side wall being in close proximity to said internal stop-shoulder means, said depression and associated intersecting edges with said bottom floor and said right-cylindrical wall portion substantially preventing deforming of said bottom floor and said right-cylindrical side wall portion in a manner which would allow telescoping of two or more of said cups when disposed in nested relation.

3,951,267

APPARATUS FOR TESTING THE END PORTIONS OF CIGARETTES OR THE LIKE

Joachim Reuland, Hamburg, Germany, assignor to Hauni-Werke Korber & Co., KG, Hamburg-Bergedorf, Germany

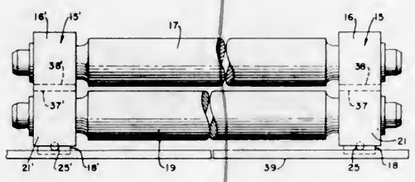
Filed Aug. 23, 1974, Ser. No. 499,900
Claims priority, application Germany, Aug. 30, 1973, 2343668; Dec. 20, 1973, 2363365
Int. Cl.² B07C *5/08*
U.S. Cl. 209—73 **26 Claims**



1. Apparatus for determining the mass of fibrous material in the end portions of discrete or grouped rod-shaped articles, particularly for determining the mass of tobacco in the end portions of cigarettes or analogous smokers' products, comprising means for conveying a succession of rod-shaped articles sideways so that a fibrous material-containing end portion of each article advances along a predetermined path; capacitor means having at least two spaced-apart stationary electrodes adjacent to a section of said path; a source of high-frequency voltage connected with said electrodes to establish between said electrodes a high-frequency field, at least while the end portion of an article advances along said section of said path, at least a portion of said field being located in said section of said path so that the end portions of successive articles travel across said portion of said field and influence said field to an extent which is a function of the mass of fibrous

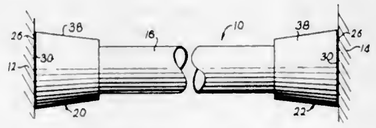
material in said end portions; and means for evaluating the influence of successive end portions upon said field.

3,951,268
METHOD AND APPARATUS FOR CHANGING ROLLS FOR A ROLLING MILL
Raymond H. Pell, Chesterton, Ind., assignor to National Steel Corporation, Pittsburgh, Pa.
Filed Jan. 7, 1974, Ser. No. 431,320
Int. Cl.² F16M *13/00*
U.S. Cl. 211—13 **7 Claims**



1. Dual roll supporting device comprising
A. a pair of spaced-apart upstanding members mounted on a base,
B. each upstanding member including:
a. first and second laterally extending portions having terminating ends, the second extending portion being located in spaced relation above the first extending portion to provide an opening in the upstanding member having a lateral entrance located in a plane passing through the terminating ends, the second extending portion having a limited vertical dimension at its terminating end to laterally fit between a pair of top and bottom parallel rolls of a dual roll assembly to be supported by the device,
b. the first extending portion having an upwardly facing surface and the second extending portion having an upwardly facing surface,
c. a first curved roll supporting surface formed on the upwardly facing surface of the first extending portion,
d. a second curved roll supporting surface formed on the upwardly facing surface of the second extending portion and terminating adjacent the terminating end of the second extending portion at an elevation below the highest elevation of the second curved roll supporting surface,
e. each roll supporting surface having a center of curvature to receive in snug supporting relation a curved surface of a roll to be supported,
f. the opening in the upstanding member being defined by the roll supporting surface on the first extending portion and by a non-roll supporting surface extending between the terminating end of the second extending portion and the roll supporting surface on the first extending portion, all points on the non-roll supporting surface being spaced from the center of curvature by a distance greater than the radius of curvature,
C. the center of curvature of the roll supporting surface on the first extending portion of both of the upstanding members lying on a first axis, and
D. the center of curvature of the roll supporting surface on the second extending portion of both of the upstanding members lying on a second axis spaced from and parallel to the first axis,
E. and wherein the centers of curvature of all of said roll supporting surfaces lie in the same vertical plane and wherein the roll supporting surfaces of the first extending portion of both of the upstanding members are mirror images of each other having the same radius of curvature and extending along the same cylindrical surface of revolution, and wherein the roll supporting surfaces of the second extending portion of both of the upstanding members are mirror images of each other having the same radius of curvature and extending along the same cylindrical surface of revolution,
F. and wherein the terminating ends of both of said first and second laterally extending portions respectively lie below horizontal planes passing through said first and second axes of said centers of curvature.

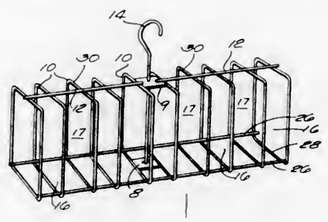
3,951,269
SELF-MOUNTING SUPPORT ROD
Robert V. Anderson, Fort Worth, Tex., assignor to Producers Specialty and Mfg. Co., Inc., Fort Worth, Tex.
Continuation of Ser. No. 436,136, Jan. 24, 1974, abandoned.
This application Feb. 28, 1975, Ser. No. 554,068
Int. Cl.² B66C *21/00*
U.S. Cl. 211—105.4 **2 Claims**



1. A self-mounting support rod assembly for disposition between a pair of opposed surfaces comprising:
an elongated, tubular member having a pair of opposed, open ends;
a pair of externally identical holding caps at opposite ends of said member having outermost faces on one side adapted to bear against said surfaces when the assembly is placed therebetween,
said caps each having an internal cavity on the opposite side thereof in axial alignment with the corresponding end of said member and receiving the same,
each cavity being provided with a floor and a continuous wall extending between said floor and said opposite side of its cap;
an internal, externally threaded arbor in the cavity of one of said caps projecting outwardly from its floor in coaxial relationship with said member and extending beyond said opposite side of the one cap,
said arbor being of reduced diameter relative to its cavity to define an annular region between the arbor and the wall of the cavity extending from its floor outwardly to said opposite side of the one cap; and
an internal, annular adapter component securely received within the end of said member associated with said one cap for rotation of the component with said member when the latter is rotated,
said component being internally threaded and being mounted on said arbor for movement along the length of the latter when said member is rotated relative to said one cap to shift the end of said member along the length of the arbor within said region thereby extending or retracting the assembly,
said face of each cap being provided with a resilient friction pad and being further provided with a single, outwardly projecting spike disposed in coaxial relationship with said member,
said spike protruding beyond said pad.

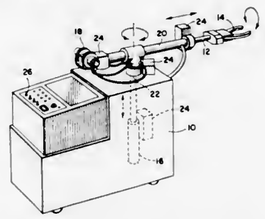
3,951,270
TIE RACK FOR PREKNOTTED TIES
Stephen Kiss, 6050 S. 27th St., Apt. 18, Milwaukee, Wis. 53221
Filed Nov. 18, 1974, Ser. No. 524,604
Int. Cl.² A47F *5/08*
U.S. Cl. 211—119 **7 Claims**

1. In combination, a tie rack, preknotted ties having inverted triangular knot portions and having tabs projecting laterally from opposite upper corners thereof, said tie rack comprising a plurality of flat frames each having oppositely-disposed upright side portions, means supporting said frames in spaced-apart relationship in horizontal row formation, pairs of adjacent frames being so spaced apart that the distance between upright side portions is greater than the apex dimension of said triangular knot portion of a tie but is less than the



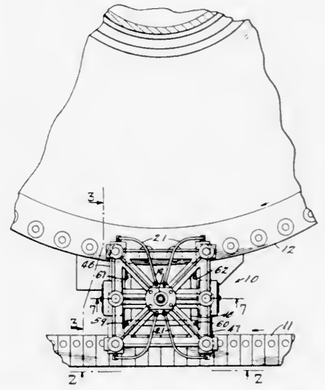
distance between opposite ends of said tabs, thereby providing a row of upright tie-receiving slots on each side of the rack, said pre-knotted ties being supported in at least some of said slots of the rack, stop means at the bottom of each tie-receiving slot, and means for suspending said row of frames from a supporting structure.

3,951,271
ROBOT CONTROL DEVICE
Klaus-Hermann Mette, 58 Orsett St., Oakville, Ontario, Canada
Filed May 3, 1974, Ser. No. 466,828
Int. Cl.² B25J *1/12*
U.S. Cl. 214—1 CM **3 Claims**



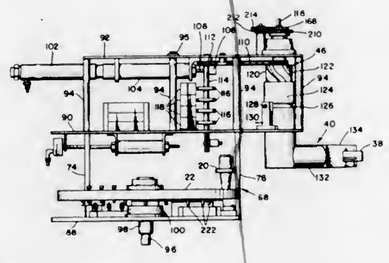
1. An article transfer device of the type providing for automatic repetitive transfer of articles along a path from one position to another, said device comprising;
article transfer means;
power operated drive means for moving said article transfer means at least between one position and another along said path;
operator control means for selectively manually controlling said drive means or placing the same under automatic control;
signal generating sensing means connected with said article transfer means for sensing movement thereof, when said article transfer means is driven by said power operated means
and operable to deliver coded signals in predetermined different combinations each said different combination of coded signals indicating a predetermined different position of said article transfer means, said sensing means having a plurality of light activated signal generating devices located at spaced intervals, and mask means therefore, said mask means having a plurality of mask areas arranged to register with respective said signal generating devices, and light source means for said devices, said mask means and said signal generating devices being mounted for movement relative to one another, in response to movement of said article transfer means;
electronic memory bank means for receiving and storing said coded signal combinations from said signal generating means when said transfer means has been manually driven into selected positions;
comparator means connected with said memory bank means and said signal generating means and operable during automatic operation for comparing the signals received from said signal generating means with a selected one of said stored coded signal combinations, and operable to deliver a control signal to said power operated drive means responsive to matching of a said received signal and a said stored coded signal combination, thereby causing same to drive said transfer means from one position to another automatically without operation of the manual control means, and,
sequence memory bank means connected to said signal generating sensing means and recording the sequence in which coded signals corresponding to selected positions as aforesaid are generated, and are stored in said memory bank means, and operable during automatic operation to select successive said stored coded signal combinations from said memory bank means for comparison by said comparator means, one after the other to procure automatic movement of said transfer means from one said position to another.

3,951,272
ARTICLE TRANSFER APPARATUS
Stanley Sankovich, Toledo, Ohio, assignor to Champion Spark Plug Company, Toledo, Ohio
Filed July 12, 1974, Ser. No. 487,919
Int. Cl.² B25J *15/02*
U.S. Cl. 214—1 BC **4 Claims**



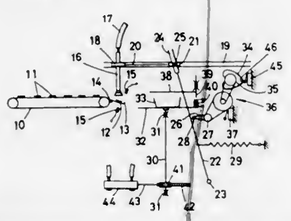
1. An article transfer apparatus for transferring workpieces from a first path to a second path, comprising: a base; a vertical support shaft extending upwardly through the base; means for raising, rotating through 180° and lowering the shaft repeatedly; at least one workpiece gripper on each of two sides of the shaft, said two sides being 180° opposed; a gripper frame supporting the grippers at its extremities, said frame being operably mounted on the shaft for rotation with the shaft and for axial movement along the shaft; a stop member below the frame on the shaft defining a lower limit for axial movement of the frame along the shaft; an upper surface on the base positioned for abutting contact with the bottom of the frame, the lower limit of the shaft's stroke being beyond the initial rest position of the frame on the base; means urging the frame downward on the shaft toward the stop member; means biasing the workpiece grippers toward their closed gripping positions; an upper frame affixed to the shaft above the gripper frame; and means associated with the workpiece grippers for opening the grippers in response to convergence of the frames.

3,951,273
REMOVABLE ATTACHMENT FOR AUTOMATING MILLING MACHINES
David Edward deCaussin, Van Nuys, Calif., assignor to Fadal Engineering Company, Inc., North Hollywood, Calif.
Division of Ser. No. 329,111, Feb. 2, 1973. This application Jan. 24, 1974, Ser. No. 436,139
Int. Cl.² F16H 25/12
U.S. Cl. 214—1 BB **7 Claims**



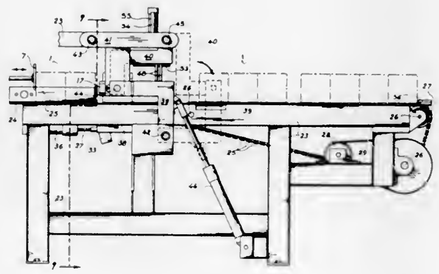
1. In combination,
a transfer arm having three degrees of freedom and articulated fingers,
a rotatable spiral fluted main drive cam having a plurality of flutes located within a cylinder which is connected to said arm and has means slidably engaged in said flutes, said cam being rotatable alternately in a first direction and then a second direction, and means to partially restrain said cylinder to cause said three degrees of movement of said arm.

3,951,274
APPARATUS FOR LOADING SLIDE FASTENERS OR THE LIKE INTO A RECEPTACLE IN NEAT ARRANGEMENT
Yasuaki Yamamoto, Uji, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan
Filed Aug. 29, 1974, Ser. No. 501,782
Int. Cl.² B65G 57/04
U.S. Cl. 214—6 FS **9 Claims**



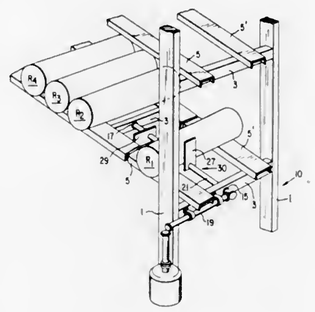
1. In apparatus for loading articles into an open-top receptacle, the combination of:
a receiving plate adapted to receive the articles successively at prescribed time intervals;
a suction member communicating with a source of vacuum and having a suction port to which the article on said receiving plate is caused to attach by suction;
a platform supporting said receptacle thereon;
means for reciprocating said suction member between a first position over said receiving plate and a second position over said receptacle on said platform, said reciprocating means including a lever;
means for arresting the motion of said suction member which has traveled from said first to said second position with the article attached to said suction port, said arresting means being effective to horizontally shift said second position of said suction member by increments relative to said receptacle each time said suction member brings the article from said first position, said arresting means including a movable element which engages said lever of the reciprocating means to determine the different second positions; and
means for causing the article to drop into said receptacle from said suction port of said suction member in said second position thereof.

3,951,275
BLOCK CUBING ASSEMBLY PARTICULARLY FOR CONCRETE BLOCKS
Pierre Gagnon, 5637 Wilderton Ave., and Pierre LaForest, 1945 Bruxelles St., both of Montreal, Quebec, Canada
Filed Sept. 4, 1974, Ser. No. 502,922
Int. Cl.² B65G 57/00
U.S. Cl. 214—6 C **3 Claims**



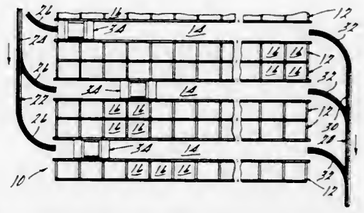
1. In a block cubing assembly, a support, a block receiving table carried by said support, a conveyor carried by said support and aligned with one end of said table for forward movement of its top run away from said table, a receiving shelf carried by said support in alignment with the other end of said table, block pusher means carried by said support over said receiving shelf for pushing forwardly from said shelf onto said table successive transverse rows of blocks contacting one another, a turnover mechanism carried by said support and including on each side of said table a frame section rotatable through 90° in a vertical plane between an initial position and a final position, a transverse frame member rigidly interconnecting said two frame sections above said table, a pair of jaws pivoted on said transverse member and depending from the latter to extend between said transverse member and said table substantially parallel to, and longitudinally, of each side of said table in the initial position of said frame sections, said jaws pivotable for movement towards and away from each other to clamp therebetween, in the initial position of said frame sections, two adjacent transverse rows of blocks positioned on said table by said pusher means and then turn said two rows of blocks through 90° and transfer the same onto said conveyor, the first row of blocks lying on top of the second row of blocks in the final position of said frame sections, and a power-operated pusher plate carried by said transverse frame member for reciprocating movement and in register with said first row of blocks for pushing the same forwardly horizontally over the blocks of the second row to offset the blocks of the first row relative to the blocks of the second row in the final position of the frame sections.

3,951,276
HANDLING AND DISPENSING SYSTEM AND APPARATUS FOR CYLINDRICAL OBJECTS
Daniel H. Moses, Fairfield, Ohio, assignor to Champion International Corporation, Hamilton, Ohio
Filed June 7, 1973, Ser. No. 367,799
Int. Cl.² B65G 1/06
U.S. Cl. 214—16.4 A **3 Claims**



1. A space saving system for storing and handling cylindrical stock such as floor coverings and the like comprising a plurality of identical racks in rows so arranged as to define corridors between every two adjacent rows to admit an object carrying movable pallet to move between said rows along said corridor, said racks having a support structure sloping toward the working face of said rack facing said corridors for receiving and storing a plurality of pieces of cylindrical stock in serial order with the axes of the pieces parallel to each other and also to a plane passing through the working face of the rack, a first and second rotary retention means of identical configuration in the form of thin blades diametrically fixed to a common rotatable shaft and having their wide faces transversed to said cylindrical stock on said rack engaging and holding said lowermost cylinder in said rack, said second retention means being angularly displaced at 90° to said first retention means and positioned inwardly in the face of the rack a distance at least equal to the diameter of one cylindrical article engageable with the next succeeding piece of cylindrical stock of said cylindrically pieces thereof, a uni-directionally common drive means interconnecting said retention means to position said first retention means in an inoperative position to free said lowermost cylinder for discharge from said rack and simultaneously to position said retention means in operative position to hold the next succeeding piece of cylindrical stock in position in said rack, said drive means mounted on said racks and positioned our of the path of movement of said pieces of cylindrical stock from the rack and also the path of movement of a pallet along said corridors; and a portable pallet means including a skeletal frame having means to receive the prongs of a fork lift truck moveable along said corridors between facing racks and of a width to receive a single piece of said cylindrical stock positioned adjacent the working face of the storage rack for receiving the lowermost piece of cylindrical stock by gravity discharge from said rack upon operation of said retention means to free same, said pallet means including stop means positioned in a plane parallel to the longer axis of said pallet means for holding said first cylindrical said first piece of cylindrical stock on said pallet means for subsequent transport in a direction parallel to its axis when it is discharged onto said pallet means.

3,951,277
STACKER STORAGE SYSTEM
Theodore N. Hegelman, Birmingham, Mich., assignor to Standard Alliance Industries, Chicago, Ill.
Continuation-in-part of Ser. No. 714,495, March 20, 1968, abandoned. This application Jan. 5, 1976, Ser. No. 332,502
Int. Cl.² B65G 01/06
U.S. Cl. 214—16.4 A **54 Claims**

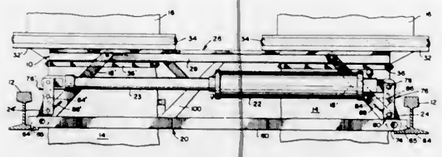


1. In a plant work transport and storage system having a main conveyor system on which work carriers travel in the system,
a work storage area disposed adjacent said conveyor system,
a first spur track section extending from said conveyor system to a first work transfer point adjacent to said work storage area and adapted to transport work carriers from said conveyor system to said work storage area,
a second spur track section extending from said conveyor system to a second work transfer point adjacent to the work storage area adapted to transport work carriers from the work storage area to said conveyor system,
said work storage area having at least one bank of vertically and horizontally spaced work storage compartments arranged along a longitudinal aisle and each compartment provided with an overhead storage track section,
a stacker crane assembly movable horizontally alongside said bank of work storage compartments between individual work storage compartments and to and from said first and second work transfer points and provided with a transfer track section,
said stacker crane assembly including elevating means for moving said transfer track section vertically of said work storage compartments and between individual compartments, means mounted on said elevating means for selectively positioning said transfer track section in aligned, substantially butting end-to-end relation with a selected spur track section and selectively individually with said storage track sections when said elevating means is at selected vertical and horizontal positions relative to said storage area, and means for moving work carriers onto and off of said transfer track section at said transfer points and at said storage compartments,
said main conveyor system, said first and second spur track sections, said storage track sections, and said transfer track section being essentially similar to each other and adapted to receive and to accommodate interchangeably work carriers in said system,
said work carriers being movable from said conveyor system to said first spur track section, then shiftable to the transfer track section of said stacker crane assembly at said first work transfer point, then movable on the transfer track section by said stacker crane assembly to a selected work storage compartment and shifted for storage onto the storage track section of the selected compartment,
said stored work carriers being individually selectively retrievable from said work storage compartments by shifting the selected work carrier from the storage track in the compartment in which it is stored to the transfer track section of said stacker crane assembly, moved by the latter to said second work transfer point, and then shifted onto said second spur track section and thereafter to said conveyor system.

3,951,278
APPARATUS FOR UNLOADING BULK MATERIAL

Hugh H. Pase, Cheshire, Conn., assignor to Mimco Incorporated, Cheshire, Conn.

Division of Ser. No. 307,445, Nov. 17, 1972, Pat. No. 3,865,347. This application Nov. 6, 1974, Ser. No. 521,514
Int. Cl.² B65G *67/24*
U.S. Cl. 214—44 R **4 Claims**



1. In a bulk-unloading apparatus having a lift assembly for connection with a pair of discharge outlets disposed in spaced relation to each other on a vehicle to be unloaded, said lift assembly comprising a platform and a pair of coupling frames supported thereon for movement from a retracted position adjacent each other to a spread position in which said coupling frames are spaced apart for alignment with said discharge outlets,

a spreading device for said coupling frames comprising in combination therewith,

a spreader bar pivoted intermediate its ends at a fixed point on said platform between said coupling frames,

first link means pivotally connecting one end of said spreader bar to one of said coupling frames and

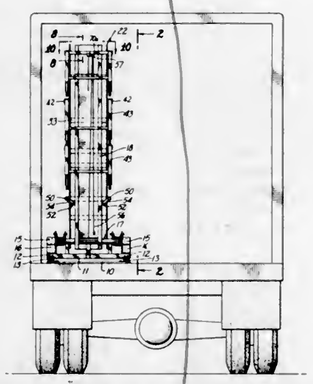
second link means pivotally connecting the opposite end of said spreader bar to the other said coupling frame,

such that movement of either of said coupling frames on said platform results in a corresponding movement of the other coupling frame in the opposite direction.

3,951,279
TRUCK MOUNTED EXTENDABLE FLEXIBLE CONVEYOR

Robert E. Jones, 1994 Hilldale Drive, La Canada, Calif. 91011

Filed Apr. 17, 1975, Ser. No. 568,937
Int. Cl.² B60P *1/52*
U.S. Cl. 214—83.26 **12 Claims**

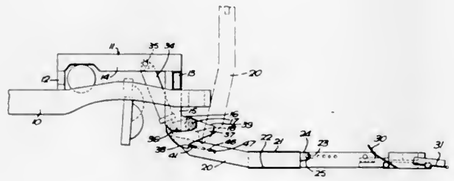


1. A conveyor for loading and unloading cargo onto and from the floor of the cargo carrying portion of a truck, at least the major portion of said conveyor comprising a plurality of transversely directed roller carrying members, connecting means extending between said members, said connecting means being longitudinally extendable to permit movement of said members between a collapsed storage position in which said members are disposed substantially parallel and closely adjacent to each other and a longitudinally extended usage postion in which said members are spaced a substantial longitudinal distance apart from each other, each end of said members in extended position being independently movable with respect to the other end of said member to permit limited movement of said members to angular positions with respect to each other, whereby said conveyor may be curved in either lateral direction, means pivotally mounting one end of said conveyor on said truck adjacent to said floor, and means maintaining said roller carrying members in a substantially straight line when collapsed for unitary pivotal movement of said collapsed conveyor between horizontal and vertical positions, whereby said conveyor may be stored and carried in said truck in a collapsed position extending vertically upwardly from the floor of the truck and may be pivoted downwardly to a horizontal position and then extended horizontally outwardly from the cargo carrying portion of the truck for use.

3,951,280
VEHICLE-TRANSPORTING APPARATUS

Albert William Peck, Welwyn Garden City, England, assignor to John Ratcliff (Tail Lifts) Limited, Welwyn Garden City, England

Filed Nov. 20, 1974, Ser. No. 525,663
Int. Cl.² B65G *47/00*
U.S. Cl. 214—86 A **4 Claims**



1. A vehicle-transporting apparatus comprising in combination:

a. a mounting for attachment to the rear of a towing vehicle,

b. a longitudinally extending boom the forward end of which is pivotally connected to the mounting by a boom pivot,

c. a hydraulic ram between the boom and the mounting to effect up and down swinging movement of said boom about said boom pivot,

d. two supports, mounted adjacent the rearward end of the boom and spaced apart across said boom for receiving the wheels of a vehicle to be transported,

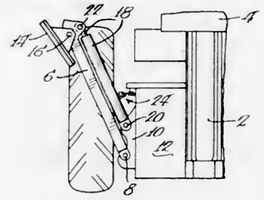
e. said ram having its line of action on the other side of said boom pivot said supports,

f. releasable detent means between the boom and the mounting to retain said boom alternatively in a loading position in which said supports rest on the ground, a transporting position in which said supports are raised a short distance from the ground, and a stowed position in which said boom extends upwardly from said mounting further said detent means comprise a movable catch member on one of said boom and said mounting engagable with an abutment fixed relatively to the other of said boom and mounting, and said movable catch member further comprises a pivotally mounted lever, pivotal movement of which swings one end thereof into an operative position in which it is engagable with said abutment upon swinging movement of said boom.

3,951,281
APPARATUS WITH PIVOTAL LATCHING MEANS FOR RETAINING AN OUTRIGGER IN AN INOPERATIVE POSITION

Donald J. Parquet, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Nov. 18, 1974, Ser. No. 524,536
Int. Cl.² B66F *9/00*; **B66C** *23/62*; **B60S** *9/00*
U.S. Cl. 214—140 **6 Claims**



1. In a mobile heavy duty machine having a load lifting boom and at least one outrigger arm pivotally mounted on a frame and movable between a ground-engaging position and a substantially vertical raised and inactive position, said outrigger being adapted to provide lateral stabilization for the machinery, power means for pivoting said outrigger arm, the improvement of a latching mechanism actuated in response movement of said arm to secure said outrigger against the frame when the arm is in said substantially vertical raised and inactive position, said latching mechanism comprising a leaf spring member and a finger member, said finger member being movable with and extending inwardly from said arm toward said frame when in said substantially vertical position, a mounting block pivotally supporting said leaf spring member on said frame, said mounting block having a stop defining a first cantilevered position for said leaf spring member extending outwardly from said frame to engage said one member, said leaf spring member having an outer nose portion forming a backwardly facing offset abutment surface extending substantially normal to the axial length of the leaf spring member, and said finger member having a portion engageable with said abutment surface, said spring being sufficiently flexible to bend under the moment of a pulling force exerted on said members, pivoting said leaf spring member from said first position thereby causing said nose portion to slide from behind said finger member and releasing the outrigger arm from retention by the frame.

3,951,282
METHOD FOR FEEDING FIBERS

Alex Jacques Keller, 2222 Scottwood Drive, Gastonia, N.C. 28052

Division of Ser. No. 409,297, Oct. 24, 1973, abandoned. This application Sept. 20, 1974, Ser. No. 507,792
Int. Cl.² D01G *13/00*
U.S. Cl. 214—152 **6 Claims**

1. An improved method for feeding fibers from bales of fibers to the hopper of a fiber feeding machine, said method comprising:

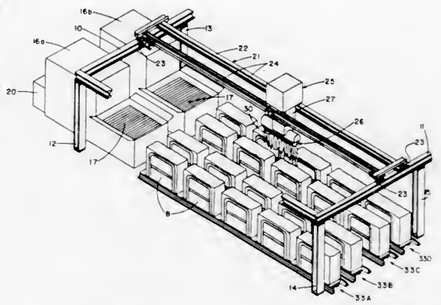
a. Defining a bale assembly area adjacent the hopper and extending longitudinally therefrom,

b. Determining a precise location within the assembly area for each of a plurality of bales,

c. Supporting each of said bales and mechanically confining each said supported bale within a space corresponding substantially to one of said precise locations within said bale assembly area,

d. Coordinating the location of said confined bales within the assembly area with the movement of an automatically operated machine for plucking fibers from said bales,

e. Automatically and selectively moving said machine for plucking fibers to a position above any said precise bale location within the assembly area, and plucking a given amount of fibers from said bale confined thereat,



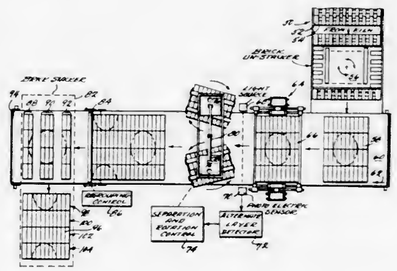
f. Automatically moving said machine for plucking fibers from said bale with the fiber plucked therefrom to said hopper and depositing said given amount of fibers in the hopper, and

g. Repeating steps e and f.

3,951,283
METHOD FOR BLENDING BRICKS

Hans Lingl, Jr., Paris, Tenn., assignor to Lingl Corporation, Paris, Tenn.

Filed Apr. 17, 1973, Ser. No. 352,033
Int. Cl.² B65G *57/00*
U.S. Cl. 214—152 **8 Claims**



1. A method for blending a stack of bricks comprising a plurality of vertically superimposed layers, each layer comprising a plurality of bricks, said stack having a central core section of lesser hardness and lighter color than in the surrounding outer shell section thereof, said method comprising the steps of

a. unstacking an entire first layer of bricks from said stack, said layer including a corresponding core section and shell section,

b. unstacking an entire second layer of bricks from said stack, said layer including a corresponding core section and shell section,

c. transporting said second layer to a rearranging position,

d. rearranging bricks within said second layer with respect to each other, to place bricks from the normally occurring core section areas into the normally occurring shell section areas and vice versa,

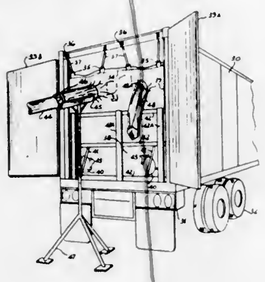
e. transporting said first and second layers to a restacking position,

f. restacking said first and second layers of bricks,

g. repeating said unstacking, transporting, and rearranging steps until a new stack is formed having increased uni-

formity in the spatial distribution of bricks having different hardness and color characteristics.

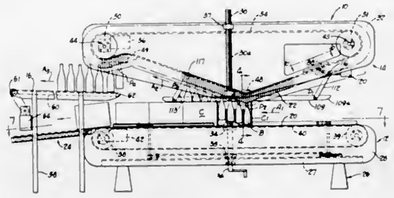
3,951,284
DEVICE FOR TRANSPORTING BULK MATERIALS AND METHODS
Don Russell Fell, Stoney Creek, and Robert Wilson Leonard, Ajax, both of Canada, assignors to Du Pont of Canada, Ltd., Montreal, Canada
Continuation of Ser. No. 387,388, Aug. 10, 1973, abandoned. This application Apr. 9, 1975, Ser. No. 566,424
Claims priority, application Canada, Aug. 18, 1972, 149767
Int. Cl.² B65D *25/16*
U.S. Cl. 214—152 **23 Claims**



1. A device for transporting bulk material in a shipping vehicle having walls one of which defines a door opening and doors attached thereto, the device comprising:
a flexible liner having sides adjacent the walls of the shipping vehicle and supported by a plurality of downwardly extending stretchable connectors between the shipping vehicle walls and the liner for flexibly suspending the liner from the top of the walls of the vehicle, the side of the liner adjacent the shipping vehicle door opening having at least two apertures in the upper portion of the liner thereof and at least one aperture in the lower portion of the liner thereof, the apertures in the upper portion of the liner representing an entry opening and a vent opening and the aperture in the lower portion of the liner representing a discharge opening, each of the apertures having a closing means and the apertures being connected to tubular sleeves made from the same material as the liner, the liner being reusable,
a separate removable bulkhead positioned in the lower portion of the shipping vehicle door opening, the bulkhead as so positioned being adapted to contain a full liner in the shipping vehicle and not allow it to bulge outwards when the doors are open, the bulkhead having at least one opening and a removable panel therein located adjacent the aperture in the lower portion of the liner, the opening adapted to receive the tubular sleeve connected to the aperture in the lower portion of the liner, the bulkhead being reusable, and
the liner being detachably connected to the bulkhead during shipment.

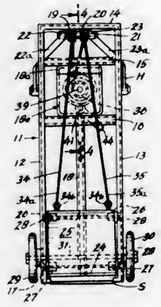
21. A method of transporting bulk material in a shipping vehicle having walls, one of which defines a door opening and doors attached thereto, including the steps of:
flexibly suspending a flexible liner inside the vehicle and from the top of the walls thereof, the flexible liner having sides resting adjacent the walls and having a loading sleeve, a vent sleeve and at least one unloading sleeve connected to apertures in the side of the liner adjacent the door opening,
installing a separate bulkhead in the door opening in the vehicle, the bulkhead having at least one removable panel for the unloading sleeve,
loading bulk material through the loading sleeve into the flexible liner by pneumatic loading means, and
closing the apertures whereby to complete the loading operation.

3,951,285
BOTTLE UNCASER
Theodore L. Barker, Sagamore Hills, Ohio, assignor to MBI Corporation, Northfield, Ohio
Filed Aug. 26, 1974, Ser. No. 500,350
Int. Cl.² B65G *65/36*
U.S. Cl. 214—309 **22 Claims**



22. A method of removing containers from a full depth case, i.e., a case with side and end walls that extend the full height of the containers, the steps comprising moving full depth cases of containers at random along a guiding path, moving a plurality of continuous columns of directly adjacent container grippers above and along said path and in a direction toward said path to a position where the grippers are in part below the walls of the case and then in a direction away from the path, engaging grippers with containers in the case so as to remove the containers from the case when the grippers are moved away from the path, and permitting any gripper to move upward relative to the adjacent grippers when it engages a wall of the case.

3,951,286
HAND TRUCK FORK LIFT
Ray J. Horst, 456 W. Calle Lindero, Tucson, Ariz. 85704
Filed Sept. 19, 1974, Ser. No. 507,627
Int. Cl.² B62B *1/06*
U.S. Cl. 214—370 **2 Claims**



1. In a device of the class described, comprising a hand truck fork lift, said device having a rectangular iron frame including a pair of upright supports in parallel spaced apart relation and enjoined by a plurality of transverse cross pieces or spacers, a platform having a plurality of rollers riding along said upright supports, and mechanical means to raise or lower said platform along said frame including a pair of cables, each

of which are secured at their one ends to studs mounted on said platform, while the other ends of said cables are fastened to a common winding drum, both said cables having an intermediate portion thereof passed around a pair of pulley-like rollers rotatable about a common horizontal shaft supported at an upper end of said frame, said studs being spaced apart a distance that is several times greater than a distance between said pulley-like rollers, whereby said cables are convergingly inclined from said studs to said pulley-like rollers, the incline of said cables being greatest when said platform is highest elevated, means to wind or unwind said cables on said drum, said cable winding means including a housing in which there is a drum riding upon an idler shaft and a large spur gear, said gear made fast to said drum, and rotating with said drum on said idler shaft, a secondary stud gear meshing with said large gear, said stud gear held to an operating shaft, said shaft running parallel with the shaft on which the drum and the large gear are mounted, and a handle one said secondary shaft, the operation of said handle rotating said stud gear and said large gear, respectably, to wind said pair of cables on said drum to raise or to lower the aforesaid platform.

3,951,287
TIRE CART
Robert E. Cofer, 1011 Central, Dodge City, Kans. 67801
Filed Dec. 16, 1974, Ser. No. 533,179
Int. Cl.² B65G *7/00*
U.S. Cl. 214—331 **3 Claims**

1. A dolly comprising:
a. a dolly frame having a U-shaped portion with an open front including a pair of spaced side members and a transverse member secured to the rear portion of the side members, the side members having casters mounted on the end portion thereof,
b. a lift frame having oppositely disposed end members longitudinally slidably mounted on said side members and rigidly secured to a first cross member, said lift frame having a pair of standards extending upwardly, said standards in use holding an engaging means for securing a wheel assembly or the like to said lift frame, .
c. a sleeve member rotatably mounted on said first cross member,
d. a pair of spaced essentially parallel stanchion members secured to said sleeve member and extending upward,
e. a second cross member slidably mounted on said stanchion members,
f. a pair of arms transversly slidably mounted on said second cross member, said arms extending from said second cross member toward said open front and parallel to the side members of said dolly frame, said pair of arms including removable extension members,
g. means to raise and lower said second cross member relative to said dolly frame, and
h. tilt means having a stationary third cross member rigidly mounted with said lift frame at the rear of said first cross member, a tilt arm member secured to said sleeve member extending over said third cross member, and an adjustable coupler member connecting said tilt arm member and said third cross member, said adjustable coupler member being constructed and adapted to in use adjust the relative position of said tilt arm member and said third cross member for tilting said stanchion members and said second cross member relative to said dolly frame,
the dolly is constructed and adapted to in use receive and hold one or more tires, wheel assemblies or the like for removing or replacing the same on a vehicle such as a tractor.

3,951,288
LARGE ROUND BALE HANDLING APPARATUS
John K. Hale, Knokke, Belgium, and Willis R. Campbell, Ephrata, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed Dec. 5, 1974, Ser. No. 529,984
Int. Cl.² B60P *1/38*
U.S. Cl. 214—506 **9 Claims**

1. An apparatus for handling crop material packages, such as large round bales or the like, comprising:
a mobile frame adapted for movement across a field;
an elongated bed assembly mounted to said frame and capable of being disposed in an inclined position in which one of its opposite ends is disposed adjacent the field;
first means movably mounted on said bed assembly along a first portion thereof which extends to and includes said one end thereof, said first movable means for delivering a bale or the like from the field to said one end of said bed assembly when said bed assembly is disposed in its inclined position and for moving said bale or the like along said first portion of said bed assembly;
second means movably mounted on said bed assembly along a second portion thereof which extends from rearwardly of said first portion thereof to the other of said opposite ends thereof, said second movable means for receiving said bale or the like from said first movable means and for moving said bale or the like along said second portion of said bed assembly;
power transmitting means for moving said first movable means;
a member mounted generally within said bed assembly and extending upwardly with respect thereto within the path of the movement of the bale or the like along said bed assembly and being actuatable by said bale or the like as the same is moved along said first portion of said bed assembly; and
means for operably coupling said power transmitting means to said second movable means for moving the same in response to actuation of said member by said bale or the like.

3,951,289

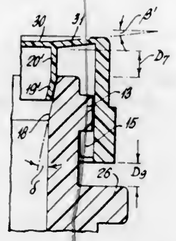
SAFETY-CLOSURE DEVICE

William James Landen, Cheshire, Conn., assignor to Eyelet Specialty Co., Inc., Wallingford, Conn.

Continuation-in-part of Ser. No. 126,442, March 22, 1971, abandoned. This application July 8, 1971, Ser. No. 160,844

Int. Cl.² B65D *55/02*

U.S. Cl. 215—211 **21 Claims**



1. Tamper-proof selectively openable closure means, comprising a body including a neck with a circular axial-end opening having a conically tapered counterbore at the outward-end thereof, and a cap for selectively opening and closing said opening, said cap and the exterior of said neck having coacting telescoping parts for removably securing the same, and said coacting telescoping parts including axially extending means having circumferentially continuous resiliently loaded sealing contact with said opening when said cap is in secured position; said cap being of singlepiece integral molded plastic construction, comprising an outer relatively thick generally cylindrical annular portion having the means for removable securing to the exterior of said neck, a closure wall integrally and continuously and axially resiliently yieldably closing one axial end of said generally cylindrical portion, and a downwardly extending inner cylindrical sleeve projection radially spaced from said outer portion and connected to said outer portion via an integral and relatively thin annular portion of said closure wall, thereby establishing an axially yieldable connection of said sleeve projection and of said outer portion, said sleeve projection having a circumferentially continuous outwardly exposed edge short of the lower end of said sleeve projection and of substantially the maximum diameter of the taper of said counterbore, the lower end of said sleeve projection being characterized by an inwardly tapered relief below said edge, said edge interfering with said tapered counterbore in the course of establishing a secured cap and neck engagement, and the taper of said counterbore being of such axial extent that contact of said edge therewith is the only closure and sealing contact and is maintained throughout the range of relative axial displacement involved in establishing the disengaging a secured cap and neck engagement, whereby the essentially line-contact nature of edge-to-taper engagement assures against the cap ever "plugging" the neck opening, and whereby compliant axial deflection of said annular portion may provide a substantial axial preload upon said sealing contact.

3,951,290

CHILD-RESISTANT OVERCAP FOR A SCREW-TYPE CONTAINER CAP

Gary Van Montgomery, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed June 6, 1975, Ser. No. 584,576

Int. Cl.² B65D *55/02, 85/56;* **B61J** *1/00*

U.S. Cl. 215—219 **4 Claims**

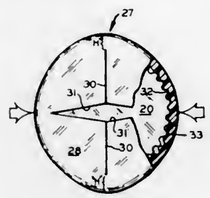
1. A child-resistant overcap for a threaded screw cap having a flat top, an annular threaded skirt mating with the threads on a bottle neck and a plurality of axially-extending ribs on the outer surface of the skirt, said overcap comprising,

a. a generally disc-like top,

b. an open bottom, annular skirt depending from said top and having an inside diameter larger than the outside diameter of said ribs on said screw cap and adapted to be nested over said screw cap and freely rotatable relative thereto when said overcap is not distorted,

c. a pair of diametrically opposed, outwardly converging V-notches in the top of said overcap,

d. a pair of diametrically aligned narrow slits in the top of said overcap, said slits being normal to the diameter bisecting said V-notches, and



e. at least one radially inwardly protruding, axially-extending driving rib on the inner wall of said skirt of said overcap that is radially aligned with said ribs on said screw cap and not engageable therewith when said overcap is not distorted, said driving rib being positioned at the outer end of at least one of said narrow slits.

3,951,291

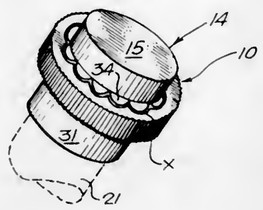
CHILD-RESISTANT CONTAINER CLOSURE

Sidney M. Libit, 441 Lakeside Terrace, Glencoe, Ill. 60022

Filed Sept. 10, 1975, Ser. No. 611,998

Int. Cl.² B65D *55/02, 85/56;* **A61J** *1/00*

U.S. Cl. 215—220 **12 Claims**



1. In combination with a container having a pouring neck provided with means to attach a closure thereto, a closure to be attached to said means, said closure having a generally hollow cylindrical body closed at one end, an annular member encircling the body and flexibly connected thereto to allow limited angular displacement of the member relative to the body, said member comprising material which is resilient but generally shape-retaining, said member having a plurality of cams extending inwardly thereof and said body having a plurality of cam followers extending outwardly thereof, said cams and cam followers regarded as sets confronting one another and having respective surfaces adapted to co-act in camming relation upon relative rotation of the body and annular member to translate angular displacement of the member into radial force on the body to tighten the closure onto the neck.

3,951,292

PILFER-PROOF NECKBAND FOR A BOTTLE

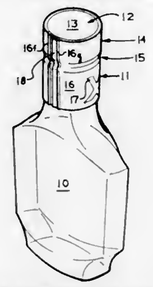
Stephen W. Amberg, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 15, 1974, Ser. No. 514,370

Int. Cl.² B65D *41/54*

U.S. Cl. 215—230 **10 Claims**

1. A labelled container comprising a bottle having a neck portion and a mouth opening at the outer axial end thereof, a closure applied over the mouth opening for closing the container, said closure having an annular skirt, a seamed sleeve-type preprinted label comprised of a sheet of a heat shrinkable, organic foamed thermoplastic material of at least 0.005 inch thickness, said foamed material having a bulk density of from 6 to 40 lbs. per cubic foot, and is highly oriented in its circumferential dimension, said sleeve label encircling said



neck portion and the skirt of said closure and having plural, axially extending pleats and an axially extending seam formed by the overlapping ends of the sheet united together, said label being shrunken into snug fitting engagement with said neck and skirt, respectively, the pleats being disposed as vertical flutes on the labelled bottle in annularly spaced relationship about the exterior surface of said label and on either side of said axial seam.

3,951,293

GAS-PERMEABLE, LIQUID-TIGHT CLOSURE

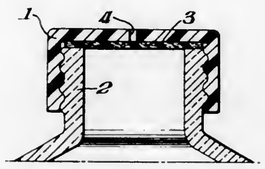
Horst Schulz, Hanover, Germany, assignor to Riedel-De Haen Aktiengesellschaft, Seelze, Germany

Filed Jan. 21, 1975, Ser. No. 542,707

Claims priority, application Germany, Jan. 24, 1974, 2403244

Int. Cl.² B65D *53/04*

U.S. Cl. 215—261 **14 Claims**



1. A gas-permeable liquid-tight sealing device for a container, comprising a closure for the container, a gas-permeable sealing film disposed within said closure, said film having a thickness of from about 0.1 to 3 mm. of unsintered tetrafluoroethylene polymer having a fibrillated structure and a density of less than about 1.4, and an opening in said closure disposed adjacent said film through which gases flowing through said film can pass while liquids are contained within said film.

3,951,294

CONTAINER FOR COMPOST DECOMPOSITION

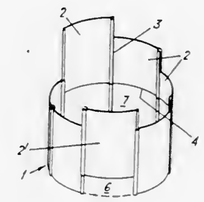
Clifford Arthur Wilson, 58 Oakwood Ave., Purley, Surrey, C.R. 2 1AQ, England

Continuation-in-part of Ser. No. 505,278, Sept. 12, 1974, abandoned. This application Nov. 22, 1974, Ser. No. 526,177

Int. Cl.² B65D *7/02*

U.S. Cl. 220—5 R **9 Claims**

1. A compost bin for the decomposition of discarded vegetable matter therein to compost comprising: a plurality of similar panels, each of which panels is provided with a first side consisting of a straight bead and a second side, parallel to said first side and consisting of a straight concave slot dimensioned to accommodate the bead of said first side such that the bead of one panel may slide in the slot of an adjacent panel; a plurality of said panels being connected at said first and second sides to form at least a part of the wall of the compost bin, one panel being movable in relation to adjacent panels by



movement of said straight bead in the slot of an adjacent panel and by movement of said straight slot enclosing the bead of another adjacent panel for access to the compost bin interior for removal of compost therefrom, the compost bin being normally closed at its upper end by a cover which is at least partially removable to provide for delivery of discarded vegetable matter to the interior of the compost bin.

3,951,295

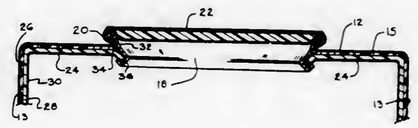
TOP OPENING INSULATED TANK

Larry L. Guenther, Beatrice, Nebr., assignor to Hoover Ball and Bearing Company, Saline, Mich.

Filed June 13, 1974, Ser. No. 479,047

Int. Cl.² B65D *25/18*

U.S. Cl. 220—9 F **3 Claims**

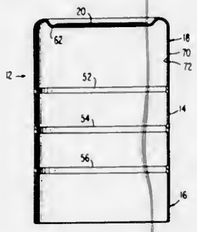


1. An insulated container comprising a rectangular tank having side walls, a bottom wall, and a top wall provided with an inlet opening, each of said walls having an inner surface and an outer surface, a continuous body of insulating material applied to the inner surface of said walls, said insulating materialf comprising three laminations, one lamination being substantially thicker than said walls, said one lamination being an expanded foam material having thermal insulating qualities, a continuous skin affixed to the outer side of said one lamination and securing said one lamination to said inner surface of said walls, and an inner lamination affixed to the inner side of said one lamination comprised of a continuous skin which is impervious to fluid, whereby said tank has a continuous fluid tight inner skin and is insulated so that it is capable of maintaining the initial temperature of the material stored in the tank over a prolonged period of time.

3,951,296
REINFORCED WALL-IRONED CONTAINER

William D. Swanson, Coraopolis, Pa., and Edward P. Spencer, Steubenville, Ohio, assignors to National Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 177,322, Sept. 2, 1971, abandoned, which is a division of Ser. No. 795,428, Jan. 31, 1969, Pat. No. 3,610,018. This application July 29, 1974, Ser. No. 492,853
Int. Cl.² B65D *7/46, 1/44*
U.S. Cl. 220—72 **8 Claims**



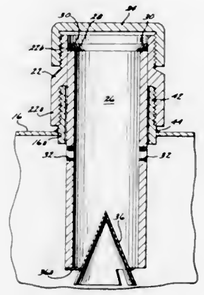
1. A wall-ironed metallic container formed of cold work hardenable metal comprising:
a hollow, metallic body having ironed side walls and having an end closure unitary with the side wall,
the side wall having an inside surface and having a first end portion contiguous to the end closure and a second end portion opposite the first end portion, and
a plurality of spaced-apart discrete, continuous circumferential reinforcing ribs, each reinforcing rib being spaced from the second end portion of the side walls, each reinforcing rib being unitary and integral with the side walls and projecting from the inside surface of the side walls at locations spaced from the first end portion of the side walls, the metal of each rib being in cold worked condition by virtue of having been formed by plastic metal flow from the metal of the side walls during the ironing of the side walls,
the hollow body having a single axis of symmetry, a plane including the axis of symmetry intersecting the outside surface of the side walls throughout their entire area along straight lines parallel to one another,
the side walls having a thickness which is uniform from the first end portion to the second end portion of the side walls at locations displaced from each reinforcing rib,
each reinforcing rib including a central surface parallel to the inside surface of the side walls,
each reinforcing rib also including a pair of wedging surfaces on opposite sides of the central surface,
the wedging surfaces inclining from the inside surface of the side walls to the central surface of the reinforcing rib,
the thickness of the side walls being not greater than the thickness of conventional tin can side walls.

3,951,297
ANTI-SIPHON GAS TANK ADAPTOR

Ronald J. Martin, Fountain Valley, Calif., assignor to Carlos A. Riquelme and Paul Keele, both of Fullerton, Calif., part interest to each

Filed May 6, 1974, Ser. No. 466,988
Int. Cl.² B67C *3/00*
U.S. Cl. 220—86 AT **1 Claim**

1. An anti-siphon intake adaptor for truck fuel tanks comprising in combination,
a tubular extension adapted to be firmly affixed to a truck fuel tank about an opening in the wall of the latter,
a tubular sleeve telescopically positioned within said extension and rigidly secured thereto,
said sleeve having a plurality of radial openings formed in the side wall thereof,
a generally conically-shaped end member having an imperforate side wall whose cross section at the base of said cone approximates the internal cross section of said sleeve,
said end member further comprising tabs punched therefrom at the marginal edge of said base and extending outwardly from the end member, said tabs being welded to the end of said sleeve to position said end member with



the apex of the conical configuration within said sleeve and the base thereof outside of said sleeve, the base of said end member and said outwardly extending tabs preventing access longitudinally of said sleeve into said fuel tank,
and means formed on one end of said extension to receive a cap for closing the end of said adaptor.

3,951,298
GATED CAN LID WITH AN INTERRUPTED TRIPLEFOLD GATE PANEL CONSTRUCTION

Gerald B. Klein, 13451 Stuart Court, Broomfield, Colo. 80020

Filed Sept. 11, 1975, Ser. No. 612,540
Int. Cl.² B65D *41/32*
U.S. Cl. 220—268 **3 Claims**

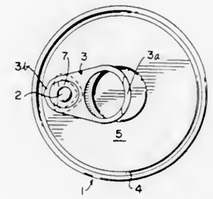


1. An improved lid for a can including a gate structure defining a normally closed aperture therein so as to facilitate removal of the contents of the can, said lid comprising a generally planar sheet metal member the outer periphery of which is adapted for attachment to a can body, said sheet metal member being drawn and shaped to provide an aperture in the surface of said member as well as a gate panel underneath the aperture normally closing same, the surface of the sheet metal member being underfolded about only a portion of the periphery of said aperture as a 180° outward underfold to form a narrow spacer strip at the underside of the lid about said portion of the periphery of said aperture, said sheet metal member thence being infolded about the outer edge of said spacer strip as a 180° inward underfold to continuously merge into the metal sheet portion constituting the gate panel, and a score line cut about the edge of said gate panel adjacent to said 180° inward underfold adapted to permit the gate panel to be severed from the spacer strip at the score line by downwardly applied pressure on the gate panel, said gate panel being maintained in a partially attached relationship with said can lid by the remaining non-folded portion of the periphery of the aperture, said remaining portion defining a hinge for said gate panel.

3,951,299
HORSE-SHOE SHAPED VENT SCORE

Nick S. Khoury, Worth, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed May 27, 1975, Ser. No. 581,383
Int. Cl.² B65D *41/32*
U.S. Cl. 220—273 **11 Claims**

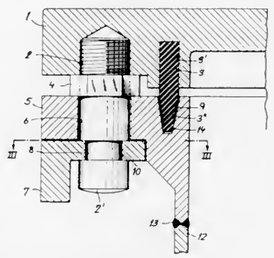


1. In an easy-opening end closure, the combination of:
a scoreline formed in the end panel and defining an opening flap therein;
a tab for initiating rupture of said scoreline, said tab comprising a handle portion and a score-rupturing portion;
interconnecting means for attaching said tab intermediate said portions thereof to said end panel whereby movement of said handle portion of said tab away from said end panel forces said score-rupturing portion toward said end panel; and
ancillary scoreline means formed in the end panel adjacent said interconnecting means rupturable in response to movement of said handle portion of said tab away from said end panel to form a pivotable segment in said end panel, said ancillary scoreline being generally horseshoe-shaped and having a bight portion and end portions terminating in distal end configurations, said ancillary score partially embracing said interconnecting means with said bight portion remote from said flap-defining scoreline and said end configurations curled away from said flap-defining score-line and toward each other as well as toward said interconnecting means.

3,951,300
PRESSURE VESSEL

Karl Kalasek, Vienna, Austria, assignor to Vereinigte Edelstahlwerke Aktiengesellschaft (VEW), Vienna, Austria

Filed July 1, 1974, Ser. No. 484,962
Int. Cl.² B65D *45/00*
U.S. Cl. 220—327 **7 Claims**

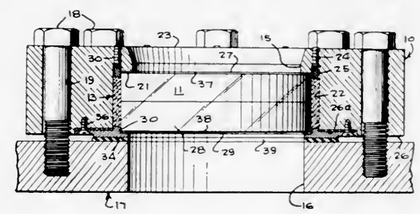


1. A pressure receptacle comprising:
a vessel;
a flange member formed along the periphery of said vessel;
a removable lid member overlying said vessel and said flange member and defining a chamber with said vessel;
an annular sealing element between said lid member and said flange member, one of said members being provided with a peripheral array of bolts extending through the other of said members; and
at least one locking strip shiftable along said other member and engageable with said bolts for locking said lid member to said flange member, said flange member being provided with a plurality of throughgoing holes, said bolts being secured to the underside of said lid member in registration with said holes and and passing downwardly therethrough, said strip being disposed beneath said flange member and being formed as an annular ring disposed beneath said flange member, said ring being formed with a plurality of keyhole-shaped openings receiving said bolts, said bolts having shanks formed with narrowed portions and enlarged heads, said heads passing through the larger ends of said keyhole-shaped openings and said narrowed portions of said bolts being engageable by the slots of said keyholes upon lateral displacement of said annular ring.

3,951,301
SIGHT GLASS ASSEMBLY

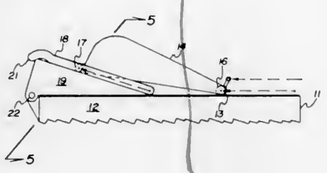
Charles E. Meginnis, 529 1/2 Nancy St., Charleston, W. Va. 25302

Filed Nov. 8, 1974, Ser. No. 522,282
Int. Cl.² B65D *25/54*
U.S. Cl. 220—328 **9 Claims**



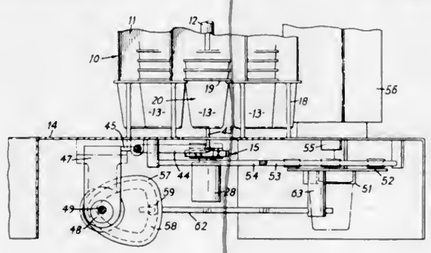
1. A sight glass assembly comprising a housing structure having an opening therethrough, said opening having an enlarged section providing a shoulder, a face plate having an opening registered with the opening in said housing structure and mounted on said housing structure in opposed relation to said shoulder, a lens disposed in the enlarged section of the opening in said housing structure and interposed between said shoulder and said face plate, a packing member disposed in the enlarged section of said opening between said housing structure and the periphery of said lens, said face plate having a flange portion of a preselected configuration and projecting longitudinal into said enlarged section and engaging said packing member, means for securing said face plate to said housing structure, applying a force on said packing member whereby said packing member is caused to expand laterally to provide a compressive force about the periphery of said lens and effect a seal between said housing structure and the periphery of said lens, a compression ring disposed in said enlarged section of said opening engaging said packing member at an end opposite the end of said packing member engaged by the flange portion of said longitudinal plate, and screws threaded into openings provided in said housing structure engaging said compression ring whereby upon threading said screws into said openings, said ring will exert an additional longitudinal force on said packing member directed toward the flange portion of said face plate, resulting in a radially inward force causing said packing member to expand laterally.

3,951,302
TRASH BIN LID
Calvin P. Owen, San Diego, Calif., assignor to Allan M. Hodge, San Diego, Calif.
Filed Aug. 5, 1974, Ser. No. 494,388
Int. Cl.² B65D *43/14*
U.S. Cl. 220—331 **2 Claims**



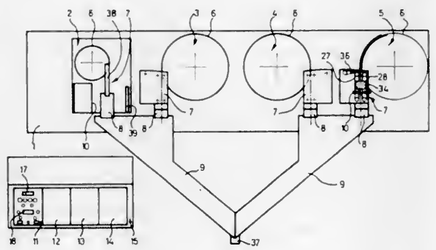
1. A trash container lid system comprising:
a lid assembly having separate front and rear sections;
a trash bin having first and second sides with first and second roller tracks on the top edges thereof;
third and fourth roller tracks located on the top of the rear lid section and on an incline plane with the top edges of said trash bin;
said front lid section having first and second pairs of rollers rotatably coupled to a front and rear portion respectively of said front lid section;
said first pair of rollers being received by said first and second roller tracks on said trash bin edges;
said second pair of rollers being captured within said inclined third and fourth roller tracks on said top of the rear section; and
a pivotal connection between a back portion of said rear lid section and a back portion of said trash bin for rotating said lid sections to a full open position.

3,951,303
BEVERAGE-DISPENSING MACHINE
Nigel Mark Hobden, Leamington Spa; Barrie Mair, Maidenhead; Michael Taylor, and Malcolm Douglas Norman Withnall, both of Warwick, all of England, assignors to Mars Limited, Slough, England
Filed Sept. 24, 1973, Ser. No. 399,814
Claims priority, application United Kingdom, Sept. 20, 1972, 43619/72
Int. Cl.² A47G *19/24*
U.S. Cl. 221—96 **32 Claims**



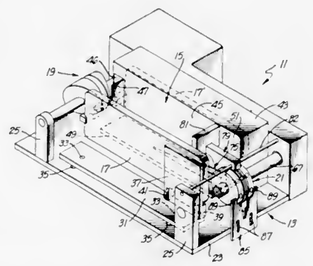
1. A machine for dispensing a range of beverages comprising:
a holder comprising several compartments, each compartment being adapted to receive a stack of cups, said holder having at least one compartment corresponding to each beverage of the range;
a cup separating station;
compartment selecting means comprising means responsive to selection by a customer for moving the holder and said plurality of stacks of cups to present a selected compartment to the cup separating station;
stationary means providing a common support for said plurality of stacks of cups as they are moved by the holder in presenting the selected compartment to the cup separating station;
movable cup supporting means at said station positioned to receive cups from the stationary supporting means and to support them as they are presented to the station;
and means at the cup separating station for removing the movable supporting means from supporting position and for separating cups singly from the stack so presented.

3,951,304
APPARATUS FOR TRANSPORTING SMALL OBJECTS
Dieter Heinz, Heideck, and Manfred Sittmann, Stuttgart, both of Germany, assignors to ABG Apparatebau Gesellschaft mbH, Schweigern, Germany
Continuation of Ser. No. 301,676, Oct. 27, 1972, abandoned. This application June 10, 1974, Ser. No. 478,094
Claims priority, application Germany, Oct. 28, 1971, 2153733; Mar. 11, 1972, 2211897
Int. Cl.² B65H *3/44*
U.S. Cl. 221—124 **11 Claims**



1. Apparatus for supplying a predetermined number of small objects, each of which has a head portion and a stem portion of predetermined diameter, said apparatus including at least one unit comprising pot-shaped vibratory conveyor means adapted to receive a great number of said small objects, said pot-shaped vibratory conveyor means having a substantially circular path including a pair of parallel track portions forming between each other a slot adapted to receive the stem portions of said objects while said head portions slide on said track portions, and an outlet through which said objects are discharged seriatim and at a predetermined speed; elongated transporting means extending tangential to said substsantially circular path and having an inlet at said outlet end of said pot-shaped conveyor means for receiving objects discharged through said outlet of said pot-shaped conveyor means, said elongated transporting means comprising a pair of driven endless belts located in a common horizontal plane and having confronting belt portions located in parallel vertical planes and forming between each other a gap open in a vertical plane and having a constant width corresponding to the stem diameter of the objects so that the stem portions are firmly gripped by said confronting belt portions with free ends of said stem portions projecting downwardly beyond said belts, means for moving said confronting belt portions in the same direction and at a speed greater than the predetermined speed so that said objects are transported spaced from each other from said inlet to the opposite end of said elongated transporting means, a stationary support bridging said belt portions above said gap, and elongated guide means mounted on said support below the latter and above said gap for slidingly guiding the heads of objects transported in said gap by said confronting belt portions; sensing means arranged adjacent said belts for cooperation with said projecting ends of said stem portions for creating a signal during passing of each of the spaced stem portions past said sensing means; counter means receiving said signals from said sensing means and counting the number of objects passing said sensing means; receiving means adjacent said opposite end of said elongated transporting means for receiving the counted objects; and control means cooperating with said counter means for stopping operation of said conveyor and transporting means and for discharging the objects from said receiving means after a predetermined number of objects has been received therein.

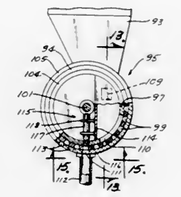
3,951,305
MAGNETIC FEEDER AND METHOD OF FEEDING MAGNETIC PARTS
Ivan V. Rondas, Mission Viejo, Calif., assignor to GTI Corporation, Pittsburgh, Pa.
Filed Oct. 25, 1974, Ser. No. 517,907
Int. Cl.² B65G *47/12*
U.S. Cl. 221—212 **11 Claims**



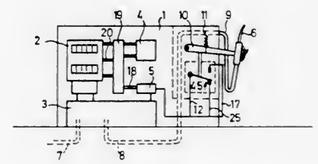
1. A feeder for magnetic components comprising:
a hopper adapted to receive the components including a bottom wall and first and second side walls, each of said first and second side walls having an inner surface, said hopper having first and second opposite ends and an outlet adjacent said first end of the hopper;
first and second magnets;
first means for mounting said first magnet outside of the inner face of said first side wall for pivotal movement about a first pivot axis;
second means for mounting said second magnet outside of the inner surface of said second side wall;
means for oscillating said first magnet about said first pivot axis to move the first magnet relative to the inner surface of said first side wall;
said magnets cooperating to orient the components in the chute and the oscillatory movement of said first magnet at least assisting the movement of the components toward said outlet; and
means for removing the component at said outlet.

3,951,306
PLANTER APPARATUS
Arnold E. Ernst, Wolverton, Minn. 56594
Division of Ser. No. 417,741, Nov. 21, 1973, Pat. No. 3,886,875. This application Aug. 20, 1974, Ser. No. 498,982
Int. Cl.² B65H *3/00*
U.S. Cl. 221—263 **2 Claims**

1. For use in planting machines, a seed storage and discharge device comprising:
a hopper for holding seed;
a rotatable drum having regularly spaced holes formed therein; and
a stationary housing including an inner fixed drum having an elongated aperture formed therein, an outer fixed drum having a passage formed therein, and a closed end with an entrance formed therein, said hopper being attached to said outer drum over said entrance whereby seed in said hopper is delivered to said housing, said inner drum being attached to said closed end whereby an annular space is formed between said fixed drums, said rotatable drum being received into said annular space, said holes, aperture, and passage being in the same plane, whereby said holes are periodically registered sequentially first with said aperture and secondly with said passage by movement of said rotatable drum, said seed being thereby transferred from said housing through said rotatable drum to the ground;
and further wherein said housing includes an internal wall member attached between said closed end and said inner drum whereby a container is formed with said entrance and said aperture included therein.



3,951,307
TIMING OF THE CONTROL AND RESETTING MOTOR IN A FUEL DISPENSING ARRANGEMENT
Felix Müller; Dietmar Hummel, and Bernhard Müller, all of Schwenningen, Germany, assignors to Kienzle Apparate GmbH, Villingen, Germany
Filed July 10, 1974, Ser. No. 487,274
Claims priority, application Germany, July 11, 1973, 2335241
Int. Cl.² B67D *5/26*
U.S. Cl. 222—33 **13 Claims**



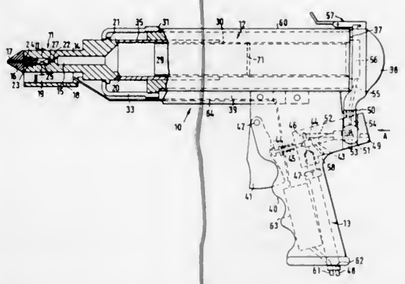
1. In a fuel dispensing arrangement of the type comprised of a fuel dispensing nozzle, a fuel pump for pumping fuel to said fuel dispensing nozzle, an electric pump motor operative when energized by pump motor current for driving said fuel pump, a price calculator and indicator arrangement for calculating and indicating the price of the fuel pumped through said nozzle, a resetting arrangement which can be driven to effect resetting of said price calculator and indicator arrangement, and an electric control motor operative for driving said resetting arrangement, in combination therewith, a source of electrical energy; first means connecting said source of electrical energy to said pump motor and defining a pump motor current path for the flow of pump motor current through said pump motor current path from said source to said pump motor; and second means connecting said control motor to said pump motor current path and operative for controlling the operation of said control motor in dependence upon the flow of pump motor current through said pump motor current path.

3,951,308

APPARATUS FOR DISPENSING ADHESIVE MATERIAL

David Colin Thirtle, Camberley, England, assignor to Sale Tilney AG, Zug, Switzerland

Filed Nov. 11, 1974, Ser. No. 522,921
Claims priority, application United Kingdom, Dec. 7, 1973, 56870/73; Apr. 6, 1974, 15475/74
Int. Cl.² B67D *5/32, 5/62*
U.S. Cl. 222—39 **17 Claims**



1. Dispensing apparatus for dispensing adhesive material comprising:
   a. a housing;
   b. a feed passage in the housing having adhesive in the form of at least one normally substantially solid but heat-liquefiable block which has seal-forming means to form a fluid-tight yet yieldable seal with the wall of the feed passage,
   c. nozzle means for discharging liquefied adhesive and communicating with the forward end of the feed passage,
   d. actuating means adapted normally to prevent any flow of pressurized fluid from a source of such fluid to the feed passage and adapted on actuation to permit such flow;
   e. permanently open fluid flow ducting extending from said actuating means to the feed passage so that in use pressurized fluid flows directly to the rear of a said block in the feed passage without the intermediation of any mechanical means to propel the said block axially along the feed passage towards the discharge opening; and
   f. heating means located adjacent the forward end of the feed passage for heating and progressively liquefying a said block of adhesive from its leading end, the solid portion of the said block serving, in use, as a piston for the liquefied portion thereof with said seal-forming means preventing pressurized fluid from coming into contact with said liquefied portion.

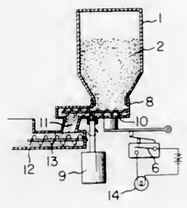
3,951,309

DEVICE FOR DETECTING THE QUANTITY OF REMAINING DEVELOPER

Syujiro Kadowaki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 8, 1974, Ser. No. 486,317
Claims priority, application Japan, July 11, 1973, 48-82501[U]
Int. Cl.² B65D *83/06*
U.S. Cl. 222—64 **5 Claims**

1. A device for detecting a decrease quantity of developer in a container comprising:
   a non-magnetic stationary container for containing magnetic developer therewithin and having a lower discharge opening;
   a magnet disposed outside and adjacent the bottom of said container for producing a magnetic attraction between the magnet and the developer within said container;
   means for delivering the developer from said container through said opening thereof;
   means for mounting said magnet for movement away from said container under the force of gravity when the developer is below a predetermined quantity; and



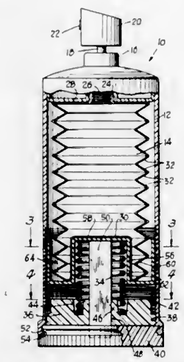
   a switch operable in response to movement of said magnet away from said container.

3,951,310

SPRING-CHARGED AEROSOL DISPENSER

Wolf Steiman, Bridgeport, Conn., assignor to V.C.A. Corporation, Greenwich, Conn.

Filed Feb. 11, 1974, Ser. No. 441,542
Int. Cl.² B65D *35/28*
U.S. Cl. 222—95 **2 Claims**



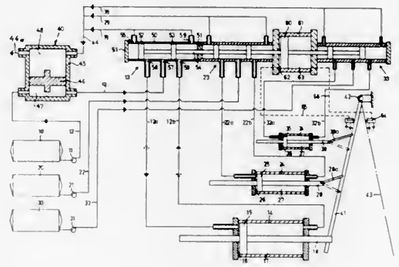
1. A spray dispenser of the hand-held type comprising in combination:
   a. a casing having a generally cylindrical sidewall and being open at the lower end thereof and having internal threads on the lower portion thereof, and a non-removable top wall fixedly attached to the upper end of said sidewall, said top wall providing a central opening therein;
   b. a discharge valve structure having a manually operable actuator protruding from said central opening in said top wall, and a boss extending downwardly from said top wall;
   c. means rigidly mounting said valve structure in proximity to said top wall;
   d. a collapsible, flexible bag having its upper end attached to said boss of said valve structure and having a movable wall adapted to reduce the volume of said bag so as to expell the contents of said bag through said valve;
   e. an inverted support cup slidably received in said casing supporting said movable wall of said flexible bag, said cup having spaced apart outer and inner cylindrical walls connected at their lower ends by an annular bottom wall, said inner cylindrical wall being closed at its upper end by a flat top wall to provide an axially aligned cup-shaped recess;
   f. spring means within said casing having its upper end received in said cup-shaped recess;
   g. a follower member having an annular recess in its upper surface receiving the lower end of said spring, said member having external threads engageable with the internal threads of said sidewall to enable advancing movement of said follower member in response to turning thereof with respect to said casing;
   h. an external finger piece closing the opening in said casing;
   i. means rotatably mounting said finger piece on the lower end of said casing; and
   j. keying means connecting said finger piece and said follower member for effecting axial movement of said follower member within said casing.

3,951,311

LIQUID MEASURING AND MIXING APPARATUS

Bjorn-Olow Johansson, Lomma, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Jan. 12, 1973, Ser. No. 323,219
Claims priority, application Sweden, Jan. 19, 1972, 576/72
Int. Cl.² B67D *5/06*
U.S. Cl. 222—145 **3 Claims**



1. In an apparatus for measuring and mixing different liquids and comprising a measuring unit having inlet conduits for supplying the respective liquids under pressure, said unit also having outlet ducts for discharging measured quantities of the respective liquids and a common outlet conduit connected to said ducts for discharging a mixture of the measured liquid quantities, and means forming an inlet chamber connected to one of said inlet conduits for a liquid component of the mixture and forming a separate outlet chamber connected to said outlet conduit for the mixture, said means including a member subjected to the pressures in said two chambers and movable by the pressure in said one inlet conduit into said outlet chamber in response to a pressure drop in the outlet chamber, whereby said member acts to displace liquid from said outlet chamber.

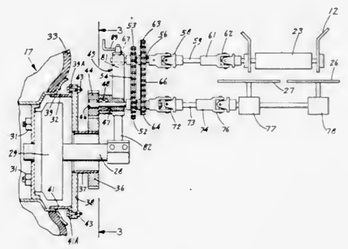
3,951,312

GROUND WHEEL DRIVE FOR SPREADER

James E. Gay, Fargo, N. Dak., assignor to Mobility, Inc., Fargo, N. Dak.

Filed Oct. 16, 1974, Ser. No. 515,335
Int. Cl.² A01C *17/00*
U.S. Cl. 222—177 **27 Claims**

1. A particulate fertilizer spreader comprising: a hopper for carrying particulate fertilizer and like materials, a frame attached to the hopper, ground engaging wheel means supporting the spreader on the ground, means connecting the wheel means to the frame, a fertilizer distributor assembly mounted on the frame rearwardly of the hopper for spreading fertilizer onto the ground, conveyor means located in said hopper for moving fertilizer from the hopper to the distributor assembly, and power transmitting means connecting the ground engaging wheel means with the conveyor means and distributor assembly for concurrently operating the conveyor means and distributor assembly in response to rotation of the wheel means, said power transmitting means including a first spur gear drivably connected to the wheel means, a second spur gear engageable with the first gear, means drivably connecting the second gear with the conveyor means and distributor assembly, and means selectively adjustable to support the second gear in driving relation with the first gear and to move the second gear to a non-driving position with respect to the first gear, said means adjustably supporting the second gear comprising a first tubular member secured to a part of the means connecting the wheel means to the frame and a second member located in a moving telescopic relation with respect to the first member, means for mounting the second gear on the second member whereby the second gear moves with the second member, and means to move the second member relative to the first member to thereby change the position of the second gear relative to the first gear to either hold the second gear in driving relation with the first gear or locate the second gear in a non-driving relation with respect to the first gear.

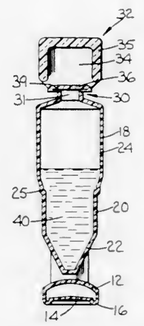


3,951,313

RESERVOIR WITH PREPACKED DILUENT

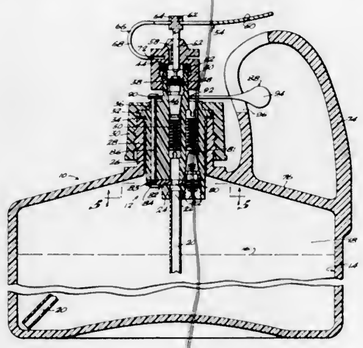
Roy Coniglione, Sparta, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed June 5, 1974, Ser. No. 476,522
Int. Cl.² B67D *5/06;* **G01N** *1/14;* **B65D** *47/10*
U.S. Cl. 222—186 **4 Claims**



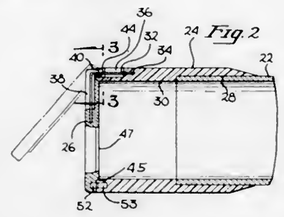
1. A container of unitary construction comprising:
   a prepackaged accurately measured volume of diluent disposed in said container and being hermetically sealed therein, said container having a shearable closure covering an access opening formed in said container, said container having a body for housing said diluent, said body including a lower section of reduced diameter and terminating in a closed end, and a stand mounted on said closed end to provide means for maintaining the container in an upright position.

3,951,314
SPRAYING DEVICE WITH LIQUID-VAPOR WITHDRAWAL VALVE
Anthony S. Toro, 6834 SW. 15th St., Pembroke Pines, Fla. 33023
Filed Dec. 16, 1974, Ser. No. 532,751
Int. Cl.² B65D *83/14*
U.S. Cl. 222—402.17 10 Claims



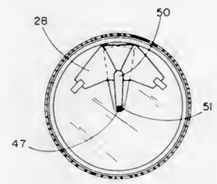
1. A pressurized container assembly comprising,
A. a container defining an interior chamber to carry a liquid under a pressure head of a medium such as air or any other appropriate gas;
B. a top neck portion;
C. stopper means, removably fixed in said neck portion, providing a generally vertical port extending therethrough;
D. a reduced diameter discharge orifice in a spray top, fixed to said stopper, opening to the atmosphere from the top of said port;
E. discharge valve means removably fixed in said vertical port including an upwardly, axially extending actuating stem;
F. a discharge tube, extending downwardly into the liquid and having an upper end fixed relative to the lower end of said vertical port;
G. manual actuating means, connected to said spray top, to selectively engage said stem to open said discharge valve means;
H. a manually operable, pivotal valve segment bisecting said vertical port below said discharge valve and having a first portion providing a through hole communicating, in a first position, between the top end of said discharge tube and said discharge orifice by way of said discharge valve and vertical port; and a second portion in a sealing relation to the top of said discharge tube and providing an opening communicating between said pressurized head and discharge orifice in a second position;
I. a pivot pin extending vertically upwardly through said stopper in a spaced apart, parallel relation to said vertical port, said valve segment being fixed to the lower end thereof with a horizontally, outwardly extending, manually operable lever means being fixed to an upper extended end thereof to selectively position said valve segment in either of said first or second positions;
J. a handle grip extending upwardly from said container in a position closely adjacent to said valve segment lever means and said manual actuating means whereby said container may be selectively, instantaneously operated by a finger or thumb of the hand engaged with said handle to perform a liquid spraying operation or to deliver a short burst of the pressurized air through the nozzle.

3,951,315
FUEL PUMP NOZZLE ANTI DRIBBLE DEVICE
Thomas R. Glodek, 4572 Via Marina, Apt. 201, Marina del Rey, Calif. 90291
Filed Aug. 22, 1974, Ser. No. 499,396
Int. Cl.² B65D *47/08*
U.S. Cl. 222—491 9 Claims



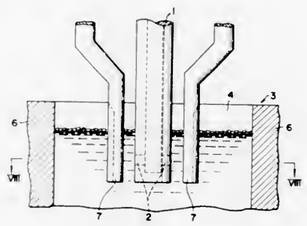
4. The anti dribble device of claim 1 wherein the portion of the axis of rotation of said closure member between said depressions is located within the outer diameter of said body member.

3,951,316
SANITARY DRINKING SPOUT FOR LIQUID CONTAINER
Chester L. O'Neal, 101 S. Locust, Greencastle, Ind. 46135
Filed Oct. 10, 1974, Ser. No. 513,762
Int. Cl.² B67D *3/00*
U.S. Cl. 222—529 3 Claims



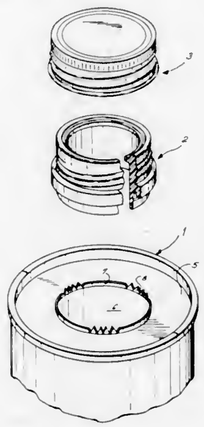
1. A liquid containing metal can with sanitary drinking spout comprising:
a main body including a top wall with a circumferentially extending edge portion, a bottom wall and a circular sidewall sealing joined to said top wall and said bottom wall, said top wall having an aperture sealingly closed by a tear tab;
a pull attached to said tear tab;
a sanitary drinking spout including a pair of flanges and a flexible center portion integrally attached to and disposed between said flanges, said flanges being fixedly attached to said top wall on opposite sides of said aperture within said main body, said center portion having a base located adjacent said edge portion of said top wall, said center portion being projectable through said aperture when said tab is moved to open said aperture;
said spout including a plurality of crease lines extending across said flanges allowing said center portion to be movable with respect to said flanges;
a finger cantileveredly attached to said tear tab at the location of attachment of said pull to said tear tab, said finger projecting from said location of attachment toward said edge portion of said top wall and being positioned in said can with said spout projecting between said top wall and said finger, said spout being pulled through said aperture by said finger and pivoted with said finger about said base as said tab is torn from said can in a direction from said location of attachment toward said base.

3,951,317
SUBMERGED TUNDISH NOZZLE FOR CONTINUOUS CASTING
Yoshio Hosokawa; Hiroyuki Ichihashi, both of Ibaragi; Mamoru Toyota, Chiba, and Kenzi Takahashi, Ibaragi, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Japan
Filed Sept. 4, 1974, Ser. No. 503,065
Int. Cl.² B22D *37/00*, *41/08*
U.S. Cl. 222—566 1 Claim



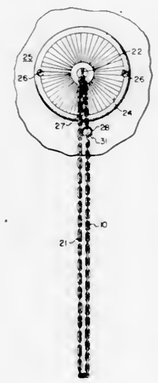
1. A submerged tundish nozzle for use with a mould of rectangular horizontal section having opposed horizontally long side walls and opposed horizontally short side walls, respectively, said nozzle having a closed lower end and having two substantially H-shaped delivery ports on the outer periphery of the nozzle and opened upwardly toward said opposed short side walls of the mould, said ports having a divergence angle of 10° to 20°, and having a deflecting plate of arrow-head-shaped horizontal cross-section set in front of each of said delivery ports.

3,951,318
DISPENSING DEVICE COMPOSED OF A CAN AND A NOZZLE FIXEDLY ATTACHABLE THERETO
Allan A. Costa, 682 Udall St., West Islip, N.Y. 11795
Filed Dec. 11, 1974, Ser. No. 531,538
Int. Cl.² B65D *25/48*
U.S. Cl. 222—569 6 Claims



1. An assemblage of a dispensing device comprising in combination:
a container for material to be dispensed and a nozzle fixedly attachable to the container;
said container being made of a hard and rigid material and having a top wall including a circular opening for dispensing material through said opening and for receiving said nozzle, and including a plurality of generally tooth-shaped serrations each terminating in a sharp point and extending upwardly circumferentially spaced from and about the rim defining the top wall opening substantially normal to said top wall; and
said nozzle being made of a form-retaining but flexible synthetic plastics material softer than the material of the serrations on the container and being of generally tubular configuration, said nozzle having an upper portion for releasably receiving a screw cap and a lower portion for locking the nozzle to the container, said upper nozzle portion having on its outer wall threads for screwing on and off a screw cap by rotating the cap relative to the nozzle and the container, and said lower portion of the nozzle having an outer wall surface increasing from a diameter less than the diameter of said top wall opening from the lower edge of said outer surface to a diameter larger than the diameter of the top wall opening diameter whereby upon forcing the lower nozzle wall portion through the top wall opening into a position in which the wall surface part having the diameter larger than the diameter of the top wall opening is located below the level of the top wall opening the nozzle is locked against axial withdrawal from the container,
said lower nozzle portion further having on its outer surface a circular flange radially outwardly extending from said outer surface, said flange defining a substantially plane surface on its side facing the lower edge of the nozzle, said surface being substantially parallel with the top wall and normal to the serrations when the nozzle is in its locked position, the height of the serrations and the location of the plane surface of the flange being so correlated that upon axially downwardly pressing the lower nozzle portion into and through the top wall opening the points of said serrations bite into the plane flange surface in any rotational position of the nozzle relative to the container thereby locking the nozzle against rotation relative to the container.

3,951,319
ZIPPER PULLER (ZIPPER ZIP)
Inez A. Huntress, Glendale, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Mar. 17, 1975, Ser. No. 558,725
Int. Cl.² A47J *51/06*
U.S. Cl. 223—111 1 Claim



1. A device to permit a person to operate a zipper slide located in a relatively inaccessible location on a garment worn by the person comprising
a plate member adapted to be mounted to a fixed vertical surface of a dressing room, said plate fitted with a closed loop projecting from the plate,

a first length of flexible material fastened at one end to the closed loop, and fastened at the other end to an open hook of a size to fit the hole of a zipper slider tab, and

a second length of flexible material fastened at one end to the closed loop and fastened at the other end to an open ring of a size to readily engage the hook of the said first length,

said second length of flexible material being of a shorter length than the said first length so as to serve as a means of supporting the hook of the first length, when not in use, in a uniform location accessible to a person in the dressing room who wishes to detach the hook of the said first length from the ring of the second length and engage the hook into the slider tab of a zipper so as to operate the zipper slider by pulling on the said first length against the engaged hook,

said plate adapted to be located on a vertical surface of a dressing room at a height above the dressing room floor so that a ring of a said second length is freely suspended at a height readily accessible to a user of a dressing room.

3,951,320

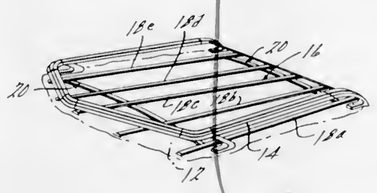
LUGGAGE RACK

John A. Bott, 931 Lake Shore Drive, Grosse Pointe Shores, Mich. 48236

Continuation of Ser. No. 60,662, Aug. 3, 1970, abandoned. This application May 15, 1974, Ser. No. 470,263

Int. Cl.² B60R *9/04*

U.S. Cl. 224—42.1 D **6 Claims**



4. A vehicle luggage rack platform including a pair of parallel cross straps spaced apart in the longitudinal direction of the vehicle, means for affixing the two opposite ends of each of said cross straps to a vehicle roof, a plurality of luggage supporting slats mounted on said cross straps, each of said slats having a pair of spaced side walls defining a cavity therebetween which is open to the lower surface of said slat, an adjustable joint between the opposite ends of each of said cross straps for tightening said strap between the opposite ends thereof, the joint of each of said cross straps being disposed entirely within the cavity of one of said slats and being completely concealed thereby, and a plurality of resilient arm means projecting upwardly from each of said straps, selected resilient arm means receivable entirely within the cavities of said slats securing selected ones of said slats to said straps, whereby the surfaces of said slats above said joints and said securing means are flush with remainders of the slat surfaces.

3,951,321

METHOD OF, APPARATUS FOR, TRANSPORTING YARNS THROUGH MEASURING UNITS

Eduard Heusser, Uster, Switzerland, assignor to Zellweger, Ltd., Switzerland

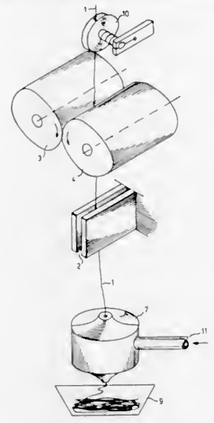
Filed Sept. 25, 1974, Ser. No. 509,220

Claims priority, application Switzerland, Sept. 26, 1973, 13804/73

Int. Cl.² B65H *17/32*

U.S. Cl. 226—97 **2 Claims**

1. An apparatus for transporting yarns, especially filaments, through a measuring unit, comprising: a measuring unit; means for delivering a yarn to said measuring unit including a pair of delivery rollers preceeding the measuring unit in the direction of travel of the yarn; nozzle means engaging the yarn downstream of said measuring unit for applying a uniform adjustable tension to the yarn in the measuring unit, said nozzle means including a nozzle having an air chamber, a three-way cock and a pair of airlines tangentially opening into



the nozzle chamber on opposite sides thereof and being connected to respective outlets of said three-way cock; and air supply means for applying air under pressure to said cock so that a flow of air can be selectively applied through the line opening tangentially into the nozzle chamber from one side or from the other side to produce a vortex of air therein which will impart an S- or Z-twist to the yarn, respectively.

3,951,322

METHOD AND APPARATUS FOR THE TREATMENT OF FLEXIBLE MATERIAL

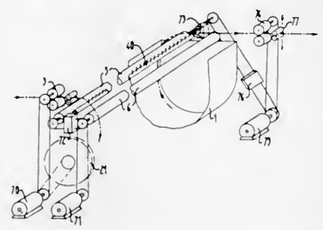
Marcel A. P. Giros, Ancerville, France, assignor to Societe Meusienne de Constructions Mecaniques, Ancerville, France

Filed May 18, 1973, Ser. No. 361,616

Claims priority, application France, May 24, 1972, 72.19235

Int. Cl.² B65H *17/42*

U.S. Cl. 226—119 **11 Claims**



1. Apparatus for treatment of strip material by a fluid, comprising, a container for fluid, first and second strip-supporting, elongated shafts journaled for rotation over said container in spaced, side-by-side relation on parallel horizontal first and second axes, a comb fixed between and parallel with said shafts essentially in a plane determined by their uppermost elements and essentially coextensive therewith, said comb including upstanding teeth spaced therealong, and rotating means engaging and positively feeding the strip material at predetermined speed, into said container at one end of said shafts, thence upwardly over and in transverse contact with said shafts in a plurality of loops each and guided between consecutive pairs of teeth of said comb with each loop depending into said container for contact with treatment fluid therein.

3,951,323

REMOVABLE UPPER GUIDE ROLL UNIT IN A CONTINUOUS METAL CASTING INSTALLATION

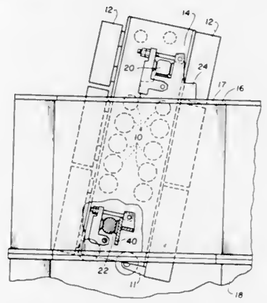
Henri Libossart, Lezennes, and Marcel Beghin, Lille, both of France, assignors to Fives-Cail Babcock, Paris, France

Filed Oct. 7, 1974, Ser. No. 512,683

Claims priority, application France, Oct. 2, 1973, 73.35120

Int. Cl.² B65H *17/20, 17/52*

U.S. Cl. 226—189 **7 Claims**



1. In an installation for continuously casting molten metal, which comprises a fixed support frame and a unit of guide rolls, the unit having a pair of side walls and being removably mounted in the interior of the support frame, the improvement of a pair of upper trunnions and a pair of lower trunnions mounted on respective ones of the side walls, the entire weight of the unit being supported by a single pair of the trunnions, means for supporting the single pair of trunnions on the support frame, and abutment means on the support frame for the upper and lower trunnions, the abutment means preventing transverse movements of the unit and each abutment means comprising an abutment affixed stationarily to the support frame and an abutment movable in respect of the stationary abutment, the movable abutment being displaceable away from the stationary abutment for facilitating the assembly and disassembly of the unit in the installation.

3,951,324

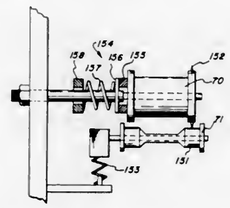
CAMERA/PROCESSOR/PROJECTOR AND SUB-SYSTEMS

Arnold L. Pundsack, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 15, 1974, Ser. No. 451,654

Int. Cl.² B65H *23/08*

U.S. Cl. 226—195 **1 Claim**



1. A vibration regulator for an advancing web comprising:

an idler roller rotatably mounted on a shaft, said roller adapted to receive an advancing web in non-sliding contact therewith; and

adjustable drag means contacting said roller to control the amount of advancing force on the web necessary to rotate said roller and thus advance said web to thereby regulate the transfer of vibrations along said web;

said drag means comprising:

a friction pad attached to the side of said idler roller;

a plate member in continuous contact with said friction pad;

an adjustable lock collar on said shaft; and

a spring member biased between said lock collar and said plate member whereby said plate member and said friction pad are adjustably biased into contact with said roller to regulate the transfer of vibrations along said web.

3,951,325

STAPLER WITH A PUNCH MECHANISM

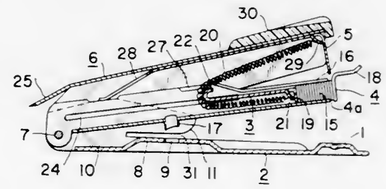
Yoshio Mitsuhashi, 79, Higashi-Kibogaoka, Asahi, Yokohama, Kanagawa, Japan

Division of Ser. No. 444,986, Feb. 22, 1974, Pat. No. 3,907,190. This application Apr. 23, 1975, Ser. No. 570,795

Claims priority, application Japan, Feb. 26, 1973, 48-22954

Int. Cl.² B25C *5/02*

U.S. Cl. 227—76 **3 Claims**



1. In a stapler of the type including a base having an anvil die adjacent one end thereof, an open-top staple magazine having a staple dispensing aperture provided at distal end in a bottom wall thereof, said magazine being pivoted at its proximal end to the other end of said base so as to be turnable up and down relative thereto, a lever having a staple ejector at its distal end and also pivotally connected at its proximal end to the other end of said base so as to be turnable up and down relative thereto, said lever being adapted to drive each foremost staple accommodated within said staple magazine out of said dispensing aperture by said staple ejector such that the dispensed staple is clinched by said anvil die to hold layers of penetrable material together, a feed element slidably mounted within said staple magazine behind the staples accommodated therein, and spring means urging said feed element toward said dispensing aperture to feed the staples toward the dispensing aperture:

an improvement comprising a punching die on said base intermediate the ends thereof and having a planar surface and a bore formed therein;

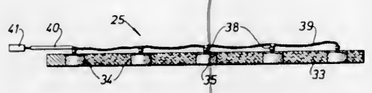
a perforating punch extending downwardly from the bottom of said staple magazine at a position to be received in said bore of said punching die when said staple magazine is depressed onto said base; and

a pin pivotally coupling at least said staple magazine at its proximal end to said other end of said base so that said magazine can be pivoted independently of said lever, said pin having an axis located on a line of intersection between the plane of said surface of said punching die and the plane of said bottom surface of said staple magazine.

3,951,326
APPARATUS FOR EXPLOSION WELDING OF A COVERING PLATE TO A BED PLATE OF ANOTHER METAL

Johan Ingvar Johansson, and Rune Östen Walter Fredriksson, both of Avesta, Sweden, assignors to Avesta Jernverks Aktiebolag, Avesta, Sweden

Filed Aug. 30, 1974, Ser. No. 502,029
Int. Cl.² B23K *21/00*
U.S. Cl. 228—2.5 **5 Claims**

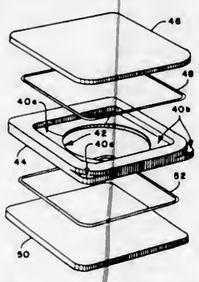


1. An apparatus for point-by-point explosion welding of a covering plate of a corrosion-resistant metal, such as titanium, to a bed plate of another metal, such as steel, comprising
a plate support beam,
a blasting-charge holding beam extending along said plate support beam,
guide means for said blasting-charge holding beam providing for a guided reciprocating translational motion thereof toward and away from said support beam,
said blasting-charge holding beam being thus positionable away from said support beam to permit free movement of the plates to be welded between said beams for support upon said support beam,
means for moving said blasting-charge holding beam to a lower position to press said plates against said support beam,
a longitudinal blasting-charge rod,
the side of said blasting-charge holding beam turned toward said support beam including a longitudinal channel accommodating said blasting-charge rod,
said blasting-charge rod comprising a rod proper of wood or similar material containing a plurality of blasting units fitted in bores longitudinally spaced therein,
a blasting cap connected by a fuse to said blasting units for producing simultaneous detonation of said blasting units and thus point-by-point explosion joining of the two plates while pressed together between said beams.

3,951,327
CERAMIC TO METAL SEAL

Gary S. Snow, and Paul D. Wilcox, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 28, 1975, Ser. No. 544,716
Int. Cl.² B23K *19/00*
U.S. Cl. 228—121 **11 Claims**



1. A method for providing a high-strength, hermetic, ceramic to metal seal and bond consisting essentially of chemically cleaning a surface of a ceramic member to be joined; positioning a wire-like metal gasket directly on said ceramic surface; then heating said ceramic member and said gasket to a temperature of from about 45 percent to about 70 percent of the melting temperature of said metal gasket; and thereafter while maintaining said temperature simultaneously extensively deforming said heated gasket from about 50 percent to about 95 percent against said surface to seal and bond said gasket to said ceramic.

3,951,328
JOINING OF METAL SURFACES

Eric Robert Wallace, Cambridge, England, and Ernest William Dewing, Arvida, Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

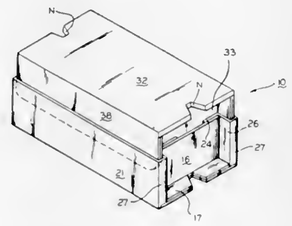
Continuation of Ser. No. 447,168, March 1, 1974, abandoned, which is a continuation-in-part of Ser. No. 384,272, July 31, 1973, abandoned. This application Oct. 6, 1975, Ser. No. 620,112
Int. Cl.² B23K *31/02, 35/36*
U.S. Cl. 228—207 **16 Claims**

1. A method of joining by brazing surfaces of metal selected from the class consisting of aluminum and alloys thereof with an aluminum brazing alloy having a melting point lower than that of metal of the surfaces to be joined, comprising:
a. disposing, for contact, between the surfaces, with exposed metal including a body of the brazing alloy which is to serve for joining the surfaces, a flux comprising a mixture of potassium fluoaluminate complexes and essentially free of unreacted potassium fluoride;
b. heating the brazing alloy body and flux, in juxtaposed relation to the surfaces to be joined, to a temperature above the brazing alloy melting point for joining the surfaces; and
c. then allowing said body and said surfaces to cool.

3,951,329
TELESCOPE CONTAINER WITH RECESSED ENDS

Gerald W. Turner, Norristown, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Sept. 5, 1975, Ser. No. 610,572
Int. Cl.² B65D *5/00, 13/00*
U.S. Cl. 229—23 BT **7 Claims**

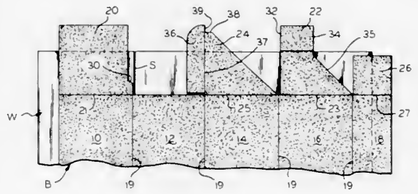


1. A tray having a recessed end for forming one of a pair of telescoping trays for protecting the binding of a book or the like, said tray being formed from a cut and scored blank of paperboard or the like and comprising:
a. a rectangular main panel;
b. opposed end walls spaced inward of the ends of said main panel;
c. a connector element foldably connected to said main panel at each end thereof in facing relationship therewith and foldably connected to an end wall along an edge thereof;
d. opposed side walls foldably connected to said main panel along the sides thereof;
e. flaps foldably connected between ends of said side and end walls for maintaining said end walls in position spaced from the ends of said main panel to provide a recessed end for said tray.

3,951,330
CARTON TOP CLOSURE ARRANGEMENT

John D. Desmond, Philadelphia, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Mar. 6, 1975, Ser. No. 555,971
Int. Cl.² B65D *5/08*
U.S. Cl. 229—38 **5 Claims**



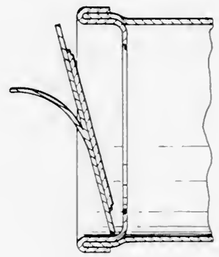
1. In a closure arrangement for a prewrapped, collapsible carton formed from a unitary blank of foldable paperboard having a sheet overwrap of flexible material such as paper, film, or the like secured to its outer surface, the combination of:
a. first, second, third, and fourth side wall panels hingedly interconnected to form a tubular structure open at the top;
b. first, second, and third top closure flaps hingedly attached to the upper edges of said first, second, and third side wall panels, respectively;
c. said first flap presenting at a side thereof adjacent said fourth side wall panel a shoulder like projection located adjacent the side wall panel to which said first flap is connected;
d. said third flap having hingedly attached thereto, at a side thereof adjacent said fourth side wall panel a relatively narrow, elongated tuck tab having a tip projecting a slight distance beyond an edge of said third flap remote from the side wall panel to which said third flap is connected;
e. said sheet of overwrap extending approximately one half of the length of the closure flaps and being uninterrupted throughout its width except for a slit located adjacent the projection on said first flap and extending from an edge of said fourth side wall panel to the free edge of said overwrap;
f. said closure flaps being adapted to be folded over into overlapped relation with each other with said tuck tab being inserted between an inner surface of said fourth side wall panel and an adjacent edge of said first closure flap and with the tip of said tuck tab engaged under said first closure flap projection, whereby excess portions of said overwrap in the areas between certain adjacent edges of said closure flaps are folded under related closure flaps.

3,951,331
RECLOSABLE CLOSURE

Ernest L. Smith, and George E. MacEwen, both of Kansas City, Mo., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 29, 1974, Ser. No. 474,230
Int. Cl.² B65D *5/64, 5/54*
U.S. Cl. 229—43 **18 Claims**

1. A closure adapted to be fixed to an open end of a container, said closure comprising at least two layers of material, an inner layer being of size and shape such as to close said open end of said container when fixed to said open end of said container and having two concentric score lines, one on its inner surface and one on its outer surface, with the score line on the inner surface of said inner layer being farther from the walls of said container than the score line on the outer surface of said inner layer, said inner layer being of a tensile strength and said score lines so positioned that when the closure is acted on by sufficient force the score lines will lead to rupture of said inner layer between said score lines, thereby permitting removal of a portion of said inner layer to leave in said open end of said container a shouldered ledge adapted to receive

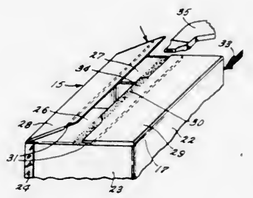


back said portion to mate therewith at the rupture, and an outer layer which is adapted to be acted on by a force to remove said closure and which is bonded to the inner layer in such a manner that the total outer layer will form a single unit with the removed portion of the inner layer after it is removed.

3,951,332
CONTAINER CLOSURE WITH TUCK-UNDER TAB

Frank W. Torbeck, 8529 Concord Hills Circle, Cincinnati, Ohio 45243

Filed July 22, 1974, Ser. No. 490,901
Int. Cl.² B65D *5/66*
U.S. Cl. 229—44 R **4 Claims**

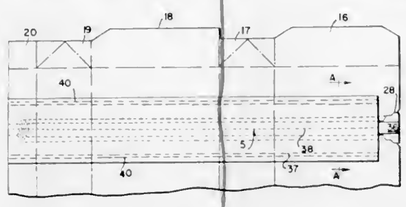


1. In a set-up, sealed container formed from a blank having lateral score lines to form opposed interconnected side and end walls, said blank having a longitudinal score line to define first and second outer closure flaps on the container side walls and inner closure flaps on the container end walls, slots formed between adjacent closure flaps permitting the inner closure flaps to be hinged towards each other to lie in a common plane with their longitudinal edges in confronting relationship and the first and second outer closure flaps to be hinged towards each other to lie in a common plane upon the inner closure flaps with their longitudinal edges in abutting relationship; a tuck-under tab formed on the first outer closure flap and projecting from the central longitudinal edge portion of said first outer flap and to overlap the longitudinal edge portions of the inner closure flaps, and a single, straight bond line of adhesive on the outer surface of the tab and aligned outer surface portions of the inner closure flaps on each side of the tuck-under tab whereby the tab underlies and is adhered to the longitudinal end portion of the second outer closure flap and the second closure flap is adhered to the inner closure flaps.

3,951,333
SURGICAL PACKAGE

Hampton E. Forbes, Jr., Wilmington, Del., and William V. Plant, Westfield, N.J., assignors to Westvaco Corporation, New York, N.Y.

Filed Apr. 1, 1975, Ser. No. 564,034
Int. Cl.² B65D *5/54*
U.S. Cl. 229—51 TS **7 Claims**



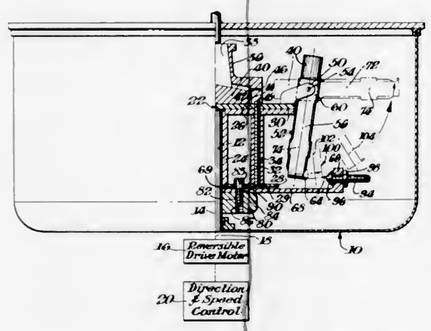
1. A surgical package for packaging sterile products consisting of an outer protective carton formed from a blank of delaminatable material and including a removable tear strip for providing access to the contents of said carton, said tear strip being defined in said delaminatable material by limited depth exterior and interior cut lines to define planes of cleavage along which said tear strip delaminates to separate from said carton, the improvement comprising:

a. means including the addition of a skirt element on the inside of said carton in the region of said tear strip said skirt element being adapted to cover the otherwise exposed contents of said carton when said tear strip is removed for maintaining the contents of said carton substantially sterile after the tear strip is removed.

3,951,334
METHOD AND APPARATUS FOR AUTOMATICALLY POSITIONING CENTRIFUGE TUBES

John A. Fleming, Newtown, and Lawrence R. Barrett, Bridgeport, both of Conn., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed July 7, 1975, Ser. No. 593,221
Int. Cl.² B04B *9/12*
U.S. Cl. 233—26 **8 Claims**



1. In a centrifuge having a motor, a drive shaft connected to said motor for selective rotation about a vertical axis in a first sense and a second sense opposite said first sense, a rotor mounted on said drive shaft, adapted to rotate about said axis, and having a plurality of carriers pivotally mounted in a circular array on said rotor, each said carrier adapted to hold an open topped centrifuge receptacle and to pivot radially outwardly and upwardly in operation, the improvement comprising:

a locking ring mounted on said drive shaft and having a plurality of circumferentially spaced castellations each in the path of pivotal movement of a different one of said carriers, thereby to lock said carriers in a generally vertical orientation, and

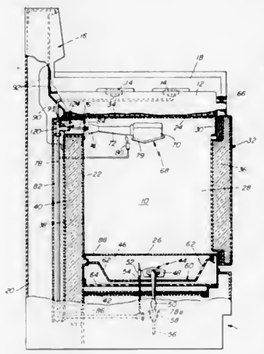
passive coupling means between said rotor and said locking ring for permitting limited angular movement between said rotor and said locking ring between a first position in which said castellations are in the path of pivotal movement of said castellations when said drive shaft undergoes angular acceleration in a first sense and a second position in which said castellations out of the path of pivotal movement of said carriers when said drive shaft undergoes angular acceleration in a second sense opposite to said first sense,

one of said rotor and locking means being driven by said drive shaft.

3,951,335
OVEN STACK ACTION CONTROL

Wayne T. Kemp, Kutztown, Pa., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 30, 1974, Ser. No. 537,304
Int. Cl.² F23N *5/04*
U.S. Cl. 236—15 A **8 Claims**



1. An oven having a fresh air inlet opening in its lower region and an exhaust opening in its upper region, and at least one heat-generating burner therein, and baffle means located at one of said openings for controlling stack action comprising a baffle which is normally open with respect to said opening, bi-metal means connected to said baffle for moving said baffle toward closed position with increased temperatures within the oven, said baffle means including a rotatable shaft to which the baffle is fixed, and said bi-metal means being a coil which is attached to said shaft for rotating the shaft and baffle and a pipe connecting said burner to a supply of fuel, and a valve having a rotatable valve stem connected to said pipe for controlling flow of fuel therethrough, said baffle means being operatively connected with said valve stem for operating the valve by rotation of said valve stem simultaneously with movement of the baffle.

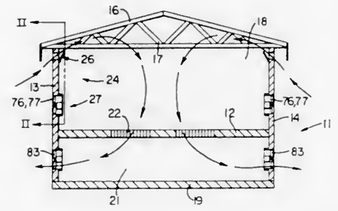
5. An oven having a fresh air inlet opening in its lower region and an exhaust opening in its upper region, at least one heat-generating burner within the oven, and baffle means located within one of said openings for controlling stack action comprising a hollow support having spaced end walls, a vertical divider between said end walls forming two compartments in the support, a shaft extending transversely through one compartment and having one end portion projecting through and rotatably mounted in said divider, a bi-metal element in the second compartment having one end fixed to the support and having its opposed end attached to the shaft for rotating same in responseto temperature variations within

the oven, and a baffle plate carried by said shaft for rotation therewith.

3,951,336
VENTILATION SYSTEM FOR LIVESTOCK HOUSING

Loren C. Miller, Warsaw, and Kenneth G. Walsh, Fort Wayne, both of Ind., assignors to Miller and Sons Structures, Inc., Silver Lake, Ind.

Filed Aug. 28, 1974, Ser. No. 501,273
Int. Cl.² F24F *3/10, 11/00*
U.S. Cl. 98—1.5 **11 Claims**



1. An improved ventilation system for an agricultural building having a livestock confinement space therein, comprising:

fan means providing for the flow of air between the lower region of said confinement space and the atmosphere outside of said building;

air flow means for permitting air flow between said space and the atmosphere in the direction opposite to the flow caused by said fan means, said air flow means including opening means in a wall of said building for permitting communication between said atmosphere and the upper region of said confinement space;

said air flow means also including movable baffle means disposed adjacent said opening means and movable for opening and closing said opening means, said baffle means being movable between a first position wherein said opening means is closed and a second position wherein said opening means is at least partially uncovered;

drive means connected to said baffle means for moving same between said first and second positions, said drive means including motor means and link means connected between said motor means and said baffle means, said link means being capable of transmitting both tensile and compressive loads therethrough to positively control both the opening and closing movement of said baffle means;

sensing means including first means for sensing the pressure of the air within said confinement space and second means for sensing the pressure of the atmosphere outside the building;

control means directly responsive to the pressure differential sensed by said first and second means for causing energization of said drive means when the sensed pressure differential deviates from a preselected differential to cause opening or closing movement of said baffle means;

said building including a floor and an animal support surface spaced upwardly from the floor and defining a servicing space therebetween, said animal support surface having vent means therein for permitting communication between said confinement space and said servicing space;

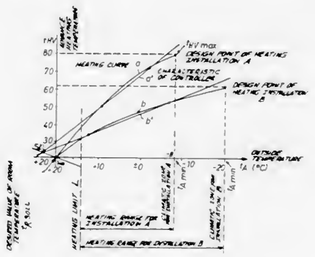
said fan means including a first fan mounted in a sidewall of the building and communicating directly with said servicing space and a second fan mounted in the sidewall of the building and communicating directly with the confinement space; and

switch means associated with said first and second fans for causing operation of only said first fan when the temperature in said confinement space is relatively low and for causing simultaneous operation of both said first and second fans when the temperature in said confinement space is relatively high.

3,951,337
ARRANGEMENT, IN A WEATHER-DEPENDENT ADVANCE CONTROLLER OF TEMPERATURE OF A HEATING INSTALLATION, FOR FACILITATING ADJUSTMENT OF CONTROLLER CHARACTERISTICS TO HEATING CHARACTERISTICS

Eugen Reiner, Arbon, TG, Switzerland, assignor to Aktiengesellschaft Adolph Saurer, Switzerland

Filed Dec. 26, 1974, Ser. No. 536,468
Int. Cl.² G05D *23/24*
U.S. Cl. 236—91 F **10 Claims**



1. In a weather-dependent advance controller of the temperature of a heating installation and of the type including a bridge circuit having an input connected to a source of potential and an output connected to a heating medium control and further having at least a first setting member, adjustable to shift the controller characteristic curve, relating the outside temperature to the advance heating temperature of the heating medium, parallel to itself and a second setting member, adjustable to change the slope of controller characteristic curve, to effect substantial coincidence between the controller characteristic curve and a given heating characteristic curve, also relating the outside temperature to the advance heating temperature of the heating medium, an arrangement for facilitating such adjustment comprising, in combination, means in the output of said bridge circuit operatively associated with at least one of said setting members and cooperable therewith to produce an electric value equivalent, as a decision value, to an outside temperature which is optimal for the respective climatic range; and means connected to said bridge circuit and operable, responsive to such electric value, to identify which of said first and second setting members is to be adjusted to secure said substantial coincidence of the controller and heating characteristic curves.

3,951,338
HEAT-SENSITIVE SUBSURFACE SAFETY VALVE

Marion David Genna, New Orleans, La., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed July 15, 1974, Ser. No. 488,621
Int. Cl.² G05D *23/00*
U.S. Cl. 236—93 A **3 Claims**

1. A subsurface safety valve for insertion in a tubing string suspended in a wellbore which comprises:

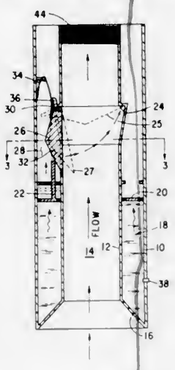
a housing having a longitudinal bore therethrough and a valve receiving pocket;

a reservoir containing a heat sensitive fluid expandable with increased temperature, said reservoir surrounding at least a part of said bore;

an annular, downwardly facing valve seat within said bore;

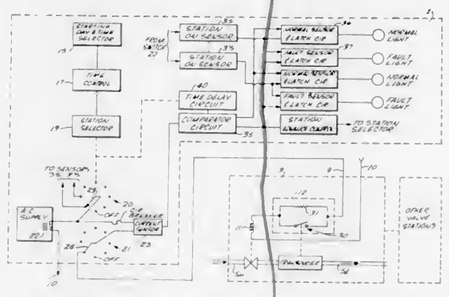
a valve for closing against said valve seat, said valve normally retained within a valve receiving pocket within said housing, said valve connected to a pivot within said pocket;

biasing means urging said valve to rotate about said pivot to an open position within said pocket;



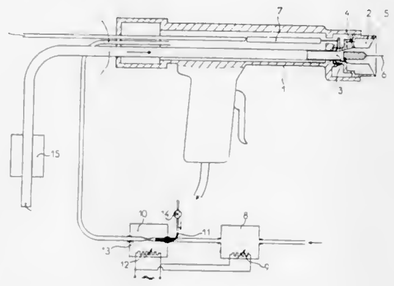
means responsive to said heat sensitive fluid to rotate said valve in a direction opposite the rotation caused by said biasing means.

3,951,339
LIQUID DISTRIBUTION SYSTEM FOR IRRIGATION AND THE LIKE
Armand F. DuFresne, 901 Iva Court, Cambria, Calif. 93428
Filed June 10, 1975, Ser. No. 585,562
Int. Cl.² A01G *25/16*; F17D *3/00*
U.S. Cl. 239—66 **11 Claims**



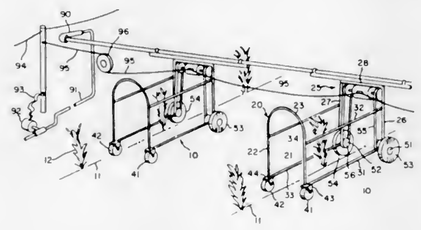
1. An electrically controlled liquid distribution system comprising:
- a central sequencing control station including circuit means for providing a command voltage during timed intervals;
- means for distributing the liquid including a piping path having an upstream side and a downstream side, the piping path including a valve station located at a remote distance from the central station;
- the valve station including control voltage receiving means, a remote control valve having an impedance therein, and a network having a network input coupled to the control voltage receiving means and a network output loaded by the impedance of the remote control valve; the remote control valve, when properly functioning, being actuated in response to a turn-on level of current being supplied from the network to flow through the impedance of the remote control valve;
- conductor means for connecting the circuit means in the central station to the command voltage receiving means;
- the network including an electrical switching device having open and closed operating conditions, and the loaded network defining a transadmittance that is controlled in accordance with the operating condition of the electrical switching device; and
- the valve station further including transducer means responsive to the liquid in the piping path on the downstream side of the remote control valve for controlling the switching device to provide local fault-sensing feedback control over the current flowing through the impedance of the remote control valve.

3,951,340
ELECTROSTATIC POWDER PROJECTION SYSTEM AND METHOD
Marcel Point, Grenoble, France, assignor to Air-Industrie, Grenoble, France
Filed Feb. 8, 1973, Ser. No. 330,589
Claims priority, application France, Nov. 27, 1972, 72.42701
Int. Cl.² B05B *5/02*
U.S. Cl. 239—3 **4 Claims**



1. In a method of coating objects by projecting a stream of powder-carrying gas past electrostatically charged electrode means against said objects, the improvement which comprises the step of mixing said stream as it passes said electrode with an auxiliary stream of preheated and prehumidified gas.

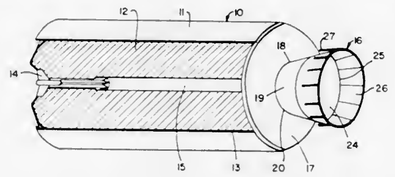
3,951,341
IRRIGATION VEHICLE
Elton E. Jenkins, 416 N. 10th St., Geneva, Nebr. 68361
Filed May 7, 1975, Ser. No. 575,350
Int. Cl.² B05B *15/06*; A01G *25/02*
U.S. Cl. 239—212 **5 Claims**



1. An irrigation vehicle intended for straddling a row of crops and to travel therealong in a manner not damaging or interfering with the crops, the vehicle comprising, in combination:
- a supporting frame having a front end and a back end;
- a pair of wheels affixed to said back end for swivelling type movement relative thereto;
- a pair of wheels affixed to said front end and projecting outwardly therefrom journaled for rotation in said frame;
- an electric motor affixed to said front end of said frame;
- means drivingly connecting said motor to said front wheels to effect driving rotation thereof;

- a carrying bar member affixed to said front end and extending outwardly therefrom in a direction transverse of said frame to extend normal to the axis of a row of crops when said vehicle straddles the same;
- A pair of water pipe carrying yokes swivelly connected to opposite ends of said carrying bars adapted to carry a water pipe in a horizontal position therebetween and
- said water pipe having a series of longitudinally aligned spaced apart nozzle type openings extending therealong with such openings being oriented relative to said carrying bars to spray water outwardly of the pipe in a direction rearwardly of said vehicle to avoid moistening the ground in the position of said wheels rotatively mounted to said front end.

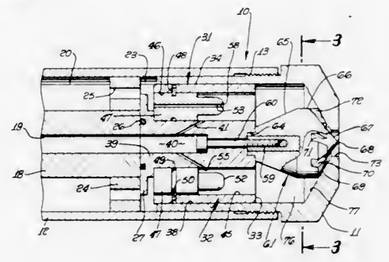
3,951,342
EXTENDIBLE NOZZLE FOR A ROCKET MOTOR OR THE LIKE
William H. Baker, Jr., Sacramento, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.
Filed Feb. 15, 1973, Ser. No. 329,909
Int. Cl. B64c *15/04*
U.S. Cl. 239—265.33 **12 Claims**



1. An extendible nozzle for a rocket motor or the like comprising:
- a generally conically shaped main nozzle portion having an entrance portion and an exit portion;
- a plurality of petals representing longitudinal strips of a conically shaped structure hingedly connected by means of hinges at their forward ends to the periphery of said exit portion;
- petal retention means operatively connected to all of said petals for selectively holding said petals in said first position; and
- petal moving means including torsion spring means operatively connected to both said main nozzle portion and all of said petals for selectively moving said petals from a first or stowed position whereby all of said petals are radially outward and slightly forward of the hinge locations to a second or deployed position where the petals form a smooth conical extension of the exit portion of said main nozzle portion upon release of said retention means.

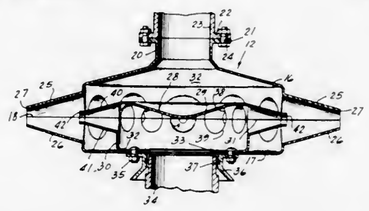
3,951,343
FUEL OIL NOZZLE
William J. Hampton, 217 Suzanne, Taft, Calif. 93268
Filed Aug. 9, 1974, Ser. No. 496,075
Int. Cl.² B05B *1/34*
U.S. Cl. 239—399 **7 Claims**

1. An atomizing fuel oil nozzle comprising:
- a body having a main oil inlet and at least one gas inlet;
- at least one mixing chamber in said body;
- at least one oil passage in said body, each oil passage connecting the oil inlet with a mixing chamber for oil discharge therein;
- at least one gas passage in said body, each gas passage connecting a gas inlet with a respective mixing chamber for gas discharge therein;
- each gas passage being formed within a tube at its discharge end, each tube extending into the respective mixing chamber and being spaced from the walls thereof;
- each oil passage being in communication with a mixing chamber upstream from the gas tube discharge end;
- a protruding member on said body downstream of the mixing chamber and having a surface extending over the mixing chamber;
- an outer discharge end on said protruding member terminating in a pointed conical surface having lands and grooves;



- a cap on the discharge end of the nozzle and having a discharge orifice fitted in alignment with the point on the conical surface, said grooves being in communication with said orifice,
- an inner surface of the cap around said orifice being conical for fitting on said lands; and
- a gas and oil mixture flow chamber formed by said surface extending over the mixing chamber and a wall of said cap, said flow chamber being in communication with said grooves so that said mixture will discharge through said orifice.

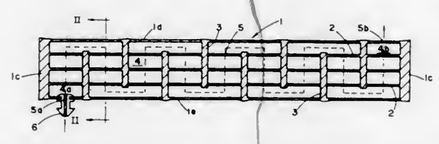
3,951,344
RADIAL JET AERATOR MODULE
George E. Wilson, Carmichael, Calif., assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed Dec. 14, 1973, Ser. No. 424,795
Int. Cl.² B05B *7/00*
U.S. Cl. 239—421 **7 Claims**



2. A jet aerator apparatus comprising an outer housing means having a gas chamber with a gas inlet and a plurality of outer nozzles angularly spaced about said outer housing means for discharging liquid and gas, said outer housing means being formed of molded sheet wall sections each having nozzle defining portions and chamber defining portions, means joining sheet wall sections together at a mating line to form said outer nozzles and said gas chamber,
- an inner housing means having a liquid chamber with a liquid inlet and a plurality of inner liquid discharging nozzles aligned with and spaced radially inwardly of said outer nozzles said inner nozzles being spaced from said outer nozzles to permit substantial gas entrapment by the liquid stream issuing from each inner nozzle before it issues from an outer nozzle, said inner liquid housing means being formed of at least two molded sheet wall sections each having inner nozzle defining portions and liquid chamber defining portions, means joining said inner sheet wall sections together at a mating line to form

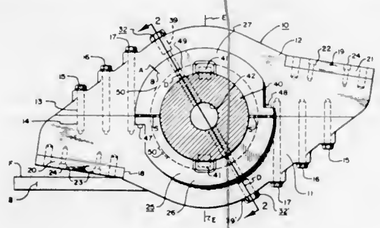
said inner nozzles and said liquid chamber, and means joining said inner housing means to said outer housing means.

3,951,345
DRIP LEVEL IRRIGATION
Raphael Mehoudar, 36, Yehuda Hanassi, Tel-Aviv, Israel
Filed Dec. 18, 1974, Ser. No. 534,063
Claims priority, application Israel, Dec. 18, 1973, 43850
Int. Cl.² B05B *15/00*
U.S. Cl. 239—542 **10 Claims**



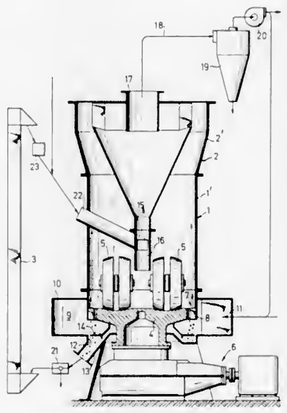
1. An elongated dripper unit including at least one elongated enclosure having walls disposed generally parallel to the longitudinal axis thereof and being sealed at either end thereof, each enclosure comprising:
a liquid inlet;
a liquid outlet;
at least one longitudinal partition disposed in said enclosure so as to divide said enclosure into at least two sub-enclosures;
a plurality of lateral partitions disposed in relative spaced relationship with respect to each other, each lateral partition extending across one of said sub-enclosures thereby to divide each of said sub-enclosures into a plurality of cells including an input cell communicating with said liquid inlet, an output cell communicating with said liquid outlet and a plurality of intermediate cells;
a plurality of liquid communication apertures of reduced diameter formed in said at least one longitudinal partition intermediate said lateral partitions, said apertures and said lateral partitions being arranged so as to permit sequential liquid communication from said input cell through said intermediate cells and to said output cell and defining a liquid flow path including a plurality of abrupt direction changes, the available cross-sectional liquid flow capacity of said apertures being substantially less than that of said cells, said liquid flow path thereby creating a negative liquid pressure gradient between said liquid inlet and said liquid outlet.

3,951,346
REVOLVABLE BLADE STRUCTURE
John C. Brewer, Salt Lake City, Utah, assignor to Garbalizer Corporation of America, Salt Lake City, Utah
Filed Mar. 24, 1975, Ser. No. 561,305
Int. Cl.² B02C *23/04*
U.S. Cl. 241—32 **10 Claims**



1. A revolving blade construction including, in combination, a revolvable shaft having an axial bore and provided with hub means for receiving a blade means; a blade means mounted upon said hub means for revolvement thereabout during times of overload, said blade means, hub means, and shaft having aligned, radially disposed apertures communicating with said axial bore; shear pin means removably disposed in said apertures of said blade means and hub means, said radially disposed aperture of said shaft being diametrically enlarged relative to said hub means aperture, whereby to permit an inner extremity of said shear pin means, when sheared due to overload, to freely pass from said hub means through said shaft to said bore thereof.

3,951,347
APPARATUS FOR CRUSHING MATERIAL CONTAINING PARTICLES THAT ARE HARD TO PULVERIZE
Peter Tiggesbaumker, Oelde, and Ludger Lohnherr, Diestedde, both of Germany, assignors to Polysius AG, Neubeckum, Germany
Filed Sept. 13, 1973, Ser. No. 396,855
Claims priority, application Germany, Sept. 21, 1972, 7239679[U]
Int. Cl.² B02C *13/14*; **B07B** *13/00*
U.S. Cl. 241—52 **14 Claims**

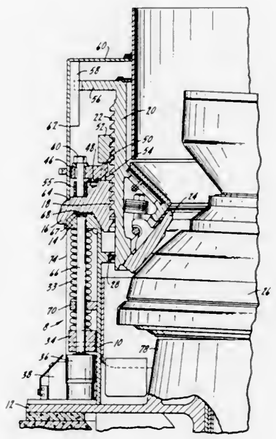


1. A rotary mill for crushing material containing hard to pulverize particles, said mill having a material intake, a fine particle outlet, and a coarse particle outlet; means for supplying to said intake material to be ground; means for grinding said material; pneumatic means for separating coarse and fine particles from the ground material and discharging fine particles through said fine particle outlet and discharging coarse particles through said coarse particle outlet; conveyor means for receiving discharged coarse particles and conveying them to said intake; and coarse particle removal means interposed between said outlet and said intake for removing a selected fraction of said coarse particles.

3,951,348
CRUSHER BOWL CLAMPING SYSTEM
D. Carter Davis, Menomonee Falls; Ulhas S. Sawant, Sussex, and Francis Scaffidi, West Allis, all of Wis., assignors to Rexnord Inc., Milwaukee, Wis.
Continuation-in-part of Ser. No. 363,655, May 24, 1973, abandoned, which is a continuation-in-part of Ser. No. 241,313, April 5, 1972, Pat. No. 3,797,760. This application Sept. 18, 1974, Ser. No. 507,219
Int. Cl.² B02C *4/28*
U.S. Cl. 241—290 **7 Claims**

1. In a gyratory crusher, a circumferential main frame with an outwardly extending flange adjacent its upper end, a bowl-

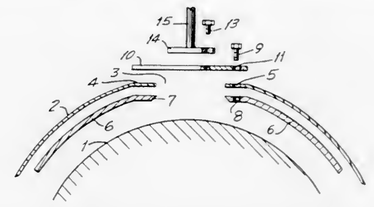
supporting ring tiltably mounted on the flange and movable upwardly therefrom for tramp iron clearance, a bowl mounted in screw-threaded relation in the bowl-supporting ring so that it may be adjusted by rotation, an external clamp ring in screwthreaded relation with the bowl positioned above and fixed in relation to the bowl-supporting ring so that it will not rotate with the bowl, a plurality of rocker arms disposed about and pivoted on the bowl-supporting ring engaging the underside of the clamping ring, spring means biasing the outer end of the rocker arms down so as to bias the clamping ring and bowl up, and a top cap covering the rocker arms, the clamp



ring and the exterior of the bowl in sealing relation with the bowl-supporting ring throughout its **360°** of peripheral extent so as to prevent the entry of dust and dirt into and around the rocker arms, clamp ring and bowl, the top cap being constructed and arranged to peripherally surround the rocker arms with the lower peripheral edge of the top cap resting on the exterior of the bowl-supporting ring so that the weight thereof is taken by the bowl-supporting ring, the outer ends of the rocker arms being relatively adjacent but spaced inwardly somewhat from the inside of the top cap so that operation of the rocker arms to clamp and unclamp the bowl does not raise and lower the top cap.

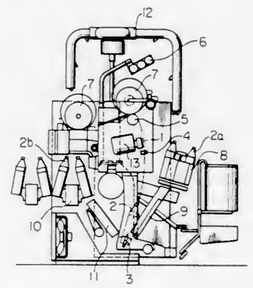
3,951,349
MANDREL FOR WINDING SPHERICAL CONTAINERS
Birte Christensen; Borge Christensen, both of Tunemarken pr., 2690 Karlslunde; Helge Hovad, and Karl Erik Hovad, both of Kvikmarken 22, 2860 Soborg, all of Denmark
Division of Ser. No. 808,081, March 18, 1969, Pat. No. 3,741,838. This application Jan. 3, 1973, Ser. No. 320,709
Claims priority, application Denmark, Mar. 18, 1968, 434/68
Int. Cl. B65h *75/22*, *75/24*, *81/00*
U.S. Cl. 242—1 **4 Claims**

1. A mandrel for use in the production of containers having an opening the diameter of which is substantially smaller than the largest diameter of the container by winding a filament or strip shaped material onto the mandrel, said mandrel comprising:
1. an inflatable bladder core;
2. a jacket of a flexible material enclosing at least part of said bladder core;
3. a coupling comprising a generally circular disc adapted to be mounted on a shaft; and
4. a plurality of rigid members positioned between the jacket and the bladder core, each said rigid member being provided at one end thereof with a flat attachment flange having a threaded hole for receiving a bolt by means of which said rigid member is detachably secured to said



disc, said jacket being clamped between the attachment flanges of said rigid members and said disc.

3,951,350
METHOD AND APPARATUS FOR SUPPLYING A COP TO EACH WINDING UNIT OF AN AUTOMATIC WINDER
Hiroshi Uchida, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed Apr. 29, 1974, Ser. No. 465,375
Claims priority, application Japan, May 4, 1973, 48-50099
Int. Cl.² B65H *54/20*, *67/06*
U.S. Cl. 242—35.5 A **9 Claims**

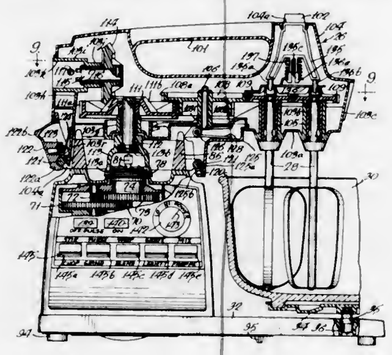


1. In an automatic winder provided with a plurality of stationary winding units installed in a row along a lengthwise direction of said winder, each winding unit being provided with a cop supply magazine having a plurality of cop reserve compartments, a method for supplying fresh cops to each winding unit comprising the steps of reserving a plurality of fresh cops in said cop reserve compartments respectively, carrying a plurality of fresh cops by an endless conveyer having a carrying passage formed parallel to a lengthwise direction of said winding machine at a position adjacent to a row of said winding units, and selectively supplying cops from either one of said magazine and endless conveyer to a cop holding device of each of said winding units when it is required to supply a cop.

3,951,351
MULTI-PURPOSE KITCHEN APPLIANCE
Peter Jacob Ernster, Glendale; William Joseph Collins, Milwaukee, and George Henry Schaefer, Wauwatosa, all of Wis., assignors to Oster Corporation, Milwaukee, Wis.
Filed June 13, 1974, Ser. No. 478,905
Int. Cl.² A47J *44/00*
U.S. Cl. 241—101.1 **34 Claims**

1. A combination food preparation appliance comprising a power unit including a motor supported in a housing with said motor having a shaft extending vertically, said housing being generally of inverted cup shape with a laterally extending platform at the bottom edge thereof for support of a mixing bowl, drive means connected to said motor and extending outwardly of said housing through an opening in the top of

said housing, a blender vessel having mixing means mounted within the bottom of said vessel with first coupling means for drivingly connecting said mixing means with said power unit drive means, an elongated mixing head having mounting means and second coupling means at one end thereof and beater spindles for mounting beaters at the other end thereof, said second coupling means driving said beater spindles through gearing in said mixing head, attachment mounting means supported on said power unit housing surrounding said drive means and having means for alternatively supporting



said blender vessel and said mixing head, said attachment mounting means mounting said mixing head in a first or a second position on said power unit extending generally horizontally with said second coupling means in driven engagement with said drive means, in said first position said beaters extending into said mixing bowl positioned on said platform, in said second position said other end of said mixing head supporting said beaters extending away from said power unit in the opposite direction from said platform to permit an attachment mounted on said mixing head to overhang said platform and said mixing bowl.

3,951,352

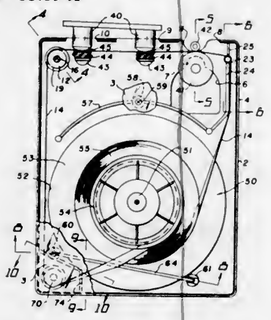
MAGNETIC TAPE GUIDANCE DEVICE

Donald M. Kalmokoff, North Vancouver; Dominic R. DiPalma, Vancouver; David J. Glasstetter, Richmond, and Jack K. Gordon, Vancouver, all of Canada, assignors to Western Broadcasting Co., Ltd., Vancouver, Canada

Continuation of Ser. No. 269,929, July 10, 1972, abandoned. This application Aug. 19, 1974, Ser. No. 498,660

Int. Cl.² B65H *17/48*

U.S. Cl. 242—55.19 A **19 Claims**



12. An endless magnetic tape cartridge for use in a horizontal position with a recording/playback machine to direct tape from a storage reel within the cartridge along a path for sequential engagement by record/playback heads and drive means provided on the machine in alignment at the same height, said drive means being adapted to draw the tape over the heads in a first predetermined plane and with an edge of the tape in a second predetermined plane normal to the first plane, said cartridge comprising:

a housing dimensioned and ported for co-operation with the record/playback machine,

fixed planar guide means fixed against movement relative to the housing and located in said second plane,

a fixed wrap-around guide surface fixed against movement relative to the housing and located at said planar guide means and extending normal thereto for guiding said tape into said first predetermined plane, said guide means and said guide surface forming a tape guiding unit and being positioned in the housing to guide the tape from a feed path along said engagement path in the first plane over the record/playback head when the housing is located in the machine and the tape engaged by the drive means, said engagement path being free of rigid guidance elements engaging either the planar sides or the edges of the tape between said guiding unit and said drive means, said fixed elements of the guiding unit comprising a means for applying a resistance to movement of the tape as it moves thereabout to apply tension to the tape in the head engagement zone,

an input tape director means in said feed path in advance of said guiding unit for directing the tape into said feed path to the guiding unit with said edge of the tape in the second plane for assuring that said edge of the tape remains in the second plane after the tape has passed over said guide surface, said input director means including means for applying a resistance to the movement of the tape thereat to apply tension to the tape in the feed path,

a tape storage reel mounted for free rotation within said housing, said reel having a base flange and an outwardly flared core upstanding from the base, whereby tape can be wound on the reel when discharged from the drive means and withdrawn from the reeled body of tape thus formed at a position adjacent the core under frictionally generated tension, and

a bridge member for constraining the tape withdrawn from the reel into a path clear of the upper surface of the tape on the reel and into engagement with said input tape director.

3,951,353

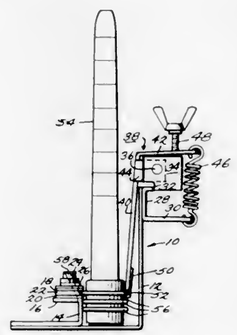
BOBBIN SUPPORT ASSEMBLY

Ellis H. Jenkins, Lanett, Ala., assignor to West Point-Pepperell, Inc., West Point, Ga.

Filed May 29, 1975, Ser. No. 581,888

Int. Cl.² B65H *49/00*

U.S. Cl. 242—129.7 **3 Claims**



1. An assembly for supporting a bobbin having at least one metallic ring about its base, said assembly comprising:

a frame member;

means on said frame member for supporting in fixed position a pair of plates separated by a spacer to define a first groove between said plates and the edge of said spacer, said groove being dimensioned to receive said ring;

a movable plate member having a vertically extending portion, said plate member being pivotally connected to said frame and spring biased to urge the vertically extending portion of the plate member towards said fixed plates; and

means positioned at the bottom of said vertically extending portion defining a second groove dimensioned to receive said bobbin ring, said means defining the second groove including:

a flange positioned at the bottom edge of said vertically extending portion and projecting towards the fixed plates; and

an L-shaped member secured to said vertically extending portion of the plate member and having a horizontally extending portion spaced from the flange.

3,951,354

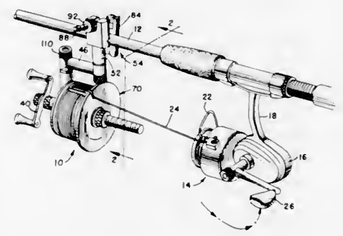
FISHING REEL LOADING AND UNLOADING DEVICE

James A. Bagby, R.R. No. 2, Box 36A, Greenville, Ky. 42345

Filed Feb. 11, 1975, Ser. No. 549,045

Int. Cl.² B65H *49/00*; **A01K** *89/00*, *89/02*

U.S. Cl. 242—129.8 **8 Claims**



1. Fishing reel loading and unloading apparatus for supporting and positioning a line spool with centrally apertured end flanges in operative relation to a rod mounted fishing reel, said apparatus comprising:

a spindle for coaxially mounting the line spool and having a journal near one end thereof;

means for clamping the line spool against rotation relative to said spindle;

spindle supporting means including:

a mounting clamp having a post portion extending therefrom, and

an L-shaped standard having first and second legs, swivel means connecting said first leg at right angles to said post portion, swivel locking means for holding said first leg against swiveling movement after adjustment with respect to said post, said second leg having a bearing aperture for rotatably receiving said journal and to support said spindle so that the axis thereof lies in a plane spaced from but parallel to a plane containing said first leg;

crank means connected to said spindle;

releaseable brake means adjustable to hold said spindle against rotation or to allow rotation thereof by said crank means; and

the length of said first leg approximating one-half the axial length of the line spool whereby either the axis of the spindle or the axial center of the spool thereon can be positioned approximately in a single reference plane containing the axis of the swivel by adjustment of said swivel.

3,951,355

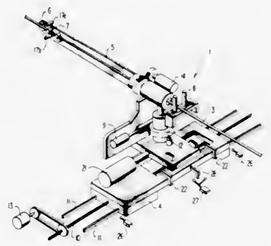
AUTOMATIC CABLE WINDING APPARATUS

Joji Morioka; Takuzo Matsumoto, both of Osaka; Kanji Otani, and Katsuhisa Uedono, both of Yokohama, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 30, 1974, Ser. No. 501,929

Int. Cl.² B65H *54/28*

U.S. Cl. 242—158 R **10 Claims**



1. Automatic cable winding apparatus comprising; a traverse base, means for traversing said traverse base in directions to wind said cable on a drum, a traverse block slidably mounted thereon, a traverse arm mounted to the traverse block for guiding cables to be wound on the drum, said arm being provided near the top thereof with guide rollers for guiding said cables while supporting them form the upper and the lower sides thereof and a presser roller pressing the cables sideways; a device for providing a pressing force to said traverse arm; proximity switch means for detecting the presence of cables being wound up to the vicinity of the flanges of the drum; means responsive to change of state of said proximity switch means for stopping movement of said traverse base; a rotation angle detector actuated by said proximity switch means for providing a rotation angle detection signal when the drum rotates a predetermined amount following said actuation; traverse block control means responsive to said rotation angle detection signal for quickly advancing and retracting said traverse block relative to the flanges of the drum; and means for raising said traverse arm by an amount substantially equal to the outer diameter of said cable every time a layer of cable is wound on the drum.

3,951,356

TAPE TRANSPORT

Virgil W. Davis, Jr., Glen Ellyn, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

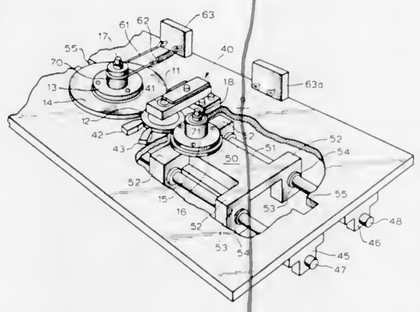
Filed Jan. 2, 1974, Ser. No. 430,293

Int. Cl.² G03B *1/04*; **G11B** *15/32*

U.S. Cl. 242—192 **3 Claims**

1. A tape transport including a capstan having a resilient outer surface, a first reel support including a first central indexing shaft mounted for movement toward and away from the capstan, a supply reel having a shaft portion received in the first reel support and positioned such that a magnetic tape pack on the supply reel can abut the capstan, a second reel support including a second central indexing shaft mounted for movement toward and away from the capstan, and a takeup reel having a shaft portion received in the second reel support and positioned such that a magnetic tape pack on the take-up reel can abut the capstan, said supply and take-up reels providing the entire support for the tape packs, characterized by bias means including a spring coupled to both the first and second central indexing shafts to apply the same force between the supply reel and capstan as is applied between the take-up reel and capstan, and brake means, positioned to

apply a drag force to the supply reel during transfer of the tape from the supply reel to the take-up reel, with no component



applying any force to the take-up reel during such tape transfer.

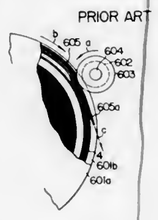
3,951,357

AUTOMATIC CARTRIDGE TAPE DRAW-OUT DEVICE

Hiroshi Yamada, Ichikawa, and Kenji Kojima, Tokyo, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Division of Ser. No. 335,416, Feb. 23, 1973, Pat. No. 3,840,276. This application Aug. 22, 1974, Ser. No. 499,605
Claims priority, application Japan, Mar. 8, 1972, 47-28216; Mar. 10, 1972, 47-29853
Int. Cl.² G03B *1/04*; **G11B** *15/32*
U.S. Cl. 242—195 **7 Claims**

PRIOR ART



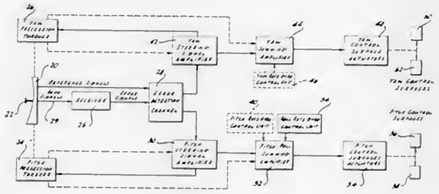
1. An automatic cartridge tape draw-out device for a tape wound on a supply reel rotatable in a cartridge and having at least one annular flange at the radial periphery thereof, comprising, in combination: a real drive roller, means for rotating the reel drive roller in pressing engagement of the periphery thereof with the periphery of an annular flange of the supply reel to rotate the reel and to cause the outer convolutions of the tape wound on the reel to move radially outwardly by centrifugal force, a tape draw-out roller concentric with and rotating with said reel drive roller and having a diameter greater than that of the reel drive roller, said tape draw-out roller including means defining a plurality of irregularities in its circumferential peripheral surface, said irregularities including a plurality of depressions in the circumferential peripheral surface of the tape draw-out roller interspersed with a plurality of projections from the circumferential peripheral surface of the tape draw-out roller, said tape draw-out roller engaging the leading forward end of the tape on the supply reel by means of said irregularities, said tape draw-out roller rotating at the same annular velocity as the reel drive roller and extending radially inwardly of the periphery of the reel flange engaged by the reel drive roller to be in pressing engagement with the leading forward end of the tape on the supply reel when the outer tape convolutions thereof are caused to move radially outwardly by rotation of the reel, to thereby advance the tape from the cartridge, with the forward end of the tape maintained in engagement with at least some of the irregularities in the tape draw-out roller, support means rotatably mounting said rollers and means for selectively moving the rollers into their respective engaging positions with the reel and with the tape wound on the reel, including a tape advance means comprising a capstan roller and a pinch roller, at least one of the rollers having means defining a plurality of irregularities on its peripheral circumferential surface, said last recited irregularities including a plurality of depressions in the last recited surface interspersed with a plurality of projections from the last recited surface, means for mounting the capstan roller and the pinch roller in pressing engagement with each other and in the path of the tape leading end advanced away from the cartridge by the tape draw-out roller, said irregularities engaging the leading forward edge of the tape advanced thereto, and means for driving the capstan roller to engage said leading forward end of the tape between the capstan roller and the pinch roller, said tape advancing toward the capstan and pinch rollers along a line intersecting at an acute angle a line which is coplanar therewith and perpendicular to the plane connecting the axes of rotation of the capstan and pinch rollers.

3,951,358

GUIDANCE AND CONTROL SYSTEM FOR TARGET-SEEKING DEVICES

Richard H. DeLano; Raymond H. Griest, both of Los Angeles, and Dean E. Wooldridge, Sherman Oaks, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 5, 1952, Ser. No. 324,258
Int. Cl.² F41G *7/00*; **F42B** *15/02*
U.S. Cl. 244—3.15 **10 Claims**



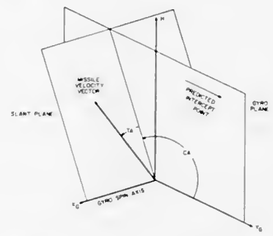
5. In a target-seeking device having a plurality of steering members for steering it along a predetermined type of navigation course with respect to a target that is illuminated by radio-frequency signals having a substantially constant repetition rate, a guidance and control system operable solely in response to echoes of said signals reflected from said target for effecting the steering of said device along said predetermined course, said system comprising, in combination, gyroscope scanning means for conically scanning an area wherein said target is located; means coupled to said scanning means for receiving said signals, means for operating said receiving means in synchronism with the received echo signals, said scanning means being a generator of reference signals; means selectively operable by said reference signals and coupled to said receiving means to produce error signals representative of the deviation of said target from the center of the field of scan; and means selectively operable in response to said error signals and coupled to said scanning means and to said steering members to effect continuous tracking of said target by said scanning means and to operate said steering elements for steering said device along said predetermined course.

3,951,359

MISSILE CONTROL SYSTEM

Charles C. Willhite, Greensboro, N.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 28, 1966, Ser. No. 523,807
Int. Cl.² F41G *7/14*
U.S. Cl. 244—3.14 **8 Claims**



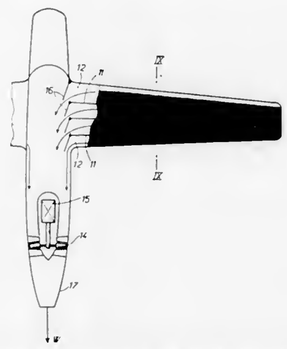
1. In a missile system including a missile, a launcher, radar having a tracking antenna, and a control system for controlling the missile during the initial portion of its flight, said control system comprising: first computer means for determining a critical turn angle and providing an electrial signal representative thereof, second computer means for determining a difference turn angle and providing an electrical signal representative thereof, means providing a signal proportional to the missile turn angle, a summing circuit connected to the outputs of said first and second computers and said turn angle means for providing a missile turn signal, a time servo for providing a signal representative of the time the missile has been in flight, means for multiplying the outputs of said summing circuit and said time servo, a yaw oscillator for providing a yaw control signal, means selectively connecting the outputs of said summing means and said multiplying means to said yaw oscillator, a pitch oscillator for providing a pitch control signal, means connecting the outputs of said summing means and said time servo to said pitch oscillator, and means for transmitting said yaw and pitch control signals to said missile.

3,951,360

DEVICE FOR REGULATING AND RECOVERING THE BOUNDARY LAYER OVER THE SURFACE OF A BODY SUCH AS AN AIRCRAFT IN FLIGHT

Rene Anxionnaz, 8, rue Nicolas Chuquet, 75-Paris, France

Filed July 2, 1974, Ser. No. 485,272
Claims priority, application France, July 5, 1973, 73.24706
Int. Cl.² B64C *21/08*
U.S. Cl. 244—42 CE **2 Claims**



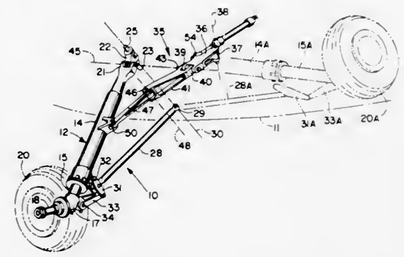
1. A device for controlling the thickness of the boundary layer of a flow of ambient fluid over the surface of a hollow streamlined body extending fore-and-aft from a leading edge to a trailing edge, comprising means for maintaining the thickness of the boundary layer contiguous with said total of said surface at maximum value compatible with laminar flow conditions over said surface including a multiplicity of counter-ramming intakes pointing in a rearward direction at substantially right angles with the normal to said surface of said body, substantially uniformly distributed over the total area of said surface and facing rearwards towards said trailing edge, said counter-ramming intakes leading into the inside of said hollow body, and sucking means connected to the inside of said hollow body and maintaining therein a sub-ambient pressure for sucking fluid from said boundary layer into said hollow body throughout said total of said surface through said counter-ramming intakes along a path making a U-turn of substantially **180** degrees relative to the direction of said flow, for thereby maintaining the thickness of the boundary layer contiguous with said total of said surface at maximum value compatible with laminar flow conditions over said surface.

3,951,361

ARTICULATED MAIN LANDING GEAR

Louis C. Hrusch, Chesterland, Ohio, assignor to Pneumo Corporation, Boston, Mass.

Filed June 23, 1975, Ser. No. 589,368
Int. Cl.² B64C *25/12*
U.S. Cl. 244—102 R **7 Claims**



1. In combination with an aircraft fuselage, a retractible articulated landing gear for helicopters and the like comprising a shock absorbing oleo strut having a tire on its outboard end, means connecting the inboard end of the oleo strut to the fuselage for pivotal movement about a retraction axis and an articulation axis, and a three member drag brace assembly extending between the fuselage and the oleo strut, a first member of said drag brace assembly being pivotally connected to the fuselage at its inboard end and to a second member at its outboard end, the latter pivotal connection lying along the articulation axis, the second member being pivotally connected at its outboard end to a third member which in turn is connected at its outboard end to the oleo strut by a universal joint, the pivotal connection of the second and third members being perpendicular to the articulation axis when the gear is extended.

3,951,362

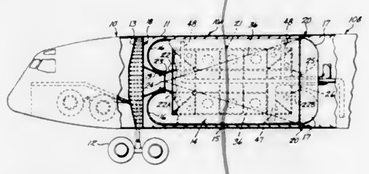
CRYOGENIC TANK AND AIRCRAFT STRUCTURAL INTERFACE

Robert K. Robinson, Mercer Island, and Philip C. Whitener, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 13, 1974, Ser. No. 469,583
Int. Cl.² B64D *9/00*, *37/06*
U.S. Cl. 244—118 R **11 Claims**

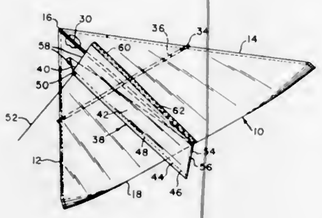
1. A fluid container for an airplane, comprising: an elongated cylindrically shaped container for positioning longitudinally within the fuselage of the airplane; said container having a cylindrical center section and semi-toroidal-ring surface end

members; a baffle assembly having a core support structure; said baffle assembly being mounted within the container in spaced relation to the interior wall surfaces of the container by said core structure interconnecting the semi-toroidal-ring surface end members through their centers to react the baffle assembly sloshing fluid pressure loads against the semi-toroidal-ring end members and to allow the surfaces of the semi-



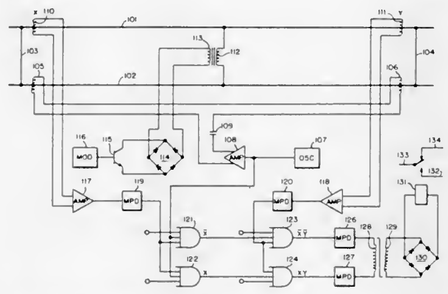
toroidal-ring end members to work in relieving expansion and contraction forces on the container without abrasion of the baffle assembly; a front and a rear mounting ring, each being integral with the central portion of a semi-toroidal-ring surface end member and fixedly secured to the end of the core structure of the baffle assembly for mounting the container to aircraft support structure in spaced relationship from the interior sides of the fuselage.

3,951,363
KEELED KITE CONSTRUCTION
Edwin L. Grauel, 799 Elmwood Terrace, Rochester, N.Y. 14620
Filed Nov. 27, 1974, Ser. No. 527,742
Int. Cl.² B64C *31/06*
U.S. Cl. 244—153 R **8 Claims**



1. A kite comprising a substantially horizontal canopy having upper and lower faces and a substantially vertical keel secured to and depending freely from the lower face of said canopy between its leading and trailing edges for stabilizing said kite while in flight, said canopy extending laterally on opposite sides of said keel to define wing portions of said kite, said keel comprising a tubular member of limp sheet material having an open leading end and a closed trailing end, and means for attaching a kite string to the lower edge of said tubular member in a position relative to the fore and aft axis of the kite which enables said kite to rise in an air current and said tubular member to be inflated by air entering the open leading end of the tubular member as the result of relative movement in opposite directions of said kite and said air whereby said tubular member is retained in a keel configuration to continue to stabilize said kite even when the true wind velocity has fallen to an insignificantly low value.

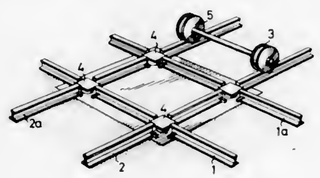
3,951,364
TRACK CIRCUIT
Henry C. Sibley, Adams Basin, N.Y., assignor to General Signal Corporation, Rochester, N.Y.
Filed Jan. 9, 1975, Ser. No. 539,664
Int. Cl.² B61L *21/06*
U.S. Cl. 246—34 CT **27 Claims**



1. A railroad track circuit for detecting the presence of a railroad vehicle shunt across the rails and within the limits of a track section, said track section having ends defined by shorting bonds across the rails and comprising in combination:

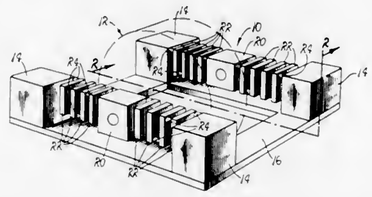
a. first and second segments of said track section with each segment sharing a leg in common with the other segment;
b. circuit means for coupling an a.c. signal from a signal generating means to said first and second segments of said track section;
c. first and second sensing means coupled to said first and second segments, respectively, for responding to the a.c. signal coupled to each segment of said track section;
d. modulating means coupled to said track section for intermittently effecting the signal sensed by said sensing means; and
e. detecting means coupled to said sensing means for responding to the changing signal sensed by said sensing means.

3,951,365
RAIL CROSSOVER ARRANGEMENT
Kazuo Maeda, Chiba, Japan, assignor to Mitsui Shipbuilding & Engineering Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 335,589, Feb. 26, 1973, abandoned.
This application Oct. 11, 1974, Ser. No. 514,070
Int. Cl.² E01B *7/18*
U.S. Cl. 246—465 **2 Claims**



1. In combination with a rail crossover for use with a vehicle wheel having a tread and at least one flange: a cut-out common to each of a pair of intersecting rails of said crossover and aligned with each of them at the point of their intersection, said cut-out dividing each of said pair of rails into adjacent sections such that each section of each rail is thereby separated from each of the other three rail sections; and a crossover plate in said cut-out, said plate having a substantially flat top positioned below the tops of said adjacent sections by a distance substantially the same as the height of said flange measured from its tread, said flat top extending laterally over and beyond the regions traversed by said flange as said wheel traverses said cut-out along either of said rails, thereby to support said wheel on its flange as it traverses said flat top of said plate and to maintain said wheel at substantially the same height as when said wheel is traversing either of said rails on its tread.

3,951,366
HANGER
William J. Abernathy, 209 Cole Drive, Huntsville, Ala. 35802, and Lowell G. Snoddy, 419 Warner St., NW., Huntsville, Ala. 35805
Filed Dec. 23, 1974, Ser. No. 535,409
Int. Cl.² F16F *15/00*
U.S. Cl. 248—15 **1 Claim**



1. A mounting for resiliently supporting a delicate instrumentation unit comprising;

a pair of spaced parallel elongated elastic bodies with each of said bodies having a central longitudinal axis and with each having the ends thereof joined to rigidly supported piers;
each of said elongated bodies comprising a mounting block and a plurality of adjacent mutually spaced parallel flexure plates extending from two opposite sides of said mounting block;
means for uniting said flexure plates, said mounting block and said piers of each of said elongated bodies comprising a flexure pin connected to and extending between said adjacent plates, between a plate and each of said piers and between said mounting block and each plate adjacent said mounting block at opposite sides thereof;
said flexure pins between adjacent plates being abaxially aligned about said central longitudinal axis of each of said elongated bodies and being sequentially spaced apart in helical progression by 90°;
an instrumentation unit having a rotating component, said unit being mounted between said spaced elongated bodies and being attached to said mounting blocks;
each of said flexure pins having a central longitudinal axis about which said pin is symmetrical whereby the resistance to flexure of each of said pins is equal in all directions.

3,951,367
FASTENER
Anders Torvald Sverker Hagelberg, Molnlycke, Sweden, assignor to Bengt Petersson New Products Investment AB, Goteborg, Sweden
Filed Oct. 25, 1973, Ser. No. 408,413
Claims priority, application Sweden, Oct. 23, 1972, 13652/72; Oct. 2, 1973, 7313368
Int. Cl.² F16B *15/04*
U.S. Cl. 248—71 **3 Claims**

1. A fastener formed of a moldable material, such as a plastics material, by casting or a similar plastic molding method and arranged to secure an object such as a cable to a base material with the fastener intended to be inserted into and expanded into tightly fitting engagement with the surface of a hole formed in the base material, said fastener comprising an integral unit including a substantially rigid first portion having a shaped surface to hold the object, and an attachment portion spaced laterally from the said shaped surface, an elongated second portion secured to and extending outwardly from the said attachment portion of said first portion and arranged to be inserted into a hole in the base material, said second portion comprising a pair of elongated juxtaposed peg-shaped portions each having a first end secured to the attachment portion of said first portion and a second end spaced outwardly in the elongated direction of said second part from said first portion, said peg-shaped portions spaced apart between the first and second ends thereof and forming an elongated groove therebetween extending between the first and second ends of said peg-shaped portions, the attachment portion of said first portion having a groove therethrough aligned with the groove between said peg-shaped portions so that a continuous groove is provided through said first and second portions, the groove through the attachment portion being open in the elongated direction of the continuous groove on the opposite side of the attachment portion from the shaped surface of said first portion, the facing surfaces of said peg-shaped portions forming the groove having at least a part thereof between and spaced from the first and second ends disposed in tapering relation converging in the direction from the first end to the second end, an elongated expanding

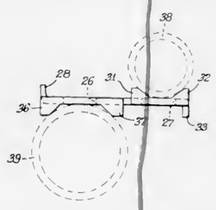


element having a first end and a second end, and a thin flexible bar connected to said peg-shaped portions at a location intermediate the first and second ends of said peg-shaped portions and to said expanding element at the first end thereof, said flexible bar having a length between said peg-shaped portions and said expanding element which is significantly shorter in length than said peg-shaped portions and said expanding element, and said thin flexible bar forming a hinge so that said expanding element can be pivoted about the point of connection of said flexible bar to said peg-shaped portions from a first position outside of the continuous groove to a second position where said expanding element is located within and aligned with the continuous groove, in the second position said expanding element having the first end thereof located in the groove between the first and second ends of said peg-shaped portions and the second end of said expanding element being located outwardly from said first portion on the opposite side of said first portion from said second portion, said expanding element in the second position being arranged to be driven into the groove with its first end being driven toward the second end of said peg-shaped portions and said expanding element being shaped between the ends thereof for expanding said peg-shaped portions outwardly away from one another and into tightly fitting engagement with the surface of a hole formed in the base material.

3,951,368
ELECTRICAL CONDUIT CLAMP-BACK
Arthur I. Appleton, 1 Bridlewood Road, Northbrook, Ill. 60062
Filed Sept. 11, 1972, Ser. No. 288,131
Int. Cl.² F16L *3/04*
U.S. Cl. 248—74 R **1 Claim**

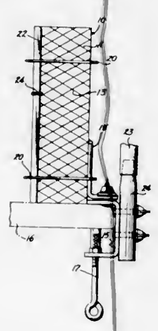
1. In the combination of a conduit clamp and a clamp-back employed to mount electrical conduit, the improvement wherein said clamp-back comprises:

a stamped sheet metal member with a planar base of elongated form having two ends and two sides and an opening therethrough adjacent one of said ends, two depending side feet extending downwardly from opposite sides respectively of said base and adjacent said one end thereof, and a third depending foot extending downwardly from the other end of the base, said three feet having flat bottoms positioned approximately in a common plane and defining open spaces therebetween, two pairs of upstanding ears with the pairs being at opposite sides respectively of said base and extending upwardly from said base adjacent said other end thereof, each pair of ears defining a saddle for said conduit, said side feet being integral with said sides of said base adjacent said one end and said third foot being integral with said end of said base at said other end and said ears being integral with



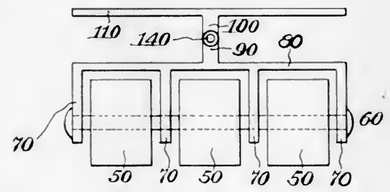
said sides of said base adjacent said other end and all having originally been in the same plane as the base when in sheet metal form but having been bent out of said plane to define said clamp-back, two additional depending feet at opposite sides respectively of said base so that there are a pair of said feet at each of said sides and adjacent said first pair of feet, said pairs of feet being spaced apart to form a second saddle for another conduit of a size different than the size for which said ears are adapted to receive, an upstanding projection extending, from said one end of the base, in the same general direction as that in which said ears extend and having an end extending the same height above said base as said ears, whereby said clamp-back may be used with one side outwardly for one size conduit and the other side outwardly for another size of conduit.

3,951,369
IRON HOLDER
Dezso Kocsak, 7420 Eastmoreland Road, Annandale, Va. 22003
Filed Mar. 12, 1975, Ser. No. 557,516
Int. Cl.² D06F *79/02*
U.S. Cl. 248—117.6 **6 Claims**



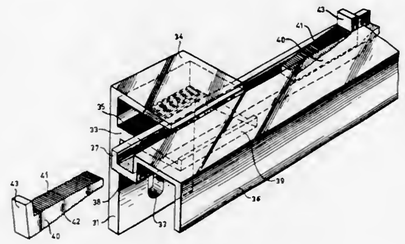
1. An iron holder adapted to be releasably secured to an ironing board to safely store a heated iron ready for use comprising a U-shaped body of open mesh material having a generally flat bottom and inwardly extending curved side walls adapted to enclose an iron, a support secured to the lower end of said body, said support carrying a bracket which extends beneath said U-shaped body when the said body is stood on one end with the said body and said side walls being vertically positioned, and means coacting with said bracket for securing said holder to an ironing board when the holder is positioned with the body thereof extending vertically above the board and the bottom of the bracket extending below the board.

3,951,370
LEVELING DEVICE
E. Allen Tompkins, Helena, Mont., assignor to The Raymond Lee Organization, Inc., a part interest
Filed Sept. 3, 1974, Ser. No. 502,563
Int. Cl.² F16M *11/20*
U.S. Cl. 248—188.3 **3 Claims**



1. A device used in combination with an appliance having a rectangularly shaped bottom surface with opposite sides and front and rear edges to level the appliance on a non-level floor, said device comprising:
a first flat plate secured to the bottom surface intermediate the sides and adjacent the rear edge;
first and second leveling legs of variable length, each leg being secured to a corresponding one of the two front corners of the bottom surface;
a second flat plate spaced below the first plate and generally parallel thereto;
a first vertical flange secured to the bottom of the first plate and extending downward therefrom;
a second vertical flange secured to the top of the second plate and extending upward therefrom;
pivot means interconnecting the bottom of the first flange and the top of the second flange, said pivot means including a first horizontal shaft and allowing the bottom surface of the appliance to be pivoted about the first shaft as an axis;
a second horizontal shaft disposed below the second plate and extending at right angles to the first shaft;
support means secured to said second plate and holding the second shaft in position; and
cylindrical roller means having a horizontal axial bore through which said second shaft extends as an axle, said roller means permitting the bottom surface of the appliance to be pivoted about the second shaft whereby the appliance can be leveled without reaching in the back of the appliance.

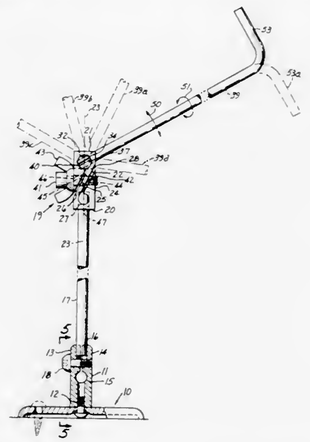
3,951,371
FIXATION FOR A PLATE SHEATHING
Jan Hoes, Maastricht, Netherlands, assignor to Globe-Lak N.V., Netherlands
Division of Ser. No. 251,812, May 9, 1972. This application Jan. 23, 1975, Ser. No. 543,521
Claims priority, application Netherlands, May 11, 1971, 106479
Int. Cl.² F16M *13/00*
U.S. Cl. 248—223 **5 Claims**



1. Apparatus for fixing plate sheathing to a wall, comprising:
a first fixing member having a first leg and a pair of second legs spaced from each other and extending from said first leg substantially normally thereto, at least one of said second legs having serrations on at least one surface portion thereof;
a second fixing member having a first leg disposed substantially parallel to said first leg of said first fixing member and a second leg extending from said first leg of said second fixing member substantially normally thereto, said second leg of said second member having a channel-shaped portion and a serrated surface portion located between said second legs of said first fixing member, said serrated portions of the respective members being complementary to and engaging each other; and
means for clamping the complementary serrated surface portions of said fixing member legs to each other, including at least one locking member driven into said channel-shaped portion and engaging the other of said second legs of said second fixing member to urge said serrated surface portion of said second fixing member leg into locking engagement with said serrated surface portion of said one second leg of said first fixing member.

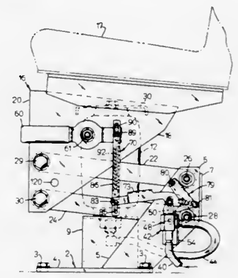
3,951,372
THREE DIMENSIONAL CLAMP DEVICE
William A. Casler, and Phillip E. Saurenman, both of Pasadena, Calif., assignors to Clamp Mfg. Co., Inc., South El Monte, Calif.
Filed Nov. 29, 1974, Ser. No. 528,432
Int. Cl.² A47B *96/06*
U.S. Cl. 248—230 **14 Claims**

1. A clamp for holding at least two rod-like members at various angles to each other comprising:
a body having two opposed clamping sections and an intermediate section joining said clamping sections;
a first of said clamping sections having at least one opening extending at least part way through it and having a tongue extending from the opening;
the second of said clamping sections having at least two intersecting openings extending at least part way through it and having a tongue extending from said openings;
the tongue of the first of said clamping sections having a surface which extends alongside of, and normally spaced from, one side of said intermediate section;
the tongue of the second of said clamping sections having a surface which extends alongside of, and normally spaced from, the other side of said intermediate section;
each of said openings being adapted to have inserted into it one of said rod-like members;
clamping means attached to said tongues to resiliently draw said tongues toward each other and toward the intermediate section;



whereby the cross-section areas of said openings are resiliently reduced, and the rod-like members are thereby gripped to prevent their movement relative to each other.

3,951,373
VEHICLE SEAT HAVING VALVE CONTROLLED AIR SPRING
Richard F. Swenson, and Shawn H. Eimen, both of Milwaukee, Wis., assignors to Milsco Manufacturing Company, Milwaukee, Wis.
Filed Feb. 18, 1975, Ser. No. 550,418
Int. Cl.² A45D *19/04*
U.S. Cl. 248—400 **10 Claims**



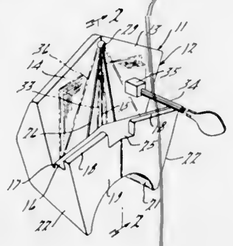
1. In a vehicle seat suspension mechanism for vertically, adjustably, and resiliently supporting a vehicle seat, the combination comprising; a base frame, a seat frame, means mounting said seat frame on said base frame for vertical shifting of the seat frame relative to the base frame, an air spring mounted between said seat frame and said base frame, an air valve mounted on said base frame and having a conduit connection with said air spring for conducting flow of air to and from said air spring, said air valve having means for connection to a source of air presssure; said valve also having a shiftable valve element which is shiftable between a neutral position, air spring pressurizing position, and an air spring exhaust position; a control handle mounted on said seat frame, and linkage means between said handle and said shiftable

valve element; said linkage means including a floating link, a lost motion connection between said handle and one end of said floating link, said link being connected to said shiftable valve element intermediate the length of said floating link, said floating link having a pivot point at its other end, and means for mounting said pivot point of said floating link and permitting said pivot point to shift from a normal position when said seat frame assumes an extreme position in either an upper or downward direction to thereby render said valve inoperative when said seat frame is in said extreme positions.

3,951,374
BOOK HOLDER

Wanda L. Quigley, 1950 Connell Road, Ortonville, Mich. 48462

Filed Sept. 16, 1974, Ser. No. 506,114
Int. Cl.² A47B 97/04
U.S. Cl. 248—451 **8 Claims**

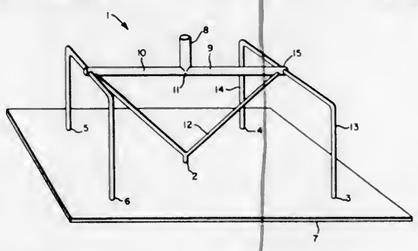


1. In a book holder, a unit element molded from a foamable plastic material to have a soft interior and a durable outer skin, said unit element having a pair of upright wall sections converging toward the center, an outwardly projecting shelf near the bottom of said sections, and flat side wall portions extending rearwardly from the side edges of said sections and converging rearwardly and downwardly to provide a recessed area behind said sections.

3,951,375
BALANCED RUNNER SYSTEM FOR INJECTION MOLDING APPARATUS

Peter John Lovell, Kingston, Canada, assignor to Du Pont of Canada, Ltd., Montreal, Canada

Filed July 2, 1974, Ser. No. 485,083
Claims priority, application Canada, July 13, 1973, 176438
Int. Cl.² B29F 1/04
U.S. Cl. 249—107 **6 Claims**

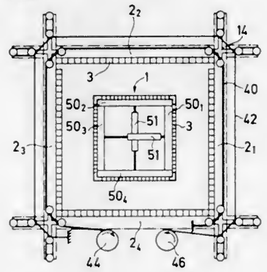


1. A balanced runner system for injection molding apparatus comprising an inlet, a plurality of runners and five gates attached to the same mold having a single cavity, one gate being centrally located with the remaining gates being symmetrically spaced in two dimensions about said centrally located gate, the inlet being connected to said gates by a plurality of runners having lengths and cross-sections such that the runner system is capable of supplying molten polymer to each gate at substantially the same rate and of providing a uniform flow of molten polymer to the mold.

3,951,376
MOLD WITH TENSIONED CABLE ADJUSTING MEANS

Otto Berndt, Memmingen; Edmund Dolfen, Moers, and Gerhard Strese, Kamp-Lintfort, all of Germany, assignors to Grunzweig & Hartmann und Glasfaser AG, Ludwigshafen, Germany

Filed Sept. 27, 1974, Ser. No. 509,898
Claims priority, application Germany, Sept. 27, 1973, 2348655
Int. Cl.² B28B 7/02
U.S. Cl. 249—146 **9 Claims**



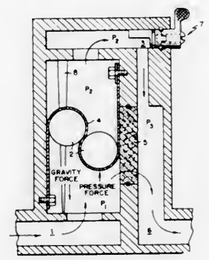
1. A device for forming a structure useful as a mold comprising means defining a core (**1**), a plurality of intersecting frame members (**2**) arranged around the core defining a polyhedral enclosure, said frame members being individually movable toward and away from the core, at least one pulley (36,38) arranged near each end of the frame members, means guiding (**8,12**) said frame members toward and away from said core, support means (**14**) slidably engaging adjacent frame members at each intersection, a first set of pulleys (24,26) comprising at least two mounted on said support means (**14**), a second set of pulleys (**20,22**) mounted on said support means, at least one cable, a first portion (**42**) being reeved through the first set of pulleys and the pulleys mounted to the frame members in a block and tackle fashion such that shortening of said first portion moves at least one frame member away from said core, and a second portion (**40**) of said at least one cable being reeved through said second set of pulleys such that shortening of said second portion moves at least one frame member toward the core, and lining means for mounting on said frame.

3,951,377
ROLLING-GATE, QUIET-THROTTLING, FLOW-CONTROL VALVE

Richard A. Milroy, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 7, 1974, Ser. No. 521,983
Int. Cl.² G05D 7/00
U.S. Cl. 251—35 **1 Claim**

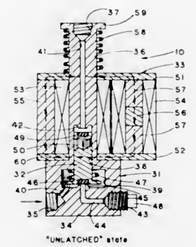
1. A flow control valve, comprising:
a valve housing;
an inlet and an outlet in said housing;
a first and second fluid chamber within said housing;
a first rolling plane within said housing;
a second rolling plane within said housing;
a porous passage integral with said second rolling plane and communicating with said outlet, said passage being in communication with said inlet through one of said chambers;
a rolling cluster comprising a band and a first and second roller, said rolling cluster being free to translate between and along said first and second rolling planes to variably divide said housing into said first and said second chambers; said rolling cluster being free to move along said second plane to progressively cover or expose said porous passage depending upon the direction of its motion, and said rollers being selected to be of sufficient mass to be constantly biased in one direction of motion by the constant vertical component of the force of gravity on said cluster, and
said housing containing a rolling cluster by-pass channel which increases in cross-sectional area from one end of said housing to the other such that the by-pass flow area changes according to the position of said rolling cluster.



3,951,378
VALVE

Aharon Manor, Rehovoth, Israel, assignor to Oramt Turbines Ltd., Israel

Filed Mar. 8, 1974, Ser. No. 449,479
Claims priority, application Israel, Mar. 9, 1973, 41742
Int. Cl.² F16K 31/08
U.S. Cl. 251—65 **6 Claims**

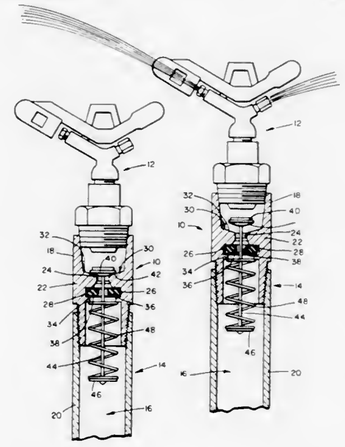


1. A manually resettable valve comprising a valve body having a cylindrical portion with a wetted enclosure defined by an internal coaxial aperture within which a magnetically attractable plunger is slidable between two terminal positions establishing the states of the valve; a spring urging the plunger toward a first terminal position; an electromagnet mounted on the body and responsive to an electrical signal when the plunger is in its first terminal position for magnetically attracting the plunger and moving it to a second terminal, position against the action of the spring; and a permanent magnet in a magnetic circuit whose elements include the cylindrical portion of the body and the plunger for holding the plunger independently of the electromagnet in its second terminal position thereby holding the valve in its latched state; some of the elements of the magnetic circuit being manually movable relative to other of the elements for selectively disrupting the magnetic circuit and causing the permanent magnet to release the plunger whereby the spring is effective to move the plunger from its second terminal position to its first terminal position thereby resetting the valve to its unlatched state.

3,951,379
FLOW CONTROL DEVICE

Gail Cornelius, Portland, Oreg., assignor to R. M. Wade & Co., Portland, Oreg.

Filed June 21, 1974, Ser. No. 481,893
Int. Cl.² F16K 15/06, 47/00
U.S. Cl. 251—118 **4 Claims**



1. A flow control device comprising:
a body defining a passage through which fluid may flow upon application of fluid pressure thereto
means within the passage defined by the body and supported relative thereto, and defining an opening through which the fluid may flow within the passage, and responsive to relatively increased fluid pressure causing said fluid flow to decrease the cross-sectional area of the opening through which said fluid may flow, and responsive to relatively decreased fluid pressure causing fluid flow to increase the cross-sectional area of the opening through which said fluid may flow; and
means connected to said body for allowing fluid flow through the passage upon application of fluid pressure thereto above a certain positive level, but blocking fluid flow upon decrease of applied fluid pressure to below said certain positive level.

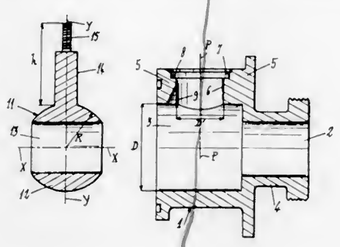
3,951,380
DEMOUNTABLE VALVE

Lucien Oliva-Bonino, Grenoble, France, assignor to Gachot S.A., Soisy-Sous-Montmorency, Val d'Oise, France

Filed Jan. 28, 1974, Ser. No. 437,027
Claims priority, application France, Mar. 20, 1973, 73.09897
Int. Cl.² F16K 1/22
U.S. Cl. 251—304 **10 Claims**

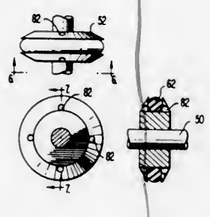
1. A valve comprising a hollow body having two oppositely disposed flow ports, a plug rotatable in said hollow body for controlling the flow of fluid between said ports, a substantially cylindrical operating stem integral with said plug, said stem emerging from an opening of said valve body having a central axis and protruding beyond said valve body, said body having at least one oblique recess therein for receiving the valve operating stem thereby to permit insertion of said plug and stem, as a one-piece assembly, into said body and removal of said plug and stem as a one-piece assembly from said body through one of said ports having a central axis, said recess being disposed between said opening and said one port, said

oblique recess having a wall that is part of the surface of a cylinder whose radius is slightly greater than the radius of said



cylindrical operating stem, the axis of said surface intersecting said axes of said opening and said one port at acute angles.

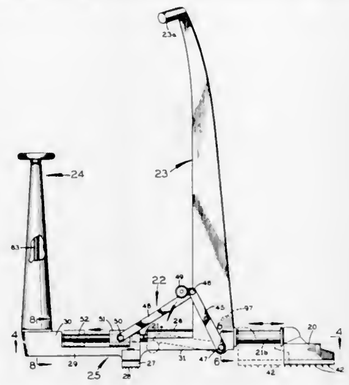
3,951,381
DISC VALVES
Robert V. Whitener, 20 Tall Tree Court, Huntington, Long Island, N.Y. 11743
Division of Ser. No. 478,628, June 12, 1974. This application Mar. 10, 1975, Ser. No. 557,104
Int. Cl.² F16K 1/00
U.S. Cl. 251—356 **7 Claims**



1. A valve comprising a disc member defining a generally rectangular groove about the periphery thereof, a resilient seal disposed in said groove in contact with the side walls thereof, said disc member further defining at least one aperture extending through both side walls of said rectangular groove adjacent the bottom thereof whereby fluid pressure on both upstream and downstream sides of said dic member may be released.

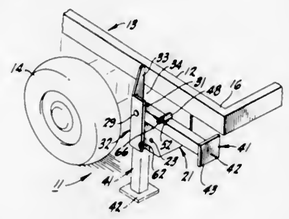
3,951,382
AUTOMATIC CARPET KICKER
Charles T. Asbury, 717 Isle of Palms, Ft. Lauderdale, Fla. 33301
Filed Aug. 21, 1975, Ser. No. 606,466
Int. Cl.² A47G 27/04
U.S. Cl. 254—62 **21 Claims**

1. In a carpet kicker having a carpet-engaging head, the improvement which comprises:
a base extending behind said head to overlie the carpet;
an elongated plunger slidably reciprocable substantially horizontally along the base through a rearward retraction stroke and a forward stroke;
spring means operatively associated with said plunger to be stressed by the latter's retraction;
mechanical linkage means on said base for retracting said plunger to stress said spring means;
and means for releasing said plunger from said linkage means at the end of its retraction stroke to be propelled forward by said spring means;
said plunger being operatively associated with said carpet-



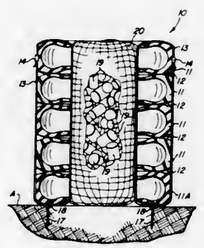
engaging head to impart a forward thrust to the latter when said plunger is propelled forward.

3,951,383
TRAILER JACK
David N. Tenney, Jr., P.O. Box 1135, Project City, Calif. 96079
Filed Sept. 19, 1975, Ser. No. 614,888
Int. Cl.² B66F 7/22
U.S. Cl. 254—94 **4 Claims**



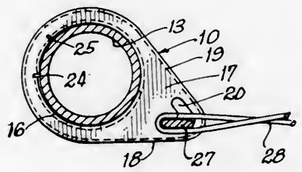
1. A tilt up jack for a trailer having a pair of longitudinal frame channels spring mounted on ground engaging wheels, said jack comprising on each of said channels:
a. a fore and aft sector plate mounted on said channel and depending therefrom;
b. an angle bar mounted vertically on said channel adjacent the forward end of said sector plate, said angle bar including a transverse web and a fore and aft flange, said web and said flange forming with said sector plate an elongated vertical U-shaped in section enclosure;
c. an elongated leg;
d. pin means for pivotally mounting one end of said leg on said sector plate for movement of said leg in a vertical plane between a first position in which said leg extends aft in a substantially horizontal attitude, a second position in which said leg extends downwardly and aft, and a third position in which said leg is vertical and is located within said enclosure;
e. a foot plate mounted on the other end of said leg; and,
f. latch means for selectively securing said leg in said first and said third positions, the distance between said pin means and the bottom of said foot plate being greater than the radius of the trailer tire so that the trailer tire is elevated above ground level when said leg is in said vertical third position,
said latch means including a sleeve mounted transversely on said leg, a latch pin slidably disposed within said sleeve, and means carried on said sleeve for limiting the movement of said latch pin between a retracted location removed from said sector plate and a projected location in which one end of said latch pin extends into a latch pin opening in said sector plate.

3,951,384
IMPACT ABSORBING DEVICE
Robert E. Hildreth, Jr., 6841 E. 6th St., Scottsdale, Ariz. 85257
Filed Mar. 20, 1975, Ser. No. 560,228
Int. Cl.² E04H 17/00
U.S. Cl. 256—1 **4 Claims**



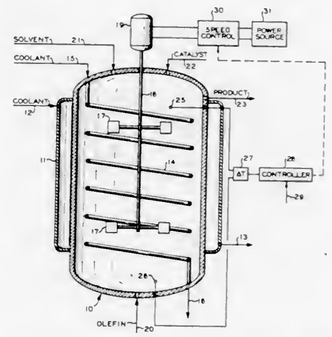
1. An energy absorbing device fabricated substantially of salvaged material for receiving the impact of a moving vehicle and dissipating at least a portion of the kinetic energy thereof by deformation, said energy absorbing device comprising:
a. a plurality of concentrically arranged and stacked used whole tire casings, each positioned horizontally having the side wall thereof in surface contact with the side wall of each adjacent casing to form a deformable elongate upright hollow cylindrical body;
b. securement means including at least three equally spaced cable members each encircling the side wall of said hollow cylindrical body for holding said casings in said stacked arrangement;
c. at least one used empty crushable container within said hollow cylindrical body; and
d. anchor means for affixing said cylindrical body to a predetermined surface.

3,951,385
TENSION BAND
Clarence Lee Folden, Downers Grove, and Nicholas D. Reidy, Chicago, both of Ill., assignors to Sears, Roebuck and Co., Chicago, Ill.
Filed Dec. 16, 1974, Ser. No. 533,129
Int. Cl.² B21F 27/00
U.S. Cl. 256—47 **6 Claims**



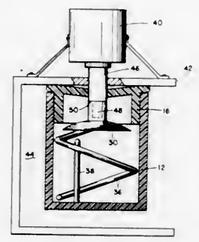
1. A tension band for retaining a chain link fence fabric tension bar to a support post for maintaining the fence fabric under tension comprising, a generally flat planar unitary member having a circular opening to receive a support post and generally V-shaped opening spaced from said circular opening to receive a tension bar, the leg portions of said V-shaped opening lying on respective lines generally tangent to respective opposite sides of said circular opening so that the fence fabric when under tension may be selectively disposed in a plane generally tangent to one or the other side of said post.

3,951,386
UNIFORM MIXING IN VESSELS
William M. Small, and Donald K. Petree, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Mar. 31, 1975, Ser. No. 563,399
Int. Cl.² B01F 15/00
U.S. Cl. 259—1 R **8 Claims**



1. In a process in which material in a vessel is agitated to provide a uniform blend; the method of control which comprises comparing the temperature of the material at a first location within the vessel with the temperature of the material at a second location within the vessel spaced from the first location to detect any temperature differential therebetween, and regulating the agitation imparted to the material in the vessel so as to reduce the temperature differential substantially to zero with minimum agitation.

3,951,387
CARTRIDGE FOR STORING AND MIXING AT LEAST TWO INDEPENDENT INGREDIENTS
Fuller Warden, and Eugene W. Lewis, both of Tulsa, Okla., assignors to Grace Development Company, Tulsa, Okla.
Filed Apr. 25, 1975, Ser. No. 571,523
Int. Cl.² B01F 7/24
U.S. Cl. 259—67 **9 Claims**



1. Cartridge means for storing and mixing at least two independent ingredients and comprising sectional housing means, sealing means carried by one of said housing means and disposed within the cartridge in one position for providing at least two independently sealed compartments therein and movable to a second position for providing communication between the compartments for intermingling of the ingredients, rotatable mixing means carried by the sealing means and extending into the interior of the housing for mixing the inter-

mingled ingredients, and one of said housing sections being removable with respect to another of said housing sections and independent of the sealing means and mixing means for carrying the mixed ingredients to a site of use.

3,951,388

APPARATUS FOR CONTROLLING THE OPERATION OF INJECTION MOLDING MACHINES

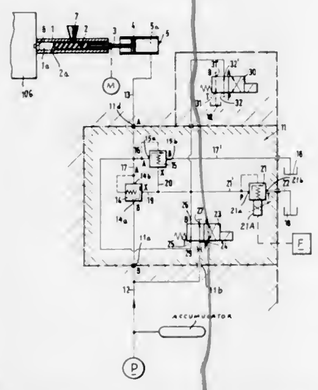
Werner Schrammel; Arno Stöhr, both of Emmendingen, and Hans Birkhofer, Windenreute, all of Germany, assignors to Klockner-Werke AG, Duisburg, Germany

Filed Apr. 18, 1975, Ser. No. 569,171

Claims priority, application Germany, Apr. 25, 1974, 2419975

Int. Cl.² B29B *1/06*

U.S. Cl. 259—191 **10 Claims**



1. In an injection molding machine, a combination comprising an elongated barrel having a nozzle at one end thereof; means for feeding unplasticized synthetic plastic material into said barrel at a locus remote from said nozzle; a plasticizing screw in said barrel; means for rotating said screw to thereby plasticize the material supplied by said feeding means and to advance plasticized material toward said nozzle whereby the material which accumulates in said barrel behind said nozzle moves said screw away from said nozzle from a first to a second end position; means for moving said screw from said second to said first end position to thereby expel plasticized material through said nozzle, including a hydraulic cylinder having a piston connected with said screw and a fluid-containing chamber at that side of said piston which faces away from said screw; and control apparatus for maintaining the fluid in said chamber at a relatively low basic pressure during movement of said screw from said first to said second end position, at a higher injection pressure during a first stage of movement of said screw from said second toward said first end position, and at a higher or lower holding pressure during the remaining stage of movement of said screw to said first end position, comprising means for supplying fluid at a pressure at least equal to said holding pressure, a receptacle for fluid, first conduit means connected with said chamber, a first adjustable pressure relief valve having a fluid-admitting first port connected to said fluid supplying means a fluid-discharging second port connected with said first conduit means, a second pressure relief valve having a fluid-admitting first port connected with said first conduit means and a fluid-discharging second port connected with said receptacle, each of said valves further having a control port, a pressure selecting third valve operable to set seriatim said second valve for opening at said basic pressure and said first valve for opening at said injection and holding pressures, said third valve having a first port and a fluid-discharging second port connected with said receptacle, second conduit means connected with said control ports and with said first port of said third valve, means for operating said third valve, and a fluid flow regulating valve having a first portion in which said regulating valve connects said first conduit means with said second conduit means while said second valve is set to open at said basic pressure and a second position in which said regulating valve additionally connects said fluid supplying means with said first conduit means while said first valve is set to open at said injection and holding pressures.

3,951,389

ELASTOMER PROCESSING METHOD

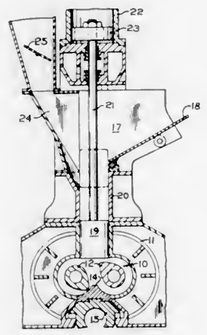
John P. Porter, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 307,583, Nov. 17, 1972, abandoned.

This application Dec. 16, 1974, Ser. No. 532,937

Int. Cl.² B29B *1/04*; **B29H** *1/10*

U.S. Cl. 259—192 **6 Claims**



1. The method of controlling elastomer processing comprising:

a. placing the elastomer in an electrically driven apparatus capable of mechanically working the elastomer;

b. providing an electrical signal representative of the electrical power required to operate said apparatus with the elastomer therein;

c. compensating said signal for the amount of electrical power required to operate said apparatus without elastomer therein;

d. integrating said compensated signal with respect to time;

e. providing a continuous indication of said integrated signal; and,

f. terminating the working of said elastomer upon the consumption of a preselected amount of electrical energy in working the elastomer as determined by said integrated signal.

3. The method of controlling elastomer compound mixing comprising:

a. placing the uncompounded elastomer in an electrically driven apparatus capable of mechanically mixing the elastomer;

b. providing an electrical signal representative of the electrical power required to operate said apparatus with the elastomer therein;

c. compensating said signal for the amount of electrical power required to operate said apparatus without elastomer therein;

d. integrating said compensated signal with respect to time;

e. adding at least one compounding ingredient to said elastomer upon the consumption of a preselected amount of electrical energy in mixing the elastomer as determined by said integrated signal; and,

f. continuing the mixing of said elastomer after addition of an ingredient until consumption of a further preselected amount of electrical energy has occurred as determined by said integrated signal.

3,951,390

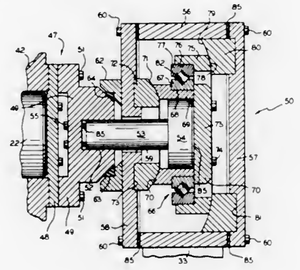
THRUST BEARING DEVICE FOR METAL TREATING VESSEL

Richard P. Krause, and Harry T. Montgomery, both of New Castle, Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Apr. 3, 1974, Ser. No. 457,437

Int. Cl.² C21C *5/46*

U.S. Cl. 266—221 **10 Claims**



1. In combination:

a. a vessel for converting ferrous metal to steel,

b. first and second shaft means extending substantially horizontally from said vessel,

c. support means spaced from said vessel and including first and second bearing means in which said first and second shaft means are journaled, respectively, to enable rotation of said vessel to selected angular positions, said bearing means also permitting axial movement of said shaft means,

d. drive means for rotating said vessel and coupled to a first one of said shaft means, and

e. thrust bearing means mounted along the axis of said shaft means independently of said first and second bearing means and being coupled to one of said shaft means for absorbing forces that are substantially axial of said shaft means, said thrust bearing means including second support means, and rocker means coupled between said one shaft means and said second support means to permit the end of said one shaft means to move about a nominal axis of rotation,

f. said rocker means including first and second means mounted on said one shaft means and having spaced apart substantially concentric first and second oppositely curved surfaces,

g. axially spaced apart third and fourth means having, respectively, third and fourth curved surfaces complementary to and in sliding contact relationship with said first and second curved surfaces,

h. said first and second means comprising radially separated elements the first of which has said first curved surface and the second of which has said second curved surface, and

i. bearing means interposed between said first and second radially separated elements.

3,951,391

SHOCK ABSORBER

Robert D. Papousek, 3426 Chicago, San Diego, Calif. 92117

Filed Feb. 22, 1974, Ser. No. 444,788

Int. Cl.² B60G *15/16*

U.S. Cl. 267—8 R **5 Claims**

1. A shock absorber having an external, helical coiled spring in concentric alignment therewith, one end of said coiled spring being fixed to one end of such shock absorber and the other end of said coiled spring being provided with an internally projecting lug as a part thereof, said other end being secured to said shock absorber by means of a clamping member, said clamping member comprising two sections which when joined, are cylindrical and have a diameter approximately equal to the diameter of said coiled spring, said two parts having a longitudinal interface, said clamping member being provided with a continuous helical groove in the outer surface thereof, said helical groove substantially conforming



to the configuration and cross-sectional dimensions of said coiled spring and having an indentation at lower end thereof adapted for receiving said internally projecting lug of said helical coiled spring, said clamping member further having an opening therethrough along its axis of dimensions substantially the same but not less than, the dimensions of said shock absorber at the point to which said clamping member is to attach, said clamping member being further provided with means for joining and holding said two sections thereof in fixed relation to one another and to said shock absorber.

3,951,392

HYDRO-PNEUMATIC SPRING

Jacob Baart de la Faille, Delft, Netherlands, assignor to Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel en Verkeer, The Hague, Netherlands

Filed June 28, 1974, Ser. No. 484,106

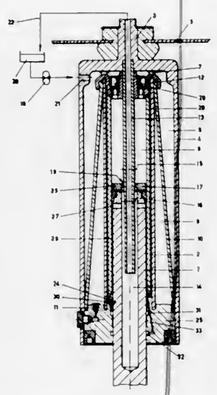
Claims priority, application Netherlands, July 4, 1973, 7309301

Int. Cl.² F16F *5/00*

U.S. Cl. 267—64 R **7 Claims**

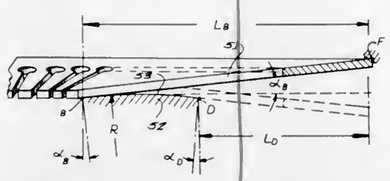
1. A hydro-pneumatic spring consisting of a cylinder, a plunger movable in the cylinder, a fluid chamber connected with the cylinder containing a gas cushion and the rest of the chamber filled with liquid and means for controlling the amount of liquid present in the chamber, the said cylinder being connected with a device for the supply of a substantially constant flow of liquid and with a liquid discharge via a passage, the flow resistance of which depends upon the position

of the plunger in the cylinder, the said plunger being provided with a central bore and a tapered discharge tube secured to



the cylinder cooperating with said bore to control the oil flow through the passage.

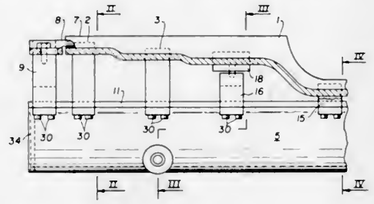
3,951,393
FULCRUMS FOR BELLEVILLE SPRINGS
Richard L. Smirl, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed July 22, 1974, Ser. No. 490,477
Int. Cl.² F16F 1/34
U.S. Cl. 267—161 **14 Claims**



1. In combination with a Belleville spring having a variable spring rate providing a load deflection curve including a negative rate portion, a convex surfaced fulcrum in contact with one face of said spring, said face having a relative rolling movement on said fulcrum surface as a load is applied to said spring, said fulcrum being of an annular shape and having a relatively wide convex surface, said movement of the contact point of said spring on said fulcrum surface acting to modify the inherent load variation in the Belleville spring and provide an extended range of substantially constant spring load.

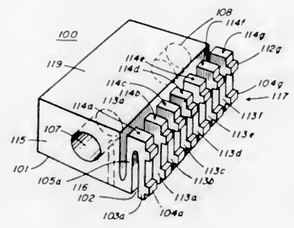
3,951,394
APPARATUS FOR PRODUCING TUBULAR BODIES FROM TWO SHELLS
Otto Oeckl, Munich, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg AG, Munich, Germany
Division of Ser. No. 359,688, May 14, 1973, Pat. No. 3,829,959. This application May 1, 1974, Ser. No. 465,826
Claims priority, application Germany, May 20, 1972, 2224722
Int. Cl.² B23Q 3/00
U.S. Cl. 269—43 **10 Claims**

1. A clamping apparatus for holding longitudinal half shell sections of workpieces so that a work surface of the workpiece may be presented in sequence to different operations without removal of the workpiece from the clamping apparatus for producing tubular bodies from said half shell sections, comprising a base in the form of a hollow carrier beam which is stiff against bending and torsion, mounting means (**11**) forming part of said hollow carrier beam along one side thereof, holding means (**9, 16, 15, 15'**) secured to said mounting means and spaced along said hollow carrier beam with predetermined spacings between adjacent holding means, said holding means including clamping means for clamping a shell



section against said hollow carrier beam at several points along the length of the shell section, said holding means further including claw means for securing the ends of a shell section to said hollow carrier beam whereby edges of said shell section are exposed first for a machining operation and then for a welding operation and warping of the workpiece is avoided.

3,951,395
RESILIENT VISE JAW
Douglas J. Hennenfent, Minneapolis; Robert A. Johnson, Minnetonka, and Raymond Eino Jutila, Wayzata, all of Minn., assignors to Control Data Corporation, Minneapolis, Minn.
Filed Nov. 25, 1974, Ser. No. 526,555
Int. Cl.² B25B 1/24
U.S. Cl. 269—266 **12 Claims**

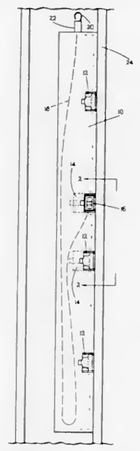


1. An improved jaw for a vise intended to apply relatively even pressure along a surface of the clamped work piece, and comprising a base and a plurality of substantially identical cantilevered beams formed of a refractory material, said beams rigidly attached to the base along a pre-selected line and extending along a first pre-selected direction, and each having a load-bearing surface, all load-bearing surfaces exteriorly facing in a second pre-selected direction substantially perpendicular to the first pre-selected direction, the plurality of said load-bearing surfaces forming the jaw face.

3,951,396
WIRING SYSTEM RETAINER
Joseph W. Bird, Scituate, Mass., assignor to Ralph Pill Electric Supply Co., South Boston, Mass.
Filed Nov. 1, 1974, Ser. No. 519,986
Int. Cl.² H01R 33/00
U.S. Cl. 269—321 WE **5 Claims**

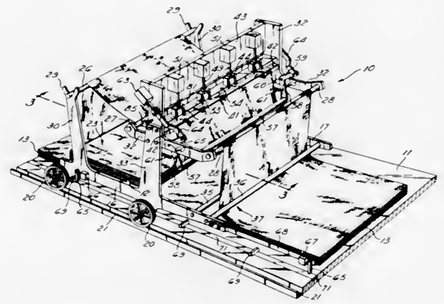
1. A retainer for use in a building constructed with a framework for holding a load device having a length of cable extending therefrom and terminating in a holder, said retainer comprising; an elongated cardboard-like box having opposite ends with the holder disposed at one of said ends and a plural-

ity of cut out openings spacedly disposed along the box each defining a freely pivotal flap that pivots from a corner of the box and has a bend line extending in the same direction as the corner but spaced therefrom each said cut out opening for



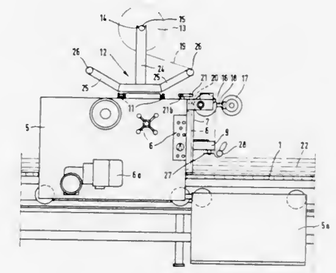
accommodating a load device having an edge wall for receiving an end of the flap with the bend in the flap limiting the insertion of the flap into the load device, said flap for holding the load device in place with the face of the load device extending outwardly from a wall forming the face of the box.

3,951,397
SHADE MARKING MACHINE
George A. Rice, Palestine, Tex., assignor to Work Wear Corporation, Cleveland, Ohio
Filed Mar. 14, 1974, Ser. No. 451,296
Int. Cl.² B65H 29/46
U.S. Cl. 270—31 **11 Claims**



11. In apparatus for spreading successive layers of a web over a work area, a carriage for transporting a web supply over the work area alternately from one end of the work area to the other, said carriage including means for its guidance and support over a work area substantially longer than its length, a web supply station and a web discharge station on the carriage, a web layer marking station along a path taken by the web from the supply station to the discharge station, means for marking the web according to layer, and means for actuating said marking means, said actuating means including means responsive to pattern coordinating means located at variably spaced selected points along the work area and separate from the carriage whereby said marking means is actuated to mark said web at desired locations corresponding to said selected points.

3,951,398
FABRIC LAYERING MACHINE
Günter Stumpf, Hohenweg 13, 7421 Mehrstetten (Kr. Munsingen), Germany
Filed Mar. 28, 1974, Ser. No. 455,731
Claims priority, application Germany, Mar. 30, 1973, 7312181[U]
Int. Cl.² B65H 29/46
U.S. Cl. 270—31 **8 Claims**



1. A fabric layering machine for movement along a layering table, comprising a frame, mounting means carried by said frame for mounting a supply of fabric, first and second power rollers carried by said frame, transfer means operable to move one of said power rollers between a first position in which said one of said power rollers is in close proximity to the other of said power rollers so as to form a nip therebetween, and a second position in which said one of said power rollers is spaced apart from said other of said power rollers, power means operable to rotate said power rollers, when said one of said power rollers is in said first position, in opposite senses relative to each other so as to pull a web of fabric through the nip between said power rollers from said supply of fabric, and a deflecting roller carried by said frame and disposed before the first roller with respect to the movement of said web of fabric from said supply of fabric for causing said web to contact said first power roller over an arc of contact, said deflecting roller being positioned at a side of said first power roller remote from the second power roller, said deflecting roller, and said first and second power rollers having axes located in a common horizontal plane; said transfer means being operable to move said one of said power rollers between said first and second positions along a path such that the axis of one of said power rollers remains in a single plane containing the axis of the other of said power rollers, and the axis of said deflecting roller is also contained in said plane.

3,951,399
ARTICLE-HANDLING APPARATUS
Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland
Filed Oct. 8, 1974, Ser. No. 513,175
Claims priority, application Switzerland, Oct. 10, 1973, 14405/73
Int. Cl.² B65H 39/065
U.S. Cl. 270—58 **18 Claims**

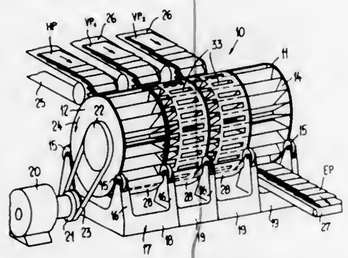
1. Apparatus for handling printed sheet products, comprising:

a drum;

means for rotatably driving said drum about a longitudinal axis;

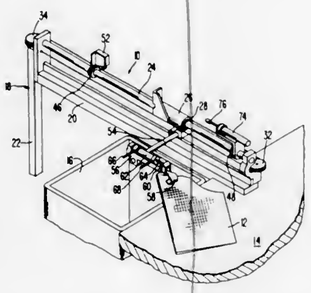
means dividing said drum into a plurality of compartments extending radially of said axis;

means for supplying said products to the compartments at one location along said drum;
means individual to each of said compartments for axially advancing the products in said compartments in synchro-



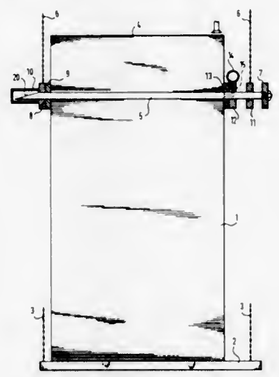
nism with the rotation of the drum from said one location to a second location along said drum; and
means for removing said products from the compartments at said second location.

3,951,400
CLOTH MOVER AND STACKER
Hubert Blessing, Dallas, Tex.; Robert D. Eckerson, Trumbull, and Alfred E. Mally, Fairfield, both of Conn., assignors to Levi Strauss & Co., San Francisco, Calif.
Filed Aug. 12, 1974, Ser. No. 496,522
Int. Cl.² B65H *29/10*
U.S. Cl. 271—85 **9 Claims**



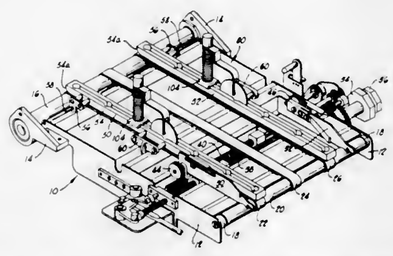
1. A mechanism for gripping and moving lengths of pliable fabric from a stationary working surface to a storage location, the mechanism comprising
an elongated frame having one end adjacent to the working surface and its other end adjacent the storage location;
a carriage movable on the frame from the one end to the other end;
gripper means mounted on the carriage for gripping the lengths of fabric;
means responsive to a first control signal for activating the gripper means to grip the fabric lengths;
means for moving the carriage on the frame from the one end toward the other end and back again, carriage movement controlling means controlled in part by the gripper activating means for initially causing the carriage moving means to move the carriage away from the one end at a first speed after the gripper means has gripped a length of fabric, pausing, and then continuing to move the carriage toward the other end at a second speed which is slower than the first speed.

3,951,401
DEVICE FOR CHANGING STACKS CONTINUOUSLY OPERATED SHEET FEEDING MACHINES
Josef Marass, Seehausen, Germany, assignor to Georg Spiess GmbH, Gersthofen, Germany
Filed June 11, 1975, Ser. No. 586,068
Claims priority, application Germany, Feb. 12, 1975, 2505762
Int. Cl.² B65H *1/30*
U.S. Cl. 271—158 **6 Claims**



1. In a device for changing stacks in continuously operating sheet feeding machines comprising a rake-like auxiliary stack table formed of parallel rods that are rigidly connected to one another at their one end and which can be inserted under the residual stack before the main stack is raised up to it, the improvement comprising said rake-like auxiliary stack table comprising at right angles to the rods (**5**) sealing strips (**8,12**) having openings for the passage therethrough of the rods (**5**) of the rake, said strips being pressable from without, against the two stacks (**1,4**) in such a manner that they seal off chambers (**16**) formed between the rods (**5**) of the make and means for introducing a blast of air between the main stack and the residual stack.

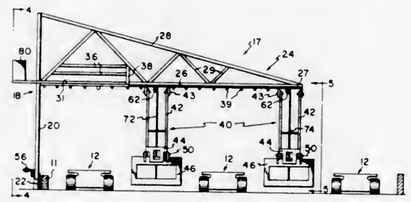
3,951,402
PAPER CONVEYOR AND GUIDANCE SYSTEM
Lloyd D. Skinner, 1150 NW. 79th St., Oklahoma City, Okla. 73112
Filed Mar. 25, 1974, Ser. No. 454,439
Int. Cl.² B65H *5/36*
U.S. Cl. 271—273 **17 Claims**



16. A paper conveyor and guidance system comprising:
a conveyor for conveying sheets of paper in a flat, upwardly facing status;
an elongated, rack assembly positioned over the conveyor and extending substantially parallel thereto, said rack assembly comprising:

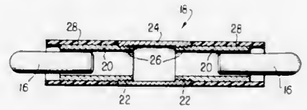
at least one elongated rack having at least one generally cylindrical aperture extending through the rack above the conveyor and in a direction substantially normal to the conveyor surface and to sheets of paper conveyed thereon;
balls positioned in one or more of the generally cylindrical apertures and positioned for rolling contact with paper passed between said conveyor and rack; and
a disc subassembly adjustably mounted on said elongated rack for selective positioning along the length thereof, said disc subassembly including:
a pressure disc mounted for rotation about a horizontal axis and having a peripheral portion projecting below said rack toward said conveyor; and
means mounting said pressure disc on said rack for selectively adjusting the extent to which said peripheral portion projects below said rack.

3,951,403
STARTING ALIGNER FOR MOTOR VEHICLE RACING
Floyd L. Kirkham, 1003 W. Third St., Rushville, Ind. 46173
Filed Jan. 2, 1974, Ser. No. 429,938
Int. Cl.² A63K *3/02*
U.S. Cl. 272—4 **13 Claims**



10. A starting aligner for directing the movement of laterally adjacent rows of serially aligned racing motor vehicles of a predetermined height and width which travel on a race track of predetermined width at high speeds during a prerace lap of a running start motor vehicle race comprising:
frame means having a mounting portion adapted to be mounted adjacent one lateral side of the track and a support portion supported by said mounting portion for extending over the track;
track divider means depending from said support portion for dividing said track into lanes, when suspended thereover said divider means including yieldable means at the lower end thereof;
said mounted portion adapted for mounting said frame means on said one side of said track such that said yieldable means are spaced from each other to provide passages through which vehicles in adjacent rows can pass on laterally opposite sides of said yieldable means as the vehicles move side-by-side along the track;
said track divider means and said yieldable means being mounted such that said yieldable means are vertically movable between an operative lowered position and a raised stow position; and
means is provided on said support portion for vertically moving said yieldable means between said operative position and said stow position;
said mounting portion comprising an upstanding post for mounting at one side of said track, said track divider means being mounted on said post for rotation about the vertical axis of said post; and
means is provided for rotating said track divider means at least partially about said axis in an oscillatory path to selectively dispose said track divider means above said track;
said yieldable means comprising resilient members pivotally mounted on said divider means, said rotating means interacting between said support portion and said resilient member for vertically swinging said resilient members to a raised position.

3,951,404
EXERCISING DEVICE HAVING TUBULAR LENGTHS OF STRETCHABLE MATERIAL THE ENDS OF WHICH HAVE CONNECTING MEANS TO FORM THE LENGTHS INTO ENDLESS BANDS
Michael H. Brown, P.O. Box 206, Berea, Ky. 40403
Filed Jan. 15, 1975, Ser. No. 541,261
Int. Cl.² A63B *23/00, 23/04*
U.S. Cl. 272—142 **5 Claims**

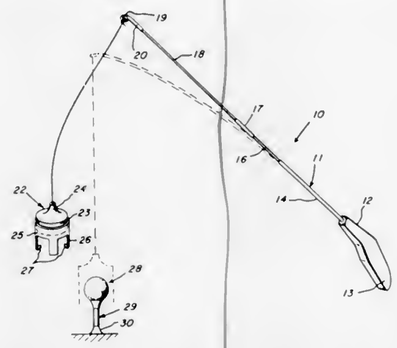


1. An exercising device comprising:
a. first and second substantially U-shaped frame members, each of said frame members having two parallel side portions, each of said side portions having an end portion formed inwardly thereof such that the end portions of each side portion is axially aligned with and spaced from the other;
b. at least one length of elastometric material being looped between said first and second frame member, said length having ends secured together by means to form an endless band; and
c. a tubular grip member rotatably mounted on said axially aligned end portions of each of said side portions of said first and second frame members, each of said grip members having a center portion having threads at its respective ends, first and second tubular sections with a threaded means detachably threaded to the center portion at the latter's respective ends, so that said first and second sections may move axially relative to said axially aligned end portions and permit the detachment of said center portion without altering said parallel relationship of said side portions to thereby permit the addition or removal of said endless bands, said endless bands providing a force resistance to the movement of said grip members away from each other.

3,951,405
ROD SUPPORTED YIELDABLE BALL ENGAGING MEMBER FOR ENGAGING AND CLAMPING A POST SUPPORTED BALL
Ben Long, 4911 Brooklyn Blvd., Minneapolis, Minn. 55429
Filed Jan. 30, 1975, Ser. No. 545,729
Int. Cl.² A63B *67/10*
U.S. Cl. 273—1 R **3 Claims**

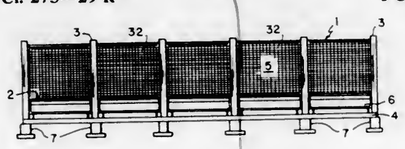
1. A toy comprising:
a spherical ball,
an elongate ball support post adapted to have one end thereof engage a flat surface to extend vertically upwardly therefrom, and engaging and supporting said ball upon the other end thereof,
an elongate flexible rod including a handle at one end thereof and having an outer end,
an elongate flexible line having one end thereof secured to the outer end of said rod means for grasping said ball secured to the other end of said line and including a body having a plurality of elongate spaced apart flexible fingers extending longitudinally therefrom and arranged in a circular pattern, so that when said means is lowered, primarily by its own weight, over said ball supported on said post the fingers will be biased outwardly by said ball and be held in said means, said fingers terminating in

inwardly projecting flexible terminal portions, the opening defined between the inwardly projecting end portions



of said fingers, being slightly less than the cross-sectional size of said spherical ball.

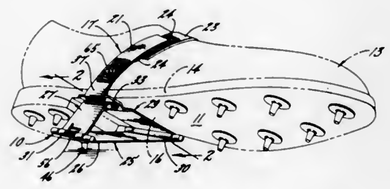
3,951,406
PORTABLE PLATFORM TENNIS COURT
James H. Rock, Sewickley, Pa., assignor to American Platform Tennis Systems, Butler, Pa.
Continuation-in-part of Ser. No. 275,283, July 26, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 401,802
Int. Cl.² A63B *61/00*
U.S. Cl. 273—29 R **1 Claim**





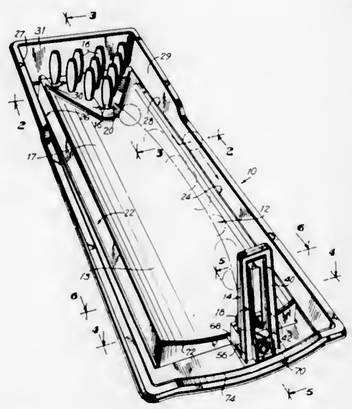
1. In a paddle tennis court having a substantially horizontally extending playing surface, substantially vertically extending spaced apart uprights and wire screen panels between said uprights and forming end and side walls of an enclosure around said playing surface, said panels including upper horizontally extending frame members secured to the uprights, lower horizontally extending frame members and wire screen connected therebetween, the improvement comprising a plurality of hook members for securing the wire screen to said upper and lower frame members, each hook member including a plurality of double bent hooks, each double bent hook having a first hook for engaging the wire screen, a second hook for engaging the frame member and a spanning section between said first and second hooks which conforms at least in part in shape to a portion of said frame member engaged thereby, said double bent hooks maintained in spaced apart relationship by at least one support rod connected to and extending normal to said double bent hooks.

3,951,407
DEVICE FOR USE ON A GOLF SHOE
Frank C. Calacurcio, 216 Brendenwood Terrace, Rockford, Ill. 61108
Filed Apr. 14, 1975, Ser. No. 567,691
Int. Cl.² A63B *57/00, 69/36*
U.S. Cl. 273—32 C **10 Claims**



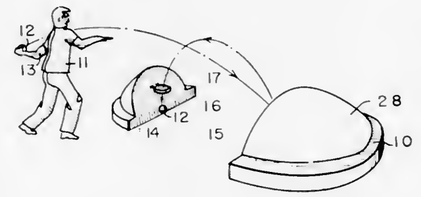
1. A device adapted for use on a golf shoe to support one edge of the shoe in an elevated position with respect to the opposite edge thereof so as to aid in positioning a golfer for swinging, said device including an arm connectable with the shoe on the underside thereof and having one end portion movable away from and toward the underside of the shoe between a first position spaced downwardly from the one edge of the shoe for engagement with the ground to support the one edge in its elevated position and a second out-of-the-way position closely adjacent the underside of the shoe, and a brace for acting between said arm and said shoe to support said end portion in said first position, said brace being movable to release said end portion for movement into its out-of-the-way position to enable the golfer to walk in a normal manner while said device remains on the shoe.

3,951,408
PENDULUM BOWLING GAME
Lawrence L. Reiner, 1 Hickory Lane, Woodbury, L. I., N.Y. 11797, and William A. Brady, 243 Teaneck Road, Ridgefield Park, N.J. 07660
Filed July 25, 1974, Ser. No. 491,878
Int. Cl.² A63D *3/02*
U.S. Cl. 273—38 **20 Claims**



15. A game comprising a game board including a simulated bowling alley being generally concavely curved in transverse cross section and having proximate and remote ends, an object-supporting section at the remote end of said bowling alley adapted to support a plurality of pins thereon, impact-transfer means having a pivoted pendulum striker at the proximate end of said bowling alley adapted to launch a playing ball along said alley toward said object-supporting section and means mounting said impact-transfer means for adjustment to various transverse locations at said proximate end for launching said ball along said alley; said means mounting said impact-transfer means including mutually co-operatively associated elements on said impact-transfer means and on said game board, said elements having mating arcuate guide track surfaces corresponding to said concavely curved alley; means for supporting said ball in impact-transfer relation to said impact-transfer means; and said impact-transfer means being operable to propel said ball onto said alley from a location determined by the lateral position of said impact-transfer means with respect to said alley.

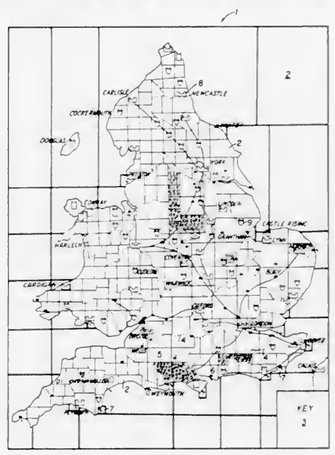
3,951,409
BACKBOARDS WITH HOOPS THEREON AND SCOREBOARD
Walter Drohomirecky, Rankin, Pa., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Dec. 14, 1972, Ser. No. 315,026
Int. Cl.² A63B *71/02*
U.S. Cl. 273—95 H **1 Claim**



1. A game in which players may competitively project a ball against an inclined surface so as to cause the ball to fall through an open circular hoop mounted on a second inclined surface, comprising a ball and a pair of inclined stands,
each inclined stand consisting of a structure on which a flat inclined surface is mounted at an acute angle to the bottom plane of the structure to which it is joined along a continuous line, with a wire circular open hoop mounted on said inclined surface, the plane of the hoop being generally parallel to the bottom plane of the structure,
said wire hoop being located with regard to said inclined surface so that the surface extends above, below and on both sides of the hoop to provide a rebound surface for a ball which is either thrown or rolled against the surface, together with a flat scoreboard which is rested on the inclined surface of both stands located side-by-side and facing in the same direction, with two or more circular dial faces marked on the surface of the scoreboard in numberals, said scoreboard also serving as a rebound surface to a thrown or rolled ball projected against the scoreboard surface so as to cause a properly aimed ball to fall through one of the hoops mounted on one of the two adjoining stands.

3,951,410
BOARD GAME APPARATUS
Andrew R. McNeil, 6 Pilgrim's Lane, London NW3, England
Continuation-in-part of Ser. No. 431,627, Jan. 8, 1974, abandoned. This application Jan. 10, 1975, Ser. No. 539,938
Claims priority, application United Kingdom, Jan. 11, 1973, 1632/73
Int. Cl.² A63F *3/04*
U.S. Cl. 273—134 AC **6 Claims**

1. A game equipment enabling a plurality of players to enact in play events fitting into a specified geographic area within a specified period of time, comprising the combination of
a. a game board having thereon a map depicting a geographic area,
a. the map being divided into a multiplicity of adjoining individual areas and
b. some of the individual areas being marked with the names of specific sites;
2. a plurality of playing pieces for use by respective ones of the players,
a. a first group of the playing pieces being marked by indicia representing two rival contending power blocs and to be controlled by respective ones of the players, and
b. a second group of the playing pieces being marked by indicia representing units of power and to be moved by respective ones of the players at their turn of play;

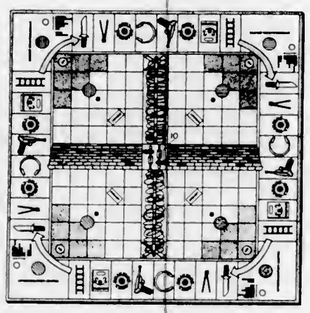


3. a first pack of cards to be dealt to respective ones of the players,
the cards of the first pack being marked with indicia each representing power allocated to the player holding the cards, the indicia on some of said cards being identical with the indicia on the playing pieces of the second group, and some of the individual map areas being marked with the indicia of the second group of the playing pieces to indicate home sites for the playing pieces marked with the same indicia; and
4. a second pack of cards to be drawn by respective ones of the players at their turns,
a. the cards of the second pack carrying information determining the movement of the playing pieces of the second group to respective ones of the individual map areas.

3,951,411
BOARD GAME APPARATUS
Christopher Hill, 7 Eastbury Road, Kingston, Surrey; Charles Baker, 38 Pepys Road, London, SW20, and Leonard Blundun, 44 Claremont Road, London, E.7, all of England
Filed Sept. 23, 1974, Ser. No. 508,627
Claims priority, application United Kingdom, Sept. 21, 1973, 44328/73
Int. Cl.² A63F *3/00*
U.S. Cl. 273—134 AD **10 Claims**

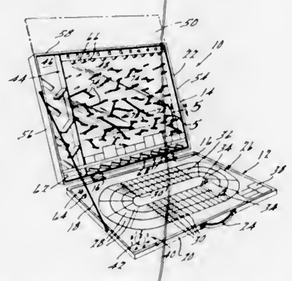
1. A board game comprising a board having a first section, said first section including a plurality of divisions bearing symbols of pieces collectable by a player and on which a preliminary stage of the game is played, and a second section on which a second stage of the game is played, a set of collectable pieces for each player which are movable on the second section of the board, a further piece for each player which, in

playing the game, is moved along divisions of the first section to collect said pieces of the set of collectable pieces before that player can participate in the second stage of the game, and a still further piece for each player, the second section of the board being divided into a plurality of sectors and each sector being divided into a plurality of divisions for moving the



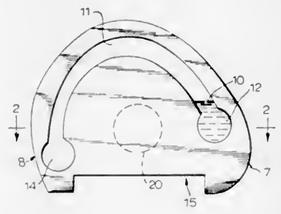
pieces of each set across the board to secure the still further piece of an opposing player, said still further piece being located on a specific division of the opposing player's sector, and return it to a safe location, the game further comprising means for randomly controlling movement of each piece on the board, and card means for providing advantages and forfeits regulating playing of the game.

3,951,412
HORSE RACING BOARD GAME APPARATUS
Marshall C. Adams, 4016 W. Davison, Detroit, Mich. 48238
Filed Feb. 14, 1975, Ser. No. 550,126
Int. Cl.² A63F *3/00*
U.S. Cl. 273—134 CH **7 Claims**



1. A horse racing game apparatus comprising,
a first section depicting a race course having a plurality of racing lanes each divided into a series of racing positions,
a plurality of player manipulated pawns adapted to be selectively moved to successive positions along said lanes,
a second section having first and second pluralities of article receiving areas,
at least one article adapted to be placed in one of said areas of said first plurality thereof and means for guiding said article for movement from said first plurality of areas to said second plurality of areas, said last mentioned means comprising deflector means for selectively randomly deflecting said article as the same moves from said first plurality of areas to said second plurality of areas,
chance means for determining the particular area of said first plurality thereof into which said article is to be placed, and
means associated one with each of said areas of said second plurality thereof and into which said article is to be received for determining the particular position along said lanes to which said pawns are to be moved.

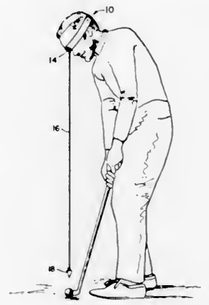
3,951,413
GOLF CLUB DRIVER WITH CENTER OF GRAVITY MOVABLE DURING SWING
Bill Bllyeu, 3002 SW. Blvd., Sedalia, Mo. 65301
Filed May 20, 1974, Ser. No. 471,572
Int. Cl.² A63B *53/08*
U.S. Cl. 273—170 **2 Claims**



1. A golf club comprising in combination a shaft, a head having a hosel, a toe most remote from the shaft and a heel adjacent the shaft and below said hosel, said head having upper and lower sections affixed together and being aligned on said shaft with a flattened front surface for addressing a golf ball during a golf's swing, and movable means located solely within the lower section of said head which changes position and therefore the center of gravity of the head during a golf club swing, wherein the movable means comprises a charge of mercury confined in a passageway within said lower section of the head, said passageway being planar and having two end reservoirs located respectively in said toe and heel and an intermediate restricted dimension throat, said heel reservoir being aligned with said shaft through an imaginary vertical plane parallel to said front surface and with said toe reservoir being located adjacent said front surface forwardly of said imaginary plane, said passageway describes an arc generally facing said flattened surface wherein the movable means is therefore, so oriented to move from a position substantially in line with the shaft during the back-swing to a position nearer the toe of the head during substantially 35% of the foward swing.

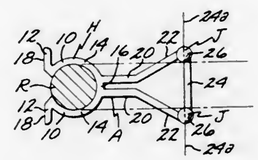
3,951,414
GOLF PUTTING AID
Bernard E. Nunez, 5952 Searl Terrace, Bethesda, Md. 20016
Filed Apr. 14, 1975, Ser. No. 567,813
Int. Cl.² A63B *69/36*
U.S. Cl. 273—183 B **2 Claims**

1. A golfer's training device consisting essentially of a band of light impervious material adapted to be secured around the head of a golfer and over the eyes of the golfer, a single aperture in said band adapted to be aligned with one of the golfer's eyes for permitting the golfer to view both the golf ball and putting cup, a cord having one end thereof attached to the band directly below said aperture, and a weight attached to the other end of said cord so that said cord may hang vertically



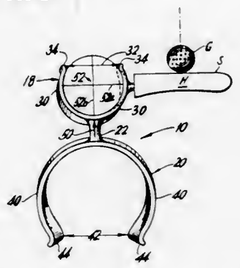
from said band with said weight aligned over a predetermined sighting point.

3,951,415
GOLF CLUB PUTTER SIGHTING DEVICE
William H. Stuart, 16287 Scotch Pine, Fountain Valley, Calif. 92708
Filed July 1, 1974, Ser. No. 484,438
Int. Cl.² A63B *69/36*
U.S. Cl. 273—183 D **3 Claims**



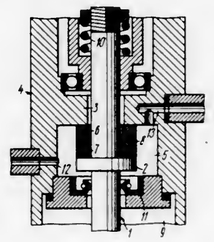
1. In combination with a golf putter having a shaft that supports a flat golf club striking surface, a sighting device that may be removably and adjustably mounted on said shaft to permit a golfer to concurrently see first and second laterally spaced areas of equal size when in his particular putting stance only when said device has been so adjusted on said shaft that said striking surface is normal to the arcuate path through which said head moves prior to said striking surface contacting the golf ball to be putted, said sighting device including:
a. a single clamp removably and adjustably supported on said shaft above said head; and
b. a body that extends outwardly from said clamp, said body having first and second end portions that define said first and second areas of equal size, said first and second areas being laterally spaced from one another a distance as least as great as the diameter of the section of said shaft from which said clamp is supported, said body being partially concealed by said shaft by being disposed thereunder when said user is in said particular putting stance, and said first and second areas being concurrently visible to said user when in said particular stance only when said shaft and head are so oriented that said striking surface is normal to said arcuate path through which said head will move in the putting of a golf ball.

3,951,416
GOLF TRAINING DEVICE
Karl W. Koch, Manhasset, N.Y., and J. Joseph Sherry, Jackson, N.J., assignors to Koch-Sherry Inc., Great Neck, N.Y.
Filed Jan. 13, 1975, Ser. No. 540,432
Int. Cl.² A63B *69/36*
U.S. Cl. 273—183 B **12 Claims**



1. A training device for use with a manually gripped, swing type sporting instrument having a shaft to prevent breaking of the player's wrist and arm so that a predetermined angle between the center line of the shaft and arm is maintained throughout the swing, comprising: a unit having a first portion defining a semicircular clamp having peripheral walls of such an extent as to resiliently clamp said unit to the grip of said shaft so, as to be self supporting thereon, a second portion defining a semicircular positioning member having walls adapted to resiliently engage the forearm portion of a player's arm, and a rigid member between and interconnecting said first and second portions in lateral spaced apart relationship, whereby the center line on a player's arm is maintained at a predetermined angle to the center line of the shaft throughout the swing without the breaking of the player's wrist.

3,951,417
ROTARY SHAFT END SEAL FOR APPARATUS OPERATING UNDER PRESSURE
Vitaly Petrovich Chernykh, ulltsa Kurchatova, 9, kv. 4, Irkutsk, U.S.S.R.
Filed Oct. 3, 1973, Ser. No. 403,214
Int. Cl.² F16J *15/00*
U.S. Cl. 277—33 **15 Claims**



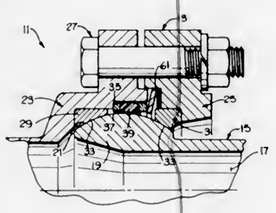
1. A rotary shaft end seal for apparatus operating under pressure comprising: a housing embracing the shaft; an annular shoulder on the inner surface of said housing; an annular shoulder on said shaft embraced by said housing having an end face facing an end face of said annular shoulder of said housing; a set of working members disposed between said end faces of said annular shoulders of the shaft and housing; an antifriction sliding ring which is one of said working members of said set, said ring being floatingly fitted on said shaft in contact with said end face of one of said annular shoulders; an elastic ring forming a second of said working members of said set, said elastic ring being tightly fitted on said shaft in contact

with said end face of said annular shoulder on the shaft; a metal sliding ring which is a third of the working members of said set, said metal ring being located between said antifriction sliding ring and the elastic ring and loosely and slidably mounted on said shaft; a chamber for sealing fluid in said housing accommodating said set of the working members and serving for circulation of sealing fluid therethrough; passages in said housing for admission and discharge of the sealing fluid from said chamber, said annular shoulders of said shaft and housing imparting an axial displacement to the shaft responsive to a force applied to said shaft by the internal pressure in said apparatus so as to compress said set of the working members; and means for spring-loading said shaft in the direction of its displacement resulting in the compression of said set of the working members.

3,951,418
MOVING CAPTIVE SEAL CONSTRUCTION USABLE UNDER HIGH TEMPERATURE AND CRYOGENIC CONDITIONS

Eldon O. Dryer, Malibu, Calif., assignor to W. S. Shamban & Co., Los Angeles, Calif.

Filed Jan. 21, 1974, Ser. No. 434,803
Int. Cl. F16j *15/24*
U.S. Cl. 277—124 **14 Claims**

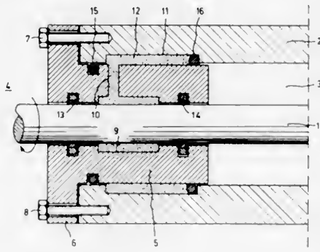


1. A captive seal construction comprising:
an outer member and an inner member, said outer member at least substantially circumscribing said inner member;
at least one of said members including first and second sections;
means for relatively moving said sections toward each other;
said outer and inner members including first and second srufaces, respectively, said first and second surfaces being radially spaced to define a seal groove therebetween;
a sealing mass of deformable sealing material in said seal groove;
means including at least portions of said first and second surfaces and first and second retainers for defining a substantially completely enclosed seal cavity for said sealing mass, said retainers being axially arranged in said seal groove and on opposite sides of said sealing mass, said retainers being relatively movable in a generally axial direction to reduce the volume of said seal cavity;
means for drivingly associating said first retainer with said first section;
means for drivingly associating said second retainer with said second section whereby movement of said sections toward each other tends to move said retainers generally axially toward each other to reduce the volume of the seal cavity and to compressively load said sealing mass, said compressive load being sufficient to cause plastic flow of said sealing mass and to cause the sealing mass to substantially fill said seal cavity;
resilient means for resiliently urging said first retainer generally axially in a direction to reduce the volume of the seal cavity; and
said first retainer having first and second resilient lips engageable with said first and second surfaces of said members, respectively, said lips at least partially defining an axially opening recess opening toward and at least partially receiving said sealing mass.

3,951,419
SEAL BETWEEN MEMBERS WHICH ARE ROTATABLE RELATIVE TO EACH OTHER

Jacobus Hubertus Abrahams, and Robertus Aloysius Tarcisius Walters, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 11, 1975, Ser. No. 586,141
Claims priority, application Netherlands, June 18, 1974, 7408109
Int. Cl.² F16J *15/40*
U.S. Cl. 277—135 **10 Claims**



1. A seal between an inner member and an enveloping outer member, such as a shaft and an enveloping housing, which are rotatable with respect to each other, the seal containing a viscous medium such as oil or grease which separates a space containing a gas of higher pressure from a space containing a gas of lower pressure, characterized in that the seal comprises a sleeve which is arranged about the inner member and which is immobile with respect to the outer member, the said sleeve having an inner diameter over an intermediate portion of its length which is larger than the outer diameter of the inner member, an annular gap thus being formed which is in open communication, via at least one port through the sleeve, with an annular chamber which is bounded by the outer wall of the sleeve and the inner wall of the outer member, a viscous medium present in the chamber and the gap communicating therewith being separated from the spaces of higher pressure and lower pressure by means of sealing members between the sleeve and the outer member and the inner member, respectively, the sealing member on the side of the annular chamber which faces the space of higher pressure being arranged to be axially slidable in this chamber for the permanent transfer of the higher gas pressure to the viscous medium.

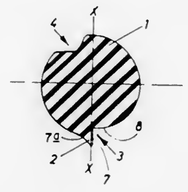
3,951,420
ELASTIC ROLL RING

Waldemar H. R. Gritzka, Keilstr. 85, 463 Bochum-Linden, Germany

Filed Oct. 23, 1973, Ser. No. 408,866
Claims priority, application Germany, Oct. 26, 1972, 2252468; June 13, 1973, 2329952
Int. Cl.² F16L *19/00, 21/02*
U.S. Cl. 277—207 R **2 Claims**

1. A roll-type sealing ring of elastic material for application to the insertion end of a first conduit to be sealingly received in the socket end of a second conduit, said ring having a circumferentially extending ring axis and a body of a generally circular section normal to said axis, an inside diameter less than the outside diameter of said insertion end and an outside diameter greater than the inside diameter of said socket end;
said ring further having a lip projecting inwardly beyond the body of the ring and extending circumferentially thereabout,

said lip having an insertion-face-engaging front surface portion lying substantially in the plane of said ring axis when said ring is unstressed, said lip being joined to the body of said ring by a generally sloping rear surface portion forming an apex at the extremity of said lip, and a generally convex contact surface portion disposed generally perpendicular to said front surface portion,

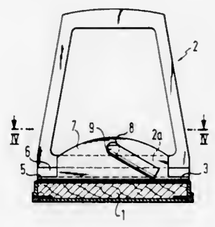


so that upon stressing said ring by partially rotating it about said ring axis said front surface portion of said lip may resiliently engage the outer surface of said insertion end and said contact surface portion may engage the end of said insertion end.

3,951,421
SKI FIXTURE

Egidius Arnold Brangenberg, Garmisch-Partenkirchen, Germany, assignor to Dieter Thon, Munich, Germany

Filed Dec. 6, 1974, Ser. No. 530,490
Claims priority, application Germany, Dec. 8, 1973, 2361258
Int. Cl.² A63C *5/06*
U.S. Cl. 280—601 **11 Claims**

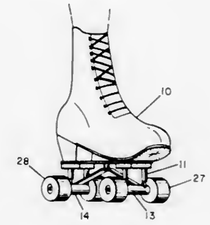


1. In a ski fixture for preventing unintentional crossing of skis during skiing, to be directly secured to the upper surface of a ski, preferably at a short distance from the pointed end of the ski, the improvement comprising a thin adhesive bond coating on a surface of the fixture to be secured to the upper surface of the ski, a removable protective sheet covering a surface of the coating to be adhered to the upper surface of the ski, a base plate to be inseparably mounted on the ski by said adhesive bond coating and a bracket having a lower wall with a free inner side, said bracket being removably secured to said base plate including a resilient intermediate layer provided between said bracket and said baseplate to to conform with antecedent, wherein the base plate includes upwardly extending side walls disposed on two opposite sides of the base plate, said side walls accommodating said lower wall of the bracket between themselves in a positive engagement, and wherein each said side wall of the base plate has a hole, and a clamping pin extending through said holes and resting on said inner side of said lower wall of the bracket to releasably hold the same.

3,951,422
SHOCK ABSORBER FOR SKATES

Guyton Ellis Hornsby, 2001 Rose Lane, Annandale, Va. 22003

Filed Mar. 12, 1975, Ser. No. 557,491
Int. Cl.² A63C *17/02*
U.S. Cl. 280—11.28 **2 Claims**

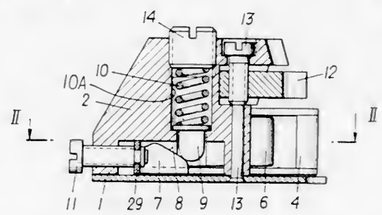


1. In combination with a roller skate having axles, a pneumatic shock absorber system comprising:
a. a chamber attached to the sole plate of said roller skate, said chamber having a top, two sides, two ends, and a bottom;
b. a plurality of hollwo cylindrical tubes attached at their upper ends to said bottom and extending into said chamber to form a guideway;
c. a piston having upper and lower ends slidably engaged for reciprocation in each said tube; and
d. an inflatable elastic air bag contained in said chamber between the upper end of said piston and the top of said chamber, said air bag having a filler valve extending outwardly through an aperture in said side of said chamber, said lower ends of said pistons attached to said axles.

3,951,423
FRONT JAW FOR SAFETY SKI BINDINGS

Herbert Kaineder, Hundsheim, and Josef Svoboda, Schwechat, both of Austria, assignors to Gertsch AG, Zug, Switzerland

Filed Sept. 19, 1974, Ser. No. 507,469
Claims priority, application Austria, Sept. 26, 1973, 8290/73
Int. Cl.² A63C *9/08*
U.S. Cl. 280—629 **7 Claims**



1. A front jaw in safety ski bindings for holding a ski boot onto a ski, comprising:
base means mounted on said ski and having a pair of horizontally spaced vertical posts fixedly secured thereto;
a two-arm lever pivotally mounted on each of said vertical posts for movement between a ski boot engaging and a ski boot releasing position, each two-arm lever having a long arm adapted to engage said ski boot and a short arm, both of said short arms having cam means connected thereto and movable therewith, said cam means on each short arm of each two-arm lever including an upright curved flange connected thereto and movable therewith, the axis for said curved flange coinciding with the axis of the corresponding one of said posts, each of said upright flanges having a contoured upper edge; and

resilient locking means mounted on said base means and consisting of a single elongated spring and a single locking member, the longitudinal axis of said spring being immovably fixed to said base means, said spring resiliently urging said locking member into engagement with said upper edges of both of said upright flanges when said two-arm levers are in said ski boot engaging position, the spacing between one of said contoured edges and an abutment for said spring becoming smaller as at least one of said two-arm levers is swung from said ski boot engaging position toward said ski boot releasing position, said spring backed locking member resisting a lateral pivotal movement of said two-arm levers toward a ski boot releasing position whereby a pivotal movement of one of said two-arm levers toward said ski boot releasing position will effect a movement of said locking member toward said abutment to thereby lift said locking member from engagement with the other one of said upright flanges on the other one of said two-arm levers.

3,951,424

SAFETY SKI BINDING
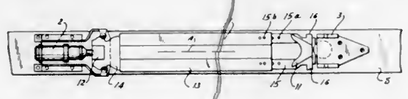
Hans Näpflin, Kastanienallee 5, CH-6375 Beckenried, Switzerland

Filed July 2, 1975, Ser. No. 592,663

Claims priority, application Switzerland, July 2, 1974, 9083/74

Int. Cl.² A63C *9/08*

U.S. Cl. 280—618 **6 Claims**



1. A safety ski binding for securing a skiboot to a ski, said binding comprising:

a plate securable to said skiboot and having a rear heel end formed with a pair of generally forwardly open seats spaced apart transversely to the longitudinal direction of said ski, and with a front end having an edge extending generally perpendicularly to said direction;

a toe clamp on said ski and provided with a wheel pivoted about an upright axis perpendicular to said direction and to the upper surface of said ski and having a circumferential groove lying generally in a plane parallel to said surface; and

a heel clamp provided with a pair of rollers spaced apart transversely to said direction and with a swivelable pin having a forward end engageable against said plate between said seats and provided with spring means to urge said edge forwardly into said groove and said seats forwardly against said rollers.

3,951,425

ANTI-CROSSING DEVICE FOR SKIS

Margaretha Lohr, Lampersbach, Austria, assignor to Margaretha Lohr, Werfenweng, Austria

Filed Mar. 10, 1975, Ser. No. 556,959

Claims priority, application Austria, Mar. 11, 1974, 1986/74

Int. Cl.² A63C *11/00*

U.S. Cl. 280—11.37 E **12 Claims**



1. An anti-crossing device for a ski having ski binding means mounted on the upper surface thereof, comprising:

a member pivotally secured to the upper surface of said ski between said ski binding means and the tip end of said ski, said member being pivotal between a first upright position transverse to the upper surface of said ski and a second collapsed position parallel to said ski, said member being sufficiently rigid to stand upright on said ski when in said first position;

means for limiting the extent of pivoting of said member relative to said ski so that said member will, in said second position, remain above the upper surface of said ski; and

holding means for holding said member in at least said first position.

3,951,426

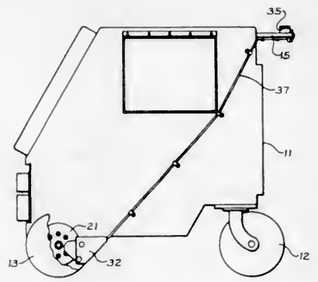
BRAKE SYSTEM FOR CART

Clifford K. Shaffer, Westfield, and Joe B. Weiss, Indianapolis, both of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 23, 1975, Ser. No. 598,317

Int. Cl.² B60T *13/04*; **B62B** *3/00*

U.S. Cl. 280—47.34 **5 Claims**



1. A braking system for a cart having at least two non-pivotal wheels and at least one pivotal wheel and an operator push handle comprising,

axle means rotatably attached to said cart,

first and second wheels fixedly attached to said axle means and rotatable therewith,

first and second hubs fixedly attached to said axle means and rotatable therewith,

first and second brake disks resiliently connected, respectively, to said first and second hubs, said brake disks being fixed against rotation relative to said hubs and movable longitudinally with respect to said axle means,

first and second pairs of brake shoes, one shoe of said first pair being movable and positioned on one side of said first brake disk and the other shoe of said first pair being stationary and positioned on the opposite side of said first brake disk, and one shoe of said second pair being movable and positioned on one side of said second brake disk and the other shoe of said second pair being stationary and positioned on the opposite side of said second brake disk,

first spring means for normally biasing said movable brake shoe of said first pair of brake shoes into engagement with said first disk and said first disk into engagement with said stationary brake shoe of said first pair of brake shoes and second spring means for normally biasing said movable brake shoe of said second pair of brake shoes into engagement with said second disk and said second disk into engagement with said stationary brake shoe of said second pair of brake shoes,

first and second retracting means for disengaging said first and second movable brake shoes, respectively, from said first and second brake disks, and

a single hydraulic means for operating both said first and second retracting means.

3,951,427

SHOCK-ABSORBING FRONT-WALL FOR MOTOR VEHICLES

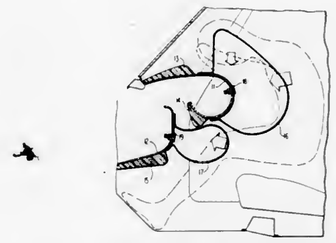
Karl Wilfert, Gerlingen-Waldstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Division of Ser. No. 208,315, Dec. 15, 1971, Pat. No. 3,817,553. This application Apr. 4, 1974, Ser. No. 458,041

Claims priority, application Germany, Dec. 15, 1970, 2061595; Dec. 23, 1970, 2063478

Int. Cl.² B60R *21/08*

U.S. Cl. 280—732 **20 Claims**



1. A shock-absorbing front wall for motor vehicles, especially passenger motor vehicles, the shock-absorbing front wall includes shock-absorbing means that are permanently deformable as a result of an impact of a vehicle passenger caused by an accident, said shock absorbing means comprising: a first shock-absorbing and a second shock-absorbing section, means for independently mounting said first and said second shock-absorbing sections on the front wall of the motor vehicle one above the other in a spaced relationship, said first shock-absorbing section including a first deformation member projecting into the vehicle interior for absorbing the impact energy of at least one impinging body portion of a vehicle passenger, padding means disposed over at least a portion of the outer surface of said first deformation member, said second shock-absorbing section including a second deformation member projecting into the vehicle interior and disposed on the front wall of the vehicle below said first deformation member for absorbing impact energy of at least one other impinging body portion of a vehicle passenger, padding means provided over at least a portion of the outer surface of said second deformation member, said first and said second deformation member each having a different rigidity with the shock-absorbing characteristics of the respective deformation members being matched to the respective body portions impinging thereon, and an inflatable gas cushion means adapted to be automatically inflated in case of an accident mounted on at least one section of said shock-absorbing means.

3,951,428

GAS BAG INFLATING DEVICE

Fumio Sugiura, Aichi, and Mitsuhiko Ura, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 6, 1974, Ser. No. 448,563

Claims priority, application Japan, Mar. 27, 1973, 48-37897

Int. Cl.² B60R *21/10*

U.S. Cl. 280—737 **4 Claims**

1. A gas bag inflating device comprising:

a gas bomb;

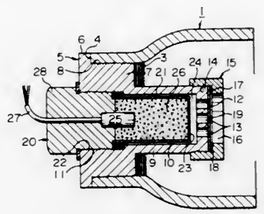
an inflatable gas bag connected to one end of said gas bomb;

a normally closed release valve provided at said end of said gas bomb to control gas flow to said gas bag;

a gas generating device including a gas generating agent, a casing for storing said gas generating agent and an ignition device for igniting said gas generating agent in said casing;

a socket member detachably sealed to the other end of said gas bomb, said socket member defining a mounting cavity, said gas generating device being detachably connected to said socket member and disposed thereon to define a combustion chamber between said casing and the closed end of said socket member, and said closed end of said socket member defining a plurality of orifices; and

a frangible seal plate of sufficient strength to withstand a predetermined gas pressure within said gas bomb and of insufficient strength to withstand a gas pressure resulting from the actuation of said gas generating device, said frangible seal plate being secured to and disposed on the exterior of said closed end of said socket member, whereby said frangible seal plate cuts off and hermetically seals said respective orifices from the inner side of said gas bomb and is subject on its outer surface to said predetermined gas pressure within said gas bomb, thereby to prevent the gas within said gas bomb from flowing into said socket member.



3,951,429

SAFETY DEVICE FOR THE OCCUPANTS OF VEHICLES, ESPECIALLY MOTOR VEHICLES

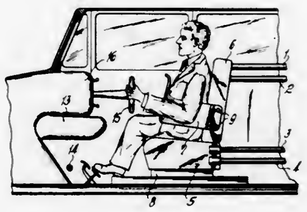
Roland Satzinger, Hammelburger Str. 21 a, D - 8731 Euerdorf, Germany

Filed Apr. 10, 1974, Ser. No. 459,817

Claims priority, application Germany, Apr. 13, 1974, 2318664; July 26, 1973, 2337925

Int. Cl.² B60R *21/06*

U.S. Cl. 280—727 **10 Claims**

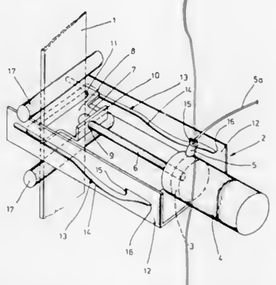


1. In a motor vehicle equipped with a stationary vehicle floor and a front seat longitudinally slidably mounted on said vehicle floor and having a seat portion and a back portion which faces a dashboard, the improvement comprising an energy-dissipating dampening means extending entirely rearwardly of said seat portion and attached articulately to said seat portion and an energy-dissipating dampening means extending entirely rearwardly of said back portion and attached articulately to said back portion, said energy-dissipating dampening means extending longitudinally of the motor vehicle and attached at the other end to a stationary portion of the motor vehicle, said seat being independently dampened from any other seat of said motor vehicle.

3,951,430
SAFETY BELT TAKE-UP DEVICE

Wilfried Schwanz, Ahnsen, and Ulrich Seiffert, Braunschweig, both of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Apr. 28, 1975, Ser. No. 572,328
Claims priority, application Germany, May 16, 1974, 2423777
Int. Cl.² B60R *21/10*
U.S. Cl. 280—744 **5 Claims**



1. An improved safety belt take-up device of the type having a frame, a cylinder arranged on the frame, a piston displaceable within the cylinder, an intermediate lug holding the safety belt, a connecting rod connecting the intermediate lug to the piston, a propellant charge in the cylinder for applying the belt retracting force through displacement of the piston, and an actuating sensor for releasing the propellant charge upon sensing and impending collision, wherein the improvement comprises:

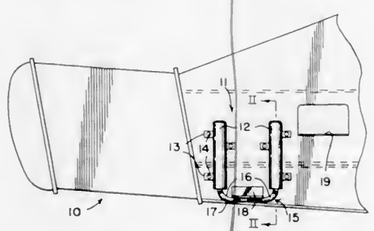
a. stationary backstop means on said frame for stopping said intermediate lug when moved by said piston from a normal unactivated position to a retracted position against said backstop means, said retracted position being a predetermined distance from said normal unactivated position corresponding to the length of belt to be retracted; and

b. locking means in conjunction with said backstop means for locking said intermediate lug in place after said lug has retracted the belt over said predetermined distance against said backstop means following release of said propellant charge.

3,951,431
SELF-STORING VEHICLE STEP ASSEMBLY

Delaney C. Hopkins, Dwight, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 9, 1974, Ser. No. 531,006
Int. Cl.² B60R *3/00*
U.S. Cl. 280—166 **10 Claims**



1. A self-storing step assembly mounted on an earthworking vehicle comprising

a pair of tubular housings secured on said vehicle,

an upright step member comprising a pair of leg portions each reciprocally mounted in a respective one of said housings for movement between raised and lowered positions,

a first annular guide member secured within a lower end of at least one of said housings and reciprocally receiving a respective one of said leg portions therein,

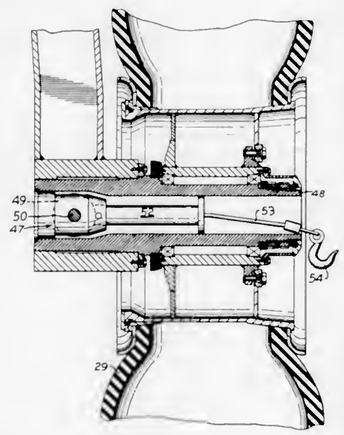
a second annular guide member mounted on an upper end of at least one of said leg portions and closely fitted within said one housing,

compression coil spring means disposed between said first and second annular guide members for automatically retracting said step member to its raised position and for permitting extension of said step member to its lowered position upon manual depression thereof, said spring means comprising a first compression coil spring compressed between said first and second annular guide members and a second compression coil spring, having a length less than the length of said first spring, disposed concentrically with respect to said first spring and said one leg portion.

3,951,432
VEHICLE CARRIER

Dino Crovatto, and Georges F. M. P. Etienne, both of Brussels, Belgium, assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 440,464, Feb. 7, 1974, Pat. No. 3,915,322.
This application Apr. 23, 1975, Ser. No. 570,986
Int. Cl.² B60P *7/06*
U.S. Cl. 280—179 R **3 Claims**



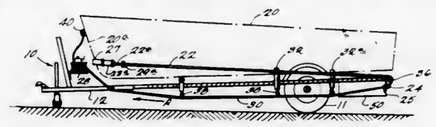
1. In a carrier mounted on at least one pair of road wheels and forming an inverted cradle adapted to suspend a load therein for transport purposes, the invention comprising anti-sway means disposed in an axle for at least one of said road-wheels adapted for attachment to said load.

3,951,433
BOAT LAUNCHING MECHANISM

John F. Starkey, P.O. Box 419, Clovis, N. Mex. 88101

Filed Dec. 12, 1974, Ser. No. 532,222
Int. Cl.² B60P *3/10*
U.S. Cl. 280—414 R **4 Claims**

1. For use on a trailer, a mechanism for launching a boat from the trailer comprising: a winch disposed on a frontal portion of the trailer; a winch cable adapted to be wound up by said winch, said winch cable extending longitudinally of the trailer and having a free end; a cross member extending transversely of the trailer; means for releasably connecting said free end of said winch cable to said cross member; a bow plate for engaging the bow of a boat supported on the trailer; a roller

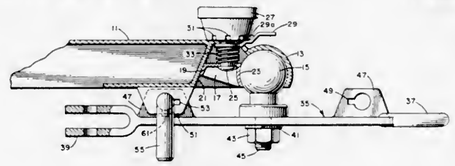


carried by the rear portion of the trailer; and launching cable means including first and second sections extending from said cross member over said roller and connected to said bow plate.

3,951,434
THREE-WAY TRAILER HITCH

Alfred J. Sause, 8636 Baltimore National Pike, Ellicott City, Md. 21043

Filed Jan. 31, 1975, Ser. No. 545,808
Int. Cl.² B60D *1/16*
U.S. Cl. 280—415 A **2 Claims**



1. A trailer hitch for attaching a trailer to a draw vehicle comprising:

a trailer tongue having two ends, one of said ends being attached to the trailer;

a socket at the other end of said trailer tongue for accepting a ball-pin;

means on the trailer tongue for securing a ball-pin within said socket;

an elongated hitch bar having a loop at one end, a clevis at the other end and a ball-pin fixedly attached between said loop and said clevis, said ball-pin being selectively engageable in said socket for allowing said hitch bar to pivot about said socket and for allowing either of said loop or said clevis to be attached to the draw vehicle; and

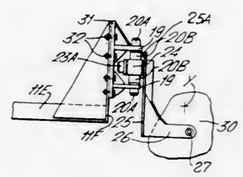
locking means for stabilizing the attachment of said hitch bar to said trailer tongue when either end of said hitch bar is to be attached to the draw vehicle.

3,951,435
VEHICLE COUPLINGS

Robert Johnson Greatbach, P.O. Box 24636, Nairobi, Kenya

Continuation-in-part of Ser. No. 395,710, Sept. 10, 1973, abandoned. This application Aug. 23, 1974, Ser. No. 500,049
Claims priority, application United Kingdom, Mar. 6, 1974, 10114/74
Int. Cl.² B60D *1/00*
U.S. Cl. 280—477 **11 Claims**

1. A vehicle coupling in which a first member is pivotally connectable to a first vehicle so as to be pivotable about a horizontal transverse axis, a second member is rigidly connectable to a second, vehicle, first and second pivot means having perpendicularly intersecting pivotal axes lying in a plane extending perpendicular to the horizontal transverse axis to accommodate relative rolling and yawing movement between the first and second vehicles are mounted on the first member so as to be disposed above the horizontal transverse axis and support connecting means for connection to the second member, one of the pivot means comprising a first bearing journalled on a central spindle and the other pivot means comprising two second bearings respectively mounted on outer spindles disposed on opposite sides of the first bearing along a common axis which is substantially vertical when

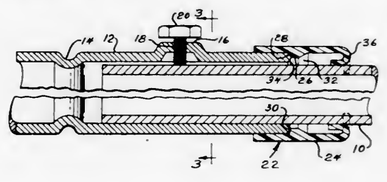


the first and second vehicles are coupled together, and a chock is disposed between the upper second bearing and an adjacent portion of the first member to resist bending of the central spindle carrying the first bearing under load.

3,951,436
WATER RESISTANT CONDUIT FITTING

David F. Hyde, Jr., Norridge, Ill., assignor to Midwest Electric Manufacturing Company, Chicago, Ill.

Continuation of Ser. No. 397,687, Sept. 17, 1973, abandoned.
This application Jan. 6, 1975, Ser. No. 538,948
Int. Cl.² F16L *21/00*
U.S. Cl. 285—27 **5 Claims**

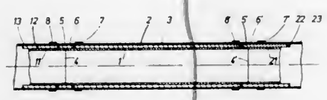


1. A water resistant conduit fitting comprising a cylindrical body of predetermined diameter having an open end telescopically receiving therein the end of a length of conduit of lesser diameter and having an inwardly directed set screw adapted to bear against the side surface of the inserted length of conduit to secure said fitting to said conduit with the surface portion of the conduit opposite the set screw contacting the inner surface of the cylindrical body of the fitting, and a free-standing resilient elastomeric boot externally secured on and extending beyond the open end of said cylindrical body, said boot including a cylindrical portion having a longitudinal axis with a radially inwardly projecting intermediate inner stop abutting the open end of said cylindrical body with said cylindrical portion extending axially beyond said stop away from said cylindrical body to a self-supporting end portion spaced exteriorly outwardly from the conduit and terminating in a circumferential initially generally radially inwardly extending substantially planar flange of uniform thickness and of finite extent radially of said boot and substantially perpendicular to said axis adjacent the extending end of said cylindrical portion forming an outer shoulder therewith and presenting an inner aperture of less diameter than that of the conduit, said flange, thus comprising an apertured diaphragm having an inner marginal portion that is stretched and deflected by the outer wall of the length of conduit inserted into said fitting with permissive differential spacing of the outer surface of the deflected flange relative to the inner surface of the cylindrical portion adjacent the end portion of the boot to compensate for eccentricity and misalignment between the conduit and fitting for proper sealing, said boot being externally free and unrestrained.

3,951,437
CONSTRUCTION OF ENCASED PIPELINES

Gérard F. Wittgenstein, deceased, late of Lausanne, Switzerland, and by Raymond Pache, executor, Lausanne, Switzerland, assignors to Les Fils d'Auguste Scheuchzer S. A., Lausanne, Switzerland

Filed Sept. 17, 1974, Ser. No. 506,873
Claims priority, application Switzerland, Sept. 20, 1973, 13546/73
Int. Cl.² F16L *55/00*
U.S. Cl. 285—47 8 Claims



2. A pipeline comprising a pipe, and an outer annular jacket surrounding the pipe and forming therewith an annular space containing a netting of longitudinal inserts, wherein the pipeline is composed of a plurality of units each forming a section of the finished pipeline, and means for connecting the units, each unit comprising:

a pipe section;

a first section of netting wrapped about the pipe section, said first section of netting including a plurality of transversely deformable elongated inserts extending longitudinally along the pipe section and circumferentially spaced thereon, one of said inserts comprising a grooved insert having an outer longitudinal groove, said inserts being shorter than the pipe section and the ends of said inserts being spaced from the ends of the pipe section;

a primary slotted jacket section having adjacent longitudinal edges, said primary jacket section being shorter than the inserts of the first section of netting and being spaced from the ends of the pipe section and from the ends of said inserts, said longitudinal edges of the primary jacket section being turned inwardly into said longitudinal groove with the primary jacket section compressed onto the inserts of the pipe section; and

a solidified mass filling said groove to provide a fluid-tight connection of the primary jacket section and its grooved insert;

and said connectig means comprising for each adjacent pair of units:

a weld joint uniting the adjacent ends of said pipe sections placed end-to-end with said grooved inserts of the adjacent units at least approximately aligned;

a second section of said netting having a grooved insert and wrapped about the ends of the welded pipe sections between said first sections of netting with the grooved insert thereof aligned with the grooved inserts of the adjacent units;

a secondary slotted jacket section having adjacent longitudinal edges, said secondary jacket section being disposed between the adjacent ends of the primary jacket sections with said longitudinal edges thereof turned inwardly into the longitudinal groove of the grooved inserts of the first and second sections of netting and with the secondary jacket section compressed onto the underlying inserts;

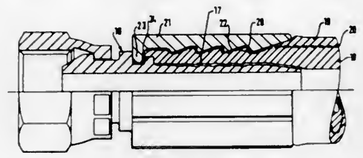
a solidified mass filling each said groove along the secondary jacket section to provide a fluid-tight connection of the secondary jacket section on the grooved inserts; and

flexible fluid-tight joints between the adjacent ends of the primary and secondary jacket sections.

3,951,438
FASTENING MEANS

William Scales, Newcastle-upon-Tyne, England, assignor to Dunlop Limited, London, England

Filed June 28, 1974, Ser. No. 484,065
Claims priority, application United Kingdom, July 6, 1973, 32373/73
Int. Cl.² F16L *33/20*, *33/24*
U.S. Cl. 285—55 23 Claims

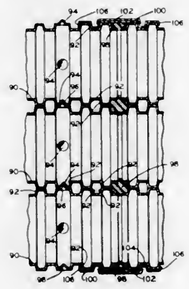


1. A hose assembly capable of operating in pulsating pressure conditions, comprising: a hose; hose fastening means attached to an end portion of the hose and including a metallic member having a serrated surface, said serrated surface having a plurality of inclined serrations which are shaped to resist removal of the hose from the metallic member; and a thin annular first layer of polymeric material disposed between the hose and the serrated surface of the metallic member and extending along the serrated surface and only along the attached end portion of the hose, the thin layer of polymeric material being subject to compression forces between the hose and the metallic member, and inner and outer surfaces of the layer conforming, adjacent both the hose and the metallic member, substantially to the shape of the serrated surface.

3,951,439
MODULAR CELLULAR CONDUIT ASSEMBLY

John D. Schmunk, Findlay, Ohio, assignor to Hancor, Inc., Findlay, Ohio

Continuation of Ser. No. 292,157, Sept. 25, 1972. This application Oct. 7, 1974, Ser. No. 512,777
Int. Cl.² F16L *39/00*
U.S. Cl. 285—137 R 3 Claims

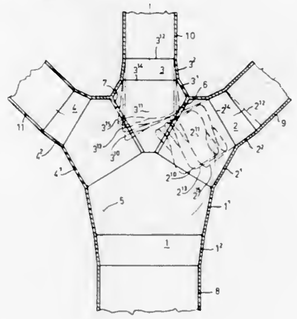


1. A joint assembly connecting the ends of aligned bundles of corrugated tubes in which each of the tubes have an exterior surface defined by alternate peaks and valleys which are circumferentially extending, comprising a resilient compressible member having a plurality of openings therein receiving the opposed ends of the corrugated tubes of each bundle, said openings being smaller than the maximum cross-sectional dimension of the tubes, a sectional cap member means receiving the ends of each bundle and having grooves thereon receiving and engaging the end corrugation of the outermost tubes in each bundle, said grooves being spaced a distance and having complementary shapes with the corrugations such as to cause the ends of the bundles to be drawn together to compress said compressible member when said cap member means are moved relative to each other, and means joining the sections of the sectional cap member to provide a unitary structure.

3,951,440
PIPE BRANCH PIECE

Guido Dolder, Zurich, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

Filed Sept. 23, 1974, Ser. No. 508,632
Claims priority, application Switzerland, Sept. 27, 1973, 013826/73
Int. Cl.² F16L *41/00*
U.S. Cl. 285—150 5 Claims



1. A pipe branch piece for joining a pipe line of large diameter with at least two pipe lines of smaller diameter comprising

a. a first pipe leg connected with the large diameter pipe line, and second and third pipe legs connected, respectively, with the pipe lines of smaller diameter,

b. said pipe legs having adjoining pipe sections which touch a common imaginary sphere and widen conically toward that sphere; and

c. a curved reinforcing element in the interior of the branch piece and attached to the conical sections of the second and third legs along a junction between them,

d. the reinforcing element being situated outside each of two imaginary cylinders, one of those cylinders having an axis which coincides with the axis of the conical section of the second leg and a diameter equal to the largest circular throughflow cross section of the pipe line connected with the second leg, and the other of said cylinders having an axis which coincides with the axis of the conical section of the third leg and a diameter equal to the largest circular throughflow cross section of the pipe line connected with the third leg.

3,951,441
ADJUSTABLE PLUMBING FITTING

Nicholas G. Scheuer, and George J. Fiegel, both of Michigan City, Ind., assignors to Josam Manufacturing Co., Michigan City, Ind.

Continuation of Ser. No. 373,021, June 25, 1973. This application Dec. 12, 1974, Ser. No. 532,302
Int. Cl.² F16L *15/00*
U.S. Cl. 285—391 24 Claims

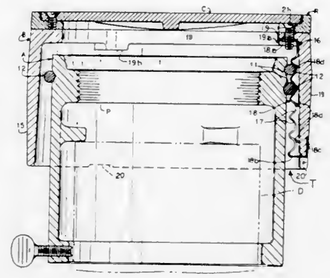
1. A plumbing or drainage fitting, comprising

a cast metal male component having a cylindrical external surface,

a female component having a cylindrical, internal surface telescoped over the male component, and

a thread structure providing an axially adjustable engagement between said components including a female thread on the female component, and a male thread,

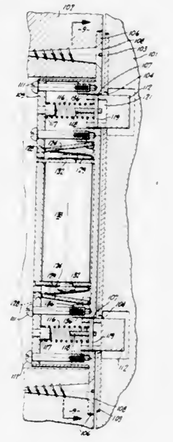
said male component having in its external cylindrical surface a cast-in spiral groove of about one turn, and a split ring received over its length in, and held partially radially projecting by, said groove to form the said male thread of desired pitch.



3,951,442
PIVOTING LATCH AND LOCK

Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, San Francisco, Calif.

Filed July 11, 1974, Ser. No. 487,766
Int. Cl.² E05C *3/06*, *3/22*, *5/00*, *19/02*
U.S. Cl. 292—71 3 Claims



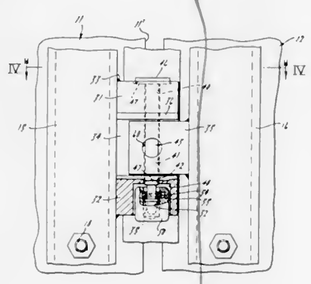
1. A pivoting latch and lock for a hinged door movable with respect to a door jamb having a strike opening therein comprising a frame adapted to be installed on said door, a detent bolt, means supporting said detent bolt at one side on said frame for swinging movement in a predetermined path between a projected position in said opening and a retracted position out of said opening, half-journal means included in said supporting means for precluding movement of said detent bolt from side to side on said frame while allowing said detent bolt to move away from said frame, means for resiliently urging said detent bolt toward said projected position, and means on said frame movable between a first position out of said path and a second position in said path for blocking said swinging movement of said detent bolt; and

a second latch similar to said latch and including a duplicate pivot lug in substantial alignment with at least one of said pivot lugs, a second lever movable into and out of a position blocking movement of said duplicate pivot lug, and a single electromagnetic means mounted on said

frame between said levers for simultaneously operating said lever and said second lever.

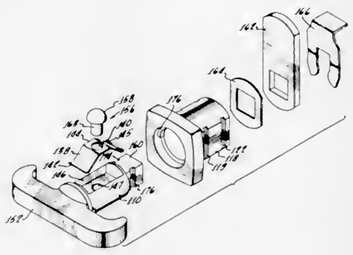
2. In a pivoting latch and lock for a hinged door, having a frame plate adapted to be installed on said door, an opening in said frame plate, a detent bolt extending through said opening and arranged to pivot inwardly of said opening about either of two parallel axes at opposite sides of said opening, the improvement comprising: inwardly facing semi cylindrical grooves in said frame plate at said opposite sides of said opening and concentric to said respective axes, generally cylindrical pivot lugs on opposite sides of said detent bolt extending substantially the full height thereof and seated in said respective grooves, each groove extending the full height of said opening and each having a portion engaging its lug in a region between its axis and the other lug to prevent movement of said bolt in a direction toward the other side of said opening when said bolt pivots about one side thereof; resilient means urging said bolt outwardly wherein both said lugs are in their respective grooves; and means on said frame movable between a first position blocking movement of at least one of said lugs out of its groove and a second position permitting movement of said lug out of its groove.

3,951,443
SECURITY LOCK
Perry J. Barnaby, St. Clair Shores, Mich., assignor to Fruehauf Corporation, Detroit, Mich.
Filed Mar. 27, 1975, Ser. No. 562,556
Int. Cl.² E05C *13/02*
U.S. Cl. 292—327 **11 Claims**



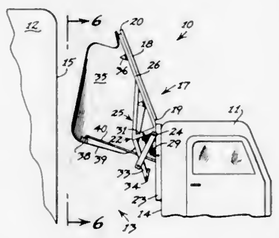
1. A system for securing a door to an adjacent structure comprising a keeper block on the door, a keeper block on the adjacent strucure, said keeper blocks being positioned to be in close juxtaposed relation when said door is in the closed condition, each of said keeper blocks having a passage therethrough, said passages being positioned so as to be aligned with each other when the door is in the closed condition thereby forming a continuous passage extending through both blocks for the reception of a bolt, one of said keeper blocks having a pilot hole of a diameter at least equal to that of the bolt passage extending inwardly from an outer surface of the block on an axis generally perpendicular to but aligned with the axis of the bolt passage and intersecting the bolt passage whereby a bolt disposed in and extending through said continuous passage can be severed by means of a drill inserted in the pilot hole.

3,951,444
LOCK ASSEMBLY WITH RESILIENT LATCH
Paul H. Shull, Orange, Calif., assignor to Elixir Industries, Gardena, Calif.
Division of Ser. No. 328,767, Feb. 1, 1973, Pat. No. 3,877,268.
This application Dec. 19, 1974, Ser. No. 534,181
Int. Cl.² E05C *13/00*
U.S. Cl. 292—359 **8 Claims**



1. A catch assembly comprising a housing cylinder having a bore and a longitudinally extending radially inwardly facing groove formed therein, a retainer cylinder rotatably mounted in said bore and having a radially outwardly facing recess formed therein, a dog mounted in said retainer cylinder having a cam head positioned in camming engagement with said groove, a resilient spring member captured in said recess and resiliently deformed between said retainer cylinder and said cam head, and means for driving said cam head from its engagement with said groove, said last-mentioned means comprising an operator member for rotating said retainer cylinder and dog relative to said housing cylinder so as to cause said housing cylinder groove to force said dog from said groove against the urging of said spring member and allow rotation of said retainer cylinder relative to the housing cylinder.

3,951,445
DRAG REDUCTION APPARATUS AND METHOD
John W. Tatom, Smyrna, Ga., assignor to Vanderbilt University, Nashville, Tenn.
Continuation-in-part of Ser. No. 367,850, June 5, 1973, abandoned. This application Aug. 29, 1974, Ser. No. 501,641
Int. Cl.² B62D *35/00*
U.S. Cl. 296—1 S **13 Claims**



1. A drag reduction apparatus for use with a tractor-trailer vehicle having an air gap between the tractor and the trailer comprising:

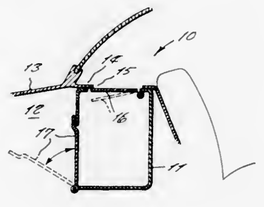
fairing means including a top fairing panel defining an air deflecting surface thereon for directing the air flow thereover;

support means carried by the tractor of the tractor-trailer vehicle and movably mounting said top fairing panel for movement of said top fairing panel between a stowed position in which said top fairing panel lies out of interference with the trailer as the tractor and trailer turn with respect to each other; and, a deployed position in which said top fairing panel extends at least partly across the top of the air gap between the tractor and the trailer; and,

deployment means including urging means for constantly urging said top panel toward said stowed position,

said support means positioning said top panel so that said air deflecting surface projects out into the air flow about the tractor-trailer vehicle as the vehicle moves forward to cause the air flow to exert a force on said top panel urging said top panel toward said deployed position so that the force exerted on said top panel by the air flow exceeds the force exerted on said top panel by said urging means when the vehicle reaches a generally predetermined forward speed to move said top panel from said stowed position to said deployed position and maintain said top panel in said deployed position as long as the vehicle exceeds the predetermined forward speed, said deflecting surface of said top panel directing the air flow across the air gap between the tractor and trailer so as to reduce the air drag characteristics of the tractor-trailer vehicle when said top panel is in said deployed position.

3,951,446
CAR TRUNK LITTER RECEPTACLE
Fred. W. Zehnder, and George Spector, both of 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007
Filed Sept. 18, 1974, Ser. No. 506,944
Int. Cl.² B60N *3/08*
U.S. Cl. 296—37 R **2 Claims**



1. A litter receptacle for an automotive vehicle having a trunk compartment, said receptacle being secured within said compartment, said vehicle having a horizontal rear window sill with an opening therethrough, said reciptacle having an upper aperture aligned with and adjacent to said opening, including a back stop hinged to the sill adjacent the rear of said opening, said back stop being maintained in the open position by resilient means, further including a trap door pivotally mounted on the receptacle in the aperture and adapted to close the sill opening, said door including spring means for maintaining the door in a normally closed position, said receptacle having a rear vertical wall with spring closed closure for litter removal.

3,951,447
TRAILER TOP WITH LIFTING AND MOUNTING MEANS
Maurice C. Sharp, P.O. Box 2A, Rossville, Ind. 46065
Filed Sept. 6, 1974, Ser. No. 503,612
Int. Cl.² B60J *7/10*
U.S. Cl. 296—137 B **8 Claims**

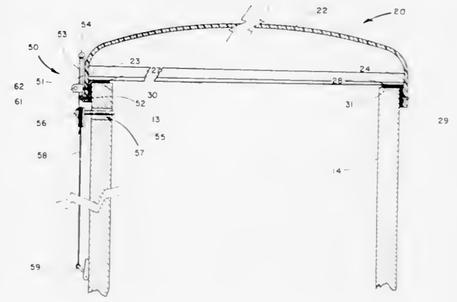
1. A panel for mounting atop opposite vertical walls of a trailer vehicle to provide an enclosure on said vehicle comprising:

a main body of rigid fiber glass including a top wall integrally joined to opposite depending sidewalls and opposite depending first and second end walls;

a pair of side channels fixedly mounted interiorly to and between said opposite sidewalls forming a seat for said panel to sit atop said vertical walls;

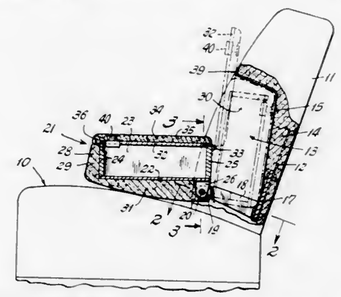
an end channel fixedly mounted to said first end wall and extending between said opposite sidewalls and being positioned between said side channels and said top wall, said end channel having one leg secured to said first end wall and a second leg disposed outwardly of first end wall forming a guideway to receive a vertical end wall of an adjacent panel;

means at least partially mounted exteriorly to said opposite sidewalls operable to enable said main body to be lifted by said means and also operable to secure said main body to said sidewalls of said trailer vehicle;



a downwardly opening channel positioned between said opposite side channels and said top wall, said downwardly opening channel having opposite depending vertical legs integrally joined together by a horizontal wall, said downwardly opening channel having an outwardly extending flange integrally attached to one depending vertical leg and to said pair of side channels with the remaining depending vertical leg fixedly attached to and reinforcing said second vertical end wall of said main body.

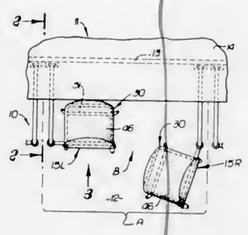
3,951,448
RECEPTACLE ARMREST FOR MOTOR VEHICLES
Frederick Hawie, 729 N. Washington Ave., Bridgeport, Conn. 06604
Filed Apr. 21, 1975, Ser. No. 570,201
Int. Cl.² A47C *13/00*
U.S. Cl. 297—113 **2 Claims**



1. A seat assembly for a motor vehicle passenger compartment including a seat portion and a backrest portion having a recess open at the front side of the backrest, an armrest pivotally mounted on said backrest portion and movable from a substantially horizontal position supported on the seat portion to a substantially vertical position into said recess in said backrest portion, said armrest comprising a substantially rectangular box having front, rear, side and bottom panels and forming a storage receptacle for holding personal property; a cover for closing said box; means for hingedly connecting said cover to the top of said rear panel adjacent the backrest and positioned so that when it swings upwardly and rearwardly, the cover will rest in engagement with the backrest in position

to strike the backrest and be thereby moved to closed position when the armrest is moved into said recess in the backrest, the exterior of the bottom panel of the receptacle being formed and upholstered to conform to the contour of the upholstery of the backrest when the armrest is swung into said recess, the top of said cover being upholstered to function as a comfortable armrest when resting on the seat portion.

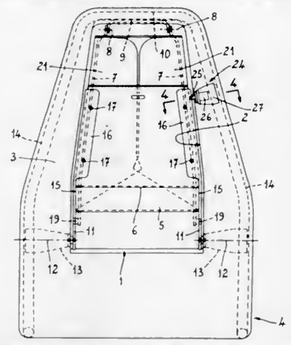
3,951,449
DUAL BAR STOOL SYSTEM
Hearl L. Crowther, 1755 Orange Ave., Suite F, Costa Mesa, Calif. 92627
Filed Jan. 30, 1975, Ser. No. 545,615
Int. Cl.² A47B *39/00*
U.S. Cl. 297—142 **12 Claims**



1. In a device for effecting a tethered association of a bar stool with a bar structure embracing a bar wall capped by a bar counter, and resting on a floor, the combination of:
a frame fixed on and releasably interlocking with said bar structure and rigidly held thereby in a vertical plane at a right angle with and extending a substantial distance outwardly from beneath said bar counter, a front element of said frame comprising a vertical shaft;
vertically aligned bearing means rotatably mounted on said shaft; and
a bar stool, when normally in use, squarely facing said bar, said stool being disposed to one side of said frame and rigidly mounted at its backside on said bearing means to swing about the axis thereof, said axis lying approximately in the plane of the backside of said stool at all times, said stool being exclusively rotatable about said axis in swinging said stool between said normal position and an outward position allowing for movement of a person either into or away from the occupancy of said stool.

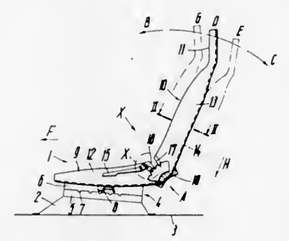
3,951,450
INFANT SEAT FOR AUTOMOTIVE AND OTHER VEHICLES
Paul Gambotti, Caluire, France, assignor to Societe Anonyme dite RECPRO, Aux Maholiere, Pont de Veyle-Ain, France
Filed Nov. 18, 1974, Ser. No. 524,892
Claims priority, application France, Nov. 20, 1973, 73.41912
Int. Cl.² A47C *15/00*
U.S. Cl. 297—238 **5 Claims**

1. In a vehicle having a passenger seat provided with a back, the improvement wherein:
said back is provided with a rearwardly open recess;
an articulated infant seat is mounted on said back and is foldable for receipt in said recess and unfoldable to project therefrom and accommodate an infant, said infant seat comprises a back member pivotably connected at an upper part thereof to said back of said passenger seat and a seat member pivotably connected to said back or said passenger seat at a lower portion of said recess, said seat member being formed with apertures along opposite sides



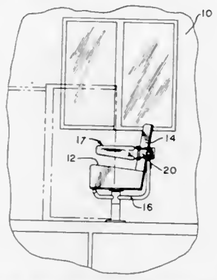
thereof and said back member having portions slidably received in said apertures.

3,951,451
SHELL SEAT FOR PASSENGER MOTOR VEHICLES
Rainer Srock, Leinfelden, Germany, assignor to Dr. -Ing. h.c.F. Porsche Aktiengesellschaft, Germany
Filed July 19, 1973, Ser. No. 380,556
Claims priority, application Germany, July 21, 1972, 2235823
Int. Cl.² B60N *1/02*
U.S. Cl. 297—366 **5 Claims**



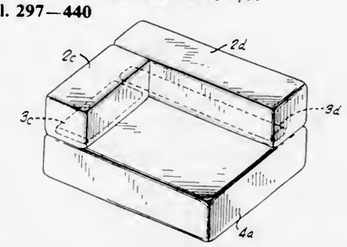
1. A shell seat for passenger motor vehicles, the shell seat comprising: a lower seat means including a main body supporting portion and a pair of integrally formed outwardly projecting side wall portions, said main body supporting portion and said integrally formed side wall portions defining a lower seat area having a substantially U-shaped configuration, an adjustable back rest means including a main body supporting portion and a pair of integrally formed outwardly projecting side wall portions disposed in substantial alignment with the side wall portions of said lower seat means, said main body supporting portion of said adjustable back rest means and said side wall portions thereof defining a back rest area having a substantially U-shaped cross-sectional configuration, a connecting wall portion disposed in a transitional area between the lower seat means and the back rest means for connecting said main body portions of said lower seat means with said adjustable back rest means, said connecting wall portion being integrally formed with said main body portions of said lower seat means and said adjustable back rest means such that the shell seat is made in one piece, said side wall portions of said lower seat means and said adjustable back rest means being interrupted up to the connecting wall portion at the transitional area between the lower seat means and the adjustable back rest means, means for adjusting the adjustable back rest means including a means for locking said adjustable back rest means in an adjusted position, and means provided on the connecting wall portion at the transitional area between the lower seat means and the adjustable back rest means for stressing the back rest means in the driving direction of the motor vehicle toward said lower seat means, said means for stressing being constituted by profile means provided at the connecting wall portion, said profile means being constituted by stiffening corrugations which extend in an approximately vertical direction.

3,951,452
BREAKAWAY ARMREST FOR SEAT
Arthur J. Harder, Jr., Franklin Park, Ill., assignor to Coach & Car Equipment Corporation, Elk Grove Village, Ill.
Filed Aug. 4, 1975, Ser. No. 601,581
Int. Cl.² A47C *7/54*
U.S. Cl. 297—417 **11 Claims**



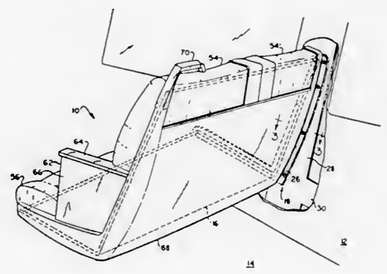
1. In a seat having a rigid frame, a back and a bottom for supporting an occupant, a breakaway arm support unit comprising:
an armrest;
hinge means attaching the armrest to the seat frame;
said hinge means including a first pivot means mounting the armrest for rotational movement between an arm-supporting first position extending forwardly in relation to said seat back and a second position angularly, outwardly displaced from said first position; and,
a lock comprising releasable means normally exerting a locking action to hold the armrest against movement away from said first position, and said releasable means including means, responsive to a predetermined outward lateral force against said armrest, for releasing said locking action to permit movement of the armrest from said first position toward said second position.

3,951,453
SEATING DEVICE HAVING A WEIGHTED CUSHION
Otto Zapf, Eschborn, Germany, assignor to Knoll International, Inc., New York, N.Y.
Filed Dec. 5, 1974, Ser. No. 529,964
Claims priority, application Germany, Mar. 23, 1974, 7410172[U]
Int. Cl.² A47C *7/00*
U.S. Cl. 297—440 **7 Claims**



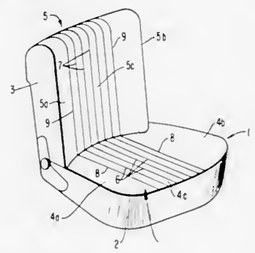
1. A top cushion, for use with a seating device having a base portion and movably positionable on said base portion, said top cushion comprising a nonrigid cushion having an upper portion, a middle portion and a lower portion, and an insert in the lower portion thereof, the insert having a relatively and substantially greater density than that of the cushion and sufficient weight to substantially maintain said cushion in a selected position while the seating device is in use.

3,951,454
CANTILEVERED PASSENGER SEAT FOR TRANSIT VEHICLE
Keith W. Tantlinger, Rancho Santa Fe, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.
Continuation of Ser. No. 299,975, Oct. 13, 1972, which is a continuation of Ser. No. 77,109, Oct. 1, 1970. This application June 5, 1974, Ser. No. 476,652
Int. Cl.² A47C *7/02*
U.S. Cl. 297—452 **12 Claims**



1. A cantilever seat for a transit vehicle comprising an integral L-shaped unitary panel structure having a mounting end and a free end, said panel structure forming the bottom and back support portions of said seat and comprising a pair of facing sheets and a core material sandwiched therebetween; and a mounting flange for fixedly mounting said seat in cantilever manner to a vertical support, said flange extending along said mounting end of said panel structure and comprising a first portion perpendicular to the facing sheets thereof, and a second integral portion extending laterally from said first portion and fixedly disposed between end portions of said facing sheets.

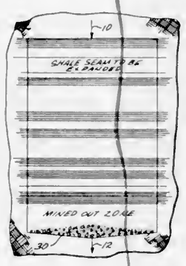
3,951,455
CUSHIONED SEAT, ESPECIALLY MOTOR VEHICLE SEAT
Kurt Bandel, Monchberg; Adolf Honegg, Grafenau-Datzingen, and Heinz Stahl, Sindelfingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany
Filed Apr. 13, 1973, Ser. No. 350,972
Claims priority, application Germany, Apr. 13, 1972, 2217791
Int. Cl.² A47C *7/02, 27/00*
U.S. Cl. 297—452 **8 Claims**



1. A cushioned seat comprising:

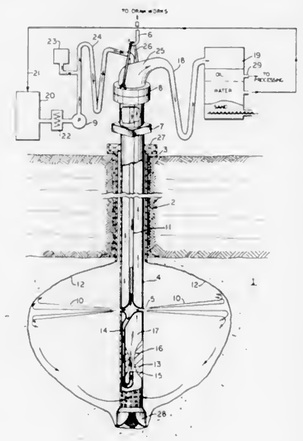
a spring box;
a seat cushion disposed on said springbox including a cushion shaped part having a top side surface and an underside surface;
cover means for covering said seat cushion including a plurality of individual cover sections joined along seams extending in a longitudinal direction of said seat cushion;
sleeve members attached to said cover means at least along the seams thereof;
slot means provided in said sleeve members;
recess means formed in said topside of said cushion shaped part for receiving said sleeve members;
aperture means formed in said cushion shaped part;
rod means inserted into said sleeve members including retaining loops projecting through said slot means in said sleeve members and extending through said aperture means in said cushion shaped part; and
clamping means extending through said retaining loops for fixedly clamping said retaining loops at said underside surface of said cushion shaped part.

3,951,456
PROCESS FOR EFFECTING EVEN RETORT WORKING FLUID FLOW THROUGHOUT AN IN SITU RETORT CONTAINING CARBONACEOUS DEPOSITS
Richard D. Ridley, Claremont, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.
Continuation of Ser. No. 385,319, Aug. 3, 1973, abandoned. This application Jan. 3, 1975, Ser. No. 538,461
Int. Cl.² E21B *43/26*; E21C *41/10*
U.S. Cl. 299—2 **23 Claims**



1. An in situ process for recovering carbonaceous values from a subterranean deposit comprising the steps of:
a. developing an in situ rubble pile within a retorting chamber of a subterranean carbonaceous deposit having a retorting fluid entrance and retorting fluid exit, said rubble pile being formed by undercutting at about the base of the carbonaceous deposit to remove a predetermined volume of material and form a sloped floor having a high point at the shortest retorting fluid path between the retorting fluid entrance and the floor and the low point at the periphery of the floor and expanding the deposit to form the in situ rubble pile wherein the bulk permeability of the rubble pile increases from the shortest retorting fluid path to the longest retorting fluid path between the retorting fluid entrance and the retorting fluid exit so that the resistance to retorting fluid flow through the rubble pile along all retorting fluid paths is approximately equal;
b. establishing the retorting fluid entrance between the rubble pile and a source of retorting fluid;
c. establishing the retorting fluid exit between the rubble pile and a destination for the retorting fluid, the exit communication with the rubble pile being spaced by at least a portion of the rubble pile from the retorting fluid entrance;
d. retorting the rubble pile to extract the carbonaceous values therefrom, the retorting step including the passage of the retorting fluid through the rubble pile along the retorting fluid paths; and
e. recovering the retorted carbonaceous values.

3,951,457
HYDRAULIC MINING TECHNIQUE FOR RECOVERING BITUMEN FROM TAR SAND DEPOSIT
David Arthur Redford, Fort Saskatchewan, Canada, assignor to Texaco Exploration Canada Ltd., Calgary, Canada
Filed Dec. 7, 1973, Ser. No. 422,635
Int. Cl.² E21B *43/114*
U.S. Cl. 299—5 **22 Claims**

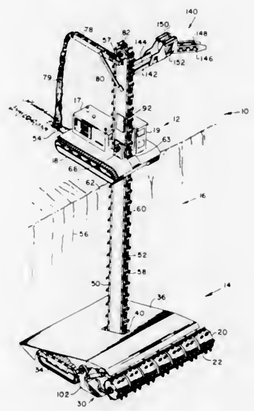


1. A hydraulic mining method for recovering viscous petroleum including bitumen from subterranean, viscous petroleum-containing, unconsolidated mineral formations including tar sand deposits, said formation being penetrated by at least one well, comprising:
a. introducing a hot, aqueous hydraulic mining fluid containing an alkalinity agent into the formation via the well in the form of a high velocity jet which rootates within the formation, said jet contacting the formation with sufficient energy to dislodge viscous petroleum and unconsolidated minerals;
b. introducing a solvent for petroleum simultaneously with the aqueous hydraulic mining fluid;
c. introducing a non-condensible gas into the formation;
d. recovering a fluid pulp comprised of viscous petroleum, unconsolidated minerals, solvent, and hydraulic mining fluid from the formation.

3,951,458
METHOD OF EXPLOSIVE FRACTURING OF A FORMATION AT DEPTH
Lawrence Maclagan Cathles, Boston, and Robert Amos Hard, Still River, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.
Filed July 31, 1974, Ser. No. 493,245
Int. Cl.² E21B *43/26*, *43/27*, *43/28*
U.S. Cl. 299—5 **8 Claims**

1. A method for increasing the leaching efficiency of an ore body from which metal values are sought to be recovered adjacent to a drill hole, including introducing into a drill hole an explosive, the improvement comprising: filling a drill hole with a fluid such as water or a liquid, overpressuring the fluid to exceed the lithostatic pressure and to produce fractures from the hole into the formation; thereafter, while maintaining said pressure, detonating the explosive for creating a shock wave through the fractures, introducing a leaching fluid into said ore body and recovering same with leached metal values.

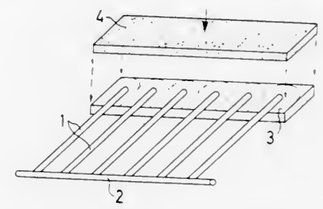
3,951,459
COAL MINING APPARATUS AND METHOD
Dewitt W. Honeycutt, Jr., 5881 Preston View No. 254, Dallas, Tex. 75240
Filed Oct. 16, 1974, Ser. No. 515,206
Int. Cl.² E21C *41/00*
U.S. Cl. 299—11 **30 Claims**



1. Apparatus for moving subterranean material to the surface of the earth, comprising:
mobile underground propulsion means for processing said subterranean material to transport said material to said surface, said mobile underground means being moveable in the direction of said subterranean material,
transporting means connected to said mobile underground means and extending upward through the earth to the surface, said transporting means being adapted to move in coordination with said mobile underground means for transporting said processed subterranean material to said surface, and
mobile surface propulsion means on said earth surface attached to said transporting means and adapted to move in coordination with said mobile underground means for receiving said processed subterranean material from said transporting means,
said underground means and said surface means being connected to said transporting means to be moveable relative to each other and relative to said transporting means.

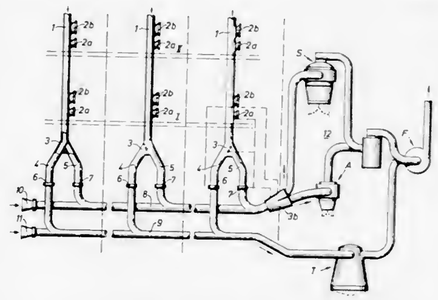
3,951,460
METHOD OF MANUFACTURING BRUSHES AND THE LIKE
Werner Blankschein, Ohlauerstrasse 2, 8 Munich 50, Germany
Filed Dec. 14, 1972, Ser. No. 315,029
Int. Cl.² A46B *15/00*
U.S. Cl. 300—21 **3 Claims**

1. A method of manufacturing a plurality of brushes, each brush comprising a handle and a head of foamed plastic material, said method comprising the steps of providing a plurality of handles arranged in parallel, coplanar, side-by-side relationship with one end portion of each handle lying intermediately on a first strip of foamed plastic material which extends perpendicular to the handles and which strip is more narrow than the length of a handle, placing a second strip of foamed plastic material on top of the first strip and in registration therewith, and stamping and welding the said strips to form the plastic material into a brush head on each handle while simultaneously separating the said brush heads from each other and securing the thus formed heads in enclosing relation to the said one end portion of the handles, said plurality of



brush handles being first formed by stamping groups thereof from a sheet of plastic, the handles of each group remaining connected by the other end portion to a holding portion produced simultaneously from the same sheet of plastic and integral with the said handles.

3,951,461
PNEUMATIC CONVEYING PIPE SYSTEM FOR COLLECTION AND INTERMITTENT CONVEYANCE OF DIFFERENT TYPES OF GOODS
Sergio De Feudis, Nacka, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden
Filed Aug. 1, 1973, Ser. No. 384,447
Claims priority, application Sweden, Aug. 25, 1972, 11079/72
Int. Cl.² B65G *51/02*
U.S. Cl. 302—27 **7 Claims**



7. In a pneumatic pipe conveying system for conveying a plurality of different classes of goods from a corresponding plurality of sets of inlet port means to a corresponding plurality of remote receiving container means so that each of said classes of goods from each of said sets of inlet port means is conveyed to a corresponding respective one of said container means, one of said classes comprising laundry and another of said classes comprising waste material, said system comprising a valved pipe system extending from each of said inlet port means to said container means and means for applying a gas pressure differential to at least a portion of said valved pipe system to effect said conveying, the improvement wherein:
said valved pipe system comprises a plurality of downwardly-extending branch chutes connected with each of said inlet port means to receive said goods therefrom, a plurality of collecting spaces at the lower ends of said chutes and a bottom valve for each of said collecting spaces whereby when any of said bottom valves is closed goods delivered thereto from said inlet port means can be accumulated in the collecting space above it, pneumatic conveying pipes connected with said bottom valves for re-

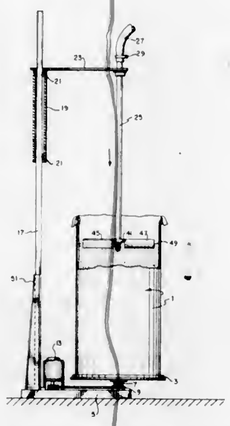
ceiving said accumulated goods from any of said collecting spaces the bottom valve for which is open, and means for controlling the operation of said valved pipe system including said bottom valves to accumulate only one of said classes of goods at a time in any of said collecting spaces and to convey said different classes of goods through said valved pipe system to the respective container means for said classes of goods, said valved pipe system comprising at least one pipe through which goods of more than one of said classes, including said laundry and said waste material, pass at different times in travelling from said inlet ports to their respective containers; each of said branch chutes being provided with inlet port means of only one of said sets, so as to be supplied with only one of said classes of goods, said pneumatic conveying pipes comprising a single pipe connected with all of said bottom valves to receive goods from all of said chutes and branch pipes for connecting said single pipe to different ones of said container means, said system also comprising additional valve means connected between said single pipe and said branch pipes for routing said goods from said single pipe to the corresponding respective container means for the type of goods being conveyed through said single pipe, and means for coordinating the action of said additional valve means and of said bottom valves so that when any of said bottom valves is open said additional valve means is placed in the state which delivers the corresponding class of said goods to the proper corresponding container means.

3,951,462

APPARATUS FOR FEEDING A POWDERED SUBSTANCE

Leonard De Francisci, Manhasset, N.Y., assignor to De Francisi Machine Corporation, Brooklyn, N.Y.

Filed Dec. 5, 1974, Ser. No. 529,913
Int. Cl.² B65G *53/24*
U.S. Cl. 302—56 **6 Claims**



1. Apparatus for removing powdered substance from a container comprising:

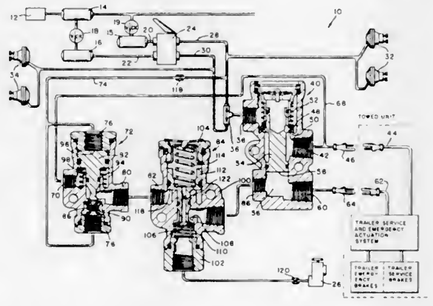
a table for supporting the container of powdered substance, a base, means located on said base for rotating said table, a hollow pipe having first and second ends, said pipe being located over the container of powdered substance, said pipe first end being open-mouthed and being located on the surface of the powdered substance in the container, means for providing suction to said pipe being connected to said pipe second end, a pair of generally rectangular blades being attached to said pipe adjacent said pipe first end on opposite sides of said pipe first end, said pair of blades having a common lateral axis, the first of said pair of blades forming an angle of approximately **45°** and the second of said pair of blades forming an angle of approximately 135° with a horizontal plane in which said common lateral axis lies, a vertical upright attached to said base, a slidable collar being mounted on said upright, an arm member extending horizontally from said collar, said arm being attached to said pipe in order to permit said pipe to move downwardly as the surface level of the powdered substance in the container declines.

3,951,463

FLUID PRESSURE BRAKING SYSTEM INCLUDING A PRESSURE DIFFERENTIAL RESPONSIVE VALVE DEVICE

Richard C. Fannin, Elyria, and Anthony B. Stellato, Grafton, both of Ohio, assignors to The Bendix Corporation, South Bend, Ind.

Filed Mar. 6, 1975, Ser. No. 556,043
Int. Cl.² B60T *13/00*
U.S. Cl. 303—7 **10 Claims**



1. In a fluid pressure braking system for an articulated vehicle including a towing unit having service brakes and a towed unit having service and emergency brakes, a service brake actuation system having a first portion for communicating fluid pressure to the service brakes on the towing unit, a second portion for communicating fluid pressure to the service brakes on the towed unit, and a service conduit communicating the first portion with the second portion, an operator-actuated control valve for communicating fluid pressure through said service brake actuation system, and pressure differential responsive means for sensing a pressure differential between the fluid pressure level in said service conduit and the fluid pressure level at said operator-actuated control valve, said pressure differential responsive means including means for actuating said emergency brakes when said pressure differential attains a predetermined level.

3,951,464

TRUCK-TRAILER BRAKE SYSTEM WITH INDEPENDENT CONTROL OF TRAILER BRAKES

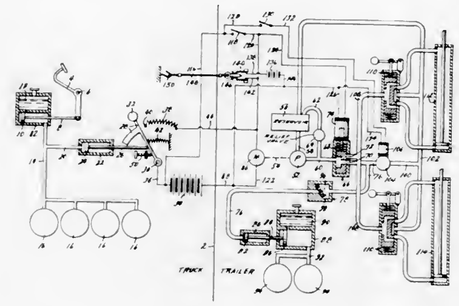
James C. Donahue, P.O. Box 126, Durham, Kans. 67438, and John T. Ramsey, 3921 S. Webb Road, Wichita, Kans. 67210

Filed Aug. 30, 1974, Ser. No. 502,162
Int. Cl.² B60T *13/00*
U.S. Cl. 303—7 **6 Claims**

1. A brake system for a truck-trailer combination comprising:

a. a truck brake system including a pedal and being operable to apply the truck brakes by depression of said pedal,
b. a trailer brake system including an electric motor, and operable by energization of said motor to apply the trailer brakes,
c. an operating electrical circuit for said electric motor, said circuit including a normally open control switch and the battery of the truck electrical system,

d. control means operable by depression of said pedal to close said control switch,
e. an auxiliary source of electrical power carried by said trailer and independent of the truck electrical system,
f. another operating electrical circuit including said motor, auxiliary power source, and a normally open safety switch, and



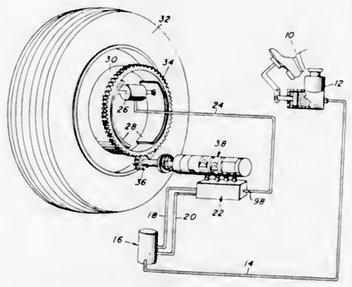
g. operating means for said safety switch including a mechanical connection between said truck and trailer and operable to close said safety switch to energize said motor to apply the trailer brakes if the trailer should be disconnected from the truck.

3,951,465

ANTI-SKID DEVICE INCLUDING A GEAR-DRIVEN CAM PUMPING UNIT WITH FAIL-SAFE FEATURES

Jack W. Stage, 100 Mount Lyell Drive, San Rafael, Calif. 94903

Filed June 8, 1973, Ser. No. 368,429
Int. Cl.² B60T *8/087, 13/16*
U.S. Cl. 303—21 F **8 Claims**



1. An anti-skid device for controlling the braking of a wheel comprising,

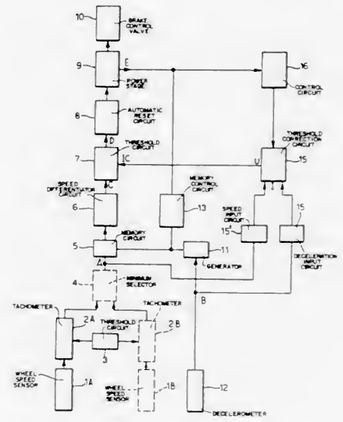
a master brake cylinder,
a pressure-sensitive valve means connected to said master brake cylinder,
a valve and piston means having an inlet means and an outlet means, said inlet means connected to said pressure-sensitive valve means,
a brake cylinder connected to said wheel, said outlet means connected to said brake cylinder,
a cam means driven by said wheel operating said valve and piston means,
to impart a pumping action to said brake cylinder when the pressure exerted by said master cylinder on said pressure-sensitive valve exceeds a predetermined valve, and, a gear means driven by said wheel, said gear means in turn driving said cam means.

3,951,466

ANTI-SKID BRAKING SYSTEMS FOR VEHICLES

Renato Guagliumi, and Giuseppe Cuzzucoli, both of Turin, Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed July 10, 1974, Ser. No. 487,120
Claims priority, application Italy, July 26, 1973, 69247/73
Int. Cl.² B60T *8/8*
U.S. Cl. 303—21 CG **3 Claims**



1. An antiskid braking system for a vehicle including a source of pressure, brake actuator means associated with at least one wheel of the vehicle, control valve means interconnecting the pressure source and the brake actuator means and controlling the release and reapplication of the brake actuator means, a threshold circuit controlling said control valve means in response to the deceleration of the vehicle wheels, said threshold circuit initiating release of the brake actuator means at a first threshold level and initiating a reapplication of the brake actuator means at a second threshold level and wherein the improvements comprise: (a) a first circuit means for applying a voltage signal proportional to the instantaneous wheel speed to alter the first threshold level whereby the release of the brake actuator means varies according to said dynamic parameter, said first circuit means comprising two resistive networks having a common point, the first resistive network having at least one input terminal to which at least one signal corresponding to at least one said dynamic parameter is applied and the second resistive network being connected to an input of the threshold circuit, and (b) a correcting signal control circuit having means to annul the signal from said first circuit means for applying the correcting signal during brake release to keep the second threshold level constant while varying the first threshold level, the correcting signal control circuit controlling the common point of the two resistive networks of said first circuit means and comprising a transistor T, the collector of shich is connected to the input of a resistive circuit and the base of which is connected to the output of the control of the power stage by means of a resistance operable by a signal from the valve means upon brake release.

3,951,467

WHEEL SLIP CONTROL SYSTEM FOR AUTOMOTIVE VEHICLES AND THE LIKE

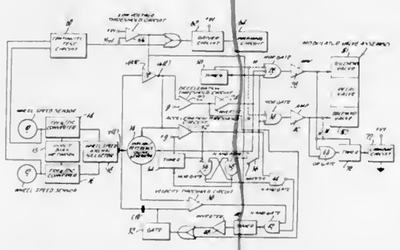
Joseph E. Fleagle, Overland, Mo., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed Feb. 3, 1975, Ser. No. 546,270
Int. Cl.² B60T *8/08*
U.S. Cl. 303—21 BE **44 Claims**

10. A wheel slip control system for a vehicle having at least one wheel with associated braking means, comprising:

1. first means operative to generate a variable-width deceleration pulse when the rate of change of rotational velocity of a selected wheel exceeds a deceleration threshold, said first means being further operative to generate a variable-width slip pulse when the change in rotational velocity of the selected wheel, measured from the value of said rotational velocity at the time said deceleration pulse is initiated, exceeds a reference increment of wheel speed which is variable in relation to both the velocity and the deceleration of the selected wheel during deceleration of the selected wheel and in relation to acceleration during acceleration of the selected wheel; and
2. second means operative to receive said deceleration pulse and said slip pulse, and further operative at least in response to said slip pulse to alter the braking force applied to at least said selected wheel.

32. A method of controlling the degree of slip of at least one brakeable wheel, comprising essentially the steps of:



1. monitoring the speed of said wheel;
2. monitoring the rate of change of the speed of said wheel;
3. generating a reference increment of wheel speed which is variable in relation to both the velocity and the deceleration of the monitored wheel during deceleration of the monitored wheel and in relation to acceleration during acceleration of the monitored wheel;
4. modifying the rate of change of braking force at least during each period of time in which the rate of change of wheel speed exceeds a predetermined deceleration threshold; and
5. reducing braking force at least during each period of time in which the reduction in wheel speed, measured from the value of wheel speed at the time the rate of change of wheel speed exceeds the predetermined deceleration threshold, exceeds the variable reference increment of wheel speed.

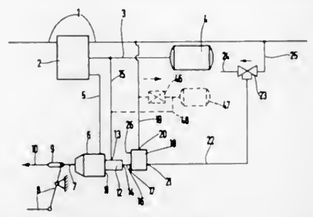
3,951,468

AIR BRAKE SYSTEM FOR RAILWAY VEHICLES

Engelbert Kolbeck, Mering, and Erich Sammer, Munich, both of Germany, assignors to Knorr-Bremse GmbH, Munich, Germany

Filed June 9, 1975, Ser. No. 584,965
Claims priority, application Germany, June 8, 1974, 2427778
Int. Cl.² B60T *11/28, 15/04*
U.S. Cl. 303—81 **9 Claims**

1. An air brake system for a railway vehicle comprising a main air line containing a predetermined pressure when the brakes are in the release state, a brake control valve connected to said main air line, an air reservoir connected to said brake control valve, a brake cylinder connected to said brake control valve to be subjected to air pressure from said reservoir and to be evacuated to the atmosphere so as to operate a friction brake connected thereto, and valve means connected to said brake cylinder and main air line and including a venting valve connected to said air line for venting said air line to the atmosphere in response to the friction brake being



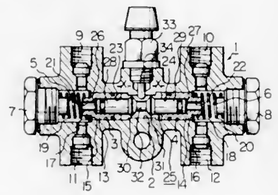
in the braking state concurrently with said predetermined pressure existing in said main air line.

3,951,469

PRESSURE CONTROL DEVICE FOR VEHICLE HYDRAULIC BRAKING SYSTEM

Yoshihiro Hayashida, Chigasaki, Japan, assignor to Tokico Ltd., Japan

Filed Feb. 20, 1975, Ser. No. 551,510
Claims priority, application Japan, Feb. 22, 1974, 49-21110
Int. Cl.² B60T *17/18*
U.S. Cl. 303—84 A **5 Claims**



1. A pressure control device for use in a dual-circuit hydraulic system, said device comprising:

housing means for connecting said dual circuits, said housing means having a central bore therethrough between said dual circuit;

sleeve means coaxially slidably fitted within said central bore at each end thereof for limited movement therein in response to the difference in pressure between said dual circuits connected by said central bore;

plunger means slidably fitted within said central bore and said sleeve means for movement within said bore and sleeve means in response to the pressure difference between said dual circuits connected by said central bore, said plunger means comprised of:

a central portion,

side portions coaxially spaced from each side of said central portion and slidably fitted within said sleeve means, said side portions having a diameter different than the diameter of said central portion, and

annular slant surfaces coaxially positioned between and joining said central portion and said side portions, said slant surfaces having at least one surface sloping upward from the circumference of said side portions;

biasing means positioned at each end of said housing means in said central bore for biasing against and urging said sleeve means toward the center of said central bore; and

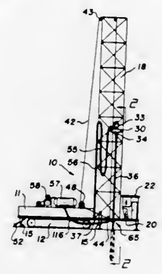
a warning device operatively fitted to said housing means for warning when the pressure difference between said circuits is not within a proper range, said warning device having an actuating rod projecting into said central bore adjacent said plunger means for actuating said warning device in response to the contact of the actuating rod with said plunger means sliding in said central bore due to the pressure difference between the dual circuits.

3,951,470

DRILL STEEL IDLER GUIDE

Donald F. McLean, Princeton, Canada, assignor to Bralorne Resources Limited, Calgary, Canada

Continuation of Ser. No. 390,951, Aug. 23, 1973, abandoned.
This application May 1, 1975, Ser. No. 573,660
Int. Cl.² F16C *21/00*
U.S. Cl. 308—3.9 **3 Claims**



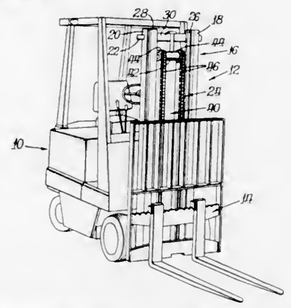
1. In combination with a top drive rotary drill steel for use in drilling mine shafts or blast holes in earth formations, an idler guide comprising a base having a passage of circular cross-section extending therethrough and adapted to be carried by a support, said passage being defined by an inner cylindrical surface, an internal sleeve rotatably mounted within said base passage and spaced slightly from said cylindrical surface to form a small annular clearance space therebetween, opposed annular grooves in the inner cylindrical surface of the base and an outer surface of the sleeve, and rotatable bearings in said grooves spanning said annular space and supporting the sleeve within the base, said sleeve having an axial bore therethrough for unimpeded rotation and sliding passage of said drill steel therein during a normal drilling operation, lateral runoff of said drill steel during rotation thereof as it passes through said bore imparting rotation to said sleeve so that said bearings take the lateral load.

3,951,471

RECIRCULATING BALL BEARING ASSEMBLY FOR FORK LIFT MAST UNITS

Joseph G. Langenstein, Edelstein, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 7, 1975, Ser. No. 575,302
Int. Cl.² F16C *29/06*
U.S. Cl. 308—6 C **25 Claims**



1. In a fork lift mast unit including a first upright section having a pair of spaced apart, elongated, structural beams and a second upright section being movable relative to the first upright section and having spaced apart, elongated, structural beams, each beam in the second upright section being arranged adjacent one of the beams in the first upright section, the pairs of adjacent beams having elongated surfaces arranged in substantially parallel, facing relation with each other, a plurality of similar anti-friction, recirculating ball bearing assemblies of minimum thickness arranged between the facing elongated surfaces of the adjacent beams, each ball bearing assembly comprising

a first race member secured to one of the facing surfaces of the adjacent beams, the first race member having a substantially flat bearing surface,

a second race member being mounted upon the opposite face of the other adjacent beam for movement relative to the first beam, the second race member having a flat bearing surface in facing relation with the flat bearing surface of the first race member,

a bearing carrier plate arranged between the flat bearing surfaces of the race members, the bearing carrier plate forming a pair of closed loop paths of elongated configuration in combination with one of the race members, each of the closed loop paths having a straight line, bearing portion penetrating entirely through the bearing carrier plate, another straight line, recirculating path portion being formed partially by the bearing carrier plate and partially by the bearing surface of the one race member and curved end portions formed partially by the bearing carrier plate and partially by the one race member to complete the closed loop path with a planar configuration in combination with the two straight line path portions, and

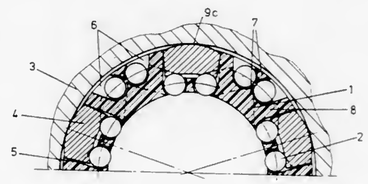
a plurality of ball bearings each having a diameter greater than the thickness of the bearing carrier plate and substantially filling each of the closed loop paths.

3,951,472

BOX WITH DOUBLE ROW TRACK CARRIERS

Rainer Schurger, Schwanfeld; Armin Olschewski, Schweinfurt; Erich Burkl, Stammheim, and Lothar Walter, Schweinfurt, all of Germany, assignors to SKF Industrial Trading and Development Company, B.V., Jutphaas, Netherlands

Filed Oct. 30, 1974, Ser. No. 519,335
Claims priority, application Germany, Dec. 19, 1973, 2363033
Int. Cl.² F16C *29/06*
U.S. Cl. 308—6 C **10 Claims**



1. A ball box positioned in a housing and having a central load zone, and recirculating balls alternating between said central load zone and a load-free zone, comprising a cage, a plurality of endless rows of balls arranged in said cage to roll in said load zone in pairs of row tracks, and a plurality of row track carriers each positioned to support the balls in a pair of adjacent row tracks in said cage, said row track carrier extending radially outwardly with respect to said ball box in the region between the corresponding row tracks to a greater extent than in the regions radially aligned with said corresponding row tracks, whereby each said row track carrier provides a firm support on one side thereof against said housing in the center thereof and a less firm support on the other side thereof in the areas adjacent said centers and corresponding to the position of each said row track on said other side of said row track carrier, said less firm support allowing the rollers in said row tracks to shift radial positions in accordance with load variation in said central load zone.

3,951,473

BALL BEARING FOR LONGITUDINAL MOVEMENTS

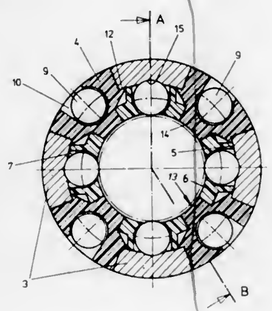
Armin Olschewski, Schweinfurt; Erich Burkl, Stammheim; Lothar Walter, Schweinfurt, and Manfred Brandenstein, Aschfeld, all of Germany, assignors to SKF Industrial Trading and Development Company, B.V., Jutphaas, Netherlands

Filed May 20, 1975, Ser. No. 579,264

Claims priority, application Germany, June 1, 1974, 7419065

Int. Cl.² F16C 29/06

U.S. Cl. 308—6 C 18 Claims



1. A linear ball bearing which has a sleeve, continuous rows of load-bearing and non-load-bearing balls distributed over the bearing circumference, and which has for each row of balls a radial aperture in said sleeve, characterized in that said apertures distributed over the circumference of the sleeve are separated by axially oriented lands, and there are inserted in said apertures return elements that include return grooves for the non-load-bearing balls of each continuous row of balls.

3,951,474

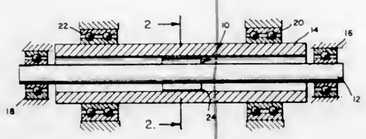
INTERSHAFT FOIL BEARING

Nick M. Hughes, Scottsdale, Ariz., and Alexander Silver, Tarzana, Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Mar. 8, 1974, Ser. No. 449,421

Int. Cl.² F16C 7/04

U.S. Cl. 308—9 19 Claims



1. In combination:
a hollow outer shaft;
first rolling contact bearing means to rotatably support said hollow outer shaft;
an inner shaft concentrically disposed to independently rotate within said hollow outer shaft;
second rolling contact bearing means to independently rotatably support said inner shaft within said hollow outer shaft; and
a compliant foil bearing operably disposed between said inner shaft and said hollow outer shaft near the midspan thereof.

3,951,475

RESILIENTLY MOUNTED GAS BEARING DEVICE

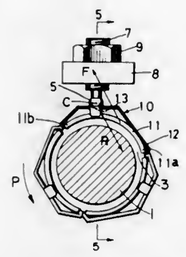
Hiroshi Okano, and Yushiro Yasuda, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 10, 1973, Ser. No. 405,171

Claims priority, application Japan, Apr. 24, 1973, 48-46417

Int. Cl.² F16C 17/06, 19/04, 23/04, 35/02

U.S. Cl. 308—9 10 Claims



1. In combination with a gas bearing wherein a plurality of arcuately curved bearing pads are positioned one adjacent to another encircling a rotatable shaft in a circle of diameter greater than the diameter of said shaft to support said shaft in a floating fashion during rotation of said shaft, said bearing pads each being supported on a pivot adjustably secured to a bearing housing, the improvement wherein each of said bearing pads comprises:
a relatively thin arcuately curved bearing shell having an inner surface facing the peripheral surface of said shaft in a manner substantially complementary to, but spaced from, said peripheral surface; and
means for holding said bearing shell, said means being made of thin elastic material and extending over the outer surface of said bearing shell, said means being supported on said pivot and engaged with at least one pair of opposite edges of said bearing shell for resiliently supporting said bearing shell on said pivot.

3,951,476

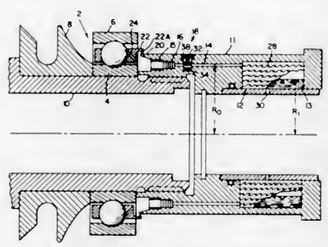
CENTRIFUGALLY FLOW CONTROLLED LUBRICATED BEARING

Howard E. Schulien, Montville, and William H. Ficken, Berkeley Heights, both of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Sept. 27, 1974, Ser. No. 510,106

Int. Cl.² F16C 1/24, 33/66; F16N 9/02, 29/02

U.S. Cl. 308—114 4 Claims



1. Apparatus for lubricating a rotating member, comprising:
means arranged with the rotating member for rotating therewith;
said means including a lubricant reservoir and means communicating with the reservoir and the rotating member for carrying lubricant to the rotating member through the centrifugal force generated upon rotation of the reservoir carrying means therewith;
said lubricant carrying means including a channel leading from the reservoir and terminating in a lubricant transfer member disposed near the rotating member for transferring lubricant to said member; and
means arranged with the channel and responsive to the centrifugal force for metering the lubricant flow therethrough to the rotating member, said means including a plate disposed in the channel and carrying an aperture, said plate arranged for transverse displacement relative to the channel, means for biasing the plate so that the aperture carried thereby is in a predetermined alignment relation with the channel, and said biasing means being responsive to the centrifugal force generated by the rotation for transversely displacing the plate to adjust the predetermined alignment relation for metering the lubricant flow through the channel to the rotating member.

4. Bearing lubricating apparatus, comprising:
a bearing arranged with a rotatable member;
means for locking the bearing to the rotatable member and rotatable therewith;
a lubricant reservoir internal to the locking means and a lubricant flow channel leading from the reservoir and terminating in a lubricant discharge orifice near the bearing;
means arranged in the channel and responsive to the centrifugal force effected upon rotation of the rotatable member and the locking means therewith to meter the lubricant flow therethrough, said means including a plate disposed in the channel and carrying an aperture, said plate arranged for transverse displacement relative to the channel, means for biasing the plate so that the aperture carried thereby is in a predetermined alignment relation with the channel, and said biasing means being responsive to the centrifugal force generated by the rotation for transversely displacing the plate to adjust the predetermined alignment relation for metering the lubricant flow through the channel to the rotating member,
restricting means arranged in the discharge orifice for restricting the flow of lubricant therethrough; and
the lubricant being carried from the reservoir and through the partially blocked channel, metering means and discharge orifice restricting means to the bearing by the centrifugal force.

3,951,477

MOUNTING ARRANGEMENTS

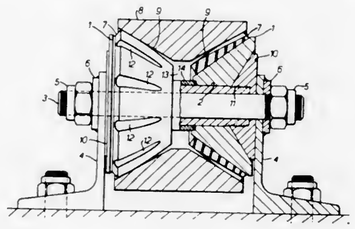
Maurice Philip Townshend, Castle Cary, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland

Filed Nov. 26, 1974, Ser. No. 527,481

Claims priority, application United Kingdom, Nov. 27, 1973, 54991/73

Int. Cl.² F16C 9/00; F16F 15/08

U.S. Cl. 308—22 6 Claims



1. A mounting arrangement comprising a first part including a pair of inwardly facing external cone surfaces supported on a common axis, a second part including a pair of outwardly facing internal cone shaped surfaces, the second part of said arrangement being mounted on the first part thereof with the same common axis so that each of the external cone surfaces coact with a respective one of the internal cone surfaces, and a resilient sleeve interposed between each of the coacting surfaces, said sleeve being secured to one of said surfaces and having a surface that is angled relative to the other of said surfaces such that contact between said sleeve and the other of said surfaces is made over only part of their surface areas adjacent the base of said other cone surfaces.

3,951,478

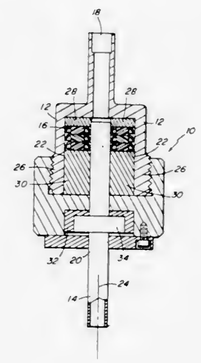
VACUUM ASSEMBLY

Harry G. Olsen, Woburn, and Peter Oberhauser, Sudbury, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 22, 1975, Ser. No. 580,108

Int. Cl.² F16C 1/24

U.S. Cl. 308—36.1 11 Claims



1. An improved vacuum assembly including:
a. a housing having a first and a second aperture formed therein and a hollow internal region communicating with the apertures, the first aperture adapted to convey a low pressure into the internal region,
b. a shaft positioned in the second aperture and extending at least partially into the internal region, and
c. at least one seal made of a fluorocarbon polymer material and being disposed around the shaft within the internal region, the seal having a central relatively rigid support section to prevent the seal from collapsing in response to the pressure, a first deformable rib extending at an angle from a low pressure side of the seal so as to contact the surface of the shaft and a second deformable rib extending at an angle from the low pressure side so as to contact the wall of the internal region, the ribs deforming in response to pressure thereby increasing the surface area of contact with the shaft and the internal region.

3,951,479

THRUST BEARING FOR OPEN-END SPINNING ROTORS

Fritz Stahlecker, Bad Uberkingen, Germany, assignor to Hans Stahlecker and Fritz Stahlecker, both of, Germany

Filed Apr. 3, 1974, Ser. No. 457,500

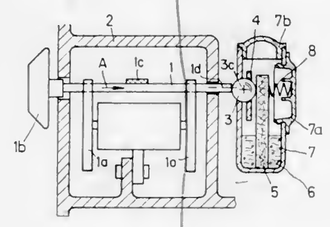
Claims priority, application Germany, Apr. 6, 1973, 2317306

Int. Cl.² F16C 1/24, 19/12

U.S. Cl. 308—172 11 Claims

1. Bearing means for a machine having a spinning rotor with a shaft, comprising a thrust bearing which includes a movable spherical supporting surface in contact with the shaft, a lubricant reservoir, impregnable material in communication with

lubricant in the reservoir and with the spherical supporting surface, and oscillating holder means for holding said spherical supporting surface such that said supporting surface is caused to vibrate by virtue of machine oscillations.

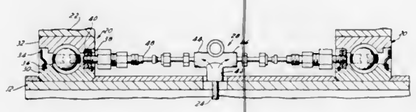


3,951,480

BEARING LUBRICATION SYSTEM FOR BOWED ROLLS

Charles B. Nicholson, Glens Falls, N.Y., assignor to Albany International Corporation, Menands, N.Y.

Filed Nov. 7, 1973, Ser. No. 413,445
Int. Cl.² F16C *33/76*
U.S. Cl. 308—187 **4 Claims**



1. In a bowed roll of the type having an elongated shaft; a plurality of spools disposed about said shaft for rotation; and a plurality of ball bearings disposed along said shaft, each of said bearings having an inner race in contact with said shaft, an outer race in contact with one of said spools and a pair of side walls extending between said races and cooperating with said races in defining a ball chamber said side walls being affixed to one of said races and slidable with respect to the other of said races; the improvement comprising a lubrication system for providing lubricant to the interior of said ball chamber including a lubricant reservoir, a lubrication fitting extending into said chamber through one of said sidewalls of each of said bearings and a lubricant line extending between said reservoir and said fitting along said shaft whereby lubricant may be injected directly into said chamber.

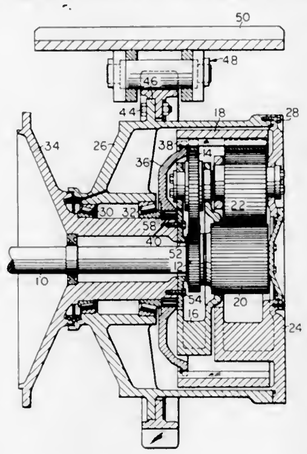
3,951,481

PLANETARY REACTION HUB AND BEARING RETAINER

Arthur J. Ritter, Jr., Metamora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 18, 1975, Ser. No. 569,382
Int. Cl.² F16C *1/24, 33/78*
U.S. Cl. 308—187 **9 Claims**

1. In a mechanism including a power shaft transmitting power to a gear set, said gear set comprising a sun gear fixed to said shaft, a first hub on said shaft and a housing rotatably mounted on said first hub by a plurality of bearings, a reaction hub having its radially innermost portion connected to said first hub by spline means, said reaction hub being intermediate said bearings and a ring mounted on said first hub, said reaction hub being spaced from said bearings and said ring, and means associated with said reaction hub for pre-loading said bearings.

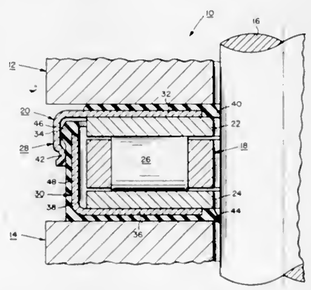


3,951,482

UNITIZED THRUST BEARING AND SEAL ASSEMBLY

Thomas J. Blaydon, deceased, late of Lincolnton, N.C. (by Bonnie J. Blaydon, administratrix), and Edward W. Linser, Gastonia, N.C., assignors to Garlock Inc., Palmyra, N.Y.

Filed Feb. 3, 1975, Ser. No. 546,715
Int. Cl.² F16C *33/72*
U.S. Cl. 308—187.1 **20 Claims**



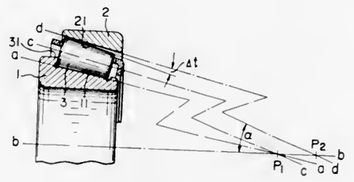
1. A seal assembly for a thrust bearing comprising:
a. an annular outer seal element including a radial portion and an outer cylindrical portion connected to the radial portion at the radially outer end thereof;
b. an annular inner seal element including a radial portion and an inner cylindrical portion connected to the radial portion at the radially outer end thereof;
c. said cylindrical portions extending toward each other with the inner cylindrical portion being located radially inside of the outer cylindrical portion and with said radial portions being spaced apart to provide a thrust bearing chamber therebetween;
d. said outer cylindrical portion being metal and having a radially inwardly extending locking member at the distal end thereof, extending toward said inner cylindrical portion, and
e. said inner cylindrical portion including a metal part and having a radially outwardly extending O.D. sealing lip at the distal end thereof bonded to said metal part and extending into contact with said outer cylindrical portion, said O.D. sealing lip and said locking member having an interference fit therebetween, whereby they have to snap past one another when said elements are connected in interlocking relationship.

3,951,483

CONICAL ROLLER BEARING

Takeshi Nakamura, Samukawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 318,423, Dec. 26, 1972, abandoned. This application June 3, 1974, Ser. No. 475,889
Int. Cl.² F16C *13/02, 19/00*
U.S. Cl. 308—214 **7 Claims**



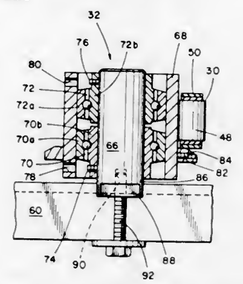
1. A conical roller bearing comprising:
a. an inner race having a tapered raceway with a substantially rectilinear portion;
b. an outer race having a tapered raceway with a substantially rectilinear portion; and
c. a plurality of conical rollers each having a substantially rectilinear portion partly in the rolling surface thereof and having an end crowning applied thereto, each of said conical rollers being disposed between said tapered raceways of said outer and inner races so that a portion of said rolling surface thereof is engaged with said tapered raceways,
said rectilinear portions of said rollers and said rectilinear portion of at least one of said tapered raceways being engaged with each other with a given angle therebetween when no radial load is imparted to the bearing and approaching rectilinear engagement upon bearing loading.

3,951,484

ROLLER ASSEMBLY IN A TURN CHAIN ASSEMBLY

John H. Bowman, Jr., Oaklawn, Ill., assignor to Albert G. Nicholson and Robert W. Nicholson, both of Worth, Ill.

Filed Apr. 14, 1975, Ser. No. 567,783
Int. Cl.² F16C *35/08*
U.S. Cl. 308—228 **10 Claims**



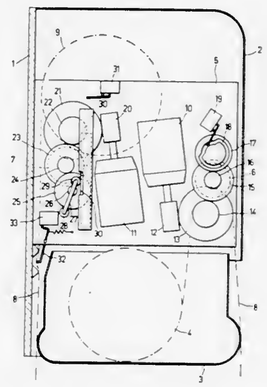
1. In a turn chain assembly which is utilized in guiding and bearing a tow chain about a turn in a towveyor system and which includes a bearing guide plate having a front bearing surface, a return guide plate situated behind said bearing guide plate and having a front surface facing said bearing guide plate, a continuous turn chain comprising a plurality of bearing rollers rotatably journaled between links of said turn chain, said turn chain having one portion thereof situated between the two chain and said front surface of said bearing guide plate and another portion thereof trained on said front surface of said return guide plate, and guide means at each end of the turn for guiding said turn chain between said bearing guide plate and said return guide plate, the improvement residing in said guide means comprising at least one roller assembly including a non-rotatable, shaft, a larger diameter, rotatable hollow cylinder coaxial with said shaft, and bearing means between said shaft and said cylinder, said turn chain being trained around the outer surface of said cylinder.

3,951,485

DISPENSER FOR TEXTILE HAND TOWELLING WEB

Conrad W. Schnyder, Triesenberg, Liechtenstein, and Gunter Kullik, Beerfelder, Falken-Gesass, Germany, assignors to Conrad W. Schnyder, Triesenberg, Liechtenstein

Filed Jan. 31, 1975, Ser. No. 545,783
Claims priority, application Switzerland, Feb. 6, 1974, 1606/74
Int. Cl.² B65H *19/00*
U.S. Cl. 312—38 **9 Claims**



1. A dispenser for textile hand towelling web comprising:
a housing for accommodating a supply of fresh hand towelling,
a rotatable dispensing roller for dispensing towelling from said supply out of said housing,
means for blocking said dispensing roller each time a predetermined length of fresh hand towelling has been dispensed,
an arrangement operable by an electric motor for drawing used hand towelling into said housing,
and a measuring and control arrangement including means for each time preventing release of said dispensing roller at least until a predetermined minimum length of used hand towelling has been drawn in, said minimum length being equal to at least about (8/9) of the length of towelling dispensed in each operation.

3,951,486

ORGANIZER FILE AND BRIEFCASE-DESK COMBINATION FOR VEHICLES

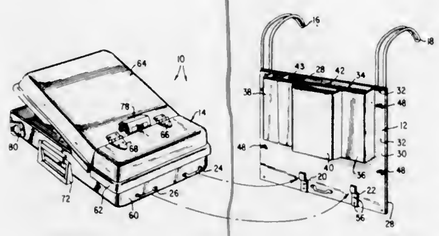
Charles W. Tracy, Tallahassee, Fla., assignor to Apollo Plastics, Inc., Tallahassee, Fla.

Filed June 3, 1974, Ser. No. 476,004
Int. Cl.² B60R *7/04*
U.S. Cl. 312—235 R **16 Claims**

1. A storage unit, comprising:
an organizer file having a plurality of pockets;

means for securing said file in a substantially vertical position;

a briefcase-desk unit including a container base, a hinged, openable and closable cover, and latch means for holding said cover closed; and



means for detachably securing said briefcase-desk unit to the face of said organizer file whereby said briefcase-desk unit serves as a desk when secured to said organizer file and as a briefcase when detached therefrom.

3,951,487

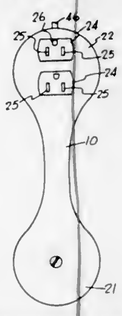
ELECTRICAL RECEPTACLE PLUG AND SOCKET

Gerald A. Waldbrook, Capreol, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Dec. 16, 1974, Ser. No. 532,951

Int. Cl.² H01R *39/00*

U.S. Cl. 339—8 R **2 Claims**



1. A device, attachable to an electrical wall-mounted socket which contains a female socket for electrically connecting the plug of a portable electrical line cord to the electrical supply at a distance from the wall-mounted socket, comprising

a member fitted at one end with a female electrical socket and at the other end with a male electrical plug, with the contacts of the socket individually joined electrically to corresponding contacts of the plug, with the contact pins of the plug mounted to a disc which is rotatably fitted in an end of the device, in which latching means are joined to an external push button to maintain the disc in non-rotatable engagement with the device.

3,951,488

PLUG RECEPTACLE FOR A CONTACT RAIL ADAPTOR

Kurt Hesse, Waterfohr 38, and Karl Wehling, Liegnitzer Str. 9, both of 492 Lemgo, Germany

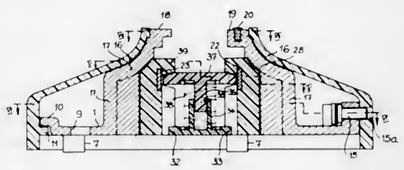
Filed Apr. 22, 1974, Ser. No. 462,835

Claims priority, application Germany, Apr. 26, 1973, 2320981

Int. Cl.² H01R *3/06, 13/44, 13/54*

U.S. Cl. 339—14 R **14 Claims**

1. An electrical power distribution system comprising, in combination, an individual plug receptacle adapted to be mounted on a wall or the like and constructed to receive only a single adaptor and an adaptor for insertion into said receptacle, said adaptor comprising an elongated body having a pair of opposed radially extending supporting clips for selective insertion into spaced support channels in the receptacle and also having a pair of opposed radially extending contacts spaced from one another and from the supporting clips for engaging spaced electrical conductors in the receptacle when the adaptor supporting clips are inserted into the support channels, the adaptor being insertable longitudinally into said receptacle in a first position wherein said radially extending clips and contacts are initially radially spaced form said support channels and conductors respectively whereafter the adaptor may be rotated about its longitudinal axis to turn said radially extending clips and contacts into engagement with said receptacle channels and conductors respectively, said receptacle comrising a base plate having means for mounting said base plate in substantially flush engagement with a wall or the like, a pair of arms attached to said base plate and extending in spaced, facing relation to one another outwardly of said base plate in directions transverse to the plane of said base plate, a central insulator block attached to said base plate between said arms and extending from said base plate away



from said mounting means toward the spaced free ends of said arms remote from said plate, the free end of said insulator block remote from said plate terminating at a position located between said plate and said free ends of said arms and cooperating with the portions of said arms outward of said free end of said block to define opposed interior recesses between the free end of said insulator block and the free ends of said arms, said interior recesses being respectively complementary in shape and dimension to the shapes and dimensions of the opposed supporting clips of the adaptor and constituting said spaced support channels, said central insulator block defining an interior central opening in alignment with the space between the free ends of said arms for receiving a portion of the adaptor when the adaptor is inserted longitudinally between the spaced free ends of said arms and into said opening, and a pair of electrical conductors supported within said insulator block on opposite sides of said central opening, said conductors being accessible through said central opening for engagement respectively by the opposed radially extending contacts of the adaptor when the inserted adaptor is thereafter rotated to turn the adaptor supporting clips into said recesses.

3,951,489

ELECTRICAL RECEPTACLE

Menashe Bromberg, West Orange, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

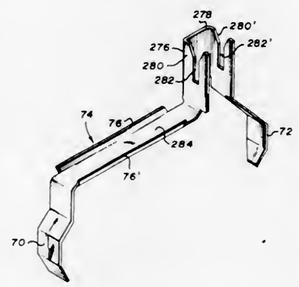
Division of Ser. No. 512,414, Oct. 7, 1974, abandoned. This application Apr. 14, 1975, Ser. No. 567,688

Int. Cl.² H01R *3/06*

U.S. Cl. 339—14 R **3 Claims**

1. Contact means for engaging the ground conductor of an electrical multiwire cable located within an electrical receptacle, comprising: a single strip of highly conductive thin metallic material having a U-shaped conductor receiving portion having a bight portion and leg portions, said bight portion and said leg portions of said U-shaped portion each being substantially planar and extending parallel to a first axis, said leg portions lying in respective planes parallel to one another, said bight portion lying in a plane normal to said leg portion planes and communicating with each of said leg portions along a line parallel to said first axis, an arm portion extending outwardly

from the lower edge of one of said leg portions in a direction generally perpendicular to the plane of said one leg portion, said arm portion terminating in a first finger portion folded out of the plane of said arm portion and communicating therewith along a line generally parallel to the transverse axis of said arm portion, said first finger portion comprising a series of contiguous planar elements including a first, a second, a third, and a fourth planar element, said first planar element extending directly from said arm portion and oriented generally perpendicular thereto, said second planar element extending outwardly from said first planar element at an oblique angle thereto, said third planar element extending from said second planar element at an oblique angle thereto and lying in a plane substantially parallel to the plane of said first planar element, said fourth planar element extending inwardly from said third planar element at an oblique angle thereto so that said third



planar element describes the outermost extent of said first finger portion and is arranged to contact the ground pin of an electrical plug inserted within a given opening in said electrical receptacle, a second finger portion extending outwardly from the lower edge of the other of said leg portions and comprising a series of contiguous planar elements including a fifth, a sixth, and a seventh planar element, said fifth planar element extending directly outwardly from said other of said leg portions at an oblique angle thereto, said sixth planar element extending from said fifth planar element at an oblique angle thereto and lying in a plane substantially parallel to the planes of said leg portions, said seventh planar element extending inwardly from said sixth planar element at an oblique angle thereto so that said sixth planar element describes the outermost extent of said second finger portion and is arranged to contact the ground pin of an electrical plug inserted within a further given opening in said electrical receptacle.

3,951,490

CABLE SYSTEM DISTRIBUTION SUBSTATION WITH NOVEL CENTER CONDUCTOR SEIZURE APPARATUS

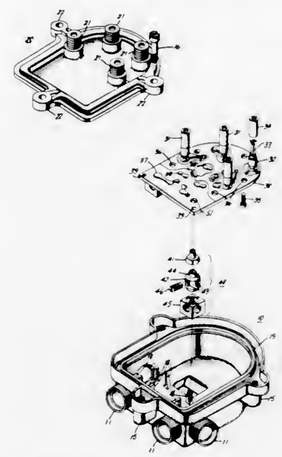
Alan E. Devendorf, Phoenix, N.Y., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Jan. 24, 1974, Ser. No. 436,251

Int. Cl.² H05K *1/08;* **H01R** *13/46, 13/60*

U.S. Cl. 339—17 C **10 Claims**

1. A center conductor seizure apparatus for coupling a cable to a distribution box comprising: a terminal, said terminal fabricated of a conducting material; a receptacle, said receptacle fabricated of an insulating material, said receptacle shaped to contain said terminal; a plurality of projections from an electrically conductive housing of said distribution box, said plurality of projections arranged to secure said receptacle whereby any tension exerted by the cable is transmitted to the housing through the plurality of projections; and means for coupling a center conductor of said cable to said terminal; said coupling means having a passage in said terminal; a passage in said receptacle, said receptacle passage and said terminal passage located to receive said center conductor; means for securing said center conductor in said terminal passage; and connecting means for detachably connecting the terminal to a printed circuit board, the connecting means permitting



separation of the terminal and printed circuit board without use of any tools.

3,951,491

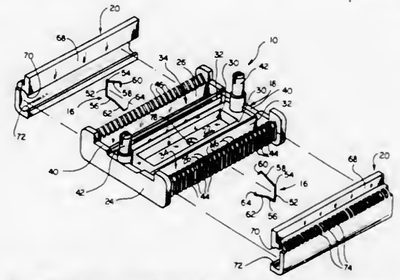
ELECTRICAL CONNECTOR

Eugene J. Mysiak, Cicero, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Dec. 19, 1974, Ser. No. 534,429

Int. Cl.² H01R *13/48*

U.S. Cl. 339—17 CF **2 Claims**



1. An electrical connector for electrically connecting an electrical component having a plurality of conductive interfaces to a plurality of points on an electrical circuit member, including means to attach said connector to said circuit member, said connector comprising:

a plurality of generally U-shaped, resilient, stressable terminals, each having a bight portion and two free ends defining a component contacting end which is adapted to engage one of said interfaces and a circuit contacting end which is adapted to engage one of said points of said circuit member; and

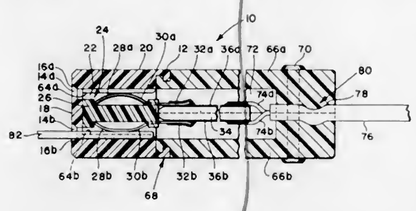
an insulated housing for mounting said terminals, said housing including a base member having means at the top thereof adapted to position said electrical component, a bottom surface adapted to be adjacent said circuit member and two opposing lateral sides, each lateral side having a plurality of terminal receiving recesses for receiving and positioning the bight portion of each terminal against the side so that the component contacting end overlies the top surface and the circuit contacting end underlies the bottom surface, said housing further including two generally U-shaped cross sectioned cover members each

of which is adapted to be snap-fit over each side so that terminals mounted in the recesses are trapped between said cover and said base member and said terminal ends extend outside of said cover member, said cover member engaging said terminal, whereby said terminal is stressed outwardly in a manner to ensure good contact.

3,951,492
TRAPPED BOW CONTACT AND CONNECTOR USING THE SAME

Kenneth W. Braund, Willoughby, Ohio, assignor to A P Products Incorporated, Painesville, Ohio

Filed Nov. 13, 1974, Ser. No. 523,221
Int. Cl.² H01R *13/58*
U.S. Cl. 339—17 LC **15 Claims**



1. An electrical connector for coupling in stress-free relation to a printed circuit board or the like to provide for electrical connection between the latter and electrically conductive means inserted into the connector, comprising:

an electrically non-conductive housing having an interior cavity and front and rear faces, opening means in the front face of the housing for access to said cavity by such inserted electrically conductive means, plural raised land portion means extending in said cavity parallel to the direction of entry through said opening means to define at least one channel in said cavity for guiding such electrically conductive means upon insertion thereof;

electrical contact means for electrically connecting such printed circuit board or the like and such inserted electrically conductive means, each electrical contact means including deformable bow portion means for abutting connection to such inserted electrically conductive means, and having opposed ends, and tail portion means extending beyond one of said ends for coupling to such printed circuit board;

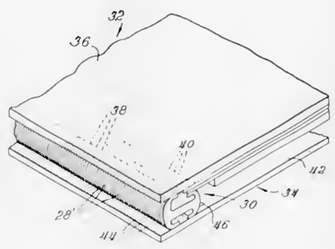
an electrically non-conductive interstitial support means positioned in said cavity for supporting said electrical contact means, groove means in said interstitial support means opening toward said at least one channel for retaining said opposed ends of said bow portion means in relatively fixed position therein, and passageway means for passing said tail portion means from said groove, relatively free from stresses imposed on said bow portion means upon deformation of the latter by such inserted electrically conductive means, toward the rear of said housing for coupling to such printed circuit board or the like.

3,951,493
FLEXIBLE ELECTRICAL CONNECTOR AND METHOD OF MAKING SAME

Charles A. Kozel, McHenry; Nathan A. Baraglia, Northlake, and Edgar Vellner, Barrington, all of Ill., assignors to Methode Manufacturing Corporation, Rolling Meadows, Ill.

Filed Aug. 14, 1974, Ser. No. 497,318
Int. Cl.² H01R *13/24*
U.S. Cl. 339—17 M **4 Claims**

1. A flexible electrical connector comprising; an elongated tubular-like core member including a web portion, a first pair of resilient non-conductive arm segments along one side of said web portion extending away from each other, and a second pair of resilient non-conductive arm segments along the other side of said web portion extending away from each other and with the adjacent edges of said first and second pairs of

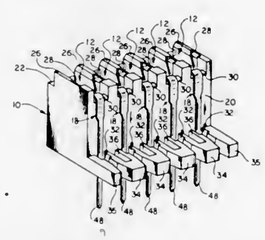


arm segments being spaced apart; a first set of angularly displaced parallel longitudinally spaced apart conductive bands secured to the outer surface of said first pair of arm segments; and a second set of angularly displaced parallel longitudinally spaced apart conductive bands secured to the outer surface of said second pair of arm segments.

3,951,494
ELECTRICAL CONNECTOR

Edward L. Romine, Darien, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Nov. 14, 1974, Ser. No. 523,584
Int. Cl.² H05K *1/02*
U.S. Cl. 339—17 L **6 Claims**



1. An electrical connector mountable on top of a printed circuit board and connectable to a conductive element located below said connector, said electrical connector comprising:

an insulated housing having at least one terminal receiving cavity having a top opening and a bottom opening through which the conductive element is received in the cavity, said housing including a side wall having a terminal tail receiving area defined between two spaced apart flexible tabs, said area having an area entrance space of smaller width than said area through which a terminal tail is receivable into said area; and

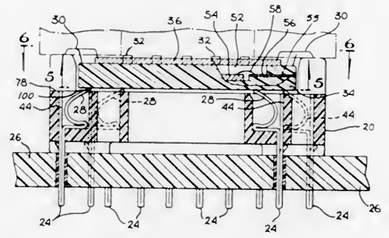
a terminal mounted in said cavity, said terminal including an elongated strip of metal formed to have a pre-loaded biased portion adapted to be received in said cavity to engage said conductive element and a tail portion extending out of the cavity through the top opening and bent over and down along the side wall so that the end points downwardly for connection to the printed circuit board, said tail portion being received in said receiving area and having a width greater than said area entrance so that said tail portion is restrained from side to side movement or movement perpendicularly outwardly from the side wall

when received in said area prior to mounting on said printed circuit board.

3,951,495
LEADLESS PACKAGE RECEPTACLE

Charles Joseph Donaher, Los Altos Hills, and James C. K. Lee, Santa Clara, both of Calif., assignors to Advanced Memory Systems, Inc., Sunnyvale, Calif.

Filed Sept. 23, 1974, Ser. No. 508,464
Int. Cl.² H05K *5/02*
U.S. Cl. 339—17 CF **16 Claims**



1. A chip carrier and receptacle comprised of:

a nonconductive receptacle body having means for receiving a chip carrier assembly;

a plurality of spring contact members in said body, each of said contact members having a portion thereof forming a lead extending downward from said body, each of said contact members further having an integral cantilevered extension projecting into a central region of a said body for contacting and yieldably engaging a conductive surface on the bottom of said chip carrier assembly, said cantilevered extension having an end member, said end member making an acute angle with respect to said conductive surface on the said chip carrier assembly such that when said chip carrier assembly is disposed therein, said end member forcibly slides across said conductive surface; and

a chip carrier assembly having a plurality of conductive areas on its bottom surface; and

means for releasably retaining said chip carrier assembly in said receptacle, whereby each said spring contact member is in forcible contact with a respective conductive surface.

3,951,496
MULTIPLE CONNECTION ELECTRICAL CONNECTOR DEVICE

Jean LeRouzic, 11, Rue de Bourgogne, 22300 Lannion, France

Filed Apr. 7, 1975, Ser. No. 565,620
Claims priority, application France, May 3, 1974, 74.15360
Int. Cl.² H01R *31/08*
U.S. Cl. 339—19 **1 Claim**

1. An electrical multiple connecting unit comprising:

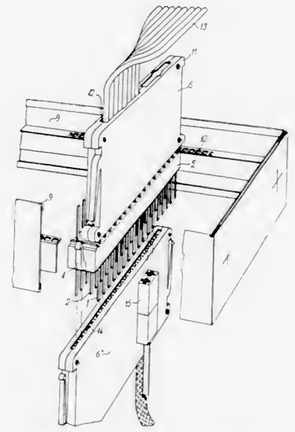
an elongated solid insulating member along a central horizontal axis of said unit in which parts of the said unit are mounted;

a plurality of H-shaped electrical conductor connecting elements in a row embedded in said solid insulating member with the transverse arm of the H-shaped element being transverse to said insulating member;

each of said H-shaped elements having four equipotential connections arms and forming two rows of connecting pins which are disposed parallel to one another, one behind the other, and along said central longitudinal axis;

said connecting unit also comprising a plurality of further straight connecting elements arranged in a further row and each spaced within the arms of the H-shaped elements so that each row of said further elements along the longitudinal axis is on an opposite side of said axis;

the central parts of said straight connecting elements being embedded in said solid insulating member so as to form one row of connecting pins disposed on each side of said



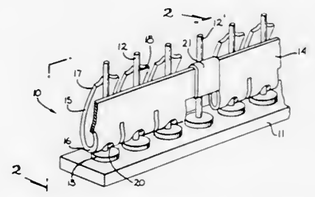
solid insulating member located between the arms of the H-shaped elements, said straight elements being electrically insulated from the H-shaped elements; and,

at least one female connector engageable in a number of said parallel pins disposed in a single plane parallel to said longitudinal axis of the connecting unit.

3,951,497
ELECTRICAL BUSS CONNECTOR

Alfiero F. Balzano, Fullerton, and David W. Ohlrich, Redondo Beach, both of Calif., assignors to Logic Dynamics, Inc., Gardena, Calif.

Filed Jan. 16, 1975, Ser. No. 541,499
Int. Cl.² H01R *31/08*
U.S. Cl. 339—19 **7 Claims**



1. In combination with an electrical terminal board having a plurality of terminal posts extending therefrom in a row in fixed spaced apart relationship and said posts being electrically insulated with respect to each other, an electrical buss conductor comprising the improvement of:

an elongated electrically conducting strip;

a plurality of leaf elements connected to said strip along a lower edge thereof in downwardly depending relationship and having an arcuate portion interconnecting body portion to said lower edge of said strip;

each of said arcuate portions having an opening defined by a sharp edged corner being capable of permitting insertion of one of said posts therethrough and locating said post between said strip and said body portion in electrically conducting relationship;

each of said body portions having a shaped indentation at their terminating ends for receiving and semi-wrapping about its associated post and wherein

the central longitudinal axis of said row of said posts is off-set from the central axis of said arcuate opening whereby a portion of said sharp corner cuts into said post to provide for both electrical and mechanical connection therebetween;

said strip includes a recess provided along its length; and

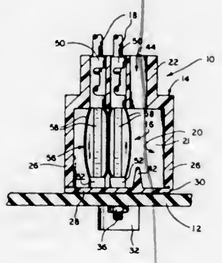
a copper material of higher electrical conductivity than the material of said strip carried in said recess.

3,951,498

ELECTRICAL CONNECTOR

Leonard H. Michaels, Warrenville, and Edgar W. Cooney, Markham, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jan. 10, 1975, Ser. No. 540,092
Int. Cl.² H01R *31/08*
U.S. Cl. 339—19 **13 Claims**



1. An electrical connector comprising:

an insulated housing including a hollow chamber portion and a plurality of entrance positions allowing communication into said chamber portion; and

a plurality of like terminals insertable in said housing through said entrance positions each including a crimp portion of a smaller sized cross section than the entrance positions receivable in said entrance position when the terminal is inserted into said housing, each terminal further including a resilient barrel contact portion of a larger sized cross section than the remainder of the terminal and being changeable between a normally expanded configuration and any one of a plurality of contracted configurations, the cross section of said terminal while in an expanded configuration being greater in size than said entrance positions, said contact portion of each terminal being contractable to squeeze through an entrance portion into said chamber portion whereupon said contact portion assumes its normal expanded configuration, said entrance positions being spaced a given distance so that the contact portions of any two terminals inserted into the chamber portion through adjacent entrance positions resiliently press against each other.

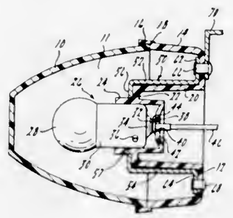
3,951,499

ELECTRIC LAMP MOUNTING ASSEMBLY

Kenneth C. Ploeger, Blue Springs, Mo., assignor to Rupert Manufacturing Company, Blue Springs, Mo.

Filed Aug. 12, 1974, Ser. No. 496,917
Int. Cl.² H01R *13/48*
U.S. Cl. 339—59 L **7 Claims**

1. An electric lamp assembly for mounting an electrical bulb having a globe, a cylindrical base, a base terminal insulated from said base and a pair of studs extending radially from said base, said assembly including: an insulating housing formed from semi-rigid material and having a base portion and a sleeve portion interconnected with said base portion, said sleeve adapted to receive telescopically said cylindrical base and completely surround a portion of said base in closely contiguous relationship thereto, said sleeve having a pair of longitudinal slots formed therein, each of said slots adapted to receive one of said studs, a first electrical conductor positioned in one end of said sleeve by resilient means integral with said housing, said electrical conductor adapted to be urged into contact with said base terminal by said resilient



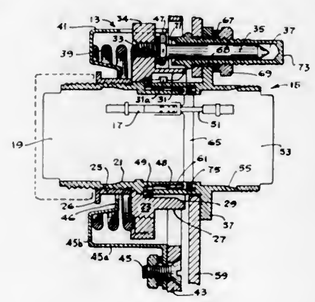
means, said first conductor adapted to be interconnected with a source of electrical energy, a second electrical conductor at least partially surrounding said sleeve and including a pair of projections, each of said projections extending into one of said slots and engaging only one of said studs, and electrically conductive fastener means securing said second conductor to said base portion and adapted to interconnect said second conductor to an electrically grounded element.

3,951,500

CIRCULAR RACK AND PANEL CONNECTOR

Norman Richard Anderson, Cicero, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 477,663, June 10, 1974, abandoned, which is a continuation of Ser. No. 328,866, Feb. 1, 1973, abandoned. This application Mar. 17, 1975, Ser. No. 558,833
Int. Cl.² H01R *13/62*
U.S. Cl. 339—64 M **7 Claims**



1. An electrical connector assembly for use with a pair of spaced support elements each having an opening and adapted for relative movement toward each other for engaging each contact of a plurality of contacts carried by a plug member having a generally annular end projecting beyond one end of said contacts with a respective contact of a plurality of contacts carried by a receptacle member with said receptacle member having a generally annular end projecting beyond one end of the contacts carried by said receptacle member for telescopingly engaging said plug member annular end in response to the relative movement of said support elements toward each other, comprising:

a housing having an annular wall encircling one of said members with an axially extending slot in said annular

wall and a transverse back wall extending radially inwardly of said annular wall,

means for fixing said housing to one of said support elements with said back wall spaced from said one support element,

a flange fixed on the one of said members and extending radially outwardly of the annular end of said one member and spaced intermediate the annular end of said one member and the other end of said one member, said flange located between said one support element and said back wall with the annular end of said one member aligned with the opening in said one support element,

spring means engaged with said back wall and with said flange for biasing said one member axially in the direction of the opening in said one support element,

means integrally formed on said flange and engaged in said slot in said annular wall for preventing relative rotation between said one member and said housing in response to the telescoping engagement of said plug and receptacle member and the axial movement of said plug and receptacle members against the bias of said spring means,

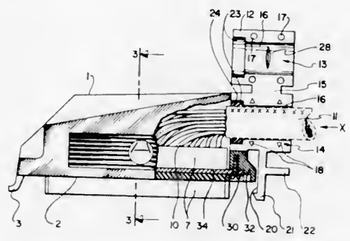
and a plurality of guide pins secured to said flange on said one member with said guide pins spaced radially intermediate the annular wall of said housing and the cylindrical end of said one member and projecting in one direction beyond the cylindrical end of said one member to which said guide pins are secured.

3,951,501

HOUSING FOR ELECTRICAL CONNECTOR

Gerhard Bauerle, Willsbach, and Oswald Hubner, Neuenstadt, both of Germany, assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Sept. 10, 1973, Ser. No. 396,018
Claims priority, application Germany, Sept. 13, 1972, 2244910
Int. Cl.² H01R *13/54*
U.S. Cl. 339—91 R **9 Claims**



1. A housing for mounting a first electrical connector carrying a plurality of contacts connected to respective conductors of a cable which has a sealing ring thereabout and to engage respective contacts of the second electrical connector mounted in a second connector housing which has an opening therein at one end and a shoulder at the other end, said housing for said first electrical connector comprising:

an elongate molded plastic shell of U-shaped cross section including walls defining an elongate cavity for receiving the first electrical connector;

mounting means for securing said first electrical connector to said shell;

attachment means integrally molded with said shell for attaching said shell to the second housing of the second electrical connector, including a nose hook at one end of said shell for insertion into the opening in the second housing to form a pivot for said first electrical connector, and a flexible latch arm at the opposite end of said shell flexing to releasably engage the shoulder of the second housing; and

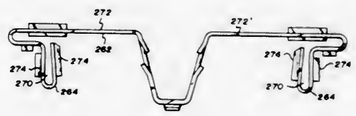
cable clamp means integrally molded with said shell for securing the cable to said shell, said cable clamp means comprising two mating halves and a thin web of molded material joining said halves, one of said halves firmly fixed to said shell and the other half hinged to said one half by said thin web, each of said halves including a semi-circular recess therein for receiving corresponding portions of the sealing ring disposed about the cable, and means for securing said halves about the cable.

3,951,502

ELECTRICAL RECEPTACLE

Menashe Bromberg, West Orange, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Division of Ser. No. 512,414, Oct. 7, 1974, abandoned. This application Apr. 14, 1975, Ser. No. 567,515
Int. Cl.² H01R *9/08*
U.S. Cl. 339—99 R **7 Claims**



1. Contact means for an electrical receptacle, comprising: a single strip of highly conductive thin metallic material having a generally U-shaped conductor receiving central portion having a bight portion and planar leg portions, and planar arm portions each contiguous with and extending in an opposite direction from the free end of a respective leg portion, said arm portions lying along a common plane which intersects the respective planes of said leg portions along a line generally parallel to the longitudinal axis of said bight portion, the plane of said arm portions and the planes of said leg portions all being similarly oriented and mutually perpendicular to a further plane intersecting the planes of said arm portions and said leg portions, said arm portions each terminating in a looped portion of flattened configuration and lying in a plane generally parallel to the plane of said arm portions to provide a tab receiving slot arranged to resiliently engage a terminating end of an electrical plug, said leg portions each having a first slot extending from one edge of said leg portion a predetermined distance in direction generally parallel to the longitudinal axis of said bight portion, each of said first slots communicating with a second slot extending selectively outwardly from either side of the base of each of said first slots in a direction generally perpendicular to the longitudinal axis of each of said first slots to provide an independently deflectable finger portion on each side of each of said first slots, said finger portions being offset from the plane of its associated leg portion in opposite directions, said first slots lying along a common axis oriented generally parallel to the plane of said arm portions, the opposing edges of each of said first slots being arranged to sever the insulation and contact the conductive portion of an insulated electrical conductor forcibly urged thereinto.

3,951,503

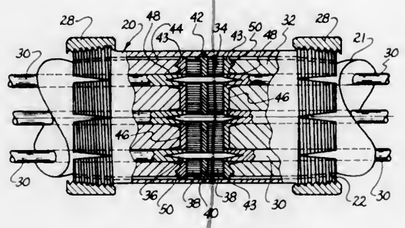
CABLE SPLICE ASSEMBLY FOR MULTICONDUCTOR CABLES

Robert M. Caulkins, 2664 Glenbar Court, Columbus, Ohio 43219

Filed Nov. 4, 1974, Ser. No. 520,633
Int. Cl.² H01R *7/04*
U.S. Cl. 339—100 **6 Claims**

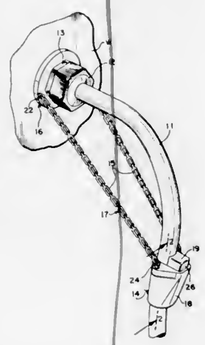
1. In a cable splice assembly for multiconductor cables, the combination of sleeve means adapted to slideably receive the portions of the cable being joined, said sleeve means provided with resilient end portions, each end portion having an outer, threaded surface; collar means threadably engaging a respective one of said resilient sleeve end portions for frictionally

securing each sleeve end portion to a respective portion of cable on each side of the area being spliced; and a non-conducting centerplate slideably mounted in said sleeve means and including a plurality of electrically conducting pins longi-



tudinally extending through opposing outer faces of said centerplate, a respective one of said pins being aligned to engage in electrically conducting relationship a respective one of each of the conductors in said cable being spliced.

3,951,504
ELECTRICAL CABLE STRESS TRANSFER DEVICE
John Clark, Willow Spring, Ill., assignor to I-T-E Imperial Corporation, East Farmingdale
Filed Apr. 29, 1975, Ser. No. 572,717
Int. Cl.² H01R *13/58*
U.S. Cl. 339—103 R **9 Claims**



1. A device for transferring the pull on a cable to an anchor point comprising a cable clamp including an elongated collar member with a longitudinal bore having forwardly converging opposing first and second side faces and a wedge member longitudinally slidably registering with said bore and having opposite forwardly converging first and second wedge faces, said first wedge face engaging said first side face and said second wedge face confronting and laterally spaced from said second side face, an elongated connector member joined at its distal end to said collar member and means for securing the proximal end of said connector member to said anchor point.

3,951,505
STRAIN RELIEF SYSTEM FOR ELECTRICAL CONNECTORS
Robert A. Williams, 55 Bounty Road East, Fort Worth, Tex.
Filed May 1, 1975, Ser. No. 573,744
Int. Cl.² H01R *13/58*
U.S. Cl. 339—103 M **4 Claims**

4. A strain relief system for an electrical connector, said connector comprising a cylindrical housing means having a front end and a rear end with threads formed around its outer surface near its rear end, a flexible grommet located in said housing with its rear end projecting rearward beyond the rear end of said housing, a plurality of contact members supported by said grommet at said front end of said connector, and a plurality of electrical conductors extending through the rear end of said grommet, each conductor being connected to one of said contact members, said strain relief system comprising:

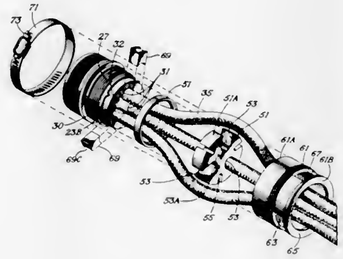
a ferrule adapted to be fitted around the rear end of said grommet,

a circular wafer having a diameter about equal to the outside diameter of the rear end of said housing and a plurality of angularly spaced conductor receiving slots formed in its edge for receiving said conductors to allow said wafer to be located next to said ferrule with each of said conductors located in one of said slots,

a cylindrical shell having an inside diameter slightly greater than the diameter of said wafer,

said shell having a front end and a rear end with threads formed on its inside surface at its front end and an inward extending annular edge at its rear end having an inside diameter less than the diameter of said wafer,

said shell being adapted to be fitted around said wafer with its front end threaded to the rear end of said housing and the inside of its annular edge in engagement with said wafer to hold said wafer in place next to said ferrule with each of said conductors located in one of said slots,



said shell having a plurality of openings formed through its wall at its rear end at angularly spaced positions such that each of said openings will be aligned with one of said slots when said shell is fitted around said wafer and threaded to said housing,

a plurality of inserts equal in number to the number of said conductor receiving slots formed in said wafer,

each insert being adapted to be inserted through one of said openings of said shell and into the slot of said wafer with which the opening is aligned when said shell is fitted around said wafer and threaded to said housing,

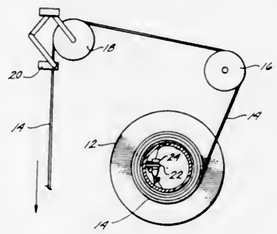
each insert has a concave inner edge formed in a first plane adapted to fit around and engage a portion of the conductor in a slot into which the insert is inserted,

each insert, when inserted into one of said slots, with its inner edge in engagement with the conductor in the slot, having its outer end extending through the aligned opening and projecting outward beyond the outer surface of said shell,

each insert has an arcuate outer edge formed in said first plane and a slot formed in said outer edge in a plane perpendicular to said first plane,

a removable clamping band means adapted to surround said shell and to fit in the slots formed in the arcuate outer edges of said inserts for clamping said inserts in place in said slots against said conductors.

3,951,506
FAIL-SAFE CONNECTOR
Frederick L. Bennett, Granada Hills; Robert M. Bridges, Northridge, and Harold A. Gray, Burbank, all of Calif., assignors to The Bendix Corporation, North Hollywood, Calif.
Filed Apr. 24, 1975, Ser. No. 571,146
Int. Cl.² H01R *13/58*
U.S. Cl. 339—104 **7 Claims**



1. In a cable termination comprising an electrical connector having terminals for a large number of wires, a cable including a large number of electrical conducting wires connected to said terminals, and an insulating jacket surrounding said wires, characterized in that said electrical conducting wires are of graduated lengths such that the shortest of said conducting wires is connected essentially taut to said connector and others of said wires have varying amounts of slack such that no more than a limited number of said wires are of substantially equal length, a soft flexible material having a low shear strength encapsulating said wires, and a covering sheath of high strength flexible material, such that when said cable is subjected to a high force tending to separate said cable from said connector, said force is applied to said shortest wire and then to the wires of successively greater length as the shorter wires fall until the cable is entirely separated from said connector.

6. A method of connecting a multiconductor electrical cable having an external insulating jacket to a connector having connecting lugs to insure that said cable will separate cleanly from said connector with the application of a limited force to said cable comprising the steps of:

a. trimming the individual conductors of said cable to varying lengths,

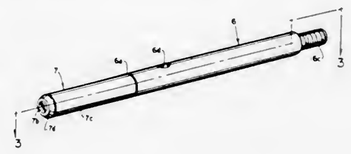
b. fastening said conductors to said connecting lugs so that one such conductor is taut and others of said conductors have varying amounts of slack,

c. encapsulating said conductors and said connecting lugs in a soft, flexible material having low shear strength,

d. molding a covering sheath of high strength flexible material to said connector, said encapsulating material and said insulating jacket, and bonding said sheath to said insulating jacket over a limited annular area.

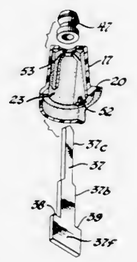
3,951,507
ELECTRIC CONNECTOR APPARATUS
George L. Lambert, III, Lilburn, Ga., assignor to Kearney-National, Inc., Atlanta, Ga.
Filed May 6, 1975, Ser. No. 574,918
Int. Cl.² H01R *13/52*
U.S. Cl. 339—111 **2 Claims**

1. A contact pin constituting a component of an electric connector apparatus, said contact pin comprising a tubular pin of conducting material, a stem of mechanically strong plastic material secured to the end of said tubular pin which is subjected to arcing and arranged in coaxial relation therewith, and a hollow tubular sleeve of arc extinguishing material disposed about and secured to said stem and in coaxial rela-



tion therewith and having one end in snug engagement with the adjacent end of said tubular pin of conducting material.

3,951,508
INTERNAL COMBUSTION ENGINE IGNITION DISTRIBUTOR CAP
Richard E. Farrer, Anderson, and Glendon D. Starks, Pendleton, both of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed July 12, 1974, Ser. No. 487,930
Int. Cl.² H01R *13/50;* **H01H** *19/00*
U.S. Cl. 339—214 R **1 Claim**

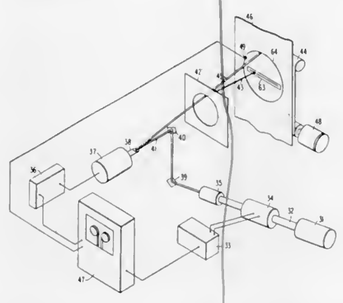


1. An internal combustion engine ignition distributor cap comprising: a top portion, a plurality of output terminal towers, each having an axial bore, extending outwardly from and circumferentially arranged about the outer surface of said top portion and a peripheral wall portion molded into an integral unit of an electrically nonconductive material, the inner surfaces of said top portion and said peripheral wall portion defining a space within said cap; an elongated unitary insert member of an electrically conductive material having a rectangular cross-section throughout the length thereof and a flat face surface on at least one end thereof inserted into said axial bore of each of said prior molded output terminal towers with the said end thereof having said flat face surface extending into said space within said cap and the opposite end extending beyond the top of said output terminal tower; positioning means corresponding to each of said insert members for locating the corresponding said insert member within the said output terminal tower axial bore into which it is inserted in such a manner that one of said flat face surfaces thereof extending into said space within said cap is substantially tangential to the imaginary circle centered about the center of the inner surface of said top portion and having a radius equal to the distance between said center and the point of tangency of said flat face surfaces of said insert members; and an output terminal of an electrically conductive material electrically connected to the end of each of said insert members opposite the end thereof located within said space within said cap.

3,951,509
APPARATUS FOR DEFLECTING LIGHT AND SCANNING LINE CONVERSION SYSTEM

Masaru Noguchi; Tsunehiko Takahashi, and Shigenori Oosaka, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 16, 1974, Ser. No. 461,328
Claims priority, application Japan, Apr. 17, 1973, 48-43536; Apr. 17, 1973, 48-47466
Int. Cl.² G02B *27/17*
U.S. Cl. 350—7 **4 Claims**

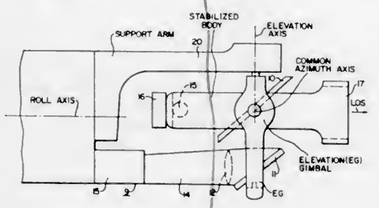


1. A scanning line conversion system comprising
a monochromatic light source,
a light deflection member for circular-scanning a monochromatic light beam from said light source,
a deflection angle correction member for forming a desired diffracted light beam from the circular-scanned light beam, said correction member comprising an arrangement of two-beam elemental holograms, and a light receiving member for said diffracted light beam, said diffracted light beam from said deflection angle correction member being applied as a fixed-size spot to said light receiving member to carry out a uniform linear scanning thereon.

3,951,510
INERTIALLY STABILIZED HELIOSTAT ASSEMBLY

Wayne B. Lloyd, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 25, 1975, Ser. No. 553,049
Int. Cl.² G02B *23/00*
U.S. Cl. 350—16 **5 Claims**

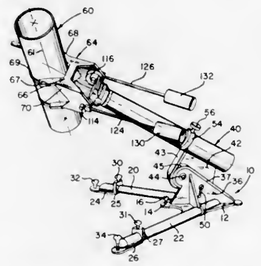


1. An assembly for an inertially stabilized heliostat device, comprising,
an elevation gimbal having a horizontal elevation axis about which such gimbal is pivotally moveable in elevation angulation attitude,
an inertially stabilized body pivotally affiliated with said elevation gimbal for relative angular azimuth movement about a vertical stabilized-body-azimuth axis located in substantially the same plane as that of said elevation axis,
an input mirror pivotally affiliated with said inertially stabilized body for relative angular azimuth movement about a vertical mirror-azimuth axis substantially aligned with said stabilized-body-azimuth axis, and,
a half-angle drive means responsive to relative turning movement between said elevation gimbal and said stabilized body about said stabilized-body-azimuth axis to effect turning of said mirror about said mirror-azimuth axis in the same direction as the elevation gimbal azimuth movement but to one-half the angular extent.

3,951,511
ASTRONOMICAL TELESCOPE MOUNT

J. Howard Parsons, 15702 Stanbrook Drive, La Mirada, Calif. 90638

Filed Dec. 19, 1973, Ser. No. 426,111
Int. Cl.² G02B *23/16*
U.S. Cl. 350—83 **6 Claims**

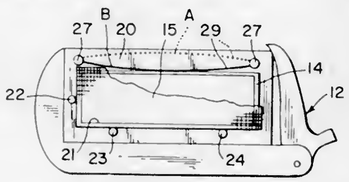


1. An optical instrument embodying a telescope having a column containing a polar axis, mounting means for rotation about said polar axis, the mounting means including an adjustable hub and telescope support the support and the hub being associated for relative rotation, the adjustable hub being settable to a predetermined position relative to a position angle scale on the column; tracking means whereby the telescope is rotatable relative to the hub during tracking and release means whereby the telescope can be rotated freely relative to the hub, the hub having a sidereal time scale whereby a reference mark having a fixed position relative to the telescope can be positioned relative to said sidereal time scale whereby the mechanism computes the sidereal time during tracking and indicates it on said sidereal time scale.

3,951,512
MICROSCOPE SLIDE REFERENCE APPARATUS

Walter E. Tolles, Cove Neck Road, Oyster Bay, N.Y. 11771

Filed Nov. 4, 1974, Ser. No. 520,764
Int. Cl.² G02B *21/24*
U.S. Cl. 350—90 **4 Claims**

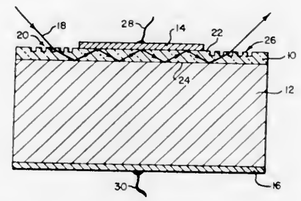


1. A portable holder for a microscope slide and a grid used together therewith comprising:
a. a rectangular plate having a pair of parallel faces and four intersecting edges defining a central rectangular opening, smaller than the slide to be held, extending through said faces;
b. three aligning pins extending perpendicularly from one of said faces, said pins having a height dimension sufficient to receive both a slide and a cooperating grid in abutment therewith two of said pins being in a line substantially parallel to one said edge of the central opening and the other said pin adjacent to another said edge intersecting the first named said edge; and
c. means for releasably clamping the slide against said aligning pins.

3,951,513
SEMICONDUCTOR LIGHT MODULATING OPTICAL WAVE GUIDE

James V. Masi, 3 Sportsman Drive, Huntington, Conn. 06484

Filed Sept. 9, 1974, Ser. No. 504,066
Int. Cl.² G02B *5/14*; **G02F** *1/01*
U.S. Cl. 350—96 WG **23 Claims**

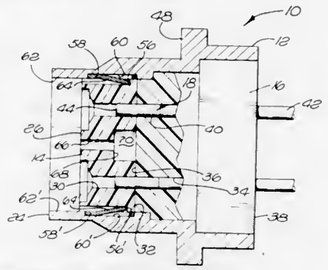


1. In combination:
a. a wave guide for phase modulating a light beam comprising:
i. a substrate of semiconductor material exhibiting a first kind of electrical conductivity;
ii. a film of a glassy amorphous material exhibiting the other kind of electronic conductivity disposed upon said substrate, a diode junction being formed thereby;
iii. first conductive means for making ohmic contact with said substrate;
iv. second conductive means for making ohmic contact with said layer of glassy amorphous material; and
v. means for coupling light into said film;
b. modulation voltage means electrically coupled to said first and second conductive means for applying between said first and second conductive means a modulation voltage for biasing said diode junction; and
c. a source of light optically coupled to said phase modulating wave guide by said coupling means for providing to said film of glassy amorphous material a light beam whose phase is to be modulated.

3,951,514
CONNECTOR MEMBER

Jose M. Medina, Jr., Whittier, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,290
Int. Cl.² G02B *5/16*; **H01R** *13/46*
U.S. Cl. 350—96 C **10 Claims**

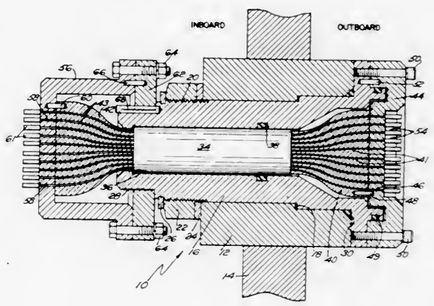


1. A connector member comprising:
a shell containing a rear fixed support member and a front support member slidably removable from the forward end of said shell;
each said support member having a forward face and a rear face;
a plurality of conductive elements mounted in said rear support member extending at least to said forward face thereof but terminating behind said forward face of said front support member;
said shell having an inner surface;
said front support member having a forwardly facing shoulder thereon adjacent to said shell inner surface and behind said forward end of said shell;
said shell having at least one resilient retention finger extending inwardly and rearwardly from said inner surface thereof engaging said shoulder to limit forward movement of said front support member in said shell;
means defining a clearance space between said shell inner surface and said front support member extending from said shoulder to said forward face of said front support member; and
an elongated slot in said front support member extending rearwardly from said forward face thereof to a rearwardly facing surface on said front support member.

3,951,515
FIBER OPTIC HULL PENETRATOR WITH HIGH CHANNEL DENSITY

Frederick C. Allard, Mystic, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 20, 1975, Ser. No. 588,747
Int. Cl.² G02B *5/16*
U.S. Cl. 350—96 C **6 Claims**

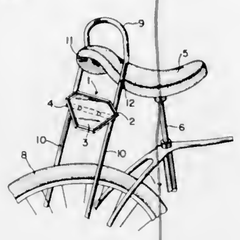


1. A fiber optic hull penetrating assembly adapted to be inserted in a hull aperture comprising:
an annular receptacle body adapted to be inserted in said hull aperture;
a solid cylindrical fiber optic plug inserted in said annular receptacle body;
a pair of identical fiber optic blocks with each of said blocks abutting opposite sides of said plug and said blocks having a plurality of fiber optic channels;
first connecting means adapted for holding said annular receptacle body in said aperture;
second connecting means for holding said plug between said pair of fiber optic blocks; and
registration means for respectively aligning said fiber optic blocks plurality of fiber optic channels with each other.

3,951,516
MOVABLE TWO TONE BICYCLE REFLECTOR AND ITS SUPPORT

Peter L. Rihm, 642 N. Cherry St., Celina, Ohio 45822

Filed Sept. 13, 1974, Ser. No. 505,859
Int. Cl.² G02B 5/12
U.S. Cl. 350—99 3 Claims



1. A bicycle reflector in combination with a bracket for supporting the reflector on a conventional bicycle, and a securing means to secure the bracket to the reflector,

said reflector comprising a flat planar body, of a plastic material having a luminous reflective surface, and a rigid frame, of a plastic material different from the material of said body and having a luminous reflective surface different from and contrasting visually with the reflective surface of the body in order to increase the visibility of the reflector to an observer, said frame surrounding said body and having a flat planar back coinciding with the plane of the body and flat planar sides projecting forwardly from said back forming inside acute angles with said back so that their planes intersect in front of said body,

said securing means being fastened to said body and to said bracket, and

said bracket having support means for attachment to the two parallel legs of a conventional bicycle seat support,

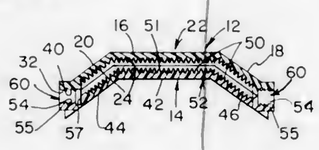
said bracket spanning the two parallel legs and comprising two resilient flat horizontal elements slidable with respect to each other, each element having one curved end to partially encompass one of the respective legs, and the elements having matching slots to receive the securing means to thereby secure the bracket to the reflector and resiliently and adjustably support the reflector on the bicycle to permit the reflector to vibrate and thereby to change the angle between the reflector and the line of vision from an observer to said reflector in order to further increase the visibility of the reflector,

said reflector being supportable behind the said parallel legs and extending laterally beyond each of the legs.

3,951,517
WIDE ANGLED REFLECTOR UNIT FOR SPOKED WHEEL

Leon M. Levy, 2047 N. Dayton St., Chicago, Ill. 60614, and David Lockett, 605 Timberlane, Lake Forest, Ill. 60045

Filed Dec. 9, 1974, Ser. No. 530,854
Int. Cl.² G02B 5/12
U.S. Cl. 350—99 10 Claims

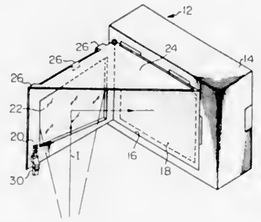


1. A wide angled reflector unit for securement to the spokes of a bicycle wheel, said reflector unit comprising a pair of reflector elements, each of said reflector elements having a central section and an angled side section or wing extending outwardly at an angle from each side of said central section, all integrally formed, each said reflector element having outward facing surfaces and inward facing surfaces with said inward facing surfaces each formed with a series of prismatic reflecting surfaces on said central sections and on said angled side sections, one of said pair of reflector elements positioned adjacent the other reflector element with said inward reflecting surfaces of each parallel and facing the other corresponding inward reflective surface and with the outward facing surfaces of each reflector element facing outwardly in opposite directions, said pair of reflector elements being secured together and forming a single unit, and means for securing said reflector unit to the spokes of a bicycle wheel, said reflector unit providing reflecting surfaces on each side of the reflector unit which reflect laterally and forwardly and rearwardly of the wheel on each side of the wheel.

3,951,518
PROJECTOR AND PROJECTION SCREEN ASSEMBLY

Kazuki Kobayashi, Hachioji, and Kikuo Takita, Tokyo, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Sept. 30, 1974, Ser. No. 510,819
Claims priority, application Japan, Nov. 8, 1973, 48-128593[U]
Int. Cl.² G03B 21/56, 21/10, 21/22, 21/28
U.S. Cl. 350—117 6 Claims



1. A projection screen unit adapted to be attached to a projector to constitute a cover for the projector, the projection screen unit comprising:

a generally box shaped housing having one open side and an opening formed through the opposite side, the open side being adapted to mate with the projector;

a translucent screen mounted in the opening;

a plate hinged at one edge thereof to the housing along one vertically oriented edge of the outer surface of the side of the housing having the opening formed therethrough, the plate having a reflecting surface formed on the side thereof facing the translucent screen, the plate being swingable from a storage position covering the translucent screen outwardly to a projection position;

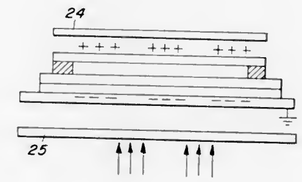
means for holding the plate in the selected one of the storage and projection positions; and

legs attached to the lower portion of the unit to support the same, two legs being attached to the lower surface of the housing and one leg being attached to the lower portion of the plate, the part of the means for holding the plate operative to hold the plate in the storage position comprising a latch, the latch also serving as the leg attached to the lower portion of the plate.

3,951,519
LIQUID CRYSTAL IMAGING SYSTEM

Fred W. Schmidlin, Pittsford; Werner E. Haas, Webster, and James E. Adams, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 19, 1974, Ser. No. 498,835
Int. Cl.² G02F 1/13
U.S. Cl. 350—160 LC 18 Claims



1. An imaging method comprising

providing an imaging member comprising a layer of a homeotropically aligned nematic liquid crystalline material overlying a photoconductive insulating layer;

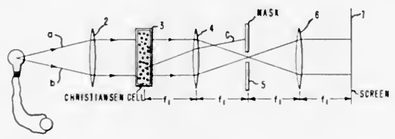
electrically charging the surface of said imaging member without applying any other voltage across the imaging member; and

exposing said photoconductive insulating layer to an imagewise pattern of activating radiation wherein optical biaxiality is induced in said layer of nematic liquid crystalline material only at boundaries between exposed and non-exposed regions of the photoconductive layer.

3,951,520
COLOR IMAGING USING THE CHRISTIANSEN EFFECT

Robert Kerr Waring, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 16, 1974, Ser. No. 515,406
Int. Cl.² G02B 5/23; G02F 1/19
U.S. Cl. 350—160 R 13 Claims



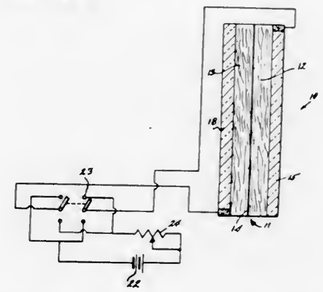
1. A method of forming colored images by projection comprising forming a Christiansen cell consisting of a first condensed phase dispersed in a second condensed phase, said first phase having a dispersion of refractive index differing from that of said second phase, but having a refractive index at one matching wavelength in the region of the visible spectrum matching the refraction index of said second phase; locally varying the refractive index of at least one said phase whereby said matching wavelength is locally changed in accordance with a predetermined image, passing light through said cell, separating a scattered light component from an unscattered light component, and imaging one of said scattered light component or said unscattered light component.

13. A Christiansen cell having as its operating element a dispersion of glass powder in a liquid, said liquid capable of undergoing a chemical change upon exposure to actinic light.

3,951,521
REVERSIBLE RADIANT ENERGY FILTER AND PROCESS OF USING SAME

Eugene Findl, Granada Hills, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 371,927, June 2, 1964, abandoned. This application June 6, 1969, Ser. No. 831,059
Int. Cl.² G02F 1/17
U.S. Cl. 350—160 R 9 Claims



1. A radiant energy filter adapted to reversibly regulate the transmission of radiant energy therethrough comprising:

an electrolytically conductive layer comprising,

I. a first film having dispersed therein (a) a dye whose color commences to change at a particular half-cell potential and (b) a first ionic species which can have its oxidation state changed by the passage of current through said first film, said oxidation change causing a half-cell potential change in said first film which overlaps at least a portion of the half-cell potential at which said dye changes color;

II. an adjacent second film having a second ionic species therein which has its oxidation state changed by the passage of current through said second film, said first ionic species and said second ionic species being related by a reversible reduction oxidation electrochemical reaction; and

III. barrier means positioned between said first film and said second film, said barrier means adapted to prevent the passage therethrough of said dye, said first ionic species and said second ionic species but adapted to permit the passage therethrough of current-carrying ions, said current-carrying ions comprising a third ionic species common to both said first and second film, and

first and second electrodes in contact with opposite sides of said electrolytically conductive layer.

3,951,522
LENS STRUCTURE HAVING A MOVABLE PORTION

Shigeru Hashimoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 355,597, April 30, 1973, abandoned. This application Dec. 5, 1974, Ser. No. 529,966
Claims priority, application Japan, May 15, 1972, 47-56485[U]
Int. Cl.² G02B 15/14
U.S. Cl. 350—187 1 Claim

1. A zoom lens structure for a camera, whether a still camera or a motion picture camera, comprising:

at least one movable lens for zooming;

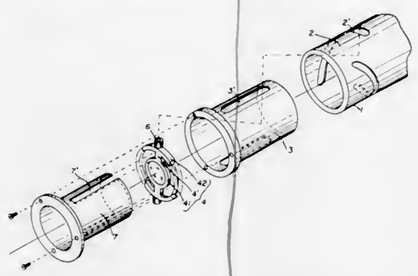
a guide cylinder for the movement of said lens;

a lens frame movable within said cylinder along the optical axis of said lens and having a portion for supporting said lens, a portion for slidable engagement with said cylinder and radial portions for connecting said supporting portion and engaging portion to form arcuate slots between the supporting portion and the engaging portion; and

a cylindrical light shield member provided with an inner cover antireflection surface over the whole range of the

movement of said frame and having longitudinally extending slots,

the radial portions of said lens frame passing through the longitudinally extending slots of said light shield member,



and said shield member passing through said arcuate slots, thereby permitting passing through said arcuate slots, thereby permitting movement of said frame without any interference between said frame and said shield member.

3,951,523

PHOTOGRAPHIC LENS SYSTEM WITH A SHORT OVERALL LENGTH

Yoshio Nishimoto, Hamura, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1974, Ser. No. 529,590
Claims priority, application Japan, Dec. 5, 1973, 48-135245
Int. Cl.² G02B *3/04, 9/12*
U.S. Cl. 350—189 **3 Claims**



1. A photographic lens system with a short overall length comprising three lens components of four lenses; a first lens component being a cemented positive meniscus doublet lens consisting of a biconvex lens and biconcave lens, a second lens component being a positive lens, and a third lens component being a negative meniscus lens with its concave surface positioned on the object side, the focal length f_4 of said third lens component satisfying a condition $0.65f < -f_4 < 0.8f$ and at least the surface on the image side of said third lens component being arranged as an aspherical surface expressed by the following formula:

$$x = \frac{y^2}{r_7 + r_7\sqrt{1 - (\frac{y}{r_7})^2}} + By^4 + Cy^8 + Dy^8 + Ey^{10}$$

$B > 0, C < 0$

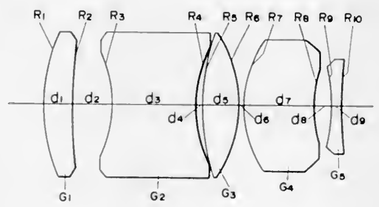
wherein reference symbol r_7 represents a radius of curvature of the surface on the image side of said third lens component at its portion near the optical axis, the advancing direction of ray on the optical axis is represented by x axis and the direction perpendicular to said x axis is represented by y axis.

3,951,524

PROJECTION LENS SYSTEM FOR MOTION PICTURE PROJECTOR

Yoshikazu Doi, Omiya, and Nagayoshi Hirano, Urawa, both of Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Jan. 29, 1975, Ser. No. 545,196
Claims priority, application Japan, Feb. 8, 1974, 49-16023
Int. Cl.² G02B *9/60*
U.S. Cl. 350—216 **5 Claims**



1. A projection lens system comprising a positive meniscus lens G1 (as numbered consecutively from front to rear) convex to the front, a biconcave lens G2, a biconvex lens G3, a positive meniscus lens G4 convex to the front, and a biconcave lens G5, said lens system being designed in accordance with the following data, wherein R1, R2, . . . R10 represent the radii of curvature of the surfaces of the lenses, *d*1, *d*2, . . . *d*9 represent the axial air separations or thicknesses of the lenses, *N*d1, *N*d2, . . . *N*d5 represent the refractive indices for the helium *d*-line and *ν*d1, *ν*d2, . . . *ν*d5 represent the Abbe's dispersion numbers;

Focal length : f=1.0
Relative aperture : F:1.3
Angle of field : 2ω=21°

R1 = 0.909	d1=0.15737	Nd1=1.74400	νd1=44.9
R2 = 6.4579	d2=0.21474		
R3 = 0.89815	d3=0.48	Nd2=1.76182	νd2=26.5
R4 = 1.00826	d4=0.01579		
R5 = 1.26821	d5=0.20316	Nd3=1.74400	νd3=44.9
R6 = −0.816	d6=0.01158		
R7 = 0.682631	d7=0.4137	Nd4=1.69680	νd4=55.6
R8 = 1.56642	d8=0.07263		
R9 = −1.55716	d9=0.05947	Nd5=1.68893	νd5=31.1
R10= 2.27018.			

3,951,525

HEAT AND LIGHT REFLECTING SPANDREL

John D. Ballentine, Monroeville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 291,430, Sept. 22, 1972, Pat. No. 3,869,198. This application Nov. 27, 1974, Ser. No. 527,674
Int. Cl.² G03B *17/00*
U.S. Cl. 350—259 **2 Claims**

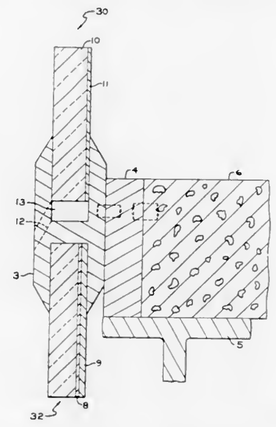
1. An article for reflecting visible light comprising:

a transparent substrate having a first major surface and a second major surface opposite to the first major surface;

a transparent, reflective coating disposed over substantially all of the first major surface of said substrate, said transparent reflective coating having (1) a transmitted dominant wavelength for visible light, which transmitted dominant wavelength is determined by transmittance to visible light of said substrate and said transparent, reflective coating and (2) a reflectance to visible light which is

determined by said transparent reflective coating and the second surface of said substrate; and

an opaque, reflective coating disposed over substantially all of said transparent, reflective coating, said opaque, reflective coating having a reflective dominant wavelength for visible light substantially equivalent to the transmitted dominant wavelength to provide the article with a total



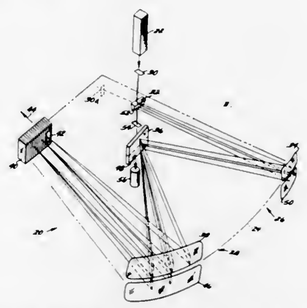
reflectance to visible light that exceeds the visible light reflected from (1) said transparent reflective coating and (2) the second surface of said substrate and to provide the article with a dominant wavelength substantially equivalent to the dominant wavelength of light transmitted through said transparent reflective coating and said substrate.

3,951,526

LINE REJECTION MIRROR FOR FILTER SPECTROGRAPH

Jack J. Grossman, Manhattan Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Division of Ser. No. 392,644, Aug. 29, 1973, Pat. No. 3,865,490. This application Aug. 2, 1974, Ser. No. 494,325
Int. Cl.² G02B *5/10*
U.S. Cl. 350—293 **6 Claims**



5. For use in a spectral line rejection filter, an acylindrical mirror means comprising:

a body including a plurality of parallel optical plate elements secured together to form a normally lateral stack, said optical elements being positioned with their planes extending longitudinally in a normally vertical direction, and a normally vertical aspheric echelle surface mirror having a predetermined lateral curvature on a face of said stack for reflecting impinging spectral lines in predetermined directions from said echelle surface mirror, said optical elements being positioned to provide a multiplicity of normally vertical, incremental, offset steps laterally distributed over said predetermined curvature to produce said echelle surface mirror which extends longitudinally in a normally vertical direction and generally intersecting laterally across said planes of said optical elements; and

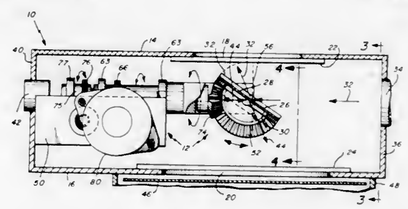
at least one normally vertical slit aperture in said echelle surface mirror and extending through said body, said at least one slit aperture being positioned in said echelle surface mirror to pass and reject at least a corresponding selected spectral line from a spectrum produced on said echelle surface mirror.

3,951,527

TARGET IMAGE PROJECTOR

John H. Blanz, Concord, Mass., assignor to Narco Scientific Industries, Inc., Fort Washington, Pa.

Filed Sept. 12, 1974, Ser. No. 505,338
Int. Cl.² A61B *3/02*; **G03B** *21/26, 21/28*
U.S. Cl. 351—30 **5 Claims**



1. An appratus for projecting a target image to a selected variable location comprising:

a light source;

a double faced mirror mounted in relation to said light source to reflect a light beam from said source off one surface of the mirror;

means mounting said mirror for rotational movement about at least two intersecting, perpendicular axes;

first drive means operatively associated with said mirror for rotating said mirror about one of said axes;

second drive means operatively associated with said mirror for effecting rotation of said mirror about the other of said axes, said first and second drive means being operable independently of each other;

said mirror mounting means being constructed and arranged so that one of said axes will rotate in unison with said mirror and about said other axis when said mirror is rotated about said other axis;

said light source being mounted along said other axis and being constructed and arranged to direct the light emitted therefrom substantially along said other axis toward said mirror;

a second light source mounted with respect to said mirror and said other axis to direct the light emitted therefrom toward the opposite surface of said mirror and along said other axis whereby the light from said first and second light sources may be reflected from said mirror in opposite directions.

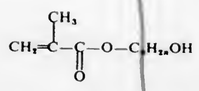
3,951,528

METHOD OF MAKING POLYMERIC CONTACT LENS

Harry R. Leeds, Rochester, N.Y., assignor to Patent Structures, Inc., New York, N.Y.

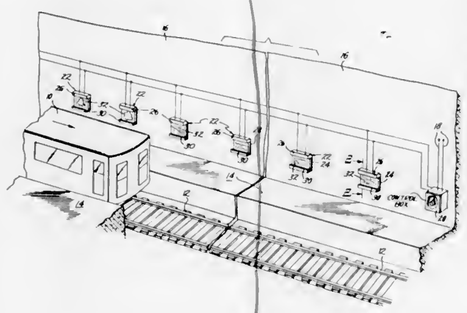
Continuation of Ser. No. 149,784, June 2, 1971, abandoned, which is a division of Ser. No. 713,998, March 18, 1968, abandoned. This application July 23, 1975, Ser. No. 598,405
Int. Cl.² G02C *7/04*; **G02B** *1/04*
U.S. Cl. 351—177 **10 Claims**

1. A method of preparing a contact lens material comprises reacting under polymerizing conditions a monomer having the formula:



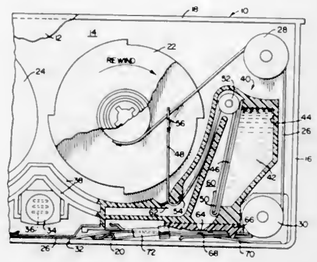
wherein *n* is 2 or 3, in the substantial absence of monomers which have more than one unsaturated group and in the presence of a polymerization initiator or catalyst under conditions to effect polymerization of said monomeric material, the process being carried out at an initial polymerization temperature in the range of from 45°to 65° C. and thereafter post heating the resulting polymeric product for a period of time sufficient to effect completion of polymerization of any residual unpolymerized material and to effect relaxation of internal stresses in said polymer, and thereafter machining or cutting the polymer thus formed into contact lenses.

3,951,529
ILLUMINATED SIGNS USING STROBOSCOPIC MEANS FOR ANIMATION ALONG A VEHICLE PATHWAY
Ricardo Tarrega Gandia, 1, Av. Mohamed Resza Shah, Teheran, Iran
Filed Feb. 11, 1974, Ser. No. 441,281
Int. Cl.² G03B *25/00*
U.S. Cl. 352—100 **1 Claim**



1. Apparatus for the transmission of visual information by intermittent illustration of status pictures viewed in a moving vehicle along a vehicle pathway, comprising:
the combination of a longitudinal row of substantially equally spaced apart pictures each in a frame, each picture containing separated animated figures in said frame depicting separated illuminated phases of a movement of the animated figures along said vehicle pathway;
a stroboscopic illumination means mounted in a fixed relation to each frame to sequentially illuminate each picture;
a variable control switch means for energizing and actuating said stroboscopic illumination means to sequentially turn the illumination on and off and provide about 80 to 100 flashes of light for each picture per second so that the light pulses which illuminate each picture have a duration which is approximately one eight to about one tenth of one tenth of a second of viewing period of the moving viewer in said vehicle;
said switch means including an adjustable clock and a pulse generator;
said stroboscopic illumination means comprising a strobe light energized by said clock and pulse generator; and,
said strobe light being mounted on each frame to uniformly illuminate the animated figures in the frame during the viewing period.

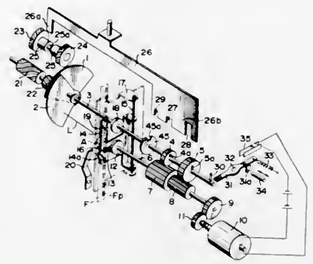
3,951,530
METHOD AND APPARATUS FOR DEPOSITING PROCESSING FLUID ON CASSETTE CONTAINED FILM STRIPS
Frank M. Czumak, Derry, N.H.; Paul B. Mason, Magnolia, and Joseph A. Stella, Peabody, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Aug. 16, 1974, Ser. No. 497,933
Int. Cl.² G03C *11/00*
U.S. Cl. 352—130 **12 Claims**



1. In a cassette configured for retaining a photographic film strip having a light sensitive emulsion on one surface thereof, said cassette containing a processor operative to deposit processing fluid on a moving run of the film strip after exposure of the film emulsion; said processor having a nozzle opening through which the processing fluid is passed into contact with the film emulsion, a doctoring surface following said nozzle opening in the direction of moving run travel, said doctoring surface being configured during moving run travel to produce a hydrodynamic force component of predetermined minimum and maximum magnitude within the processing fluid and directed toward the film strip when the emulsion surface is spaced a given minimum distance from said doctoring surface, and a pressure pad configured for engaging the other side of the film strip opposite said doctoring surface, the improvement comprising:
means for biasing said pressure pad against the film strip to urge the film strip toward said doctoring surface with a force at least substantially equal to said predetermined minimum magnitude and equal to or less than said predetermined maximum magnitude and opposite to said hydrodynamic force component such that said biasing means in cooperation with said pressure pad urges the film strip toward said doctoring surface with a force generally balancing the hydrodynamic force thereby providing deflection of said pressure pad and the film strip away from said doctoring surface responsive to fluid or film strip carried particles engaging said doctoring surface in a manner tending to provide increased force between said doctoring surface and the film strip so as to permit such particles to pass by said doctoring surface.

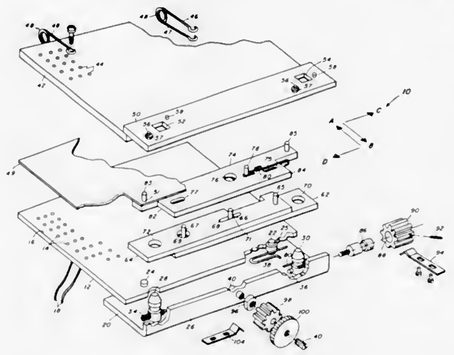
3,951,531
MOTION PICTURE CAMERA WITH EXPOSURE TIME PROLONGING MEANS
Hiroshi Nakai, Yono; Tetsuo Nishizawa, Kawagoe, and Ziro Sekine, Koshigaya, all of Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan
Filed Dec. 5, 1974, Ser. No. 529,752
Claims priority, application Japan, July 15, 1974, 49-80889
Int. Cl.² G03B *9/10*
U.S. Cl. 352—216 **5 Claims**

1. In a motion picture camera employing a rotary shutter and a reciprocating film feed claw, an exposure time prolonging means comprising, in combination, a horizontally swingable and vertically slidable claw member having a claw which has a flat lower face and a tapered top face, said claw member having a horizontally extending guide slot and a cam follower pin, a claw driving shaft having at one end thereof an eccentric pin engaged with the slot of said claw member to move the claw member up and down by the rotation of the shaft, a sector shaft extending in parallel to said claw driving shaft, a first sector fixed to the sector shaft, a second sector rotatably mounted to the sector shaft for defining a fanshaped opening together with said first sector the angle of which is changeable, means interconnecting said first and second sectors for rotating one sector relative to the other sector to change the angle of said opening, a face cam concentrically fixed to said sector



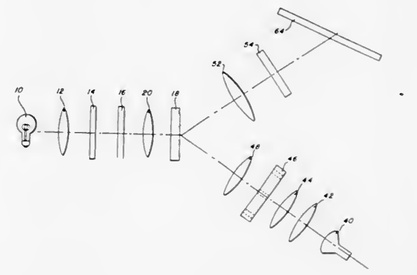
shaft and being in face contact with said cam follower pin to swing said claw member by the rotation thereof, an electric driving motor connected with one of said shafts for rotating the same, rotation transmitting means comprising a pair of selectively operable transmitting means for transmitting the rotation of said one shaft to the other shaft with different transmission ratios for selectively rotating said claw driving shaft at the same rate as said sector shaft or at a multiple thereof, and a switchover means for selectively activating one of said pair of transmitting means and said means interconnecting said first and second sectors.

3,951,532
MICROFICHE READER EMPLOYING DUAL INCREMENTAL ADVANCING MEANS
Willis A. Kropp, DeLand, Fla., assignor to Personal Communications, Inc., Stamford, Conn.
Filed Apr. 11, 1974, Ser. No. 460,015
Int. Cl.² G03B *23/02*
U.S. Cl. 353—25 **17 Claims**



1. A microfiche reader comprising:
a first plate;
a plurality of light sources disposed with said first plate in an array of rows and columns;
a second plate disposed adjacent said first plate;
a plurality of lens disposed with said second plate in an array of rows and columns, each lens corresponding to one of said light sources;
means for movably positioning a film having information thereon between said plates, said positioning means including:
a beam;
means for fixing one edge of said film to said beam;
means for moving said beam in a first direction parallel to the plane of said plates; and
means for moving said beam in a second direction substantially normal to said first direction and parallel to the plane of said plates.

3,951,533
COLOR IMAGE REPRODUCTION SYSTEM
Richard F. Bergen, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Sept. 20, 1974, Ser. No. 507,911
Int. Cl.² G03B *21/00*
U.S. Cl. 353—31 **4 Claims**



1. A color image reproduction system comprising, arranged along an optical path
an extended light source;
means for generating a plurality of point light sources;
means to project images of said point light sources at an image plane;
an imaging member comprising a substantially transparent first electrode carrying a layer of photoconductive insulating material which carries a layer of elastomer material which carries a flexible conductive metallic second electrode, a fiber optic element comprising a plurality of light conducting fibers secured together in side by side relationship so that corresponding opposite ends of said fibers cooperate to define first and second faces, one of said faces being adjacent the surface of said first electrode opposite that carrying said photoconductive layer, and means for applying an electrical field coupled to said electrodes, said imaging member bearing multicolor information comprising at least two images at different angular orientations and corresponding respectively to the color content of at least two different colors of an original multicolor image; and
light filter means including selectively transmissive and substantially non-transmissive portions positioned at the image plane of said means for generating a plurality of point light sources for selectively transmitting to an output image plane the color content of the multicolor original image corresponding to the images recorded by the imaging member, wherein the images of said point light sources are in registry with said substantially non-transmissive portions.

3,951,534
SHORT THROW, OBLIQUE INCIDENCE, VISUAL TRANSPARENCY PROJECTOR

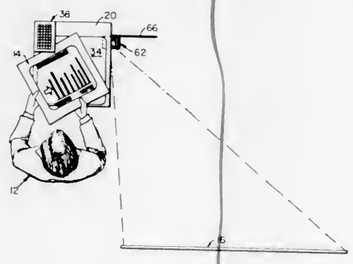
Gerald Altman, 41 Westminster Road, Newton Centre, Mass. 02159

Continuation-in-part of Ser. No. 500,322, Aug. 26, 1974, which is a continuation-in-part of Ser. No. 329,574, Feb. 5, 1973, Pat. No. 3,837,739, and a continuation-in-part of Ser. No. 419,063, Nov. 26, 1973, Pat. No. 3,915,567, said Ser. Nos. 329,574, and Ser. No. 419,063, each is a continuation-in-part of Ser. No. 81,987, Oct. 10, 1970, Pat. No. 3,778,142. This application Dec. 23, 1974, Ser. No. 535,694

The portion of the term of this patent subsequent to Apr. 20, 1993, has been disclaimed.

Int. Cl.² G03B *21/00*

U.S. Cl. 353—64 **14 Claims**



1. A large copy projector for imaging a visual sheet on a viewing screen, said projector comprising:
a. Fresnel field lens means having a first axis;
b. wide angle catadioptric objective reflector means having a second axis;
c. deflecting mirror means obliquely disposed with respect to said first axis and said second axis;
d. said objective reflector means establishing a first conjugate surface and a second conjugate surface;
e. said first conjugate surface including said visual sheet in association with said Fresnel lens means;
f. said second conjugate surface including said viewing screen;
g. said deflecting mirror means establishing a folded path involving said first conjugate surface and said second conjugate surface; and
h. lamp means for illuminating said folded path.

3,951,535
LOW PROFILE EPISCOPIC PROJECTOR

Gerald Altman, 41 Westminster Road, Newton, Mass. 02159

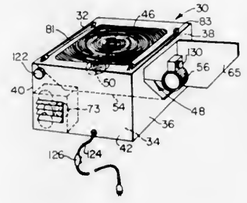
Continuation-in-part of Ser. No. 500,322, Aug. 26, 1974, which is a continuation-in-part of Ser. No. 329,574, Feb. 5, 1973, Pat. No. 3,837,739, and a continuation-in-part of Ser. No. 419,063, Nov. 26, 1973, each is a continuation-in-part of Ser. No. 81,987, Oct. 19, 1970, Pat. No. 3,778,142. This application Feb. 12, 1975, Ser. No. 549,351

The portion of the term of this patent subsequent to Apr. 20, 1993, has been disclaimed.

Int. Cl.² G03B *21/06*, *21/08*

U.S. Cl. 353—66 **7 Claims**

1. A large copy projector for imaging a visual sheet on a viewing screen, said projector comprising:
a. fresnel field lens means having a first axis;
b. wide angle catadioptric objective reflector means having a second axis;
c. said first axis and said second axis being crossed with respect to each other;
d. deflecting mirror means obliquely disposed with respect to said first axis and said second axis;
e. said objective reflector means establishing a first semi-field conjugate surface and a second semi-field conjugate surface;
f. said first semi-field conjugate surface including said visual sheet in association with said Fresnel lens means;
g. said second semi-field conjugate surface including said viewing screen;



h. said deflecting mirror means establishing a folded path involving said Fresnel field lens means and said first semi-field conjugate surface; and
i. lamp means for illuminating said folded path below said Fresnel field lens means.

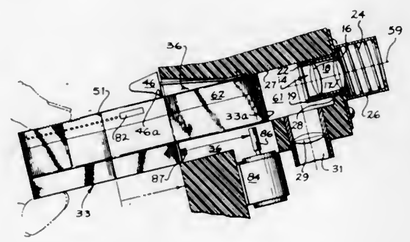
3,951,536
FILM PROJECTION SYSTEM

Charles J. Becker, San Jose, Calif., assignor to American Videonetics Corporation, Sunnyvale, Calif.

Filed Oct. 25, 1974, Ser. No. 517,919

Int. Cl.² G03B *3/00*, *21/10*, *21/11*

U.S. Cl. 353—76 **6 Claims**



1. In a film projection system,
a. a projector including a relatively large hollow housing,
b. an optical viewing screen for receiving images projected onto said screen from a film,
c. a lens system movable between advanced and retracted positions within said housing,
d. means biasing said lens system to its retracted position,
e. a light source disposed within said housing and adapted to project light along a path through a film and said lens system to display an image onto said viewing screen,
f. means carried by said housing and adapted to receive a film cartridge inserted partially into said housing for disposing film of said cartridge into said light path, said lens system being moved to and maintained in said advanced position in response to insertion of said cartridge, and
g. means serving to engage the cartridge to limit the degree of insertion thereof to dispose said lens system at a predetermined position providing a predetermined focal length with respect to said film.

3,951,537
SLIDE PROJECTOR CONTROL DEVICE

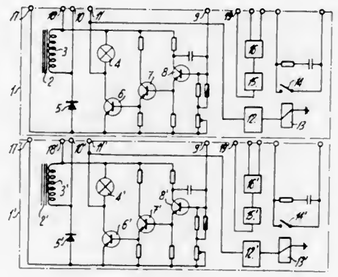
Charles-Louis Rochat, Veyrier, Switzerland, assignor to Pignons S.A., Ballaigues, Switzerland

Filed Aug. 1, 1974, Ser. No. 493,746

Claims priority, application Switzerland, Aug. 9, 1973, 11497/73

Int. Cl.² G03D *21/20*

U.S. Cl. 353—85 **4 Claims**



1. In a slide projector control circuit, a projection lamp having a first and a second terminal, a transformer having a secondary winding with a first end and a second end, first and second shunting terminals, first and second external connection terminals, a rectifier element, and current control means, a connection from the first end of the secondary winding to the first lamp terminal, a connection from the first end of the secondary winding to the first external connection terminal, a connection from the second end of the second winding to the first shunting terminal, a connection from the second end of the secondary winding to the rectifier element, a connection from the rectifier element to the second external connection terminal, a connection from the second terminal of the lamp to the second shunting terminal, a connection from the second terminal of the lamp to the current control means, and a connection from the current control means to the second external connection terminal.

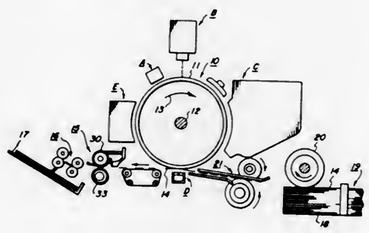
3,951,538
PERMANENTLY NIPPED CONTACT IMAGE FUSER SYSTEM INCORPORATING A ONE-WAY CLUTCH

Ari Bar-on, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 24, 1974, Ser. No. 482,680

Int. Cl.² G03G *15/20*

U.S. Cl. 355—3 R **5 Claims**



1. Copier apparatus comprising:
means for forming toner images on support sheets;
means for fusing said images on said support sheets, said fusing means including:
a first roll structure;
a second roll structure;
means for mounting said roll structures for engagement whereby they cooperate to move said copy sheets therebetween;
said roll structures being permanently engaged;
means for effecting rotational movement of said roll structures; and
means for permitting rotation of said roll structures independently of said rotation effecting means and for permitting a copy sheet to be manually moved between said roll structures with simultaneous fixing of said toner images to said copy sheet.

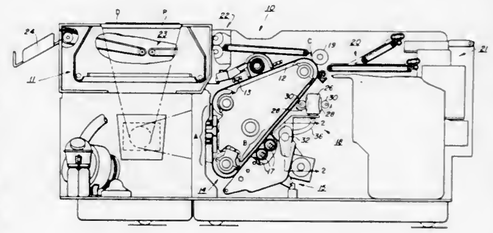
3,951,539
ELECTROSTATIC REPRODUCTION MACHINE WITH IMPROVED TONER DISPENSING APPARATUS

Vaidevutis C. Draugelis, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 15, 1974, Ser. No. 514,685

Int. Cl.² G03G *15/00*

U.S. Cl. 355—3 DD **3 Claims**



1. The combination of an electrostatic reproduction machine having means defining a surface upon which an electrostatic latent image may be formed, means for forming the latent image on the surface, and a developer having means for holding a quantity of toner powder and means for transporting the powder from the holding means to the surface to develop the latent image, with an improved toner dispensing apparatus for dispensing toner into the developer, the improved toner dispensing apparatus comprising:
means for containing a supply of toner powder, an elongated manifold mounted within and extending across the holding means, the manifold having means defining a plurality of dispensing orifices along the length of the manifold, a tube connected to the containing means and to the manifold, and means for alternately pressurizing the containing means to expel powder through the orifices into the developer and depressurizing the containing means to aerate the powder to prevent bridging and caking of the powder.

3,951,540
ELECTROPHOTOGRAPHIC COPIER OF TRANSFER TYPE

Masaya Ogawa, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 347,530, April 3, 1973, Pat. No. 3,873,196, which is a continuation of Ser. No. 167,398, July 29, 1971, abandoned. This application Sept. 25, 1974, Ser. No. 509,180

Claims priority, application Japan, Dec. 24, 1970, 45-127087; Aug. 3, 1970, 45-77348[U]; Sept. 18, 1970, 45-93418[U]

Int. Cl.² G03G *15/28*

U.S. Cl. 355—8 **5 Claims**

1. An electrophotographic copier of the transfer type comprising:

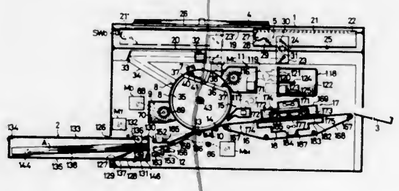
a document table made of a transparent plate;

an exposure optical system of the slit scanning type having means for scanning the surface of an original document disposed below said document table and movable in parallel with said document table;

an endless support supporting a photoreceptor and disposed below said exposure optical system and movable at a constant peripheral speed;

an image forming and copying assembly disposed around said endless support including means for charging said photoreceptor composed of a corona discharger, an exposure window positioned at the terminal end of the light path of said exposure optical system for exposing the charged photoreceptor to produce an electrostatic latent image, developing means for visualizing electrostatic latent image with a toner transfer means for transferring the powder image onto copy paper, and cleaner means for cleaning the surface of said photoreceptor;

a copy paper supply station including paper supply roller means for dispensing sheets of paper to be made into final copies, paper feed means for feeding the dispensed paper to said transfer means, conveyor means for discharging transferred paper out of said copier, and means disposed over the transport path of said conveyor means for heat-fixing the toner image on said transferred paper;



a control member disposed in the interior of said copier and rotatable in a predetermined synchronous relation with said endless support in synchronism therewith; and

means including a program circuit for controlling the operation for a selective pre-selected number of copying cycles of said copier, and characterized in that:

said scanning means includes a first carriage synchronously driven in a predetermined relation to the moving speed of a photoreceptor support and a second carriage driven at half the speed of said first carriage, said first carriage being provided with a document illuminating system and a plane mirror for directing the image of the document to a plane mirror on said second carriage, said second carriage being provided with at least one plane mirror for reflecting the image of the original reflected by said plane mirror on said first carriage toward a projecting lens, the length of the light path from the surface of the document to said projecting lens being kept constant irrespective of the position of said first carriage; and

said scanning means includes guide rails parallel to said document table, a roller rotatably mounted on said second carriage and rolling along said guide rails and said first carriage rests on said roller rolling on said guide rails, said first carriage and said second carriage being moved in operative relation at a speed ration of 1½.

3,951,541

DUPLICATOR PROCESSOR

Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Information Systems, Inc., Bedford, Mass.

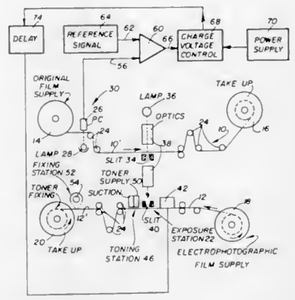
Filed Sept. 14, 1973, Ser. No. 397,310
Int. Cl.² G03G *15/28, 15/32*
U.S. Cl. 355—8 **11 Claims**

1. Apparatus for duplicating photographic images carried by an original strip film onto a flexible, transparent strip of electrophotographic film having a photoconductive, charge-acceptable coating which comprises:

A. supply and take-up means for each strip including structure for guiding and continuously moving the strips in opposite general directions,

B. a projection and exposure station at which said guiding and moving means are arranged to pass the strips in parallel spaced juxtaposition at the identical speed,

C. charging means disposed before the projection and exposure station and arranged to charge the coating of the electrophotographic film to a predetermined surface potential in darkness,



D. the projection and exposure station including a source of light and projector means for projecting a narrow transverse area of said original strip film directly, continuously and uninterruptedly onto the coating of said electrophotographic film as the two strips move, and the strips being disposed such that when so moved parallel, the coating will face the strip film, the projection serving to form a duplicate of the images of the original film as latent charge images on the electrophotographic film, and

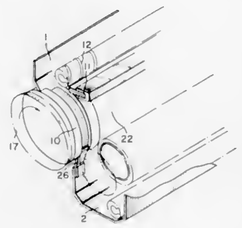
E. a toning station located after the projection and exposure station and including means for continuously flood toning the latent charge images with liquid toner to render the same visible forming a duplicate-original of said original strip film.

3,951,542

DEVELOPER CONVEYOR DEVICE

Yoshio Ito, Yokohama; Toru Takahashi, Tokyo; Tadayuki Kitajima, and Syujiro Kadowaki, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1974, Ser. No. 467,744
Claims priority, application Japan, May 14, 1973, 48-53279
Int. Cl.² G03G *21/00*
U.S. Cl. 355—15 **20 Claims**



1. A developer conveyor device comprising:

a rotatable photosensitive medium repetitively used;

a developer conveyor member disposed outwardly of the effective width of the photosensitive medium, said developer conveyor member having a peripheral surface which is flush with or lower than the surface of said photosensitive medium to convey the developer to a developer containing portion;

cleaning means for removing unnecessary developer on the surface of said photosensitive medium;

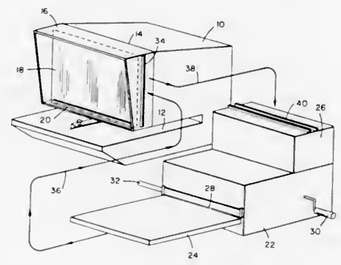
means for transporting, to said developer conveyor member, the developer removed by said cleaning means.

3,951,543

MANUALLY OPERATED READER-PRINTER

David D. Mulligan, 3143 Vichy Ave., Napa, Calif. 94358

Filed May 6, 1974, Ser. No. 467,419
Int. Cl.² G03B *7/14*
U.S. Cl. 355—27 **7 Claims**



1. A system for providing a standard microfiche or like reader with the capacity for making prints of the projected material without substantially modifying the reader other than removal of the viewing screen therefrom, said system comprising:

a microfiche reader having a forward generally vertically disposed face ordinarily including a viewing screen and adapted to normally project a microfiche image onto said viewing screen, the screen of said reader being removed;

a screen extension having one end mountable to the forward face of the reader at the location of the removed screen, said extension including a substantially light-impervious walled periphery having an elongate narrow slot in one wall thereof and means mounting the removed screen at the opposite end of said extension for continued use of the reader as a visual display device;

a paper carrier insertable through the slot in the periphery of the screen extension to the interior of said screen extension adjacent an interior surface of the viewing screen mounted to said extension, said paper carrier including means for exposing light-sensitive paper in said paper carrier to an image normally projected by the reader onto said viewing screen;

a paper supply module remote from said reader and including means for supplying light-sensitive paper to said paper carrier without exposing said paper; and

a development module remote from said reader and including means for developing the exposed light-sensitive paper.

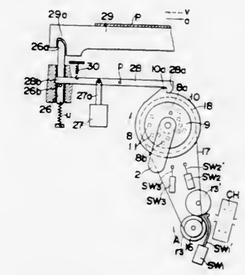
3,951,544

PRINTING PAPER CUTTING DEVICE FOR USE IN COPYING APPARATUS

Yoshio Mikasa, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sept. 30, 1974, Ser. No. 510,858
Claims priority, application Japan, Oct. 26, 1973, 48-124897[U]
Int. Cl.² G03B *29/00*
U.S. Cl. 355—29 **18 Claims**

1. A printing paper cutting device for use in a copying apparatus having platform means on which an original to be copied is placed and an optical system means for transmitting an image from an original to printing paper, reciprocating driving means coupled to one of said means for driving the one means relative to the other for scanning the original to be copied, the apparatus further employing a roll of printing paper fed by transportation members, said device comprising a first switch member for actuating the reciprocating driving means, said first switch member being disposed along the path of the paper from said roll of printing paper and detecting a leading edge of said paper fed by the transportation members, a reciprocating means locking means for locking the reciprocating means in a starting position and coupled to said first switch member for being released by a signal from said first switch member, a rotary member adapted to start rotation at the same time said locking means has been released and to stop rotation when the rotary member has returned to a starting position, a cut length setting member movably mounted on said rotary member, click means operatively associated with said cut length setting member and said rotary member for controlling movement of said cut length setting member, step by step, to a desired cut length position on said rotary member corresponding to the length of the original to be copied, a cut size setting member connected with said cut length setting member for moving said cut length setting member on said rotary member, a second switch member in the path of said cut length setting member and actuated by said cut length setting member during the rotation of the cut length setting member, and a cutting means for cutting said paper web coupled to said second switch member and disposed along the path of the paper from the roll of printing paper and operated by a signal from said second switch member.

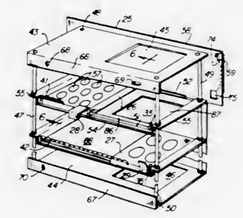


3,951,545

PHOTOGRAPHIC PRINT APPARATUS

Orren J. Lucht, Bloomington, Minn., assignor to Lucht Engineering, Inc., Burnsville, Minn.

Filed Aug. 28, 1974, Ser. No. 501,036
Int. Cl.² G03B *27/44, 27/76*
U.S. Cl. 355—46 **45 Claims**



23. A photographic printer comprising a frame, a negative holder assembly supported by said frame, said assembly being adapted to support a negative for photographic printing, means supported by said frame on one side of said negative holder assembly and spaced apart therefrom for supporting

light sensitive photographic print material, means supported by said frame on the opposite side of said negative holder assembly and spaced apart therefrom for projecting a light beam through a negative at said negative holder assembly toward print material at said print material supporting means, and lens means supported by said frame in the space between said negative holder assembly and said print material supporting means, said photographic printer being particularly characterized in that:

a. said print material supporting means is housed within light-excluding walls of a chamber not enclosing said lens means therewithin, said chamber having a shutter-controllable window thereinto located in the path of said light beam between said lens means and print material at said print material supporting means,

b. said shutter-controllable window of said chamber is equipped at said window with a shutter mechanism capable of being closed to block and opened to unblock the passage of said light beam through said window, said shutter mechanism being normally closed and adapted to be momentarily opened for passage of said light beam through said window for printing on said print material, and

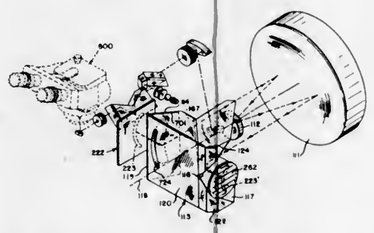
c. said lens means is removable independently of said shutter mechanism.

3,951,546

THREE-FOLD MIRROR ASSEMBLY FOR A SCANNING PROJECTION SYSTEM

David A. Markle, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sept. 26, 1974, Ser. No. 509,598
Int. Cl.² G03B *27/48, 27/50, 27/70*
U.S. Cl. 355—51 **5 Claims**



1. In an apparatus for photographically exposing an image receiving surface to a light image of an object, said apparatus comprising a unit power optical system having an optical axis and having conjugate planes normal to that axis for which the system is of unit power,

plane reflecting surfaces interposed in the optical system for repositioning said conjugate planes,

separate means to support substantially plane object and image-receiving surfaces in said repositions of the conjugate planes, and

means to illuminate in said object surface an arcuate area exterior of and having its center of curvature substantially on said optical axis in relation to said reposition of the object plane,

said plane reflecting surfaces comprising a first plane reflecting surface at an angle to said optical axis for repositioning one of said conjugate planes and

a 90° roof formed of a pair of plane reflecting surfaces having their line of intersection at a 90° angle relative to the plane of the first plane reflecting surface, and said roof being disposed for locating said other conjugated plane parallel to said one conjugate plane to permit advancing said object and image surfaces in the same direction simultaneously and for said reflecting surfaces to generate at said image surface an image equivalent in orientation to a contact print image.

3,951,547

CHROMIUM OXIDE PHOTOMASK MATERIAL AND THE PRODUCTION THEREOF

Tomoaki Fujinami, Samukawa, and Isao Hattori, Chigasaki, both of Japan, assignors to Ulvac Corporation, Chigasaki, Japan

Filed May 19, 1972, Ser. No. 254,986
Claims priority, application Japan, May 24, 1971, 46-34813
Int. Cl.² G03B *27/02*
U.S. Cl. 355—133 **2 Claims**

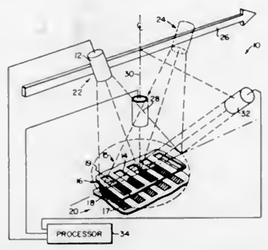
1. A colored mask comprising a glass substrate and a discontinuous masking film on said glass substrate having a thickness of from about 2000 to about 6000 A which is transparent to yellowish-brown color light and transmits less than 5% of light having a wavelength of no more than 4500 A, said masking film consisting essentially of a single layer of non-stoichiometric chromium oxide composition wherein the proportions of different types of chromium oxides comprising said layer are substantially the same as those in a layer produced by heating a member selected from the group consisting of chromic oxide and metallic chromium in an oxidizing atmosphere consisting essentially of oxygen or an oxygen-nitrogen mixture at a total pressure of 0.5×10^{-4} to 5×10^{-4} Torr and at an oxygen partial pressure of 0.1×10^{-4} to 5×10^{-4} Torr to generate vapor therefrom and depositing said vapor onto a surface of heated glass substrate positioned within said oxidizing atmosphere.

3,951,548

ELECTRO-OPTICAL FOURIER VERNIER DEVICE

William E. Westell, Weston, Mass., assignor to Baird-Atomic, Inc., Bedford, Mass.

Filed July 22, 1974, Ser. No. 490,698
Int. Cl.² G01C *3/08*
U.S. Cl. 356—4 **17 Claims**



1. An electro-optical device for generating data signals representing relative displacement between a pattern of apertures in a reference plane and a pattern of reflectors in a measurement plane, the reference plane and measurement plane in spaced parallel relationship, said device comprising:

a. source means for generating reference radiation constituting spatial quadrature samples, said reference radiation directed towards the aperture pattern, said reference radiation passing through the apertures in the aperture pattern being reflected by the reflectors in the reflective pattern;

b. reference detector means for sensing said reference radiation directed towards the aperture pattern;

c. convolution detector means for sensing said reference radiation reflected from the reflective pattern; and

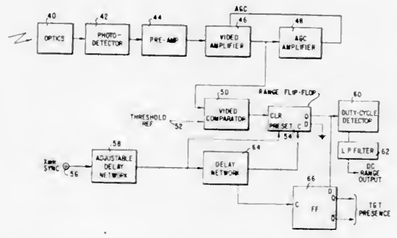
d. processor means operatively connected to said reference detector means and said convolution detector means, said reference detector means and said convolution detector means generating signals having a phase relationship related to the relative displacement between the aperture pattern and the reflective pattern seen through the aperture pattern, said processor means comparing the phase of said signals generated by said reference detector means and said convolution detector means and generating data signals representing the relative displacement of the aperture pattern and the reflective pattern.

3,951,549

TRANSMITTER-RECEIVER SYSTEM

Richard L. Fowler, Royal Oak, and Gary I. Robin, Oak Park, both of Mich., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Aug. 20, 1974, Ser. No. 499,103
Int. Cl.² G01C *3/08;* **H03K** *17/56*
U.S. Cl. 356—5 **7 Claims**



1. A transmitter-receiver system comprising a laser diode transmitter and a range detecting receiver for receiving the output of said transmitter, said transmitter comprising a laser diode and a modulating circuit for said diode comprising a bank of avalanche transistors having a common output line, a capacitive storage network, means for sequentially triggering said transistors into the avalanche made so as to deliver energy from said storage network to said diode and means for directly connecting said common output line of said bank of transistors to said laser diode, and said receiver comprising signal converting means for converting the received transmitter output into an electrical input signal in accordance therewith; automatic gain control amplifier means connected to receive said input signal; comparator means for comparing the output of said amplifier means with a threshold reference; bistable multivibrator means which produces a predetermined output when the output of said amplifier means exceeds said threshold reference, said bistable multivibrator means being preset by a control signal derived from a transmitter synchronizing signal; and a duty-cycle detector connected to said bistable multivibrator means for converting the output thereof into a corresponding d-c range signal.

3,951,550

DIRECTION-SENSING VIRTUAL APERTURE RADIATION DETECTOR

E. Paul Slick, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

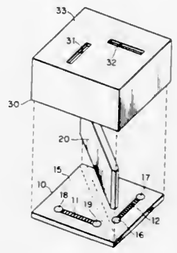
Filed Aug. 12, 1974, Ser. No. 496,680
Int. Cl.² G01B *11/26*
U.S. Cl. 356—141 **9 Claims**

1. A radiation sensing device, comprising:

a base unit;

a housing unit adapted to be coupled to said base unit, said housing unit and said base unit providing an interior chamber, said housing including a slit for admitting radiation to said chamber;

an elongated radiation detector coupled to said base unit, said detector positioned at an angle with respect to said slit; and plural means electrically coupled to a first and a second end of said detector and separately measuring currents at the first and second end and whereby currents from said first end and said second end determine an intersection point of said admitted radiation with said detector.

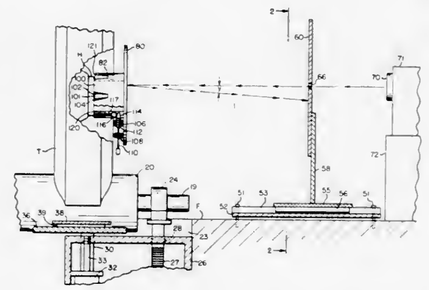


3,951,551

APPARATUS FOR TESTING THE FRONT WHEEL ALIGNMENT OF AUTOMOTIVE VEHICLES

Roger Macpherson, Rochester, N.Y., assignor to American Tatra, Inc., Rochester, N.Y.

Filed Oct. 7, 1974, Ser. No. 512,193
Int. Cl.² G01B *11/275*
U.S. Cl. 356—155 **6 Claims**



1. In apparatus for checking the alignment of the front wheels of an automotive vehicle comprising

a target having an opening therethrough,

means for rotating the front wheels of a vehicle while the vehicle is motionless,

magnetic means for releasably mounting a reflecting surface on the hub of a front wheel for rotation thereby in confronting relation to the target,

a light source for projecting parallel beams of light through the opening in said target and onto said reflecting surface for reflection thereby back onto said target,

the improvement wherein said magnetic mounting means comprises means for tilting said reflecting surface angularly relatiive to a plane perpendicular to the axis of the spindle of the vehicle on which the front wheel is mounted, and including

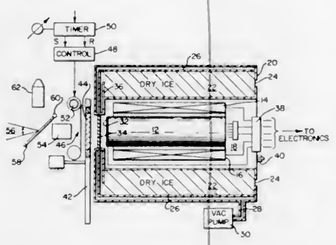
an annular magnet having a plurality of notches at its rear equiangularly spaced about its axis and alternating with teeth which constitute poles, and

some of said teeth being chamfered on their rear ends for contact with the hub of the wheel.

3,951,552
PHOTOMETER-DIGITIZER SYSTEM

Thomas B. McCord, Manchester, Mass., and James A. Westphal, Altadena, Calif., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 7, 1972, Ser. No. 278,571
Int. Cl. G01j *1/46*
U.S. Cl. 356—215 **4 Claims**

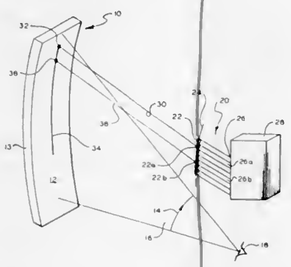


1. A method for providing long-term single photometer exposure to relatively weak radiation comprising the steps of:
cooling the target of a vidicon tube to a lowered temperature which reduces dark currents in the target;
establishing a predetermined charge across the P-N junction of the target of said vidicon type tube with the cooling of said target preventing discharge of said P-N junction;
inhibiting electron beam scanning of the target of said vidicon type tube for a predetermined interval;
exposing said target to said relatively weak radiation for a period within said predetermined interval, said period being substantially longer than the scan period for the vidicon type tube;
the exposure of said target to said relatively weak radiation producing a cumulative discharge pattern on said target linearly representative of radiation incident on said target over a wide dynamic range, the reduction of dark currents by the cooling of said target preventing substantial distortion of the discharge pattern during said period;
producing electron beam scanning of said target subsequent to said predetermined interval to produce an output signal representative of the discharge pattern.

3,951,553
APPARATUS FOR AIMING A GUN

Joseph H. Oberheuser, Trumbull, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 7, 1974, Ser. No. 512,689
Int. Cl.² G02B *23/10*
U.S. Cl. 356—251 **4 Claims**

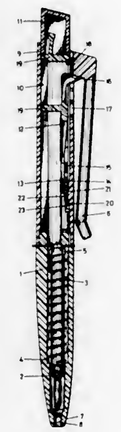


1. Apparatus for indicating an aiming position of a gun comprising:
a substantially spherical lens mounted for rotation about the center of curvature thereof, said lens having a reflecting surface which reflects visible light of a first wavelength and transmits therethrough visible light of a second wavelength; and
a plurality of sources of illumination fixedly mounted with respect to said lens, said sources being operable to transmit light of said first wavelength to the reflecting surface of said lens from a focal surface thereof, each of said sources being positioned to direct light to a different region on the reflecting surface, each of said regions representing a different range, and said regions being within the line of sight of an observer viewing the lens from said center of curvature,
whereby when the apparatus is operatively connected for the lens to rotate in synchronism with adjustments of the aiming position of a gun, and said regions on the reflecting surface are located to correspond with aiming positions of the gun for different ranges of the gun, respectively, and when one of said illumination sources representing a desired range for the gun is illuminated, said observer is able to see through the lens to observe a target scene beyond and also to observe when adjustments of the aiming position of the gun correspondingly rotate the lens until the illuminated region on the lens reflective surface is in register with a target in the target scene observed through the lens.

3,951,554
WRITING APPLIANCE

Martinus Karel Petrus Jonkers, Burgemeester Verheugtstraat 49, Mierlo, Netherlands

Filed Aug. 21, 1974, Ser. No. 499,116
Int. Cl. B43k *24/08*
U.S. Cl. 401—112 **5 Claims**



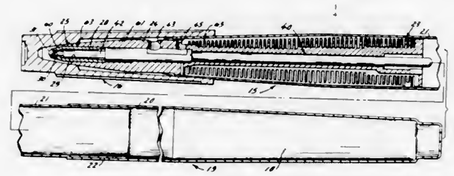
1. In a writing appliance having alternate stable operating and non-operating positions and including a shell having a tapered end, a stylus for insertion through said tapered end in the operating position and for withdrawal therefrom in the non-operating position, said stylus being biased toward the non-operating position, and a reciprocable operating member for actuating said stylus into the operating position, the improvement comprising:
a slender flexible shank connected to said operating member for reciprocation therewith and extending inside said shell;
a cam follower on the inwardly extending end of said flexible shank, said cam follower being positioned between said flexible shank and said inner wall; and
a cam projection on the inner wall of said shell for interacting with said cam follower, and thereby laterally deflecting said flexible shank, said cam projection including:

1. a first surface for deflecting the inwardly extending end of said flexible shank from its undeflected position in one lateral direction during the actuation of said stylus into the operating position,
2. a tooth for holding said flexible shank in tension and thereby restraining said operating member connected thereto in the actuating position, and for maintaining said flexible shank in a deflected position, and
3. a second surface for guiding said flexible shank from said deflected restraining position, releasing said flexible shank into its undeflected position under its resiliency, and deflecting said flexible shank in the other lateral direction around said cam projection under the bias on said stylus upon the next reciprocation of said operating member; said stylus being restored to the non-operating position under its bias.

3,951,555
MODULAR WRITING PEN

Frederick R. Wittnebert, Whitewater; Francis J. Meinhardt, Edgerton; Joseph R. Branks, Janesville; Gerald C. Herold, Janesville, and Daniel P. Stambaugh, Janesville, all of Wis., assignors to The Parker Pen Company, Janesville, Wis.

Filed Apr. 14, 1975, Ser. No. 567,678
Int. Cl.² B43K *7/02*
U.S. Cl. 401—217 **35 Claims**

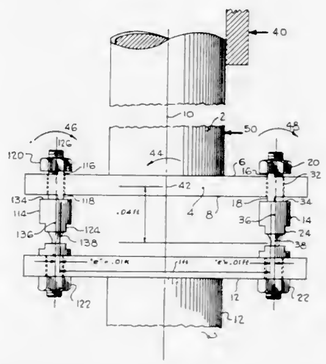


1. A writing pen including a writing tip and a shell providing an area for storing a supply of ink, the improvement which comprises a feed extending between the ink supply area and the writing tip and a primary ink feed channel of capillary dimensions for delivering ink from the supply area to the writing tip, a collector partially mounted within the shell and partially extending from the shell and having a bore therethrough for holding the writing tip and for surrounding the feed, the portion of the collector mounted within the shell having a first set of outwardly extending fins arranged to provide capillary fin spaces therebetween, each of the first set of fins having an opening therein for providing communication between adjacent ones of the capillary fin spaces and the openings being longitudinally aligned; and the collector further having a second set of outwardly extending fins arranged to provide capillary fin spaces therebetween, the second set of fins including a tortuous air passage having a first opening communicating with the longitudinally aligned openings of the first set of fins and a second opening communicating with the ink supply area, the first and second openings in the second set of fins being circumferentially offset so that at least a portion of the tortuous air passage extends along the surfaces of the second set of fins, the outside wall surfaces of the second set of fins being circumferentially spaced from the inside wall of the shell a capillary space for maintaining ink therebetween, the collector also having an exposed vent hole in the portion of the collector extending from the shell and communicating with the atmosphere and an internal vent hole in the collector in the portion of the collector within the shell and opening into the longitudinally aligned openings along the communicating capillary fin spaces of the first set of fins and the feed comprises a trough portion arranged for connecting the exposed vent hole and the internal vent hole.

3,951,556
LOAD CONCENTRATED BREAKAWAY COUPLING APPARATUS

Richard A. Strizki, Ringoes, N.J., assignor to Transpo-Safety, Inc., New Rochelle, N.Y.

Filed May 16, 1974, Ser. No. 470,371
Int. Cl.² F16D *9/00*
U.S. Cl. 403—2 **14 Claims**



13. In a combination embodying a post having a vertical axis, a base fixedly secured to said post, a support for the post, a plurality of breakaway coupling members each having a vertical axis extending generally parallel to the axis of said post, said coupling members each having a zone of weakness between the upper and lower ends thereof located in a horizontal plane between the base of said post and said support, said coupling members further being spaced radially from the axis of said post and spaced circumferentially from each other, fastening means connected to the upper end of each coupling member and to the base of said post, other fastening means connected to the lower end of each coupling member and to said support, and means operable to apply substantially equally opposed balanced bending forces to said coupling members at their zones of weakness upon the application of a transverse load to an upper portion of said post and to apply unequally opposed unbalanced bending forces to said coupling members at their zones of weakness upon the application of transverse loads to a lower portion of said post, the improvement wherein said means are formed integral with said base and located at a predetermined distance inwardly from the axes of said coupling members.

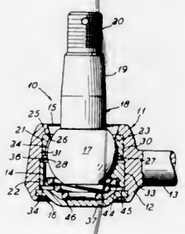
3,951,557
DUAL SEAT BALL AND SOCKET JOINT

Edward J. Herbenar, Detroit, Mich., assignor to TRW Inc., Cleveland, Ohio

Continuation of Ser. No. 274,870, July 25, 1972. This application Oct. 19, 1973, Ser. No. 408,152
Int. Cl.² F16C *11/06*
U.S. Cl. 403—138 **2 Claims**

1. A ball and socket joint comprising a stud having a shank with a ball end, a housing having an open ended cavity receiving the ball end of said stud with an inturned lip at one end defining a throat receiving the stud shank freely therethrough and a closure plate closing the other end, a rigid wear resisting bearing ring in said cavity seated on said lip and having an internal bearing surface tiltably and rotatably supporting the portion of the ball end of the stud adjacent said shank, a resilient, more yieldable split wear takeup bearing ring in said cavity axially spaced from said rigid ring and having an internal bearing surface tiltably and rotatably supporting the portion of the ball end remote from said shank of the stud, a spring bottomed on said closure plate biasing said split wear take-up ring axially toward the rigid wear resisting bearing

ring and against said remote portion of the ball end of the stud, said split ring having opposed circumferential ends defined by said split and a tapered outer periphery converging toward said lip of the housing, said cavity of the housing having at least the portion receiving the tapered periphery of said split ring tapered toward said lip and mating with the tapered outer periphery of said split ring, said tapered outer periphery of the split ring and said tapered portion of the cavity cooperating to urge the opposed circumferential ends of the split ring toward each other in response to axial movement of the split ring toward the rigid wear resisting ring, said split ring being expansible into wedged engagement with the tapered portion of the cavity in response to loads on the stud tending to move the



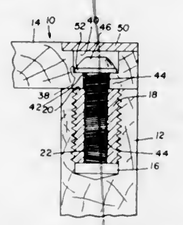
stud into the cavity, and means preventing further movement of the split ring toward the load carrying ring when the circumferential ends of the split ring contact each other, said means preventing further movement of said split ring comprising a preselected relationship between the size of the gap between the circumferential ends of the split ring, the sectional radial thickness of the split wear takeup bearing ring, and the convergent annular radial space between the surface of the ball and the tapered wall of the housing cavity receiving the split ring such that the ends of the split ring will contact prior to wear of the parts beyond a predetermined degree so that further wear will develop looseness of the stud in the housing to indicate the worn condition of the joint components.

3,951,558

APPARATUS FOR DEMOUNTABLY COUPLING TWO MEMBERS

Anatoli N. Komarov, 100 Erskine Place, Coop City, Bronx, N.Y. 10475

Filed Nov. 22, 1974, Ser. No. 526,105
Int. Cl.² F16B *12/14*
U.S. Cl. 403—231 **1 Claim**



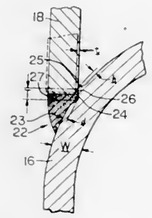
1. Knock-down Furniture formed by engaging at least two pieces and adapted to be easily assembled and broken down for packing and reassembly comprising:
   a plurality of cylindrical cavities formed in one of the furniture pieces with each of said cavities having one end thereof communicating with the engaging surface of said one furniture piece;
   a plurality of cylindrical hardened inserts each having a threaded exterior and defined by two opposed lateral end faces, each of said inserts being formed with a threaded bore along the central longitudinal axis thereof that communicates with one of said opposed lateral end faces, an associated one of each of said inserts being threadably received in a respective one of said cavities so that each one of said inserts remains affixed therein with said one of said insert lateral faces of each of said plurality of inserts being flush with said engaging surface;
   a plurality of apertures through the other one of the furniture pieces, each of said apertures being coincident with a corresponding one of said plurality of insert bores when the furniture pieces are placed in mutual contact;
   a plurality of machine screws each having a head of sufficient size to cover a corresponding one of said apertures so that when said screws are received through a corresponding one of said apertures to threadably engage an associated one of said bores, the regions of said other furniture piece adjacent to and defining each of said apertures will be driven into contact with a corresponding one of said opposed lateral end faces defining each of said inserts to thereby provide a hardened seat onto which said region of said another furniture piece abuts,
   each of said apertures being formed with a discontinuity of cross section defined by a first portion to receive said bolt head and a second portion to receive the stem of said bolt so that when the knocked-down furniture pieces are assembled and joined by concomitant engagement by each of said screws, each of said heads thereof reside below the outboard surface of said other furniture piece,
   said other furniture piece is formed with a ledge of reduced cross section, said ledge of said other furniture piece having a thickness less than the remaining portion of said other furniture piece,
   and a decorative covering strip means equal to the width of said ledge and having an exposed surface free of visible securing means thereon and proportioned to fit in the last mentioned ledge thereby to cover and conceal said apertures with said covering means adapted to conform contiguously to the outboard surface of said other furniture piece and being removable from said last mentioned ledge without the removal of added securing means to uncover and afford access to said machine screws.

3,951,559

WELDMENT FOR BULLDOZER BLADES

Thomas P. Casey, Burlington, Iowa, assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 469,337, May 13, 1974, Pat. No. 3,921,728. This application Feb. 28, 1975, Ser. No. 554,267
Int. Cl.² B25G *3/34*; F16B *11/00, 12/04*
U.S. Cl. 403—268 **8 Claims**



1. A weldment comprising
   a first member,
   a groove of predetermined depth formed on and below a substantially smooth surface of said first member and terminating at one side thereof at a contiguous, raised dam of predetermined height above said surface, said groove and said dam forming a general S-shape when viewed in cross section,
   a second member having a corner thereof disposed at said groove and closely adjacent to said dam and

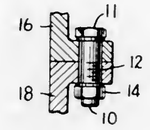
common and independent weld means at least substantially filling said groove and securing said first and second members together.

3,951,560

MAGNETOSTRICTIVE FASTENER ARRANGEMENT

Andrew E. Beer, 25 Sutton Place, New York, N.Y. 10022

Division of Ser. No. 290,349, Sept. 19, 1972, Pat. No. 3,816,902. This application Apr. 30, 1974, Ser. No. 465,575
Int. Cl.² F16B *4/00*
U.S. Cl. 403—273 **10 Claims**



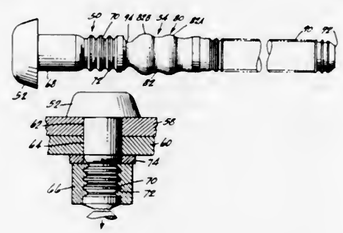
1. A magnetostrictive fastening system comprising a magnetostrictive element having at least one portion whose dimensions are adapted to be elastically changed in the presence of a magnetic field; receiving means for frictionally retaining said magnetostrictive element; and means for applying an external magnetic field to said magnetostrictive element so that said dimensions of said portion are altered within its elastic limit and said frictional relationship between said magnetostrictive element and said receiving means will be altered for fastening purposes.

3,951,561

STRESS COINING TOOL FASTENED JOINT

Eugene R. Speakman, Fullerton, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Continuation of Ser. No. 221,763, Jan. 28, 1972, abandoned, which is a continuation of Ser. No. 25,288, April 29, 1970, which is a continuation of Ser. No. 779,148, Nov. 26, 1968. This application Dec. 10, 1973, Ser. No. 423,411
Int. Cl.² F16B *7/10*; B25G *3/00*; F16D *1/00*
U.S. Cl. 403—279 **4 Claims**



1. A structural joint comprising:
   a workpiece having a pair of exposed opposite surfaces formed by a plurality of overlapping contiguous metal elements in face-to-face contacting relation with the next adjacent element; the metal forming the elements having the inherent physical property of being receptive to improvement in its fatigue strength via coldworking and elastically rebounding to a different size and an increased fatigue strength after such cold working;
   a straight bore of a first selected diameter extending coaxially through all of said elements; and
   a unitary metallic combined headed bolt and metal-working tool formed coaxially on a shank common to both, the bolt portion and the tool portion being joined by a breakneck groove which groove provides means for eventual frangible removal of said tool portion,
   the bolt portion comprising:
      a head;
      a cylindrical shank having a second predetermined diameter larger than said workpiece bore one end of which is joined to said head and an alternately ridged and grooved fastener-receiving portion having a diameter less than said bore extending from the other end of the cylindrical shank and terminating adjacent said breakneck groove, said cylindrical shank extending substantially through said workpiece bore and being engaged by the walls of said bore with an interference fit, said head engaging one of said surfaces adjacent the bore; and
      a fastening collar surrounding and tightly interengaged with said fastener-receiving ridges and grooves, said fastening collar having end faces one of which firmly engages with the other surface of said workpiece, the remaining face of said collar terminating adjacent said breakneck groove,
   said tool portion comprising:
      a metalworking section adjacent said breakneck groove, said metalworking section including a cylindrical shank having a diameter less than said workpiece bore along which a plurality of axially-spaced, smooth-surfaced, solid, annular, relatively hard protuberances extend radially therefrom to form hole-expanders, said expanders having successively graduated selected maximum diameters each of which is larger than the diameter of said workpiece bore with the expander of largest diameter being adjacent said breakneck groove, each expander being formed by a smoothly curved surface of revolution the maximum diameter of which is in the middle thereof, said curved surface having an initial segment facing toward said end portion and a return segment facing toward said breakneck groove, both the initial and return segments of the curved surface extending from said maximum diameter with progressively smaller diameters and generally asymptotically approach said tool shank diameter, the space between successive expanders forming recesses for a lubricant and the diameter of the largest expander section being larger than said workpiece bore by an amount substantially equal to twice said elastic rebound of said workpeice bore wall, said cylindrical shank having a diameter greater than the diameter to which the bore tends to rebound after coldworking and less than the diameter of said expander; and
      a tool-receiving end portion extending from the smallest of the expanders a distance sufficient for engagement by a tool and including ridge and groove means for co-operation therewith, whereby said bore has been cold worked by said expanders during insertion of said combined bolt and tool, the fatigue strength of the walls of the bore through said workpieces has been increased and thus engages said bolt shank with a stronger and more fatigue-resistant grip and thereby forming an improved structural joint.

3,951,562

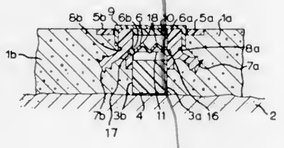
EXPANSION JOINT

Edward Robert Fyfe, Burlington, Canada, assignor to Elastomet al Limited, Burlington, Canada

Continuation-in-part of Ser. No. 330,551, Feb. 8, 1973, abandoned. This application Sept. 27, 1974, Ser. No. 509,780
Int. Cl.² E01C *11/02*
U.S. Cl. 404—68 **12 Claims**

1. An expansion joint for joining a pair of substantially parallel edge surfaces of adjacent slabs, said expansion joint comprising:
   a. a pair of elongated anchor elements of a substantially rigid polymeric material, each adapted to extend along the edge surface of a respective one of said slabs;

b. securing means on each anchor element for securing the respective element to the respective slab edge;
c. a laterally compressible and extensible elongate web of normally folded configuration, of more flexible polymeric material than the said anchor elements and having two parallel longitudinal edges which in the completed joint are permanently secured to respective ones of the said anchor elements; and



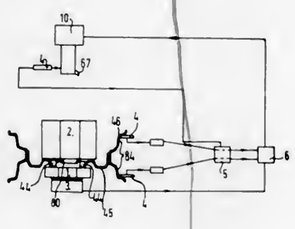
d. spacing means interposed between the anchor elements for maintaining them at a preselected spacing to one another until said elements are secured to the respective slabs, said spacing means comprising an extensible membrane joined to the folds of the web to resist spreading thereof, said membrane being adapted to rupture during normal movement of said slab surfaces away from each other in operation.

3,951,563

MANUFACTURE OF VEHICLE DISC WHEELS

Alan Ravenhall, Huntley, England, assignor to Dunlop Limited, London, England

Filed Aug. 29, 1973, Ser. No. 392,550
Claims priority, application United Kingdom, Sept. 7, 1972, 41677/72
Int. Cl.² B23B *35/00*
U.S. Cl. 408—1 R **9 Claims**



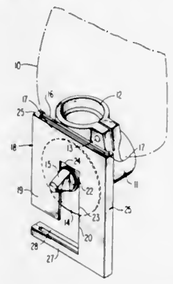
1. A method of truing a disc wheel of the kind having a rim including a pair of bead seats for supporting the beads of a pneumatic tire and a body portion in the form of a disc having at least one location hole for mounting the wheel, comprising mounting the wheel about an axis, measuring the radial displacements of at least one bead seat region of the rim at a plurality of positions around the rim, calculating the value of the amplitude and phase of the first harmonic of the vibrations generated as a result of the radial displacements and feeding signals corresponding to the amplitude and phase of the first harmonic to a servo positional controlled machine to align the center line of a tool of said machine with the true center of the location hole, and machining the hole to ensure that when the wheel is mounted and located by the hole and rotated, the first harmonic is of small amplitude.

3,951,564

PIPE OR TUBE CUTTER FOR HAND DRILLS

George R. Montgomery, 1152 Okeechobee Road, West Palm Beach, Fla. 33401

Filed Nov. 1, 1974, Ser. No. 520,126
Int. Cl.² B23D *21/04, 81/00*
U.S. Cl. 408—29 **4 Claims**



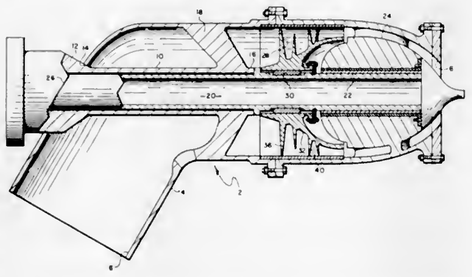
1. A tube cutter attachment for a portable hand drill having a drill spindle, said attachment comprising a right angular drive unit including means for clamping said unit to the hand drill and having an output shaft extending at right angles to the axis of the hand drill spindle, a tubing cutter blade secured to said output shaft and rotating therewith in a plane perpendicular to the axis of the output shaft, a slide plate fixedly secured to said right angular drive unit immediately rearwardly of the tubing cutter blade and having a pair of spaced parallel straight edges, and an integral guide and guard means for said slide plate, said integral guide and guard means including cutter blade guard and a work rest means, said integral guide and guard means being of plate-like formation and having side opposing grooves receiving said straight edges guidingly and having an L-shaped slot opening through one side edge to receive tubing, there being a bottom tubing rest bar on the bottom of the integral guide and guard means defining the bottom edge of said slot and adapted to engage a solid surface, said cutter blade guard being disposed immediately forwardly of said cutter blade to guard the same in all adjusted positions of the cutter blade except in the area defined by said slot, and spring return means disposed between said integral means and said unit for biasing said unit away from said rest bar.

3,951,565

HIGH SUCTION INDUCER

Kurt Rothe, Palisades, and Raymond B. Furst, Northridge, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 9, 1974, Ser. No. 530,644
Int. Cl.² F04D *1/04, 3/02*
U.S. Cl. 415—1 **3 Claims**



1. A high suction inducer of the type having a generally conical hub with a plurality of blades being formed of alar configuration and projecting substantially perpendicular to

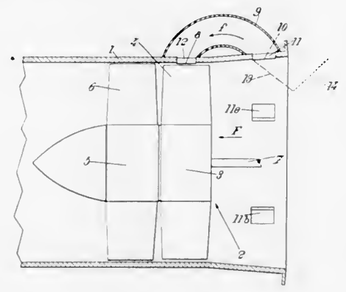
the axis of said hub with a housing encircling said blades, the improvement which comprises;
each of said blades with the tip suction surface leading edges of said blades defining angles of ±0.5° with the relative flow direction of an incident fluid to minimize cavitation damage to the suction side of said blades and having the ratio of the spacing between adjacent blades to the clearance distance between said blade tips and said housing greater than 70 to dissipate harmlessly, tip vortex cavitation that spills between said blades said blades having a sweep angle of about 60°.

3,951,566

AXIAL-FLOW FAN WITH BY-PASS PIPE OR PIPES

Jean Mattei, Saint-Mande; Bernard Simon, Clamart, and Ingrid Vuong nee Adlerberg, Bures-sur-Yvette, all of France, assignors to Electricite de France (Service National), Paris, France

Filed Dec. 11, 1974, Ser. No. 531,714
Claims priority, application France, Dec. 11, 1973, 73.44198; Nov. 21, 1974, 74.38270
Int. Cl.² F04D *29/66*
U.S. Cl. 415—115 **3 Claims**



1. In an axial-flow fan comprising a fan casing and a rotor having blades, said rotor being oriented to blow flow medium through the casing from upstream to downstream, said casing having a flow zone upstream of said rotor and a second zone at the periphery of said blades of said rotor, the improvement comprising at least one pipe having an intake and an outlet, said intake of said at least one pipe communicating with said flow zone and said outlet from said at least one pipe communicating with said second zone such that during operation of said rotor, said at least one pipe is drawing off flow medium from said flow zone and passing the drawn off medium to said second zone.

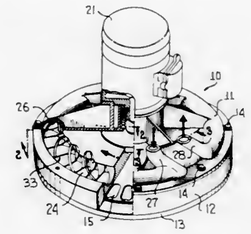
3,951,567

SIDE CHANNEL COMPRESSOR

Ulrich Rohs, Roonstr. 11, 516 Duren, Germany

Continuation-in-part of Ser. No. 313,478, Dec. 8, 1972, abandoned. This application Nov. 6, 1974, Ser. No. 521,456
Claims priority, application Germany, Dec. 18, 1971, 2163011
Int. Cl.² F01D *5/10*
U.S. Cl. 415—119 **12 Claims**

1. A side channel compressor comprising a housing defining a fluid conveying chamber, said fluid conveying chamber being of a curved configuration, a compressor wheel, means mounting said compressor wheel for rotation about an axis, fluid inlet and fluid outlet ports in fluid communication with said fluid conveying chamber, said compressor wheel having a plurality of blades which during the rotation of said compressor wheel move fluid along said chamber in a direction from said inlet port toward said outlet port, each blade being disposed generally radially relative to said axis, each blade having a radially innermost and outermost blade axially extending surface portions with the latter being more remote from said axis than the former, said innermost and outermost blade portions being inclined relative to said axis and inclined in the direction of fluid flow along said chamber, and the angle



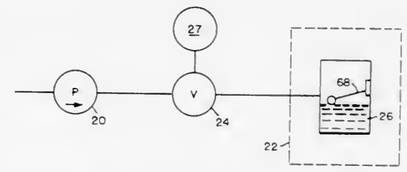
of said innermost blade axially extending surface portions to a radial plane being steeper in the opposite direction of rotation of said compressor wheel than the angle of said outer most blade axially extending surface portions to said same direction of rotation where by optimum flow conditions of fluid through said chamber are achieved.

3,951,568

PUMP CHECK VALVE CONTROL APPARATUS

William L. Carlson, Jr., St. Cloud, Minn., assignor to General Signal Corporation, Rochester, N.Y.

Filed Jan. 29, 1974, Ser. No. 437,552
Int. Cl.² F04B *49/04;* **F16K** *31/12*
U.S. Cl. 417—27 **38 Claims**



1. A pump check valve control apparatus, comprising:
means for delivering a fluid to a system;
valve means between said delivering means and said system for controlling the delivery of the fluid to the system;
a valve actuator for positioning said valve means; and
actuator control means for moving said valve actuator at a time when the pressure upstream of said valve means is slightly less than the system pressure whereby said valve means starts to open when the differential pressure across said valve means is substantially zero.

3,951,569

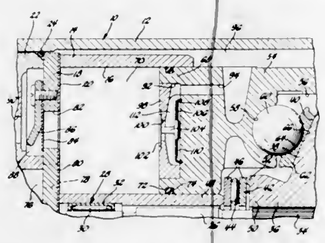
AIR CONDITIONING COMPRESSOR

James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 2, 1975, Ser. No. 573,849
Int. Cl.² F04B *1/12, 49/00*
U.S. Cl. 417—269 **3 Claims**

1. A piston type compressor for use in an air conditioning system comprising: a housing defining at least one cylinder bore with an end portion covering the cylinder bore; a piston supported for reciprocation within the cylinder bore and defining in conjuction with the end member and the cylinder bore a variable volume compression chamber, said housing having a valved inlet passage for controlling the flow of refrigerant into the compression chamber in response to suction within the compression chamber caused by movement of the

piston during an intake stroke and also having a valved outlet passage for controlling the flow of refrigerant from the compression chamber in response to increased pressure therein caused by movement of the piston during a compression stroke; said piston having passage means therein fluidly connected to said compression chamber to permit a limited flow of refrigerant into said compression chamber during an intake stroke and a limited flow from said compression chamber during a compression stroke; valve means associated with said piston passage means for controlling the flow of refrigerant therethrough as said piston is reciprocated within said cylinder



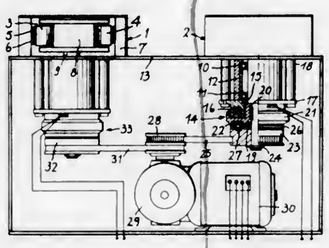
bore; valve actuator means on said piston including a movable diaphragm which forms a part of a sealed enclosure which is filled with a fluid characterized by relatively limited pressure and volume changes in response to temperature changes whereby said diaphragm moves primarily in response to pressure changes of the refrigerant at the compressor inlet; means operably connecting said valve means and said movable diaphragm to open said piston passage whenever a refrigerant pressure level corresponding to freezing temperatures produces volumetric expansion of said sealed enclosure and corresponding movement of said diaphragm.

3,951,570

PUMPING UNIT FOR EXTRACORPOREAL HAEMATIC CIRCULATION, IN PARTICULAR IN ARTIFICIAL KIDNEYS

Gianfranco De Biaggi, Via Punta 54, Mirandola, Italy

Filed Feb. 20, 1974, Ser. No. 444,202
Claims priority, application Italy, Feb. 21, 1973, 4722/73, Aug. 3, 1973, 4855/73
Int. Cl.² F04B *9/00, 35/00, 43/08*
U.S. Cl. 417—319 **3 Claims**



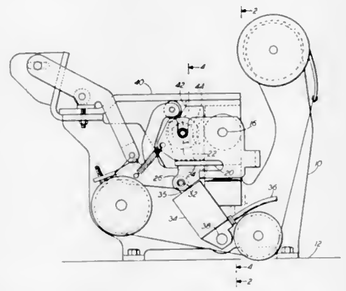
1. A pumping unit for extra corporeal haematic circulation, in particular in artificial kidneys, comprising a pair of pumps of the peristaltic type, an adjustable speed reversible motor, a transmission system for transmitting rotation from said motor to said pumps, said transmission system including between said motor and one of said pumps a first unidirectional coupling and between said motor and the other of said pumps a second unidirectional coupling, only said first unidirectional coupling being adapted to transmit rotation to the pump connected therewith when the motor rotates in one direction and only the other of said unidirectional couplings being adapted to transmit rotation to the other respective pump connected therewith when the motor rotates in the other direction, wherein said motor has a driving shaft extending into a housing mounted on said motor and wherein said transmission system comprises a worm gear on said driving shaft, a pair of helical gears arranged in said housing and intermeshing with said worm gear in diametrically opposite positions thereof, said helical gears lying in the same plane, a pair of parallel transmission shafts rotatably supported in said housing and each supporting one respective of said helical gears, said pair of pumps being connected with said transmission shafts, said unidirectional couplings being arranged between said helical gears and said pumps.

3,951,571

CONSTANT PRESSURE PUMP

Werner Jung, Morton Grove, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Aug. 26, 1974, Ser. No. 500,800
Int. Cl.² F04B *43/12, 45/06*
U.S. Cl. 417—328 **9 Claims**



1. A constant-pressure liquid pump including:
an anvil;
a ram mounted for movement in a path toward and away from the anvil;
a deformable, resilient container having an exit port and positioned between the anvil and the ram;
means for substantially constraining the liquid leaving the container to flow only through the exit port;
the anvil and the ram so shaped as to present, perpendicular to the path of movement of the ram, a substantially constant area of contact with the resilient container;
means for applying substantially a constant-force to the ram including a constant-force spring; and
said applying means further comprises means for moving the ram and anvil together against the urging of the spring and means for releasing the ram for movement toward the anvil under the urging of the spring.

3,951,572

APPARATUS FOR PUMPING CEMENT SLURRY

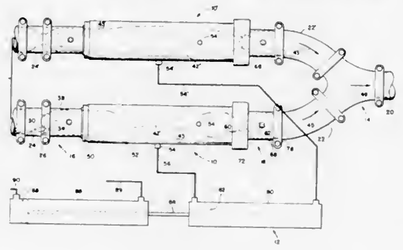
Jess B. Ray, Jr., 3150 E. 62 St., Tulsa, Okla. 74136, and Billie Eugene Nourse, Rte. 4, Bristow, Okla. 74145

Filed July 8, 1974, Ser. No. 486,382
Int. Cl.² F04B *9/08, 35/02, 43/08, 15/02*
U.S. Cl. 417—389 **1 Claim**

1. A cement slurry pumping system comprising:
a. first and second apparatus for pumping a slurry of cement particles and water, each apparatus comprising
1. inlet tubular means having an inlet ball check valve at a first end including means to restrain said ball means to the vicinity of the valve seat;
2. flexible tubular bladder means and circumferential clamp means to sealably attach said bladder means, at a first end, to the second end of said inlet means, outlet check valve seat means attached to the second end of said bladder means by circumferential clamp means;

3. rigid cylindrical housing means removably attached at its first end to said inlet means, said housing means of larger diameter than and surrounding said bladder means, providing an annular space therebetween, said housing means supporting said outlet check valve seat means, said clamp means being in said annular space; and
4. outlet tubular means and outlet ball valve means removably attached to said housing means and coupled to said outlet check valve seat means, and including means to restrain said ball means to the vicinity of said seat means;

b. additional tubular means to couple both of said inlet tubular means to an inlet pipe means and to couple both of said outlet tubular means to an outlet pipe means, the internal surfaces of said inlet tubular means, inlet check valve, said bladder means, said outlet check valve seat means, and said additional tubular means being contoured to prevent accumulations of cement slurry in pockets, said means to couple said inlet means and said means to couple said outlet means comprising a Y-shaped means, said first and second apparatus being positioned parallel and adjacent to each other;



c. cylinder means and piston means sealably slidable in said cylinder means, and piston rod means attached to said piston means;
d. first conduit means connected from a first end of said cylinder means to said first annular space, and second conduit means connected from the second end of said cylinder means to said second annular means, said cylinder, conduits and annular spaces filled with pressure fluid; and
e. means to cyclically oscillate said piston rod to apply fluid pressure to each of said annular spaces in a manner so that high pressure is applied to a first annular space while low pressure is applied to the second annular space and vice versa.

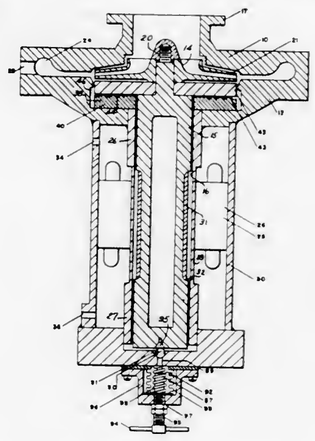
3,951,573

FLUID LUBRICATED BEARING CONSTRUCTION

John R. Dunning, Riverdale, N.Y.; Henry A. Boorse, Leonia, N.J., and Gilbert F. Boeker, New York, N.Y., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed July 16, 1946, Ser. No. 683,872
Int. Cl.² F04B *17/00*
U.S. Cl. 417—424 **13 Claims**

1. A fluid lubricated thrust bearing assembly comprising, in combination, a first bearing member having a plain bearing surface, a second bearing member having a bearing surface confronting the bearing surface of said first bearing member and provided with at least one spiral groove extending inwardly from the periphery of said second bearing member, one of said bearing members having an axial fluid-tight well, a source of fluid lubricant adjacent to the periphery of said second bearing member, and means for relatively rotating said bearing members to cause said lubricant to be drawn through said groove and to flow between said bearing surfaces, whereby a sufficient pressure is built up between said bearing



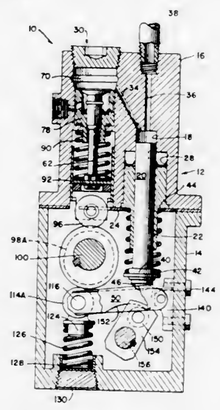
surfaces and in said well to tend to separate said bearing surfaces.

3,951,574

RECIPROCATING PLUNGER TYPE PUMP WITH STROKE ADJUSTMENT MEANS

George Panuline, Richmond, Va., assignor to D-Cycle Power Systems, Inc., Richmond, Va.

Filed Sept. 6, 1974, Ser. No. 503,929
Int. Cl.² F04B *7/00;* **F15B** *15/24*
U.S. Cl. 417—510 **2 Claims**



1. A positive displacement fluid pump including a pump housing; a cylinder in said housing having fluid inlet and outlet passages communicating with one end of said cylinder; a pump plunger mounted for reciprocation in the cylinder; drive means for reciprocating said plunger comprising; a lever arm; means at one end of said plunger having engagement with one end of said lever arm; means at the other end of the lever arm having engagement with lever arm rocking means; a fulcrum for said lever arm and means for moving the fulcrum to vary the travel distance of the plunger; feed means for the pump plunger cylinder comprising a feed chamber in said housing; a valve seat in said chamber dividing said chamber into an inlet zone and an outlet zone; means connecting the inlet zone with a source of fluid and said outlet zone with the inlet to said

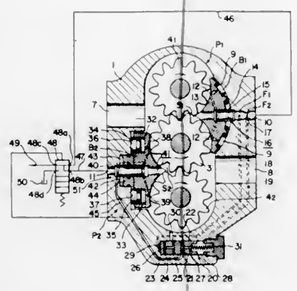
cylinder; a poppet valve reciprocatably mounted in said feed chamber between the inlet and outlet zones; and means for reciprocating the poppet valve in a predetermined phase relation with the means for reciprocating the plunger; wherein the means for rocking the lever arm and for reciprocating the poppet valve comprises a cam and cam followers; wherein the fulcrum for the lever arm comprises a cylindrical member, means mounting said cylindrical member from a lever arm and means for moving said lever arm to swing the cylindrical surface of the fulcrum in an arcuate path in contact with an arcuate track on said lever arm; and wherein the means at one end of the plunger which engages the lever arm is a segment of spherical bearing element.

3,951,575

CONTROLLED OUTPUT GEAR PUMP AND MOTOR

Mitsuteru Motomura, Kamakura; Masayuki Futamata, Kitamine, and Yasuo Kitta, Yokohama, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed July 10, 1973, Ser. No. 377,922
Claims priority, application Japan, July 10, 1972, 47-68218
Int. Cl.² F04B *49/02;* **F01C** *19/04, 1/08;* **F03C** *3/00*
U.S. Cl. 417—283 **2 Claims**



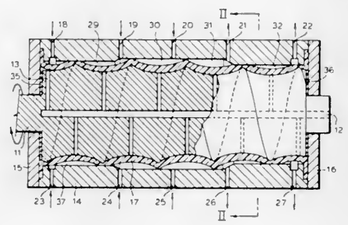
1. A gear pump and motor comprising:
a prime mover;
a housing;
a drive gear driven by said prime mover and at least two driven gears interengaged with said drive gear rotatably mounted within said housing;
first pump means including said drive gear and one of said driven gears;
a first seal block disposed within the vicinity of the engaging area between said drive gear and one of said driven gears;
side balance chambers formed upon the outer surface of said first seal block which are in fluidic communication with the area between the teeth of said drive gear and said one of said driven gears and with each other;
a central balance chamber also formed upon the outer surface of said first seal block which is in fluidic communication with an exhaust hole formed within said first seal block which in turn is in fluidic communication with an exhaust port formed within said housing, said exhaust port having a throttle formed therein;
second pump means including said drive gear and said other one of said driven gears;
a second seal block disposed within the vicinity of the engaging area between said drive gear and said other one of said driven gears;
a pair of balance chambers formed upon the outer surface of said second seal block;
pistons slidably disposed within said balance chambers the latter of which are in fluidic communication with the areas formed between the teeth of said drive gear and said other one of said driven gears and with each other;
a guide tube slidably and sealingly disposed within an exhaust hole formed within said second seal block, the front end of said guide tube being slidably disposed within another exhaust port formed within said housing;
an oil chamber provided within said housing within the vicinity of said another exhaust port;
piston means slidably disposed within said oil chamber for moving said second seal block toward said drive gear and said other one of said driven gears;
control valve means provided within said housing;
a valve spool slidably disposed within said housing and having first, second and third annular grooves formed thereon in such a manner that said first and second annular grooves are in communication with each other and said third annular groove is in communication with an oil chamber formed at the rear end of said valve spool, said oil chamber being in communication with said throttle of said said first pump means and said valve spool is in communication with the area surrounding the gear teeth of said other one of said driven gears;
another oil chamber formed at the front end of said valve means which is in fluidic communication with the inlet side of said exhaust port of said first pump means;
spring means interposed between said valve spool and the rear end of said control valve means for urging said valve spool toward said another oil chamber so as to terminate the communication between said valve spool and said area surrounding said teeth of said other one of said driven gears and;
a passage formed within said housing for connecting said valve spool with said oil chamber of said second pump means for releasing the hydraulic fluid within said oil chamber into said area surrounding said teeth of said other one of said driven gears when said drive gear is driven at high speed.

3,951,576

ROTARY DIAPHRAGM PUMP

Alden A. Lofquist, Jr., 10 Rita Way, Orinda, Calif. 94563

Filed Sept. 23, 1974, Ser. No. 508,236
Int. Cl.² F01C *5/08, 21/08;* **F04C** *5/00;* **B01F** *5/12*
U.S. Cl. 418—5 **9 Claims**



1. Apparatus for pumping small volumes of fluids which comprises:
a. a body having an elongated bore therein,
b. a tubular diaphragm located in the elongated bore and attached to the body at each end and along at least one longitudinal line on the outer perimeter of the tubular diaphragm thereby defining at least one longitudinal fluid flow channel between the tubular diaphragm and the wall of the elongated bore,
c. a helix of such dimensions and mounted within the body in such a manner that the ridges of the helix cause the tubular diaphragm to achieve fluid sealing contact between the tubular diaphragm and the wall of the elongated bore of the body thereby dividing the fluid flow channel into a series of discrete fluid cavities along the fluid flow channel,
d. inlet passageway means adjacent to the first end of the tubular diaphragm communicating with the fluid flow channel,

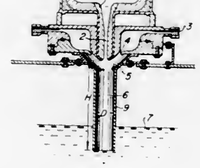
e. outlet passageway means adjacent to the second end of the tubular diaphragm communicating with the fluid flow channel,
f. means for rotatably mounting the helix within the bore of the body whereby when the helix is rotated the discrete fluid cavities are caused to progressively move from the first end to the second end of the diaphragm within the fluid flow channel,
g. means for varying the volumes of the discrete fluid cavities at a selected point along the fluid flow channel, and
h. intermediate passageway means including at least one passageway communicating with the fluid flow channel at the selected point where the discrete fluid cavities are changed in volume.

3,951,577

APPARATUS FOR PRODUCTION OF METAL POWDER ACCORDING WATER ATOMIZING METHOD

Akira Okayama; Hisashi Ando; Ko Soeno, all of Hitachi; Hisasuke Takeuchi, Omiya, and Atsuya Kamada, Yokohama, all of Japan, assignors to Hitachi, Ltd. and Hitachi Metals, Ltd., both of, Japan

Filed Feb. 11, 1974, Ser. No. 441,357
Claims priority, application Japan, Feb. 9, 1973, 48-15523
Int. Cl.² B22D *23/08*
U.S. Cl. 425—7 **26 Claims**



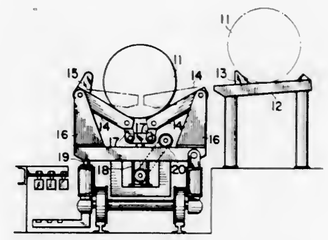
1. An apparatus for production of metal powders comprising:
a molten metal tank,
molten metal nozzle means which is communicated with the tank and through which molten metal passes,
annular liquid spray means surrounding the molten metal nozzle for injecting cooling liquid into said molten metal and thereby finely dividing said molten metal,
a granulation chamber guide through which atomized metal particles coming from the molten metal nozzle pass, and
a water tank disposed under the chamber guide with a lower end of said guide being opened into water contained in the water tank,
wherein said guide is dimensioned to ensure violent movement of the finely divided metal and liquid in said guide so that vapor film of said liquid on the surfaces of said finely divided metal is promptly destroyed and a fresh portion of said liquid is contacted with the surfaces of said finely divided metal.

3,951,578

APPARATUS FOR AUTOMATICALLY ADJUSTING CENTER-HEIGHT OF A MOLD AND THE LIKE USED FOR MANUFACTURING CONCRETE PIPES

Yoshiaki Horiuchi; Masaaki Hanawa, both of Kashiwa, and Shinzo Hasegawa, Yokohama, all of Japan, assignors to Nippon Concrete Industries Co. Ltd., Tokyo, Japan

Filed June 28, 1974, Ser. No. 484,091
Int. Cl.² B28B *17/00*
U.S. Cl. 425—150 **5 Claims**



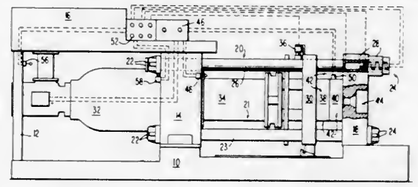
1. An apparatus for automatically adjusting the height of a mold relative to a platform comprising:
lift means positioned below said mold for supporting said mold and moving said mold vertically;
control means for controlling the vertical movement of said lift means;
a first sensor on said platform for sensing the presence of a mold on said lift means and thereby activating said control means;
a second sensor on said platform for sensing the vertical position of said mold and thereby deactivating said control means;
said second sensor comprising a support mounted to said platform, a first and second lever pivotally mounted to said support so that the angle formed by the longitudinal axis of said first and second levers is bisected by a line between the center of the mold in its final position and the apex of the angle formed by said first and second levers, a pair of intermeshing gears mounted respectively to the pivotal connection of said levers to said support for synchronizing angular movement of said first and second levers and a switch on the other end of said second lever to sense the presence of the mold at a preselected center distance and deactivate said control means.

3,951,579

APPARATUS FOR FACILITATING ACCESS TO THE MOLD HALVES OF A MOLDING MACHINE

Gary L. Myers, and Donald W. Staiger, both of Mount Gilead, Ohio, assignors to Koehring Company, Milwaukee, Wis.

Filed May 8, 1974, Ser. No. 467,897
Int. Cl.² B29F *1/00*
U.S. Cl. 425—190 **11 Claims**



6. Clamping apparatus comprising:
a pair of clamp arms pivotally connected together at one end and having at the opposite ends thereof opposed gripper portions; and

linking means for alternately opening and closing said gripper portions, said linking means including

opposed, mutually connected linking members individually extending in symmetrical, mutually inclined, angular relation to said clamp arms,

a pin connector coupling said linking members at said mutual connection, and

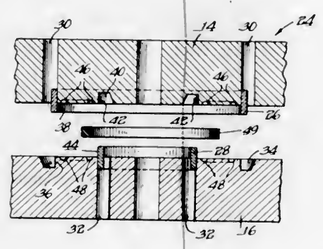
translating means for translating said pin connector to open and close said gripper portions.

3,951,580

POSITIVE PRESSURE MOLD

Carroll D. Hobson, Goshen, Ind., assignor to Goshen Rubber Co., Inc., Goshen, Ind.

Continuation of Ser. No. 400,239, Sept. 24, 1973, abandoned.
This application Jan. 23, 1975, Ser. No. 543,372
Int. Cl.² B29G 1/00
U.S. Cl. 425—233 9 Claims



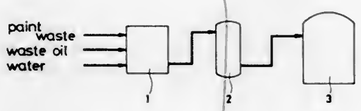
1. A positive pressure mold for compression molding comprising a pair of cooperative mold parts relatively movable towards and away from each other, barrier means including two sets of circumferentially disposed wall and groove means on said mold parts forming an air entrapment mold chamber as said mold parts are moved toward each other, and means forming an air escapement passage of controlled size operative during continued movement of said mold parts toward each other to cause a predetermined pressure to be reached by air entrapped within said chamber as said mold parts continue said motion toward each other.

3,951,581

COMBUSTION METHOD OF PAINT WASTE DISPOSAL

Minoru Nakayama, and Yusai Yamahata, both of Ichihara, Japan, assignors to Mitsui Shipbuilding & Engineering Co., Ltd., Tokyo, Japan

Filed June 15, 1973, Ser. No. 370,434
Claims priority, application Japan, June 22, 1972, 47-63021
Int. Cl.² F23J 7/00
U.S. Cl. 431—4 7 Claims



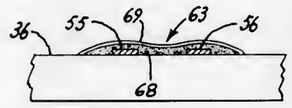
1. The method of disposing of solid or paste-like paint waste, comprising comminuting said paint waste to form small particles of said paint waste of a size to be suspendable in oil, dispersing said particles in suspension in a carrier liquid comprising oil to form a low sedimentation-rate flowable slurry, and incinerating said slurry to provide substantially complete combustion of said paint waste.

3,951,582

SWITCHING DEVICES FOR PHOTOFLASH UNIT

Fred F. Holub, and Jan Walter Szymaszek, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 24, 1974, Ser. No. 473,151
Int. Cl.² F21K 5/02; G03B 15/04
U.S. Cl. 431—95 R 8 Claims



1. A photoflash lamp unit comprising

a. a pair of flash lamps,

b. an electrical circuit into which said lamps are arranged to fire individually and in sequence, and

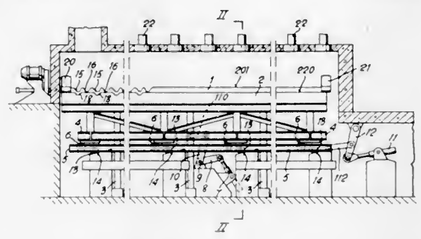
c. a solid state, radiant energy device located external of the lamps and forming part of the electrical circuit, said switching device being located adjacent one of said lamps and disposed to receive radiant energy emitted by the lamp, said photoflash unit being characterized by said switching device being a high relative humidity and temperature resistant mass of a first composition comprising a carbon-containing silver salt and a humidity resistant organic polymer binder selected from the group consisting of cellulose esters, cellulose ethers, polyalkylacrylates, polyalkylmethacrylates, polystyrene and polycarbonate, and a protective coating over said first composition comprising a light absorbing and heat transmitting coloring agent and an organic film forming material whereby the stability of the switching devices is improved under adverse conditions upon exposure to light.

3,951,583

ROCKING-BEAM TYPE FURNACES

Ferdinando Carretta, and Pietro Tixi, both of Genoa, Italy, assignors to Italimpianti Societa Italiana Impianti P.a., Genoa, Italy

Filed Aug. 5, 1974, Ser. No. 494,971
Claims priority, application Italy, Aug. 8, 1973, 12789/73
Int. Cl.² F27B 9/14
U.S. Cl. 432—124 2 Claims



1. In a rocking beam type furnace for heating billets or the like, the arrangement which comprises:

a plurality of fixed support beams which extend longitudinally of the furnace, each fixed support beam having an upper surface defining a first series of continuous transverse billet locating notches with inclined billet support surfaces for approximately a first third of the furnace length; and

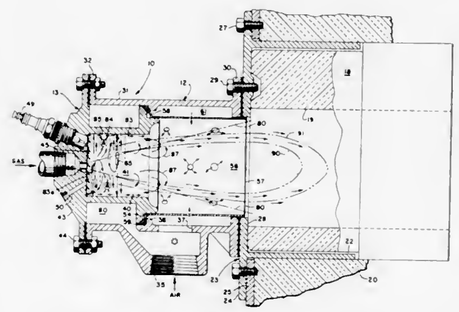
a plurality of conveyor beams, which are parallel to and in alternate arrangement with said fixed support beams, each conveyor beam having an upper surface defining a second series of continuous transverse billet locating notches with inclined billet support surfaces for approximately a first third of the furnace length, which plurality of conveyor beams can be raised and lowered, and longitudinally reciprocated, relative to said plurality of fixed support beams, wherein each billet locating notch of said first series of notches has a symmetrical trapezoidal profile, and is separated from adjacent billet locating notches of said first series of notches by horizontal billet support sections of the upper side of said conveyor beams.

3,951,584

SELF-STABILIZING BURNER

Arvind C. Thekdi, Sylvania, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed May 23, 1974, Ser. No. 472,532
Int. Cl.² F23D 15/02
U.S. Cl. 431—352 9 Claims



1. A self-stabilizing burner comprising:

a housing defining first and second contiguous chambers therein;

said first chamber being generally cylindrical and having an open exit end and a closed inlet end, said inlet end having a first opening approximately in the center thereof and at least a second opening spaced from said first opening;

said second chamber being larger in cross section than said first chamber over at least a portion thereof and having an exit end in fluid communication with an enclosure to be heated by said burner;

fuel supply means for directing a gaseous fuel under pressure through said first opening in said first chamber to cause said fuel to enter said first chamber generally parallel to the longitudinal axis thereof;

first air supply means for supplying a source of combustion air at a first pressure to said housing;

second air supply means for supplying a source of combustion air at a second pressure to said housing;

first port means within said first housing in fluid communication with said first air supply means for directing said combustion air in axially spaced streams tangential to the walls of said first chamber and generally perpendicular to the flow of said gaseous fuel to cause an underpressure at the center of said first chamber drawing said gaseous fuel radially outwardly and establishing an air layer zone at said inlet end of said first chamber tending to prevent carbon formation at said inlet end of said first chamber;

second port means within said second chamber and in fluid communication with said second air supply means to introduce combustion air radially inwardly into said second chamber to define a positive pressure therein;

said second port means coacting with said first port means to impart a recirculatory motion to a portion of the longitudinally moving portion of said gaseous fuel and air exiting said first chamber whereby said portion is recirculated back into said first chamber; and

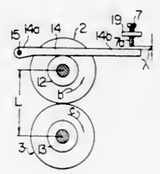
ignition means extending within said second opening in said inlet end of said first chamber to cause said gaseous fuel and air therein to be ignited.

3,951,585

METHOD OF HEATING AND FIXING A TONER IMAGE

Sakae Fujimoto, Chofu, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Division of Ser. No. 357,097, May 4, 1973, Pat. No. 3,874,843.
This application Nov. 20, 1974, Ser. No. 525,682
Claims priority, application Japan, May 11, 1972, 47-46997
Int. Cl.² G03G 5/00; H05B 3/10
U.S. Cl. 432—8 1 Claim



1. A method of heating and fixing a toner image formed on a copy sheet wherein the sheet is fed between a pair of fixing rolls, one of which is movably supported relative to the other to vary the interaxial distance between the rolls, and at least one of which undergoes radial thermal expansion when heated, said method comprising:

a. heating the last-mentioned one of said fixing rolls for effecting radial thermal expansion thereof;

b. limiting an increase in the interaxial distance between said pair of fixing rolls when said one heated fixing roll undergoes radial thermal expansion by the heating step for pushing the pair of fixing rolls to bear against each other due to the thermal expansion of the heated fixing roll,

c. the limiting step comprising restraining movement of the axis of said movably supported roll away from the other of said rolls only beyond a point at which the rolls are in contact when said one heated roll has been radially thermally expanded by a predetermined amount owing to heating by the heating step; and

d. feeding a toner-image-bearing copy sheet between said pair of fixing rolls while the rolls are pushed against each other as aforesaid for fixing the image on the copy sheet.

3,951,586

METHOD OF OPERATING THE HEATING STOVES

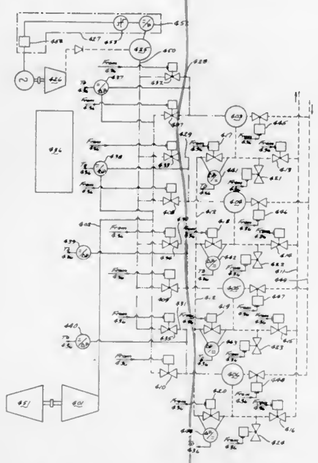
Alexander Rutshtein, and Naum Staroselsky, both of West Des Moines, Iowa, assignors to Compressor Controls Corporation, Des Moines, Iowa

Filed Jan. 9, 1975, Ser. No. 539,710
Int. Cl.² F24H 7/00
U.S. Cl. 432—30 2 Claims

1. The method of operating heating stoves which are heated successively or alternatively to then supply the hot blast required in a blast furnace by staggered parallel operation, the furnace being provided with a group of at least four stoves which group has a common cold air supply manifold connected to at least one turboblower, an auxiliary common cold air supply manifold connected to an air source independently of said at least one turbo-blower, an auxiliary common hot air manifold connecting all of the stoves only between themselves and a common hot blast manifold connected to said furnace, said method comprising:

disconnecting a first one of said stoves from both the cold

and hot air common air manifolds; and
equalizing the pressure in the second and said first stoves by

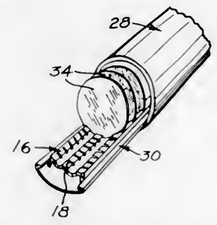


connecting them both between themselves by use of the auxiliary common hot air manifold.

3,951,587
SILICON CARBIDE DIFFUSION FURNACE COMPONENTS

Richard A. Alliegro, Holden, and Samuel H. Coes, Northborough, both of Mass., assignors to Norton Company, Worcester, Mass.

Filed Dec. 6, 1974, Ser. No. 530,083
Int. Cl.² F27B *5/06*
U.S. Cl. 432—253 **9 Claims**



1. A system for a semi-conductor diffusion furnace comprising a process tube, a paddle of a size and configuration that will allow the paddle to traverse said process tube, and at least one boat supportable on said paddle, wherein said process tube, paddle and boat consist essentially of a sintered silicon carbide matrix containing 5 to 30% by weight of high purity silicon metal, said silicon metal rendering said tube, paddle and boat gas impervious.

CHEMICAL

3,951,588
PROCESS FOR DYEING AND PRINTING OR OPTICAL BRIGHTENING OF CELLULOSE MATERIALS

Pierre Perrin, Basel; Arthur Schmutz; Raymond Defago, both of Riehen, and Andres Schaub, Biel-Benken, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 30, 1974, Ser. No. 501,897
Claims priority, application Switzerland, Sept. 20, 1973, 13553/73
Int. Cl.² D06P *5/02*
U.S. Cl. 8—1 A **7 Claims**

1. Process for the semi-continuous or continuous dyeing and printing or optical brightening of cellulose materials by impregnation of the material with an aqueous liquor or printing paste containing at least one fibre-reactive dyestuff or fibre-reactive optical brightener, wherein, subsequent to impregnation, fixing of the dyestuff or optical brightener is performed in a single-phase bath containing at least one alcohol and alkali.

3,951,589
AQUEOUS ALKALINE HAIR DYE COMPOSITIONS

George Alperin; Raymond Feinland, both of Stamford, and Winfield H. Howard, Weston, all of Conn., assignors to Clairol Incorporated, New York, N.Y.

Continuation of Ser. No. 309,498, Nov. 24, 1972, abandoned. This application Feb. 21, 1975, Ser. No. 551,890
Int. Cl.² A61K *7/12*
U.S. Cl. 8—10.1 **19 Claims**

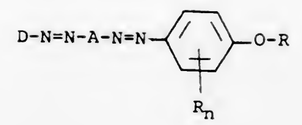
1. An aqueous alkaline hair dyeing composition comprising an aqueous alkaline medium containing therein a tinctorial quantity of N^1,N^4,N^4-tris(2'-hydroxyethyl)-2-nitro-p-phenylenediamine and an alkalizing agent in an amount sufficient to render the composition alkaline, said alkalizing agent being an aminohydroxy compound selected from the group consisting of diethanolamine; triethanolamine; 2-amino-2-methyl-1-propanol; tris(hydroxymethyl)aminomethane; 2-amino-2-methyl-1,3-propanediol; diisopropanolamine; triisopropanolamine and a mixture of diethanolamine and triethanolamine.

3,951,590
MIXTURES OF OPTIONALLY SUBSTITUTED SULFOPHENYL-AZO-NAPHTHYLENE OR TETRAHYDRONAPHTHYLENE-AZO-PARA-ALKOXYPHENYL DYES

Martin Studer, Bettingen, Switzerland, assignor to Sandoz Ltd., (Sandoz AG), Basel, Switzerland

Continuation-in-part of Ser. No. 45,546, June 11, 1970, abandoned, which is a continuation-in-part of Ser. No. 743,054, July 8, 1968, abandoned. This application Mar. 26, 1973, Ser. No. 344,935
Claims priority, application Switzerland, July 27, 1967, 10645/67
Int. Cl.² D06P *1/39*
U.S. Cl. 8—26 **8 Claims**

1. A mixture of compounds consisting essentially of at least two compounds of the formula



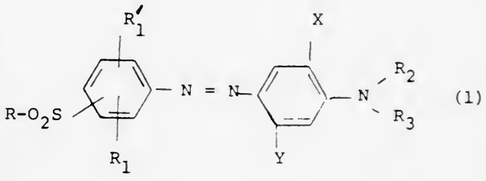
wherein
D is sulfophenyl or substituted sulfophenyl wherein each substituent is independently alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, nitro, chloro or bromo,
A is 1,4-naphthylene, substituted 1,4-naphthylene, 1,4-(5,6,7,8-tetrahydronaphthylene) or substituted 1,4-(5,6,7,8-tetrahydronaphthylene), wherein each substituent of substituted 1,4-naphthylene and substituted 1,4-(5,6,7,8-tetrahydronaphthylene) is independently lower alkyl, lower alkoxy, chloro or bromo,
each R is independently alkyl of 1 to 4 carbon atoms, and
n is 0, 1 or 2.

3,951,591
PROCESS FOR DYEING SYNTHETIC FIBER MATERIALS

Walter Birke; Rudolf Schickfluss, and Franz Schon, all of Frankfurt am Main, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

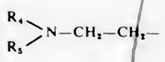
Filed Oct. 23, 1973, Ser. No. 408,643
Claims priority, application Germany, Oct. 24, 1972, 2252123
Int. Cl.² D06P *1/04;* **C09B** *43/00*
U.S. Cl. 8—41 A **7 Claims**

1. A process for the continuous dyeing of synthetic fibrous materials from organic solvents, which comprises impregnating the said fibrous materials with organic dyebaths containing at least one dyestuff of the formula (1)



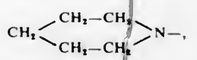
(1)

in which R represents a secondary or tertiary amino group of the formula (2)



(2)

in which R_4, R_5 each represents straight chain or branched alkyl, hydroxyalkyl, lower alkyl -COO- lower alkylene, lower alkyl -o- lower alkylene, and R_4 additionally represents hydrogen, or R_4 and R_5 represent together with the nitrogen atom the heterocyclic ring



R_1 and R_1' each represents hydrogen chlorine, bromine, lower alkyl, lower alkoxy, nitro or $-SO_2-$
lower alkyl, R_2 and R_3 each represents hydrogen, lower alkyl, cyano-lower alkylene, hydroxylower alkylene, lower alkylene



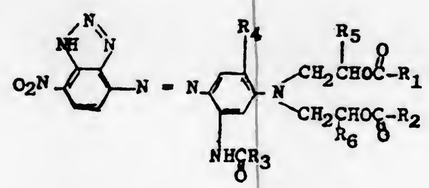
lower alkylene



lower alkyl, lower alkylene-phenyl or phenyl, X represents hydrogen, chlorine, bromine, lower alkyl or lower alkoxy, Y represents hydrogen, chlorine, bromine, lower alkyl, lower alkoxy or acylamino, and subsequently fixing the applied dyestuffs by a heat treatment.

3,951,592
POLYESTER FABRIC MATERIALS DYED WITH MONOAZO DYES MADE FROM 4-AMINO-7-NITROBENZOTRIAZOLE
Raouf Botros, Beech Creek, Pa., assignor to American Color & Chemical Corporation, Charlotte, N.C.
Filed July 13, 1973, Ser. No. 378,946
Int. Cl.² C09B *29/00, 29/08*; **D06P** *1/04, 3/52*
U.S. Cl. 8—41 C **6 Claims**

1. A polyester textile fiber dyed with from 0.01 to 2% by weight, based on the weight of the fiber, of a compound of the formula



wherein
each of R_1 and R_2 is independently lower alkyl, chloro(-lower alkyl), bromo(lower alkyl), phenyl, lower alkylphenyl, lower alkoxyphenyl, chlorophenyl or bromophenyl;
R_3 is lower alkyl, phenyl or tolyl;
R_4 is hydrogen, lower alkyl, lower alkoxy, or chloro;
and R_5 and R_6 are hydrogen or methyl.

3,951,593
METHOD FOR OBTAINING NUBUCK LEATHER SURFACES BY THERMAL CORRECTION OF GRAIN
Waldemar Wojdasiewicz; Krystyna Szumowska, and Robert Morawiec, all of Lodz, Poland, assignors to Instytut Przemtslu Skorzanego, Lodz, Poland
Filed Apr. 11, 1974, Ser. No. 460,213
Claims priority, application Poland, Apr. 16, 1973, 161937
Int. Cl.² C14C *1/00*
U.S. Cl. 8—94.15 **2 Claims**

1. A method for obtaining a nubuck leather surface by thermal correction of the grain surface of wet leather prior to tanning comprising contacting the wet grain surface with a heating element surface for 0.01–5.0 sec. at a temperature higher than the shrinkage temperature of the grain surface, said temperature being in the range of from 80°C to 250°C.

3,951,594
HYDROGEN PEROXIDE BLEACHING SOLUTIONS AND PROCESS
Harry Gregory Smolens, Philadelphia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.
Continuation of Ser. No. 309,852, Nov. 27, 1972, abandoned. This application Mar. 25, 1975, Ser. No. 561,753
Int. Cl.² D06L *3/02*; **C11D** *7/56*
U.S. Cl. 8—111 **6 Claims**

1. The process of bleaching textile fabrics with hydrogen peroxide solution to insure uniform dyeing of the textile fabrics while preventing scaling of bleaching equipment consisting essentially of contacting the textile fabrics with an aqueous hydrogen peroxide solution containing an effective amount of sodium orthosilicate to control the alkalinity and pH of the peroxide solution.

4. The process of bleaching textile fabrics with hydrogen peroxide solution to insure uniform dyeing of the textile fabrics while preventing scaling of the bleaching equipment consisting essentially of contacting the textile fabrics with aqueous hydrogen peroxide solution containing at least 1.5 grams per liter of sodium orthosilicate to control alkalinity and pH of the peroxide solution and a stabilizing amount of magnesium-alkali metal polyphosphate stabilizer.

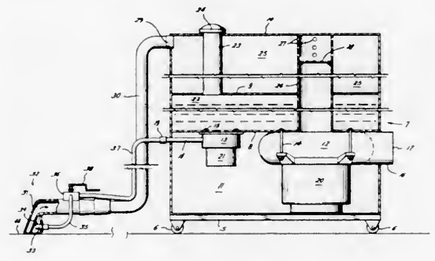
3,951,595
VAPOR PHASE PROCESS FOR CELLULOSE FABRICS
Thomas S. Shelton, Mt. Carmel, Ohio, assignor to McGraw-Edison Company, Elgin, Ill.
Filed July 10, 1974, Ser. No. 487,731
Int. Cl.² D06M *13/14*
U.S. Cl. 8—116.4 **4 Claims**

1. In a method of vapor treating in an enclosure a cellulose or cellulose blend fabric, where the fabric is initially moistened to a concentration of water weight of 5–20% weight of the cellulose fibers in the fabric and thereafter is subjected to gaseous formaldehyde to add same to approximately 0.3% to 0.6% weight of the cellulose fibers, the improvement being the delaying of the application of the catalyst in the form of a charge of sulfur dioxide gas metered into the enclosure until an approximate gaseous build up has been achieved in the enclosure of 40–60% of the total formaldehyde charge required, and thereafter to discharge steam into the enclosure a short duration in the order of seconds for mixing the sulfur dioxide and the formaldehyde gases.

3,951,596
SOAP CURD DISPERSANT
Gordon Trent Hewitt, Upper Montclair, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Division of Ser. No. 297,194, Oct. 13, 1972, Pat. No. 3,843,543. This application June 5, 1974, Ser. No. 476,521
Int. Cl.² B08B *3/00*; **C11D** *9/30*
U.S. Cl. 8—137 **7 Claims**

1. A method of washing fabrics using soaps of higher fatty acids comprising adding to the wash or rinse water a liquid soap curd dispersant comprising from about 10 to about 60 percent of an amide selected from the group consisting of oleic dimethyl amide, isostearic dimethyl amide, lauric dimethyl amide, myristic dimethyl amide, higher alkyl dimethyl sulfonamides wherein the alkyl group contains from 8–18 carbons, and mixtures thereof; from about 5 to about 25 percent of a hydrotrope, said hydrotrope being selected from the group consisting of sodium and potassium xylene sulfonates, cumene sulfonates, benzene sulfonates, ethylbenzene sulfonates, alkyl naphthalene sulfonates wherein the alkyl group contains from 1–6 carbon atoms; from about 5 to about 25 percent of an organic solvent, the balance of said soap curd dispersant being water.

3,951,597
METHOD OF DRY CLEANING FABRICS
Scott W. Mooring, Fort Worth, Tex., assignor to Steamatic, Inc., Grand Prairie, Tex.
Continuation-in-part of Ser. No. 206,059, Dec. 8, 1971, abandoned. This application Aug. 31, 1973, Ser. No. 393,344
Int. Cl.² D06L *1/04*
U.S. Cl. 8—142 **7 Claims**



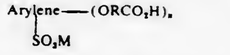
1. The method of dry cleaning fabrics, as upholstery, draperies and the like, in situ, the method being suitable for normal use in or near inhabited areas without recapture of spent solvent, which comprises the steps of
a. placing the inlet nozzle of a suction pipe in close proximity with the fabric,
b. forcefully and continuously discharging against the fabric portion immediately adjacent said inlet nozzle a spray of solvent comprising predominantly a chlorinated hydrocarbon selected from the group consisting of trichloroethylene, trichloroethane, perchloroethylene, methylene chloride, and methyl chloroform,
c. immediately thereafter and continuously applying to said fabric portion through said pipe and nozzle suction sufficient to draw the sprayed solvent with entrained soil and ambient atmosphere through and from the fabric and in a stream through said nozzle and pipe,
d. the velocity of the applied solvent spray and the intensity of the applied suction interacting to entrain soil in the fabric and maintain the solvent in said stream substantially in liquid droplet form for efficient transport of soil therewith,
e. vaporizing said stream upon emergence from said pipe for separating and collecting the entrained soil, and
f. discharging the residual solvent and air into the ambient atmosphere.

3,951,598
VISCOUS WATER-IN-OIL TYPE DYE OR FLUORESCENT BRIGHTENING AGENT EMULSION AND METHOD FOR THE MANUFACTURE THEREOF
Masahiro Arashi, Komatsu; Kazuko Iwano, and Akira Nakamura, both of Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo and Komatsu Seiren Kabushiki Kaisha, both of, Japan
Filed Apr. 24, 1974, Ser. No. 463,603
Claims priority, application Japan, Aug. 23, 1973, 48-94748; Apr. 25, 1973, 48-46946
Int. Cl.² D06P *5/04*
U.S. Cl. 8—169 **8 Claims**

1. A stable viscous water-in-oil type emulsion comprising:
a. 0.02 to 5% by weight of at least one dye or fluorescent brightening agent which is sparingly soluble in water and liquid hydrocarbons;
b. 70 to 90% by weight of water;
c. 6 to 60% by weight of at least one liquid hydrocarbon, said liquid hydrocarbon forming a continuous phase in which said dye is dispersed; and
d. 0.05 to 7.5% by weight of at least one nonionic or amphoteric surface active agent.

3,951,599
POLYAMIDES HAVING IMPROVED DYEABILITY PREPARED FROM AROMATIC CARBOXYLIC MONOSULFONATED COMPOUNDS
Gerald Wayne Davis, Charlotte, N.C., and Jimmy Bernard Sheats, Nashville, Tenn., assignors to Fiber Industries, Inc., Charlotte, N.C.
Division of Ser. No. 216,291, Jan. 7, 1972, Pat. No. 3,860,560. This application Sept. 12, 1974, Ser. No. 505,281
Int. Cl.² D06P *3/24*
U.S. Cl. 8—178 R **6 Claims**

1. A fiber-forming polyamide in the form of a fiber dyed with a basic dye, said polyamide comprising the polymerization product obtained from dicarboxylic acid-diamines, aminocarboxylic acids or mixtures thereof reacted in the presence of from about 0.5 to 2.5 mole per cent based on the weight of the polymerization product of a sulfoaryloxycarboxylic acid or salt thereof having the formula:



wherein R is an alkyl or aryl radical, M is hydrogen of a monovalent metal, and n=1 or 2.

3,951,600
ACRYLAMIDE AQUEOUS SOLUTION HANDLING METHOD
Shiro Asano, No. 1071-2, Nakano-cho, Totsuka, Yokohama, Kanagawa; Kiyotaka Yoshimura, No. 266-9, Takashi, Mobara, Chiba; Ryoji Tsuchiya, No. 15-22, Daimachi 4-chome, Kamakura, Kanagawa, and Tadatoshi Honda, No. 1541, Yabe-cho, Totsuka, Yokohama, Kanagawa, all of Japan
Filed Dec. 4, 1972, Ser. No. 311,900
Claims priority, application Japan, Dec. 6, 1971, 46-97894
Int. Cl.² A61L *13/00*; **C07C** *103/08*
U.S. Cl. 21—2 **4 Claims**

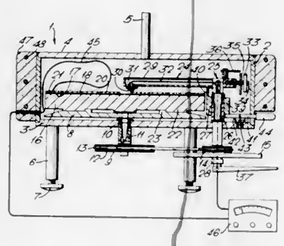
1. In a method for handling in storage or transit 20 to 70 wt% acrylamide aqueous solutions obtained by reacting acrylonitrile with water in the presence of a copper catalyst and purifying the resultant crude acrylamide, the improvement consisting of containing said acrylamide aqueous solution which contains no effective amount of polymerization inhibitor in a utensil made of or lined with materials selected from the group consisting of phenol resin, polyethylene, polypropylene, and polyvinylchloride resin, thereby preventing the

polymerization of the acrylamide during said storage or transit.

3,951,601
DETERMINATION OF SOFTENING TEMPERATURES FOR THIN FILMS

Peter John Deasley, Newmarket; Howard Donald Curtis, Swavesey, and Paul Castle, Willingham, all of England, assignors to Decca Limited, London, England

Filed May 1, 1975, Ser. No. 573,765
Int. Cl.² G01N *25/04*
U.S. Cl. 73—17 R **19 Claims**



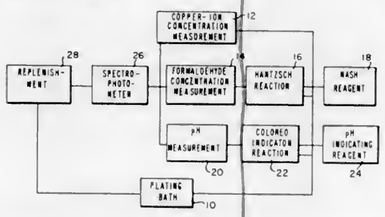
1. A method for determining the softening temperature of a thin film of material deposited on a conductive substrate, comprising heating said thin film, measuring the temperature thereof and monitoring the capacitance between said substrate and an electrically conductive indentor resting on the surface of the thin film, and ascertaining the temperature at which that capacitance substantially increases, said temperature being the softening temperature of the thin film.

9. Apparatus for the determination of the softening temperature of a thin film of material comprising a conductive substrate on which said film will be deposited, means for heating the film, means for measuring the temperature thereof, an electrically conductive indentor which is adapted to rest on the thin film, and means for monitoring the capacitance between said indentor and said substrate.

3,951,602
SPECTROPHOTOMETRIC FORMALDEHYDE-COPPER MONITOR

Douglas Stuart Thompson, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed June 25, 1974, Ser. No. 482,880
Int. Cl.² G01N *21/28*
U.S. Cl. 23—230 R **3 Claims**



1. In a method for the spectrophotometric measurement of the concentration of copper ion in an electroless copper plating bath containing copper ions and formaldehyde, the improvement which comprises:

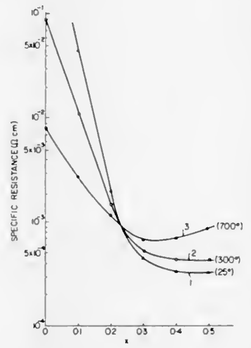
reacting a reagent containing acetylacetone and ammonium salt with said formaldehyde to produce a reaction product photoindicative of formaldehyde concentration in said bath, and

spectrophotometrically measuring said reaction product to indicate said formaldehyde concentration.

3,951,603
GAS-SENSOR ELEMENT AND METHOD FOR DETECTING REDUCING GAS OR OXYGEN GAS

Hidehito Obayashi, and Tetsuo Gejyo, both of Tokyo, Japan, assignors to Hitachi, Ltd., Japan

Filed July 5, 1973, Ser. No. 376,276
Claims priority, application Japan, July 8, 1972, 47-68308; Nov. 15, 1972, 47-113867; May 4, 1973, 48-49094
Int. Cl.² G01N *27/04*; H01C *13/00*
U.S. Cl. 23—232 E **36 Claims**



1. In a method for detecting the presence of a gaseous substance in a test gas comprising contacting the test gas with a sensor element whose resistance changes in the presence of said gaseous substance and measuring the resistance of said sensing element while said test gas is in contact therewith, the improvement wherein said gaseous substance is oxygen or a reducing gas and further wherein said sensing element comprises a complex metal oxide having a perovskite-type crystal structure and represented by the general formula $A_{1-x}A'_xBO_{3-\delta}$, wherein A is at least one element selected from the group consisting of rare earth elements of the atomic numbers from 57 to 71, yttrium, and hafnium, A′ is at least one alkaline earth metal, B is at least one element selected from the group consisting of transition metals of the atomic numbers from 21 to 30, O is oxygen, x is in the range of $0 \leqq x \leqq 1$, and δ is a nonstoichiometric parameter.

3,951,604
CONTROLLED POLYMERIZATION APPARATUS

Dexter E. Smith, and William S. Stewart, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 192,290, Oct. 26, 1971, Pat. No. 3,817,962. This application Apr. 8, 1974, Ser. No. 458,698
Int. Cl.² B01J *8/08*; G01N *31/08*, *33/00*; G05B *21/02*
U.S. Cl. 23—253 A **13 Claims**

1. Apparatus comprising:

a polymerization reactor;

means for introducing a first feed material into said reactor;

means for introducing a second feed material into said reactor;

means for introducing a modifier into said reactor;

means for introducing a diluent into said reactor;

means for removing a product from said reactor;

means for separating a gas from said product;

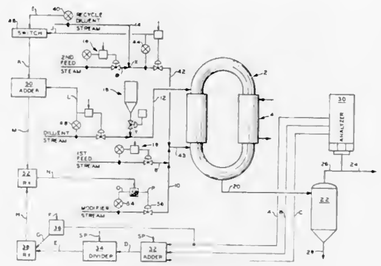
means for establishing a signal D representative of the total concentration of material in addition to modifier, first feed material, and second feed material in said gas;

means for establishing a signal G in response to a comparison of the concentration of modifier in said gas with a preselected desired modifier concentration in said gas;

means for establishing in response to said signal G and said signal D a signal H representative of the desired ratio of modifier to diluent to be introduced into said reactor, said signal H being equivalent to the quotient of signal G divided by signal D;

means for establishing a signal M responsive to the total flow rate of diluent into said reactor;

means for multiplying said signal M and said signal H to establish a signal N;



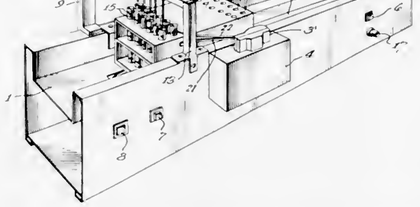
means for establishing a signal O representative of the flow rate of modifier into said reactor; and

means for comparing said signal O with said signal N and controlling the flow rate of modifier into said reactor in response to said comparison.

3,951,605
INSTRUMENT FOR AUTOMATED IMMUNOCHEMICAL ANALYSIS

Samuel Natelson, Chicago, Ill., assignor to Rohe Scientific Corporation, Santa Ana, Calif.

Filed Aug. 8, 1974, Ser. No. 495,671
Int. Cl.² G01N *31/20*, *1/10*, *33/16*
U.S. Cl. 23—253 R **5 Claims**



1. An instrument for quantitative analysis to measure a minute quantity of antigens or antibodies in a sample comprising in combination:

a. a defined horizontal travel path for receiving holding means thereon; said holding means holding test tubes vertically thereon;

b. moving means disposed for moving said holding means, coupled to said travel path to move a plurality of containers in a gang horizontally along said travel path;

c. a work station including sensing means to sense a passing container in the container gang to align the containers at said work station;

d. probes at said work station disposed above said containers when aligned at the work station;

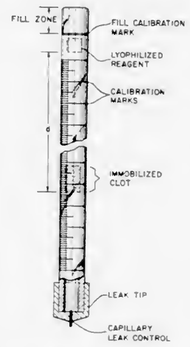
e. lift means for lowering and raising the probes into and out of the containers to add and remove liquid therefrom;

f. program means to control the operation of the instrument including means for the repetitive addition and removal of liquid wash solution from the containers; whereby after reagents are added to said containers to lay down a film of immunologically active substance on the walls of said containers, excess reagent is removed and liquid wash solution is added and removed from said containers thus said containers being washed repetitively by successive addition and removal of wash solution so as to leave the tubes coated with the immunologically active substance free of contaminating impurities, where the immunologically active substance is one of the group defined by antigen and antibody.

3,951,606
APPARATUS FOR PROTHROMBIN TESTING

Rudolph H. Moyer, West Covina, and Donald J. Sibbett, Cucamonga, both of Calif., assignors to Geomet, Inc., Gaithersburg, Md.

Filed May 17, 1974, Ser. No. 470,893
The portion of the term of this patent subsequent to Nov. 11, 1992, has been disclaimed.
Int. Cl.² G01N *33/16*; B01L *11/00*
U.S. Cl. 23—253 R **16 Claims**



1. Apparatus for reproducibly measuring changes of viscosity in a liquid sample subject to an increase in viscosity after combination with at least one reagent capable of altering said sample viscosity comprising in combination:

A. a uniform bore reaction tube having an internal diameter sufficiently large so as to substantially eliminate effects of initial sample viscosity, wherein said combination further comprises;

B. means at a first end of said uniform bore reaction tube for receiving said sample and combining said sample with said at least one reagent, and

C. means to reproducibly gauge the approximate position from said first end at which said liquid and reagent combination travels downwardly and becomes immoblized due to said increase in viscosity wherein said gauge means includes calibration means operable to visually gauge the time for said viscosity increase as a direct function of said downward travel wherein said calibrated gauge means includes a restriction proximate the second end of said uniform bore reaction tube comprising a limiting orifice.

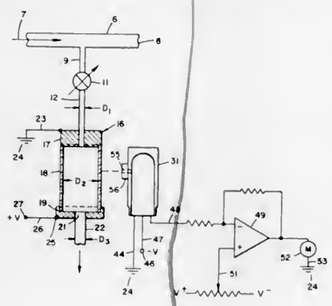
3,951,607
GAS ANALYZER

Robert B. Fraser, Lagunitas, Calif., assignor to Searle Cardio-Pulmonary Systems Inc., Emeryville, Calif.

Filed Nov. 29, 1974, Ser. No. 528,089
Int. Cl.² G01J *3/50*; G01N *21/26*, *33/16*; H01I *5/16*
U.S. Cl. 23—254 E **4 Claims**

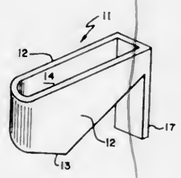
1. A gas analyzer especially for pulmonary use comprising: a patient's breathing tube, a cylindrical analyzing chamber of insulating material having electrical conductive ends and being of substantially uniform internal diameter of from 0.4 to

1.2 inches between said ends, means including a conduit of a diameter of from 0.04 to 0.08 inches extending axially through one of said ends and connecting said chamber to said tube, means including a duct of a diameter of from 0.125 to 0.25 inches extending axially through the other of said ends for connecting said chamber to subatmospheric pressure and to thereby draw gases from said tube through said chamber,



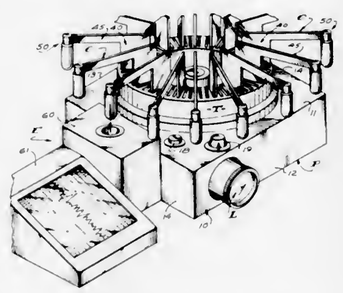
means for applying to said ends of said chamber a voltage difference to cause radiation from gas in said chamber, a plurality of radiation detection devices arrayed around said chamber, radiation filters between said chamber and at least some of said detection devices, each radiation filter being for a particular one of a plurality of gases in said chamber, and means for displaying the response of each of said detection devices.

3,951,608
MIXING CUVETTE AND TIMING TURNTABLE FOR PROVIDING REACTION MIXTURES
Ernest Trod, 2376 Roosevelt Circle, Santa Clara, Calif. 95050
Filed Jan. 22, 1975, Ser. No. 542,963
Int. Cl.² G01N *1/14, 1/18*
U.S. Cl. 23—259 **14 Claims**



1. An apparatus for providing reaction mixtures for displaying characteristics of a sample comprising a support base, a rotating table mounted for rotational movement relative to said support base, said support base having thereon a predetermined rotational reference position, means mounted on said support base for defining thereon a predetermined rotational mixing position, said mixing position being located at a predetermined angle relative to said reference position, means for urging said rotational table through said predetermined angle from said mixing position to said reference position at a predetermined rate, a cuvette mounted on said rotating table for holding the sample and a reagent in spaced relation therein, means mounted on said support base for disturbing said cuvette at said mixing position only for intermixing said sample and reagent to form the reaction mixture, whereby a reaction progresses for the period of time said rotating table takes to rotate at said predetermined rate through said predetermined angle.

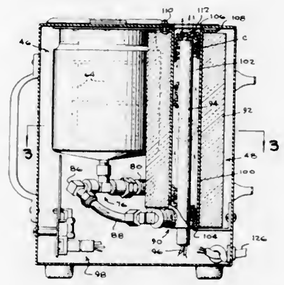
3,951,609
SAMPLING APPARATUS
William J. Palenscar, 3788 Highland Drive, Carlsbad, Calif. 92008
Filed Sept. 3, 1974, Ser. No. 502,774
Int. Cl.² G01N *21/24, 33/16*
U.S. Cl. 23—259 **12 Claims**



1. In combination, a photographic slide projector comprising an upwardly opening gate, light generating means and a lens assembly related to the gate, orienting means to support a horizontally disposed slide tray with a plurality of vertical upwardly and downwardly opening slide receiving slots in lineal series, power driven advancing means to intermittently shift the tray to sequentially move said slots into and out of vertical alignment with the gate and power driven transport means including an elevator related to the gate and shiftable vertically to transport a slide dropped into the gate from a slot when that slot is moved into alignment therewith, upwardly into returned engagement in said slot preparatory to moving said slot out of alignment with the gate; a plurality of sample carriers with flat, vertical slidelike bodies with portions slidably engaged and normally positioned within the slots in the tray and having portions projecting upwardly therefrom, carrier means at the upper portions of the bodies and projecting laterally therefrom and clear of the projector, sample handling means on said carrier means remote from the projector; said sample handling means shiftable sequentially into and out of vertical alignment with sample handling equipment spaced laterally from the projector.

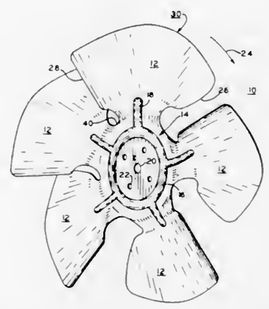
3,951,610
GAS GENERATING APPARATUS
Hugh T. Freebairn, and Mark H. Cohen, both of Houston, Tex., assignors to Catalytic Generators, Inc., Chesapeake, Va.
Filed Feb. 1, 1974, Ser. No. 438,774
Int. Cl.² B01J *7/00*
U.S. Cl. 23—281 **20 Claims**

1. A gas generator apparatus comprising:
a housing, said housing have a liquid supply source means positioned within and communicating with the interior of said housing,
an access port in said housing to communicate with said supply source means,
a liquid outlet in said supply source means,
conduit means having one end connected to said liquid outlet,
valve means connected to said outlet to meter the flow of the liquid from said supply source means,
a reaction vessel positioned within said housing and having a reaction chamber with open and closed ends,
an opening in said housing to communicate with said chamber open end to form a gas outlet,
inlet means in said reaction vessel connected to the other end of said conduit means and positioned vertically lower than the supply source means liquid outlet to permit the liquid to gravity feed into said vessel,
said reaction vessel having an outer jacket and an transversely adjacent electric heating element forming said reaction chamber transversely therebetween to receive said liquid,



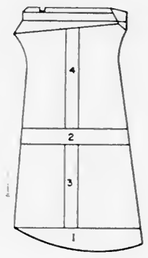
temperature control means to regulate the heat supplied by said heating element and maintain a preselected temperature within said reaction chamber, and
a solid catalyst positioned within said chamber to catalyze the conversion of said liquid into said gas for movement out of said gas outlet.

3,951,611
BLANK FOR FAN BLADE
Wayne J. Morrill, 3448 S. Washington Road, Fort Wayne, Ind. 46804
Filed Nov. 14, 1974, Ser. No. 523,652
Int. Cl.² F01D *5/14*
U.S. Cl. 29—190 **10 Claims**



1. In a one-piece blank for a propeller fan formed of relatively thin sheet metal having a plurality of substantially identical blade portions extending outwardly from a central hub portion, each of said blade portions having leading and trailing edges with respect to a predetermined direction of rotation of said fan about an axis extending through said hub portion, said leading and trailing edges of each of said blade portions being joined at outer leading and trailing corners to an outer peripheral edge, the improvement wherein the leading and trailing edges of adjacent blade portions define a narrow slot therebetween which extends generally radially with respect to said axis, said leading edges being shorter than said trailing edges, each said peripheral edge having a trailing portion extending from said trailing corner which is generally arcuate with respect to said axis and a leading portion smoothly joined to said trailing portion and extending to said leading corner which generally follows an involute curve having a base circle concentric with said axis.

3,951,612
EROSION RESISTANT COATINGS
John E. Gates, Worthington, Ohio; Neil D. Veigel, Novi, Mich., and Melvin F. Browning, Columbus, Ohio, assignors to Aerospace Materials Inc., Columbus, Ohio
Filed Nov. 12, 1974, Ser. No. 523,018
Int. Cl.² B32B *15/04*
U.S. Cl. 29—195 **5 Claims**



1. An erosion-resistant coated article comprising a metal alloy substrate selected from the group consisting of stainless steel, nickel, and titanium alloys, a first coating of a low-modulus, ductile nickel metal and a second coating of an erosion-resistant, ceramic-type chromium carbide material having a hardness of about 1200–1300 KHN.

3,951,613
ANTI-POLLUTION HEATING OIL PRODUCTS AND PROCESSES
Francis S. Kiele, Yonkers, N.Y., assignor to Stewart Hall Chemical Co., Mount Vernon, N.Y.
Division of Ser. No. 112,461, Feb. 3, 1971, abandoned. This application Dec. 11, 1973, Ser. No. 423,719
Int. Cl.² C10L *9/00, 1/08*
U.S. Cl. 44—5 **8 Claims**

1. A chemical composition for removing accumulated soot deposits from the surfaces of a furnace consisting essentially of a lithium salt of a carboxylic acid having from 6 to 18 carbon atoms, an initiator selected from the group consisting of lithium nitrate, potassium nitrate, sodium nitrate, sodium chlorate, sodium perchlorate, potassium chlorate, potassium perchlorate, lithium chlorate and lithium perchlorate.

3,951,614
FUEL DETERGENTS
Lewis R. Honnen, Petaluma, and Marvin D. Coon, Vallejo, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of Ser. No. 256,289, May 24, 1972, Pat. No. 3,785,789. This application Mar. 15, 1973, Ser. No. 341,650
The portion of the term of this patent subsequent to Jan. 5, 1991, has been disclaimed.
Int. Cl.² C10L *1/22*
U.S. Cl. 44—58 **9 Claims**

1. A fuel composition comprising a major amount of a hydrocarbonaceous liquid fuel and, in an amount sufficient to provide detergency, a composition which is the reaction product of a hydrocarbyl-substituted amine, wherein said hydrocarbyl substituent is of from about 420 to about 10,000 average molecular weight, with an aliphatic or aromatic coupling agent of from 2 to about 20 carbon atoms, selected from the group consisting of polycarboxylic acid, polyisocyanates and polyhalides, in a mole ratio of from about 1:3 to about 3:1 at

from 25° to about 250°C for from 1 to 48 hours wherein said polycarboxylic acid is a telechelic compound having a molecular weight below about 300; said polyisocyanate is a telechelic compound having a molecular weight below about 400, and said polyhalide contains from about 4 to 20 carbon atoms.

3,951,615

CYLINDRICAL PRESSURE REACTOR FOR PRODUCING A COMBUSTIBLE GAS

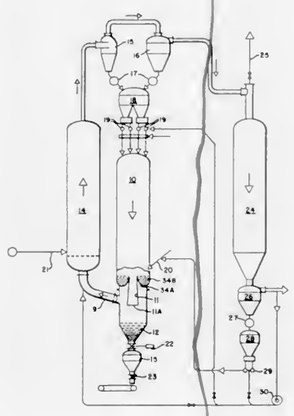
Paul Gernhardt; Egon Haese, and Wilhelm Dangullier, all of Bochum, Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Germany

Filed May 7, 1974, Ser. No. 467,644

Claims priority, application Germany, May 18, 1973, 2325204

Int. Cl.² C10J *3/48*

U.S. Cl. 48—71 **5 Claims**



1. Apparatus for producing combustible gases by the gasification of solid fuels or mixtures of solid and liquid fuels, said apparatus comprising, in combination:

a pressure reactor vessel having a cylindrical shape and forming a reaction chamber;

means at the top of said vessel for feeding fuel and a gasification medium into the reaction chamber of said vessel;

a discharge pipe having a discharge opening at the lower rim thereof essentially smaller in cross section as compared with the diametrical cross section of the reaction chamber of said vessel, said discharge pipe being centrally arranged at the bottom of said reaction chamber and extending downwardly therefrom;

a ring-shaped chamber surrounding said discharge pipe in said reaction chamber for containing a bath of molten iron;

said pressure reactor vessel including contiguous means for establishing a water bath below the lower rim of said discharge pipe in a spaced relation below said reaction chamber;

pipe means passing through the side wall of said means for establishing a water bath at an elevation above the lower rim of said discharge pipe and below said ring-shaped chamber for discharging gases produced in said vessel; and

means for utilizing the available heat from the gases passing through said pipe means.

3,951,616

APPARATUS FOR THE CONTINUOUS GASIFICATION OF COAL

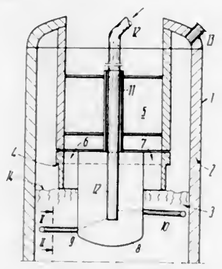
Paul Rudolph, Bad Homburg, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sept. 24, 1974, Ser. No. 508,783

Claims priority, application Germany, Oct. 24, 1973, 2353241

Int. Cl.² C10J *3/30, 3/32*

U.S. Cl. 48—85.2 **3 Claims**



1. Reactor for continuously gasifying coal under superatmospheric pressures and elevated temperatures by a treatment with oxygen and water vapor comprising rotatable feeder means for continuously feeding coal and at least one stirrer arm means extending close to the inside surface of the reactor which revolves in the upper portion of the coal bed, each stirrer arm means extending from an axially extending displacement body having a diameter which is 0.3 to 0.7 times the inside diameter of the upper region of the reactor, the cross-sectional profile of each stirrer arm being approximately an obtuse angled triangle and the upper side of the triangle rising at an angle α of 17°–25° and its trailing side at an angle γ of 60°–80° from the horizontal direction in opposite direction to movement of the stirrer arm.

3,951,617

PRODUCTION OF CLEAN FUEL GAS

William B. Crouch, Whittier, Calif., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 18, 1974, Ser. No. 533,907

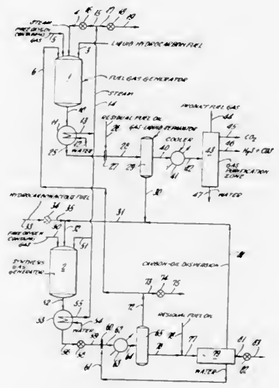
Int. Cl.² C10J *3/00;* **C01B** *2/14*

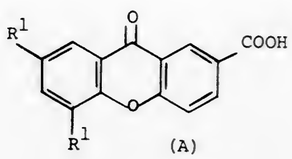
U.S. Cl. 48—197 R **6 Claims**

1. A process fo the production of fuel gas comprising

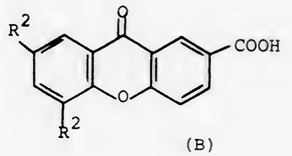
1. reacting by partial oxidation a liquid hydrocarbon fuel with a free-oxygen containing gas selected from the group consisting of air, oxygen-enriched air, i.e. at least 22 mole % oxygen, and substantially pure oxygen, i.e. at least 95 mole % oxygen, in the presence of a temperature moderator from step (7) optionally in admixture with steam, wherein said partial oxidation reaction takes place in the reaction zone of a first unpacked free-flow noncatalytic gas generator at an autogenous temperature in the range of about 1700° to 2500°F. and a pressure in the range of about 1 to 300 atmospheres to produce a gaseous effluent stream principally comprising H_2, CO, CO_2, H_2O, CH_4, and particulate carbon along with gases from the group consisting of H_2S, COS, A, N_2, and mixtures thereof;
2. introducing the gaseous effluent stream from (1) into a gas cooling and cleaning zone to remove particulate carbon and ash, and then into a gas purifying zone to remove CO_2, H_2S, COS and H_2O;
3. discharging a product gas stream from (2) principally comprising H_2 and CO, and containing at least 5 mole % CH_4;
4. reactiing in a second unpacked free-flow gas generator by partial oxidation a hydrocarbonaceous fuel with a free-oxygen containing gas selected from the group consisting of air, oxygen-enriched air, i.e. at least 22 mole % oxygen,

and substantially pure oxygen, i.e. at least 95 mole % oxygen, in the presence of a temperature moderator selected from the group consisting of H_2O, CO_2, inert gas such as nitrogen, off-gas from an ore-reduction zone, and a portion of cooled effluent gas from said second gas generator with or without entrained particulate carbon, and mixtures thereof, at an autogenous temperature in the range of about 1700° to 3500°F. and a pressure in the range of about 1 to 300 atmospheres to produce a gaseous effluent stream principally comprising H_2, CO, CO_2, H_2O and particulate carbon along with gases from the

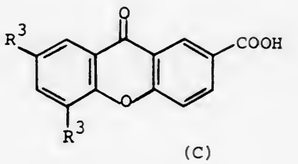




(A)



(B)



(C)

group consisting of CH_4, H_2S, COS, A, N_2, and mixtures thereof;

5. introducing the gaseous effluent stream from (4) into a gas cooling and cleaning zone to remove particulate carbon and ash;
6. introducing the particulate carbon recovered from the gas cleaning zone in (2) and (5) into said second gas generator in (4) as a portion of said hydrocarbonaceous feed; and
7. introducing at least a portion of the cooled and cleaned gas stream leaving (5) into said first gas generator in (1) as at least a portion of said temperature moderator.

3,951,618

METHOD OF USE OF, AND COMPOSITIONS CONTAINING, DISUBSTITUTED XANTHONE CARBOXYLIC ACID COMPOUNDS

Jurg R. Pfister, Los Altos; Ian T. Harrison, and John H. Fried, both of Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 450,351, March 12, 1974, Pat. No. 3,886,181, which is a division of Ser. No. 217,300, Jan. 12, 1972, Pat. No. 3,821,251. This application Jan. 20, 1975, Ser. No. 542,477

Int. Cl.² A61K *31/35*

U.S. Cl. 424—283 **56 Claims**

1. A method for inhibiting the symptoms of the asthmatic condition resulting from an antigen-antibody reaction in a host susceptible to said reaction which comprises administering to said host an effective amount of from about 0.005 to about 100 mg. per kg. of body weight per day sufficient to produce said inhibition of a compound represented by the formulas:

wherein

each R^1 group is lower alkylthio;

one R^2 group is lower alkylthio and the other is lower alkyl; and

one R^3 group is lower alkylthio and the other is lower alkoxy;

or a pharmaceutically acceptable non-toxic alkyl or glycerol ester, unsubstituted, monoalkyl, dialkyl, dialkylaminoalkyl, alkoxyalkyl, or phenethyl substituted amide, or salt thereof, wherein said alkyl and alkoxy groups each contain 1 to 5 carbon atoms.

3,951,619

METHOD OF MAKING A GRINDING WHEEL

Joseph G. Frangipane, 312 Graham Drive, Clearwater, Fla. 33515

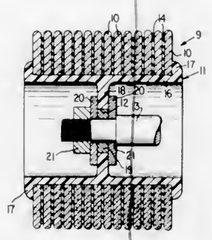
Continuation-in-part of Ser. No. 359,314, May 11, 1973, abandoned. This application Oct. 21, 1974, Ser. No. 516,642

Int. Cl.² B24B *1/00*

U.S. Cl. 51—308 **11 Claims**

1. A method of making a grinding wheel comprising the steps of, providing an abrasive grinding wheel body, setting the body to a sufficient hardness which permits cutting into the body grooves substantially deeper than wide to define spaced apart sections and of such hardness which permits subsequent setting of the body to a greater hardness of a

finished grinding wheel while maintaining the sections and grooves intact, cutting said grooves into the body to define



said spaced apart grinding sections, and after cutting the grooves setting the body to said greater hardness.

3,951,620

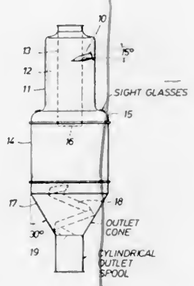
SEPARATION APPARATUS AND PROCESS

Robert W. Frischmuth, Jr., Huntington Beach, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Sept. 19, 1974, Ser. No. 507,311

Int. Cl.² B01D *45/00*

U.S. Cl. 55—1 **4 Claims**



1. A cyclone separator for the separation of gases from polymer particles including an upper barrel, a gas outlet, a lower barrel, and a truncated cone below said lower barrel wherein:

a. at least one jet inlet is positioned to the upper part of the upper barrel for introducing particulate solids-laden gases tangentially into the barrel;

b. the upper barrel is positioned on the top end of the lower barrel;

c. the gas outlet is of smaller diameter and concentric with the upper barrel and extends into the upper part of the lower barrel;

d. the bottom end of the lower barrel being positioned on the widest face of the truncated cone;

e. said cone being fitted with at least one helical channel along the inner face of the cone leading to the outlet, said outlet comprising the smaller face of the truncated cone;

f. and an essentially vertical transition strip positioned to have one end thereof supported by the cone and the opposite end thereof supported by the channel.

3,951,621

PROCESS FOR SEPARATING ONE OR MORE COMPONENTS OF A GASEOUS MIXTURE

Robert D. Hughes, and Edward F. Steigelmann, both of Park Forest, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed May 30, 1973, Ser. No. 365,204

The portion of the term of this patent subsequent to Sept. 11, 1990, has been disclaimed.

Int. Cl.² B01D *53/22*

U.S. Cl. 55—16 **8 Claims**

1. In a method for separating a gaseous material from a mixture which comprises contacting said mixture containing said material with a first side of an essentially solid, water-insoluble, hydrophilic, semi-permeable membrane having therein an aqueous liquid barrier having ions which combine with said material to form a water-soluble complex, the partial pressure of said material on a second side of said semi-permeable membrane being sufficiently less than the partial pressure of said material in said mixture to provide separated material on said second side of said semi-permeable membrane, and removing said separated material from the vicinity of said second side of said semi-permeable membrane, said separated material having a transfer rate across said liquid barrier that is greater than at least one other component of said mixture, the improvement which comprises employing as said semi-permeable membrane a polymer film comprising: (a) nylon, and (b) polyvinyl alcohol cross-linked with water-soluble polycarboxylic acid.

3,951,622

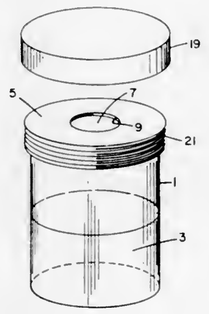
TIME RELEASE PERFUME METHOD AND DEVICE

Immanuel J. Wilk, 1044 Noel Drive, Menlo Park, Calif. 94025

Filed Dec. 4, 1974, Ser. No. 529,372

Int. Cl.² B01D *59/12*

U.S. Cl. 55—16 **12 Claims**



1. A device which uniformly and over a long period of time releases the unchanged odor of a fragrance, comprising:

a container, at least one portion of which comprises a membrane selected from the group consisting of polyethylene, polypropylene, copolymers and mixtures thereof, said membrane having a thickness of no more than about 6 mils, said container having fully enclosed therein a mixture of mutually soluble fragrance components, the membrane being permeable to at least one of said components, said components including an essential oil and an alcohol having a molecular weight below 100.

3,951,623

METHOD OF AND APPARATUS FOR CLEANING FILTER BOXES

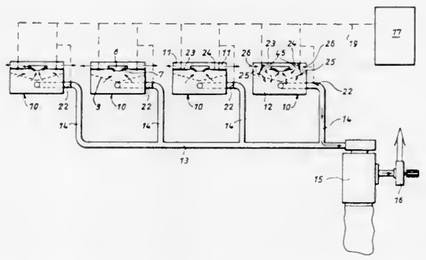
Joachim Furstenberg, Aichelberg, Germany, assignor to LTG Lufttechnische GmbH, Stuttgart, Germany

Continuation of Ser. No. 309,008, Nov. 24, 1972, abandoned. This application Jan. 10, 1975, Ser. No. 539,968

Claims priority, application Germany, Nov. 23, 1971, 2148048; Nov. 24, 1971, 2148338

Int. Cl.² B01D *46/04*

U.S. Cl. 55—96 **18 Claims**



1. In a method of removing solid impurities from air and of periodically cleaning at least one, single path, air cleaning filter box which includes a first air flow generating unit and filter disposed upstream thereof, and into which during the normal air cleaning operation, impure air is drawn from a work area and passed through the work side of said filter by said first air flow generating unit, said filter collecting solid impurities on said work side to convert said impure air to clean air being blown out of said filter box by said first air flow generating unit, the improvement comprising the simultaneous steps of

A. periodically drawing auxiliary air by a second air flow generating unit into said filter box through the clean side of said filter for removing the accumulated impurities from the work side thereof,

B. drawing said auxiliary air, together with the impurities dislodged from said work side of said filter, out of said filter box by said second air flow generating unit and

C. drawing said impure air into and out of said filter box by said second air flow generating unit, so that impure air is continuously drawn into said filter box during normal operation and during the cleaning operation without interruption at any time.

3,951,624

ELECTROSTATIC PRECIPITATOR

Earle Stuart Snader, Pasadena, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Nov. 22, 1974, Ser. No. 526,201

Int. Cl.² B03C *3/00*

U.S. Cl. 55—128 **5 Claims**

1. An electrostatic precipitator for cleaning a gas flowing therethrough comprising in combination:

shell means having a gas inlet port and a gas outlet port and defining a gas chamber therein;

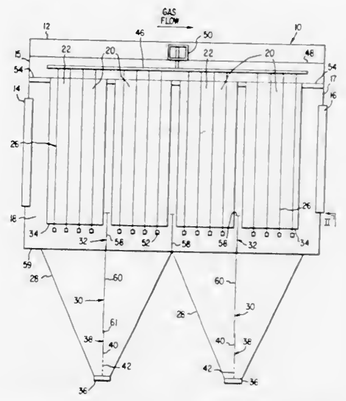
sets of spaced collector electrode means suspended within said shell means said collector electrode means defining gas passages therebetween;

discharge electrode means suspended within said gas passages for ionizing particles in said gas for collection on said collector electrode means;

hopper means suspended below said collector electrode means for collecting particles dislodged from said collector electrode means, each of said hoppers being suspended beneath at least two of said sets of collector electrode means; and

baffle means suspended within each of said hoppers transverse to said gas flow, said baffle means having:

a rigid portion extending between and below lower portions of adjacent sets of said collector electrode means and terminating substantially above an outlet end of said hopper means; and



a flexible portion connected to said rigid portion and extending therefrom to said outlet end of said hopper means for obstructing the flow of said gas in said hopper means to maintain said gas within said gas passages and to prevent said particles from becoming lodged between said hopper means and said rigid portion upon discharge of said particles from said hopper means.

3,951,625

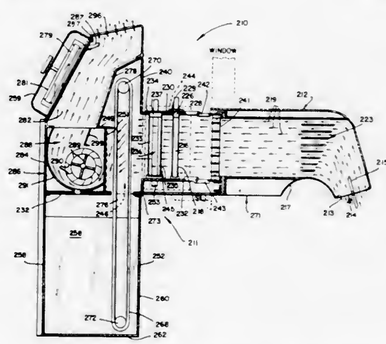
AIR CONDITIONING APPARATUS

Donald T. Follette, 98 Sleight Plass Road, Poughkeepsie, N.Y. 12603

Continuation-in-part of Ser. No. 284,909, Aug. 30, 1972, Pat. No. 3,869,529. This application Feb. 27, 1975, Ser. No. 553,500

Int. Cl.² B01F *3/04*

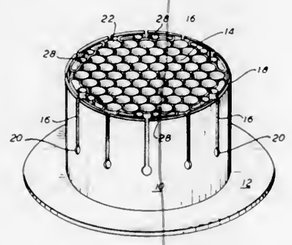
U.S. Cl. 55—232 **7 Claims**



1. Air conditioning apparatus assembly comprising a portable air conditioning unit and an air inlet duct housing having an air inlet port at one end thereof for communication with the ambient air and operative to releasably receive said air conditioning unit at the other end thereof in assembly therewith; said portable air conditioning unit comprising: an air duct having an air filter mounted transversely therethrough and an electric air heater mounted transversely through said air conditioning air duct dowstream from said air filter, a

humidifier chamber located downstream from said electric air heater and operative to controllably impart moisture to the air stream flowing therethrough, an air discharge duct, blower means located downstream of said humidifier chamber for drawing air through said air conditioning unit air duct and said humidifier chamber and expelling said air out through said air discharge duct, said air conditioning unit air duct having a top rotatable door mounted in the top wall thereof and a bottom rotatable door mounted in the bottom wall thereof, a louvred shutter being mounted in the inlet opening of said air conditioning unit air duct to control the flow of air therethrough, air temperature sensing means and humidity sensing means located in said air discharge duct, mode selector switch means operative to selectively render said air conditioning unit into the humidifying mode and ventilating mode respectively by selectively actuating said top and bottom rotatable doors and said louvred shutter, and control means operative in response to said air temperature sensing means and said humidity sensing means for selectively actuating and deactuating said air heater and said humidifier chamber to thereby maintain the temperature and humidity of the air stream in said air discharge duct at preselected levels.

3,951,626
HIGH TEMPERATURE FILTER
Colwell Carey, Glen Rock, N.J., assignor to Kreisler Manufacturing Corporation, North Bergen, N.J.
Filed Oct. 4, 1974, Ser. No. 512,173
Int. Cl.² B01D *46/60*
U.S. Cl. 55—278 **6 Claims**

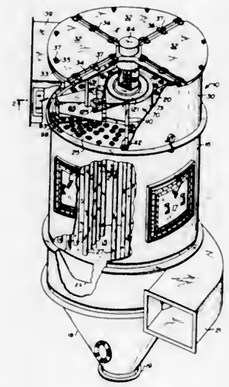


6. A filter for removing foreign matter from a high temperature gas flowing through a conduit, comprising a housing having an inlet end and an outlet end, slits in the wall of the outlet end thereof and having means thereon at the inlet end for mounting the same in a conduit to permit a gas to pass through the housing; a hexagonal stacked array of open ended tubes composed of a material which expands or contracts with temperature change, forming a filter element located within the end of the housing having slits; a plurality of resilient brackets, each forming an open elongated loop between the filter element and the housing and supporting the filter element in the housing, in a manner to permit flow of the gas through the filter element and the brackets, with the open portion of each bracket being positioned to align with a slit in the housing, so that the filter element will be free to expand and contract with temperature variation in the gas flowing through the filter.

3,951,627
AIR FILTERING APPARATUS
Harry S. Barr, Jr., and Thomas E. Mullinax, both of Charlotte, N.C., assignors to Pneumafil Corporation, Charlotte, N.C.
Filed Jan. 9, 1975, Ser. No. 539,827
Int. Cl.² B01D *41/00*
U.S. Cl. 55—284 **8 Claims**

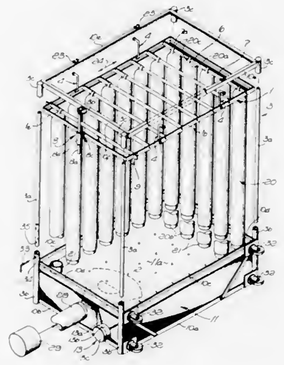
1. Air filtering apparatus for separating filterable material from an air stream, said apparatus comprising:

a. a casing having an air inlet through which air to be filtered is received, and an outlet through which filtered air is discharged;
b. a grid plate in said casing between the casing inlet and outlet dividing said casing into a collecting chamber on the side of the grid plate facing the air inlet end of said casing, and a filtered air chamber on the side of the grid plate facing the air outlet end of said casing, said grid plate having at least one air passage opening through which air may flow between said collecting chamber and filtered air chamber;
c. a filter element in said grid plate air passage opening;
d. a plenum moveably mounted in said filtered air chamber, said plenum having an air inlet and a reverse air stream outlet, said plenum intermittently moveable to a position aligning the reverse air stream outlet with the grid plate air passage opening;
e. fan means coupled to said plenum establishing air flow through the plenum; said fan means comprising a centrifugal fan; a housing enclosing said fan in said filtered air



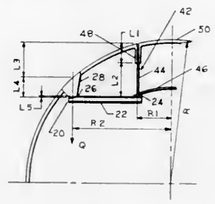
chamber, said housing rotatable with respect to said fan in said filtered air chamber, said housing having an inlet opening facing said grid plate and an air outlet facing radially outwardly from said fan, said plenum being elongate and formed integral with said housing, with the housing outlet communicating with the plenum inlet, with the longitudinal axis of said plenum lying along the air flow path from said fan housing outlet;
f. a reverse air conduit connected to the plenum reverse air outlet and extending between the plenum reverse air outlet and said grid plate, said conduit conducting a flow of reverse air from said plenum reverse air outlet to said grid plate air passage opening when said reverse air conduit is aligned with the grid plate air passage opening;
g. a slide plate secured to the end of said reverse air conduit remote from said plenum and having a relatively friction free lower surface moving over said grid plate;
h. an upturned leading edge on said slide plate extending upwardly and forwardly of said slide plate at an acute angle with respect to the plane thereof; and
i. means for controlling the movement of said plenum.

3,951,628
PORTABLE FILTER BAG ASSEMBLY
Luther Eskijian, 2223 Midlothian Drive, Altadena, Calif. 91001
Continuation of Ser. No. 427,835, Dec. 26, 1973, abandoned. This application Nov. 7, 1974, Ser. No. 521,551
Int. Cl.² B01D *41/02*
U.S. Cl. 55—300 **10 Claims**



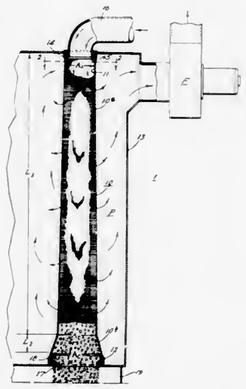
1. In a portable filter baghouse, the assembly comprising
a. a main frame,
b. a plenum chamber attached to the frame,
c. a sub-frame carried by the main frame for shaking movement relative thereto, the sub-frame having means to support a plurality of filter bags to extend longitudinally toward the plenum chamber for communication therewith, and
d. the main frame including collapsible means supporting the sub-frame for bodily swinging displacement relative to the main frame and also for longitudinal collapse with the bags toward the plenum chamber,
e. the sub-frame being spaced directly above the plenum chamber, there being wheels carried by the assembly at one side of the plenum chamber for supporting the assembly after collapse of the sub-frame toward the plenum chamber and tilting of the assembly to bring the wheels under the plenum chamber.

3,951,629
HIGH TEMPERATURE SUPPORT FOR CYCLONE SEPARATORS
Bodo Kalen, Dix Hills, N.Y., assignor to Emtrol Corporation, Great Neck, N.Y.
Continuation-in-part of Ser. No. 407,180, Oct. 17, 1973, abandoned. This application May 3, 1974, Ser. No. 466,610
Int. Cl.² B01D *45/12*
U.S. Cl. 55—349 **17 Claims**



1. A device for supporting a horizontally aligned apparatus from a structure subject to high temperature differences, said device comprising a first support supporting one side of the apparatus for relative movement therewith and a second support supporting an opposite side of the apparatus, from a support connection restraining said opposite side from vertical and horizontal expansion with respect to said second support said first named support comprising a support means to provide for vertical and horizontal expansion to maintain the apparatus in horizontal alignment comprising an angular rest means and support for relative horizontal and vertical sliding movement against a corresponding angular surface of the apparatus.

3,951,630
TAPERED TUBULAR FILTER ELEMENT HAVING FLARED OUTLET
Edwin A. Kleissler, Jr., Little Silver, N.J., assignor to G. A. Kleissler Co., Edison, N.J.
Filed Oct. 29, 1974, Ser. No. 518,745
Int. Cl.² B01D *46/02*
U.S. Cl. 55—378 **8 Claims**



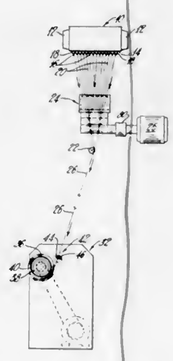
1. In combination with a separator having a plenum, means for admitting a particle-laden gaseous medium into said plenum, means for removing separated particles from the plenum, and means for exhausting the gaseous medium from the plenum; at least one elongated tubular filter element mounted upright across said plenum for removing particulate matter from said particle-laden gaseous medium; said filter element being fabricated of a flexible material permeable to said gaseous medium but substantially impermeable to said particulate matter; said filter element being symmetrical about its longitudinal axis and having an open upper end, an open lower end larger than said upper end, and an unobstructed flow passage between said ends; means connecting one of said ends to said admitting means to afford flow of said particle-laden gaseous medium into the interior of said filter element and means connecting the other of said ends to said removing means to afford the discharge from the interior of the filter element of particles separated from the gaseous medium therein when the exhausting means creates an ambient pressure differential around the filter element; said filter element having a cross-sectional area increasing at a predetermined rate in an axial direction from said upper end for a major portion of the length of the element; said filter element also having another cross-sectional area increasing at another greater predetermined rate in said direction for a minor portion of the length of the element to provide said filter element with a flare at said lower end; said major and minor portions of said length being related in a ratio of at least 10:1; so that when said particle-laden gaseous medium is flowed into the filter element, separated

particulate matter tends to fall freely through the lower end of the filter element at least during cleaning thereof.

3,951,631
APPARATUS FOR COATING CONTINUOUSLY PRODUCED GLASS FILAMENTS

Walter F. Fulk, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 19, 1974, Ser. No. 498,492
Int. Cl.² C03C *25/02*
U.S. Cl. 65—11 W **47 Claims**



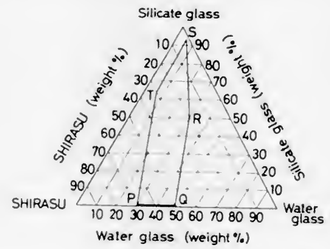
1. Apparatus for applying liquid to filaments comprising:
a body having a passageway with an elongated outlet and an exterior groove spaced below the outlet, the groove extending in a direction lengthwise of the outlet;
a rotatable applicator member for supplying liquid to filaments passed thereacross, the member being mounted in the exterior groove so that a portion of the member projects from the groove below the outlet so that filaments can be passed across the portion of the member that projects from the groove;
a means for rotating the applicator member in a direction such that the surface at the upper side of the member at the outlet moves away from the groove during rotation; and
means for supplying liquid under pressure to the passageway of the body to discharge the liquid from the outlet onto the surface of the member at the upper side and on that portion of the member that projects from the groove so that during rotation the liquid is carried directly to filaments that are passed across the portion of the member that projects from the groove.

3,951,632
METHOD FOR MANUFACTURE OF FOAM GLASS

Yachio Seki, Ikeda, and Masaya Nakamura, Suita, both of Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Nov. 14, 1974, Ser. No. 523,726
Claims priority, application Japan, Nov. 20, 1973, 48-130898
Int. Cl.² C03B *19/08*
U.S. Cl. 65—22 **4 Claims**

1. A method for the manufacture of foam glass, which comprises the steps of:
mixing silicate glass, SHIRASU, which is a white-colored volcanic ash sand occurring abundantly in Japan, having as its principal component, volcanic glass, and also containing crystals of feldspar, and having as principal chemical constituents SiO_2, Al_2O_3, NaO and K_2O, and possessing a particle size distribution of 2–0.05 mm, a specific gravity of 2.4 – 1.8 and a softening point of 1200°C, water glass and at least one salt selected from the group consisting of 0.5 to 25 percent by weight of a sodium salt of phosphoric acid and 0.3 to 15 percent by weight of a calcium salt of phosphoric acid, wherein the amount of said salt is based on the total combined weight of silicate glass, SHIRASU and water glass, so that the mixing ratio of said silicate glass, SHIRASU and water glass falls within the area of a ternary diagram of silicate glass, SHIRASU and water glass defined by the sequentially connected points of P-T-S-R-Q, wherein the point P is 1 percent by weight silicate glass, 69 percent by weight SHIRASU and 30 percent by weight water glass, the point T is 65 percent by weight silicate glass, 30 percent by weight SHIRASU and 5 percent by weight water glass, the

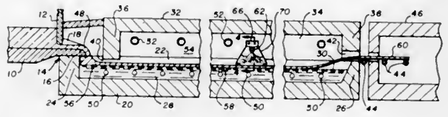


point S is 93 percent by weight silicate glass, 2 percent by weight SHIRASU and 5 percent by weight water glass, the point R is 50 percent by weight silicate glass, 20 percent by weight SHIRASU and 30 percent by weight water glass, and the point Q is 1 percent by weight silicate glass, 50 percent by weight SHIRASU and 49 percent by weight water glass;
converting the resultant mixture into a slurry by the addition of water;
drying and pulverizing said slurry;
pressure-fabricating the pulverized mixture;
firing the fabricated mixture at a temperature of 850° – 950°C into a fused state; and
cooling the fused mixture.

3,951,633
METHOD FOR PRODUCING PATTERNED GLASS ON A FLOAT RIBBON

William Thomas Danihel, Bethel Park, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 23, 1974, Ser. No. 535,911
Int. Cl.² C03B *18/02*
U.S. Cl. 65—23 **9 Claims**

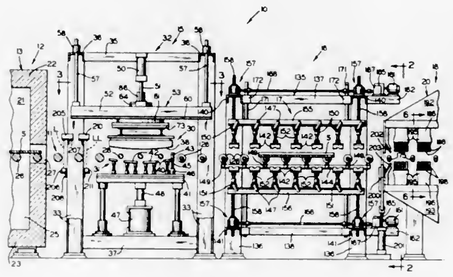


1. A method for texturing the surface of glass manufactured by the float process comprising:
a. introducing molten glass at a controlled rate onto a molten metal bath to form a continuous ribbon of heat softened glass;
b. drawing said ribbon across said bath while cooling said ribbon into a structurally integral sheet;
c. depositing particulate carbon onto the surface of said ribbon while said ribbon is being drawn across said bath; and
d. removing said integral sheet from said molten bath and introducing said sheet into an annealing lehr having an atmosphere containing sufficient oxygen to remove substantially all said carbon while said sheet is at a temperature greater than the ignition temperature of said carbon deposited on said sheet.

3,951,634
METHOD OF AND APPARATUS FOR BENDING AND TEMPERING THIN GLASS SHEETS

Harold R. Hall, Whitehouse; Richard A. Herrington, Walbridge, both of Ohio; Martin Huizinga, Lambertville, Mich.; Donald D. Rahrig, and Robert G. Revells, both of Toledo, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed June 20, 1974, Ser. No. 481,307
Int. Cl.² C03B *23/02, 27/00*
U.S. Cl. 65—104 **25 Claims**



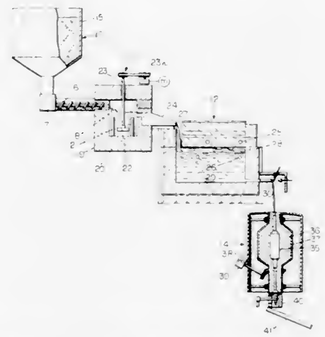
1. A method of bending and tempering relatively thin glass sheets comprising: supporting a thin glass sheet in a substantially horizontal plane and moving the same bodily in a generally horizontal path successively through a series of operations, initially heating the glass sheet uniformly substantially to the softening point thereof in a furnace while advancing said sheet in said path, removing said heated sheet from said furnace, pressing said heated sheet between complemental shaping surfaces to a desired curvature, reheating said bent sheet while advancing the same in said path to render said sheet sufficiently viscous throughout for proper tempering, and immediately cooling said reheated bent sheet rapidly by directing streams of cooling gases against opposite surfaces thereof for tempering the same while continuously advancing said sheet in said path.

9. Apparatus for bending and tempering relatively thin glass sheets comprising: a conveyor for supporting a thin glass sheet in a substantially horizontal plane and moving the same along a generally horizontal path successively through a first, second, third and fourth station, said first station having a furnace for initially heating said glass sheet uniformly to substantially the softening point thereof as said sheet advances therethrough, said second station having means including opposed mold members exteriorly of said furnace for pressing said heated sheet to a desired curvature about at least one axis normal to said path of movement of said sheet, means for rotating one of said mold members in a horizontal plane after pressing to reorient said sheet and thereby said one axis in a direction parallel to said path of movement for subsequent conveyance in an optimum position through a tempering area, said third station having boost heating means for reheating said reoriented bent sheet while advancing the same therethrough to render said sheet sufficiently viscous throughout for proper tempering, and said fourth station having chilling means for rapidly cooling and tempering said reheated sheet during movement thereof in said reoriented position through said fourth station.

3,951,635
METHOD FOR RAPIDLY MELTING AND REFINING GLASS

Robert R. Rough, Sr., Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 29, 1974, Ser. No. 528,031
Int. Cl.² C03B *5/16, 5/18*
U.S. Cl. 65—135 **1 Claim**



1. A method of making glass which comprises applying heat to glass-forming materials to produce a mass of molten glass;
a. adding glass-forming materials to said mass of molten glass;
b. agitating the mixture of glass-forming materials and molten glass while applying heat to said mixture;
c. continuing the adding, mixing, agitation and application of heat for a time such as to disperse the materials rapidly and uniformly in the mass of molten glass, thus facilitating transfer of heat to the materials and promote rapid chemical reactions until a molten glass is produced which has some small amount of undissolved glass-forming materials, cords, and incompleted chemical reactions between the glassforming materials and contains gaseous inclusions, said molten glass mixture having a foamy appearance due to the gaseous inclusions therein;
d. transferring said foamy glass mixture to a chamber containing a pool of molten glass at an elevated temperature;
e. dispersing said foamy glass over the surface of said molten pool of glass;
f. subjecting said foamy glass to heat both from the pool of glass and from above, whereby said foamy glass gives up the gaseous inclusions and becomes part of the pool of glass, and thereafter rotating the homogenized molten glass containing gaseous inclusions in a centrifugal refining apparatus, and continuing the rotation for a time and at a speed such as to produce pressure gradients within the glass to cause gaseous inclusions to migrate out of the glass, thereby producing a refined molten glass having a controlled number of gaseous inclusions.

3,951,636
MOLDING APPARATUS

Franz Günthner, Mainz, Germany, assignor to Jenaer Glaswerk Schott & Gen., Mainz, Germany

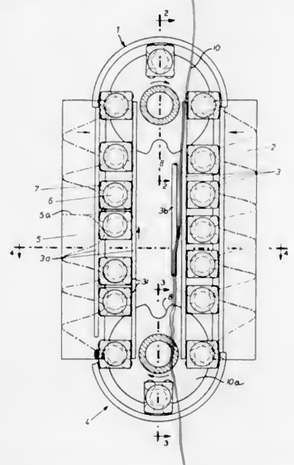
Filed May 22, 1974, Ser. No. 472,266
Int. Cl.² C03B *5/30, 9/00*
U.S. Cl. 65—207 **14 Claims**

1. Apparatus for production of pressed objects from plastic material by pressing of charges of the material in at least one mold mounted on a carriage which is routed over an endless course comprising a charging section, a pressing section, a solidification section and a discharging section, comprising:
a. a first straight track for receiving carriage and mold from the discharging section, conveying the carriage and mold through the charging section for charging of the mold and

then conveying the carriage and charged mold to the pressing section, means for delivering a charge of material to the mold during passage thereof through the charging section,

b. a first round-table assembly providing the pressing section, disposed to receive the carriage and charged mold from the first straight track and comprising pressing means for pressing the charge to form the charge into the shape of the pressed object,

c. a second straight track for receiving the carriage and charged mold from said first round-table assembly, and conveying the charged mold to the discharging section, for solidification of the pressed charge during passage thereover,



d. a second round-table assembly providing the discharging section, disposed to receive the carriage and charged mold from the second straight track and comprising discharge means for discharging the pressed, solidified charge from the mold as said pressed object, and for delivering the carriage and empty mold to the first straight track,

e. a first continuously operating drive means for driving the carriages over said first straight track, a second continuously operating drive means for driving the first round-table assembly, a third continuously operating drive means for driving the second straight track section, and a fourth continuously operating drive means for the second round table assembly, said first, second, third, and fourth drive means being disposed at fixed positions along said endless course.

3,951,637

FORMING STATION FOR A MACHINE FOR FORMING HOLLOW ARTICLES OF VITREOUS MATERIAL

Lothar Schaar, Heuerssen, Germany, assignor to Hermann Heye, Obernkirchen, Germany

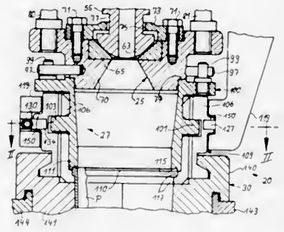
Filed May 14, 1974, Ser. No. 469,846

Claims priority, application Germany, May 15, 1973, 2324953

Int. Cl.² C03B *9/00, 9/14*

U.S. Cl. 65—229 **17 Claims**

1. In a machine for forming hollow articles of vitreous material, a blow bold forming station comprising at least one forming means including neck ring means adapted to carry a parison, each neck ring means including a pair of neck ring halves and an integral guide ring mounted in and supported by said neck ring halves rotatable relative thereto and adapted to engage the parison for rotating the latter upon rotation of said guide ring, said forming means including further a split mold coaxial with said neck ring means and having two mold halves movable between an open and closed position and contacting in said closed position with portions thereof the parison, said mold halves having upper portions, which, in said closed position of said mold halves, enclose and interengage with adjacent portions of said neck ring halves to thereby maintain in said closed position of said mold halves the axial position of



said neck ring halves relative to said mold halves; means for rotating said guide ring at said forming station relative to said neck ring halves and said mold halves while the axial position of the neck ring halves and mold halves is maintained, to thereby avoid forming of a parting line on those portions of the parison which are engaged by said neck ring and mold halves during forming of said parison; and means for preventing rotation of said neck ring halves with said guide ring.

3,951,638

PRILLING

John Kenneth Bradley, Ipswich, England, assignor to Fisons Limited, London, England

Filed June 26, 1975, Ser. No. 590,552

Claims priority, application United Kingdom, July 6, 1974, 30043/74

Int. Cl.² C05C *9/00*

U.S. Cl. 71—11 **9 Claims**

1. A process for producing prills which comprises allowing drops of a molten material to fall through a dust zone containing dust particles which have been treated with an organo silicon compound.

3,951,639

PROCESS FOR INTRODUCING ZINC MICRONUTRIENTS INTO LIQUID FERTILIZERS

Richard J. Windgassen, East Chicago, Ind., assignor to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 321,924, Jan. 8, 1973, Pat. No. 3,796,559, which is a continuation of Ser. No. 129,109, March 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 867,905, Oct. 20, 1969, abandoned. This application Jan. 28, 1974, Ser. No. 437,138

Int. Cl.² C05D *9/02*

U.S. Cl. 71—27 **7 Claims**

1. In the preparation of zinc-containing liquid phosphate-containing fertilizers which comprises incorporating by admixing and dissolving particulate solid zinc-containing material of the group consisting of zinc sulfate, zinc oxide, zinc carbonate and metallic zinc in a liquid phosphate-containing fertilizer, the improvement comprising incorporating said zinc material that has been coated with from about 0.005 to about 2 wt. percent of a coating material having from 6 to 40 carbon atoms selected from the group consisting of (a) primary-, secondary-, and tertiary-aliphatic amines, (b) alpha, omega-diaminoalkanes, (c) N-aliphatic 1,3-propylenediamines, (d) salts of said amines and (e) mixtures thereof.

3,951,640

HETEROCYCLIC THIADIAZOLYLUREAS

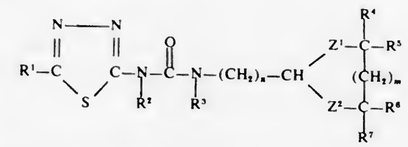
John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 387,051, Aug. 9, 1973, Pat. No. 3,901,902. This application Feb. 18, 1975, Ser. No. 546,637

Int. Cl.² A01N *9/22*

U.S. Cl. 71—90 **2 Claims**

1. A herbicidal composition comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to weeds, a compounds of the formula



wherein R^1 is selected from the group consisting of lower alkyl, lower alkenyl, lower chloroalkyl, lower bromoalkyl, trifluomethyl, cycloalkyl of from 3 to 7 carbon atoms, lower alkoxy, lower alkylthio, lower alkylsufonyl, and lower alkylsulfinyl; Z^1 and Z^2 are independently selected from the group consisting of oxygen and sulfur; R^2, R^3, R^4, R^5, R^6, and R^7 are each selected from the group consisting of hydrogen and lower alkyl; *m* is an integer from 0 to 2; and *n* is the integer 1 or 2.

3,951,641

USE OF N-(4-ISOPROPOXY-3-CHLOROPHENYL)-N'-METHYL-N'-METHOXYUREA FOR CONTROL OF WEEDS IN MAIZE CULTURES

Stefan Janiak, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 259,330, June 2, 1972, abandoned, which is a division of Ser. No. 59,703, July 30, 1970, abandoned. This application Sept. 26, 1974, Ser. No. 509,574

Claims priority, application Switzerland, Aug. 5, 1969, 11887/69

Int. Cl.² A01N *9/20*

U.S. Cl. 71—120 **1 Claim**

1. A method for combating weeds in maize cultures which comprises applying thereto a herbicidally effective amount of N-(4-isopropoxy-3-chlorophenyl)-N'-methyl-N'-methoxyurea.

3,951,642

METALLIC COATING POWDER CONTAINING Al AND Hf

David R. Chang, Cincinnati, and John J. Grisik, Middletown, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Nov. 7, 1974, Ser. No. 521,860

Int. Cl.² C22C *1/04;* **B32B** *15/00*

U.S. Cl. 75—.5 R **3 Claims**

1. A coating source powder useful in diffusion aluminide coating of a metal article consisting essentially of:

a powdered metal selected from the group consisting of Al and blaring alloys Al; and

Hf in a powdered form of a material selected from the group consisting of Hf, alloys including Hf, and compounds of Hf, the Hf being included in the material in a range of from a small but effective amount up to 10 weight percent Hf which range provides 0.1–10 weight percent Hf in the coating.

3,951,643

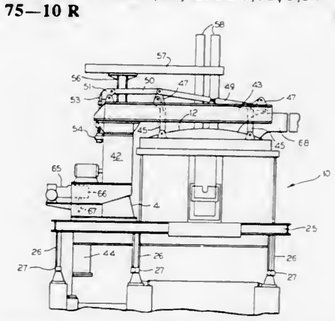
STEEL PRODUCTION METHOD

Eberhard G. Schempp, and Jai K. Pearce, both of Pittsburgh, Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Division of Ser. No. 335,468, Feb. 26, 1973, Pat. No. 3,812,275. This application Feb. 11, 1974, Ser. No. 441,665

Int. Cl.² C22B *4/00;* **C21C** *5/32, 5/34*

U.S. Cl. 75—10 R **16 Claims**



1. In a method of treating molten metal, the steps of containing a quantity of said metal in a refractory lined electric arc furnace vessel which is pivotal between a first position and a second position and having tuyere means extending therethrough, the steps of

positioning said vessel in a first position wherein said tuyere means is above the level of said metal charge,

injecting an oxygen containing gas and a fuel through said tuyere means for preheating the metal charge in said vessel.

discontinuing the flow of said oxygen containing gas and fuel through said tuyere means and positioning electrode means adjacent said metal charge,

energizing said electrode means for the final melting of said metal charge, and elevating said electrode means away from said molten metal,

tilting said vessel to dispose said tuyere means below the level of molten metal and injecting a treatment gas into said vessel through said tuyere means and into and beneath the level of molten metal in said vessel.

3,951,644

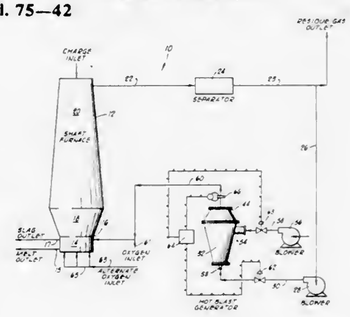
METHOD OF PRODUCING IRON AND STEEL FROM IRON ORE

Robert J. Block, and James H. Christensen, both of Norman, Okla., assignors to HeaTran, Inc., Houston, Tex.

Filed May 6, 1974, Ser. No. 467,198

Int. Cl.² C21B *5/06*

U.S. Cl. 75—42 **9 Claims**



1. A method of producing molten iron from iron ore which comprises the steps of:

a. charging said iron ore along with coke and limestone to a shaft furnace;
b. introducing a heated oxygen enriched gas stream into said shaft furnace so that coke contained therein is combusted, said iron ore is reduced to molten iron and a residue gas stream containing carbon monoxide is produced;
c. withdrawing said residue gas stream from said shaft furnace;
d. combining at least a portion of said residue gas stream with a stream of air;
e. combusting said residue gas-air mixture so that carbon monoxide contained therein is converted to carbon dioxide and a heated gas stream is produced, the sole source of heat for heating said gas stream being said combustion of said residue gas;
f. combining a stream of oxygen with said heated gas stream to form a heated oxygen enriched gas stream; and
g. introducing said heated oxygen enriched gas stream into said shaft furnace in accordance with step (b) above.

3,951,645
STEELMAKING PRACTICE FOR PRODUCTION OF A VIRTUALLY INCLUSION-FREE SEMI-KILLED PRODUCT

Leon Luyckx, Peters Township, Washington County, Pa., and John R. Bell, Grosse Ile Township, Wayne County, Mich., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Aug. 16, 1974, Ser. No. 497,999
Int. Cl.² C21C 7/02
U.S. Cl. 75—58 **8 Claims**

1. A method of producing a semi-killed wrought steel product virtually free of elongated sulfide and silicate inclusions comprising:
a. refining molten ferrous material containing carbon and silicon into molten steel containing 0.10% carbon maximum and 0.008% silicon maximum;
b. treating said molten steel with a deoxidizing agent containing a total weight of silicon that is no more than about 0.0005% of the weight of said molten steel so as to obtain a semi-killed steel having a total oxygen content greater than about 100 ppm to 150 ppm;
c. adding an alloying addition to said molten steel, said alloying addition containing a total weight of silicon that is no more than about 0.0005% of the weight of said molten steel;
d. teeming said molten steel into a mold to form a casting of said semi-killed steel so as to obtain a cast product having globular sulfide inclusions and virtually free of silicate inclusions; and
e. mechanically hot working said cast product so as to obtain a wrought steel product virtually free of elongated sulfide and silicate inclusions and having good cold formability and bendability.

3,951,646
PROCESS TO MAKE BRITTLE BOILER DUST ADHERING TO THE WATER TUBE SURFACE OF A WASTE HEAT BOILER OF NON-FERROUS METAL SMELTING FURNACE

Kunitomo Hamada, Kosaka, and Kiyoshi Sato, Funabashi, both of Japan, assignors to Dowa Mining Co., Ltd., Tokyo, Japan

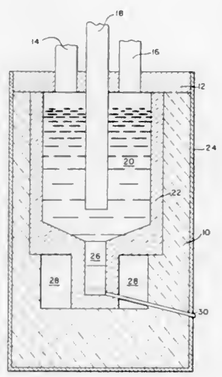
Filed Oct. 16, 1974, Ser. No. 515,113
Claims priority, application Japan, Dec. 25, 1973, 48-143740; Aug. 23, 1974, 49-96211
Int. Cl.² C22B 15/02
U.S. Cl. 75—74 **6 Claims**

1. In a copper smelting process wherein a hot flue gas conveying flue dust is generated and subsequently cooled and wherein said flue gas is conducted to a waste heat boiler wherein said flue gas contacts water tubes upon which said flue dust has a tendency to adhere, the improvement comprising in combination therewith adding to said flue gas containing flue dust in said waste heat boiler a composition selected from the group consisting of calcium oxide, calcium hydroxide and calcium carbonate thereby embrittling said flue dust and decreasing the tendency of said flue dust to adhere to said water tubes.

3,951,647
REDUCTION METHOD FOR PRODUCING MANGANESE METAL

Paul H. Cardwell, Zanoni, Va., and Bruce E. Barton, Houston, Tex., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

Continuation-in-part of Ser. No. 192,095, Oct. 26, 1971, abandoned. This application Nov. 27, 1972, Ser. No. 309,737
Claims priority, application Germany, Oct. 26, 1972, 2252567
Int. Cl.² C22B 47/00
U.S. Cl. 75—80 **15 Claims**



1. A process for producing manganese within a reactor vessel, the process comprising: (1) forming a molten pool comprising a manganese halide, selected from the group consisitng of manganese iodides, manganese bromides and manganese chlorides, in a reactor vessel such that the upper portion of the molten pool is at a temperature above the melting point of the manganese halide in the pool but below the boiling point of the metal halide in the pool, and the temperature of the lower portion of the molten pool is sufficient to maintain aluminum metal, manganese metal and any alloy of the two metals in a molten state, the boiling point of the pure manganese halide being below the temperature of the lower portion of the pool, there being a temperature gradient maintained in the molten pool, the temperature increasing from top to bottom; (2) feeding to the molten pool in substantially stoichiometric proportions additional manganese metal halide and aluminum to form aluminum halide and manganese metal in the pool; (3) removing the aluminum halide as a vapor overhead from the top of the reactor vessel; (4) forming a layer of molten elemental manganese metal at the bottom of the molten pool; and (5) withdrawing elemental manganese metal from the bottom of the pool.

3,951,648
PROCESS FOR RECOVERING PALLADIUM, MORE PARTICULARLY FROM ALUMINA CONTAINING CATALYSTS

Robert Stern, Marly le Roi; Jean-Pierre Franck, Bougival, and Jean-Francois Le Page, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Paris, France

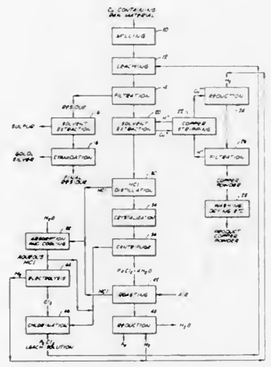
Filed Mar. 27, 1974, Ser. No. 455,078
Claims priority, application France, Mar. 30, 1973, 73.11716
Int. Cl. C22b 11/00
U.S. Cl. 75—83 **9 Claims**

1. A process for treating a catalyst containing palladium in an amount lower than 5% by weight and a carrier, so as to recover said palladium, comprising contacting said catalyst with a gas stream consisting essentially of gaseous chlorinated hydrocarbon, at a temperature of 300°–500°C., said temperature being sufficient to form a volatile palladium compound without substantial attack of said carrier, and cooling the effluent to condense and recover said chlorinated palladium compound, the ratio by weight of the chlorinated hydrocarbon being about 4 to 100 parts by weight per part by weight of palladium contained in said catalyst.

3,951,649
PROCESS FOR THE RECOVERY OF COPPER

Olmedo Kieswetter, Jr., Old Hickory, Tenn., and Cedomir M. Sliepcevich, Norman, Okla., assignors to University Engineers, Inc., Norman, Okla.

Filed Aug. 19, 1974, Ser. No. 498,422
Int. Cl.² C22B 15/00
U.S. Cl. 75—117 **9 Claims**



1. A process for recovering copper from coppercontaining raw materials comprising:
leaching the raw material with an aqueous ferric chloride leach solution to solubilize the copper as copper chloride salts;
filtering the pregnant leach solution to remove insoluble solids therefrom;
extracting the copper from the chloride solution with a liquid extractant;
contacting the liquid extractant loaded with cupric ions with sulfuric acid to strip the extractant, and provide an aqueous copper sulfate solution;
contacting said aqueous copper sulfate solution in a reducing zone with hydrogen gas derived from an electrolysis step carried out subsequently in the process as hereinafter described, to reduce copper ions in solution to metallic copper;
recovering insoluble solid metallic copper from the sulfate solution;
removing HCl from the leach solution raffinate remaining after copper extraction with the liquid extractant;
recovering crystals of ferrous chloride from the leach solution raffinate remaining after solvent extraction to remove copper from the leach solution;
roasting the ferrous chloride crystals to yield HCl;
electrolysing the hydrochloric acid to produce hydrogen and chlorine;
recycling hydrogen to the reducing zone to reduce copper ions to copper metal; and
reacting chlorine with the residual leach solution raffinate remaining after crystals of ferrous chloride have been removed therefrom to produce and regenerate the ferric chloride leach solution.

3,951,650
LOW CARBON, NI-CR-MO SYSTEM CAST IRON ROLL

Kakunosuke Miyashita, Tokyo, Japan, assignor to Hitachi Metals, Ltd., Japan

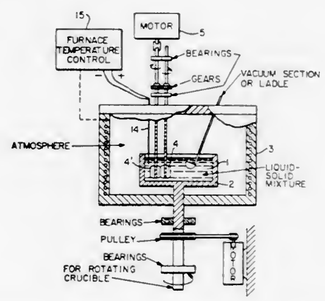
Filed June 9, 1975, Ser. No. 584,823
Claims priority, application Japan, June 12, 1974, 49-66104
Int. Cl.² C22C 38/22, 38/36
U.S. Cl. 75—128 D **3 Claims**

1. A low carbon, Ni- Cr- Mo system cast iron roll consisting essentially of in weight percent, from 1.5 to 2.8% C, from 0.2 to 0.7% Si, from 0.6 to 0.8% Mn, from 2.1 to 3.5% Ni, from 1.8 to 2.5% Cr, from 1.1 to 1.5% Mo, the balance being essentially Fe and impurities.

3,951,651
METAL COMPOSITION AND METHODS FOR PREPARING LIQUID-SOLID ALLOY METAL COMPOSITIONS AND FOR CASTING THE METAL COMPOSITIONS

Robert Mehrabian, Arlington, and Merton C. Flemings, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 278,457, Aug. 7, 1972, abandoned. This application July 17, 1973, Ser. No. 379,990
Int. Cl.² C22C 1/02; C22B 4/00
U.S. Cl. 75—135 **15 Claims**



1. The method for forming a metal composition comprising a metal alloy matrix and solid particles homogeneously suspended in said matrix, said solid particles having a composition different from said alloy and having a surface composition that is not wet by the metal alloy when said metal alloy is liquid which comprises
a. heating a metal alloy to form a liquid-solid mixture of said alloy wherein less than about 65 weight percent thereof is solid,
b. vigorously agitating said liquid-solid mixture to convert the solid therein to discrete degenerate dendrites derived from said metal alloy, said degenerate dendrites comprising up to about 65 weight percent of the heated metal alloy and wherein the remainder of the heated metal alloy is liquid,

c. adding said solid particles to said heated metal alloy containing said degenerate dendrites and
d. dispersing said solid particles homogeneously in said heated metal alloy containing degenerate dendrites, said solid particles being added in an amount up to about 65 weight percent based upon the weight of metal alloy and degenerate dendrites.

3,951,652

METHOD OF FORMING IMAGE ON SULFUR BASED PHOTOSENSITIVE MEMBER

Eiichi Inoue, Tokyo; Takao Nakayama, Yokohama, and Taiji Nose, Koshigaya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed July 17, 1974, Ser. No. 489,289
Claims priority, application Japan, July 17, 1973, 48-81623
Int. Cl.² G03G *13/00; G03C 5/04, 5/24, 1/00*
U.S. Cl. 96—1 R **4 Claims**

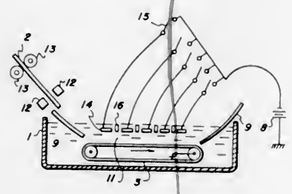
1. A process for forming an image which comprises (1) imagewise exposing a sulfur-based photosensitive member comprising a support having thereon a layer consisting essentially of sulfur in an amorphous solid state and physically changeable on absorbing the energy of light to produce a difference in respect to sublimation characteristics between the exposed area and the non-exposed area, and, (2) heating said imagewise exposed sulfur-based photosensitive member to a temperature of between about 70 to 150°C to sublime the area of higher sublimation characteristics.

3,951,653

METHOD OF PREVENTING TONER BUILD-UP ON ELECTRODES DURING LIQUID DEVELOPMENT

Seiji Matsumoto, Tokyo, Japan, assignor to Rank Xerox Ltd., London, England

Filed Aug. 30, 1973, Ser. No. 393,095
Int. Cl.² G03G *13/22*
U.S. Cl. 96—1 PE **7 Claims**



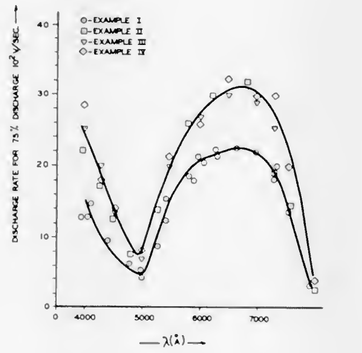
1. An improved electrophoretic development method, comprising:
a. providing a liquid development system having (1) a development zone defined by a backing electrode and a development electrode, said development electrode comprising a plurality of individually biased electrodes, each individually biased electrode being separated from the adjacent individually biased electrode by an insulating spacer, and (2) means for transporting an electrostatically imaged discontinuous insulating sheet through said zone; and
b. passing an electrostatically imaged discontinuous insulating sheet in contact with the liquid developer through said development zone concurrent with sequential activation of the individually biased development electrodes in synchronization with the travel of the leading edge of said insulating member and sequential inactivation of the individually biased development electrodes in synchronization with the travel of the trailing edge of said insulating member.

3,951,654

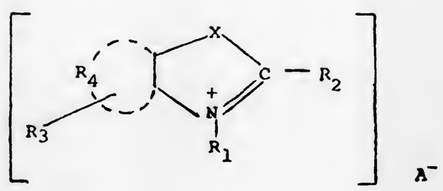
METHOD FOR ENHANCEMENT IN THE RATE AND EFFICIENCY OF PHOTODISCHARGE OF ELECTROSTATOGRAPHIC IMAGING MEMBERS COMPRISING PHTHALOCYANINE

Joseph Mammino, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 20, 1974, Ser. No. 481,014
Int. Cl.² G03G *5/09*
U.S. Cl. 96—1.6 **24 Claims**



24. In an electrophotographic imaging member having a conductive substrate and a photoconductive layer comprising phthalocyanine pigment in an insulating binder resin, the improvement comprising:
the inclusion within said photoconductive layer of a charge transport sensitizer effective amount of at least one compound of the formula



wherein R_1 is alkyl of 1–6 carbon atoms;
R_2 is aryl, aralkyl, p-alkylaminophenyl, or substituted p-dialkylaminophenyl;
R_4 represents a hydrocarbon diradical making up the balance of an aromatic ring system;
R_3 is alkyl, aryl, alkaryl, heterocyclo, amino, alkyl substituted amino, nitro, alkoxy or halogen;
X is sulfur, oxygen or selenium; and
A is a monovalent or divalent anion;
the relative weight ratio of phthalocyanine pigment to charge transport sensitizer compound ranging from about 99.9:0.1 to about 90:10.

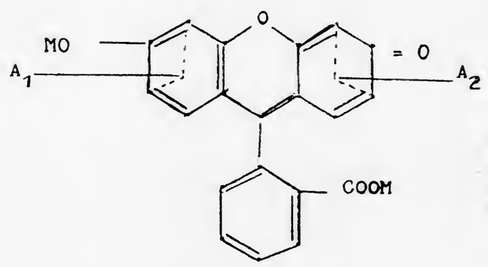
3,951,655

DYE SENSITIZED PHOTOCONDUCTIVE MATERIAL

Bauke Schoustra, Tegelen, and Hubertus W. H. M. Roncken, Helden, both of Netherlands, assignors to Oce-van der Grinten N.V., Venlo, Netherlands

Filed June 27, 1974, Ser. No. 483,567
Claims priority, application United Kingdom, July 9, 1973, 32554/73; Jan. 31, 1974, 4496/74
Int. Cl.² G03G *5/09*
U.S. Cl. 96—1.7 **6 Claims**

1. Electrophotographic sheet material comprising a photoconductive insulating layer containing at least one sensitizing nitro-substituted xanthene dye selected from the group consisting of compounds represented by the following formula and mesomeric and tautomeric forms thereof:



in which M represents a hydrogen or metal atom or a methyl or ethyl group and wherein A_1 or A_2 or each of A_1 and A_2 represents a nitro group in an ortho position with respect to the —OM and/or keto group, and each remaining position is unsubstituted or substituted by one or more substituents selected from the group consisting of halogen atoms and lower alkyl, lower alkoxy, nitro, hydroxyl and esterified hydroxyl groups.

3,951,656

DIRECT-POSITIVE SILVER HALIDE EMULSION FOGGED WITH A CYANOBOROHYDRIDE ANION

Frederick William Millard, Montrose, Pa., assignor to GAF Corporation, New York, N.Y.

Filed July 5, 1974, Ser. No. 486,196
Int. Cl.² G03C *1/28*
U.S. Cl. 96—107 **11 Claims**

1. A method for chemically fogging a silver halide photograph emulsion comprising digesting a cyanoborohydride anion with a silver halide emulsion at a pH ranging from pH 5–7, said pH being without prior adjustment, thereby forming metallic silver, said digestion proceeding for a period of time ranging from about 15 to about 60 minutes and temperatures of from about 45° to 65° C.

3,951,657

PROCESS FOR MAKING A RELIEF PRINTING PLATE

Frank P. Recchia, New Haven, and Tilak M. Shah, North Haven, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 383,377, July 27, 1973, Pat. No. 3,912,516. This application July 16, 1975, Ser. No. 596,521
Int. Cl.² G03C *5/00, 1/68, 7/02, 8/00*
U.S. Cl. 96—35.1 **2 Claims**

1. A process for the preparation of a relief printing plate which comprises exposing one face of a photopolymerizable element in the form of a sheet imagewise to actinic radiation, said element comprising
a. an addition polymerizable ethylenically unsaturated compound having a boiling point above 100°C at normal atmospheric pressure;
b. a free radical generating addition polymerization initiator activatable by actinic radiation;
c. a compatible polyurethane binding agent comprising the product of reaction of
i. 4,4′-methylenebis(phenyl isocyanate);
ii. a polycaprolactone diol having a molecular weight in the range of about 1,000 to about 2,500; and
iii. a mixture of at least two different aliphatic diols of from 2 to 6 carbon atoms, inclusive;
the ratio of equivalents of polycaprolactone diol (ii) to total equivalents of said aliphatic diols (iii) being within the range of 1:1.5 to 1:7, and the ratio of equivalents of isocyanate (i) to total equivalents of polyols (ii) and (iii) being within the range of about 0.94:1 to 0.98:1,
and developing the relief image on the exposed face of said element by subjecting the latter to etching with a solvent in which the unexposed portions of said photopolymerizable element are soluble.

3,951,658

COLOR MODIFYING IMAGING METHOD AND ARTICLE

Dana G. Marsh, Rochester, and William W. Limburg, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

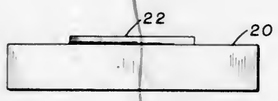
Filed May 24, 1974, Ser. No. 473,018
Int. Cl.² G03C *5/04;* **B14M** *5/00;* **G03C** *1/68*
U.S. Cl. 96—27 R **13 Claims**

1. In an imaging system based upon the selective interaction of leuco or highly colored compounds with one or more color modifying reagents thus leading to the formation of a product differing in absorption spectrum from any of the materials undergoing said interaction, the improvement consisting essentially of:
a. providing a structure or composition wherein said leuco or highly colored compounds are separated from color modifying reagents by a polymeric divider layer thus precluding their uncontrolled interaction and formation of a product having an absorption spectrum different from the materials separated by said divider, said polymeric divider layer being capable of undergoing selective reduction in viscosity in response to ultraviolet light; and
b. selectively exposing said structure or composition to ultraviolet light, whereby the viscosity in the exposed areas of the polymeric divider layer is reduced, thereby, allowing for the selective interaction of the leuco or highly colored compounds with the color modifying reagents and the formation of a product having an absorption spectrum different from any of the interacting materials.

3,951,659
METHOD FOR RESIST COATING OF A GLASS SUBSTRATE

Joseph L. Abita, Columbia, and Jack G. Bebee, Derwood, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 9, 1974, Ser. No. 531,148
Int. Cl.² C03C *15/00*
U.S. Cl. 96—36 **4 Claims**



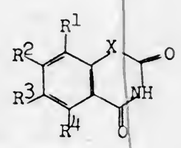
1. A method for providing a coating of a photoresist material directly onto the surface of a glass substrate, comprising the steps of:
cleaning the substrate;
boiling the substrate in trichloroethylene;
heating the substrate to a temperature between 160°C and 200°C; and,
applying photoresist material directly onto the surface of the substrate.

3,951,660
DRY COPYING MATERIAL

Hermann Hagemann, Cologne, and Anita von Konig, Leverkusen, both of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Continuation-in-part of Ser. No. 424,205, Dec. 13, 1973. This application Dec. 17, 1974, Ser. No. 533,672
Claims priority, application Germany, Dec. 16, 1972, 2261739; June 2, 1973, 2328145
Int. Cl.² G03C *1/02*; C07D *265/00*
U.S. Cl. 96—67 **13 Claims**

1. In a photographic radiation sensitive recording material having therein a radiation sensitive composition and at least one layer containing dispersed in a binding agent a substantially non-light sensitive silver salt, a reducing agent for the non-light sensitive silver salt, and a toner compound, the improvement which comprises the toner being a heterocyclic toner compound of the following formula:



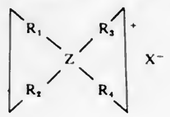
in which
X represents 0 or N-R⁵,
R¹, R² R³ or R⁴represent hydrogen, alkyl, cycloalkyl, alkoxy, alkylthio, hydroxy, dialkylamino or halogen, in addition to which R¹ and R² or R² and R³ or R³ and R⁴ can represent the ring members required to complete an anellated aromatic ring, and
R⁵ presents alkyl.

3,951,661
SILVER HALIDE EMULSION CONTAINING AN ARYLPHOSPHONIUM SALT AS ANTIFOGGANT

Nobuo Soma; Isao Kawamoto, both of Hiro; Tomio Nakajima, Shin; Sadao Sugita, Hanno; Tsuneo Wada, Machida; Shizuo Saito, Hachioji; Hiroyuki Inokuma, Chofu; Koichi Horigome, Tokyo, and Yukio Morifuji, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co. and Sankyo Company Limited, both of Tokyo, Japan

Continuation-in-part of Ser. No. 247,512, April 26, 1972. This application May 24, 1974, Ser. No. 473,315
Claims priority, application Japan, Apr. 30, 1971, 46-28720
Int. Cl.² G03C *1/34*
U.S. Cl. 96—76 R **4 Claims**

1. A light-sensitive silver halide photographic material which comprises a support, at least two layers on said support, one of said layers being an emulsion layer containing the silver halide and at least one of the remaining layers being a non-emulsion layer, and a fog-inhibiting substance incorporated in one of said layers, in the amount of about 10^{-2} to 10^{-5} mols per mol of silver halide when incorporated in the emulsion layer, and in the amount of about 10^{-2} to 10^{-6} mols per square meter when incorporated in a non-emulsion layer, said fog-inhibiting substance being a compound of the formula



wherein
Z is phosphorus,
X^- is an acidic anion, selected from the group consisting of Cl^-, Br^-, BF_4^- and ClO_2^-, and
R_1, R_2, R_3, and R_4 may be the same or different and are selected from the grouup consisting of alkyl having 1 to 4 carbon atoms, phenyl, benzyl, tolyl, phenyl substituted with an electron-attracting group and benzyl substituted with an electron-attracting group, at least one of said R_1, R_2, R_3 and R_4 being said substituted phenyl or said substituted benzyl, wherein the electron-attracting substituent is selected from the group consisting of nitro, cyano, carbonyl, carboxyl, sulfonyl, halogen, and quaternary amino.

3,951,662
METHOD OF ANTISTATIC TREATMENT FOR SILVER HALIDE PHOTOSENSITIVE MATERIALS

Norio Chiba, Hachioji; Masao Ishihara, Hino; Sadatsugu Terada, Hachioji; Koichi Horigome, Tokyo; Kyusaku Yoshida, Hachioji; Kenichi Taguchi, Sayama, and Mitate Matsui, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1973, Ser. No. 416,184
Claims priority, application Japan, Nov. 20, 1972, 47-115641
Int. Cl.² G03C *1/82*
U.S. Cl. 96—84 R **4 Claims**

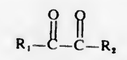
1. Supported silver halide photosensitive material having an additive which comprises a glycidol poly-addition product of a phenol-aldehyde condensate or a glycidol poly-addition product of a halogenated phenol formalin condensate, the added glycidol being present in the amount of less than 50 moles per unit of said condensate.

3,951,663
ORGANIC VOLUME PHASE HOLOGRAPHIC RECORDING MEDIA COMPRISING AN α DI-KETONE

Daniel Louis Ross, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 4, 1973, Ser. No. 403,377
Int. Cl.² G03C *1/76, 1/68*
U.S. Cl. 96—67 **8 Claims**

1. A medium for recording volume phase holograms consisting essentially of a cured, insoluble, transparent light-insensitive polymeric host selected from the group consisting of acrylic polyesters and epoxy resins containing a soluble light-sensitive α-diketone having the formula



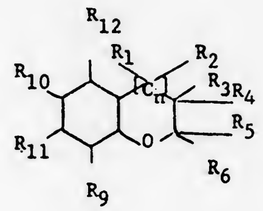
wherein R_1 and R_2 independently can be an aliphatic or aromatic hydrocarbon radical or together can form a carbocyclic ring, in an amount sufficient to cause a change in the index of refraction in the medium when illuminated by a spacially modulated coherent light beam having a wavelength corresponding to the absorption band wavelength tail of the α-diketone.

3,951,664
LIGHT-SENSITIVE MATERIAL HAVING DEVELOPERS EMBEDDED THEREIN

Anita von König, Leverkusen; Helmut Kampfer; Ernst Roos, both of Cologne, and Kurt Ley, Leverkusen, all of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Division of Ser. No. 156,047, June 23, 1971, Pat. No. 3,819,382. This application June 24, 1974, Ser. No. 482,228
Claims priority, application Germany, June 26, 1970, 2031748
Int. Cl.² G03C *1/06, 5/30*
U.S. Cl. 96—95 **7 Claims**

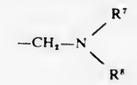
1. A light-sensitive photographic material containing at least one silver salt composition which comprises a light-sensitive silver salt selected from the group consisting of silver halide, and silver salt of carboxyalkyl thioether derivatives and containing a reducing agent that after imagwise exposure causes development of a visible image by reducing the silver salt composition when processed with heat or with an alkaline bath wherein the improvement comprises the reducing agent has the following formula:



wherein
n is 0 or 1;
R_1, R_2, R_3, R_4, R_5 and R_6 are hydrogen or alkyl groups having up to 9 carbon atoms, but
R_3 and R_4 or R_4 and R_5 may be joined together to complete a carbocyclic ring system having 5, 6 or 7 carbon atoms, and
R_6 may further represent an alkoxy group having up to 6 carbon atoms or a tertiary amino group of the formula:



wherein
R_7 and R_8 represent alkyl having up to 6 carbon atoms or are together the ring members required for completing a 5-, 6-, or 7- membered ring;
R_9, R_{10} are hydrogen, alkyl or alkoxy having up to 6 carbon atoms, and at least one of them represents a hydroxyl group;
R_{11}, R_{12} are hydrogen, alkyl or alkoxy having up to 9 carbon atoms, cycloalkyl, aralkyl, aryl or a group of the formula:

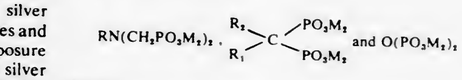


3,951,665
DIRECT-POSITIVE SILVER HALIDE EMULSION FOGGED WITH A TIN (II) CHELATE

Hans-Willi Balmer, Wallenried, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Jan. 14, 1974, Ser. No. 432,916
Claims priority, application Switzerland, Jan. 17, 1973, 687/73
Int. Cl.² G03C *1/28*
U.S. Cl. 96—108 **1 Claim**

1. A photographic direct positive material which contains, on a carrier, a light-sensitive silver halide emulsion layer containing, in an amount which corresponds to less than 1 gram atom and to at least 10^{-3} gram atom of tin per gram atom of silver, a divalent tin chelate of a chelating agent corresponding to one of the formulae



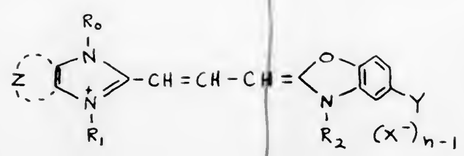
wherein
R denotes an alkyl group or an aryl radical,
R_1 denotes a hydrogen atom, an alkylaryl or aralkyl radical, a heterocyclic or alicyclic group or a M_2O_3P,
R_2 denotes a hydrogen atom or a hydroxyl, alkyl or M_2O_3P group and
M denotes a cation which confers solubility in water; or a mixture of a salt of divalent tin and one of said chelating agent which forms said chelate, said silver halide emulsion layer having been chemically fogged by said divalent tin chelate or a mixture of a salt of divalent tin and one of said chelating agent which forms said chelate.

3,951,666
SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION

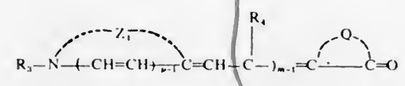
Masanao Hinata; Masanaga Ohki; Haruo Takei; Akira Sato, and Tadashi Ikeda, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 6, 1974, Ser. No. 495,171
Claims priority, application Japan, Aug. 6, 1973, 48-88196
Int. Cl.² G03C *1/14*
U.S. Cl. 96—126 **6 Claims**

1. A silver halide photographic emulsion containing in a supersensitizing amount a combination of dyes which provides minus blue supersensitivity which consists essentially of at least one sensitizing dye represented by the general formula (I)



wherein Z represents the non-metal atoms necessary to form a benzene nucleus; R_0, R_1, and R_2 each represents an aliphatic group, with at least one of R_1 and R_2 representing an alkyl group containing a carboxy group or an alkyl group containing a sulfo group; Y represents a halogen atom; X represents an acid anion; *n* represents an integer of 1 or 2 with *n* being 1 when the dye forms an intramolecular salt; and at least one sensitizing dye represented by the general formula (II)



wherein Z_1 represents the non-metal atoms necessary to form a 5- or 6-membered heterocyclic nucleus; Q represents the atoms necessary to form a rhodamine nucleus, a 2-thio-2,4-imidazolidine-dione nucleus, a 2-pyrazoline-5-one nucleus, or a 2-thio-2,4-oxazolidinedione nucleus; R_3 represents an aliphatic group; R_4 represents a hydrogen atom, an alkyl group, an alkoxy group, or a mono-aryl group; *m* represents 1 or 2; and *p* represents 1 or 2.

3,951,667

INORGANIC ANTICORROSIVE COATING MATERIAL

Hideo Kogure; Hiroshi Kuriyama, and Fumihiko Nakakita, all of Hiratsuka, Japan, assignors to Kansai Paint Company, Ltd., Amagasaki, Japan

Continuation of Ser. No. 326,139, Jan. 23, 1973, abandoned. This application Nov. 14, 1974, Ser. No. 523,704

Claims priority, application Japan, Jan. 26, 1972, 47-9032; Feb. 4, 1972, 47-12187

Int. Cl.² C09D *5/10*

U.S. Cl. 106—1 **10 Claims**

1. An inorganic coating composition which forms a hard, water resistant, and corrosion resistant protective layer when directly applied to a substrate without subsequent post deposition acid or heat treatments comprising:

a. a vanadium-modified water soluble silicate aqueous solution comprising the reaction product of effective amounts of aqueous silicate solution and a member taken from the group of vanadium, vanadium compounds, and mixtures thereof, said reactants reacting at room temperature for about 4 days or more, at about 60°C for 24 hours or more, or at about 100°C for 8 hours or more, said reactants include about 100 parts by weight of an aqueous solution of water soluble silicates and from about 0.5 to about 25 parts by weight of said vanadium, vanadium compounds, or mixtures thereof; said vanadium compounds being selected from the group consisting of vanadium oxides, vanadium hydroxides, vanadium halides, vanadium sulphates, vanadium phosphates, vanadium silicates, vanadium borates, vanadium nitrates, and vanadium carbonates; and

b. an anticorrosive metallic powder dispersed in said aqueous solution of said vanadium-modified water soluble silicate.

3,951,668

MULTICOLOR PRINTING

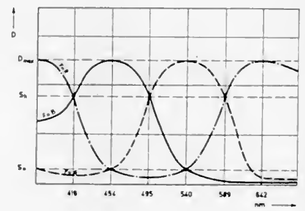
Ernst Schumacher, Frankfurt am Main; Hans Bremer, Nieder-Ramstadt, and Rolf Herold, Bad Homburg vor der Hobe, all of Germany, assignors to Druckfarbenfabrik Gebr. Schmidt GmbH, Frankfurt am Main, Germany

Filed July 5, 1973, Ser. No. 376,563

Claims priority, application Germany, July 6, 1972, 2233165

Int. Cl.² B41M *1/14;* **C09D** *11/02, 11/06, 11/08*

U.S. Cl. 106—20 **4 Claims**



1. In a method for reproducing a multicolored image by printing on a white background with printing inks of the three primary colors, i.e. a color absorbing blue, a color absorbing green and a color absorbing red, the step of selecting the primary colors so that the printed colors have spectral density curves passing through matching ranges of optical densities at characteristic wavelengths on the visible spectrum, the ranges being within the following parameters:

Range of Wave lengths	Optical Density in % of D_{max} color absorbing blue	color absorbing green	color absorbing red
407 to 423 nm	65 to 93	2 to 27	39 to 79
453 to 456 nm	89 to 101	10 to 25	12 to 25
492 to 496 nm	60 to 74	65 to 81	1 to 10
538 to 541 nm	4 to 14	88 to 103	13 to 25
584 to 591 nm	1 to 3	50 to 75	65 to 88
633 to 646 nm	1 to 3	1 to 4	84 to 109

D_{max} marking the range of the maxima of the three spectral density curves, which is spaced from the optical density of the white background D_0 by a distance corresponding to the density of the solid areas obtained by printing with normal inking.

3,951,669

FUSION SEALS AND SEALING COMPOSITIONS FOR THEIR PRODUCTION

Joseph W. Malmendier, Corning; Francis W. Martin, Painted Post, and Brian P. Tyndell, Beaver Dams, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 18, 1974, Ser. No. 524,676

Int. Cl.² C03C *3/22, 12/00*

U.S. Cl. 106—39.6 **9 Claims**

1. A sealing mixture for use in sealing to a glass surface consisting essentially of a lead borate, a lead-zinc borate, a lead borosilicate, or a lead-zinc borosilicate sealing glass having a softening temperature below about 400°C. and a coefficient of thermal expansion in excess of about 99×10^{-7}/°C. (25°–200°C.) and, as an additive to reduce the effective coefficient of thermal expansion of said sealing glass, an effective amount in the form of particles within the range of about 100–400 mesh size up to about 35% by volume of a ZnO-Al_2O_3-SiO_2 glass-ceramic material having a coefficient of thermal expansion less than that of said sealing glass consisting essentially, by weight, of about 45–65% SiO_2 and at least 35% ZnO + Al_2O_3, wherein ZnO and Al_2O_3 are present in molar ratios ranging between about 0.9–1.1, in which the crystal content constitutes greater than 50% by weight of said glass-ceramic material and consists essentially of zinc beta-quartz solid solution.

3,951,670

CRISTOBALITE SUPPRESSION IN HIGH-SILICA Li_2O-Al_2O-SiO_2 DEVITRIFIED GLASS FRITS

Edward A. Bush, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 10, 1975, Ser. No. 548,548

Int. Cl.² C03C *3/22, 3/04*

U.S. Cl. 106—39.7 **5 Claims**

1. A method of inhibiting the development of a cristobalite phase in a sintered crystalline ceramic article made from one or more finely divided base glass frits in the aggregate consisting essentially, by weight on the oxide basis, of 3.5–7.5% Li_2O, 15–30% Al_2O_3, and 74–80% SiO_2, with the mole ratio of Al_2O_3:Li_2O being between about 1.0–1.5, which method comprises:

I. preparing the particulate glass frits by melting, quenching, and comminuting a raw material batch,

II. shaping the frit and optionally a particulate crystalline seeding material into a green article, and

III. firing the green article to about 1200°–1350°C. for a time sufficient to sinter the frit into a coherent article and to cause the glass to crystallize in situ;

wherein the improvement comprises:

adding into either step I or step II a cristobalite suppressing oxide selected from Na_2O, K_2O, Cs_2O, MgO, CaO, SrO, BaO, Y_2O_3, La_2O_3, TiO_2, Nb_2O_5, Ta_2O_5, ZnO, B_2O_3, PbO and Sb_2O_3; the oxides being selected in an effective amount for suppressing the formation of a cristobalite phase in the sintered article up to a concentration of 0.02 moles per 100 grams of glass frit of the oxides having an even valence cation and up to a concentration of 0.01 moles per 100 grams of glass frit of the remaining oxides.

3,951,671

OPHTHALMIC GLASS COMPOSITIONS

Richard John Parry, Southport, and Reginald Dunning, Parbold, Nr. Wigan, both of England, assignors to Pilkington Brothers Limited, St. Helens, England

Filed Nov. 29, 1974, Ser. No. 528,573

Claims priority, application United Kingdom, Dec. 6, 1973, 56656/73

Int. Cl.² C03C *3/04, 3/08, 23/22*

U.S. Cl. 106—52 **3 Claims**

1. An ophthalmic glass composition having a refractive index between about 1.5197 and 1.5272 and an expansion coefficient (0°–100°C) between 81.1 and 89.6×10^{-7} suitable for toughening by an ion-exchange process below the glass strain point, essentially of the following constituents in percentages by weight:

SiO_2	58 to 67%
Al_2O_3	4.5 to 8.0%
Na_2O	8.5 to 17%
K_2O	2 to 11%
ZrO_2	3 to 6.5%
TiO_2	0 to 5%
As_2O_3	0 to 1%
Sb_2O_3	0 to 1%
B_2O_3	0 to 6%

and ZnO in an amount up to 10% and effective to control expansion coefficient and to promote ion penetration in an ion-exchange toughening process, the total of the foregoing constituents amounting to at least 95% of the composition and the balance, if any, being composed of compatible constituents; the total of Na_2O plus K_2O being between 17 and 22%; B_2O_3 being present when a total of Al_2O_3 plus ZrO_2 exceeds 10%; and the total of ZrO_2 plus TiO_2, when TiO_2 is present, being not more than 5.5%.

3,951,672

GLASS FRIT CONTAINING LEAD RUTHENATE OR LEAD IRIDATE IN RELATIVELY UNIFORM DISPERSION AND METHOD TO PRODUCE SAME

Robert C. Langley, Millington, and Muriel Abrash, Paterson, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Newark, N.J.

Continuation of Ser. No. 301,102, Oct. 26, 1972, abandoned. This application Nov. 7, 1974, Ser. No. 521,987

Int. Cl.² C03C *3/10, 3/04, 5/02;* **H01B** *1/02*

U.S. Cl. 106—53 **20 Claims**

1. A method of making a glass frit suitable for use in the production of thick film resistors comprising heating a finely-divided mixture of glass-forming proportions of lead oxide and silica, and a minor amount of a member selected from the group consisting of ruthenium dioxide and iridium dioxide to a temperature sufficient to form a glass melt containing lead ruthenate or lead iridate, whereat the viscosity of the melt is sufficiently high to maintain the lead ruthenate or lead iridate in relatively uniform dispersion in the glass melt, cooling and comminuting the mixture to provide the glass frit.

3,951,673

INORGANIC HARDENING COMPOSITION

Susumu Isohata; Kyoichi Sasaki, both of Tokyo, and Yoshihiro Minamitani, Saitama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 365,498, May 31, 1973, abandoned. This application Nov. 12, 1974, Ser. No. 523,134

Claims priority, application Japan, July 24, 1972, 47-73358

Int. Cl.² C04B *19/04;* **C09D** *1/02*

U.S. Cl. 106—84 **6 Claims**

1. An inorganic hardening composition comprising water glass and at least one member selected from the group consisting of petalite and spodumene which have been fired at a temperature of at least 1,000°C, wherein the proportion of the water glass to the petalite and/or spodumene is 100 parts: 300 – 10 parts.

3,951,674

CONCRETE ADDITIVE

John D. Curry, Oxford; Francis L. Diehl, Cincinnati, and Joseph P. Nirschl, Fairfield, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 17, 1974, Ser. No. 533,739

Int. Cl.² C04B *7/353*

U.S. Cl. 106—88 **8 Claims**

1. A cementitious composition having improved compressive strength, comprising a hydraulic cement and a water-solu-

ble cellulose acetate sulfate additive at a cement: additive weight ratio in the range of 100:0.30 to 100:2.0.

3,951,675

METHOD FOR THE TREATMENT OF PHOSPHOGYPSUM

Robert Krempff, Neuilly-sur-Seine, France, assignor to Centre d'Etudes et de Recherches des Phosphates Mineraux Cerphos, Paris, France

Filed Sept. 25, 1973, Ser. No. 400,617
Claims priority, application France, Oct. 2, 1972, 72.34872
Int. Cl.² C04B *11/00*
U.S. Cl. 106—109 **9 Claims**

1. A method for the treatment of phosphogypsum, which consists essentially of subjecting a pulp, obtained from mixing phosphogypsum and water, to a wet screening step by passing the pulp through a sieve to remove the coarse grain fractions, subjecting the pulp passing through the sieve to a flotation process to remove the fine grain fractions thereof, the granulometric limits of the treated phosphogypsum being so selected that the proportions of water-soluble P_2O_5, fluorine and carbon compounds which exist as impurities in the phosphogypsum do not exceed 0.01, 0.9 and 0.1% respectively, the percentage of the carbon containing compounds being calculated on the basis of the carbon content, filtering the thus-purified phosphogypsum to obtain the solid purified phosphogypsum residue; washing the residue with water; drying the residue and baking the thus-obtained phosphogypsum residue to convert it into plaster; said phosphogypsum being treated by adding thereto, prior to the baking step, calcium carbonate to adjust the acidity thereof.

3,951,676

CATIONIC BITUMINOUS EMULSIONS FORMING RESIDUUM HAVING IMPROVED TEMPERATURE CHARACTERISTICS

Edward G. Elste, Jr., Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sept. 5, 1974, Ser. No. 498,144
Int. Cl.² C08L *93/04*, *95/00*; C09D *3/24*
U.S. Cl. 106—277 **5 Claims**

1. A stable, modified cationic oil-in-water bituminous emulsion comprised of:

1. from 95–99 parts by weight of a cationic bituminous emulsion containing
   a. from 50–80% parts by weight of a bitumen having a penetration at 77°F. of from about 60–150,
   b. from about 0.1–1% of a cationic emulsifier,
   c. a minor amount of acid sufficient to give the emulsion a pH of from about 4 to about 6,
   d. and the balance to make 100% by weight being water, and
2. from about 1 to about 5 parts by weight of a tallate salt of a metallic polyvalent cation selected from the group consisting of tin, magnesium, copper, aluminum and iron, wherein the weight ratio of said cation to tall oil is from 1:5–35 and with the proviso that the total parts by weight of said modified emulsion is 100.

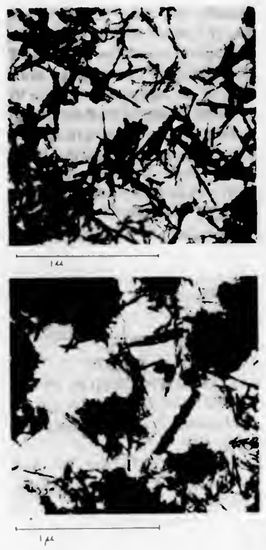
3,951,677

MULLITE FIBRILS

Howard Wayne Jacobson, 2009 Longcome Drive, and George Leoutsacos Lewis, 1001 Graylyn Road, both of Graylyn Crest, Wilmington, Del. 19803

Continuation-in-part of Ser. No. 69,931, Sept. 4, 1970, abandoned, and a continuation of Ser. No. 206,058, Dec. 8, 1971, abandoned. This application Oct. 4, 1974, Ser. No. 512,138
Int. Cl.² C01B *33/26*; C08K *3/34*
U.S. Cl. 106—288 B **1 Claim**

1. A particulate aluminum silicate composition having a surface area from 30 M^2/gm to 350 M^2/gm as determined by nitrogen adsorption and having an Al_2O_3:SiO_2 molar ratio of 2.8:2 to 3.4:2 consisting essentially of a major amount of colloidal, nonspinnable, monocrystalline mullite fibrils and a minor amount of alumina and silica, said mullite fibrils having



an Al_2O_3:SiO_2 molar ratio of 3:2, a diameter of 3–100 nanometers, a length of 0.05–2.0 microns and a length-to-diameter ratio of from 5:1 to 100:1.

3,951,678

PIGMENTATION OF CRUDE METAL PHTHALOCYANINES

Calvin C. Wanser, South Glens Falls, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 20, 1974, Ser. No. 499,094
Int. Cl.² C08K *5/34*
U.S. Cl. 106—288 Q **10 Claims**

1. A process for producing a metal phthalocyanine pigment having improved tinctorial strength and transparency comprising:

a. intimately contacting a dry crude metal phthalocyanine produced by the fusion synthesis of metal phthalocyanine-forming reactants with per part of pigment in the crude, about 2 to about 5 parts of about 82 to about 86% sulfuric acid in the absence of shear until a pasty dough-like mass is formed,

b. adding to said mass sufficient of a hot aqueous diluent to provide an aqueous mixture having a sulfuric acid concentration of about 20 to about 50%, or discharging said mass into sufficient of said hot aqueous diluent to provide an aqueous mixture having a sulfuric acid concentration of about 10 to about 15%, said aqueous diluent consisting essentially of water and from 2 to 15% by weight of pigment in the crude of at least one compound selected from the group consisting of ammonium hydroxide, tetramethyl ammonium hydroxide and an amine of the formula



where R is lower alkyl of hydroxy substituted lower alkyl and R′ and R″ are hydrogen or R, and the temperature of said aqueous diluent being between 75° and 100°C,

c. agitating the aqueous mixture of 75° to 100°C. to form a pigment slurry, and

d. recovering the metal phthalocyanine pigment from the slurry.

3,951,679

COLORED PIGMENTS

Horst Bernhard; Alfred Stein; Reiner Esselborn; Reiner Hesse, and Horst Russmann, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Mar. 15, 1974, Ser. No. 451,388
Claims priority, application Germany, Mar. 17, 1973, 2313332
Int. Cl.² C09C *1/00*
U.S. Cl. 106—291 **9 Claims**

1. A colored mica flake pigment having a layer of ferric hexacyanoferrate(II) on the mica flakes as a color-imparting uniform coating.

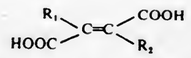
3,951,680

FILLED POLYOLEFIN COMPOSITIONS

James A. Robertson, West Chester, Pa.; Robert L. Adelman, and Horacio Enrique Bergna, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 356,431, May 2, 1973, abandoned. This application May 28, 1974, Ser. No. 473,663
Int. Cl.² C09C *1/00*, *1/42*
U.S. Cl. 106—302 **7 Claims**

1. A treated filler pigment selected from the group consisting of talc, kaolin, calcined kaolin, wollastonite, mica, attapulgite, asbestos and montmorillonite, said filler having absorbed on the surface thereof about in the range 0.01 to 1.0% based on the pigment weight of a coupling agent comprising one or more water-soluble coordination complexes of (a) chromium (III) derived from a water-soluble nitrate thereof, which nitrate yields $Cr(H_2O)_6^{3+}$ in water; with (b) a trans-acid of the formula



wherein R_1 and R_2 are the same or different and are H, alkyl, $-CH_2COOH$ or phenyl; provided that the total number of carbon atoms in said trans-acid is an integer in the range 4–10, inclusive.

3,951,681

METHOD FOR DESCALING FERROUS METALS

Robert H. Shoemaker, Royal Oak, and William G. Wood, Grosse Pointe Park, both of Mich., assignors to Kolene Corporation, Detroit, Mich.

Filed Nov. 1, 1973, Ser. No. 411,993
Int. Cl.² C23G *1/14*, *1/28*
U.S. Cl. 134—2 **4 Claims**

1. A method of removing scale from and cleaning ferrous metal surfaces, particularly ferrous oxides and scale remaining on the metal surfaces as a result of the formation process, comprising the steps of:

a. converting the process scale into a conditioned scale on said metal surfaces by immersing the metal in a molten oxidizing salt bath which oxidizes said scale,

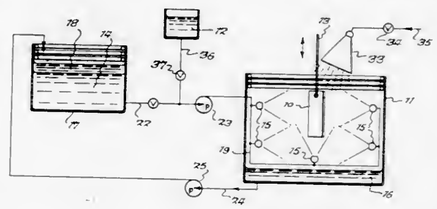
b. then, removing the conditioned scale from said metal surfaces by immersing the metal in a separate strongly alkaline, non-acidic caustic bath having a temperature of about 200° to 240°F, said caustic bath comprising about 2 to 12 pounds of a mixture of about 20 to 90% of an alkali hydroxide, from about 5 to 80% of an alkali gluconate, 0.1 to 6% triethanolamine, serving as a chelating agent, per gallon of water in a bath.

3,951,682

MULTI-PHASE RINSE AND RECOVERY APPARATUS

William Russell Schevey, Hawley, Pa.; Harold Freeman Jones, Dover, and Burton A. Spielman, Chatham, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 235,994, March 20, 1972, Pat. No. 3,888,693. This application Nov. 15, 1974, Ser. No. 524,106
Int. Cl.² B08B *3/02*
U.S. Cl. 134—102 **6 Claims**



1. Apparatus for treating a solid article having a contaminate thereon comprising:

a. a first sump adapted to contain a liquid and provided with means for cooling the space in the area above contained liquid,

b. movable means for suspending an article within said first sump,

c. spray means for applying immiscible liquids to substantially all surfaces of the suspended article,

d. means comprising a second sump adapted to contain a liquid and to separate immiscible liquids which collect in the bottom of said first sump into distinct liquid phases, said second sump being separate from and in communication with said first sump, and being provided with means for cooling the space in the area above contained liquid, and

e. means for separately removing and recycling at least one phase from said second sump to said spray means.

3,951,683

WATER DISTRIBUTION SYSTEM FOR DISHWASHING APPLIANCE

Wilbur W. Jarvis, Jr., St. Joseph, and Leslie Toth, Coloma, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 5, 1974, Ser. No. 494,893
Int. Cl.² B08B *3/02*
U.S. Cl. 134—144 **6 Claims**

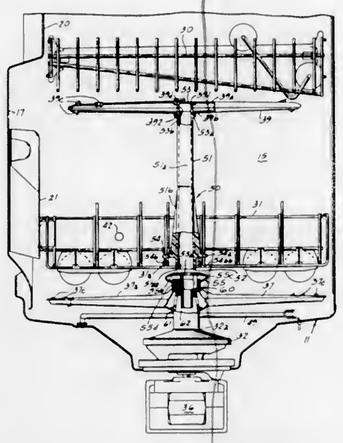
1. In an automatic dishwasher having lower and upper rotatable spray devices, a rack transversely movable between loading and operating positions and interposed between said lower and upper spray devices, and a pump having a pressurized water outlet, a wash liquid distribution system comprising:

a stationary hollow tower firmly attached in a vertical position upon said movable rack and having an annular wall member forming an internal fluid passage communicating between an open lower end of said tower and said upper spray devices;

a hollow stationary hub means fixedly attached to and communicating with said pump outlet upwardly of said lower

spray devices and having a fluid passage aligned with said open lower end of said tower when said rack is in its said operating position,

said hub means including a hub body and a nozzle member including a neck portion concentrically aligned within the axial bore of and attached to the upper portion of said hub body;



a stationary, expansible coupling member fixedly mounted upon said nozzle member and receiving fluid from said neck portion,

said coupling member having an upper, inwardly-extending wall forming an axially-facing opening therein in a position communicable to said open lower end of said tower when said rack is in its operating position, said wall selectively sealingly engaging said annular wall member of said tower upon expansion of said coupling member, by a flow thereinto of pressurized wash liquid.

3,951,684

LIQUID DISTRIBUTION SYSTEM FOR DISHWASHER

Paul J. LaPrad, St. Joseph; Chester W. Wassilak, Benton Harbor, and Philip P. Johnson, St. Joseph, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 5, 1974, Ser. No. 494,894

Int. Cl.² B08B *3/02*

U.S. Cl. 134—144 **6 Claims**

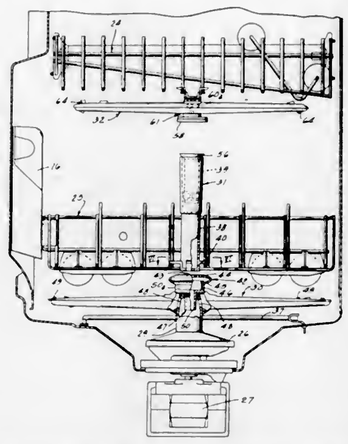
1. In a dishwashing appliance having upper and lower dish racks each transversely movable between loading and operating positions, a support assembly affixed to an underside of said upper rack, a rotating spray device located between said dish racks and carried rotatably upon said support assembly, and a pump for pressurizing wash liquid at an outlet thereof, a distribution system for said wash liquid comprising:

a hollow tower having a vertically fixed portion in communication with said pump outlet and receiving a flow of pressurized liquid therefrom;

a hollow movable tower portion slidably received within said fixed portion of said tower,

said movable portion having at the upper end thereof flared seal means for engaging said support assembly of said spray device at a resilient cooperating gasket in said support assembly for communication of said liquid flow thereto, and a constricted orifice means for assuring pressure build-up within said movable portion sufficient to raise said movable portion to engage said support, and

said movable tower portion carrying on a lower end portion thereof an annular sealing means which is sufficiently radially elastic upon exposure to pressure of said liquid flow through said portion to effect a substantially liquid-tight seal between said movable portion and said hollow tower,



whereby pressurized liquid is communicated to said upper spray arm during operation of said appliance through said tower and movable portion, and said movable portion collapses in the absence of flow through said tower for movement of said upper and lower dish racks to loading positions.

3,951,685

NONAQUEOUS CELL UTILIZING A 3Me2Ox-BASED ELECTROLYTE

Marvin L. Kronenberg, Cleveland Heights, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 25, 1975, Ser. No. 552,997

Int. Cl.² H01M *10/08*

U.S. Cl. 136—6 LN **10 Claims**

1. A nonaqueous cell comprising a highly active metal anode, a solid CuO cathode and a liquid organic electrolyte consisting essentially of 3-methyl-2-oxazolidone in combination with at least one low viscosity cosolvent and a conductive solute.

3,951,686

ELECTRODE MASS CONTAINING NICKEL HYDROXIDE

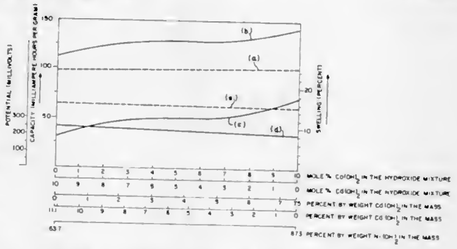
Peter Ness; Günter Krämer, both of Kelkheim, Taunus, and Elvira Tisch, Frankfurt am Main, all of Germany, assignors to Varta Batterie Aktiengesellschaft, Hannover, Germany

Filed July 25, 1974, Ser. No. 491,804

Claims priority, application Germany, Aug. 13, 1973, 2340869

Int. Cl.² H01M *4/38*

U.S. Cl. 136—28 **10 Claims**



1. A positive electrode for alkaline storage batteries containing nickel hydroxide as active mass and characterized in that the active mass is a ternary crystalline mixture of nickel hydroxide, cadmium hydroxide, and cobalt hydroxide formed by simultaneous precipitation of all three metal ions from a common solution.

8. The method of producing a positive electrode containing nickel hydroxide as active mass, characterized in that nickel hydroxide, cobalt hydroxide, and cadmium hydroxide are simultaneously precipitated in the electrode body from salt solutions of nickel, cobalt and cadmium.

3,951,687

NICKEL-ZINC STORAGE BATTERY

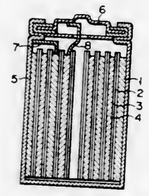
Tsutomu Takamura, Kawasaki; Tamotsu Shirogami, Yamato; Yuichi Sato, Kawasaki; Kenji Murata, and Hirokazu Niki, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Nov. 20, 1974, Ser. No. 525,667

Claims priority, application Japan, Nov. 21, 1973, 48-130952

Int. Cl.² H01M *4/38*

U.S. Cl. 136—28 **6 Claims**



1. In a nickel-zinc storage battery wherein a sheetlike separator is interposed between a sheet-like zinc electrode and a sheet-like nickel electrode; and the columnar electrode body is housed in a cylindrical case, said nickel-zinc storage battery characterized in that said sheet-like zinc electrode is prepared by bonding under pressure to a collector a mixture sheet consisting of 60 to 85 weight percent of zinc oxide, 5 to 20 weight percent of zinc, 2 to 30 weight percent of bismuth oxide, 5 to 20 weight percent of calcium hydroxide and 2 to 13 weight percent of fluorine-contained resin; said sheet-like nickel electrode is prepared by bonding under pressure to a collector an oxide of nickel together with a conductive material; and said sheet-like separator is prepared by coating on an alkali-resisting woven or nonwoven fabric a mixture of polyvinyl alcohol and at least either of one selected from the group consisting of boron compounds and metal oxides having low solubility to alkali solution.

3,951,688

METHOD AND APPARATUS FOR PASTING BATTERY PLATES

Herbert G. Pankow; Terrance M. Larkin, both of Littleton; Roland L. Young, Denver, and Donald H. McClelland, Littleton, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Continuation of Ser. No. 244,812, April 17, 1972, abandoned. This application Apr. 23, 1974, Ser. No. 463,225

Int. Cl.² H01M *35/26*

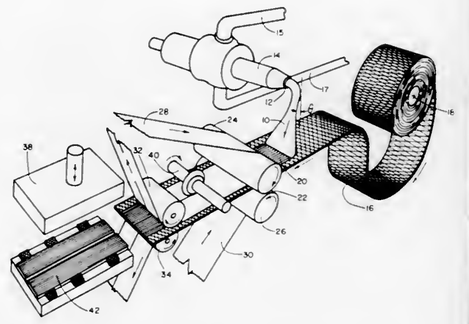
U.S. Cl. 136—67 **10 Claims**

1. A method for pasting lead-acid battery plate porous substrates with an electrochemically active thixotropic paste composition which maintains a non-plastic condition during the pasting operation, comprising the steps of:

circulating the paste in a substantially closed loop network so as to agitate and thoroughly mix the paste;

diverting a predetermined volumetric flow rate of the paste from the loop network to a discharge nozzle;

discharging said paste in the form of a thin ribbon through the nozzle positioned in close proximity to the substrate at said predetermined volumetric flow rate without substantially deforming the substrate while simultaneously moving said substrate horizontally beneath the nozzle in a continuous manner to thereby deposit the paste onto the upper surface of the moving substrate to form a pasted substrate;



moving the thus pasted substrate through the nip of a set of driven rolls, said rolls being spaced apart a predetermined distance; and

compressing the paste into the interstices of the porous substrate to produce a plate of desired thickness and density of paste.

3,951,689

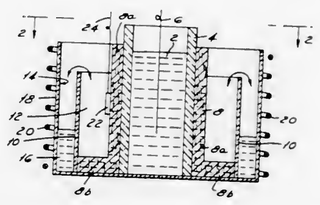
ALKALI METAL/SULFUR CELL WITH GAS FUEL CELL ELECTRODE

Frank A. Ludwig, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 20, 1975, Ser. No. 605,942

Int. Cl.² H01M *8/12*

U.S. Cl. 136—86 A **27 Claims**



1. In an alkali metal/sulfur cell comprising:

A. One or more anodic reaction zones containing a molten alkali metal reactant-anode in electrical contact with an external circuit;

B. One or more cathodic reaction zones including an electrode of porous conductive material and in which, during discharge of said cell, cations of said alkali metal combine with polysulfide ions to form alkali metal polysulfide salts which at least partially fill said porous conductive material; and

C. A cation-permeable barrier to mass liquid transfer interposed between and in contact with said anodic and cathodic reaction zones, said porous conductive material being in electrical contact with both said cation-permeable barrier and said external circuit,

wherein the improvement comrpises at least one cathodic reaction zone which is adapted to operate as a gas fuel cell electrode by employing a sulfur storage chamber containing

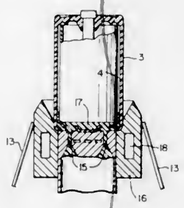
molten sulfur connected with said cathodic reaction zone so as to allow sulfur vapors to pass therebetween, said storage chamber being adapted to be maintained at a temperature (i) above the temperature of said cathodic reaction zone when said cell is being discharged such that sulfur distills into said cathodic reaction zone and (ii) below the temperature of said cathodic reaction zone when said cell is being charged such that sulfur vapor condenses in said storage chamber.

3,951,690

BASE FOR LEAKPROOF ELECTROCHEMICAL CELLS AND METHOD OF FORMING THE SAME

Demetrio Lopez Sanchez, Madrid, Spain, assignor to Pilas Secas Juipter S.A., Tolosa, Spain

Continuation-in-part of Ser. No. 262,467, June 14, 1972, abandoned. This application Aug. 1, 1974, Ser. No. 493,883
Claims priority, application Spain, Aug. 5, 1971, 171,501
Int. Cl.² H01M *2/04*
U.S. Cl. 136—133 **12 Claims**



1. A method of leak-proof sealing of a dry electrochemical cell, formed by a metallic cup which acts as a negative electrode, in which are positioned an electrolyte, a depolarizer mass and a positive electrode extending beyond one end of the cup, the whole assembly so formed being introduced into a casing of a thermoplastic material which closes the cell at the end thereof with a terminal of said positive electrode, as well as at the opposite end thereof formed by the bottom of the cup, onto which is fixed in electric contact a metallic part which serves as a terminal of said negative electrode, said method comprising:

a. providing a metallic dish as said metallic part and said terminal of said negative electrode, said dish having a bottom wall perforated with a plurality of apertures in the peripheral area thereof, said bottom wall having an unperforated downwardly extending protrusion positioned centrally of said apertures, said dish having an annular side-wall and a shoulder between said side-wall and said peripheral area, and fitting said dish onto the side-wall of said cup with said shoulder supporting the bottom of said cup and providing a continuous gap between said bottom wall of said dish and said bottom of said cup;
b. introducing said cup with said dish fitted thereon into said thermoplastic casing, causing said casing to compress said side-wall of said dish fitted onto said cup, to a position wherein the end of said casing extends beyond the bottom of of said cup by a length equal to not less than the distance between said apertures and said bottom of said cup;
c. axially compressing said dish and said cup and forcing hot thermoplastic material through said apertures in such a way that said hot material blocks said apertures and is present on both sides of said apertures and said bottom wall of said dish, said casing and said hot material being integrally united, while maintaining the outer surface of said unperforated central protrusion of said dish free and not covered by said plastic material; and
d. cooling said thermoplastic material which is present on both sides of said apertures and joined to said casing until said material solidifies.

3,951,691

WETTABLE BATTERY SEPARATOR AND PROCESS THEREFOR

Walter R. Wszolek, Sykesville, and Joseph A. Cogliano, Baltimore, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Oct. 7, 1974, Ser. No. 512,372
Int. Cl.² H01M *2/16, 2/00*
U.S. Cl. 136—144 **6 Claims**

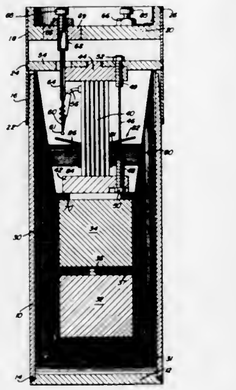
1. A process for imparting permanent wettability to a battery separator comprising a non-woven mat of polyolefin fiber which comprises impregnating said mat with 0.2 to 30% by weight of an α-olefin/α,β-unsaturated acid or anhydride copolymer, said copolymer containing about 5 to about 80 weight percent α,β-unsaturated acid or anhydride and being dissolved in an amount ranging from 0.5% to 33% by weight in an aqueous base and thereafter regenerating the copolymer to a water-insoluble, substantially free acid form by volatilization or neutralization of the base.

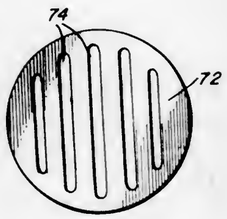
3,951,692

MICROWATT THERMOELECTRIC GENERATOR

Fred Hittman, Baltimore, and Thomas S. Bustard, Ellcott City, both of Md., assignors to Nuclear Battery Corporation, Columbia, Md.

Filed July 18, 1974, Ser. No. 489,739
Int. Cl.² G21H *1/10*
U.S. Cl. 136—202 **2 Claims**





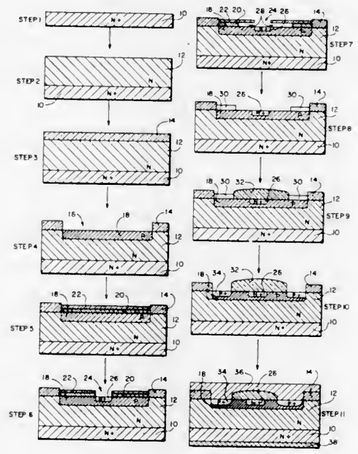
1. A microwatt thermoelectric generator comprising, in combination, a sealed container having an interior and a feed through assembly on one end of said container for making an external electrical connection to said container interior, a thermopile having a hot plate and cold plate in said container interior with said cold plate disposed adjacent said feed through assembly, means for connecting said thermopile to said feed through assembly, a nuclear source in said container interior adjacent said container other end, getter means in said container interior between said nuclear source and said thermopile with said getter means and said thermopile hot plate in spaced-apart relationship to define a clearance space and a foil separator package in said clearance space for maintaining said getter means and said thermopile hot plate in said spaced-apart relationship, said foil separator package including a plurality of foil discs arranged in stacked relationship and having a plurality of openings therein to permit a limited amount of radiation from said getter means to said thermopile hot plate.

3,951,693

ION-IMPLANTED SELF-ALIGNED TRANSISTOR DEVICE INCLUDING THE FABRICATION METHOD THEREFOR

John A. Fisher, Mesa, Ariz., and Demir S. Zoroglu, Palm Beach Gardens, Fla., assignors to Motorola, Inc., Chicago, Ill.

Filed Jan. 17, 1974, Ser. No. 434,177
Int. Cl.² H01L *21/265*
U.S. Cl. 148—1.5 **10 Claims**



1. A method for fabricating a self-aligned transistor device comprising the steps of:

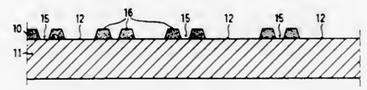
depositing two different masking layers on the surface of a base region of one type conductivity with one of said two different masking layers in contact with the surface of said base region;
forming an emitter region of opposite type conductivity in said base region through an initial opening formed in said two different masking layers;
selectively etching away a portion of said one of said two different masking layers about said initial opening while leaving intact the other of said two different masking layers;
removing said other of said two different masking layers thereby leaving the remaining portion of said one of said two different masking layers in contact with the surface of said base region;
forming another masking layer in the opening in said one of said two different masking layers of a different material than the material of said one of said two different masking layers;
removing the remaining portion of said one of said two different masking layers; and
forming heavily doped base contact regions in said base region at a predetermined distance from the periphery of said emitter region.

3,951,694

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE AND DEVICE MANUFACTURED ACCORDING TO THE METHOD

Alain Gerard Monfret, Echirolles, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 20, 1974, Ser. No. 498,913
Claims priority, application France, Aug. 21, 1973, 73.30278
Int. Cl.² H01L *21/26*
U.S. Cl. 148—1.5 **9 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

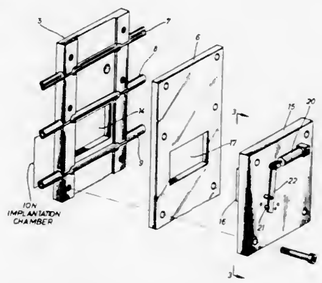
a. providing a semiconductor body having a first surface;
b. providing a masking layer on said first surface;
c. providing at least a first aperture in said masking layer;
d. forming in said first aperture an island of an isotropically growing material, said step of forming said island being carried out until said island extends beyond the edge of said masking layer and forms on said masking layer a collar that is disposed at the edge of said aperture, parts of said masking layer remaining uncovered by said island;
e. removing said uncovered parts of said masking layer to form therein at least one second aperature;
f. removing said islands; and
g. providing doped zones in said semiconductor body via said first and second apertures, by introducing therethrough at least one doping material into said body.

3,951,695

AUTOMATIC END STATION FOR ION IMPLANTATION SYSTEM

Larry F. Templeton, and Roger B. Gault, both of Austin, Tex., assignors to Accelerators, Inc., Austin, Tex.

Filed Feb. 11, 1975, Ser. No. 549,082
Int. Cl.² H01L *21/26*
U.S. Cl. 148—1.5 **10 Claims**



10. In an automatic continuous system of implanting impurities in semi-conductor wafers by bombarding the wafers with selected ions, the improvement which comprises:

Separately passing each wafer to be bombarded through a slot-shaped passageway which contains at a point intermediate the ends thereof an opening communicating with a source of high velocity ions;
stopping and holding each semi-conductor wafer in said passageway adjacent to said opening and in a position to receive ions from said high velocity ion source;
sealing the passageway at a point above and one below said wafer to be implanted by inflating a pair of resilient tubes

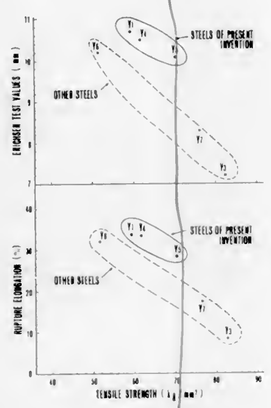
extending across said passageway at said points, which tubes totally fill and seal the opening in said passageway when inflated;
evacuating the sealed implantation chamber thus formed;
bombarding the semi-conductor wafer in said chamber with an ion beam for the appropriate time; and thereafter
indexing the implanted wafer out of the implantation chamber by deflating the resilient tube below the wafer in the passageway; and
indexing a new wafer into the implantation chamber by first re-inflating the lower resilient tube and subsequently deflating the upper resilient tube to permit a new wafer to proceed into place within said chamber; and
repeating the above sequence.

3,951,696

METHOD FOR PRODUCING A HIGH-STRENGTH COLD ROLLED STEEL SHEET HAVING EXCELLENT PRESS-FORMABILITY

Hisashi Gondo; Hiroshi Takechi, both of Kisarazu; Hiroaki Masui, Kimitsu, and Kazuo Namba, Kisarazu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 8, 1974, Ser. No. 495,894
Claims priority, application Japan, Aug. 11, 1973, 48-90342
Int. Cl.² C21D 7/02, 9/46
U.S. Cl. 148—12 R **8 Claims**



1. A method for producing a cold rolled steel sheet having high strength and press formability which comprises hot rolling a steel containing 0.03 to 0.30% C, less than 0.7% Si, 0.6 to 2.5% Mn, 0.01 to 0.20% sol.Al, not more than 0.15% 0 with the balance being Fe and unavoidable impurites, cold rolling with a reduction not less than 30%, heating with an average heating rate not less than 3°C/sec. annealing in a temperature range from 650°C to A_3 transformation point for 1 to 15 minutes, and cooling with an average cooling rate of 0.5 to 30°C/sec. down to 500°C.

3,951,697

SUPERPLASTIC ULTRA HIGH CARBON STEEL

Oleg D. Sherby, Palo Alto; Conrad M. Young, Del Mar; Bruno Walser, Stanford, and Eldon M. Cady, Jr., Concord, all of Calif., assignors to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Feb. 24, 1975, Ser. No. 552,245
Int. Cl.² C21D 7/14, 9/48
U.S. Cl. 148—12 R **20 Claims**

1. An ultra high carbon steel having a carbon content in excess of about 1.0% and an iron grain matrix with uniformly dispersed cementite, said iron grain being stabilized in a predominantly equiaxed configuration having an average grain size no greater than about 10 microns, said cementite being in



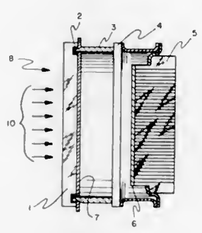
predominantly spheroidized form in a temperature range of 723°C to 900°C.

3,951,698

DUAL USE OF EPITAXY SEED CRYSTAL AS TUBE INPUT WINDOW AND CATHODE STRUCTURE BASE

Herbert L. Wilson, and William A. Gutierrez, both of Woodbridge, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 25, 1974, Ser. No. 527,181
Int. Cl.² H01L 21/36
U.S. Cl. 148—33.4 **7 Claims**



1. In a photon sensing device having an input faceplate window, a photocathode, an electron multiplier and an output viewing screen, the improvement consisting of an integrated input window and photocathode wherein the input faceplate window additionally serves as the substrate support upon which a layer of photocathode material is epitaxially grown.

3,951,699

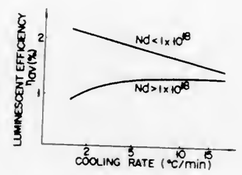
METHOD OF MANUFACTURING A GALLIUM PHOSPHIDE RED-EMITTING DEVICE

Makoto Naito, Kamakura; Akinobu Kasami, Yokohama; Masaru Kawachi; Tetsuo Sadamasa, both of Tokyo, and Hiroki Mineo, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Feb. 6, 1974, Ser. No. 440,020
Claims priority, application Japan, Feb. 22, 1973, 48-20687; Feb. 22, 1973, 48-20688
Int. Cl.² H01L 7/00
U.S. Cl. 148—171 **4 Claims**

1. A method of manufacturing a gallium phosphide red light emitting device comprising the steps of preparing an n-type gallium phosphide substrate; expitxally growing an n-type gallium phosphide layer in liquid phase on the substrate to impart to one surface of the layer a donor concentration of less than 1×10^{18} cm^{-3}; and forming a p-type gallium phosphide layer on said surface of the n-type layer, at least the light

emitting region of the p-type gallium phosphide layer formed by liquid-phase epitaxial growth, and cooling at a rate of less



than 5° C/min so as to enhance the crystallinity of the p-type layer near the p-n junction.

3,951,700

METHOD OF MANUFACTURING A GALLIUM PHOSPHIDE LIGHT-EMITTING DEVICE

Tatsuro Beppu, Tokyo; Masami Iwamoto, Yokohama, and Tetsuo Sekiwa, Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Aug. 16, 1974, Ser. No. 498,213
Claims priority, application Japan, Oct. 26, 1973, 48-119991; Nov. 21, 1973, 48-130103; Nov. 22, 1973, 48-130710
Int. Cl.² H01L 7/38
U.S. Cl. 148—171 **3 Claims**

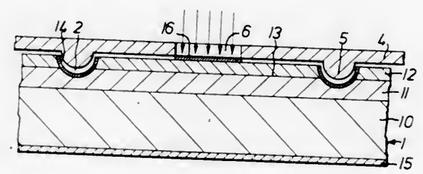
1. In a method of manufacturing a gallium phosphide light-emitting device which comprises the step of growing a gallium phosphide layer of one conductivity type by the liquid phase epitaxial process on a gallium phosphide substrate of the opposite conductivity type to provide a p-n junction contributing to emission of light, the improvement wherein the growth of said gallium phosphide layer is initiated by contacting the gallium phosphide in the molten state at a crystal growth initiating temperature ranging from 650° to 850° C with said gallium phosphide substrate.

3,951,701

MASK FOR USE IN PRODUCTION OF SEMICONDUCTOR ARRANGEMENTS

Andreas Csillag, Leingarten, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Mar. 19, 1975, Ser. No. 560,082
Claims priority, application Germany, Mar. 29, 1974, 2415290
Int. Cl.² H01L 21/283
U.S. Cl. 148—187 **8 Claims**



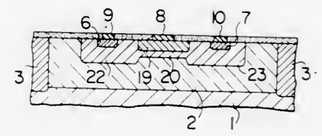
3. A method of producing a semiconductor arrangement including the steps of forming in a surface of said semiconductor arrangement a plurality of recesses, applying to said surface of said semiconductor arrangement a mask element with projections cooperating with said plurality of recesses to locate said mask element on said surface of said semiconductor arrangement and depositing connecting contacts by evaporation of metal through windows in said mask element onto said surface of said semiconductor arrangement.

3,951,702

METHOD OF MANUFACTURING A JUNCTION FIELD EFFECT TRANSISTOR

Gota Kano, Nagaokakyo, and Satoshi Teramoto, Suita, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Apr. 15, 1974, Ser. No. 460,877
Claims priority, application Japan, Apr. 20, 1973, 48-45315
Int. Cl.² H01L 21/225
U.S. Cl. 148—187 **3 Claims**



1. A method of manufacturing a junction field effect transistor, comprising the steps of:
a. forming a P type prediffused layer in a first N type region constituting a back gate region, the prediffused layer and first N type region providing a back gate junction;
b. selectively removing an insulating film on the prediffused layer to provide an opening after forming the P type prediffused layer.
c. diffusing arsenic from the opening to form a second N type diffusion region constituting an upper gate region and, in the process of diffusing the arsenic, diffusing the P type prediffused layer to a preselected depth while pulling in a portion of the back gate junction opposing the upper gate region by a pull-in effect of the arsenic; and
d. forming a source region and a drain region in the transistor.

3,951,703

BALLISTIC MODIFICATION OF COMPOSITE PROPELLANTS BY USE OF 2-FERROCENYLTETRAHYDROFURAN NOVEL LIQUID COMPOUND

Orval E. Ayers, Huntsville, and Dennis C. Van Landuyt, Auburn, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 15, 1971, Ser. No. 155,671
Int. Cl.² C06B 45/10
U.S. Cl. 149—19.2 **7 Claims**

1. A solid propellant composition comprising a binder present in an amount of about 10 to about 25 weight percent, an oxygen oxidizer present in an amount from about 50 to about 75 weight percent, a metal fuel present in an amount of about 5 to about 20 weight percent, and 2-ferrocenyltetrahydrofuran present in an amount from about 0.01 to about 20 weight percent.

3,951,704

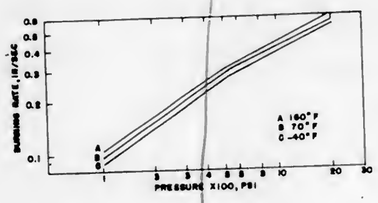
DOUBLE-BASE PROPELLANTS WITH COMBUSTION MODIFIER

Joseph S. Stack, Riverdale, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 1, 1970, Ser. No. 56,018
Int. Cl.² C06B 45/10
U.S. Cl. 149—19.8 **8 Claims**

1. A high energy propellant comprising
about 1–70% of a high energy nitramine selected from the group consisting of cyclotrimethylenetrinitramine and cyclotetramethylenetetranitramine,
about 6–51% of a double base propellant containing at least 74% nitrocellulose, the remainder consisting essentially of nitroglycerine and a stabilizer; and

about 1–7% of a combustion modifier selected from the group consisting of lead stannate-2,4-tolylene diisocya-



nate (reduced) and lead stannate-2,4-tolylene diisocyanate (oxidized).

3,951,705
BLUE-BURNING TRACER MIX

Dennis J. Mancinelli, Philadelphia, and Walter J. Puchalski, Southampton, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 14, 1975, Ser. No. 577,508
Int. Cl.² C06B *33/14*
U.S. Cl. 149—41 **3 Claims**

1. A pyrotechnic tracer mixture providing a substantially blue flame, said mixture comprising about 6–10% by weight of potassium perchlorate, about 11–18% by weight of magnesium, about 10–20% by weight of cupric chloride anhydrous, about 35–45% by weight of barium nitrate, about 12–18% by weight of hexachlorobenzene, and about 5–10% by weight sulfur, said pyrotechnic mixture additionally providing a smoke trail even after said blue flame is no longer visible so as to extend visible range of trace.

3,951,706
SOLID PROPELLANT MIXTURES AND PROCESS OF PREPARATION

Judson B. Eldridge, 8055 E. Thomas Apt. A-101, Scottsdale, Ariz. 85251

Filed July 3, 1962, Ser. No. 207,440
Int. Cl.² C06B *45/10*
U.S. Cl. 149—19.8 **10 Claims**

1. A process for preparing a solid propellant composition having a modified burning-rate comprising the steps of providing a cured double base propellant which has been milled to a uniform mesh, mixing said propellant with an uncured nitrasol binder until a homogenous mixture results, casting said mixture and curing in an oven at about 180° F. for about 2 hours.

3,951,707
METHOD FOR FABRICATING GLASS-BACKED TRANSDUCERS AND GLASS-BACKED STRUCTURES

Anthony D. Kurtz, Englewood; Joseph R. Mallon, Wood Ridge; Harold Bernstein, Hillsdale, and Richard Alan Weber, Denville, all of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Division of Ser. No. 347,226, April 2, 1973, Pat. No. 3,868,719. This application Apr. 15, 1974, Ser. No. 460,818
Int. Cl.² C23F *1/04*
U.S. Cl. 156—3 **10 Claims**

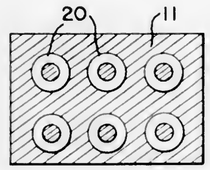
8. A method of fabricating a glass-backed transducer comprising the steps of:

a. electrostatically bonding a glass insulator to a semiconductor to form a composite structure,

b. polishing the surface of said glass insulator to a desired depth,

c. electrostatically bonding a silicon wafer containing at least one force responsive element in a predetermined area of said wafer to said polished surface,

d. removing all of said wafer not in said predetermined area, and



e. removing all of said semiconductor to provide said transducer of said predetermined area on the surface of said glass insulator.

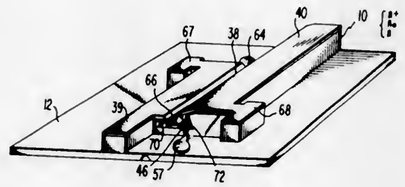
9. The method according to claim **8** further comprising the additional step of:

a. electrostatically bonding said transducer to a force collector with said insulator in contact with said force collector to provide electrical isolation.

3,951,708
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Raymond Harkless Dean, Shawnee Mission, Kans., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 15, 1974, Ser. No. 514,938
Int. Cl.² H01L *21/28, 21/302*
U.S. Cl. 156—3 **15 Claims**



11. A method for making a dual-gate Schottky barrier field-effect transistor comprising the steps of:

a. etching a step with a substantially vertical wall between a high surface and a low surface in a layer of a semiconductor material appositioned to a substrate;

b. depositing a first layer of at least one metal from a first source located at a position characterized by a displacement above the high surface and a rotation clockwise by an angle Θ from a normal extending from the step;

c. depositing a second layer of at least one metal from a second source located at a position characterized by a displacement above the low side and a rotation counterclockwise by an angle ϕ from the normal, ϕ being selected so that the second layer is deposited only on the first layer and on the wall of the step;

d. forming a channel with a floor and sidewalls tilted in pyramid fashion beneath an aperture between metal layers formed on each side of the step in cantilever fashion and whereby the metal layer on the low side forms the drain contact and the metal layer on the high side forms the source contact;

e. forming a first resistant pattern over a first connected region defined by the areas of the source and drain contacts and the channel;

f. removing all exposed semiconductor material and all exposed metal layers down to the substrate;

g. removing the first pattern;

h. depositing Schottky-barrier metal film for a first gate on the floor of the channel beneath the source contact and outside the channel;

i. forming a second resistive pattern over a second connected region defined by the first connected region and an area for a first gate contact which extends from an end of the channel onto the substrate;

j. defining the deposited metal films according to the second pattern;

k. removing first gate metal film located within the channel and beneath the first spaced contact at the end of the channel away from the first gate;

l. removing the second resistive pattern;

m. depositing a Schottky-barrier metal film for a second gate on the floor of the channel beneath the aperture and outside the channel;

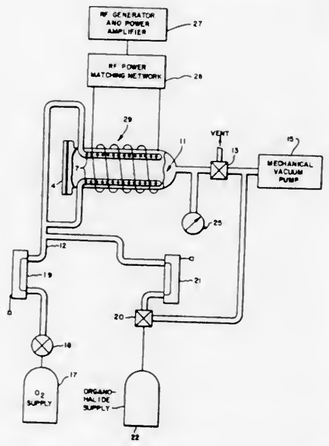
n. forming a third resistive pattern over a third connected region defined by the second connected region and an area for a second gate contact for the second gate, the second gate contact being located at the end of the channel away from the first gate contact;

o. defining the Schottky metal film deposited for the second gate according to the third resistive pattern whereby the second gate contact is electrically isolated from the first gate metal film.

3,951,709
PROCESS AND MATERIAL FOR SEMICONDUCTOR PHOTOMASK FABRICATION

Adir Jacob, Framingham, Mass., assignor to LFE Corporation, Waltham, Mass.

Filed Feb. 28, 1974, Ser. No. 446,931
Int. Cl.² B29C *17/08*; C23F *1/02*; C09K *13/04*
U.S. Cl. 156—8 **27 Claims**



1. In a plasma process for chemically etching metallic material in the presence of organic material without significant degradation of the organic material, the improvement comprising the step of:

exposing the material to a gaseous plasma to form volatile oxychloride derivatives as products within the temperature range 25° to 350° Centigrade wherein said gaseous plasma is formed from a mixture of oxygen and a halogen containing gas selected from one of the following groups, chlorine gas, inorganic chlorine containing compounds capable of forming volatile oxychloride derivatives as products within the temperature range 25° to 350° Centigrade, and a halocarbon vapor or gas having no more than two carbon atoms per molecule, wherein at least one carbon atom in said molecule is linked to a predominance of chlorine atoms.

3,951,710
METHOD FOR REMOVING COPPER CONTAMINANT FROM SEMICONDUCTOR SURFACES

Jagtar S. Basi, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

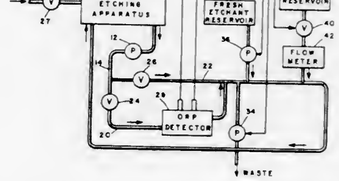
Filed Sept. 13, 1974, Ser. No. 505,699
Int. Cl.² B44D *5/12*; H01L *7/00*
U.S. Cl. 156—17 **6 Claims**

1. A method for removing discrete dispersed traces of copper from a surface of a silicon semiconductor wafer comprising treating said surface with a water solution consisting essentially of a cupric tetrammine compound and ammonium hydroxide at a pH of at least about 10, to react with said copper and generate a spent liquid comprised of a water soluble cuprous diammine compound.

3,951,711
SYSTEM FOR MAINTAINING UNIFORM COPPER ETCHING EFFICIENCY

H. Ben Snyder, Upland, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Filed Oct. 24, 1974, Ser. No. 517,665
Int. Cl.² C23F *1/08*
U.S. Cl. 156—19 **9 Claims**



1. A process for etching copper providing a generally uniform etching efficiency independent of the variance of size of the work load comprising the steps of:

exposing a copper workpiece to a predetermined volumetric supply of working etchant, the etching reaction converting ferric ions to etching retarding ferrous ions and increasing the copper ion concentration of said etchant,

detecting the oxidation reduction potential (ORP) of the working etchant,

comparing the detected ORP of the working etchant to a preset ORP relating to a selected ferric to ferrous ion ratio,

rejuvenating the etchant if the ferric to ferrous ion ratio according to the detection step falls outside a given range of ORP values by,

dumping a specified quantity of the working etchant,

adding fresh etchant to the working etchant to replace the dumped etchant, the dumping and adding steps co-acting to reduce the amount of copper in the working etchant,

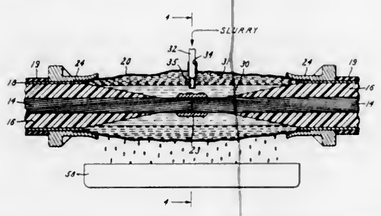
charging the working etchant with an oxidizer to reconvert ferrous ions to ferric ions, said dumping, adding and charging steps initiated solely in response to the comparing of the detected ORP step,

and discontinuing the rejuvenating step upon the ferric to ferrous ion ratio falling within a given range.

3,951,712
METHOD FOR APPLYING HIGH-VOLTAGE ELECTRICAL INSULATION BY FILTERING OUT SUSPENDED PARTICLES FROM A SLURRY

Roy Nakata, Pittsfield, Mass., assignor to General Electric Company, Philadelphia, Pa.

Filed Sept. 26, 1974, Ser. No. 509,504
Int. Cl.² H01B 13/02
U.S. Cl. 156—48 25 Claims

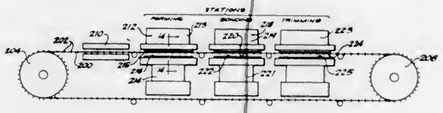


1. A method of applying high voltage electrical insulation to an electrical conductor, comprising,
   a. providing about said conductor a housing having a porous wall spaced from and generally surrounding the conductor,
   b. pumping into said housing a slurry comprising a liquid and particles suspending in said liquid having good electrical insulating properties,
   c. allowing the liquid component of said slurry to discharge from said housing via the pores in said wall but filtering out said particles within said housing so as to build up from the internal surface of said housing wall a deposit of said particles,
   c'. blocking discharge of the components of said slurry from said housing sufficiently to develop within said housing pressures substantially exceeding those surrounding said housing,
   d. continuing said pumping and filtering action and thereby continuing the build-up of said deposit until the deposit spans the space between said internal surface of said housing wall and said conductor.

3,951,713
METHOD AND APPARATUS FOR INSULATING ELECTRICALLY CONDUCTIVE ELEMENTS

Leroy L. Emmel, Costa Mesa, Calif., assignor to Fortin Laminating Corporation, San Fernando, Calif.

Division of Ser. No. 426,246, Dec. 19, 1973, which is a division of Ser. No. 93,949, Dec. 1, 1970, Pat. No. 3,802,974. This application Jan. 20, 1975, Ser. No. 542,213
Int. Cl.² H01B 13/06; B32B 31/08, 31/20
U.S. Cl. 156—52 1 Claim



1. A method for insulating a predesigned electrically conductive layer bonded to a layer of insulative material comprising the steps of:
   providing a predesigned electrically conductive layer bonded to a substrate layer of insulative material;
   positioning a covering layer of insulative material over said conductive layer bonded to said substrate layer;
   heating said substrate and covering layer of insulative material to a degree insufficient to cause bonding of said insulative material;
   positioning said substrate layer with said conductive layer bonded thereto and said covering layer on a conveyor belt;
   moving said substrate layer with said conductive layer bonded thereto and said covering layer relative a first pressure station, said first pressure station including at least one mold plate and having a face pattern of recesses and ridges;
   selectively applying pressure to form said substrate layer and said covering layer of insulative material about said predesigned electrically conductive layer substantially maintaining a distinguishable and separable interface between said substrate and said covering layer;
   moving the formed substrate and covering layer of insulative material with said predesigned electrically conductive layer therebetween relative a second pressure station, said second pressure station including at least one mold plate having a face pattern of recesses and ridges; and
   selectively applying pressure and sufficient heat substantially simultaneously to predetermined regions of said formed substrate and covering layers of insulative material to bond said substrate and said covering layers at said predetermined regions.

3,951,714
METHOD OF MANUFACTURING A DECORATIVE FLOOR COVERING

Alfredo A. Franco, Willow Street, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Continuation of Ser. No. 62,964, Aug. 11, 1970, abandoned. This application June 10, 1974, Ser. No. 477,802
Int. Cl.² B05D 3/02, 3/12
U.S. Cl. 156—62.2 1 Claim

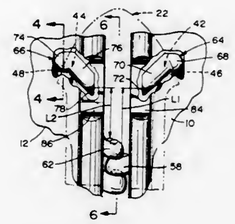


1. A process for providing a decorative floor covering comprising the steps of:
   a. printing on the backing layer a decorative pattern consisting of different design elements, said printed design elements are provided as a dark printed area, a light area with spot-like patterns thereon, and a fade-out area between the dark printed area and light area wherein there is a blend of the dark printed areas and light areas to provide the effect of a fade out of the dark area as one moves from the dark area into the light area,
   b. passing the backing layer with its decorative pattern through a stenciling apparatus to lay up on the decorative pattern of the backing a plurality of at least translucent granules of material arranged in a decorative pattern of plural design elements, said design elements being determined by the stenciling apparatus,
   c. stenciling the design elements of the stenciled pattern relative to the design elements of the decorative printed pattern on the backing layer to secure registry of the printed design elements with the stenciled design elements, said stenciled design elements are provided as a grout-simulation design which is placed over the dark printed area and a translucent area which is printed over the light area and fade-out area in registry therewith, and
   d. consolidating the granules of material into a sheettype wear layer of different design elements and consolidating these to the backing layer to form an end product which is composed of a backing layer and wear layer with the design elements of the wear layer in registry with and coordinated with the design elements of the decorative pattern printed on the backing layer so that certain printed design elements can be visible through selected stenciled design elements.

3,951,715
SLIDE FASTENERS AND METHOD OF MAKING THE SAME

David V. Hofius, Meadville, Pa., assignor to Textron, Inc., Providence, R.I.

Division of Ser. No. 293,183, Sept. 28, 1972, Pat. No. 3,872,552. This application Feb. 24, 1975, Ser. No. 552,458
Int. Cl.² B32B 31/20
U.S. Cl. 156—66 13 Claims

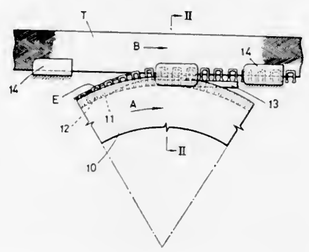


1. A method of assembling slide fasteners from a pair of tapes each having a cord along the inner edge thereof carrying interengageable fastener elements, the method comprising the steps of
   forming a stop member on each of the tapes;
   reducing the cross section of areas of the cords adjacent the stop members;
   disposing a slider to receive in channels there through the reduced cross section areas of the cords; and
   moving the slider along the cords away from the stop members to position the fastener elements in the channels through the slider.

3,951,716
PROCESS FOR PRODUCTION OF SLIDE FASTENER CHAIN

Ikuo Takamatsu, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan

Filed Aug. 16, 1974, Ser. No. 498,119
Claims priority, application Japan, Sept. 28, 1973, 48-109994
Int. Cl.² B32B 31/20; B29C 27/08; B29D 5/00
U.S. Cl. 156—73.2 2 Claims

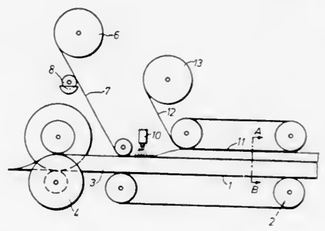


2. In the process for the manufacture of a slide fastener in which a continuous coupling element having spaced-apart shanks is attached to the edge portion of a stringer tape extending between such shanks, the improvement which comprises the steps of passing the continuous coupling element along a curved path, passing the stringer tape along a path tangential to said coupling element path and directed such that the edge portion of the tape passes between those shanks of the coupling element located within a given length portion of the coupling element path, and applying heat and pressure directed transversely to the plane of the tape to fuse said shanks to the tape between them.

3,951,717
PROCESS FOR MAKING A LAMINATE HAVING A FOAM CORE

Peter Herweg, Burscheid, and Roland Guse, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 30, 1974, Ser. No. 501,903
Claims priority, application Germany, Sept. 13, 1973, 2346131
Int. Cl.² B32B 5/20
U.S. Cl. 156—79 6 Claims

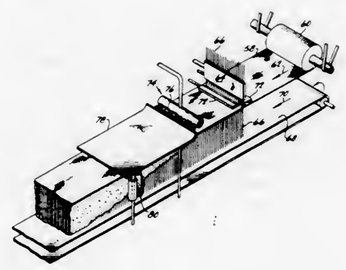


1. In a process for the continuous production of a double laminate, comprising the steps of:
   introducing onto the lower run of a double conveyor a lower cover layer with recesses;
   distributing onto said lower cover layer a foamable reaction mixture; and
   introducing onto the upper run of said double conveyor an upper cover layer;
   said foamable reaction mixture expanding up to said upper cover layer to form a laminate;
   the improvement wherein a sheet of material which is permeable to the mixture is placed on said lower cover layer before the mixture is applied whereby said permeable sheet acts as a control in providing for even foam distribution throughout the resultant foam core.

3,951,718
METHOD FOR PRODUCING REINFORCED INSULATING FOAM

Rodolfo Gonzalez, Palos Verdes Estates, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jan. 3, 1975, Ser. No. 538,365
Int. Cl.² B32B 5/20
U.S. Cl. 156—79 2 Claims



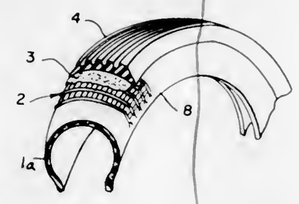
1. A method of making a reinforced foam insulation material comprising the steps of:

a. providing an open weave fabric which allows liquid flow therethrough,
b. placing said fabric in a substantially horizontal plane,
c. adding vertically oriented fibers to said fabric and extending said fibers downwardly therefrom,
d. applying foaming material onto said fabric while said material is moving,
e. applying a shield over said fabric to prevent upward expansion of said foaming material and to cause downward expansion thereof through said fabric, and
f. after foaming and curing removing the foam above said fabric to expose the upper surface of said fabric for bonding.

3,951,719
VEHICLE TIRE CONSTRUCTION AND METHOD OF MAKING SAME

Dean R. Hough, 3901 Nantasket St., Pittsburgh, Pa. 15207

Continuation-in-part of Ser. No. 218,757, Jan. 18, 1973, Pat. No. 3,752,206. This application Aug. 9, 1973, Ser. No. 386,869
Int. Cl.² B29H *5/04*
U.S. Cl. 156—96 **7 Claims**



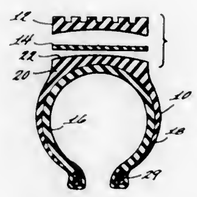
1. The method of retreading and curing a tire, comprising providing a pre-cured rubber tread having a pre-cured tread design, applying cushion gum to the inner surface thereof, applying a net of cord loosely across the width of said tread underneath said cushion gum with its ends terminating near the beads of the tire, and adhering the cushion gum to the buffed tire surface to be retreaded, covering said pre-cured tread short of the area of the beads with a thin plastic envelope, surrounding the tire and enveloped tread with a curing module in the form of an annular chamber, allowing the ends of said patch to extend outwardly of said envelope and module, applying steam and air under pressure in said module between the envelope and inner peripheral walls of said chamber so that portions of the envelope will penetrate into the grooves of said tread and force said cord towards the base of said tread grooves so as to vent air from pockets otherwise formed in said grooves by passing air through said cords to the ends thereof adjacent said beads exteriorly of said envelope.

3,951,720
MATERIAL AND METHODS FOR BONDING TREADS TO TIRES

Edwin T. Brodie, Muscatine, Iowa, assignor to Bandag Incorporated, Muscatine, Iowa

Continuation of Ser. No. 149,834, June 3, 1971, abandoned, and a continuation-in-part of Ser. No. 612,026, Jan. 26, 1967, abandoned. This application Feb. 4, 1974, Ser. No. 439,639
Int. Cl.² B29H *5/04, 5/16, 17/36*
U.S. Cl. 156—96 **3 Claims**

1. A method of applying a preformed vulcanized rubber tread strip to the periphery of a tire comprising: interposing between the periphery of the tire and the preformed tread strip a single preformed solid strip of rubber base bonding material which contains unvulcanized rubber, vulcanizing agent and a vulcanizing accelerator system which begins to become active at about 140°F and which is capable upon being heated of vulcanizing the unvulcanized rubber at temperatures below about 210°F, said unvulcanized rubber, vulcanizing agent and accelerator system being in homogeneous mixture and said mixture being stable against premature vulcanization for a long period of time at room temperature, said bonding material being compounded by separate incorporation of the accelerator system and vulcanizing agent into the rubber at a temperature above room temperature and below

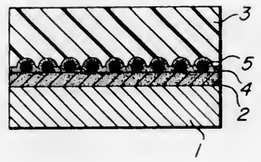


about 240°F followed by prompt cooling of the mixture to room temperature and then sheeting at below about 230°F whereby the accelerator system and vulcanizing agent remain stable against vulcanization until heated; and subjecting the resulting tire and tread assembly to an external pressure at least equal to normal tire pressure at a temperature above room temperature and below about 210°F to obtain a uniform bond between the tire periphery and the preformed tread strip.

3,951,721
METHOD OF FORMING A MECHANICALLY STRONG REFLECTIVE SURFACE

Mutuo Ishibai, Hachioji, and Kunizo Hosino, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 18, 1972, Ser. No. 245,123
Claims priority, application Japan, Apr. 21, 1971, 46-25242
Int. Cl. B32b *31/22;* **G01j** *1/04*
U.S. Cl. 156—154 **20 Claims**



1. A method for producing on a base plate a mechanically strong reflecting surface having optical reflectance and diffusibility characteristics comparable to those of an MgO smoked surface, said process comprising:
1. cleansing the surface of said base plate to remove rust, grease, oil and the like contaminants therefrom,
2. coating the cleansed surface produced thereby with an epoxy resin paint,
3. bonding a fabric to the epoxy resin layer,
4. coating the fabric with a first paint having a putty-like consistency and containing barium sulfate, water and at least one of polyvinyl alcohol and carboxy-methyl cellulose to form a reflecting layer, and
5. polishing said reflecting layer to render its surface smooth.

15. A method according to claim **1**, wherein polishing is accomplished by rubbing an abrasive sheet material over said reflecting layer.

16. A method according to claim **15**, wherein said abrasive sheet material is sand paper.

3,951,722
CONTACT ADHESIVES

John Charles Howson, and Thomas Emsley Brooke, both of c/o Fort Dunlop, Erdington, Birmingham, England

Continuation-in-part of Ser. No. 136,610, April 22, 1971, abandoned. This application Nov. 9, 1973, Ser. No. 414,211
Claims priority, application United Kingdom, Apr. 28, 1970, 20254/70
Int. Cl.² C09J *5/02*
U.S. Cl. 156—307 **27 Claims**

1. A method of adhering two surfaces together which comprises
applying to the surface to be adhered a one-part thixotropic contact adhesive composition consisting essentially of polychloroprene, an organic liquid selected from the group consisting of organic liquid solvents and dispersing media for polychloroprene, a hydrocarbyl-phenol/formaldehyde resin, and from 1 to 10 parts by weight, per 100 parts by weight of the composition of a thixotropic agent being a compound selected from the group consisting of saturated hydroxy-carboxylic acids and esters of saturated hydroxy-carboxylic acids, which are solid at ambient temperatures, and
bringing the surfaces into contact with each other after at least some of the organic liquid has evaporated.

3,951,723
BONDING FIBERS TO RUBBER WITH RESOL CONDENSATES OF UNSATURATE-RESORCINOL POLYMERS

Robert Lee Wright, Fairlawn, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 255,851, May 22, 1972, Pat. No. 3,812,068, which is a continuation-in-part of Ser. No. 186,782, Oct. 5, 1971, abandoned, which is a continuation-in-part of Ser. No. 159,453, July 2, 1971, abandoned, which is a continuation-in-part of Ser. No. 59,720, July 30, 1970, abandoned. This application Apr. 25, 1974, Ser. No. 464,039
Int. Cl.² B05D *3/02;* **B32B** *25/08*
U.S. Cl. 156—331 **40 Claims**

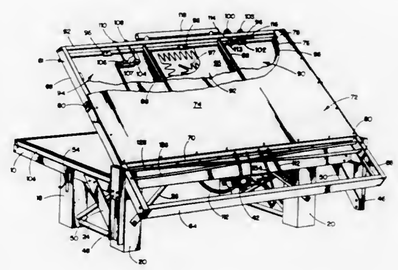
1. The method of enhancing adhesiveness of fiber to rubber which comprises treating the fiber with an adhesive composition comprising the conjoint condensate of (1) resorcinol, (2) essentially saturated resorcinol polymer comprising alkylene nuclear di-resorcinol units, (1) and (2) being the condensation product mixture of resorcinol and said polymer resulting from introducing olefinic unsaturated radical of 3–10 carbon atoms into the resorcinol nucleus within the range of about 0.1 to 0.6 mole of unsaturated radical per mole of resorcinol charged, and (3) a resol, said resol being the condensation product of 0.5–3.0 mole of formaldehyde and one mole of phenol, the conjoint condensate being obtained by heating said condensation product mixture and such amount of the resol as to provide up to but not to exceed 1.4 moles of either phenol or formaldehyde per mole of resorcinol charged in making said mixture.

3,951,724
VACUUM PRESS

Terence C. Johnson, Hamden, Conn., and Malcolm E. Reed, Reading, Mass., assignors to Seal Incorporated, Derby, Conn.

Continuation of Ser. No. 311,680, Dec. 4, 1972, abandoned, which is a division of Ser. No. 132,359, April 8, 1971, Pat. No. 3,738,890. This application Oct. 21, 1974, Ser. No. 516,792
Int. Cl.² B29C *17/00;* **C12H** *1/00*
U.S. Cl. 156—382 **12 Claims**

1. A vacuum press comprising a base with a lower horizontal work-support assembly including a first frame and a flexible air-impermeable sheet secured to and supported at its edges by said first frame, an upper platen assembly mounted above and hinged to said base so as to be moveable into and out of engagement with said work-support assembly, said platen assembly including a metal platen, a second frame for supporting said platen, means attached to said second frame for supporting said platen so that said platen is free to expand and contract in its own plane relative to said second frame in response to changes in temperature, and electrical heater means for heating said platen, said platen assembly and said work support assembly when engaged providing an air-tight

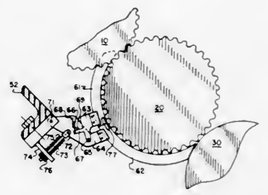


work-receiving chamber therebetween with said platen and flexible sheet forming opposite side walls of said chamber, means for evacuating said chamber so that the atmospheric pressure exterior of said chamber will force said flexible sheet toward said platen and thereby compress a workpiece supported on said sheet, and control means for operating said electrical heater means and said evacuating means so that a work-piece in said chamber is both heated and compressed.

3,951,725
TWO PIECE STRIPPER FINGER FOR CORRUGATING MACHINE

Ward J. Bradley, Jr., and Willem A. Nikkel, both of Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Filed May 21, 1975, Ser. No. 579,719
Int. Cl.² B31F *1/26, 1/28*
U.S. Cl. 156—473 **8 Claims**



1. In a web corrugating machine having a pair of cylindrical corrugated surface roll members mounted for rotation about respective cylinder axes and relatively positioned to rotatively mesh corrugation flute crests of one roll surface with corrugation flute roots of the other roll surface within a pressure nip region, said machine having web stripper fingers secured to finger bar means and arcuately disposed adjacent a portion of one roll cylinder circumference to strip a web drawn between the corrugated surfaces of said roll members at said nip region from the surface of the other roll and confine said web firmly against the corrugated surface of said one roll, the improvement comprising:
A. First and second stripper finger sections movable relative to each other and aligned in the same plane that is substantially perpendicular to the cylinder axis of said one roll, each section arcuately disposed in contiguous relationship to each other and adjacent a respective segment of said one roll cylinder circumference portion;

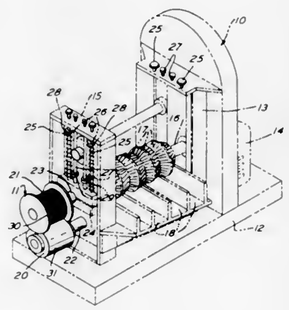
B. First finger section clamping means being rigidly secured to said first finger section and pivotally secured relative to said finger bar means;
C. Second finger section clamping means being rigidly secured to said second finger section and pivotally secured relative to said finger bar means;
D. First spring means operatively disposed against said first clamping means to resiliently bias said first finger section toward said one roll surface; and
E. Second spring means operatively disposed against said second clamping means to resiliently bias said second finger section toward said one roll surface.

3,951,726
DEVICE FOR STRIPPING, DISPENSING AND APPLYING ADHESIVE TAPE
George H. Found, Kearsarge, N.H., assignor to G. H. Found Corporation, North Conway, N.H.
Filed Oct. 15, 1974, Ser. No. 514,406
Int. Cl.² B32B *31/00*
U.S. Cl. 156—527 **15 Claims**



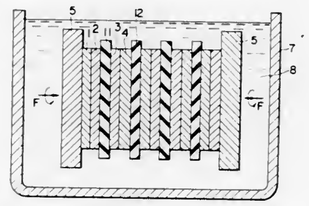
15. A tape stripping, dispensing, cutting and applying device, which device comprises in combination:
a. a pistol grip-type element;
b. a spring tension-biased hand-actuating element arranged to move in cooperation with the grip-type element in a reciprocating manner between a nonactuating and an actuating position by the spring bias;
c. a roll of pressure-sensitive adhesive tape from which roll the tape is to be stripped, dispensed and applied onto a work surface;
d. a straight-line rack on the upper surface of the hand-actuating element;
e. first and second pinion gears, the gears in a separate cooperating intermeshed relationship with the straight-line rack, the rack, on reciprocating movement between the non-actuating and actuating positions through the hand-squeeze action of an operator, imparting rotary motion to the first and second gears;
f. first and second spools, each spool secured on a separate common axis on the grip-type element with the first and second gears, respectively, each of the spools adapted for rotary unidirectional movement on the movement of the gears to strip and dispense the tape from the roll of tape, each of the spools characterized by a peripheral, substantially nonadhering surface to prevent the adhesion of the pressure-sensitive side of the tape to the surface of the spools;
g. a cooperative free-wheeling, indent roller in a cooperative relationship with the second spool, the second spool having a V-type groove therein, the roller and second spool arranged to impart a longitudinal-type crease into the nonadhesive side of the stripped tape to rigidize the tape passed between the roller and second spool and received from the surface of the first spool;
h. clutch means to provide for the first and second spools to move in only one direction on movement of the rack;
i. means to apply the stripped and dispensed tape, which means includes an elongated snout-like element to apply the dispensed tape, the element composed of a polymeric resilient material characterized by a cavity therein to permit the passage of the tape, an inlet at the one end to receive the longitudinally creased rigid tape, and an outlet at the other end through which the tape passes to deliver the tape to the surface to which it is to be applied; and
j. means to sever the tape after dispensing, which means includes a cutting blade to sever the tape, the means constructed and arranged between the inlet and outlet of the elongated element.

3,951,727
DELAMINATING METHOD AND APPARATUS
William B. Greenberg, 211 Rock Hill Road, Bala Cynwyd, Pa. 19004
Continuation of Ser. No. 269,411, July 6, 1972, abandoned. This application May 28, 1974, Ser. No. 473,518
Int. Cl.² B32B *31/18*
U.S. Cl. 156—584 **5 Claims**



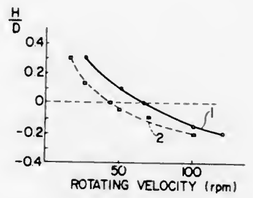
1. Delaminating apparatus for separating or reducing the bond tenacity of intimately adherent substantially flat laminated strips in facing engagement with each other having different physical characteristics, said apparatus comprising a pair of generally tangent rotary members, each of said rotary members being of generally constant cross-sectional configuration between its opposite ends, journal means mounting said rotary members for rotation, mounting means mounting said journal means for movement away from and toward each other, pressure applying means for urging the mounting means toward each other to apply force to laminated strips between said rotary members sufficient to permanently deform one laminated strip beyond its elastic limit and not the adjacent laminated strip, drive means for driving each of said rotary members in opposite directions at different surface speeds, knurling on the periphery of one of said rotary members extending transversely thereacross, the periphery of the other of said rotary members being relatively smooth, and circumferential flange means on the opposite ends of at least one of said rotary members projecting radially therefrom to overlap opposite ends of the other rotary member with the rotary members spaced to positively contain the strips being operated upon against lateral movement from the nip of said rotary members, whereby a substantially flat laminated assembly is fed between said rotary members in compressive and shear forces to effect delamination by differential deformation without pushing one lamination through the other.

3,951,728
METHOD OF TREATING SEMICONDUCTOR WAFERS
Etsuo Egashira; Shinichiro Miyoshi, both of Yamanashi; Yukio Takei, Hachioji, and Masato Fujita, Yamanashi, all of Japan, assignors to Hitachi, Ltd., Japan
Filed July 30, 1974, Ser. No. 493,106
Int. Cl.² H01L *21/20, 21/302*
U.S. Cl. 156—600 **17 Claims**



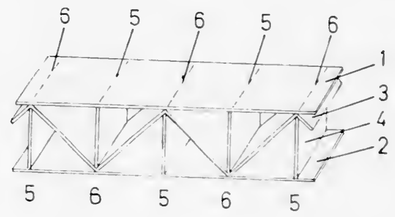
2. A method of treating semiconductor wafers, comprising the steps of providing at least one group of two semiconductor wafers each having first and second principal planes with peripheral parts defining edge portions therebetween, stacking every group of two semiconductor wafers in such a manner that the first principal planes of the semiconductor wafers are positioned opposite to and in contact with each other, etching the exposed surfaces of the peripheral parts of said semiconductor wafers in such an arrangement that corrosion-proof elements are closely contacted with the second principal planes of said respective semiconductor wafers of each group to cover said second principal planes and to contact the peripheral parts of the wafers with an etchant and heating the resultant etched and chamfered semiconductor wafers in such a manner that said second principal plane of each semiconductor wafer is closely contacted with a surface of a heating body and that an epitaxially grown semiconductor layer is formed on said first principal plane of each semiconductor wafer.

3,951,729
METHOD FOR PRODUCING SINGLE CRYSTALS
Kazumasa Takagi, Kokubunji; Tokuumi Fukazawa, Tachikawa; Mitsuru Ishii, Higashiyamato, and Seigo Kishino, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan
Filed Jan. 11, 1974, Ser. No. 432,516
Claims priority, application Japan, Jan. 16, 1973, 48-6644
Int. Cl.² B01J *17/18*
U.S. Cl. 156—617 **16 Claims**



1. A process for producing a single crystal body free of facets and dislocations by the Czochralski method from a material in which dislocation defects grow perpendicularly with respect to the solid-liquid interface during a Czochralski growing method regardless of the pull-up axis, said process comprising producing by the Czochralski method a single crystal having a slender portion and said single crystal body attached to said slender portion, said slender portion being formed first followed by the formation of said single crystal body attached thereto, said single crystal being rotated during formation of said slender portion at a rate such that H/D is about 0.2 to about 0.7, said single crystal thereafter being rotated during formation of said single crystal body at a rate such that H/D is about −0.05 to about 0.1, wherein D is the diameter of the growing crystal and H is the distance by which the center of the solid-liquid interface is below the level of the melt, said slender portion being grown sufficiently long so that dislocations in said slender portion extend to the side surfaces of said slender portion whereby the part of the slender portion attached to said single crystal body is free of dislocations.

3,951,730
COMPRESSIBLE CONSTRUCTION
Lennart Arne Wennberg, and Barbro Christina Wennberg, both of Hjortronvagen 59, 196 31 Kungsangen, Sweden
Filed Mar. 23, 1973, Ser. No. 344,061
Claims priority, application Sweden, Mar. 27, 1972, 3919/72
Int. Cl. B65d *65/44*
U.S. Cl. 428—116 **10 Claims**

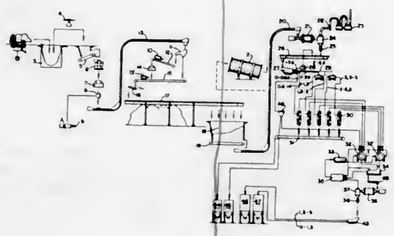


1. A compressible construction comprising
a first layer having a first set of fold lines adapted to fold inwardly and alternating therewith a second set of fold lines adapted to fold outwardly
a second layer having a first set of fold lines adapted to fold inwardly and alternating therewith a second set of fold lines adapted to fold outwardly
a zigzag folded sheet positioned between the layers and attached alternately to set first said of fold lines of said first layer and said first set of fold lines of said second layer
a plurality of perpendicular parts attached at one end to said second set of fold lines of said first layer and projecting toward said zigzag folded sheet.

3,951,731
PROCESS FOR AEROBIC DECOMPOSITION AND SOLVENT TREATMENT OF WASTE MATERIAL
Raimund Jetzer, Nussbaumen, Switzerland, assignor to Jetzer Engineering AG, Vaduz, Liechtenstein
Filed Nov. 29, 1973, Ser. No. 420,288
Claims priority, application Switzerland, Dec. 4, 1972, 17607/72
Int. Cl.² D21C *5/02*
U.S. Cl. 162—5 **15 Claims**

1. A process for recovering fibrous materials from waste, comprising subjecting a quantity of waste which contains aerobically unstable components to aerobic decomposition by maintaining said waste at a temperature of at least about 50° C in the presence of oxygen until said aerobically unstable components are aerobically decomposed to a great extent and aerobically semi-stable components are also partially aerobically decomposed to thereby obtain a fibrous mass; contacting at least a portion of the mass with at least one solvent which is capable of dissolving the still undecomposed aerobically unstable components remaining in said mass so that said undecomposed aerobically unstable components are dissolved; and removing said solvent containing the dissolved undecomposed

aerobically unstable components from said portion of said mass so as to recover a fibrous material the odor of which is



reduced due to the aerobic decomposition and dissolution of said aerobically unstable components.

3,951,732

DELIGNIFICATION AND BLEACHING OF WOOD PULP WITH OXYGEN IN THE PRESENCE OF TRIETHANOLAMINE

Eero Vilhelm Sjöström, Kauniainen, and Olli Tapio Valttila, Niittykumpu, both of Finland, assignors to A. Ahlstrom Osakeyhtio, Finland

Filed Nov. 5, 1973, Ser. No. 412,794

Claims priority, application Finland, Nov. 16, 1972, 3233/72

Int. Cl.² D21C *9/10*

U.S. Cl. 162—65 **7 Claims**

1. In a method of delignifying and bleaching wood pulp wherein the wood pulp is mixed with an alkali and a magnesium compound and the mixture is subjected to oxygent treatment at a temperature of 80°– 130°C, the improvement comprising including in the mixture of the wood pulp, the alkali magnesium compound, triethanolamine as a wood pulp protecting agent.

3,951,733

DELIGNIFICATION AND BLEACHING OF WOOD PULP WITH OXYGEN

Richard B. Phillips, Sloatsburg, N.Y., assignor to International Paper Company, New York, N.Y.

Filed Nov. 6, 1974, Ser. No. 521,376

Int. Cl.² D21C *9/10*

U.S. Cl. 162—65 **13 Claims**

1. In a continuous method of bleaching and delignifying cellulose pulp comprising the steps of preparing a cellulose pulp slurry in an oxygenated alkaline aqueous solution, said slurry having a reaction temperature of between about 160°F and its boiling point, a consistency of from about 2% to about 10% by weight, and having a pH of between about 9 and 14, said alkaline aqueous solution being oxygenated by dissolving and intimately dispersing oxygen into said alkaline aqueous solution so that no agglomerated bubbles are formed, continuously introducing said slurry into a vessel, subjecting the slurry to an initial pressure and thereafter gradually reducing that pressure, without subjecting the slurry to any substantial agitation, so that there is a pressure gradient of between about 1 and 10 atmospheres between the initial pressure and final pressure, and continuously withdrawing treated slurry from said vessel, the improvement which comprises subjecting said pulp slurry and not more than about ⅔ of said oxygenated alkaline aqueous solution to a pre-treatment in a pressurizing vessel at a temperature of between about 160° and 300° F. and pressure of up to about 300 p.s.i.g. and mixing said pressurized slurry with the remainder of said oxygenated alkaline aqueous solution.

3,951,734

AMMONIA-KETONE PULPING PROCESS

Gerrit G. DeHaas, and Charles J. Lang, both of Longview, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Oct. 11, 1974, Ser. No. 514,041

Int. Cl.² D21C *3/02, 3/20*

U.S. Cl. 162—72 **6 Claims**

1. A pulping process comprising the steps of: mixing cellulosic raw materials with an aqueous pulping liquor containing ammonia and one or more ketones; digesting said cellulosic raw material in said liquor at a temperature of 170°C to 220°C and for a time of from 10 to 300 minutes with the ratio of 2 to 20 pounds pulping liquor to 1 pound oven-dried cellulosic raw material, the ammonia concentration and the ketone concentration being from 5 to 22% and 15 to 70% by weight, respectively, of the total liquor; cooling the mixture; separating the pulping liquor from the digested cellulosic raw material.

3,951,735

PROCESS FOR PREPARING GYPSUM BOARD

Minoru Kondo, and Yoshinori Hatou, both of Tokyo, Japan, assignors to Nihon Cement Co. Ltd. and Asano Slate Co. Ltd., both of Tokyo, Japan

Filed May 28, 1974, Ser. No. 473,836

Claims priority, application Japan, May 29, 1973, 48-59383

Int. Cl.² D21F *11/04, 11/08*

U.S. Cl. 162—133 **8 Claims**

1. A process for making a compressed gypsum board having exposed gypsum surfaces, which comprises:

forming an aqueous slurry consisting essentially of water, setting retardant for calcined gypsum, cellulosic fibers, asbestos fibers and calcined gypsum, said slurry containing, on a water-free basis, from 0.5 to 30 weight percent of said cellulosic fibers, from 0.5 to 30 weight percent of asbestos fibers and from 60 to 95 weight percent of calcined gypsum;

continuously depositing at least one layer of said slurry directly onto a moving porous surface capable of passing drainable water therethrough and retaining the solids, thereon, and draining water from said layer while same is on said surface, then removing said layer from said surface and obtaining an intermediate gypsum board product having exposed gypsum surfaces free of covering layers and containing sufficient water adhering to the surfaces of the solids to cure the gypsum;

pressure molding said intermediate gypsum board product under a molding pressure of from 10 to 400 kg/cm² to obtain a second intermediate compressed board product;

then drying said second intermediate compressed board product to obtain a final gypsum board product.

3,951,736

SINGLE-LAYER AND MULTI-LAYER PAPER MAKING APPARATUS

Tadashi Kobayashi, 1560-2 Tenma, Fuji, Shizuoka, Japan

Filed Dec. 30, 1974, Ser. No. 537,314

Int. Cl.² D21F *9/04;* **D21H** *1/06*

U.S. Cl. 162—274 **2 Claims**

1. A paper making apparatus for producing elongated sheets of paper at speeds in excess of 200 m/minute, comprising in combination:

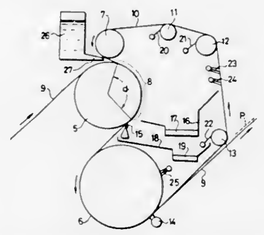
a. a head box (**26**) for feeding paper-making slurry from a narrow elongated horizontal outlet (**27**) in one direction;

b. a large diameter rotating hollow forming roll (**5**) having a smooth surface with an axis of rotation disposed vertically substantially under said outlet (**27**) the roll having a periphery extending to said outlet and receiving slurry material discharged substantially tangentially thereon at the upper part of said roll, said roll being adapted to rotate in the same direction as the slurry discharged thereon;

c. a large diameter rotating hollow turning cylinder (**6**) so disposed that its axis of rotation is almost vertically under said forming roll (**5**);

d. a rotating breast roll (**7**) disposed over said outlet so that said elongated horizontal outlet (**27**) extends partly between said rotating breast roll (**7**) and said forming roll (**5**);

e. an endless wire belt (**10**) passing over said breast roll (**7**) in front of said outlet (**27**) traveling at the time of passing substantially in the same direction as said slurry fed from said outlet, said wire belt traveling over the periphery of said forming roll (**5**) for an angle of at least 100° of the circumference of said forming roll (**5**), and then, leaving said forming roll to travel in the other direction, passing to the periphery of said turning cylinder (**6**) and traveling over said turning cylinder periphery at least until said direction of travel is again reversed;



f. an endless second belt (**9**) contacting the periphery of said forming roll (**5**) below said forming roll upper part, traveling along said forming roll periphery between said forming roll periphery and said wire belt (**10**) so that said slurry is sandwiched between said wire belt at the outside and said second belt on the inside, to form a web, said second belt also traveling together with said wire belt around said turning cylinder;

g. first save-all plate means (**16**) disposed adjacent to said forming roll (**5**) extending under said roll to receive liquid squeezed from said slurry through said wire belt (**10**) and ejected by the rotating action of said roll (**5**);

h. separation means (**14**) disposed under said cylinder (**6**) to separate the formed web from said wire belt (**10**) and,

i. a deflector (**15**) disposed under said forming roll (**5**) at the location where said wire belt (**10**) leaves said forming roll, and, a second save-all plate means (**19**) having a water receiving plate (**18**) extending under said deflector (**15**) disposed to receive additional liquid squeezed from said slurry.

3,951,737

POWER GENERATING PLANT WITH A GAS-COOLED NUCLEAR REACTOR WITH CLOSED GAS CIRCULATION

Hans Frutschi, Riniken near Brugg; Gerassimos Sarlos, Brugg-Laufohr; Jean-Francois Dupont, Klingnau, and Dieter Haschke, Wittnau, all of Switzerland, assignors to Gesellschaft zur Forderung der Forschung an der Eidgenossischen Technischen Hochschule, Zurich, Switzerland

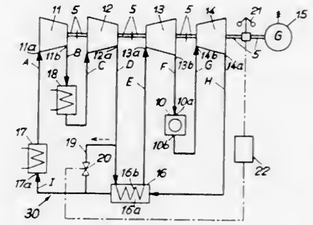
Filed Sept. 24, 1973, Ser. No. 400,421

Claims priority, application Switzerland, Mar. 26, 1973, 4314/73

Int. Cl.² G21C *3/56, 19/28*

U.S. Cl. 176—60 **2 Claims**

1. A power generating plant comprising a gas-cooled nuclear reactor, means defining a closed gas circulation system containing a gaseous medium used for cooling the reactor and serving as a working medium, compressor means, a first gas turbine and a second gas turbine, said reactor, said compressor means and each of said turbines having a respective inlet and an outlet for the gaseous medium, the closed gas circulation system leading through the compressor means, the nuclear reactor, the first and second gas turbines and back to the compressor means, an electrical generator for delivering electrical energy, at least one of the gas turbines being in driving connection with the compressor means and at least the other of the gas turbines being in driving connection with the electrical generator for the delivery of said electrical energy, said reactor being arranged in the g as circulation system between the outlet of the first turbine and the inlet of the second turbine, a recuperative heat exchanger having a primary path and a secondary path, said primary path being located between the



outlet of the second gas turbine and the inlet of the compressor means, the secondary path of the recuperative heat exchanger being arranged between the outlet of the compressor means and the inlet of the first gas turbine, the first and second turbines being constructed with respect to one another in such a manner that in operation of the power generating plant the gaseous medium at the outlet of the first gas turbine and thus at the inlet of the reactor has an operating pressure which is substantially equal to an equalization pressure which the gaseous medium in the gas circulation system assumes in a stationary rest state at substantially operation temperatures.

3,951,738

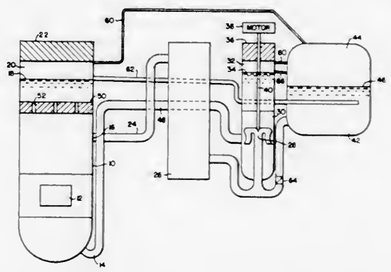
NUCLEAR REACTOR COOLANT AND COVER GAS SYSTEM

John A. George, Greensburg; Arnold H. Redding, Export, and Stephen N. Tower, Murrysville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 10, 1974, Ser. No. 468,778

Int. Cl.² E21C *7/06*

U.S. Cl. 176—65 **19 Claims**



1. In a primary coolant flow system of a liquid cooled nuclear reactor including a reactor vessel, a heat exchanger flow connected to a first outlet of said reactor vessel, and a coolant circulating pump flow connected to an inlet of said reactor vessel, said reactor vessel having a core positioned therein, being partially filled with reactor coolant and having a cover gas above the level of reactor coolant therein, the system comprising coolant flow restricting means immersed within the reactor coolant in the reactor vessel for maintaining a predetermined rate of flow of reactor coolant from below the

restricting means to above the restricting means, said restricting means being positioned above said first outlet of the reactor vessel, and a second outlet of said reactor vessel above said restricting means; said second outlet being flow connected to an inlet of said circulating pump.

3,951,739

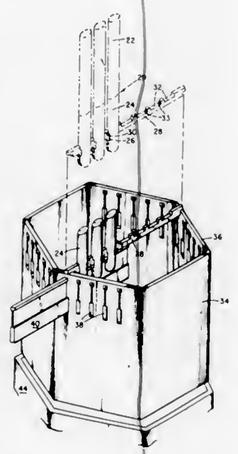
POSITIONING AND LOCKING DEVICE FOR FUEL PIN TO GRID ATTACHMENT

Thomas M. Frick, Irwin, and Arthur L. Wineman, Greensburg, both of Pa., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed July 15, 1974, Ser. No. 488,638

Int. Cl.² E21B *7/04*

U.S. Cl. 176—78 **8 Claims**



1. A positioning and locking device for nuclear reactor fuel pins comprising an elongated fuel pin assembly having a fuel pin lower end cap, said end cap having a keyed slot therethrough perpendicular to its major axis; a positioning and locking means adapted to slidably mate with a first part of said keyed slot, said means having multiple, spaced-apart, notches disposed along its length; a thin walled fuel pin attachment and flow distribution block disposed below said fuel pin assembly, said block having an upper edge to support said positioning and locking means at each extremity thereof and having multiple spaced apart elongated keyed slots in the walls thereof, each of said slots having its major axis parallel to the major axis of said fuel pin assemblies; a fuel pin attachment grid beam adapted to slidably mate with said keyed slot of said fuel pin assembly whereby a multiple fuel pin assembly is rigidly maintained and locked in spaced apart rows.

3,951,740

MANUFACTURE OF INTERFERON

Ion Gresser, and Michael G. Tovey, both of Paris, France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Jan. 7, 1975, Ser. No. 539,176

Claims priority, application France, Jan. 11, 1974, 74.00949; Aug. 26, 1974, 74.29144

Int. Cl.² C12D *13/02*

U.S. Cl. 195—1.8 **9 Claims**

1. A process for the preparation of interferon of high titre which comprises growing interferon-producing cells from a continuous cell line in a stirred suspension culture while effecting the following process stages:

a. adding a priming dose of interferon, the interferon being specific to the species from which the cells are derived, to a culture medium of cells grown in suspension up to the saturation density of the cells in the medium, and enough L-glutamine to keep the cells in an active metabolic state, and effecting priming of the cells with suitable stirring of the medium;
b. stopping the stirring and separating the cells by sedimentation from the supernatant liquid;
c. resuspending the cells in a small volume of a highly concentrated suspension of a virus inducer, leaving the cells in contact with the virus, and thereafter removing the virus inducer by centrifugation;
d. subjecting the cells to metabolic inhibitors and removing the inhibitors by centrifugation;
e. resuspending the cells in a nutrient medium without serum, in which the cells are incubated; and
f. separating the cells by sedimentation, collecting the supernatant liquid containing the interferon, and concentrating and purifying the interferon.

3,951,741

PROCESS AND APPARATUS FOR THE SYNTHESIS OF PEPTIDES BY USE OF N-CARBOXYANHYDRIDES

Peter Pfaender, Steinwaldstrasse 64, 7 Stuttgart 70; Helmut Pratzel, Leonrodstrasse 62, 8 Munich 19, and Hartmut Blecher, Kauzenhecke 15, 7 Stuttgart-Degerloch 70, all of Germany

Filed July 3, 1974, Ser. No. 485,728

Claims priority, application Germany, July 10, 1973, 2334930; Apr. 8, 1974, 2416941

Int. Cl.² C12D *13/00;* **C07C** *103/52*

U.S. Cl. 195—29 **10 Claims**

1. A method for synthesizing polypeptides employing N-carboxyanhydrides of amino acids which comprises:

1. combining in an aqueous alkaline medium a water soluble poly)monopeptide)-polyethyleneimine, consisting of polyethyleneimine of at least about ten thousand molecular weight and arginine bonded to said polyethyleneimine by amide linkages, with an N-carboxyanhydride to form a poly(dipeptide)-polyethyleneimine having terminal carbamyl groups;
2. acidifying said medium to hydrolyse said terminal carbamyl groups to amino groups;
3. freeing said medium of lower molecular weight compounds;
4. repeating steps (1) to (3) to form a poly(n-peptide)-polyethyleneimine from a poly((n-1)peptide)-polyethyleneimine; and
5. enzymatically cleaving said poly(n-peptide)-polyethyleneimine to form an arginyl carboxy end group substituted poly(n-peptide) and enzymatically cleaving said arginyl group to leave said (poly(n-peptide).

3,951,742

PRODUCTION OF ZEAXANTHIN

David Shepherd, Morges, and Jaroslav Dasek, Yverdon, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed July 18, 1974, Ser. No. 489,473

Claims priority, application Switzerland, July 26, 1973, 10903/73

Int. Cl.² C12D *13/02*

U.S. Cl. 195—28 R **6 Claims**

1. In a process for the preparation of zeaxanthin pigment which comprises culturing a microorganism of the genus Flavobacter producing this pigment, in a nutrient medium containing at least one carbohydrate as assimilable carbon source, at least one source of assimilable amino nitrogen containing free amino acids, mineral salts, oligoelements and vitamins to produce intracellular zeaxanthin, the improvement which comprises modifying the spectrum of amino acids of the medium to enhance the production of said zeaxanthin by adding at least one of the sulphur-containing amino acids methionine, cystine and cysteine thereto, the quantity of added sulphur-containing amino acid not exceeding 1 μg/ml, but being sufficient to adjust the sulphur-containing amino acid content of said medium to from 3 to 10 percent of the content of other amino acids in said medium.

3,951,743

PRODUCTION OF ZEAXANTHIN

David Shepherd, Morges; Jaroslav Dasek, Yverdon, and Mariette Suzanne Catherine Carels, Orbe, all of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed July 18, 1974, Ser. No. 489,725

Claims priority, application Switzerland, July 26, 1973, 10904/73

Int. Cl.² C12D *13/02*

U.S. Cl. 195—28 R **4 Claims**

1. In a process for the preparation of a zeaxanthin pigment which comprises culturing a microorganism of the genus Flavobacter producting the pigment in a nutrient medium containing at least one carbohydrate as assimilable carbon source, at least one source of assimilable amino nitrogen containing free amino acids, mineral salts, oligoelements and vitamins until said zeaxanthin has been produced intracellularly, the improvement which comprises modifying the composition of the medium through incorporation therein of from 0.1 to 1 μg/ml of pyridoxine and from 0.005 to 0.1 M of bivalent metal ions selected from the group consisting of Fe^{++} Co^{++}, Mo^{++}, Mn^{++} and admixtures thereof.

3,951,744

PURIFICATION OF DEHYDROGENASES

Albert Röder, Seeshaupt; Klaus Beaucamp; Günter Weimann, both of Tutzing, Upper Bavaria; Walter Schneider, Weilheim, and Klaus Mühlegger, Weilheim am Schleiferhausl, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim-Waldhof, Germany

Filed July 16, 1974, Ser. No. 489,792

Claims priority, application Germany, July 23, 1973, 2337312

Int. Cl.² C07G *7/02*

U.S. Cl. 195—66 R **13 Claims**

1. Process for the separation and purification of NADP-dependent dehydrogenases which comprises subjecting the dehydrogenase to chromatography using as the affinity chromatography material a nucleotide with a phosphate group in the 2′- or 3′-position, bound to a solid carrier material.

3,951,745

GLYCOSIDE-HYDROLASE ENZYME INHIBITORS

Werner Frommer; Walter Puls, both of Wuppertal-Elberfeld; Dietmar Schafer, Neuhof near Fulda, and Delf Schmidt, Wuppertal-Vohwinkel, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 213,066, Dec. 28, 1971, Pat. No. 3,876,766. This application July 31, 1974, Ser. No. 493,464

Claims priority, application Germany, Dec. 28, 1970, 2064092

The portion of the term of this patent subsequent to Apr. 8, 1992, has been disclaimed.

Int. Cl.² C12D *13/00*

U.S. Cl. 195—80 R **13 Claims**

1. A method for the production of an inhibitor of glycosidehydrolase enzymes of the digestive tract comprising culturing a microorganism of the order Actinomycetales and extracting the inhibitor from the resulting culture, wherein said inhibitor:

a. is substantially heat-stable at neutral pH values;
b. is stable to acid at pH 2;
c. is stable to alkali at pH 12;
d. is slowly dialyzable;
e. is not inactivated by trypsin or pepsin;
f. does not inhibit trypsin or pepsin;
g. is not receptive to protein dyes;
h. is free from characteristic UV absorption up to 250 nm.;
i. is not inhibited by urea or β-mercaptoethanol;
j. is of molecular weight 500–6000; and
k. yields a monosaccharide on hydrolytic splitting.

10. The method of any preceding claim in which the inhibitor is extracted from the mycelium.

3,951,746

ANTIBIOTICS AND PROCESS FOR THEIR MANUFACTURE

Marvin J. Weinstein; Gerald H. Wagman, both of East Brunswick, and Joseph A. Marquez, Montclair, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 426,163, Dec. 19, 1973, abandoned, which is a continuation-in-part of Ser. No. 208,907, Dec. 16, 1971, abandoned, which is a continuation-in-part of Ser. No. 58,050, July 24, 1970, abandoned. This application Feb. 18, 1975, Ser. No. 550,802

Int. Cl.² C12D *9/14*

U.S. Cl. 195—96 **6 Claims**

1. A process which comprises cultivating a microorganism of the species *Micromonospora grisea* under aerobic conditions in an aqueous nutrient medium containing assimilable source of carbon and nitrogen until a complex having substantial antibiotic activity is produced and recovering said complex consisting of verdamicin 1, sisomicin, Antiobiotic G-418 and gentamicin A from said medium.

3,951,747

LYOPHILIZED MEDIA

Patrick Michael Yananton, Garfield, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 177,478, Sept. 2, 1971, abandoned. This application June 27, 1974, Ser. No. 483,495

Int. Cl.² C12K *1/06*

U.S. Cl. 195—103.5 R **5 Claims**

1. A method for identifying Enterobacteriaceae consisting essentially of (*a*) sterilizing and lyophilizing, in separate microcontainers, a series of liquid nutrient broth media containing an indicator, (*b*) forming liquid culture media in said microcontainers by adding 0.1 to 1 ml. of an aqueous mixture of an unidentified member of Enterobacteriaceae directly to each of said series of sterile, lyophilized nutrient broth media in separate microcontainers, (*c*) incubating each of said series of nutrient broth media at about 35° to 38°C., (*d*) observing and comparing the incubation results to a predetermined fermentation, growth or enzyme activity profile to thereby identify said unidentified member of Enterobacteriaceae.

3,951,748

SENSITIZED MATRIX FOR DETECTION OF DISEASE

Robert Francis Devlin, Keene, Tex., assignor to Medical Products, Inc., Houston, Tex.

Filed Nov. 11, 1974, Ser. No. 522,722

Int. Cl.² C12K *1/04*

U.S. Cl. 195—103.5 R **25 Claims**

1. A specific sensitized matrix for diagnosing disease comprising,

an insoluble, inert matrix having a network of pores,
carrier protein molecules,
a specific immunological reactant selected from the group consisting of antigens and antibodies, and
a coupling agent coupling the carrier protein molecules together, and coupling the specific immunological reactant to the carrier protein molecules and forming a network of the carrier protein molecules, the immunological reactant and the coupling agent,

the last-mentioned network being immobilized within the network of pores of the matrix.

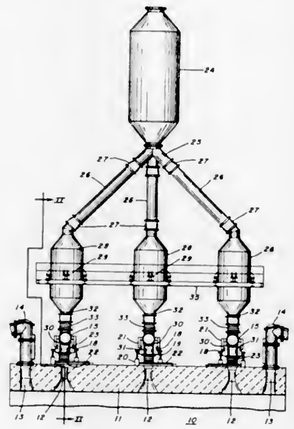
3,951,749
TAR SAND PROCESSING APPARATUS
John B. Fairbanks, Jr., 3927 S. 3030 East, Salt Lake City, Utah 84106, and Gary C. Brimhall, 2915 Branch Drive, Salt Lake City, Utah 84117
Filed Apr. 19, 1974, Ser. No. 462,346
Int. Cl.² C10C *1/20*; **C10G** *1/00, 1/04*
U.S. Cl. 196—46 **10 Claims**



1. Apparatus for processing tar sands to recover oil therefrom, said apparatus including, in combination: a tank having an upward facing concave bottom provided with upwardly and outwardly sloping, opposite end portions respectively terminating in discharge and feed ends; an endless conveyor having an upper course descending into said tank, being positioned therein against said bottom, and a lower course disposed underneath said tank, having upwardly and outwardly sloping opposite end portions **13A** and **13B** terminating in feed and discharge ends **13C** and **13D**; said endless conveyor comprising a pair of mutually horizontally spaced, flexible, endless members and plural, mutually spaced, transverse, drag elements affixed to, upstanding from said upper course, and carried by said flexible endless members; means for feeding tar sand to said feed end of said tank for engagement thereat with the upper course of said endless conveyor; means for discharging processed tar sand from the discharge end of said tank; and means for supporting and powering said endless conveyor coupled thereto.

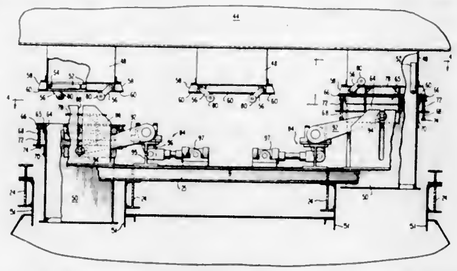
3,951,750
APPARATUS FOR CHARGING PREHEATED COAL INTO COKE OVENS
Friedrich Wilhelm Drebes, Bochum, Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Germany
Filed Sept. 3, 1974, Ser. No. 502,657
Claims priority, application Germany, Sept. 7, 1973, 2345154
Int. Cl.² C10B *31/02*
U.S. Cl. 202—262 **1 Claim**

1. Charging apparatus for charging preheated coal into the oven chambers of a battery of coke ovens from a bunker disposed above the battery, each oven chamber having a plurality of charging holes in the roof thereof and the charging holes of the several oven chambers being arranged in rows extending longitudinally of the battery, said charging apparatus comprising conveyor means associated with each row of charging holes, each of said conveyor means being a vibratory conveyor having a tubular conveyor member through which the coal passes, each of said tubular conveyor members being spring mounted on a frame and each frame being supported on springs on the roofs of the oven chambers, each conveyor means having a discharge outlet for each charging hole, closure means for each outlet, resilient, vibration-absorbing tubular members between the outlets of each conveyor and each charging hole, a measuring vessel for each conveyor adapted to receive a predetermined amount of coal and to transmit the coal to the conveyor, resilient, vibration-absorbing tubular members joining each measuring vessel to its associated con-



veyor, and means including downwardly-extending pipes for connecting said bunker to each of said measuring vessels.

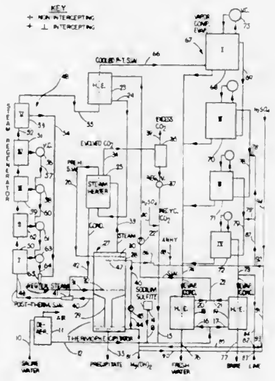
3,951,751
POLLUTANT COLLECTION SYSTEM FOR COKE OVEN DISCHARGE OPERATION
Christopher C. Jakimowicz, Detroit; Larry C. Jones, Allen Park, and Donald D. Raugh, Grosse Ile, all of Mich., assignors to National Steel Corporation, Pittsburgh, Pa.
Filed July 26, 1974, Ser. No. 492,261
Int. Cl.² C10B *33/00, 39/00*
U.S. Cl. 202—263 **2 Claims**



1. In a coke oven battery air pollution prevention system including a transfer car for receiving the coke discharged from an oven, a coke guide mounted on a carriage for movement along the length of the battery, an exhaust hood carried by the coke guide carriage, the exhaust hood being shaped to enclose the coke guide and to extend outwardly from the coke guide carriage to form an enclosure projecting over and enclosing the open top of the transfer car, a stationary exhaust manifold positioned above and in spaced relation to the exhaust hood and extending along the length of the battery, means forming a plurality of exhaust openings in the exhaust manifold corresponding in spacing to the spacing between coke oven doors, exhaust manifold sealing means surrounding each opening in the exhaust manifold, gate means for closing each opening in the exhaust manifold, means for mounting the gate means and biasing the gate means toward closed position, gate opening means for opening each gate means, means forming an opening in the exhaust hood positioned for registry with any one of a plurality of the openings in the exhaust manifold as the coke guide carriage is moved along the length of the battery, exhaust hood sealing means carried by the exhaust hood surrounding the opening in the exhaust hood and movable into sealing engagement with an exhaust manifold sealing means which is in registry with the opening in the exhaust hood, and means associated with the exhaust hood for actuating the gate opening means for opening the associated gate means in conjunction with movement of the exhaust hood sealing means into sealing engagement with the sealing means on the associated opening in the exhaust manifold, the sealing means of the exhaust manifold and the sealing means of the exhaust hood each having a planar sealing face, the planar faces being in coplanar relation when in sealing contact, the improvement wherein the exhaust hood sealing means comprise:

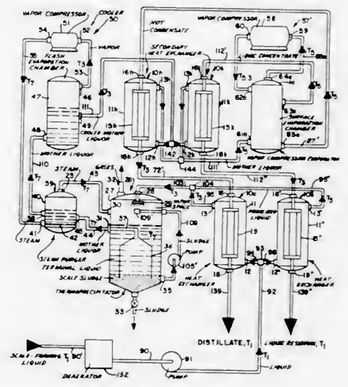
a. a conduit open at both ends telescopically received in the opening in the exhaust hood,
b. a sleeve slideably mounted on the upper end of the conduit,
c. a reinforcing member surrounding the upper end of the sleeve,
d. the reinforcing member having an upwardly directed planar sealing face, the upwardly directed planar sealing face constituting the uppermost portion of the conduit when the upwardly directed planar sealing face is in its uppermost position,
e. resilient means acting between the conduit and the sleeve urging the sleeve upwardly, and
f. means for moving the conduit in an upward direction for resilient engagement of the planar sealing face on the reinforcing member with the planar face of the exhaust manifold sealing means, the upper portion of the conduit extending above the uppermost portion of the exhaust hood.

3,951,752
METHOD AND APPARATUS FOR CONVERTING SALINE WATER TO FRESH WATER
Paul S. Roller, 1341 G St., NW. (Room 825), Washington, D.C. 20005
Continuation-in-part of Ser. No. 531,278, June 3, 1966, abandoned, and a continuation-in-part of Ser. No. 834,203, March 15, 1969, abandoned. This application Aug. 13, 1973, Ser. No. 387,585
Int. Cl. B01d *3/00, 3/06, 3/10, 3/02*
U.S. Cl. 203—7 **21 Claims**



1. A process for the conversion of saline water containing scale-forming compounds, which comprises indirectly preheating the saline water; passing steam through preheated saline water and condensing a part of the steam in direct contact with the preheated saline water, thereby further heating it, while issuing another part of the steam uncondensed; as a result of the further heating, thermally decomposing bicarbonates in the saline water and thereupon precipitating alkaline scale compounds, while liberating carbon dioxide, and precipitating also calcium sulfate as anhydrite and other scale compounds, thereupon forming a total precipitate of scale compounds; expelling carbon dioxide by including it in the issuing, uncondensed steam; separating said precipitate of scale compounds from the further heated saline water, thus forming clarified saline water and separated precipitate; indirectly condensing the issued steam and forming condensate thereof, while evolving the included carbon dioxide; combining said condensate with the clarified saline water, to give post-thermal saline water; flash vaporizing the post-thermal saline water, and thereupon forming vapor and cooled post-thermal saline water; heating said vapor under pressure and thereby forming regenerated steam for employment as steam for said further heating; and evaporating said cooled, post-thermal saline water to produce fresh water and saline water residuum.

3,951,753
METHOD AND APPARATUS FOR THE CONVERSION OF AN AQUEOUS SCALE-FORMED LIQUID
Paul S. Roller, 703 Colorado Bldg., 131 G St., NW., Washington, D.C. 20005
Continuation of Ser. No. 834,203, June 3, 1969, abandoned, which is a continuation-in-part of Ser. No. 531,278, March 15, 1966, abandoned. This application Feb. 22, 1974, Ser. No. 444,789
Int. Cl.² B01D *5/00*; **C02B** *1/06*
U.S. Cl. 203—7 **18 Claims**



1. Method of converting an aqueous scale-forming liquid containing alkaline scale-forming compounds, typified by calcium and magnesium bicarbonates, and non-alkaline scale-forming compounds, typified by calcium sulfate and compounds of silica and iron, which comprises indirectly preheating said aqueous liquid; adding steam to the preheated liquid and condensing the steam therein, whereby the preheated liquid is further heated; as a result of said further heating, thermally decomposing alkaline scale-forming compounds, forming carbon dioxide and a precipitate of alkaline scale compounds and non-alkaline scale compounds; expelling said carbon dioxide from the further heating liquid; separating said precipitate of alkaline and non-alkaline scale compounds from the further heated liquid, thereby forming a hot mother liquor; flash vaporizing the hot mother liquor, forming water vapor and cooled mother liquor; compressing the water vapor and employing compressed vapor as steam for said further heating; and evaporating said cooled mother liquor to form distiallate and aqueous liquid residuum.

3,951,754
METHOD OF INHIBITING THE THERMOPOLYMERIZATION OF ISOPRENE AND BUTADIENE

Alexandr Grigorievich Liakumovich, prospekt Lenina, 23, kv. 4; Boris Izrailevich Pantukh, prospekt Oktyabrya, 6, kv. 97; Aida Pavlovna Zakharova, ulitsa Druzhby, 19, kv. 11, all of Sterlitamak; Vitaly Ivanovich Butin, Molodezhny Butvar, 33, kv. 31, Tolyatti; Vladimir Alexeevich Tulupov, ulitsa Krasny Mayak, 4, korpus 2, kv. 33, Moscow, and Zoya Stephanovna Baiburina, ulitsa Volochaevskaya, 16-a, Kv. 19, Sterlitamak, all of U.S.S.R.

Continuation of Ser. No. 164,127, July 19, 1971, abandoned. This application Feb. 19, 1974, Ser. No. 433,777

Int. Cl.² B01D *3/00*; **C07C** *7/18*

U.S. Cl. 203—9 **5 Claims**

1. In a process for inhibiting the thermopolymerization of a feed during the extractive distillation of said feed, said feed comprising members selected from the group consisting of isoprene and butadiene produced in a dehydrogenation reaction, the improvement comprising, contacting the internal metallic surfaces of the apparatus used for said extractive distillation, with a solution, prior to the introduction of said feed into said apparatus, said solution comprising a 1–25 WT% aqueous solution of passivators selected from the group consisting of sodium nitrite, potassium nitrite, sodium sulfite, potassium sulfite, sodium phosphate and potassium phosphate, said solution having a temperature of about 20°–100°C, said improvement further comprising, introducing said feed and a polar extractant into said apparatus after said contacting, said extractant selected from the group consisting of dimethyl acetamide, dimethyl formamide and n-methylpyrrolidone, said extractant containing 0.01–1.0 wt% of an inhibitor selected from the group consisting of sodium nitrite, n-naptholamine, parahydroxydiphenylamine, sulphur and diphenylamine.

3,951,755
PROCESS FOR PREPARING TECHNICALLY PURE ACETIC ACID BY EXTRACTIVE DISTILLATION

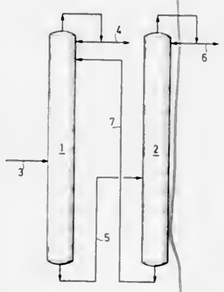
Rudolf Sartorius, and Hans Stapf, both of Frankfurt am Main, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Feb. 18, 1975, Ser. No. 550,643

Claims priority, application Germany, Feb. 20, 1974, 2408011

Int. Cl.² B01D *3/40*; **C07C** *51/44*, *53/08*

U.S. Cl. 203—16 **5 Claims**



1. Process for preparing technically pure acetic acid from mixtures of water and acetic acid by extractive distillation, which comprises submitting the water-containing acetic acid to an extractive distillation with N-methyl acetamide in a first step and fractionating the acetic acid from N-methyl acetamide in a second step by rectification.

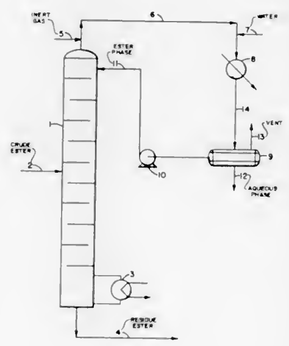
3,951,756
PURIFICATION OF ALKYL ESTERS

Jerald Edson Dirks, Hastings, Nebr., and Gene Jordan Fisher, Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Nov. 8, 1974, Ser. No. 522,196

Int. Cl.² B01D *3/34*, *3/14*; **C07C** *69/52*

U.S. Cl. 203—95 **11 Claims**



1. A continuous distillation process for removal of light ends impurities some of which are substantially water soluble and some of which are substantially water insoluble, from a crude alkyl ester of a carboxylic acid of the formula R_1COOR_2 wherein R_1 is hydrogen, an alkyl group of **1** to **5** carbons, or an alkenyl group of **1** to **5** carbons, and wherein R_2 is an alkyl group of **1** to **3** carbons, said crude ester containing from about 0.1 to 5% by weight of light end impurities, which process comprises continuously;

a. passing said crude ester as feed to a distillation zone which is operated so as to obtain a residue consisting of the said ester having less of said light ends impurities therein than said crude ester, and so as to obtain a distillate of overhead vapors containing light ends impurities;

b. adding to said overhead vapors an inert gas and water to give a combined overhead stream, said inert gas being added in an amount of at least 1.0 milliliter, as measured at standard temperature and pressure; of said inert gas per gram of said feed to the distillation tower, and wherein the amount of water added to said overhead vapors is from about 0.5 to 50% by weight of that of said feed;

c. in a partial condenser cooling the combined stream so obtained by adding said inert gas and said water to said overhead vapors to a temperature sufficient to condense substantially all of the water and the said ester contained therein, but which temperature is high enough to cause the amount of the substantially water insoluble light ends impurities contained in the hereafter defined vapor phase of the hereafter defined phase separator to be at least 50% of the amount of said water insoluble light ends impurities contained in said feed to the distillation zone; and

d. passing the effluent from said partial condenser to a phase separator and allowing said effluent to separate into a vapor phase, a liquid aqueous phase and a liquid ester phase, and recycling said liquid ester phase back to the top of said distillation zone as reflux.

3,951,757
PROCESS OF MAKING ELECTRORECORDING SHEET

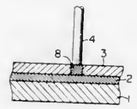
Kimiaki Yoshino, Moriguchi; Wataru Shimotsuma, Hirakata; Kin-ichi Adachi, Takarazuka; Yoichi Sekine, Katano, and Fujio Oda, Ashiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 5, 1974, Ser. No. 494,886

Claims priority, application Japan, Aug. 17, 1973, 48-92600

Int. Cl.² B21H *1/20*; **G01D** *15/10*; **G02B** *27/22*

U.S. Cl. 204—2 **17 Claims**



1. In a process for producing an electrorecording sheet comprising heat sensitive materials capable of forming color or changing its color upon application of a heat energy, cuprous iodide which imparts electroconductivity, a binder therefor and a support and forming a visible image by color formation or color changing in the portions of the heat sensitive materials to which current is selectively applied, with heat generated by application of current, the improvement which comprises coating on the support a suspension of said cuprous iodide to which a reducing agent is added to remove free iodine to increase resistance and to whiten the sheet.

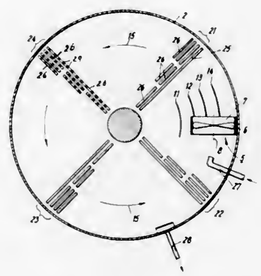
3,951,758
METHOD OF OPERATING A PURIFYING PLANT AND TANK FOR PRACTICING SAID METHOD

Rudolf Pörsch, Altbach, Germany, assignor to Menzel & Company, Stuttgart, Germany

Filed July 17, 1974, Ser. No. 489,153

Int. Cl.² C02C *1/12*

U.S. Cl. 210—14 **5 Claims**



2. A reactivating tank with substantially vertical axis for purifying a sludge-water mixture adapted to be received revolving independently in said tank, which includes in combination: a bottom, an at least approximately round outer wall at least nearly uniformly spaced from said axis and confining said bottom, and means arranged in said tank adjacent said outer wall to circulate said mixture circumferentially in said tank, to produce a radially inwardly directed component of said flow, an upwardly tapering deflecting member positioned centrally on the bottom of the tank having upwardly converging surface means to deflect the inwardly directed flow upwardly, and a plurality of compressed air ventilator means extending radially outwardly adjacent the bottom of said tank, said ventilator means including outlet means increasing in total cross section radially outwardly toward said outer wall.

3,951,759
CHROMIUM ELECTROPLATING BATHS AND METHOD OF ELECTRODEPOSITING CHROMIUM

Walter Studer, Olten, Switzerland, assignor to Rotel-Holding AG, Basel, Switzerland

Filed Jan. 20, 1975, Ser. No. 542,385

Claims priority, application Switzerland, Jan. 23, 1974, 792/74; June 12, 1974, 8130/74

Int. Cl.² C25D *3/10*, *5/34*

U.S. Cl. 204—32 R **10 Claims**

1. A bath for the electroplating of chromium comprising an aqueous acidic hexavalent chromium solution containing 200 to 550 g/l chromium trioxide, 1 to 18 g/l strontium sulfate, 2 to 30 g/l potassium silicofluoride, 2 to 8 g/l potassium dichromate, and as a synergetic additive 4 to 50 g/l 2,2-dichloromalonic acid or a salt thereof.

6. A method for the electro-deposition of chromium coating on a metal workpiece, comprising using a bath according to claim **1**, and including the step of operating the bath at a temperature range of 45° to 60°C and a current density of 40 to 500 amp/dm²

8. A method according to claim **6**, including the steps of removing an oxide film from the metal workpiece and preventing the formation of a new oxide film by means of inhibitors until the workpiece is placed in the bath.

3,951,760
BATH FOR THE ELECTRODEPOSITION OF BRIGHT TIN-COBALT ALLOY

Shimetomo Fueki, Tokyo; Junichi Tada, Yokohama; Kenji Osawa, Hino; Naomi Sakai, and Kazuhiro Ogawa, both of Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 360,542, May 15, 1973. This application Apr. 18, 1975, Ser. No. 569,448

Claims priority, application Japan, May 17, 1972, 47-48181; May 17, 1972, 47-48182; May 17, 1972, 47-48183; May 17, 1972, 47-48184

Int. Cl.² C25D *3/60*

U.S. Cl. 204—43 S **7 Claims**

1. A bright tin-cobalt alloy electroplating bath consisting essentially of an aqueous alkaline solution of:

a. a stannous salt present in an amount sufficient to provide from 2 to 70 grams of stannous metal per liter of said solution;

b. a cobalt salt present in an amount sufficient to provide from 1 to 'grams of cobalt metal liter of said solution, with the total amount of said stannous and cobalt metals being less than 75 grams per liter of said solution;

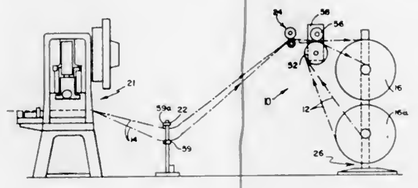
c. an alkali metal pyrophosphate present in an amount providing more than two mols thereof for each mol of said total amount of said stannous and cobalt metals; and

d. a brightener additive consisting of at least one organo-sulphur compound and at least one substance selected from the group consisting of ammonia, ammonium salts and amine compounds, said organo-sulphur compound being present in an amount of approximately 0.01 to 5.0 grams per liter of said solution, and said selected substance being present in an amount of approximately 5.6 to 28.0 grams per liter of said solution, when said substance is ammonia, and approximately 0.1 to 150 grams per liter of said solution, when said selected substance is selected from said ammonium salts and amine compounds.

3,951,761
METHOD AND APPARATUS FOR ELECTRO-PLATING STRIP CONTACTS

Werner K. Böhringer, Heilbronn-Frankenbach; Horst B. Goller, Obersulm-Willsbach; Hans K. Kollmar, Lowenstein; Hans A. Mössinger, Beilstein, and Rudolph H. Zeltner, Obersulm-Willsbach, all of Germany, assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Jan. 31, 1975, Ser. No. 545,812
Int. Cl.² C25D 5/02, 17/04, 17/06
U.S. Cl. 204—15 26 Claims



1. A carrier strip for carrying a web of variable length having spaced pilot holes and a plurality of spaced contacts projecting past one edge of said strip, comprising:

a plurality of elongate modules each formed of an insulating material,

securing means on each module for securing each module in sequence to another module to form said carrier strip in a length corresponding to the length of said web,

means on each module of said strip for engaging said pilot holes to attach each module in predetermined relationship to said web with said contacts projecting past one edge of each module,

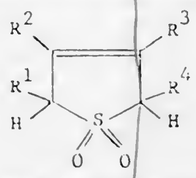
and means on each module of said strip for enabling said web to be supported in a predetermined position in a plating bath.

3,951,762
PREPARATION OF PERFLUORINATED ORGANIC SULFONYL FLUORIDES

Peter Voss, Leverkusen; Hans Niederprüm, Monheim, Rhineland, and Manfred Wechsberg, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 322,268, Jan. 9, 1973. This application Oct. 2, 1974, Ser. No. 511,560
Claims priority, application Germany, Jan. 14, 1972, 2201649
Int. Cl.² B01K 1/00; C07C 143/70; C25B 3/08
U.S. Cl. 204—59 F 6 Claims

1. In the electrochemical fluorination of an alkane-sulfonyl halide wherein an electric current is passed through a cell containing said alkanesulfonyl halide dissolved in hydrofluoric acid to produce a perfluorinated alkanesulfonyl fluoride, the improvement which comprises including in said cell about 1 to 400%, based on the weight of the alkanesulfonyl halide, of an unsaturated cyclic sulfone of the formula

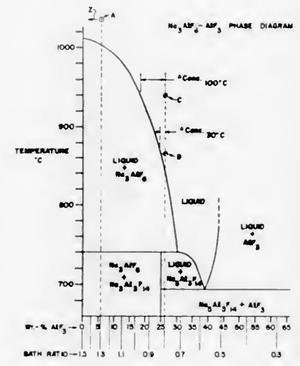


in which R^1, R^2, R^3 and R^4 each independently is hydrogen or lower alkyl.

3,951,763
ALUMINUM SMELTING TEMPERATURE SELECTION

William C. Sleppy, Belleville, Ill.; C. Norman Cochran, Oakmont, Pa.; Perry A. Foster, Jr., New Kensington, Pa., and Warren E. Haupin, Lower Burrell, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 374,816, June 28, 1973, abandoned. This application Mar. 7, 1975, Ser. No. 556,428
Int. Cl.² C25C 3/06, 3/18
U.S. Cl. 204—67 16 Claims



1. A process for producing aluminum, comprising electrolytically decomposing Al_2O_3 to aluminum metal in an electrolyte bath between an anode and a cathodic interface formed between aluminum metal and the electrolyte bath, the bath

a. consisting essentially of Al_2O_3, NaF, and AlF_3, and

b. having a weight ratio NaF to AlF_3 up to 1.1:1,

while maintaining said bath at an operating temperature

a. greater than 40°C above the cryolite liquidus temperature of the bath, and

b. effective for preventing bath crusting in interfacial areas between bath and aluminum metal.

3,951,764
ALUMINUM-MANGANESE ALLOY

William R. King, Livermore, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Division of Ser. No. 446,885, Feb. 28, 1974, abandoned. This application Feb. 10, 1975, Ser. No. 548,496
Int. Cl.² C25C 3/36
U.S. Cl. 204—71 3 Claims

1. In the process of producing aluminum by electrolysis of Al_2O_3 feed in the presence of a molten fluoridic salt, which serves as a cover layer for the produced molten aluminum and which dissolves Al_2O_3, and wherein the produced molten aluminum is connected as cathode in the electrolysis, the improvement which comprises

a. simultaneously producing an aluminum-manganese alloy containing up to about 10% by weight manganese by incorporating in the Al_2O_3 feed a manganese oxide selected from the group consisting essentially of MnO, MnO_2 and mixtures thereof in an amount in excess over the calculated quantity required for the production of an aluminum-manganese alloy having a desired manganese content:

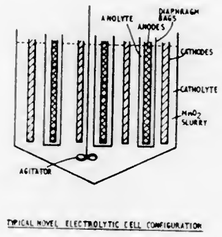
b. agitating the molten aluminum to obtain intimate contact between the manganese oxide and the aluminum for a time sufficient to allow for the reduction of manganese oxide to manganese and for the uniform distribution of the manganese in the aluminum; and

c. recovering the aluminum-manganese alloy of desired manganese content.

3,951,765
PRODUCTION OF ELECTROLYTIC BATTERY ACTIVE MANGANESE DIOXIDE

Peter Kenneth Everett, 5 Sutherland St., Neutral Bay, New South Wales 2089, Australia

Filed Dec. 11, 1974, Ser. No. 531,800
Claims priority, application Australia, Dec. 20, 1973, 6071/73
Int. Cl.² C25B 1/00
U.S. Cl. 204—96 10 Claims



TYPICAL NOVEL ELECTROLYTIC CELL CONFIGURATION

1. A process for the production of high grade γMnO_2 from manganese dioxide ore in an electrochemical cell having one or more inert anodes, immersed in an aqueous anolyte having a solution manganese content of 20 g/l Mn to 200 g/l Mn and an acidity of up to 5N, and one or more inert cathodes, immersed in a slurry consisting of particulate manganese dioxide ore and an aqueous catholyte having a solution manganese content of 30 g/l Mn to 220 g/l Mn and a pH below 7, the anodes and cathodes disposed on opposite sides of one or more porous diaphragms, the process consisting of applying a direct current potential between the anodes and cathodes to reduce the manganese dioxide slurry to ionic manganese which diffuses through the diaphragms and is oxidised at the anodes where γMnO_2 is formed, the anode current density being 20 to 250 Amp/m² at a cell temperature of from 15 to 25°C or 1,000 to 4,000 Amp/m² at a cell temperature of 80° to 100°C and the cathode current density being 5 to 400 Amps/m².

3,951,766
ELECTROLYTIC CELL AND METHOD OF USING SAME

Edward H. Cook, Jr., Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 494,110, Aug. 2, 1974, Pat. No. 3,882,002. This application Apr. 2, 1975, Ser. No. 564,529
Int. Cl.² C25B 1/14, 1/16, 1/26, 11/10
U.S. Cl. 204—98 17 Claims

14. A method for the electrolytic decomposition of aqueous solutions of ionizable chemical compounds which comprises electrolyzing an aqueous solution of an ionizable chemical compound in an electrolytic cell having an anode and a cathode separated by a permselective membrane which is substantially impervious to liquids and gases, and is a hydrolyzed copolymer of tetrafluorethylene and a sulfonated perfluorovinyl ether characterized by the formula

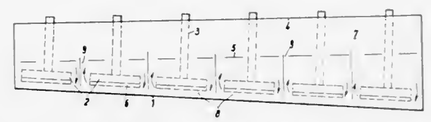
$$FSO_2CF_2CF_2OCF(CF_3)CF_2OCF{=}CF_2$$

and having an equivalent weight of about 900 to about 1,600; and said anode comprises a valve metal substrate, a coating of electroconductive tin oxide on the surface thereof and an outer coating, on the surface of the electroconductive tin oxide, of at least one of a noble metal or noble metal oxide.

3,951,767
METHOD AND APPARATUS FOR THE ELECTROLYSIS OF ALKALI METAL CHLORIDES

Karl Lohrberg, Heusenstamm; Günther Haas, Weisskirchen, and Jurgen Müller, Frankfurt am Main, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 1, 1974, Ser. No. 447,405
Claims priority, application Germany, May 29, 1973, 2327303
Int. Cl.² C25B 1/40, 1/26, 11/02, 9/00
U.S. Cl. 204—99 8 Claims



1. Method for the electrolysis of alkali metal chlorides in a mercury cell having an inclined bottom over which the mercury flows which comprises carrying out the electrolysis in the presence of a series of spaced apart electrodes substantially parallel to said bottom which are free of apertures or perforations extending thru the thickness of the anode, said anodes having on their underside channel-or groovelike recesses extending in the direction of mercury flow, said anodes being positioned with partitions between adjacent anodes to cause a directed flow of brine at one end of each anode into the space between each anode and the mercury and an outflow of a chlorine-brine dispersion at the other end of each anode from the channel-or groovelike recesses thereof without mixing the emerging chlorine-brine dispersion and the entering brine in the regions between adjacent anodes.

3,951,768
METHOD OF SEPARATING ISOTOPES

Karl Gürs, Weissdornweg 23, Niederhochstadt, Germany

Continuation-in-part of Ser. No. 113,094, Feb. 5, 1971, abandoned. This application Oct. 17, 1973, Ser. No. 407,246
Int. Cl.² B01J 1/10
U.S. Cl. 204—157.1 R 14 Claims

1. A method for separating isotopes which comprises: (a) irradiation molecules in a gaseous state, which contains isotopes including a selected isotope, by means of a laser, said molecules containing said selected isotope having an absorption line corresponding to an emission line of said laser and said selected isotope in said molecules having said corresponding absorption line participates in the resultant oscillation of said molecules, whereby (b) said absorbing molecules having said selected isotope are chemically converted to other entities; and (c) separating out that portion of said other entities which contain, or are, said selected isotope.

3,951,769
EPOXIDE PHOTOPOLYMERIZABLE COMPOSITIONS CONTAINING CYCLIC AMIDES AS GELATION INHIBITOR AND METHODS OF POLYMERIZING

Sheldon Irwin Schlesinger, East Windsor Township, N.J., assignor to American Can Company, Greenwich, Conn.

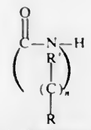
Filed Mar. 1, 1974, Ser. No. 447,209
Int. Cl.² B01J 1/10; G03C 1/70
U.S. Cl. 204—159.11 28 Claims

1. A stabilized polymerizable composition, comprising a polymerizable material consisting essentially of:

a major proportion of a monomeric or prepolymeric epoxide, mixtures thereof or mixture thereof with a monomer selected from the group consisting of lactones and vinyl-containing compounds, said mixture being polymerizable to higher molecular weights through the action of a cationic catalyst;

a radiation-sensitive catalyst precursor which decomposes upon application of energy to provide a Lewis acid effective to initiate polymerization of said polymerizable material, said precursor being an aromatic diazonium salt of a complex halogenide and present in an amount sufficient to effect said polymerization;

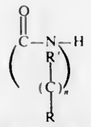
and a stabilizing amount of a monomeric gelation inhibitor for counteracting prematurely formed Lewis acid, said inhibitor being selected from compounds of the general formula



R′ is hydrogen or an unreactive group; R is hydrogen, an unreactive group, or a double bond to an adjacent carbon atom; and *n* is an integer of 3 to 11; said stabilizing amount of the inhibitor being substantially inert to said polymerizable material and said catalyst precursor.

16. The process of polymerizing a polymerizable material consisting essentially of a major proportion of a monomeric or prepolymeric epoxide, mixtures thereof or mixtures thereof with a monomer selected from the group consisting of lactones and vinyl-containing compounds, said mixtures being polymerizable to higher molecular weights through the action of a cationic catalyst, comprising:

forming a mixture of a polymerizable material with a radiationsensitive catalyst precursor which decomposes upon application of energy to provide a Lewis acid effective to initiate polymerization of said polymerizable material, said precursor being an aromatic diazonium salt of a complex halogenide and present in an amount sufficient to effect said polymerization, and with a stabilizing amount of a monomeric gelation inhibitor for counteracting prematurely formed Lewis acid, said inhibitor being selected from compounds of the general formula



R′ is hydrogen or an unreactive group; R is hydrogen, an unreactive group, or a double bond to an adjacent carbon atom; and *n* is an integer of 3 to 11 said stabilizing amount of the inhibitor being substantially inert to said polymerizable material and said catalyst precursor and subsequently applying energy to the resulting mixture to release said Lewis acid in sufficient amounts to effect substantial polymerization of the polymerizable material.

3,951,770

HYDROCARBON CONVERSION

David R. McCoy, Wappingers Falls, and Dennis R. Taylor, Poughkeepsie, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed July 5, 1974, Ser. No. 485,858
Int. Cl.² B01J *1/10*; **C07C** *17/10*
U.S. Cl. 204—163 R **19 Claims**

1. The method which comprises

adsorbing a normal paraffin hydrocarbon onto the surface of a solid particulate adsorbent;

chlorinating said normal paraffin hydrocarbon on said solid particulate adsorbent in the presence of a free-radical initator thereby forming a product containing a 1-chloro normal alkane on said solid particulate adsorbent; and

recovering said product containing said 1-chloro normal alkane.

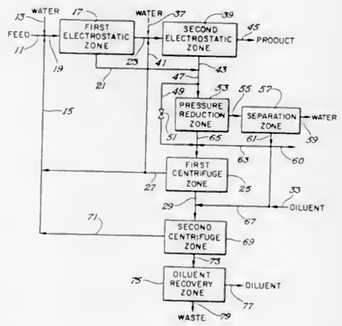
5. The method of claim **1** wherein said reaction is carried out in the presence of electromagnetic radiation.

3,951,771

SOLIDS REMOVAL FROM VISCOUS LIQUIDS

Edward D. Burger, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed July 21, 1975, Ser. No. 597,483
Int. Cl.² B01D *17/06*
U.S. Cl. 204—190 **16 Claims**



1. A method for treating a synthetic hydrocarbonaceous liquid feed which contains solid particles to remove at least a portion of said solid particles with minimum feed loss, comprising:

a. mixing water with said feed to provide a second liquid phase in said feed;

b. subjecting said mixture of feed and water to at least one electric field in at least one electrostatic zone whereby a first underflow containing water, solids and residual feed is separated from said mixture, thereby leaving a feed-rich product in the first overflow which is reduced in solids content as compared to the original feed;

c. centrifuging said first underflow in at least one centrifuging zone to produce a second overflow containing residual feed and water, and a second underflow containing primarily solids with a minimum amount of liquids; and

d. returning at least a part of said second overflow to said electrostatic zone for recovery of at least part of said residual feed.

3,951,772

SELECTIVE PLATING APPARATUS

Maurice Bick, South Orange; Jean A. Lochet, Metuchen; Donald J. Dubas, Maplewood, and Richard J. Di Murro, Harrison, all of N.J., assignors to Auric Corporation, Newark, N.J.

Filed May 31, 1974, Ser. No. 474,952
Int. Cl.² C25D *17/28*, *5/02*, *5/06*, *3/48*
U.S. Cl. 204—198 **14 Claims**

1. Apparatus for continuous electroplating of selected portions of discrete electronic components of the type comprising an electrically conductive body having a die-receiving face, a lip portion formed above said face of greater diameter than said face, and a plurality of electrical contacts formed as insulated islands at said die-receiving face, with flexible wire leads being connected to at least some of said contacts and extending oppositely from said die-receiving face and beyond the body of said component, but at least some of said leads being electrically insulated from said body and from one another; said selected portions to be electroplated being said die-receiving face and at least some of said electrical contacts; and said apparatus comprising:

an electroplating station;

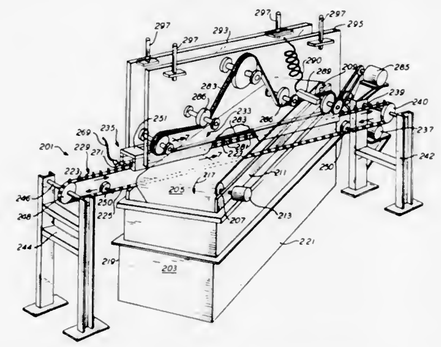
a moveable applicator means adapted for carrying electroplating solution on the surface thereof;

means for continuously moving at least a portion of said applicator means surface through said electroplating station;

means for applying electroplating solution to said applicator means at a point in the progression thereof, upstream of said electroplating station;

conveyor belt means for receiving said component bodies and supporting same at said lip portions so that said die-receiving faces of said electrical components project beneath the plane of said belt;

a stationary conveyor belt guide means mounted in fixed spaced relationship above said moving applicator means, and having a lengthwise channel therethrough through which said conveyor belt means passes, said channel



including means for restraining the movement of said components other than in the direction of conveyance of said conveyor belt, the said components being thereby conveyed across the surface of said applicator means, with the downwardly projecting die-receiving face and electrical contacts of said components in contact with said electroplating solution on said applicator means;

the direction of movement of said conveyed components through said guide being such in relationship to said movement of said applicator means that the trace of each said component on the surface of applicator means continuously overlies fresh electroplating solution; and

means for applying a D.C. electrical potential between both said die-receiving face and the leads connected to the electrical contacts to be plated, and the side of said applicator means opposite said component, to enable said plating.

3,951,773

FLUIDIZED BED ELECTRODE SYSTEM UTILIZING EMBEDDED INSULATOR AUXILIARY ELECTRODE

Pierre L. Claessens, Saint-Eustache, and John L. Cromwell, Pincourt, both of Canada, assignors to Noranda Mines Limited, Toronto, Canada

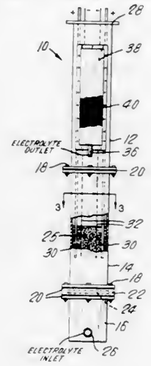
Filed May 1, 1974, Ser. No. 466,086
Claims priority, application Canada, Aug. 13, 1973, 178684
Int. Cl.² C25B *11/02*, *13/02*, *13/04*, *15/08*
U.S. Cl. 204—263 **4 Claims**

1. A static or fluidized bed electrode system comprising

a. a chamber;

b. a main electrode of particulate material contained in said chamber; and

c. an auxiliary electrode inserted into said particulate material and consisting of a conductive base material and a non conductive screen material partially embedded into said conductive base material so as to insulate the auxiliary electrode from the main electrode, said non conductive screen material having a mesh opening less than about half the size of the particles of the bed so as to



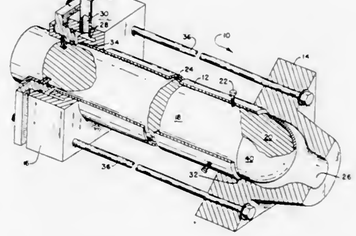
avoid any physical contact between the particles and the auxiliary electrode.

3,951,774

ELECTROLYTIC CELL CONSTRUCTION

Glenn C. Jones, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1974, Ser. No. 536,044
Int. Cl.² C25C *7/00*, *7/02*
U.S. Cl. 204—272 **4 Claims**



1. In an electrolytic cell wherein an aromatic compound is oxidized as it is caused to flow through the cell, said cell having a hollow, cylindrical cathode and a smaller cylindrical anode positioned inside of and substantially coaxial with said cathode defining an annular passage for flow of said aromatic compound between the electrodes, and a pair of openings in said cathode for feed and discharge of said aromatic compound, said anode having a domeshaped end exposed inside the cell whereby the distance from points on the dome-shaped end to the nearest part of the cathode is relatively large, the improvement which comprises an insulating shield attached to and substantially covering the dome-shaped end of said anode.

3,951,775

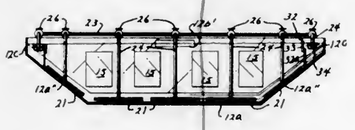
ELECTROCOATING TANK ARRANGEMENT

David M. Horton, and William S. Mitchell, both of Evansville, Ind., assignors to George Koch Sons, Inc., Evansville, Ind.

Continuation of Ser. No. 323,841, Jan. 15, 1973, abandoned.
This application Aug. 15, 1975, Ser. No. 605,212
Int. Cl.² C25D *1/12*, *1/18*
U.S. Cl. 204—299 EC **6 Claims**

1. An electrocoating tank arrangement comprising a tank for containing coating material and having side walls, end walls, and a bottom wall with upwardly and outwardly sloped wall portions blending into said side walls, one of said side walls having a central overflow opening formed therein; a

supply header having a supply portion longitudinally and centrally disposed within said tank at aid bottom wall, said supply portion having formed therein generally opposed orifices at the sides thereof; pump means for supplying coating material to said supply header to cause coating material to said supply header to cause coating material circulation upwardly along said sloped wall portions and side walls, and then



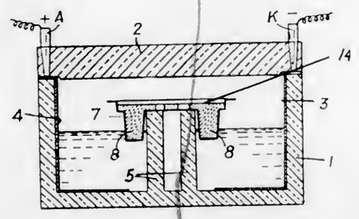
downwardly at the longitudinal upper center of said tank; a weir arrangement at each end of said tank having a trough with a horizontally extending strip separating said trough from coating material in said tank; and means for supplying coating material to each of said troughs to cause coating material to spill over each of said horizontal strips and flow therefrom toward the center of said tank and outwardly through said overflow opening.

3,951,776

LOW-VOLTAGE CROSS MIGRATION ELECTROPHORESIS APPARATUS

Johann Eibl; Ewald Molinari, and Gerald Eder, all of Vienna, Austria, assignors to Medizinische Produkte Immuno Aktiengesellschaft fur Chemish, Austria

Continuation-in-part of Ser. No. 296,864, Oct. 12, 1972, abandoned. This application Feb. 13, 1974, Ser. No. 442,158
Claims priority, application Austria, Oct. 15, 1971, 8943/71; July 21, 1972, 6296/72
Int. Cl.² B01K *5/00*; **G01N** *31/00*
U.S. Cl. 204—299 R **8 Claims**



1. A disposable low-voltage cross-migration electrophoresis apparatus for demonstrating antigens in body liquids, comprising,

a rectangular container made of plastics material and containing a buffer solution including a reducing agent, which container is adapted to be closed by a cover,

a separating dam dividing said container in longitudinal direction into an anode chamber and a cathode chamber,

electrodes made of non-precious metal, oxide layers forming thereon being dissolved by the reducing agent included in the buffer solution, which electrodes are positioned and fixed in said anode chamber and cathode chamber,

a tray arranged on said separating dam and connecting the anode chamber with the cathode chamber,

a gel layer positioned in said tray and accommodating a current migration path, said gel layer having a horizontal heat-exchange surface area of at least 50 cm²,

two rows of recesses for receiving the antigens to be demonstrated and antibodies, the recesses being arranged in pairs in the gel layer to lie opposite each other at a distance of not more than 2.5 mm and enframing a gel layer reaction zone having a thickness of between 0.5 and 1.5 mm and a cross-sectional area of between 100 and 150 mm², for

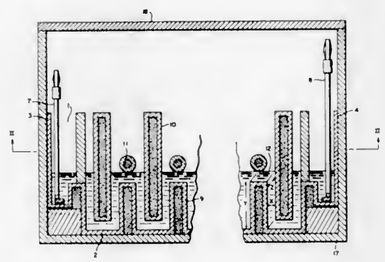
permitting a current passage of 100 milliampere, resulting in a current density 0.7 milliampere/mm² therethrough, whereby a reaction of the antigens and the antibodies occurs within a minimum of 15 and a maximum of 30 minutes without melting or drying of the gel layer.

3,951,777

ISOELECTRIC FOCUSING DEVICES

William Donner Denckla, Tenafly, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 487,081, July 10, 1974. This application Apr. 24, 1975, Ser. No. 571,160
Int. Cl.² B01D *13/02*; **C25D** *13/00*
U.S. Cl. 204—299 R **19 Claims**



1. In an improved device for isoelectric focusing of ampholyte mixtures said device comprising a substantially rectangular, box-shaped receptacle (**1**) for receiving a solution of an ampholyte mixture to be separated, said receptacle having a bottom (**2**), two opposite end walls (**3, 4**), two opposite front and rear walls (**5, 6**), two electrodes (**7, 8**) inserted in said receptacle proximate to said opposite end walls and adapted to be connected to a direct voltage source, said receptacle being provided with a plurality of impermeable walls (**9, 10**), said impermeable walls extending parallel to said end walls and being disposed so that first alternate walls (**9**) extend to the receptacle bottom and remaining alternate walls (**10**) extend proximate to the receptacle bottom so as to divide the receptacle into a plurality of continuously communicating U-tube chambers,

the improvements which comprise

a. providing a distance between the walls of the U-tube chamber (x) of about 1 mm for devices of volumes of up to 200 ml, 1.5 mm for volumes of up to 2,000 ml. and 3.0 mm for volumes of up to 20;

b. providing a ratio between the height of the U-tube arms (y) to the inter-wall distance of the U-tube chamber (x) of greater than 50 to 1;

c. providing a ratio between the width of each of the U-tube arms to the abosolute length of the total flow path between the electrodes of less than 1 to 15;

d. cooling means associated with said impermeable walls for causing highly efficient heat removal from the ampholyte solution proximate to said impermeable walls;

e. high voltage electrical insulation at all surfaces of the receptacle which contact the ampholyte solution during normal use; and,

f. water- and high voltage-resistant sealing means for providing leak-proof seals at all internal joints of said receptacle which contact the ampholyte solution during normal use.

3,951,778

METHOD OF SEPARATING BITUMIN FROM BITUMINOUS SANDS AND PREPARING ORGANIC ACIDS

John W. Willard, Sr., Rapid City, S. Dak., assignor to CAW Industries, Inc., Rapid City, S. Dak.

Continuation-in-part of Ser. No. 317,097, Dec. 20, 1972, Pat. No. 3,893,943, Continuation of Ser. No. 108,198, Jan. 20, 1971, abandoned. This application Mar. 26, 1974, Ser. No. 455,021
Int. Cl.² C10G *1/04*
U.S. Cl. 208—11 LE **28 Claims**

1. A method of separating bitumin from bituminous sand containing an intimate admixture of bitumin and sand comprising the steps of intimately contacting the bituminous sand with an aqueous medium containing a catalytically effective amount of a catalyst until the aqueous medium penetrates the bituminous sand and the bitumin will separate from the sand, thereafter agitating the bituminous sand in the aqueous medium to separate the bitumin from the sand, the temperature of the aqueous medium during the agitation step being sufficiently elevated whereby the bitumin separates from the sand, and recovering the separated bitumin from the aqueous medium, the said catalyst being prepared by a process comprising

admixing a water soluble alkali metal silicate with an aqueous medium containing a dissolved substance which is a source of calcium ion and a dissolved substance which is a source of magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide between about 1×10^{-4} and 1×10^{-1} mole per liter each of calcium ion and magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide a molar ratio of calcium ion to magnesium ion between about 2.0:1.0 and 1.0:2.0,

the alkali metal silicate having an alkali metal oxide to silicon dioxide ratio between about 0.9:1.0 and less than 2.0:1.0 and being admixed with the aqueous medium in an amount of about 0.05–2 moles per liter,

the alkali metal silicate reacting with said dissolved substances providing calcium ion and magnesium ion to thereby produce an aqueous suspension of finely divided particles of a reaction product,

admixing a micelle-forming surfactant with the aqueous medium in an amount to form catalyst micelles comprising said finely divided particles of the reaction product upon agitating the aqueous medium, and

agitating the aqueous medium containing the finely divided particles of the reaction product and surfactant to form said catalyst micelles.

3,951,779

HYDROSEPRATION PROCESS FOR AQUEOUS EXTRACTION OF BITUMEN FROM TAR SANDS

Joseph C. Anderson, Fort McMurray, Canada, assignor to Great Canadian Oil Sands Limited, Toronto, Canada

Continuation of Ser. No. 506,672, Sept. 16, 1974, abandoned. This application Oct. 21, 1974, Ser. No. 516,222
Int. Cl.² C10G *1/04*
U.S. Cl. 208—11 LE **6 Claims**

1. In a hot water process for recovering bitumen from tar sands comprising:

a. forming a mixture of tar sands and water;

b. settling said mixture in a separation zone to form an upper bitumen froth layer, a sand tailings layer, and a middlings layer containing silt, clay, and bitumen;

c. recovering said upper bitumen froth layer;

d. removing sand from a sand discharge outlet in the bottom of the zone at a controlled rate to maintain a substantially quiescent bed of sand in the bottom of the zone which seals the middlings layer from said discharge outlet; and

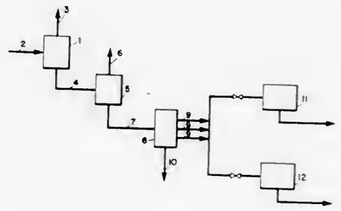
e. passing at least a part of the middlings from said separation zone to a scavenger zone and therein recovering an additional amount of bituminous froth, the improvement which comprises removing a stream of bitumen depleted middlings from the scavenger zone and injecting said stream into and below the surface of the sand bed in the separation zone to displace bitumen-rich middlings from the interstices thereof without disturbing the upper surface of the bed and thereby disturbing said seal.

3,951,780

AROMATIC OILS BY THERMAL POLYMERIZATION OF REFINERY STREAMS

Charles Woo, and Bruce M. Sankey, both of Sarnia, Canada, assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Oct. 25, 1974, Ser. No. 517,940
Int. Cl.² C10G *37/08*
U.S. Cl. 208—14 **4 Claims**



1. A method for producing a low V.I. aromatic oil of good color comprising the steps of:

a. heat soaking a steam cracker naphtha stream, useful in gasoline blending and having an initial boiling point within the range from about 80° to about 100° F. and a final boiling point within the range from about 300° to about 400° F., at a temperature within the range from about 200° to about 400° F. for a period of time within the range from about 30 to about 150 minutes at a pressure at least equal to the autogenous pressure of the steam cracked naphtha so as to produce a heat soaked polymer having an initial boiling point in the range from about 200° to about 400° F. and a final boiling point within the range from about 500° to about 650° F.;

b. separating the heat soaked polymer from said steam cracked naphtha and subjecting the same to a thermal polymerization at a temperature within the range from about 400° to about 700° F. for a period of time within the range from about 30 to about 150 minutes at a pressure at least equal to the autogenous pressure of the heat soaked polymer at the conditions of the thermal polymerization;

c. fractionating the thermally polymerized product so as to obtain at least one cut therefrom boiling within the range from about 650°–950° F.; and

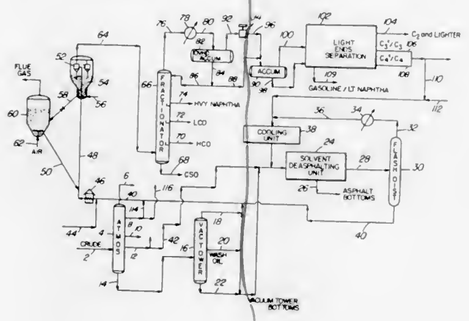
d. hydrotreating at least one cut boiling within the range from about 650° to about 950° F. at a temperature within the range from about 400° to about 700° F. in the presence of a hydrotreating catalyst and a hydrogen partial pressure within the range from about 25 to about 70 atmospheres.

3. An aromatic oil produced by the method of claim **1** exhibiting a viscosity within the range from about 50 to about 5000 SUS at 100° F. and between about 30 and 1000 SUS at 210° F., a viscosity index between about +40 and about −2000, a pour point within the range from about −50° to +70° F., said aromatic oil containing from about 3 to about 95 wt. % aromatics (by silica gel analysis) and exhibiting a color within the range from about 0 to about +27 (Saybolt) and a specific gravity within the range from about 4 to about 26 API at 60° F.

3,951,781
COMBINATION PROCESS FOR SOLVENT DEASPHALTING AND CATALYTIC UPGRADING OF HEAVY PETROLEUM STOCKS

Hartley Owen, Belle Mead, and Paul B. Venuto, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 20, 1974, Ser. No. 525,436
Int. Cl.² C10G *13/18, 34/07*
U.S. Cl. 208—86 **10 Claims**



1. A method for upgrading residual hydrocarbons comprising asphaltenes which comprises

solvent extracting a residual hydrocarbon with a mixture of C_3 to C_5 olefins under conditions to remove asphaltic material from a lower boiling hydrocarbon phase comprising said C_3 to C_5 olefins,

separating a portion of the solvent olefins from the lower boiling phase for recycle to said solvent extraction step,

combining the lower boiling hydrocarbon phase of reduced solvent olefins with additional low molecular weight carbon-hydrogen fragment contributing material and passing the mixture thus formed in contact with a fluid zeolite cracking catalyst in a riser conversion cracking zone,

separating the product of the cracking operation to recover a mixture comprising C_3 to C_5 olefins and passing a portion of the olefins thus recovered to said solvent extraction step.

3,951,782
REFORMING WITH A GROUP IIB-CONTAINING CATALYST

Waldeen C. Buss, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

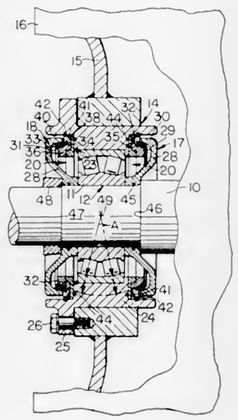
Continuation-in-part of Ser. No. 200,121, Nov. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 132,715, April 9, 1971, abandoned. This application Mar. 9, 1972, Ser. No. 233,236
Int. Cl.² C10G *35/08*; B01J *11/08*
U.S. Cl. 208—139 **11 Claims**

1. A process for the reforming of a naphtha feedstock which comprises contacting the feedstock at reforming conditions and in the presence of hydrogen with a catalyst comprising 0.01 to 3 weight percent of a platinum component, 0.01 to 5 weight percent of a Group IIB component, 0.01 to 3 weight percent of a catalyst component selected from the group consisting of a rhenium component, and a germanium component, and 0.1 to 3 weight percent of a halogen in association with a porous solid carrier.

3,951,783
FACE SEAL FOR SPHERICAL SURFACE

Thomas Eugene Cochran, Yorkville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 18, 1974, Ser. No. 524,717
Int. Cl.² F16C *33/78*
U.S. Cl. 308—187.1 **5 Claims**



1. An arrangement for resiliently supporting a bearing which includes an inner race supported by a shaft and an outer race communicating with said arrangement, while preventing loss of bearing lubricant through relatively large angular misalignment of said shaft relative to said arrangement, comprising:

a pair of circular channel defining members, one on each side of said bearing, said members being sealingly journaled to said shaft axially thereof with the channels therein defined facing one another;

a pair of convexly surfaced ramps supported on each side of said bearing by the outer race thereof axially disposed from said shaft, the convex surfaces of each ramp facing the nearer of said members;

a pair of resilient seal rings axially disposed from said shaft having a convex and concave side with the convex side thereof in contact with a respective convex surface of a respective ramp; and

a pair of elastomeric tori axially disposed from said shaft, each in contact with a respective member and the concave side of a respective seal ring to bias said convex surfaces of said ramps against said convex surfaces of said seal rings.

3,951,784
FINE POWDER CLASSIFICATION BY FERROFLUID DENSITY SEPARATION

Robert Kaiser, Winchester; Leon Mir, Brookline, both of Mass., and Richard A. Curtis, Seattle, Wash., assignors to Avco Corporation, Cincinnati, Ohio

Filed Jan. 29, 1975, Ser. No. 545,128
Int. Cl.² B03B *13/04*
U.S. Cl. 209—1 **6 Claims**

1. A method of constructing a density gradient column in a ferrofluid comprising the step of:

supplying a column of ferrofluid having a magnetization magnetic field intensity curve which includes a saturation region; and

passing a constant gradient magnetic field through the ferrofluid, the maximum level of said magnetic field being below said saturation region.

3,951,785
CLASSIFICATION BY FERROFLUID DENSITY SEPARATION

Robert Kaiser, Winchester; Leon Mir, Brookline, both of Mass., and Richard A. Curtis, Seattle, Wash., assignors to Avco Corporation, Cincinnati, Ohio

Filed Jan. 29, 1975, Ser. No. 545,240
Int. Cl.² B03B *5/00, 13/04*
U.S. Cl. 209—1 **5 Claims**

1. A method of separating substantially non-magnetic particles of different densities where alone or in combination, the product of the difference in particle density and particle diameter is at most 5 gr/cm² or the difference in particle density is at most 0.1 gr/cm³ or the particle diameter is at most 1 cm comprising:

immersing said particles in a ferrofluid with a magnetic dipole moment of M, M being computed from the ratio of particle attraction forces (F_{aa}) to particle separation forces (F_1) to be applied by the magnetized ferrofluid, and said ratio being made less than 10 where:

$$\frac{F_{aa}}{F_1} = \left(\frac{1}{8\pi}\right)\left(\frac{(4\pi M)^2}{(\rho 2-\rho 1)}\right)\left(\frac{D^3}{ga^4}\right)$$

M = magnetic dipole moment per unit volume of ferrofluid
$\rho 2$ = density of the more dense particles
$\rho 1$ = density of the less dense particles
D = dimeter of the particles
g = acceleration of gravity; cm/sec²
a = center to center spacing between particles

applying a magnetic field to said ferrofluid capable of overcoming the forces produced by gravity and interparticle magnetic attraction to levitate the least dense particles in said ferrofluid, whereby the particles are classified into relatively pure fractions; and

collecting the individual fractions.

3,951,786
OXIDIZING METHOD IN FROTH FLOTATION OF MINERALS

Vojislav Petrovich, 1925 W. Schiller St., Chicago, Ill. 60622

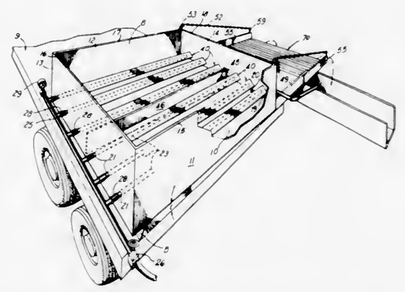
Filed Apr. 30, 1974, Ser. No. 465,408
Int. Cl.² B03D *1/02*
U.S. Cl. 209—166 **1 Claim**

1. An improved method of beneficiating ores and minerals selected from the group of oxide ores and minerals of iron, antimony, cerium, yttrium, thorium, titanium, vanadium, niobium, tantalum, chromium, wolfram, and uranium by a froth flotation process to produce a froth concentrate of desired metal values, which improvement comprises effecting froth flotation of the ore by treating the comminuted ore of the mineral slurry with organic nitrogen compounds selected from the group consisting of hydrazine, hydroxylamine, carbamide, acetamide, oxamide, guanidine, semicarbazide, carbohydrazide, ethylene diamine decomposing said compounds in the presence of hypochlorous acid or a hypochlorite in a slightly acid pulp of mineral slurry (which compounds act as oxidizing agent-vehicle by self destruction) to liberate elemental nitrogen which takes part in an electron transfer reaction of oxidizing the metal at the mineral surface of the mineral particles to be floated adding an effective amount of an olefine alcohol or olefine glycol collector, said alcohols or glycols having from 5–15 carbon atoms, said oxidized metal reacting with the collector at its double bond; and recovering a froth concentrate relatively rich in the desired metal value to leave the tailings relatively poor in the desired metal values.

3,951,787
METHOD AND APPARATUS FOR SEPARATING GOLD AND OTHER HEAVY MATERIALS FROM ORE

Arthur W. Duke, Smyrna, Ga., assignor to Great American Silver Company

Filed Feb. 25, 1974, Ser. No. 445,545
Int. Cl. B03b *3/00, 11/00*
U.S. Cl. 209—458 **19 Claims**



2. In an apparatus for the recovery of heavy material from ore:

a. a sluice box having an upright sides and a transverse bottom below said sides for defining an open ore receiving chamber open at its upper end and into which unslurried ore is charged;

b. a plurality of support means carried by said sluice box vertically below the open upper end and space above said bottom for supporting a portion of the ore charged into said chamber, said support means being spaced apart from each other to provide a plurality of spaces forming avenues of escape through which increments of the bottom portion of the ore charged into said chamber can fall; and

c. conduit means below said support means, said conduit means having spaced holes for directing water against the increments of said ore passing through said avenues for progressively eroding said increments and for progressively forming a slurry with the eroded increments;

d. said sluice box having a discharge opening below said support means and said conduit means for discharging the entire slurry as it is formed;

said support means being parallel members extending longitudinally across said chamber and said discharge opening being transversely of said sluice box and beneath all of said support means.

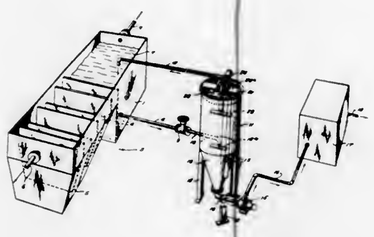
3,951,788
SLUDGE CONTROL AND DECANT SYSTEM

Thomas D. Ward, and Marshall W. Ray, both of Weatherford, Tex., assignors to Harsco Corporation, Harrisburg, Pa.

Continuation of Ser. No. 394,985, Sept. 7, 1973, abandoned. This application Feb. 10, 1975, Ser. No. 548,775
Int. Cl.² C02C *1/08*
U.S. Cl. 210—8 **3 Claims**

1. A sewage treatment system comprising: an aeration tank including means to aerate waste water; a clarifier tank; means to admit waste water to the aeration tank; a baffle between said aerator tank and said clarifier tank, said baffle having an upper edge over which liquid flows from said aeration tank into said clarifier tank; a decant tank; gravity fluid flow communication means between the aeration tank and the decant tank, said gravity fluid flow communication means having an intake below the elevation of the upper edge of said baffle to prevent flow of floating matter into the decant tank; a first pump; means connecting the first pump to remove clarified liquid from the upper portion of the decant tank and to deliver the clarified liquid to said aeration tank; a sludge digester

container; a sludge discharge line connected to the lower portion of the decant tank and connected to the sludge digester container; a second pump in the sludge discharge line to transfer sludge from the decant tank to the sludge digester container; first timer means; means connecting said first timer means to said first pump to actuate the first pump to remove



clarified liquid from the decant tank at selected intervals and for selected periods of time; second timer means; and means connecting said second timer means to said second pump to actuate the second pump to discharge sludge from said decant tank at selected intervals and for selected periods of time in order to maintain a predetermined biological balance in the aeration tank.

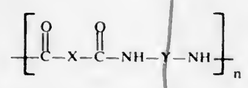
3,951,789

NOVEL HIGH DIFFUSIVITY MEMBRANES

Lester T. C. Lee, Parsippany; Win-Sow Ho, Wharton, and Kang-Jen Liu, Somerville, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

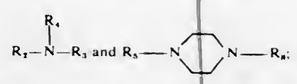
Filed Oct. 11, 1973, Ser. No. 405,389
Int. Cl.² B01D *31/00, 13/00*
U.S. Cl. 210—22 C **16 Claims**

1. A membrane characterized by a water content of 5–75% and a diffusivity greater than about 10^{-8} cm²/sec. comprising a polymer containing polyamideamine functional group of the formula:

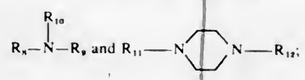


wherein:

X is selected from the group consisting of R_1,



Y is selected from the group consisting of R_7,



wherein:

R_1, R_2, R_3, R_5, R_6, R_7, R_8, R_9, R_{11} and R_{12} are organic diradicals independently selected from the group consisting of alkylene, cyclic alkylene, phenylene, phenyl dialkylene, bis-phenylene alkylene and substituted diradicals thereof wherein the substituents are selected from the group consisting of oxygen, sulfur and nitrogen; and

wherein:

R_4 and R_{10} are organic radicals selected from the group consisting of alkyl, cyclic alkyl and phenyl;

with the proviso that at least one of X and Y as defined above contains a tertiary amine group;

and wherein:

n is an integer designating the repeating monomeric units of the polymer.

3,951,790

THIURAM POLYSULFIDE HEAVY METAL REMOVER

Tamotsu Fujisawa, Yamato; Mitsuko Ambe, Tokyo; Norio Kobayashi; Akiko Osawa, both of Sagamihara, and Kiwako Shimizu, Hachioji, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed July 12, 1974, Ser. No. 488,039
Claims priority, application Japan, July 20, 1973, 48-80569
Int. Cl.² C02B *1/42*
U.S. Cl. 210—38 B **10 Claims**

1. A process for removing a heavy metal or a mixture thereof from an environment containing the same which comprises contacting said environment with a polymeric compound of the formula

(1)

wherein R_1 represents an alkylene radical or an arylene radical, R_2 and R_3 represent, independently, hydrogen, an alkyl radical, an aryl radical, and in some cases, R_2 and R_3 are combined to form a divalent organic radical and giving ring structure to the compound, x is 2, 3 or 4, and n is an integer identifying the number of units in said polymeric compound.

3,951,791

METHOD FOR TREATING FOULED WATER

Ching Yun Huang, Minoo; Naomitsu Takashina, Fujisawa, and Toshiaki Nishimura, Hiratsuka, all of Japan, assignors to Mitsubishi Gas Chemical Co., Ltd., Tokyo, Japan

Filed Sept. 7, 1973, Ser. No. 395,151
Claims priority, application Japan, Sept. 16, 1972, 47-92239
Int. Cl.² C02B *1/20*
U.S. Cl. 210—47 **8 Claims**

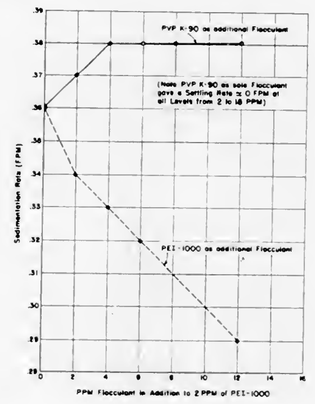
1. A method for flocculating solid particles suspended in fouled water containing anionic latexes or anionic resin emulsions which comprises adding to said fouled water 0.1 to 15 parts by weight, based on 100 parts of the suspended solid in the fouled water, of a cationic aqueous dispersion of a copolymer having a quaternary ammonium salt form or an inorganic or organic acid salt form, which is obtained by the emulsion polymerization of (a) 0.1 to 8.0% by weight, based on the weight of the total monomers, of at least one α, β-ethylenically unsaturated monomer containing basic nitrogen atoms or at least one α, β-ethylenically unsaturated monomer containing halogen atoms capable of forming an ammonium salt with a basic nitrogen atom, (b) a α, β-ethylenically unsaturated monomer and (c) a conjugated diene monomer, in the presence of a polymerization initiator and 0.5 to 7.0 parts by weight per 100 parts by weight of the total monomers of a cationic surfactant and followed by reacting with a quaternary ammonium salt forming agent or, in the case of using monomers containing a basic nitrogen atom, by reacting with an inorganic or organic acid.

3,951,792

FLOCCULATION OF SUSPENDED SOLIDS

Julian L. Azorlosa, Bakersfield, Calif., and Earl P. Williams, Pen Argyl, Pa., assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 239,531, March 30, 1972, Pat. No. 3,835,084, which is a continuation-in-part of Ser. No. 834,797, June 19, 1969, abandoned. This application Dec. 18, 1973, Ser. No. 425,925
Int. Cl.² C02B *1/20*
U.S. Cl. 210—52 **5 Claims**



1. A process for flocculating inorganic solids dispersed in an aqueous phase comprising adding a flocculating amount of a flocculating composition to said aqueous phase, said flocculating composition consisting essentially of a blend of from about 2 to about 3 parts by weight of polyvinyl pyrrolidone having a K-value of from about 80 to about 140, said K-value being determined on the basis of the viscosity of a 1% solution of said polymer in water at 25 ± 0.05°C, and about 1 part by weight of polyethylene imine having a viscosity, measured in a 5% aqueous solution at 25°C, of from about 20 to about 5,000 centipoises.

3,951,793

METHOD FOR CONTROLLING SCALE

Jack F. Tate, and Jim Maddox, Jr., both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,587
Int. Cl.² C02B *5/06*
U.S. Cl. 210—58 **7 Claims**

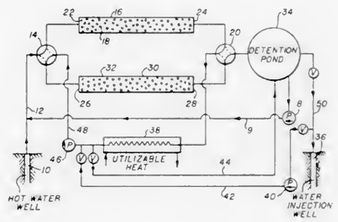
1. A method of controlling the build-up of scale deposits selected from the group consisting of calcium sulfate scale and barium sulfate scale in an aqueous system which comprises incorporating in said system a scale treating composition consisting essentially of about one part by weight of a sulfated/sulfonated polyethoxy alkyl phenol containing from about 8 to about 14 carbon atoms in the alkyl group and from about 4 to about 10 ethoxy groups, in admixture with from about 1 to 3 parts by weight of a C_8-C_{14} alkyl benzene sulfonate, said sulfated/sulfonated polyethoxy alkyl phenol being the reaction product of a polyethoxy alkyl phenol containing from about 8 to about 14 carbon atoms in the alkyl group and from about 4 to about 10 ethoxy groups therein with a member selected from the group consisting of chlorosulfonic acid and sulfur trioxide for a time period of from about 5 to about 90 minutes at a temperature in the range of from about 50° to about 60° C., using a reactant mole ratio of from about 1 mole of said polyethoxy alkyl phenol per 0.8 to 1.35 moles of said chlorosulfonic acid of sulfur trioxide, the resulting reaction products consisting essentially of from about 70 to 90% sulfated and from about 10 to 30% sulfonated products, each of said components of said composition being selected from the group consisting of the acid form thereof, the corresponding alkali metal and ammonium salts thereof, and mixtures of said acid and said corresponding alkali metal and ammonium salts thereof, said composition being present in said aqueous system in an amount of from about 5 to about 30 ppm by weight.

3,951,794

GEOTHERMAL POWER METHOD

Judson S. Swearingen, 500 Bel-Air Road, Los Angeles, Calif. 90024

Continuation-in-part of Ser. No. 424,470, Dec. 13, 1973. This application Oct. 10, 1974, Ser. No. 513,777
Int. Cl.² C02B *5/06*; **F03G** *7/02*
U.S. Cl. 210—58 **28 Claims**



1. A method for extracting heat from hot unrefined water containing scale-forming impurities comprising the steps of: alternately co-currently flowing volumes of said unrefined water and volumes of clean liquid through a housing containing porous material whereby heat is alternately transferred from said unrefined water to said porous material and from said porous material to said clean liquid; adding to said unrefined water prior to its contact with said porous material an agent which increases the formation of non-scale forming species of said impurities whereby scaling and other such solid build-up of said impurities on said porous material is reduced; and extracting heat from said clean liquid subsequent to its flow through said housing; wherein a high temperature front moves along the length of said housing as each of said volumes of unrefined water is passed therethrough and wherein the subsequent volume of clean liquid is caused to begin to flow through said housing when said high temperature front is intermediate the ends of said housing.

3,951,795

PROCESS AND APPARATUS FOR TREATING FATTY WASTE WATER

Alex J. Doncer, Burbank, and Harold R. White, New Lenox, both of Ill., assignors to Alar Engineering Corporation, Chicago, Ill.

Filed Apr. 16, 1975, Ser. No. 568,559
Int. Cl.² B01D *37/00, 21/01*
U.S. Cl. 210—61 **14 Claims**

5. A process for cleanup of fat containing waste water comprising the steps of

A. charging generally at an irregular rate of fat containing waste water composition to a first treating zone,

said waste water composition being derived from cleanup of food preparation operations,

said waste water composition containing from about 100 to 4,000 parts per million of hexane soluble material and from about 100 to 10,000 parts per million of suspended solids which are below about 250 millimicrons in average diameter

said waste water composition having a pH in the range from about 5 through 14,

B. mixing with said waste water composition in said first treating zone a sufficient quantity of a dissolved inorganic

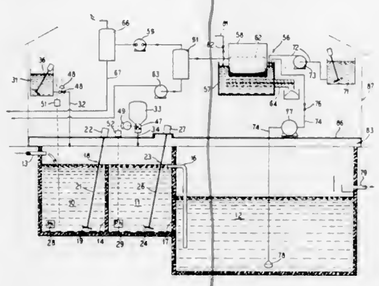
aqueous ferric salt solution to make the pH of the resulting mixture fall in the range from about 3 to 5,

C. overflowing said resulting mixture from said first treating zone into a second treating zone by gravity,

D. mixing with said resulting mixture in said second treating zone a sufficient quantity of calcium hydroxide to make the pH of the so-produced mixture fall in the range from about 7 to 8,

E. overflowing said so-produced mixture into a third treating zone by gravity,

F. allowing the level of said so-produced mixture in said third treating to rise and fall while simultaneously permitting settling to occur therein,



G. removing the so settled said mixture at a generally constant rate from said third treating zone and continuously passing same over the cylindrical outer surface portions of a horizontally rotating drum of a vacuum filter assembly, said surface portions being coated with a layer of substantially completely water-insoluble, inert particulate material having a particle size below about 250 millimicrons in average diameter, while simultaneously continuously drawing aqueous portions of such mixture through said surface portions and simultaneously continuously removing longitudinally, from said surface portions, the filter cake deposited on said surface portions.

3,951,796
OIL RECIRCULATING TOILETS

James M. Kemper, Sherman Oaks, Calif., assignor to Monogram Industries, Inc., Santa Monica, Calif.

Filed May 5, 1975, Ser. No. 574,354
Int. Cl.² C02B *1/36*
U.S. Cl. 210—62 **8 Claims**

1. A method for preventing the flushing oil contained in a recirclating toilet from becoming discolored with an offensive yellow color and having an offensive odor when contacted with animal waste products containing water, amides, amines, ammonia, oil soluble unsaturated fats, carotene and bilirubin, comprising removing said animal waste product from a toilet by flushing said animal waste products with a substantially saturated flushing oil which has a specific gravity different than that of water and bringing said animal waste product containing water, oil soluble unsaturated fats, carotene, bilirubin, amines, amides and ammonia into contact with a water-soluble chlorine compound having an active chlorine atom whereby said chlorine compound is dissolved in said water and react with said amine or amide to form an oil soluble N-chloro-amide or amine, and contacting said N-chloro-amide or amine with said flushing oil thereby dissolving said N-chloro-amide or amine in said flushing oil to contact said oil soluble unsaturated fats, carotene and bilirubin and oxidizing said fats, carotent and bilirubin thereby preventing said oils from becoming discolored.

3,951,797
PHOTOOXIDATIVE DESTRUCTION OF ORGANIC WASTES

Gilbert R. Seely, Fairborn, Ohio, assignor to Charles F. Kettering Foundation, Dayton, Ohio

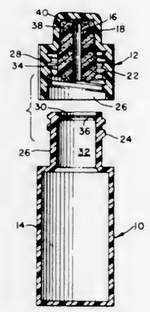
Filed Feb. 21, 1975, Ser. No. 551,532
Int. Cl.² C02B *1/34*
U.S. Cl. 210—63 R **9 Claims**

1. A method for photooxidative destruction of organic wastes found in aqueous effluents utilizing a dye sensitizer to promote the oxidation of said organic wastes by air or oxygen in the presence of visible light, at an at least weakly alkaline pH and under other process conditions operable to effect the photooxidation wherein the improvement comprises using as the promoter biodegradable, gelled metal alginate particles selected from the group consisting of barium alginate, calcium alginate, strontium alginate, and aluminum alginate beads which have been stained with a dye sensitizer selected from the group consisting of the acridine, thiazine, triphenylmethane, phenazine, phthalocyanine classes of cationic dyes, the dye to alginate normality ratio being in the range of 1:30 to 1:200.

3,951,798
CONTAINER FILTER COMBINATION

Ioakim Haldopoulos, College Park, Ga., assignor to Glasrock Products, Inc., Atlanta, Ga.

Filed Feb. 25, 1974, Ser. No. 445,472
Int. Cl.² B01D *27/00*
U.S. Cl. 210—452 **9 Claims**



1. A dispensing device comprising:

a filter member;

a cap member having seating means within said cap member for temporarily retaining said filter member within said cap;

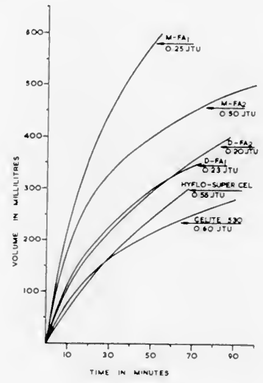
a container having a neck portion defining a mouth or opening, said neck portion being adapted to receive said cap member; and

means, responsive to placing said cap on said container, for transferring said filter member from said cap to said neck portion and retaining said filter within said neck portion upon removal of said cap.

3,951,799
FILTRATION PROCESS

Donald Eric Weiss, Blackburn, and Hendrik Adriaan Jacobus Battaerd, North Clayton, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization; Imperial Chemical Industries of Australia and New Zealand Limited, all of Campbell, Australia

Division of Ser. No. 138,679, April 29, 1971, Pat. No. 3,890,224. This application Nov. 20, 1974, Ser. No. 525,685
Claims priority, application Australia, May 4, 1970, 1083/70
Int. Cl.² B01D *35/06*
U.S. Cl. 210—75 **11 Claims**

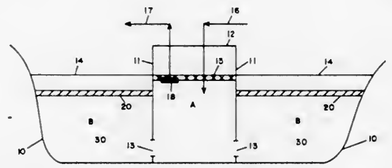


1. A process of filtering suspensions of particulate matter in a liquid medium which comprises utilizing, as a filter aid, a bed comprising magnetized ferromagnetic synthetic polymeric particles wherein the particles are in the size range from 0.5 to 40 microns overall diameter.

3,951,800
METHOD OF STORING SLUDGE RECOVERED FROM THE HOT WATER EXTRACTION OF BITUMEN FROM TAR SANDS

John E. Ashton, Fort McMurray, and H. James Davitt, Edmonton, both of Canada, assignors to Great Canadian Oil Sands Limited, Toronto, Canada

Filed Sept. 11, 1974, Ser. No. 504,922
Int. Cl.² B01D *21/01*
U.S. Cl. 210—83 **1 Claim**



1. A method for storing sludge containing mineral matter and bitumen colloidally dispersed therein, said storage being substantially free of environmental hazards, said sludge having been formed in an open retention pond used to store effluent discharge waste water streams derived from the hot water extraction of bitumen from tar sands comprising:

a. transferring said sludge to a receiving well within a storage zone containing a layer of substantially unpolluted water on the surface thereof, said water containing an effective quantity of a flocculating agent, said receiving well communicating with the storage zone below said layer;

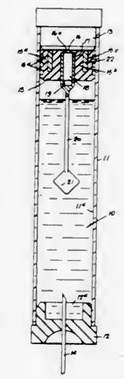
b. settling said sludge in the receiving well to permit bitumen to float to the surface thereof while said sludge settles into the storage zone below the unpolluted surface layer;

c. recovering bitumen and liquid hydrocarbons on the surface of said receiving well.

3,951,801
SERUM/PLASMA SEPARATOR-STRUT STOP TYPE

Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Feb. 27, 1974, Ser. No. 446,349
Int. Cl.² B01D *21/26*
U.S. Cl. 210—117 **5 Claims**



1. A separator assembly, capable of separating blood into its component parts of plasma or serum and cellular portion comprising:

a. a container having at least one open end which is adapted to receive blood for subsequent separation into a light phase and a heavy phase;

b. a closure sealing the open end of the container, the closure being formed of a self-sealing elastomeric material which is penetrable by a cannula through which blood to be separated is conducted into the container;

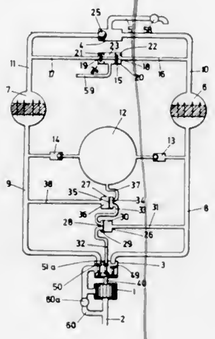
c. a piston assembly having an average specific gravity greater than the blood and slidably mounted in the container and having means on an outer surface in sealing engagement with an inner surface of the container;

d. pressure responsive valve means associated with said piston, said valve means being normally closed when there is a minimum of pressure differential on different portions of the valve means and which automatically opens in response to a substantial pressure differential so that when said container is subjected to moderate centrifugal force the blood separates into its light phase and heavy phase but the piston stays in the upper portion of the container, and subsequently when increased centrifugal force is used the valve means automatically opens with light phase fluid passing up through the valve means enabling the piston to move down through the light phase while retaining sealing engagement with the inner surfaces of the container; and

e. stop means comprising a strut projecting from the piston to contact the end of the container whereby the piston when moving through the light phase will stop a predetermined distance from the said end of the container followed by termination of the differential pressure which permits the valve means to automatically shift from an open position to a closed position to provide an impervi-

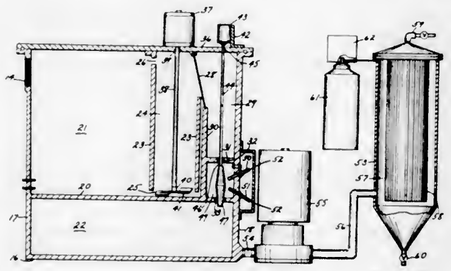
ous barrier between the separated light phase and heavy phase of the blood.

3,951,802
WATER SOFTENER
René Derouineau, Moulin de Pélissey, B.P. N° 12, F - 33170 Gradignan, France
Filed May 30, 1974, Ser. No. 474,700
Claims priority, application France, May 30, 1973, 73.20649
Int. Cl.² B01D *35/12, 29/38*
U.S. Cl. 210—134 **3 Claims**



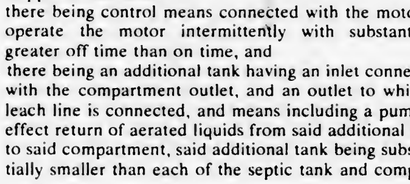
1. A water softener comprising:
first and second containers;
an ion-exchange resin element in each of said containers;
an inlet duct and an outlet duct for each of said ion-exchange containers;
a hard water supply duct;
a soft water outlet;
a salt container;
pipe circuitry connected to said salt container and alternately to each said ion-exchange container for alternately regenerating one said container when the other said container is connected to said hard water supply duct;
a control valve connected in the path between said hard water supply duct and said inlet ducts of said first and second ion-exchange containers;
said control valve being automatically actuated by hard water from said hard water supply duct to alternately supply hard water to each of said ion-exchange containers;
drive means for said control valve;
a positive-displacement hydraulic motor connected to said hard water supply duct for rotating said control valve drive means when water flows from said hard water supply duct in the direction of either one of said ion-exchange containers;
said control valve operating to provide a liquid connection between said hard water supply duct and either said inlet duct of said first ion-exchange container or said inlet duct of said second ion-exchange container in accordance with the momentary position of said drive means;
a discharge valve having two inlet ports, each one of which is connected to the outlet duct of one of said ion-exchange containers, an outlet port to which is connected said soft water outlet, and valve means constructed and arranged to make a liquid connection between said soft water outlet and the outlet duct of that ion-exchange container which is connected to said hard water supply duct through said control valve;
means to deliver a predetermined quantity of hard water to said salt containers;
a pair of brine outlet ducts each extending between said salt container and said inlet duct of each ion-exchange container, respectively;
a one-way valve being mounted in each of said brine outlet ducts to cut-off the connection of pressure being present in the ion-exchange container inlet duct when the ion-exchange container is connected to said hard water supply duct through said control valve;
a drain valve to drain said brine;
said control valve includes a first piston constructed and arranged to slidably connect and disconnect said hard water supply duct to and from said inlet duct of said first ion-exchange container, respectively;
said control valve includes a second piston constructed and arranged to slidably connect and disconnect said hard water supply duct to and from said inlet duct of said second ion-exchange container, respectively;
said control valve including a cam which is rotated by said control valve drive means for ultimately actuating said first and second pistons; and
wherein on operation of said control valve to change the connection between said hard water supply duct and said inlet duct of either of said ion-exchange containers, both ion-exchange container inlet ducts are simultaneously in liquid connection with said hard water supply duct.

3,951,803
MARINE SEWAGE DISPOSAL DEVICE
Norman H. Siegel, 2014 Wilson St., Hollywood, Fla. 33020
Filed Oct. 17, 1974, Ser. No. 507,745
Int. Cl.² B01D *21/00*
U.S. Cl. 210—149 **3 Claims**



1. A sewage disposal device adapted to receive the discharge of a toilet or head, and incorporating means for killing coliform bacteria present in such sewage comprising: storage tank means having an inlet from said toilet for receiving untreated sewage, septum means within said tank means defining a vertically oriented enclosure, said septum means having upper and lower openings therein communicating with the interior of said storage tank means for the recycling of non-particulated sewage; macerator means disposed within said vertically oriented enclosure having an impeller at a lower end thereof, said enclosure having filtering screen means disposed at an upper end thereof forming an outlet passing particulated sewage impelled by said macerator; pre-treatment storage means having an inlet bordering said screen receiving particulated sewage past thereby, a sewage treatment compartment disposed beneath said pre-storage means, first valving means forming an outlet at a lower end of said pre-treatment storage means and an inlet to said sewage treatment compartment, permitting the passage of particulate sewage under gravity from the former to the latter; heating means including a pair of electrodes disposed within said treatment compartment automatically operative upon the presence of sufficient particulate sewage forming an ionizable fluid in said treatment compartment; second valving means disposed at the bottom of treatment compartment forming an outlet for draining the same of treated waste, and thermostatic means for sensing the attainment of a pre-determined temperature in said treatment compartment determining the completion of a treatment heating cycle and controlling operation of said first and second valving means.

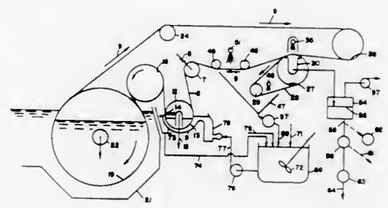
3,951,804
AERATED SEWERAGE DISPOSAL
Alvin Jack Smith, 22 Cordova Drive, Santa Barbara, Calif. 93110
Continuation of Ser. No. 335,029, Feb. 23, 1973, abandoned. This application Aug. 5, 1974, Ser. No. 495,053
Int. Cl.² C02C *1/08*
U.S. Cl. 210—170 **1 Claim**



1. In an aerated sewage disposal system, the combination comprising
a. a septic tank having a sewage inlet and a liquids discharge outlet,
b. an enclosed aeration compartment having an inlet located to directly receive liquids from the septic tank discharge outlet, and an aerated liquids outlet, the compartment having a bottom wall, side wall structure, and rounded corners extending between the bottom wall and side wall structure,
c. a rotary agitator located in the aeration compartment at a depth to agitate and flow liquids downwardly in said compartment, and a tubular shaft extending downwardly to the approximate level of the agitator to carry and to rotate said agitator and to conduct air downwardly into the downwardly flowing agitated liquid, the tubular shaft having an air outlet proximate the agitator depth in said compartment, a motor connected with the tubular shaft at its upper end to rotate same, said rounded corners being located downwardly and laterally of the agitator in sufficiently close relation thereto to turn the air containing flowing liquid upwardly along said side wall structure,
d. said aeration compartment having vent means to pass air between the interior and exterior of the compartment, and
e. there being liquids in said tank and compartment, and said tank and compartment having liquid outlets, the volume of sewage and liquid in the septic tank when filled to the level of its outlet exceeding the volume of sewage and liquid in the compartment when filled to the level of its outlet and more than 50% of the sewage solids being trapped in the tank,
f. there being control means connected with the motor to operate the motor intermittently with substantially greater off time than on time, and
g. there being an additional tank having an inlet connected with the compartment outlet, and an outlet to which a leach line is connected, and means including a pump to effect return of aerated liquids from said additional tank to said compartment, said additional tank being substantially smaller than each of the septic tank and compartment

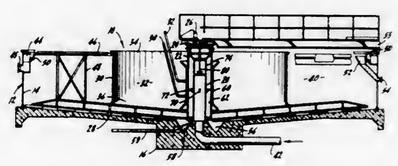
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3,951,805
ALGAE HARVESTER
Joseph C. Dodd, 117 Powell Drive, Werribee, Victoria 3030, Australia
Filed Oct. 24, 1974, Ser. No. 517,793
Int. Cl.² B01D *37/02*
U.S. Cl. 210—193 **13 Claims**



1. An algae harvester comprising a main belt screen, means for supporting and advancing said main belt screen along a predetermined path through successive stations, means at a first station for supplying long fibers in a water carrier to one side of said main belt screen and for removing much of said fiber water carrier through said main belt screen leaving said long fibers on said one side thereof, means at a second station for supplying said one side of said main belt screen and said long fibers thereon with algae in a water carrier, a fine belt screen at a third station having a mesh too small to pass said long fibers, means supporting and advancing said fine belt screen adjacent to, in face-to-face relation with and in synchronism with a portion of said main belt screen and in substantial contact with said algae thereon, and means at said third station for causing flow of much of said algae water carrier and said algae through said fine belt screen.

3,951,806
CLARIFIER APPARATUS
Daniel A. Young, Green Lane, Pa., assignor to Ecodyne Corporation, Lincolnshire, Ill.
Filed Oct. 18, 1974, Ser. No. 516,310
Int. Cl.² B01D *21/14;* **C02B** *1/20*
U.S. Cl. 210—197 **5 Claims**



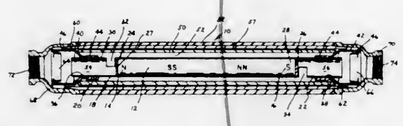
1. In a water treating apparatus including a hollow center support post, means forming a settling zone, and means forming a mixing and recirculation zone, the lower portion of said mixing and recirculation zone communicating with said settling zone, the lower portion of said center support post communicating with a raw water inlet means and the upper portion of said center support post communicating with said mixing and recirculation zone, means for withdrawing effluent from said settling zone; the improvement comprising: means forming an uptake zone defined around said center support post forming an eductor tube having an upper end in communication with an upper portion of said mixing and recirculation chamber and a lower end in communication with a lower portion of said mixing and recirculation chamber; first openings extending through an intermediate portion of said center support post for directing the flow of raw water upwardly into an intermediate portion of said uptake zone, second openings

extending through said center support post and positioned above said first openings for directing the remaining flow of raw water within said center support post into an upper portion of said uptake zone, and means for controlling the relative flow rates of raw water through said first and second openings such as to cause sludge, which has accumulated adjacent the lower end of said uptake zone, to be hydraulically lifted upward through said uptake zone and recirculated with the raw water.

3,951,807
WATER CONDITIONING APPARATUS

Charles H. Sanderson, 3717 Fritcha Ave., Fort Wayne, Ind. 46806

Continuation-in-part of Ser. No. 399,164, Sept. 20, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 518,243
Int. Cl.² B01D *35/06*
U.S. Cl. 210—222 **20 Claims**

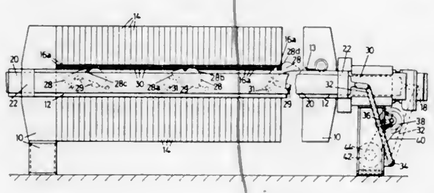


1. In a device for the magnetic treatment of liquids comprising an elongated hollow outer casing made of a magnetic material, an elongated inner casing made of a non-magnetic material positioned within the outer casing and spaced therefrom to form an annular chamber therebetween, external inlet and outlet means for providing fluid flow from an external supply through the annular chamber, the improvement comprising: a single elongated magnet being received in said inner casing and aligned longitudinally, said magnet being magnetized along its longitudinal axis and consisting of at least two adjacent magnetic domains positioned along said longitudinal axis and extending transversely throughout said magnet and having opposing magnetic moments such that there exists at least three longitudinally spaced apart sections of alternating North and South polarity.

3,951,808
FILTER PRESSES

John Harp, Stoke-on-Trent, England, assignor to Edwards & Jones Limited, Stoke-on-Trent, England

Filed June 5, 1974, Ser. No. 476,370
Claims priority, application United Kingdom, June 12, 1973, 27855/73
Int. Cl.² B01D *25/00*; **B30B** *9/02*
U.S. Cl. 210—230 **3 Claims**

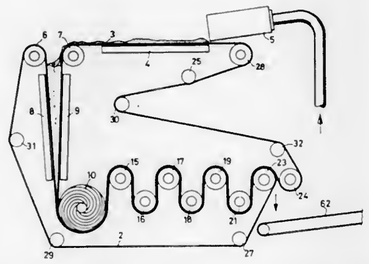


1. A filter press having trays furnished with projecting pins, a fixed bar and a movable bar extending lengthwise of the press, means mounting the movable bar for non-rotary reciprocating movements parallel to the longitudinal axis of the press, means for imparting constant length reciprocating movements to the movable bar during the tray-opening cycle of the filter press, a plurality of pawls pivotally mounted on the movable bar at spaced-apart points along the bar, each pawl successively engaging press tray pins to effect the propulsion of a single tray at each movement of the movable bar in the appropriate direction, each pawl having a nose portion adapted to push against the pins of previously moved trays, and a block pivotally supporting each tray pin, said block having a flat bottom slidably engaging the fixed bar as its respective tray moves longitudinally of the press.

3,951,809
FILTER PRESS

Ulrich Kollmar, Pforzheim-Wurm, Germany, assignor to Gebrueder Bellmer KG. Maschinenfabrik, Niefern, Germany

Filed Oct. 24, 1973, Ser. No. 409,037
Claims priority, application Germany, Oct. 28, 1972, 2252979; Nov. 18, 1972, 2256735; Aug. 16, 1973, 2341360
Int. Cl.² B01D *33/04*
U.S. Cl. 210—241 **12 Claims**

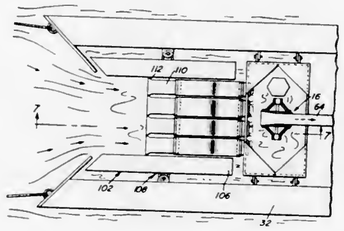


1. A web filter press for the removal of the liquid component from sewage treatment sludge, fiber-containing suspensions, and the like, comprising in combination:
a machine frame with an elevated head portion;
an upper endless filter web supported on the machine frame by a plurality of support and guide rollers;
a lower endless filter web likewise supported on the machine frame by a plurality of support and guide rollers;
a converging filtering space defined by a common descending run of the up filter webs starting in the head portion of the machine, where the filter webs are guided over two horizontally spaced head guide rollers, the descending filter webs being backed p by supports inclined from the upright so as to converge at an acute angle and to progressively compress any sludge contained between the webs;
a sludge feeding device mounted in the head portion of the frame, including means for delivering the sludge to the upper end of the filtering space between the head guide rollers;
a web deflecting spiral-lobe dandy roll so positioned near the lower end of the converging filtering space that the two webs are jointly guided around a major circumference portion of the dandy roll and into an upwardly directed run from which some of the liquid will flow into the spiral lobes of the dandy roll, which lobes, by virtue of their spiral shape, lift the water away from the filter web;
a horizontal roller train adjacent the deflecting drum, including at least two pairs of rollers between which the two webs and the sludge solids carried between them are jointly subjected to at least one S-shaped run; each roller pair having a roller supporting the lower web and a roller bearing down on the upper web; the roller train including means for adjusting the roller pressure between the roller pairs; and an entry guide roller of the roller train being so arranged in relation to the dandy roll that the web portions running between them leave the dandy roll in a substantially vertical direction;
means for driving the filter webs at a common speed; and
means for centering the filter webs along their endless runs.

3,951,810
OIL SKIMMER MODULE WITH FREE FLOATING WEIR TROUGH

Angelo J. Crisafulli, Box 1051, Glendive, Mont. 59330

Division of Ser. No. 330,079, Feb. 6, 1973, Pat. No. 3,822,789, which is a continuation-in-part of Ser. No. 142,282, May 11, 1971, Pat. No. 3,756,414. This application June 27, 1974, Ser. No. 483,905
The portion of the term of this patent subsequent to July 9, 1991, has been disclaimed.
Int. Cl.² E02B *15/04*
U.S. Cl. 210—242 S **7 Claims**



7. A skimmer adapted to be supported in a body of water having floating pollutants therein for removing the pollutants and an upper layer of water therewith, said skimmer comprising a sump box oriented with at least a portion thereof below the surface of the water, said sump box including an inlet opening at least partially disposed below the surface of the water defining a gravity inlet for water and pollutants, pump means communicated with the portion of the sump box below the surface of the water for removing water and pollutants collected therein and discharging them into a desired location for separation, a weir forming device disposed forwardly of the sump box, said weir forming device including float means and a longitudinal elongated weir supported thereby whereby the float means supports the weir in predetermined elevational relation to the surface of the body of water for removing a layer of water and pollutants of a predetermined thickness, means communicating with the weir with the inlet of the sump box to provide gravity flow from the weir into the sump box and enable vertical elevational movement of the weir independent of the sump box and maintaining the same angular relationship to the sump box, said weir forming device including a plurality of rigid tubular members having substantially continuous forward bottom edges defining a weir, said means communicating the weir with the sump box including a plurality of independent tubular conduits of flexible construction interconnecting the tubular members and the sump box, said sump box including a plurality of tubular nipples defining the inlet opening thereto with the tubular nipples extending a short distance forwardly of the sump box, the length of the flexible tubular conduits being greater than the horizontal distance between the tubular members defining the weir and the sump box to enable relative vertical movement between the sump box and weir forming device, said float means including a pair of parallel longitudinally extending floats rigidly connected with the rigid tubular members and extending forwardly and rearwardly thereof, the rearward ends of the floats being spaced forwardly of the sump box and independent thereof, means at the outer central portion of each float for guiding vertical movement thereof and precluding fore-and-aft angular movement of the floats and rigid tubular members.

3,951,811
MODULAR CONTAINER

Angelo J. Casolo, Columbia, and Henry Handler, Brookeville, both of Md., assignors to Almag Pollution Control Corporation, Baltimore, Md.

Filed June 27, 1974, Ser. No. 483,804
Int. Cl.² B01D *27/02*, *35/02*
U.S. Cl. 210—281 **15 Claims**



1. A modular container for capturing ion-exchange particulare material through which liquid passes, comprising:
a. housing means having a through opening for passage of said liquid;
b. flow distribution means secured to an inner surface of said housing means for substantially equalizing flow of said liquid through said particulate material within said container independent of said particulate material positional locations, said flow distribution means being a pair of disc members each of which has a plurality of openings constructed and arranged randomly without any predetermined pattern taken with respect to the surface contour of said discs and passing therethrough for equalizing said flow of said liquid in a plane normal to a path of said flow of said liquid through said housing means, said disc members being mounted internal said housing means and on opposing ends thereof; and
c. containment means for constraining said particulate material within a chamber of said housing, said containment means being porous to provide passage of liquid therethrough, said containment means being a fibrous padding member mounted in secured fashion to said flow distribution means on one surface thereof.

3,951,812
WATER EXTRACTOR

Charles Jui-Cheng Hsu, Box 460, Grand Central Station, New York, N.Y. 10017

Continuation-in-part of Ser. No. 379,735, July 16, 1973, abandoned. This application Dec. 30, 1974, Ser. No. 537,343
Int. Cl.² B01D *27/02*
U.S. Cl. 210—282 **2 Claims**

1. In a water extractor, the combination of a sack comprised of porous material, said sack containing weights and a quantity of pulverized Sterculia Lychnophora Hance having the characteristic of absorbing water but not absorbing oil, a grommet secured at one end of said sack, and a tethering line secured to said grommet; said sack being of elongated, flat, rectangular shape, and including a row of closed, separate pockets, each one of which contains a single weight and a quantity of said Sterculia Lychnophora Hance, said weights being secured along a single string that extends diagonally

between diagonally opposite corners of said sack, the ends of said string being secured within said corners, said sack being readily longitudinally flexible and bendable at areas between said pockets, so that when folded up for packaging, said weights are positioned adjacent each other so to maintain said folded sack relatively flat, and a pair of tethering lines being



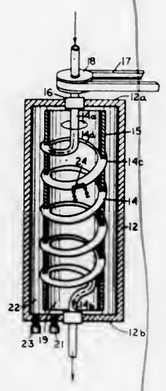
secured at their one ends to said extractor and opposite ends being secured to a graspable member, one of said line ends secured to said extractor being secured to an upper panel of a pocket thereof, while the other said line has said end extending through said pocket and being secured to a lower panel thereof.

3,951,813

FLUID SEPARATOR OR MIXER

James R. Palma, 1502 Curry Road, Schenectedy, N.Y. 12306

Filed July 2, 1973, Ser. No. 375,623
Int. Cl.² B01D *33/00*
U.S. Cl. 210—374 **15 Claims**



1. In a separator-mixer for fluent substances having an outer housing, and a spiral conduit rotable inside said outer housing, said conduit having transverse abutments that project into the interior of the conduit at spaced locations along its length and have inner ends,

the improvement wherein said abutments have openings therein at said inner ends which provide fluid communication between the interior of said conduit and the outside.

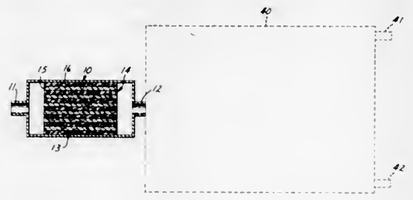
3,951,814

COALESCING UNIT FOR GRAVITY SEPARATOR

Dennis L. Krueger, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 407,965, Nov. 12, 1974, Pat. No. 3,847,821. This application Nov. 7, 1974, Ser. No. 521,787
The portion of the term of this patent subsequent to Nov. 12, 1991, has been disclaimed.
Int. Cl.² B01D *25/16*
U.S. Cl. 210—488 **13 Claims**

1. In a gravity separator for treating a liquid to remove a dispersed liquid phase from a continuous liquid phase, a coalescing unit comprising 1) a housing having an inlet, an outlet, and a separation chamber between the inlet and outlet through which liquid being treated passes; and 2) a separator element that tightly occupies the inside of the separation chamber and comprises a plurality of discrete sections of coalescing and sorbing media interspersed in intimate contact with one another; the coalescing media having less resistance to liquid flow than the sorbing media, and extending longitudinally through the separator element so as to establish substantially continuous thin minimal-pressure-drop channels for liquid being treated, and directing dispersed liquid phase to



the interface of the coalescing and sorbing media; and the sorbing media being wetted by the dispersed liquid phase in preference to being wetted by the continuous liquid phase, whereby the dispersed liquid phase is sorbed into the sorbing media and ultimately exits from the outlet end of the separator element as an effluent capable of separating from the continuous liquid phase by gravity.

3,951,815

COMPOSITE SEMIPERMEABLE MEMBRANES MADE FROM POLYETHYLENIMINE

Wolfgang J. Wrasidlo, La Mesa, Calif., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 5, 1974, Ser. No. 503,400
Int. Cl.² B01D *39/00, 31/00*
U.S. Cl. 210—500 M **14 Claims**

1. A composite semipermeable membrane which comprises a microporous substrate and an ultrathin film formed of a crosslinked, grafted polyethylenimine having semipermeable properties disposed on one surface of said microporous substrate, said ultrathin film being formed of polyethylenimine that has been cross-linked with a di- or tri-functional compound selected from the group consisting of acyl halides, chloroformates, isocyanates and sulfonyl chlorides, said crosslinked polyethylenimine also having grafted thereonto, at what would otherwise be secondary amido sites, a graft reactant selected from the group consisting of acrylonitrile, epichlorohydrin and phthalic anhydride.

3,951,816

CLARIFICATION TANK

Alberto H. Bascope, and Eugene H. Grizzard, both of Huntington Beach, Calif., assignors to Burmah Oil and Gas Company, Houston, Tex.

Filed June 28, 1971, Ser. No. 157,343
Int. Cl.² B01D *21/24*
U.S. Cl. 210—519 **1 Claim**

1. An apparatus for clarifying a liquid mixture, comprising:

a. a tank having means for removing one component of said mixture at the liquid level in said tank;

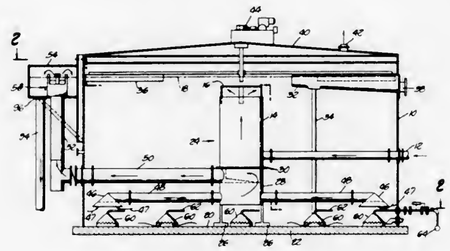
b. a central tube vertically disposed in said tank and having upper and lower plenum chambers therein;

c. means for feeding said liquid mixture to said upper plenum chamber, said upper chamber having an opening therein for discharging said mixture into said tank to effect a separation of the liquid components of said mixture;

d. a plurality of pick-up tubes of equal length and diameter each extending radially from said lower plenum chamber, each tube having a downwardly facing opening near the outer end thereof through which a second liquid component is withdrawn from the lower section of said tank

through each of said tubes at equal flow rates into said lower plenum chamber;

e. a riser positioned exteriorly of said tank in fluid communication with said lower plenum chamber, said riser being of a size relative to said tank and said plenum chamber as



to educt liquid from said tank through said lower plenum chamber; and

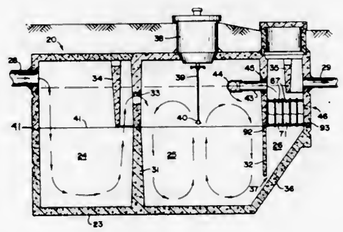
f. an adjustable weir device at the upper end of said riser for controlling the rate of discharge of said second liquid component from said tank, and the liquid level in said tank.

3,951,817

SEWAGE TREATMENT TANK AND TUBE SETTLER

John R. Snyder, Eastlake, Ohio, assignor to Jet Aeration Company, Cleveland, Ohio

Filed June 26, 1974, Ser. No. 483,457
Int. Cl.² B01D *21/00*
U.S. Cl. 210—521 **5 Claims**



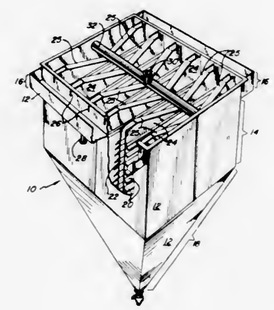
1. A tube settler including in combination a plurality of spaced and generally parallel plates, each said plate having first and second faces, opposed side edge portions and opposed end edge portions, each said plate having a plurality of spaced and generally parallel deflector members integrally connected to and extending outwardly from said first face thereof and terminating adjacent and spaced from said second face of an adjacent plate, each said deflector member having wall means which define an elongated chamber having side walls which taper toward each other as they extend away from the plate to which they are connected, said elongated chamber, also, having opposed end walls, said deflector members extending outwardly generally normal to said plates and extending in a direction which is at an acute angle to the side edge portions of said plates, and means for holding said plates in their spaced and generally parallel relationship.

3,951,818

CHEVRON CLARIFIER

Milovan Bosnjak, 6322 S. Poplar Court, Englewood, Colo. 80110

Filed Dec. 9, 1974, Ser. No. 530,821
Int. Cl.² B01D *21/00*
U.S. Cl. 210—522 **12 Claims**



1. A clarifier for separating a substance of heavier density from a liquid having a lesser density comprising:

a vessel having a separation portion and an upper weir portion;

a plurality of pairs of separation elements positioned in the separation portion in vertically stacked opposed parallel relation to define a common up flow channel therebetween and a down flow path exteriorly thereof, each having a substantially uniform cross section in the direction of liquid flow, each separation element having a vertical downward extending wing and a downward and outward jutting wing, the vertically downward wing and the downward and outward wing being joined at a predetermined angle α at an apex, and each separation element further having a predetermined number of fluid flow apertures of predetermined cross sectional areas formed in the vertically downward wing adjacent the apex; and,

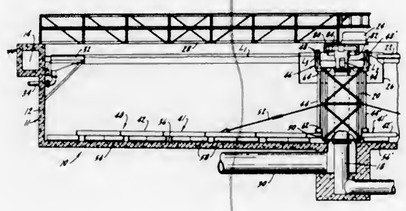
retaining means retaining the separation elements in at least one pair of vertical columns within the separation portion of the vessel with the downward extending wings of each separation element being in near vertical alignment with the downward extending wing of each vertically adjacent separation element of the column, said means further retaining said elements with the adjacent downward extending wings of the separation elements in one column facing in opposed substantial parallel relation to the similar adjacent downward extending wings of the separation elements of the other column of the pair to define a vertical up flow collecting channel extending through the separation portion and communicating with the upper weir portion of the vessel;

whereby the heavier density substance is caused by gravity to settle along the downward and outward jutting wings of the separation elements and the liquid is caused by a decrease in specific gravity due to settling of the heavier density substance to flow upward and inward through the fluid flow apertures to the up flow collecting channel to provide clarified liquid of lesser density at the weir portion of the vessel.

3,951,819
SLUDGE REMOVAL SYSTEM

Robert L. Shaffer, Olathe, and Donald G. Mason, Overland Park, both of Kans., assignors to Ecodyne Corporation, Lincolnshire, Ill.

Filed Sept. 11, 1974, Ser. No. 505,192
Int. Cl.² B01D *12/00*
U.S. Cl. 210—527 **8 Claims**



1. In a circular clarifier tank having an inlet for receipt of liquid influent with entrained solids, an upper overflow outlet for removal of clarified liquid, and a bottom surface on which settled solids deposit; an improved sludge removal assembly comprising:

a. a suction arm having a plurality of selfsupporting structural sludge conduits of different lengths, extending radially outward from and mounted for rotation about a substantially vertical axis extending through the center of the tank, said sludge conduits being secured to one another in a common horizontal plane above the bottom surface of said tank;

b. said sludge conduits having inlet suction ports along their bottoms surfaces adjacent the outer ends thereof for receiving sludge from said bottom surface of said tank;

c. a plurality of substantially vertical riser tubes secured at their lower ends to the inner ends of the corresponding sludge conduits adjacent said vertical axis of said tank;

d. a sightwell assembly positioned above the upper ends of said riser tubes having a lower portion below the static liquid level in said tank and an upper portion above the static liquid level in said tank; and

e. flow control valve assembly means associated with the upper ends of each of said riser tubes for controlling the respective flow rates from said riser tubes into said sightwell assembly;

f. said flow control valve assembly means including adjustable orifice means having a lower portion below the static liquid level in said tank and an upper portion above the static liquid level in said tank.

3,951,820
MIXTURE OF CINNAMYLPHENOLS AND NORMALLY SPOILABLE SUBSTANCE

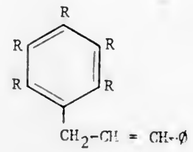
Leonard Jurd, Berkeley; A. Douglas King, Jr., Martinez, and William L. Stanley, Richmond, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 74,485, Sept. 22, 1970, Pat. No. 3,745,222. This application Feb. 21, 1973, Ser. No. 334,342
Int. Cl.² C09K *15/08*
U.S. Cl. 252—1 **7 Claims**

1. A composition of matter which is a mixture of:

a. a substance in liquid or particulate form, which substance is normally subject to spoilage by the growth of microorganisms selected from the group consisting of bacteria, yeasts, and molds, and

b. an effective microbial growth-inhibiting amount of a compound of the structure —



wherein at least one but not more than three of the R's are hydroxy radicals, and the remainder of the R's are each independently selected from the group consisting of lower alkyl and hydrogen.

3,951,821
DISINTEGRATING AGENT FOR TABLETS

William G. Davidson, Carmel, Ind., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 271,829, July 14, 1972, abandoned. This application Sept. 20, 1974, Ser. No. 508,025
Int. Cl.² C09K *3/00*
U.S. Cl. 252—1 **5 Claims**

1. In a compressed tablet comprising an active ingredient and an effective amount of a disintegrating agent to facilitate disintegration of the tablet in contact with a liquid, the improvement wherein the disintegrating agent comprises a tubule, said tubule having an internal cross-sectional area corresponding to an inside diameter of from about 5 microns to about 2,000 microns, and a length corresponding to an axial length of from about 0.5 micron to about 3 millimeters, said tubule being wettable by the liquid.

3,951,822
FIRE RETARDANT COMPOSITION FOR URETHANE POLYMERS

Jasper H. Brown, East Alton; Albert W. Morgan, Collinsville, both of Ill., and John A. Cooper, Manchester, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 18, 1974, Ser. No. 524,582
Int. Cl.² C09K *3/28*
U.S. Cl. 252—8.1 **12 Claims**

1. A flame retardant composition comprising a salt of a carboxylic acid and a metal selected from zinc, antimony, tin and copper and a beta-haloethyl phosphate.

3,951,823
FOAM WELL CLEANOUT USING OLIGOMERIC SULFONATES

Alan E. Straus, El Cerrito; William A. Sweeney, Larkspur; Ralph House, El Sobrante, and Samuel H. Sharman, Kensington, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 276,266, July 28, 1972, abandoned, which is a division of Ser. No. 858,097, Sept. 15, 1969, Pat. No. 3,721,707. This application Sept. 25, 1974, Ser. No. 509,176
Int. Cl.² C09K *7/02;* **E21B** *43/22*
U.S. Cl. 252—8.5 C **6 Claims**

1. In a method of circulating a gas-in-liquid foam in a well the improvement which comprises generating said foam from a gas and a foamable aqueous solution containing as foaming agent the oligomer obtained by the process which comprises heating in the liquid phase a feed comprising at least one compound having a carbon atom content of at least 5 but less than 50 selected from the group of the formula

a) $RCH(CH_2)_xCHRSO_2$,

b. $RCH(OH)(CH_2)_xCHRSO_3H$, and

c. $RCH{=}CH(CH_2)_yCHRSO_3H$

wherein x is the number 0 and integers 1–3 and y is a whole number in the range 0–n wherein n is a number which is 4 less than the number of carbon atoms in the longest straight chain of the compound containing the $-SO_3H$ group as a substituent, and wherein the several R groups are the same or different and are hydrogen or alkyl hydrocarbon radicals; said heating being at a temperature above about 110°C and below the carbonization temperature of the feed, in the substantial absence of water, and for a period at least sufficient for a significant conversion of the feed to the corresponding oligomeric disulfonic acids, said oligomer being neutralized with ammonia, an alkali metal base, a calcium base, a magnesium base, or a mixture thereof and circulating said foam in said well.

3,951,824
DRY DRILLING FLUID COMPOSITION

Orwin G. Maxson, Ponca City, Okla.; George M. Myers, Houston, Tex., and Jaime A. Lescarboura, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Feb. 12, 1973, Ser. No. 331,429
Int. Cl.² E21B *43/16*
U.S. Cl. 252—8.5 B **2 Claims**

1. A method of drilling a well comprising circulating in the well, during drilling, a dry drilling composition consisting essentially of from 98–90 parts by weight water and from 2–10 parts by weight of hydrophobic silica particles.

3,951,825
TEXTILE TREATING COMPOSITION AND TEXTILE YARN TREATED THEREWITH

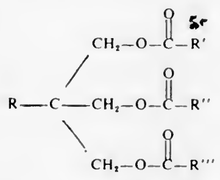
Bobby C. Carver, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 392,726, Aug. 29, 1973, Pat. No. 3,907,689. This application May 27, 1975, Ser. No. 581,171
Int. Cl.² D06M *13/16, 13/20, 13/30*
U.S. Cl. 252—8.7 **26 Claims**

1. A textile treating composition comprising

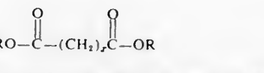
a. a mixture of:

1. a major amount of an alkylidyne trimethanol ester having the formula

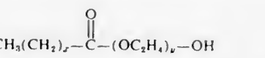


wherein R is H or an alkyl radical having 1 to 12 carbon atoms and R′, R″, and R‴ are selected from the class consisting of alkyl radicals and alkenyl radicals containing from 3 to 14 carbon atoms per radical; and

2. a minor effective amount of at least one member selected from the group consisting of a diester of a dicarboxylic acid having the structure

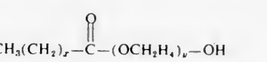


wherein x is 2 to 22 and R is an alkyl radical containing 2 to 22 carbon atoms and an ethoxylated ester of the formula



wherein x is 4 to 22 and y is 1 to 40, and

b. an ethoxylated fatty acid wax which has a melting point greater than 100°F. and having the formula

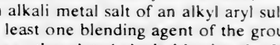


wherein x is 10 to 22 and y is 5 to 200,

c. an alkali metal salt of an alkyl aryl sulfonate; and

d. at least one blending agent of the group consisting of:

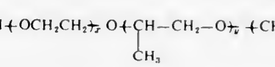
1. an ethoxylated alcohol having the formula



wherein x is from 8 to 22 and n is 1 to 20;

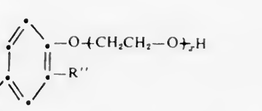
2. an ethoxylated castor oil ether containing from about 5 to about 200 moles of ethylene oxide per mole of castor oil;

3. an ethoxylated polyoxypropylene having the formula



wherein x is 1 to 15, y is 1 to 50 and z is 1 to 15;

4. an ethoxylated aromatic phenol ether having the formula



wherein R′ and R″ are aryl, alkyl aryl, and x is 1 to 25; and

5. an aliphatic saturated or unsaturated unsubstituted alcohol containing 10 to 30 carbon atoms.

3,951,826
ALL PURPOSE LIQUID DETERGENT

Per Hforth Rasmussen, Copenhagen, Denmark, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed July 13, 1973, Ser. No. 378,883
Claims priority, application France, July 25, 1972, 72.26689
Int. Cl.² C11D *1/34, 1/83, 3/075;* **D06M** *13/32*
U.S. Cl. 252—8.9 **8 Claims**

1. A single phase, all purpose heavy duty liquid detergent which consists essentially of from 75 to 95% water; 0.4 to 5% of nonionic detergent of the formula $RO(CH_2CH_2O)_nH$ wherein R is a higher alkyl of 8 to 16 carbon atoms and n is from 3 to 10; 3 to 17% of a builder salt or mixture of such salts selected from the group consisting of organic builder salts and alkali metal or ammonium inorganic builder salts; 0.1 to 4% of $R^1O(CH_2CH_2O)_mPO(OM)_2$; 0.1 to 3% of $[R^1O(CH_2CH_2O)_m]_2POOM$; 0.1 to 2% of $R^2OPO(OM)_2$; and 0.1 to 1% of $(R^2O)_2POOM$, wherein R^1 is a higher alkyl of 14 to 20 carbon atoms, R^2 is an alkyl of 6 to 10 carbon atoms, m is from 1 to 6 and M is an alkali metal or ammonium, said mixture of phosphoric acid mono- and diester salts contributing detergency to the product and stability against phase separation during storage.

3,951,827

COMPOSITION AND METHOD FOR REMOVING INSOLUBLE SCALE DEPOSITS FROM SURFACES

James E. Burroughs, Mount Prospect, and James A. Nowak, Glendale Heights, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 3, 1973, Ser. No. 421,017
Int. Cl.² C09B 5/02, 5/06; E21B 37/00
U.S. Cl. 252—8.55 B 4 Claims

1. A composition useful in the removal of water-insoluble scale deposits from surfaces comprising an aqueous solution containing an effective amount from about 5% to about 12% by weight of the total composition of a chelating compound selected from ammonium and alkali metal salts of polyaminocarboxylic acids and from about 1% to about 5% by weight of the total composition of a synergistic inorganic fluoride salt selected from the group consisting of ammonium and alkali metal fluorides, acid fluorides and mixtures thereof, having a pH greater than 8.

3,951,828

PROCESS OF INJECTING A MICELLAR DISPERSION INTO A SUBTERRANEAN RESERVOIR

Mark A. Plummer, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Nov. 29, 1973, Ser. No. 420,027
Int. Cl.² E21B 43/22
U.S. Cl. 252—8.55 B 10 Claims

1. In a process of injecting a micellar dispersion into a subterranean reservoir wherein the micellar dispersion is comprised of a petroleum sulfonate surfactant, hydrocarbon and water in an amount of from about 20 to about 95 percent by weight and the dispersion contains sufficient amounts of wax having an average molecular weight of about 240 to about 600 to adversely influence the injectivity of the micellar dispersion into the reservoir, the improvement comprising incorporating about 0.1 to about 10 weight percent of a paraffinic hydrocarbon having an average molecular weight of about 50 to about 200 within the micellar dispersion and then injecting the dispersion into the reservoir.

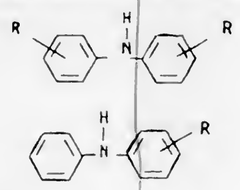
3,951,829

TWO-CYCLE AND ROTARY COMBUSTION ENGINE LUBRICANT

Theodore R. Mullen, Freehold, and William J. Lendener, Old Bridge, both of N.J., assignors to Cities Service Company, Tulsa, Okla.

Filed May 5, 1975, Ser. No. 574,476
Int. Cl.² C10M 1/44, 3/38, 5/24, 7/24
U.S. Cl. 252—32.5 9 Claims

1. An improved 2-cycle and rotary combustion engine lubricant comprising a 2-cycle engine oil, an additive comprising between about 54 wt.% and 74 wt.% of a mixture of an alkylated aryl ammonium salt of an alkyl phosphate and a di(alkylated aryl ammonium) salt of an alkyl phosphate, between about 15 wt.% and 27 wt.% of a mineral oil having a viscosity at 100°F of between about 100 N SUS and 650 N SUS, between about 5 wt.% and 15 wt.% of alkylated diarylamines having a formula selected from the group consisting of



and mixtures thereof, wherein R is an alkyl having between about 4 and 20 carbon atoms, between about 1 wt.% and 9 wt.% of a lithium dialkylaryl sulfonate, said additive comprising from about 0.1 wt.% to about 1.0 wt.% of the lubricant.

3,951,830

BASIC METAL SALTS OF SULFUR- AND METHYLENE-BRIDGED POLYPHENOL COMPOSITIONS, AND EPOXIDE-REACTED DERIVATIVES THEREOF, AND LUBRICANTS CONTAINING THEM

Jack Lee Karn, Cleveland Heights, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Filed May 2, 1973, Ser. No. 356,662
Int. Cl.² C10M 1/54, 3/48, 5/28, 7/52
U.S. Cl. 252—42.7 44 Claims

1. A lubricating composition comprising a major amount of a lubricating oil and a minor lubrication-improving amount of an oil-soluble additive selected from the following:

I. Basic metal phenates prepared by reacting an excess of an alkali metal or alkaline earth metal base with (A) a separately sulfur- and methylene-bridged polyphenol composition prepared by reacting a phenol with formaldehyde or a reversible polymer thereof and subsequently sulfurizing the methylene-bridged intermediate thus obtained, or with (B) a separately sulfur- and methylene-bridged polyphenol composition prepared by sulfurizing said phenol and subsequently reacting the sulfurized intermediate thus obtained with formaldehyde or a reversible polymer thereof; the sulfurizing agent being sulfur or a halide thereof;

II. Reaction products of an epoxide with said sulfur- and methylene-bridged polyphenol composition (A) or (B);

III. Basic metal salts prepared by reacting an excess of an alkali metal or alkaline earth metal base with the epoxide reaction product of (II);

IV. Reaction products of an epoxide with the basic metal phenate of (I).

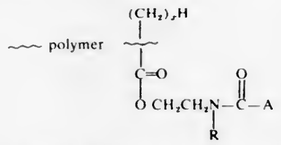
3,951,831

ANTIOXIDANT-CONTAINING VISCOSITY INDEX IMPROVERS FOR HIGH TEMPERATURE SERVICE

Gordon L. Willette, Doylestown, and Richard H. Hanauer, Furlong, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jan. 17, 1975, Ser. No. 541,973
Int. Cl.² C10M 1/38, 3/32, 5/28, 7/36
U.S. Cl. 252—47.5 2 Claims

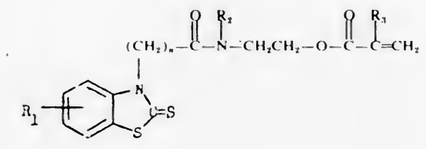
1. A novel lubricating oil useful at high temperatures comprising (I) a major proportion of a mineral or lubricating oil and (II) a minor amount comprising about 1 to about 10% by weight of the antioxidant-containing polymer, said polymer supplying about 1 to about 15% by weight of the antioxidant moiety, said polymer comprising an antioxidant ester of a carboxylic acid containing polymer useful at high temperatures and having the general formula:



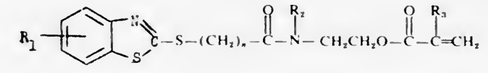
where x is 0 or 1, R is H or a C_1 to C_{12} straight chain or branched alkyl group, and A is an antioxidant structure.

2. A novel lubricating oil useful at high temperatures containing (I) a major proportion of a mineral or lubricating oil and (II) a minor amount comprising about 1 to about 10% of an antioxidant copolymer, said copolymer having been prepared by copolymerizing an acid-containing oil solubilizing monomer with a monomer of one of the following formulas or structures, (c), (d), (e) or (f), or a mixture thereof, said formulas or structures (c), (d), (e), or (f), or a mixture

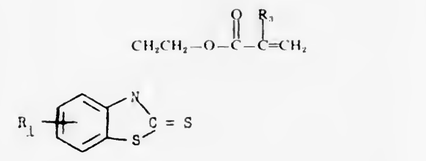
thereof, supplying the antioxidant moiety:



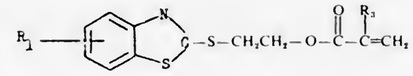
(c)



(d)



(e)



(f)

where R_1 = H or C_1 to about C_{20} alkyl; and where n = 1 or 2; and where R_2 is H or a C_1 to C_{12} alkyl group and where R_3 is H or CH_3.

3,951,832

STABILIZED POLYSILOXANE-POLYGLYCOL FOAM INHIBITORS FOR MINERAL OILS

Frederic C. McCoy, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 13, 1974, Ser. No. 523,295
Int. Cl.² C10M 1/10
U.S. Cl. 252—49.6 9 Claims

1. A process for preparing storage stable, clear mineral oil solutions of polysiloxane-polyglycol polymeric substrates, said substrates normally being insoluble in mineral oil, said polymeric substrates having the following range of characteristics:

Average molecular weight range - about 1000 to 5000,
Silicon (% by weight) - about 4 to 30,
Carbon (% by weight) - about 25 to 60,
Hydrogen (% by weight) - about 5 to 10,
Dimethylsiloxane (% by weight) - about 10 to 95,
Polyglycol component (% by weight) - 90 to 5,

said polyglycol being selected from the group consisting of polyethylene glycol and ethylene glycol-propylene glycol copolymers,

said process consisting essentially of mixing each part by weight of said substrates to be stabilized, with from about 1 to 20 parts by weight of mineral oil having the following characteristics:

Viscosity, Kinematic 100°F, cs. - 10 to 5000
Viscosity Index - 50 to 120
Pour Point, °F - 0 to 25
Gravity, API - 20 to 30,

and from at least 1 part by weight of alkylated phenol, said alkyl group or groups of the alkylated phenol containing from 4 to 30 carbon atoms to form an admixture and maintaining the admixture between about 20°C and 50°C until clear, storage-stable mineral oil solutions of polymeric substrates are produced.

5. The storage-stabilized, foam-inhibiting mineral oil solution of normally mineral oil-insoluble polysiloxane-polyglycol block copolymer substrates consisting essentially of the following components in the proportions shown below:

a. for each part by weight of polydimethyl siloxane glycol copolymer substrates having the following characteristics:
Average molecular weight range - about 1000 to 5000,
Silicon (% by weight) - about 4 to 30,
Carbon (% by weight) - about 25 to 60,
Hydrogen (% by weight) - about 5 to 10,
Dimethylsiloxane (% by weight) - about 10 to 95,
Polyglycol component (% by weight) - 90 to 5,

said polyglycol being selected from the group consisting of polyethylene glycol and ethylene glycol-propylene glycol copolymers,

b. from about 1 to 20 parts by weight of mineral oil having the following characteristics:
Viscosity, Kinematic 100°F, cs. - 10 to 5000,
Viscosity Index - 50 to 120,
Pour Point, °F - 0 to 25,
Gravity, API - 20 to 30, and

c. from about 1 to 20 parts by weight of alkylphenol, said alkyl group or groups of alkylphenol containing from 4 to 30 carbon atoms.

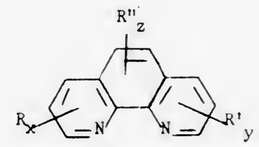
3,951,833

METHOD FOR PRESERVING FUNCTIONAL FLUIDS AND LIQUID HYDROCARBON FUELS WITH SELECTED 1,10-PHENANTHROLINES

Robert H. Juda, Orange; Gene A. Hyde, Hamden, and Alan E. Ardis, North Haven, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 27, 1975, Ser. No. 553,705
Int. Cl.² C10M 1/32, 3/26, 5/20, 7/30
U.S. Cl. 252—51.5 R 10 Claims

1. A method for preventing microbial contamination of organic fluids selected from the group consisting of functional fluids and liquid hydrocarbon fuels which support microbial growth when mixed with water comprising incorporating in said fluid an effective inhibitory amount of a biocide having the formula



wherein R and R′ are lower alkyl appended to a ring carbon atom, x and y are each integers in the range of 0–2, the sum of x and y being an integer in the range of 0–4 and wherein R″ is selected from the group consisting of lower alkyl, phenyl, halo, nitro and oxy, z being an integer in the range of 0–2 and wherein the sum of x, y, and z is an integer in the range of 0–4.

3,951,834
FOAMED PRODUCTS FROM SODIUM SILICATE

Warren Gillilan, Holland, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 9, 1973, Ser. No. 404,478
Int. Cl.² C04B 43/00; E04B 1/74
U.S. Cl. 252—62 **4 Claims**

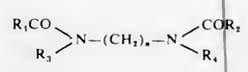
1. In a process for maufacturing foamed products from sodium silicate comprising the steps of:
   a. forming a mixture of a surface tension depressant and an aqueous solution of sodium silicate;
   b. subjecting the mixture to mixing with a gas at above atmospheric pressure until a wet foam is formed;
   c. blending and reacting with the wet foam an insolubilizing agent in an amount sufficient to make a foamed product rigid and resistant to being solubilized by water, and
   d. pre-hardening the foamed product,
   the improvement comprising autoclaving the foamed product at a steam pressure ranging from 50 to 250 psi for a time ranging from 15 minutes to 4 hours, after completing step (d).

3,951,835
TONER FOR DEVELOPING ELECTROSTATIC LATENT IMAGES CONTAINING AN ALKYLENE-BIS FATTY ACID AMIDE

Makoto Tomono, and Noriyoshi Tarumi, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1974, Ser. No. 440,466
Claims priority, application Japan, Feb. 19, 1973, 48-19239
Int. Cl.² G03G 9/00
U.S. Cl. 252—62.1 R **4 Claims**

1. A toner for developing electrostatic latent images which comprises a colorant, a styrene type resin containing a styrene component in an amount of more than 25% by weight based on the sum of a resin component of the toner and an alkylene-bis fatty acid amide represented by the following general formula:



wherein R_1 and R_2 stand for saturated or unsaturated aliphatic hydrocarbon residues having at least 10 carbon atoms, R_3 and R_4 are a hydrogen atom or a group $-COR_5$ in which R_5 is a saturated or unsaturated aliphatic hydrocarbon residue, and n is a positive integer.

3,951,836
TONERS FOR ELECTROSTATIC IMAGING

Josef Matkan, Malvern, Australia, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 669,350, Sept. 7, 1967, abandoned. This application Dec. 15, 1971, Ser. No. 208,505
Claims priority, application Australia, Sept. 12, 1966, 10897/66
Int. Cl.² G03G 9/04
U.S. Cl. 252—62.1 R **5 Claims**

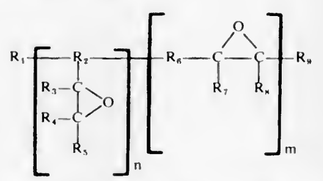
1. A liquid developer for electrophotography comprising a carrier liquid of volume resistivity in excess of 10^9 ohm cm. and dielectric constant less than 3, toner particles suspended therein, which are substantially insoluble in said carrier liquid and said toner particles characterized by containing as the effective component a product obtained by reacting an azine dye selected from the group consisting of nigrosine C.I. 50415 and induline C.I. 50400 with a C_8–C_{20} fatty acid at elevated temperatures until a color change occurs in the reaction mixture and thereafter recovering the product.

3,951,837
FUNCTIONAL FLUID COMPOSITIONS

Martin B. Sheratte, Reseda, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Sept. 24, 1973, Ser. No. 400,122
Int. Cl.² C10M 3/02
U.S. Cl. 252—78 **25 Claims**

1. A functional fluid composition consisting essentially of (1) a major portion of a phosphorus compound selected from the group consisting of phosphorus esters and amides of an acid of phosphorus, and mixtures thereof, (2) a minor effective portion of a polyalkylene glycol viscosity index improver selected from the class consisting of polyalkylene glycols and polyalkylene glycol mono- and diethers containing at least one oxyalkyl end group wherein the alkyl radicals contain from 1 to about 8 carbon atoms, said alkylene groups being selected from the class consisting of ethylene, propylene and butylene, and mixtures thereof, said polyalkylene glycol viscosity index improver having a molecular weight ranging from about 2,000 to about 20,000 and (3) a small effective amount of a polyepoxide having the general formula:



wherein R_1, R_3, R_4, R_5, R_7, R_8 and R_9 can be a member selected from the group consisting of hydrogen, alkyl having from 1 to about 8 carbon atoms, aryl of from about 6 to about 8 carbon atoms, and wherein R_3 and R_4, R_7 and R_8, together, respectively, can be the carbon atoms necessary to complete a cycloalkyl group of from about 5 to about 6 carbon atoms, R_2 and R_6 are divalent or trivalent organic radicals containing from 1 to about 20 carbon atoms, selected from the group consisting of alkylene, arylene, amino alkylene, amino arylene, ether, poly-ether, polyglycol ether, carboxylic acid ester and dicarboxylic acid radicals, and wherein n and m can range from 0 to 100, but wherein n plus m equals at least 2, and wherein said polyepoxide is present in an amount ranging from about 2 to about 10%, by weight.

3,951,838
SILICA SOL STABILIZERS FOR IMPROVING THE STABILITY OF SODIUM PERCARBONATE IN SOLID BLEACHES AND DETERGENTS

Madhusudan D. Jayawant, Hockessin, and Paul C. Yates, Talleyville, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 10, 1973, Ser. No. 405,053
Int. Cl.² C11D 7/54
U.S. Cl. 252—99 **10 Claims**

1. A method for preparing a sodium percarbonate having improved stability in solid bleach and detergent formulations which comprises treating particles of the percarbonate with an aqueous sol containing from about 3 percent to about 8 percent of silica which has a maximum particle size of 0.1 micron which is prepared by deionizing a solution of a water soluble silicate to a pH of from 3 to 10, and depositing 1 to 10 percent by weight of silica based on the weight of the percarbonate on the percarbonate particles, and drying the resulting product.

3,951,839
DETERGENT COMPOSITION

Junryo Mino, Kamagaya, and Haruhiko Arai, Narashino, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1974, Ser. No. 534,908
Claims priority, application Japan, Dec. 27, 1973, 49-4220
Int. Cl.² C11D 3/395, 7/54
U.S. Cl. 252—95 **3 Claims**

1. A clothes-washing detergent composition consisting essentially of
   a. from 0.001 to 1.0 percent by weight of at least one radical chain-inhibiting antioxidant selected from the group consisting of 4,4′-butylidene-bis(6-tert.-butyl-3-methylphenol), 2,2′-butylidene-bis(6-tert.-butyl-4-methylphenol), monostyrenated cresol, distyrenated cresol, monostyrenated phenol, distyrenated phenol and 1,1′-bis(4-hydroxyphenyl) cyclohexane,
   b. from 0.5 to 50 percent by weight of an oxygen-type bleaching agent selected from the group consisting of sodium perborate, sodium percarbonate, sodium persulfate, hydrogen peroxide adduct of sodium tripolyphosphate and hydrogen peroxide adduct of sodium pyrophosphate, and
   c. the balance is clothes-washing surfactant and water-soluble detergent builders.

3,951,840
STABLE BLEACHING COMPOSITION

Takashi Fujino, Yokohama; Makoto Yamanaka, Koganei, and Keiichi Deguchi, Funabashi, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1974, Ser. No. 461,906
Claims priority, application Japan, Apr. 26, 1973, 48-48036
Int. Cl.² C01B 3/02, 3/26, 3/39
U.S. Cl. 252—102 **8 Claims**

1. A powdery bleaching composition comprising an inorganic peroxide bleaching agent selected from the group consisting of sodium perborate, sodium percarbonate, sodium peroxypyrophosphate, sodium peroxysilicate and sodium peroxytripolyphosphate, and a chelating agent selected from the group consisting of salicylaldoxime, α-benzoinoxime, cupferron, dithizone, aluminon, dimethylglyoxime, sulfosalicylic acid, mercaptobenzothiazole and oxine, the amount of said chelating agent being from 0.05 to 5 percent by weight, based on the weight of the inorganic peroxide bleaching agent.

3,951,841
PHONOGRAPH RECORD CLEANING COMPOSITION

Bruce R. Maier, St. Louis, Mo., assignor to Discwasher Inc., Columbia, Mo.

Continuation-in-part of Ser. No. 260,828, June 8, 1972, abandoned. This application Nov. 6, 1974, Ser. No. 521,284
Int. Cl.² C11D 1/72, 3/48
U.S. Cl. 252—106 **2 Claims**

1. A phonograph record cleaning composition useful for loosening and coagulating particulate matter and inducing fungicidal activity upon the record surface without leaving any evident dry weight residue after usage, and consisting essentially of a fungicide of sodium azide in an amount of between about 0.0001 to 0.001 percent by weight, a nonionic surfactant selected from the group consisting of octyl phenoxy polyethoxy ethanol and nonyl phenoxy polyethoxy ethanol and included in an amount of between about 0.0003 to 0.025 percent by weight, and emulsifier selected from the group consisting of propylene glycol, ethylene glycol, and glycerine and included in an amount of between about 0.001 to 0.0125 percent by weight, an alcohol selected from the group consisting of methyl, ethyl, propyl and isopropyl alcohols and included in an amount of between about 0.01 to 5 percent, and the remaining part of the composition comprising a liquid carrier of water present in an amount of not less than 94 percent by weight, said alcohol being included to make the surfactant more soluable in said water.

3,951,842
SYNTHETIC DETERGENT BAR WITH ANTIMUSHING AGENT

Leon M. Prince, Westfield, and Joseph P. Furrier, Northvale, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

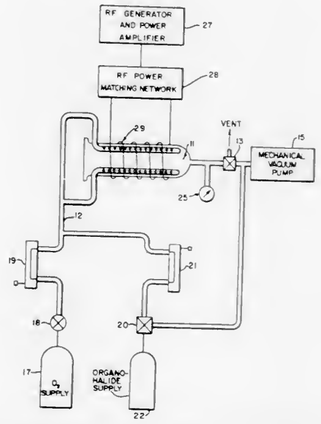
Filed Apr. 2, 1973, Ser. No. 347,105
Int. Cl.² C11D 9/32, 9/30, 9/48
U.S. Cl. 252—117 **6 Claims**

1. A toilet detergent tablet comprising from about 30 to about 60 percent of water-soluble alkali metal detergent salts of esters of isethionic acid with mixed aliphatic fatty acids having from 6 to 18 carbon atoms and an iodine value of less than 20, of which mixed acids at least 75 percent have from twelve to eighteen carbon atoms and up to 25 percent have from 6 to 10 carbon atoms, from 2 to 10 percent of at least one water-soluble suds-boosting detergent salt selected from the group consisting of alkali metal and organic amine higher aliphatic fatty alcohol sulfates, alkyl aryl sulfonates, and the higher aliphatic fatty acid taurides, from about 1 to about 9 percent water, from about 2.5 to about 25 percent of water-soluble higher fatty acid soap, from 10 to 40 percent of at least one higher fatty acid having from about 25 carbon atoms as a binder and plasticizer, and an anti-mushing agent in the proportions of about 3 to about 25 percent, wherein said anti-mushing agent is (a) linoleic acid dimer or (b) linoleic acid dimer together with a mixture of sodium sulfate and sodium chloride, said tablet having improved hardness, improved firmness recovery characteristics, and being substantially free from efflorescence, and having a pH within the range of about 6 to about 8, measured as a 10 percent aqueous solution of the bar composition at 35°C.

3,951,843
FLUOROCARBON COMPOSITION FOR USE IN PLASMA REMOVAL OF PHOTORESIST MATERIAL FROM SEMICONDUCTOR DEVICES

Adir Jacob, West Roxbury, Mass., assignor to LFE Corporation, Waltham, Mass.

Division of Ser. No. 322,134, Jan. 9, 1973, Pat. No. 3,806,365, which is a continuation of Ser. No. 173,537, Aug. 20, 1971, abandoned. This application Nov. 8, 1973, Ser. No. 413,884
Int. Cl.² C09K 13/00
U.S. Cl. 252—187 R **3 Claims**



1. A composition of matter, useful in a mixture with oxygen in a process for plasma removal of photoresist material in manufacturing semiconductors, comprised of a liquid mixture of CCl_2FCF_2Cl (1, 1, 2 Trichloro-1, 2, 2 Trifluoroethane) and $CHCl{=}CCl_2$ within range of 0.75 to 50 percent by volume of

CCl_2FCF_2Cl (1, 1, 2 Trichloro-1, 2, 2 Trifluoroethane) of the liquid mixture.

3. A composition of matter, useful in a process for plasma removal of photo-resist material in manufacturing semiconductors, comprising a gas mixture of oxygen, CH_3Cl and CH_3Br with the mole fraction of CH_3Cl being equal to that of CH_3Br.

3,951,844

CORROSION INHIBITION OF AQUEOUS POTASSIUM CARBONATE GAS TREATING SYSTEMS

Blake F. Mago, New City, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Apr. 29, 1974, Ser. No. 464,858
Int. Cl.² C23F *11/18, 11/10;* **B01D** *53/34*
U.S. Cl. 252—192 **9 Claims**

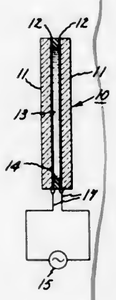
1. A corrosion inhibited composition suitable for scrubbing carbon dioxide from acid gas streams consisting essentially of an aqueous solution of about 20 to 40 percent by weight of potassium carbonate and an inhibiting amount of a mixture of about 9 to about 1 parts by weight of a vanadium compound capable of ionizing in said aqueous solution of potassium carbonate to pentavalent vanadium ions and about 1 to about 9 parts by weight of an antimony compound which is at least partially soluble in said aqueous solution of potassium carbonate.

3,951,845

NEMATIC LIQUID CRYSTAL MIXTURES HAVING HOMOGENEOUS BOUNDARY CONDITIONS AND METHOD OF MAKING THE SAME

Herbert S. Cole, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 265,792, June 23, 1972, abandoned. This application July 16, 1973, Ser. No. 379,723
Int. Cl.² G02F *1/16*
U.S. Cl. 252—299 **19 Claims**



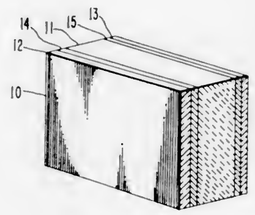
1. A nematic liquid crystal mixture characterized by a homogeneous boundary condition when formed in a thin layer, said mixture comprising a nematic liquid crystal and between approximately 0.5 and 5 percent by weight of the mixture of a compound having at least two polar groups, one group at each end of the compound, said compound being characterized by a substantially straight chain organic radical containing from **1** to about **12** carbon atoms between said end polar groups and by a substantial solubility in the nematic liquid crystal, the molecules of said compound tending to align parallel to a boundary substrate and thereby produce said homogeneous boundary condition in said mixture.

3,951,846

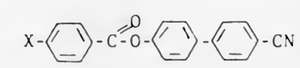
NOVEL LIQUID CRYSTAL ELECTRO-OPTIC DEVICES

Dragan Milan Gavrilovic, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

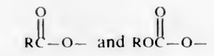
Filed June 28, 1974, Ser. No. 484,087
Int. Cl.² C09K *3/34;* **G02F** *1/13;* **C07C** *121/64, 69/96*
U.S. Cl. 252—299 **9 Claims**



1. In an electro-optic cell comprising a liquid crystal layer between two electrodes, the improvement which comprises including in the liquid crystal layer a compound of the formula



wherein X is a member selected from the group consisting of hydrogen, R—, RO—,



groups wherein R is an alkyl group of 1–10 carbon atoms.

3,951,847

SCINTILLATOR COMPOSITION

Mark Hyman, Jr., 62 Woodbine Road, Belmont, Mass. 02178

Filed June 26, 1974, Ser. No. 483,317
Int. Cl.² F21K *2/02;* **C09K** *11/06;* **C07D** *271/10;* **G01T** *1/20*
U.S. Cl. 252—301.17 **4 Claims**

1. As a scintillator, a composition consisting essentially of 2,5-di-m-tolyl-1,3,4-oxadiazole in an organic solvent, adapted to emit measurable radiative pulses when exposed to high energy radiation.

3,951,848

BARIUM FLUOROCHLORIDE X-RAY PHOSPHORS AND METHOD OF PREPARING SAME

Robert W. Wolfe, Towanda, and Russell F. Messier, Ulster, both of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Apr. 28, 1975, Ser. No. 571,926
Int. Cl.² C09K *11/46*
U.S. Cl. 252—301.4 H **12 Claims**

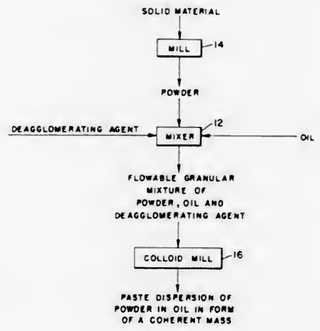
1. An x-ray luminescent composition consisting essentially of a host of BaFCl, from about 0.005 moles to about 0.02 moles of europium per mole of host as an activator and an effective amount of a brightness enhancement additive selected from the group consisting of lead, thallium, and aluminum and mixtures thereof, said effective amount being from about **5** to about **100** molar parts per million of said host when said additive is thallium; from about **10** to about **1000** molar parts per million of said host when said additive is lead; and from about **0.005** moles to about **0.025** moles per mole of said host when said additive is aluminum.

3,951,849

PRODUCTION OF DISPERSIONS OF FINE POWDERS

Glenn C. Vickery, Barberton, and Donald M. Mozynski, Elyria, both of Ohio, assignors to Basic Incorporated, Cleveland, Ohio

Division of Ser. No. 178,081, Sept. 7, 1971, abandoned. This application July 25, 1973, Ser. No. 382,346
Int. Cl.² B01J *13/00*
U.S. Cl. 252—309 **18 Claims**



1. A process for preparing a high solids paste dispersion of fine particle size solid material in a vehicle which comprises premixing solid material with a liquid vehicle and a surface active agent, the proportions of solid material, vehicles and surface active agent being such as to produce a discrete flowable powder,

and passing said discrete flowable powder through a colloid mill to convert the same to a paste dispersion in the form of a coherent mass.

13. A process for preparing a high solids paste dispersion of magnesium oxide in a vehicle suitable for polymer compounding, comprising the steps of

processing said magnesium oxide to an average particle size of about 0.02–1 microns;

premixing said magnesium oxide with a mineral oil having a viscosity between about 1,000 and about 6,000 Saybolt Universal seconds at 100°F and with a surface active agent;

said premix comprising in percentages by weight about 65–75% magnesium oxide, about 2–5% surface active agent, the remainder mineral oil, and being in the form of a discrete flowable powder, and

passing said premix through a colloid mill having a gap setting of about 0.010–0.025 inches to convert the powder to a paste dispersion in the form of a coherent mass.

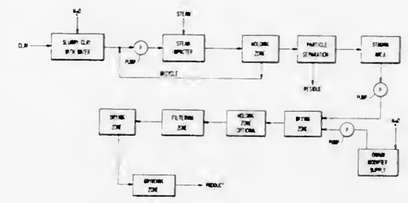
3,951,850

CONVERSION OF CLAY TO ITS COLLOIDAL FORM BY HYDRODYNAMIC ATTRITION

Edwin T. Clocker, 1343 N. Cleveland Ave., St. Paul, Minn. 55108; William Paterek, 146 S. Pierce, River Fall, Wis. 54022; Newton D. Farel, 2333 Farleigh Road, Upper Arlington, Ohio 43221, and Michael J. Selsley, 1878 Knollridge Court, Columbus, Ohio 43229

Filed June 22, 1973, Ser. No. 372,569
Int. Cl.² B01J *13/00*
U.S. Cl. 252—313 R **2 Claims**

1. A process for producing a colloidal clay which comprises initially slurrying a clay material with water, commingling the slurry with steam at a pressure of about 100–500 psig and a temperature of about 300°–470°F, expanding the commingled material at a reduced pressure sufficient to form at least some colloidal particles, conducting said steam-commingled and expanded material to a holding zone and therein holding said material at a temperature of about 180°–270°F and a pressure



of about 0–25 psig for a period of time sufficient to increase the amount of colloidal particles of clay formed.

3,951,851

PROCESS OF PRODUCING ASPIRIN-CONTAINING CAPSULES

Masao Kitajima; Asaji Kondo, and Fuminori Arai, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 29, 1973, Ser. No. 364,478
Claims priority, application Japan, May 29, 1972, 47-53088
Int. Cl.² B01J *13/02*
U.S. Cl. 252—316 **11 Claims**

1. A process of producing aspirin containing microcapsules which comprises:

1. dispersing aspirin particles in a solution of a cellulose derivative in an organic solvent partially miscible with water;
2. adding the dispersion to an encapsulation medium comprising (A) water and an organic solvent partially miscible with water or (B) water, an organic solvent partially miscible with water and aspirin, the amount of organic solvent present in the encapsulation medium being at least about 1 weight percent and the amount of the aspirin if present in the encapsulation medium being at least about 0.01 weight percent;
3. stirring the mixture to form a fine dispersion of the aspirin;
4. evaporating off the organic solvent to thereby encapsulate the aspirin particles in the cellulose derivative.

3,951,852

PROCESS FOR THE PREPARATION OF ALUMINA GEL

George Keith Emerson Gregory, Marlow; James Marchant Peach, High Wycombe, and James Campbell Newell, Bushey, all of England, assignors to John Wyeth & Brother Limited, Taplow, England

Continuation-in-part of Ser. No. 239,604, March 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 847,974, Aug. 6, 1969, abandoned. This application Feb. 19, 1974, Ser. No. 443,651
Claims priority, application United Kingdom, Aug. 16, 1968, 39202/68
Int. Cl.² B01J *13/00;* **A61K** *13/06, 13/10*
U.S. Cl. 252—317 **3 Claims**

1. A process for the preparation of a pourable alumina gel, which comprises

a. introducing solid aluminium sulphate into an aqueous solution of at least 85 grams per liter of a mixture of sodium carbonate and sodium bicarbonate, said sodium carbonate and sodium bicarbonate being present in a weight ratio of from 1:2 to 2:1, under conditions of good mixing, at a temperature within the range of 10°C. to 35°C. to precipitate an alumina gel, the percentage neutralization of the said mixture of sodium carbonate and

sodium bicarbonate by the aluminium sulphate being within the range of 65% to 90%,
b. straining or thickening the gel,
c. washing the gel, and
d. thickening the washed gel until the resultant gel has an alumina content within the range of from 10% to 16%.

3,951,853
DEFOAMER COMPOSITION

David W. Suwala, Flanders, N.J., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Nov. 4, 1974, Ser. No. 520,483
Int. Cl.² B01D *19/04*
U.S. Cl. 252—321 **17 Claims**

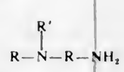
1. A defoamer composition comprising:
a. from about 75 to about 98 parts by weight of an organic liquid,
b. from about 1 to about 15 parts by weight of an amide which is a reaction product of a polyamine having at least one alkylene group of 2 to 10 carbon atoms and a fatty acid of from 6 to 18 carbon atoms,
c. from about 0.1 to about 10 parts by weight of a base,
d. from about 0.1 to about 5 parts by weight of a reactive chlorosilane monomer, and
e. from about 0 to about 3 parts by weight of an organic component selected from the groups consisting of an organic polymer, a fatty acid of 10 to 20 carbon atoms and a glyceride of fatty acids of from 10 to 20 carbon atoms.

3,951,854
STABILIZED ANALYTICAL STANDARDS

Roy C. Sias, and William L. Groves, Jr., both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 435,354, Jan. 21, 1974, abandoned, Continuation of Ser. No. 262,808, June 14, 1972, abandoned. This application Oct. 4, 1974, Ser. No. 512,794
Int. Cl.² C09K *3/00;* **C10M** *1/40, 3/34;* **G01N** *23/223, 33/22*
U.S. Cl. 252—408 **5 Claims**

1. A stabilized analytical standard containing a predetermined total metal content of less than about 2000 ppm by weight with any single metal being present in an amount less than about 1000 ppm by weight which comprises
(a) an oil-soluble metal salt of a hydrocarbon sulfonic acid wherein the metal is selected from the group consisting of molybdenum, vanadium, iron, boron, beryllium, tin, silver, copper, magnesium and mixtures thereof,
(b) a normally liquid hydrocarbon diluent, and (c) a stabilizing amount of an oil-soluble amine compound selected from
(1) amines defined by



wherein R is a saturated or unsaturated aliphatic hydrocarbon having 6 to 24 carbon atoms; R′ is hydrogen or a saturated or unsaturated aliphatic hydrocarbon having 6 to 24 carbon atoms; R′ is hydrogen or a saturated or unsaturated aliphatic hydrocarbon having 1 to 24 carbon atoms; and R″ is a saturated aliphatic hydrocarbon having 2 to 6 carbon atoms;
(2) monocarboxylic acid salts of the amines defined in (1) wherein the monocarboxylic acid is a saturated or unsaturated aliphatic hydrocarbon carboxylic acid having 6 to 24 carbon atoms; and
(3) oil-soluble sulfonic acid salts of the amines defined in (1) wherein the oil-soluble sulfonic acid is a hydrocarbon sulfonic acid having an average molecular weight of at least 400, preferably in the range of 400 to 600.

3,951,855
BREATH ALCOHOL TEST MEDIUM

Andrew H. Principe, Mundelein, and Emmett P. Glynn, Lemont, both of Ill., assignors to Cand-Aire Industries, Inc., Highland Park, Ill.

Continuation-in-part of Ser. No. 160,780, July 8, 1971, abandoned, which is a division of Ser. No. 802,880, Feb. 27, 1969, Pat. No. 3,618,393. This application July 9, 1973, Ser. No. 377,383
Int. Cl.² C09K *3/00;* **G01N** *31/00, 33/00;* **C01B** *2/00*
U.S. Cl. 252—408 **5 Claims**



1. A gaseous standard of a known amount of vaporized ethanol in a closed canister having interior walls which are inert to said ethanol comprising a charge of vaporized ethanol in a predetermined amount per volume of the canister, the remainder of the volume in said canister consisting essentially of a gaseous medium inert with respect to the vaporized ethanol contained therein, said charge of vaporized ethanol being present in said canister entirely in vapor form, and said canister having a means for accommodating discharge of said gaseous medium containing the known amount of ethanol vapor therefrom.

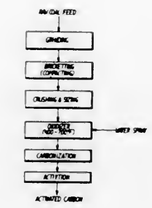
4. A process for establishing a gaseous standard of a known amount of vaporized volatile liquid, comprising the steps of pressurizing a first container that is partially filled with said liquid with a gas which is inert to said liquid to a given pressure to produce a vaporized volatile liquid saturated gas, draining off the vaporized volatile liquid saturated gas into a secondary container at a pressure that is lower than the pressure of said first container, and then draining the vaporized volatile liquid containing gas from said secondary container into a dispensing container having a lower pressure than said secondary container.

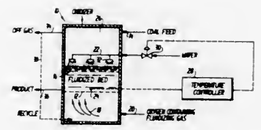
3,951,856
PROCESS FOR MAKING ACTIVATED CARBON FROM AGGLOMERATIVE COAL

Albert J. Repik, Charleston; Charles E. Miller, Mount Pleasant, and Homer R. Johnson, Charleston, all of S.C., assignors to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 294,468, Oct. 2, 1972, Pat. No. 3,843,559. This application Sept. 4, 1974, Ser. No. 503,483
The portion of the term of this patent subsequent to Oct. 22, 1991, has been disclaimed.
Int. Cl.² B01J *31/10, 21/18*
U.S. Cl. 252—421 **6 Claims**

1. In a process for treating high rank, medium volatile bituminous coal consisting essentially of, preparing said coal for oxidizing by grinding, briquetting said ground coal, crushing said briquettes, fluidizing said prepared coal particles with a gas containing from about 1% to about 50% oxygen at a temperature from about 400°F. to about 700°F. until the Oxidation Number is at least 85, injecting water into said fluidized coal particles to control the temperature, carbonizing said oxidized coal at a temperature in the range of about 1,000°F. to about 1,200°F., and activating said oxidized-carbonized coal with an activating gas from the group consisting of steam and an oxygen containing gas at a temperature in the range of about 1,650°F. to about 1,950°F., the improvement comprising,





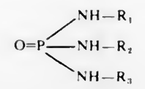
crushing said briquettes to a particle size from about ¾ inch to 4 mesh.

3,951,857
ALKYLATION CATALYST ADDITIVE

Frederic C. McCoy, Beacon, and Edward L. Cole, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 413,123, Nov. 5, 1973, Pat. No. 3,865,896. This application June 24, 1974, Ser. No. 482,182
Int. Cl.² B01J *27/02, 31/02*
U.S. Cl. 252—428 **2 Claims**

1. An alkylation catalyst consisting essentially of concentrated sulfuric acid having a concentration from about 88 to about 98 weight percent H_2SO_4 and containing from about 0.0005 to about 0.5 weight percent of a NN′N″ tris (alkyl) phosphoric triamide having the formula:



wherein R_1, R_2, and R_3 are selected from the group consisting of straight chain and branched chain alkyl radicals each having from 10 to 24 carbon atoms.

3,951,858
MANUFACTURE OF A MODIFIED TITANIUM COMPONENT FOR CATALYSTS OF THE ZIEGLER/NATTA TYPE

Hannes Schick, Mannheim; Peter Hennenberger, Ludwigshafen; Gerhard Staiger, Bobenheim-Roxheim, and Heinz Mueller-Tamm, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwighshafen (Rhine), Germany

Filed Jan. 8, 1974, Ser. No. 431,703
Claims priority, application Germany, Jan. 11, 1973, 2301136
Int. Cl.² C08F *110/04, 110/06, 110/08, 110/14*
U.S. Cl. 252—429 B **5 Claims**

1. A process for the manufacture of a modified titanium component for catalysts of the Ziegler/Natta type by milling a mixture of *a* grammoles of a titanium compound of the formula $TiCl_3 \cdot 1/3AlCl_3$ with $1/100a$ to $1a$ grammoles of an organic electron donor selected from the group consisting of $P(O)Y_3$, PY_3, triphenylphosphine, triphenylphosphine oxide, tri-*n*-butylphosphine, tri-n-butylphosphine oxide and hexamethylphosphoric triamide wherein each Y is an alkylamino ($-NR_2$) or alkoxy ($-OR'$), said R and R′ being alkyl radicals containing 1 to 8 carbon atoms, wherein the mixture of titanium compound and electron donor is first milled wet in from $100a$ to $1000a$ grams of a liquid inert hydrocarbon medium over a period of from 0.5 to 100 hours and at a temperature of from 0° to 50°C and at a milling acceleration of 30 to 60 $m.sec^{-2}$, whereupon it is separated from the hydrocarbon medium and is finally milled dry over a period of from 1 to 100 hours at a temperature of from 0° to 50°C and at a milling acceleration of from 30 to 60 $m.sec^{-2}$.

3,951,859
MOLECULAR SIEVING PARTICLE AND PREPARATION THEREOF

Yoshihito Inaba; Masataka Morishita, and Mitsuru Fukushima, all of Shizuoka, Japan, assignors to Toyo Jozo Co., Ltd., Japan

Filed Dec. 28, 1973, Ser. No. 429,677
Claims priority, application Japan, Dec. 30, 1972, 47-2821; Nov. 20, 1973, 48-131080
Int. Cl.² B01J *31/06*
U.S. Cl. 252—430 **14 Claims**

1. A molecular sieving particle comprising adsorbent powders which are dispersed in a micro-porous matrix of a polymer selected from the group consisting of ethyl cellulose, cellulose acetate, hydroxypropyl methyl cellulose phthalate, polyvinyl formal, polyvinyl butyral, polyvinyl acetal diethylamino acetate, polystyrene, vinyl chloride-vinyl acetate copolymer, vinyl chloride-vinyl propionate copolymer, phenyl siloxane ladder polymer, cellulose acetate phthalate, cellulose acetate dibutylaminohydroxypropyl ether, cellulose butyrate, cellulose propionate, hydroxypropyl methyl cellulose trimellitate, polyvinyl acetal diethylaminoacetate, styrene-maleic acid-ethylene copolymer, ethylene-vinyl acetate copolymer and acrylic acid-methacrylic acid copolymer, having a molecular sieving micro-porous structure, said molecular sieving particle having a size from 0.3 mm to 2.0 mm and micro-pores in said polymer matrix having a size in the range of from 8 to 40 A, the amount of said adsorbent powders being from 5 to 85% of the molecular sieving particle.

3,951,860
CATALYST

Gary James Keith Acres, and Barry John Cooper, both of London, England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed Nov. 20, 1972, Ser. No. 307,823
Claims priority, application United Kingdom, Nov. 22, 1971, 54038/71; Nov. 22, 1971, 54039/71
Int. Cl.² B01J *21/02, 23/56*
U.S. Cl. 252—432 **5 Claims**

1. A catalyst consisting essentially of an inert porous refractory ceramic material selected from the group consisting of zircon-mullite, mullite, alpha alumina, sillimanite, magnesium silicate, zircon, petalite, spodumene, cordierite and aluminasilicate in the form of a corrugated cellular honeycomb which has applied thereto, as a first coating, a layer or deposit of a mixture of two catalytically active refractory metal oxides which is unreactive with the said inert ceramic material and in which the first of said oxides is selected from the group consisting of an oxide of Be, Mg, B, Al, Si, Ti, Zr, Hf and Th and the second of said oxides is selected from the group consisting of an oxide of Sc, Y and a lanthanide in which the said second metal oxide constitutes from 5–20% by weight of the refractory metal oxide coating and which has applied to the first coating a second coating consisting essentially of a mixture of platinum and rhodium in which rhodium is present in an amount from 1–20 weight percent of the total metal content of the said second coating.

3,951,861
CATALYSTS FOR THE PREPARATION OF ACROLEIN

Tatsuo Shiraishi; Susumu Kishiwada; Shinkichi Shimizu; Shigeru Honmaru, all of Niihama; Akihiko Atsumi, Funahashi; Hiroshi Ichihashi, and Yoshihiko Nagaoka, both of Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Division of Ser. No. 262,489, June 14, 1972, abandoned. This application Jan. 2, 1974, Ser. No. 429,947
Claims priority, application Japan, June 14, 1971, 46-42310
Int. Cl.² B01J *27/14, 23/14*
U.S. Cl. 252—437 **10 Claims**

1. A catalyst composition comprising a catalyst system of the formula:

$$Mo_aBi_bFe_cNi_dTl_eP_fX_gY_hO_i$$

wherein X is one or more of Mg, Mn and Co, Y is one or more of Cu, Ca, Sr, Zn, Cd, Sn and Pb and *a*, *b*, *c*, *d*, *e*, *f*, *g*, *h* and *i* represent, respectively, the number of atoms and wherein *a* is 12, *b* is 0.1 to 5, *c* is 0.1 to 12, *d* is 0.1 to 12, *e* is 1 or less but not less than a catalytic amount, *f* is 0 to 5, *g* is 0 to 12, *h* is 0.1 to 12 and *i* is a number determined by the valence requirements of the other atoms in the catalyst.

3,951,862
PROCESS FOR THE PREPARATION OF AMMONIA SYNTHESIS CATALYST

Morgan C. Sze, Upper Montclair, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Oct. 30, 1974, Ser. No. 519,481
Int. Cl.² B01J *21/18, 23/10*
U.S. Cl. 252—446 **16 Claims**

1. In the process of preparing an ammonia synthesis catalyst based on fused and reduced iron oxide which comprises fusing and reducing of the iron oxide, the improvement comprising effecting the fusion in the presence of a small quantity of graphite, and impregnating the reduced iron oxide with an aqueous solution of a cerium salt.

3,951,863
SILICA XEROGEL PRODUCTION

Joseph A. Delap, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 25, 1974, Ser. No. 445,583
Int. Cl.² B01J *29/00, 21/08;* **C01B** *33/12*
U.S. Cl. 252—454 **7 Claims**

1. A method for removing water from a silica-containing hydrogel which comprises:

a. passing a silica-containing hydrogel and a liquid, oxygen-containing organic compound in which water is soluble in countercurrent contact in a first zone at a first pressure to remove water from said hydrogel and to form a gel containing a residual quantity of water and a residual quantity of organic compound and to form an organic compound-water solution;
b. passing said gel into a separation zone at a second pressure less than said first pressure to separate at least a portion of said residual quantity of organic compound from said gel and to form a xerogel;
c. cooling said organic compound-water solution to separate said organic compound from said water;
d. combining the separated residual quantity of organic compound from step (*b*) with the organic compound separated in step (*c*) to form a combined organic compound;
e. heating said combined organic compound and introducing the heated organic compound into said countercurrent contact; and,
f. recovering a xerogel.

6. The method of claim 3 in which said hydrogel contains a material selected from the group consisting of compounds of chromium, titanium and zirconium.

3,951,864
HYDROCARBON CONVERSION CATALYST

Jarold A. Meyer, Concord, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 314,044, Dec. 11, 1972, which is a continuation-in-part of Ser. No. 150,857, June 3, 1971, abandoned. This application July 2, 1973, Ser. No. 376,026
Int. Cl.² B01J *29/06, 29/00*
U.S. Cl. 252—455 Z **4 Claims**

1. A catalytic composition of matter comprising a matrix including alumina, silica and magnesia, associated with a hydrogenation component and, dispersed in particulate form in said matrix, crystalline zeolitic molecular sieve substantially free of hydrogenation components, said composition of matter having a specific gravity less than about 1.8.

3,951,865
CATALYTIC PURIFIER UNIT

Per G. Norback, Lidingo, Sweden, assignor to Aktiebolaget Carl Munters, Sollentuna, Sweden

Filed June 20, 1974, Ser. No. 481,211
Claims priority, application Sweden, June 25, 1973, 089096
Int. Cl.² B01J *35/04*
U.S. Cl. 252—457 **9 Claims**

1. In a catalytic purifier unit for purifying hot exhaust gases from internal combustion engines having a catalyst supporting skeletal body formed of layers, at least some of which are corrugated, bearing against one another and defining a large number of narrow passageways through which the exhaust gases pass, the improvement in the body resulting in a light-weight porous skeleton capable of rapid homogenous heat distribution and resistance to thermal stress and mechanical shock comprising layers of asbestos sheet containing fused material selected from the group consisting of metal silicate and ceramic metal oxide or combinations of the two formed by contacting the asbestos sheet with an inorganic material in a liquid state and obtaining a precipitate therefrom, the inorganic material being decomposable to yield the material selected from the group consisting of metal silicate and ceramic metal oxide, and then heating the contacted asbestos sheet to the fusing temperature for the precipitate.

3,951,866
PROCESS FOR PREPARING CATALYSTS

Sotoji Goto, Yokosuka, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 399,381, Sept. 21, 1973, abandoned. This application Jan. 8, 1975, Ser. No. 539,439
Claims priority, application Japan, Oct. 30, 1972, 47-109885
Int. Cl.² B01J *37/02*
U.S. Cl. 252—461 **7 Claims**

1. A process for preparing a catalyst which comprises coating an ester of a metallic acid and an alcohol onto a carrier, heating the coated carrier to cause the ester to gel and then baking the coated carrier at a temperature between 400° to 1,100° C. to form a film of the catalyst on the carrier.

3,951,867
COPRECIPITATED CeO_2—SnO_2 CATALYST SUPPORTS

Robert G. Howell, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 7, 1974, Ser. No. 512,204
Int. Cl.² B01J *23/10, 23/14*
U.S. Cl. 252—462 **4 Claims**

1. A thermally-stable high-surface-area catalyst support material consisting of a mixture of CeO_2 and SnO_2 wherein the SnO_2 content ranges about 30–90 mole percent and the CeO_2 ranges about 10–70 mole percent, said mixture being produced by coprecipitating hydrous cerium oxide and hydrous tin oxide from an aqueous solution of salts of cerium and tin, washing the coprecipitated hydrous oxides, and drying the coprecipitated hydrous oxides by heating to a temperature sufficient to remove the water of hydration therefrom.

3,951,868
HYDROCARBON CONVERSION CATALYST

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 448,131, March 4, 1974, Pat. No. 3,892,657, which is a continuation-in-part of Ser. No. 272,582, July 17, 1972, abandoned, which is a division of Ser. No. 114,719, Feb. 11, 1971, abandoned. This application Mar. 14, 1975, Ser. No. 558,521
Int. Cl.² B01J *21/04, 23/62*
U.S. Cl. 252—466 PT **12 Claims**

1. A catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.1 to about 3.5 wt. % halogen, about 0.01 to about 5 wt. % germanium or tin, and indium in an amount sufficient to result in an atomic ratio of indium to platinum group metal of about 0.1:1 to about 1:1, wherein the platinum group metal and indium are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum group metal is present in the elemental metallic state, wherein substantially all of the indium and germanium or tin are present in an oxidation state above that of the corresponding elemental metal and wherein substantially all of the halogen is present in the form of combined halide.

3,951,869
MODIFIED ZINC FERRITE OXIDATIVE DEHYDROGENATION CATALYSTS

James R. Baker, Fort Worth, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Sept. 3, 1974, Ser. No. 502,775
Int. Cl.² B01J *23/80;* **C07C** *5/48*
U.S. Cl. 252—471 **4 Claims**

1. A novel catalyst composition suitable for oxidative dehydrogenation or organic compounds consisting of zinc ferrite compositing having the empirical formula

$$Zn_xFe_yO_z$$

wherein *x* is from about 0.1 to about 2, *y* is from 0.3 to about 12, and *z* is from about 3 to about 18 and additionally containing free manganese oxide as a promoter in an amount of from about 0.1 to about 10 wt.% based on the weight of the zinc ferrite composition.

3,951,870
SUPERCONDUCTIVE TRANSITION METAL CARBONITRIDE FIBERS AND METHOD FOR THE PREPARATION THEREOF

James Economy, Eggertsville; John H. Mason, Clarence, and William D. Smith, Tonawanda, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Sept. 13, 1973, Ser. No. 396,926
Int. Cl.² H01B *1/06*
U.S. Cl. 252—506 **9 Claims**

1. A superconducting fiber comprising niobium carbonitride having a maximum diameter of 20 microns wherein said niobium carbonitride has a formula NbC_xN_{1-x} wherein x is from about 0.05 to about 0.75.

3,951,871
DEFORMATION RESISTANT SHIELDING COMPOSITION

Keith A. Lloyd, Piscataway; Eugene J. Fisher, Brunswick, and Lucio Ongchin, Warren, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 16, 1974, Ser. No. 470,644
Int. Cl.² H01B *1/06*
U.S. Cl. 252—511 **12 Claims**

1. A semi-conducting insulation shielding composition comprising, based on the total weight of said composition,

about 25 to 60 weight percent of thermoplastic ethylene copolymer having a density of 0.910 to <0.940 and containing about 2 to 35 weight percent, based on the total weight of said copolymer, of at least one comonomer selected from the group consisting of vinyl acetate, vinyl propionate, vinyl butyrate, acrylic acid, methacrylic acid, and the C_1 to C_4 alkyl esters of said acids,
about 3 to 20 weight percent of a second thermoplastic crystalline resin having a melting point of ≥ 115°C and selected from the group consisting of propylene resin and ethylene polymer having a density of ≥ 0.940,
said propylene resin being either an isotactic homopolymer, or a copolymer containing ≥ 94 weight percent of interpolymerized propylene and > 0 to 6 weight percent of one or more interpolymerized monomers selected from the group consisting of ethylene and C_4 to C_6 monoolefins, and
said ethylene polymer having a density of ≥ 0.940 being either a homopolymer or a copolymer containing ≥ 94 weight percent of interpolymerized ethylene and >0 to 6 weight percent of one or more interpolymerized C_3 to C_6 monoolefins,
about 5 to 35 weight percent of at least one thermoplastic elastomer, and
about 30 to 50 weight percent of conducting carbon black,
with the proviso that the weight ratio of said second resin to said elastomer is in the range of 1:1 to 1:3.

3,951,872
ELECTRICAL CONTACT MATERIAL

Lloyd F. Neely, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

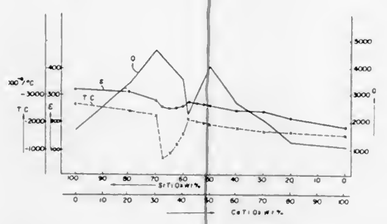
Filed Dec. 3, 1973, Ser. No. 421,276
Int. Cl.² H01B *1/02*
U.S. Cl. 252—513 **10 Claims**

1. A highly conductive-refractory metal containing type electrical contact material consisting essentially of about 12 wt. % to about 69 wt. % of electrically conductive metal selected from Ag and An and mixtures thereof, about 30 wt. % to about 85 wt. % total of at least two refractory constituents selected from W, Mo and Ta, and an effective amount up to about 6 wt. % of a bonding constituent consisting essentially of at least two metals that are capable of forming an alloy with each other selected from the group of Cu and the metals of Group VIII of the Periodic Table of the Elements.

3,951,873
CERAMIC DIELECTRIC COMPOSITION

Nobuaki Kikuchi; Tsunehiko Yoshioka; Kiyoshi Furukawa, and Shinobu Fujiwara, all of Tokyo, Japan, assignors to TDK Electronics Company, Limited, Tokyo, Japan

Filed Aug. 2, 1974, Ser. No. 494,186
Claims priority, application Japan, Oct. 4, 1973, 48-110988
Int. Cl.² H01B *1/08*
U.S. Cl. 252—520 **6 Claims**



1. A dielectric ceramic composition, which comprises 22.5–45.2 wt. % SrO, 8.3–20.6 wt. % CaO, 29.3–80.8 wt. % TiO_2, and 0.07–8.3 wt. % MgO.

3,951,874
METHOD FOR PREPARING ELECTRON EMISSIVE COATINGS

Edmund R. Kern, Hampton, N.H., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed July 10, 1974, Ser. No. 487,082
Int. Cl.² H01B *1/06*
U.S. Cl. 252—521 **2 Claims**

1. The method for preparing electron emissive coatings for electrical gas discharge devices comprising the following steps:

combining 5 mols of $Ba_5Ta_2O_{10}$ with 4 mols $CaCO_3$;

milling the mixture in a suspension of methyl alcohol for obtaining a homogeneous suspension therein; and

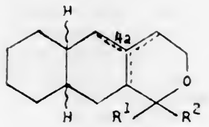
drying the suspension and heating for one hour at 800°C and for two hours at 1200°C in order to form the alkaline earth tantalate.

3,951,875
PERFUME COMPOSITIONS

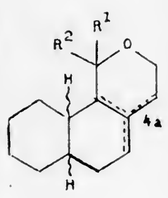
Bernard Auger, Residence les Marronniers, Grasse; Pierre Pesnelle, 1 rue de Cannes, Le Cannet, and Paul Jose Teisseire, 14 Avenue Pierre Semard, Grasse, all of France

Division of Ser. No. 328,928, Feb. 2, 1973, Pat. No. 3,901,924. This application Dec. 20, 1974, Ser. No. 534,737
Claims priority, application France, Feb. 16, 1972, 72.05139
Int. Cl.² A61K *2/46*; **C11B** *9/00*
U.S. Cl. 252—522 **12 Claims**

1. An odoriferous composition containing naphthopyran of the formula



or



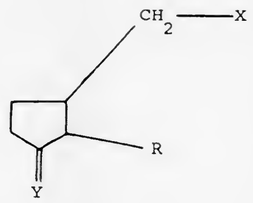
wherein R^1 and R^2 each represent lower alkyl having from 1 to 4 carbon atoms and the dotted lines indicate an optional double bond emanating from the carbon atom in the 4*a* position, and mixtures thereof.

3,951,876
ODORIFEROUS COMPOSITIONS CONTAINING CERTAIN CYCLOPENTANONE DERIVATIVES

Charles Jerome Louis Celli, Eaubonne; Marcel Plattier, Antibes, and Paul José Teisseire, Grasse, all of France, assignors to Societe Anonyme des Etablissements Roure-Bertrand Fils and Justin Dupont, Paris, France

Filed Jan. 11, 1973, Ser. No. 322,747
Claims priority, application France, Jan. 18, 1972, 72.01509
Int. Cl.² C11B *9/00*
U.S. Cl. 252—522 **19 Claims**

1. An odoriferous composition comprising a cyclopentanone derivative of the formula



in which

R represents a hydrocarbon group of 3 to 7 carbon atoms,

X represents a cyano, formyl, hydroxymethyl, lower alkoxymethyl, lower alkanoyloxymethyl or lower alkylcarbonyl group and

Y represents an oxo or ketal group,

with the proviso that R does not represent an n-pentyl group when, simultaneously, X represents a methylcarbonyl group and Y represents an oxo group, in admixture with a carrier which is perfumed by said cyclopentanone derivative.

3,951,877
HEAVY-DUTY GRANULAR DETERGENT COMPOSITION WITH SODIUM CITRATE BUILDER

Osamu Okumura, Funabashi; Kazuo Ohbu, Tokyo; Mitsuharu Kachi, Ichikawa, and Masuzo Nagayama, Tokyo, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed July 13, 1973, Ser. No. 378,922
Claims priority, application Japan, July 17, 1972, 47-071934
Int. Cl.² C11D *3/08, 3/04, 1/22, 1/14*
U.S. Cl. 252—526 **3 Claims**

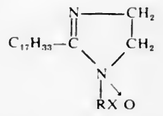
1. A heavy-duty granular detergent having the form of free-flowing, generally hollow and spherical particles having a particle shell strength effective to minimize pulverization of the particles during packaging and transportation, prepared by spray drying an aqueous slurry of a detergent composition consisting essentially of 10 to 60 wt. percent of sodium citrate, 5 to 40 wt. percent of non-soap anionic surfactant, the weight ratio of sodium citrate to said surfactant being in the range of from 1:5 to 10:1, 0.1 to 10 wt. percent of an inorganic aluminum substance selected from the group consisting of aluminum salts, aluminum oxide and aluminum hydroxide, and the balance is sodium sulfate or sodium sulfate and sodium silicate.

3,951,878
IMIDAZOLINE OXIDES

Reginald L. Wakeman, Philadelphia, Pa.; Zdzislaw J. Dudzinski, Clifton, and Arnold Lada, Montclair, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 804,669, March 5, 1969, abandoned, which is a continuation-in-part of Ser. No. 562,522, July 5, 1966, abandoned. This application Nov. 23, 1971, Ser. No. 201,573
Int. Cl.² C11D *3/26*
U.S. Cl. 252—542 **4 Claims**

1. A surface-active composition consisting essentially of (a) a surface-actively effective amount of a compound having the structure:



wherein R is a member of the group consisting of C_2H_4 and C_3H_6 and X is a member of the group consisting of OH and NH_2, and (b) a surface-actively effective amount of another surface-active agent selected from the group consisting of anionic, cationic and non-ionic surface-active agents.

3,951,879
DETERGENT THAT REDUCES ELECTROSTATIC CLING OF SYNTHETIC FABRICS

Harold Eugene Wixon, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 14, 1973, Ser. No. 424,903
Int. Cl.² C11D *1/00, 1/02, 1/62, 1/66*
U.S. Cl. 252—547 **8 Claims**

1. A laundry product which cleans and eliminates static electricity on synthetic fabrics comprising an organic detergent selected from the class consisting of anionic, non-ionic, amphoteric surfactants and mixtures thereof wherein the amount of anionic ranges from about 5–24%, the amount of nonionic from about 2–20% and the amount of amphoteric from about 2–20% and about 0.5 to 1% of a water-soluble organic or inorganic magnesium or calcium salt, and about 0.25 to 1% of a quaternary ammonium compound, all percents by weight of the total composition.

3,951,880
ANTI-DUSTING ALPHA-OLEFIN SULFONATE DETERGENT COMPOSITIONS

Marvin Mausner, Teaneck, and Brij L. Kapur, Paterson, both of N.J., assignors to Witco Chemical Corporation, New York, N.Y.

Filed Feb. 2, 1973, Ser. No. 329,274
Int. Cl.² C11D *1/12*
U.S. Cl. 252—555 **9 Claims**

1. A process for suppressing the dusting tendencies of an alkali metal salt of a C_{10}–C_{22} alpha-olefin sulfonate detergent which comprises incorporating therein from about 10 to 35% by weight of a lower alkanolamine salt of said alpha-olefin sulfonate.

5. A substantially dry particulate composition consisting essentially of an alkali metal salt of a C_{10}-C_{22} alpha-olefin sulfonate admixed with about 10–35% by weight of a lower alkanolamine salt of said sulfonate.

3,951,881
METHOD OF MAGNETIC PARTICLE TESTING USING STRIPPABLE COATINGS

Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 360,988, May 16, 1973, Pat. No. 3,855,526. This application Oct. 3, 1974, Ser. No. 511,814
Int. Cl.² G01R *33/12*; **H01F** *1/28*
U.S. Cl. 252—62.52 **6 Claims**

1. A water removable magnetic particle dispersion composition for nondestructive magnetic inspection of an object, which consists essentially of, by volume, about 60 to 90 parts of a liquid hydrocarbon vehicle, about 5 to 35 parts of a water soluble surfactant and about 2 to 10 parts magnetic particles, said water soluble surfactant being a water soluble ether of polyethylene glycol, and said magnetic particles being black magnetic Fe_3O_4 particles or red magnetic Fe_2O_3 particles.

3,951,882
DIELECTRIC COATING COMPOSITIONS

Albert H. Markhart, and David R. Cahill, both of Wilbraham, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 8, 1973, Ser. No. 339,263
Int. Cl.² H01B *3/02*
U.S. Cl. 252—63.5 **13 Claims**

1. A dielectric coating composition for the preparation of a dielectric recording medium containing a dielectric coating on a conductive substrate, which comprises an organic solvent solution of a dielectric resin and a dispersed organophilic clay pigment to impart a non-glossy surface and receptiveness to marking to the dielectric coating, wherein the organophilic clay pigment is a finely divided calcined kaolin clay which has been reacted with an organotitanium compound containing at least two hydrolyzable groups, the organotitanium compound being represented by the formula:

$$Ti(OR)_mR'_{4-m}$$

wherein R is a hydrocarbon radical containing from 1 to 12 carbon atoms and R′ is OCOR″, OR‴, or OSiR″, wherein R″ is a substituted or unsubstituted hydrocarbon radical having from 1 to 40 carbon atoms and wherein R‴ is a substituted or unsubstituted hydrocarbon radical having from 6 to 40 carbon atoms providing that R‴ and R are not identical and wherein m is an integer of 2 or 3; wherein the weight ratio of the solvent to the combined weight of dielectric resin and clay is in the range of 9:1 and 3:7; wherein the dielectric resin is a poly(vinyl butyral) containing from 9 to 21 weight percent "vinyl alcohol" and less than 10 weight percent vinyl acetate and of weight average molecular weight in the range of 20,000 to 500,000; and wherein the solvent is a blend of aromatic hydrocarbon containing 6 to 9 carbon atoms and a lower alcohol containing 1 to 4 carbon atoms in the weight ratio in the range of 80:20 to 20:80.

8. A dielectric coating composition for the preparation of a dielectric recording medium containing a dielectric coating on a conductive substrate, which comprises an organic solvent of a dielectric resin and a dispersed organophilic clay pigment to impart a non-glossy, surface and receptiveness to marking to the dielectric coating, wherein the organophilic clay pigment is a finely divided calcined kaolin clay which has been reacted with an organotitanium compound containing at least two hydrolyzable groups, the organotitanium compound being represented by the formula:

$$Ti(OR)_mR'_{4-m}$$

wherein R is a hydrocarbon radical containing from 1 to 12 carbon atoms and R′ is OCOR″, OR‴, or OSiR″, wherein R″ is a substituted or unsubstituted hydrocarbon radical having from 1 to 40 carbon atoms and wherein R‴ is a substituted or unsubstituted hydrocarbon radical having from 6 to 40 carbon atoms providing that R‴ and R are not identical and wherein *m* is an integer of 2 or 3; wherein the weight ratio

of the solvent to the combined weight of dielectric resin and clay is in the range of 9:1 and 3:7 wherein the binder is an interpolymer containing 30 to 70 parts by weight of styrene or a substituted styrene, 30 to 70 parts by weight of an acrylic ester or a methacrylic ester of a C_1 to C_8 saturated monohydric aliphatic alcohol and optionally up to 10 parts by weight of an unsaturated acid monomer, the relative viscosity of the interpolymer being in the range of from 1.1 to 3.0, measured on a 2 percent solution in benzene; and wherein the solvent is an aromatic hydrocarbon containing 6 to 9 carbon atoms.

3,951,883

PROCESS FOR THE MANUFACTURE OF PULVERULENT POLYVINYL CHLORIDE MOLDING COMPOSITIONS

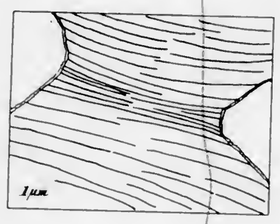
Kasimir Ruchlak, Burgkirchen, Alz; Christoph Heinze, Burghausen, Salzach, and Rolf Kränzle, Burgkirchen, Alz, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Feb. 28, 1974, Ser. No. 446,779

Claims priority, application Germany, Jan. 18, 1974, 2402314

Int. Cl.² C08J *9/24*

U.S. Cl. 260—2.5 M **6 Claims**



1. In the process for making a pulverulent molding composition capable of being sintered of suspension polyvinyl chloride by polymerizing vinyl chloride in suspension in aqueous phase using an oil soluble activator in the presence of a suspension stabilizer, a non ionic wetting agent and an emulsifier, separating and drying the polymer, the improvement which comprises using as emulsifier of from 0.01 to 0.5 % by weight, calculated on monomeric vinyl chloride, of an alkylarylsulfonic acid having from 3 to 16 carbon atoms in the alkyl chain, or an alkylsulfonic acid having from 8 to 16 carbon atoms, or a mixture of the said sulfonic acids, about 30 to 80 % of the said emulsifier being added prior to and optionally during the course of polymerization and the balance of 70 to 20 % of emulsifier being applied to the polymer after its separation.

3,951,884

PHOTO-DEGRADING RESINOUS COMPOSITION AND SHAPED ARTICLE MANUFACTURED THEREFROM

Hiroshi Miyoshi, Takatsuki; Hirohumi Mori, and Yoriko Tanoue, both of Suita, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 213,211, Dec. 28, 1971, Pat. No. 3,925,269. This application Oct. 3, 1974, Ser. No. 511,729

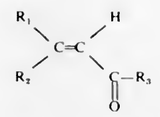
Claims priority, application Japan, Dec. 28, 1970, 45-126944; Dec. 28, 1970, 45-126945

Int. Cl.² C08J *9/00*

U.S. Cl. 260—2.5 B **10 Claims**

1. A photo-degradable non-rubbery resinous composition which comprises a blend of:

a. from 50 to less than 100 % by weight of a copolymer composed of (i) 95.0 – 99.9 % by weight of a monomer selected from the group consisting of styrene and methyl methacrylate, (ii) 5.0 – 0.1 % by weight of a diene monomer and (iii) 0.5 to 4.9 % by weight of an unsaturated ketone having the formula



wherein R_1, R_2 and R_3, which may be the same or different, represent a hydrogen atom or a methy or phenyl group, the sum of the proportions of the monomers (i), (ii) and (iii) being 100% by weight and the sum of the weight percent of the diene monomer and the unsaturated ketone being not greater than 5% by weight, and

b. greater than 0% by weight and up to 50 % by weight of a thermoplastic synthetic resin other than said copolymer, said thermoplastic synthetic resin being selected from the group consisting of polystyrene, polyethylene, polymethyl methacrylate and polyvinyl chloride.

3,951,885

METHOD OF MAKING MAGNESIUM OXYCHLORIDE CEMENT COFOAMED WITH SYNTHETIC RESIN

Henry Clark Thompson, Saratoga, Calif., assignor to Thompson Chemicals, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 194,557, Nov. 1, 1971, Pat. No. 3,778,304, which is a continuation-in-part of Ser. No. 811,616, March 28, 1969, abandoned, which is a continuation-in-part of Ser. No. 589,808, Oct. 27, 1966, abandoned. This application Sept. 17, 1973, Ser. No. 397,833

Int. Cl.² C08K *3/18*; **C08G** *18/14*, *8/22*

U.S. Cl. 260—2.5 AK **11 Claims**

1. In a method of preparing a fireproof material, the steps of mixing

a. between 1 and 9 parts by weight on a dry basis of

1. aqueous magnesium chloride having a specific gravity between 21.5° and 22.5° Baume,
2. between 5 and 6.5 pounds magnesium oxide per gallon of aqueous magnesium chloride, and
3. metallic frothing agent chemically reactive with ingredients (1) and (2) to produce bubbles in a foamed magnesium oxychloride cement with

b. one part of the ingredients for synthetic resin foam and reacting the ingredients simultaneously to form a cofoamed product.

2. A method as in claim **1** wherein the synthetic resin is polyurethane.

6. A method as in claim **1** wherein the synthetic resin is resorcinol-formaldehyde.

3,951,886

PROCESS FOR PRODUCING POLYESTER RESIN

Hideo Miyake; Osamu Makimura, and Toshio Tsuchida, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Mar. 22, 1974, Ser. No. 453,955

Claims priority, application Japan, Mar. 22, 1973, 48-33309

Int. Cl.² C08J *11/04*; **C08G** *63/76*

U.S. Cl. 260—2.3 **14 Claims**

1. A process for producing polyester resin, which comprises depolycondensing 1 mol of polyester waste with 1.05 to 2.0 mols of at least one polyol in the presence of about 0.005 to 0.1% by weight, based on the weight of polyester waste, of at least one titanyl oxalate compound or titanium tartrate compound as a catalyst at a temperature of about 210° to 240°C. for a time sufficient to produce an oligomer, and polycondensing the resulting depolycondensation product with at least one polycarboxylic acid or an anhydride thereof and at least one polyol.

3,951,887

ADHESION OF RUBBER TO REINFORCING MATERIALS

Syozo Tanimura; Masahiko Harada, both of Minoo, and Ryohei Tsuyama, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 15, 1974, Ser. No. 443,002

Claims priority, application Japan, Feb. 16, 1973, 48-19616

Int. Cl.² C09J *3/14*, *3/16*; **C08L** *9/00*, *61/28*

U.S. Cl. 260—3 **11 Claims**

1. A vulcanizable rubber composition having improved adhesion properties comprising a diene rubber component, a methylolmelamine condensate formaldehyde-donor consisting essentially of 3 to 8 oligomers of a methylolmelamine, said methylolmelamine condensate being prepared by condensing at least one methylolmelamine selected from the group consisting of dimethylolmelamine, trimethylolmelamine and tetramethylolmelamine at a temperature of 0° to 100°C. and at a pH of 5 to 8 in an aqueous medium until the viscosity of the reaction mixture in the aqueous medium is from 300 to 500 cp, and a formaldehyde-acceptor selected from the group consisting of m-disubstituted benzenes and reaction products thereof with aldehyde compounds.

3,951,888

PROCESS FOR PREPARING POLYOXYALKYLENE HAVING ALLYL END-GROUP

Katsuhiko Isayama, and Itaru Hatano, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 7, 1974, Ser. No. 477,409

Claims priority, application Japan, June 7, 1973, 48-64567; May 21, 1974, 49-57604

Int. Cl.² C08G *65/32*

U.S. Cl. 260—823 **23 Claims**

1. A process for preparing a polyoxyalkylene oxide having allyl end-groups which comprises subjecting an alkylene oxide monomer to addition polymerization in the presence of potassium hydroxide in an amount of 2 to 30% by mole to said alkylene oxide monomer at a polymerization temperature of 20° to 100°C. for 1 to 40 hours with agitation, and reacting the polymerized alkylene oxide with an allyl halide compound in an amount of not less than one mole to one mole of an end-group of the polymerized alkylene oxide at a reaction temperature of 20° to 100°C. for 10 minutes to 2 hours; said potassium hydroxide being for the most part dispersed in the polymerization system.

3,951,889

FLUID ABSORBENT ALLOY FIBERS

Frederick R. Smith, Wilmington, Del., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 309,076, Nov. 24, 1972. This application Dec. 6, 1974, Ser. No. 530,476

Int. Cl.² C08L *1/28*

U.S. Cl. 260—17 R **4 Claims**

1. Fluid absorbent alloy fibers formed from non-derivatized viscose containing at least 5%, based upon the weight of the cellulose in such viscose, of each cyanoethylated viscose and polyvinylpyrrolidone, each of said fibers comprised of a matrix of non-derivatized regenerated cellulose having uniformly dispersed therein regenerated cyanoethyl cellulose having an average degree of cyanoethyl substitution of from about 0.25 to about 0.65 and polyvinylpyrrolidone having an average molecular weight of from about 100,000 to 400,000, the non-derivatized regenerated cellulose being the major portion of the respective fibers, said alloy fibers having fluid holding capacities greater than fibers formed of non-derivatized regenerated cellulose and alloy fibers comprised of a matrix of non-derivatized regenerated cellulose and either of said regenerated cyanoethyl cellulose and said polyvinylpyrrolidone.

3,951,890

TAIL CONTROL AND TRANSFER ADHESIVES FOR ROLLED PAPER PRODUCTS

Raymond J. Reilly, Hickory Hills, and Howard R. Adamson, Wheaton, both of Ill., assignors to Unitech Chemical Inc., Chicago, Ill.

Filed July 22, 1974, Ser. No. 490,727

Int. Cl.² C08L *3/00*

U.S. Cl. 260—17.4 ST **6 Claims**

1. An improved adhesive composition comprising from about 30–65% water by weight, from about 10–40% by weight of a modified starch selected from the group consisting of borated dextrin, gelatinized starch, pre-gelatinized starch and mixtures thereof, and from about 15–40% polyethylene resin solids emulsion by weight said resin solids being present in the amount of from about 10 to 80% basis the weight of modified starch, the total solids content of said adhesive composition being from about 25% to 55% by weight.

3,951,891

PREPARATIONS OF REACTION PRODUCTS OF EPOXIDES, FATTY AMINES AND FATTY ACIDS, PROCESS FOR THEIR MANUFACTURE AND THEIR USE

Rosemarie Töpfl, Dornach; Max Schwank, Basel, and Arthur Maeder, Therwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sept. 25, 1974, Ser. No. 508,957

Claims priority, application Switzerland, Oct. 5, 1973, 14256/73; Dec. 12, 1973, 17405/73

Int. Cl.² C08G *8/32*, *59/00*; **C08L** *61/26*, *63/02*

U.S. Cl. 260—21 **46 Claims**

1. A preparation of reaction products of epoxides, fatty amines and fatty acids which contains

1. reaction products of

a. 1 epoxide equivalent of an epoxide that contains at least two epoxide groups per molecule,

b. a 0.1 to 0.7 amino group equivalents of a fatty amine with 12 to 24 carbon atoms,

c. a 0.2 to 1.5 acid equivalents of a dimerized and/or trimerized fatty acid that is derived from monomeric unsaturated fatty acids with 16 to 22 carbon atoms, and

2. an aminoplast precondensate that contains alkyl ether groups and is used in admixture with (1) or as reaction component for the manufacture of (1) or is used as mixture and reaction component and which is 10 to 80% by weight based on the total weight of components (a) to (c) and (2).

3,951,892

AQUEOUS PRINTING VEHICLE

Raymond L. Drury, Jr.; Charles S. Nevin, both of Decatur, and James W. Hines, Maroa, all of Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Apr. 9, 1973, Ser. No. 349,351

Int. Cl.² C18L *93/00*

U.S. Cl. 260—23 EM **54 Claims**

1. An aqueous polymer dispersion possessing film-forming characteristics under ambient drying conditions and adaptable for use as an aqueous printing vehicle, said polymer dispersion comprising:

a. a continuous, aqueous external phase consisting essentially of an adduct reaction product of at least one dicarboxylic acid selected from the group consisting of an alpha, beta-ethylenically unsaturated dicarboxylic acid and an alpha, beta-ethylenically unsaturated dicarboxylic acid anhydride and an unsaturated glyceride oil, said adduct reaction product being neutralized with an aqueous solution of a tertiary amine in an amount sufficient to provide a watersoluble, tertiary amine salt reaction product having a pH within the range of 7.0 to 10.0, and

b. a non-continuous, internal phase of minute polymer particles of a polymerized monovinyl aromatic monomer

having an average particle size of less than 0.4 micron uniformly dispersed within said external phase,

said polymer dispersion being characterized as containing at least one part to less than two parts external phase dry weight solids for each three parts by weight dry internal phase solids, the total dry solids weight of said external phase and said internal phase being at least 40% with the remaining nonsolids portion of said polymer dispersion consisting essentially of water, said polymer dispersion being further characterized as containing less than 0.5% by weight monovinyl aromatic monomer.

3,951,893

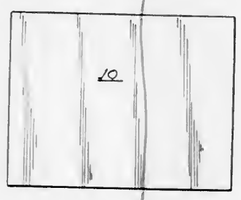
FILM-FORMING SILANE CROSSLINKED ACRYLATE INTERPOLYMERS HAVING WATER-BARRIER PROPERTIES

Robert J. Gander, Whitehouse, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

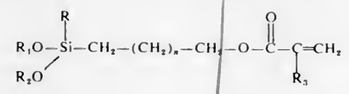
Continuation-in-part of Ser. No. 90,539, Nov. 18, 1970, abandoned. This application Sept. 12, 1974, Ser. No. 505,414

Int. Cl.² C08F *230/08*

U.S. Cl. 260—23 AR **22 Claims**



1. A film-forming polymeric composition having water-barrier properties at neutral pH's in the range of between about 4.5 and about 8.5 and solubilizable at a pH substantially outside said neutral pH range, said composition comprising a silane-crosslinked interpolymer of about 0.5 to 5 parts by weight of a first monomer selected from the group consisting of the alkyl acrylates wherein the alkyl group has from one to eight carbon atoms, and about 1 part by weight of a second monomer selected from the group consisting of acrylic acid, methacrylic acid, fumaric acid, maleic acid, maleic anhydride, itaconic acid, dimethylaminoethyl acrylate, dimethylaminoethyl methacrylate, diethylaminoethyl acrylate, diethylaminoethyl methacrylate, tert.-butylaminoethyl acrylate and tert.-butylaminoethyl methacrylate, and about 0.9 to 1.5% by weight, based on the combined weight of said first and second monomers, of a crosslinking monomer selected from the group consisting of the silane monomers having the structural formula:



wherein:

R is selected from the group consisting of CH_3—, CH_3CH_2—, CH_3O— and CH_3CH_2O—;

R_1 and R_2 are each selected from the group consisting of CH_3—and CH_3CH_2—;

R_3 is selected from the group consisting of H, CH_3— and CH_3CH_2—;

and n is 0 or a positive integer not greater than 8.

3,951,894

TERNARY FLAME-RETARDED COMPOSITIONS INCLUDING IRON COMPOUND

William Paul Whelan, Jr., Woodbury, Conn., assignor to Uniroyal Inc., New York, N.Y.

Filed Oct. 17, 1974, Ser. No. 515,800

Int. Cl.² C08J *3/20*

U.S. Cl. 260—27 BB **24 Claims**

1. A composition comprising an organic polymer selected from the group consisting of acrylonitrile-butadiene rubber and a plastic terpolymer of acrylonitrile, butadiene and styrene, and: (a) from 1 to 300 parts by weight per 100 parts by weight of said organic polymer of an organic additive selected from the group consisting of chlorine-substituted and bromine-substituted aliphatic, aromatic and alicyclic hydrocarbyl compounds having a halogen content in the range of from 35 to 80 weight percent and optionally containing oxygen substituents in the form of hydroxyl, anhydride, ether, carboxyl, ester or phosphate groups and which are substantially nonvolatile and stable at polymer processing temperatures, and mixtures thereof; and (b) from 0.1 to 50 parts by weight per 100 parts by weight of said organic polymer of an iron compound selected from the group consisting of basic and normal forms of ferrous and ferric sulfates, ferrous and ferric ammonium sulfates, iron carbonate, ferrous sulfide, ferrous, ferric, ferrous ammonium and ferric ammonium salts of aliphatic carboxylic acids which optionally contain a hydroxyl substituent, and iron resinate, and mixtures of said iron compounds.

3,951,895

ASPHALTIC COMPOUND AND PROCESS FOR MAKING THE SAME

Conrad A. Anthenien, 4404 Roselle, Modesto, Calif. 95350; Mark C. Anthenien, 780 Saratoga Ave., No. S-313, San Jose, Calif. 95129, and Dale C. Anthenien, 4404 Roselle, Modesto, Calif. 95350

Filed July 24, 1975, Ser. No. 598,556

Int. Cl.² C08L *95/00*

U.S. Cl. 260—28.5 AS **5 Claims**

1. A process of manufacturing an asphaltic compound in the field comprising the steps:

mixing at ambient air temperature, one to five parts by weight of an emulsion of a copolymer of methyl methacrylate and ethyl acrylate have 40% to 60% solids by weight with 12 to 20 parts by weight of asphaltic emulsion.

3,951,896

AMIDO-CONTAINING RESINS AND COMPOSITIONS CONTAINING THE SAME

Katsuhisa Shimizu, Otokuni; Masaru Ori, Osaka, and Osamu Oseto, Suita, all of Japan, assignors to Arakawa Rinsan Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

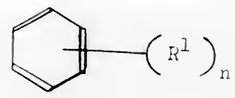
Filed Nov. 11, 1974, Ser. No. 522,691

Int. Cl.² C08L *23/00;* **C08F** *18/14;* **C08G** *63/00;* **C08F** *6/00*

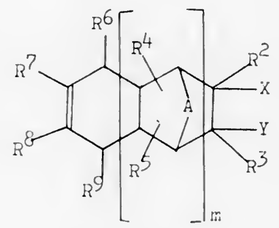
U.S. Cl. 260—29.7 R **17 Claims**

1. Amido-containing resin which consists essentially of an aminolysis reaction product of

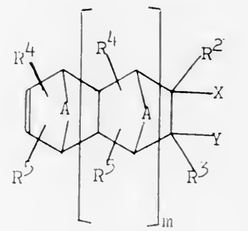
A. a Friedel-Grafts catalyzed reaction product of (a) a benzene compound having the formula



wherein R^1 is an alkyl group having 1 to 18 carbon atoms and n is zero or an integer of 1 to 5 and (b) an alicyclic compound having the formula



or



wherein each of R^2, R^3, R^4 and R^5 is a hydrogen atom or methyl group, each of R^6, R^7, R^8 and R^9 is a hydrogen atom or alkyl group having 1 to 4 carbon atoms, one of X and Y is —COOH and the other is —$COOR^a$ or X and Y as bonded together represent an acid anhydride ring, R^a being an alkyl group having 1 to 4 carbon atoms, A is $-CH_2-$ or $-CH_2CH_2-$, and m is zero or an integer of 1 or 2, and

B. an amino-containing compound having the formula



wherein each of R^{10} and R^{11} is a hydrogen atom, alkyl group having 1 to 6 carbon atoms or cyclohexyl or R^{10} and R^{11} as bonded together with nitrogen represent morpholino or piperidino group.

3,951,897

PROCESS FOR PREPARING NON-IONIC POLYURETHANE EMULSIONS

Kazuo Matsuda; Hidemasa Ohmura, and Hirakazu Aritaki, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Nov. 26, 1974, Ser. No. 527,247

Claims priority, application Japan, Nov. 27, 1973, 48-133215

Int. Cl.² C08G *18/32;* **C08J** *3/06*

U.S. Cl. 260—29.2 TN **8 Claims**

1. A method for preparing a non-ionic polyurethane aqueous emulsion in which the polyurethane component is a polyurethane-urea-polyamine containing in the molecule a crosslinkable halohydrin structure, which comprises:

1. reacting (I) organic polyhydroxyl reactant mixture consisting essentially of 15 to 80 weight percent of a water-soluble polyoxyethylene glycol having a molecular weight of 200 to 10,000, and the balance a water-insoluble organic polyhydroxyl compound having a molecular weight of 200 to 10,000 and (II) an excess of organic polyisocyanate to produce an isocyanate-terminated prepolymer, and
2. reacting said prepolymer with (III) polyalkylene polyamine having at least two groups selected from the group consisting of primary amino groups and secondary amino groups and also having a functional group of the formula

$$-CH(OH)CH_2X$$

where X is chloro or bromo, the total mole number of primary and secondary amino groups in the polyalkylene polyamine being greater than the total mole number of isocyanate groups in said prepolymer, the reaction being carried out until the presence of —NCO groups cannot be detected, whereby to form polyurethane-urea-polyamine, and

3. mixing the polyurethane-urea-polyamine with water to form a non-ionic polyurethane emulsion.

3,951,898

BLENDS OF POLYSULFIDE POLYMER LATICES WITH URETHANE PREPOLYMERS TO PRODUCE AN IMPROVED SEALANT AND CAULKING COMPOSITION

Henry N. Paul, III, Blue Bell, Pa., assignor to Thiokol Corporation, Newtown, Pa.

Continuation of Ser. No. 316,168, Dec. 18, 1973, abandoned. This application May 13, 1974, Ser. No. 469,207

Int. Cl.² C08L *75/06, 81/04*

U.S. Cl. 260—29.6 NR **10 Claims**

1. A process for making a polysulfide polymer latex based sealant composition which comprises reacting an isocyanate-terminated urethane prepolymer having an NCO content of from 4% to 10% by weight with a water dispersion of a normally solid high molecular weight polysulfide polymer substantially free of thiol terminals and having about 60% solids content, said polysulfide polymer having in its polymeric chain recurring radicals selected from the group hydrocarbon, or oxahydrocarbon radicals linked by sulfur linkages.

2. A process as in claim 1 additionally containing special purpose additives selected from the group consisting of fillers, plasticizers, adhesive additives, latex stabilizers, and anti-sponging agents.

5. A process as in claim 2 wherein the fillers are $CaCO_3$ and TiO_2, the plasticizers are a mixture of chlorinated terphenyl and chlorinated hydrocarbon, the adhesive additive is polyethyl acrylate, the latex stabilizer is sodium polyacrylate, and the anti-sponging agent is magnesium oxide.

3,951,899

OPAQUE, MICROCELLULAR FILMS FROM LATEX COMPOSITIONS, PROCESS AND COMPOSITION FOR PREPARING THE SAME

Jerome A. Seiner, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 48,199, June 22, 1970, Pat. No. 3,669,728, Continuation-in-part of Ser. No. 741,502, July 1, 1968, Pat. No. 3,764,364, Continuation-in-part of Ser. No. 745,433, July 17, 1968, Pat. No. 3,655,129. This application June 10, 1971, Ser. No. 151,735

Int. Cl.² C08L *9/10, 13/02*

U.S. Cl. 260—29.6 MH **14 Claims**

1. A latex composition which forms continuous opaque films comprising:

A. an aqueous continuous phase containing dispersed therein in latex form a film-forming binder consisting essentially of substantially water-insoluble particles of coalescable polymer; and

B. a liquid which is less volatile than water and which is a non-solvent for the coalescable polymer, which nonsolvent is present in an amount between about 0.5 and about 5 parts by weight of the non-solvent liquid per part of coalescable polymer; said non-solvent being of sufficiently low volatility as to be capable of producing a continuous, non-porous, microcellular and opaque film having minute, discrete and substantially closed voids, and in the absence of an opacifying agent, a Kubelka-Munk scattering coefficient greater than 0.5 reciprocal mil at 4400 angstroms and greater than 0.1 reciprocal mil at 5600 angstroms.

3,951,900

FIRE-RETARDANT ADHESIVE

Wesley W. Bath, Williamsville, N.Y., assignor to National Gypsum Company, Buffalo, N.Y.

Filed Dec. 26, 1973, Ser. No. 427,688
Int. Cl.² C08L 9/08; C09K 3/28
U.S. Cl. 260—29.7 S **2 Claims**

1. A wet adhesive composition comprising a styrene-butadiene latex aqueous emulsion, a finely ground calcium sulfate dihydrate fire-retardant filler, a minor quantity of sodium glucoheptonate sequestering agent, a minor quantity of sodium polyacrylate thickener, and a minor quantity of a nonionic surface active agent, said nonionic surface active agent being present in a ratio of about 1 part for each 100 parts styrene-butadiene latex aqueous emulsion.

3,951,901

PROCESS FOR THE PRODUCTION OF HOMOGENEOUS POLYOLEFIN RUBBER-OIL MIXTURES

Harald Bluemel, and Georg Schleich, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Feb. 21, 1974, Ser. No. 444,282
Claims priority, application Germany, Feb. 23, 1973, 2309039
Int. Cl.² C08K 5/01
U.S. Cl. 260—33.6 AQ **5 Claims**

1. A process for preparing a homogeneous liquid mixture consisting essentially of i) a normally solid polyolefin rubber copolymer of 30–65% by weight ethylene and correspondingly 70–35% by weight of at least one monoolefinically unsaturated hydrocarbon of 3–8 carbon atoms, optionally further including at least one copolymerizable unconjugated diene hydrocarbon of 6–16 carbon atoms in an amount which provides 0.5–30 olefinic double bonds per 100 carbon atoms in the copolymer, sad polyolefin rubber copolymer having a molecular weight (M_n) of 25,000–100,000 as determined by the osmometric method and a Mooney viscosity ML_{1+4} at 100° C. of 30–180, dissolved in ii) 3–6 parts by weight, per part by weight of the copolymer, of an extending oil having a viscosity of 50–5000 centistokes at 20° C., a specific gravity of 0.84–0.98 and a boiling point of 120°–370° C. at 5 Torr, which comprises:

a. adding the polyolefin rubber in the form of loose, freely movable crumbs having a density of 0.1–0.4 g/cm³ to said extending oil at a temperature of 160–210° C; and

b. admixing the polyolefin rubber crumbs with the hot extending oil at an agitation speed of 5–100 cm/sec. and a shear velocity of 1–50 $sec.^{-1}$ for a period of time less than about 45 minutes but which time is sufficient to form a homogeneous liquid mixture wherein less than 1% by weight of the polyolefin rubber remains in the solid state.

3,951,902

POLYIMIDE SEALANT COMPOSITION

Robert J. Jones, Hermosa Beach; Howard N. Cassey, Long Beach, and Howard E. Green, Los Angeles, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 18, 1974, Ser. No. 524,607
Int. Cl.² C08G 18/62, 73/10
U.S. Cl. 260—37 N **7 Claims**

1. A method for making a compliant polyimide comprising polymerizing:

an aromatic bis furfurylimide prepared by reacting (A) one equivalent of an aromatic dianhydride with (B) one molecular weight of furfurylamine with an aliphatic ether bis(maleimide) prepared by reacting (C) one equivalent weight of functionally terminated aliphatic ether selected from the group consisting of diisocyanate terminated aliphatic ethers and diamine terminated ethers with (D) one molecular weight of maleic anhydride in a temperature range of from 20°C to 60°C; and curing said imide polymer by heating in a temperature range of from 150°C to approximately 240°C.

3,951,903

MODIFIED POLYCARBONATE RESIN

John W. Shaffer, Williamsport, Pa., assignor to GTE Sylvania Incorporated, Montoursville, Pa.

Filed Nov. 1, 1974, Ser. No. 519,964
Int. Cl.² C08J 3/20
U.S. Cl. 260—37 PC **6 Claims**

1. A polycarbonate resin modified to counteract any alkali-catalyzed hydrolysis of the resin to thereby prolong the time to failure of said resin under conditions of high humidity and high mechanical stress, said modified resin consisting essentially of a homogeneous mixture of from about 70 to 99.9 percent by weight of a polycarbonate resin and from about 0.1 to 30 percent by weight of a compatible acidifying agent consisting of an organic carboxylic acid having a first ionization pKa value in a range of from about 1.0 to 6.5 or an anhydride thereof.

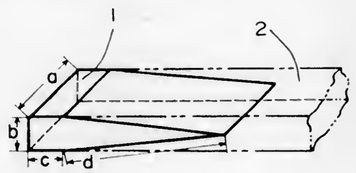
6. The modified polycarbonate resin of claim **1** further including reinforcing glass fibers dispersed throughout said modified resin.

3,951,904

ELECTROMAGNETIC WAVE ABSORBING MATERIAL CONTAINING CARBON MICROSPHERES

Atsushi Tomonaga, Tachikawa, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo and Toyo Boseki Kabushiki Kaisha, Osaka, both of, Japan

Filed Feb. 28, 1974, Ser. No. 446,798
Claims priority, application Japan, Mar. 7, 1973, 48-26104
Int. Cl.² C08L 67/00
U.S. Cl. 260—40 R **9 Claims**



1. An electromagnetic wave absorbing material useful for absorbing waves of 8,000 to 10,000 MHz comprising hollow non-cohesive carbon microspheres having a particle size of 50 – 1000μ and a wall thickness of 2 – 10μ uniformly mixed in a matrix comprising a non-conductive thermosetting or thermoplastic resin having a specific resistance of greater than $10^3\Omega$ cm.

3,951,905

FIBER- AND FILM-FORMING POLYESTER COMPOSITION

Keizo Sano; Yoshimasa Nishida, both of Mishima; Yoshio Kagiya, Shizuoka; Michihiko Tanaka, Aichi, and Masatoshi Mineo, Mishima, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 30, 1974, Ser. No. 465,533
Claims priority, application Japan, May 10, 1973, 48-51123
Int. Cl.² C08G 63/34, 63/70
U.S. Cl. 260—40 R **23 Claims**

1. A fiber and film-forming composition comprising a linear synthetic polyester containing a multiplicity of spaced-apart particles containing antimony, said particles being present in an amount of from about 0.02 to 1.0% by weight of said composition, the content of antimony in said particles being from about 15 to 70% based upon the weight of said particles, the average diameter of said particles being less than 10 microns and the maximum diameter of said particles being less than 30 microns, and the solution haze of said composition being from about 5 to 70%.

3,951,906

REINFORCED STYRENE-ACRYLONITRILE POLYMERS

Milton Farber, Bethany, and Henno A. Petersen, Newtown, both of Conn., assignors to Uniroyal Inc., New York, N.Y.

Continuation-in-part of Ser. No. 285,298, Aug. 31, 1972, abandoned. This application Feb. 28, 1974, Ser. No. 447,123
Int. Cl.² C08K 7/14
U.S. Cl. 260—42.18 **13 Claims**

1. A blend composition comprising:

A. between about 40% and 60% of a styrene-acrylonitrile copolymer;

B. between about 20% and 30% of $CaCO_3$ which has a maximum cross sectional dimension of 0.005 inch;

C. between about 20% and 30% of a discontinuous glass fiber having diameter between 10^{-3} and 10^{-4} inches; said percentages herein being based upon the total weight of said blend.

3,951,907

ELASTOMERIC AND PLASTOMERIC MATERIALS CONTAINING AMORPHOUS CARBONACEOUS SILICA

Povindar Kumar Mehta, El Cerrito, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 276,133, July 28, 1972. This application July 23, 1973, Ser. No. 381,528
Int. Cl.² C08K 3/04, 3/36
U.S. Cl. 260—42.46 **6 Claims**

1. As a new composition of matter, a polymeric material selected from the class consisting of elastomers and plastomers containing from 5 to 95% by weight of a highly reactive, highly amorphous, anhydrous, siliceous material derived from organic agricultural matter, which agricultural matter has a high initial silica content of up to about 28% and which material comprises from about 49 to about 98% silica, the balance being mainly residual carbon and nonvolatile inorganic constituents of said organic agricultural matter, said material having at least about 0.3% residual carbon and from about 1 to about 5% of minor nonvolatile impurities other than calcium oxide.

3,951,908

FLAME-PROOFING, HIGH MELTING POINT THERMOPLASTIC POLYMERS WITH LACTAM-IMPREGNATED RED PHOSPHORUS

Otto Kaiser, and Anton Cadus, Ludwigshafen, both of Germany, assignors to Badische Anilin- & Soda Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Continuation-in-part of Ser. No. 102,144, Dec. 28, 1970, abandoned. This application May 8, 1974, Ser. No. 468,179
Claims priority, application Germany, Dec. 31, 1969, 1965635
Int. Cl.² C08K 3/32; C08L 59/02, 67/00, 77/02
U.S. Cl. 260—45.7 P **11 Claims**

1. A composition comprising a high melting point, synthetic thermoplastic polymer selected from the group consisting of polyamides, linear polyesters and polyacetals and red phosphorus evenly incorporated into said polymer in a concentration ranging from 1 to 75% by weight based on the weight of the polymer, said composition being obtained by melt blending and uniformly incorporating into said polymer at a temperature above about 200° C. a lactam-impregnated red phosphorus mixture consisting essentially of from 25 to 90% by weight of particulate red phosphorus and from 10 to 75% by weight of lactam having from 4 to 12 carbon atoms.

3,951,909

POLYLAURYLLACTAM LOW IN FISHEYE GEL CONTENT

Rainer Feldmann, and Roland Feinauer, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft

Filed Oct. 29, 1974, Ser. No. 518,817
Claims priority, application Germany, Nov. 14, 1973, 2356728
Int. Cl.² C08G 69/48; C08K 5/34
U.S. Cl. 260—45.8 NZ **7 Claims**

6. A film-forming polyamide composition consisting essentially of about 98.5–99.95 percent by weight polylauryllactam and about 0.05 to 1.5 percent by weight 2-hydroxyphenylbenzoxazole.

3,951,910

FLAME RETARDANT POLYCARBONATE COMPOSITION

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 28, 1973, Ser. No. 429,646
Int. Cl.² C08K 5/16
U.S. Cl. 260—45.9 NC **11 Claims**

1. A flame retardant aromatic carbonate polymer composition comprising in admixture an aromatic carbonate polymer and a minor amount of an additive selected from the group consisting of the metal salt of monomeric and polymeric unsubstituted and substituted sulfonic acids of aromatic amides, and mixtures thereof, wherein said metal salts thereof are selected from the group consisting of alkali metals and alkaline earth metals, and mixtures of these metal salts, and said substituent on the metal salt of the substituted sulfonic acids of aromatic amides is selected from the group consisting of an electron withdrawing radical and mixtures of electron withdrawing radicals.

3,951,911
STABILIZED PROPYLENE-BASED POLYMER COMPOSITIONS

Kornel D. Kiss, Yonkers, N.Y., assignor to Dart Industries Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 464,409, April 26, 1974, abandoned. This application Nov. 22, 1974, Ser. No. 526,085
Int. Cl.² C08J *3/20*
U.S. Cl. 260—45.85 B 12 Claims

1. A stabilized normally solid polymeric composition which is highly resistant to degradation at high temperatures even in the presence of a metal such as copper comprising a base polymer the major fraction of which by weight is derived from propylene and which contains a carefully balanced, extraction resistant stabilizer system composed by weight of:

a. between about 0.4 and about 1.6% of the tetraester of pentaerythritol with 3(3′,5′-ditertiary butyl, 4′-hydroxy phenyl) propionic acid,
b. between about 0.1 and about 0.4% of N,N′′′ diacetyl N′,N′′ adipoyl dihydrazide, and
c. between about 0.15 and about 0.8% of a linear esterification product of the condensation reaction between 3,3′ thiodipropionic acid and glycols of the general formula HO—R—OH wherein R is a cycloalkylene or branched alkylene radical in which the carbon atom bonded to each —OH group is a primary carbon;

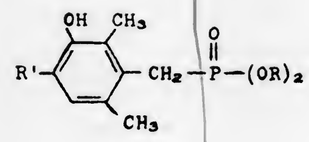
provided that the amount of (a) is substantially greater than the amount of either (b) or (c) and the amount of (c) is at least about equal that of (b).

3,951,912
HYDROXYBENZYLPHOSPHONATE ANTIOXIDANTS

Peter Vincent Susi, Middlesex, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 458,273, April 5, 1974, abandoned. This application Jan. 21, 1975, Ser. No. 542,760
Int. Cl.² C08J *3/20*
U.S. Cl. 260—45.85 B 9 Claims

1. A composition comprising a polyolefin containing a stabilizing quantity of (a) a compound of the formula:



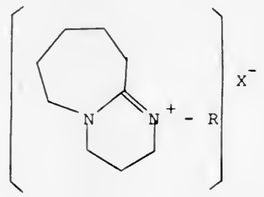
wherein R is an alkyl group of 12 to 30 carbon atoms and R_1 is a branched-chain alkyl of 3 to 12 carbon atoms and (b) a secondary stabilizer selected from the group consisting of distearyl thiodipropionate, dilauryl thiodipropionate, and pentaerythritol tetrakis(3-n-dodecylthiopropionate).

3,951,913
FLUOROELASTOMER COMPOSITION

Yutaka Kometani; Shun Koizumi, both of Toyonaka; Takeshi Suzuki, Nagaokakyo; Yasuyoshi Furukawa, Neyagawa; Masayasu Tomoda, Takatsuki, and Kiyoichi Kondo, Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Apr. 19, 1974, Ser. No. 462,427
Claims priority, application Japan, Apr. 21, 1973, 48-45247
Int. Cl.² C08F *8/30*
U.S. Cl. 260—47 UA 13 Claims

1. A fluoroelastomer composition comprising per 100 parts by weight of (a) a fluoroelastomer, 2 to 30 parts by weight of (b) at least one metal compound selected from the group consisting of a bivalent metal oxide, a bivalent metal hydroxide and a mixture of a bivalent metal oxide or a metal hydroxide with a metal salt of a weak acid, 0.5 to 5 parts by weight of (c) an aromatic polyhydroxy compound, 0.2 to 10 parts by weight of (d) a quaternary ammonium compound having the general formula:



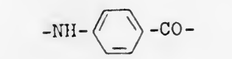
wherein R is an alkyl group having 1 to 24 carbon atoms or an aralkyl group having 7 to 20 carbon atoms, and x^- is an anion selected from the group consisting of halide ion, hydroxylate ion, alkoxylate ion, carboxylate ion, phenoxide ion, sulfonate ion, sulfate ion, sulfite ion and carbonate ion, and an effective amount but not more than 0.07 part by weight of (e) 1,8-diaza-bicyclo[5.4.0]-7-undecene.

3,951,914
PROCESS FOR PREPARING POLY(1,4-BENZAMIDE) IN CYCLIC SULFONE MEDIA

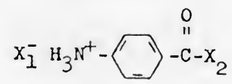
Stephanie Louise Kwolek, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed July 30, 1974, Ser. No. 493,069
Int. Cl.² C08G *69/04*
U.S. Cl. 260—47 CZ 5 Claims

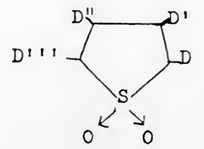
1. A process for preparing poly(1,4-benzamide) and copolymers thereof comprising at least about 80 mol % of units of the formula



comprising reacting a p-aminobenzoyl halide salt of the formula



wherein X_1 and X_2 are individually selected from chlorine and bromine with itself or with a coreactant system selected from the group of (1) an aliphatic diamine with an aromatic diacid chloride; (2) an acid chloride of a hydroxybenzoic acid; and (3) a bisphenol and an aromatic acid chloride or aromatic bischloroformate; in a cyclic sulfone medium containing an acid acceptor, the sulfone medium corresponding to the formula



wherein D, D′, D′′ and D′′′ represent hydrogen or methyl radicals, at temperatures under 50°C. and under anhydrous conditions.

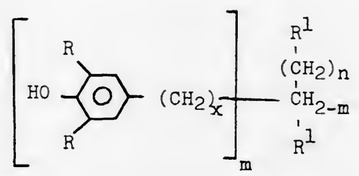
3,951,915
THERMO-OXIDATIVE STABLE COPOLYESTERS

Max H. Keck, and Richard H. Kline, both of Cuyahoga Falls, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 20, 1974, Ser. No. 534,610
Int. Cl.² C08G *63/18*
U.S. Cl. 260—47 C 12 Claims

1. High molecular weight linear copolyester compositions having improved thermo-oxidative stability comprising the condensation product of

A. an ester forming reactant selected from the group consisting of aromatic dicarboxylic acids or the C_1 to C_4 lower alkyl esters thereof, mixtures of two or more of said aromatic dicarboxylic acids or two or more of the C_1 to C_4 lower alkyl esters thereof, mixtures of at least one of said aromatic dicarboxylic acids with at least one saturated aliphatic dicarboxylic acid containing from 4 to 10 carbon atoms and mixtures of at least one of the C_1 to C_4 lower alkyl esters of said aromatic dicarboxylic acids with at least one C_1 to C_4 lower alkyl ester of said saturated aliphatic dicarboxylic acids containing from 4 to 10 carbon atoms,
B. glycols selected from the group consisting of glycols of the series $HO(CH_2)_nOH$ where *n* is an integer from 2 to 10 and 1,4-cyclohexanedimethanol and
C. copolymerizable hindered phenolic comonomers selected from the group consisting of hindered phenolic comonomers corresponding to the formula



where *x* and *n* are integers ranging from 0 to 1, *m* is an integer ranging from 1 to 2, R is a tertiary alkyl radical containing from 4 to 8 carbon atoms and R^1 is a radical selected from the group consisting of $—CH_2OH$, —COOH and $—COOR^2$ where R^2 is an alkyl radical containing from 1 to 4 carbon atoms and mixtures thereof, and

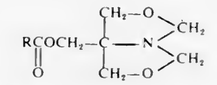
wherein units of said copolymerizable hindered phenolic comonomers are present in the copolyester in an amount ranging from about 0.1 to 10.0 mol percent of (A).

3,951,916
EPOXY RESIN COMPOSITION HAVING IMPROVED WETTING PROPERTIES

David K. Sausaman, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Filed May 14, 1974, Ser. No. 469,715
Int. Cl.² C08G *30/14*
U.S. Cl. 260—47 EN 4 Claims

1. A composition consisting essentially of a 1,2-epoxy resin having an epoxide equivalent of from about 170–1000, a curing agent therefor, and from about 0.1 to about 3% of an oxazolidine ester represented by the formula:



wherein R is an alkyl or alkenyl group of from 5 to 21 carbons.

3,951,917
PROCESS FOR REMOVAL OF CATALYST FROM POLYPHENYLENE ETHERS

Daniel E. Floryan, Glenmont, and James W. Watson, Albany, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed July 23, 1974, Ser. No. 490,938
Int. Cl.² C08G *65/44*
U.S. Cl. 260—47 ET 19 Claims

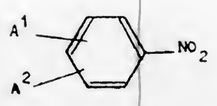
1. In a process for forming a polyphenylene ether by an oxidative coupling reaction in the presence of a chelatable metal-ion amine complex catalyst comprising passing an oxygen-containing gas through a reaction solution of a phenol and said catalyst, the improvement which comprises separating the metal ion component of said catalyst by contacting the reaction solution with a salt of ethylenediaminetetraacetic acid and thereafter without phase separation, separating the polyphenylene ether by admixing the combined mixture of said reaction solution and said salt of ethylenediaminetetraacetic acid with an antisolvent for said polyphenylene ether.

3,951,918
MANUFACTURE OF POLYSULPHONES

Michael Edward Benet Jones, Hitchin, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 474,933, July 26, 1965, abandoned, which is a continuation-in-part of Ser. No. 320,508, Oct. 31, 1963. This application July 8, 1974, Ser. No. 486,667
Claims priority, application United Kingdom, Nov. 6, 1962, 1059263/62; Mar. 18, 1963, 3201664/63; Aug. 6, 1964, 32016/64
Int. Cl.² C08G *75/20*, *75/23*
U.S. Cl. 260—49 10 Claims

1. In a process for the manufacture of polyaryl sulphones containing repeating units of the formula $—Ar—SO_2—$ from a starting material selected from the class consisting of reagents of the formula $H—Ar—SO_2.X$ and mixtures of reagents of the formulae $X.SO_2—AR—SO_2.X$ and H—Ar—H, in which formulae X is a halogen atom and Ar is a bivalent aromatic radical, the modification wherein the polymerisation is carried out at a temperature not exceeding 160°C in solution in a diluent selected from the class consisting of nitrobenzenes of the formula



in which A^1 is selected from the class consisting of hydrogen and halogen atoms and alkyl, cyano and nitro groups and A^2 is selected from the class consisting of hydrogen and halogen atoms and alkyl groups, the alkyl groups having not more than 4 carbon atoms each, using as catalyst a Lewis acid capable of generating a sulphonylium cationic species $-(Ar-SO_2)^+$ from an aromatic sulphonyl halide $-(Ar-SO_2.X)$ dissolved in a nitrobenzene of the above formula.

3,951,919
HEAT-SOFTENABLE POLYESTERURETHANE ADHESIVE

Raymond N. F. Pinfold, Frisby-on-the-Wreake; Austin T. Carpenter, Leicester; John R. Hall, Old Dalby; Alan Hardy, and Jogindar Johl, both of Leicester, all of England, assignors to USM Corporation, Boston, Mass.

Filed Aug. 23, 1974, Ser. No. 500,112

Claims priority, application United Kingdom, Aug. 23, 1973, 39906/73

Int. Cl.² C08G *18/42*; **A43B** *9/12*; **B32B** *27/40*

U.S. Cl. 260—75 NK **10 Claims**

1. An adhesive composition comprising a heat softenable polyurethane having a relative viscosity determined from a solution in reagent grade m-cresol of 1 gm. of the material per 100 cc. of solution according to *British Standard Methods for the Determination of the Viscosity of Liquids in C.G.S. Units*, BS188 : 1957 at 25 + 0.05°C. in a suspended level viscometer, in the range 1.36 to 2.10 formed from diisocyanate and substantially linear hydroxyl bearing polyester material said polyester material being made up of acid units of which not less than about 60 mole % are derived from terephthalic acid and diol units of which not less than about 60 mole % are derived from hexane diol-1,6 units, said polyurethane having a cure index of from 80 to 100.

3,951,920
PERMSELECTIVE POLYMERIC MEMBRANE PREPARED FROM POLYBENZIMIDAZOLES

Masao Senoo; Shigeyoshi Hara, and Shuji Ozawa, all of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Sept. 12, 1972, Ser. No. 288,389

Claims priority, application Japan, Sept. 13, 1971, 46-71550; Feb. 8, 1972, 47-13801

Int. Cl. C08g *33/02*, *33/04*

U.S. Cl. 260—78 TF **14 Claims**

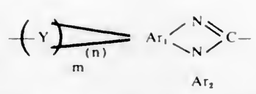
1. A permselective polymeric membrane comprising a substrate polymer consisting essentially of a linear polymer containing as the main structural units N-aryl-substituted-benzimidazole units wherein said linear polymer;

1. is composed of the recurring units expressed by the following general formula (1)

$$+A.B+ \qquad (1)$$

wherein

A is a divalent atomic group expressed by following general formula (2)



(2)

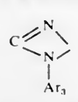
in which m and (n) are zero or 1, the two nitrogen atoms are bonded to two adjacent nuclear carbon atoms of the radical Ar_1, and Ar_2 is a monovalent aromatic group having up to 15 carbon atoms, and in which (i) when (n) is zero, Ar_1 stands for a trivalent aromatic radical having up to 15 carbon atoms, Y is at least one member selected from the group consisting of -CONH-, -CONHNHCO-, -NHCONH- and



and when Y is -CONH- or



Ar_1 may be bonded to either of the nitrogen and carbon atoms of Y; (ii) when (n) is 1, $\overline{(n)}$ indicates a single bond, Ar_1 is a tetravalent aromatic radical having up to 15 carbon atoms, and Y is an atomic group expressed by following formula (3)



(3)

the two nitrogen atoms are bonded to the two adjacent nuclear carbon atoms of the aromatic radical Ar_1, and Ar_3 stands for a monovalent aromatic group having up to 15 carbon atoms; and (iii) the divalent atomic group expressed by above formula (2) is bonded in the polymer in either of the left and right directions;

b. B stand for a single bond or a divalent organic radical in which the average number of atoms in the polymer exclusive of hydrogen atoms is not greater than 80 and carbon atoms are located at both the terminal ends, and when B is a single bond, the recurring unit A consists of the atomic group expressed by above formula (2);

2. has the parameter (Hp) of hydrophilic property, expressed by the following formula, of at least 0.4

$$Hp = \frac{N_H + 10N_I}{\text{total number of atoms exclusive of hydrogen atoms in the polymer}} \qquad (4)$$

wherein

N_H is the number of hydrogen-bonding units contributed by polar groups in the entire polymer and is expressed by the product of the number (N_A) of hydrogen-bonding groups in the entire polymer and their hydrogen-bonding strength (G_A); and N_I is the number of ionic groups in the entire polymer, with the proviso that the number of ionic groups does not exceed 1 per 500 of the molecular weight of the polymer;

3. has a solubility of 25°C. in a solvent composed of at least one member selected from the group consisting of N,N-dimethylacetamide, N-methylpyrrolidone, dimethylsulfoxide and hexamethylphosphoramide (which solvent may contain up to 5% by weight of lithium chloride), of at least 7% by weight; and

4. has a molecular weight sufficient to form a film;

and wherein said permselective membrane has;

1. a thickness of 2-400 microns;

2. a water permeability Wp of 5 to 1300 l/m^2/hour atm wherein Wp is calculated by the following formula:

$$Wp = \frac{\text{amount of permeated water (liters)}}{\text{membrane area } (m^2) \times \text{time (hr)} \times \text{pressure (atm)}} \times 10^3$$

3. and a salt rejection of at least 40% wherein said salt rejection is calculated by the following formula:

$$(\%) = 1 - \frac{\text{salt concentration in permeated water}}{\text{salt concentration in feed water}} \times 100$$

3,951,921
CATIONIC WATER SOLUBLE RESINOUS REACTION PRODUCT OF POLYAMINOPOLYAMIDE-EPICHLOROHYDRIN AND NITROGEN COMPOUND

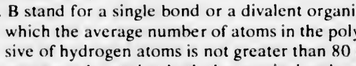
Herbert H. Espy, Fairfax, and Stearns T. Putnam, Wilmington, both of Del., assignors to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 334,338, Feb. 21, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 512,768

Int. Cl.² C08G *69/48*

U.S. Cl. 260—78 SC **9 Claims**

1. A cationic water soluble resin consisting essentially of the reaction product of (1) a water soluble or water dispersible polyaminopolyamide--epihalohydrin base resin having epoxide moieties and (2) a nitrogen compound in an amount at least stoichiometrically equivalent to the epoxide moieties of the base resin, said base resin consisting essentially of the reaction product of a dicarboxylic acid selected from the group consisting of diglycolic acid, saturated aliphatic dicarboxylic acids containing from 4 through 12 carbon atoms, aromatic carbocyclic dicarboxylic acids and alpha, beta-ethylenically unsaturated dicarboxylic acids and anhydrides thereof, lower alkyl esters and amides thereof, with a polyalkylene polyamine selected from the group consisting of 1,4-bis-(3-aminopropyl) piperazine, 1-(2-aminoethyl) piperazine and polyalkylene polyamines of the formula



wherein R'' is hydrogen, C_1–C_{12} alkyl, or C_1–C_{12} hydroxyalkyl; n is an integer 2 through 6 and x is an integer 1 through 4, in a mole ratio of polyalkylene polyamine to dicarboxylic acid of from about 0.9:1 to about 1.2:1 to form a polyaminopolyamide and reacting the polyaminopolyamide with epihalohydrin in a mole ratio of epihalohydrin to amine groups of said polyaminopolyamide of from about 0.1 mole to about 2 moles, said nitrogen compound having the formula RRR'N wherein R is independently selected from the group consisting of hydrogen and C_1–C_4 alkyl and wherein R' is selected from the group consisting of hydrogen, hydroxyl and C_1–C_4 alkyl, and said reaction between (1) and (2) being carried out at a temperature of from about 0°C. to about 150°C. and until substantially all epoxide moieties of the base resin have reacted with the nitrogen compound.

3,951,922
PROCESS FOR PREPARING POLYIMIDES FROM DERIVATIVES OF PHTHALIC ANHYDRIDE

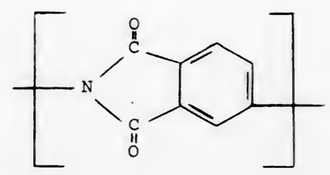
Reinhard H. Richter, Hamden, and Henri Ulrich, North Branford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 228,376, Feb. 22, 1972, Pat. No. 3,829,444. This application June 10, 1974, Ser. No. 477,629

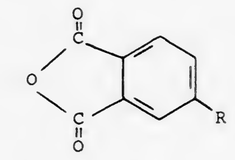
Int. Cl.² C08G *75/10*

U.S. Cl. 260—78 A **3 Claims**

1. A process for the preparation of a solid polyimide which does not melt at temperatures below about 500°C and which has the recurring unit:



which comprises heating an anhydro compound having the formula:



wherein R is selected from the class consisting of azidocarbonyl, isocyanato and —NHCOOR' wherein R' is lower-alkyl, at a temperature in the range of about 250°C to about 300°C until evolution of gas ceases.

3,951,923
PREPARATION OF AMINO-BENZENESULFONATE-MODIFIED POLYAMIDES

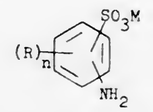
James W. Cleary, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 370,155, June 14, 1973, Pat. No. 3,853,823, which is a continuation of Ser. No. 177,426, Sept. 2, 1971, abandoned. This application Sept. 23, 1974, Ser. No. 508,649

Int. Cl.² C08G *69/08*, *69/14*, *69/16*

U.S. Cl. 260—78 A **11 Claims**

1. A process for preparing a fiber forming modified aliphatic polycarbonamide wherein amide linkages and terminal sulfonate groups are integral parts of a polymer chain, comprising reacting under polymerization conditions at a temperature of 360°F to 620°F (a) at least one polyamide-forming component selected from the group consisting of an amino acid and a lactam and (b) 0.05 to 4 mole percent based on the moles of recurring amide linkages in said polycarbonamide of at least one basic dyeability modifier having the formula



wherein M is an alkali metal, R is an alkyl group having 1 to 4 carbon atoms and n is an integer having a value within the range of 0 to 2, in the presence of (c) 50–300 mole percent of an alkali metal hydroxide per mole of said dyeability modifier.

3,951,924
RESIN DERIVATIVES

Ian Stanley Ripley, Stockton-On-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sept. 3, 1974, Ser. No. 502,880
Claims priority, application United Kingdom, Sept. 7, 1973, 42174/73
Int. Cl.² C08D *3/04, 5/02*
U.S. Cl. 260—878 R 10 Claims

1. In a process for the production of a salt of a carboxylated petroleum resin and a compound of a metal of Group II of the Periodic Table, which comprises reacting in the liquid phase a petroleum resin with an alpha, beta-ethylenically unsaturated aliphatic dicarboxylic acid or the anhydride thereof with, and the resulting carboxylated petroleum resin is reacted with a Group II metal compound, to form a salt, the improvement which comprises reacting said carboxylated resin and Group II metal compound in the presence of a lithium cation as a catalyst.

3,951,925
PROCESS FOR PRODUCING IMPROVED VINYL CHLORIDE POLYMERS

Sanetsugu Mishima; Tsutomu Matsuhara; Hiroyuki Fujii; Kazumasa Funada, all of Minamata, and Masataka Torigoe, Hoya, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed July 13, 1973, Ser. No. 378,858
Claims priority, application Japan, Oct. 28, 1970, 45-94913
Int. Cl.² C08F *1/11, 3/34*
U.S. Cl. 526—72 6 Claims

1. A process for producing a vinyl chloride-containing polymer having improved properties which consists essentially of:

a. subjecting a polymer feed selected from the group consisting of vinyl chloride or at least 80% by weight vinyl chloride and up to 20% by weight of another vinyl monomer copolymerizable therewith selected from the group consisting of vinyl acetate, vinyl stearate, methyl acrylate, ethyl acrylate, dimethyl maleate, dimethyl fumarate, vinyl octyl ether, vinyl cetyl ether, vinylidene chloride, acrylonitrile, ethylene and propylene to a first polymerization step involving aqueous suspension polymerization:
   1. which uses 100 to 400 parts by weight of water based upon 100 parts by weight of said polymer feed,
   2. at a temperature of 30° to 70°C.,
   3. in the presence of an oil-soluble radical initiator in an amount of 0.005% to 0.2% by weight based upon the weight of said polymer feed, said oil-soluble radical initiator consisting of at least one member selected from the group consisting of dilauroyl peroxide, dibenzoyl peroxide, di-2-ethylhexyl peroxide, 3,5,5-trimethylhexanoyl peroxide, 2,4-dichlorobenzoyl peroxide, azobisisobutyronitrile, 2,2′-azobis-2,4-dimethylvaleronitrile, 2,2′-azobis-4-methoxy-2,4-dimethylvaleronitrile, isopropyl peroxydicarbonate, disecondary butyl peroxydicarbonate, t-butyl peroxypivalate and acetyl cyclohexylsulfonyl peroxide,

b. deactivating said oil-soluble radical initiator when the polymerization in said first step reaches 15% to 80% completion, said deactivation being carried out by the addition of an alkaline substance,

c. continuing the polymerization of said polymer feed in a second polymerization step
   1. at a temperature of 30° to 70°C.,
   2. in the presence of a water-soluble radical initiator which is present in an amount of from 0.02 to 0.2% by weight based upon the total weight of the polymerization system, said water-soluble radical initiator being at least one member selected from the group consisting of potassium persulfate, ammonium persulfate, hydrogen peroxide, and 2,2′-**azobis**(2-amidino-propane hydrochloride).

3,951,926
CROSS-LINKED ETHYLENE-MALEIC ANHYDRIDE INTERPOLYMERS

Shengen Hu, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 5, 1974, Ser. No. 494,447
Int. Cl.² C08F *220/08*; C08L *23/36, 33/02*; C08F *2/54*
U.S. Cl. 526—232 4 Claims

1. In a process for forming a cross-linked ethylenemaleic anhydride interpolymer wherein ethylene and maleic anhydride in molar proportions sufficient to achieve approximately a 1:1 molar ratio in the resulting interpolymer, are reacted at a temperature and a pressure and for a time sufficient to cause polymerization in the presence of a free-radical catalyst and a cross-linking agent, the improvement wherein said cross-linking agent is triallyl isocyanurate in an amount of about 0.35 to about 0.55 mol percent based upon the maleic anhydride monomer.

3,951,927
VULCANIZABLE ELASTOMERS FROM POLYTHIODIETHANOL

Romeo Raymond Aloia, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sept. 18, 1974, Ser. No. 507,031
Int. Cl.² C08G *75/12*
U.S. Cl. 260—79 8 Claims

1. A vulcanizable elastomer composition comprising a copolymer represented by the formula:

$$H\left\{OG\right\}_n OH$$

wherein $\left\{OG\right\}$ consists of randomly alternating structural units (I) and (II)

$$\left\{OC_2H_4SC_2H_4\right\} \quad (I)$$

$$\left\{OR\right\} \quad (II)$$

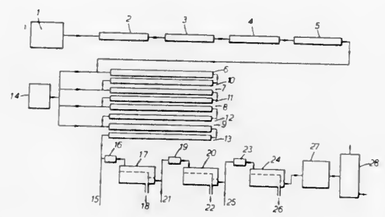
wherein R is one or more radicals which are the residues remaining on removal of two aliphatic hydroxyl groups of diols selected from (a) saturated linear, branched chain or cyclic diols and (b) linear, branched chain or cyclic diols containing external unsaturation having an allylic hydrogen atom; being characterized in that n is an integer sufficient to provide a molecular weight at least about 8000; the molar ratio of structural units (I) to structural units (II) being not less than 1:1; and containing from about 1 to 10 mole percent of the total of (I) and (II) of said linear, branched chain or cyclic diol containing external unsaturation.

3,951,928
PETROLEUM RESINS

Malcolm Alastair Leckie, Melbourne, Australia, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 311,524, Dec. 4, 1972, abandoned. This application Aug. 12, 1974, Ser. No. 496,877
Int. Cl.² C08F *210/00, 212/00, 240/00*
U.S. Cl. 526—66 11 Claims

1. In a process for the production of petroleum resins which comprises continuously and exothermically polymerising an unsaturated hydrocarbon feedstock containing 4 to 10 carbon atoms at a temperature in the range of −100°C to +200°C and in the presence of a Friedel Crafts catalyst, the improvement whereby the hydrocarbon feedstock is passed through a plurality of alternating polymerisation and cooling zones and in which catalyst is added to each polymerisation zone, the temperature of the feedstock rising because of said exothermic



polymerisation in each polymerisation zone and being reduced in each cooling zone.

3,951,929
POLYACRYLATES AND WAXY RESIDUAL FUEL COMPOSITIONS THEREOF

William M. Sweeney, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 250,900, May 8, 1972, Pat. No. 3,904,385. This application Feb. 26, 1975, Ser. No. 553,182
Int. Cl.² C08F *15/16*
U.S. Cl. 526—328 3 Claims

1. An interpolymeric poly(n-alkylacrylate) of a molecular weight between about 3000 and 100,000 wherein said n-alkyl is at least 18 carbons and wherein at least 70 wt. % of said n-alkyl is of from 20 to 24 carbons consisting of between about 2 and 65 wt. % C_{20} alkyl, between about 18 and 65 wt. % C_{22} alkyl, and between about 8 and 35 wt. % C_{24} alkyl.

3,951,930
EXTRUSION POWDER

John Michael Downer, Harpenden, and Colin Greig Kinnear, Welwyn Garden City, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 276,167, July 28, 1972, abandoned. This application Sept. 17, 1974, Ser. No. 506,780
Claims priority, application United Kingdom, Aug. 12, 1971, 37874/71
Int. Cl.² C08F *2/16, 4/38, 14/26*
U.S. Cl. 526—82 6 Claims

1. A process for the production of polymers of tetrafluoroethylene suitable for extrusion at a high reduction ratio comprising polymerising tetrafluoroethylene in an aqueous medium in the presence of a free radical catalyst system and a dispersing agent to produce an aqueous dispersion of the tetrafluoroethylene polymer, the polymerisation being one of the following: homopolymerisation, polymerisation in the presence of a chain transfer agent and copolymerisation with a minor amount of one or more comonomers wherein the polymerisation is initiated by the use of a catalyst selected from water soluble persulphates and hydrogen peroxide and after at least 20% by weight but before 85% by weight of the total polymer to be formed has been polymerised, a dibasic carboxylic acid peroxide is added in an amount sufficient to ensure that the polymer of tetrafluoroethylene produced exhibits improved electrical insulation performance when extruded into shaped articles as compared with tetrafluoroethylene polymers produced by using only a free radical catalyst selected from hydrogen peroxide and salts of water soluble persulphates and compared with tetrafluoroethylene polymers produced when a dibasic carboxylic acid is added before 20% or after 85% by weight of the total polymer to be formed has been polymerised.

3,951,931
PRODUCTION OF POLYMERIC COMPOUNDS HAVING FUNCTIONAL END GROUPS

Walther Burchard, Gundelfingen, and Helmut Eschwey, Merzhausen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Sept. 9, 1974, Ser. No. 504,286
Claims priority, application Germany, June 10, 1974, 2427956
Int. Cl.² C08F *210/00, 212/00*; C08L *9/00, 147/00*
U.S. Cl. 260—879 2 Claims

1. A process for the manufacture of polymeric compounds which have any desired number of functional end groups which comprises: reacting polymeric organoalkali metal compounds with reactive low molecular weight compounds, wherein

I.

a. mixtures of divinylbenzene with monovinyl-aromatic compounds having a divinylbenzene content of from 10 to 80% by weight and
b. low molecular weight organoalkali metal compounds of up to 50 carbon atoms in the organic radical are reacted with one another in inert organic solvents forming the said polymeric organoalkali metal compounds, the content of divinylbenzene in the reaction mixture not exceeding 2.5 per cent by weight, based on the reaction mixture, and the molar ratio of divinylbenzene to the alkali metal content of the low molecular weight organoalkali metal compound being from 0.5:1 to 20:1, and thereafter

II. the polymeric organoalkali metal compounds thus obtained are reacted with the reactive low molecular weight compounds, selected from the group consisting of carbon dioxide, carbon disulfide, bromine, iodine, molecular oxygen, methylene chloride, 1,2-dibromoethane and ethylene oxide, the molar ratio of the alkali metal content of the polymeric, polyfunctional organoalkali metal compound to the reactive low molecular weight compound being equal or less than 1:1.

3,951,932
PROCESS FOR PREPARING OLEFINIC NITRILE-VINYL AROMATIC RESINS

Gerald Paul Coffey, Cleveland Heights, Ohio, assignor to Standard Oil Company, Cleveland, Ohio

Filed June 17, 1974, Ser. No. 480,123
Int. Cl.² C08F *120/44*
U.S. Cl. 526—85 8 Claims

1. The process for preparing a thermoplastic, processable polymer consisting essentially of a nitrile and a vinyl aromatic copolymer having low permeability to gases and low odor and taste transfer characteristics comprising, polymerizing in an aqueous emulsion medium containing from about 0.3 to 1.0 part by weight of tertiary butyl mercaptan per hundred parts of monomer as a molecular weight modifier, an emulsifier and a free-radical polymerization initiator in the substantial absence of molecular oxygen, 100 parts by weight of:

A. at least 50% by weight of at least one nitrile having the structure



wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms or a halogen, and

B. up to 50% by weight based on the combined weight of (A) and (B) of a vinyl aromatic, in the presence of from 0 to about 40 parts by weight of (C) a preformed rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene, and at least one member selected from the group consisting of a vinyl aromatic and a nitrile as defined in (A), wherein said rubbery polymer contains from 50 to 95% by weight of polymerized conjugated diene, and the remainder being polymerized vinyl aromatic and or polymerized olefinic nitrile.

3,951,933

PRODUCTION OF HYDROGENATED ETHYLENE POLYMERS USING CHROMIUM-CONTAINING CATALYST

Benny E. Nasser, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 30, 1974, Ser. No. 510,459
Int. Cl. C08f 27/25
U.S. Cl. 526—25 **15 Claims**

1. In a process for producing ethylene polymer having low unsaturation, the improvement comprising:

contacting an olefin monomer system comprising ethylene with an activated catalyst comprising a silicon-containing support containing a chromium compound and a Group VIII metal compound, said silicon-containing support and said Group VIII metal compound being coprecipitated;

said contacting taking place in the presence of a hydrocarbon solvent at a temperature sufficient that at least substantially all of said polymer thus produced is dissolved;

thereafter venting substantially all of any olefin monomer remaining;

thereafter introducing hydrogen into said solvent containing said polymer dissolved therein and maintaining hydrogenation conditions thereon, said catalyst from said polymerization being present during said hydrogenation and serving as the sole catalyst therefor; and

thereafter recovering said polymer having low unsaturation.

3,951,934

POLYMERIZATION OF ACRYLAMIDE IN THE PRESENCE OF WATER-SOLUBLE NITROGEN COMPOUNDS

Iwao Ohshima; Seiichi Chiba; Kenzo Ariyama, all of Yokohama; Yasuo Ogawa, Kawasaki, and Zengiro Kawamura, Yokohama, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

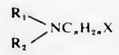
Filed Sept. 30, 1974, Ser. No. 510,195
Claims priority, application Japan, Sept. 29, 1973, 48-109646
Int. Cl.² C08F 120/56
U.S. Cl. 526—83 **7 Claims**

1. A process for producing a high-molecular weight water-soluble acrylamide homopolymer by polymerizing acrylamide in a aqueous medium at a high concentration, which comprises polymerizing said acrylamide at a concentration of from about 10 to 30% by weight in the presence of at least one of the water-soluble nitrogen compounds represented by the general formulae

$N(C_nH_{2n}X)_3$ (I)

$R_1N(C_nH_{2n}X)_2$, (II)

or



(III)

wherein R_1 and R_2 each represents —H, $—CH_3$ or $—C_2H_5$; X represents —CN, —COOH, —OH or $—CONH_2$; and n is an integer of from 1 to 4, with the proviso that X in the general formula (III) is not —COOH when n is 1 or 2, said water soluble nitrogen containing compounds being present in an amount of from about 0.1 to about 3% by weight based on the amount of said acrylamide, and the pH of said polymerization system being maintained at about 3.5 to about 5.5.

3,951,935

PROCESS FOR POLYMERIZING α-OLEFINES

Manfred Engelmann, Augsburg, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed June 5, 1974, Ser. No. 476,584
Claims priority, application Germany, June 9, 1973, 2329641
Int. Cl.² C08F 4/02, 10/06
U.S. Cl. 526—129 **4 Claims**

1. A process for preparing a polyolefin having a melt viscosity of from 100 to 100,000 cP at 170°C by polymerization of at least one olefin having the formula $R—CH=CH_2$, wherein R is alkyl of from 1 to 30 carbon atoms, in the presence of a mixed catalyst consisting of a titanium-containing compound (component A) and of an aluminumorganic compound (component B), wherein the polymerization is carried out in the absence of hydrogen at a temperature of from 100° to 160° C in the presence of a mixed catalyst the component A of which represents the reaction product of from 0.2 to 5 moles of a member selected from the group consisting of chlorides and alcoholates of tetravalent titanium and of 1 mole of a member selected from the group consisting of alcoholates and OH-groups containing magnesium compounds containing from 0.5 to 2 moles of OH-groups per g-atom magnesium, alkoxy groups and chlorine being present in the reaction system and component B being an aluminum alkyl chloride in which the proportion of Al : Cl is from 2 : 1 to 1 : 1.

3,951,936

POLYMERIZATION PROCESS

Thomas L. Hanlon, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 3, 1974, Ser. No. 502,580
Int. Cl.² C08F 4/66, 36/08
U.S. Cl. 526—116 **4 Claims**

1. A process of preparing a mixture of cis-1,4-polyisoprene and trans-1,4-polyisoprene polymers from isoprene with a trans producing catalyst system consisting essentially of (1) a trialkylaluminum, (2) a titanium halide, and (3) a vanadium halide, wherein the mole ratio of the trialkylaluminum/-vanadium halide/titanium halide ranges from about 3/1/1 to about 10/1/1, together with vinyl chloride in the polymerization mixture in amounts to give a vinyl chloride to vanadium halide mole ratio of from about 1.0 to about 500, thereby forming a mixture of cis-1,4-polyisoprene and trans-1,4-polyisoprene polymers, which contain less than 95 percent trans-1,4-configuration.

3,951,937

LARGE SCALE PURIFICATION OF HEPATITIS TYPE B ANTIGEN USING POLYETHYLENE GLYCOL

John Vnek, New York, N.Y., and Alfred M. Prince, Stanford, Conn., assignors to The Community Blood Council of Greater New York, Inc., New York, N.Y.

Filed Dec. 20, 1973, Ser. No. 426,825
Int. Cl.² C07G 7/00
U.S. Cl. 260—112 B **15 Claims**

1. A process for producing highly purified type B hepatitis antigen from fluid blood material containing such antigen by substantially removing impurities from said material, said process comprising the steps of:

maintaining the pH of said blood material within the range of approximately 4.4 to 4.7;

admixing with said material, while its pH is being maintained within said range, approximately 4.0 to 4.5 weight percent polyethylene glycol based on the total weight of the admixture, to produce a precipitate containing type B hepatitis antigen;

separately recovering said precipitate and adding a sufficient amount of water thereto to present an intermediate fluid material having a type B hepatitis antigen concentration substantially the same as in the original blood material;

causing the pH of said intermediate fluid material to be within the range of approximately 4.9 to 5.1 to thereby produce a precipitate containing proteinaceous material and polyethylene glycol and a fluid phase containing type B hepatitis antigen;

separately recovering said fluid phase and adjusting the pH thereof to within the range of approximately 4.4 to 4.7;

admixing with said fluid phase, while maintaining its pH within said range, approximately 4.0 to 4.5 weight percent polyethylene glycol based on the total weight of the admixture, to produce a precipitate containing purified type B hepatitis antigen; and

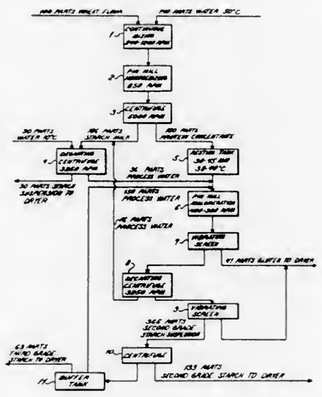
separately recovering said purified antigen containing precipitate.

3,951,938

METHOD OF SEPARATING GLUTEN FROM WHEAT FLOUR

H. K. Kerkkonen; K. M. J. Laine; M. A. Alanen, and H. V. Renner, all of Raisio, Finland, assignors to Oy Vehna Ab, Raisio, Finland

Continuation-in-part of Ser. No. 391,924, Aug. 27, 1973, abandoned. This application Mar. 14, 1975, Ser. No. 558,387
Claims priority, application Finland, Sept. 8, 1972, 2477/72; Sweden, June 7, 1973, 7308091
Int. Cl.² C07G 7/00; C13L 1/00
U.S. Cl. 260—112 G **5 Claims**



1. A process for separating gluten having a protein content of at least 80% on a dry basis and in a vital or nondenatured condition from wheat flour which comprises:

1. Mixing wheat flour with water in a weight ratio of 1.2–2.0 parts water per part wheat at a temperature of 30°–50°C to form a suspension of flour and water;
2. Homogenizing the suspension to achieve a free-flowing dispersion of wheat flour and water by passing said suspension through a mill of the pin-mill type;
3. Separating from said dispersion a main heavy portion (A) comprising starch and a light portion (B) comprising a protein concentrate;
4. Allowing said light portion (B) to stand, free of agitation and without dilution, at 30°–50°C for at least 10 minutes to form gluten thread-like formations without separation;
5. Thereafter adding to said light portion fresh or recycled water in the amount of at least one part water per part of said portion (B) and subjecting the so diluted liquid to a beating action whereby to agglomerate said gluten formations with one another and squeeze the water-containing non-gluten solids substantially out of the resultant agglomerates; and
6. Separating the gluten agglomerates from the remaining liquid.

3,951,939

POLYPEPTIDES, PROCESS FOR THEIR MANUFACTURE AND THEIR USE AS POLYVALENT ISOINHIBITORS

Hans Fritz, Hohenbrunn; Laszlo Beréss; Rosemarie Beréss, both of Ottendorf, and Brunhilde Förg-Brey, Munich, all of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Lahn, Germany

Continuation-in-part of Ser. No. 478,791, June 12, 1974, abandoned, which is a continuation of Ser. No. 321,301, Jan. 5, 1973, abandoned. This application July 8, 1974, Ser. No. 486,223
Claims priority, application Germany, July 7, 1973, 2334564
Int. Cl.² C07C 103/52; C07G 7/00; C08H 1/00
U.S. Cl. 260—112 R **17 Claims**

1. Polypeptides found in sea-anemones (Actinaria), which have the following composition of amino acids:

Amino acids	Number of molecules
Aspartic acid	5 – 7
Threonine	1 – 3
Serine	2 – 5
Glutamic acid	3 – 7
Proline	2 – 4
Glycine	6 – 7
Alanine	2 – 5
Cysteine	6
Valine	2 – 4
Isoleucine	1 – 2
Leucine	1 – 3
Tyrosine	3 – 4
Phenylalanine	2 – 4
Histidine	1 – 2
Lysine	2 – 4
Arginine	4 – 7

and which have molecular weights in the range of from 5200 to 7800, preferably between 5800 and 7100, and isoelectric points between pH 4.5 and pH 9.5., preferably between pH 6.0 and pH 7.5.

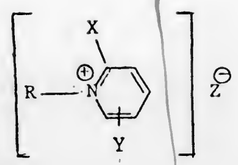
3,951,940

METHOD OF PRODUCING A HARDENED GELATIN LAYER USING AQUEOUS SOLUTION OF A 2-HALOGENO PYRIDINIUM COMPOUND

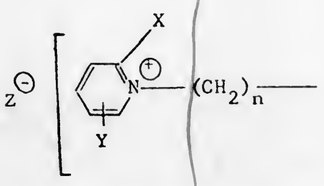
John Douglas Ballantine, and Norman Alfred Smith, both of Ilford, England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Sept. 30, 1974, Ser. No. 510,941
Int. Cl.² C09H 7/00; G03C 1/30
U.S. Cl. 260—117 **8 Claims**

1. A method of producing a hardened gelatin layer which comprises treating an aqueous gelatin solution with an aqueous solution of a 2-halopyridinium compound of the formula

(I) 

where X is a halogen atom, Y is a hydrogen or a halogen atom, Z is an anion and R is an alkyl, aralkyl, or aroylalkyl group, or a group of the formula

(II) 

where X, Y and Z have the meanings assigned to them above and *n* is an integer of 2 to 12.

3,951,941

TRISAZO COMPOUNDS CONTAINING A DIPHENYL-TETRAZINYL COMPONENT

Kenzo Konishi, Nishinomiya; Akira Kotone, Nara; Yoshihiko Nakane, Yao; Takeshi Hori, and Masahiro Hoda, both of Sakai, all of Japan, assignors to Sakai Chemical Industry Company, Limited, Osaka, Japan

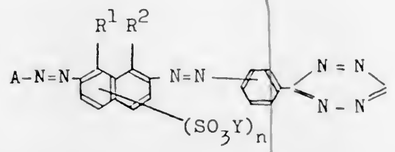
Filed Mar. 13, 1974, Ser. No. 450,816

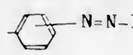
Claims priority, application Japan, Mar. 14, 1973, 48-29835

Int. Cl.² C09B *35/34*; **D06P** *3/04*, *3/24*, *3/60*

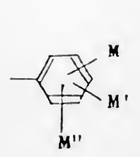
U.S. Cl. 260—152 **3 Claims**

1. A polyazo dye represented by the formula

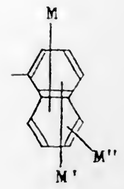




wherein A is phenyl, naphthyl or phenyl or naphthyl substituted with chlorine, lower alkyl, lower alkoxy, amino, carboxy, nitro, or SO_3H; B is



or



where M is NH_2 or OH; M′ and M″ are the same or different and are H, NO_2, lower alkyl, SO_3H or $N(R^6)_2$, the members R^6 being independently H, NO_2, lower alkyl or phenyl substituted with lower alkyl; Y is hydrogen, alkali metal, or NH_4; *n* is 1 or 2; and each of R^1 and R^2 is hydroxyl or amino, R^1 being amino when R^2 is hydroxyl and hydroxyl when R^2 is amino.

3,951,942

PHENYL-AZO-TETRAHYDROQUINOLINE AZO COMPOUNDS

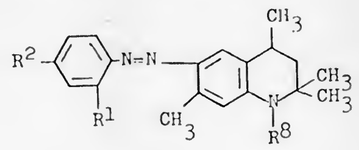
Max A. Weaver; James M. Straley, and Clarence A. Coates, Jr., all of Kingsport, Tenn., assignors to The University of Delaware, Newark, Del.

Continuation-in-part of Ser. No. 216,239, Jan. 7, 1972, abandoned. This application Feb. 21, 1974, Ser. No. 444,619

Int. Cl.² C09B *29/36*; **D06P** *1/08*, *3/24*

U.S. Cl. 260—155 **10 Claims**

1. A compound having the formula



wherein

R^1 is hydrogen, chlorine, or bromine;

R^2 is lower alkylsulfonyl, lower alkoxycarbonyl, cyano, $—SO_2NR^9R^{10}$, or $—CONR^9R^{10}$;

R^9 is lower alkyl or the group $—(CH_2)_n—Y$ in which n is two or three and Y is hydroxy, $—CONR^9R^{10}$ or $—NH—X—R^{12}$; in which R^9 and R^{10} individually are hydrogen or lower alkyl, R^9 and R^{10} in combination are pentamethylene or ethyleneoxyethylene, X is —CO— or —COO—, and R^{12} is phenyl, cyclohexyl, lower alkyl or lower alkyl substituted with hydroxy, lower alkoxy, cyano, chlorine, bromine, phenyl or phenoxy.

3,951,943

COUPLING PROCESS IN THE PREPARATION OF DISAZO DIIMIDES

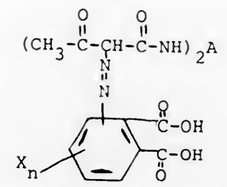
Jack L. Towle, Holland, Mich., assignor to Chemetron Corporation, Chicago, Ill.

Filed Mar. 18, 1974, Ser. No. 451,873

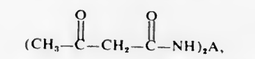
Int. Cl.² C09B *41/00*

U.S. Cl. 260—176 **10 Claims**

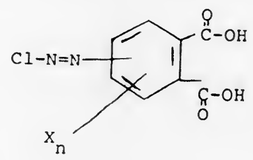
1. A method of preparing a disazo tetracarboxylic acid having the formula:



wherein A is aromatic hydrocarbylene or substituted aromatic hydrocarbylene, X is the same or different halogen selected from the class consisting of fluorine, chlorine and bromine, or lower alkyl or lower alkoxy and *n* is an integer of from 0 to 2, said method comprising the coupling of one molecular proportion of a bis-acetoacetamide having the formula



wherein A is as defined above, with two molecular proportions of a diazotized aminophthalic acid having the formula:



wherein X and *n* are as defined above, in an aqueous medium containing a sufficient amount of a water soluble cyclic ether to bring the reagents into solution.

3,951,944

FIBER-REACTIVE, WATER-SOLUBLE DISAZO DYES CONTAINING AN N-B-SULFOETHYLAMIDE GROUP

Hermann Fuchs, Kelkheim, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

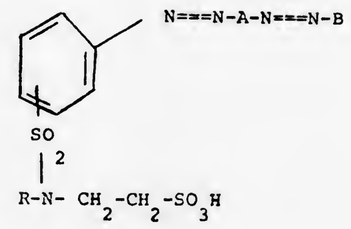
Filed Nov. 29, 1972, Ser. No. 310,363

Claims priority, application Germany, Nov. 30, 1971, 2159216

Int. Cl.² C09B *31/04*, *31/06*, *31/10*, *31/14*

U.S. Cl. 260—186 **5 Claims**

1. A water-soluble disazo-dyestuff which corresponds in the form of the free acid to the formula



wherein A is phenylene, naphthylene or phenylene or naphthylene substituted by alkyl of from 1 to 4 carbon atoms, alkoxy of from 1 to 4 carbon atoms, chlorine, acetylamino, benzoylamino or trifluoromethyl, B is phenolyl or phenolyl substituted by chlorine, alkyl of from 1 to 4 carbon atoms or alkoxy of 1 - 4 carbon atoms, or anilino or anilino substituted by chlorine, alkyl of 1 - 4 carbon atoms, alkoxy of from 1 to 4 carbon atoms or acetylamino,

or anilino substituted at the N-atom by lower alkyl, β-hydroxyethyl, β-cyanoethyl, β-acetoxyethyl wherein the nucleus is unsubstituted or substituted by lower alkyl, lower alkoxy or chlorine,

or α-naphtholyl, β-naphtholyl or α-naphtholyl or β-naphtholyl substituted by $—SO_2-NH_2$, lower alkyl sulfonamide acetylamino, benzoyl-amino or phenyl-amino wherein the phenyl nucleus is unsubstituted or substituted by lower alkyl, lower alkoxy or chlorine, or 2,3 naphthoic acid anilido substituted in the anilido radical by chlorine, lower alkyl, lower alkoxy or cyano, or acetoacetylanilido or acetoacetylanilido substituted in the anilido portion by lower alkyl, lower alkoxy or chlorine,

and R is hydrogen or lower alkyl.

3,951,945

METHOD FOR THE PREPARATION OF ESTERS OF POLYALCOHOLS

Jan Gerhard Heesen, Gorinchem; Pieter Koenraad Kuipers, Woudrichem, and John Adriaan van Velthuijsen, Gorinchem, all of Netherlands, assignors to B.V. Chemie Combinatie Amsterdam C.C.A., Amsterdam, Netherlands

Filed May 10, 1974, Ser. No. 468,738

Int. Cl.² C08B *37/00*

U.S. Cl. 260—210 R **18 Claims**

1. A process for the preparation of a carboxylic acid ester of a linear aliphatic polyalcohol or of a hydrophilic derivative of said polyalcohol, in which process the formation of polyalcohols containing anhydro-rings during the esterification reaction is minimized, said process comprising esterifying an aliphatic fatty acid having 10 to 22 carbon atoms with a polyalcohol or a glycoside of said polyalcohol in the presence of a fatty acid soap, in a quantity of about10% to 80% based upon the polyalcohol, at a temperature between 100° and 190°C while sumultaneously eliminating water formed during the reaction said polyalcohol being a linear aliphatic polyalcohol of the formula $C_nH_{n+2}(OH)_n$ wherein *n* is at least 4.

3,951,946

CARDIOGLYCOSIDE DERIVATIVES OF THE STROPHANTHIDIN TYPE, A PROCESS FOR THEIR MANUFACTURE AND MEDICINAL PREPARATIONS CONTAINING THESE COMPOUNDS

Kurt H. Schmidt, Hildesheim, Germany, assignor to Johann A. Wulfing Fabrik Pharmazeutischer Praparate, Dusseldorf, Germany

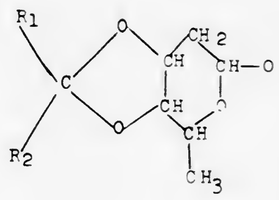
Continuation-in-part of Ser. No. 810,946, March 27, 1969, abandoned. This application Aug. 10, 1971, Ser. No. 170,635

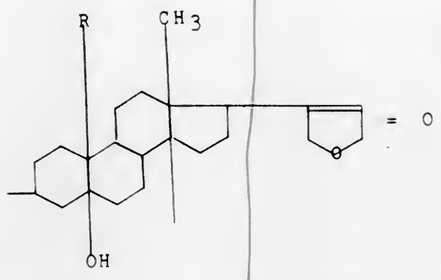
Claims priority, application Germany, Mar. 27, 1968, 1768054; Apr. 4, 1968, 1768140; Apr. 4, 1968, 1768142; Apr. 4, 1968, 1768143; Mar. 12, 1969, 1912518

Int. Cl.² C07J *19/00*

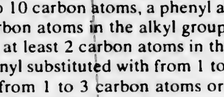
U.S. Cl. 260—210.5 **24 Claims**

1. Cardioglycosides of the formula





wherein R is selected from the group consisting of formyl (CHO) and methylol (CH_2OH), R_1 is selected from the group consisting of hydrogen and a saturated or olefinically unsaturated straight or branched alkyl group having from 1 to 3 carbon atoms, R_2 is selected from the group consisting of a saturated or olefinically unsaturated straight or branched alkyl group having from 5 to 10 carbon atoms, a phenyl alkyl group having from 1 to 4 carbon atoms in the alkyl group, a phenyl alkylene group having at least 2 carbon atoms in the alkylene group, phenyl and phenyl substituted with from 1 to 3 alkyl or alkoxy groups having from 1 to 3 carbon atoms or a methylenedioxy group; and wherein R_1 and R_2 can form together with the carbon atom to which they are linked, a cycloaliphatic residue containing 8 to 12 carbon atoms in the ring or a cycloaliphatic residue containing 6 to 12 carbon atoms substituted with from 1 to 2 alkyl groups having from 1 to 6 carbon atoms, provided that when R_2 is saturated or unsaturated alkyl, the residue



contains at least 8 carbon atoms.

3,951,947
THIN-THICK WAXY MALZE BASED STARCH DERIVATIVE FOR ACID AND NEUTRAL RETORT MEDIA

Robert V. Schanefelt; James E. Eastman, and Michael F. Campbell, all of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of Ser. No. 387,579, Aug. 10, 1973, abandoned. This application Sept. 17, 1974, Ser. No. 506,820
Int. Cl.² C08B *31/00*
U.S. Cl. 260—233.3 R **15 Claims**

1. An hydroxypropylated, crosslinked high amylopectin starch derivative selected from the group consisting of waxy maize, waxy sorghum, waxy milo, and waxy starches having less than 20% amylose content, said starch derivative having a degree of substitution of hydroxypropyl units of about 0.1 to 0.23, and subjected to crosslinking with a crosslinking agent capable of producing heat stable crosslinks selected from the group consisting of epichlorohydrin, phosphorus oxychloride and sodium trimetaphosphate, said crosslinking being sufficient to obtain an alkali fluidity ranging from about 30–75 ml. for a 3 gram sample of the starch derivative slurried in about 10 ml. of water and 90 ml. of 0.375N NaOH, said starch derivative being capable of developing substantially increased viscosity when used in retort media comprising about 3.5–6% dry substance basis of said starch derivative buffered at a pH of 3–7, and when retorted under superatmospheric pressure for up to 20 minutes using a heat source capable of raising the internal temperature of the retort media to at least 190°F., said retort media having a heat penetration rate without degrading the starch derivative such that the internal temperature of said retort media is capable of attaining a temperature of at least 190°F. after heating under retort conditions for 8–25 minutes.

3,951,948
SIZE CLASSIFIED CEREAL STARCH GRANULES

John L. Bond, Dublin; Saul Rogols, Circleville, and John W. Salter, Westerville, all of Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Division of Ser. No. 180,588, Sept. 15, 1971, abandoned. This application June 12, 1974, Ser. No. 478,563
Int. Cl.² C08B *31/00*
U.S. Cl. 260—233.3 A **14 Claims**



1. An improved large granule cereal starch product selected from the group consisting of wheat, barley and rye, in which about 22% of the total number of granules are at least 22 microns in size, about 99% by weight of the granules are at least 12 microns in size, said starch product being cross-linked to increase the heat stability of the starch granules.

3,951,949
SULFATES OF HYDROXYETHYL STARCH

Junji Hamuro, Tokyo, and Yayoi Yoshinari, Kawasaki, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed July 3, 1974, Ser. No. 485,724
Claims priority, application Japan, July 12, 1973, 48-77913
Int. Cl.² C08B *31/06, 31/16*
U.S. Cl. 260—233.3 R **3 Claims**

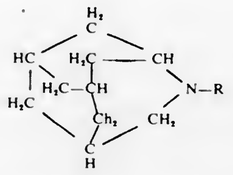
1. Compounds selected from the group consisting of sulfates of hydroxyethyl starch, metallic salts of sulfates of hydroxyethyl starch and metallic complexes of sulfates of hydroxyethyl starch, said compounds having an average molecular weight in the range from 1,000 to 200,000; a degree of hydroxyethyl substitution of from 0.2 to 1.2 per anhydrous glucose unit, a sulfur content of from 2 to 18% by weight and an intrinsic viscosity of from 0.02 to 0.5 at 30°C in water.

3,951,950
4-AZATRICYCLO[4.3.1.1^{3,8}]UNDECANE AND RELATED COMPOUNDS

Venkatachala Lakshmi Narayanan, Hightstown, and Linda Louise Setescak, Cranbury, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 754,460, Aug. 21, 1968, Pat. No. 3,763,165. This application Mar. 5, 1973, Ser. No. 337,963
Int. Cl.² C07D *223/14*
U.S. Cl. 260—239 B **7 Claims**

1. A compound of the formula



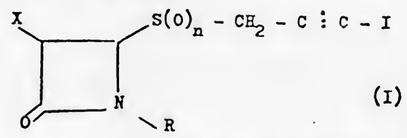
wherein R is $(CH_2)_m$-COOH and *m* is an integer from 1 to 10.

3,951,951
AZETIDINONES

Terence Charles Smale, Epsom Downs, England, assignor to Beecham Group Limited, England

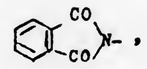
Filed Oct. 11, 1974, Ser. No. 514,073
Int. Cl.² C07D *205/08, 403/04, 501/02*
U.S. Cl. 260—239 A **5 Claims**

1. A compound of the formula (I):

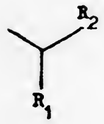


(I)

wherein *n* is 0 or 1, X is selected from the group consisting of $Ph_3C.NH$,



$(CH_3)_3C.O.CO.NH$-, $Cl_3C.CH_2.O.CO.NH$-, $Ph.CH_2.CO.NH$- and $Ph.O.CH_2.CO.NH$- and R is hydrogen or a group of the formula (II) or (III):



(II)



(III)

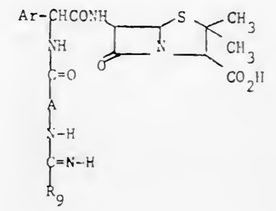
wherein R_1 is benzyloxycarbonyl, t-butoxycarbonyl, 2,2,2-trichloroethoxycarbonyl, diphenylmethoxycarbonyl, p-methoxybenzyloxycarbonyl, p-nitrobenzyloxycarbonyl or p-methoxyphenoxycarbonyl, R_2 is OH or Cl and R_3 is $C(CH_3)_2$ or $PR_aR_bR_c$ wherein R_a, R_b and R_c are each alkyl of 1 to 6 carbon atoms phenyl, toluyl or benzyl.

3,951,952
BROAD SPECTRUM ANTIBIOTICS

Ernest S. Hamanaka, Groton, and John G. Stam, Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 277,064, Aug. 2, 1972, abandoned. This application Dec. 14, 1973, Ser. No. 424,891
Int. Cl.² C07D *499/68*
U.S. Cl. 260—239.1 **8 Claims**

1. A compound selected from those of the formula



and the pharmaceutically acceptable basic salts or acid addition salts thereof, wherein

Ar is selected from the group consisting of phenyl, 4-hydroxyphenyl, 2-thienyl and 3-thienyl;

A is methylene and

R_9 is selected from the group consisting of pyridyl; pyrimidinyl; pyridazinyl; pyrazinyl; benzimidazolyl; pyrryl; 2-pyrrolinyl; picolyl; substituted pyridyl wherein said substituent is selected from the group consisting of fluoro, chloro, bromo and 2,6-dichloro; and pyridyl-1-oxide.

3,951,953
PHARMACEUTICAL COMPOSITIONS

Mohammad Zafar Khan, Worthing, England, assignor to Beecham Group Limited, Great Britain

Filed July 8, 1974, Ser. No. 486,713
Claims priority, application United Kingdom, July 10, 1973, 32769/73
Int. Cl.² C07D *499/68, 499/70*
U.S. Cl. 260—239.1 **5 Claims**

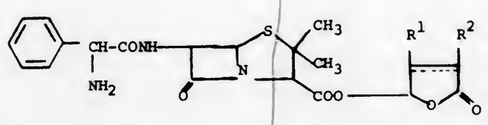
1. A complex in the form of finely divided particles which particles comprise 20%–70% of cloxacillin, dicloxacillin, flucloxacillin or the phenyl or 5-indanyl α-esters of carbenicillin or ticarcillin and 30%–80% of a water-insoluble, benzene-insoluble, pharmaceutically acceptable, strongly basic, highly porous anion exchange resin having less than 4% of cross-linking in which complex the penicillin is absorbed onto the surface of an in the ducts or channels in the resin particles and substantially all of said particles have diameters between 20μ and 250μ.

3,951,954
NOVEL OXOFURYL ESTER DERIVATIVES OF PENICILLIN AND CEPHALOSPORIN

Masuo Murakami, Tokyo; Ichiro Isaka, Hoya; Teruya Kashiwagi, Ageo; Hidefumi Matsui, Ageo; Kohzi Nakano, Ageo; Kozo Takahashi; Hiroshi Horiguchi, both of Tokyo, and Akio Koda, Hoya, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 256,343, May 24, 1972, abandoned. This application Feb. 18, 1975, Ser. No. 550,457
Claims priority, application Japan, June 5, 1971, 46-39483; June 15, 1971, 46-42197; June 25, 1971, 46-46510; Aug. 10, 1971, 46-59969; Mar. 11, 1972, 47-25121
Int. Cl.² C07D *499/68*
U.S. Cl. 260—239.1 **5 Claims**

1. The oxofuryl ester derivatives of 6-α-amino-phenylacetamido)penicillanic acid represented by the formula



wherein R^1 and R^2, which may be the same or different, each represents hydrogen or lower alkyl, and wherein , represents a single bond or a double bond, and the acid addition salts thereof.

3,951,955

PENICILLINS SUBSTITUTED WITH HETEROCYCLIC GROUPS

Hisao Tobiki, Toyonaka; Kozo Shimago, Takarazuka; Shigeru Okano, Ibaragi; Toshiaki Komatsu; Toyozo Katsura, both of Takarazuka; Yasushi Taira, Minoo, and Yasuko Eda, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

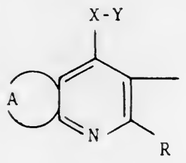
Division of Ser. No. 292,325, Sept. 26, 1972, Pat. No. 3,864,329, which is a continuation-in-part of Ser. No. 213,745, Dec. 29, 1971, abandoned. This application July 25, 1974, Ser. No. 491,693

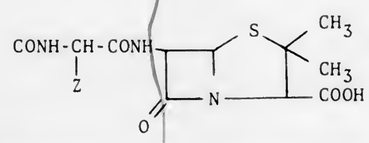
Claims priority, application Japan, Dec. 29, 1970, 45-124374; Dec. 29, 1970, 45-124377

Int. Cl.² C07D *499/44*

U.S. Cl. 260—239.1 **15 Claims**

1. A penicillin of the formula:





wherein A is an unsubstituted benzene or pyrimidine ring or a benzene or pyrimidine ring substituted with one or more members selected from the group consisting of lower alkyl, lower alkoxy, lower alkoxycarbonyl, hydroxyl, halogen, halo(-lower)alkyl, nitro, lower alkylsulfonyl, lower alkylthio, lower alkylenedioxy, lower alkylene, amino, lower alkylamino, di(-lower)alkylamino, acetamido, benzyloxycarbonylamino, trichloroethoxycarbonylamino and o-nitrophenylsulfenylamino, R is hydrogen or lower alkyl, X is oxygen or sulfur, Y is hydrogen, lower alkyl, lower alkanoyl or lower alkoxycarbonyl and Z is phenyl or thienyl, and non-toxic pharmaceutically acceptable salts thereof.

3,951,956

PROCESS FOR THE PREPARATION OF 3-HYDROXY PENAM-1-OXIDES AND DERIVATIVES THEREOF

Peter George Sammes, Sandy, and Ian Harold Coates, London, both of England, assignors to Glaxo Laboratories Limited, Greenford, England

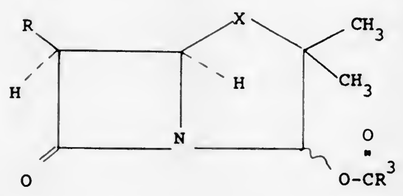
Filed Jan. 16, 1974, Ser. No. 433,714

Claims priority, application United Kingdom, Jan. 17, 1973, 2524/73

Int. Cl.² C07D *499/08*

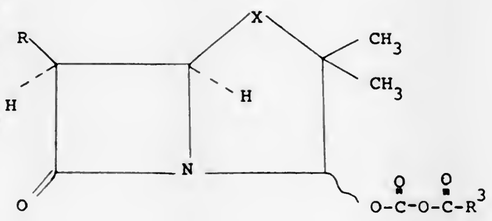
U.S. Cl. 260—239.1 **14 Claims**

1. A process for the preparation of compounds of the formula



VI

wherein R represents a blocked amino group; R^3 represents phenyl or phenyl substituted with a substituent which enhances the electron withdrawing properties of the phenyl group; and X represents >SO in the α- or β-configuration; which comprises subjecting a compound of formula



V

wherein R, R^3 and X are as defined above, to decarboxylation.

3,951,957

CHLOROMETHYL ESTER OF PENICILLINS

Welf von Daehne, Rungsted Kyst; Erling Knud Frederiksen, Holte; Wagn Ole Godtfredsen, Varlose, and Schneur Rachlin, Horsholm, all of Denmark, assignors to Lovens Kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

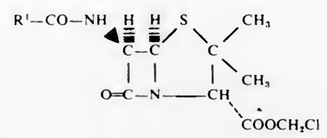
Division of Ser. No. 121,547, March 5, 1971, Pat. No. 3,850,908. This application June 18, 1974, Ser. No. 480,559

Claims priority, application United Kingdom, Mar. 12, 1970, 11995/70; Aug. 26, 1970, 41667/70

Int. Cl.² C07D *499/44*

U.S. Cl. 260—239.1 **1 Claim**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof in which R^1 is selected from the group consisting of phenoxymethyl, benzyl, dimethoxyphenyl, 5-methyl-3-phenyl-4-isoxazolyl, and 5-methyl-3-O-chlorophenyl-4-isoxazolyl.

3,951,958

1,3-OXYGENATED-8α-ESTRATRIENES

Klaus Prezewowsky; Henry Laurent; Helmut Hofmeister; Rudolf Wiechert; Friedmund Neumann, and Yukishige Nishino, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

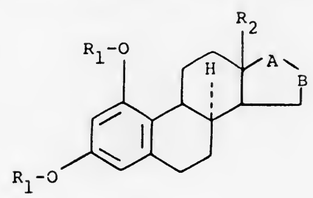
Filed July 12, 1974, Ser. No. 487,988

Claims priority, application Germany, July 13, 1973, 2336434; July 13, 1973, 2336433; May 31, 1974, 2426778; May 31, 1974, 2426779

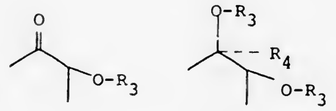
Int. Cl.² C07J *71/00*

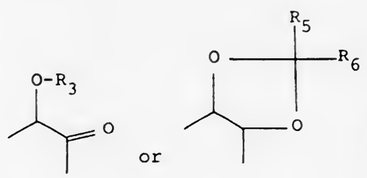
U.S. Cl. 260—239.5 **42 Claims**

1. A 1,3-oxygenated 8α-estratriene of the formula



wherein —A—B— is





wherein R_1 and R_3 each are a hydrogen atom, hydrocarbon acyl of 1–15 carbon atoms wherein acyl is the acyl radical of a carboxylic or sulfonic acid, alkyl of 1–5 carbon atoms, cycloalkyl of 3–8 ring carbon atoms or tetrahydropyranyl; R_2 is alkyl of 1–4 carbon atoms; R_4 is a hydrogen atom or alkyl, alkenyl or alkinyl of 1–6 carbon atoms; and R_5 and R_6 each are a hydrogen atom, alkyl of 1–5 carbon atoms, phenyl alkyl wherein alkyl is of 1–4 carbon atoms, or phenyl.

24. 1,3,16α-Tris(piperidinosulfonyloxy)-17α-ethinyl-8α-estra-1,3,5(10)-trien-17β-ol.

3,951,959

1,3-OXYGENATED 8α-ESTRATRIENES

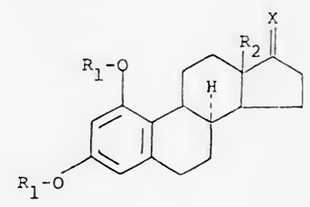
Klaus Prezewowsky; Henry Laurent; Helmut Hofmeister; Rudolf Wiechert; Friedmund Neumann, and Yukishige Nishino, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

Filed July 12, 1974, Ser. No. 488,058

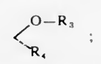
Int. Cl.² C07J *43/00, 1/00*

U.S. Cl. 260—239.55 R **24 Claims**

1. A 1,3-oxygenated 8α-estratriene of the formula



wherein X is an oxygen atom or



R_1 and R_3 each are a hydrogen atom, hydrocarbon carbonyl or sulfonyl of 1–15 carbon atoms, alkyl of 1–5 carbon atoms, cycloalkyl of 3–8 ring carbon atoms, or tetrahydropyranyl; R_2 is alkyl of 1–4 carbon atoms; and R_4 is a hydrogen atom alkyl of 1–6 carbon atoms or chloroethinyl.

3,951,960

NOVEL CRYSTALLINE FORMS OF OPTICAL BRIGHTENERS

James C. Heath, Norwood; Raymond E. Werner, Wyoming, both of Ohio; John W. Delaney, Fort Mitchell, Ky., and Nathan N. Crounse, Cincinnati, Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. Nos. 526,351, Feb. 10, 1966, abandoned, and Ser. No. 283,558, May 27, 1963, abandoned, which is a continuation-in-part of Ser. No. 177,743, March 6, 1962, abandoned. This application June 18, 1969, Ser. No. 834,560

Int. Cl.² C07D *251/54*

U.S. Cl. 260—240 B **13 Claims**

1. A compound selected from the group consisting of disodium 4,4′-bis(4-anilino-6-morpholino-s-triazin-2-ylamino)-2,2′-stilbenedisulfonate in the form of crystalline needles characterized by the following X-ray diffraction data:

INTERPLANAR SPACINGS, A
26.75
10.04
9.20
8.42
6.02
5.34
5.18
4.79
4.35
4.29

and disodium 4,4'-bis(4,6-dianilino-s-triazin-2-ylamino)-2,2'-stilbenedisulfonate in the form of crystalline needles characterized by the following X-ray diffraction data:

INTERPLANAR SPACINGS, A
6.23
5.90
5.70
5.59
5.51
5.34
4.90
4.85
4.60
3.98
3.82
3.64
3.44
3.28
3.22.

3,951,961

XANTHENE AND THIOXANTHENE DERIVATIVES, COMPOSITIONS THEREOF AND A METHOD OF PREPARATION THEREOF

Georg Ujvari, Nykobing S, and Peter Bregnedal Hansen, Horsholm, both of Denmark, assignors to Kefalas A/S, Denmark

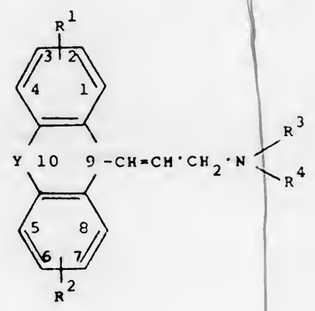
Filed Nov. 21, 1974, Ser. No. 525,967

Claims priority, application United Kingdom, Nov. 30, 1973, 55759/73

Int. Cl.² C07D *405/06, 409/06*

U.S. Cl. 260—240 TC **14 Claims**

1. A compound selected from the group consisting of 1) a compound of the following formula:



I

wherein Y is selected from the group consisting of sulphur and oxygen, R^1 is selected from the group consisting of hydrogen, chlorine, trifluoromethyl and dimethylsulfamoyl, R^2 is selected from the group consisting of hydrogen and fluorine, and R^3 and R^4 taken together with the nitrogen atom form a ring selected from the group consisting of a piperazine and a piperidine ring such rings substituted in the 4-position by a substituent selected from a methyl group, a 2-hydroxyethyl group and a 2-hydroxyethyl group esterified with an aliphatic carboxylic acid having from one to seventeen carbon atoms inclusive, and 2) a non-toxic acid addition salt thereof.

3,951,962

NOVEL N-ALKENYLTETRACYCLINE DERIVATIVES

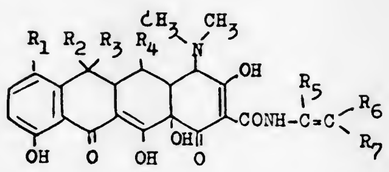
Masuo Murakami, Tokyo; Masaru Iwanami, Yokohama; Tadao Shibanuma, Asaka; Masaharu Fujimoto, Tokyo; Norio Sato; Ryutaro Kawai, both of Shiraoka, and Kunichiro Yano, Tokorozawa, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 415,529, Nov. 14, 1973, abandoned, which is a division of Ser. No. 205,414, Dec. 6, 1971, Pat. No. 3,818,274. This application Mar. 19, 1975, Ser. No. 560,110

Int. Cl.² C07D *307/02;* **C07C** *103/19*

U.S. Cl. 260—240 R **7 Claims**

1. An N-alkenyltetracycline derivative represented by the formula



wherein R_1 represents a hydrogen atom or a halogen atom; R_2 represents a hydrogen atom or a methyl group; R_3 represents a hydrogen atom or a hydroxyl group or said R_2 and R_3 when combined with each other, form a methylene group; R_4 represents a hydrogen atom or a hydroxyl group; R_5 represents a hydrogen atom, an alkyl group, a furyl alkyl group or a methyl substituted furyl alkyl group; R_6 represents a hydrogen atom, a furyl group or a methyl substituted furyl group; R_7 represents a hydrogen atom or an alkyl group or said R_6 and R_7 when combined with each other, form a 1-oxa-2-pentenylene group; with the proviso that at least one group of R_5, R_6 and combination group of R_6 and R_7 is a cyclic group including oxygen atom.

3,951,963

0-(SUBSTITUTED-AMINOALKYL)-5-NITROIMIDAZOLE-(2)-ALDOXIMES

Erhardt Winkelmann; Ulrich Gebert, both of Kelkheim, Taunus, and Wolfgang Raether, Dreieichenhain, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

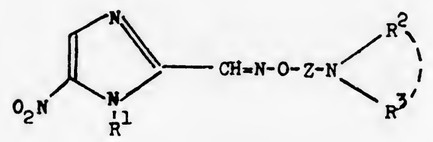
Filed Mar. 5, 1974, Ser. No. 448,376

Claims priority, application Germany, Mar. 7, 1973, 2311177

Int. Cl.² C07D *401/12, 403/12, 413/12, 233/32*

U.S. Cl. 260—240 G **15 Claims**

1. An 0-(substituated-aminoalkyl)-5-nitroimidazole-(2)-aldoxime of the formula



and non-toxic, physiologically-acceptable acid salts thereof, wherein R^1 is hydrogen, methyl, ethyl, or hydroxyethyl; Z is linear or branched alkylene having 2 to 3 carbon atoms; R^2 and R^3, taken alone, are the same or different lower alkyl having from 1 to 4 carbon atoms, and R^2 and R^3, taken together with the nitrogen atom to which they are attached, form a substituted or unsubstituted heterocyclic ring which may contain further hetero atoms.

3,951,964

METHOD FOR PREPARING AZINES

Pierre Tellier, Ouillins; Henri Mathais, Sainte Foy-les-Lyon; Jean-Pierre Schirmann, Brignais, and Francis Weiss, Pierre-Benite, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Saint-Denis, France

Filed Nov. 22, 1972, Ser. No. 308,836

Claims priority, application France, Nov. 23, 1971, 71.41867; Mar. 13, 1972, 72.08580

Int. Cl.² C07C *119/00*

U.S. Cl. 260—240 G **4 Claims**

1. A method for preparing azines which consists of reacting

a. ammonia;

b. a carbonyl compound selected from formaldehyde, acetaldehyde, propionaldehyde, butyraldehyde, isobutyraldehyde, n-pentanal, pival aldehyde, oenanthal, 2-ethylhexanal, Δ-3-tetrahydrobenzaldehyde, hexahydrobenzaldehyde, 5-norbornene-2-carboxaldehyde, tetrahydropyran-2-carboxaldehyde, benzaldehyde, monochlorobenzaldehyde, p-nitrobenzaldehyde, anisaldehyde, β-chloropropionaldehyde, β-methoxypropionaldehyde, β-ethoxypropionaldehyde, 4-cyano-2,2-dimethylbutyraldehyde, acetone, 2-butanone, 2-pentanone, 3-pentanone, methylisopropylketone, methylisobutylketone, ethylamylketone, methylcyclohexylketone, acetophenone, benzophenone, cyclobutanone, cyclopentanone, cyclohexanone, 2-methylcyclohexanone, 3-methylcyclohexanone, 4-methylcyclohexanone, 2,4-dimethylcyclohexanone, 3,3,5-trimethylcyclohexanone, isophorone, cycloheptanone, cyclooctanone, cyclodecanone and cyclododecanone, and mixtures thereof;

c. at least one diacyl peroxide selected from monochloroacetyl, trifluoroacetyl, propionyl, β-chloropropionyl, β-methoxypropionyl, β-carboxypropionyl, n-butyryl, perfluoro-n-butyryl, isobutyryl, perfluoroisobutyryl, crotonyl, valeryl, isovaleryl, pivaloyl, hexanoyl, heptanoyl, octanoyl, 2-ethylhexanoyl, nonanoyl, decanoyl, lauroyl, myristoyl, palmitoyl, stearoyl, cyclohexanecarbonyl, nonbornane2-carbonyl, benzoyl, o-toluyl, m-chlorobenzoyl, p-chlorobenzoyl, 2,4-dichlorobenzoyl, p-methoxybenzoyl, p-nitrobenzoyl, m-trifluoromethylbenzoyl, p-phenylbenzoyl, o-carboxybenzoyl, a naphthoyl, 2-furoyl and nicotenoyl peroxides; mixed acetyl and benzoyl, acetyl and butyryl, isobutyryl and benzoyl, acetyl and lauroyl and stearoyl and benzoyl peroxides; diacyl peroxides derived from oxalic, succinic, glutaric, adipic, pimelic, dodecanedioic, cyclohexane-1,2-dicarboxylic, cyclohexane-1,4-dicarboxylic, o-phthalic, isophthalic, and terephthalic acid; mixed isopropoxycarbonyl and benzoyl, methoxycarbonyl and lauroyl, isopropoxycarbonyl and lauroyl, 3,3,5-trimethylcyclohexyloxycarbonyl and lauroyl peroxides, isopropylperoxydicarbonate cyclohexylperoxydicarbonate peroxides; and mixed dianhydrides of diperoxycarbonic acid and benzoic, caproic, lauroic and 2-ethylhexanoic acids,

and recovering the azine or mixtures of azines from the reaction medium.

3,951,965

BIS-TRIAZINYL-AMINO)-STILBENE-DISULFONIC ACID DERIVATIVES

Helmut Mengler, Frankfurt am Main; Erich Schinzel, Hofheim, Taunus, and Gunter Rosch, Altenhain, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

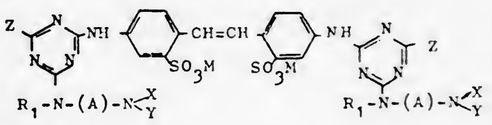
Filed Sept. 18, 1974, Ser. No. 506,985

Claims priority, application Switzerland, Sept. 21, 1973, 13558/73

Int. Cl.² C07D *403/10*

U.S. Cl. 260—240 B **12 Claims**

1. A compound of the formula



in which

X is $-CO-R_2$, $-SO_2-R_3$, $CO-O-R_3$, $-CO-NH-R_2$ or $-CS-NH-R_2$,

Y is $-CO-R_3$ or R_4, or, if X is $-CO-R_2$,

Y and R_2 together form a chain of 3 to 5 carbon atoms which chain consists of the following ring members:

a groups of the formula $-CH_2-$,

b groups of the formula $-CH=CH-$,

c groups of the formula



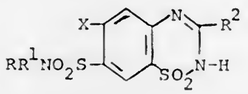
and
d groups of the formula -CO-, wherein
a is an integer of zero to 5,
b is an integer of zero to 2 and
c and *d* are zero or 1, with the proviso that a is more than 3 if *b*, *c* and *d* all are zero,
R_1, R_2 and R_4 are hydrogen, alkyl of 1 to 20 carbon atoms, cycloalkyl of 4 to 8 carbon atoms or phenyl,
R_3 is alkyl or 1 to 20 carbon atoms, cycloalkyl of 4 to 8 carbon atoms or phenyl,
A is alkylene of 2 to 6 carbon atoms,
Z is chlorine or a group of the formula

$-NR_5R_6$ or $-O-R_7$,

wherein
R_5 is hydrogen, alkyl or alkenyl of up to 20 carbon atoms, cycloalkyl of 4 to 8 carbon atoms or phenyl,
R_6 is hydrogen or lower alkyl, or
R_5 and R_6 together with the nitrogen to which they are bound are pyrrolidino, piperidino, hexamethyleneimino or morpholino,
R_7 is lower alkyl or phenyl and
M is hydrogen or a colorless cation,
which groups R_1, R_2, R_3, R_4, R_5, R_6 and R_7 are unsubstituted or substituted by non-chromophoric radicals selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, lower alkanoyl, benzoyl, halogen, amino, lower alkylamino, di-lower-alkyl-amino, tri-lower-alkylammonium, hydroxy, lower alkanoyloxy, benzoyloxy, lower alkanoylamino, benzoylamino, carboxy, lower carboalkoxy, carbamoyl, mono- and di-N-(lower alkyl) carbamoyl, cyano, sulfo, sulfonic acid lower alkyl ester, sulfonic acid amide, sulfonic acid mono- and di-N-(lower alkyl) amide and phenyl.

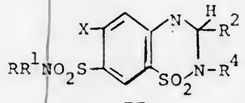
3,951,966
3-PYRAZINYL SUBSTITUTED-1,2,4-BENZOTHIADIAZINES
Frederick C. Novello, Berwyn, Pa., assignor to Merck & Co., Inc., Rahway, N.J.
Division of Ser. No. 236,243, March 20, 1972, Pat. No. 3,890,313. This application Sept. 26, 1974, Ser. No. 509,975
Int. Cl.² C07D *285/22*
U.S. Cl. 260—243 D **13 Claims**

1. A benzothiadiazine compound having the structure I or II



I

OR



II

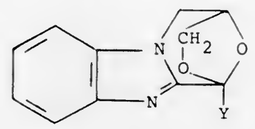
and pharmacologically acceptable salts thereof wherein R is hydrogen or lower alkyl; R^1 is hydrogen or lower alkyl; R^2 is pyrazinyl, or a substituted derivative thereof wherein the substituent is one or two similar or dissimilar groups selected from lower alkyl, lower alkoxy, hydroxy, chloro and bromo; R^4 is hydrogen or lower alkyl; and X is halo, lower alkyl and trifluoromethyl.

3,951,967
7-MERCAPTO(OR THIO)-BENZOTHIADIAZINE PRODUCTS
Frederick C. Novello, Berwyn, Pa., assignor to Merck & Co., Inc., Rahway, N.J.
Division of Ser. No. 236,244, March 20, 1972, Pat. No. 3,892,738. This application Dec. 4, 1974, Ser. No. 529,313
Int. Cl.² C07D *285/22*
U.S. Cl. 260—243 D **5 Claims**

1. A 3-R^1-6-X-7-RS-1,2,4-benzothiadiazine-1,1-dioxide and pharmacologically acceptable salts thereof wherein X represents C_{1-3}-alkyl, chloro and trifluoromethyl; R^1 represents pyrazinyl, lower alkyl substituted pyrazinyl, pyridazinyl, lower alkyl substituted pyridazinyl, pyrimidinyl and lower alkyl substituted pyrimidinyl, and R represents hydrogen, lower alkyl and phenyl-lower alkyl.

3,951,968
(2-6-OXYMETHYLENE) MORPHOLINO (4,3A) BENZIMIDAZOLES
Claude P. Fauran, Paris; Jeannine A. Eberle, Chatou; Michel J. Turin; Guy M. Raynaud, both of Paris, and Claude J. Gouret, Meudon, all of France, assignors to Delalande S.A., Courbevoie, France
Filed Sept. 17, 1974, Ser. No. 506,825
Claims priority, application France, Oct. 3, 1973, 73.35379
Int. Cl.² C07D *265/00, 273/00, 295/00*
U.S. Cl. 260—244 R **8 Claims**

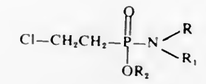
1. A compound having the formula



wherein Y is alkyl having one to 4 carbon atoms, phenyl, or phenyl substituted by at least one substituent selected from the group consisting of halogen, alkyl containing one to 4 carbon atoms, methoxy and trifluoromethyl.

3,951,969
N-SUBSTITUTED-P-(2-CHLOROETHYL)-PHOSPHONAMIDATES
David I. Randall, and Robert W. Wynn, both of Easton, Pa., assignors to GAF Corporation, New York, N.Y.
Continuation of Ser. No. 875,498, Nov. 10, 1969, abandoned. This application Feb. 12, 1974, Ser. No. 441,859
Int. Cl.² C07D *295/00*
U.S. Cl. 260—247 **6 Claims**

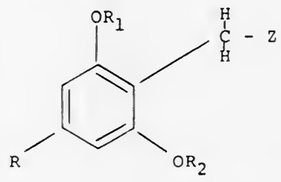
1. A compound of the formula:



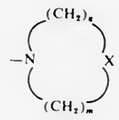
wherein R is cycloalkyl of 3 to 8 carbon atoms, R_1 is cycloalkyl of 3 to 8 carbon atoms or hydrogen or R and R_1 together with the depicted nitrogen form a heterocyclic ring selected from the group consisting of morpholine, piperidine and pyrrolidine and alkyl substituted derivatives thereof wherein the alkyl group contains 1 to 5 carbon atoms, and R_2 is alkyl of 1 to 7 carbon atoms or beta-chloroalkyl of 2 to 7 carbon atoms.

3,951,970
RESORCINOL AMINE DERIVATIVES
Raj Kumar Razdan, Belmont, and Harry George Pars, Lexington, both of Mass., assignors to Sharps Associates, Cambridge, Mass.
Filed Oct. 1, 1973, Ser. No. 402,481
Int. Cl.² C07D *295/08*
U.S. Cl. 260—247.7 Z **11 Claims**

1. A compound of the group consisting of compounds of the formula



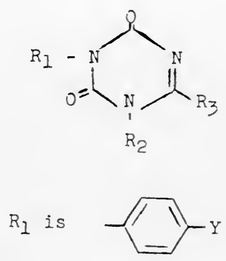
and acid addition salts thereof, wherein R represents an alkyl group having 1 to 20 carbon atoms;
R_1 and R_2 represent hydrogen or the same lower alkyl or lower alkanoyl groups; and
Z represents $-NH_2$, $-NHR_3$, $-NR_3R_4$, or



where R_3 is lower alkyl or phenyl-lower alkyl, R_4 is lower alkyl or phenyl-lower alkyl, m is an integer from 0 to 6, n is an integer from 0 to 6, m + n is an integer from 3 to 6, and X is CH_2, CHR_3, O, S, or NR_3.

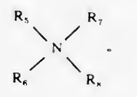
3,951,971
1,3,5-TRIAZINEDIONES
Julius Jakob Fuchs, 1104 Greenway Road, Forwood, Wilmington, Del. 19803, and Kang Lin, Lot 78, Quartz Mill Road, Lamatan West, Newark, Del. 19711
Continuation of Ser. No. 301,853, Oct. 30, 1972, Pat. No. 3,855,219, which is a continuation-in-part of Ser. No. 268,767, July 3, 1972, abandoned, which is a continuation-in-part of Ser. No. 181,202, Sept. 16, 1971, abandoned. This application Oct. 16, 1974, Ser. No. 515,243
The portion of the term of this patent subsequent to Dec. 17, 1991, has been disclaimed.
Int. Cl.² C07D *251/30*
U.S. Cl. 260—248 NS **11 Claims**

1. A compound of the formula



wherein
R_1 is

where Y is halogen;
R_2 is a cation selected from lithium, sodium, potassium, calcium, magnesium, barium, or



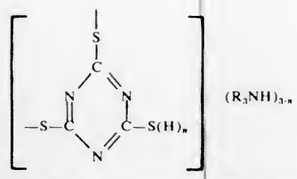
where
R_5, R_6 and R_7 can be the same or different and each can be hydrogen, alkyl of 1 through 4 carbon atoms, or hydroxy alkyl of 2 through 4 carbon atoms; and
R_8 is hydrogen, alkyl of 1 through 12 carbon atoms, or benzyl; R_5 and R_6 can be taken together to form a ring that is $-(CH_2)_2-O-(CH_2)_2-$ or $-(CH_2)_n-$ where *n* is 4-6 and R_7 and R_8 are H;
R_3 is SR_4 or OR_4 where
R_4 is methyl.

3,951,972
CONTROL OF SODIUM DICHLOROCYANURATE HYDRATION THROUGH AIRSTREAM FLASH DRYING
George D. Nelson, Creve Coeur, and Kenneth J. Nissing, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed Mar. 27, 1975, Ser. No. 562,994
Int. Cl.² C07D *251/26*
U.S. Cl. 260—248 C **6 Claims**

1. A method for the direct conversion of wet sodium dichlorocyanurate particles to sodium dichlorocyanurate monohydrate which comprises introducing said wet sodium dichlorocyanurate particles to an airstream or gas stream flash dryer and controlling the particle temperature between about 70°C. and about 95°C.

3,951,973
DI AND TRI (HYDROCARBYLAMMONIUM) TRITHIOCYANURATE
John W. Nebzydoski, Fishkill, N.Y., assignor to Texaco Inc., New York., N.Y.
Division of Ser. No. 417,153, Nov. 19, 1973, Pat. No. 3,849,319. This application June 24, 1974, Ser. No. 482,545
Int. Cl.² C07D *251/38*
U.S. Cl. 260—248 CS **7 Claims**

1. A compound of the formula:



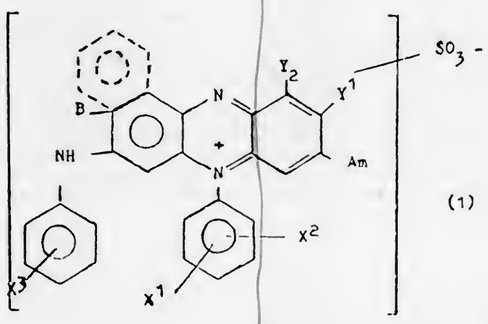
in which R is hydrogen or an alkyl radical having from about 8 to 24 carbon atoms at least one R being an alkyl radical and n has a value of 0 to 1.

3,951,974
TRIAZINE DYESTUFFS

Allen Crabtree, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 323,359, Jan. 15, 1973, abandoned. This application May 21, 1974, Ser. No. 472,060
Claims priority, application United Kingdom, Aug. 28, 1973, 40522/73; Mar. 20, 1974, 12294/74
Int. Cl.² C07D *251/44, 251/50*
U.S. Cl. 260—249.5 **6 Claims**

1. A reactive dyestuff of the formula:



wherein Am is selected from the group consisting of anilino, di(lower alkyl)amino wherein each alkyl moiety has 1–4 carbon atoms, di(hydroxyethyl) amino, di(cyanoethyl) amino and N(alkyl) benzylamino wherein the alkyl moiety has 1–4 carbon atoms,

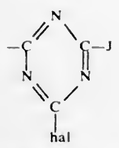
one of Y^1 and Y^2 is H or SO_3H and the other is H or an alkyl or alkoxy group of 1–4 carbon atoms,

one of X^1 or X^2 is H or SO_3H and the other is H, an alkyl or alkoxy group of 1–4 carbon atoms, Cl or CO_2H,

X^3 is H, an alkyl group of 1–4 carbon atoms or SO_3H,

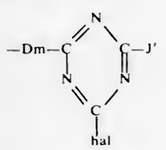
when the dotted fused ring is present B is absent and when the dotted fused ring is absent B is H or an alkyl or alkoxy group of 1–4 carbon atoms,

one or both of the phenylene ring substituted by X^3 and the Am group when it is anilino contains a NHQ group wherein Q is a cellulose reactive group of the triazine series having the formula:



wherein hal is chlorine or bromine, and

J is chlorine, bromine, amino, NHR^5, NR^5R^6 or R^5 wherein R^5 and R^6 are selected from alkyl having 1–4 carbon atoms; hydroxyalkyl having 1–4 carbon atoms; sulphoalkyl having 1–4 carbon atoms; N-w-sulphomethylanilino, anilino or phenoxy, each having 0–2 substituents selected from SO_3H, CH_3, COOH, $SO_2CH_2CH_2OSO_3H$, OCH_3 and Cl; naphthylamino substituted by 1–3 SO_3H groups; and



wherein hal is chlorine or bromine, and

J′ is J which has the meaning given above or aminophenazine group defined above by formula (1) with an NH group in place of NHQ and

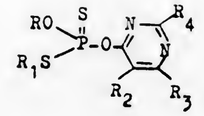
Dm is the N,N′-di-radical of a diamine selected from the group consisting of the mono and disulphonic acids of phenylene diamine, N-methyl phenylene diamine, N-ethyl phenylene diamine, naphthylamine, diaminodiphenyl, diaminodiphenylurea, diaminodiphenylamine, diaminodiphenoxyethane, diaminodiphenylmethane and and the dyestuff as a whole contains at least 2 SO_3H groups.

3,951,975
O-ALKYL-S-ALKYL-O-[2-SUBSTITUTED-PYRIMIDIN(-4)YL]THIONOTHIOLPHOSPHORIC ACID ESTERS

Wolfgang Hofer; Fritz Maurer, both of Wuppertal, and Ingeborg Hammann, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 4, 1974, Ser. No. 529,658
Claims priority, application Germany, Dec. 6, 1974, 2360877
Int. Cl.² C07D *9/65;* **A01N** *9/36*
U.S. Cl. 260—251 P **7 Claims**

1. An O-alkyl-S-alkyl-O-pyrimidin(4)yl-thionothiolphosphoric acid ester of the formula



(I)

in which

R and R_1 each independently is alkyl with 1 to 6 carbon atoms,

R_2 is hydrogen or lower alkylmercapto,

R_3 is hydrogen or methyl, and

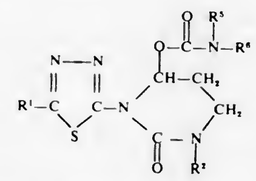
R_4 is alkylmercapto with 1 to 6 carbon atoms, or lower alkylmercapto-lower alkylmercapto, or carbo-lower alkoxymethylmercapto, the lower alkyl and alkoxy moieties having 1 to 4 carbon atoms.

3,951,976
1-THIADIAZOLY-6-CARBAMOYLOXYTETRAHYDROPYRIMIDINONES

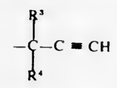
John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Sept. 18, 1974, Ser. No. 507,043
Int. Cl.² C07D *239/00*
U.S. Cl. 260—256.6 R **8 Claims**

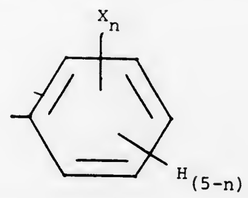
1. A compound of the formula



wherein R^1 is selected from the group consisting of lower alkyl, lower alkenyl, lower chloroalkyl, lower bromoalkyl, trifluoromethyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl and lower alkylsulfinyl; R^2 is selected from the group consisting of lower alkyl, lower alkenyl, lower chloroalkyl, lower bromoalkyl and



wherein R^3 and R^4 are each selected from the group consisting of hydrogen and lower alkyl; R^5 is selected from the group consisting of hydrogen and lower alkyl; and R^6 is selected from the group consisting of lower alkyl, cycloalkyl of from 3 to 7 carbon atoms and



wherein X is selected from the group consisting of lower alkyl, halogen, lower haloalkyl and lower alkoxy, and *n* is an integer from 0 to 3.

3,951,977
4-HIGH MOLECULAR WEIGHT ALKYL-SUBSTITUTED CARBOPHENOXY PHTHALIC ACID-CONTAINING COMPOUNDS

Edmund J. Plasek, Chicago, and Imre Puskas, Lisle, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Sept. 16, 1970, Ser. No. 72,831
Int. Cl.² C07D *295/10, 209/48*
U.S. Cl. 260—268 BC **7 Claims**

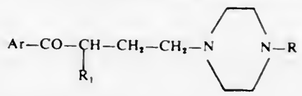
3. The N,N′-bis-aminopropyl piperazine di-4-(polybutylcarbophenoxy) phthalimide wherein the polybutyl-substituent has the M_n of 1500.

3,951,978
1,3-DISUBSTITUTED 3-AROYLPROPANES AND PROCESS FOR THE PREPARATION THEREOF

Elso Manghisi, and Giuseppe Cascio, both of Monza, Italy, assignors to Istituto Luso Farmaco d'Italia S.r.l., Italy

Filed Apr. 18, 1973, Ser. No. 352,346
Claims priority, application Italy, Apr. 22, 1972, 23444/72; Mar. 20, 1973, 21881/73
Int. Cl.² C07D *295/10, 295/12*
U.S. Cl. 260—268 PH **11 Claims**

1. A 1,3-disubstituted-3-aroyl propane having the formula:



wherein:

Ar is phenyl, halo-phenyl or methoxy substituted phenyl;

R_1 is hydroxy, acetyloxy, phenoxy, mono-alkylcarbamoyloxy having up to 5 carbon atoms or dialkylcarbamoyloxy having up to 4 carbon atoms in each alkyl group thereof;

and

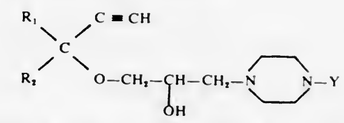
R is phenyl, o-methoxyphenyl or 2-pyridyl; or the pharmaceutically acceptable salts thereof.

3,951,979
AMINO PROPANEDIOL DERIVATIVES

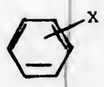
Roland Yves Mauvernary, 13 rue Eugene Gilbert, 63000 Riom; Norbert Bush, Le Bouquet, 63410 Loubeyrat; Jacques Moleyre, 21, rue Sarrazin, 63200 Mozac; Andre Montell, 25 bld Thermal, 63400 Chamalieres, and Jacques Simond, HLM LE Patural Bt H, 63360 Gerzat, all of France

Division of Ser. No. 350,517, April 12, 1973, Pat. No. 3,884,923. This application Jan. 29, 1975, Ser. No. 545,311
Claims priority, application France, Apr. 13, 1972, 72.12893
Int. Cl.² C07D *295/08*
U.S. Cl. 260—268 PH **6 Claims**

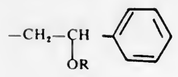
1. A piperazine of the formula



wherein R_1 and R_2 are like or unlike alkyl groups having 1 to 4 carbon atoms and Y is selected from the group consisting of groups having the formula



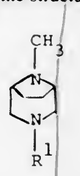
in which X is selected from the group consisting of hydrogen, halogen, trifluoromethyl, alkyl of 1–4 carbon atoms, and alkoxy of 1–4 carbon atoms and groups having the formula



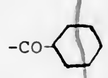
in which R is alkyl of 1–4 carbon atoms, or the pharmaceutically acceptable acid salts thereof.

3,951,980
3-SUBSTITUTED-8-METHYL-3,8-DIAZABICYCLO[3.2.-1]OCTANES
David W. Henry, Menlo Park, and Priscilla A. Sturm, Mountain View, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.
Division of Ser. No. 468,370, May 9, 1974, Pat. No. 3,905,979. This application Aug. 21, 1975, Ser. No. 606,338
Int. Cl.² C07D *451/02, 487/08*
U.S. Cl. 260—268 BF **5 Claims**

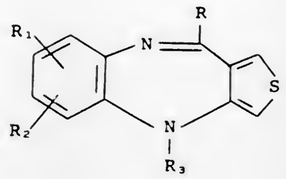
1. A compound having the structure



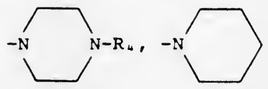
wherein R^1 represents $-CON(C_2H_5)_2$, $-COOC_2H_5$, $-CONHC_2H_5$, or



together with the acid addition salts of said compounds.



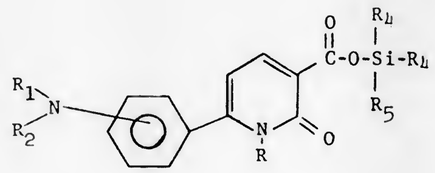
wherein R_1 and R_2 are selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halogen, nitro, trifluoromethyl, methylthio, methylsulfonyl and hydroxy; R_3 is selected from the group consisting of hydrogen and lower alkyl; R is selected from the group consisting



and $-N(CH_2)_nN(R_5)_2$, wherein R_4 is selected from the group consisting of hydrogen, lower alkyl, 2-hydroxyethyl, phenyl and phenylloweralkyl, *n* is 2 or 3 and R_5 is lower alkyl, and acid addition salts thereof.

3,951,982
TRIALKYLSILYL ESTERS OF 6(SUBSTITUTED AMINO)PHENYL-1,-DIHYDRO-2-OXONICOTINIC ACID, METHODS FOR THEIR PRODUCTION AND CONVERSION TO THE CORRESPONDING ACID CHLORIDES
Om P. Goel, Detroit, Mich., assignor to Parke, Davis & Company, Jospeh Campau at the River
Filed Nov. 21, 1974, Ser. No. 526,017
Int. Cl.² C07D *295/12*
U.S. Cl. 260—268 PH **7 Claims**

1. A member of the class consisting of compounds of the formula



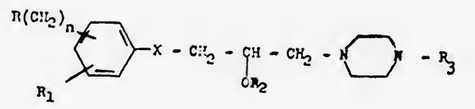
3,951,981
SUBSTITUTED BENZODIAZEPINES AND METHOD OF USE
Sidney Robert Safir, River Edge, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Filed Feb. 24, 1975, Ser. No. 552,022
Int. Cl.² C07D *295/12*
U.S. Cl. 260—268 TR **8 Claims**

1. A compound selected from those of the formula:

or acid addition salts thereof, wherein R is hydrogen or methyl; R_1 and R_2 are branched or straight chain lower alkyl groups of from one to six carbon atoms, or R_1R_2N taken together form 4-R_3-1-piperazino, 4-methyl-1-homopiperazino, 1-pyrrolidino, morpholino, 1-piperidino, 4-(1-pyrrolidino)-piperidino or 4-(1-piperidino)piperidino, wherein R_3 is a lower alkyl group of from one to six carbon atoms, cyclohexyl, benzyl, phenyl, halophenyl wherein halo represents chloro, fluoro, bromo, or iodo, and R_4 and R_5 are each methyl or ethyl.

3,951,983
PHENOXYPROPANOLPIPERAZINES
John Christopher Danilewicz, Ash; John Edward Glyn Kemp, Canterbury; Michael Snarey, Sandwich, and James Robert Wright, Deal, all of England, assignors to Pfizer Inc., New York, N.Y.
Division of Ser. No. 196,729, Nov. 8, 1971, Pat. No. 3,856,794. This application Aug. 2, 1974, Ser. No. 494,206
Claims priority, application United Kingdom, Nov. 10, 1970, 53303/70
Int. Cl.² C07D *295/12*
U.S. Cl. 260—268 PH **9 Claims**

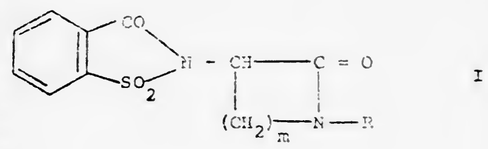
1. A compound of the formula:



or the pharmaceutically acceptable acid addition salts thereof, wherein R is a member selected from the group consisting of hydroxy, amino, alkanoylamino having from one to six carbon atoms, acryloylamino, crotonoylamino, benzoylamino, phenylalkanoylamino having up to three carbon atoms in the alkanoyl moiety, succinoylimino, phthaloylimino, alkanesulfonamido having from one to six carbon atoms, benzenesulfonamido, p-toluenesulfonamido, sulfamoyl, N-monoalkylsulfamoyl and N,N-dialkylsulfamoyl each having up to three carbon atoms in the alkyl moiety, N-phenylsulfamoyl, N-phenylalkylsulfamoyl having up to three carbon atoms in the alkyl moiety, carboxy and alkoxycarbonyl having from one to six carbon atoms in the alkoxy moiety; *n* is an integer of from one to two, inclusive; R_1 is a member selected from the group consisting of hydrogen, alkyl and alkoxy each having from one to six carbon atoms, fluorine, chlorine and bromine; R_2 is a member selected from the group consisting of hydrogen and alkanoyl having from two to six carbon atoms; R_3 is chlorophenyl or alkoxyphenyl having from one to six carbon atoms in the alkoxy moiety; and X is oxygen or sulfur.

3,951,984
3-BENZAZOCINE COMPOUNDS
Michio Kimura; Takeshi Nakajima, both of Minoo; Toshio Atsumi, Ashiya; Kenji Kobayashi; Yoshiaki Takebayashi, both of Takarazuka; Shigeho Inaba, Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan
Filed Dec. 18, 1973, Ser. No. 425,717
Int. Cl.² C07D *221/26*
U.S. Cl. 260—283 R **10 Claims**

1. A 3-benzazocine compound of the formula:

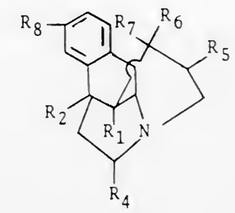


I

wherein R is a hydrogen atom or an alkyl radical with 1 to 3 carbon atoms and *m* represents the numbers 2, 3 or 4.

3,951,985
LACTAMS AND PROCESS FOR THEIR MANUFACTURE
Ivars Graudums, Stolberg, Rhineland; Heinrich Mückter, Aachen, and Ernst Frankus, Stolberg-Busbach, all of Germany, assignors to Chemie Grunenthal GmbH, Stolberg, Rhineland, Germany
Filed Feb. 27, 1973, Ser. No. 336,313
Claims priority, application Germany, Mar. 3, 1972, 2210166
Int. Cl.² C07D *417/04*
U.S. Cl. 260—293.57 **14 Claims**

1. A lactam of the general formula



wherein R_1, R_4, R_5 and R_8 are each hydrogen or lower alkyl, R_2 is hydrogen, lower alkyl or phenyl and R_6 and R_7 are each lower alkyl, and pharmaceutically acceptable salts thereof.

3,951,986
NOVEL 2-PROPANOL DERIVATIVES AND PREPARATION THEREOF
Isamu Maruyama, Minoo; Masaru Nakao, Osaka; Kikuo Sasajima, Toyonaka; Shigeho Inaba, Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan
Filed June 18, 1973, Ser. No. 370,693
Claims priority, application Japan, June 17, 1972, 47-60587; Aug. 24, 1972, 47-84866
Int. Cl.² C07D *211/52*
U.S. Cl. 260—293.73 **11 Claims**

1. 1-[2-hydroxy-3-(p-fluorophenoxy)propyl]-4-(p-chlorophenyl)-4-hydroxypiperidine.

8. 1-[2-Hydroxy-3-(p-fluorophenylthio)propyl]-4-(p-chlorophenyl)-4-hydroxypiperidine, and its pharmaceutically acceptable salts.

9. 1-[2-Acetyloxy-3-(p-fluorophenoxy)propyl]-4-(m-trifluoromethylphenyl)-4-hydroxypiperidine, and its pharmaceutically acceptable salts.

10. 1-[2-Hydroxy-3-(p-fluorophenylsulfinyl)propyl]-4-(m-trifluoromethylphenyl)-4-hydroxypiperidine, and its parmaceutically acceptable salts.

3,951,987

TETRAHYDROPYRIDINE DERIVATIVES

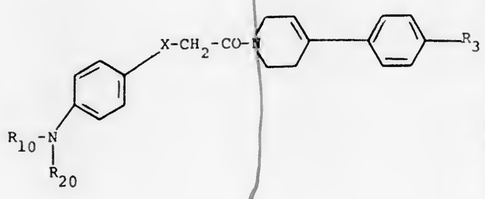
Albrecht Edenhofer, Riehen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 362,636, May 21, 1973, Pat. No. 3,879,405. This application Jan. 13, 1975, Ser. No. 540,753

Int. Cl.² C07D *213/32*

U.S. Cl. 260—294.8 G **1 Claim**

1. A compound of the formula



wherein R_3 signifies fluorine, chlorine or lower alkoxy; X signifies an oxygen atom or a sulfur atom; R_{10} signifies hydrogen, lower alkyl, lower alkanoyl, C_3 to C_6 cycloalkyl or C_3 to C_6 cycloalkyl-lower alkyl; R_{20} signifies hydrogen, lower alkyl, C_3 to C_6 cycloalkyl or C_3 to C_6 cycloalkyl-lower alkyl; or R_{10} and R_{20} each represent an oxygen atom and together with the nitrogen atom represent nitro.

3,951,988

1,2-PENTAMETHYLENE-1,4-DIHYDROPYRIDINE DERIVATIVES

Horst Meyer; Friedrich Bossert, both of Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

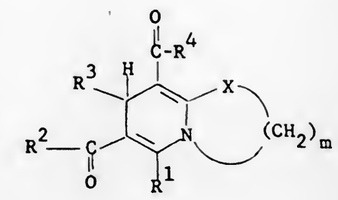
Division of Ser. No. 336,477, Feb. 28, 1973, Pat. No. 3,856,798. This application May 10, 1974, Ser. No. 468,664

Claims priority, application Germany, Mar. 6, 1972, 2210633

Int. Cl.² C07D *213/55*

U.S. Cl. 260—294.9 **17 Claims**

1. A compound of the formula:



wherein

X is $—CH_2—$;

m is 4;

R^1 is hydrogen or lower alkyl;

each of R^2 and R^4, independent of the other, is lower alkoxy or alkynyloxy of 2 to 4 carbon atoms; and

R^3 is lower alkyl; phenyl; phenyl substituted by one to three substituents selected from the group consisting of lower alkyl, trifluoromethyl, cyano, halo, nitro and carbo(lower alkoxy); pyridyl; furyl: thienyl; or naphthyl.

3,951,989

THIENOPYRIDINE-CARBOXYLIC ACID DERIVATIVES

Yutaka Kuwada, Ashiya; Kanji Meguro, Takarazuka; Yoshiaki Sato, Kobe, and Takeshi Fugono, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

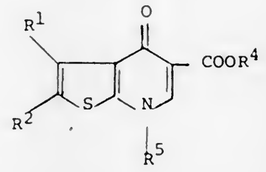
Filed July 22, 1974, Ser. No. 490,704

Claims priority, application Japan, July 23, 1973, 48-82869; July 23, 1973, 48-82870; Nov. 16, 1973, 48-129352; Nov. 16, 1973, 48-129353

Int. Cl.² C07D *213/28*

U.S. Cl. 260—294.8 C **29 Claims**

1. A compound of the general formula



wherein R^1 represents hydrogen or a lower alkyl; R^2 represents hyrogen, a lower alkyl or a halogen; R^4 represents hydrogen or a lower alkyl, and R^5 represents a lower alkyl; or their pharmaceutically acceptable salts obtainable when R^4 is hydrogen.

3,951,990

4-ARYL OR HETERO-6-AMINO-3,4-DIHYDROPYRID-2-ONE-3,5-DICARBOXYLIC ACID ESTER

Horst Meyer, Wuppertal; Friedrich Bossert, Wuppertal; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

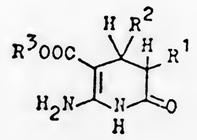
Divlsion of Ser. No. 390,193, Aug. 21, 1973. This application Dec. 12, 1974, Ser. No. 531,999

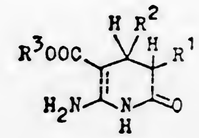
Claims priority, application Germany, Aug. 31, 1972, 2242787

Int. Cl.² C07D *213/70*

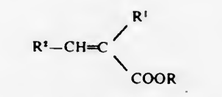
U.S. Cl. 260—294.8 D **20 Claims**

1. A process for the production of a compound of the formula:

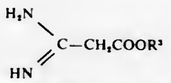




wherein R^1 is $—COOR'$ wherein R' is straight or branched chain lower alkyl, straight or branched chain lower alkenyl, straight or branched chain lower alkynyl, cycloalkyl of 3 to 7 carbon atoms, cycloalkenyl of 3 to 7 carbon atoms or lower alkyl, lower alkenyl, lower alkynyl, cycloalkyl of 3 to 7 carbon atoms or cycloalkenyl of 3 to 7 carbon atoms interrputed by 1 or 2 oxygen atoms; R^2 is lower alkyl, lower alkenyl, lower alkynyl, cycloalkyl of 3 to 7 carbon atoms, cycloalkenyl of 3 to 7 carbon atoms, aryl unsubstituted or substituted by 1 to 3 of the same or different substituents selected from the group consisting of lower alkyl, lower alkoxy, halogen, nitro, cyano, trifluoromethyl, carb. lower alkoxy and SO_n —lower alkyl wherein *n* is **o,** 1 or 2, or R^2 is naphthyl, pyridyl, thenyl, furyl or pyrryl unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of lower alkyl, lower alkoxy and halogen; and R^3 is straight or branched chain lower alkyl, straight or branched chain lower alkenyl, straight or branched chain lower alkynyl, or straight or branched chain lower alkyl, straight or branched chain lower alkenyl or straight or branched chain lower alkynyl interrupted by 1 or 2 oxygen atoms; which comprises reacting an α,β-unsaturated carboxylic acid ester of the formula



wherein R is alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms or alkynyl of 2 to 6 carbon atoms; and R^1 and R^2 are as above defined, with an amidine of the formula:



wherein R^3 is as above defined, and recovering the compound produced.

3,951,991

4-ARYL-6-AMINO-3,4-DIHYDROPYRID-2-ONE-3,5-DICARBOXYLIC ACID ESTER

Horst Meyer; Friedrich Bossert, both of Wuppertal; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Division of Ser. No. 390,193, Aug. 21, 1973. This application Dec. 11, 1974, Ser. No. 531,599

Claims priority, application Germany, Aug. 31, 1972, 2242787

Int. Cl.² C07D *213/71*

U.S. Cl. 260—294.8 F **5 Claims**

1. A compound of the formula

wherein R^1 is hydrogen or straight or branched chain lower alkyl; R^2 is phenyl unsubstituted or substituted by 1 or 2 of the same or different substituents selected from the group consisting of lower alkyl, lower alkoxy, halogen, nitro, cyano, trifluoromethyl, carb.lower alkoxy and SO_n— lower alkyl wherein *n* is 0, 1 or 2, or by 3 methoxy moieties, or naphthyl unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of lower alkyl, lower alkoxy and halogen; and R^3 is straight or branched chain lower alkyl, straight or branched chain alkenyl of 2 to 4 carbon atoms, straight or branched chain alkynyl of 2 to 4 carbon atoms, or straight or branched chain lower alkyl, straight or branched chain alkenyl of 2 to 4 carbon atoms or straight or branched chain alkynyl of 2 to 4 carbon atoms interrupted by 1 or 2 oxygen atoms.

3,951,992

4-THENYL-OR FURYL-6-AMINO-3,4-DIHYDROPYRID-2-ONE-3,5-DICARBOXYLIC ACID ESTER

Horst Meyer; Friedrich Bossert, both of Wuppertal; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

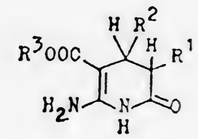
Division of Ser. No. 390,193, Aug. 21, 1973. This application Dec. 11, 1974, Ser. No. 531,525

Claims priority, application Germany, Aug. 31, 1972, 2242787

Int. Cl.² C07D *213/70*

U.S. Cl. 260—294.8 D **6 Claims**

1. A compound of the formula



wherein

R^1 is $—COOR'$ wherein R' is straight or branched chain lower alkyl, straight or branched chain lower alkenyl, straight or branched chain lower alknynyl, cycloalkyl of 3 to 7 carbon atoms, cycloalkenyl of 3 to 7 carbon atoms or lower alkyl, lower alkenyl, lower alkynyl, cycloalkyl of 3 to 7 carbon atoms or cycloalkenyl of 3 to 7 carbon atoms interrupted by 1 to 2 oxygen atoms;

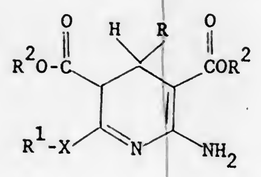
R^2 is thenyl or furyl unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of lower alkyl, lower alkoxy and halogen; and

R^3 is straight or branched chain lower alkyl, straight or branched chain lower alkenyl, straight or branched chain lower alkynyl, or straight or branched chain lower alkyl, straight or branched chain lower alkenyl or straight or branched chain lower alkynyl interrupted by 1 or 2 oxygen atoms.

3,951,993
2-AMINO-4,5-DIHYDROPYRIDINE DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Horst Meyer, Wuppertal; Friedrich Bossert, Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany
Division of Ser. No. 336,481, Feb. 28, 1973, Pat. No. 3,876,646. This application Mar. 22, 1974, Ser. No. 453,863
Claims priority, application Germany, Mar. 6, 1972, 2210659
Int. Cl.² C07D 213/32
U.S. Cl. 260—294.8 G 34 Claims

1. A process for the production of a compound of the formula

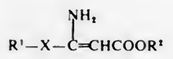


wherein

R is hydrogen; lower alkyl; lower alkenyl; lower alkynyl; phenyl; substituted phenyl in which the substituents are one to three members selected from the group consisting of lower alkyl, lower alkoxy, halogen, nitro, cyano, trifluoromethyl, azido, carbo(lower alkoxy), lower alkylsulfonyl, lower alkylsulfinyl, lower alkylthio or phenyl; naphthyl; or a heterocyclic ring selected from the group consisting of quinolyl, isoquinolyl, pyridyl, thenyl, furyl and pyrryl, said heterocyclic ring being unsubstituted or substituted by one or two members selected from the group consisting of lower alkyl, lower alkoxy and halogeno;

each of R^1 and R^2, taken independently of the other, is lower alkyl, lower alkenyl or lower alkynyl; and

X is oxygen or sulfur; which comprises reacting an aldehyde of the formula RCHO, wherein R is as above defined, with a 3-alkoxy- or 3-alkylthio-3-aminoacrylate of the formula

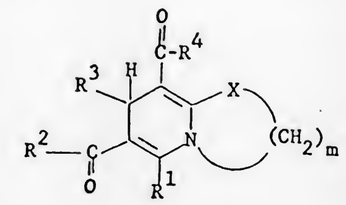


wherein R^1, R^2 and X are as above defined, there being at least two molar equivalents of said aldehyde per molar equivalent of said acrylate, at a temperature of from 20° C to 250° C and recovering the compound produced.

3,951,994
TETRAHYDROINDOLIZINE DERIVATIVES

Horst Meyer; Friedrich Bossert, both of Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Division of Ser. No. 337,477, Feb. 28, 1973, Pat. No. 3,856,798. This application May 9, 1974, Ser. No. 468,458
Claims priority, application Germany, Mar. 6, 1972, 2210633
Int. Cl.² C07D 213/57
U.S. Cl. 260—294.9 10 Claims

1. A compound of the formula:



wherein

X is $-CH_2-$;

m is 2;

R^1 is hydrogen or lower alkyl;

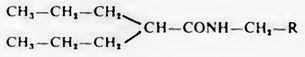
each of R^2 and R^4, independent of the other, is lower alkoxy or alkynyloxy of 2 to 4 carbon atoms; and

R^3 is lower alkyl; phenyl; phenyl substituted by one or two substituents selected from the group consisting of lower alkyl, trifluoromethyl, cyano, halo, nitro and carbo(lower alkoxy); pyridyl; furyl; thienyl; or naphthyl.

3,951,995
METHOD FOR INDUSTRIAL PRODUCTION OF N-SUBSTITUTED DIPROPYLACETAMIDES

Christobal Martinez Roldan; Miguel Fernandez Brana, and Jose Maria Castellano Berlanga, all of Madrid, Spain, assignors to Laboratorios Made, S.A., Madrid, Spain
Filed Oct. 24, 1974, Ser. No. 517,550
Claims priority, application Spain, Oct. 30, 1973, 420074
Int. Cl.² C07D 213/56
U.S. Cl. 260—295 AM 4 Claims

1. A compound having the formula



wherein R is 2-picolyl, 3-picolyl or 4-picolyl.

3,951,996
PROCESS FOR MAKING NICOTINIC ACID HYDRAZIDES

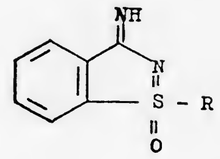
Robert Holroyd Stanley, Durham, and Barry Leigh Shaw, Teesside, both of England, assignors to British Titan Limited, Billingham, Teesside, England
Filed Dec. 12, 1973, Ser. No. 426,669
Claims priority, application United Kingdom, Jan. 4, 1973, 513/73
Int. Cl.² C07D 213/56
U.S. Cl. 260—295 H 10 Claims

1. A process for producing a nicotinic acid hydrazide comprising condensing a nicotinic carboxylic acid with a compound selected from the group consisting of hydrazine and substituted hydrazine in the presence of a catalyst having the formula $M(OR)_n$ wherein M represents titanium or zirconium, R represents an alkyl radical having 1 to 4 carbon atoms, and *n* represents an integer from 1 to 4 inclusive and thereafter recovering the nicotinic acid hydrazide.

3,951,997
CYCLIC SULPHOXIMIDES

Peter Stoss, Wildtal, and Gerhard Satzinger, Denzlingen, both of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Aug. 9, 1974, Ser. No. 495,984
Claims priority, application Germany, Aug. 11, 1973, 2340815
Int. Cl.² C07D 275/04
U.S. Cl. 260—304 A 7 Claims

1. Cyclic sulphoximide of the formula:

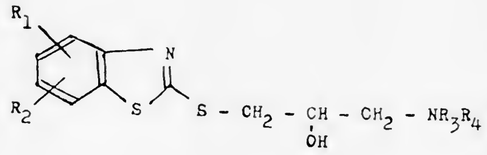


wherein R is a lower alkyl of 1 to 4 carbon atoms or phenyl, and pharmaceutically acceptable acid salts thereof.

3,951,998
BENZOTHIAZOLE DERIVATIVES

Toshihiko Hibino, Takarazuka; Yoshio Suzuki, Itami; Shigeru Okano, Kawani; Yoichi Hara, Toyonaka, and Etsuro Sato, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed June 17, 1974, Ser. No. 480,311
Int. Cl.² C07D 277/72, 295/08
U.S. Cl. 260—306.6 R 6 Claims

1. A compound selected from the group consisting of compounds of the formula

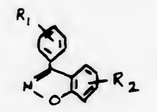


wherein R_1 and R_2 are individually hydrogen, lower alkyl, nitro, halogen, amino, C_2 – C_5 alkanoylamino, benzylideneamino, C_1 – C_4 alkylsulfonylbenzylideneamino, carboxyl, lower alkoxycarbonyl or di-lower alkyl-carbamoyl and R_3 and R_4 are individually hydrogen, lower alkyl or α-lower alkyl-benzyl, or NR_3R_4 is pyrrolidino, piperidino, morpholino or piperazino, and pharmaceutically acceptable salts thereof.

3,951,999
ANTI-INFLAMMATORY 1,2-BENZISOXAZOLE DERIVATIVES

John Christopher Saunders, Maidenhead, and William Robert Nigel Williamson, Slough, both of England, assignors to Lilly Industries, Ltd., London, England
Filed Oct. 16, 1974, Ser. No. 515,131
Claims priority, application United Kingdom, Oct. 23, 1973, 49259/73
Int. Cl.² C07D 261/20
U.S. Cl. 260—307 DA 4 Claims

1. A 1,2-benzisoxazole derivative of formula I:

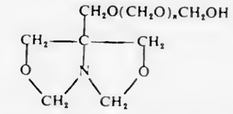


wherein R^1 represents one or two substituents substituted in any of the available positions in the benzene ring selected from the class consisting of hydrogen, chlorine, bromine, C_{1-4} alkyl, C_1–C_4 alkoxy, nitro, and trifluoromethyl, and R^2 is a substituent at the 5-, 6-, or 7- position of the 1,2-benzisoxazole nucleus and is one of the following: carboxy C_{1-4} alkyl, $-CH(R^3).COOH$, $-CH_2.COOR^3$ and $-CH(R^3).COOR^3$, where R^3 is C_{1-4} alkyl; and pharmaceutically acceptable salts thereof when R^2 is carboxy C_{1-4} alkyl or $CH(R^3).COOH$.

3,952,000
BIOCIDAL BICYCLIC POLYOXYMETHYLENEOXAZOLIDINES

Henri Sidi, Paramus, and Hilding R. Johnson, Wayne, both of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.
Division of Ser. No. 447,797, March 4, 1974, Pat. No. 3,890,264. This application Oct. 31, 1974, Ser. No. 519,885
Int. Cl.² C07D 498/04
U.S. Cl. 260—307 FA 4 Claims

1. A bicyclic polyoxymethyleneoxazolidine having the structural formula

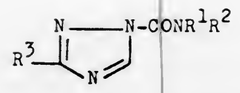


wherein *n* represents a number in the range of 1 to 4.

3,952,001
1-CARBAMOYL-1,2,4-TRIAZOLES

Robert Frederick Brookes, Tollerton; David Henry Godson, Chilwell; Douglas Greenwood; Margaret Tulley, both of Nottingham, and Stanley Brice Wakerley, Burton Joyce, all of England, assignors to The Boots Company Limited, Nottingham, England
Continuation-in-part of Ser. No. 261,206, June 9, 1972, abandoned, which is a continuation-in-part of Ser. No. 153,448, June 15, 1971, abandoned. This application Dec. 21, 1972, Ser. No. 317,453
Claims priority, application United Kingdom, July 1, 1970, 31922/70; Mar. 31, 1971, 8275/71
Int. Cl.² C07D 249/12, 403/12, 413/12
U.S. Cl. 260—308 R 11 Claims

1. A compound of the formula



in which R^3 is selected from the group consisting of alkylthio containing 2 – 5 carbon atoms, alkylsulphinyl containing 3 – 5 carbon atoms, alkylsulphonyl containing 1 – 5 carbon atoms and alkenylthio containing 3 – 4 carbon atoms, R^1 is selected from the group consisting of alkyl containing 2 – 6 carbon atoms, allyl and 2-methylallyl and R^2, which together with R^1 contains a total of 4 – 9 carbon atoms, is selected from the group consisting of alkyl containing 2 – 3 carbon atoms, allyl, 2-methylallyl and prop-2-ynyl.

3,952,002

TRIAZOLYL-O,N-ACETALS

Wolfgang Kramer; Karl Heinz Buchel; Werner Meiser, all of Wuppertal; Helmut Kaspers, and Paul-Ernst Frohberger, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

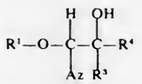
Filed Apr. 30, 1974, Ser. No. 465,713

Claims priority, application Germany, May 12, 1973, 2324010

Int. Cl.² C07D *249/08, 249/04*

U.S. Cl. 260—308 R **7 Claims**

1. A triazolyl-O,N-acetal of the formula



in which

R^1 is phenyl, chlorophenyl, fluorophenyl, bromophenyl, nitrophenyl, diphenyl, chlorodiphenyl, or alkyl-phenyl, alkoxy-phenyl or carbo alkoxyphenyl wherein the alkyl moieties have up to 4 carbon atoms,

R^3 is hydrogen, alkyl with up to 4 carbon atoms or benzyl,

R^4 is alkyl with up to 4 carbon atoms, phenyl, chlorophenyl, cyclopentyl or cyclohexyl,

Az is a 1,2,4-triazolyl-(1), 1,2,4-triazolyl-(4) or 1,2,3-triazolyl-(1) radical.

or a salt thereof with a physiologically tolerated acid.

3,952,003

CERTAIN BENZOTRIAZOLE-4,7-DIONE DERIVATIVES

Ian D. Entwistle; Peter J. Williams, and Barry R. J. Devlin, all of Sittingbourne, England, assignors to Shell Oil Company, Houston, Tex.

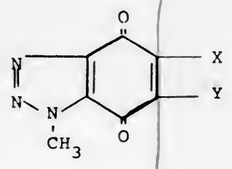
Division of Ser. No. 112,440, Feb. 3, 1971, Pat. No. 3,780,055. This application Sept. 4, 1973, Ser. No. 393,769

Claims priority, application United Kingdom, Feb. 17, 1970, 7527/70

Int. Cl.² C07D *249/18*

U.S. Cl. 260—308 B **2 Claims**

1. A substituted 1,4-quinone of the formula



wherein Y is Cl or isopropylamino and, when Y is Cl, X is Cl, methylamino or isopropylamino and, when Y is isopropylamino, X is acetylmethylamino or acetylisopropylamino.

3,952,004

STABILIZED E-SERIES PROSTAGLANDINS

Donald C. Monkhouse, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 480,354, June 18, 1974, abandoned. This application Aug. 1, 1975, Ser. No. 601,037

Int. Cl.² A61K *31/16, 31/19*; **C07C** *61/38*; **C07D** *257/06*

U.S. Cl. 260—308 D **11 Claims**

1. A lyophilized pharmaceutical composition comprising a biologically active prostaglandin of the E-series together with a storage stabilizing amount of sodium chloride in a weight/-weight ratio of 1:1 to 1:200.

5. The composition of claim **1** wherein said prostaglandin is 16-phenyl-13,14-dihydro-w-tetranor-PGE_2, para-biphenyl ester.

3,952,005

1-CARBOXYALKYL DERIVATIVES OF IMIDAZOLES

Dan Jorgensen, Virum, Denmark, assignor to A/S Dumex, Copenhagen, Denmark

Filed June 27, 1974, Ser. No. 483,826

Claims priority, application United Kingdom, June 28, 1973, 30830/73; May 28, 1974, 23636/74

Int. Cl.² C07D *233/60*

U.S. Cl. 260—309 **2 Claims**

1. A compound of the formula

1a

wherein R^2 represents hydrogen, straight or branched alkyl of 1–3 carbon atoms, cycloalkyl of 3–6 carbon atoms or phenyl optionally substituted by at least one member of the group consisting of chlorine, methyl, methoxy and nitro, and R^4 and R^5 which may be the same or different, each represent phenyl or p-methoxyphenyl; A represents $—CH_2—$, $—CH(CH_3)—$or $—CH_2CH_2—$and B represents —OH or —OR in which R is selected from the group consisting of methyl and ethyl groups; physiologically compatable acid addition salts thereof, and when B represents an —OH group, physiologically compatable alkali metal and alkaline earth metal salts thereof.

3,952,006

THIOPHENE DERIVATIVES

Tetsuya Tahara; Hideo Matsuki; Kazuhiko Araki, and Masami Shiroki, all of Yoshitomi, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

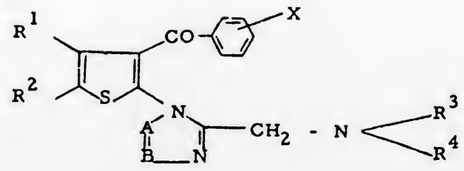
Filed Aug. 8, 1973, Ser. No. 386,819

Claims priority, application Japan, Aug. 8, 1972, 47-79809; Aug. 30, 1972, 47-87242; Sept. 13, 1972, 47-92534; Sept. 16, 1972, 47-93337

Int. Cl.² C07D *417/04*

U.S. Cl. 260—309 **6 Claims**

1. A compound selected from the group consisting of a compound of the formula:



and a pharmaceutically acceptable acid addition salt thereof, wherein R^1 is H or CH_3; R^2 is CH_3 or C_2H_5; each of R^3 and R^4 is H, alkyl of from 1 to 4 carbon atoms or cyclohexyl, or R^3 and R^4 together with the adjacent nitrogen atom form 1-pyrrolidinyl, piperidino, 4-methyl-1-piperazinyl or morpholino; X is H, halogen or OCH_3; A is —CH= or $—C(CH_3)=$; and B is =CH—.

3,952,007

PROCESSES FOR PREPARING 5-NITRO-1-METHYL-2-(2-DIALKYLAMINOVINYL)-IMIDAZOLE AND 5-NITRO-1-METHYL-2-IMIDAZOLYL CARBOXALDEHYDE

Clemens Rufer, and Eberhard Schröder, both of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

Filed Dec. 20, 1972, Ser. No. 316,928

Claims priority, application Germany, Dec. 21, 1971, 2164412

Int. Cl.² C07D *233/92, 295/22*

U.S. Cl. 260—309 **6 Claims**

1. A process for the preparation of a 5-nitro-1-methyl-2-(2-dialkylaminovinyl)-imidazole wherein the alkyl group is methyl or ethyl, which comprises:

reacting 5-nitro-1,2-dimethylimidazole with a member selected from the group consisting of dimethylformamide dimethylacetal, dimethylformamide diethylacetal and diethylformamide diethylacetal to form said 5-nitro-1-methyl-2-(2-dialkylaminovinyl)-imidazole.

4. A process for the preparation of 5-nitro-1-methyl-2-imidazolyl carboxaldehyde, which comprises:

a. reacting 5-nitro-1,2-dimethylimidazole with a dimethylformamide diacetal to form 5-nitro-1-methyl-2-(2-dimethylaminovinyl)-imidazole; and

b. oxidizing the resultant. 5-nitro-1-methyl-2-(2-dimethylaminovinyl)-imidazole to form said 5-nitro-1-methyl-2-imidazolyl carboxaldehyde.

3,952,008

PYRAZOL-5-ONES

Eike Moller; Karl Meng, both of Wuppertal; Egbert Wehinger, Neviges, and Harald Horstmann, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

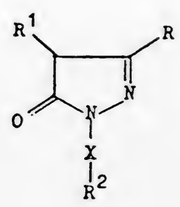
Filed Apr. 15, 1974, Ser. No. 461,285

Claims priority, application Germany, Apr. 17, 1973, 2319279; Dec. 19, 1973, 2363138

Int. Cl.² C07D *231/20, 231/38, 231/52, 401/06*

U.S. Cl. 260—310 A **20 Claims**

1. A compound of the formula



I

or a pharmaceutically acceptable, nontoxic salt thereof, wherein

R is amino;

R^1 is hydrogen, lower alkyl or lower alkenyl;

X is ethylene, ethylene wherein 1 hydrogen atom on one of the carbon atoms is substituted by alkyl of 1 to 4 carbon atoms or ethylene wherein 1 hydrogen atom on each of the two carbon atoms is substituted by alkyl of 1 to 4 carbon atoms, linked to R^2 via an oxygen or sulphur atom;

R^2 is aryl of 6 to 10 carbon atoms unsubstituted or substituted by:

a. 1 or 2 of the same or different substituents selected from the group consisting of halogen, trifluoromethyl, alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms and lower alkoxy;

b. cycloalkyl of 5, 6 or 7 carbon atoms or cycloalkenyl of 5, 6 or 7 carbon atoms;

c. nitro; or

d. nitro and 1 or 2 of the same or different substituents selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, halogen and trifluoromethyl.

3,952,009

PREPARATION OF AZOMETHINES BY REACTING A 4,4-DIHALO-5-PYRAZOLONE WITH AROMATIC PRIMARY AMINES

Delwyn Earl Machiele, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,924

Int. Cl. C07d *49/16*; **C09b** *29/38*

U.S. Cl. 260—310 A **13 Claims**

1. A process comprising reacting a 4,4-dihalo-5-pyrazolone compound with an aromatic compound having the formula H_2N-Ar-X, wherein Ar is an arylene group containing from 6 to 20 carbon atoms and X is an hydroxy group or an alkylamino group, wherein an azomethine linkage is formed where said pyrazolone reacts with said aromatic compound.

3,952,010

CATALYTIC DEHYDROGENATION PROCESS FOR THE PREPARATION OF 3,5-DISUBSTITUTED PYRAZOLES

Murray Garber, Trenton; Lawrence James Ross, Martinsville, and Walter Joseph Stepek, Trenton, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 398,284, Sept. 17, 1973, abandoned. This application Feb. 12, 1975, Ser. No. 549,219

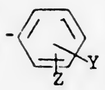
Int. Cl.² C07D *49/02, 57/00, 99/00*

U.S. Cl. 260—310 R **11 Claims**

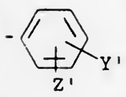
1. A method for the preparation of 3,5-disubstituted pyrazole having the formula:



wherein R_1 is -



and R_2 is -



said Y, Y', Z and Z' each represents a member selected from the group consisting of hydrogen, halogen, methylthio, methysulfonyl, cyano, carboxyl, carboalkoxy C_1–C_4, hydroxy, alkyl C_1–C_4, haloalkyl C_1–C_4 containing 1 to 4 halogen atoms and alkoxy C_1–C_4 which comprises the steps of: reacting approximately equimolar amounts of a compound having the formula R_1COCH_3 with a compound having the formula R_2CHO, wherein R_1 and R_2 are as defined above, in the presence of a C_1–C_4 alcoholic solvent and a base at a temperature ranging between about 10°C. and 70°C., acidifying said reaction mixture to a pH of at least 7, treating the so-acidified reaction mixture with from about 1.0 to 2.0 mole equivalents of hydrazine, adding to said reaction mixture a dehydrogenation catalyst heating said mixture to refluxing temperatures, and recovering the desired 3,5-disubstituted pyrazole in good yield and purity.

3,952,011
PROCESS FOR PRODUCING HEMI-ALKALI METAL SALT OF 2-PYRROLIDONE-5-CARBOXYLIC ACID

Miyoji Dazai, Yokkaichi; Katsumi Sugiyama, Kawasaki; Masaaki Iida, Yokohama; Hideo Tazuke, Tokyo, and Hiroo Kageyama, Kamakura, all of Japan, assignors to Ajinomoto Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 206,165, Dec. 8, 1971, abandoned. This application Feb. 25, 1974, Ser. No. 445,771
Int. Cl.² C07D *207/28*
U.S. Cl. 260—326.45 **9 Claims**

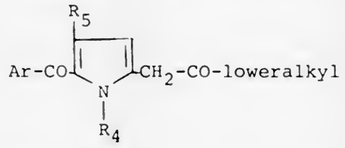
1. Hemi-alkali salt of 2-pyrrolidone-5-carboxylic acid.

3,952,012
AROYL-SUBSTITUTED PYRROLES

John Robert Carson, Norristown, Pa., assignor to McNeil Laboratories, Incorporated, Fort Washington, Pa.

Division of Ser. No. 338,461, Feb. 16, 1973, Pat. No. 3,865,840, which is a division of Ser. No. 5,958, Jan. 26, 1970, Pat. No. 3,752,826, which is a continuation-in-part of Ser. No. 741,348, July 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 656,074, July 26, 1967, abandoned. This application June 17, 1974, Ser. No. 491,965
Int. Cl.² C07D *207/24*
U.S. Cl. 260—326.47 **2 Claims**

1. The process of making a loweralkyl 5-aroyl-1-R_4-4-R_5-pyrrole-2-acetate of the formula:



which comprises:

hydrolyzing a loweralkyl 1-R_4-4-R_5-3-loweralkoxycarbonyl-pyrrole-2-acetate under alkaline conditions to the di-acid, 1-R_4-4-R_5-3-carboxypyrrole-2-acetic acid,

partially re-esterifying said di-acid to loweralkyl 1-R_4-4-R_5-3-carboxypyrrole-2-acetate by treating said di-acid with an acidic solution of a lower alkanol,

decarboxylating the 3-carboxy group of said loweralkyl 1-R_4-4-R_5-3-carboxypyrrole-2-acetate to the pyrrole ester, loweralkyl 1-R_4-4-R_5-pyrrole-2-acetate, by heating said loweralkyl 1-R_4-4-R_5-3-carboxypyrrole-2-acetate to CO_2-elimination temperatures, and

acylating said loweralkyl 1-R_4-4-R_5-pyrrole-2-acetate to said loweralkyl 5-aroyl-1-R_4-4-R_5-pyrrole-2-acetate by treatment with an aroyl chloride of the formula Ar-COCl in the presence of a Lewis acid in an organic solvent suitable for Friedel-Crafts acylation reactions;

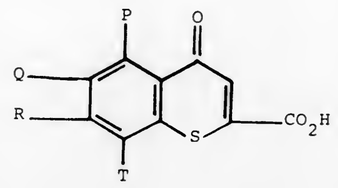
wherein the foregoing said AR—CO is a member selected from the group consisting of benzoyl, thenoyl, 5-methylthenoyl, monosubstituted benzoyl, disubstituted benzoyl and trisubstituted benzoyl, each substituent of said substituted benzoyls being a member selected from the group consisting of halo, loweralkyl, trifluoromethyl, loweralkoxy, nitro, cyano and methylthio, and said R_4 and said R_5 represent loweralkyl.

3,952,013
1-THIACHROMONE-2-CARBOXYLIC ACIDS AND DERIVATIVES

Richard Hazard, Cropston, and John King, Loughborough, both of England, assignors to Fisons Limited, England

Continuation of Ser. No. 258,752, June 1, 1972, abandoned, which is a continuation-in-part of Ser. No. 10,623, Feb. 11, 1970, abandoned. This application Mar. 27, 1974, Ser. No. 455,348
Claims priority, application United Kingdom, Feb. 12, 1969, 7467/69; June 8, 1971, 19378/71; Nov. 29, 1971, 55152/71
Int. Cl.² C07D *335/06*
U.S. Cl. 260—327 TH **24 Claims**

1. A member selected from the group consisting of a compound of the formula



wherein P, Q, R, and T are the same or different and each represents hydrogen, alkyl, hydroxy, alkoxy, hydroxyalkoxy, alkoxyalkoxy, acetoxy, carboxy, amino, alkylamino, dialkylaminio, alkenyl, p-toluenesulfonyloxy, phenylalkyl, phenyl, nitro, carboxy ester derived from an alkanol of 1 to 6 carbon atoms, alkenyloxy, alkanoyl, none of which groups contain more tha 10 carbon atoms, or an adjacent pair of P, Q, R, and T form the chain —CH=CH—CH=CH—, with the provisos that

i. not all of P, Q, R and T are hydrogen, and

ii. when T is methoxy and Q and R are hydrogen, P is not a methyl group, and

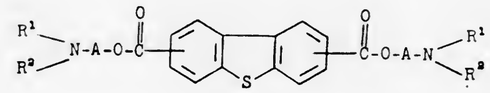
a pharmaceutically acceptable salt thereof.

3,952,014
BIS-BASIC ESTERS AND AMIDES OF DIBENZOTHIOPHENE

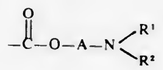
William L. Albrecht, and Robert W. Fleming, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Aug. 18, 1969, Ser. No. 851,098
Int. Cl.² C07D *333/76*
U.S. Cl. 260—329.3 **6 Claims**

1. A compound of the formula



wherein the substituent groups



may be at the 2- and 6- or 8-positions and

A. each of R^1 and R^2 is hydrogen, (lower)alkyl, cycloalkyl of 3 to 6 ring carbon atoms, alkenyl of 3 to 6 carbon atoms having the vinyl unsaturation in other than the 1-position of the alkenyl group, or each set of R^1 and R^2 taken together with the nitrogen atom to which they are attached is pyrrolidino, piperidino, N-(lower)alkylpiperazino, or morpholino;

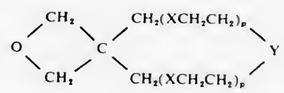
B. each A is alkylene of 2 to about 8 carbon atoms and separates its adjacent 0 and amino nitrogen by an alkylene chain of at least 2 carbon atoms; or a pharmaceutically acceptable acid addition salt thereof.

3,952,015
MACROCYCLIC COMPOUNDS HAVING OXA AND AZA LINKAGES IN THE RING AND CONTAINING SPIROOXETANE GROUPS

Carl George Krespan, 2705 Point Breeze Drive, Barkley, Wilmington, Del. 19810

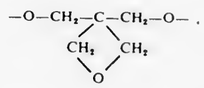
Continuation-in-part of Ser. No. 415,249, Nov. 12, 1973, abandoned. This application Aug. 9, 1974, Ser. No. 497,050
Int. Cl.² C07D *493/10, 498/10*
U.S. Cl. 260—338 **6 Claims**

1. A compound having the formula



wherein:

Y is $-OCH_2CH_2O-$, $-Z(CH_2CH_2O)_2-$, or



Z being —O—, —NH— or $>NCH_2CH_2OH$;

p is 1 or 2; and

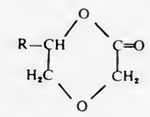
X is —O— or —NH—, with the proviso that the number of nitrogen atoms is from 1 to 3.

3,952,016
2-KETO-6-SUBSTITUTED DIOXANE-(1,4) COMPOUNDS

Joseph Barillo, Glen Rock; Thomas A. Payne, Jr., Teaneck, and Warren J. Urban, River Vale, all of N.J., assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 452,229, March 18, 1974, abandoned. This application Mar. 3, 1975, Ser. No. 554,941
Int. Cl.² C07D *319/12*
U.S. Cl. 260—340.2 **5 Claims**

1. A compound of the formula:



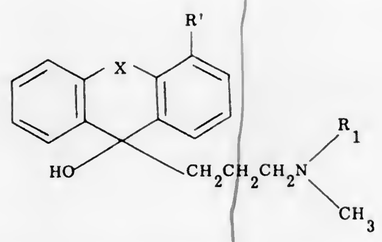
wherein R is $R'OCH_2$- wherein R' is an alkyl radical of from C_5-C_8.

3,952,017
TRICYCLIC COMPOUNDS

Emilio Kyburz, Reinach, and Hans Spiegelberg, Basel, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 270,674, July 11, 1972, which is a continuation-in-part of Ser. No. 818,146, April 21, 1969, abandoned. This application Aug. 30, 1974, Ser. No. 501,931
Claims priority, application Switzerland, May 3, 1968, 6612/68
Int. Cl.² C07C *93/00;* **C07D** *317/28*
U.S. Cl. 260—340.9 **2 Claims**

1. A compound of the formula



wherein R_1 is hydrogen or methyl; X is ethylene or vinylene, and R′ is a ketalized acetyl group, or its N-oxide when R_1 is methyl.

3,952,018

15-OXASTEROIDS

Perry Rosen, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 217,956, Jan. 14, 1972, Pat. No. 3,872,076. This application Nov. 29, 1974, Ser. No. 528,384

Int. Cl.² C07D *317/02*

U.S. Cl. 260—340.9 **3 Claims**

1. 2α,4α-Dibromo-15-oxa-5α-androstan-3,17-dione.

3,952,019

BICYCLO-OCTANE DERIVATIVES

Richard Philip Peel, and James Kenneth Sutherland, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

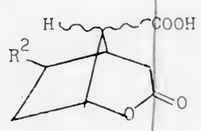
Filed Apr. 30, 1974, Ser. No. 465,557

Claims priority, application United Kingdom, May 15, 1973, 23045/73

Int. Cl.² C07D *311/92*

U.S. Cl. 260—343.2 R **3 Claims**

1. A lactone of the formula:-



wherein R^2 is hydrogen, bromine, chlorine, iodine or alkanoyloxy of 1 to 6 carbon atoms.

3,952,020

LACTONE PRODUCTION

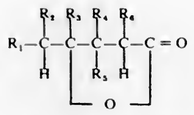
Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 26, 1973, Ser. No. 418,914

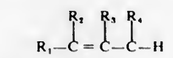
Int. Cl.² C07D *307/32*

U.S. Cl. 260—343.6 **3 Claims**

1. A process for the preparation of a gamma-butyrolactone having the formula



wherein R_1, R_2, R_4 and R_5 are individually selected from the group consisting of hydrogen and alkyl of from 1 to 3 carbon atoms, R_3 is an alkyl radical having from 1 to 3 carbon atoms and R_6 is hydrogen or a methyl radical, which comprises reacting a monoolefin having the formula



wherein R_1-R_5 are as defined above, an aldehyde having the formula



wherein R_6 is as defined above, and carbon monoxide in the presence of from 0.01 to about 10 weight percent of rhodium chloride based on the weight of starting reactants and from 2 to 6 parts of a catalyst activator selected from the group consisting of elemental iodine and lower alkyl iodides per part by weight of said rhodium chloride.

3,952,021

α-(3,4-DIMETHOXYPHENETHYLAMINOMETHYL)-3,4 OR 3,5-DIHYDROXYBENZYLALCOHOLS AND SALTS THEREOF

Muneyoshi Ikezaki, Ageo; Yasushi Okazaki; Nobuo Ito, both of Tokyo; Taku Nagao, Ageo; Masao Hoshiyama, Tokyo, and Hiromichi Nakajima, Yono, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

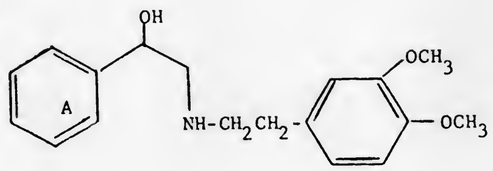
Filed Apr. 22, 1974, Ser. No. 462,594

Claims priority, application Japan, Apr. 28, 1973, 48-48744

Int. Cl.² C07C *91/16;* **C07D** *307/62*

U.S. Cl. 260—343.7 **5 Claims**

1. A compound of the formula



wherein Ring A is 3,4-dihydroxyphenyl, or 3,5-dihydroxyphenyl or a pharmaceutically acceptable acid addition salt thereof.

3,952,022

METHOD OF CONDENSING PHTHALIC ANHYDRIDE

Jacques Becuwe, Fontenay-sous-Bois, France, assignor to Rhone-Progil, Courbevoie, France

Filed Jan. 14, 1974, Ser. No. 433,259

Claims priority, application France, Jan. 16, 1973, 73.01371

Int. Cl.² C07D *307/82*

U.S. Cl. 260—346.7 **5 Claims**

1. A method of condensing and recovering phthalic anhydride diluted in gases discharged from a reactor, in which the phthalic anhydride is produced by oxidation of o-xylene or naphthalene, comprising introducing the gaseous stream containing vapors of phthalic anhydride diluted in the gases discharged from the reactor for continuous flow through a confined passage the surfaces of which are free of cooling means which might cause condensation of phthalic anhydride thereon, introducing into the gaseous stream solid granular carrier at a temperature below the solidification temperature of the phthalic anhydride whereby phthalic anhydride condenses on the surfaces of the carrier during their conveyance by the gaseous stream through the confined passage; separating from the carrier and collecting a quantity of condensate substantially equal to the quantity condensed; cooling the carrier outside the pneumatic conveyor in a fluidized bed to a temperature below the solidification temperature of the anhydride; and then recycling the carrier back into circulation in the condensation region.

3,952,023

METHOD FOR PREPARING ADDUCT OF BUTADIENE POLYMER OR COPOLYMER AND α, β-ETHYLENICALLY UNSATURATED DICARBOXYLIC ACID COMPOUND

Atsushi Kaiya, Kawasaki; Yutaka Otsuki, and Hideo Horii, both of Yokohama, all of Japan, assignors to Nippon Oil Company Ltd., Tokyo, Japan

Filed Dec. 12, 1973, Ser. No. 423,985

Claims priority, application Japan, Dec. 16, 1972, 47-126461; May 25, 1973, 48-57676; Dec. 7, 1973, 48-137079; Dec. 7, 1973, 48-137080; Dec. 7, 1973, 48-137081

Int. Cl.² C07D *307/60*

U.S. Cl. 260—346.8 R **6 Claims**

1. In a method for preparing an adduct of (A) a butadiene lower polymer, or a butadiene lower copolymer of butadiene and a monomer selected from the group consisting of a conjugated diolefin and a vinyl substituted aromatic compound, and (B) a α,β-ethylenically unsaturated dicarboxylic acid compound selected from the group consisting of maleic anhydride, citraconic anhydride, 1,2-diethylmaleic anhydride, maleic acid monomethyl ester, maleic acid dimethyl ester and maleic acid diethyl ester, said method is characterized in that said (A) and (B) are reacted at a temperature of from 120°C to 250°C in the presence of an inert gas and from 0.005 to 5 percent by weight, based upon the weight of (A), of a compound selected from (C) the group consisting of a p-phenylenediamine a pyrogallol, a N-nitrosoamine, a quinoline and a naphthol, said p-phenylenediamine being selected from the group consisting of
N,N′-dimethyl-p-phenylenediamine,
N,N′-diethyl-p-phenylenediamine,
N,N′-dipropyl-p-phenylenediamine,
N,N′-diisopropyl-p-phenylenediamine,
N,N′-di-n-butyl-p-phenylenediamine,
N,N′-di-sec-butyl-p-phenylenediamine,
N,N′-di-tert-butyl-p-phenylenediamine,
N,N′-diphenyl-p-phenylenediamine,
N-phenyl-N′-isopropyl-p-phenylenediamine and
N,N′-di-β-naphthyl-p-phenylenediamine;
said pyrogallol is pyrogallol or 1,2,3-trihydroxy-5-methylbenzene;
said N-nitrosoamine being selected from the group consisting of N-nitroso-dimethylamine, N-nitroso-diethylamine, N-nitroso-di-n-propylamine, N-nitroso-di-n-butylamine, N-nitroso-di-n-pentylamine, N-nitroso-di-n-hexylamine, N-nitroso-dicyclohexylamine, N-nitroso-diphenylamine, N-nitroso-dicumenylamine, N-nitroso-ditolylamine, N-nitroso-dixylylamine, N-nitroso-methylphenylamine, N-nitroso-ethylphenylamine and N-nitroso-dinaphthylamine;
said quinoline being selected from the group consisting of
1,2-dihydro-2,2,4-trimethylquinoline,
1,2-dihydro-2,2,4-triethylquinoline,
1,2-dihydro-2,2,4-tri-n-propylquinoline,
1,2-dihydro-2,2,4-tri-n-butylquinoline,
1,2-dihydro-2,2-dimethyl-4-ethylquinoline,
1,2-dihydro-2,2,4-trimethyl-6-methoxyquinoline,
1,2-dihydro-2,2,4-trimethyl-6-propoxyquinoline and
1,2-dihydro-2,2,4-trimethyl-6-n-butoxyquinoline;
and
said naphthol being selected from the group consisting of 1,2-dihydroxynaphthalene, 1,3-dihydroxynaphthalene, 1,4-dihydroxynaphthalene, 1,5-dihydroxynaphthalene, 1,6-dihydroxynaphthalene, 1,7-dihydroxynaphthalene, 1,8-dihydroxynaphthalene, 2,3-dihydroxynaphthalene, 2,6-dihydroxynaphthalene, 2,7-dihydroxynaphthalene, 1-amino-2-naphthol, 2-amino-1-naphthol, 4-amino-1-naphthol, 5-amino-1-naphthol, 6-amino-1-naphthol, 7-amino-1-naphthol, 7-amino-2-naphthol, 8-amino-1-naphthol, 8-amino-2-naphthol, 1-nitro-2-naphthol, 2-nitro-1-naphthol and 4-nitro-1-naphthol.

3,952,024

FURFURYLTHIOACETONE

Max Winter, Petit-Lancy; Fritz Gautschi, Commugny; Ivon Flament, and Max Stoll, both of Petit-Lancy, all of Switzerland, assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 482,693, June 24, 1974, Pat. No. 3,900,581, which is a division of Ser. No. 243,866, April 13, 1972, abandoned, which is a division of Ser. No. 70,560, Sept. 8, 1970, Pat. No. 3,702,253, which is a continuation of Ser. No. 543,069, April 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, April 30, 1965, abandoned. This application June 9, 1975, Ser. No. 585,206

Int. Cl.² C07D *307/46*

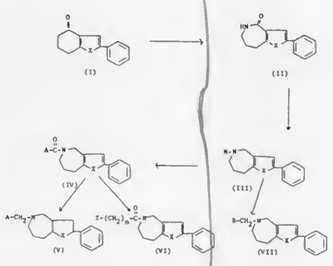
U.S. Cl. 260—347.2 **1 Claim**

1. The compound furfurylthioacetone.

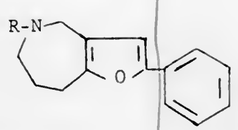
3,952,025
SUBSTITUTED 2-PHENYL-4,6,7,8-TETRAHYDROFURO AND 1,4,5,6,7,8-HEXAHYDROPYRROLO[3,2,-C]AZEPINES

Richard C. Effland, Somerville; Larry Davis, Flemington, and Grover C. Helsley, Pottersville, all of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed Aug. 26, 1974, Ser. No. 500,254
Int. Cl.² C07D *307/00*
U.S. Cl. 260—347.3 4 Claims



1. A compound of the formula



wherein R is alkanoyl of from 2 to 6 carbon atoms, haloalkanoyl of from 2 to 6 carbon atoms, alkoxycarbonyl of from 2 to 6 carbon atoms, cycloalkylcarbonyl of from 4 to 7 carbon atoms, benzoyl, alkoxybenzoyl of from 8 to 10 carbon atoms, halobenzoyl or halobenzoylalkyl of from 8 to 11 carbon atoms, and a physiologically tolerable acid addition salt thereof.

3,952,026
5-METHYL-FURFURYL FURFURYL ETHER

Max Winter, Petit-Lancy, Geneva; Fritz Gautschi, Commugny, Vaud; Ivon Flament, and Max Stoll, both of Petit-Lancy, Geneva, all of Switzerland, assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 482,691, June 24, 1974, which is a division of Ser. No. 243,866, April 13, 1972, abandoned, which is a division of Ser. No. 70,560, Sept. 8, 1970, Pat. No. 3,702,253, which is a continuation of Ser. No. 543,069, April 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, April 30, 1965, abandoned. This application June 6, 1975, Ser. No. 584,687
Int. Cl.² C07D *307/42*
U.S. Cl. 260—347.8 1 Claim

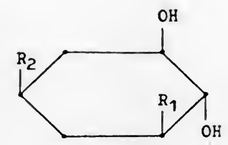
1. The chemical compound 5-methyl-furfuryl furfuryl ether.

3,952,027
ALICYCLIC COMPOUNDS AND PROCESS FOR PREPARING THE SAME

André Cler, Neuilly-sur-Seine; Stephan Gero, Ablon; Alain Olesker, and Jean Leboul, both of Gif-sur-Yvette, all of France, assignors to Labaz, Paris, France

Filed Jan. 31, 1975, Ser. No. 545,799
Int. Cl.² C07C *117/00*
U.S. Cl. 260—349 1 Claim

1. A cyclohexanediol derivative corresponding to the general formula:



I

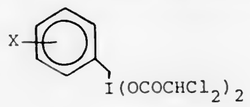
wherein R_1 and R_2 each represent a N_3 group.

3,952,028
BIS(DICHLOROACETOXY)-IODOBENZENES AND BIS(TRICHLOROACETOXY)IODOBENZENES AND THEIR PREPARATION

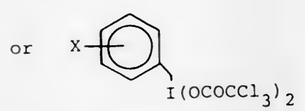
Zdravko Jezic, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 103,920, Jan. 4, 1971, abandoned. This application July 2, 1974, Ser. No. 485,179
Int. Cl.² C07C *69/00*, *71/00*
U.S. Cl. 260—350 R 2 Claims

1. A compound represented by the formula



or



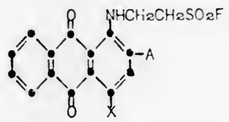
wherein X represents H, F, Cl, Br, loweralkyl, loweralkoxy, NO_2, CF_3, CO_2H, $CONH_2$ or loweralkylcarboxylate.

3,952,029
2-(FLUOROSULFONYL)ETHYLAMINO ANTHRAQUINONES

James J. Krutak, Sr., and Robert D. Burpitt, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 13, 1975, Ser. No. 540,365
Int. Cl.² C07C *143/665*; C09B *1/24*, *1/34*, *1/52*
U.S. Cl. 260—371 3 Claims

1. Dyestuff having the formula



wherein

A represents hydrogen, lower alkyl, lower alkoxy or phenoxy;

X represents hydrogen, $—NHCH_2CH_2SO_2F$, hydroxy, nitro, amino, $NHSO_2R$, —NHR, and NHCOR wherein R represents lower alkyl, phenyl or p-tolyl.

3,952,030
SELENIUM-75 STEROIDS

Virginia Edith May Chambers, and Anthony Leonard Mark Riley, both of Amersham, England, assignors to The Radiochemical Centre Ltd., Amersham, England

Filed Dec. 20, 1973, Ser. No. 426,695
Claims priority, application United Kingdom, Dec. 27, 1972, 59690/72
Int. Cl.² C07J *1/00*; G01T *1/00*; C07J *5/00*, *9/00*
U.S. Cl. 260—397.4 10 Claims

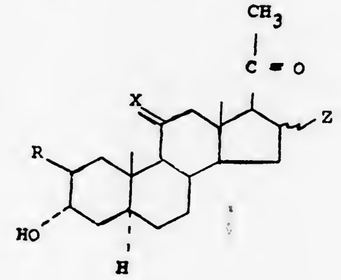
1. A selenium-75 derivative of a 3-keto steroid selected from the group consisting of cortisol, testosterone, progesterone, aldosterone, cholesterone, deoxycorticosterone, 3-dehydrodigitoxigenin and 3-dehydrodigoxigenin.

3,952,031
ANAESTHETIC COMPOSITION CONTAINING A STEROID OF THE 5α-PREGNANE SERIES AND METHOD OF USING SAME

Gordon Hanley Phillipps, Wembley; Christopher Earle Newall, Acton, and Barry Edward Ayres, Amersham, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

Division of Ser. No. 197,915, Nov. 11, 1971, Pat. No. 3,869,451. This application Dec. 13, 1974, Ser. No. 532,612
Claims priority, application United Kingdom, Nov. 12, 1970, 53911/70
Int. Cl.² C07J *71/00*
U.S. Cl. 260—397.45 8 Claims

1. A pharmaceutical composition comprising a compound of the formula



wherein:

R is a chlorine atom or thiocyanato;

X is 2 hydrogen atoms or an oxo group; and

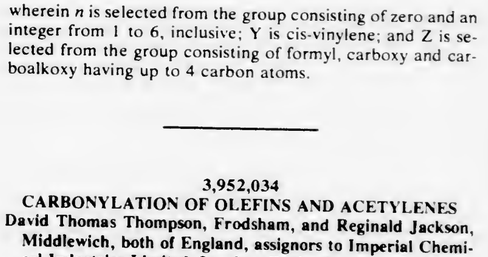
Z is 2 hydrogen atoms, a hydrogen atom and a chlorine atom, or a hydrogen atom and methyl together with a pharmaceutical carrier or excipient.

3,952,032
COMPOUNDS WITH MULTIPLE ACRYLIC RADICALS, COMPOSITIONS CONTAINING THEM, AND USES THEREOF

August Vrancken, Dworp; Paul Dufour, Ruisbroek, both of Belgium; Jacques Noat, Versailles, and Jean Holderic, Asnieres, both of France, assignors to U.C.B., Societe Anonyme, Brussels, Belgium

Filed May 14, 1974, Ser. No. 469,891
Claims priority, application United Kingdom, May 15, 1973, 23083/73
Int. Cl.² C09F *5/00*
U.S. Cl. 260—404.8 16 Claims

1. Compounds with multiple acrylic radicals, the average composition of which has the general formula



wherein X is the radical derived by removing the OH groups from the carboxyl groups of an organic carboxylic acid containing n COOH groups and the number of carbon atoms of which is between 14 and 90,

Y is the radical derived by removing *m-p* hydrogen atoms from the hydroxyl groups of an organic compound containing *m* OH groups,

Z is the monovalent radical derived by removing the OH group from the carboxyl group of a monocarboxylic acid having at least one terminal CH_2=CH-COO- radical,

n is a whole number from 1 to 6,

m is a whole number from 2 to 8,

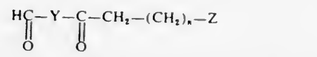
p is a number of from 0 to 2.5, with the proviso that *m-p-l* is a positive number different from zero and that n(*m*-p-l) is between 2 and 15.

3,952,033
FURAN INTERMEDIATES AND PROCESS FOR SYNTHESIS OF 4-HYDROXYCYCLOPETENONES, PROSTAGLANDIN SYNTHESIS INTERMEDIATES

Middleton Brawner Floyd, Jr., Suffern, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 23, 1975, Ser. No. 571,041
Int. Cl.² C07C *59/33*, *59/37*, *49/12*, *49/20*
U.S. Cl. 260—405.5 6 Claims

1. A compound of the formula:



wherein *n* is selected from the group consisting of zero and an integer from 1 to 6, inclusive; Y is cis-vinylene; and Z is selected from the group consisting of formyl, carboxy and carboalkoxy having up to 4 carbon atoms.

3,952,034
CARBONYLATION OF OLEFINS AND ACETYLENES

David Thomas Thompson, Frodsham, and Reginald Jackson, Middlewich, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 126,319, March 19, 1971, abandoned. This application Dec. 3, 1973, Ser. No. 421,348
Claims priority, application United Kingdom, Mar. 25, 1970, 14415/70; Sept. 4, 1970, 42532/70
Int. Cl.² C07C *55/18*
U.S. Cl. 260—410.5 13 Claims

1. A process for the preparation of acyclic dicarboxylic acids in which

a. a cyclic olefin selected from the group consisting of cycloalkadienes and alkenylcycloalkenes is carbonylated to a cycloalkenyl carboxylic acid or ester by reaction with carbon monoxide and a hydroxylic compound selected from the group consisting of water, alcohols, and phenols in the presence of a homogeneous catalyst composition including palladium and aluminum, the catalyst composition being a polynuclear organic complex incorporating palladium in combination with aluminum or being a mixture of a soluble palladium compound with a chloride of the further metal,

b. the reaction mixture resulting from the above carbonylation reaction is heated to an elevated temperature under alkaline conditions to induce cleavage of the cycloalkenyl ring, and

c. the acyclic dicarboxylic acid is isolated from the reaction mixture.

3,952,035
ORGANIC COMPOUNDS

Eugéne Ervin Galantay, Liestal, and Heribert Wagner, Pfeffingen, both of Switzerland, assignors to Sandoz Ltd., (Sandoz AG), Basel, Switzerland

Filed Apr. 19, 1974, Ser. No. 462,292
Claims priority, application Switzerland, Apr. 25, 1973, 5884/73
Int. Cl.² C11C *1/00;* **C01B** *25/16*
U.S. Cl. 260—413 **12 Claims**

1. A compound of the formula,

$$CH_3-(CH_2)_n-(CH\ ^{cis}\ CHCH_2)_p-(CH_2)_2-Z \quad \text{I}$$

wherein

n is an integer from 0 to 4,

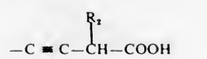
p is the integer 3 or 4, with the proviso that when $p = 3$, *n* must be 2 to 4, and when $p = 4$, *n* must be 0 or 1, and

Z is one of the radicals of formula IIa,



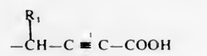
IIa

wherein R_1 and R_2 are, independently, hydrogen or lower alkyl, of formula IIb,



IIb

wherein R_2 is hydrogen or lower alkyl, or of formula IIc,



IIc

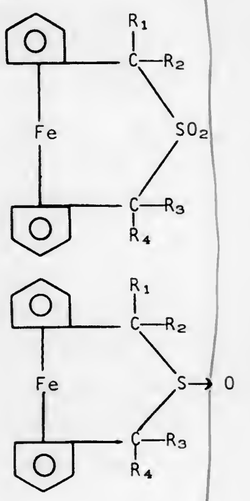
wherein R_1 is hydrogen and lower alkyl, or a pharmaceutically acceptable salt thereof.

3,952,036
1,1-(THIADIALKYLIDENE) FERROCENE S-OXIDES

John T. Suh, Mequon, Wis., assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed Sept. 9, 1974, Ser. No. 504,366
Int. Cl.² C07F *15/02*
U.S. Cl. 260—439 CY **7 Claims**

1. A compound selected from the compounds of the following formulae:



I

II

3,952,037
ALUMINUM CATALYSTS

Hiroshi Yoshitake, Oita; Kenji Tanimoto, Minoo, and Norio Kotera, Amagasaki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 24, 1973, Ser. No. 363,699
Claims priority, application Japan, May 26, 1972, 47-052759
Int. Cl.² C07F *5/06*
U.S. Cl. 260—448 R **15 Claims**

1. A method for producing an aluminum halide complex of an aluminum halide, a hydrogen halide and an alkylbenzene, which comprises continuously feeding gaseous hydrogen halide to a lower part of a reaction zone containing the aluminum and the alkylbenzene, and continuously removing the resulting aluminum halide complex from a lower part of the reaction zone, by-produced hydrogen gas being removed from an upper part of the reaction zone, wherein each of the aluminum and the alkylbenzene are continuously or intermittently fed to the reaction zone separate from each other in an amount sufficient to supplement the amounts thereof consumed in the formation of said complex.

3,952,038
POLYETHER URETHANE FOAM

Bela Prokai, Mahopac, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 325,327, Jan. 22, 1973, abandoned. This application June 3, 1974, Ser. No. 475,968
Int. Cl.² C07F *7/10, 7/18*
U.S. Cl. 260—448.2 N **25 Claims**

1. A cyanoalkyl modified siloxane fluid having the average formula

$$(X)_xR_{3-x}SiO(R_2SiO)_z[(X)(R)SiO]_ySiR_{3-x}X_x$$

wherein *x* has a value of 1 to 6 inclusive; *y* has a value of 0 to 6 inclusive; *z* has a value of 0 to 1 inclusive; R is a lower alkyl or phenyl radical; and X is a cyanoalkyl radical of the formula $-(O)_nR'CN$ where *n* has a value of 0 or 1 and R′ is an alkylene radical having from 2 to 4 carbon atoms; said siloxane containing at least one of said cyanoalkyl radicals and having an average molecular weight in the range of about 400 to about 1500.

3,952,039
CATALYTIC PROCESS FOR POLYHYDRIC ALCOHOLS AND DERIVATIVES

Wellington E. Walker, Charleston; David R. Bryant, and Earle S. Brown, Jr., both of South Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed July 12, 1974, Ser. No. 488,141
Int. Cl.² C07C *27/06*
U.S. Cl. 260—449 R **12 Claims**

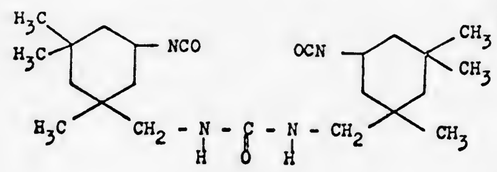
1. In the process of making alkane polyols, which comprises reacting at a pressure of from about 500 psia to about 15,000 psia and a temperature of about 100°C to about 375°C, a mixture consisting essentially of oxides of carbon and hydrogen in the presence of an alkali metal cation and a rhodium carbonyl complex, said complex is provided to the reaction as a rhodium carbonyl cluster which possesses an infrared spectrum which exhibits three intense wavelength bands between about plus and minus 10 cm^{-1} of about 1868 cm^{-1}, about 1838 cm^{-1}, and about 1785 cm^{-1} at a pressure of at least about 500 psi, wherein the improvement comprises providing to the reaction mixture about 0.5 to about 1.5 atoms of the alkali metal cation for every six atoms of rhodium present in the reaction mixture.

3,952,040
UREA DERIVATIVE CONTAINING ISOCYANATE GROUPS

Horst Schnurbusch, Herne, and Peter Kirchner, Wanne-Eickel, both of Germany, assignors to Veba-Chemie AG, Gelsenkirchen-Buer, Germany

Filed Aug. 5, 1974, Ser. No. 494,959
Claims priority, application Germany, Aug. 14, 1973, 2341065
Int. Cl.² C07C *119/045*
U.S. Cl. 260—453 A **3 Claims**

1. Urea derivative containing isocyanate groups having the formula



2. Method for making the urea derivative of claim 1, which comprises reacting 3-isocyanatomethyl-3,5,5-trimethylcyclohexylisocyanate with water in a molar ratio of 2:1 at temperatures of 0° – 100°C, preferably 20° – 50°C, in presence of a catalyst with stirring in a solvent for the urea derivative, said catalyst being a polyvalent organometalic compound selected from the group of mercury acetate, phenyl mercury acetate, phenyl mercury propionate, di-n-butyltindilaurate, led-(II)-octoate, tin-(II)-octoate, zinc octoate, phenyl mercury naphthenate, ironacetylacetonate and manganese acetylacetonate.

.3,952,041
PEROXY COMPOUNDS CONTAINING AN ACID HALIDE GROUP

Antonio Joseph D'Angelo, Englishtown, N.J., and Orville Leonard Mageli, Kenmore, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 211,092, Dec. 22, 1971, abandoned, which is a division of Ser. No. 727,323, May 7, 1968, Pat. No. 3,671,651. This application July 31, 1974, Ser. No. 493,369
Int. Cl.² C07C *179/18*
U.S. Cl. 260—453 R **7 Claims**

1. A peroxide having the formula



where:

1. R is hydrocarbon aliphatic of 1–20 carbons, cycloalkyl of 4–10 carbons or hydrocarbon aromatic of 6–12 carbons;
2. B is Cl— or Br—;
3. R_1 is tertiary alkyl of 4–8 carbons; and
4. *n* and m are integers equal to 1-2.

3,952,042
PROCESS FOR THE PRODUCTION OF POLYISOCYANATES

Hartmut Knöfel, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 11, 1974, Ser. No. 522,618
Claims priority, application Germany, Nov. 14, 1973, 2356828
Int. Cl.² C07C *118/02, 119/048*
U.S. Cl. 260—453 PH **2 Claims**

1. A process for the simultaneous production of diisocyanates and higher functional polyisocyanates of the diphenylmethane series by reacting an arylamine which is at least partly protonized with formaldehyde in the aqueous phase, separating the resulting aniline/formaldehyde condensate from the resulting reaction product, phosgenating the separated aniline/formaldehyde condensate and working up the resulting polyisocyanate mixture by distillation; the said at least partly protonized arylamine being a mixture of

a. aniline and

b. a polyamine of the diphenylmethane series which has been obtained by aniline/formaldehyde condensation,

the proportions of (a) to (b) corresponding to a ratio of aniline amino groups to polyamine amino groups of between 98:2 and 20:80, at least 90% of the amino groups in the mixture being protonized;

the aniline/formaldehyde molar ratio at the beginning of the reaction being between 1:1 and 12:1;

the condensation reaction being carried out in at least two stages, the reaction temperature in the first stage being 20° to 60°C and the reaction temperature in the last stage of condensation being above 60°C;

the separation of the polyamine which is to be phosgenated being carried out by

a. extraction in at least two stages of the resulting reaction mixture with a hydrophobic solvent in the presence of additional aniline added to the condensation product in the aqueous phase during or before the condensation reaction and

b. removal of water, hydrophobic solvent and aniline from the resulting organic phase being by distillation,

a a. extraction being carried out at temperatures above 60°C in all stages of extraction,

a b. the mixture conveyed to the first extraction stage for extraction containing 10 to 60 percent by weight of free arylamine,

a c. the hydrophobic solvent supplied to the first extraction stage containing 10 to 80 percent by weight of free aniline, and

a d. the hydrophobic solvent supplied to the last extraction stage containing a maximum of 10 percent by weight of free aniline, and

the aqueous phase obtained from the extraction process being returned to the beginning of the process.

3,952,043
BIS (DIISOCYANATOBENZYL) -CHLOROBENZENE

Wilhelm J. Schnabel, Branford, and Ralph A. Colafati, III, New Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 416,043, Nov. 15, 1973, Pat. No. 3,904,666. This application Jan. 10, 1975, Ser. No. 540,048
Int. Cl.² C07C *119/048*
U.S. Cl. 260—453 AM **8 Claims**

1. As a composition of matter, bis(diisocyanatobenzyl)-chlorobenzene.

2. A process for preparing the composition of claim 1 which comprises condensing, in the presence of a Friedel-Crafts catalyst, α-chlorotoluene diisocyanate with monochlorobenzene.

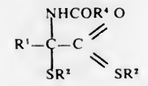
3,952,044

NOVEL ENAMINOSULFOXIDES AND A PROCESS FOR THEIR PREPARATION

Genichi Tsuchihashi, Tama, and Katsuyuki Ogura, Sagamihara, both of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Division of Ser. No. 396,366, Sept. 12, 1973, Pat. No. 3,898,295. This application Mar. 7, 1975, Ser. No. 556,415
Claims priority, application Japan, Sept. 12, 1972, 47-90948; Sept. 12, 1972, 47-90949; Sept. 12, 1972, 47-90952; Oct. 18, 1972, 47-103606
Int. Cl.² C07C *153/07*
U.S. Cl. 260—455 R 2 Claims

1. α-acylamino-α-alkyl (or aryl)thio- carboxylic acid thiol ester of the formula,



in which R^1 is a member of the group consisting of alkyl, dialkoxyalkyl, phenylalkyl, phenyl, halophenyl, alkylphenyl, alkoxyphenyl, and dialkoxyphenyl groups, said alkyl and alkoxy each containing 1 to 4 carbon atoms, R^2 is a member of the group consisting of alkyl of 1 to 4 carbon atoms, phenyl, tolyl, and halophenyl groups, and R^4 is a member of the group consisting of methyl, ethyl and phenyl.

3,952,045

METHOD FOR PREPARING CARBONIC ACID ESTERS

Wolfgang Gaenzler, Darmstadt-Arheilgen; Guenter Schroeder, Ober-Ramstadt, and Klaus Kabs, Seeheim, all of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Filed July 3, 1974, Ser. No. 485,630
Claims priority, application Germany, July 9, 1973, 2334736
Int. Cl.² C07C *68/00*
U.S. Cl. 260—463 3 Claims

1. In the method of making a carbonic acid ester of the formula



wherein R is alkyl, aralkyl, or cycloalkyl, by reacting an alcohol, ROH, wherein R has its earlier meaning, with carbon monoxide and oxygen in the presence of a catalyst system consisting essentially of copper, a halide, and an organic phosphorus compound, the improvement wherein the reaction is carried out at a temperature from 100° to 250°C. under a combined pressure of oxygen and carbon monoxide between 10 and 150 atmospheres in the presence of a catalyst system, soluble in the ROH reaction medium, consisting essentially of cuprous or cupric copper, chloride or bromide, and an organic phosphorus compound selected from the group consisting essentially of triphenyl phosphine oxide; halo- and alkyl-substituted triphenyl phosphine oxides; lower alkyl-, lower alkylene-, and phenyl-phosphites; lower alkyl- and lower haloalkyl-phosphates and oligophosphates thereof; and ethyl phosphonic acid diethyl ester, the ratio Cu:halide:phosphorus compound in said catalyst system being about 1:1:1 for cuprous copper and about 1:2:2 for cupric copper.

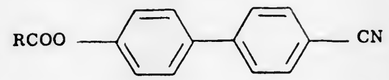
3,952,046

LIQUID CRYSTALLINE BIPHENYLS

Hanspeter Scherrer, Therwil, and Arthur Boller, Binningen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 14, 1974, Ser. No. 523,594
Int. Cl.² C07C *69/96*, *121/64*
U.S. Cl. 260—463 16 Claims

1. A compound of the formula



wherein R is straight-chain alkyl of 3 to 8 carbon atoms or straight-chain alkoxy of 3 to 10 carbon atoms.

3,952,047

METHOD OF PURIFYING PYRETHRUM EXTRACT

Joseph B. Moore, Edina, and Dean C. Kassera, St. Louis Park, both of Minn., assignors to McLaughlin Gormley King Company, Minneapolis, Minn.

Filed Jan. 11, 1974, Ser. No. 432,656
Int. Cl.² C07C *67/48*
U.S. Cl. 260—468 H 12 Claims

1. A process for purifying crude pyrethrum extract formed by the extraction of pyrethrum flowers with an appropriate solvent and containing a mixture of pyrethrins and various impurities, said process comprising:

mixing a crude pyrethrum extract with virtually pure acetonitrile and allowing the same to separate into an acetonitrile-pyrethrum extract layer and a remaining crude pyrethrum extract layer;

chilling said acetonitrile-pyrethrum extract and remaining crude pyrethrum extract layers to a temperature effective to precipitate out waxes and other undesirable impurities in said mixture;

removing the acetonitrile-pyrethrum extract layer;

removing the acetonitrile from the acetonitrile-pyrethrum extract by distillation to form a concentrated pyrethrum extract, said distillation being carried out at the distillation temperature of acetonitrile;

diluting said concentrated pyrethrum extract with a volume of mineral spirits effective to precipitate out remaining undesirable impurities; and

removing the mineral spirits by distillation and separating said remaining precipitated impurities.

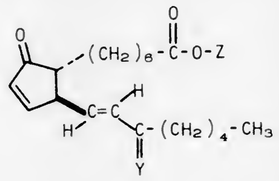
3,952,048

SUBSTITUTED ANILIDE ESTERS OF PGA

Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

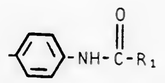
Filed Jan. 8, 1974, Ser. No. 431,600
Int. Cl.² C07C *103/82*, *103/34*, *127/19*
U.S. Cl. 260—468 D 11 Claims

1. An optically active compound of the formula:

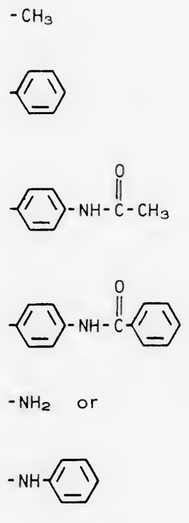


or a racemic compound of that formula and the mirror image thereof, wherein Z is

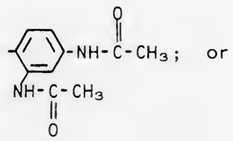
(1)



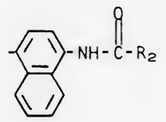
wherein R_1 is



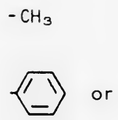
(2)



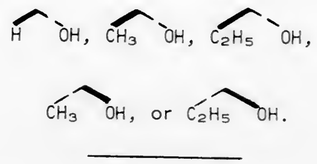
(3)



wherein R_2 is



and wherein Y is



3,952,049

DIESTERS OF TRICYCLIC ALCOHOLS

Yoshiaki Inamoto; Hirokazu Nakayama, both of Wakayama; Hidetsugu Takenaka, Arita, and Takeji Kadono, Kainan, all of Japan, assignor to Kao Soap Co., Ltd., Tokyo, Japan

Division of Ser. No. 173,666, Aug. 20, 1971, Pat. No. 3,862,206. This application Nov. 18, 1974, Ser. No. 524,657
Claims priority, application Japan, Aug. 28, 1970, 45-75410
Int. Cl.² C07C *69/34*, *69/60*
U.S. Cl. 260—485 L 8 Claims

1. A compound of the formula

wherein Z is a single or double bond, and R is a divalent hydrocarbon moiety of a dicarboxylic acid selected from the group consisting of malonic acid, succinic acid, glutaric acid, adipic acid, pimelic acid, suberic acid, azelaic acid, sebacic acid, maleic acid, fumaric acid, itaconic acid, citraconic acid, mesaconic acid, trans-glutaconic acid, cis-glutaconic acid and muconic acid.

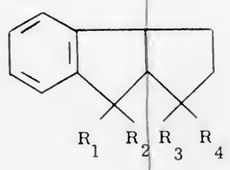
3,952,050

CYCLOPENT [a] INDENE COMPOUNDS

Barry John Price, London, England, assignor to Allen & Hanburys Limited, London, England

Filed Apr. 3, 1973, Ser. No. 347,477
Claims priority, application United Kingdom, Apr. 14, 1972, 17222/72
Int. Cl.² C07C *87/40*
U.S. Cl. 260—501.1 27 Claims

1. Compounds of the general formula:



in which:

R_1 and R_2 represent a hydrogen atom, a C_{1-6} alkyl group, or a benzyl group, or together form a cycloalkyl ring containing from 3 to 6 carbon atoms;

R_3 represents a hydrogen atom or a C_{1-6} alkyl group;

R_4 represents the group NR_5R_6 in which R_5 and R_6 may be the same or different, each represent a hydrogen atom, or a C_{1-6} alkyl radical, which C_{1-6} alkyl radical may optionally be substituted by an amino, C_{1-6} alkylamino, C_{1-6} dialkylamino, hydroxy, phenyl or benzoyl groups which benzoyl groups may be further substituted by halogen; and non-toxic pharmaceutically acceptable salts.

3,952,051

METHOD FOR CRYSTALLIZATION OF DIAMINE DICARBOXYLATE

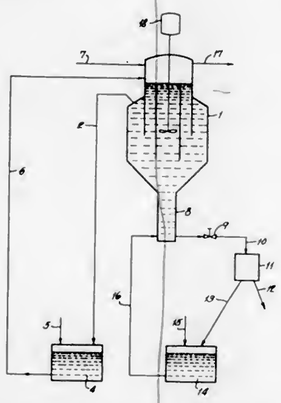
Shinsaku Ogawa; Yoshiaki Yamazaki, and Hiroshi Takeuchi, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 251,325, May 8, 1972, abandoned. This application June 6, 1974, Ser. No. 476,778

Claims priority, application Japan, May 8, 1971, 46-30165

Int. Cl.² C07C *87/14*

U.S. Cl. 260—501.2 **7 Claims**



1. A process for precipitating a crystalline diamine carboxylate which comprises preparing a water solution saturated with the said diamine dicarboxylate, the solution also containing a dissolved quantity of corresponding dicarboxylic acid which is greater than the amount of said dicarboxylic acid which will dissolve in the same amount of pure water, maintaining the pH of the water solution at from 7 to 8.6 by the addition of the corresponding diamine and the temperature at from 20° to 100°C. to dissipate the heat of neutralization, whereby the desired crystalline diamine dicarboxylate precipitates; the dicarboxylic acid being represented by the formula:

$$HOOC - R - COOH$$

wherein R is phenylene, cyclohexylene or alkylene containing from 2 to 8 carbon atoms; the diamine being represented by the formula:

$$H_2N - R' - NH_2$$

wherein R' is phenylene, cyclohexylene or alkylene containing from 4 to 12 carbon atoms.

3,952,052

PROCESS FOR PRODUCING ALKALI METAL SALTS OF AROMATIC POLYCARBOXYLIC ACIDS

Fred T. Sherk, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 15, 1974, Ser. No. 460,939

Int. Cl.² C07C *51/52, 51/01*

U.S. Cl. 260—525 **9 Claims**

1. In a process for producing alkali metal salts of aromatic polycarboxylic acids wherein an alkali metal salt of an aromatic carboxylic acid and a dispersant are introduced into a disproportionation zone, said alkali metal salt of said aromatic carboxylic acid is disproportionated at elevated temperature and high pressure conditions whereby there is formed a slurry comprising said alkali metal salts of said aromatic polycarboxylic acid and said dispersant and a gaseous effluent and wherein said alkali metal salts and said dispersant are separated,

the improvement which comprises

a. treating said slurry in a concentration zone and increasing the solids content of said slurry;

b. combining said slurry having an increased content of solids with said gaseous effluent from said reaction zone,

c. passing said slurry combined with said gaseous effluent to a separation zone;

d. suddenly lowering the high pressure of said slurry combined with said gaseous effluent to a pressure of about 10 to 100 psia,

e. recovering said dispersant as a vapor from said separation zone, and

f. recovering said alkali metal salts of said polycarboxylic acids as solids from said separation zone.

3,952,053

METHOD FOR RECOVERING TEREPHTHALIC ACID AND ETHYLENE GLYCOL FROM POLYESTER MATERIALS

George E. Brown, Jr., Cincinnati, and Richard C. O'Brien, Dayton, both of Ohio, assignors to Safetech, Inc., Cincinnati, Ohio

Filed Feb. 26, 1974, Ser. No. 446,014

Int. Cl.² C07C *51/42*

U.S. Cl. 260—525 **9 Claims**

1. A method for recovering terephthalic acid from a polyester material produced from two or more monomers, one of which is terephthalic acid comprising

A. adding said polyester material to concentrated sulfuric acid heated to a temperature of about 140° F. to 200° F., said concentrated sulfuric acid comprising at least about 87% by weight of sulfuric acid, and the weight of concentrated sulfuric acid is at least as great as the amount of polyester material,

B. adding said polyester material-sulfuric acid mixture to water wherein said terephthalic acid precipitates, and

C. separating terephthalic acid from said mixture.

3,952,054

PROCESS FOR PREPARING DIGLYCOLIC ACID

Chung Y. Shen, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 5, 1974, Ser. No. 529,769

Int. Cl.² C07C *59/22*

U.S. Cl. 260—535 P **8 Claims**

1. A method of making diglycolic acid, said method comprising oxidizing p-dioxanone with an oxidizing agent selected from the group consisting of HNO_3, NO_2, N_2O_3, N_2O_4, N_2O_5, and mixtures thereof.

3,952,055

UREA SYNTHESIS WITH IMPROVED HEAT RECOVERY AND CONVERSION

Ivo Mavrovic, 530 E. 72nd St., New York, N.Y. 14331

Filed Oct. 19, 1971, Ser. No. 190,519

Int. Cl.² C07C *126/00*

U.S. Cl. 260—555 A **6 Claims**

1. In a substantially adiabatic urea synthesis system wherein fluid NH_3 and fluid CO_2 are reacted at elevated pressure and temperature to form a total urea synthesis mixture in a reactor having a conduit position therein, the improvement comprising

charging reactor feed streams comprising from about 5 to about 100 mol percent of each of a reactor feed stream of fluid NH_3 and fluid CO_2 into an upper section of said conduit and forming therein a first urea synthesis mixture,

passing said first urea synthesis mixture downwardly through said conduit and discharging it therefrom into said reactor proximate the reactor bottom section.

charging the balance of said fluid NH_3 and fluid CO_2 reactor feed streams directly into said reactor bottom section to form a total urea synthesis mixture therein,

passing said total urea synthesis mixture in said reactor indirectly and countercurrently to said first urea synthesis mixture to maintain a substantially constant temperature throughout said reactor, and

wherein said first urea synthesis mixture and said total urea synthesis mixture are formed at substantially the same elevated pressure.

3,952,056

PLANT GROWTH REGULATING AGENT

Christian Vogel, Binningen, and Rudolph Aebi, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

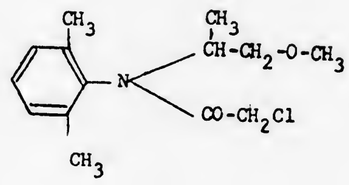
Continuation-in-part of Ser. No. 328,202, Jan. 31, 1973, abandoned. This application Feb. 7, 1975, Ser. No. 548,042

Claims priority, application Switzerland, Feb. 7, 1972, 1739/72

Int. Cl.² C07C *103/38*

U.S. Cl. 260—562 B **1 Claim**

1. The compound 2-chloro-2',6'-dimethyl-N-(1-methoxyprop-2-yl)-acetanilide of the formula



3,952,057

PROCESS FOR THE PREPARATION OF GUANIDINE CARBONATE

Alfred Schmidt; Karlheinz Wegleitner; Josef Herbert Hatzl; Rudolf Sykora, and Ferdinand Weinrotter, all of Linz, Danube, Austria, assignors to Chemie Linz AG, Linz, Austria

Filed July 3, 1973, Ser. No. 376,176

Claims priority, application Germany, July 14, 1972, 2234732

Int. Cl.² C07C *129/00*

U.S. Cl. 260—564 D **5 Claims**

1. A process for obtaining guanidine carbonate from an aqueous solution containing guanidine, urea, pyrolysis products of urea, ammonia and carbon dioxide, which comprises heating the aqueous solution to a temperature not higher than 80°C at atmospheric pressure to expel the ammonia and free carbon dioxide present in the aqueous solution, evaporating the resulting solution containing an amount of carbon dioxide equivalent to the guanidine content thereof at a pressure between 0.1 and 0.80 atmospheres absolute and a temperature between 50°C and 80°C until the solution, after cooling to a temperature of 20° to 30°C, is saturated with urea, separating the resulting solid precipitate from the solution, suspending the remaining solution, at a temperature between −33°C and 20°C, in an amount of liquid ammonia which is at least twice the amount of urea present in the solution, the water content of the resultant suspension being not higher than 20% by weight, and separating undissolved guanidine carbonate from the suspension.

3,952,058

SWEETENER

Guy A. Crosby, Palo Alto, and Patrick M. Saffron, Los Gatos, both of Calif., assignors to Dynapol, Palo Alto, Calif.

Division of Ser. No. 442,482, Feb. 14, 1974, Pat. No. 3,876,814. This application Oct. 16, 1974, Ser. No. 509,999

Int. Cl.² C07C *93/14, 91/40*

U.S. Cl. 260—575 **1 Claim**

1. The compound 3-amino-4-n-propoxybenzyl alcohol.

3,952,059

ALKYL AMMONIUM THIOCYANATE MANUFACTURE AND LUBE CONTAINING SAME

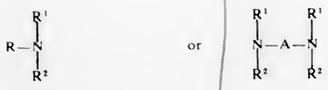
John W. Nebzydoski, Fishkill; Harry Brockway, Beacon; Edwin L. Patmore, Fishkill, and Frederick G. Oberender, Wappingers Falls, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 329,505, Feb. 5, 1973, Pat. No. 3,867,297. This application Sept. 9, 1974, Ser. No. 504,635

Int. Cl.² C07C *87/04, 87/14*

U.S. Cl. 260—583 R **3 Claims**

1. A method of preparing an alkyl ammonium thiocyanate of enhanced load-carrying properties in synthetic ester lubricating oils comprising forming a mixture of a thiocyanate reactant of the formula MSCN where M is a member selected from the group consisting of ammonium and monoalkyl ammonium of from 2 to 7 carbons and an alkyl amine from 6 to 30 carbons of the formula:



where A is alkylene of from 2 to 6 carbons, R is alkyl of from 6 to 30 carbons, R^1 and R^2 are hydrogen or alkyl of from 1 to 10 carbons utilizing a ratio of equivalent weight of said amine to mole of said thiocyanate reactant of between about 1:1.2 and 0.9:1, heating the resultant mixture to a temperature of between about 90° and 130°C. while continuously introducing into said mixture as free oxygen containing gas at a gas rate of between about 40 and 200 volumes gas per hour per volume said mixture and maintaining said temperature and gas introduction until between about 5 and 0.2 mole oxygen per equivalent weight of initial amine has been introduced.

3,952,060

PERFLUORINATED AMINO COMPOUNDS AND PROCESS FOR THEIR MANUFACTURE

Helmut Huber-Emden, Basel, and Alberto Deflorin, Riehen, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

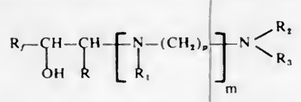
Filed Nov. 11, 1974, Ser. No. 522,541

Claims priority, application Switzerland, Nov. 22, 1973, 16473/73

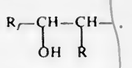
Int. Cl.² C07C *91/04*

U.S. Cl. 260—584 R **15 Claims**

1. Perfluorinated amino compounds of the formula



wherein R_f represents a perfluorinated hydrocarbon radical with 1 to 18 carbon atoms and R represents hydrogen or methyl each of R_1, R_2 and R_3 independently represents hydrogen or the radical



in which R_f and R have the meanings already assigned to them, *p* is an integer from 2 to 6 and *m* is an integer from 1 to about 500.

3,952,061

METHOD OF ISOMERIZING HUMULONE TO ISOHUMULONE BY CATALYTIC ACCELERATION WITH METAL SALTS

Horst Koller, Munich; Alfons E. Hartl, Germering near Munich, and Gerhard Kirchner, Grobenzell near Munich, all of Germany, assignors to Atlantic Research Institute Limited, Nassau, Bahamas

Continuation-in-part of Ser. No. 725,458, April 30, 1968, abandoned. This application May 30, 1973, Ser. No. 356,785

Claims priority, application Germany, May 2, 1967, 55619

Int. Cl.² C12C *9/02*

U.S. Cl. 260—586 D **10 Claims**

1. A method for preparing isohumulone products, comprising:

providing a mixture of (1) a salt productive in an aqueous medium of an anion and a cation, said anion being inert to the starting material and inert to the isohumulone products under the operating conditions of the present method, and said cation being an element selected from the group consisting of Group IIa or IIb elements, Fe group elements, cerium and manganese, (2) humulone or a humulone-containing material, and (3) a liquid medium, inert to the starting materials and to the isohumulone produced under the operating conditions of the present method, said liquid medium being one in which said salt dissociates to form said anion and said cation and said humulone or humulone containing material dissociates to form humulate anion, said liquid medium comprising a mixture of water and a water miscible organic solvent; and

isomerizing at an elevated temperature, at a pH below 9 and greater than that pH at which humulone forms humulate anion in solution;

wherein said salt is present in an amount sufficient to accelerate said isomerization.

3,952,062

MERCAPTO- OR ALKYLTHIO-SUBSTITUTED MENTHENONES

Dietmar Lamparsky, Wangen-Dubendorf, and Peter Schudel, Grut, near Wetzikon, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 69,457, Sept. 3, 1970. This application Apr. 26, 1974, Ser. No. 464,416

Claims priority, application Switzerland, Sept. 10, 1969, 13748/69

Int. Cl.² C07C *49/48*

U.S. Cl. 260—586 R **3 Claims**

1. p-Menthane-1-thiol-3-one.
2. 8-Methylthio-p-menthan-3-one.
3. 1-Methylthio-p-menthan-3-one.

3,952,063

PROCESS FOR THE PREPARATION OF AN ORGANOMERCAPTOPHENOL FROM SULFUR, A PHENOL, AND AN ACTIVATED OLEFIN OR AN EPOXY COMPOUND

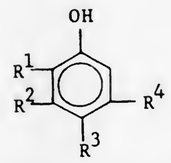
Allan S. Hay, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed July 1, 1974, Ser. No. 484,986

Int. Cl.² C07C *148/02*

U.S. Cl. 260—609 D **24 Claims**

1. A process for the preparation of an organomercaptophenol which comprises the reaction of a member of the class consisting of sulfur, an alkali metal sulfide, an alkaline earth metal sulfide, or an ammonium sulfide with a phenol of the formula



wherein independently each R^1, R^2, R^3 and R^4 is a monovalent substituent selected from the group consisting of hydrogen, hydrocarbon and hydrocarbonoxy radicals, said reaction being carried out in the presence of (1) a base, (2) a member of the class consisting of an activated olefin or an epoxy compound, (3) and a solvent having a dielectric constant of less than about 20.

3,952,064

PROCESS FOR PRODUCING MERCAPTOPHENOLS

William G. Whalley, Vancouver, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

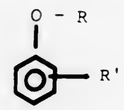
Continuation-in-part of Ser. No. 340,627, March 12, 1973, abandoned. This application July 18, 1974, Ser. No. 489,625

Int. Cl.² C07C *149/36*

U.S. Cl. 260—609 D **19 Claims**

1. A process for the preparation of mercaptophenols, including a selective sulfurization reaction, comprising the steps of

a. forming a sulfurization reaction system including at least one phenol compound, a sulfur chloride, a polar solvent reaction medium having a water solubility of at least about 2.0, and a catalytic amount of hydrogen chloride promoter, said phenolic compounds having a formula



wherein R is selected from the group consisting of hydrogen, alkyl, cycloalkyl, haloalkyl, and combinations thereof, the carbon-containing R groups having from 1 to about 10 carbon atoms, and R′ is either R''_n or H, R″ being selected from the group consisting of hydroxyl, halogen, alkyl, alkoxy, cycloalkyl, and combinations thereof, the carbon-containing R″ groups having a total of from 1 to 5 carbon atoms, n being an integer from 1 to 2, said phenol forming less than about 25% by weight of the total sulfurization system, said sulfur chloride being present in at least a 0.1 stoichiometric quantity based on the concentration of said phenol, said polar solvent reaction medium including those polar solvents which themselves react with said sulfur chloride, provided that said polar solvent-sulfur chloride reaction is considerably slower than said selective sulfurization reaction, said hydrogen chloride promoter being present in an amount of at least 0.1% by weight based on the weight of the total sulfurization reaction system;

b. reacting said phenol and sulfur chloride to form a polysulfide; and

c. reducing the polysulfide to form said mercaptophenol.

3,952,065

METHOD OF PRODUCING CHLOROBENZENES FROM BENZENE SULPHONYL CHLORIDES

Bohumir Mrva, Jur; Josef Macko, Bratislava; Milan Kupcik, Bratislava, and Stefan Truchlik, Bratislava, all of Czechoslovakia, assignors to Vyskumny ustav agrochemickej Technologie, Bratislava-Predmestie, Czechoslovakia

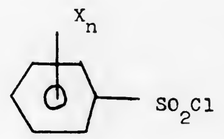
Filed June 20, 1974, Ser. No. 481,041

Claims priority, application Czechoslovakia, June 25, 1973, 4523-73

Int. Cl.² C07C *43/22*, *43/28*

U.S. Cl. 260—612 D **1 Claim**

1. A method of producing chlorobenzenes from benzene sulphonyl chlorides by a thermal chlorinating decomposition of aromatic sulphonyl chlorides of the general formula



wherein X stands for a radical selected from the group consisting of hydrogen, halogen, alkyl group with 1 – 4 carbon atoms and alkoxy group with 1 – 4 carbon atoms, and *n* stands for an integer of from 1 to 5,

the method comprising carrying out said decomposition at a temperature of from 50° – 250°C in the presence of a catalyst consisting of a combination of active carbon and a compound selected from the group consisting of phosphorus chlorides, phosphorous bromides, and organic azo compounds capable of giving free radicals when degrading, the catalyst being present in an amount of from 0.1 to 10 percent by weight based upon the starting sulphonyl chloride, and the mutual ratio of the two constituents of the catalyst varying between 0.1 : 9.9 and 9.9 : 0.1.

3,952,066

DERIVATIVES OF PERFLUOROALKYL IODIDE-ALLYL GLYCIDYL ETHER ADDUCTS

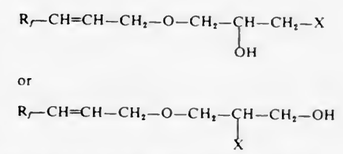
Samuel A. Glickman, Willingboro, N.J., and Stephen W. Osborn, Newtown, Pa., assignors to Thiokol Corporation, Newtown, Pa.

Filed July 7, 1972, Ser. No. 269,911

Int. Cl.² C07C *43/00*, *43/01*

U.S. Cl. 260—615 BF **10 Claims**

1. A compound of the formula:



wherein R_f is a perfluoroalkyl group of from 6 to 16 carbon atoms, and X is a polyetheralkoxy residue of a methoxy polyethylene glycol of average molecular weight 350 to 750 wherein said residue is the molecule minus the hydrogen of the hydroxy groups.

3,952,067

ETHYNYLBENZENES

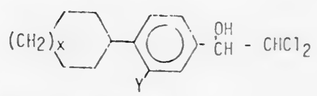
George H. Douglas, Paoli, and Norman J. Santora, Roslyn, both of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Nov. 12, 1974, Ser. No. 523,109

Int. Cl.² C07C *31/16*

U.S. Cl. 260—618 D **6 Claims**

1. A compound of the formula:



where X is 0–2 and Y is halo.

3,952,068

VINYLIDENE ALCOHOL COMPOSITIONS

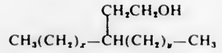
Robert Malone Gipson; John Gordon Milligan, and Floyd Edward Bentley, all of Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

Division of Ser. No. 472,427, May 22, 1974, abandoned, which is a division of Ser. No. 260,545, June 1, 1972, Pat. No. 3,887,624. This application July 17, 1975, Ser. No. 596,885

Int. Cl.² C07C *31/02*, *33/02*

U.S. Cl. 260—632 R **2 Claims**

1. An alcohol represented by the formula:



wherein, individually, x and y are numbers from 3 to 9 and the sum of x and y is a number from 8 to 16.

3,952,069
HYDROGENATION OF AROMATICS

Robert D. Christman, and Geoffrey R. Wilson, both of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Division of Ser. No. 326,692, Jan. 26, 1973, Pat. No. 3,876,680, which is a continuation-in-part of Ser. No. 272,018, July 14, 1972, abandoned. This application Feb. 26, 1975, Ser. No. 553,183
Int. Cl.² C07C *5/10*
U.S. Cl. 260—667 **6 Claims**

1. A process for catalytically hydrogenating an aromatic feed which comprises contacting said aromatic feed with hydrogen at hydrogenation conditions in the presence of a catalyst comprising a hydrogenating component selected from the Group VI-B metals and a second hydrogenating component selected from the Group VIII metals composited with an alumina base, at least 40 percent of the volume of pores of the catalyst composite being in pores having a radius in the range of 50 to 300 A units, the average pore radius of said catalyst composite being at least 40 A units as determined by nitrogen adsorption, the surface area of said catalyst composite being at least 150 square meters per gram, and the pore volume of said catalyst composite being at least 0.45 cubic centimeter per gram as determined by nitrogen adsorption, said catalyst composite having been prepared by calcining an alumina support having a bayerite content in the range of 0 to 50 weight percent at a temperature in the range of 427° – 871°C., admixing said alumina support with the two hydrogenating components, and thereafter calcining the catalyst composite at a temperature in the range of 427° – 871°C.

3,952,070
PROCESS OF OLEFIN METATHESIS

Edward N. Nowak, Uniontown, and Kenneth J. Frech, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 23, 1974, Ser. No. 508,479
Int. Cl.² C07C *3/62*
U.S. Cl. 260—683 D **10 Claims**

1. In a process of converting an olefin in an olefin metathesis reaction wherein at least one olefin selected from the group of cyclic and acyclic mono and polyene olefin hydrocarbons and mixtures of such hydrocarbons are converted in a reaction zone to products of the olefin metathesis reaction, which as defined herein, can be visualized as comprising the reaction between two first pairs of carbon atoms, the two carbon atoms of each first pair being connected by an olefinic double bond, to form two new pairs from the carbon atoms of the said first pairs, the two carbon atoms of each said new pairs being connected by an olefinic double bond, in the presence of an olefin metathesis catalyst comprising an oxide of tungsten on a silica support active for converting propylene into ethylene and butene, under metathesis conditions including temperatures of from about 300°C to about 550°C and pressures of from about 0 to about 2000 psig and a reaction time in the range of from about 0.1 second to about 10 hours, said process having a decreased activity, the improvement comprising regenerating the catalyst by treating the catalyst with an olefin selected from the group comprising ethylene and butylenes at temperatures ranging from about 450°C to about 750°C for a period of time varying from about 0.1 minute to about 60 minutes prior to its use again as an olefin metathesis catalyst.

3,952,071
METHOD FOR PREPARATION OF OLEFIN OLIGOMER

Hiroshi Isa; Toshiyuki Ukigai, both of Yachiyo; Anri Tominaga, Tokyo; Ryozo Taniyasu, Narashino, and Masuzo Nagayama, Tokyo, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1975, Ser. No. 538,965
Claims priority, application Japan, Jan. 29, 1974, 49-11441
Int. Cl.² C07C *3/18*
U.S. Cl. 260—683.15 B **6 Claims**

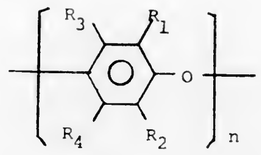
1. A method of preparing an olefin oligomer, which comprises polymerizing at a temperaure of from 50° to 150°C, a monoolefin or a mixture of monoolefins having 6 or more carbon atoms, in the presence of a catalyst mixture of aluminum chloride and a polyhydric alcohol derivative selected from the group consisting of ethoxyethyl acetate, butoxypropyl acetate, ethoxyethoxyethyl acetate, methoxyethoxyethyl propionate, 4-methoxybutyl caproate, lauroxyethyl octanoate, ethylene glycol diacetate, ethylene glycol dicaproate, propylene glycol dipropionate, 1,3-diacetoxypropane, 1,4-diacetoxybutane, trans-1,4-diacetoxybutene, 1,5-diacetoxypentane, diethylene glycol diacetate, dibutylene glycol dipropionate, triethylene glycol didecanoate, and pentaerythritol tetracetate, the amount of said aluminum chloride being in the range of from 0.1 to 5 mole %, based on said olefin, and the molar ratio of said aluminum chloride to said derivative being from 0.8 to 1.0 mole of aluminum chloride per one ether bond or ester bond of said derivative, and recovering an olefin oligomer from the polymerization reaction mixture.

3,952,072
STABILIZED POLYPHENYLENE ETHER TYPE RESIN COMPOSITION

Eiichi Yonemitsu, Kashiwa; Akitoshi Sugio, Omiya; Masanobu Masu, Tokyo; Masaharu Kimura, Tokyo; Masao Okabe, Tokyo; Norio Sayama, Tokyo, and Masatsugu Matsunaga, Matsudo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 14, 1974, Ser. No. 523,931
Claims priority, application Japan, Nov. 14, 1973, 48-127920; Dec. 12, 1973, 48-138990; Mar. 5, 1974, 49-25557
Int. Cl.² C08J *3/20*
U.S. Cl. 260—874 **62 Claims**

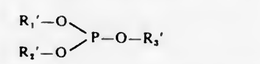
1. Stabilized polyphenylene ether type resin composition containing
   1. stabilizer and
   2. (i) a homopolymer or copolymer having polymeric segments consisting of more than 50 of recurring structural units, represented by the formula



wherein R_1 represents a monovalent substituent selected from the group consisting of a hydrogen atom, alkyl radical, haloalkyl radical having at least two carbon atoms between the halogen atom thereof and the phenol nucleus, alkoxy radical, haloalkoxy radical having at least two carbon atoms between the halogen atom thereof and the phenol nucleus; R_2, R_3 and R_4 each represent a monovalent radical selected from the above-identified group or a halogen atom, wherein all of R_1, R_2, R_3 and R_4 cannot represent hydrogen atoms at the same time and said substituents cannot include an α-carbon atom as a tertiary carbon atom, and n represents an integer of more than 50;

(ii) a graft copolymer wherein alkenyl aromatic compound is grafted on said homopolymer or said copolymer; or

(iii) a mixture of said homopolymer, said copolymer or said graft copolymer with other resins; characterized in that said stabilizer is a high molecular phosphorous ester which has at least three phosphorous ester-bonds per molecule and is obtained by reacting a compound selected from the group consisting of bisphenol A, hydrogenated bisphenol A, alkyl-substituted bisphenol A, halogenated bisphenol A, p-xylylene glycol, 1,4-cyclohexanedimethanol and pentaerythritol with a phosphorous ester or acid represented by the formula (I)



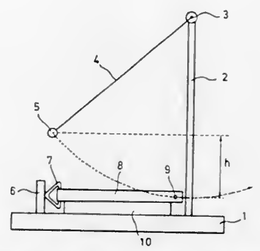
(I)

wherein R'_1, R'_2 and R'_3 represent each a hydrogen atom, alkyl, aryl, or haloaryl radical.

3,952,073
FILM HAVING GOOD TEAR PROPERTY ON IMPACT COMPRISING POLYPROPYLENE AND AN ETHYLENE POLYMER

Tsutomu Isaka; Shuji Inoue, and Kunihiko Arakawa, all of Inuyama, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed June 11, 1973, Ser. No. 368,519
Claims priority, application Japan, June 9, 1972, 47-57806
Int. Cl.² C08L *23/12, 23/08, 23/06*
U.S. Cl. 260—897 A **14 Claims**



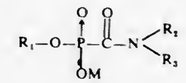
1. A biaxially stretched film having an excellent cutting property in the transverse direction, and sufficient break strength in the machine direction to resist breakage by impact in the machine direction, which comprises a mixture of polypropylene and at least one ethylene homopolymer, in a weight ratio of 40 : 60 to 90 : 10, the polypropylene having an isotactic index of not less than 85%, the polyethylene having a density of not less than 0.926 g/cm³, said film satisfying the following requirements:
   1. $N_y - N_x = 6 \times 10^{-3}$ to 25×10^{-3} wherein N_x is the refractive index in the machine direction and N_y is the refractive index in the transverse direction;
   2. $(N_x + N_y) \times 0.5 - N_z \leq 0.012$ wherein N_z is the refractive index in the vertical direction and N_x and N_y are each as defined above;
   3. the break elongation in the machine direction = 150 to 800%; and
   4. no substantial necking is seen on the surface thereof, said film having been stretched at a draw ratio in the machine direction of from 1.05 to 2.0 and at a draw ratio in the transverse direction of not less than 4.

3,952,074
CARBAMOYLPHOSPHONATES

William P. Langsdorf, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 283,769, Aug. 25, 1972, Pat. No. 3,846,512, Continuation-in-part of Ser. No. 85,221, Oct. 29, 1970, Pat. No. 3,819,353, Continuation-in-part of Ser. No. 803,962, March 3, 1969, abandoned, Continuation-in-part of Ser. No. 731,732, May 24, 1968, Pat. No. 3,627,507. This application June 13, 1974, Ser. No. 478,968
Int. Cl.² C07F *9/09;* **A01N** *9/36*
U.S. Cl. 260—924 **1 Claim**

1. A compound of the formula:



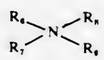
wherein:

R_1 alkyl of one through 6 carbon atoms, chloroalkyl of one through six carbon atoms containing up to three chlorine atoms, bromoalkyl of one through six carbon atoms containing up to three bromine atoms, alkoxy alkyl of three through seven carbon atoms, alkenyl of two through six carbon atoms, alkynyl of three through four carbon atoms, phenyl or benzyl;

R_2 is hydrogen or methyl;

R_3 is hydrogen or methyl;

M is selected from the group consisting of



where R_6, R_7 and R_8 can be the same or different and each can be hydrogen, alkyl of one through four carbon atoms, or hydroxy alkyl of two through four carbon atoms; and R_9 is hydrogen, alkyl of one through twelve carbon atoms, allyl, benzyl, amino, methylamino, or dimethylamino; provided that R_6, R_7, R_8 and R_9 cannot all be hydrogen.

3,952,075

FLUORINE-CONTAINING COMPOUNDS

Yasusi Nakamura; Masashi Umemura, and Michimasa Yonekura, all of Tokyo, Japan, assignors to Asahi Denka Kogyo K.K., Tokyo, Japan

Filed Oct. 2, 1974, Ser. No. 511,272

Claims priority, application Japan, Oct. 3, 1973, 48-111226; Oct. 3, 1973, 48-111227; Oct. 3, 1973, 48-111229; Nov. 24, 1973, 48-132040; Nov. 24, 1973, 48-132041; Nov. 24, 1973, 48-132043; Nov. 24, 1973, 48-132044; Oct. 3, 1973, 48-111225

Int. Cl.² C07F *9/09*; **C07C** *141/00, 101/26, 43/17*

U.S. Cl. 260—950 **3 Claims**

1. A compound having the formula:

$R_f(CH_2)_pO(C_3H_6O)_m(C_2H_4O)_nX'$

wherein R_f is a perfluoroalkyl group having from 4 to 14 carbon atoms, p is a number of from 1 to 10 and $R_f(CH_2)_p$ has from 6 to 16 carbon atoms; X' is a member selected from the group consisting of $-PO_3H_2$ and its alkali metal, ammonium and amine salts; m is a number selected from the group consisting of 0 and from 1 to 50; n is a number selected from the group consisting of 0 and from 1 to 50, with the proviso that when m is 0, n is a number of from 1 to 50.

3,952,076

CARBURETTORS

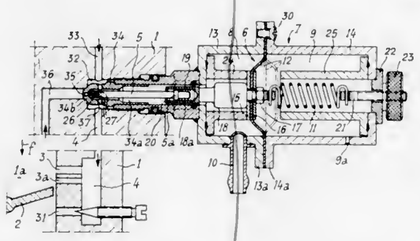
Lucien Chatelain, Alfortville, and Jean-Yves Lemonnier, Fontenay-le-Viconte, both of France, assignors to Regie Nationale des Usines Renault, France

Filed Mar. 18, 1975, Ser. No. 559,415

Claims priority, application France, Mar. 21, 1974, 74.09730

Int. Cl.² F02M *3/04*

U.S. Cl. 261—41 D **4 Claims**



1. A carburettor for an internal combustion engine, the carburettor comprising a main body, a butterfly throttle housed in said body, a fuel supply (full load) circuit opening into the body upstream of the butterfly throttle, a slow running circuit opening into the body substantially in the vicinity of the butterfly throttle via progression pipes and a slow running pipe, a slow running tube communicating with the pipes and opening out at its upper part into an annular chamber, a slow running air pipe opening into the annular chamber, a slow running jet provided in said annular chamber and whereof its inner chamber is connected to a fuel inlet pipe and to the annular chamber, said main body opening out, on the downstream side, into an induction manifold, from which a number of induction pipes leave, each for connection to one cylinder of the engine, an axially movable closure member arranged coaxially within the chamber of the slow running jet for controlling the output thereof, means for controlling axial movement of the closure member depending on the magnitude of depression prevailing downstream of the butterfly throttle, the slow running jet being partially closed by the closure member as soon as the depression prevailing downstream of said butterfly throttle reaches a predetermined degree, the closure member having a front end provided with passage means opening, on the one hand, at the front end and lateral faces of said closure member to allow fuel to pass from a fuel inlet pipe towards the inner chamber of the slow running jet through a front orifice of said jet when said closure member is in closed position, and a movable diaphragm to which the closure member is connected and which subdivides in fluid-tight manner a control chamber into two chambers, whereof one is connected either to the downstream side of the carburettor or to the induction manifold, while the other is connected to atmosphere by an orifice.

3,952,077

LIQUID COOLER DEVICES

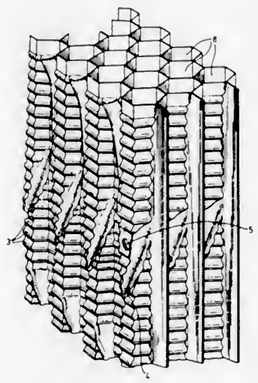
Albert Frederick Wigley, London, England, assignor to Serck Industries Limited, Birmingham, England

Continuation-in-part of Ser. No. 141,339, May 7, 1971, abandoned. This application May 21, 1974, Ser. No. 472,049

Claims priority, application United Kingdom, May 7, 1970, 22192/70

Int. Cl. B01d *47/00*

U.S. Cl. 261—112 **8 Claims**



1. A packing for use in apparatus wherein a film of liquid flows in counter-current to a gas stream to effect contact therebetween, comprising a plurality of packing sheets each of which is corrugated to define a plurality of parallel depressions which are generally segmental in cross-section whereby the sheets when assembled together form tubes and wherein each sheet is deformed to provide channels communicating between the depressions, to provide transverse ribs which project from the walls of the depressions, and to provide obliquely extending projections in the wall of the depressions.

3,952,078

METHOD OF PRILLING AMMONIUM NITRATE AND UREA THROUGH EPOXY-RESIN LINED BORES

John Kenneth Bradley, Ipswich, England, assignor to Fisons Limited, London, England

Division of Ser. No. 246,274, April 21, 1972, abandoned. This application Jan. 17, 1974, Ser. No. 434,119

Int. Cl.² B01J *2/02*

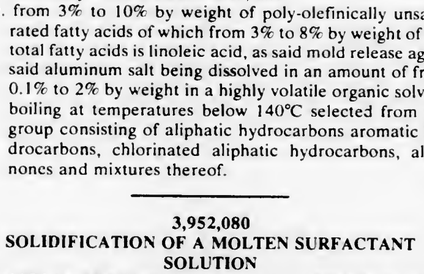
U.S. Cl. 264—13 **7 Claims**

1. In a process for prilling material selected from the group consisting of ammonium nitrate and urea comprising:

a. flowing a melt of said materials through a plurality of bores in a distribution plate of a prilling head located in a cooling tower to form droplets falling within said cooling tower;

b. cooling and solidifying said falling droplets in said cooling tower;

the improvement comprising:



c. said bores having an interior surface formed of epoxy resin.

3,952,079

PROCESS OF RELEASING POLYURETHANE FOAMS USING ALUMINUM SALTS OF FATTY ACID MIXTURES

Riza Nur Özelli, Neuss; Günter Klement, and Eugen Scheidt, both of Dusseldorf-Holthausen, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

Filed Aug. 7, 1974, Ser. No. 495,395

Claims priority, application Germany, Aug. 10, 1973, 2340574

Int. Cl.² B29D *27/00*; **B29C** *1/04*

U.S. Cl. 264—45.5 **1 Claim**

1. In the process for the production of molded articles of integral skin polyurethane foams by foaming a polyurethane reaction mixture in a mold, comprising coating a mold with a thin film of a mold release agent, foaming a polyurethane reaction mixture in said mold and removing the foamed integral skin polyurethane from said mold, the improvement consisting of applying a thin film of from 0.2gm to 0.4gm per m^2 to said mold using an aluminum salt of a fatty acid mixture of fatty acids having 12 to 22 carbon atoms consisting of

a. from 42% to 50% by weight of mono-olefinically unsaturated fatty acids, wherein at least 42% by weight of the total acids are oleic acid,

b. from 42% to 48% by weight of saturated fatty acids, wherein at least 42% by weight of the total acids are saturated fatty acids having 16 to 18 carbon atoms, of which from 22% to 28% by weight of the total fatty acids is palmitic acid and from 14% to 20% by weight of the total fatty acids is stearic acid, and

c. from 3% to 10% by weight of poly-olefinically unsaturated fatty acids of which from 3% to 8% by weight of the total fatty acids is linoleic acid, as said mold release agent said aluminum salt being dissolved in an amount of from 0.1% to 2% by weight in a highly volatile organic solvent boiling at temperatures below 140°C selected from the group consisting of aliphatic hydrocarbons aromatic hydrocarbons, chlorinated aliphatic hydrocarbons, alkanones and mixtures thereof.

3,952,080

SOLIDIFICATION OF A MOLTEN SURFACTANT SOLUTION

Gerald Richard Backlund, Maplewood, N.J., and Yakow Breslerman, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 381,129, July 20, 1973, abandoned. This application Feb. 10, 1975, Ser. No. 548,854

Int. Cl.² C11D *3/22*

U.S. Cl. 264—176 F **1 Claim**

1. A method for solidifying a surfactant product mixture which consists essentially of sodium dicyclohexyl sulfosuccinate with about 3–6% by wt. inorganic salts and hydrolysis products and about 13–16% by wt. volatile matter, said process comprising cooling of said product mixture from melt temperature above 175°F. to a lower intermediate temperature in the range from about 145°–165°F. by means of a scraped surface heat exchanger with thorough mixing of the product mixture throughout said cooling step, followed by extrusion of the product mixture at said lower intermediate temperature to form extruded strands of said product and subsequent cooling of said strands to ambient temperature to complete the solidification of the product mixture.

3,952,081

PRODUCTION OF CELLULOSE ACETATE FILAMENTARY MATERIAL

Martin E. Epstein, Basking Ridge, and Henry H. George, Jr., Berkely Heights, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 15, 1974, Ser. No. 461,032

Int. Cl.² D01F *3/26*

U.S. Cl. 264—207 **16 Claims**

1. An improved process for the production of a cellulose acetate filamentary material comprising:

a. dissolving secondary cellulose acetate in a medium selected from the group consisting essentially of (a) a liquid consisting primarily of methanol, (b) a liquid consisting primarily of ethanol, and (c) a liquid comprising about 40 to 60 percent acetone by weight and about 40 to 60 percent water by weight, at a temperature of about 75° to 150°C. while at a superatmospheric pressure of about 75 to 200 psig to form a homogeneous solution, with said medium producing no substantial degradation of said secondary cellulose acetate while dissolved therein and being incapable of dissolving said secondary cellulose acetate at ambient conditions and with at least 50 percent by weight of said medium exhibiting a boiling point below 80°C. at ambient conditions,

b. passing said homogeneous solution while at a temperature of about 95° to 120°C. and pressure of about 250 to 500 psig through a shaped extrusion orifice consisting of a plurality of holes having a diameter of about 25 to 200 microns into a gaseous atmosphere provided at substantially atmospheric pressure and at a temperature below the boiling point of said medium wherein said extruded solution undergoes a phase separation wherein the medium separates substantially as a liquid to form a continuous length of a solid cellulose acetate filamentary material consisting of a plurality of discrete continuous filaments, and

c. collecting said solid cellulose acetate filamentary material.

3,952,082

METHOD FOR FORMING AN EXPANDED-RESIN CONTAINER ABOUT A BODY

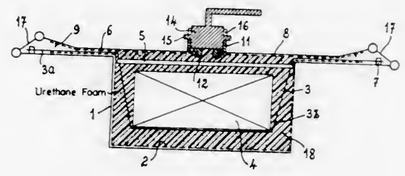
Guy Arnaud, Magnieu, France

Filed Dec. 18, 1972, Ser. No. 315,899

Claims priority, application Switzerland, Dec. 16, 1971, 18363/71

Int. Cl.² B29D *27/04*

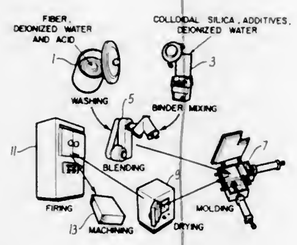
U.S. Cl. 264—46.6 **2 Claims**



1. A method of packaging an object for transport or storage comprising the steps of:

providing a mold cavity having perforated walls and of a volume larger than that of an object to be packaged and of dimensions greater than the corresponding dimensions of said object; and
a cover for said cavity having perforated walls and a pouring duct;
lining said walls with gas pervious sheets;
suspending said object in said cavity in all-around spaced relationship with said lined walls and upon a plurality of filaments extending from said object out of said cavity; and
closing said lined mold cavity with said lined cover
and introducing through said duct a foamable and curable polyurethane reaction mixture into the space around said object and between said object and said line closed mold cavity walls;
causing said mixture to expand in said space to completely fill the latter and displace air from said space out of said cavity through said gas pervious sheets and perforated walls without penetration of the mixture through said sheets; and
curing said mixture to form a polyurethane sheath completely surrounding said body and covered and bonded to said sheets while retaining said filaments embedded in said sheath.

3,952,083
SILICA REUSABLE SURFACE INSULATION
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Howard E. Goldstein, Saratoga, Calif.; Marnell Smith, and Daniel Leiser, both of San Jose, Calif.
Filed Dec. 26, 1973, Ser. No. 427,775
Int. Cl.² F27D *7/04*; **C04B** *35/14*
U.S. Cl. 264—63 **6 Claims**



6. A method of making a reusable silica surface insulation material comprising the steps of:
a. washing silica fibers for 2 hours in a dilute Hcl solution at pH3, said fibers comprising less than 0.06% by weight of alkali and alkaline earth impurities,
b. washing the fibers in (*a*) in deionized water until the pH is at least 6,
c. preparing a binder by mixing colloidal silica, starch, and ammonical deionized water,
d. blending the fibers of (*b*) with the binder in (*c*) to form a slurry,
e. mixing the blend (*d*) for 30 minutes in a twin-shell V-blender equipped with an intensifier bar,
f. molding said slurry into the shape of a tile at a pressure of 10–20 lbs. per square inch,
g. drying said tile on an 18 hour cycle up to a temperature of 300°F., and
h. firing said tile in accordance with a curing cycle which comprises:
1. heating said tile in a furnace at the rate of 200°F. to 300°F. per hour to a maximum temperature of 2250°F. to 2350°F.,
2. holding said tile at said maximum temperature for 1½ to 2½ hours,
3. lowering the temperature at the rate of 200°F. to 300°F. per hour to a temperature of 1800°F., turning off the furnace and allowing the tile to cool to 300°F.–500°F. before removing the tile from the furnace, said firing step providing a tile consisting of 95 to 98% by weight silica fibers and 2 to 5% by weight colloidal silica binder, and
4. machining the tile to the desired dimensions.

3,952,084
POLYIMIDE AND POLYAMIDE-IMIDE PRECURSORS PREPARED FROM ESTERS, DIANHYDRIDES, AND DIISOCYANATES
Leonard E. Edelman, and William M. Alvino, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 466,744, May 3, 1974, abandoned. This application Oct. 22, 1974, Ser. No. 517,282
Int. Cl.² C08G *18/00*
U.S. Cl. 260—77.5 AM **28 Claims**

1. A composition comprising a solution of:
A. about 30 to about 60 mole percent of an ester selected from the group consisting of
1. mono-esters of tricarboxylic anhydride;
2. diesters of a tetrocarboxylic acid where the ester groups are non-vicinal and each ester group is vicinal to a different carboxylic acid group; and
3. mixtures thereof;
B. about 40 to about 70 mole percent of a dianhydride; and
C. an aromatic diisocyanate in an amount within 5 mole percent of stoichiometric.

3,952,085
REMOVAL OF BORON FROM $MgCl_2$ BRINES
David G. Braithwaite, Brookhaven, Miss., and R. Keith Darlington, Salt Lake City, Utah, assignors to NL Industries, Inc., New York, N.Y.
Filed Feb. 21, 1975, Ser. No. 551,750
Int. Cl.² C01F *5/30*, *7/46*
U.S. Cl. 423—158 **3 Claims**

1. A method for removing boron from a magnesium chloride desulfated, decarnallited naturally occurring brine, wherein said brine comprises essentially from 30.0 to 35.0% $MgCl_2$ and from 400 to 550 ppm boron, by solid-liquid absorption extraction which comprises: intimately mixing said brine with a solid extractant comprising spray-dried, very dense, activated aluminum oxide microspheres, and the amount of activated alumina added to said brine being in the range of from 0.5 to 20.0% on a brine weight basis, heating a slurry of the mixture of brine and extractant at a temperature from about 60°C to about 80°C for about 30 to 60 minutes until the boron in said brine is reduced to less than 50 p.p.m., and then separating the essentially boron-free brine from said extractant after maintaining the slurry quiescent to effect gravity separation of the extractant from the supernatant brine.

3,952,086
PURIFICATION OF CRUDE CHLOROPHOSPHAZENE COMPOUNDS BY TREATMENT WITH BRONSTED BASES
John William Fieldhouse, Mogadore, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Oct. 7, 1974, Ser. No. 512,645
Int. Cl.² C01B *25/10*
U.S. Cl. 423—300 **36 Claims**

1. A process for the purification of crude chlorophosphazene comprising the steps of:
adding at least 1 mole percent based on the crude of a Bronsted base to a vessel containing the crude chlorophosphazene,

said Bronsted base selected from the group consisting of the **1A** and **2A** metals of hydroxides, carbonates, phosphates, bicarbonates and oxides,
applying a partial vacuum to said vessel,
heating said vessel to a temperature of from about 130°C to about 200°C and removing water produced in said vessel by said heating, and
removing at least the cyclic chlorophosphazene trimer from said vessel.

3,952,087
PRODUCTION OF HIGH STRUCTURE CARBON BLACKS
Randolph Antonsen, Boston; Allan Clark Morgan, Sudbury, both of Mass.; Roger T. Ball, Pampa, Tex.; Ronald C. Hurst, Pampa, Tex.; Dennis J. Potter, Pampa, Tex., and Robert I. Wood, Cuddington, England, assignors to Cabot Corporation, Boston, Mass.
Filed Sept. 13, 1974, Ser. No. 505,616
Int. Cl.² C09C *1/50*
U.S. Cl. 423—450 **7 Claims**

1. In a modular process for producing furnace carbon blacks having increased structure characteristics as represented by increased DBP values of the blacks and lower extrusion shrinkage values of rubber formulations containing said blacks wherein a fuel and an oxidant are reacted in a first stage so as to provide a stream of hot combustion gases possessing sufficient energy to convert a carbon black-yielding liquid hydrocarbon make to carbon black which stream is propelled at a high linear velocity into a second stage where the liquid hydrocarbon make is injected, in the form of a plurality of coherent jets, into said gaseous stream substantially transversely and under sufficient pressure to achieve the degree of penetration required for proper shearing and mixing whereby in a third stage the hydrocarbon make is decomposed and converted into carbon black prior to termination of carbon forming reaction by quenching, the improvement which comprises introducing an auxiliary hydrocarbon in an amount such that the carbon content of the auxiliary hydrocarbon ranges from about 2 to about 60% by weight based upon the total carbon content of the reactants and in a form not yet reacted so as to produce carbon black particles at the zone of substantial reaction in the carbon forming process wherein the hydrocarbon make, previously introduced, mixed, atomized and vaporized, is at the moment undergoing the carbon forming reactions to form the carbon particles which zone is located from about 2 to about 60% of the distance from the point of injection of hydrocarbon make to the point of introduction of the quenching medium and then cooling, separating and recovering the resultant carbon black.

3,952,088
EFFLUENT TREATMENT
Peter John Nicholas Brown, Epsom, and Clifford William Capp, Ewell, both of England, assignors to Petro-Tex Chemical Corporation, Houston, Tex.
Filed Oct. 1, 1974, Ser. No. 510,897
Claims priority, application United Kingdom, Oct. 2, 1973, 45900/73
Int. Cl.² C01D *3/14*, *1/28*
U.S. Cl. 423—499 **5 Claims**

1. The process for treating an aqueous effluent for reducing the organic carbon level thereof, said effluent being essentially an aqueous solution of sodium chloride containing some sodium hydroxide and dissolved organic carbon compounds in quantities up to a few thousand parts per million and being the aqueous effluent from the dehydrochlorination of 3,4-dichlorobutene-1 in an aqueous alkaline medium to give chloroprene followed by removal of any major amount of organic materials by distillation and/or decantation, which comprises initially treating the aqueous effluent having a pH of about 13, with ozone, adjusting the pH of the ozonised effluent to about 7, followed by treatment of the ozonised effluent with chlorine until the pH is acidic.

3,952,089
PROCESS FOR THE CONCENTRATION OF HYDROGEN PEROXIDE
Gerhard Käbisch, and Rudolf Trube, both of Rheinfelden, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany
Filed May 1, 1972, Ser. No. 249,009
Claims priority, application Germany, May 21, 1971, 2125192
Int. Cl.² C01B *15/02*
U.S. Cl. 423—588 **10 Claims**

1. A process of concentrating a crude H_2O_2 extraction product from an anthraquinone process consisting essentially of first water stripping the extraction product to a concentration of above 80% but below 90% and containing a carbon content of 80 to 300 mg/l, and then freezing the water stripped product to produce (1) a product having an H_2O_2 content above 90% and a carbon content of 80 mg/l or less and (2) a mother liquor depleted in H_2O_2.

3,952,090
METHOD OF MAKING FIBROUS ALKALI TITANATES
Tadao Shimizu, Tachikawa; Koshiro Hashimoto, Tokyo, and Hiroaki Yanagida, Kashiwa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan
Filed Oct. 23, 1974, Ser. No. 517,436
Int. Cl.² C01G *23/00*
U.S. Cl. 423—598 **10 Claims**

1. A method of making fibrous alkali titanates comprising the steps of: melting a mixture of a titanium compound and an alkali metal compound at a temperature higher than 1000°C, the alkali metal in said alkali metal compound being a member selected from the group consisting of Na, K, Rb and Cs, and said mixture containing said alkali metal compound and titanium compound in a molar ratio of higher than 1.0 in terms of M_2O: TiO_2 where M designates Na, K, Rb or Cs; cooling the thus melted product so as to form a vitreous material; pulverizing the thus cooled product into a powder; treating the thus obtained powder in an autoclave in the presence of water at a temperature higher than 350°C and a pressure higher than 100 atmospheres so as to form fibrous alkali titanate; and washing the thus obtained product.

3,952,091
SIMULTANEOUS MULTIPLE RADIOIMMUNOASSAY
Emanuel Grunberg, North Caldwell, and Magdalena Usategui Gomez, Wayne, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Oct. 23, 1974, Ser. No. 517,268
Int. Cl.² G01N *33/16*
U.S. Cl. 424—1.5 **16 Claims**

1. A composition useful as a reagent for carrying out multiple radioimmunoassays simultaneously for a plurality of desired test substances wherein a positive result in such assays indicates the presence of one or more of the desired test substances which composition comprises (i) a plurality of labeled antigens corresponding to the test substances to be detected, and (ii) antibodies directed to each of said antigens, wherein said labeled antigens and their respective antibodies are present in concentrations selected to produce a response curve for each antigen which is substantially superimposable upon the response curves of all the other antigens present in said composition.

3,952,092

ORAL PREPARATIONS

William Henry Bowen, 50 Hillcrest Road, Purley, Surrey, and Sidney Alan Barker, 1 Abdon Ave., Selly Oak, Birmingham, both of England

Filed June 7, 1973, Ser. No. 367,892
Claims priority, application United Kingdom, June 9, 1972, 27048/72
Int. Cl.² A61K 7/28, 7/18
U.S. Cl. 424—50 10 Claims

1. A method of inhibiting dental caries which comprises applying to the teeth a composition comprising an anti-caries effective amount of an anticaries agent bound to a lectin.

3,952,093

NOVEL ATTRACTANT COMPONENTS FOR MALES OF THE TOBACCO BUDWORM MOTH

Wendell L. Roelofs, 652 W. North St.; Ada S. Hill, 575 White Springs Road; Thomas C. Baker, 432 Castle St., and Ring T. Carde, Glass Factory, Bay Road, all of Geneva, N.Y. 14456

Division of Ser. No. 460,633, April 12, 1974, Pat. No. 3,917,711. This application Apr. 4, 1975, Ser. No. 565,310
Int. Cl.² A01N 17/14
U.S. Cl. 424—84 6 Claims

1. An insect attractant for males of the species virescens comprising from 200 to 2 parts of cis-11-hexadecenal per 1 part of cis-9-tetradecenal.

3,952,094

ANTIBACTERIAL COMPOSITIONS

Martin Cole, and Robert Sutherland, both of Dorking, England, assignors to Beecham Group Limited, Great Britain

Division of Ser. No. 505,741, Sept. 13, 1974. This application Jan. 17, 1975, Ser. No. 541,845
Claims priority, application United Kingdom, Sept. 28, 1973, 45504/73
Int. Cl.² A61K 35/00
U.S. Cl. 424—114 7 Claims

1. An antibacterial pharmaceutical composition which comprises an antibacterially effective amount of a mixture of 2-isopropoxynaphth-1-yl penicillin, or a physiologically acceptable salt thereof, and cephalothin, or a physiologically acceptable salt thereof, in a ratio of 2:1 to 1:2 in combination with a pharmaceutically acceptable vehicle.

3,952,095

NOVEL ANTIBIOTIC AND A PROCESS FOR THE PRODUCTION THEREOF

Robert L. Hamill, New Ross; William M. Stark, and Donald C. DeLong, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 259,334, June 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 118,674, Feb. 25, 1971, abandoned. This application Dec. 17, 1974, Ser. No. 533,570
Int. Cl.² A61K 35/00
U.S. Cl. 424—118 4 Claims

1. The antibiotic substance A-4696, or a pharmaceutically acceptable acid addition salt thereof, which antibiotic in the form of its hydrochloride salt is a white, crystalline substance soluble in water and insoluble in the common organic solvents, has a melting point greater than 220° C.; has an electrometric titration curve in 66 percent aqueous dimethylformamide approximating a straight line with a slope of about 0.14 from pH 6.0 to pH 13.0; has the approximate composition of 51.33 percent carbon, 5.79 percent hydrogen, 5.46 percent nitrogen, 30.96 percent oxygen, and 6.72 percent chlorine; has an apparent molecular weight of 1158, as determined by the vapor pressure osmotic method; had a specific rotation, $[\alpha]_D^{25}$ −42.3° (c=1, H_2O); has an ultraviolet absorption spectrum in acidic and neutral solutions at 276 mμ. with an extinction coefficient $E_{1cm}^{1\%}$ of 65; and has the following distinguishable bands in its infrared absorption spectrum when determined in a mineral oil mull: 3.0, 5,8, 5.9, 6.03, 6.15, 6.28, 6.63, 6.85, 7.27, 7.75, 8.1, 8.25, 8.9, 9.4, 9.9, and 10.1 microns.

3,952,096

MIXTURE OF CALCIUM CARBONATE AND CALCIUM-α-p-CHLOROPHENOXYISOBUTYRATE AS AN ANTIHYPERLIPEMIC AGENT

John Carl Godfrey, Syracuse; John Edwin MacNintch, Liverpool, and Joseph Rubinfeld, Northport, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed June 15, 1973, Ser. No. 370,506
Int. Cl.² A61K 31/19, 33/00
U.S. Cl. 424—156 10 Claims

1. The method of reducing an elevated concentration in the blood of cholesterol, triglycerides or low density lipoproteins which comprises orally administering to a hyperlipidemic patient an effective lipid-lowering dose of a mixture comprising one part by weight of calcium α-p-chlorophenoxyisobutyrate and about 0.5 to 4 parts by weight of calcium carbonate.

3,952,097

NUCLEASE-RESISTANT HYDROPHILIC COMPLEX OF POLYRIBOINOSINIC-POLYRIBOCYTIDYLIC ACID

Hilton B. Levy, Bethesda, Md., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Sept. 27, 1974, Ser. No. 509,966
Int. Cl.² A61K 37/00; C07C 103/52; C07H 19/00
U.S. Cl. 424—177 6 Claims

1. An injectable preparation in a pharmaceutically acceptable aqueous carrier of a nuclease-resistant hydrophilic complex of relatively high molecular weight polyriboinosinic-polyribocytidylic acid, relatively low molecular weight poly-l-lysine and carboxymethylcellulose.

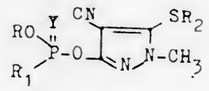
3,952,098

COMPOSITIONS AND METHODS OF COMBATTING INSECTS AND ACARIDS USING PYRAZOLO-(THIONO)-PHOSPHORIC(PHOSPHONIC) ACID ESTERS

Hellmut Hoffmann, Wuppertal-Elberfeld; Ingeborg Hammann, Cologne, and Gunter Unterstenhofer, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 165,390, July 22, 1971, Pat. No. 3,839,355. This application June 29, 1973, Ser. No. 375,209
Claims priority, application Germany, July 30, 1970, 2037853
Int. Cl. A01n 9/22, 9/36
U.S. Cl. 424—200 11 Claims

1. A method of combating insects or acarids which comprises applying to said insects, acarids or a habitat thereof an insecticidally or acaricidally effective amount of a compound of the formula



in which
R is alkyl of 1–6 carbon atoms,
R_1 is alkyl or alkoxy of 1–6 carbon atoms,
R_2 is alkyl of 2–4 carbon atoms, and
Y is oxygen or sulfur.

3,952,099

DERMATOLOGICAL COMPOSITIONS

Donald Edward Smith, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 340,787, March 13, 1973, Pat. No. 3,896,238, and a continuation-in-part of Ser. No. 241,404, April 5, 1972, abandoned. This application Jan. 17, 1975, Ser. No. 541,902
Int. Cl.² A61K 7/48, 47/00
U.S. Cl. 424—227 12 Claims

1. A method for treating acne lesions, comprising applying thereto an effective amount of an anti-acne composition comprising from about 0.1% to about 1% by weight of sucrose monooleate, from about 0.1% to about 8% by weight of decyl methyl sulfoxide, from about 30% to about 70% by weight of ethyl alcohol and from about 0.1% to about 1% by weight of a member selected from the group consisting of tetracycline hydrochloride, epi-tetracycline hydrochloride and an equilibrium mixture of tetracycline hydrochloride and epi-tetracycline hydrochloride.

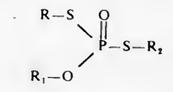
3,952,100

PHOSPHORUS NEMATOCIDES

Keimei Fujimoto, Kobe; Kunio Mukai, Amagasaki; Takaji Yamamoto, Fujisawa, and Kouichi Ishibe, Kanagawa, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Division of Ser. No. 319,236, Dec. 29, 1972, Pat. No. 3,845,173. This application July 25, 1974, Ser. No. 491,759
Claims priority, application Japan, Dec. 30, 1971, 47-1750; Dec. 30, 1971, 47-1751; Jan. 8, 1972, 47-4853
Int. Cl.² A01N 9/36
U.S. Cl. 424—219 7 Claims

1. A nematocidal composition containing, as an active ingredient, a nematocidally effective amount of a phosphorodithiolate compound of the formula:



wherein R_1 is methyl or ethyl, R_2 is chlorine- or bromine-substituted allyl, and R is n-propyl, and a conventional inert carrier.

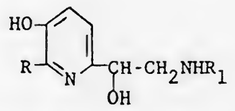
3,952,101

α-AMINO METHYL-5-HYDROXY-2-PYRIDINEMETHANOLS

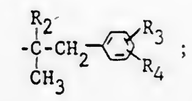
Timothy Yu-Wen Jen, Broomall, Pa., and Carl Kaiser, Haddon Heights, N.J., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Apr. 14, 1975, Ser. No. 568,079
Int. Cl.² C07D 213/38; A61K 31/44
U.S. Cl. 424—263 13 Claims

1. A chemical compound of the formula:



or a pharmaceutically acceptable acid addition salt of said compound, wherein:
R is hydrogen, methyl or methanesulfonylmethyl;
R_1 is branched chain lower alkyl of from 3 to 5 carbon atoms, cycloalkyl or cycloalkylmethyl, the cycloalkyl moiety having from 3 to 6 carbon atoms, or



R_2 is hydrogen or methyl; and
R_3 and R_4 are hydrogen, hydroxy, methoxy or, taken together in adjacent positions, methylenedioxy.

11. The method of producing β-adrenergic stimulant activity which comprises administering internally to animals in need thereof an amount sufficient to produce said activity of a chemical compound as defined in claim 1.

3,952,102

INSECTICIDAL COMPOSITION FOR ULTRA LOW VOLUME APPLICATION

Konrad Albrecht, Fischbach, Taunus; Heinz Frensch, Frankfurt am Main, and Klaus-Detlev Bock, Kelsterbach, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 26, 1974, Ser. No. 536,363
Claims priority, application Germany, Dec. 28, 1973, 2364892
Int. Cl.² A01N 9/12
U.S. Cl. 424—276 3 Claims

1. An insecticidal composition for ultra low volume application, which comprises
a. from 15 to 35 weight % of 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepine-3-oxide,
b. from 60 to 84.5 weight % of a solvent mixture of 1.5 to 2.5 parts by weight of a vegetable oil consisting of rapeseed, cottonseed, peanut, sunflower, or safflower oil, and from 0.5 to 1.5 parts by weight of an aromatic hydrocarbon having a boiling range of from 170° to 250°C consisting of one or more alkyl benzenes having 9 to 11 carbon atoms; or 1-or2-methyl naphthalene; and
c. from 0.5 to 6 weight % of an epoxide selected from the group consisting of epichlorohydrin, epoxypropane, styrene oxide, phenylepoxy propane, and an epoxide of an unsaturated vegetable oil.

3,952,103

HERPES VIRAL INFECTION TREATMENT

James B. Mercer, 13109 W. 95th St., Lenexa, Kans. 66215

Continuation-in-part of Ser. No. 370,952, June 18, 1973, Pat. No. 3,856,966. This application Oct. 15, 1974, Ser. No. 514,798
Int. Cl.² A61K 31/415
U.S. Cl. 424—273 4 Claims

1. A method for treating a human host having a herpes viral infection selected from the group consisting of at least one of the following; zoster, simplex, hominus and mononeucleosis comprising:
a. repeatedly orally administering anti-herpes viral infection effective amounts of a pharmaceutical composition which contains, as an active ingredient, 1-(β-hydroxyethyl)-2-methyl-5-nitromidazole to a human host in need of said treatment.

3,952,104
BENZOPYRAN-2-CARBOXYLIC ACIDS IN THE PREVENTION OF ASTHMATIC SYMPTOMS

Hugh Cairns; Albert Chambers, and Thomas Brian Lee, all of Loughborough, England, assignors to Fisons Limited, England

Division of Ser. No. 172,214, Aug. 16, 1971, Pat. No. 3,786,071. This application July 26, 1973, Ser. No. 382,642
Claims priority, application United Kingdom, Aug. 25, 1970, 40777/70; Sept. 15, 1970, 43984/70; Dec. 11, 1970, 58860/70; June 3, 1971, 18807/71
Int. Cl.² A61K *31/35*
U.S. Cl. 424—283 **38 Claims**

1. A composition useful for the prevention of asthmatic symptoms comprising an effective amount of

a. 8-allyl-5-(2-hydroxypropoxy)-4-oxo-4H-1-benzo-pyran-2-carboxylic acid
b. 5-(3-methyl-n-butoxy)-8-n-propyl-4-oxo-4H-1-benzopyran-2-carboxylic acid
c. 8-allyl-5-(3-methyl-n-butoxy)-4-oxo-4H-1-benzopyran-2-carboxylic acid
d. 6,8-diallyl-5-hydroxy-4-oxo-4H-1-benzopyran-2-carboxylic acid
e. 7-(2-ethoxyethoxy)-6-hexyl-4-oxo-4H-1-benzopyran-2-carboxylic acid
f. 8-ethyl-5-tetrahydrofurfuryloxy-4-oxo-4H-1-benzopyran-2-carboxylic acid
g. 8-allyl-5-tetrahydrofurfuryloxy-4-oxo-4H-1-benzopyran-2-carboxylic acid
h. 8-ethyl-5-(3-methyl-n-butoxy)-4-oxo-4H-1-benzopyran-2-carboxylic acid
i. 6,8-diallyl-4-(3-methyl-n-butoxy)-4-oxo-4H-1-benzopyran-2-carboxylic acid
j. 6,8-diallyl-4-oxo-4H-1-benzopyran-2-carboxylic acid
k. 5-(3-ethyl-n-butoxy)-4-oxo-4H-1-benzopyran-2-carboxylic acid
l. 5-(3-ethyl-n-hexyloxy)-4-oxo-4H-1-benzopyran-2-carboxylic acid
m. 5-n-hexyloxy-4-oxo-4H-1-benzopyran-2-carboxylic acid
n. 5-n-pentyloxy-4-oxo-4H-1-benzopyran-2-carboxylic acid
o. 6,8-diethyl-5-(3-methyl-n-butoxy)-4-oxo-4H-1-benzopyran-2-carboxylic acid
p. 6,8-diallyl-5-tetrahydrofurfuryloxy-4-oxo-4H-1-benzopyuran-2-carboxylic acid
q. 6,8-diethyl-5-tetrahydrofurfuryloxy-4-oxo-4H-1-benzopyran-2-carboxylic acid
r. 6,8-dimethyl-5-(3-methyl-n-butoxy)-4-oxo-4H-1-benzopyran-2-carboxylic acid

or a pharmaceutically acceptable salt thereof as active ingredient, in combination with a pharmaceutically acceptable carrier.

3,952,105
ORGANOMETALLIC AGRICULTURAL FUNGICIDAL COMPOSITIONS AND METHODS FOR MAKING AND USING SAME

Kenneth P. Dorschner, Vienna, Va., assignor to SCM Corporation, New York, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,592
Int. Cl.² A01N *9/00, 17/08*
U.S. Cl. 424—287 **8 Claims**

1. In a fungicidal composition having a fungicidally active but phytotoxic triorganostannoxy-substituted ester of a Group IVB metal, the improvement rendering said ester essentially nonphytotoxic which comprises:

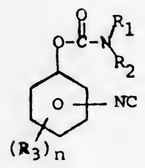
an intimate mixture of said ester with finely divided neutral to alkaline clay in the proportion of about one to four parts of said ester per part of said clay.

3,952,106
ISOCYANOPHENYL CARBAMATES

David L. Booth, Crystal Lake, Ill., assignor to Morton-Norwich Products, Inc., Chicago, Ill.

Division of Ser. No. 277,053, Aug. 1, 1972, Pat. No. 3,862,976. This application Nov. 11, 1974, Ser. No. 522,345
Int. Cl.² A01N *9/06, 9/20*
U.S. Cl. 424—300 **10 Claims**

1. A process for the control of insect and acarid infestation which comprises applying to the locus of said infestation a pesticidally effective amount of an isocyanophenyl carbamate of the general formula



in which

R_1 and R_2 are each hydrogen, alkyl (C_1–C_4);
R_3 is alkyl (C_1–C_6), and mixtures thereof;
n is an integer from 1 to 3 inclusive.

3,952,107
GROWTH PROMOTION USING A CERTAIN GLYCERIDE MIXTURE

Fumio Shibata, Nagoya, Japan, assignor to Nihon Nohyaku Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1974, Ser. No. 456,746
Claims priority, application Japan, Apr. 4, 1973, 48-38524
Int. Cl.² A61K *31/22*
U.S. Cl. 424—311 **5 Claims**

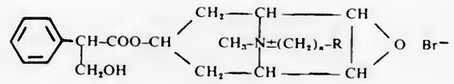
1. A growth-promoting feed additive for domestic cattle comprising a glyceride mixture consisting of mono-, di- and triglycerides of acetic, propionic and butyric fatty acids in which the mon-, di- and triglyceride for each fatty acid is in the molar ratio of 1:1:1, in which glyceride mixture the molar equivalent ratio range of the propionic acid residue to the sum of the molar equivalents of the acetic and butyric acids is 0.3–3.0.

3,952,108
SCOPOLAMINE DERIVATIVES FOR TREATING ULCERS AND SPASMS

Silvano Casadio, and Arturo Donetti, both of Milan, Italy, assignors to Istituto de Angeli S.p.A., Milan, Italy

Division of Ser. No. 350,927, April 13, 1973, Pat. No. 3,853,886. This application July 22, 1974, Ser. No. 490,266
Claims priority, application United Kingdom, Apr. 18, 1972, 17920/72
Int. Cl.² A61K *31/46*
U.S. Cl. 424—265 **14 Claims**

1. A pharmaceutical composition useful for treating gastric ulcers or spasms which comprises an effective amount of at least one scopolamine derivative having the following general formula:



wherein R represents a cycloalkyl group containing up to five carbon atoms, a lower alkyl-substituted cycloalkyl group containing up to six carbon atoms or an epoxyethyl group and *n* is 1 or 2 and a solid pharmaceutically acceptable excipient or carrier.

3,952,109
LOW SALT PROTEIN HYDROLYZATES

Ganta V. Rao, Hutchinson, and Oliver B. Gerrish, Atchison, both of Kans., assignors to Far-Mar-Co., Inc., Hutchinson, Kans.

Continuation-in-part of Ser. No. 332,200, Feb. 13, 1973, abandoned. This application Mar. 5, 1975, Ser. No. 555,450
Int. Cl.² A23L *1/231*
U.S. Cl. 426—48 **39 Claims**

1. A process for preparing substantially salt-free protein hydrolyzate flavor enhancers comprising the steps of:

a. hydrolyzing protein in an acid;
b. removing excess acid;
c. liquefying starch; and
d. admixing the hydrolyzed protein, the liquefied starch and an enzyme selected from the group consisting of amyloglucosidase and β-D glucoside glucohydrolyase at a pH in the range 3.5 to 5 and a temperature in the range 40° to 75°C, whereby said enzyme and said liquefied starch react to produce reducing sugars which in turn react with said hydrolyzed protein to form substantially salt-free protein hydrolyzates.

3,952,110
DRY MIX FOR COATING FOODS

Ronald M. Knight, Cobourg; Elwood J. Thompson, Peterborough, and Jean E. Cain, Cobourg, all of Canada, assignors to General Foods, Limited, Toronto, Canada

Filed July 1, 1974, Ser. No. 484,534
Claims priority, application Canada, July 3, 1973, 175471
Int. Cl.² A23L *1/01*
U.S. Cl. 426—296 **8 Claims**

1. A dry mix composition for coating proteinaceous foods consisting essentially of a farinaceous ingredient and a buffering agent in an amount effective to maintain a pH in the range of about 5.2 to 6.8 of said foods, said buffering agent present in said composition in an amount from about 1 to about 30% by weight.

3,952,111
MEAT EXTENDER AND PROCESS OF MAKING THE SAME

Norman W. Desrosier, 400 Sandwich St., Plymouth, Mass. 02360

Filed July 15, 1974, Ser. No. 488,555
Int. Cl.² A23J *3/00*
U.S. Cl. 426—302 **24 Claims**

1. A process of making a meat extender comprising

moisture-cooking wheat kernels until the enzymes therein are inactivated and said kernels become chewy and lose their raw taste;
drying the cooked material to a moisture content of about 20 to 30%;
kneading the dried material until the gluten structure thereof is developed but not destroyed;
grinding the kneaded material to a ground meat texture; and
drying the ground material to a moisture content of about 12 to 18%.

3,952,112
METHODS FOR TREATING DRIED FRUITS TO IMPROVE SOFTNESS RETENTION CHARACTERISTICS

Charles V. Fulger, and Daryl R. Schaller, both of Battle Creek, Mich., assignors to Kellogg Company, Battle Creek, Mich.

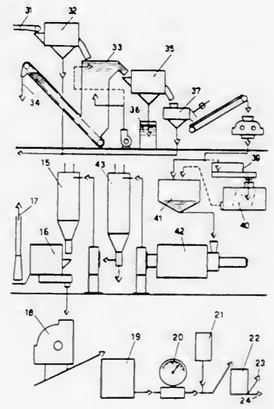
Filed July 11, 1973, Ser. No. 378,123
Int. Cl.² A23B *7/08, 7/14*
U.S. Cl. 426—321 **23 Claims**

1. Method for improving softness retention characteristics of dried fruits comprising the steps of first immersing the fruit in an edible liquid for a period of time sufficient to remove surface air bubbles therefrom, and then treating the fruit with a water soluble edible humectant until the humectant content of the fruit is in excess of 4%.

3,952,113
SYSTEM FOR RECOVERING AND TREATING STOCKFEED FROM URBAN WASTE MATERIALS

Manlio Cerroni, Via Bruxelles 53, Rome, Italy

Division of Ser. No. 358,516, May 9, 1973, Pat. No. 3,891,104. This application Apr. 24, 1974, Ser. No. 463,767
Claims priority, application Italy, Feb. 22, 1973, 48411/73; Apr. 20, 1973, 49595/73
Int. Cl.² A23K *1/00*
U.S. Cl. 426—456 **4 Claims**



1. Improvements in the process for the recovery of a base-product for stockfeed from solid urban waste material from which paper-pulp has been removed and which includes edible components, mold, light inert components, and heavy inert components, comprising the steps of washing the material for removing mold and at least some of the light inert components, conveying the remaining washed material into the upper end of a chamber containing water and directing water into the chamber for providing a rising stream of water for settling heavy inert components downwardly through the rising stream of water and floating light material including light inert components and edible components having a specific gravity in a range of up to only slightly greater than 1 to the surface of the water in the chamber, removing the floating light material from the chamber, draining water from the removed light material, pressing the light material for providing further removal of water, drying the light material, loosening the dried light material, exposing the loosened dried light material to cyclonic separation and screening the material which has been cyclonically separated for separating the edi-

ble components from the remaining light inert components, and collecting the edible components.

3,952,114
1,4-CYCLOHEXADIENE-1-CARBOXALDEHYDE SYN-OXIME SYNTHETIC SWEETENING AGENTS

Edward M. Acton; Michael W. Lerom, and Herbert Stone, all of Menlo Park, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Continuation of Ser. No. 477,995, June 10, 1974, Pat. No. 3,919,318. This application Aug. 25, 1975, Ser. No. 607,266
Int. Cl.² A23L *1/236*
U.S. Cl. 426—548 **3 Claims**

2. The method of sweetening a comestible which comprises adding 1,4-cyclohexadiene-1-carboxaldehyde syn-oxime, 4-methyl-1,4-cyclohexadiene-1-carboxaldehyde syn-oxime, 4-methoxymethyl-1,4-cyclohexadiene-1-carboxaldehyde syn-oxime, or 4-(1-methoxyethyl)-1,4cyclohexadiene-1-carboxaldehyde syn-oxime.

3,952,115
FORTIFICATION OF FOODSTUFFS WITH N-ACYL DERIVATIVES OF SULFUR-CONTAINING L-AMINO ACID ESTERS

Ralph Anthony Damico, and Robert Wayne Boggs, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

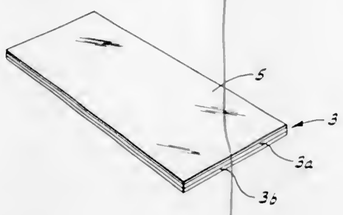
Filed Apr. 2, 1975, Ser. No. 561,737
Int. Cl.² A23L *2/38, 1/38, 1/30*; A23J *3/00*
U.S. Cl. 426—590 **12 Claims**

1. A proteinaceous foodstuff comprising an edible sulfur-containing amino acid deficient protein and a nutritionally supplemental amount of a sulfur-containing amino acid derivative selected from the group consisting of N-acyl L-methionine ester, N,N'-diacyl L-cystine ester and N-acyl L-cysteine ester, wherein the acyl group is derived from fatty acids having from 1 to 9 carbon atoms, and the ester group is derived from fatty alcohols having from 1 to 22 carbon atoms.

3,952,116
PROCESS FOR FORMING ELECTRICAL RESISTANCE HEATERS

George Trenkler, East Providence, and Hans A. Stoeckler, Woonsocket, both of R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 17, 1974, Ser. No. 506,679
Int. Cl.² B05D *5/12*
U.S. Cl. 427—122 **6 Claims**



1. A process for forming an electrical resistance heater on a metal substrate comprising:
applying to a surface of the substrate at least one layer of a composition of a polymer selected from the group consisting of a polyamic acid and a polyamide-imide polymer and a solvent therefor;
heating the substrate and layer to remove the solvent and to effect only partial curing of the polymer thereby to form a partially cured insulating layer;
applying to said insulating layer a composition of a mixture of a polymer selected from the group consisting of a polyamic acid and a polyamide-imide polymer, a solvent therefor and flakes of an electrical conductivity-modifying material thereby to form an overlying layer having an electrical conductivity substantially greater than that of the insulating layer; and
heating the substrate, insulating layer and overlying layer for a period of time and at a temperature sufficient to at least partially cure said overlying layer.

3,952,117
METHOD OF DESENSITIZING

Akio Miyamoto, Fujimiya, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

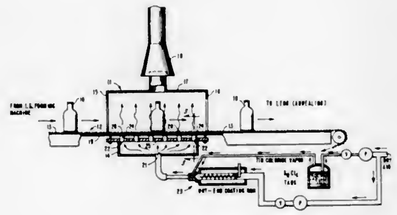
Filed Aug. 8, 1974, Ser. No. 495,748
Claims priority, application Japan, Aug. 8, 1973, 48-88984
Int. Cl.² B41M *3/12*
U.S. Cl. 427—150 **6 Claims**

1. A method for desensitizing an electron accepting color developer compound used with a substantially colorless electron donor organic color former compound to produce a color forming reaction in a pressure-sensitive or heat-sensitive transfer system comprising contacting said color developer with a desensitizer comprising polypropylene glycol having an average molecular weight of from about 400 to 5,000.

3,952,118
METHOD FOR HOT-END COATING OF GLASS CONTAINERS

Michael A. Novice, Elmira, N.Y., assignor to Dart Industries Inc., Los Angeles, Calif.

Continuation of Ser. No. 280,376, Aug. 14, 1972, abandoned. This application Oct. 17, 1974, Ser. No. 515,744
Int. Cl.² C03C *17/22*; B05D *3/02*
U.S. Cl. 427—255 **4 Claims**

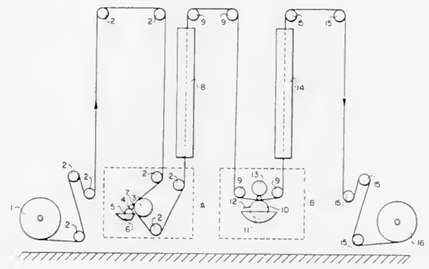


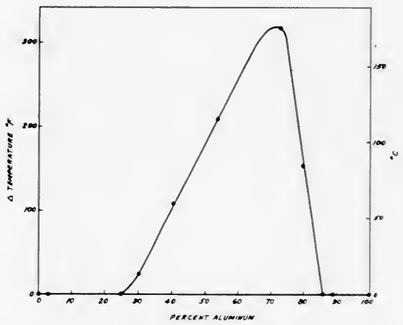
1. A method of continuously coating a plurality of elongate upstanding vitreous articles carried by conveyor means with a coating material comprising a metallic halide of a metal selected from the group consisting of iron, tin, titanium, vanadium and zirconium comprising:
A. introducing said articles into a coating area beneath which is positioned a plurality of discretely located inlet ports, said articles being above the pyrolysis temperature of said coating material but below the melting temperature of said vitreous material;
B. orienting and retaining said conveyor means and articles carried thereby in a predetermined path of movement so that said inlet ports are positioned underneath said articles and along the lateral extremities of said path of movement in approximate alignment with the article sidewalls;
C. introducing said coating material to a plurality of outlet nozzles each of which is in communication with a single respective inlet port and passing said material upwardly through said outlet nozzle and inlet ports thereby directing the flow of said material around said articles;
D. maintaining said coating material within said area and in contact with the articles passing therethrough; and,
E. venting reaction products and/or residue of said coating material from said coating area in a controlled manner so as to prevent contamination adjacent said area.

3,952,119
PROCESS FOR COLORING ABSORPTIVE, ROUGH SURFACE PAPER

Helmut Bühler, Essen, Germany, assignor to Th. Goldschmidt AG, Germany

Continuation of Ser. No. 376,525, July 5, 1973, abandoned. This application Sept. 25, 1974, Ser. No. 509,114
Claims priority, application Germany, July 12, 1972, 2234205
Int. Cl.² B41M *1/10, 1/18*
U.S. Cl. 427—382 **6 Claims**





1. A process for coloring a web of rough surface paper having elevated areas and depressed areas to produce a solid-color paper having a layer of a single, predetermined coloring agent thereon, as thin as possible and optically uniform over its entire surface, comprising coating said depressed areas by providing a magnetic coloring roller which is rotatable, attractable by a magnet, free to move in a direction perpendicular to the line of travel of said web and carries a film of said coloring agent and a magnet impression roller which is rotatable and fixed against movement in a direction perpendicular to said web, passing said web between said magnetic rollers and simultaneously drawing said magnetic roller against said web by the magnetic attraction of said magnet roller to deposit said coloring agent in said depressed areas of said web; and coating said elevated areas by providing a second coloring roller which is rotatable, is fixed against movement in a direction perpendicular to said web and carries a film of said coloring agent on a pattern of closely spaced, small areas having a height differing from the general surface thereof and a second impression roller which is rotatable and is fixed against movement in a direction perpendicular to said web and passing said web under pressure between said second coloring and impression rollers to deposit said coloring agent on said elevated portions of said web.

3,952,120
ALUMINUM-ZINC COATED LOW-ALLOY FERROUS PRODUCT AND METHOD

James B. Horton, Bethlehem, and Angelo R. Borzillo, Norristown, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed May 31, 1974, Ser. No. 475,075
Int. Cl.² C22C *21/10*; C23C *1/02*
U.S. Cl. 427—433 **5 Claims**

1. An improved method of applying an aluminum-zinc coating from a hot-dip bath to a ferrous substrate which substrate is:
a. at least ¼ inch in thickness,
b. low in alloy content,
c. a manufactured product from the groups consisting of structural sections, plates, bars, castings, forgings and machined shapes,
to form a smooth bright aluminum-zinc coating at least 1 to 2 mils in thickness having an iron containing intermetallic alloy layer between the substrate metal and the outer aluminum-zinc coating, said alloy layer having:
i. a thickness of between ¼ mil and 1½ mils and being of no more than about intermediate thickness with respect to the coating as a whole, and
ii. having a substantially smooth upper surface no substantial portion of which, excluding localized projections, extends to the surface of the coating to disturb the smoothness and brightness of the outer surface of the coating, comprising:
A. cleaning the ferrous substrate and heating to at least 800° F.,
B. immersing said ferrous substrate in a molten aluminum-zinc bath comprised of 25 to 85% by weight aluminum, silicon in an amount not less than 0.7% by weight of the aluminum content, the balance substantially zinc,
C. allowing said ferrous substrate to remain in said bath in contact with the molten aluminum-zinc in said bath for a period of from 20 seconds to 5 minutes, and
D. withdrawing said ferrous substrate from the molten aluminum-zinc bath to permit solidification of an aluminum-zinc coating having a smooth, bright, adherent coating.

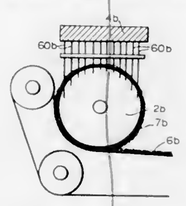
3,952,121
FELTED WEB AND METHOD OF MAKING THE SAME

Richard Dilo, Eberbach, Neckar, Germany, assignor to Rontex America, Inc., Chelmsford, Mass.

Division of Ser. No. 116,030, Feb. 17, 1971, Pat. No. 3,758,926, which is a continuation-in-part of Ser. No. 882,391, Dec. 1, 1969, abandoned, which is a division of Ser. No. 741,492, July 1, 1968, Pat. No. 3,530,557. This application Aug. 8, 1973, Ser. No. 386,552
Int. Cl.² B32B *1/08*
U.S. Cl. 428—36 **6 Claims**

1. Tubing consisting of a plurality of needled helically wound coaxial turns of at least one fibrous web of non-woven fabric, each turn overlapping at least one preceding turn and being overlapped by at least one succeeding turn, a plurality

of fibers integral with each turn angularly extending from said turn inwardly through at least one subjacent turn, said turns



being fastened to each other by said angularly inwardly extending fibers.

3,952,122

PRINTING PAPER WITH A LEADER ELEMENT ATTACHED TO THE END THEREOF

Alain de Kermadec, Versailles, and Paul Vilella, Bruyeres-le-Chatel, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, France

Filed May 21, 1974, Ser. No. 471,884

Claims priority, application France, May 21, 1973, 73.18342

Int. Cl.² B32B *3/02*; **B41J** *15/04*

U.S. Cl. 428—77 **5 Claims**



1. Device for loading paper in a printing machine comprising a leader, a strip of white paper having a first end fastened to a first portion of said leader, and a strip of carbon paper having a first end fastened to a second portion of said leader such that said strip of white paper is superimposed on said strip of carbon paper, wherein said leader includes a third intermediate portion separating said first and second portions of said leader.

3,952,123

INJECTION MOLDING A PLASTIC ARTICLE HAVING A DENSITY APPROXIMATING WOOD

Dror Kopernik, Chicago, Ill., assignor to Turner Manufacturing Company, Chicago, Ill.

Continuation-in-part of Ser. No. 237,473, March 23, 1972, abandoned, which is a division of Ser. No. 460,791, April 15, 1974. This application Apr. 19, 1974, Ser. No. 462,332

Int. Cl.² B29D *27/00*; **B29F** *1/00*

U.S. Cl. 428—178 **3 Claims**



1. An elongated, synthetic board, molded and formed wholly of a foamed thermoplastic material, that is adapted to be ornamentally shaped as provided by the mold and which has wood-like properties permitting its substitution and use in established processes of manufacture of wood-like frames for pictures and the like, said board being of relatively small thickness and great length as compared to the width thereof and being formed of cellulated polystyrene foam, said board having a continuous relatively denser surface and a lesser dense cellular interior, the density varying continuously between lesser density and greater density and without discrete delineation between the surface and the interior, with the average bulk density of the entire synthetic board being in the range of 24.7 – 33.5 lbs. per cubic foot, and the cellular interior being free of large voids and comprising a large plurality of small pores having a range of smallness bounded at an uppermost value of substantially no greater than three-sixteenths inch in diameter so as to provide a character such that the board can be readily fastened in the same manner as wood boards.

3,952,124

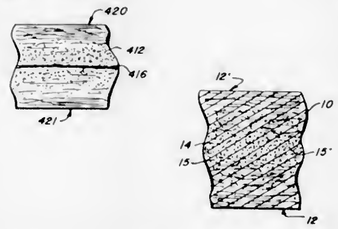
BACK-TO-BACK TRANSITION WEB AND METHOD OF MAKING SAID

Frederick K. Mesek, Downers Grove, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed July 9, 1973, Ser. No. 377,373

Int. Cl.² B32B *5/14, 5/26, 5/28, 31/12*

U.S. Cl. 428—218 **18 Claims**



1. A nonwoven web comprising: two juxtaposed through-bonded half-thickness portions, each half-thickness portion having a major face facing outwardly in said web, including a first nonwoven half-thickness portion being characterized by a given overall concentration of long fibers and short fibers, said first half-thickness portion having long fibers in excess of said given overall concentration at one major face and having short fibers in excess of said given overall concentration at the other major face, and having a transition of fiber concentrations between said major faces, and a second nonwoven half-thickness portion bonded to said first half-thickness portion at said face wherein the concentration of short fibers is in excess of said given overall concentration, said second half-thickness portion having at its outer face a concentration of long fibers in excess of the concentration of long fibers at said bonded face of said first half-thickness portion.

17. A method of forming a multi-layer nonwoven web containing long and short length fibers from two half-thickness portions comprising the steps of: (1) forming a first half-thickness portion by, (*a*) providing a separate mass of each of said fibers; (*b*) individualizing the fibers from each mass at a given overall concentration at closely spaced locations; (*c*) entraining the individualized fibers from each mass in a separate gaseous stream; (*d*) impelling each of the gaseous streams carrying the entrained fibers toward one another; (*e*) combining said gaseous streams by bringing the streams together at an angle at a common point to form a single combined gaseous stream, the space between fibers in each said first and second streams being sufficient to permit the majority of the fibers in each of said streams to intersect and transverse the fibers of the other stream; and (*f*) directing said combined gaseous stream to a moving foraminous surface which permits the passage of gas therethrough, but filters out said fibers and supports them as a web, thereby forming said first half-thickness portion characterized by short fibers in excess of said given overall concentration at one face, and long fibers in excess of said given overall concentration at the other face, and a transition of fiber concentrations between said faces; (2) providing a second half-thickness portion having on at least one major face thereof a higher concentration of long fibers than is present at said short length fiber-enriched face of said first half-thickness portion; and (3) joining said major face of said second half-thickness portion to the short fiber-enriched face of said first half-thickness portion to form said multi-layer web.

3,952,125

ELECTRICALLY INSULATING MATERIAL

Takatoshi Kuratsuji; Hiroo Shima; Takeo Shima; Shoji Kawase, all of Iwakuni; Sakae Shimotsuma, Atsugi, and Masahiro Hosoi, Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 26, 1974, Ser. No. 500,502

Claims priority, application Japan, Aug. 30, 1973, 48-97753

Int. Cl.² C08G *63/12*

U.S. Cl. 428—220 **4 Claims**

1. An electrically insulating material composed of an unstretched film having a thickness of from 70 to 1,000 microns of a substantially linear crystalline polyester at least 85 mol% of which recurring units consist of a hexamethylene naphthalene-2,6-dicarboxylate unit and which has a softening point of from about 212° to about 215°C and an intrinsic viscosity, as measured on its ortho-chlorophenol solution at 35°C., of 0.3 to 2.0.

3,952,126

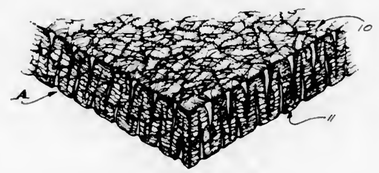
RESILIENT CARPET PADDING SHEET

Christian C. Dycks, 11957 Droxford, Artesia, Calif. 90701

Filed Mar. 20, 1975, Ser. No. 560,203

Int. Cl.² B32B *5/06, 5/16, 11/02*; **D04H** *1/46*

U.S. Cl. 428—235 **7 Claims**



1. A horizontal resilient padding sheet having flat top and bottom surfaces comprising mixed and randomly commingled staple flexible fibers having limited indexes of resiliency and memory, and flexible foam plastic particles having higher indexes of resiliency and memory than the fibers, portions of some of said fibers being turned and drawn into frictional holding and hooked engagement with other of said fibers and into supported and supporting frictional holding engagement about, between, into and through adjacent related particles in the sheet.

3,952,127

EXTRUSION OF PLASTICS NETTING

Brian Orr, Preston, England, assignor to Netlon Limited, England

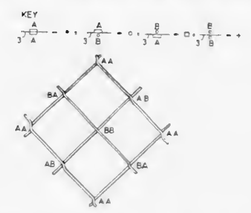
Continuation of Ser. No. 312,757, Dec. 6, 1972, abandoned. This application Feb. 12, 1975, Ser. No. 549,145

Claims priority, application United Kingdom, Dec. 7, 1971, 56788/71

Int. Cl.² D04G *1/00*

U.S. Cl. 428—255 **2 Claims**

1. An extruded integral plastics net structure having mesh members comprising a first set of spaced parallel strands and a second set of spaced parallel strands extending transversely thereto, each set of strands comprising strands of dissimilar cross section, the sets of strands being joined together at at least some of their points of crossing to form a net structure wherein the crossing points along any one strand of the first set comprise (a) integral junction masses of mirror image symmetry about the median plane of the net intersections, and (b) asymmetrical junctions in which there is substantially only linear contact and adhesion between the strands and the crossing points along any of the strands of the second set comprise



the latter form (b) and (c) symmetrical junctions having only linear contact and adhesion between the strands at crossings with no adhesion between the strands.

3,952,128

DURABLE ANTISTATIC AGENT, HYDROPHOBIC FIBERS AND FIBROUS STRUCTURES HAVING DURABLE ANTISTATIC PROPERTY AND METHOD OF MAKING SAME

Yuzuru Ogata, Wakayama, and Yukihisa Niimi, Osaka, both of Japan, assignors to Kao Soap Co., Ltd. and Kanebo, Ltd., both of Tokyo, Japan

Division of Ser. No. 284,863, Aug. 30, 1972, Pat. No. 3,864,317. This application Nov. 4, 1974, Ser. No. 520,379

Claims priority, application Japan, Sept. 1, 1971, 46-67297

Int. Cl.² B32B *27/00*; **D02G** *3/00*

U.S. Cl. 428—265 **19 Claims**

1. Hydrophobic fibers and fibrous structures having durable antistatic property, which contain deposited thereon from 0.1 to 10% by weight of a complex compound of a polyvinyl derivative having quaternary ammonium groups in its side chains, the counter anion thereof being substituted with at least one member selected from the group consisting of anionic surfactants containing 2 to 8 ethylene oxide units, ester-bonded sulfonates, alkylamidocarboxylic acid salts and amphoteric surfactants of carboxylic acid type.

7. A process for producing a hydrophobic fibrous structure having a durable antistatic property, which comprises applying to a fibrous structure an organic solvent solution consisting of 0.05 to 10% by weight of a complex compound of a polyvinyl derivative having quaternary ammonium groups in its side chains, the counter anion thereof being substituted with at least one member selected from the group consisting of anionic surfactants containing 2 to 8 ethylene oxide units, ester-bonded sulfonates, alkylamidocarboxylic acid salts and amphoteric surfactants of carboxylic acid type, 0.05 to 20% by weight of an alcohol and more than 70% by weight of at least one organic solvent selected from the group consisting of hydrocarbons, halogenated hydrocarbons, ethers, ketones and esters, the weight ratio of said alcohol to said complex compound being more than 0.2/1, whereby to deposit on the fibrous structure from 0.1 to 10% by weight of said complex compound.

3,952,129

COATED PRESSURE SENSITIVE COPYING PAPER

Hiroharu Matsukawa, and Takao Hayashi, both of Fujimiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Division of Ser. No. 187,244, Oct. 7, 1971, abandoned. This application Dec. 17, 1973, Ser. No. 425,660

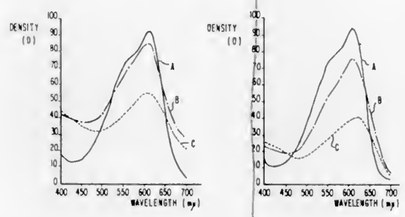
Claims priority, application Japan, Oct. 7, 1970, 45-88137

Int. Cl.² B41M *5/12, 5/16, 5/22*

U.S. Cl. 428—323 **6 Claims**

1. A pressure sensitive copying paper comprising a support having coated thereon a layer of a color-forming composition consisting essentially of leuco dye color former, an aromatic secondary amine selected from the group consisting of N,N'-

diphenyl-p-phenylenediamine, N-phenyl-N'-cyclohexyl-p-phenylenediamine, N-phenyl-N'-isopropyl-p-phenylenediamine, N,N'-disec-butyl-p-phenylenediamine, N,N'-di-beta-naphthyl-p-phenylenediamine, N,N'-bis(1,4-dimethylpentyl)-p-phenylenediamine, N,N'-bis(1-ethyl-3-methylpentyl)-p-phenylenediamine, N-(1-methylpropyl)-N'-phenyl-p-phenylenediamine, N,N'-diphenylamine, p-isopropoxy-diphenyl-amine, phenylalpha-naphthylamine, phenyl-beta-



naphthylamine, a reaction product of acetone with phenyl-beta-naphthylamine, N,N'-diphenylbenzidine, p-methoxy-acetoanilide, hydrazobenzene and N-phenyl-m-anisidine, or derivative thereof, to improve fastness and discoloration resistance of said leuco dye, and an organic solvent, said leuco dye being capable of forming a color when contacted with a color developer selected from the group consisting of a clay, an organic acid and a phenol resin, and a layer of said color developer on the same or a different support.

3,952,130
MINERAL WOOL PAPER

Stephen G. Nason, Arlington Heights, Ill., assignor to United States Gypsum Company, Chicago, Ill.

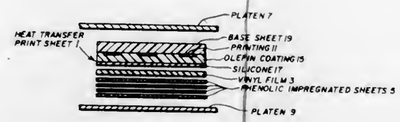
Continuation of Ser. No. 307,688, Nov. 17, 1972, abandoned. This application July 17, 1974, Ser. No. 489,348
Int. Cl.² E05D *15/26*
U.S. Cl. 428—332 **7 Claims**

1. A gypsum wallboard comprising a rehydrated gypsum core and a paper product covering being bonded to at least a surface of said core, said paper product comprising mineral fibers and a gel binder, the binder being characterized as a highly refined, nonfibrous cellulosic gel having a standard TAPPI drainage time of between about 300 to about 1200 seconds per 1.2 gram sheet weight, and a shrinkage value of at least 20% when roller after draining into a cylinder and dried unrestrained at about 250°F, the paper product having a thickness not exceeding about 0.080 inches, and an apparent specific gravity of between about 0.25 and about 0.85, said gel being present in an amount from about 10% to about 50% by weight of total gel fibers.

3,952,131
HEAT TRANSFER PRINT SHEET AND PRINTED PRODUCT

Carl E. Sideman, 30 Carriage Way Drive, Fitchburg, Mass. 01420

Continuation-in-part of Ser. No. 377,948, July 10, 1973, abandoned. This application May 14, 1974, Ser. No. 469,914
Int. Cl.² B32B *13/12, 27/06*; **D06P** *1/76*
U.S. Cl. 428—334 **1 Claim**



1. A heat transfer print sheet comprising:
   a. a base sheet,
   b. printing on said base sheet,
   c. said printing including sublimable dyes capable of subliming at an elevated temperature in a range between 200° and 1000°F.,
   d. a polyolefin coating of less than 5 mils on the printed surface of said base sheet, and
   e. an essentially monomolecular silicone release coating on said olefin coating.

3,952,132
RECORDING SHEET

Hajime Kato; Takao Hayashi, both of Fujinomiya, and Teruo Kobayashi, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

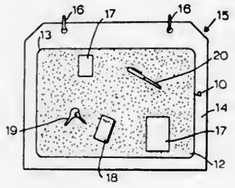
Filed Nov. 16, 1973, Ser. No. 416,544
Claims priority, application Japan, Nov. 21, 1972, 47-116891
Int. Cl.² B41C *1/06*; **B41M** *5/16*
U.S. Cl. 428—341 **7 Claims**

1. A recording sheet for use with a coloring agent to form a colored image comprising a support having thereon a layer of developer agent comprising a reacted mixture of an alkali metal salt of a phenol resin and a water soluble metallic compound selected from the group consisting of a sulfate, a chloride, a nitrate, and an acetate compound of zinc, tin, magnesium, aluminum, or nickel.

3,952,133
PRESSURE-SENSITIVE DISPLAY BOARD

Homer C. Amos, 1086 Marshall Way, and Edward T. Strickland, 816 N. Patencio Road, both of Palm Springs, Calif. 92262

Continuation of Ser. No. 323,659, Jan. 15, 1973, abandoned, which is a continuation of Ser. No. 167,305, July 29, 1971, abandoned, which is a continuation of Ser. No. 835,161, June 20, 1969, abandoned, which is a continuation-in-part of Ser. No. 612,547, Jan. 30, 1967, abandoned. This application Dec. 14, 1973, Ser. No. 424,759
Int. Cl.² C09J *7/02*
U.S. Cl. 428—354 **14 Claims**



1. A rough-surfaced display device adapted to be affixed to a rigid support for the removable attachment of articles for exhibit without the use of extrinsic fasteners, and with freedom from adhesive-retetion upon removal, including in combination: a resilient base at least 0.3 cm thick presenting a rough outer surface for display and having dimensions and elasticity sufficient to recoverably deform at least about 0.16 centimeter upon application of a perpendiculr force of about 70.3 grams to one square centimeter of surface, and a continuous coating of a pressure-sensitive, solid, water-washable tacky adhesive on and conforming to said rough surface to provide a controllable area of contact with a variety of said articles, said adhesive having a Young's modulus of from about 350 to 7000 grams per square centimeter and being water-insoluble and creep-free under load, said coating being water-washable without substantial modification of properties so as to clean the surface thereof by removing acquired contaminating lint, fuzz and dust particles therefrom, said adhesive coating having a surface free energy, as determined by placing a 25 microns strip of polyester terephthalate having a 25 microns layer of said adhesive into full contact, except for a trailing edge, with a polished steel cylinder with a 100-gram weight as a trailing edge and then noting the peel-back under static conditions by the degrees thereof, of between 10° and 40°, and an internal viscosity as determined by taking no more than 2 hours to reach within 5° of its final peelback condition, said device having the following properties by the rolling ball test wherein a steel ball is rolled up a slope and let fall down freely: the ball sticks at about 35° of slope angle and rolls at about 50° of slope angle.

3,952,134
CONTINUOUS FILAMENT PRODUCT

George A. Watson, Davidson, N.C., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 20,444, March 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 382,018, July 13, 1964, Pat. No. 3,328,850. This application June 15, 1971, Ser. No. 153,420
Int. Cl.² B44D *1/22, 5/00*; **D06M** *15/66*
U.S. Cl. 428—391 **15 Claims**

1. A crimped deregistered tow of continuous filaments wherein said filaments are coated with a silicone finish consisting essentially of a free of an antistatic agent.

3,952,135
LAMINATED GLASS WINDOWS FOR VEHICLES

John Edward Priddle, Welwyn; Andrzej Pajaczkowski, Harpenden, and Peter Incledon Vincent, Welwyn Garden City, all of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 323,397, Jan. 15, 1973, abandoned. This application Mar. 5, 1973, Ser. No. 337,846
Claims priority, application United Kingdom, Jan. 18, 1972, 2349/72
Int. Cl.² B32B *17/10*
U.S. Cl. 428—442 **6 Claims**

1. A laminated glass window comprising opposed sheets of glass whose opposed surfaces are adhesively bonded together by means of a copolymer of ethylene which has a melt flow index in grams per 10 minutes of at least 0.1 and not more than 2 and which consists essentially of from 2.65 to 7.75 mole % of copolymerised acrylic or methacrylic acid and in addition sufficient copolymerised methyl methaceylate such that the ester and the acid together constitute at least 6.9 mole % and not more than 14 mole % of the copolymer.

3,952,136
MULTI-LAYER PRODUCT OF METAL AND RESIN, AND ITS PRODUCTION

Kanji Yoshikawa; Yoshiharu Tatsukami, both of Niihama; Shuji Kitamura, Toyonaka; Junji Ono, Takatsuki, and Haruo Tateiwa, Nagoya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

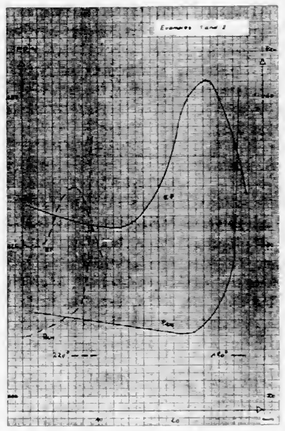
Continuation-in-part of Ser. No. 212,771, Dec. 27, 1971, abandoned. This application Sept. 25, 1974, Ser. No. 509,039
Claims priority, application Japan, Dec. 28, 1970, 46-129969
Int. Cl.² B32B *27/32, 27/30, 27/38*
U.S. Cl. 428—463 **4 Claims**

1. A multi-layer product of metal and resin which comprises a layer of a metal selected from the group consisting of iron, aluminum, zinc, tin, copper and alloys thereof and a layer of a resin adhered thereto, said resin being a copolymer consisting essentially of (a) about 50 to 98% by weight of ethylene unit, (b) about 1 to 25% by weight of at least one unsaturated glycidyl ester monomer unit, and (c) about 1 to 25% by weight of at least one unsaturated ethylenic monomer unit other than ethylene, based on the weight of the copolymer.

3,952,137
METHOD FOR THE FABRICATION OF A BITUMENOUS ROOFING MATERIAL

Hans J. Turler, Zurich, Switzerland, assignor to Ernst Brandli, Winterthur, Switzerland

Filed Apr. 2, 1973, Ser. No. 346,994
Claims priority, application Switzerland, Apr. 4, 1972, 5565/72
Int. Cl.² C08L *91/00, 95/00*; **B32B** *11/00*; **D06N** *5/00*
U.S. Cl. 428—489 **7 Claims**

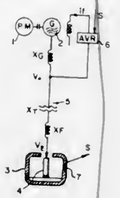


1. In a process of fabricating a covering for roofs from (a) a bituminous material such as bitumen or a tar, (b) a solid polymeric material such as a flexible thermoplastic or elastomeric material and (c) a carrier for said materials, the improvement comprising the steps:
   1. providing said bituminous material in a highly viscous phase,
   2. providing said polymeric material in a comminuted solid phase,
   3. providing a high-speed mixer apparatus having a rapidly-rotating stirrer member,
   4. mixing said polymeric material into said bituminous material in said apparatus with a high shearing mixing action supplied by said rapidly-rotating stirrer member operated at a speed sufficient to supply most of the heat necessary to plasticize and dissolve (2) and continuing said mixing until a liquid mixture is obtained; and
   5. applying the liquid mixture to said carrier.

3,952,138
POWER CONTROL SYSTEM FOR ELECTRIC ARC OR REFINING FURNACE ELECTRICALLY DIRECTLY COUPLED TO INDEPENDENT POWER GENERATING UNIT OR UNITS

Toshio Nanjyo, Yokohama, and Shozo Yasukawa, Yokosuka, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1974, Ser. No. 515,170
Claims priority, application Japan, May 2, 1974, 49-49344
Int. Cl.² H05B 7/144
U.S. Cl. 13—12 10 Claims

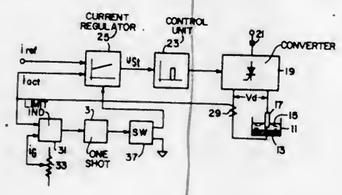


1. A power control system for controlling the power supply to an electric heating load of an electric arc furnace independently of any line source comprising an independent, self-contained power generating unit including a prime mover and generator for furnishing power to said load, means for sensing changes in the operating conditions of said furnace, and means controlled by said sensing means for adjusting the power output of said generator to thereby control the power furnished to said load.

3,952,139
CIRCUIT ARRANGEMENT FOR SUPPLYING ELECTRODE MELTING FURNACES

Peter Bürkle; Wolfgang Timpe, both of Erlangen, and Friedrich Werner Thomas, Niedermittlau, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 20, 1974, Ser. No. 534,831
Int. Cl.² H05B 7/148
U.S. Cl. 13—13 15 Claims

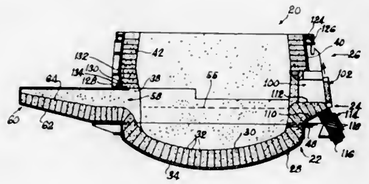


1. A circuit arrangement for use with an electrode melting furnace and a supply network comprising:
- a converter arrangement responsive to said supply network for supplying said furnace;
- control means for influencing said converter;
- current regulator means for influencing said control means, said regulator being influenced by an actual current value which is indicative of the furnace current and by a reference current value and being of the type whose output voltage increases to a maximum when said actual current is less than said reference current; and
- means responsive to said actual current falling below a predetermined minimum value for influencing said regulator such that during the duration of said actual current being below said predetermined minimum value the current produced by said regulator is replaced by a voltage control which limits the voltage output of said regulator upward to an adjustable value.

3,952,140
MODULAR DIVISIBLE BARREL-SHAPED SHELL FOR METALLURGICAL FURNACES

Edgar Wunsche, Oshawa, Canada, assignor to Engineered Metal Products Company, Inc., Birmingham, Ala.

Continuation of Ser. No. 277,142, Aug. 2, 1972. This application Oct. 30, 1974, Ser. No. 519,236
The portion of the term of this patent subsequent to Mar. 18, 1992, has been disclaimed.
Int. Cl.² F27B 14/08
U.S. Cl. 13—35 5 Claims

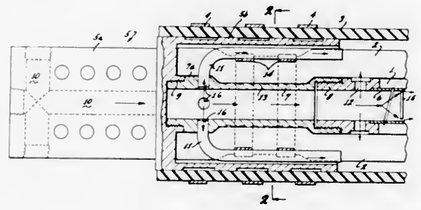


1. An electric arc furnace shell of the vertical axial type for use with molten metal,
- comprising a generally dish-shaped bottom section having a metal bottom casing and a refractory lining,
- said bottom section having a generally vertical axis and being generally circular in horizontal cross section,
- a first generally ring-shaped wall section removably mounted on top of said bottom section and having a first ring-shaped metal casing and a refractory lining,
- said first wall section being removable as a separate unit from said bottom section and being replaceable thereon,
- said first ring-shaped metal casing of said first wall section being separate from said bottom metal casing with a disengageable joint therebetween,
- said first ring-shaped wall section having a generally vertical axis and being generally circular in horizontal cross section,
- and a second generally ring-shaped wall section removably mounted on top of said first wall section and having a second ring-shaped metal casing and a refractory lining,
- said second wall section being removable as a separate unit from said first wall section and being replaceable thereon,
- said second ring-shaped metal casing being separate from said first ring-shaped metal casing with a disengageable joint therebetween,
- said second ring-shaped wall section having a generally vertical axis and being generally circular in horizontal cross section,
- each of said ring-shaped metal casings of said wall sections having its own means for supporting the refractory lining thereof when said wall section is dismounted from the furnace shell,
- whereby the refractory lining may be installed in each wall section prior to the mounting of the wall section on the furnace shell,
- said first and second wall sections constituting a generally ring-shaped side wall portion of said furnace shell,
- said side wall portion being generally barrel-shaped in that said first wall section flares upwardly in its internal horizontal diameter toward a maximum internal diameter,
- while said second wall section flares downwardly toward said maximum internal diameter,
- the barrel-shape of said side wall portion increasing the ability of said side wall portion to withstand electric arc action.

3,952,141
SOCKET-TO-CABLE CONNECTION FOR LIQUID COOLED HEAVY CURRENT CABLE

Ernst Hübner, Osnabruck, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Oct. 17, 1974, Ser. No. 515,516
Claims priority, application Germany, Oct. 20, 1973, 2352785
Int. Cl.² H01B 7/34; H02G 15/22
U.S. Cl. 174—19 7 Claims

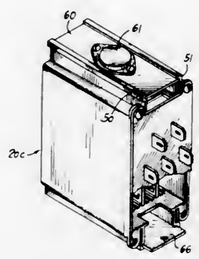


1. Liquid cooled, heavy current cable having an inner tube, an outer tube and conductors inbetween the inner and outer tubes, further having a socket for connection to at least one end of each of the conductors, the socket having a sleeve portion for receiving the conductor ends, the socket having a tube disposed inside of said sleeve portion, the socket tube being separated from but separately connected to the said inner tube of said cable; the improvement comprising:
- a plurality of individual clamping straps for clamping the conductors to said socket tube, whereby each strap fastens all of the conductors to said socket tube.

3,952,142
ELECTRONIC ENCLOSURE

Irving F. Weiss, University Heights, Ohio, assignor to Polycase, Inc., Cleveland, Ohio

Filed Aug. 9, 1974, Ser. No. 496,071
Int. Cl.² H05K 5/00
U.S. Cl. 174—52 R 11 Claims

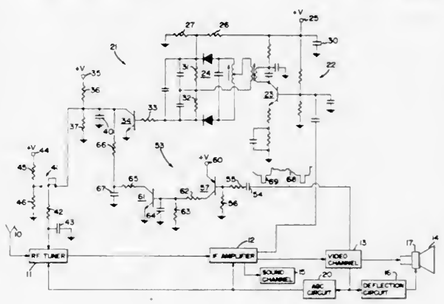


3. An insulating enclosure for electronic components and the like, comprising:
- an electrically nonconductive, unitary, structure having four side walls and one end wall joined in box-like relationship to form a liquid-proof receptacle with an open end,
- a plurality of continuous guide surfaces extending along two opposite side walls and the end wall, substantially parallel to the other two side walls, for receiving edge portions of a thin, flat, board of plate and for spacing the board or plate from said other two side walls, and
- two spaced parallel projections on one side wall externally of the receptacle, each having a groove parallel to and facing the other for slidably receiving and retaining a plate-like member relative to and externally of the receptacle formed by said structure.

3,952,143
WIDE BAND AFC SYSTEM

Karol Siwko, Batavia, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Mar. 31, 1975, Ser. No. 563,578
Int. Cl.² H04N 5/50
U.S. Cl. 178—5.8 AF 13 Claims



4. In a television receiver having a radio frequency tuner including a UHF tuner and a VHF tuner; an intermediate frequency amplifier connected to said radio frequency tuner for receiving intermediate frequency signals therefrom; and a video channel connected to said intermediate frequency amplifier; an automatic frequency control system including an automatic frequency control circuit having an error amplifier for providing an error signal indicative of the frequency error of signals amplified by said intermediate frequency amplifier wherein the improvement comprises voltage combining means comprising:
- a source of tuning voltage;
- first, second, and third resistors connected in series between said source of tuning voltage and the output of said error amplifier;
- means connecting the junction of said first and second resistors to said UHF tuner for providing a voltage thereto equal to said tuning voltage for a frequency error of a first sense and proportional to said tuning voltage and the ratio of the resistance of said first resistor to the total resistance of said first, second, and third resistors for a frequency error of a second sense; and
- means connecting the junction of said second and third resistors to said VHF tuner for providing a voltage thereto equal to said tuning voltage for a frequency error of a first sense and proportional to said tuning voltage and the ratio of the resistance of said first and second resistors to the total resistance of said first, second, and third resistors for a frequency error of a second sense.

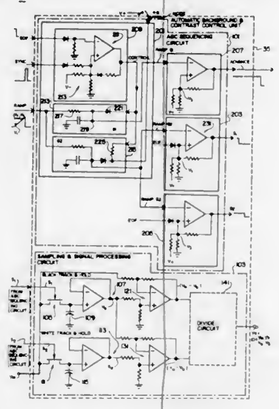
3,952,144
METHODS AND APPARATUS FOR AUTOMATIC BACKGROUND AND CONTRAST CONTROL

Carl Raymond Kolker, San Gabriel, Calif., assignor to Faxon Communications Corporation, Pasadena, Calif.

Filed Oct. 2, 1974, Ser. No. 511,422
Int. Cl.² H04N 1/40
U.S. Cl. 178—6 18 Claims

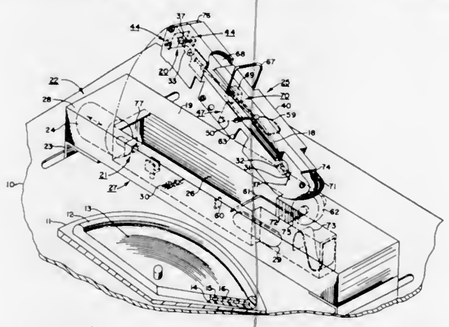
1. Apparatus for processing a variable magnitude input signal representative of an input parameter which varies between predetermined first and second magnitudes, said apparatus comprising:
- A. means for storing a first sample of said input signal when said input parameter is at its first magnitude;

B. means for storing a second sample of said input signal when said input parameter is at its second magnitude;
C. and means, operable during a reception period in which said input signal is representing varying magnitudes of said input parameter, for continually combining said input signal and said first and second samples to continu-



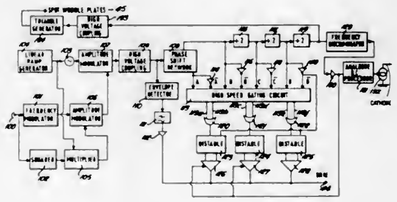
ally produce an output signal representative of the difference in magnitude of said input signal and said first sample divided by the difference in magnitude of said first and second samples, whereby said output signal is normalized so as to represent the magnitude of said input parameter as a fraction of the range established by the difference in magnitude of said first and second samples.

3,952,145
PICKUP ARM CARTRIDGE APPARATUS
James Austin Allen, Monrovia, Ind., assignor to RCA Corporation, New York, N.Y.
Filed Nov. 12, 1974, Ser. No. 522,821
Int. Cl.² H04N *5/76;* **G11B** *3/08*
U.S. Cl. 178—6.6 R **13 Claims**



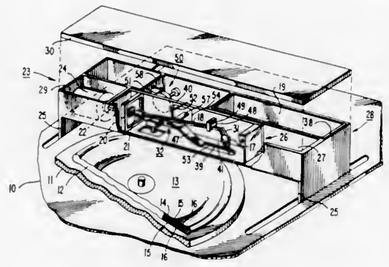
1. In a playback system for recovering prerecorded signals from a spirally grooved disc record by a signal pickup when relative speed is established therebetween, and the playback system including a supporting structure mounted for movement radially of the disc record, an apparatus comprising:
1. a pickup arm cartridge subject to location in an operative position in a compartment provided in the supporting structure, the pickup arm cartridge comprising:
A. a pickup arm unit carrying a signal pickup;
B. a casing having walls defining a protective enclosure for the pickup arm unit, the casing having an opening through which the signal pickup may protrude; and
C. means for releasably clamping the pickup arm unit in a retracted position in the casing, the retracted position providing a location for the signal pickup withdrawn within the confines of the casing and remote from the opening;
2. means mounted in the supporting structure for selective lowering and lifting of the signal pickup; and
3. means mounted in the supporting structure for disabling the clamping means as the cartridge is located in the operative position in the supporting structure compartment in order to free the pickup arm unit for engagement with the signal pickup lowering/lifting means.

3,952,146
ELECTRON BEAM RECORDING OF WIDE-BAND SIGNALS ON THERMOPLASTIC FILM
Graham Stuart Plows, and Gordon Malcolm Edge, both of London, England, assignors to Decca Limited, London, England
Continuation-in-part of Ser. No. 247,443, April 28, 1972, Pat. No. 3,821,488. This application Apr. 23, 1974, Ser. No. 463,252
Claims priority, application United Kingdom, Apr. 28, 1971, 11993/71
The portion of the term of this patent subsequent to June 28, 1991, has been disclaimed.
Int. Cl.² G11B *3/00;* **H04N** *5/82*
U.S. Cl. 178—6.6 TP **9 Claims**



1. A method of recording a wide-band signal, comprising the steps of:
directing a beam of electrons at a thin film of electrically resistive thermoplastic material which is supported by a conductive substrate;
moving said film relative to said beam so as to cause said beam to deposit a continuous track of electric charge on the film;
modulating the intensity of the beam in accordance with the said wide-band signal;
focussing said beam to produce a focus having an effective diameter, in a sense along the direction of progression of the track, which is substantially less than the shortest wavelength in said wide-band signal;
oscillating said beam from side to side across the direction of progression of said track at a wobble frequency sufficient to ensure the deposition of charge twice on substantially every part of the track;
blanking said beam at the extremities of its side to side movement;
varying the intensity of said beam at a frequency which is twice the wobble frequency and with an amplitude which is greatest for the middle of the track, whereby to cause said track to be of a width which is significantly wider than said effective diameter and to have a charge density which is substantially greater in the middle of the track than at the edges thereof; and
heating and cooling said film.

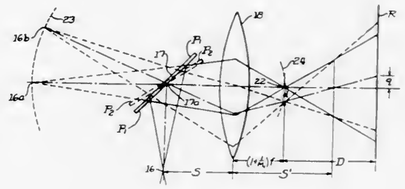
3,952,147
PICKUP ARM CARTRIDGE
Marvin Allan Leedom, South Brunswick Township, Middlesex County, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Nov. 12, 1974, Ser. No. 522,815
Int. Cl.² G11B *25/04, 25/06;* **H04M** *1/64;* **G11B** *3/20*
U.S. Cl. 178—6.6 R **10 Claims**



1. In a playback system for recovering recorded signals from a spirally grooved disc record by a signal pickup when relative speed is established therebetween, said playback system including a supporting structure; an apparatus comprising:
1. a pickup arm cartridge adapted for reception in a compartment provided in the supporting structure which comprises:
A. a signal pickup assembly including:
a pickup arm carrying said signal pickup at one end thereof;
b. a coupler; and
c. a compliant pickup arm support for securing an end of the pickup arm remote from the signal pickup to the coupler, the compliant pickup arm support permitting arcuate motion of the pickup arm in order to accommodate vertical and lateral motion of the signal pickup in the disc record spiral groove;
B. an elongated casing having walls defining a protective enclosure for the signal pickup assembly;
C. means for suspending said coupler within the casing, and wherein the casing has an opening for permitting the signal pickup to pass through for engagement with the disc record spiral groove during playback; and
D. biasing means securely holding the signal pickup assembly in the casing during storage and handling of the cartridge; and
2. means mounted in the supporting structure for disabling the biasing means during playback thereby disposing the signal pickup subject to engagement with the disc record.

3,952,148
OPTICAL VIDEO DISC PLAYBACK SYSTEM WITH POSITION SERVO
Leonard J. Laub, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Mar. 13, 1974, Ser. No. 450,697
Int. Cl.² H04N *5/76;* **G11B** *7/00*
U.S. Cl. 178—6.6 R **18 Claims**

1. An optical video playback system for deriving an output signal from a video record disc having information stored in a generally circular track, which system comprises:
means for supporting and rotating said record disc in a reading plane;
means for developing an optical reading beam;
an optical system for directing said reading beam along an optical path to said reading plane, said optical system including a mirror displaceable about a predetermined axis for selectively shifting said beam transversely of said path and further including a final lens means between said mirror and said reading plane for focusing said reading beam after reflection by said mirror onto said video disc and for imaging said mirror axis in a predetermined plane that extends across the continuation of said optical path taken by said reading beam after scanning said record disc and spaced from said reading plane by a distance



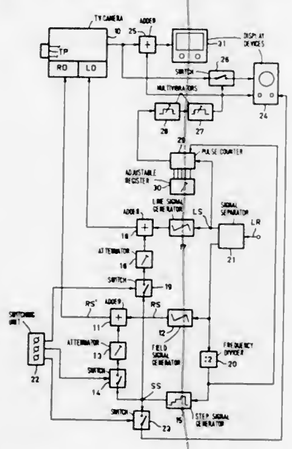
$$S' = f\left(1 + \frac{1}{M}\right),$$

where S' is the distance from said final lens means to said image of the mirror axis, M is the magnification factor of said final lens means, and f is the focal length of said final lens means;
photoreceptor means disposed in said predetermined plane for developing a correction signal representing misregistration of said reading beam with respect to said track in responses to variations in the light distribution in said predetermined plane;
and means responsive to said correction signal for displacing said mirror about its axis to maintain tracking registration of said reading beam with said track, without varying the position of the light pattern projected onto said photoreceptor means, whereby generation of spurious components in said correction signal due to record disc eccentricities and imperfections is substantially precluded.

3,952,149
TELEVISION APPARATUS SUITABLE FOR VIDEO SIGNAL ANALYSIS
Wouter van den Berg, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 20, 1974, Ser. No. 507,680
Claims priority, application Netherlands, Apr. 1, 1974, 7404361
Int. Cl.² H04N *7/18*
U.S. Cl. 178—6.8 **4 Claims**

1. Television apparatus suitable for video signal analysis comprising line and field deflection circuits, said circuits generating sawtooth-shaped deflection signals in order to constitute a line scanning raster in line periods and a field period, the field deflection circuit comprising a signal genera-

tor means for supplying a step-shaped signal having a variation occuring once during at least one field period and an amplitude wherein the line scanning raster only moves over a part of the width of a scanning line.



3,952,150

VISUALIZATION OF VIBRATIONS, DEFORMATIONS OR LEVEL LINES OF A THREE-DIMENSIONAL OBJECT

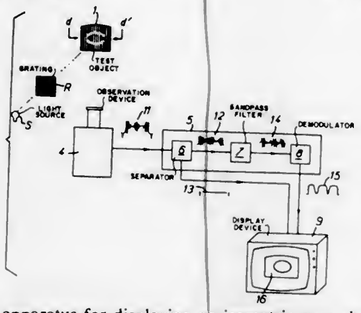
Jean Pierre Gerardin, Nanterre, and Benjamin Dessus, Meudon, both of France, assignors to Electricite de France (Service National), Paris, France

Filed July 12, 1974, Ser. No. 488,061

Claims priority, application France, July 19, 1973, 73.26585

Int. Cl.² H04N *7/18*

U.S. Cl. 178—6.8 **13 Claims**



7. An apparatus for displaying an isometric map showing the physical characteristics of a three-dimensional test object with respect to a reference, said apparatus comprising:

means for projecting a plurality of flat, parallel light beams obliquely on said test object so as to form on said test object a system of spaced apart light striations, said system having irregularities which correspond to variations of said physical characteristics with respect to said reference;

means for operating on said system so as to obtain an image which is characterized by a basic luminous structure which includes, when there are variances between said physical characteristics and said reference, local imperfections in correspondence to said variances;

means for scanning said image in a repeated sequence and at a fixed rate so as to derive an electrical signal which includes a synchronization component corresponding to said fixed rate and a modulation component corresponding to said variances;

circuit means for processing said electrical signal so as to isolate said synchronization component and to produce a further signal which is the envelope of said modulation component; and

display means for utilizing, said synchronization component and said further signal to produce an image which is the isometric map of said test object.

3,952,151

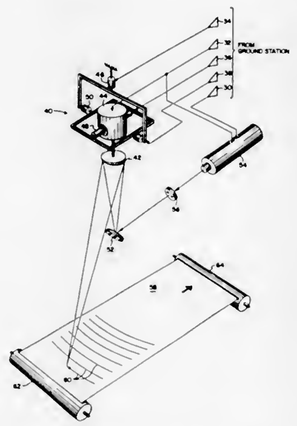
METHOD AND APPARATUS FOR STABILIZED REPRODUCTION OF REMOTELY-SENSED IMAGES

Keith R. Jenkin, Manhattan Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 13, 1973, Ser. No. 388,001

Int. Cl.² G03B *27/68*; **H04N** *1/24*, *1/28*

U.S. Cl. 178—6.8 **30 Claims**



16. The apparatus for stabilizing, during reproduction, the image of a scene acquired as an electronic signal by a scanning electromagnetic energy sensor contained within a structure, comprising:

a. Means for acquiring, substantially simultaneously with the acquisition of the sensor signal, an electronic data sequence representing the instantaneous deviation, from the nominal, of the attitude of the structure relative to the scene, said data sequence comprising three substantially simultaneous electronic signals, each representing said deviation with respect to a single one of three mutually orthogonal axes; and

b. Means for generating a reproduction image of the scene including means for deflecting, in accordance with the scan cycle of the sensor, an image-generating beam whose instantaneous relative amplitude corresponds to the amplitude of the sensor signal, and means for perturbing said deflection, substantially simultaneously, in accordance with said data sequence.

3,952,152

CRT SHIELD

William B. Lill, Glenview, and Edward M. Rezotko, Rolling Meadow, both of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Oct. 29, 1974, Ser. No. 518,698

Int. Cl.² H01J *9/00*, *29/86*; **H04N** *5/65*

U.S. Cl. 178—7.82 **10 Claims**

1. A structure for shielding non-visual electromagnetic emanations from a cathode ray tube having a face with a periphery, a neck, and a generally tapering portion, interconnecting the periphery of the face and the neck, comprising:

a conductive screen having a periphery, the screen being positioned to cover the face of the cathode ray tube and capable of transmitting the visual emanations therefrom;

a conductive collar conductively bonded to the periphery of the conductive screen and extending generally around the periphery of the face of the tube and projecting from the face generally toward the neck of the tube;

a conductive, tapered member shaped generally like the tapered portion of the tube and having a lip, the tapered member being positioned around the tapered portion of the tube and its lip mating with the collar; and

means for electrically interconnecting the tapered member to the collar.

3,952,153

DOT MATRIX PRINTER HAVING SELECTIVELY ACTUATED PRINTED BARS

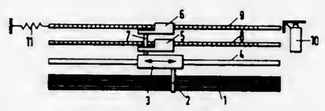
Emil Johan Nijenhuis, Voorburg, and Cornelis Kramer, Leidschendam, both of Netherlands, assignors to De Staat der Nederlanden, ten dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, The Hague, Netherlands

Filed Sept. 27, 1974, Ser. No. 509,845

Claims priority, application Netherlands, Oct. 1, 1973, 7313483; July 12, 1974, 7409464

Int. Cl.² H04L *21/00*

U.S. Cl. 178—30 **7 Claims**



1. An electric printer of characters each of which characters is composed of spots marked in *m* horizontal and *n* vertical equal areas, said printer comprising:

A. *n* parallel adjacent print bars having lengths at least equal to the length of a line of said characters,

B. anvil bridge means movable along said bars and spaced from and transverse of said bars,

C. a printable sheet in the space between said anvil means and said bars for recording simultaneous contact between said bars and said anvil means,

D. first electromagnetic means for separately moving said bars towards said anvil means, and

E. second electromagnetic means for stepping said anvil means along said bars in increments corresponding to each *m* area of said characters.

3,952,154

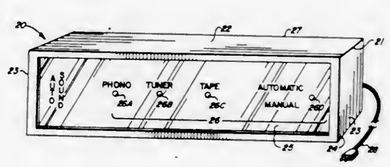
AUTOMATIC AUDIO SOURCE SELECTOR FOR STEREO ENTERTAINMENT CENTER

William A. Gates, Jr., 3228 E. Delcoa Drive, Phoenix, Ariz. 85032

Filed Oct. 2, 1974, Ser. No. 511,104

Int. Cl.² H04Q *1/18*

U.S. Cl. 179—1 SW **8 Claims**



1. An automatic electronic control system for an entertainment system utilizing audio signal sensors for the preferential selection of a first signal source with means for turning it to a second signal source upon cessation of the signal from said first signal source, said control system comprising:

a first input signal terminal for connection to a preferential first signal source,

a second input signal terminal for connection to a second signal source,

switching means comprising input, output and control terminals for selectively connecting either said first input signal source or said second input signal source to an audio output terminal,

an audio output terminal connected to said switching means output terminal for connection to a speaker system,

a first audio sensing circuit comprising input, output and control terminals for interconnecting said first input signal terminal and said switching means,

a second audio sensing circuit comprising input, output and control terminals,

said input terminal of said first audio sensing circuit being connected to said first input signal terminal and said output terminal of said first audio sensing circuit being connected to an input terminal of said switching means,

said control terminal of said first audio sensing circuit being connected to said control terminal of said second audio sensing circuit,

said input terminal of said second audio sensing circuit being connected to said switching means output terminal and said output terminal of said second audio sensing circuit being connected to an input terminal of said switching means, said second input signal terminal being connected to an input terminal of said switching means,

said switching means upon energization of said control system connecting said second input signal terminal to said audio output terminal,

said first audio sensing circuit upon sensing a signal at said first input signal terminal generating a control signal to actuate said switching means to connect said first input signal terminal to said audio output terminal,

said second audio sensing circuit upon termination of signals from said first input signal terminal existing at said audio output signal terminal transmitting a signal from its output terminal to a control terminal of said switching means to reconnect said second signal input terminal to said audio output signal terminal.

3,952,155

WATER SKI TOW COMMUNICATION SYSTEM

Joseph A. Novak, 15451 Saticoy St., Van Nuys, Calif. 91406

Filed Aug. 9, 1974, Ser. No. 495,946

Int. Cl.² H04M *1/02*

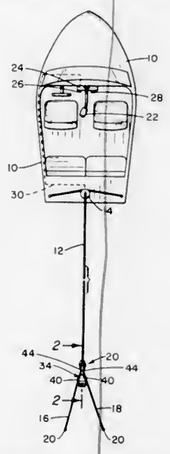
U.S. Cl. 179—1 VE **7 Claims**

1. A water ski tow assembly including:

a tow line having means at one end thereof for attaching the line to a towing boat and terminating at the other end thereof in at least one hand grip for a water skier to enable the skier to be propelled over the surface of a body of water;

a first microphone/speaker unit;

a hollow ovoid housing for said first microphone/speaker unit mounted on said other end of said tow line to provide a floatation means for the first microphone/speaker unit;



said first microphone/speaker unit being mounted in said housing coaxially with the central axis thereof and forming an enclosure for the lower portion of the housing;

a second microphone/speaker unit mounted in the towing boat;

an amplifier unit mounted in the towing boat and electrically coupled to said microphone/speaker units; and

electric leads extending from said amplifier unit to said first microphone/speaker unit and electrically connected thereto;

said leads entering the housing through the lower end thereof to hold the housing upright when in the water.

3,952,156

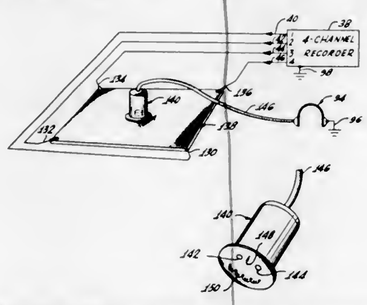
SIGNAL PROCESSING SYSTEM

Roy J. Lahr, Sierra Madre, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 7, 1972, Ser. No. 286,981

Int. Cl.² H04R *5/00*; **H01C** *10/04*

U.S. Cl. 179—1 GQ **8 Claims**



3. An audio signal processing system for processing audio signals within an audio signal space comprising:

four audio transducers positioned at substantially equally spaced locations around said audio signal space, said audio transducers generating four independent electrical channel signals;

recording means for simultaneously recording said four independent channel signals;

playback means for reproducing said four independent channel signals;

circuit means connected to said playback means for substantially producing an electrical circuit analog of said audio signal space, said circuit means having four series ring connected potentiometers with a channel connected to each junction of two potentiometers, each of said potentiometers having a mechanically variable wiper terminal;

combining means for combining predetermined pairs of said wiper terminals into first and second binaural electrical output signals having signal intensities from each of said channel signals;

binaural transducer means for converting said binaural electrical output signals into audible binaural sounds; and

manual position control means connected to said mechanically variable wiper terminals of said potentiometers for dependent movement thereof to selectively vary said channel signal intensities of said binaural electrical output signals, whereby directional manipulation of said position control means results in a substantially corresponding directional change in the binaural perception of spatial position within said audio signal space.

8. An audio signal processing system for processing audio signals within an audio signal space, comprising:

a plurality of audio transducers positioned at a plurality of different locations in said audio signal space, said transducers generating a plurality of independent electrical channel signals;

a flat surface having uniform electrical resistance characteristics connected to receive said plurality of electrical channel signals at spaced points around said resistance surface for substantially producing an electrical circuit analog of said audio signal space;

electrical connection means including a pair of taps positioned at any point on said resistive surface for tapping said channel signals to thereby generate two binaural output signals having signal intensities from each of said electrical channel signals; and

position control means connected to said flat surface and to said connection means to selectively vary said tap positions to correspondingly vary said channel signal intensities of said binaural output signals, whereby the binaural perception of spatial position of a person listening to said binaural signals may be varied.

3,952,157

MATRIX FOUR-CHANNEL DECODING SYSTEM

Susumu Takahashi, and Ryosuke Ito, both of Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1974, Ser. No. 447,759

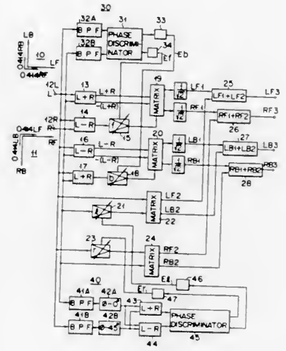
Claims priority, application Japan, Mar. 7, 1973, 48-26726

Int. Cl.² H04R *5/00*

U.S. Cl. 179—1 GQ **14 Claims**

1. A decoding system for converting first and second composite signals containing at least front-left, front-right, back-left and back-right directional audio input signals encoded with preselected amplitude and phase relationships into four output signals being coupled to four loudspeakers disposed around a listener, which comprises control means for detecting level relationships of directional audio input signals in the first and second composite signals and matrix means for producing output signals while varying the mixing coefficients of the first and second composite signals in accordance with the level relationship of directional audio input signals, the improvement wherein said matrix means is operative to vary the mixing coefficients of the first and second composite signals of medium frequency band in accordance with the level relationship of the directional audio input signals and also substantially to fix the mixing coefficients of the first and second composite signals of low and high frequency bands; and

is operative to fix the mixing coefficients of the first and second composite signals of low frequency band to differ-



ent values from those of the first and second composite signals of high frequency band.

3,952,158

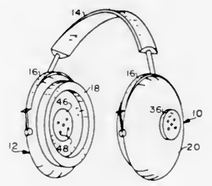
EAR PROTECTION AND HEARING DEVICE

Gordon L. Kyle, 1607 12th St., Decatur, Ala. 35601, and John D. Hays, Jr., Rte. 1, Box 175, Owens Cross Roads, Ala. 35763

Filed Aug. 26, 1974, Ser. No. 500,734

Int. Cl.² H04M *1/19*

U.S. Cl. 179—1 P **3 Claims**



1. An ear protection and hearing device comprising:

at least one enclosure having an open region adapted to fit around the human ear;

a sound insulating layer providing a barrier surface between the inside and outside of said enclosure;

a microphone attached to and positioned on the outside of said enclosure;

filter means having an input and output and including means for passing a selected band of audible frequencies;

compression means having an amplitude transfer factor which varies inversely with input;

signal amplification means;

a sound reproducer within said enclosure; and

means for serially connecting said filter means, said compression means, and said amplification means, electrically, in this order, between said microphone and said sound reproducer;

whereby a selected range of low level sounds are discernable in the presence of higher level noise.

3,952,159

DUCTED PORT REFLEX ENCLOSURE

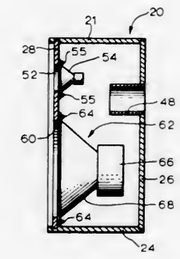
Wayne M. Schott, Mount Prospect, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Continuation of Ser. No. 339,815, March 9, 1973, abandoned.

This application Dec. 18, 1974, Ser. No. 533,903

Int. Cl.² H04R *1/02*; **G10K** *11/00*

U.S. Cl. 179—1 E **1 Claim**



1. In a ducted-port bass-reflex sound reproducing system wherein the ducted port is utilized to reduce distortion in the lower portion of the frequency range being reproduced, the combination which increases relative sound pressure level in that lower portion of said frequency range comprising:

an enclosure having a volume less than 4 cubic feet and exhibiting a predetermined acoustic compliance and being essentially air-tight except for a pair of primary openings, a first located in one wall portion and a second located in another wall portion thereof spaced from said one wall portion;

bass-range loudspeaker means mounted on said one wall portion to air-seal and project sound outwardly of said enclosure through said first opening,

said loudspeaker means exhibiting a selected cone-suspension acoustic compliance such that the ratio of said enclosure predetermined compliance to said selected cone-suspension compliance is not less than 0.707,

said loudspeaker means further exhibiting a given loaded free-air Q not less than 0.4 and not greater than 1.0 and also exhibiting a predetermined free-air resonant frequency and a frequency response in which the half-power point at one end of the response is established at a predetermined low frequency; and

a tubular duct having a diameter between 2 and 6 inches projecting from around the periphery of said second opening and having an assigned length and cross-sectional area such that it exhibits a tuned acoustic frequency and a frequency response in which the response between its half-power points extends from at least said loudspeaker free-air resonant frequency to said predetermined low frequency of said loudspeaker response, the ratio of said tuned acoustic frequency to said predetermined resonant frequency of said loudspeaker means being not less than 0.5 and not greater than 1.0.

3,952,160

COIN TELEPHONE ARRANGEMENT TO OBVIATE ACOUSTICALLY COUPLED FRAUD

Gerald Philip Pasternack, Colts Neck; Lawrence Oliver Stevenson, Howell, both of N.J., and Gary Wayne Strong, Ann Arbor, Mich., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

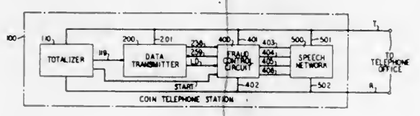
Filed Nov. 14, 1974, Ser. No. 523,661

Int. Cl.² H04M *15/18*

U.S. Cl. 179—7.1 R **11 Claims**

1. In a coin telephone station having voice signal input means, coin deposit input and detection means, and means for translating a coin deposit into encoded information for transmission to a telephone office, the improvement comprising

means for obviating acoustical coupling of a fraudulent coin deposit information signal applied through said voice signal input means, said obviating means including means automatically operative during a coin collection interval when said fraudulent signal may be applied through said input means for introducing an error in said fraudulent coin deposit information signal.

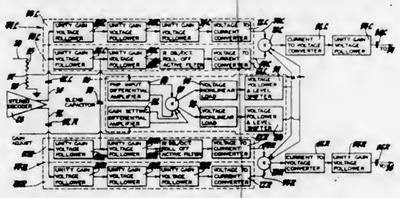


3,952,161

AUDIO PROCESSOR CIRCUIT FOR AN FM-STEREO RADIO RECEIVER

William F. Gilbert; Burtron D. Schertz, both of Kokomo; Wayne A. Smith, Russiaville, and Lester Wilkinson, Kokomo, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 21, 1974, Ser. No. 516,797
Int. Cl.² H04R 5/04
U.S. Cl. 179—15 BT **6 Claims**



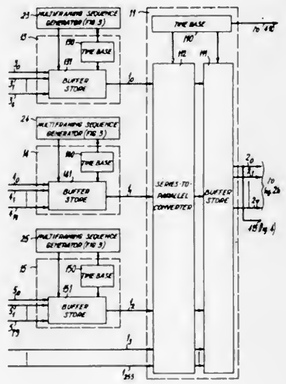
1. An audio processor for processing left and right stereophonically related input signals, said processor including left and right signal processing channels, each of said signal processing channels including first and second subchannels, means coupling said left audio input signal to said first and second subchannels of said left signal processing channel and means coupling said right audio input signal to said first and second subchannels of said right signal processing channel, means coupling the first subchannel of said left processing channel with the first subchannel of said right processing channel for producing a blended signal in each of said first subchannels, said second subchannel of said left and right processing channels maintaining the original separation between said left and right audio signals and passing said left and right input signal substantially unaltered, means providing a control voltage related to a characteristic of the carrier signal from which said input signals are obtained, and means responsive to said control voltage for summing a portion of the signal at the output of each of said first subchannels with a complementary portion of the signal at the output of its associated second subchannel to produce a composite left and a composite right audio signal.

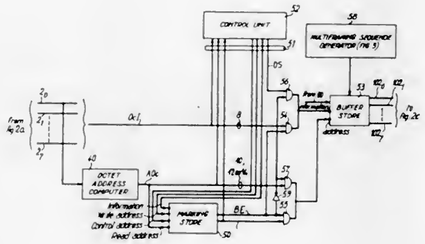
3,952,162

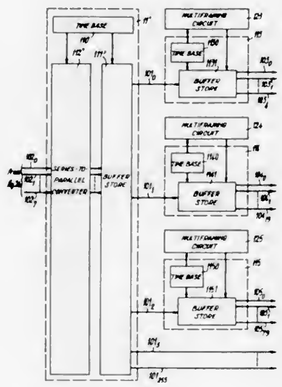
TIME DIVISION DIGITAL SWITCHING NETWORK

Alain G. Texier, 32, Avenue du General de Gaulle, 92360 Meudon-la-Foret, and Michel R. Davancens, 6, Parc de Diane, 78350 Jouy-en-Josas, both of France

Filed May 27, 1975, Ser. No. 581,081
Claims priority, application France, May 28, 1974, 74.18467
Int. Cl.² H04Q 11/04
U.S. Cl. 179—15 AT **6 Claims**







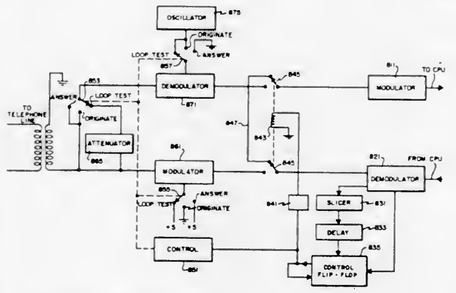
1. A time division digital switching network comprising:
first multiplexing means in which first-order digital data channels transmitting words consisting of a given number of bits and having first rates which are different from but multiples of one another undergo a first multiplexing converting them into second-order digital data channels having a second predetermined rate;
second multiplexing means in which said second-order digital channels undergo a second multiplexing converting them into third-order digital data channels having a third predetermined rate; and
a digital switching unit having at least one buffer store in which the first-order-channel words multiplexed into the third-order channels are grouped at an address having first and second part and whose first part depends upon the second-order channel they occupy in the third-order channel and whose second part depends upon the first-order channel they occupy in the second-order channel, the bits of a given rank of the words of a second-order channel forming a pseudorandom sequence having a known period and, therefore, the bits of a given rank of the words of a third-order channel forming a number of interleaved pseudorandom sequences;
the said switching network being characterized in that said digital switching unit includes means for separating the interleaved pseudorandom sequences and for deducing from the bits comprising them said second part of the address of the words.

3,952,163

METHOD AND APPARATUS FOR TESTING IN FDM SYSTEM

Robert A. Couturier, Stamford; Steven J. Davis, Ridgefield, and G. Howard Robbins, New Canaan, all of Conn., assignors to General DataComm Industries, Inc., Norwalk, Conn.

Division of Ser. No. 246,589, April 24, 1972, Pat. No. 3,869,577. This application Mar. 3, 1975, Ser. No. 554,773
Int. Cl.² H04M 11/00
U.S. Cl. 179—15 BF **7 Claims**



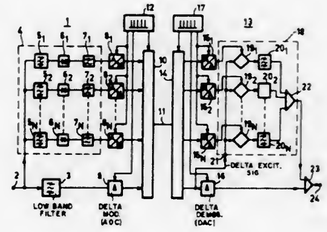
1. In a data transmission terminal comprising:
a first modem comprising:
a first demodulator with an input terminal for receiving a frequency-modulated signal and an output terminal to which are supplied data signals demodulated from said frequency-modulated signal; and
a first modulator with an input terminal for receiving digital data signals and an output terminal to which is supplied a frequency-modulated signal representative of said digital data signals; and
a second modem comprising:
a second demodulator with an input terminal for receiving a frequency-modulated signal and an output terminal to which are supplied data signals demodulated from said frequency-modulated signal, said output terminal being connected to the input terminal of the first modulator; and
a second modulator having an input terminal for receiving digital data signals and an output terminal to which is supplied a frequency-modulated signal representative of said digital data signals, said input terminal being connected to the output terminal of the first demodulator,
a method of closed loop testing the operation of said first and second modems from the frequency-modulated signal side of the first modem comprising:
sensing a particular fequency-modulated signal supplied to the first demodulator and producing in response thereto a test initiate signal;
detecting an interruption in signals applied to the first demodulator and producing in response thereto a reset signal;
operating the second modulator in one of the originate or answer modes in response to said test initiate signal;
operating the second demodulator in the other of said originate or answer modes in response to said test initiate signal;
connecting the output of the second modulator to the input of the second demodulator in response to said test initiate signal;
applying cycles of said test initiate and reset signals to a counter; and
in response to the output of said counter, interconnecting the output terminal of the first demodulator and the input terminal of the first modulator while disconnecting the first modem from the second modem, the output of the counter being such that said interconnecting does not take place during all cycles of the test initiate and reset signals.

3,952,164

VOCODER SYSTEM USING DELTA MODULATION

Guy Albert Jules David, Thiais; Gilbert Marie Marcel Ferrieu, Bievres (Essonne); Pierre Lorand, and Michel Cartier, both of Lannion, all of France, assignors to Telecommunications Radioelectriques et Telephoniques T.R.T. and Etat Francais, both of Paris, France

Filed July 18, 1974, Ser. No. 489,577
Claims priority, application France, July 20, 1973, 73.26733
Int. Cl.² G10L 1/00
U.S. Cl. 179—15.55 R **3 Claims**



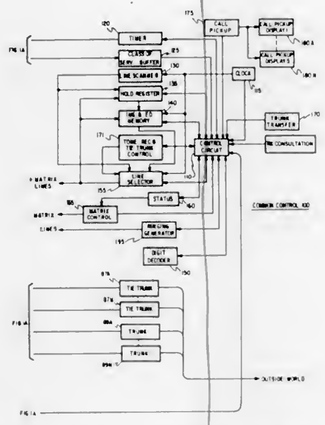
1. A vocoder system for transmitting a voice signal from a transmitter to a receiver, said transmitter comprising means for deriving from said voice signal a base band signal representative of components in a lower frequency range of said voice signal, a spectral analyzer means for deriving from said voice signal narrow band control signals representative of the energy distribution of individual components in an upper frequency range of said voice signal, and means coupled to both of said deriving means for transmitting said base band signal and said control signals to said receiver, said receiver comprising means for receiving the transmitted signals, a spectral synthesizer means coupled to said receiving means and controlled by said control signals for selectively employing a voice excitation signal derived from said base band signal to generate artificial signals representative of said individual components in said upper frequency range, means coupled to said synthesizer for combining said artificial signals with said base band signal to produce a reconstruction of said voice signal, and wherein said system further comprises a delta modulator

means coupled to receive said base band signal for deriving from said base band voice excitation signal.

3,952,165
TIE TRUNK CONTROL ARRANGEMENT

Uwe A. Pommerening, and Glenn L. Richards, both of Webster, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Mar. 25, 1975, Ser. No. 561,954
Int. Cl.² H04Q 3/62
U.S. Cl. 179—27 CA **6 Claims**



1. In a private automatic branch exchange having a solid state switching matrix for effecting connections between local calling stations and local called stations, between local stations and incoming and outgoing trunk parties and between at least one attendant position and local stations and trunk parties, having a common control for effecting the connections via individual ones of a plurality of local, incoming, outgoing and tie trunk junctors and at least one attendant junctor, having a memory for the local junctors, incoming, outgoing and tie trunk junctors and attendant junctors, and having first call extending circuit means for automatically extending an incoming tie trunk call via the attendant junctor to the attendant position, a tie trunk control arrangement comprising:

first holding circuit means responsive to a first signal from the attendant position for placing the incoming tie trunk call in a holding status;

second call extending circuit means responsive to a second signal from the attendant position for connecting the attendant position via a trunk junctor to a trunk;

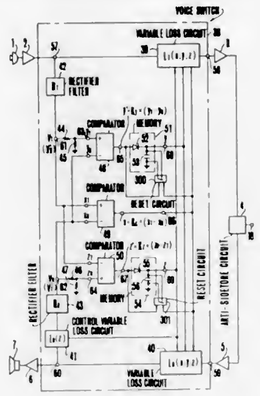
first connecting a circuit means responsive to a third signal from the attendant position for connecting the incoming tie trunk to the trunk.

3,952,166
LOUDSPEAKING TELEPHONE CIRCUIT

Kunihiro Kato, Hachiohji; Ryoichi Matsuda, Musashino, and Ryoichi Okayasu, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Oct. 3, 1974, Ser. No. 511,595
Claims priority, application Japan, Oct. 18, 1973, 48-116367
Int. Cl.² H04M 9/08
U.S. Cl. 179—81 B **13 Claims**

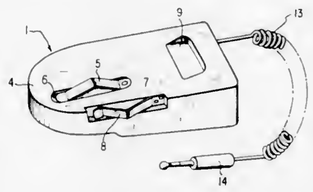
1. A loudspeaking telephone circuit comprising a first rectifier-filter circuit connected to a transmitting path for rectifying and filtering a signal transmitted through said transmitting path, a second rectifier-filter circuit connected to a receiving path for rectifying and filtering a signal received by said receiving path, a main comparator for comparing the outputs from said first and second rectifier-filter circuits, a resistance attenuator for attenuating an output from said first or second rectifier-filter circuit, a control comparator for comparing the output from said resistance attenuator with the output from said first or second rectifier-filter circuit which does not supply an output to said resistance attenuator, a memory device for memorizing the output from said control comparator, and a transmitting circuit variable loss means connected in said transmitting path and a receiving circuit variable loss means connected in a receiving path which give an insertion loss to a talking path in response to the output from said main comparator with said memory device as a parameter for both of said loss means.



3,952,167
ELECTROMAGNETIC COUPLER FOR USE WITH A TELEPHONE SET

Matsumi Suzuki, Ebina, and Toshihiko Toyoshima, Tokyo, both of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 30, 1974, Ser. No. 474,307
Claims priority, application Japan, June 8, 1973, 48-67055[U]
Int. Cl.² H04M 1/00
U.S. Cl. 179—81 R **3 Claims**



1. An electromagnetic coupling device for use with a telephone set having a hand hole in the rear thereof, said telephone set being employed in a communication facility having a transmitting device and a receiving device, said coupling device comprising

a hollow plug removably insertable in said hand hole;

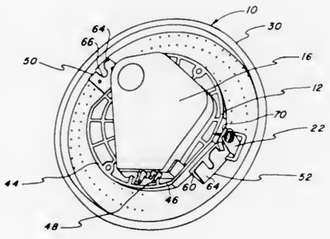
a first winding of wire disposed within said hollow plug for receiving electrical signals from said telephone set, said first winding being connected to said receiving device; and

a second winding of wire disposed within said hollow plug for transmitting electrical signals to said telephone set, said wire of said second winding being substantially thicker in cross section than the wire of said first winding, said second winding being connected to said transmitting device.

3,952,168
ROTARY TELEPHONE DIAL STRUCTURE

Eugene Barber, Corinth, Miss., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 1, 1974, Ser. No. 484,971
Int. Cl.² H04M 1/23
U.S. Cl. 179—90 R **10 Claims**



1. A rotary telephone dial assembly comprising an essentially disc-shaped dial base with diametrically opposed wall surfaces, said base adapted for mounting on one face thereof a stationary indicia plate and a manually rotatable finger wheel and adapted to position on the opposite face thereof output mechanism responsive to rotation of said finger wheel, the invention comprising means for mounting said assembly within a telephone housing, said means comprising a pair of slots, there being an entrance to each slot in each of said surfaces with said slots being parallel to said opposed face, a first and a second L-shaped mounting bracket of sheet metal with one leg of each bracket adapted to enter one of said slots, a holding tab angled from said each leg to engage and grip the adjacent slot to prevent removal of said brackets from the respective slot, and the other leg of said bracket including means for securing said assembly in said telephone housing.

3,952,169
SOLID STATE LINE CIRCUIT FOR A KEY TELEPHONE SYSTEM

Ogden W. Vincent, 147 S. Kingsley, Anaheim, Calif. 92806
Continuation-in-part of Ser. No. 349,533, April 9, 1973, abandoned. This application Oct. 15, 1974, Ser. No. 514,580

Int. Cl.² H04M 1/00
U.S. Cl. 179—99 **7 Claims**

1. In a key telephone system a solid state line circuit comprising,

in combination,

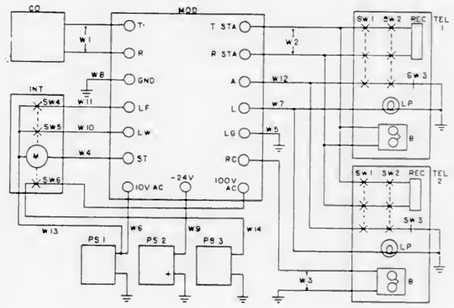
a pair of conductors connected at one end to the tip and ring lines from a central office having an office battery and a ringing voltage source and connected at the other end to the receiver, transmitter and ringer of a first key telephone and to the receiver and transmitter of a second key telephone,

an ungrounded isolated solid state line current detector means connected in series with the first conductor of said pair at the central office end, said line current detector means being responsive to line current of either polarity for activating an optical coupler when the current exceeds a predetermined quantity,

an ungrounded isolated solid state ringing detector means connected between said pair at the station end for activating an optical coupler, said ringing detector means being responsive to either polarity of voltage between said pair when the absolute voltage exceeds the voltage of said office battery by a predetermined quantity,

an ungrounded isolated solid state termination means connected between said pair at the station end, said termination means being responsive to logic circuitry means via an optical coupler for terminating said tip and ring line with either polarity of line current when an on-hold condition exists,

an ungrounded isolated solid state ring control switch for switching a local ringing supply to the ringer or buzzer of said second key telephone, said ring control switch means being responsive to said logic circuitry means via an optical coupler,



a solid state motor switch means for switching the motor of the interrupter from central to a local power supply, said motor switch means being responsive to said logic circuitry means,

a solid state lamp switch means for switching the lamps of said first and second key telephones to a local power supply, said lamp switch means being responsive to said logic circuitry means, for reliability the activation of said lamp switch means being continuous during the time the lamps of said first and second key telephones emit light,

said logic circuitry means using the output of said ringing detector means, the output of said line detector means, signal A, the light flashing signal, and the light winking signal as input signals and not as power sources,

said logic circuitry means responding to the output of said ringing detector means after a predetermined delay whereafter activating said ring control switch means, said motor switch means and said lamp switch means,

said logic circuitry means having a predetermined time-out whereby local ringing and lamp excitation continue after said ringing voltage is removed,

said logic circuitry means inhibiting said termination means, said ring control switch means and said motor switch means and activating said lamp switch means when an answered condition exists,

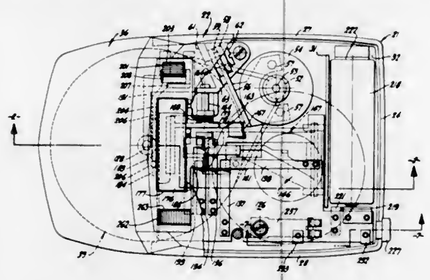
said logic circuitry means activating said termination means when an on-hold condition exists, a capacitor being previously charged by the application of said signal A to initiate an on-hold condition, thereafter said logic circuitry means remaining in a latched state by holding on itself until an answered condition is re-established, and

said logic circuitry means having a capacitor that is charged upon initiation of said on-hold condition whereafter said charged capacitor preventing drop out of said termination means due to momentary zero line current, said charged capacitor being discharged for releasing said termination means due to a predetermined time of zero line current.

3,952,170
MINIATURE APPARATUS FOR REPRODUCING SOUND FROM A STATIONARY RECORD

Ronald D. Irvin, Los Gatos, and Steven Richard Runyan, Palo Alto, both of Calif., assignors to Montron Corporation, Mountain View, Calif.

Filed Jan. 10, 1975, Ser. No. 540,267
Int. Cl.² G11B *3/00, 21/02, 17/06*
U.S. Cl. 179—100.4 R **19 Claims**



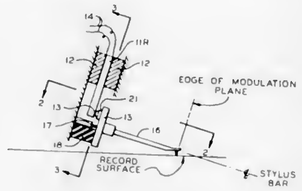
1. In an apparatus for reproducing sound from a stationary record, a base, a main shaft mounted on the base, a disc-like member mounted on said main shaft, means carried by said base for rotating said disc-like member, a cartridge having a stylus therein adapted to engage the record, an arm assembly carrying said cartridge in one end thereof, means mounting said arm assembly on said disc-like member to permit swinging motion of said one end of said arm assembly about horizontal and vertical pivot axes, said disc-like member having an arcuate slot therein through which the stylus can extend to engage the record, coounterbalance means carried by the arm assembly so that the arm assembly is counterbalanced about its pivot axes, counterbalance means carried by the disc-like member counterbalancing the disc-like member for the mass of the arm assembly and its counterbalance means, means yieldably urging said arm assembly and the cartridge with its stylus in a direction to move the stylus into a position whereby it may engage the record in any the stylus into a position whereby it may engage the record in any position of and the arm for moving said arm and the cartridge carried thereby with its stylus out of engagement with the record and for returning it to and retaining it in an at-home position latch means carried by the base for latching said disc-like member to prevent rotation of the same when said arm assembly is in said at-home position and push button means carried by said base and movable to a position to release said disc-like member to permit rotation of the same and to cause operation of said means carried by said base for rotating said disc-like member and for releasing said arm assembly to permit the cartridge and the stylus carried thereby to move to a position whereby the stylus can engage the record.

3,952,171
STEREO PHONOGRAPH CARTRIDGE

Norman H. Dieter, Jr., Pleasantville, N.Y., assignor to Micro/Acoustics Corporation, Elmsford, N.Y.

Filed Sept. 18, 1974, Ser. No. 507,202
Int. Cl.² H04R *1/16*
U.S. Cl. 179—100.41 K **7 Claims**

1. An improved stereo phonograph cartridge comprising:
a. a base;
b. first and second piezoelectric transducers;
c. first and second individual elastomeric means mounting said first and second transducer to said base depending downward in a cantilevered manner in horizontal spaced relationship;
d. first and second separate elastomeric stabilizers mounted to said base in horizontal spaced relationship with each other and directly below said first and second transducers;
e. a resolver having four connecting points contacting respectively to said first and second transducers and said first and second stabilizers;

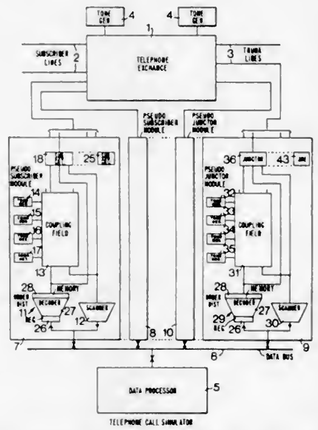


f. a pivot anchor coupling said resolver in a tensioned manner to said base, said pivot anchor being attached to said resolver at a point which is equidistant from each of said four connecting points; and
g. a stylus bar extending from said resolver along the axis of said pivot anchor.

3,952,172
TELEPHONE CALL SIMULATOR

Corentin Jean Louis Penn, Pleumeur-Bodou; Paul Jean Castex, Lannion, and André Tarridec, Perros-Guirec, all of France, assignors to SOCOTEL, a Societe Mixte pour le Developpement de la Technique de la Commutation dans le Domaine des Telecommunications, Issy-les-Moulineaux, France

Filed Apr. 18, 1974, Ser. No. 461,954
Claims priority, application France, May 2, 1973, 73.16397
Int. Cl.² H04M *3/24*
U.S. Cl. 179—175.2 R **3 Claims**

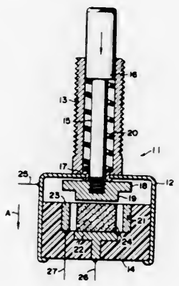


1. A telephone call simulator comprising pseudo subscriber circuits respectively connected to telephone exchange subscriber lines, pseudo junctors respectively connected to telephone exchange trunk lines, a plurality of separate test circuits comprising: line condition detectors, tone detectors, line condition generators, tone generators, order distributors, scanners and a data processing unit, said call simulator comprising said pseudo junctors connected to wires prolonging the wires of a trunk line associated with the pseudo junctor, said prolonging wires being connected to the said tone detectors and to said order distributors, data processing means controlling said pseudo junctor and the detectors and distributors connected thereto, signalling detection circuit means and signalling transmission circuit means which are proper for the signalling system used on the one of said trunk line which is under test, the said signalling detection circuit means being connected to said scanners and said signalling transmission circuits being connected directly to said order distributors.

3,952,173
SWITCHING APPARATUS

Takehiro Tsuji, and Katsuyuki Takagi, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Oct. 22, 1974, Ser. No. 516,924
Claims priority, application Japan, Nov. 9, 1973, 48-130262[U]
Int. Cl.² H01H *1/02*
U.S. Cl. 200—264 **5 Claims**

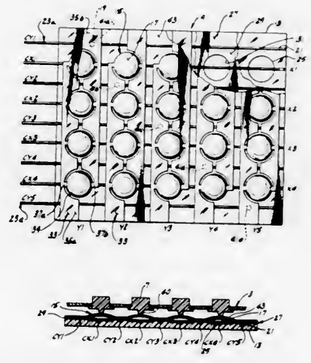


1. A switching apparatus operative to complete at least two different circuit paths in a predetermined operating sequence comprising a holder fixedly attached to a cylindrical stem member, electrical insulating means supported by said holder and defining an opening of hollow cylindrical shape positioned in coaxial relation to said stem member adjacent one end of said stem member, a first stationary electrode disposed at the end of said cylindrical opening remote from said one end of said stem member, a first terminal connected to said first electrode for connecting said first electrode to an external circuit, a second stationary electrode of cylindrical shape disposed along the sidewall portion of said cylindrical opening, said second electrode being positioned in spaced, electrically separate relationship to said first stationary electrode, a second terminal connected to said second electrode for connecting said second electrode to an external circuit, a cylindrical contact element disposed within said cylindrical opening in coaxial relation thereto, said contact element comprising a compressible elastomeric material constructed to be substantially nonconductive in its noncompressed state and to be electrically conductive when compressed, one end of said cylindrical contact element being in engagement with said first stationary electrode, the diameter of said contact element in its noncompressed state being less than the diameter of said second electrode whereby said contact element is normally maintained at a predetermined distance from said second stationary electrode, a moving electrode positioned adjacent the other end of said contact element for movement along the axial direction of said contact element to axially compress said contact element, a third terminal connected to said moving electrode for connecting said moving electrode to an external circuit, and an actuating member fixedly connected to said moving electrode and slidably disposed within said stem member for selectively compressing said contact element, movement of said actuating member and moving electrode toward said first electrode to a first stroke position being operative to partially compress said contact element to complete a conductive path between said first terminal and said third terminal via said contact element, the enlarged diameter of said contact element in its said partially compressed state still being less than the diameter of said second electrode to maintain an open circuit to said second terminal when said actuating element is in its first stroke position, further movement of said actuating element toward said first electrode to a second stroke position being operative to further compress said contact element and increase its diameter sufficiently to engage said second electrode thereby to complete a further conductive path between said first and second terminals via said contact element at said second stroke position of said actuating member.

3,952,174
PUSHBUTTON KEYBOARD SYSTEM

Henry J. Boulanger, Cumberland, R.I. and William J. Midon, North Attleboro, Mass. assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 29, 1974, Ser. No. 527,997
Int. Cl.² H01H *13/52, 1/06*
U.S. Cl. 200—5 A **1 Claim**



1. A keyboard system comprisng an electrically insulative substrate board of a molded synthetic resin material having a plurality of parallel grooves in one surface thereof extending in one direction of the board, a plurality of actuating elements arranged in an array of columns and rows on said one face of the board with said columns extending substantially in said one direction, a plurality of conductors received by said grooves, one conductor in each groove, each of said conductors being a wire of generally circular cross-section there being one conductor for each row of said elements constituting a row conductor and one for each column of said elements constituting a column conductor, each of said column conductors being substantially aligned with the center portion of each of the elements in that column, each of said elements comprising a concave-convex disk of flexible electrically conductive material, each said row of elements comprising a series of said disks in line with one another and electrically connected to an electrically conductive carrier on each side of the line of disks, each said line of disks and said carriers secured thereto constituting a unitary strip, each disk in said strip having its concave face toward said board and being movable independently of one another from an initial convex position in which the center portion of the disk is clear of its respective column conductor to a partially over-center actuated position in which the center portion of the disk is in electrical contact with its respective column conductor, said carriers being electrically common to all of said disks in its respective strip, one of said carriers of each said strip being electrically connected to a respective row conductor, a plurality of recesses in said board arranged in an array corresponding to said array of actuating elements, there being one disk for each recess, a first insulative sheet interposed between said board and said strips for electrically insulating said strips and said disks from said conductors, said sheet being secured to said board and having an array of openings therein corresponding to said array of ele-

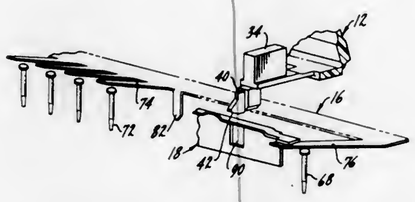
ments, said openings being smaller than said disks so that the outer periphery of the disks are engageable with said sheet, said center portions of the disks being received by said openings thereby to enable the disks to make contact with their respective conductors as they are moved from their initial positions into their actuated positions, and a second sheet of flexible insulative material overlying said strips, said second sheet being adhesively secured to the outer face of said strips and to said first sheet for electrically insulating the strips and for sealing the disks relative to the board thereby to substantially prevent contamination of the electrical contact between said disks and their respective column conductors.

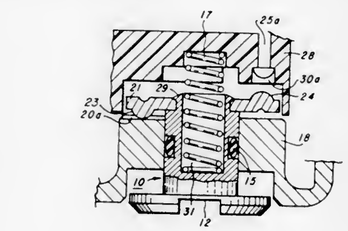
3,952,175

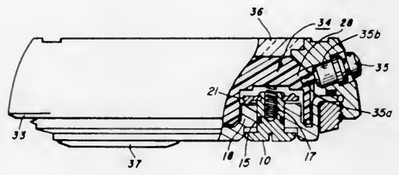
PUSHBUTTON SWITCH MECHANISM HAVING BLOCK OUT MEMBERS WITH COMMON MOUNTING AND DISCRETE LATCH BAR

Bernard J. Golbeck, Crystal Lake, and Raymond F. Lewandowski, Mount Prospect, both of Ill., assignors to Oak Industries Inc., Crystal Lake, Ill.

Filed Sept. 18, 1974, Ser. No. 506,972
Int. Cl.² H01H *9/26*
U.S. Cl. 200—5 E **16 Claims**







1. A pushbutton switch mechanism including a housing, a plurality of terminals positioned in said housing, a plurality of individual contact arms positioned for contact with said terminals,

said housing including a cover section having a cover portion and a button portion joined by an integral hinge, a plurality of buttons integrally formed with spring arms, said buttons and button spring arms being integrally formed with said button portion, said cover portion including openings, with said portions being folded one upon the other when said cover section is assembled, with the buttons extending through the button openings.

3,952,176

MULTIPLE POLE PUSHBUTTON ROTARY SWITCH

Paul Dalton Holder, and Dale Bruce Alexander, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 13, 1974, Ser. No. 532,664
Int. Cl.² H01H *13/52*, *19/10*; **G04C** *9/00*; **G04B** *27/00*
U.S. Cl. 200—11 R **28 Claims**

1. A selective switch device comprising:

a housing having an elongated bore extending therethrough;

a plunger member slidably received within the bore of said housing and extending therethrough;

a rotor plate mounted on one end of said plunger member and extending radially outwardly therefrom in outwardly disposed relation to said housing, said housing having an end surface extending transversely with respect to said plunger and disposed in juxtaposition to said rotor plate;

means defining a plurality of indexing positions on one of said rotor plate and said end surface of said housing;

an indexing member on the other of said rotor plate and said end surface of said housing, said indexing member being selectably receivable by any one of said plurality of indexing positions;

an insulative end member secured to said housing and covering said one end of said plunger member and said rotor plate in opposed spaced relation thereto;

means defining a plurality of electrically conductive contacts on said end member corresponding to the plurality of indexing positions and disposed in opposed spaced relation to said rotor plate;

an electrically conductive contact member on said rotor plate for selective engagement with any one of said plurality of contacts on said end member;

means biasing said plunger member and said rotor plate carried thereby in a direction normally spacing said contact member on said rotor plate from said plurality of contacts on said end member and seating said indexing member in engagement with a selected one of said indexing positions;

the other end of said plunger member being exposed for manual rotation of said plunger member and said rotor plate carried thereby with respect to said housing to selectably seat said indexing member in engagement with any one of said plurality of indexing positions; and

said contact member on said rotor plate being engageable with the particular contact on said end member corresponding to the selected indexing position in response to manual depression of said plunger member in a direction opposed to the direction in which said plunger member is urged by said biasing means.

3,952,177

TIMER FOR MULTI-PURPOSE USE

Kingo Murata, Shiki; Shigeyuki Nishimura, and Hiroshi Ogihara, both of Tokyo, all of Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed Oct. 29, 1974, Ser. No. 518,898
Claims priority, application Japan, Oct. 29, 1973, 48-121381
Int. Cl.² H01H *43/10*; **G04C** *21/16*
U.S. Cl. 200—35 R **3 Claims**

1. A timer to be built in a radio set or the like, which includes a clock mechanism driven by a synchronous motor, a "sleep" mechanism, a "snooze" mechanism, a timer set drum and a clutch disk interlocked with the clock mechanism and shiftable to the position where it can engage with the timer set drum for predetermined time period from the moment the time set by the timer set drum has come, comprising

a frame,

a vibrating reed attached to the synchronous motor for generating the buzzing sound,

a microswitch having an actuator and connected to the radio set or the like as a power switch of the latter,

a first slide plate slidably mounted on the frame and having at one end thereof a bent portion engageable with the actuator of the microswitch and an arm engageable with one surface of the clutch disk,

a second slide plate slidably mounted on the frame in parallel with the first slide plate and having at the middle thereof a buzzer stopper arm engageable with the vibrating reed and at one end thereof a bent portion facing with the bent portion of the first slide plate, the second slide plate being connected to the snooze mechanism,

an actuating lever pivotably supported on the frame with one end thereof positioned between the bent portions of the first and second slide plates,

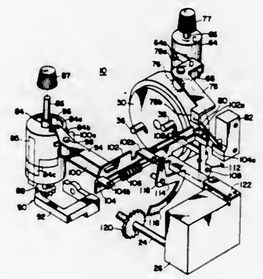
a spring for urging said one end of the actuating lever toward the bent portion of the first slide plate,

a contract spring arranged between the first and second slide plates,

a control member having a pair of cams and rotatably supported on the frame so that it can be set into four different positions,

a first connecting lever rotatable supported on the frame so that it couples one of said cams to the first slide plate,

a second connecting lever rotatably supported on the frame so that it couples the other of said cams to the second slide plate,



a switch lever pivotably mounted on the frame and coupled to the sleep mechanism through one end thereof so that, under the control of the sleep mechanism, the other end thereof can move between a position where is can open the microswitch and a position where it can close the microswitch,

a snooze actuating member mounted on the frame so that it can shift when depressed the second slide plate to the position where the buzzer stopper arm is engaged with the reed, and

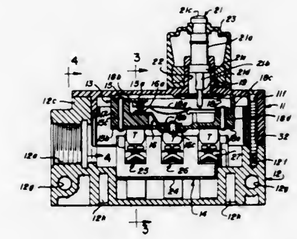
said pair of cams being so arranged that at the first position of the control member the first slide plate is shifted to the position where it can close the microswitch, that at the second position of the control member the first slide plate is retracted to the position where it can open the microswitch, that at the third position of the control member the first slide plate is retracted to the position where it can open the microswitch that at the third position of the control member the first slide plate is retracted to the position where it can open the microswitch but is held in movable condition toward the switch, and that the fourth position of the control member the first slide plate is retracted to the position where it can open the switch but is held in movable condition toward the switch and the second slide plate is held in the movable condition toward the switch.

3,952,178

SWITCH CONSTRUCTION

Cleve Lloyd Reese, Arden, N.C., and John P. Kelly, Mequon, Wis., assignors to Square D Company, Park Ridge, Ill.

Filed Mar. 25, 1975, Ser. No. 561,684
Int. Cl.² H01H *9/02*
U.S. Cl. 200—47 **10 Claims**



1. An electrical switch comprising a first component, a second component removably assembled with said first component, and a housing substantially enclosing said assembled components, said housing having a first section on which said first component is fixedly mounted and a second section on which said second component is fixedly mounted, said housing being provided with a passageway for electrical leads extending into the housing interior; said first component including first and second contact means arranged in spaced relation, and a third contact means having a portion thereof disposed intermediate said first and second contact means and being selectively movable into electrical contact with either the first or second contact means, each of said contact means being provided with a protuberance adapted to slidably engage in electrical contact a corresponding protuberance formed on said second component when said components are in assembled relation, said first component being provided with an adjustable actuating element to effect selective movement of said third contact means portion, adjustment of said element being effected exteriorly of said housing; the protuberances formed on said second component forming first segments of a plurality of terminals, said terminals having second segments spaced from said first portions for connection to the electrical leads when said housing sections are disposed in disassembled relation, said terminal second segments being spaced from a first interior wall surface of the housing, said housing second section having a pocket formed therein and in communication with said passageway for accommodating portions of the electrical leads extending into the housing interior, said pocket being disposed adjacent said terminal second segments and spaced from said terminal first segments.

3,952,179

ROTARY CUTTING DIE AND METHOD FOR ITS PRODUCTION

Kenneth Vincent Baker, Stillman Valley, Ill., assignor to Rockwell International Corporation, Pittsburgh, Pa.

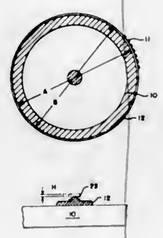
Division of Ser. No. 467,926, May 8, 1974, Pat. No. 3,905,283.
This application Feb. 6, 1975, Ser. No. 547,517
Int. Cl.² B23P *1/08*; **B23K** *9/16*
U.S. Cl. 219—69 M **3 Claims**

1. The method of making a rotary cutting die for converting sheet material into die cut and creased products comprising the steps of:

providing a die blank cylinder having a diameter less than a predetermined reference diameter,

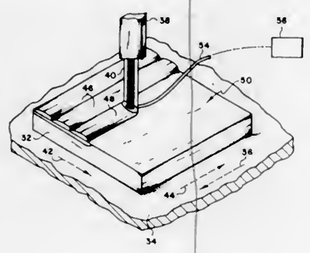
applying a weld bead to the peripheral surface of the die blank cylinder in a predetermined configuration to increase the effective diameter of the die blank cylinder beyond the reference diameter,

removing a portion of the weld bead to form a uniform working surface thereon having a diameter equal to said reference diameter,



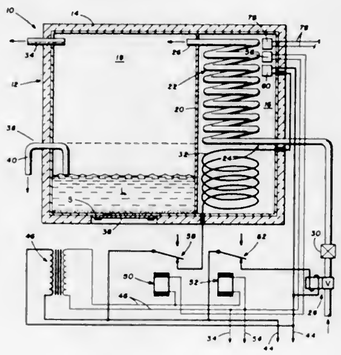
and electrical discharge machining said weld bead to form a cutting edge coincident with said working surface.

3,952,180
CLADDING
Daniel S. Gnanamuthu, Weymouth, Mass., assignor to Avco Everett Research Laboratory, Inc., Everett, Mass.
Filed Dec. 4, 1974, Ser. No. 529,379
Int. Cl.² B23K 27/00
U.S. Cl. 219—121 LM **17 Claims**



1. Cladding method comprising,
continuously scanning a metal substrate surface with a CW operating laser beam having a core power density of 29 to 500 kilowatts per square inch in linear traces with a longitudinal scanning speed along such linear trace of 5–50 inches per minute.
the scanning being carried out in a pattern to incrementally trace the surface with spaced scan line patterns,
simultaneously feeding a cladding metal to the substrate surface to intercept essentially the entire laser beam core and absorb essentially the entire beam energy so that the cladding material is melted and superheated and with application of laser beam power thereto for an essentially continuous period of at least 100 milliseconds and so that the adjacent substrate surface is heat treated at the same time to improve its wettability but melted only to the extent of a superficial surface layer thereof.

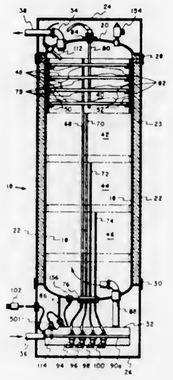
3,952,181
HUMIDIFIER
Hugh T. Reed, 3067 Valwood Parkway, Farmers Branch, Tex. 75234
Filed Aug. 5, 1974, Ser. No. 494,990
Int. Cl.² F22B 1/28
U.S. Cl. 219—272 **19 Claims**



1. A humidifier comprising:
a housing including a steam generation zone and a sediment separation zone having an upper portion and a lower portion;
heating means for selectively raising the temperature within the steam generation zone in the housing from ambient temperature to a predetermined operating temperature;
coil means for directing water through the steam generation zone of the housing so that when the temperature therein is at the predetermined operating temperature the water is vaporized into steam;
the coil means being formed from a material having a substantial coefficient of thermal expansion between ambient temperature and the predetermined operating temperature so that the coil means substantially expands as the temperature in the steam generation zone is raised under the action of the heating means and substantially contracts as the temperature within the steam generation zone is reduced upon de-energization of the heating means;
the expansions and contractions of the coil means causing separation of sediment from the interior thereof which sediment is carried through the coil means by the fluid flowing therethrough;
means for discharging the fluid flowing through the coil means into the upper portion of the sediment separation zone of the housing so that sediment and unvaporized water flowing from the coil means are separated from steam by the action of gravity and deposited in the lower portion of the sediment separation zone; and
means for discharging steam from the upper portion of the sediment separation zone of the housing.

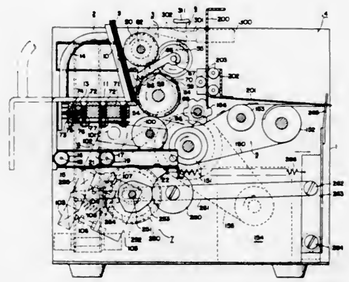
3,952,182
INSTANTANEOUS ELECTRIC FLUID HEATER
Robert D. Flanders, 18040 Lower Boones Ferry Road, Tigard, Oreg. 97223
Filed Jan. 25, 1974, Ser. No. 436,436
Int. Cl.² H05B 1/02, 3/78; F24H 1/10
U.S. Cl. 219—309 **22 Claims**

10. A rapid-response liquid immersion heater comprising:
a. a liquid-holding vessel;
b. a heating element mounted within said vessel for immersion in a liquid to be heated, said heating element comprising an electrical resistance element and a fluid-impervious, electrically non-conductive vitreous ceramic coating bonded to the outer surface of said resistance element for electrically insulating the same from said liquid, said coating having a thickness which is less than the thickness of said resistance element and is within the range of about



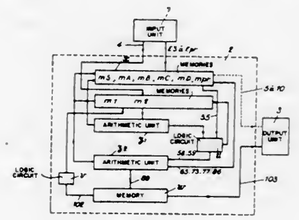
two to seven thousandths of an inch, said coating and resistance element respectively having substantially equal thermal expansion coefficients within a predetermined temperature range.

3,952,183
SHEET COUNTING APPARATUS
Masahiro Abe, Himeji, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Himeji, Japan
Filed June 21, 1974, Ser. No. 481,908
Claims priority, application Japan, June 28, 1973, 48-72248; Oct. 31, 1973, 48-122595
Int. Cl.² G06M 9/00; B65H 3/02
U.S. Cl. 235—92 SB **8 Claims**



1. In a sheet counting apparatus, the combination comprising:
a. a casing in which a stack of sheets to be counted is placed on one of their edges;
b. a sheet stand on the top of said casing, said sheet stand including means for exerting a forward pressure on the sheet-stack;
c. infeed means arranged forwardly of said sheet stand, said infeed means including at least one infeed roll which is rotatably mounted adjacent to one edge of the sheets in said sheet stand for frictionally and successively feeding out the foremost one of the sheets of a stack away from said sheet stand;
d. counting means arranged adjacent to said sheet stand for counting number of sheets successively fed from said sheet stand by said infeed means, said counting means including
1. at least one sensing roll rotatably mounted under said infeed roll so as to be displaceable away from said infeed roll in response to travelling of each sheet between said infeed roll and said sensing roll,
2. an arm on which said sensing roll is mounted, said arm being pivotally supported at one end thereof so as to be swingable through an angle corresponding to the degree of displacement of said sensing roll, and
3. a counter switch mounted on the other end of said arm, said counter switch being adapted to be actuated each time when a single sheet travels over the sensing roll;
e. conveyor means having a rear end disposed adjacent to said infeed means and a front end being remote from said infeed means, whereby the successively counted sheets loaded on said conveyor means at said rear end are transported to said front end thereof;
f. recovery means for recovering the counted and transported sheets from said conveyor means in the form of a substantially neat stack, said recovery means including
1. an abutment arranged forwardly of said front end of said conveyor means for stopping the successively counted sheets transported thereby, said abutment being effective to form a stack of the sheets on said front end of said conveyor means, and
2. a sheet holder plate arranged horizontally over said front end of said conveyor means for holding the stack of sheets in position thereon, said sheet holder plate being displaceable upwardly in step with the increase in the height of the stack of sheets; and
g. drive means for driving said infeed means and said conveyor means.

3,952,184
APPARATUS FOR THE AUTOMATIC CLASSIFYING AND FINDING OF GROUPINGS OF SERIES OF DISTINGUISHING SIGNS ACCORDING TO THE RISKS OF CONFLICT THEY INVOLVE WITH GIVEN GROUPINGS
Paul F. Bassard, Paris, France, assignor to Societe de Depot de Marques Sodema, Societe Anonyme, Paris, France
Filed Apr. 12, 1974, Ser. No. 460,651
Claims priority, application France, Apr. 13, 1973, 73.13440
Int. Cl.² G06F 7/00
U.S. Cl. 235—150 **10 Claims**



1. An apparatus for automatically finding and classifying trade marks or similar distinguishing signs MC of a first series representing marks previously registered and which have similarities capable of involving a risk of conflict R with trade marks or similar distinguishing signs MP of a second series representing marks presented for registration or use, said series of trade marks MC and MP each being represented by groupings of letters, comprising:
a. first memory means for recording said MC and MP groupings,
b. comparing and counting means for analyzing, pair by pair, each pair comprising an MCi grouping and an MPj

grouping to determine for each pair, the number *l* of the letters in the shortest trade mark, the number L of the letters in the longest trade mark, the number *a* of letters of the longest continuous or discontinuous sequence common to both groupings and disposed in the same relative positions within the sequence, the number *b* of letters common to both groupings other than those of the longest sequence, the number *c* of letters of the longest grouping not found in the other grouping,

c. second memory means for storing predetermined values of the functions A(*a*, *l*), B(*b*,L) and C(*c*,L) having increasing slopes for increasing values of *a*, *b* and *c*, respectively, for *l* and L constant, and

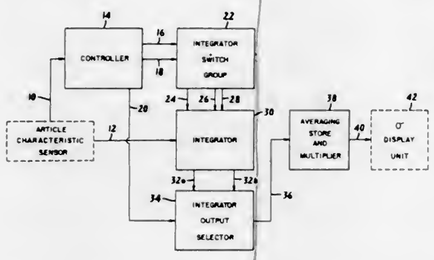
d. adding means connected to receive from said second memory means the values Aij, Bij and Cij corresponding to the numbers *l*, L, *a*, *b*, and *c* determined by said comparing and counting means for determining a coefficient of similarity (Aij + Bij − Cij) proportional to said risk of conflict R.

3,952,185

STANDARD DEVIATION DETERMINING APPARATUS

Edward B. Stultz, Chesterfield, Va., and Thomas A. Budne, Great Neck, N.Y., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jan. 17, 1975, Ser. No. 541,842
Int. Cl.² G06G *7/48*
U.S. Cl. 235—151.13 **12 Claims**



1. A system for generating an output signal indicative of the standard deviation of a random variable responsively to system input signals each indicative of a sampled value of said variable, comprising:

a. integrator means for integrating separately each said input signal and for generating output signals indicative separately of the integrated values of individual ones of said input signals;

b. signal selector means for generating output signals consisting of said integrator means output signals having amplitude unidirectionally displaced from a predetermined signal amplitude; and

c. averaging circuit means for averaging said signal selector means output signals and generating an output signal indicative of such averaging, said averaging circuit means output signal constituting said system output signal.

3,952,186

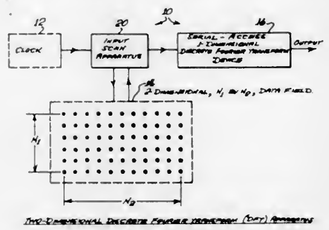
APPARATUS FOR THE GENERATION OF A TWO-DIMENSIONAL DISCRETE FOURIER TRANSFORM

Jeffrey M. Speiser, and Harper John Whitehouse, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 10, 1975, Ser. No. 548,300
Int. Cl.² G06F *15/34*
U.S. Cl. 235—156 **12 Claims**

1. An apparatus for the generation of two-dimensional discrete Fourier transforms of an input signal developed from a data field having a size of N_1 by N_2, N_1 and N_2 being relatively prime with respect to each other, comprising:

an input scan apparatus for scanning the N_1 by N_2 two-dimensional data field comprising the input signal, which receives and scans in such an order, or sequence, the N_1 by N_2 input data samples in the field so that a subsequently generated one-dimensional Fourier transform of



a length $N_1 N_2$ serial data string is identical to an N_1 by N_2 two-dimensional discrete Fourier transform of the N_1 by N_2 input data samples; and

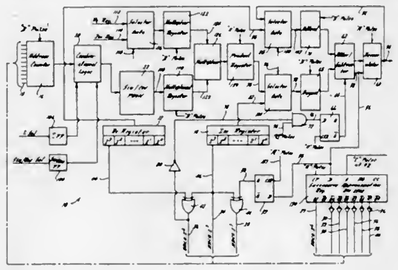
a serial-access one-dimensional discrete Fourier transform (DFT) device, connected to the input scan generator, for generating a one-dimensional discrete Fourier transform of the length N_1 N_2 serial data string.

3,952,187

CIRCUIT FOR TRANSFORMING RECTANGULAR COORDINATES TO POLAR COORDINATES

John L. Robinson, Wenonah, N.J., and Anthony Mattei, Philadelphia, Pa., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 27, 1975, Ser. No. 591,224
Int. Cl.² G06F *7/38*; **G06G** *7/22*
U.S. Cl. 235—186 **10 Claims**



1. A circuit for transforming to polar coordinate form first and second binary number electrical signals representative of rectangular coordinates for a vector or phasor or the like, said first binary number electrical signal being representative of a coordinate dimension parallel to one axis of a rectangular coordinate system and said second binary number electrical signal being representative of a coordinate dimension parallel to an other axis of said rectangular coordinate system, said circuit generating a third binary number electrical signal representative of the polar coordinate angle, measured relative to said one axis and determined by the magnitudes of said first and second binary number electrical signals, said circuit comprising:

first register means for storing said first binary number electrical signal;

second register means for storing said second binary number electrical signal;

third register means for accumulating the bits forming said third binary number electrical signal, the most significant bit of said second binary number electrical signal being coupled to the most significant bit position of said third register means;

circuit means for setting a second bit position of said third register means to a predetermined logic state;

memory circuit means programmed to provide sine and cosine values of the angle represented by the binary number contents of said third register means;

multiplier circuit means, coupled to said memory circuit means and to said first and second register means, for multiplying the contents of said second register means by said cosine value to form a first product and to multiply the contents of said first register means by said sine value to form a second product;

circuit means for determining if one of said products is greater than the other of said products; and

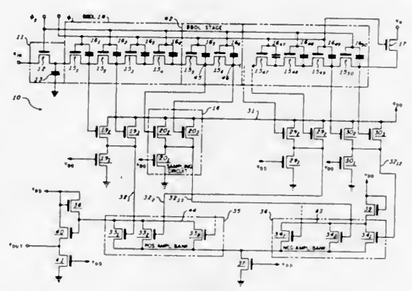
circuit means for changing said predetermined logic state setting of said second bit position of said third register means if said one of said products is greater than said other of said products.

3,952,188

MONOLITHIC TRANSVERSAL FILTER WITH CHARGE TRANSFER DELAY LINE

Harry M. Sloate, Acton, and Arthur M. Cappon, Boston, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 24, 1975, Ser. No. 561,568
Int. Cl.² H03K *5/159*
U.S. Cl. 235—193 **8 Claims**



1. A monolithic transversal filter comprising:

a plurality of charge transfer means coupled together to form a charge transfer delay line for sequentially transferring analog information in the form of electrical signals;

a plurality of sampling means coupled to selected charge transfer means for sensing said electrical signals therein;

a plurality of amplifier means, each having an output, an input individually coupled to one of said sampling means, and an amplification characteristic which may be variable fabricated to yield at the output of said amplifier means a signal indicative of the sensed electrical signal amplified by a desired factor and compensated with respect to errors therein occurring within said charge transfer delay line and wherein said plurality of amplifier means are arranged in first and second groups for polarizing the outputs of said amplifier means such that the outputs of the amplifier means comprising said first group are coupled to a first common output and the outputs of the amplifier means comprising said second group are coupled to a second common output; and

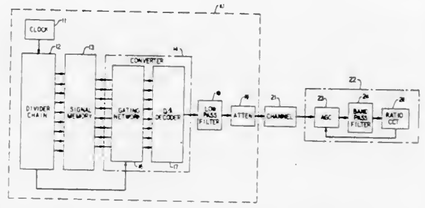
circuit means coupled to said plurality of amplifier means and cooperating therewith for providing a differential summation of the output signals from said amplifier means such that the signal on either said first or second common output represents the polarized summation of the error-compensated, amplified electrical signals sensed by said sampling means in said selected charge transfer means.

3,952,189

COMPLEX ANALOG WAVEFORM GENERATOR

Wayne Nixon Fabricius, Freehold, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 27, 1975, Ser. No. 553,510
Int. Cl.² G06F *15/34*; **G06G** *7/28*
U.S. Cl. 235—197 **6 Claims**



1. Apparatus for generating a precisely controlled complex analog waveform comprising:

means for defining a plurality of digital signals in the form of code groups constituting encoded samples of a pulse train having a fundamental spectral component and a plurality of higher order spectral components, said spectral components being each offset from a different nominal frequency by a prescribed frequency and defining a predetermined frequency spectrum, and said nominal frequencies being in harmonic relationship to each other,

accessing means in predetermined circuit relationship with said means for defining for providing the code groups in a predetermined repetitive sequence, and

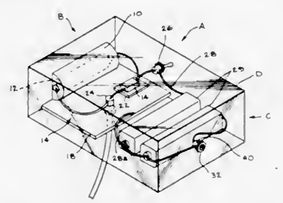
converting means for decoding the digital signals in the code groups to form the pulse train whereby the prescribed frequency has a value that insures that the peak amplitude of at least one of the pulses of the pulse train essentially corresponds to the peak amplitude of the envelope of the pulse train independent of phase intercept distortion being subject to the pulse train.

3,952,190

UNDERWATER STROBE FLASH UNIT

Ronald L. Perkins, 10911 Monteverde Lane, Houston, Tex. 77072

Filed Nov. 8, 1974, Ser. No. 522,149
Int. Cl.² G03B *17/08*, *15/05*; **F21V** *31/00*
U.S. Cl. 240—26 **11 Claims**



1. A method of waterproofing a strobe flash unit including a synchronizing switch actuated by cable means and power supply for use in underwater photography, comprising:

providing an elastomer mold;

mounting a strobe flash unit and power supply within said mold;

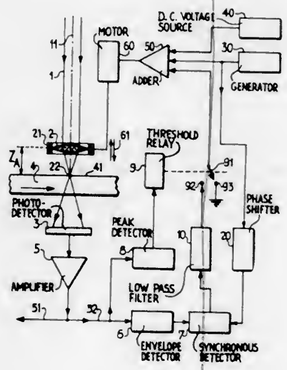
forming an aperture through one surface of said mold;

extending a cable slightly larger than said aperture through said aperture to said strobe flash unit;
attaching said cable to said synchronizing switch to operatively connect said cable and said switch;
electrically connecting said strobe flash unit, said switch and said power supply;
pouring epoxy resin into said mold to surround said strobe flash unit and power supply;
curing said epoxy resin in said mold;
removing said mold from said epoxy resin, whereby said strobe flash unit and power supply are encapsulated in a waterproof casing of epoxy resin.

3,952,191
CONTROLLED SYSTEM FOR FOCUSSING A READ-OUT LIGHT BEAM

Claude Tinet, Paris, France, assignor to Thomson-Brandt, Paris, France

Filed Nov. 14, 1974, Ser. No. 523,834
Claims priority, application France, Nov. 13, 1973, 73.40882
Int. Cl.² G01J 1/20
U.S. Cl. 250—201 **8 Claims**

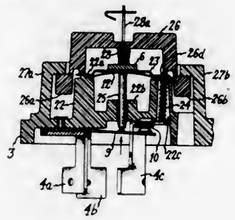


1. A system for controlling the focussing of a convergent beam of radiant energy directed toward a recorded face of a substrate carrying data in the form of an angularly modulated carrier wave, said carrier wave being transcribed along an optically readable track lying within said recorded face; said system comprising: generator means for producing a periodic electrical pilot signal having a frequency substantially smaller than the lowest frequency of said angularly modulated carrier wave; an objective lens causing said convergent beam of radiant energy to illuminate said optically readable track at its convergence point electromechanical means arranged for displacing said convergence point in response to said periodic electrical electrical pilot signal and along the direction of incidence of said convergent beam; photodetector means arranged for collecting a portion of the radiant energy emerging from the illuminated portion of said optically readable track; sensing means connected to the respective outputs of said generator means and of said photodetector means for producing a focussing error signal; and feed back means for applying said focussing error signal to the control input of said electromechanical means, thus bringing said convergence point in coincidence with said recorded face.

3,952,192
THERMAL SWITCH DEVICE

Charlie B. Turner, and Clifford M. Laughter, both of Hendersonville, N.C., assignors to General Electric Company, New York, N.Y.

Filed May 27, 1975, Ser. No. 581,168
Int. Cl.² H01J 5/02
U.S. Cl. 250—239 **14 Claims**

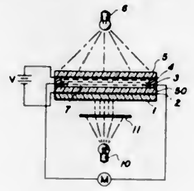


1. Electrical switch device comprising, in combination, a housing having a bottom wall and a side wall and having an open top, a bimetal member covering the open top of said housing, an electrically conductive retainer member overlying said bimetal member, temperature sensitive variable resistance means arranged on said retainer member in electrical and thermal contact therewith, a pair of separable electrical contact members arranged adjacent said bottom wall of said housing including a movable and a fixed contact member, electrically insulating connecting means arranged in said housing between said bimetal member and said movable contact member, and electrically conductive means electrically connecting said retainer member to one of said contact members, said movable contact member being normally urged toward said electrically insulating connecting means, said bimetal member flexing in response to variation in temperature to different positions toward and away from said electrically insulating connecting means for thereby operating said movable contact member for electrically connecting and disconnecting said contact members, and a cap covering the open top of said housing and holding said retainer member in assembly on said housing.

3,952,193
IMAGING METHOD WITH U.V. EXCITATION OF LIQUID CRYSTAL

Werner E. L. Haas, Webster, and James E. Adams, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 25, 1974, Ser. No. 509,151
Int. Cl.² H01J 31/49; G02B 5/23
U.S. Cl. 250—331 **22 Claims**



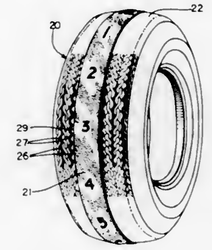
1. A method for dynamically scattering a pure liquid crystalline composition comprising a pure trans-stilbene material, comprising:
a. providing between two electrodes, a layer of said liquid crystalline composition incapable of dynamically scattering when a voltage of predetermined magnitude is applied thereacross;

b. irradiating said layer of liquid crystalline composition with ultraviolet radiation to increase the conductivity thereof sufficiently to cause dynamic scattering when said voltage of predetermined magnitude is applied thereacross; and
c. applying said voltage of predetermined magnitude across said layer of liquid crystalline composition.

3,952,194
DEVICE FOR IDENTIFYING THE LOCATION OF DEFECTS IN A TIRE BEING X-RAYED

Jack L. Bayonnet, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 11, 1974, Ser. No. 522,409
Int. Cl.² G01N 23/00
U.S. Cl. 250—358 T **17 Claims**

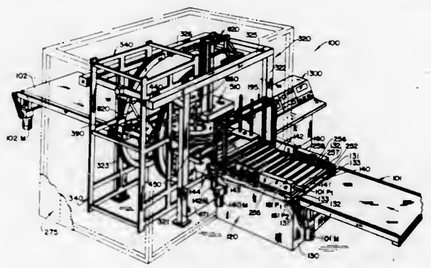


7. A method of visually inspecting a tire and correlating observable defects, or building details of the tire, to arcuate positions on the tire, comprising:
a. rotating a tire to be inspected;
b. passing X-rays through the tire from the inner peripheral surfaces thereof;
c. translating X-rays passed through the tire into images observable on a television monitor;
d. correlating the images to indicia representing arcuate positions around the tire; and
e. providing a visual display of the indicia in conjunction with the images.

3,952,195
SYSTEM OF INSPECTING TIRES WITH RELATIVELY MOVABLE INSPECTION APPARATUS COMPONENTS

Donald N. Heisner, Euclid, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Filed Aug. 7, 1974, Ser. No. 495,379
Int. Cl.² G01N 23/00
U.S. Cl. 250—358 T **27 Claims**

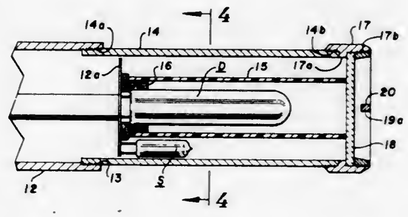


1. A tire inspection apparatus, comprising:
a. an inspection structure defining an inspection station and being operable to direct penetrative emanation through portions of a tire positioned in the inspection station;
b. the inspection structure including means for positioning a tire in the inspection station including a support and at least one tire positioning component for engaging and facilitating the positioning of a tire in the tire inpsection station, the component being movable relative to the support along a path between two ends of a range of movement;
c. drive means operably connected to the component for moving the component along said path to facilitate the positioning of a tire in the tire inspection station;
d. position monitoring means operably connected to the component for providing an output signal indicative of the position of component along said path;
e. sensing means positioned near opposite ends of said range of movement for signaling when the component is at either end of said range of movement; and
f. control means operably connected to the drive means and the position monitoring means and being responsive to said output signal to normally position the component inwardly of the ends of its range of movement, whereby the sensing means provides a signal indicating that the component has reached an end of its range of travel when the apparatus has malfunctioned.

3,952,196
RADIATION DETECTION APPARATUS

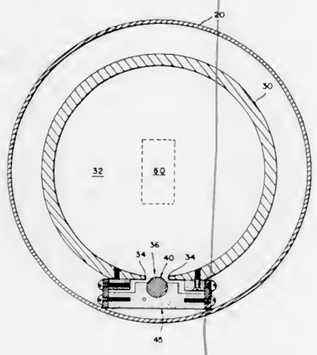
Theodore E. Larsen, Edina, Minn., assignor to Detector Electronics Corporation, Minneapolis, Minn.

Filed Feb. 5, 1975, Ser. No. 547,173
Int. Cl.² G01J 1/42
U.S. Cl. 250—372 **14 Claims**



1. An improvement in radiation detection apparatus, such improvement including:
a. a longitudinally extending housing;
b. means for mounting a source of radiation in said housing;
c. means for mounting a detector of radiation in said housing;
d. radiation shielding means extending longitudinally within said housing and arranged between said radiation source and said detector means to prevent radiation transmission therebetween within said housing;
e. radiation transmitting passages provided by said housing and said shielding means for the emission of radiation from said source and the reception of the source radiation by said detector; and,
f. reflective means positioned adjacent said housing and spaced from said shielding means to receive radiation from said source and reflect the same to said detector, whereby the radiation transmitting passage permitting the reception of radiation by said detector is monitored to determine its ability to transmit radiation to said detector.

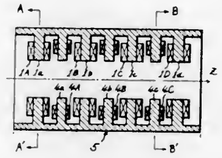
3,952,197
ION CHAMBERS
James A. R. Samson, 1600 Regency Drive, Lincoln, Nebr. 68520
Filed Feb. 14, 1975, Ser. No. 550,114
Int. Cl.² G01T *1/18*
U.S. Cl. 250—382 **11 Claims**



1. A device for detecting ionization of a gas by a source of radiant energy which provides a measurement of the absolute intensity of radiant energy comprising:
an evacuatable pressure chamber into which the gas can be introduced,
means for introducing radiant energy into said chamber,
an ion repeller electrode disposed within said chamber for repelling the ions and collecting the electrons formed by said ionization of said gas,
at least one ion-collector electrode disposed within said chamber in spaced relation to said ion-repeller electrode for collecting the ions and repelling the electrons formed by said ionization of said gas,
means for positively charging said ion-repeller electrode with respect to said at least one ion-collector electrode to create an electric field therebetween, and
means for detecting the ions collected by said at least one ion collector electrode,
said ion repeller electrode and said at least one ion collector electrode being constructed, configured and arranged with respect to each other such that said electric field has a non-uniform potential gradient between said ion repeller electrode and said at least one ion-collector electrode, allowing said gas to be ionized by said radiant energy in a region of comparatively low field strength, and the electrons thereby formed to be collected by said ion-repeller electrode with at most a small gain in energy to minimize secondary ionization of said gas by said electrons, while allowing said electrons to be repelled from said at least one ion collector electrode by a sufficiently high electron retarding potential to minimize the collection of said electrons by said at least one ion collector electrode.

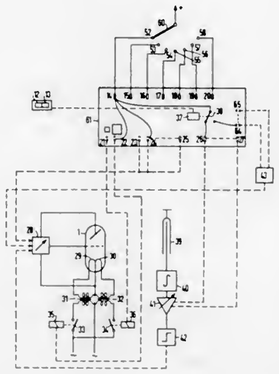
3,952,198
ELECTRON LENS
Yoshiyasu Harada, both of Akishima, and Teruo Someya, both of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 26, 1974, Ser. No. 500,625
Claims priority, application Japan, Sept. 3, 1973, 48-99088
Int. Cl.² H01J *37/26*
U.S. Cl. 250—396 ML **3 Claims**

1. An electron lens system comprising a plurality of quadrupole elements, a plurality of octupole elements for correcting the spherical aberrations of said plurality of quadrupole elements, and an axially symmetric lens arranged adjacent said quadrupole and octupole elements, means for varying the



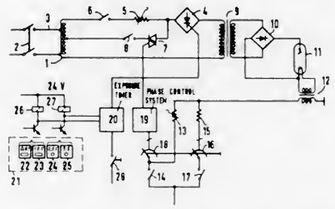
intensity of the axially symmetric lens while maintaining the intensities of the quadrupole and octupole elements substantially constant thus varying the focal length of said system.

3,952,199
X-RAY DIAGNOSTIC INSTALLATION
Kurt Franke, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany
Filed Apr. 21, 1975, Ser. No. 570,164
Claims priority, application Germany, May 21, 1974, 2424634
Int. Cl.² H05G *1/00*
U.S. Cl. 250—402 **5 Claims**



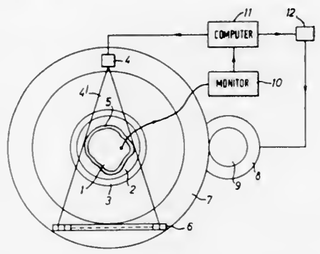
1. In an X-ray diagnostic installation including a patient support arrangement; an X-ray tube for transilluminating a patient; a high-voltage generator and a heating filament generator for said X-ray tube; control means for said high-voltage generator and for said heating filament generator; a plurality of exposure systems for X-ray images selectively actuatable for use with said X-ray tube; and an organ selector arrangement for the organ-programmed setting of exposure values for each exposure system, said arrangement having a switch position for each organ whose exposure values are programmed, said arrangement including switch means for the exposure values associated with the switch position for effecting the setting of the programmed exposure values, the improvement comprising: said arrangement including a single organ selector common to all of said exposure systems; and selector means for operatively connecting said switch means associated with the one switch position of said organ selector to setting means for the exposure values dependent upon the exposure program for the currently selected exposure system and the organ associated with said switch position.

3,952,200
X-RAY GENERATOR FOR AN APPARATUS FOR THE PRODUCTION OF TOMOGRAPHIC X-RAY PICTURES
Hans Werner Winkler, Buckenhof, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany
Filed Feb. 28, 1975, Ser. No. 554,215
Claims priority, application Germany, Mar. 5, 1974, 2410524
Int. Cl.² H05G *1/00*
U.S. Cl. 250—402 **5 Claims**



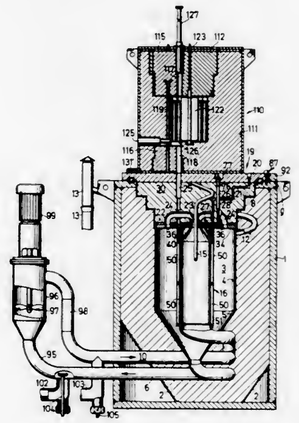
1. In an X-ray generator for an apparatus for producing tomographic X-ray pictures; an exposure unit having an X-ray tube and a picture target carrier, said exposure unit having different exposure periods through the motion path of the apparatus; setting means for the X-ray tube voltage and for the X-ray tube current; and timer means for determination of the exposure time, the improvement comprising: means in said generator for programming at least one paired value from the X-ray tube voltage and X-ray tube current for each exposure period and for each body organ to be X-rayed; a selector arrangement and means for selection of the X-ray tube motion path adapted to select an applicable paired value.

3,952,201
RADIOGRAPHY
Godfrey Newbold Hounsfield, Newark, England, assignor to EMI Limited, Hayes, England
Filed July 17, 1974, Ser. No. 489,142
Claims priority, application United Kingdom, July 21, 1973, 34858/73
Int. Cl.² H05G *1/00*
U.S. Cl. 250—403 **7 Claims**



1. Apparatus for examining a living body by means of penetrating radiation, such as X- or γ- radiation, including source means for irradiating said body with said radiation, scanning means for causing said source means to scan around said body to direct said radiation through said body along a plurality of paths lying in a plane of finite thickness which intersects said body, detector means, adapted to scan with said source means, disposed to receive the radiation emergent from said body along said paths and adapted to provide, in accordance with a prescribed programme, respective output signals indicative of the absorption suffered by said radiation on traversing each of said paths, monitoring means for monitoring the motion of the heart of the body under examination and for producing motion signals indicative of said motion, control means, responsive to said motion signals, for generating a control signal indicative of periods during which said motion exceeds a threshold level, means responsive to said control signal for interrupting said output signals during said periods, further means responsive to said control signal for generating a further control signal for application to said scanning means to control said scan whereby output signals omitted from said programme due to said interruption are subsequently provided by said detector means.

3,952,202
APPARATUS FOR IRRADIATING FLOWABLE MATERIAL
Ernst Bosshard, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed June 13, 1974, Ser. No. 479,115
Claims priority, application Switzerland, June 19, 1973, 8862/73
Int. Cl.² H01J *37/00*
U.S. Cl. 250—432 R **12 Claims**

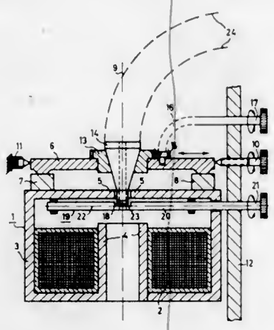


1. An apparatus for irradiating flowable material comprising
a material-receiving irradiation chamber;
a screening cover on said chamber and having a passage for radioactive sources therethrough;
a receptacle in said chamber including at least one position for receiving a radiation source, said receptacle being shiftable between an attached position and a detached position relative to said cover, and said screening cover being rotatable relative to said receptacle in said detached position to selectively communicate said passage with a respective position in said receptacle to permit transportation of a radioactive source therebetween; and
connecting means for attaching said receptacle to said cover.

3,952,203
OBJECT ADJUSTMENT DEVICE FOR A CHARGED PARTICLE BEAM APPARATUS
Walter Hoppe, Munich, Germany, assignor to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Gottingen, Germany
Continuation of Ser. No. 378,422, July 12, 1973, abandoned. This application Nov. 7, 1974, Ser. No. 521,826
Claims priority, application Germany, July 21, 1972, 2236530
Int. Cl.² G21K *5/06*
U.S. Cl. 250—442 **14 Claims**

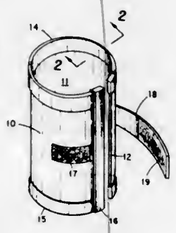
1. In a charged particle beam inspection apparatus, the improvement comprising:

a fixed support in an evacuated chamber;
a linearly movable object stage, disposed on said support, and intersected by a first axis which is coincident with the particle beam of the apparatus at the point of its intersection with said object stage;
first means for linearly moving said object stage on said support;
an object carrier for receiving a specimen;
second means coupled to said said object stage for detachably coupling said object carrier to said object stage and releasing said carrier therefrom; and



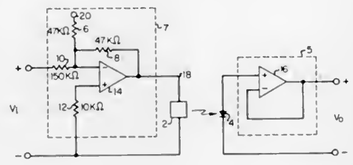
third means, coupled to said support and disposed below said object stage, for receiving said object carrier from said object stage and supporting said carrier therebelow, said third means being rotatable about a second axis which is not coincident with said first axis, and being mechanically independent of and separate from said object stage and said means for linearly moving said object stage, so that said object carrier is rotatable mechanically independently of said object stage.

3,952,204
FILM HOLDER FOR RADIOGRAPHING TUBING
Earl V. Davis, and Billy E. Foster, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.
Filed Jan. 14, 1975, Ser. No. 541,023
Int. Cl.² G03B *1/00*
U.S. Cl. 250—475 **2 Claims**



1. An improved film holder for the radiographic inspection of circumferential welds in piping comprising a pair of opaque plastic semi-rigid cylindrical members each being slit longitudinally, said members being joined to each other at one slit edge thereof by means of an integral, flexible opaque hinge so as to permit one of said members to be folded into the interior of the other member such as to secure a sheet of film and other desired sheet materials between said members when thus folded, a pair of opaque plastic slotted cylindrical end caps, each having an open end and adapted to be fitted over the respective ends of said members when folded, a longitudinal opaque plastic cap adapted to be fitted over the other slit edges of said members and the open ends of said end caps thereby effecting a light-tight enclosure for said film, and means for releasably holding said film holder about a piece of piping being inspected during exposure to a radiographic source.

3,952,205
LINEAR PHOTON COUPLED ISOLATOR
Morley C. Tobey, Jr., Sunnyvale, and David F. Colicchio, La Honda, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Nov. 25, 1974, Ser. No. 526,872
Int. Cl.² H04B *9/00*; H03K *19/14*
U.S. Cl. 250—551 **9 Claims**



1. A photon coupled isolator comprising:
photon emitting means coupled to receive an applied input signal I_i and having photon emission exponentially related to the applied input signal for producing radiation; and
a photodiode having a logarithmic voltage versus photocurrent characteristic coupled to receive radiation from the photon emission means and connected to a high impedance load for producing an output signal across the high impedance load which is a substantially linear function of said applied input signal,
said high impedance load having an impedance greater

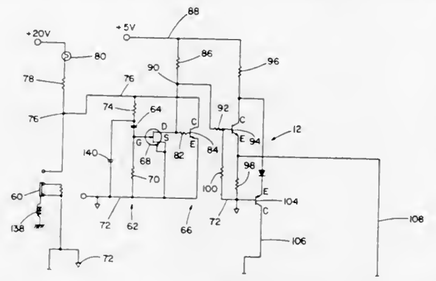
than $\frac{2kT}{ql_s} \ln\left[1 + \frac{I_i}{I_o^*}\right]$

k being Boltzmann's constant, T being the absolute temperature, q being the magnitude of the charge of an electron, I_s being the value of short circuit photocurrent produced by the photodiode in response to receiving radiation corresponding to the applied signal I_i from the photon emitting means, and I_o^* being the photodiode dark reverse leakage current.

3,952,206
PHOTOMETER CIRCUIT
Gerhard A. Liedholz, Miami, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.
Filed May 9, 1974, Ser. No. 468,491
The portion of the term of this patent subsequent to Aug. 14, 1990, has been disclaimed.
Int. Cl.² G01J *3/46*; G01N *33/16*
U.S. Cl. 250—565 **22 Claims**

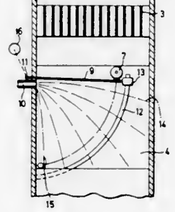
1. In a photometer circuit operable to compare a reference signal with a test signal, the improvement comprising control circuit means operable to place said photometer circuit in a receiving and storing mode of operation for a predetermined period of time, during which time a reference signal is received and stored in said photometer circuit, and grounding means connected to said control circuit means comprising a switch connected to ground, a series circuit of a transistor and a line connectable to ground, said series circuit shunting said switch, and means for placing said transistor into conduction for a predetermined period of time when said switch is closed,

wherein at the instant the switch contacts touch, the transistor provides a path to ground and is held clamped until the end



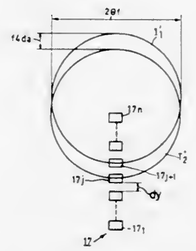
of a timing interval, thereby rendering the control circuit means independent of manners of switch operations.

3,952,207
METHOD AND MEANS FOR DETERMINATION OF PARTICLE SIZE DISTRIBUTIONS IN A MASS FLOW OF A GRANULAR MATERIAL
Kurt Leschonski, Am Silbersegen 8, 3392 Clausthal-Zellerfeld, and Hans Rumpf, Hans-Jakob Strasse 12, 75 Karlsruhe, both of Germany
Continuation of Ser. No. 437,034, Jan. 28, 1974, abandoned. This application June 30, 1975, Ser. No. 591,844
Claims priority, application Germany, Feb. 1, 1973, 2304879
Int. Cl.² G01N *21/26*
U.S. Cl. 250—573 **9 Claims**



1. A method for the determination of the particle size distribution in a mass flow of a granular material having individual particle classes in the particle size range of 1 μm to several millimeters, comprising the steps of:
establishing a constant velocity flow of a gaseous carrier medium through a continuous flow channel;
passing the gaseous carrier medium through a flat walled channel of narrow depth open at its downstream end and being of uniform size along its length and of uniform size across its width so that the velocity of said stream of medium is maintained at a constant value for a time period designated as measuring time which extends for the width and length of said narrow channel;
introducing a stream of granular material into said carrier medium flow at the upstream end and at one side of said narrow channel transversely of the carrier medium flow;
selecting the velocity of said material stream and said carrier medium flow in such a manner that individual particle classes of the granular material are carried along separate particle paths in a fan-shaped pattern across the narrow channel;
establishing a signal transmitting radiation at one wall of the narrow channel through the flow across the depth of the narrow channel;
and receiving the radiation at the other wall of the channel determining the particle quantities corresponding to the individual particle classes in the fan-shaped stream of the material from the extinction of said radiation.

3,952,208
DEVICE FOR CONTROLLING THE POSITION OF A FIRST BODY RELATIVE TO THAT OF A SECOND BODY
Francois Desvignes, Bourg-la-Reine (Seine), and Marcel Georges Hebert, Paris, both of France, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 1, 1974, Ser. No. 438,658
Claims priority, application France, Feb. 2, 1973, 73.03744
Int. Cl.² H01J *39/12*
U.S. Cl. 250—578 **16 Claims**

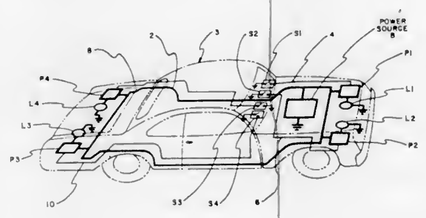


1. A device providing position information of a first body relative to the position of a second body, said device forming a part of the first body and comprising, a radiation sensitive detector system including a plurality of radiation sensitive detectors arranged in a row, a mirror pivotally mounted for periodic oscillation about an axis at a constant amplitude and frequency and located to receive radiation energy from the second body, an objective system positioned in the path of the radiation energy reflected by the mirror for forming a periodically moving radiation image of the second body on a part of the radiation sensitive detector system, and an electronic circuit for processing a detector signal derived by the radiation sensitive detector system in response to said radiation image thereby to produce a position indication, said row of radiation sensitive detectors being aligned in a direction parallel to the direction of periodic movement of the radiation image and with the detector dimensions, the spacing between detectors and the oscillation amplitude of the mirror being related such that the radiation image of the second body is oscillated over a maximum of two radiation detectors.

3,952,209
ELECTRICAL SYSTEM FOR AUTOMOTIVE VEHICLES AND THE LIKE
Francis Sowersby Shaklee, Southfield; Julius Neumann, Warren, and Evans James Irving, Grand Rapids, all of Mich., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Sept. 9, 1974, Ser. No. 504,125
Int. Cl.² H02G *3/00*
U.S. Cl. 307—9 **8 Claims**

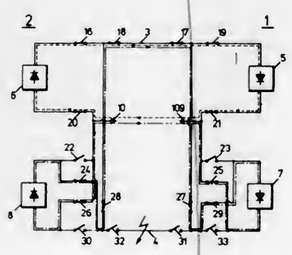
1. An electrical system for a vehicle carrying a self-contained source of electrical power, a plurality of electrical devices at various locations about the vehicle, a heavy gauge main supply conductor coupled to one terminal of said source and positioned to pass adjacent each of said devices, means for coupling said devices to the opposed terminal of said source, a plurality of controllers for individually controlling the operation of one or more of said devices, with said control-

lers each disposed physically adjacent said devices controlled thereby, individual heavy gauge power conductors coupling the respective controllers to said main supply conductor, heavy gauge power conductors electrically joining said controllers to the devices controlled thereby, and a plurality of



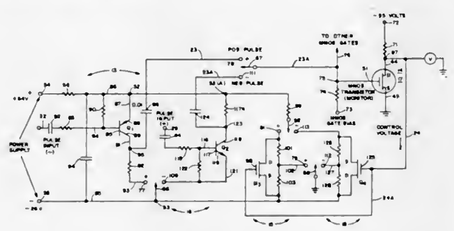
independent, manually operable switches, light gauge signalling conductors each connecting each of said switches to said controllers and independently to said power source whereby responsive to selective operation of any of said switches at least one of said controllers is actuated to control the operation of any devices controlled thereby.

3,952,210
GROUNDING OF A DOUBLE-POLE HIGH VOLTAGE-DIRECT CURRENT-TRANSMISSION SYSTEM
Karl Werner Kanngiesser, Viernheim, Germany, assignor to Brown, Boveri & Cie AG, Mannheim, Germany
Filed Dec. 4, 1974, Ser. No. 529,268
Claims priority, application Germany, Dec. 6, 1973, 2360783
Int. Cl.² H02H *1/02*
U.S. Cl. 307—82 **2 Claims**



1. In a double-pole high-voltage direct-current transmission system with two stations and an overhead line, each of the stations having rectifier bridges connected in series from a positive line pole to a ground electrode and from the ground electrode to a negative line pole, whereby the earth serves as return line if one of the line poles should fail, the ground electrode at one of the stations being a depth electrode regularly operated as an anode, and the ground electrode at the other of the stations being regularly operated as a cathode, and two pairs of reversing switches, each of said pairs, when the other of the stations is operated as a rectifier, being connected on the direct-current side of and to the respective rectifier bridges located between the negatively operated line pole and the depth electrode, on the one hand, and between the negatively operated line pole and the ground electrode operated as a cathode, on the other hand.

3,952,211
SYSTEM FOR CONTROLLING THE THRESHOLD SETTING OF A FIELD EFFECT MEMORY DEVICE
Everett Eberhard, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.
Continuation of Ser. No. 270,075, July 10, 1972, abandoned. This application May 3, 1974, Ser. No. 466,749
Int. Cl.² H03K *5/00*
U.S. Cl. 307—238 **4 Claims**



1. An apparatus for setting the threshold conducting and nonconducting potential of a threshold memory device to a predetermined level, the memory device having a threshold conducting and nonconducting potential level, respectively, which tend to shift in the absence of controlling the conducting and nonconducting potential applied thereto, the memory device including a control electrode, comprising:

a first power supply conductor being adapted to receive a power supply voltage of a first polarity;

a second power supply conductor being adapted to receive a power supply voltage of a second polarity;

first resistive means having first and second terminals, said first terminal being coupled in series to said first power supply conductor;

means for biasing the control electrode of the memory device at predetermined first and second direct current potential levels respectively, to provide initial conducting and nonconducting threshold levels for the memory device;

means for supplying a train of pulses to the control electrode of the memory device for causing the memory device to selectively switch from a conducting or nonconducting state and vice versa, said train of pulses being either positive or negative respectively;

feedback means operatively coupled between the output of the memory device and said means for supplying a train of pulses for sensing incremental changes of said output of the memory device for incrementally reducing the energy and number of pulses applied to the memory device by said means for supplying a train pulses so that no more than the necessary number of pulses are applied to the memory device to switch its state thereby preventing a shift in the conducting and nonconducting threshold potential level; and

said means for supplying a train of pulses including:

a. capacitive means having first and second terminals respectively coupled between said second terminal of said first resistive means and said second power supply conductor for developing a voltage potential thereacross having a predetermined initial voltage amplitude;

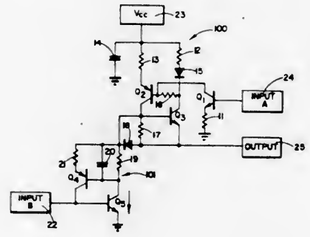
b. first electron control means having first, second and control electrodes, said control electrode being adapted to receive a train of negative pulses, said pulses having relative voltage amplitudes which are less than said predetermined initial voltage amplitude developed across said capacitor means, said first electrode being connected to said second terminal of said first resistive means;

c. second electron control means having first, second, and control electrodes, said control electrode being adapted to receive a train of positive pulses, said pulses having relative voltage amplitudes which are less than said predetermined initial voltage amplitude developed across said capacitive means, said second electrode being coupled to said second terminal of said resistive means;

d. first switching means for coupling said second electrode of said first electron control means to the control electrode of the memory device when the memory device is to be switched to a conducting state and for coupling said second electrode of said second electron control means to the control electrode of the memory device when the memory device is to be switched to a nonconductive state; and

e. second switching means for coupling said second electrode of said first electron control means to said second power supply conductor when the memory device is to be switched to said conducting state and for connecting said first electrode of said second electron control means to said second power supply conductor when the memory device is to be switched to said nonconducting state.

3,952,212
DRIVER CIRCUIT
Raymond T. Matsumoto, Fullerton, and Stanley T. Higashi, Anaheim, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed June 5, 1974, Ser. No. 476,741
Int. Cl.² H03K *17/56*
U.S. Cl. 307—243 **11 Claims**



1. A circuit comprising:

input means for supplying first and second voltage level signals,

output means,

source means for supplying a plurality of reference potentials,

first circuit means including first and second semiconductor devices having the respective conduction paths thereof connected between said source means and said output means in order to selectively supply a first of said plurality of reference potentials to said output means, and

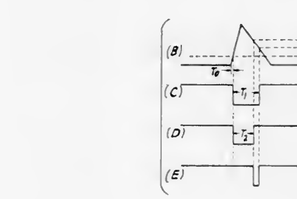
second circuit means including third and fourth semiconductor devices, said third semiconductor device having a conduction path connected from said output means to said source means and a second of said plurality of reference potentials, said fourth semiconductor device having a conduction path thereof connected between said output means and said source means in order to selectively supply a third of said plurality of reference potentials to said output means, said fourth device further connected to said third device to selectively control the conduction of said third device,

said input means connected to said first circuit means and to said second circuit means and adapted to selectively render said first circuit means conductive when said input means supplies said first voltage level signal thereto and said second circuit means conductive when said input means supplies said second voltage level signal thereto,

said first circuit means selectively rendered conductive to form a current path from said source means to said output means via the conduction paths of said first and second semiconductor devices to thereby charge said output means with a potential substantially equal to that of said first reference potential,

said second circuit means selectively rendered conductive to form a current path from said output means to said source means via the conduction path of said fourth semiconductor device to thereby substantially discharge said output means to said third reference potential.

3,952,213
DELAYED PULSE GENERATING CIRCUIT
Hirokazu Fukaya, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan
Filed Aug. 27, 1974, Ser. No. 500,849
Claims priority, application Japan, Aug. 28, 1973, 48-95686
Int. Cl.² H03K *3/295, 17/28*
U.S. Cl. 307—265 **14 Claims**



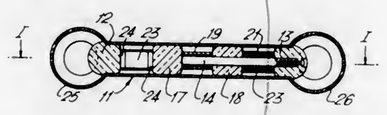
1. A delayed pulse generating circuit comprising: a pulse input circuit receiving an input pulse to be delayed and generating in response to said input pulse, an output having leading and trailing ramped edges, said output having a duration longer than that of said input pulse;

a first threshold circuit responsive to said output of said pulse input circuit for generatng a first output pulse the beginning and the end of which are determined by said leading and trailing edges of said output respectively corresponding to first and second threshold levels, said first and second threshold levels being different from one another, and the polarity of said first output being inverse to that of said output of said pulse input circuit;

a second threshold circuit responsive to said output of said pulse input circuit and arranged in parallel with said first threshold circuit for generating a second output pulse the beginning of which is not later than that of said first output pulse and the end of which is substantially earlier than that of said first output pulse, the polarity of said second output pulse being inverse to that of said output of said pulse input circuit; and

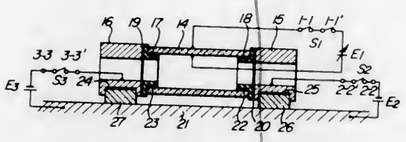
a gate circuit receiving and comparing said first and second output pulses and producing a pulse having a duration corresponding to the duration from the end of said second output pulse to that of said first output pulse, said pulse of said gate circuit being derived from said gate circuit as an output-delayed pulse of said delayed pulse generating circuit.

3,952,214
ELECTROSTATIC GENERATORS
Thomas Wilson Aitken, Warrington, England, assignor to Science Research Council, England
Filed May 12, 1975, Ser. No. 576,647
Claims priority, application United Kingdom, May 21, 1974, 22739/74
Int. Cl.² H02N 1/00
U.S. Cl. 310—6 8 Claims



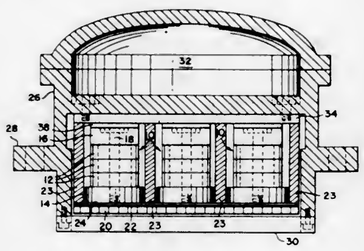
1. For an electrostatic generator, an endless charge carrying conveyor of the inductively chargeable type comprising a series of smooth uncovered electrically conductive elements, links for mechanically interconnecting the elements into an endless chain, and means for electrically insulating successive elements in the chain, said means comprising electrically insulating material interposed in compression between the links and the elements at each connection therebetween.

3,952,215
STEPWISE FINE ADJUSTMENT
Yoshio Sakitani, Katsuta, Japan, assignor to Hitachi, Ltd., Japan
Filed Apr. 18, 1972, Ser. No. 245,077
Claims priority, application Japan, Apr. 21, 1971, 46-25246
Int. Cl.² H01L 41/08
U.S. Cl. 310—8.1 10 Claims



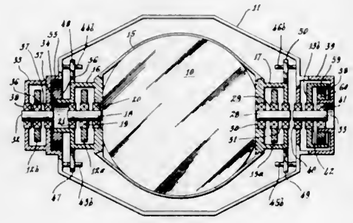
1. An apparatus for precisely positioning a specimen holder on an electron microscope, said apparatus comprising a body member made of an inverse piezoelectric material and having two end portions, a pair of leg members formed of an electrically conducting material, one of said leg members being affixed to a respective end portion of said body member, a base plate made of an electrically conducting material for supporting the assembly of said body member and said leg members, a pair of slide members made of a semiconductive material, one of said slide members being interposed between a respective one of said leg members and said base plate being affixed to one of said leg member and said base plate, means for intermittently applying a voltage across said body member so as to cause the body member to dilate by the inverse piezoelectric effect, means for alternately applying a voltage between each of said leg members and said base plate so as to alternately fix said leg members to said base plate by electrostatic force between said leg member and said base plate, and a push rod connected to one of said leg members for finely moving the specimen holder, the specimen holder being mounted for movement on an objective lens of the electron microscope.

3,952,216
MULTIPLE-FREQUENCY TRANSDUCER
Theodore C. Madison, Goleta, Calif., and Harlan G. Frey, Austin, Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 4, 1975, Ser. No. 565,174
Int. Cl.² H01L 41/08
U.S. Cl. 310—9.1 5 Claims



1. A multi-frequency, acoustic transducer comprising:
low-frequency, planar, transducer-array means;
mass-loading means physically attached to said low-frequency means for lowering the resonant frequency of said low-frequency means;
pressure-decoupling sheet means coupled to the combination of said low-frequency array means and said mass-loading means; and
high frequency, planar, transducer-array means for transmitting and receiving high frequencies during high frequency operation and for mass-loading said low-frequency array means and for forming the radiating face for said low-frequency array means during low-frequency operation bonded to said pressure-decoupling means;
said pressure-decoupling means being of the proper thickness and composition to decouple the low and the high frequency array means at high frequencies while being essentially acoustically transparent at low frequencies.

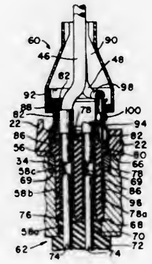
3,952,217
DRIVE FOR SCANNING MIRROR
John L. Rawlings, Westport, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Continuation-in-part of Ser. No. 400,619, Sept. 25, 1973, abandoned. This application Sept. 23, 1974, Ser. No. 508,045
Int. Cl.² H02K 33/12
U.S. Cl. 310—36 7 Claims



1. A scanning element assembly comprising:
a scanning element such as a mirror;
first bearing means supporting said scanning element for rotation about a scan axis;
a counterbalance;
second bearing means supporting said counterbalance for rotation about an axis parallel to the axis of the scanning element;

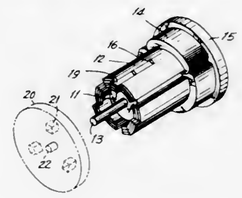
buffer spring means on one of the scanning element and counterbalance;
stop means on the other of the scanning element and counterbalance;
said stop means and spring means being mounted and spaced to permit a predetermined amount of rotation of the scanning element relative to the counterbalance successively in opposite directions and to engage and reverse the direction of relative rotation when the scanning element has rotated said predetermined amount; and
power drive means connected to the scanning element and to the counterbalance for initiating rotation of the scanning element in one direction and rotation of the counterbalance in the opposite direction and for applying power as required to continue the rotation of the scanning element and counterbalance at the desired velocity.

3,952,218
GROUNDED ELECTRICAL CONNECTOR FOR SUBMERSIBLE APPARATUS
Elmer M. Deters, Muscatine, Iowa, assignor to Weil-McLain Co., Inc., Dallas, Tex.
Filed Oct. 29, 1974, Ser. No. 518,620
Int. Cl.² H02K 11/00
U.S. Cl. 310—71 13 Claims



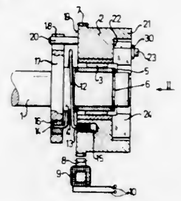
1. A grounded electrical connector assembly for a submersible body, comprising submersible electrical apparatus having a sealable housing, an electrically insulating resilient plug body having a forward cylindrical portion of reduced diameter, a stepped hole of similar dimensions formed in said housing for receiving said plug body, a plurality of radially spaced electrical conductors extending axially through the sealed interior of said plug body, and an outwardly bowed electrical grounding strip carried on the cylindrical surface of said forward portion of said plug and extending axially back through the interior of the larger rearward portion of the plug body so as to avoid interfering with the seal provided by seating of the rearward portion of the plug in the conforming portion of the hole in said housing, and contacting terminal means on the side wall of said hole adjacent the bowed portion of said grounding strip, such that when said plug body is inserted into said hole, said grounding strip is urged into sealed physical contact with said terminal means on said side wall of said hole to establish electrical connection therewith.

3,952,219
COMPACT MOTOR
Yoshihiro Mitsui; Kenichiro Arai, and Hiroshi Kamakura, all of Matsumoto, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shinshu Seiki Kabushiki Kaisha, both of, Japan
Continuation of Ser. No. 360,700, May 15, 1973, abandoned. This application Jan. 17, 1975, Ser. No. 541,985
Claims priority, application Japan, May 15, 1972, 47-47829; May 30, 1972, 47-53534
Int. Cl.² H02K 21/12
U.S. Cl. 310—156 7 Claims



1. A compact motor adapted to produce mechanical energy in response to an excitation signal applied thereto comprising a permanent magnet rotor rotatable about an axis, a plurality of magnetic pole members circumferentially spaced about the axis of rotation of said rotor, said pole members having a uniform thickness and an arcuate cross section taken in plane substantially normal to the axis of rotation of said rotor, said pole members each further including a first lengthwise portion facing said permanent magnet rotor and a second lengthwise portion of a width substantially less than said first lengthwise portion extending substantially parallel to the axis of rotation of said rotor and substantially out of facing relation with said permanent magnet rotor; excitation winding means mounted about the second lengthwise portion of each pole member out of facing relationship with said permanent magnet rotor, said excitation windings having said excitation signal applied thereto; and a yoke member mechanically supporting said pole members and closing a flux path through said rotor and pole members to effect rotation of said rotor in response to an excitation signal applied to said excitation windings.

3,952,220
RPM MEASURING APPARATUS
Heinrich Staudt, Markgroningen, Germany, and Georges Nelh, Antony, France, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Mar. 5, 1974, Ser. No. 448,201
Claims priority, application Germany, Mar. 14, 1973, 2312547
Int. Cl.² H02K 21/38
U.S. Cl. 310—168 15 Claims



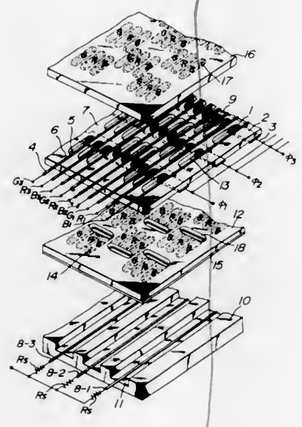
1. In a rpm measuring apparatus having a rpm signal generator driven by a drive shaft, the improvement comprising an oscillation damper having a rpm-dependent damping characteristic driven by said drive shaft, said damper including two centrifugal weights and at least one spring operatively associated with the centrifugal weights for effecting frictional

contact between said drive shaft and the centrifugal weights at low shaft rpm, said signal generator being disposed on said damper.

3,952,221
GASEOUS DISCHARGE DISPLAY PANEL INCLUDING AN APERTURED, ELECTRICALLY INSULATING, DISPLAY SHEET WITH ELECTRODES

Takeo Kamegaya, Tokyo; Ryuichi Kaneko, Kawasaki; Minori Yokozawa, Taira, and Hideomi Matsuzaki, Nara, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed July 25, 1974, Ser. No. 491,634
Claims priority, application Japan, July 28, 1973, 48-84571
Int. Cl.² H01J *61/067, 61/09, 61/30, 61/48*
U.S. Cl. 313—188 **21 Claims**



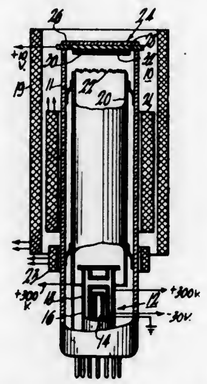
1. A gaseous discharge display panel of a multi-layer construction comprising a transparent front sheet, an opaque rear sheet and an electrically insulating display sheet which is inserted between said front and rear sheets and in which a number of small through holes each constructing a discharge unit corresponding to a picture element are formed, said sheets forming a hermetically sealed envelope, and an ionizable gas contained in said envelope, said through holes being shaped in an elongated section extending along the plane of said display sheet in parallel with each other, and each of said through holes comprising an anode at one end and a cathode which is formed by a conductive material applied on an inner surface of the through hole at the other end.

3,952,222
PICKUP TUBE TARGET

Albert Rose, Princeton, and Appleton D. Cope, Hightstown, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 10, 1955, Ser. No. 527,619
Int. Cl.² H01J *31/00, 31/26*
U.S. Cl. 313—366 **9 Claims**

1. A television camera tube comprising an elongated envelope, an electron gun in one end of said envelope for producing an electron beam, a target electrode in the other end of said envelope and in the path of said beam, said target electrode comprising a transparent conductive coating, a N-type photoconductor on said coating, a P-type photoconductor on said N-type photoconductor, another N-type photoconductor on said P-type photoconductor, a rectifying junction formed between each adjacent pair of said photoconductors and

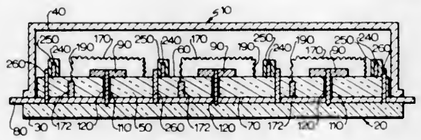


means for applying a reverse bias across at least one of said junctions.

3,952,223
MULTIPLE CHARACTER FLAT PANEL DISPLAY DEVICE

Saul Kuchinsky, Somerville, N.J.; Roger W. Wolfe, San Diego, Calif.; Thomas C. Maloney, Bernardsville, and William M. Hennessey, Somerville, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 391,373, Aug. 24, 1973, which is a continuation of Ser. No. 188,485, Oct. 12, 1971, abandoned, which is a continuation of Ser. No. 870,678, Oct. 27, 1969, abandoned. This application Mar. 3, 1975, Ser. No. 554,887
Int. Cl.² H01J *61/067, 61/66*
U.S. Cl. 313—519 **13 Claims**



1. A flat display panel for displaying any one of a predetermined number of characters in each of a plurality of side-by-side character positions, comprising

a gas-tight envelope formed of front and base plates closely spaced to one another and sealed together along a predetermined perimeter surrounding the character positions, the front and base plates forming outside walls of the envelope,

an ionizable gas within said envelope at a pressure capable of sustaining glow discharge,

at least the portions of the front plate which are aligned with the character positions being transparent to glow within the envelope to provide a viewing window for the characters to be displayed,

an assembly supported on the interior surface of the base plate including a plurality of conductive runs on said interior surface, insulating material on said conductive runs, and a plurality of groups of cathode electrodes arranged side-by-side on said insulating material, with each such group forming one of said character positions,

each such conductive run being electrically connected through said insulating material to a cathode electrode in each of said cathode electrode groups, the connection being made in each case through an aperture located directly behind and covered by the cathode electrode, so that selective combinations of said cathode electrodes in each such group can be energized by a predetermined

energization of said conductive runs to provide a multi-character display,

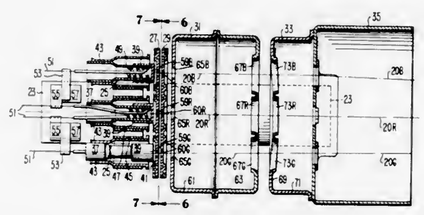
said conductive runs extending along said interior surface throughout the length of said cathode electrode groups and continuing along said surface beyond said groups to the envelope perimeter, and then extending beyond said perimeter to provide external electrical connections to said cathode electrodes, with at least the majority of said conductive runs passing directly behind all of said cathode electrode groups and none of the conductive runs crossing one another or crossing the connections between another one of said conductive runs and the cathode electrodes, and

a plurality of anode electrodes, each positioned in operative relation with one of said cathode electrode groups and having a conductive lead extending through said envelope.

3,952,224
IN-LINE ELECTRON GUNS HAVING CONSECUTIVE GRIDS WITH ALIGNED VERTICAL, SUBSTANTIALLY ELLIPTICAL APERTURES

John Evans, Jr., deceased, late of Lancaster, Pa. (by Frances M. Evans, executrix), assignor to RCA Corporation, New York, N.Y.

Filed Oct. 4, 1974, Ser. No. 512,227
Int. Cl.² H01J *29/51, 29/50, 29/56*
U.S. Cl. 313—414 **3 Claims**



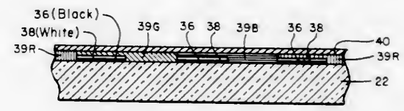
1. In a cathode-ray tube comprising, an evacuated envelope including a faceplate, a mosaic color phosphor screen on an inner surface of said faceplate, a multiapertured color selection electrode in spaced relationship to said screen, an in-line electron gun means for generating and directing a plurality of electron beams along co-planar paths through said color selection electrode to said screen, said gun means including a plurality of in-line cathodes and a plurality of grids spaced between said cathodes and said selection electrode each grid having a plurality of apertures aligned respectively with the electron beam paths, wherein said beams are subjected to vertical and horizontal magnetic deflection fields during operation of said tube for scanning said beams horizontally and vertically over said screen within a deflection zone located between said gun means and said color selection electrode and said electron beams tend to be distorted into horizontally elliptical shapes when they strike the screen as deflection angle increases by the magnetic deflection fields, the improvement comprising,

two consecutive grids nearest the cathodes having vertically substantially elliptical apertures therein, including aligned apertures in the two consecutive grids nearest the cathodes having a different elliptical shape than the other apertures in said two consecutive grids, whereby the tendancy of said beams to be distorted into horizontally elliptical shapes when they strike the screen is at least partially compensated by introducing astigmatism into the beams within said gun means, and the introduced astigmatism is different for at least two different beams.

3,952,225
CATHODE-RAY TUBE HAVING PHOSPHOR SCREEN INTERPOSED BETWEEN COMPOSITE MESH AND REFLECTIVE LAYER

Leonard Dietch, Skokie, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 13,564, Feb. 24, 1970, Pat. No. 3,614,503. This application Oct. 18, 1971, Ser. No. 190,013
Int. Cl.² H01J *29/28, 29/30, 29/32*
U.S. Cl. 313—472 **17 Claims**



1. A high-brightness, high-contrast cathode-ray tube image screen comprising:

a transparent faceplate;

on said faceplate, a grille composed of a material which is substantially non-reflective to light entering the front of the image screen through said faceplate;

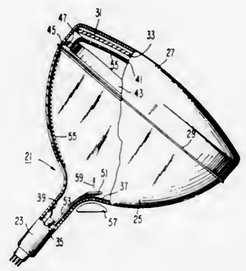
a reflective grille supported on said faceplate behind and in substantial registration with said non-reflective grille;

a phosphor screen on said faceplate over said reflective grille; and a reflective backing layer on said phosphor screen.

3,952,226
CRT COMPRISING STRONTIUM METAL GETTER FILMS AND METHOD OF PREPARATION

John Coryell Turnbull, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 394,841, Sept. 6, 1973. This application Dec. 13, 1974, Ser. No. 532,729
Int. Cl.² H01J *19/70*
U.S. Cl. 313—481 **3 Claims**



1. A cathode-ray tube comprising an evacuated envelope, a luminescent viewing screen within said envelope, means for producing a plurality of electron beams within said envelope for exciting said screen to luminescence, and an apertured mask closely spaced from said screen within said envelope for selectively intercepting and transmitting portions of said electron beams, at least a portion of the electron-beam-receiving surface of said mask being coated with a film consisting predominantly of strontium metal.

3,952,227
CATHODE-RAY TUBE HAVING ELECTROSTATIC FOCUSING AND ELECTROSTATIC DEFLECTION IN ONE LENS

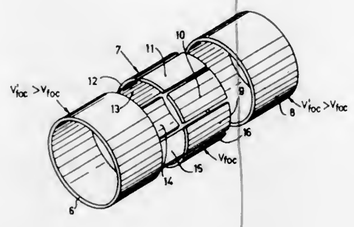
Willem Meijndert Van Alphen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 416,241, Nov. 15, 1973, abandoned. This application Nov. 26, 1974, Ser. No. 527,250

Claims priority, application Netherlands, Apr. 9, 1971, 7104835

Int. Cl.² H01J *29/70, 29/74*

U.S. Cl. 315—17 **1 Claim**



1. A cathode ray tube comprising:
a. means for producing an electron beam;
b. a target for intercepting said electron beam;
c. electrostatic focusing means for focusing said electron beam onto said target, said focusing means being disposed between said electrode beam producing means and said target and comprising three electrodes, a first and second ones of said electrodes having respective integral structures and the third one of said electrodes being disposed between said first and second electrodes and comprising at least two pairs of separate longitudinal segments arranged in orthogonal coordinates x and y perpendicular to and intersecting at the axis of said focusing means, said segments being mutually electrically insulated from each other and extending parallel to the axis of said focusing means, said first, second and third electrodes being cylindrical and having substantially equal diameters;
d. means for applying a higher focusing potential V'_f to said first and second electrodes and a lower focusing potential V_f to each segment of said third electrode, and
e. means for superimposing deflection potentials upon said lower focusing potential to produce on each segment a combined voltage $V\ R,\phi = +V_x \cos\phi + V_Y \sin\phi + V_f$, where R is the radius and ϕ is an angle of deflection assigned to respective segments with respect to said coordinates.

3,952,228
ELECTRON-BOMBARDMENT ION SOURCE INCLUDING ALTERNATING POTENTIAL MEANS FOR CYCLICALLY VARYING THE FOCUSSING OF ION BEAMLETS

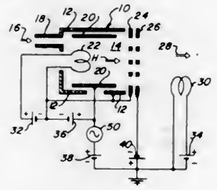
Paul D. Reader, and Harold R. Kaufman, both of Fort Collins, Colo., assignors to Ion Tech, Inc., Fort Collins, Colo.

Filed Nov. 18, 1974, Ser. No. 524,655

Int. Cl.² H05H *1/24*

U.S. Cl. 315—111.8 **19 Claims**

1. An ion source comprising:
means for producing a supply of ions within a defined region;
an apertured grid disposed in the vicinity of one end of said region;
means for impressing a potential difference between said grid and said region for accelerating ions out of said region through said grid as a plurality of beamlets, said grid serving to focus said beamlets;



and means, including a source of alternating potential, for cyclically varying the degree of focus of said beamlets.

3,952,229
DISPLAY DEVICE HAVING SIGNAL LAMPS

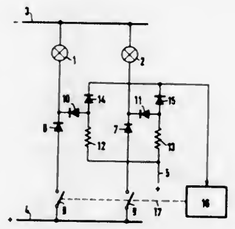
Heinz-Peter Rekow, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 29, 1974, Ser. No. 518,981

Claims priority, application Germany, Oct. 31, 1973, 2354582

Int. Cl.² G08B *21/00*

U.S. Cl. 315—131 **2 Claims**



1. In a display device having a plurality of signal lamps, with each lamp coupled to a signal voltage source through a switch contact, an improved pre-heating and testing arrangement comprising:
a. a test voltage source having a voltage lower than that of the signal voltage;
b. a plurality of first diodes one between each signal lamp and its associated switch;
c. a plurality of second diodes and resistors in series one coupling the junction of each of said lamps and said first diodes to said test voltage;
d. a testing device; and
e. a plurality of third diodes each having one of its terminals coupled to a terminal of same polarity of one of said second diodes and all having their other terminal coupled to said testing device, whereby a small current will continually flow through each of said test lamps from said test voltage prewarming said lamps and, should a lamp fail, an appropriate indication will be provided through said third diode to said testing device.

3,952,230
MATRIX TYPE GAS DISCHARGE DISPLAY DEVICE

Tetsuo Sakai, Tokyo, Japan, assignor to Nippon Hoso Kyokai, Tokyo, Japan

Filed Nov. 14, 1974, Ser. No. 523,748

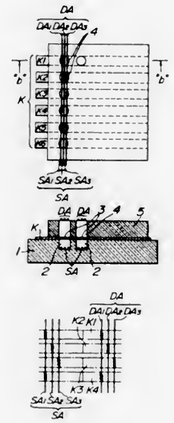
Claims priority, application Japan, Nov. 19, 1973, 48-129891

Int. Cl.² H05B *37/00*

U.S. Cl. 315—169 TV **5 Claims**

1. A matrix type gas discharge display device having a gas filled airtight envelope, comprising:

a number of first groups of insulated conductor wires provided in a number of parallel partitions of an insulated panel for forming a part of said envelope, and extending in parallel for forming scanning electrodes of the display device;
a plurality of parallel stripe shaped cathode conductors provided over the partitions of the panel and extending perpendicularly to said scanning electrodes for forming parallel rows of a matrix of the display device;
a number of second groups of insulated conductor wires provided on the frontside of and apart from said parallel stripe shaped conductors, and extending in parallel with each other and with said first groups of wires for forming columns of the matrix display device,
wherein, said first and second groups of insulated conductor wires and said stripe shaped conductors form discharge



elements on each of the crossings of said rows and columns of the matrix display device,
said first and second groups of insulated conductor wires being arranged in a cyclic order such that a respective one wire of said first and second groups of wires is not insulated at a location of every one of said discharge elements to form a respective scanning electrode and display anode of each discharge element while the other wires of each of said groups are insulated at such location, and
the order of said one wire for forming the respective scanning electrode and display anode of each discharge element is successively shifted within a respective one group of said wires according to the order of successive positions of the discharge elements in each column of the matrix.

3,952,231
FUNCTIONAL PACKAGE FOR COMPLEX ELECTRONIC SYSTEMS WITH POLYMER-METAL LAMINATES AND THERMAL TRANSPOSER

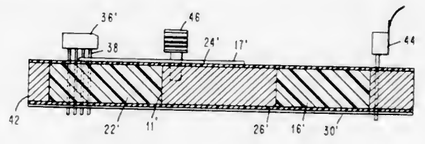
Lewis A. Davidson, Reston; Michael C. Duffy, Vienna; Alvard J. Erickson, Reston, all of Va.; Gerard R. Gunther-Mohr, Chappaqua, and Richard A. Williams, Candor, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 6, 1974, Ser. No. 503,883

Int. Cl.² H05K *7/20*

U.S. Cl. 317—100 **13 Claims**

1. A functional package for complex electronic systems comprising,
a. a first member including a wiring plane and an opening,
b. an electrical package including polymer and metal laminates united as a composite and disposed in the opening of the first member,



c. a thermal transposer and heat conducting member included in the package, and
d. means for uniting and wiring together the first member and the electrical package as a unitary structure.

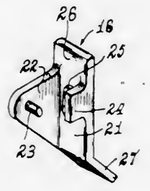
3,952,232
CIRCUIT BOARD EJECTOR

Ronald A. Coules, Chicago, Ill., assignor to Richco Plastic Company, Chicago, Ill.

Filed June 3, 1974, Ser. No. 475,421

Int. Cl.² H02B *1/02*

U.S. Cl. 317—101 DH **3 Claims**



1. An ejector for selectively inserting an apertured component into and withdrawing said component from a chassis, said ejector comprising an elongated body having a surface adapted to bear against said component, a pair of spaced apart walls extending from said body surface, one wall being substantially shorter and narrower than the other wall, a rib disposed between said walls, a stud on the other wall extending toward said one wall, said stud being spaced apart from said body surface and said one wall and adaptable to snap engage into said component aperture for pivotally mounting the ejector on said component, an end portion at one end of the body adapted for bearing against said chassis when the ejector is snap engaged on the component, and a finger tab on the end of said body opposite said end portion engageable to rock the body about the stud.

3,952,233
PRESSURE-RELIEF VALVE FOR AN ELECTRICAL CAPACITOR

Andreas Deckert, Heidenheim (Brenz), Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 22, 1974, Ser. No. 462,667

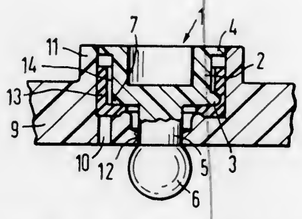
Claims priority, application Germany, Apr. 26, 1973, 2321166

Int. Cl.² H01G *9/00*

U.S. Cl. 317—230 **8 Claims**

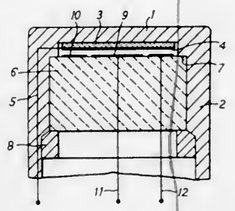
1. A pressure relief valve for an electrical capacitor comprising:
a ring-shaped valve element formed of a relatively elastic material,
a bias producing part having a cylindrical portion,
said cylindrical portion having a pair of radially outwardly extending rims formed at opposite longitudinal ends thereof,

said cylindrical portion having an extension terminating in a bulbous head,
a capacitor lid having a relief valve opening and a central opening for receiving said bulbous head,
the ring-shaped valve element being caused to overlie and close the relief valve opening



said bulbous head being snap fitted through said central opening and having one of said radial rims resiliently biased into contact with said valve element to close the same against said valve opening.

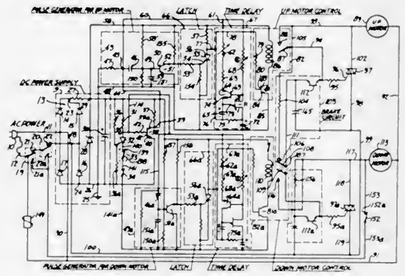
3,952,234
PRESSURE TRANSDUCERS
Donald Jack Birchall, c/o D. J. Birchall Limited, Chiswick Ave. Industrial Estate, Mildenhall, Suffolk, England
Filed Dec. 2, 1974, Ser. No. 528,863
Claims priority, application United Kingdom, Dec. 31, 1973, 60307/73
Int. Cl.² H01G *7/00*
U.S. Cl. 317—246 **6 Claims**



1. A pressure transducer comprising a metal diaphragm for deflection by the pressure being measured or monitored, a coating of ceramic insulating material on one surface of said diaphragm, said planar electrode on said coating being electrically isolated from said diaphragm by said coating, and a support plate of insulating material facing said one surface and spaced therefrom, said plate carrying on its surface facing the diaphragm a pair of mutually isolated planar electrodes, the three electrodes together constituting a differential capacitor.

3,952,235
CONTROL SYSTEM FOR ELECTRODYNAMIC MECHANISM
Leslie B. Peters, Sylmar, Calif., assignor to Tru-Eze Manufacturing Co., Inc., Burbank, Calif.
Filed June 10, 1974, Ser. No. 477,827
Int. Cl.² H02P *7/68*
U.S. Cl. 318—48 **17 Claims**

1. A system for establishing the times and durations of the application of electric power from a power source to a pair of counter-operating dynamo-electric mechanisms capable of creating force, comprising:
a. a source of D.C. voltage;
b. a selecting circuit connected to said source containing two junctions a first of which is at a D.C. voltage V when the second is at a lower voltage than voltage V, and vice versa;
c. a reset switch in said selecting circuit operable in a first position to put the voltage V at said first junction, and in a second position to put the voltage V at said second junction;
d. a first control path for a first of said dynamo-electric mechanisms, and a second control path for the second of said dynamo-electric mechanisms, each of said control paths including:
i. a pulse generator;
ii. a latch circuit connected to a pulse outlet of said pulse generator and operated in response to the pulse;
iii. a time delay circuit connected with said latch circuit which becomes closed upon operation of the latch so that it builds up a predetermined voltage at the expiration of a predetermined time period;
iv. a control circuit including variable conductance means the degree of conductance of which is controllable by the application to it of a conductance controlling voltage, connected in circuit with said power source and the respective dynamo-electric mechanism for turning full power from the power source on and off the respective dynamo-electric mechanism;

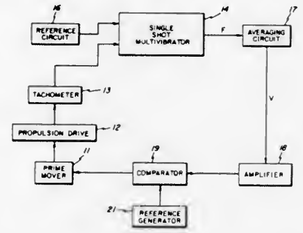


v. and control switch means operable by said predetermined voltage for establishing the degree of conductance of said variable conductance means;
e. and means responsive, after a period of time to the amount of force of said dynamo-electric mechanisms to move the reset switch back and forth intermittently from one of its said positions to the other;
whereby the application of voltage V at said first junction, while the reset switch is in its first position, creates at the first control path, a pulse which energizes the latch circuit to start the predetermined time period, at the expiration of which said predetermined voltage causes a sufficient degree of conductance of the variable conductance means to create force at the first dynamo-electric mechanism, which then causes the reset switch to move to its second position, removing the full power from the first mechanism and putting the voltage V on said second junction, thereby producing a pulse in the second control path, resulting in the application of power from the power source on the second mechanism at the expiration of the predetermined time period of the corresponding time delay circuit, and the reset switch continues to move intermittently back and forth from one of said positions to the other.

3,952,236
VEHICLE SPEED REGULATION SYSTEM
James William Hoover, North East, Pa., assignor to General Electric Company, Erie, Pa.
Filed July 19, 1974, Ser. No. 490,128
Int. Cl.² H02P *5/16*
U.S. Cl. 318—139 **8 Claims**

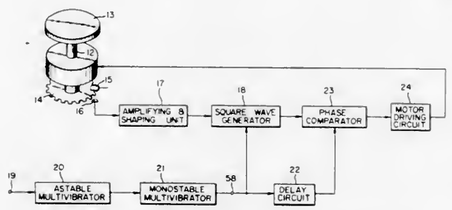
1. A speed regulation system for low speed vehicles comprising:

a. means for generating a first pulse train whose frequency is proportional to actual vehicle speed;
b. a monostable multivibrator for responsively generating a second pulse train whose repetition frequency is equal to that of said first pulse train;
c. means comprising a potentiometer and a plurality of varied capacitors which are capable of being individually switched into the timing circuit of said multivibrator for varying the pulse width of said second pulse train as a



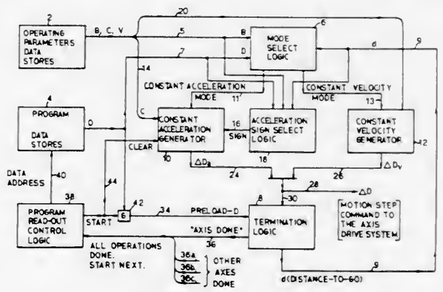
function of the desired vehicle speed, said multivibrator having a 50% duty cycle when the vehicle actual speed equals the vehicle desired speed;
d. means for filtering said second pulse train to obtain a d-c signal whose amplitude varies with any difference between the actual and desired speeds;
e. means for comparing said d-c signal with a reference signal to obtain an error signal; and
f. means for applying said error signal to regulate the actual vehicle speed.

3,952,237
ROTARY BODY CONTROL APPARATUS
Junichi Kimizuka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed June 20, 1974, Ser. No. 481,547
Claims priority, application Japan, June 26, 1973, 48-72062; July 10, 1973, 48-77620
Int. Cl.² H02P *5/16*
U.S. Cl. 318—310 **17 Claims**



1. A rotary body control apparatus comprising a rotary driven body driven at a rate of rotation according to the voltage applied, a pulse signal generating means for generating a pulse signal having frequency according to the speed of said rotary driven body, an introducing means for introducing a reference signal to control the rotation of said rotary driven body, a discriminating means adapted to discriminate if a required number of pulse signals are present during one period of said reference signal, a rectangular waveform generating means for generating a d.c. signal until said discriminating means discriminates that said rotary driven body has reached a predetermined rate of rotation while generating a rectangular waveform after said discriminating means has discriminated that said body had reached said rate of rotation, a sampled signal forming means adapted to apply the output from said rectangular waveform generating means thereby deriving a signal having a certain level to serve as an accelerating signal for said rotary driven body when the d.c. signal is applied and deriving a signal having an inclined portion between one level serving as said accelerating signal and the other level serving as a reducing signal for said rotary driven body when the rectangular waveform is applied, a means for delaying said reference signal, a means for sampling said sampled signal by a sample signal using said delayed reference signal, and a means for applying said already sampled voltage as a driving signal for said rotary driven body.

3,952,238
PROGRAMMABLE POSITIONING APPARATUS AND ACCELERATION CONTROL SYSTEM PARTICULARLY USEFUL THEREIN
Hymie Cutler, 16230 Santa Rosa, Detroit, Mich. 48221
Filed Nov. 29, 1973, Ser. No. 420,207
Int. Cl.² G05B *19/28*
U.S. Cl. 318—571 **31 Claims**

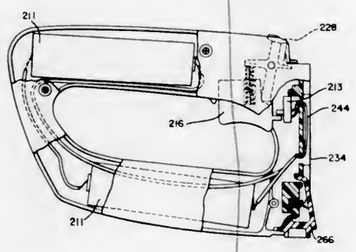


1. A programmable positioning system for moving an article a programmed distance, comprising: data input means for inputting the programmed distance data "D," acceleration data relating to a predetermined rate of acceleration, and velocity data relating to a predetermined maximum velocity means for computing the value "B" corresponding to the distance to be traversed by the article when accelerated at said predetermined rate of acceleration from zero velocity to said predetermined maximum velocity; acceleration control means for generating an acceleration electrical signal in the form of a series of pulses representative of said predetermined rate of acceleration; velocity control means for generating a velocity electrical signal in the form of a series of pulses representative of said predetermined maximum velocity; means for continuously computing a distance "*d*" corresponding to the remaining distance-to-go for the article to reach the programmed distance; and drive control means normally utilizing said predetermined acceleration electrical pulses in driving the article, but utilizing instead said maximum velocity electrical pulses in driving the article whenever the programmed distance "D" is more than twice "B", and the computed distance "*d*" is more than "B" but less than "D" minus "B".

3,952,239
MODULAR CORDLESS TOOLS
Peter Russell Owings, Towson, Md.; Jacobus Jan Beckering, Brockville, Canada, and Roderick Francis Bunyea, Cockeysville, Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.
Filed Aug. 23, 1974, Ser. No. 500,131
Int. Cl.² H02K *7/14*
U.S. Cl. 320—2 **24 Claims**

1. A modular, cordless electric tool assembly comprising a power handle module including a casing forming a hand grip and enclosing rechargeable battery means and electric switch means on said handle manipulatable by an operator having his hand on the hand grip thereof; a tool head module including

a housing, output means on said housing, and an electric motor within said housing for driving said output means; said tool head housing and said power handle casing including complementary surfaces thereon, each of said surfaces having a length and a width, said length being greater than said width, each of said surfaces having slidably interengageable and disengagable means formed thereon for retaining said power handle and tool head together, said means being elongated in the direction of said length of said surfaces, electrical connector means exposed on the interengaged faces of said power handle module and tool head module and electrically engaging one another when said power handle and tool head are assembled together, said electrical connector means being connected to said rechargeable battery means and said switch, and to said tool output means, respectively, whereby said electrical connection is automatically made when said parts are assembled, said motor and said output means being controlled by operation of said switch operator on said handle.



17. A power handle adapted for use with a variety of tool head accessories comprising a generally rectangular housing, the four sides of said housing forming a closed loop about a central opening; one side of said four sides being shaped to provide a comfortable hand grip for an operator; rechargeable battery cells enclosed within said housing, switch means within said housing including a switch operator extending outwardly of said housing at said hand grip portion for manipulation by the operator; a piloting surface for receiving and stabilizing tool head accessories mounted on said handle, said piloting surface extending substantially the entire longitudinal length of a second side of said four sides; an electrical contact means exposed on said side including said pilot surface, means interconnecting said switch, said battery cells and said electrical contact to provide an output voltage between said electrical contacts when said switch is actuated; and tapered means on said second side of said housing for slidably interengaging with complementary tapered means on said tool head accessories for providing a strong but disengageable coupling therebetween.

3,952,240

DEVICE FOR REGULATING THE CURRENT IN A LOAD

Geurt J. Ruumpol, Wilp, Netherlands, assignor to Veco Zeefplatenfabriek B.V., Netherlands

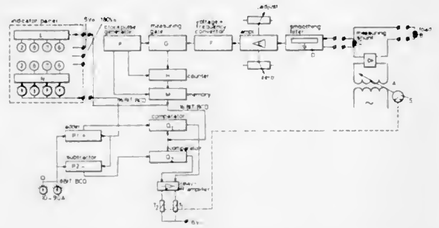
Filed July 8, 1974, Ser. No. 486,332

Claims priority, application Netherlands, July 11, 1973, 7309667

Int. Cl.² G05F *1/14, 1/64*

U.S. Cl. 323—1 **3 Claims**

1. A device for regulating the current in a load comprising a voltage-frequency converter for direct proportionally converting a voltage proportional to the load current into a number of pulses per time unit; said pulses being applied to a counter and a memory with a corresponding indicator for repetitively storing and displaying a number of pulses counted during a measuring interval; a nominal value control with corresponding indicator for setting and displaying a nominal value, a limit value control for setting a limit value, adding and subtracting circuits connected to the nominal value control and limit value control for determining the sum of and difference between the nominal value and control value, a comparator connected to the adding and subtracting circuits and the memory and a regulating unit connected to the comparator, in which comparator the memory contents corresponding to



said measuring interval are continuously compared with said sum and difference such that upon exceeding the sum or falling short of the difference a control signal is sent from the comparator to the regulating unit to adjust the voltage for the load.

3,952,241

ELECTRONIC POWER VARYING CONTROLLER DEVICE

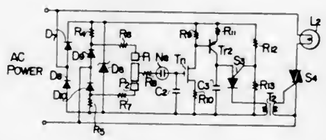
Takehide Takemura, Hirakata, and Shunji Minami, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 20, 1974, Ser. No. 444,016

Claims priority, application Japan, Feb. 20, 1973, 48-20898; Nov. 20, 1973, 48-130980; Nov. 20, 1973, 48-130981; Nov. 20, 1973, 48-130982; Nov. 20, 1973, 48-130983; Nov. 20, 1973, 48-130984; Nov. 20, 1973, 48-130985; Nov. 20, 1973, 48-130986; Nov. 24, 1973, 48-132323

Int. Cl.² G05F *3/04*

U.S. Cl. 323—19 **17 Claims**



1. An electronic power varying controller, comprising:
a rectifying circuit having an A.C. input and a D.C. output and including at least one pair of diodes coupled in series between the D.C. output terminals of said rectifier, said rectifying circuit including a first impedance coupled between one D.C. terminal and one of said diodes and a second impedance coupled between the other D.C. terminal and the other of said diodes;
a high insulation switch;
first switch means coupled to the junction of said first impedance and its corresponding diode;
second switch means coupled to the junction of said second impedance and its corresponding diode;
means coupling said first and second switch means in common to one terminal of said high insulation switch;
a field effect transistor having a gate electrode coupled to the other terminal of said high insulation switch;
a storage capacitor coupled to the gate of said field effect transistor;
a controlled switch coupled with a load to said A.C. input; and
a trigger control circuit coupled between said field effect transistor and said controlled switch to trigger said controlled switch into conduction as a function of the voltage across said storage capacitor.

3,952,242

AUTOMATIC VOLTAGE REGULATOR WITH OPTICAL FEEDBACK

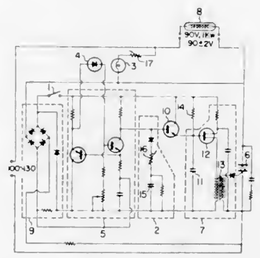
Takeshi Ukai, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 28,099, April 13, 1970, abandoned. This application June 30, 1972, Ser. No. 268,148

Claims priority, application Japan, Apr. 11, 1969, 44-28048

Int. Cl.² G05F *1/44*

U.S. Cl. 323—21 **6 Claims**



1. Electrical power regulator apparatus, comprising:
a. a load to be supplied with regulated electrical power from an alternating current source;
b. a bidirectional controlled rectifier element having two principal electrodes and a control electrode, said element being connected through said principal electrodes in series with the load and with said source of alternating current, said element having a high impedance condition in which it presents a high impedance to potentials of either polarity between said principal electrodes in the absence of a signal pulse at said control electrode, and being operable from said high impedance condition to a low impedance condition between said principal electrodes in response to a signal pulse received at said control electrode, and remaining in the low impedance condition until the potential between the principal electrodes returns to zero;
c. control means for supplying a signal pulse to said control electrode including:
1. rectifier bridge means having input terminals connected across said controlled rectifier element and output terminals;
2. starting switch means operable at any time to complete a circuit between said output terminals;
3. first transistor means having two principal electrodes and a control electrode;
i. means including said starting switch means connecting said principal electrodes to the output terminals;
ii. means coupling one principal electrode of the first transistor means to the control electrode of the controlled rectifier element;
4. first means for controlling the potential of the control electrode of the first transistor means, comprising:
i. a first branch circuit connected through said switch means between said output terminals, said branch circuit including a first resistor and a first capacitor in series;
ii. a connection between the control electrode of the first transistor means and the common junction of the resistor and capacitor;
iii. said resistor and capacitor being proportioned so that if the capacitor is fully discharged at the beginning of a half cycle of said source, it is charged through said resistor to a potential sufficient to produce a signal pulse at the control electrode of the controlled rectifier element before the end of the half cycle;
iv. each said signal pulse being effective to discharge said capacitor, and said controlled rectifier element being effective when in its low impedance condition to shunt said input terminals of the rectifier bridge means and thereby to prevent further charging of said capacitor during any half cycle after a signal pulse is generated;
v. said first potential controlling means being effective to produce a series of said signal pulses during at least all but the first of a corresponding series of half cycles beginning with the half cycle during which the switch means is closed;
5. second means for controlling the potential of the control electrode of the first transistor means, comprising:
i. second transistor means having two principal electrodes connected to the terminals of said first resistor and a control electrode;
ii. a second branch circuit connected through said switch means between said output terminals and parallel to said first branch circuit, said second branch circuit including in series a second resistor, a diode and a second capacitor; and
iii. a third resistor in parallel with the second capacitor, said third resistor and said diode cooperating to hold a charge on said second capacitor for more than one half cycle of said source;
iv. means coupling the control electrode of the second transistor means to the common junction of the second resistor and the diode;
v. said second potential controlling means being effective when the switch means remains closed during a succession of half cycles to increase gradually the power per cycle supplied to the load by increasing the rate of charge of the first capacitor, thereby advancing the signal pulses to earlier times during the successive half cycles.

3,952,243

VOLTAGE TRANSFORMER FOR A HIGH VOLTAGE SWITCHING APPARATUS

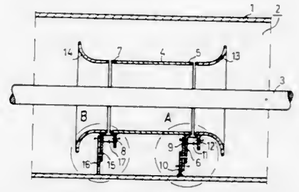
Albert Herrmann; Gerhard Kleen, and Heinz Schlemann, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 17, 1974, Ser. No. 470,983

Claims priority, application Germany, May 17, 1973, 2325438

Int. Cl.² H01B *9/06*; H01F *27/00*

U.S. Cl. 323—44 R **9 Claims**



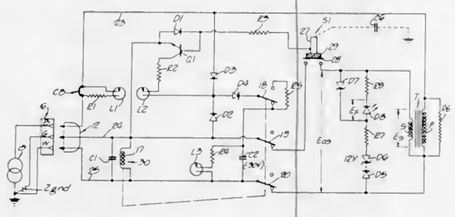
1. In a voltage transformer for an insulated high-voltage switching apparatus of the type including a metallic outer tubular casing in which an electrical conductor is disposed and a tubular sleeve disposed about the conductor within the casing, said sleeve forming a surface type electrode and further a high-potential capacitor in conjunction with the conductor, the improvement comprising
at least one connecting member made of electrical insulation material, said connecting member being fastened to one end of said sleeve and to the inner wall of said tubular casing thereby fixedly attaching said sleeve to said casing

at said one end; and, at least one supporting member made of electrical insulating material, said supporting member being disposed at the other end of said sleeve for bracing said sleeve against said inner wall of said tubular casing so as to permit said sleeve to expand in response to temperature variations without warping; said connecting member and said supporting member being dimensioned so as to conjointly support said sleeve in said casing about said electrical conductor in spaced relation to both said electrical conductor and said casing.

3,952,244
TESTER FOR THREE WIRE GROUNDING ELECTRICAL OUTLET

Richard R. Spear, Greenbrae, Calif., assignor to Communications Technology Corporation, Los Angeles, Calif.

Filed Oct. 3, 1974, Ser. No. 511,590
Int. Cl.² G01R *31/02*
U.S. Cl. 324—51 **22 Claims**



22. In a polarity identifier and fault tester for testing a three wire ac outlet having a line voltage terminal, a neutral terminal, and a ground terminal, the combination of:

a three wire plug including a line prong, a neutral prong, and a ground prong mateable with corresponding terminals of said outlet;

a first switching circuit having an input connected across said neutral and ground prongs and switchable between a first condition when there is no voltage across said neutral and ground prongs and a second condition when there is line voltage across said neutral and ground prongs;

a testing circuit having an input connected between said line prong and the output of said first switching circuit, and having an output with a first indicator circuit connected thereat;

a second switching circuit for connecting the output of said testing circuit across said neutral and ground prongs through said first switching circuit when said first switching circuit is in said first condition; and

a second indicator circuit connected between the output of said first switching circuit and one of said neutral and ground prongs and including a second indicator connected by said first switching circuit to said line prong when aid first switching circuit is in one of said first and second conditions.

3,952,245
CALIBRATED QUADRAXIAL SYSTEM FOR MEASURING SHIELDING TRANSFER IMPEDANCE

John S. Miller, Torrance, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 6, 1975, Ser. No. 547,662
Int. Cl.² G01R *27/00*
U.S. Cl. 324—57 R **5 Claims**

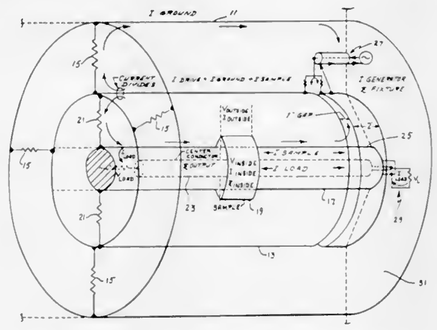
1. A system for measuring current shielding effectiveness or transfer impedance comprising:

a. a guard cylinder;

b. a driver cylinder having a discontinuity of predetermined dimensions, the driver cylinder being interior to and coaxial with the guard cylinder with a resistive coupling therewith;

c. means for imparting an electrical signal to the driver cylinder;

d. a sample interior to and coaxial with the driver cylinder and resistively coupled thereto;



e. a center conductor interposed and coaxial with the sample cylinder and having a resistive coupling therewith;

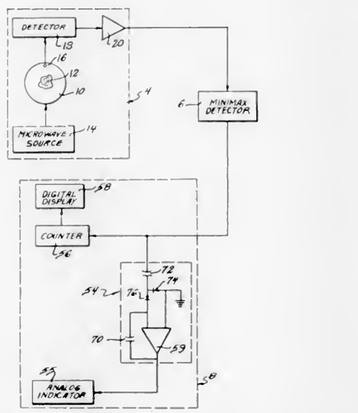
f. receiving means connected to the center conductor; and

g. a partition surrounding the driver cylinder and shielding the electrical signal imparting means from the receiving means.

3,952,246
PLASMA DIGITAL DENSITY DETERMINING DEVICE

Julien C. Sprott; Thomas W. Lovell, and Donald J. Holly, all of Madison, Wis., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed May 29, 1975, Ser. No. 581,606
Int. Cl.² G01R *27/04*
U.S. Cl. 324—58.5 C **5 Claims**



1. A method of determining the spatially averaged density of a plasma in an enclosure comprising the steps of:

a. generating an r-f signal at a known frequency;

b. coupling the r-f signal into the enclosure at a first location;

c. detecting the r-f signal at a second location distinct from the first location;

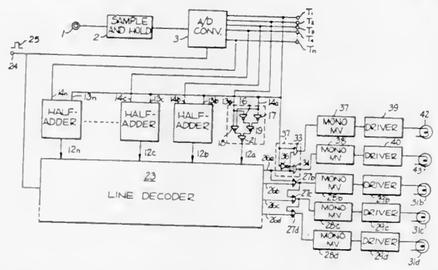
d. permitting the plasma to decay to a neutral gas; and

e. counting digitally the number of maxima of the detected r-f signal, which number of maxima equals the number of resonant cavity modes detected as being excited in the enclosure and hence provides a measure of the spatially averaged density of the plasma in the enclosure.

3,952,247
LEVEL INDICATING APPARATUS FOR P.C.M. TRANSMITTING SYSTEM

Tetsuya Horichi, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 16, 1974, Ser. No. 505,994
Claims priority, application Japan, Sept. 14, 1973, 48-104075
Int. Cl.² G01R *13/02, 19/00*
U.S. Cl. 324—133 **7 Claims**



1. Signal level indicating apparatus responsive to pulse signals corresponding to analog signals of alternating polarity encoded according to a code in which the most significant bit indicates the polarity of the encoded analog signals, said apparatus comprising:

A. a plurality of light emitting indicators, each identified with a signal magnitude;

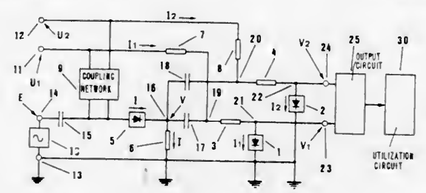
B. a plurality of bit signal input terminals to receive respective bits of the pulse signals; and

C. a plurality of logic circuits, each connected to the bit input terminal that receives the most significant bit and to a respective one of the other input terminals to respond to the pulse signals, said logic circuits comprising output circuits connected to said indicators to actuate the same according to the instantaneous magnitude of the encoded analog signals.

3,952,248
D.C. VOLTAGE RATIO MEASURING CIRCUIT

Claude Hannigsberg, Vernouillet, France, assignor to Lignes Telegraphiques et Telephoniques, Paris, France

Filed Sept. 27, 1974, Ser. No. 509,960
Claims priority, application France, Oct. 4, 1973, 73.35427
Int. Cl.² G01R *7/04;* **G06G** *7/16*
U.S. Cl. 324—140 D **11 Claims**

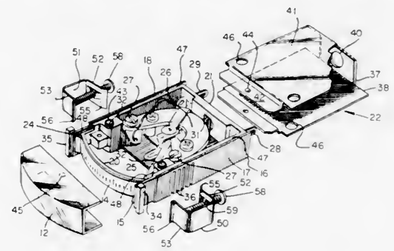


1. A measurement circuit for measuring the ratio of the magnitudes of two D-C voltages of fixed polarity and translating said ratio into a representing voltage, comprising three voltage dividers connected to a common ground point and each consisting of a fixed resistor and a variable resistor having a resistance value sensitive to the voltage applied thereto, wherein a first and a second of said dividers are respectively fed with direct current by said D-C voltages of fixed polarity, while the third of said dividers is fed with a direct current by means of a further D-C voltage derived from at least one of said D-C voltages of fixed polarity and with an alternating current voltage delivered by a source of constant amplitude, wherein the alternating current voltage appearing at the mid-point of said third divider feeds both said first and second dividers, wherein the series-connection order with respect to ground of said fixed and variable resistors is the same in said first and second dividers and is reversed in said third divider, and wherein the difference between the alternating current voltages received at the mid-points of said first and second dividers is converted into said representing voltage by amplification, rectification and filtering in an output circuit.

3,952,249
EDGEWISE METER ASSEMBLY

Phillip Colman, Needham, Mass., assignor to LFE Corporation, Waltham, Mass.

Filed Sept. 19, 1974, Ser. No. 507,280
Int. Cl.² G01R *1/04;* **G01P** *1/02;* **G01L** *19/14*
U.S. Cl. 324—156 **10 Claims**



1. An edgewise indicating meter comprising:

a. a main support frame having first and second endwalls and first and second sidewalls;

b. a meter movement mounted in said frame having an indicator needle exposed beyond said first endwall;

c. electrical terminals passing through and supported by said second endwall;

d. a top and bottom cover formed in a single piece folded at the middle and extending over the top and bottom of said frame from said second endwall; and,

e. a one-piece window for said needle fitting over said first endwall and lockingly engage with said cover securing both said cover and said window in place on said frame.

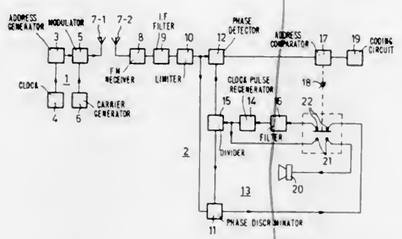
3,952,250
RECEIVER FOR A SELECTIVE PAGING SYSTEM

Albertus Marinus Morrien, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 408,402, Oct. 23, 1973, abandoned.
This application June 2, 1975, Ser. No. 582,805
Claims priority, application Netherlands, Nov. 2, 1972, 7214795
Int. Cl.² H04B *1/06*
U.S. Cl. 325—55 **2 Claims**

1. A selective paging receiver comprising a clock signal generator means for generating clock signal energy, a phase locked loop means including said generator for stabilizing said generator onto a received signal, an address recognition means for supplying an output signal when an address in said received signal corresponds to a selected address, a high quality factor acoustic reproduction device, and means for applying said clock signal energy from said clock generator to said

reproduction device for reproducing said clock signal energy comprising a make switching means coupled between said generator and said reproduction device and having a control



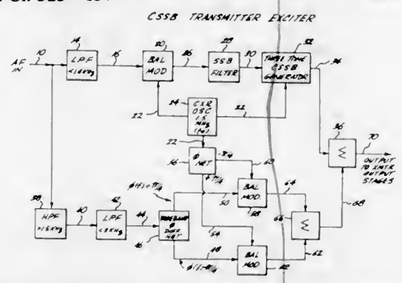
input coupled to said recognition means for coupling said generator to said reproduction device upon said address correspondence, said reproduced clock signal energy comprising an alert signal for the paging receiver.

3,952,251

NARROW BANDWIDTH, COMPATIBLE SINGLE SIDEBAND (CSSB) TRANSMISSION SYSTEM, AND THREE TONE GENERATOR USED THEREIN

Leonard R. Kahn, 70 N. Grove, Freeport, L.I., N.Y. 11520

Filed July 15, 1974, Ser. No. 488,708
Int. Cl.² H04B *1/68*
U.S. Cl. 325—137 **26 Claims**



13. A three-tone compatible single-sideband generator comprising:

a. balanced modulator means producing from a full level carrier wave and a full level single sideband suppressed carrier (SSBSC) wave a wave with a lower level carrier and a lower level second order sideband,

b. first summation means combining the wave produced by the modulator means with said SSBSC wave,

c. means providing a full level carrier wave of opposite phase to the phase of said lower level carrier, and

d. second summation means combining such oppositely phased full level carrier wave with the output of said first summation means thereby providing a three tone compatible single sideband signal.

3,952,252

NOISE SUPPRESSOR FOR TELECOMMUNICATION SYSTEM

Carlo Cornacchia, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Jan. 30, 1974, Ser. No. 437,887
Claims priority, application Italy, Jan. 30, 1973, 19733/73
Int. Cl.² H04B *15/00*
U.S. Cl. 325—319 **10 Claims**

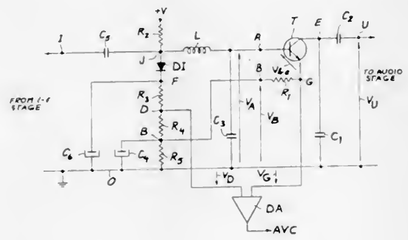
1. A noise suppressor for a telecommunication system, comprising:

a receiver having an input circuit for an incoming carrier modulated in amplitude by useful signal pulses and accompanying noise pulses, said receiver also having an output circuit;

a source of direct current;

rectifying circuit means connected across said source and forming a first terminal provided with a first biasing voltage and a second terminal provided with a second biasing voltage from said source;

a transistor between said input and output circuits having a base connected to said first terminal, an emitter connected to said second terminal and a floating collector disconnected from said source, the connection between said emitter and said second terminal including a resistor, the relative polarities of said first and second biasing voltages being such as to drive a base current sufficient to



saturate said transistor in the absence of said carrier, said circuit means deriving from the amplitude modulation of said carrier a train of unipolar pulsations superimposed upon said first biasing voltage with a polarity such as to reduce the potential difference between said base and said emitter, said transistor forming a low-impedance path between said emitter and said collector in its saturated state for the passage of limited-amplitude pulsations including said signal pulses but blocking the transmission of pulsations from said base to said collector in the presence of large-amplitude noise pulses reducing said potential difference to substantially zero; and

a load terminal in said output stage capacitively coupled to said collector.

3,952,253

METHOD AND MEANS FOR GENERATING A SYNCHRONIZING PULSE FROM A REPETITIVE WAVE OF VARYING FREQUENCY

Alexander DeVolpi, Lisle; Ronald J. Pecina, Westchester, and Dale J. Travis, Lockport, all of Ill., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Nov. 21, 1974, Ser. No. 526,039
Int. Cl.² H03K *1/17*
U.S. Cl. 328—63 **5 Claims**

3. An apparatus for generating a trigger pulse that is synchronized to the rectangular synchronizing signal from a high-speed framing camera over a range of speeds of said high-speed framing camera, said signal having a first portion and a second portion, said apparatus comprising:

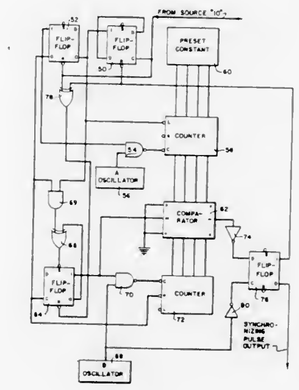
a first oscillator;

a second oscillator;

a first counter connected to said first oscillator and responsive thereto to count cycles thereof during a first portion of said rectangular synchronizing signal;

a second counter connected to said second oscillator and responsive thereto to count cycles thereof during a second portion of said rectangular synchronizing signal; and

a comparator connected to said first and second counters and generating a trigger pulse when said counts of cycles are equal,



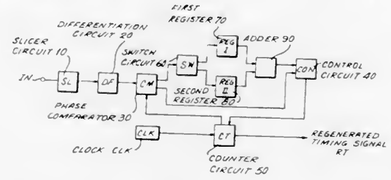
which trigger pulse is synchronized to said output synchronizing signal over a range of speeds of said camera.

3,952,254

TIMING SIGNAL REGENERATING CIRCUIT

Hidehiko Kurita; Tokutaka Nakano, both of Kawasaki, and Kenji Mizui, Yokohama, all of Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Filed Dec. 23, 1974, Ser. No. 536,930
Claims priority, application Japan, Dec. 30, 1973, 49-1036
Int. Cl.² H03K *1/17, 5/13*
U.S. Cl. 328—63 **6 Claims**



1. A timing signal regenerating circuit including changing point signal generating means for generating a changing point signal at the cross point of a two level received signal and a predetermined signal level, said timing signal regenerating circuit comprising

input means for supplying a received signal to the changing point signal generating means;

counting means for counting a predetermined number of clock pulses to provide a regenerated timing signal output;

first and second storage means coupled to the changing point signal generating means and the counting means for alternately storing values counted by the counting means at the time that the changing point signal is generated;

adding means connected to the first and second storage means for adding the counted values stored by the first and second storage means and providing a resultant sum; and

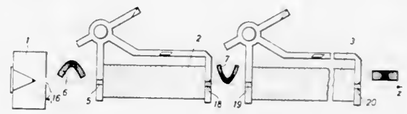
control means connected between the adding means and the counting means for controlling the counting means to control the output timing of the regenerated timing signal in accordance with the resultant sum.

3,952,255

LINEAR ACCELERATION SYSTEM FOR HIGH ENERGY ELECTRONS WITH PREACCELERATION AND MAIN ACCELERATION MEANS

Cord Passow, Neuthard, Germany, assignor to Gesellschaft fur Kernforschung m.b.H., Karlsruhe, Germany

Filed Oct. 30, 1974, Ser. No. 519,198
Claims priority, application Germany, Nov. 3, 1973, 2355102
Int. Cl.² H01J *25/00;* **H05H** *9/00*
U.S. Cl. 328—233 **6 Claims**



1. A linear acceleration system for producing high energy electrons with high energy constancy values and directional beam values, comprising, in combination:

high frequency field emission source means for producing pulsed electron beams at a predetermined frequency;

preaccelerator means disposed for receiving the beams produced by said high frequency field emission source means and arranged to operate at an operating frequency which is less than the predetermined frequency of the pulsed electron beams for causing the electron distribution of each pulse to be shifted by a multiple of 180° with respect to phase during acceleration between the input and output of said preaccelerator means; and

main accelerator means disposed for receiving the beams leaving the output of said preaccelerator means for accelerating the electrons by an amount dependent on the energy possessed thereby at the input to said main accelerator means such that the electrons whose energy deviates from the minimum electron energy at the input of said main accelerator means are accelerated less than are such minimum energy electrons by an amount determined by the magnitude of such deviation.

3,952,256

MULTI-IMPEDANCE OUTPUT FOR TRANSISTOR POWER AMPLIFIER

Frank J. Kosinski, Hauppauge, and Anthony Ernest Franquciro, Holtsville, both of N.Y., assignors to Unicord Incorporated, New York, N.Y.

Filed July 25, 1974, Ser. No. 491,831
Int. Cl.² H03F *3/26*
U.S. Cl. 330—15 **2 Claims**

1. An audio amplifier circuit, comprising:

a source of operating potential;

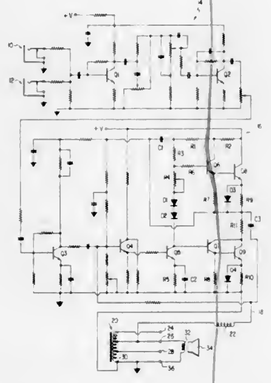
amplifying circuit means for receiving an audio input signal and generating drive signals corresponding thereto;

a power output stage including a pair of transistors operated in push-pull relation, circuit means connecting said transistors to said source of operating potential, the emitter of one of said transistors being connected across a first resistor to a junction point, the collector of the other of said transistors being connected across a second resistor to said junction point, said transistors receiving said drive signals and generating an audio output signal at said junction point in response thereto;

an autotransformer having a plurality of taps; and

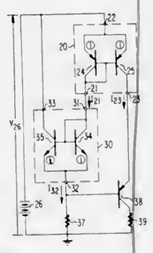
conductor means connecting said junction point to one of said taps of said autotransformer so as to pass said output signal conductively through the portion of the winding of

said autotransformer between two of said taps, the taps of said autotransformer providing output terminals for said



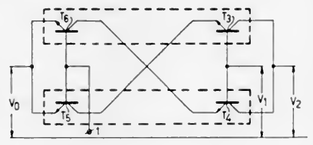
audio amplifier circuit for connecting said audio amplifier circuit to loads having different impedance levels.

3,952,257
CURRENT PROPORTIONING CIRCUITS
Otto Heinrich Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Oct. 29, 1974, Ser. No. 518,719
Int. Cl.² H03F *3/04*
U.S. Cl. 330—22 **12 Claims**



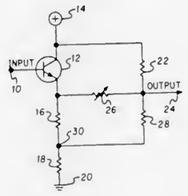
1. In combination:
means for supplying an operating potential between first and second terminals;
first and second current mirror amplifiers of complementary conductivity types, each having an input terminal, an output terminal and a common terminal;
means connecting the input terminal of said first current mirror amplifier to said first terminal;
a source of input current of predetermined value connected between said second terminal and the common terminal of said first current mirror amplifier;
means connecting the output terminal of said first current mirror amplifier to the input terminal of said second current mirror amplifier;
means connecting the common terminal of said second current mirror amplifier to said first terminal; and
utilization means, connected between the output terminal of said second current mirror amplifier and said second terminal, for utilizing output current flowing responsive to said input current.

3,952,258
PARALLEL-CONNECTION OF SEMICONDUCTOR SYSTEMS WITH AN ARRANGEMENT FOR PREVENTING THERMAL INSTABILITY
Walter Henricus Maria Magdala Smulders, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 11, 1975, Ser. No. 567,304
Claims priority, application Netherlands, Apr. 18, 1974, 7405237
Int. Cl.² H23F *3/04*
U.S. Cl. 330—23 **5 Claims**



1. An amplifier arrangement which at least in respect of the d.c. setting comprises of a multiplicity of parallel branches, each of which branches comprises at least a driver and an output transistor, means electrically coupling an output of each driver transistor individually to the input of the output transistor, characterized in that the transistors are geometrically arranged so that each output transistor has the strongest thermal coupling with a driver transistor other than that with which it is electrically coupled, and preferably has the weakest coupling with that driver transistor with which it is electrically coupled.

3,952,259
GAIN CONTROL APPARATUS
Vernon R. Cunningham, Melissa, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Apr. 28, 1975, Ser. No. 572,574
Int. Cl.² H03G *3/30*
U.S. Cl. 330—29 **6 Claims**

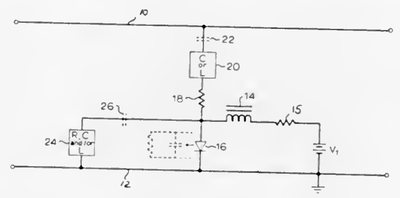


1. Gain control apparatus for providing AC gain adjustment in a DC coupled circuit intermediate a signal source and assigned load without affecting DC biasing levels consisting of:
a signal variable resistor connected between the signal source and the signal load; and
voltage dividing means connected to the signal load end of said signal variable resistor for maintaining the load end of said variable resistor at a common direct voltage value equal to that provided at the signal source end.

3,952,260
DISTORTION CORRECTION CIRCUIT
Antonin Prochazka, Malton, and Paul W. Lancaster, Thornhill, both of Canada, assignors to Delta-Benco-Cascade Limited, Rexdale, Canada
Filed Dec. 16, 1974, Ser. No. 533,156
Int. Cl.² H03F *1/26*
U.S. Cl. 330—149 **28 Claims**

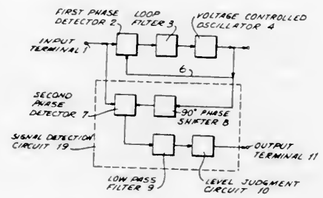
19. Distortion compensating circuit for non-linear amplifier comprising:

a diode connected across the input signal path of an amplifier,
means in series with said diode isolating said diode from direct current voltage at one of said signal terminals, said means being designed to allow passage of alternating current signals,



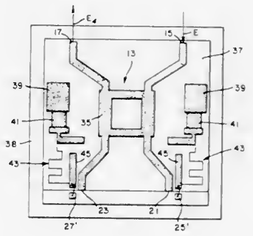
means for forwardly biasing said diode comprising:
a potential connected to one side of said diode between said diode and said isolating means selected to be in such relationship to the direct current potential on the side of said diode remote from said isolating means, as to forward bias said diode,
reactive impedance elements connected to affect the phase of the signal across said circuit.

3,952,261
SIGNAL DETECTION CIRCUIT
Takao Hara, and Yukio Murayama, both of Kawasaki, Japan, assignors to Fujitsu Ltd., Kawasaki, Japan
Continuation of Ser. No. 410,170, Oct. 26, 1973, abandoned.
This application Apr. 18, 1975, Ser. No. 569,541
Claims priority, application Japan, Nov. 6, 1972, 47-110962
Int. Cl.² H03B *3/04*
U.S. Cl. 331—1 R **2 Claims**



1. A signal detection circuit for indicating the condition of synchronism of a phase synchronization circuit having a loop consisting of a first phase detector, a loop filter and a voltage controlled oscillator and connected in series between input means for supplying input signals thereto and output means for deriving output signals therefrom, said signal detection circuit comprising
a level judgment circuit having hysteresis characteristics for providing two threshold levels depending upon the direction of variation thereby reducing misjudgments of synchronism when low signal to noise signals are supplied to the input means of the phase synchronization circuit; and
coupling means coupling the level judgment circuit between the input means and the output means, the coupling means comprising a second phase detector having one input connected to the input means and another input coupled to the output means and an output coupled to the level judgment circuit, a 90° phase shifter connected between the output means and the other input of the second phase detector and a low pass filter connected between the output of the second phase detector and the level judgment circuit thereby providing a synchronization condition qualification signal for the phase synchronization circuit.

3,952,262
BALANCED SIGNAL PROCESSING CIRCUIT
Richard S. Jamison, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Apr. 1, 1974, Ser. No. 456,716
Int. Cl.² H03B *3/06*
U.S. Cl. 331—55 **1 Claim**

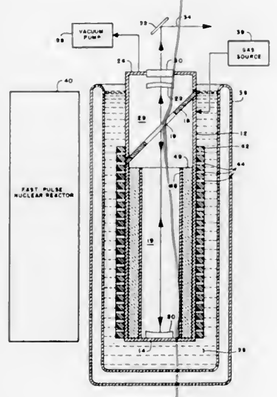


1. A balanced injection locked IMPATT oscillator, comprising:
a four-port branch line hybrid junction disposed on a substrate with first and fourth ports adapted to respectively receive and transmit electromagnetic energy, said received energy being transferred entirely and equally to second and third ports of said hybrid junction but said energy transferred to said third port lagging that transferred to said second port by 90°;
matched first and second IMPATT diode oscillators responsive to and injection locked by said received energy and respectively capacitively coupled to said second and third ports and each diode respectively generating and coupling to said hybrid junction signal energy effectively present only at said fourth port;
DC bias voltage source means disposed on said substrate, said means including similar deposited DC bias sources and deposited bias resistors coupled respectively to each of said diodes;
and isolation means including a ¾λ high impedance meander line for coupling each of said bias source/resistor combinations to an associated one of said diodes.

3,952,263
FISSION FRAGMENT EXCITED LASER SYSTEM
David A. McArthur, and Philip B. Tollefsrud, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.
Filed Oct. 4, 1974, Ser. No. 512,810
Int. Cl.² H01S *3/09, 3/22*
U.S. Cl. 331—94.5 P **12 Claims**

1. A method for exciting lasing action in a laser chamber comprising injecting into said laser chamber a molecular gas lasing medium having a mass areal density of about 5×10^{-3} grams/square centimeter, relaxation times of from about 50 to 1000 microseconds, and excitable vibrational levels from which population inversions may occur and which are excited by molecular collisions; cooling said lasing medium to a temperature of from about 60 K to about 150 K; injecting fission fragments through said laser chamber and said lasing medium

to excite the vibrational levels of said lasing medium and induce population inversions therebetween; and stimulating



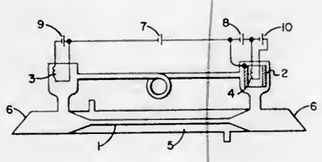
and extracting a laser beam from said excited lasing medium in said laser chamber.

3,952,264

GAS LASER WITH SUPPRESSED LOW-FREQUENCY NOISE

Karl Uno Ingard, South Lincoln, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 24, 1971, Ser. No. 146,408
Int. Cl.² H01S *3/13, 3/22*
U.S. Cl. 331—94.5 T **4 Claims**



1. A gas discharge tube suitable for use in a laser radiation generator comprising,
a tube,
a gas laser medium contained in said tube,
a cathode and anode in said tube,
means for providing a primary electrical discharge in said gas between said cathode and said anode to provide a population inversion in said gas over a region of said tube,
means for producing an ion space charge about said anode for providing ions for said primary electrical discharge and for suppressing low frequency noise in said laser radiation.

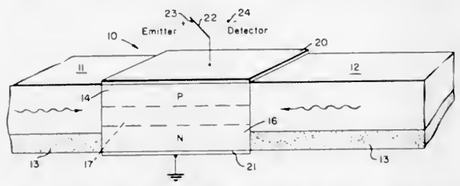
3,952,265

MONOLITHIC DUAL MODE EMITTER-DETECTOR TERMINAL FOR OPTICAL WAVEGUIDE TRANSMISSION LINES

Robert G. Hunsperger, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 29, 1974, Ser. No. 518,322
Int. Cl.² H01S *3/18;* **H01L** *31/12*
U.S. Cl. 331—94.5 H **12 Claims**

1. A monolithic dual mode emitter-detector terminal for optical waveguide transmission lines comprising:
a. a P-N junction diode;
b. at least one optical waveguide element positioned in optical signal transmissive relationship with the junction of said diode;
c. switch means to selectively d-c bias said diode in the forward direction for the emitter mode of operation and in the reverse direction for the detector mode of operation thereof;
d. said diode being formed in a direct bandgap semiconductor having an absorption spectrum which overlaps its emission spectrum, having a quantum efficiency which is sufficient for said diode to emit light of wavelengths within said emission spectrum when it is forward biased,



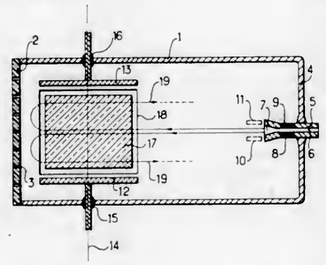
and having an absorption coefficient which is sufficient for said diode to detect light within said absorption spectrum when it is reverse biased; and
e. said semiconductor being doped to produce maximum emission at the shorter wavelengths of said emission spectrum to increase the efficiency of the diode as an emitter at the expense of its efficiency as a detector and said semiconductor exhibiting the Franz-Keldysh effect to shift the edge of said absorption spectrum to a longer wavelength in the presence of a reverse biasing electric field to increase the efficiency of the diode as a detector at said longer wavelengths when said diode is reverse biased.

3,952,266

GASEOUS FLUX LASER GENERATOR WITH PRE-IONIZATION GAS INJECTION NOZZLE

Geneviéve Girard, Jouy-en-Josas, and Maurice Michon, Draveil, both of France, assignors to Compagnie Generale d'Electricite, Paris Cedex, France

Filed Apr. 12, 1974, Ser. No. 460,632
Claims priority, application France, May 3, 1973, 73.15898
Int. Cl.² H01S *3/097;* **H01J** *17/26, 17/30*
U.S. Cl. 331—94.5 G **6 Claims**



1. In a gaseous flux laser generator including:
an elongated enclosure having restricted opening means at a first end thereof;
a nozzle for injecting a gas into said enclosure at high speed, said nozzle leading into the second end of said enclosure parallel to the longitudinal axis thereof;
two main electrodes placed in said enclosure adjacent said first end on opposite sides respectively of the gas flow therethrough remote from said nozzle and connected to a source of electrical power to set up a short "main" discharge in the injected gas;

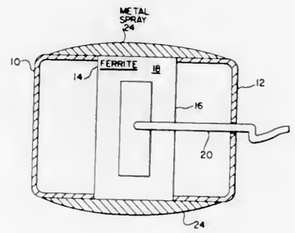
pre-ionization means for setting up an auxiliary discharge in the injected gas so as to ionize it before it is subjected to said main discharge;
an optical resonant cavity containing, in said enclosure, a gaseous mixture made active by said main discharge, said gaseous mixture comprising said injected gas; and wherein; the optical axis of the cavity, the longitudinal axis of said enclosure and the axis of said main discharge extend in three different directions,
the improvement wherein: said pre-ionizing means comprise two auxiliary electrodes connected to a source of electrical power and arranged at the output of said nozzle on respective sides thereof adjacent said second end and spaced substantially from said main electrodes, said restricted opening means at said first end of said enclosure and said high speed injection nozzle being such as to induce swirling turbulence to said gas flow from said nozzle and across said main electrodes with said pre-ionization of said gas by said auxiliary electrode being remote from said main electrodes such that homogeneous mixing of ions occurs during swirling, turbulent movement of said gas from said nozzle to said main electrodes prior to main discharge with said pre-ionization discharge across said auxiliary electrode at said nozzle effecting easy, powerful and efficient pre-ionization of said gas within the confined volume of the nozzle output.

3,952,267

METAL SPRAY FORMING OF WAVEGUIDE FOR PHASE SHIFTER CASE

William A. Dischert, Jobstown, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 3, 1975, Ser. No. 538,639
Int. Cl.² H01P *1/40, 11/00*
U.S. Cl. 333—24.1 **6 Claims**



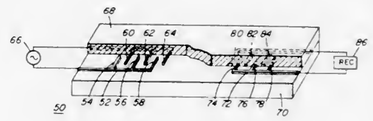
4. A metal phase-shifter assembly comprising:
a ferrite toroid assembly forming the center of said metal phase-shifter assembly;
a pair of channel-shaped pieces of metal each having a pair of parallel leg sections and an intermediate center section, said pieces abutting the sides of said ferrite toroid assembly and the free ends of said leg sections in contact therewith flush with the top and bottom of said ferrite toroid assembly;
a metal sprayed over the top and bottom of said ferrite toroid assembly and the leg sections of said channel-shaped pieces so that a continuous electrical connection is maintained at the point where said ferrite toroid assembly and said channel-shaped pieces contact.

3,952,268

TEMPERATURE COMPENSATED ACOUSTIC SURFACE WAVE DEVICE

Manfred B. Schulz, Sudbury, and Melvin G. Holland, Lexington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 359,801, May 14, 1973, which is a division of Ser. No. 185,601, Oct. 1, 1971, Pat. No. 3,786,373. This application July 29, 1974, Ser. No. 492,791
Int. Cl.² H03H *7/30*
U.S. Cl. 333—30 R **6 Claims**



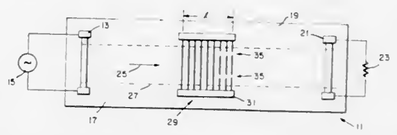
1. In combination:
means for generating a predetermined waveform including a surface wave device comprised of at least an interdigital electrode array disposed on the surface of a substrate for launching a surface wave on said substrate said means including a piezoelectric overlay film deposited on said electrode array and upon at least a portion of said substrate;
means for coupling said generated waveform to a matched filter comprised of an interdigital array interposed between a substrate and a piezoelectric overlay film, the thickness of said overlay film being such that the temperature coefficient of delay of surface waves upon said substrate is minimized for surface waves of at least a predetermined wavelength; and
means for detecting the output of said matched filter.

3,952,269

SURFACE ACOUSTIC WAVE DELAY LINE

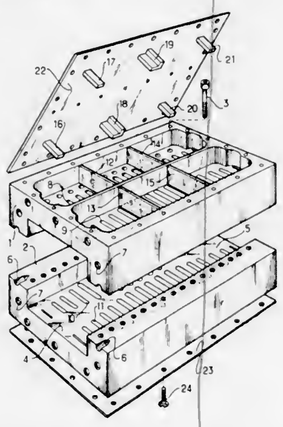
Thomas W. Bristol, Orange, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 28, 1975, Ser. No. 572,531
Int. Cl.² H03H *9/26, 9/30, 9/32;* **H01L** *41/22*
U.S. Cl. 333—30 R **8 Claims**



1. A surface acoustic wave delay line for adjusting the time delay or insertion phase of propagating surface acoustic wave energy, comprising:
a substrate of piezoelectric material having a surface capable of propagating surface acoustic wave energy;
input means including an input transducer disposed on said substrate for launching surface acoustic wave energy along said surface in response to an electrical input signal;
output means including an output transducer disposed on said substrate in the path of said propagating energy for detecting said energy incident thereon and producing an electrical output signal; and
time delay or phase compensation means disposed on said substrate in the path of said propagating energy between said transducers, said means including a group of spaced conductive electrodes initially conductively interconnected outside said path of said propagating energy, at least one of said electrodes being electrically insulated from the remainder of said group of electrodes.

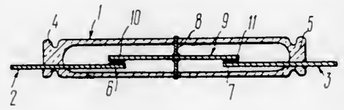
3,952,270
HYPERFREQUENCY BAND-CUT FILTER
Guy Louvel, Antony, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France
No Drawing. Filed Jan. 24, 1975, Ser. No. 543,741
Claims priority, application France, Jan. 25, 1974, 74.02517
Int. Cl.² H01P 1/20, 1/22, 5/12, 7/06
U.S. Cl. 333—73 W 3 Claims



1. In a hyperfrequency band-cut filter for absorbing a first frequency band higher than a second frequency band which is transmitted, said filter comprising; an elongated main rectangular wave guide whose input receives the first and second frequency bands and whose output sends out second non-attenuated frequency band and the first highly attenuated band, second rectangular guides for absorbing said first band, resistive loads in said secondary rectangular guldes, said rectangular guides having transversal dimensions smaller than those of the main rectangular wave guide and extending parallel to the main guide and arranged on either side of that guide along opposed longitudinal walls of said main guide and having a plurality of transversal slots within said longitudinal walls for communicating said secondary guides with said main guide, the improvement wherein: metallic transversal walls within each secondary guide form longitudinally separate resonant cavities of a length equal to $0.5\lambda_g$, where λ_g is the average wavelength of said first band, a plurality of said transversal slots open into each of said longitudinally spearate resonant cavities, and wherein said slots within said longitudinal walls opening to the end resonant cavities adjacent the input and output of said main rectangular wave guides are of decreasing size in the direction from the center of the filter outwardly towards said main wave guide input and output.

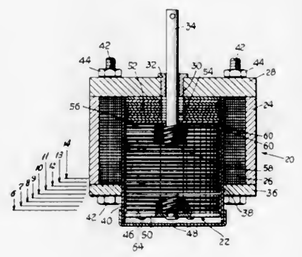
3,952,271
ELECTROMAGNETIC DEVICE USING HERMETICALLY SEALED CONTACTS
Vladimir Alexeevich Smirnov, ulitsa Lavochkina, 52, kv. 208, and Vadim Nikolaevich Shoffa, ulitsa Tashkentskaya, 15/22, kv. 288, both of Moscow, U.S.S.R.
Filed Sept. 13, 1974, Ser. No. 505,981
Int. Cl.² H01H 1/66
U.S. Cl. 335—151 23 Claims

1. A hermetically sealed reed switch contact comprising: a capsule; at least two peripheral elastically mounted magnetically controlled cores; said peripheral magnetically controlled cores being enclosed in said capsule and permanently anchored in its ends; an elastic supporting member arranged in said capsule intermediate of the inner ends of said peripheral magnetically controlled cores; a central elastically mounted magnetically controlled core at least partially overlapping said peripheral magnetically controlled cores, the transverse elasticity of said central magnetically controlled core being higher than the elasticity of said supporting member; said central magnetically controlled core being secured symmetrically



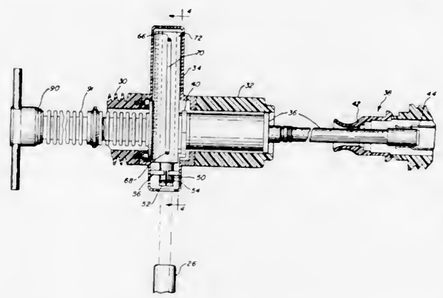
with respect to said elastic supporting member so than when a magnetic flux is applied to said cores, it gives rise to an electromagnetic force of attraction between said magnetically controlled cores, and said central magnetically controlled core comes in or out of contact with one of said peripheral magnetically controlled cores.

3,952,272
SOLENOID CORE CONSTRUCTION
Alleyne C. Howell, Jr., c/o Howell Corp., 1180 Stratford Road, Stratford, Conn. 06497
Filed Feb. 12, 1975, Ser. No. 549,247
Int. Cl.² H01F 7/08
U.S. Cl. 335—264 13 Claims



1. A manually-stackable, hooking-type lamination constituting one of a plurality of similar, loose, stackable interlocking core pieces for a solenoid, comprising in combination:
a. a stamping in the form of a metal core plate of magnetic material,
b. said core plate being adapted to have an axis which is substantially perpendicular to the plane thereof,
c. a plurality of hooks on one side of the core plate, disposed about the axis thereof,
d. said core plate having hooking apertures disposed about its axis and adapted to receive the hooks of an adjoining similar core plate when both plates are superposed one on the other,
e. said core plate having clearance apertures disposed about its axis and adapted to receive portions of the hooks of a third and similar core plate which has been attached by said hooks to the second-mentioned core plate,
f. said hooks of the first-mentioned core plate projecting from the side of the same a distance greater than twice the thickness of the core plate.

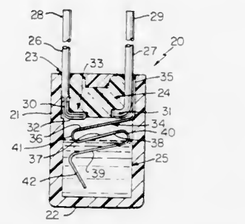
3,952,273
HIGH VOLTAGE SWITCH MECHANISM
Edward J. Rogers, Chicago, Ill., assignor to S & C Electric Company, Chicago, Ill.
Filed Apr. 1, 1975, Ser. No. 563,965
Int. Cl.² H01H 85/00
U.S. Cl. 337—7 11 Claims



1. A high voltage switch mechanism for use in conjunction with an insulated member, said switch mechanism comprising:
a stationary contact connected to one side of an electrical circuit;
movable contact means connected to the other side of an electrical circuit mounted for movement in a first direction to electrically disengage said stationary contact, and in a second direction to engage said stationary contact;
spring means for spring biasing said movable contact means in either the first or the second direction;
insulated member engaging means for engaging the insulator member and being rotated by the insulated member, in a first and a second direction;
cam means operably connected to said insulated member engaging means for moving in a first direction in response to rotation of said insulated member engaging means in the first direction and for moving in a second direction in response to rotation of said insulated member engaging means in the second direction;
biasing means operably connected to said cam means for biasing said spring means in the direction of and in response to movement of said cam means;
cam follower means for retaining said movable contact means in a stationary position against the spring biasing of said spring means until said cam means has biased said spring means, and for then releasing said movable contact means so that said movable contact means can rapidly move to disengage said stationary contact when the insulated member is rotated in the first direction and engage said stationary contact when the insulated member is rotated in the second direction.

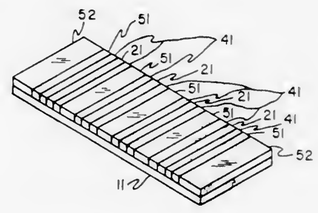
3,952,274
THERMALLY ACTUATABLE SWITCH CONSTRUCTION
Emil Robert Plasko, Washington Township, Ohio, assignor to Micro Devices Corporation, Dayton, Ohio
Filed Oct. 4, 1974, Ser. No. 512,353
Int. Cl.² H01H 37/76
U.S. Cl. 337—407 17 Claims

1. A thermally actuatable switch comprising housing means having a pair of lead means, one of said lead means having a contact means, the other of said lead means having a spring blade means for making contact with said contact means to complete an electrical circuit between said lead means, said spring blade means having a normal bias to move the same out of contact with said contact means to open said circuit, a temperature sensitive member carried by said housing means and being adapted to collapse when the same is at a predetermined temperature thereof, and biasing means operatively associated with said temperature sensitive member and said spring blade means to resiliently hold said spring blade means



in contact with said contact means as long as said temperature sensitive member is in an uncollapsed condition thereof.

3,952,275
PHOTON SENSOR AND METHOD OF FABRICATION
Reinhard D. Ennulat, Alexandria; Paul LoVecchio, Reston; Wolfgang Elser, Alexandria, all of Va., and Philip R. Boyd, Upper Marlboro, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Division of Ser. No. 350,286, April 11, 1973, Pat. No. 3,867,757. This application Oct. 17, 1974, Ser. No. 515,723
Int. Cl.² H01L 31/08
U.S. Cl. 338—18 4 Claims

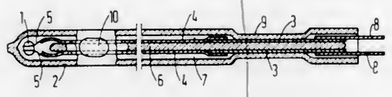


1. An IR sensing element comprising:
a substrate of insulating material; and
a plurality of barlike channels of the same photoconductive material transversely arranged on one surface of said substrate with broad surface areas of each channel in contiguous contact with at least one but not more than two other channels whereby all of said channels are serially connected to form a conducting path.

3,952,276
FLUID TIGHT NTC HIGH TEMPERATURE SENSOR AND METHOD OF PRODUCING SAME
Horst Walch, and Urlich Walter, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Feb. 6, 1975, Ser. No. 547,594
Claims priority, application Germany, Feb. 21, 1974, 2408368
Int. Cl.² H01C 7/00
U.S. Cl. 338—28 9 Claims

1. A gas and liquid tight NTC-high temperature sensor comprising:
a quartz housing;
a thermistor built into said quartz housing and disposed in an oxidizing atmosphere;
molybdenum current carrying elements partially molten

into said quartz housing;



platinum current carrying elements connected between said thermistor and said molybdenum current carrying elements.

3,952,277

COMBINED VARIABLE RESISTOR ASSEMBLY PROVIDED WITH POSITION INDICATOR MEANS

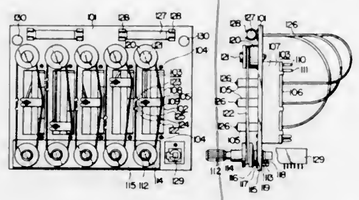
Matsuo Nishioka; Shunzo Oka, both of Hirakata; Akitoshi Miyashita, Suita, and Kazuo Oshima, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 427,735, Dec. 26, 1973. This application Feb. 12, 1975, Ser. No. 549,148

Claims priority, application Japan, Dec. 28, 1972, 48-4577[U]; Dec. 28, 1972, 48-4578[U]; Dec. 28, 1972, 48-4579[U]; Dec. 28, 1972, 48-4580[U]

Int. Cl.² H01C *10/30*

U.S. Cl. 338—119 **4 Claims**



1. A combined variable resistor assembly provided with position indicator means, comprising a panel formed with a plurality of parallel elongate openings, slidable variable resistors corresponding in number to the number of said elongate openings and mounted on said panel on the back side thereof, each said variable resistor including a slide member having a slide lever penetrating the associated one of said openings, each said slide lever having an arm protruding on the front side of said panel, operable shafts corresponding in number to the number of said variable resistors and each rotatably mounted in said panel at a position thereof spaced from the slidable span of the associated slide lever, first pulleys secured to said respective operable shafts, second pulleys paired with said respective first pulleys and rotatably mounted on the front side of said panel at respective positions spaced from the slidable span of the respective associated slide levers, rope means each passed round each pair of said first and second pulleys and connected to each said slide lever, a light source, and optical fibers each having one end held in the neiborhood of said light source and the other end connected to each said slide lever.

3,952,278

COMBINATION OF A SWITCH AND VARIABLE RESISTOR

Tetsuhiro Kiyono; Wakuya, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1973, Ser. No. 410,435

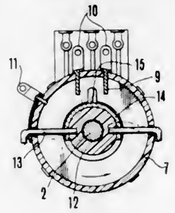
Claims priority, application Japan, Oct. 28, 1972, 47-124575

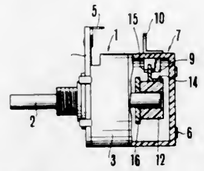
Int. Cl.² H01C *10/50*; **H01H** *3/54*

U.S. Cl. 338—198 **1 Claim**

1. The combination of a switch and variable resistor comprising

a. a switch housing having a plurality of contact members,
b. an operating shaft of said variable resistor in common with said switch, said shaft projected into said switch housing,
c. a switching member within said housing comprising a collar constructed of electrically insulative material, and collar being mounted on said operating shaft with sliding friction therebetween,
d. a projection member constructed of electrically conductive material and located on said switching member,
e. spring means comprising electrically conductive and resilient wire, one end of said spring means being attached to said switching member and electrically connected to said projection, said spring means having an opposite end which extends through an aperture in said





housing, said spring means centering said projection member between said contact members,
f. said switching member being rotated upon initial rotation of said shaft and said variable resistor, so that said projection member comes into contact with one of said contact members,
g. upon further rotation, said operating shaft overcomes the sliding friction between said operating shaft and said switching member causing a slippage therebetween so that said switching member does not rotate further and said projection member remains in contact with one of said contact members during said further rotation of said shaft and said variable resistor,
h. said spring means thereafter restoring said switching member to its center position when the rotation of said operating shaft and said variable resistor is ceased.

3,952,279

SONAR SYSTEM FOR USE BY FISHERMEN AND THE LIKE

Thomas M. Frederiksen, San Jose, and William M. Howard, Campbell, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

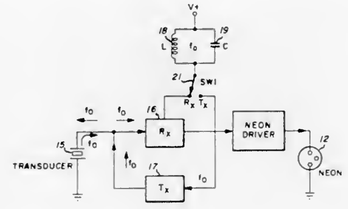
Filed May 17, 1974, Ser. No. 470,999

Int. Cl.² G01S *9/70*

U.S. Cl. 340—3 R **19 Claims**

1. A sonar system including
a transducer for converting electrical signals to sound signals, said sound signals being transmitted to a target from which echo sound signals are thereafter returned as received signals to said transducer,
a transmitter circuit for delivering radio frequency electrical signals to said transducer to create said transmitted sound signals,
a receiver circuit for receiving said returned echo signals from said transducer and converting them to electrical signals,

a radio frequency tuned circuit tuned to the frequency of said transmitted sound signal and said received echo signal,



and means for coupling said radio frequency tuned circuit to said transmitter circuit to establish the frequency of the transmitted signal and for coupling said radio frequency tuned circuit to said receiver circuit to tune said receiver to the received echo signal.

3,952,280

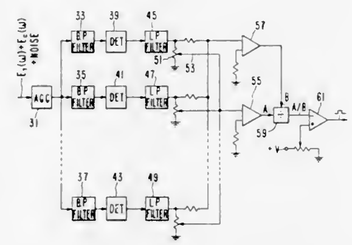
RADIATION MONITORING OF AN OBJECT SPACE WITH A CLUTTER SUPPRESSION TECHNIQUE

Richard A. Altes, Palo Alto, Calif., assignor to ESL Incorporated, Sunnyvale, Calif.

Filed Jan. 10, 1974, Ser. No. 432,169

Int. Cl.² G01S *9/66, 7/66*

U.S. Cl. 340—3 R **5 Claims**



1. A method of detecting the existence of an object of interest within an object space which also includes at least one cluttering object that has a different transfer function to incident radiation than said object of interest, comprising the steps of:
directing toward said object space radiation having a bandwidth sufficiently large so that radiation modified by the object space has different frequency spectra for each of said cluttering object and object of interest,
transducing the object space modified radiation to form an electrical signal representative thereof, and
determining from said electrical signal whether said object space modified radiation contains the spectrum of said object of interest including the step of passing said electrical signal through a plurality of constant-Q filters in parallel where each of the filters passes a different frequency band and are weighted individually so that the overall composite filter maximizes its output in response to the spectrum of the object of interest while minimizing its output in response to the spectrum of said at least one cluttering object.

3,952,281

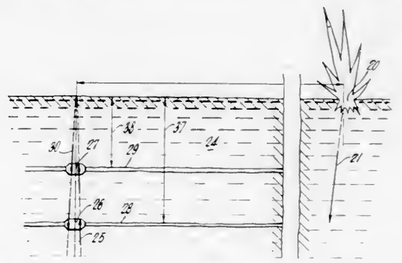
METHOD OF MARINE REFLECTION-TYPE SEISMIC EXPLORATION

Alvin L. Parrack, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 309,315, Nov. 24, 1972, abandoned. This application June 10, 1974, Ser. No. 477,554

Int. Cl.² G01V *1/38*

U.S. Cl. 340—7 R **4 Claims**



1. In marine reflection-type seismic exploration a method for improving the character of recorded data developed from seismic detectors located in a body of water, comprising
creating downward-travelling seismic energy in said body of water,
locating two of said detectors spaced vertically apart in said body of water,
delaying all of the signals from one of said two detectors in order to have the signals created by undesired vertical-going energy which is reflected from a boundary of said body of water delayed into time coincidence with the corresponding vertical-going energy signals from the other detector, and
subtracting all the signals both desired and undesired from said one of said spaced detectors from all of the corresponding signals from said other detector after said delay whereby said desired signals are also subtracted not added in order to directly cancel only the undesired vertical-going energy signals.

3,952,282

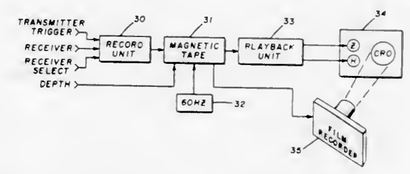
TWO-RECEIVER, VARIABLE-DENSITY LOGGING SYSTEM

Joseph Zemanek, Jr., Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed July 17, 1974, Ser. No. 489,213

Int. Cl.² G01V *1/40*

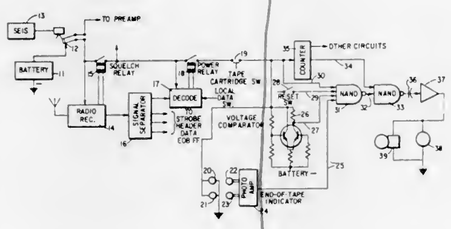
U.S. Cl. 340—15.5 TN **6 Claims**



1. In an acoustic velocity logging system having a transducer assembly adapted for movement through a borehole and including a transmitter of acoustic pulses, a pulse generator for energizing each cycle of the transmitter, and first and second receivers located at different, spaced-apart, axial distances from the transmitter for producing signals representative of the acoustic pulses traveling through the formation surrounding the borehole from the transmitter to the receivers, the method of producing a two-receiver, variable-density recording of such signals, comprising the steps of:

a. alternately providing said receiver signals during alternate acoustic cycles to provide a composite video signal,
b. triggering the sweep of a cathode-ray oscilloscope in response to each acoustic cycle,
c. applying said composite video signal to the intensity modulation input of the cathode-ray oscilloscope whereby alternate sweeps display variable-density traces of the signals from alternate receivers on the face of the cathode-ray oscilloscope, and
d. reproducing each successive sweep of the electron beam of the cathode-ray oscilloscope in side-by-side relationship to produce a two-receiver, variabledensity recording.

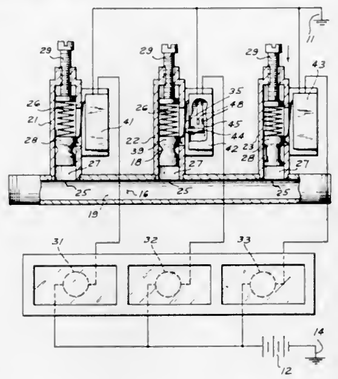
3,952,283
GROUP RECORDER ALARM
Robert A. Broding, Tulsa, Okla., assignor to Standard Oil Company, Chicago, Ill.
Filed Dec. 4, 1974, Ser. No. 529,308
Int. Cl.² G01V *1/24, 1/22*
U.S. Cl. 340—15.5 TS **5 Claims**



1. A status indicator integral with a seismic group recorder which is activated by a communications link, said indicator producing an indication remote from said recorder, including:
a source of electric energy,
normally open first switching means closed by connection of at least one geophone to said recorder,
normally open second switching means closed by loading a tape cassette in said recorder,
normally closed third switching means opened by the recording tape in said cassette reaching the end of its recording position,
normally open fourth switching means closed by individual code signal received from said communication link,
an electric alarm capable of producing a perceptible signal mounted outside said recorder, and
a circuit connecting in series said alarm, said source, and said first, second, third, and fourth switching means.

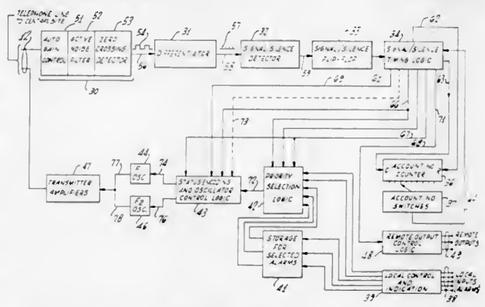
3,952,284
VARIABLE FLUID PRESSURE ACTUATED VEHICLE TAIL LIGHT SYSTEM
Robert D. Martin, Dallas, Tex., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Oct. 9, 1974, Ser. No. 513,468
Int. Cl.² B60Q *1/26*; H01H *35/24*
U.S. Cl. 340—71 **1 Claim**

1. A vehicle tail light indication system which indicates the severity of braking application of the vehicle in which it is installed comprising
a multiplicity of tail lights each individually connected to an individual electric switch,
each said electric switch being linked by mechanical means to the hydraulic fluid of the hydraulic brake line of the attached vehicle, each said switch being responsive in action to the magnitude of hydraulic pressure of the brake line, with each switch fitted with adjustment means to regulate the threshold responsiveness of the switch to a specific magnitude of hydraulic pressure, so that the



braking application effect is indicated by the number of tail lights that are simultaneously actuated.

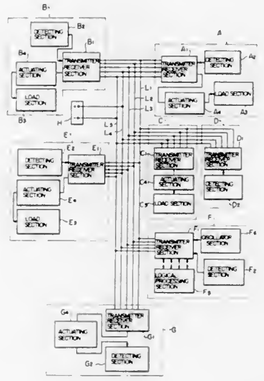
3,952,285
SECURITY POLLING TRANSPONDER SYSTEM
Melvin S. Falck, Jr., Granada Hills, Calif., assignor to Morse Products Manufacturing, Sylmar, Calif.
Filed Apr. 21, 1975, Ser. No. 570,094
Int. Cl.² H04Q *9/00*
U.S. Cl. 340—152 T **34 Claims**



1. For use in a security polling system having a central controller and a plurality of remote transponders, a method of transmitting security status information from a transponder to the central controller, said method comprising the steps of:
detecting polling signals transmitted from the central controller;
determining whether each of the polling signals is intended to trigger transmission from this particular transponder; and
transmitting, in response to an affirmative decision in said determining step, a response signal indicative of at least one security status condition at the transponder site, the response signal including a plurality of sequential signal bursts, each of a preselected frequency and duration such that the response signal uniquely identifies the security status condition.

33. For use in a security polling system having a central controller and at least one remote transponder, a method for detecting an unauthorized transponder substitution, said method comprising the steps of:
sensing the application of electrical power to the transponder; and, in response to said sensing step,
inhibiting transmission of a normal response signal; and
enabling transmission of a special response signal indicative of application of electrical power to the transponder.

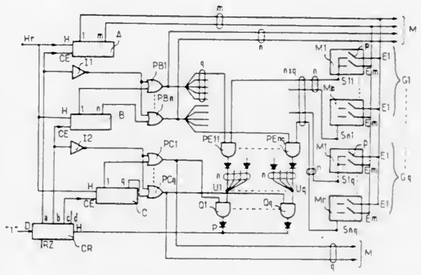
3,952,286
TIME MULTIPLEXED ELECTRIC WIRING SYSTEM FOR CONTROL AND MONITORING OF FIELD POINTS
Hisato Wakamatsu; Hiroshi Arai, both of Toyota; Akira Kuno, Nagoya, and Shigeyuki Akita, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan
Filed July 26, 1974, Ser. No. 492,204
Claims priority, application Japan, July 28, 1973, 48-85130
Int. Cl.² H04Q *9/00*
U.S. Cl. 340—163 **9 Claims**



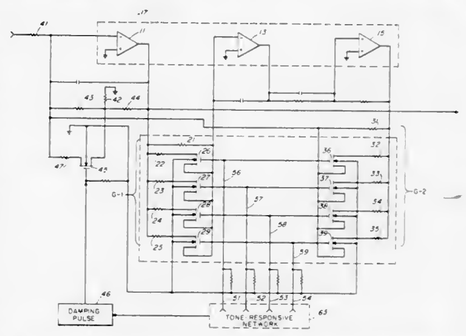
1. An electric wiring system for interconnecting a plurality of local blocks each thereof including a transmitter and receiver unit having transmitting and receiving functions and a plurality of terminals and a plurality of terminals means each thereof having an assigned address connected respectively to each of said terminals, wherein at least one of said plurality of local blocks further includes oscillator means for generating a reference signal and means for generating a synchronous signal having a period of desired cycle of said reference signal, and wherein each of said transmitter and receiver units includes a plurality of transmitting and receiving blocks commonly connected to said terminals, a plurality of selector terminals for applying selecting signals to select one of said transmitting and receiving blocks corresponding to the assigned address of said terminal means and a counting block for receiving said synchronous signal and reference signal and for time-dividing each period of said synchronous signal by said reference signal to designate the address in order and for making the designated address agree with said assigned address and for applying said designated address to said transmitting and receiving blocks, thereby accomplishing transmission and reception of signals among said local blocks corresponding to said assigned address by said transmitting and receiving blocks selected by said selecting signals.

3,952,287
DATA DETECTION SYSTEM
Christian Vié, St Cyr l'Ecole, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France
Filed Oct. 22, 1974, Ser. No. 517,286
Claims priority, application France, Oct. 22, 1973, 73.37573
Int. Cl.² H04Q *3/00*; G08B *19/00*
U.S. Cl. 340—166 R **6 Claims**

1. In a data detection system to detect and locate one data item among a number of data items, the presence of each data item being revealed by the change in logic states of an access gate, the improvement characterized in that the detection and location of these data items is achieved by means forming a meshed network (Ml to Mn) having several levels in which a plurality of access gates (p) are organized in matrixes (Ml to Mn) which are in turn organized in higher groups of matrixes (G1 to G9) so as to form any number of levels, a set of counters (A, B, C) related to each of these levels to scan said access gates and thereby locate the data item at that level, and supervising element means (CR) for successively controlling the action of the counters, said counters blocked each in turn by said supervising element when a data item is detected at the corresponding level.



3,952,288
MULTIFREQUENCY LINEAR FILTER NETWORKS WITH ACTIVE ELEMENTS
Charles Howe Carpenter, Belmont, and Thomas Raymond Stodolski, Cambridge, both of Mass., assignors to Bell & Howell Company, Chicago, Ill.
Filed Sept. 30, 1974, Ser. No. 510,787
Int. Cl.² H04Q *11/02*
U.S. Cl. 340—171 R **11 Claims**

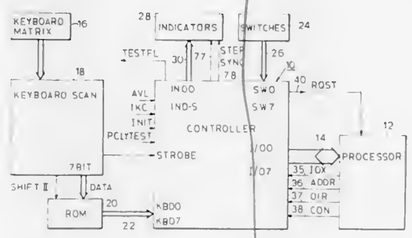


1. In a bandpass active filter circuit which has its transfer function for bandpass output controlled by a conductance magnitude, a conductance net comprising a base resistor having a conductance magnitude for setting the pass band of said filter at a base center-frequency f_0, means for setting said pass band to one of a plurality "n" center frequencies $f_0 + n\Delta f$ comprising a plurality "m" of shunt resistors each connected in series with a unique two-state switch in a shunt branch across said base resistor, said two states being substantially an open state and a closed state, the conductance magnitudes of said shunt resistors increasing from the smallest to the largest conductance by $2^0, 2^1, \ldots 2^m$ where "m" is an integer smaller than "n", and $2^m \quad n$, and means to establish a pattern of simultaneous states of said switches for setting the pass band of said filter at a desired center frequency $f_0 + n\Delta f$.

3,952,289
CONTROLLER FOR LINKING A TYPEWRITER CONSOLE TO A PROCESSOR UNIT

Jacques A. Baligant, Brussels, Belgium, assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 3, 1975, Ser. No. 546,713
Int. Cl.² G06F *3/10*
U.S. Cl. 340—172.5 **18 Claims**



1. A controller for linking a typewriter console to processor unit, the typewriter console having a keyboard including means for reading-out the keyboard data characters, said controller comprising:

a storage buffer having a plurality of stages;

a plurality of flags, one for each stage of the buffer;

means for causing each flag to assume a first condition when its respective stage is occupied by a character, and a second condition when its respective stage is vacant of a character;

means for supplying a series of strobe pulses and a series of clock pulses, the rate of clock pulses being many times faster than the rate of strobe pulses;

means controlled by said strobe pulses for serially reading each keyboard data character into the first stage of the buffer to store same therein and to cause its respective flag to assume said first, stage-occupied, condition;

means controlled by said clock pulses for continuously shifting the data character stored in the buffer towards the last stage of the buffer, to be stored in the highest stage of the buffer whose flag is in said second, stage-vacant, condition;

means for serially reading out to the processor unit the stored keyboard data characters from the last stage of the buffer;

and means preventing the entry of a character into the buffer and for providing an indication of an "**0verflow**" condition whenever a strobe pulse is received by the buffer while the flag of the first stage of the buffer is in said stage-occupied condition.

3,952,290
READ-ONLY OPTICAL MEMORY SYSTEM

Donald N. Williams, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

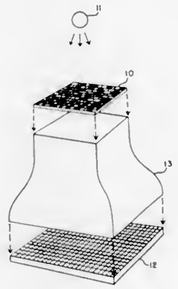
Filed Nov. 11, 1974, Ser. No. 522,808
Int. Cl.² G11C *11/42, 13/04*
U.S. Cl. 340—173 LM **8 Claims**

1. A read-only optical memory system comprising:

a mask having a plurality of discrete increments of recorded information defined by variations in opacity;

a light source positioned to uniformly illuminate all said discrete increments of said mask;

a multiple element, photo-responsive charge coupled device positioned to receive the light energy transmitted through the illuminated mask and having its elements arrayed for developing a charge at each element position commensurate with the photo energy transmitted through an optically aligned discrete increment of said mask, whereby the charges of said elements are representatives of said recorded information; and

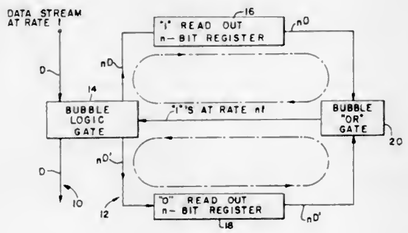


means for transferring said charges out of said charge coupled device.

3,952,291
READOUT SYSTEM FOR MAGNETIC BUBBLES

Paul T. Bailey, Creve Coeur; Robert M. Sandfort, St. Charles, both of Mo., and Howard H. Aiken, deceased, late of Fort Lauderdale, Fla. (by Mary E. Aiken, executrix), assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 28, 1973, Ser. No. 401,893
Int. Cl.² G11C *11/14, 19/08*
U.S. Cl. 340—174 TF **30 Claims**

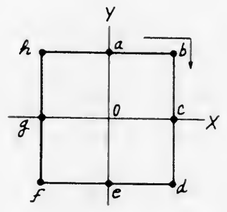


17. A magnetic bubble circuit, comprising two magnetic bubble propagation circuits each having means for advancing bubble bits down a channel through a plurality of serial consecutive bubble positions at a constant data rate, means for determining different simultaneous constant data rates for said two circuits respectively, and interaction means for causing bubbles on one of said circuits to be logically influenced by means of magnetic repulsion by the presences of bubbles in said other circuits while said circuits are both running at said different constant data rates.

3,952,292
MAGNETIC BUBBLE DEVICE DRIVER

Masahiro Komatsu, Inagi; Sakan Takai, Kawasaki; Harumi Maegawa, Kawasaki, and Masaki Takasu, Kawasaki, all of Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Filed Dec. 10, 1974, Ser. No. 531,321
Claims priority, application Japan, Dec. 14, 1973, 48-138686
Int. Cl.² G11C *11/14*
U.S. Cl. 340—174 TF **4 Claims**



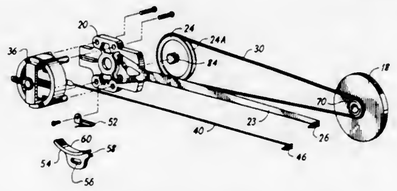
1. A magnetic bubble device driver for a magnetic bubble device having a magnetic bubble chip consisting of magnetic material for producing a magnetic bubble, said magnetic bubble chip having a surface, and at least a pair of drive coils crossing each other for producing a rotating magnetic field substantially parallel to the surface of the magnetic bubble chip, said magnetic bubble device driver comprising

circuit means for supplying drive currents to each of the drive coils of a magnetic bubble device, said drive currents respectively having predetermined waveshapes and producing magnetic fields each of which varies linearly whereby said magnetic fields produce a rotating magnetic field rotating at a uniform constant speed for driving the magnetic bubble of the magnetic bubble device.

3,952,293
METHOD AND APPARATUS FOR DISPLAYING INDUSTRIAL PROCESS CONTROL PARAMETERS

Allan L. Flanagan, Attleboro; Richard Driscoll, Mansfield, and David A. Richardson, Sheldonville, all of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed June 24, 1974, Ser. No. 482,041
Int. Cl.² G08B *29/00*
U.S. Cl. 340—213 Q **10 Claims**



1. A display apparatus for a process instrumentation system for indicating a set-point value and measured value of a process condition, comprising, in combination

a scale having graduated indicia representative of said set-point and measured values;

a set-point indicating device arranged to present a set-point pointer adjacent said scale to indicate said set-point value;

said set-point indicating device including an element for manually adjusting said set-point pointer to any position along said scale;

means coupled to said set-point indicating device for adjusting the value of a set-point signal as a function of the position of said set-point pointer along said scale;

means for developing a deviation signal representing the difference between said set-point signal and a measurement signal representative of said measured value of the process condition;

a deviation indicating device arranged to present a measurement pointer adjacent said scale;

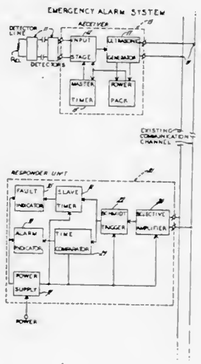
said deviation indicating device having means responsive to said deviation signal for positioning said measurement pointer,

said deviation indicating device being dependently coupled to said set-point indicating device for movement therewith whereby said measurement pointer is positioned by said responsive means a distance away from said set-point pointer corresponding to the magnitude of said deviation signal and adjacent said scale to indicate said measured value of process condition.

3,952,294
SMOKE DETECTION ALARM SYSTEM

Frank W. Emerson, and George J. Novacek, both of Peterborough, Canada, assignors to General Time Corporation, Thomaston, Conn.

Filed Jan. 3, 1974, Ser. No. 430,574
Claims priority, application Canada, Mar. 19, 1973, 166370
Int. Cl.² G08B *17/10, 1/08;* H04M *11/04*
U.S. Cl. 340—237 S **8 Claims**



6. An emergency alarm system including detector means responsive to a condition and providing a detector signal indicative of the presence or absence of said condition, means for generating a signal having constant duration and periodicity, means responsive to said detector signal when indicating the presence of said condition to vary the duration and periodicity of said generated signal, and means arranged to receive said generated signal from said generating means and to produce an alarm signal if the time between successive ones of said generated signals is outside a predetermined range.

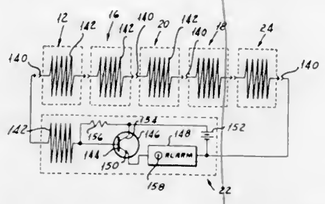
3,952,295
ALARM SYSTEM FOR CARGO BOX

August G. Luisada, Waymart, Pa.; Leonard P. Frieder, Sr., deceased, late of Clarks Green, Pa., and by Leonard P. Frieder, Jr., executor, Waverly, Pa., assignors to Gentex Corporation, Carbondale, Pa.

Division of Ser. No. 286,462, Sept. 5, 1972, Pat. No. 3,853,238. This application Aug. 2, 1974, Ser. No. 494,086
Int. Cl.² G08B *13/12*
U.S. Cl. 340—273 **7 Claims**

1. A smooth operating cargo box including in combination, a base, side panels, a back panel, a front panel and a top panel,

first interengageable means running along the side edges of said base and along the bottom edges of the side panels for connecting said side panels to said base, second interengageable means along the bottom and side edges of the back panel and along the back edge of the base and back edges of the side panels and responsive to sliding movement of the back panel from the inside toward the outside of said box in a direction perpendicular to the plane of the back panel for connecting the back panel to the base and side panels, third interengageable means comprising outwardly opening side hooks running along the front edges of the side panels and inwardly opening end hooks running along the side edges of the front panel responsive to pivotal movement of the front panel around its bottom edge in a direction from outside toward the inside of

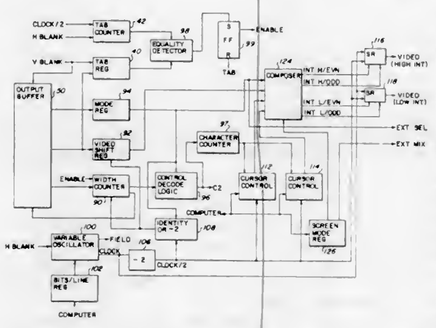


said box for connecting said front panel to said base and interengaging the front panel with the side panels, fourth interengageable means comprising outwardly opening side hooks running along the upper edges of the side panels and inwardly opening end hooks running along the side edges of the top panel and an inwardly opening side hook running along the rear edge of said top panel and an outwardly opening end hook running along the top edge of the back panel responsive to sliding movement of said top panel in the direction of the plane thereof from back to front of said box for connecting said top panel to said back and side panels, a latch for holding the front edge of the top panel down on the top edge of the front panel and means for producing a signal in response to unauthorized entry into said box.

3,952,296
VIDEO SIGNAL GENERATING APPARATUS WITH SEPARATE AND SIMULTANEOUS PROCESSING OF ODD AND EVEN VIDEO BITS

Roger D. Bates, Sunnyvale, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 23, 1973, Ser. No. 418,508
Int. Cl.² G06F *3/14*
U.S. Cl. 340—324 AD **13 Claims**



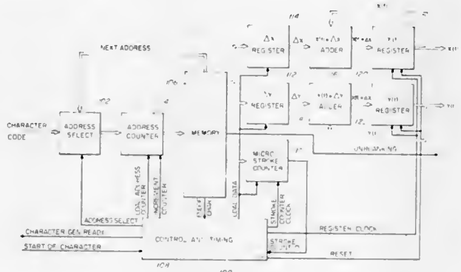
1. In an apparatus for generating video signals representing a character to be displayed on a display device, said apparatus including first memory means for storing binary information representing said character, said first memory means being addressable to generate said binary information for processing and processing means coupled to said first memory means for processing said binary information to generate said video signals, the improvement comprised in that:

said processing means includes first register means for processing the odd bits of said binary information, second register means for processing the even bits of said binary information, and means coupled to said first and second register means for simultaneously operating said first and second register means in order to simultaneously process said odd and even bits.

3,952,297
CONSTANT WRITING RATE DIGITAL STROKE CHARACTER GENERATOR HAVING MINIMAL DATA STORAGE REQUIREMENTS

Franklin K. Stauffer, Sudbury, and Phillip R. Smith, Acton, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Aug. 1, 1974, Ser. No. 493,451
Int. Cl.² G06F *3/14*
U.S. Cl. 340—324 A **22 Claims**



1. In combination:

means for storing data representing portions of straight line segments of characters to be displayed, said data comprising the magnitude and direction of each of said portions for at least two axes;

means for periodically accumulating said data at a constant rate for producing said straight line segments of said characters;

means for storing a digital number representing the number of said portions in each of said segments;

counting means operating in response to said number; and

means for displaying said characters.

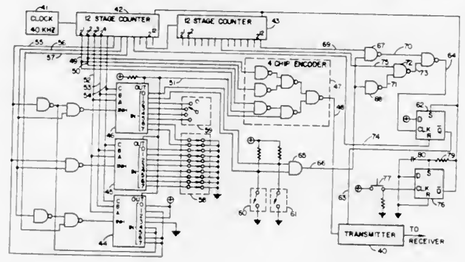
3,952,298
CLOCK GATED DIGITAL DATA ENCODING CIRCUIT

Earl R. Winkelmann, and Robert S. Briggs, Jr., both of Richardson, Tex., assignors to Spectradyne, Inc., Richardson, Tex.

Filed Apr. 17, 1975, Ser. No. 569,054
Int. Cl.² H03K *13/24*; **H04J** *6/00*
U.S. Cl. 340—347 DD **7 Claims**

1. A digital data encoding circuit connected to a multibit source of input digital data signals including: multiplexer means comprising a plurality of addressable input terminals connected to said data source, an output terminal, and a plurality of address terminals; said multiplexer means being responsive to address signals applied to said address terminals for applying to said output terminal the input digital data signal applied to the input terminal corresponding to the applied address signals; clock means providing a fixed frequency clock signal; multi-stage counter means connected to said clock means, with the first stage of said counter means providing an output signal at half the frequency of said clock signal, and each succeeding stage of said counter means providing an output signal at half the frequency of the preceding

stage; address means connected between said multiplexer means address terminals and the third and higher stages of said counter means for applying said address signals to sequentially address the input terminals of said multiplexer means; and encoder means having input terminals connected

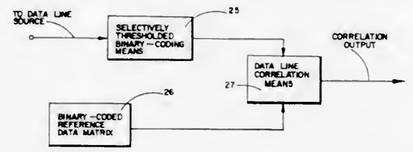


to said multiplexer means output terminal and the first and second stages of said counter means for encoding each bit of said data source into a four-chip binary code and applying the binary coded data to an output terminal of said encoder means.

3,952,299
DATA LINE CORRELATOR

Winston W. Hodge, Orange, and David Rosenstock, Norco, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed July 28, 1969, Ser. No. 845,366
Int. Cl.² G01S *7/04, 9/00*; **G06K** *9/00*
U.S. Cl. 343—5 MM **11 Claims**



1. A line correlator for correlation of a binary coded two-dimensional data matrix of interest with a binary coded one-dimensional data reference and including means for determining the correlation coefficient $M(\tau,\theta)$ of the correlation of said data matrix and said data reference in accordance with the following relationship:

$$M(\tau,\theta)=\left[\frac{LN(11)-N_R(1)N_S(1)}{[N_S(1)N_S(0)N_R(1)N_R(0)]^{1/2}}\right]^n$$

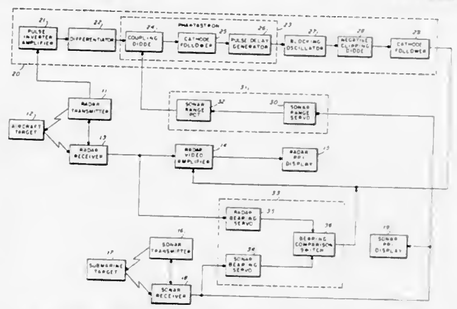
$N(11)$ = number of matched **1's**
$N_R(1)$ = number of **1's** in reference
$N_R(0)$ = number of **0's** in reference
$N_S(1)$ = number of **1's** in sensed map line segment being correlated
$N_S(0)$ = number of **0's** in sensed map line segment being correlated
$L = N_R(1) + N_R(0) = N_S(1) + N_S(0)$ = bit length of data reference
τ = displacement (in bits) of the data reference relative to the data matrix
θ = reference orientation of the data reference relative to the data matrix
n = an integer of at least unity

said device further including means responsive to the function $M(\tau,\theta)$ for a number of selected combinations of data matrix positions (τ) and orientations (θ) for determining that combination of position and orientation having a maximum value of the function $M(\tau,\theta)$ associated therewith.

3,952,300
SONAR TARGET CONVERTER

Donald G. Campbell, 788 W. Washington St., Burns, Oreg. 97720

Filed June 8, 1962, Ser. No. 202,354
Int. Cl.² G01S *9/02*
U.S. Cl. 343—6 R **14 Claims**

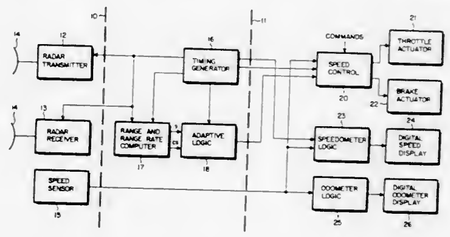


1. A sonar converter comprising in combination, radar means for echo-ranging on an aircraft target and producing a pair of output signals representing the range and bearing thereof, sonar means for echo-ranging on a submarine target and producing a pair of output signals representing the range and bearing thereof, means coupled to said radar means for displaying said aircraft range and bearing in response to the pair of output signals produced thereby, means coupled to said radar means and said sonar means for generating a signal having a time delay proportional to the range of said submarine target, means coupled to said radar and sonar means for generating a signal representing the bearing of said submarine target when same substantially coincides with the bearing display of said aircraft target, and means connected between the outputs of said time delayed signal generating means and said submarine target bearing signal generating means and the input of the aforesaid aircraft range and bearing display means for simultaneously supplying said submarine target range and bearing signals thereto for display thereof only when said displayed aircraft target bearing and said submarine target bearing are within a predetermined angular display sector.

3,952,301
DIGITAL ADAPTIVE SPEED CONTROL FOR VEHICLES

Morris Sorkin, Santa Monica, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Feb. 11, 1974, Ser. No. 441,100
Int. Cl.² G01S *9/46*
U.S. Cl. 343—7 VM **4 Claims**



1. A digital adaptive speed control for a motor vehicle comprising:

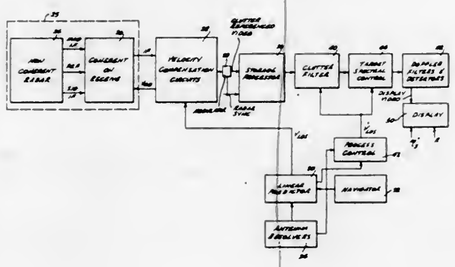
a. means for generating a first train of pulses representative of the speed of the vehicle;
b. a digital memory register coupled to said pulse generating means for storing a first digital signal representative of the desired speed of the vehicle;
c. a digital comparator coupled to said pulse generating means and to said memory register for comparing the first digital signal with a second digital signal representative of said pulse train during a predetermined period of time, and for generating an error signal;
d. a throttle actuator coupled to said comparator means;
e. a brake actuator coupled to said comparator means;
f. a radar for sensing the distance and closing speed to another vehicle ahead of the control vehicle and for developing a second pulse train representative of an adaptive speed signal;
g. a range and range rate extractor coupled to said radar for generating distance and closing speed signals;
h. a pulse gate generator coupled to said radar for generating a range gate, said digital comparator being coupled to said pulse gate generator for generating a range gate having a time duration dependent upon the vehicle speed;
i. means for coupling said radar to said digital comparator for modifying said error signal in accordance with said adaptive speed signal; and
j. means for selectively actuating said brake actuator to reduce the speed of the control vehicle in response to said adaptive speed signal.

3,952,302

SYNCHRONOUS DETECTOR WITH PULSE REPETITION FREQUENCY MODULATION

William H. Mullins, Manhattan Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed June 21, 1965, Ser. No. 465,794
Int. Cl.² G01S 9/42
U.S. Cl. 343—7.7 **5 Claims**



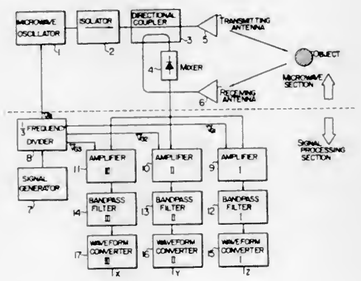
1. A system for frequency modulating an input signal having spectral signals repetitive at a predetermined pulse repetition frequency with a selected spectral signal having a predetermined mean frequency comprising:
mixing means responsive to the input signal,
a source of frequency stable reference signals at substantially the same frequency of said input signal,
and means coupled between said source of reference signals and said mixing means for controlling the phase of the reference signals as a function of the pulse repetition frequency to provide a predetermined frequency offset to the reference signals.

3,952,303

DOPPLER RADAR FOR FORECASTING COLLISION

Masahiro Watanabe; Hideo Shibuya, both of Sagamihara; Yasuhide Sakai, Kawasaki; Ryuji Hori; Mistuaki Kamiharako, both of Yokohama, and Kazuo Sato, Toyota, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Feb. 13, 1974, Ser. No. 442,240
Claims priority, application Japan, Feb. 15, 1973, 48-18939
Int. Cl.² G01S 9/37, 9/46
U.S. Cl. 343—9 **6 Claims**



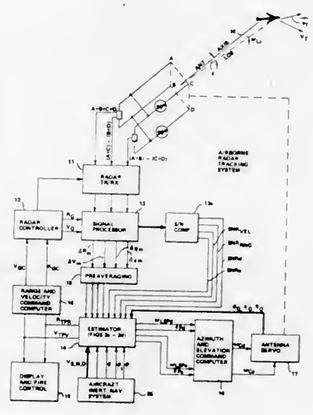
3. A Doppler radar system for use on a vehicle, comprising:
a microwave oscillator;
means for sequentially modulating said microwave oscillator to generate microwave frequencies f_1, f_2 and f_3, where $f_1 < f_3 < f_2$, in the order $f_1, f_2, f_3, f_1, \ldots$;
antenna means coupled to said microwave oscillator to transmit said microwave frequencies f_1, f_2 and f_3 and to receive portions of the transmitted frequencies reflected from an object having a relative velocity to said vehicle;
means coupled to said oscillator and antenna means for mixing at least a portion of said transmitted and received microwave frequencies to obtain Doppler signals d_1, d_2 and d_3 corresponding to said frequencies f_1, f_2 and f_3, respectively;
means coupled to said mixing means for separately amplifying and filtering each of said Doppler signals d_1, , d_2 and d_3;
distance detecting means coupled to said amplifying and filtering means for detecting the distance between said object and said antenna means from the phase difference between said Doppler signals d_1 and d_2, said distance detecting means including means for comparing the detected distance with a preset reference distance;
residual time detecting means coupled to said amplifying and filtering means for detecting the residual time left for said object to reach said antenna means, said residual time detecting means including means for comparing said detected residual time with a preset reference residual time;
direction determining means coupled to said amplifying and filtering means for determining the direction of movement of said object relative to said antenna means from the phase difference between said Doppler signals d_1 and d_3; and
means coupled to said distance detecting means, said residual time detecting means, and said direction determining means for generating an output signal only when the detected distance between said object and said antenna means is not greater than said reference distance, the detected residual time is not greater than said reference residual time and said direction determining means has determined that the direction of relative movement of said object and antenna means is toward each other.

3,952,304

TRACKING SYSTEM UTILIZING KALMAN FILTER CONCEPTS

Laurence E. Broniwitz, Los Angeles; John B. Pearson, III, Santa Monica, and Mark I. Landau, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 23, 1973, Ser. No. 418,693
Int. Cl.² G01S 9/22
U.S. Cl. 343—16 M **5 Claims**



1. In a monopulse radar tracking system having a direction sensitive antenna for cyclically sensing reflected electromagnetic energy from a moving target and producing signals ΔR_m, ΔV_m, $\Delta \epsilon_m$ and $\Delta \eta_m$ representing discriminants of elevation, azimuth, range and radial velocity, respectively, of said target relative to said tracking system, filters for tracking target range, velocity, elevation and azimuth, each filter responding to respective discriminants ΔR_m, ΔV_m, $\Delta \epsilon_m$ and $\Delta \eta_m$ to generate predictions of the next measurements from current estimates of filter states, where the states are vectors $X_R(i)$, $X_V(i)$, $X_\epsilon(i)$ and $X_d(i)$ using for each state an equation of the general form

$$\hat{X}_{i+1} = \bar{\Phi}_i \hat{X}_i + L_i + K_i (Y_i - \bar{H}_i \hat{X}_i)$$

where $\hat{X}$ is a state vector, $\bar{\Phi}$ is a transition matrix, L is a vector of dynamical aiding terms to compensate for rotational rates and inertial acceleration of the antenna, k is a gain factor, Y is the output of a measurement structure for the dynamical system, H is a system scaling factor which accounts for the gain in the measurement structure, a $\hat{}$ over X indicates the estimate of X, a bar over a symbol indicates a matrix quantity or value used in the filter for the parameter represented by the symbol, and the subscript i indicates a value at time i while the subscript $i+1$ indicates a value at the next iteration time.

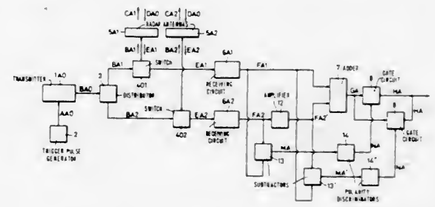
3,952,305

MARINE RADAR TRANSMISSION AND RECEPTION SYSTEM

Tomiji Nirasawa, Yokohama, and Hiroshi Ota, Tokyo, both of Japan, assignors to Kabushiki Kaisha Tokyo Keiki, Tokyo, Japan

Division of Ser. No. 358,456, May 8, 1973, Pat. No. 3,893,117.
This application Feb. 21, 1975, Ser. No. 551,759
Claims priority, application Japan, May 10, 1972, 47-46033
Int. Cl.² G01S 9/06
U.S. Cl. 343—17.1 R **3 Claims**

1. A marine radar transmission and reception system comprising:
a. means for generating transmission pulse waves;
b. first and second antennae for emitting the transmission pulse radar waves in the same direction as first and second emitted pulse radar waves of first and second polarization modes respectively and receiving first and second reflected pulse radar waves of the first and second emitted pulse radar waves respectively;
c. first and second receiving circuits with the outputs of the first and second antennae, respectively;
d. a parallel circuit of first and second gate circuits gating the output of the first or second receiving circuit or the sum of the outputs of the first and second receiving circuits; and



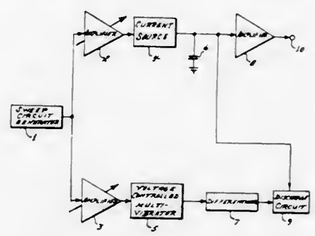
e. control means having an amplifier for amplifying the output of the first receiving circuit, a first subtractor for producing a first difference output between the outputs of the first and second receiving circuits, a second subtractor for producing a second difference output between the outputs of the amplifier and the second receiving circuit, and first and second discriminators for discriminating the polarity of the first and second difference outputs, respectively;
f. in which the first and second gate circuits are controlled with outputs of the first and second discriminators of the control means, respectively whereby sea clutter eliminated received pulse waves are obtained from the parallel circuit.

3,952,306

SERRODYNE GENERATOR

Noel B. Benton, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 4, 1970, Ser. No. 12,479
Int. Cl.² H04K 4/50
U.S. Cl. 343—18 E **2 Claims**



1. A serrodyne generator for electronic countermeasures to provide automatically a serrodyne signal of constant peak amplitude over a selected frequency range comprising single generator means to provide a predetermined single sweep signal, first and second DC amplifiers, each of said DC amplifiers having the gain and DC level output thereof adjustable, a current source having an input and output, said first DC amplifier interconnecting said single generator means and said input of said current source, with the DC output level of said first DC amplifier being set to adjust the peak amplitude of

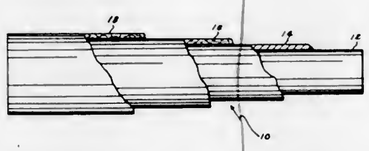
said serrodyne signal to a predetermined value and the gain of said first DC amplifier being adjusted to maintain said peak amplitude constant over said selected frequency range, a capacitor connecting said output of said current source to ground, a discharge circuit having first and second inputs, with said first input being connected to said output of said current source, a voltage controlled multivibrator having an input and output, said second DC amplifier interconnecting said single generator means and said input of said voltage controlled multivibrator, a differentiator interconnecting said second input of said discharge circuit and said output of said voltage controlled multivibrator, said voltage controlled multivibrator determining the discharge frequency of said capacitor with the frequency of said voltage controlled multivibrator being varied by said sweep signal by setting said gain and DC output level of said second DC amplifier.

3,952,307

DEACTIVATING RADAR CHAFF

Robert T. Nagler, Prairie du Sac, Wis., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 18, 1963, Ser. No. 289,784
Int. Cl.² G01S *7/38*
U.S. Cl. 343—18 B **2 Claims**



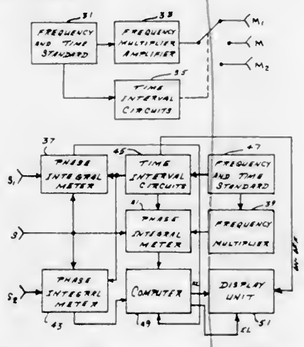
1. Deactivating radar chaff which becomes electrically inactive upon exposure to ultraviolet light and comprising: an electrically inert central element, a metallic layer on said central element, a sodium silicate layer on said metallic layer, and a layer containing a fluoride diazo compound on said sodium silicate layer.

3,952,308

PERSPECTIVE NAVIGATION SYSTEM EMPLOYING THE INNER COMPARISONS OF SIGNAL PHASES RECEIVED ON AN AIRCRAFT BY A PLURALITY OF SENSORS

Uve H. W. Lammers, 5 San Mateo Drive, Chelmsford, Mass. 01824

Filed May 21, 1974, Ser. No. 471,934
Int. Cl.² G01S *1/16*
U.S. Cl. 343—108 R **5 Claims**



1. A system for displaying a perspective scene having a plurality of markers as viewed from a moving remote reference frame comprising:

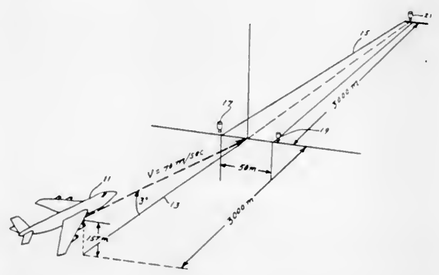
a. means for transmitting signals having a reference frequency from the plurality of markers in a sequence;
b. a reference frequency source at the remote reference frame;
c. first, second, and third means for sensing in sequence the transmitted signals with the first, second, and third sensing means having a predetermined spacing at the remote reference frame;
d. a first measuring means, measuring the phase difference between the signals from the first and second sensing means;
e. a second measuring means, measuring the phase difference between the signals from the first and third sensing means;
f. a third measuring means, measuring the phase difference between the signals from the first sensing means and the reference frequency source;
g. means for computing the radial and angular positions of each marker with respect to the reference frame, the computing means being fed by the first, second, and third measuring means; and
h. means for displaying the positions fed by the computing means.

3,952,309

DOPPLER PERSPECTIVE NAVIGATION SYSTEM EMPLOYING THE COMPARISONS WITH A REFERENCE SOURCE OF SIGNAL PHASES RECEIVED ON AN AIRCRAFT BY A PLURALITY OF SENSORS

Uve H. W. Lammers, Chelmsford, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 21, 1974, Ser. No. 471,933
Int. Cl.² G01S *1/16*
U.S. Cl. 343—108 R **4 Claims**



4. A method of displaying a perspective representation of an object from a remote and linearly moving reference frame comprising:

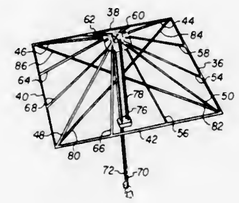
a. transmitting a reference signal having frequency f and reference signals having frequencies $f+\Delta f$ and $f-\Delta f$ from beacons positioned about the object;
b. sensing the transmitted signals from first, second and third sensors positioned on the moving reference frame;
c. phase comparing the sensed signals from the first sensor with signals from a reference frequency source located on said moving reference frame;
d. phase comparing the sensed signals from the second sensor with the signals from the reference frequency source located on said moving reference frame;
e. phase comparing the sensed signals from the third sensor with the signals from the reference frequency source located on said moving reference frame;
f. computing perspective position coordinates based on the phase comparing; and
g. displaying the perspective position coordinates.

3,952,310

CROSSED DIPOLE AND SLOT ANTENNA IN PYRAMID FORM

Leslie V. Griffee, Dallas, and Mardis V. Anderson, Richardson, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 20, 1975, Ser. No. 551,472
Int. Cl.² H01Q *21/26*
U.S. Cl. 343—730 **3 Claims**



1. Apparatus of the class described comprising, in combination:

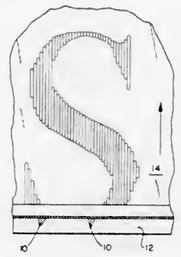
first dipole antenna means having a first axis;
second dipole antenna means having a second axis mounted orthogonal the axis of said first dipole antenna means;
means connecting the ends of said first and said second dipole antennas together to form slot antenna means intermediate said dipole antenna, in the general shape of a regular pyramid with the ends of each dipole antenna means defining opposing vertices of the base of the pyramid; and
means supplying power to said dipole antennas at the remaining vertice, which remaining vertice is removed from the base of the pyramid.

3,952,311

ELECTRO-OPTICAL PRINTING SYSTEM

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Filed Apr. 24, 1972, Ser. No. 246,555
Int. Cl.² B41B *13/00;* **G03B** *41/00*
U.S. Cl. 354—5 **2 Claims**



1. An electro-optical printing apparatus for printing alphanumeric characters on a surface of a photosensitive recording material, said apparatus comprising:

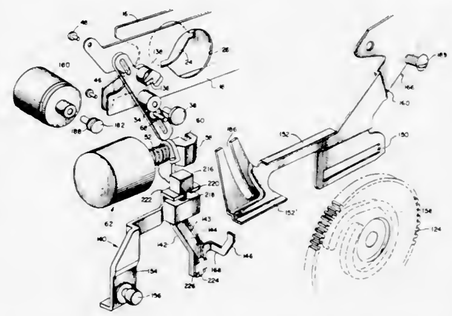
a plurality of radiation emitters each being capable of emitting radiation at wavelengths to which said surface is sensitive, said emitters being disposed in an array along a substantially straight line, said array being a plurality of rows of said radiation emitters;
means for moving said recording material with its surface adjacent said array, and at a substantially constant speed relative to said array, and;
means for selectively activating each of the said emitters for predetermined periods of time, and
means for coordinating the predetermined periods of time in which each of the said plurality of emitters are activated with said constant relative speed of said recording material so that the radiation emitted by said emitters will be recorded on selected areas of said recording surface in the form of an alpha-numeric image,
each of the said emitters being positioned to irradiate a different area of said recording surface, the different areas of said surface irradiated by each of the said emitters being arranged in an overlapping relationship with one another.

3,952,312

EXPOSURE CONTROL SYSTEM FOR PHOTOGRAPHIC APPARATUS

Lawrence M. Douglas, South Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 20, 1974, Ser. No. 534,733
Int. Cl.² G03B *7/16*
U.S. Cl. 354—29 **27 Claims**



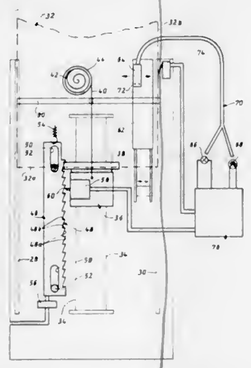
1. Apparatus for a camera defining a film plane and including a housing and an objective lens mounted on said housing, said apparatus comprising:

means for adjusting the objective lens to accomodate its focusing at the camera's film plane images of scenes located at different distances from the camera;
means for controlling the amount of scene light incident on the film plane, said scene light controlling means including a blade assembly movable along a predetermined path to define a range of apertures through which scene light must pass in reaching the film plane;
means, responsive to the operation of said adjusting means, for determining maximum aperture size from said range of aperture sizes whereby said maximum aperture size corresponds to the distance a particular scene being photographed is positioned from the camera, said maximum aperture size determining means including means for defining an elongated pathway and a slider mounted to slide along said elongated pathway responsive to the operation of said adjusting means and arranged to control the movement of said blade assembly along its said predetermined pathway; and
means for selectively trimming the response of said aperture size determining means to the operation of said adjusting means, said trimming means including means for changing the orientation of said elongated pathway relative to said housing independent of the operation of said adjusting means and solely dependent upon the operation of said trimming means, said changing of the orientation of said elongated pathway in combination with said maximum aperture size selecting means effecting a displacement of said slider along said elongated pathway for any given consideration of said adjusting means.

3,952,313
TIME RECORDER

Erich Willmann, Zell (Neckar), and Günther Trischler, Plochingen (Neckar), both of Germany, assignors to Simplex Time Recorder Co., Gardner, Mass.

Filed Sept. 9, 1974, Ser. No. 504,098
Claims priority, application Germany, Sept. 11, 1973, 2345728
Int. Cl.² G01D *15/20*
U.S. Cl. 346—82 **8 Claims**



1. A time recording device for use with a record medium on which time data are to be imprinted on respective lines of a column with each datum including as a first digit one of the group of digits **0** and **1** and **2** and each of which digits has the common feature of an optically detectable cross-bar at its base, including in combination,

a. printing mechanism including a printing head for printing data, each of which includes a first digit having an optically detectable cross-bar at its base,

b. positioning means for receiving a record medium inserted in said device,

c. optical sensing means for detecting the presence of one of said cross-bars,

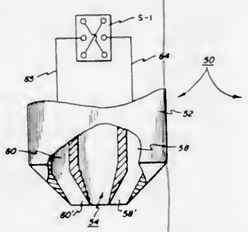
d. means mounting said sensing means in a fixed position with respect to said printing mechanism at a location at which it can register with the cross-bar of the first digit of a printed datum, and

e. means responsive to said sensing means for actuating said printing means.

3,952,314
ELECTROLYTIC PEN

Martin S. Maltz, Missisagua, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 25, 1974, Ser. No. 526,559
Int. Cl.² G01D *15/16, 15/18, 15/06*; **C25D** *17/00*
U.S. Cl. 346—140 R **1 Claim**



1. In a color display and marking apparatus, the combination of:

a housing defining a conducting passage for electrolytic ink, said housing forming a slot-like ink discharge orifice at the terminal end thereof through which said ink passes when generating a color display or marking a substrate material, and said housing being comprised of an electrically non-conductive material,

means forming a series of positive and negative electrode pairs between which said ink passes prior to discharge of said ink from said housing orifice,

one of said electrode pairs comprising an electrically conductive member in said housing and extending along one side of said slot-like discharge orifice, said one electrode member being separated from said discharge orifice by said housing,

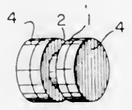
the other of said electrode pairs comprising a series of discrete electrically conductive members in said housing and extending along the opposing side of said slot-like discharge orifice, said other electrode members being separated from said discharge orifice and one another by said housing,

said electrode pairs serving to permit a color triggering electric current wave to be passed through said ink to change said ink to a preset display and marking color.

3,952,315
EDDY CURRENT DISCONTINUITY PROBE UTILIZING A PERMANENT MAGNET BOBBIN WITH AT LEAST ONE A.C. ENERGIZED COIL MOUNTED IN A GROOVE THEREON

Valentino S. Cecco, Deep River, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Canada

Filed July 29, 1974, Ser. No. 492,457
Claims priority, application Canada, Oct. 15, 1973, 183404
Int. Cl.² G01R *33/12*
U.S. Cl. 324—37 **5 Claims**



1. An eddy-current probe for the detection of discontinuities in a magnetic or weakly magnetic tubing from within the tubing comprising:

probe housing means of non-conducting or high electrical resistivity material;

a permanent magnet cyclindrical bobbin rigidly mounted within said housing to provide an unidirectional magnetic field for saturating the tubing adjacent said bobbin; said bobbin having at least one groove symmetrically located on the circumferential surface of the bobbin;

at least one test coil wound on the bobbin within the groove, said one coil adapted to be connected to an alternating current source to generate eddy currents within said tubing and further adapted to be connected to a d.c. source to produce a magnetic field to supplement said unidirectional magnetic field.

3,952,316
AUTOMATIC DIAPHRAGM APERTURE CONTROL DEVICE FOR PHOTOGRAPHIC CAMERA

Toshio Kobori, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Japan

Filed Aug. 19, 1974, Ser. No. 498,730
Claims priority, application Japan, Aug. 27, 1973, 48-95260
Int. Cl.² G03B *7/12, 9/02*
U.S. Cl. 354—40 **8 Claims**

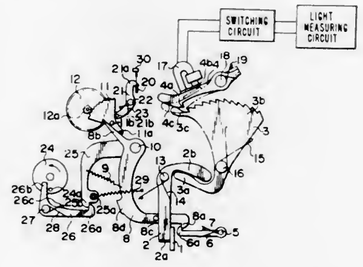
1. In an automatic diaphragm control device for a camera of the type to which an interchangeable objective lens is adaptable, said interchangeable objective lens having diaphragm, diaphragm driving means and an operating member coupled with said diaphragm driving means to determine the diaphragm aperture of said diaphragm as a function of position of said operating member so that the diaphragm of the objective may be controlled by a mechanism of said camera body through the operating member, said diaphragm control device comprising:

a retaining member for retaining said operating member in an initial position for holding the diaphragm fully open;

means for releasing the retention in response to a shutter releasing operation to stop down the diaphragm from a fully open position to a position preceding or at a terminal position thereof;

a light measuring circuit having a photoelectric member receiving scene light through said objective lens and said diaphragm;

a control circuit coupled with said photoelectric member for generating a control signal when the output of said light measuring circuit has reached a predetermined value;



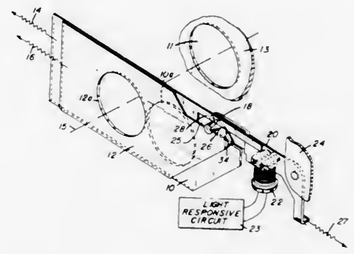
a control member movable along a path so that the control member can be stopped at any desired position in the path;

an electromagnetic means responsive to said signal to stop said control member; and

an intermediate mechanism for interlocking said operating member with said control member so that the movement of the former accompanies the movement of the latter and that the position of the former corresponds to that of the latter, said intermediate mechanism including a first lever movable with said operating member and a second lever movable with said control member, said levers respectively having cam surfaces in contacting engagement with one another to transmit the movement of said operating member to said control member so that the amount of movement of said control member is increased for the same amount of movement of said operating member as said operating member moves in a direction to reduce the diaphragm aperture.

means for urging said first blade toward said light unblocking position;

a second blade mounted for movement between light unblocking and blocking positions, including means for



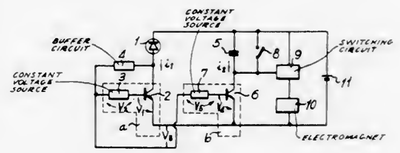
moving said latch means toward said inactive position during movement of said second blade toward said light blocking position; and

means for urging said second blade toward said light blocking position.

3,952,318
SHUTTER CONTROL CIRCUIT FOR CAMERAS

Chiharu Mori; Masahiro Kawasaki, and Hirokazu Ando, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1974, Ser. No. 513,294
Claims priority, application Japan, Oct. 9, 1973, 48-113691
Int. Cl.² G03B *7/08*; **G01J** *1/44*
U.S. Cl. 354—51 **13 Claims**



3,952,317
CAMERA SHUTTER

Floyd M. Galbraith, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 19, 1975, Ser. No. 559,938
Int. Cl.² G03B *9/40, 9/62, 7/08*
U.S. Cl. 354—48 **5 Claims**

1. In a camera, shutter apparatus comprising:

latch means mounted for movement between an active and an inactive position;

means for urging said latch means into said active position;

a first blade mounted for movement between light blocking and unblocking positions and including means located relative to said latch means for retaining said latch means in said active position during a predetermined portion of movement of said first blade toward said light unblocking position;

1. In an electrical system to be used in a camera for automatically determining exposure time, compression and expansion transistors and electrically connected therebetween electrical circuitry including photosensitive means, for providing an electrical quantity corresponding to light at the object to be photographed, and a pair of substantially identical constant voltage source means at least one of which is electrically connected to the base of at least one of said transistors, the other of said pair of constant voltage source means and said photosensitive means forming a pair of means one of which is electrically connected with the base of the other of said transistors and the other of which is electrically connected to the collector of said other transistor, and timing capacitor means electrically connected with said expansion transistor to be charged with a timing current.

3,952,319
PLURAL IMAGE CAMERA HAVING AUTOMATIC EXPOSURE CONTROL

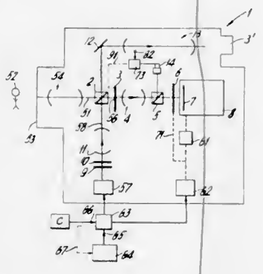
Noritsugu Hirata, Yokohama; Kiyoshi Takahashi, Tokyo, and Mitsutoshi Ogiso, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 344,724, March 26, 1973, abandoned, which is a continuation of Ser. No. 152,070, June 11, 1971, abandoned. This application Nov. 9, 1973, Ser. No. 414,453

Claims priority, application Japan, June 19, 1970, 45-53663

Int. Cl.² G03B *17/24*

U.S. Cl. 354—109 **21 Claims**



1. A plural image camera comprising:

a first photographing optical means for forming an image of the light emitted from a first scene object on a film portion;

a second photographing optical means for forming an image of the light emitted from a second scene object independent of the first scene object on said film portion;

a beam splitter means disposed at the position where the optical axes of said first and second photographing means cross each other and being adapted to lead the light of the first scene object passing through said first photographing optical means together with the light of the second scene object passing through said second photographing optical means respectively to said film portion and to a finder optical system, said finder optical system being disposed in the path of the light split by said beam splitter means so that the light emitted from the first and the second scene objects are simultaneously visible in said finder optical system;

a detecting means responsive to the brightness of scene object for detecting the consolidated brightness of image of said first and second scene objects formed on said film portion, said detecting means being interposed between said beam splitter means and said film portion so as to provide an electric output signal corresponding to the consolidated brightness of said first and second scene objects; and

a light control means for controlling incident light to keep the consolidated brightness of images formed on said film portion constant at all times, said control means being interposed between said beam splitter means and said detecting means to be controlled by the output signal of said detecting means.

3,952,320
MULTIPLE FLASH LAMP UNIT

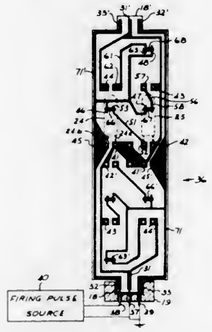
Richard Blount, South Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed July 3, 1974, Ser. No. 485,459

Int. Cl.² G03B *15/02*

U.S. Cl. 354—126 **7 Claims**

1. Photoflash apparatus comprising a selectively actuatable firing pulse source, a coupler having first and second contacts connected electrically to said firing pulse source and having a third contact shorted electrically to said second contact, a flash lamp unit having first and second photoflash lamps, wherein said flash lamp unit is characterized by first and second connectors adapted to be joined removably and alternatively with said coupler, each of said connectors having first, second and third terminals located to electrically engage said first, second and third coupler contacts, respectively, when that connector and said coupler are joined, and means for electrically connecting said first lamp across the first and



second terminals of said first connector and across the second and third terminals of said second connector and for electrically connecting said second lamp across the first and second terminals of said second connector and across the second and third terminals of said first connector thereby to cause one of said lamps to be electrically connected across said firing pulse source and to cause the other of said lamps to be electrically shorted across said second and third contacts when either of said connectors is joined with said coupler.

3,952,321
OPTICAL SYSTEM FOR EFFECTING INDICATION WITHIN A FINDER IN A SINGLE LENS REFLEX CAMERA

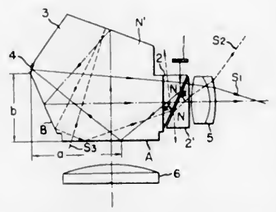
Sei Matui, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed July 29, 1974, Ser. No. 492,982

Claims priority, application Japan, Aug. 10, 1973, 48-89223

Int. Cl.² G03B *19/12*

U.S. Cl. 354—225 **2 Claims**



1. A system for indicating information within the view-field of a finder in a single lens reflex camera having a photographic lens, said finder having a focusing plate, a pentaroof-prism disposed on the optical emergence axis of said focusing plate and an eyepiece disposed on the optical emergence axis of said pentaroof-prism, said pentaroof-prism having a first light transmitting surface through which light rays from the photographic lens enter said pentaroof-prism, a first reflecting surface forming a roof, a second reflecting surface adjacent to said first light transmitting surface, and a second light transmitting surface through which light rays reflected by said first and second reflecting surfaces pass toward said eyepiece, said system comprising:

first prism means (2) disposed on the principal optical axis of the finder between said pentaroof-prism and said eyepiece in such a manner that the incidence surface of said first prism means is parallel to said second light transmitting surface of said pentaroof-prism and that the emergence surface of said first prism means forms an angle α with a horizontal plane containing the principal optical axis of the finder;

a reflector member (4) disposed at the upper end of said second reflecting surface of said pentaroof-prism and outwardly of the path of the finder's effective view-field light, the latter being light passing from the photographic lens and incident upon said eyepiece, said reflector member being adapted to reflect light into the view-field of said finder;

an indicator member disposed above said first prism means and adapted to contain information to be indicated;

said angle α a being selected so that a light beam from said indicator member will be totally reflected by the emergence surface of said first prism means and then reflected by said first light transmitting surface of said pentaroof-prism and reflected by said reflector member so as to be directed to the upper portion of the finder's view-field, said angle α satisfying the relations:

$$\alpha > \sin^{-1}\frac{1}{N} \tag{1}$$

$$\tan^{-1}\frac{b}{a} < \sin^{-1}\left\{\frac{N}{N'}\sin(2\alpha - 90°)\right\} < 90° - \sin^{-1}\frac{1}{N'}, \tag{2}$$

where N is the refractive index of said first prism means, N′ is the refractive index of said pentaroof-prism, a is the horizontal distance from the total reflection point of a light beam from said indicator member in said first transmitting surface of said pentaroof-prism to the upper end of said second reflecting surface of said pentaroof-prism which is a boundary of the path of the finder's effective view-field light, and b is the vertical distance from said total reflection point to said boundary; and

second prism means (2′) disposed on the optical axis of the finder between said first prism means (2) and said eyepiece in such a manner that the incidence surface of said second prism means is parallel to the emergence surface of said first prism means with a slight air space interposed therebetween and that the emergence surface of said second prism means is parallel to the incidence surface of said first prism means;

said indicator member being positioned so that an optical path length from said indicator member to said eyepiece through the emergence surface of said first prism means, the bottom surface of said pentaroof-prism, said reflector member and said first and second prism means, is equal to an optical path length from said focusing plate to said eyepiece via said first and second reflecting surfaces.

3,952,322
PHOTOGRAPHIC LIGHTING SYSTEM

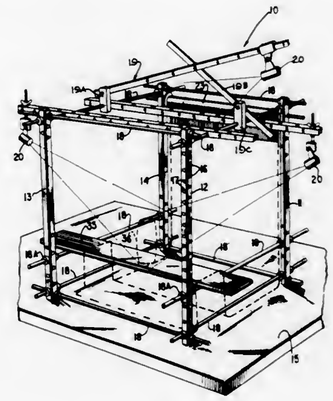
Lester Wolfe, 870 United Nations Plaza, New York, N.Y. 10017

Continuation-in-part of Ser. No. 185,237, Sept. 30, 1971, abandoned. This application Oct. 25, 1973, Ser. No. 409,626

Int. Cl.² G03B *15/03*

U.S. Cl. 354—290 **4 Claims**

1. In a photographic structure for positioning lighting means, camera means, background material and an object to be photographed in preselected positions relative to each other, and the like, the combination of vertical and horizontal supports, and releasable means for holding the vertical and horizontal supports in various selected assembled parallelepiped relations, so that the supports can be quickly and adjustably assembled to enclose a relatively small object to be photographed in a fixed position within said assembled supports, a relatively small object fixedly mounted on said supports, means to adjustably support lighting means on said structure in fixed selected locations relative to the fixed object to be photographed within said structure to provide desired lighting thereof, lighting means mounted on said means to adjustably support lighting means, means to adjustably support in fixed



position selected background roll curtain material on said structure relative to the object to be photographed in various preselected positions, and roll curtain means mounted on said means to adjustably support in fixed position selected background roll curtain material.

3,952,323
SEMICONDUCTOR PHOTOELECTRIC DEVICE

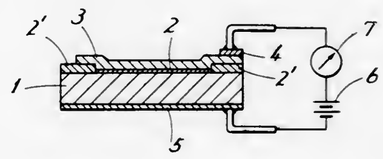
Shigeru Tanimura, Kyoto; Nobuaki Miura, Oita, and Mikizo Miyamoto, Nagaokakyo, all of Japan, assignors to Omron Tateisi Electronics Co., Ltd., Japan

Filed Aug. 14, 1973, Ser. No. 388,148

Claims priority, application Japan, Aug. 17, 1972, 47-82376

Int. Cl.² H01L *29/48, 29/56*

U.S. Cl. 357—15 **13 Claims**



1. A semiconductor photoelectric device comprising:

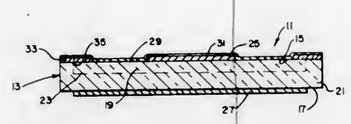
a silicon substrate having a main surface of (100) crystallographic orientation,

a film of an insulating material selected from the group consisting of SiO_2, Si_3N_4, GeO_2 and Al_2O_3, deposited on said main surface of the substrate,

a tin oxide layer deposited on said insulating material and defining a heterojunction barrier with said substrate,

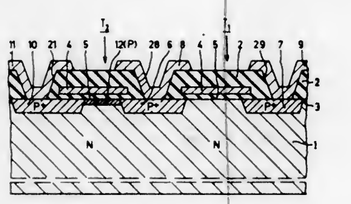
and metal electrodes deposited on said tin oxide layer and the substrate, said semiconductor device having a rectifying characteristic and being responsive to incident illumination received through said tin oxide layer at said heterojunction barrier.

3,952,324
SOLAR PANEL MOUNTED BLOCKING DIODE
George Wolff, Los Angeles; Gilbert R. Brooks, Granada Hills, and Thomas C. Eakins, Palos Verdes Peninsula, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Jan. 2, 1973, Ser. No. 320,408
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 357—19 31 Claims



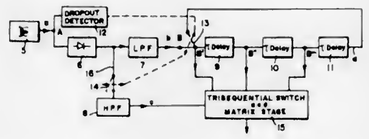
1. A blocking diode used in solar cell arrays, comprising:
a relatively thin semiconductor wafer having parallel and relatively broad upper and lower surfaces and having at least two differently doped regions defining a junction therebetween;
a first of said regions extending inwardly a predetermined distance from said upper surface and being bounded internally by a second of said regions;
a first electrode disposed on said upper surface and making ohmic contact only with said first region;
a second electrode disposed on said lower surface and making ohmic contact with said second region; and
cover means including a solar energy-reflecting cover having relatively low solar energy absorptivity and relatively high thermal energy emissivity disposed over said upper surface for blocking solar illumination from penetrating said wafer and affecting said junction.

3,952,325
SEMICONDUCTOR MEMORY ELEMENTS
Julian Robert Anthony Beale, and Peter James Daniel, both of Salfords near Redhill, England, assignors to U.S. Philips Corporation, New York, N.Y.
Filed July 26, 1972, Ser. No. 275,321
Claims priority, application United Kingdom, July 28, 1971, 35400/71
Int. Cl.² H01L *29/78*
U.S. Cl. 357—23 10 Claims



1. A semiconductor memory element comprising:
a. a semiconductor substrate comprising a first surface;
b. an insulating layer comprising an insulating portion adjacent said first surface;
c. a charge storage element comprising a conductive layer disposed on said insulating layer portion and separated thereby from said semiconductor substrate;
d. means for injecting hot electrons from said semiconductor substrate into said insulating layer portion to write a first charge state on said conductive layer, said electron injecting means comprising a first semiconductor device element located in said semiconductor substrate adjacent one part of said insulating layer portion; and
e. means for injecting hot holes from said semiconductor substrate into said insulating layer portion to write a second charge state on said conductive layer, said hole injecting means comprising a second semiconductor device element present in said semiconductor substrate adjacent another part of said insulating layer portion.

3,952,326
DROPOUT COMPENSATOR FOR A TRISEQUENTIAL COLOR VIDEO PLAYBACK SYSTEM
Gerhard Rotter, Mission Viejo, Calif., assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Filed Sept. 19, 1974, Ser. No. 507,433
Int. Cl.² H04N *5/76*
U.S. Cl. 358—8 3 Claims

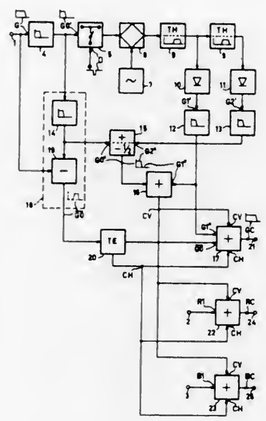


1. In the playback channel of a trisequential color video playback system, including
an FM demodulator for elimination of the FM carrier from the FM-modulated video signal recorded in trisequential form,
a separator means for separation of the Y high portion from the video signal, and
first and second delay means for recombination of the trisequential video signals into composite color video signals,
a dropout compensating arrangement comprising:
a detector means for detecting a dropout signal occurring in the envelope of the still FM-modulated video signal,
a third delay means connected to the first and second delay means for the provision of a delayed color video signal, and
a switch means selectively connecting the output lead of the third delay means to or disconnecting it from the entrance of the first delay means, said switch means being controlled by said detector means to connect the output lead of the third delay means to the entrance of the first delay means when a dropout is detected by the detector means.

3,952,327
APERTURE CORRECTION CIRCUIT FOR TELEVISION
Jan August Marcel Hofman, and Sing Liong Tan, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 27, 1974, Ser. No. 509,802
Claims priority, application Netherlands, Oct. 6, 1973, 7313754
Int. Cl.² H04N *9/14*
U.S. Cl. 358—37 10 Claims

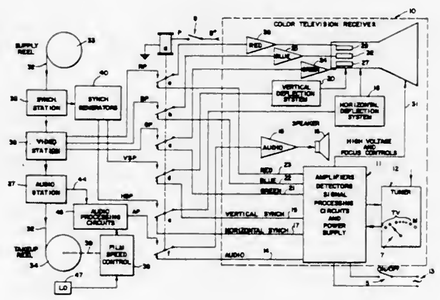
1. A method for aperture correcting a video signal having a given bandwidth, said method comprising generating an aperture correction signal from said video signal by using delay lines having a bandwidth substantially less than said given bandwidth, filtering said video signal with a lower cut off frequency about equal to the bandwidth of said delay lines to produce a filtered signal, and adding said correction and filtered signals to produce an aperture corrected video signal.

2. An aperture correction circuit comprising input means for receiving a video signal having a given bandwidth, circuit means coupled to said input means for generating an aperture correction video signal having delay circuits with a bandwidth substantially less than said given bandwidth, filter means coupled to said input means and having a lower cut off frequency about equal to the bandwidth of said delay circuits, and first



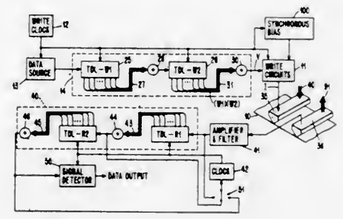
adder stage means coupled to said filter means and said generating means to produce an aperture corrected video signal.

3,952,328
FILM SCANNER FOR COLOR TELEVISION
Conrad H. Biber, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Sept. 3, 1974, Ser. No. 502,450
Int. Cl.² H04N *9/04, 5/36*
U.S. Cl. 358—54 4 Claims



1. In combination with a television receiver having a cathode ray tube, deflection means responsive to applied synchronization signals for producing a raster in said tube, and video signal responsive means for modulating said raster to produce a visible display, a slit source of light, an elongated array of linear photoresponsive signal producing means, means mounting said source and said array in confronting relationship, means for moving a strip of motion picture film bearing transparency images between said source and said array, means responsive to the movement of said film for applying deflection signals to said deflection means, and distributing means for applying video signals from the signal producing means of said array to said video signal responsive means.

3,952,329
PULSE COMPRESSION RECORDING
Roy F. Dent, III, and Richard C. Schneider, both of Boulder County, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 6, 1975, Ser. No. 547,909
Int. Cl.² G11B *5/09*; H04L *3/00*
U.S. Cl. 360—40 11 Claims

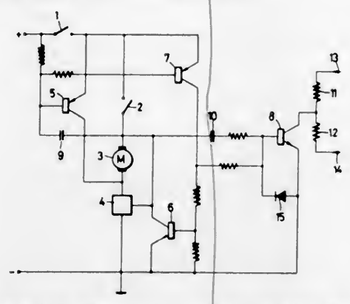


1. The method of linearly recording data signals on a magnetic record medium, the steps of:
serially receiving a sequence of data bit signals, each signal occurring in a bit period;
for each received data bit signal, generating a sequence of signal levels in accordance with a predetermined binary sequence extending over a predetermined number of data bit periods;
summing the amplitudes of all said signal levels occurring in each said bit periods, respectively;
recording said summed discrete levels on a record medium in a linear manner in accordance with said summed amplitudes;
said binary sequence having MN discrete signal positions, M and N are integers;
for each received data bit generating a first inner sequence of M signal levels, summing all said generated signal levels occurring in a given bit period and supplying an intermediate composite signal;
generating a second and outer N-bit sequence of signal levels from said composite signal and summing all of said N-bit generated signal levels in each given bit period into a final signal level; and
recording said final signal level on a record medium in a linear manner in accordance with said summed amplitudes.

3,952,330
ELECTRONIC CONTROL CIRCUIT FOR THE DRIVE MOTOR OF A MAGNETIC SOUND DEVICE
Hans-Georg Rimkus, Nurnberg, and Ludwig Hess, Hilpolstein, both of Germany, assignors to Grundig E.M.V.Elektro-Mechanische Versuchsanstalt Max Grundig, Fuerth, Bay., Germany
Filed Dec. 5, 1974, Ser. No. 529,715
Claims priority, application Germany, Apr. 13, 1974, 2418174
Int. Cl.² G11B *15/12, 15/48*
U.S. Cl. 360—61 1 Claim

1. In a magnetic sound device of the type having a sound recording medium transport, a drive motor for said transport, a main control switch, circuit means interconnecting said motor to a direct current power supply through said main control switch in accordance with a first polarity and an audio circuit the improvement comprising:
an auxiliary control switch interposed between said motor and main switch,
switch circuit means including first and second transistor switches connected between said main control switch and

motor for reversing the polarity of the interconnection between said power supply and motor,



first capacitor means interconnected between said motor and said transistor switches for activating said transistor switches during the charge-up time of said first capacitor when said auxiliary switch is opened,

the emitter-collector circuit of one of said transistor switches extending between one side of said motor and one side of said power supply and the emitter-collector circuit of the other of said transistor switches extending between said power supply and the base of a third transistor switch, said third transistor switch having an emitter-collector circuit extending between the other side of said motor and the other side of said power supply, and,

a silencing circuit including a fourth transistor switch having an emitter-collector circuit interconnecting said audio circuit with ground whereby to short out said audio circuit and a base connected to (a) the emitter-collector circuit of said second transistor and (b) said main control switch through said auxiliary switch and a second capacitor whereby said silencing circuit is activated during the charge-up time of said second capacitor when said auxiliary switch is closed and during the charge-up time of said first capacitor when said auxiliary switch is opened.

DESIGN PATENTS

GRANTED APRIL 20, 1976

ERRATA

For CLASS	See PATENT NO.
016-061	239,658
016-031	239,659

DESIGNS

APRIL 20, 1976

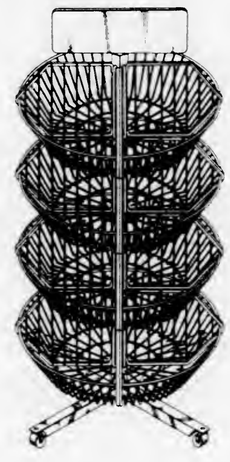
239,577
NECKTIE
Roland Edward Slocum, 14 S. Federal St., Perry, N.Y. 14530
Filed June 5, 1973, Ser. No. 367,347
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D2—350



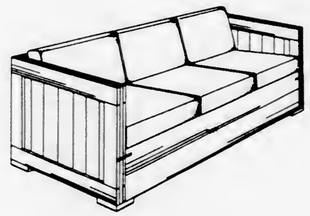
239,578
CREDIT CARD RECEIPT HOLDER
John N. Woodard, Fort Lauderdale, Fla. (P.O. Box 604, Dallas, N.C. 28034)
Filed Oct. 2, 1974, Ser. No. 511,117
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—400



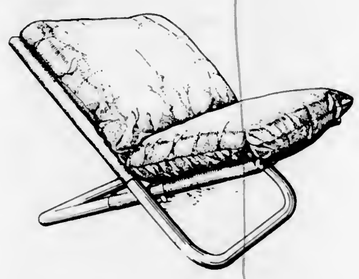
239,579
TIERED ROTARY DISPLAY FIXTURE OR SIMILAR ARTICLE
Ronald H. Taub, Highland Park, Ill., assignor to Taub Family Trust U/A
Filed May 20, 1974, Ser. No. 471,815
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—24



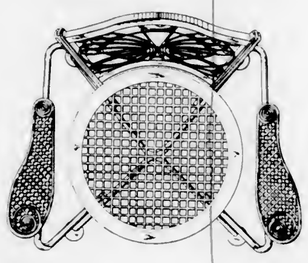
239,580
SOFA OR THE LIKE
Stephen H. Robertson, 4108 Deep Hollow Drive, Apt. 277, and Randall L. Ward, 4102 Deep Hollow Drive, Apt. 284, both of Raleigh, N.C. 27612
Filed Feb. 18, 1975, Ser. No. 550,527
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



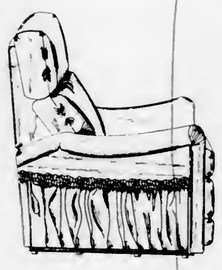
239,581
CHAIR OR SIMILAR ARTICLE
Marcello Cuneo, Milan, Italy, assignor to Arflex S.p.A., Limbiate, Milan, Italy
Filed Oct. 25, 1974, Ser. No. 518,015
Claims priority, application Italy May 9, 1974
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—66



239,582
CHAIR
Raymond Grosfillex, Arbent, France, assignor to Grosfillex S.A.R.L., Arbent, Ain, France
Filed May 9, 1974, Ser. No. 468,493
Claims priority, application France Nov. 16, 1973
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—68



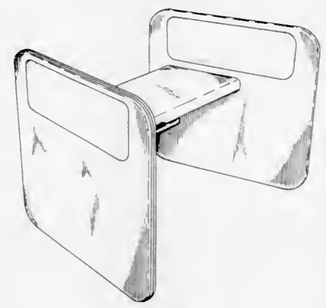
239,583
CHAIR
Stapleton Long, Morristown, Tenn., assignor to The Berkline Corporation, Morristown, Tenn.
Filed Jan. 2, 1975, Ser. No. 538,174
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



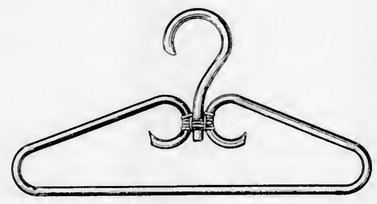
239,584
TABLE
Guy Vrignaud, Grenoble, France, assignor to Allibert Exploitation Societe Anonyme, Puteaux, France
Filed Oct. 22, 1974, Ser. No. 517,103
Claims priority, application France Apr. 22, 1974
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—175



239,585
STUDY CARREL OR SIMILAR ARTICLE
John A. Mahan, Kanata, Ontario, and John F. Tyson and Robert E. Hillmer, Ottawa, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed Sept. 23, 1974, Ser. No. 508,094
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—181



239,586
COMBINED COAT AND PANTS HANGER
Bruce Bernstein, 363 E. 76th St., New York, N.Y. 10021
Filed Jan. 3, 1975, Ser. No. 538,447
Term of patent 3½ years
Int. Cl. D6—*08*
U.S. Cl. D6—256



239,587
FOOTBALL HELMET CUP FOR COMESTIBLES OR THE LIKE
George Dickstein, Shaker Heights, and David A. Shack, Beachwood, Ohio, assignors to Sports Products Corporation, Cleveland, Ohio
Filed Oct. 30, 1973, Ser. No. 411,058
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—5



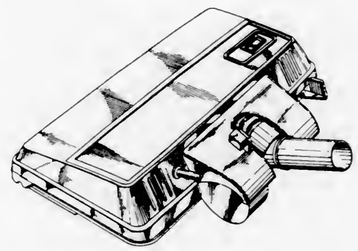
239,588
MUG
John F. Krieger, 2408 Hanneman Road, Grafton, Wis. 53024, and Robert S. Block, 8620 N. Pelham Parkway, Bayside, Wis. 53217
Filed Nov. 16, 1973, Ser. No. 416,349
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—5



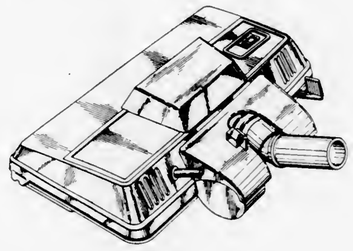
239,589
BEVERAGE CUP
Philippe G. Grant, P.O. Box 1076, Station B, Ottawa, Ontario, Canada
Filed May 7, 1974, Ser. No. 467,687
Claims priority, application Canada Apr. 24, 1974
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—6



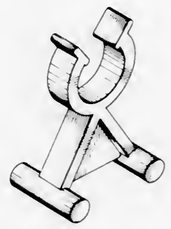
239,590
SUCTION NOZZLE OR THE LIKE
Robert M. Goodman, 9024 Moody Ave., Morton Grove, Ill. 60053
Filed Mar. 14, 1975, Ser. No. 558,317
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—173



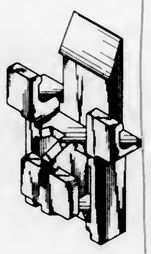
239,591
SUCTION NOZZLE OR THE LIKE
Robert M. Goodman, 9024 Moody Ave., Morton Grove, Ill. 60053
Filed Mar. 14, 1975, Ser. No. 558,318
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—173



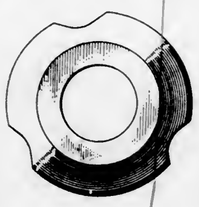
239,592
REINFORCING ROD HOLDER
Harry E. Anderson, 30241 188th SE., and Robert B. Fairbanks, 26121 108th SE., both of Kent, Wash. 98031
Filed Sept. 3, 1974, Ser. No. 502,893
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—228



239,593
MOUNTING CLIP OR THE LIKE
William L. Douma, West Paterson, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Mar. 14, 1975, Ser. No. 558,312
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—233



239,594
THREADED FASTENER
Hilmar K. Dieme, Westfield, N.J., assignor to Amerace Corporation, New York, N.Y.
Filed Nov. 16, 1973, Ser. No. 416,440
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—273



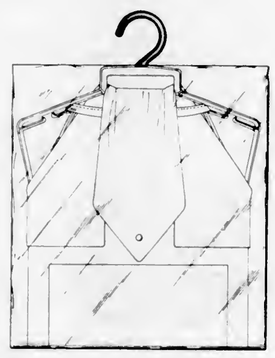
239,595
BOTTLE
Jean-Pierre Lucquiaud, Bordeaux, France, assignor to Alexis Lichine, Bordeaux, France
Filed Jan. 22, 1974, Ser. No. 435,589
Claims priority, application France Nov. 15, 1973
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—159



239,596
PACKAGING CONTAINER OR SIMILAR ARTICLE
Amilcare Dogliotti, Neive, Italy, assignor to P. Ferrero & C. S.p.A., Alba, Cuneo, Italy
Filed Oct. 31, 1973, Ser. No. 411,566
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—174



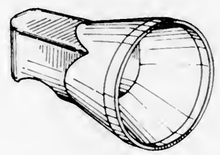
239,597
PACKAGED CLOTHING ARTICLE FOR FORMING A HALTER, TURBAN, SCARF OR THE LIKE
Harold Chesner, 255 Ardmore Ave., Staten Island, N.Y. 10314
Filed Sept. 30, 1974, Ser. No. 510,410
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—193



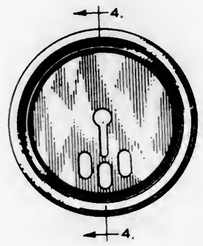
239,598
PACKAGING CONTAINER FOR A FLORAL DISPLAY OR THE LIKE
Robert N. Marona and Androus D. Noyes, both % deMartin, Marona, Cranstoun, Downes, Inc., 44 Executive Blvd., Elmsford, N.Y. 10523
Filed Dec. 18, 1974, Ser. No. 533,781
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



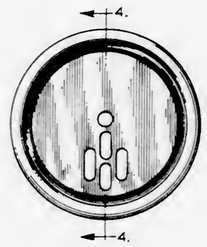
239,599
SPRAY SHIELD
Albert Carroll, Hartsdale, N.Y., and Glenn L. Beall, Gurnee, Ill., assignors to Schmid Laboratories, Inc., Little Falls, N.J.
Filed Jan. 14, 1974, Ser. No. 432,883
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—253



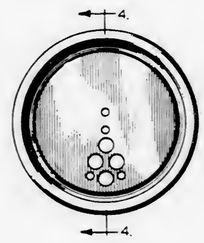
239,600
CONTAINER END PANEL
Fred C. Newman, La Grange Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Oct. 11, 1974, Ser. No. 514,033
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—253



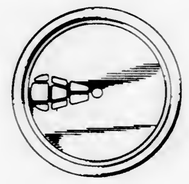
239,601
CONTAINER END PANEL
Fred C. Newman, La Grange Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Oct. 11, 1974, Ser. No. 514,037
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—253



239,602
CONTAINER END PANEL
Fred C. Newman, La Grange Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Oct. 11, 1974, Ser. No. 514,043
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—253



239,603
CONTAINER END PANEL
Fred C. Newman, La Grange Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Oct. 11, 1974, Ser. No. 514,045
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—253



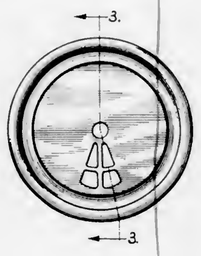
239,604
CONTAINER END PANEL
Fred C. Newman, La Grange Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Nov. 8, 1974, Ser. No. 522,003
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—253



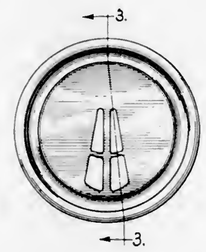
239,605
CONTAINER END PANEL
Fred C. Newman, La Grange Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Dec. 6, 1974, Ser. No. 530,464
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—253



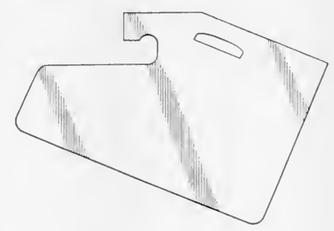
239,606
CONTAINER END PANEL
Fred C. Newman, La Grange Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Dec. 23, 1974, Ser. No. 535,648
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—253



239,607
CONTAINER END PANEL
Fred C. Newman, La Grange Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Dec. 23, 1974, Ser. No. 535,649
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—253



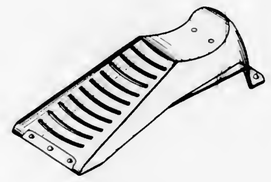
239,608
COMBINED PACKAGING CARD AND HANGER FOR AN ARTICLE OF MERCHANDISE
Charles A. Wells, Marysville, Ohio, and Robert A. O'Neil and Michael C. Wilson, Wheaton, Ill., assignors to Pretty Products, Inc., Coshocton, Ohio
Filed Nov. 25, 1974, Ser. No. 526,530
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—292



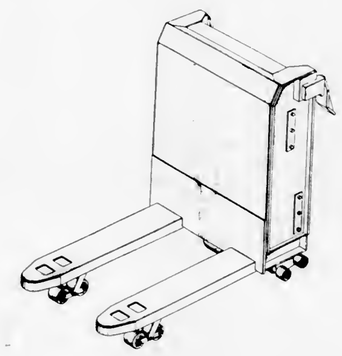
239,609
REFLECTOR
Yosimasa Tsuyama, Higashi, Sumiyoshi-ku, Osaka, Japan, assignor to Tsuyama Mfg. Co., Ltd., Higashi, Sumiyoshi-ku, Osaka, Japan
Filed Nov. 21, 1974, Ser. No. 525,902
Claims priority, application Japan Sept. 19, 1974
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—111



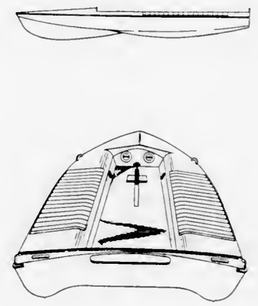
239,610
AUTOMOBILE SERVICE RAMP
Jack V. Miller, 700 N. Auburn Ave., Sierra Madre, Calif. 91024
Filed Nov. 4, 1974, Ser. No. 520,566
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—53



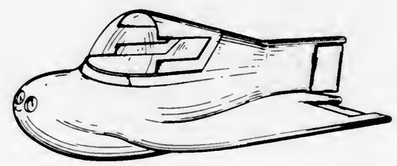
239,611
LIFT TRUCK
Dennis M. Miller, Andover, England, assignor to Automated Container Loading Limited, Orpington, Kent, England
Filed Dec. 24, 1974, Ser. No. 536,113
Claims priority, application Great Britain Dec. 16, 1974
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—57



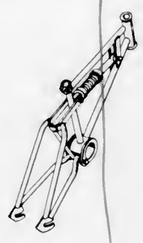
239,612
DINGHY HULL
Dudley Austic Layton, Norfolk, England (% Tudor House, Poplar Ave., Eaton, Norwich, England)
Filed Oct. 25, 1974, Ser. No. 518,104
Claims priority, application Great Britain Apr. 26, 1974
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—64



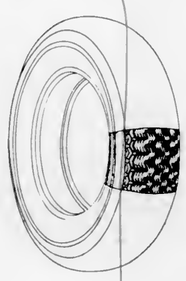
239,613
SUBMARINE
Glen R. Askeborn, 90 Gerrish Ave., East Haven, Conn. 06512
Filed May 27, 1975, Ser. No. 580,958
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—65



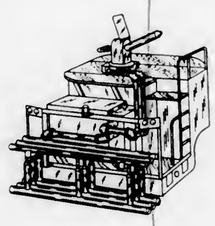
239,614
BICYCLE FRAME
Thomas D. Seifert, 1126 Fairview Ave., Apt. 203, Arcadia, Calif. 91006
Filed Nov. 4, 1974, Ser. No. 520,631
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—111



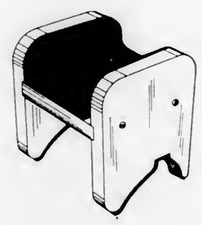
239,615
TIRE
Daniel Lejeune, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Raison Sociale Michelin & Cie, Clermont-Ferrand, Puy-de-Dome, France
Filed Jan. 27, 1975, Ser. No. 544,289
Claims priority, application France July 25, 1974
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



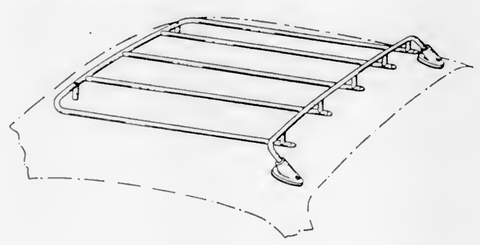
239,616
FIRE FIGHTING AND RUNWAY FOAM SPREADER MODULE
John C. Gibson, Lawrence, Mass., assignor to Gibson Motor and Machine Service, Inc., Lawrence, Mass.
Filed Feb. 14, 1974, Ser. No. 442,576
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155



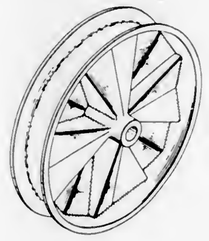
239,617
MAST CRADLE OR THE LIKE
Hayne Palmour III, 2707 Mayview Road, Raleigh, N.C. 27607
Filed July 12, 1974, Ser. No. 488,052
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D12—155



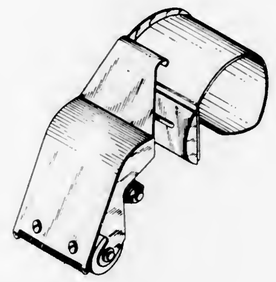
239,618
AUTOMOTIVE LUGGAGE CARRIER
Frederick L. Duer, Western Springs, and Joseph J. Orlof, Wheaton, Ill., assignors to Duer Tube Bending Company, Inc., Bellwood, Ill.
Continuation-in-part of abandoned design application Ser. No. 439,378, Feb. 4, 1974. This application Feb. 26, 1975, Ser. No. 552,973
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157

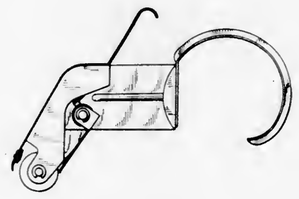


239,619
WHEEL CENTER
Joseph R. May, Chatham, and Donald F. Morgan, Bloomingdale, N.J., assignors to Amerace Corporation, New York, N.Y.
Filed Jan. 13, 1975, Ser. No. 540,692
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—204

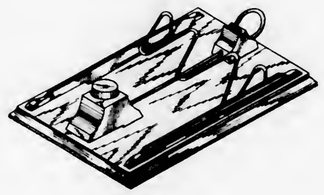


239,620
COMBINED TAPE DISPENSER AND APPLICATOR
George H. Fritzinger, 217 W. Grant Ave., Edison Township, N.J. 08819
Filed Nov. 8, 1973, Ser. No. 413,798
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—69

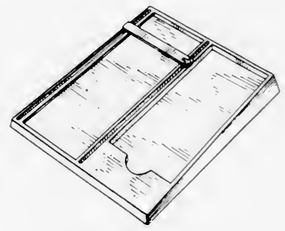




239,621
CARD FILE
John A. McInerney, 9929 S. Central Park Ave., Evergreen Park, Ill. 60642
Filed Mar. 22, 1974, Ser. No. 446,551
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



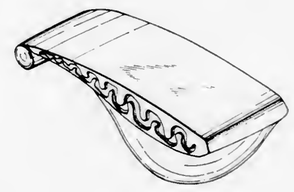
239,622
COMBINED PRICE CALCULATOR AND MENU TICKET HOLDER
Jerry L. Gilomen, Chicago, Ill., assignor to Restaurant Technology, Inc.
Filed June 12, 1974, Ser. No. 478,447
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



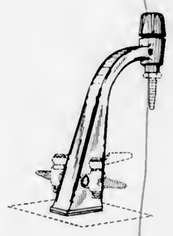
239,623
HUNTING KNIFE BLADE
Sheldon Behunin, 1442 Bowman Place, Northglen, Colo. 80233
Filed July 8, 1974, Ser. No. 486,690
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—1



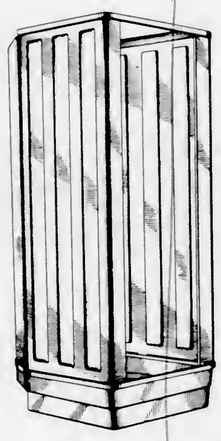
239,624
HANDLE FOR FLUSH TANK
Stanley F. Korol, Mansfield, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Sept. 26, 1974, Ser. No. 509,618
Term of patent 14 years
Int. Cl. D8—*06*; D23—*01*
U.S. Cl. D23—29



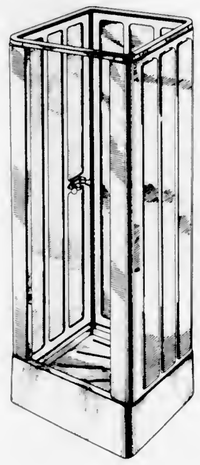
239,625
FIXTURE FOR LABORATORY TABLE OR THE LIKE
Arthur W. Carlson, Muskegon, Mich., assignor to E. H. Sheldon & Company, Muskegon, Mich.
Filed Sept. 30, 1974, Ser. No. 510,510
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32



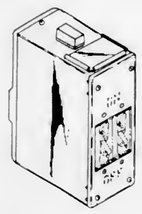
239,626
SHOWER STALL
Bruno Verlet, Mourenx, France, assignor to Consortium Pyrenees Plastiques, Mourenx, France
Filed Sept. 6, 1973, Ser. No. 394,621
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57



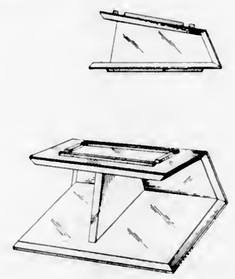
239,627
SHOWER STALL
Bruno Verlet, Mourenx, France, assignor to Consortium Pyrenees Plastiques, Mourenx, France
Filed Sept. 6, 1973, Ser. No. 394,622
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57



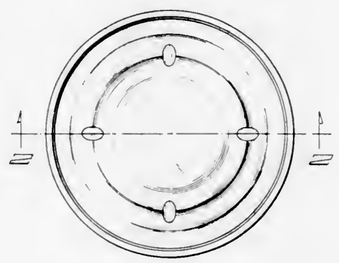
239,628
ENCLOSURE FOR CIRCUIT BREAKERS
Ronald Nicol, Trenton, N.J., assignor to Heinemann Electric Company, Trenton, N.J.
Filed Feb. 4, 1975, Ser. No. 547,052
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R



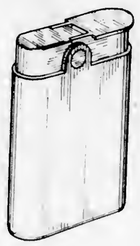
239,629
BASE FOR A LOUD SPEAKER
Morris I. Wiener, Plandome Manor, N.Y., assignor to Rectilinear Research Corporation, Bronx, N.Y.
Filed July 11, 1974, Ser. No. 487,585
Term of patent 14 years
Int. Cl. D6—*04;* D14—*99*
U.S. Cl. D26—14 G



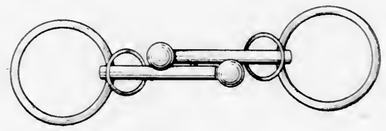
239,630
ASH TRAY
Edward M. Edwards, Sylvania, and Melvin B. Lee, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 9, 1974, Ser. No. 504,122
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—27



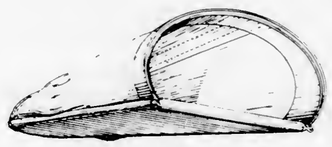
239,631
LIGHTER
Gilles Lauri, 34 Allee Marceau, Livry-Gargan, Seine Saint-Denis, France
Filed Dec. 26, 1974, Ser. No. 536,338
Claims priority, application France July 25, 1974
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



239,632
SNAFFLE BIT
Albert E. Ostermaier, 11138 Aqua Vista, North Hollywood, Calif. 91603
Filed June 7, 1974, Ser. No. 477,232
Term of patent 14 years
Int. Cl. D30—*04*
U.S. Cl. D30—21



239,633
ANIMAL SLEEPING BAG
Mary C. Henry, 921 S. Lyon St., Santa Ana, Calif. 92705
Filed Apr. 15, 1974, Ser. No. 461,160
Term of patent 14 years
Int. Cl. D30—*06*
U.S. Cl. D30—41



239,634
TOY FIGURE
Jens Nygaard Knudsen, Billund, and Leif Justesen, Give, Denmark, assignors to Interiego A.G., Zug, Switzerland
Filed Dec. 3, 1974, Ser. No. 529,027
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R



239,635
TOY FIGURE
Jens Nygaard Knudsen, Billund, and Leif Justesen, Give, Denmark, assignors to Interlego A.G., Zug, Switzerland
Filed Dec. 3, 1974, Ser. No. 529,135
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R



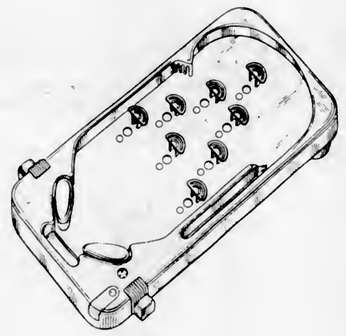
239,636
TOY FIGURE
Jens Nygaard Knudsen, Billund, and Leif Justesen, Give, Denmark, assignors to Interlego A.G., Zug, Switzerland
Filed Dec. 3, 1974, Ser. No. 529,138
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R



239,637
REFLECTIVE GOLF PUTTER HEAD
Frank C. Loggins, 4365 S. Eagle Circle, Denver, Colo. 80232
Filed Jan. 14, 1974, Ser. No. 432,907
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



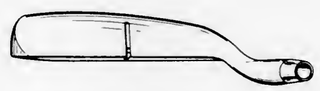
239,638
GAME BOARD
Claudio Cecchetti, Cernusco sul Naviglio, Milan, Italy
Filed Apr. 15, 1974, Ser. No. 461,323
Claims priority, application Italy Oct. 30, 1973
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 JJ



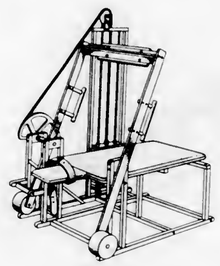
239,639
BALL PICK-UP DEVICE
Ernest Charles Clarke, London, England, assignor to Amethyst Engineering Co. Ltd., Kent, England
Filed May 16, 1974, Ser. No. 470,683
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB



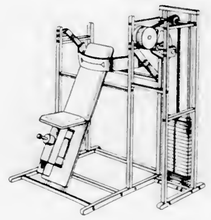
239,640
GOLF PUTTER HEAD
Raymon W. Cook, San Antonio, Tex., assignor to Ray Cook Golf Putters, Inc., San Antonio, Tex.
Continuation of design applications Ser. No. 293,527, Sept. 29, 1972, and Ser. No. 343,386, Mar. 21, 1973, both now abandoned. This application June 14, 1974, Ser. No. 479,460
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



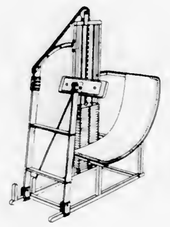
239,641
LOWER BUTTOCKS AND HAMSTRING EXERCISING MACHINE
Robert Clarke, Pacific Beach, Calif., assignor to Paramount Health Equipment Corp., Los Angeles, Calif.
Filed June 24, 1974, Ser. No. 482,099
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K



239,642
NECK DEVELOPER EXERCISING MACHINE
Robert Clarke, Pacific Beach, Calif., assignor to Paramount Health Equipment Corp., Los Angeles, Calif.
Filed June 24, 1974, Ser. No. 482,347
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K



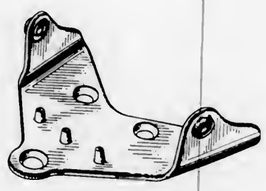
239,643
HIP AND BUTTOCKS EXERCISING MACHINE
Robert Clarke, Pacific Beach, Calif., assignor to Paramount Health Equipment Corp., Los Angeles, Calif.
Filed Aug. 13, 1974, Ser. No. 496,923
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K



239,644
TRICYCLE
Hideji Matsuura, Suite 505, 17–17 Mita 4-chome, Minato-ku, Tokyo, Japan
Filed June 11, 1974, Ser. No. 478,875
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



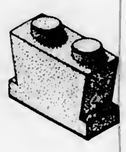
239,645
TOE-IRON FOR SKI BINDING
Borje Hoffman, Langshyttan, Sweden, assignor to Hoffmans Verkstads AB, Langshyttan, Sweden
Filed Oct. 25, 1974, Ser. No. 518,186
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 D



239,646
UPPER BODY ELEMENT FOR A TOY FIGURE
Jens Nygaard Knudsen, Billund, and Leif Justesen, Give, Denmark, assignors to Interlego A.G., Zug, Switzerland
Filed Dec. 3, 1974, Ser. No. 529,028
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG



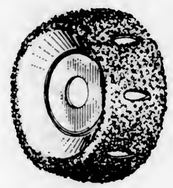
239,647
LOWER BODY ELEMENT FOR A TOY FIGURE
Jens Nygaard Knudsen, Billund, and Leif Justesen, Give, Denmark, assignors to Interlego A.G., Zug, Switzerland
Filed Dec. 3, 1974, Ser. No. 529,137
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG



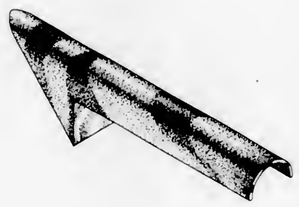
239,648
WAIST ENGAGING SKILL TOY
Donald K. Somsky, 4522 Logan, Denver, Colo. 80216
Filed Dec. 16, 1974, Ser. No. 532,845
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—15 R



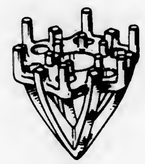
239,649
RASP WHEELS
Alton E. Tobey, 2203 Mission, Santa Cruz, Calif. 95060
Filed Nov. 15, 1974, Ser. No. 524,245
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D37—1 R



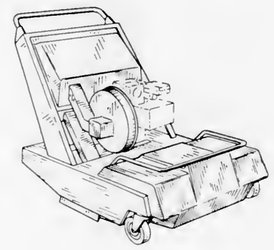
239,650
WEAR POINT FOR AGRICULTURAL FERTILIZER SHANK
Charles J. Clark, 6609 Washington N. 99208, and Charles Bedford, 11315 Galahad Drive N. 99218, both of Spokane, Wash.
Filed Apr. 18, 1974, Ser. No. 461,990
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D39—1 R



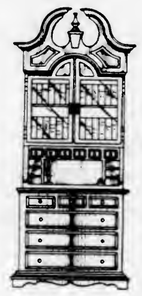
239,651
MOUNT FOR PRECIOUS STONES
Adolf Herman Hess, 7411 1B Yonge St., Apt. 508, Thornhill, Ontario, Canada
Continuation-in-part of design application Ser. No. 290,855, Sept. 21, 1972. This application Jan. 23, 1974, Ser. No. 435,764
Term of patent 14 years
The term of this patent subsequent to Sept. 3, 1991, has been disclaimed
Int. Cl. D11—*01*
U.S. Cl. D45—1 B



239,652
HOUSING FOR POWER SWEEPER
Ralph C. Peabody, Brooklyn Center, and John N. Polivka, Hopkins, Minn., assignors to Tennant Company, Minneapolis, Minn.
Filed Mar. 16, 1973, Ser. No. 341,974
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D49—9.1



239,653
RADIO
Donald J. Booty, Frankfort, Ill., assignor to Amico, Inc., Philadelphia, Pa.
Filed Apr. 17, 1974, Ser. No. 461,678
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



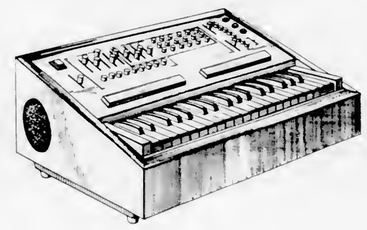
239,654
RADIO
Donald J. Booty, Frankfort, Ill., assignor to Amico, Inc., Philadelphia, Pa.
Filed Apr. 17, 1974, Ser. No. 461,679
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



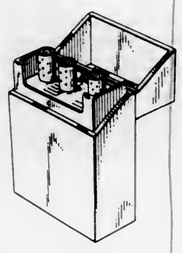
239,655
ORGAN
Thomas E. Kimble, Covington, Ky., assignor to D. H. Baldwin Company
Filed Apr. 30, 1974, Ser. No. 465,520
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—2



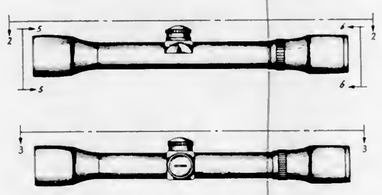
239,656
SYNTHESIZER
Thomas E. Kimble, Covington, Ky., assignor to D. H. Baldwin Company
Filed May 1, 1974, Ser. No. 465,929
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—1 R



239,657
RADIO
Hoi Tong Vong, Hong Kong, assignor to Asia International Electronics Ltd., Hong Kong
Filed May 22, 1974, Ser. No. 472,098
Claims priority, application Great Britain Nov. 28, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



239,658
RIFLESCOPE
Claus O. Huckenbeck, Sherman Oaks, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Sept. 9, 1974, Ser. No. 504,129
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—61



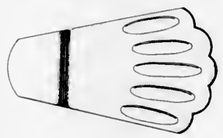
239,659
ELECTROSTATIC COPYING MACHINE OR SIMILAR ARTICLE
Isao Katayama, Sakai, Osaka, and Sadao Ishihara, Yao, Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Azuchi, Osaka, Japan
Filed Sept. 3, 1974, Ser. No. 499,676
Claims priority, application Japan Feb. 22, 1974
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—31



239,660
PAINT ROLLER OR THE LIKE
James D. Tyson, Carthage, and R. G. Harris, Lexington, N.C., assignors to Tyson Paint Roller Company, Carthage, N.C.
Filed Sept. 6, 1974, Ser. No. 503,651
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D64—18

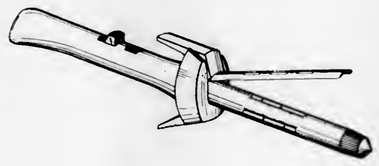


239,661
MANICURIST'S HAND REST
Catherine Goergen, 1064 Elkgrove Ave., Venice, Calif. 90291
Filed Aug. 1, 1974, Ser. No. 493,678
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 C

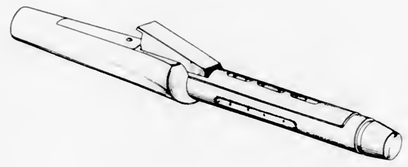




239,662
CURLING IRON
Leandro P. Rizzuto, Brooklyn, N.Y., assignor to Continental Hair Products, Inc., Edison, N.J.
Filed Aug. 2, 1974, Ser. No. 494,676
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 E



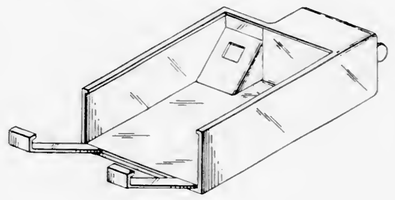
239,663
MINIATURE STEAM CURLING IRON
Douglas A. Long, 94 Sturges Ridge Road, Wilton, Conn. 06897, and Frederick A. Burke, 40 Riverside Ave., Riverside, Conn. 06878
Filed Dec. 26, 1974, Ser. No. 536,707
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 E



239,664
COMBINED SPEAKER AND CARRYING CASE FOR TAPE PLAYER AND CASSETTES
Norman E. Savoy, 123 Hampton Ave., Brooklyn, N.Y. 11235
Filed Apr. 3, 1974, Ser. No. 457,581
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



239,665
SECURITY CASE FOR A CALCULATOR
Samuel M. Cannella, Pine Brook, N.J., assignor to Becker Tool Company, Inc., Paterson, N.J.
Filed May 15, 1974, Ser. No. 470,066
Term of patent 14 years
Int. Cl. D3—*02*; D18—*01*
U.S. Cl. D87—1 R



239,666
UMBRELLA
Richard Larry Medlin, 8802 N. Myrtle Place, Tucson, Ariz. 85704
Filed Apr. 22, 1974, Ser. No. 463,067
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—3 R



INDEX OF APPLICANTS AND ASSIGNEES

OF

PATENT APPLICATIONS PUBLISHED ON THE 20TH DAY OF APRIL, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Andrews, Dallas Roy, to RCA Corporation. Tape cartridge player with cartridge pull-in mechanism. B 496,964, Cl. 360-92.000.

BASF Aktiengesellschaft: *See*—
Fischer, Adolf, deceased; Rohr, Wolfgang; and Reitel, Christian, B 534,680.

Carter, Peter Laurence, to Fisons Limited. Aminomethylenemalonitriles. B 403,076, Cl. 260-465 E.

Chevron Research Company: *See*—
Hutchison, Stanley O.; and Mitchell, Neal L., B 575,776.

Delagi, Bruce A.; Zeh, Joseph Paul; and Elia-Shaoul, Rony, to Digital Equipment Corporation. Memory unit for connection to central processor unit and interconnecting bus. B 461,752, Cl. 340-172.500.

Digital Equipment Corporation: *See*—
Delagi, Bruce A.; Zeh, Joseph Paul; and Elia-Shaoul, Rony, B 461,752.

Elia-Shaoul, Rony: *See*—
Delagi, Bruce A.; Zeh, Joseph Paul; and Elia-Shaoul, Rony, B 461,752.

Fischer, Adolf, deceased (by Fischer, Caecilia Emma, administratrix); Rohr, Wolfgang; and Reitel, Christian, to BASF Aktiengesellschaft. Substituted dihydro benzofuranyl esters. B 534,680, Cl. 260-346.20R.

Fischer, Caecilia Emma, administratrix: *See*—
Fischer, Adolf, deceased; Rohr, Wolfgang; and Reitel, Christian, B 534,680.

Fisons Limited: *See*—
Carter, Peter Laurence, B 403,076.

Hayami, Heijiro: *See*—
Tsuchiya, Hiroyoshi; Tsuda, Yukifumi; Hayami, Heijiro; and Kotera, Hiroaki, B 437,986.

Hutchison, Stanley O.; and Mitchell, Neal L., to Chevron Research Company. Method for obtaining information from a well by use of a gas operated hydraulically actuated wire line packer. B 575,776, Cl. 166-250.000.

Kotera, Hiroaki: *See*—
Tsuchiya, Hiroyoshi; Tsuda, Yukifumi; Hayami, Heijiro; and Kotera, Hiroaki, B 437,986.

Matsushita Electric Industrial Co., Ltd.: *See*—
Tsuchiya, Hiroyoshi; Tsuda, Yukifumi; Hayami, Heijiro; and Kotera, Hiroaki, B 437,986.
Tsukamoto, Masahide; Ohtsuka, Tetsuro; Morimoto, Kazuhisa; and Murakami, Yoshinobu, B 559,394.

Mine Safety Appliances Company: *See*—
Wahl, Martin H., B 555,146.

Mitchell, Neal L.: *See*—
Hutchison, Stanley O.; and Mitchell, Neal L., B 575,776.

Morimoto, Kazuhisa: *See*—
Tsukamoto, Masahide; Ohtsuka, Tetsuro; Morimoto, Kazuhisa; and Murakami, Yoshinobu, B 559,394.

Murakami, Yoshinobu: *See*—
Tsukamoto, Masahide; Ohtsuka, Tetsuro; Morimoto, Kazuhisa; and Murakami, Yoshinobu, B 559,394.

Noguchi, Matsusaburo: *See*—
Watanabe, Akinori; Tanoshima, Katsuhide; and Noguchi, Matsusaburo, B 529,214.

Ohtsuka, Tetsuro: *See*—
Tsukamoto, Masahide; Ohtsuka, Tetsuro; Morimoto, Kazuhisa; and Murakami, Yoshinobu, B 559,394.

Oki Electric Industry Company, Ltd.: *See*—
Watanabe, Akinori; Tanoshima, Katsuhide; and Noguchi, Matsusaburo, B 529,214.

RCA Corporation: *See*—
Andrews, Dallas Roy, B 496,964.

Reitel, Christian: *See*—
Fischer, Adolf, deceased; Rohr, Wolfgang; and Reitel, Christian, B 534,680.

Rohr, Wolfgang: *See*—
Fischer, Adolf, deceased; Rohr, Wolfgang; and Reitel, Christian, B 534,680.

Tanoshima, Katsuhide: *See*—
Watanabe, Akinori; Tanoshima, Katsuhide; and Noguchi, Matsusaburo, B 529,214.

Tsuchiya, Hiroyoshi; Tsuda, Yukifumi; Hayami, Heijiro; and Kotera, Hiroaki, to Matsushita Electric Industrial Co., Ltd. Photographic image pick-up and coding system of run-length type. B 437,986, Cl. 178-6.000.

Tsuda, Yukifumi: *See*—
Tsuchiya, Hiroyoshi; Tsuda, Yukifumi; Hayami, Heijiro; and Kotera, Hiroaki, B 437,986.

Tsukamoto, Masahide; Ohtsuka, Tetsuro; Morimoto, Kazuhisa; and Murakami, Yoshinobu, to Matsushita Electric Industrial Co., Ltd. Electro-optical device. B 559,394, Cl. 252-299.000.

Wahl, Martin H., to Mine Safety Appliances Company. Liquid metal level indicator. B 555,146, Cl. 73-290.00R.

Watanabe, Akinori; Tanoshima, Katsuhide; and Noguchi, Matsusaburo, to Oki Electric Industry Company, Ltd. Ink mist type high speed printer. B 529,214, Cl. 101-1.000.

Zeh, Joseph Paul: *See*—
Delagi, Bruce A.; Zeh, Joseph Paul; and Elia-Shaoul, Rony, B 461,752.

CLASSIFICATION OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM *

DATE PUBLISHED APRIL 20, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 8			
1E	B 407,205	C	Mar. 16, 1976
10.2	B 430,334	C	Jan. 27, 1976
14	B 460,388	C	Jan. 27, 1976
	B 497,473	C	Feb. 3, 1976
17	B 458,060	C	Jan. 13, 1976
21A	B 424,410	C	Mar. 30, 1976
62	B 507,476	C	Feb. 10, 1976
74	B 354,959	C	Feb. 17, 1976
84	B 495,903	C	Feb. 17, 1976
94.24	B 520,995	C	Mar. 23, 1976
115.5	B 372,232	C	Mar. 16, 1976
115.7	B 389,304	C	Jan. 27, 1976
142	B 423,867	C	Feb. 3, 1976
161	B 461,352	C	Jan. 13, 1976
169	B 497,571	C	Mar. 23, 1976
173	B 537,058	C	Mar. 23, 1976
174	B 344,967	C	Feb. 3, 1976
178R	B 389,155	C	Mar. 30, 1976
Class 11			
1AD	B 576,385	M	Mar. 30, 1976
Class 15			
53A	B 419,364	M	Mar. 30, 1976
147A	B 502,667	M	Feb. 24, 1976
229A	B 523,885	M	Feb. 17, 1976
256.53	B 579,116	M	Feb. 3, 1976
302	B 553,629	M	Feb. 24, 1976
Class 16			
125	B 589,687	M	Mar. 23, 1976
128R	B 594,871	M	Mar. 16, 1976
129	B 565,754	M	Mar. 30, 1976
Class 17			
23	B 519,599	M	Feb. 17, 1976
2502	B 541,496	E	Jan. 27, 1976
Class 19			
155	B 569,501	M	Mar. 9, 1976
Class 21			
2.7R	B 527,999	C	Feb. 3, 1976
Class 23			
230B	B 554,039	C	Feb. 24, 1976
273SP	B 431,785	C	Feb. 24, 1976
273V	B 563,165	C	Mar. 9, 1976
277R	B 510,682	C	Mar. 30, 1976
285F	B 565,180	C	Jan. 27, 1976
288S	B 517,668	C	Apr. 6, 1976
Class 24			
75	B 532,476	M	Feb. 3, 1976
Class 28			
1.6	B 497,292	M	Feb. 3, 1976
Class 29			
96	B 546,911	M	Jan. 13, 1976
127	B 510,855	M	Jan. 27, 1976
180SS	B 421,975	C	Mar. 2, 1976
183.5	B 519,680	C	Mar. 30, 1976
237	B 503,436	M	Feb. 24, 1976
415	B 504,061	M	Mar. 16, 1976
428	B 520,928	M	Jan. 13, 1976
578	B 561,732	M	Feb. 3, 1976
580	B 492,301	M	Jan. 13, 1976
591	B 506,760	M	Apr. 13, 1976
Class 30			
133	B 581,843	M	Mar. 16, 1976
Class 32			
10A	B 491,501	M	Jan. 13, 1976
Class 33			
143F	B 540,888	M	Mar. 30, 1976
174S	B 498,820	M	Mar. 9, 1976
252	B 471,681	M	Apr. 13, 1976
Class 35			
17	B 546,097	M	Mar. 23, 1976
36	B 511,454	M	Feb. 24, 1976
Class 37			
8	B 558,819	M	Feb. 3, 1976
57	B 531,753	M	Mar. 2, 1976
142A	B 511,099	M	Feb. 3, 1976
Class 40			
28C	B 493,981	M	Mar. 9, 1976
159	B 456,153	M	Mar. 9, 1976
Class 43			
129	B 442,866	M	Feb. 24, 1976
Class 44			
2	B 496,792	C	Feb. 17, 1976
62	B 407,812	C	Mar. 23, 1976
Class 47			
1.7	B 491,776	M	Mar. 16, 1976
57.6	B 548,028	M	Feb. 3, 1976
Class 48			
73	B 541,376	C	Feb. 17, 1976
192	B 593,781	C	Mar. 16, 1976
358	B 576,859	M	Feb. 24, 1976
Class 51			
358	B 576,859	M	Feb. 24, 1976
Class 52			
207	B 459,597	M	Feb. 17, 1976
225	B 591,615	M	Mar. 30, 1976
484	B 522,354	M	Jan. 20, 1976
Class 53			
77	B 508,878	M	Feb. 3, 1976
Class 55			
70	B 456,905	C	Mar. 23, 1976
71	B 570,925	C	Mar. 23, 1976
105	B 490,806	C	Feb. 3, 1976
352	B 543,941	C	Jan. 13, 1976
417	B 502,151	C	Mar. 23, 1976
Class 56			
13.4	B 494,167	M	Mar. 23, 1976
14.5	B 549,244	M	Jan. 27, 1976
15.9	B 558,973	M	Feb. 10, 1976
Class 57			
77.4	B 487,078	M	Mar. 30, 1976
140BY	B 495,124	M	Mar. 9, 1976
Class 58			
21.13	B 516,825	M	Feb. 3, 1976
Class 60			
39.63	B 491,774	M	Mar. 30, 1976
226A	B 445,459	M	Feb. 3, 1976
299	B 551,133	M	Mar. 2, 1976
304	B 502,540	M	Jan. 13, 1976
349	B 541,464	M	Feb. 17, 1976
422	B 526,445	M	Jan. 20, 1976
424	B 584,520	M	Jan. 27, 1976
425	B 535,386	M	Jan. 13, 1976
431	B 551,809	M	Feb. 24, 1976
445	B 400,871	M	Feb. 17, 1976
592	B 465,145	M	Jan. 27, 1976
645	B 538,472	M	Feb. 3, 1976
660	B 556,496	M	Mar. 16, 1976
667	B 464,027	M	Mar. 16, 1976
690	B 505,689	M	Mar. 2, 1976
706	B 509,238	M	Feb. 24, 1976
Class 61			
.5	B 554,283	M	Jan. 27, 1976
49	B 504,439	M	Mar. 16, 1976

*For Consecutive Order Listing of Applications Published Under Second Trial Voluntary Protest Program, see Official Gazette of April 27, 1976.

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 62			
306	B 522,009	M	Feb. 17, 1976
353	B 564,314	M	Jan. 20, 1976
Class 64			
27L	B 509,043	M	Feb. 24, 1976
Class 65			
3A	B 532,969	C	Jan. 13, 1976
11W	B 557,721	C	Mar. 23, 1976
49	B 517,858	C	Feb. 17, 1976
239	B 545,777	C	Jan. 27, 1976
Class 66			
116	B 438,882	M	Feb. 24, 1976
190	B 522,227	M	Mar. 30, 1976
Class 71			
28	B 141,968	C	Mar. 30, 1976
67	B 425,285	C	Apr. 13, 1976
113	B 535,076	C	Jan. 20, 1976
Class 72			
43	B 546,631	M	Feb. 3, 1976
56	B 489,290	M	Feb. 17, 1976
88	B 575,757	M	Jan. 27, 1976
238	B 563,932	M	Mar. 23, 1976
391	B 516,537	M	Feb. 17, 1976
Class 73			
9	B 573,994	M	Mar. 23, 1976
24	B 506,744	M	Jan. 13, 1976
29	B 557,153	M	Feb. 3, 1976
37.7	B 532,319	M	Feb. 3, 1976
40.5R	B 530,709	M	Apr. 6, 1976
61.1R	B 511,909	M	Feb. 17, 1976
67.5H	B 522,309	M	Feb. 3, 1976
116	B 569,859	M	Mar. 9, 1976
147	B 521,620	M	Jan. 27, 1976
154	B 513,791	M	Mar. 30, 1976
190R	B 480,350	M	Feb. 10, 1976
199	B 565,275	M	Apr. 6, 1976
290R	B 555,146	M	Apr. 20, 1976
302	B 463,473	M	Mar. 23, 1976
	B 464,290	M	Feb. 3, 1976
362AR	B 510,026	M	Apr. 13, 1976
422GC	B 490,547	M	Feb. 24, 1976
432R	B 415,021	M	Mar. 2, 1976
437	B 528,401	M	Feb. 3, 1976
557	B 523,080	M	Feb. 17, 1976
Class 74			
18.2	B 501,975	M	Mar. 2, 1976
242.1A	B 567,854	M	Feb. 3, 1976
243C	B 558,818	M	Jan. 13, 1976
424.8VA	B 499,786	M	Mar. 16, 1976
479	B 509,586	M	Feb. 3, 1976
481	B 497,021	M	Jan. 13, 1976
482	B 525,809	M	Feb. 24, 1976
527	B 470,170	M	Jan. 13, 1976
546	B 518,999	M	Feb. 3, 1976
765	B 500,945	M	Feb. 24, 1976
Class 75			
.5BA	B 385,631	C	Jan. 27, 1976
84.1R	B 538,491	C	Feb. 17, 1976
101BE	B 452,938	C	Feb. 17, 1976
135	B 525,961	C	Jan. 13, 1976
156.5	B 411,471	C	Feb. 17, 1976
165	B 483,256	C	Feb. 10, 1976
Class 83			
61	B 570,862	M	Feb. 24, 1976
425	B 545,935	M	Jan. 27, 1976
Class 84			
1.1	B 476,568	E	Mar. 16, 1976
1.16	B 556,897	M	Feb. 3, 1976
275	B 504,169	M	Jan. 13, 1976
Class 86			
1R	B 356,187	M	Jan. 20, 1976
Class 89			
142	B 470,853	M	Mar. 23, 1976
Class 91			
40	B 410,694	M	Mar. 23, 1976
Class 92			
163	B 425,193	M	Mar. 23, 1976
Class 93			
58.3	B 548,978	M	Mar. 9, 1976
Class 96			
1R	B 423,883	C	Jan. 27, 1976
1.4	B 200,759	C	Feb. 3, 1976
33	B 437,894	C	Mar. 2, 1976
35	B 524,026	C	Feb. 10, 1976
35.1	B 420,176	C	Mar. 16, 1976
	B 462,893	C	Feb. 24, 1976
	B 530,873	C	Feb. 17, 1976
36.1	B 359,901	C	Jan. 13, 1976
45	B 455,759	C	Feb. 24, 1976
50PT	B 481,190	E	Mar. 30, 1976
54	B 367,305	C	Mar. 2, 1976
66.3	B 417,498	C	Mar. 23, 1976
75	B 453,960	C	Apr. 13, 1976
78	B 503,029	C	Jan. 27, 1976
Class 99			
162B	B 432,991	M	Mar. 2, 1976
335	B 557,299	M	Feb. 3, 1976
485	B 311,450	M	Mar. 9, 1976
Class 100			
35	B 561,165	M	Mar. 30, 1976
48	B 561,166	M	Mar. 30, 1976
Class 101			
1	B 529,214	M	Apr. 20, 1976
19	B 402,328	M	Apr. 6, 1976
93.13	B 496,999	M	Jan. 27, 1976
93.14	B 481,600	M	Jan. 27, 1976
115	B 395,554	M	Mar. 9, 1976
129	B 416,589	M	Jan. 27, 1976
401.3	B 494,234	M	Feb. 10, 1976
Class 102			
32	B 405,726	M	Jan. 13, 1976
38	B 279,415	M	Mar. 16, 1976
39	B 417,349	M	Mar. 9, 1976
42R	B 443,163	M	Feb. 3, 1976
69	B 412,068	M	Jan. 13, 1976
Class 106			
1	B 466,419	C	Mar. 23, 1976
27	B 452,883	C	Jan. 27, 1976
47R	B 581,564	C	Mar. 23, 1976
57	B 502,773	C	Jan. 13, 1976
58	B 480,287	C	Mar. 30, 1976
	B 750,679	C	Mar. 23, 1976
213	B 432,265	C	Mar. 23, 1976
288	B 564,255	C	Mar. 30, 1976
309	B 311,779	C	Feb. 10, 1976
316	B 503,776	C	Mar. 23, 1976
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1SB	B 358,427	E	Feb. 3, 1976
Class 110			
8P	B 567,207	M	Apr. 13, 1976
8R	B 512,324	M	Feb. 17, 1976
Class 114			
.5A	B 472,591	M	Apr. 6, 1976
16.6	B 546,922	M	Mar. 16, 1976
67A	B 489,550	M	Mar. 16, 1976
144R	B 529,659	M	Feb. 24, 1976
230	B 484,769	M	Mar. 16, 1976
	B 503,456	M	Mar. 23, 1976
235B	B 532,679	M	Apr. 6, 1976
Class 116			
124L	B 469,228	M	Feb. 17, 1976
124.4	B 467,412	M	Jan. 13, 1976
Class 118			
637	B 563,301	M	Feb. 17, 1976
Class 123			
8.45	B 570,172	M	Feb. 3, 1976
25R	B 447,440	M	Feb. 17, 1976
32SP	B 467,486	M	Mar. 16, 1976
75B	B 563,780	M	Feb. 3, 1976
119A	B 405,899	M	Mar. 23, 1976
122AC	B 498,951	M	Mar. 2, 1976
139AW	B 480,251	M	Mar. 23, 1976
148E	B 480,473	M	Mar. 2, 1976
182	B 558,251	M	Jan. 13, 1976
191S	B 466,906	M	Mar. 16, 1976
325T	B 425,588	M	Jan. 13, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 126			
271	B 512,745	M	Jan. 13, 1976
350A	B 537,903	M	Jan. 20, 1976
Class 128			
2.6R	B 534,574	M	Feb. 24, 1976
260	B 520,277	M	Feb. 17, 1976
	B 524,121	M	Feb. 3, 1976
419P	B 535,466	M	Jan. 27, 1976
419PG	B 533,259	M	Feb. 24, 1976
Class 131			
144	B 586,387	M	Feb. 3, 1976
514.4	B 586,380	M	Mar. 2, 1976
Class 132			
7	B 464,491	M	Mar. 30, 1976
Class 136			
6LF	B 512,818	C	Apr. 6, 1976
26	B 511,665	C	Mar. 2, 1976
86R	B 505,126	C	Feb. 10, 1976
	B 574,128	C	Feb. 17, 1976
89	B 510,677	C	Feb. 24, 1976
138	B 509,819	C	Apr. 13, 1976
148	B 524,464	C	Feb. 10, 1976
202	B 378,513	C	Jan. 27, 1976
205	B 399,632	C	Mar. 9, 1976
Class 137			
220	B 554,833	M	Mar. 30, 1976
255	B 508,940	M	Feb. 17, 1976
596.12	B 514,687	M	Jan. 27, 1976
608	B 490,623	M	Mar. 2, 1976
614.11	B 530,605	M	Feb. 3, 1976
625.46	B 528,756	M	Feb. 3, 1976
627.5	B 432,594	M	Mar. 30, 1976
798	B 430,172	M	Jan. 13, 1976
Class 138			
177	B 530,263	C	Mar. 30, 1976
Class 139			
122R	B 527,171	M	Mar. 9, 1976
Class 140			
92.1	B 590,158	M	Feb. 10, 1976
	B 590,159	M	Feb. 3, 1976
Class 141			
294	B 473,813	M	Mar. 9, 1976
Class 144			
32R	B 484,332	M	Mar. 2, 1976
34R	B 521,793	M	Feb. 24, 1976
241	B 545,630	M	Jan. 27, 1976
Class 148			
1.5	B 518,226	C	Feb. 10, 1976
23	B 527,972	C	Mar. 9, 1976
36	B 459,381	C	Mar. 9, 1976
174	B 561,405	C	Mar. 30, 1976
175	B 105,006	C	Mar. 23, 1976
187	B 554,164	C	Mar. 9, 1976
Class 150			
3	B 461,250	M	Mar. 16, 1976
8	B 459,190	M	Mar. 30, 1976
52R	B 513,134	M	Mar. 23, 1976
Class 152			
213R	B 445,690	M	Feb. 3, 1976
379S	B 522,537	M	Mar. 30, 1976
Class 156			
3	B 453,031	C	Mar. 16, 1976
	B 563,722	C	Jan. 13, 1976
66	B 497,584	C	Feb. 24, 1976
71	B 456,148	C	Jan. 13, 1976
73.6	B 414,481	C	Jan. 20, 1976
143	B 462,386	C	Jan. 13, 1976
159	B 339,446	C	Feb. 24, 1976
167	B 452,293	C	Mar. 30, 1976
220	B 480,591	C	Mar. 30, 1976
435	B 475,385	C	Mar. 9, 1976
446	B 515,368	C	Apr. 6, 1976
461	B 288,757	C	Mar. 30, 1976
608	B 584,997	C	Mar. 9, 1976
Class 160			
229R	B 505,813	M	Jan. 13, 1976
Class 162			
5	B 491,673	C	Feb. 17, 1976
133	B 431,072	C	Jan. 20, 1976
198	B 150,142	C	Jan. 27, 1976
	B 552,629	C	Mar. 23, 1976
258	B 507,166	C	Apr. 13, 1976
274	B 468,421	C	Mar. 30, 1976
290	B 478,739	C	Feb. 17, 1976
Class 164			
4	B 546,677	M	Apr. 6, 1976
26	B 499,227	M	Jan. 27, 1976
57	B 488,756	M	Mar. 16, 1976
60	B 511,885	M	Jan. 27, 1976
282	B 396,916	M	Mar. 2, 1976
330	B 522,038	M	Feb. 3, 1976
Class 165			
4	B 328,116	M	Mar. 9, 1976
13	B 543,078	M	Feb. 17, 1976
32	B 529,194	C	Mar. 23, 1976
162	B 488,836	M	Mar. 30, 1976
Class 166			
224	B 492,120	M	Feb. 24, 1976
250	B 575,761	M	Apr. 13, 1976
	B 575,776	M	Apr. 20, 1976
272	B 569,519	M	Feb. 3, 1976
273	B 562,519	M	Mar. 30, 1976
303	B 529,836	M	Feb. 3, 1976
311	B 511,156	M	Jan. 27, 1976
Class 172			
719	B 97,259	M	Mar. 9, 1976
Class 173			
104	B 537,709	M	Jan. 13, 1976
170	B 567,058	M	Jan. 13, 1976
Class 174			
52R	B 492,902	E	Feb. 24, 1976
68.5	B 509,772	E	Mar. 16, 1976
Class 176			
20R	B 384,330	C	Jan. 27, 1976
36R	B 367,621	C	Feb. 3, 1976
68	B 396,164	C	Feb. 3, 1976
Class 178			
6	B 437,986	E	Apr. 20, 1976
	B 520,227	E	Mar. 30, 1976
	B 546,426	E	Jan. 27, 1976
7.1	B 468,100	E	Mar. 9, 1976
	B 519,979	E	Feb. 3, 1976
7.3D	B 442,970	E	Feb. 3, 1976
7.3DC	B 561,770	E	Mar. 16, 1976
7.5R	B 508,817	E	Feb. 3, 1976
58R	B 399,908	C	Jan. 13, 1976
66R	B 498,775	E	Mar. 2, 1976
70R	B 559,631	E	Mar. 23, 1976
88	B 561,764	E	Jan. 27, 1976
Class 179			
1A	B 513,756	E	Feb. 3, 1976
1CN	B 475,681	E	Jan. 20, 1976
1SM	B 476,577	E	Jan. 20, 1976
1G	B 554,594	E	Jan. 20, 1976
1.5FS	B 504,899	E	Mar. 9, 1976
2DP	B 462,030	E	Mar. 23, 1976
7.1R	B 545,050	E	Jan. 20, 1976
15AL	B 496,500	E	Feb. 3, 1976
15BA	B 497,293	E	Mar. 30, 1976
81R	B 472,284	E	Jan. 13, 1976
90K	B 432,049	E	Mar. 23, 1976
111E	B 557,274	E	Mar. 23, 1976
170D	B 541,415	E	Feb. 3, 1976
Class 180			
5R	B 499,171	M	Jan. 27, 1976
44F	B 432,969	M	Mar. 2, 1976
49	B 433,094	M	Jan. 27, 1976
53R	B 551,527	M	Jan. 13, 1976
79.2R	B 526,279	M	Apr. 13, 1976
	B 533,968	M	Jan. 27, 1976
103	B 490,647	M	Feb. 24, 1976
108	B 511,907	M	Mar. 30, 1976
Class 187			
1R	B 436,724	M	Feb. 24, 1976
Class 188			
71.1	B 535,411	M	Feb. 24, 1976
73.6	B 533,056	M	Jan. 13, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
165	B 567,435	M	Feb. 3, 1976
218XL	B 562,698	M	Jan. 13, 1976
Class 192			
3.57	B 548,719	M	Feb. 17, 1976
4A	B 531,267	M	Feb. 24, 1976
46	B 522,080	M	Mar. 16, 1976
Class 193			
35A	B 580,379	M	Apr. 6, 1976
Class 195			
1.8	B 530,255	E	Mar. 2, 1976
	B 514,839	C	Mar. 2, 1976
29	B 418,489	C	Jan. 13, 1976
31R	B 493,463	C	Mar. 23, 1976
65	B 566,585	C	Mar. 2, 1976
	B 592,146	C	Mar. 2, 1976
68	B 395,975	C	Mar. 2, 1976
	B 430,213	C	Mar. 30, 1976
80R	B 527,040	C	Mar. 23, 1976
103.5R	B 452,879	C	Mar. 16, 1976
Class 196			
14.52	B 520,384	M	Jan. 27, 1976
Class 197			
17	B 501,122	M	Feb. 17, 1976
18	B 535,391	M	Jan. 27, 1976
Class 198			
25	B 452,944	M	Mar. 30, 1976
38	B 495,402	M	Feb. 17, 1976
129	B 503,521	M	Mar. 16, 1976
	B 569,646	M	Jan. 13, 1976
179	B 424,989	M	Feb. 3, 1976
202	B 499,352	M	Jan. 27, 1976
Class 200			
5R	B 579,104	E	Jan. 27, 1976
11TC	B 531,425	E	Feb. 3, 1976
16C	B 480,740	E	Mar. 2, 1976
38FA	B 494,383	E	Feb. 3, 1976
61.41	B 506,286	E	Jan. 20, 1976
67D	B 585,247	E	Feb. 3, 1976
83SA	B 428,877	E	Jan. 27, 1976
84C	B 453,533	E	Feb. 17, 1976
309	B 470,899	E	Mar. 2, 1976
339	B 466,390	E	Feb. 24, 1976
Class 202			
185A	B 328,065	C	Mar. 30, 1976
227	B 513,280	C	Jan. 20, 1976
Class 203			
1	B 361,954	C	Apr. 6, 1976
59	B 466,304	C	Mar. 23, 1976
73	B 441,543	C	Mar. 23, 1976
Class 204			
9	B 462,424	C	Feb. 24, 1976
15	B 542,135	C	Feb. 10, 1976
129.43	B 446,956	C	Apr. 13, 1976
158HA	B 550,744	C	Feb. 17, 1976
159.16	B 476,776	C	Mar. 23, 1976
159.18	B 498,205	C	Feb. 10, 1976
159.22	B 423,404	C	Mar. 2, 1976
162R	B 354,222	C	Mar. 23, 1976
163R	B 526,447	C	Feb. 24, 1976
181	B 167,470	C	Mar. 2, 1976
186	B 589,179	C	Mar. 23, 1976
192	B 231,416	C	Mar. 30, 1976
	B 433,892	C	Apr. 6, 1976
195P	B 511,002	C	Mar. 2, 1976
195S	B 843,038	C	Feb. 3, 1976
224M	B 534,314	C	Feb. 10, 1976
252	B 542,258	C	Mar. 23, 1976
Class 206			
1.5	B 536,923	M	Mar. 30, 1976
451	B 371,912	M	Mar. 2, 1976
455	B 490,067	M	Jan. 27, 1976
Class 208			
15	B 437,596	C	Jan. 27, 1976
33	B 516,625	C	Mar. 30, 1976
59	B 508,118	C	Feb. 17, 1976
78	B 467,250	C	Feb. 3, 1976
93	B 499,370	C	Mar. 30, 1976
208R	B 508,119	C	Feb. 17, 1976
210	B 501,317	C	Jan. 13, 1976
253	B 438,916	C	Jan. 13, 1976
323	B 476,542	C	Mar. 30, 1976
Class 210			
22R	B 525,204	C	Mar. 16, 1976
23H	B 364,797	C	Feb. 17, 1976
	B 524,806	C	Mar. 2, 1976
24	B 452,501	C	Mar. 16, 1976
84	B 356,470	C	Mar. 23, 1976
114	B 401,221	C	Apr. 6, 1976
130	B 532,901	C	Jan. 13, 1976
168	B 449,989	C	Mar. 30, 1976
189	B 492,716	C	Mar. 2, 1976
199	B 449,988	C	Mar. 30, 1976
321A	B 470,601	C	Mar. 9, 1976
500M	B 433,930	C	Mar. 23, 1976
	B 493,474	C	Mar. 23, 1976
512R	B 330,719	C	Mar. 16, 1976
Class 214			
1C	B 453,238	M	Mar. 2, 1976
18N	B 373,344	M	Feb. 3, 1976
58	B 555,772	M	Jan. 13, 1976
90R	B 536,403	M	Mar. 23, 1976
152	B 480,604	M	Jan. 13, 1976
Class 215			
216	B 541,015	M	Jan. 27, 1976
347	B 337,023	M	Mar. 30, 1976
Class 219			
69M	B 426,227	E	Mar. 2, 1976
121EM	B 479,502	E	Mar. 16, 1976
201	B 451,248	E	Mar. 2, 1976
233	B 463,388	E	Feb. 10, 1976
273	B 403,507	E	Feb. 10, 1976
553	B 513,027	E	Feb. 17, 1976
Class 220			
23.83	B 529,156	M	Jan. 13, 1976
66	B 223,678	M	Mar. 9, 1976
288	B 516,032	M	Jan. 27, 1976
337	B 578,447	M	Jan. 20, 1976
Class 221			
75	B 510,281	M	Mar. 9, 1976
Class 222			
43	B 497,853	M	Feb. 17, 1976
56	B 559,697	M	Mar. 16, 1976
67	B 521,480	M	Jan. 13, 1976
136	B 487,260	M	Jan. 27, 1976
181	B 562,601	M	Mar. 16, 1976
306	B 559,954	M	Feb. 3, 1976
325	B 515,303	M	Jan. 20, 1976
512	B 532,976	M	Mar. 23, 1976
Class 226			
1	B 506,624	M	Mar. 9, 1976
21	B 504,778	M	Feb. 24, 1976
68	B 506,926	M	Feb. 17, 1976
Class 227			
83	B 540,703	M	Apr. 13, 1976
Class 228			
190	B 473,972	M	Jan. 13, 1976
Class 229			
2.5	B 537,990	M	Jan. 13, 1976
17R	B 461,257	M	Jan. 13, 1976
62.5	B 429,157	M	Jan. 27, 1976
Class 235			
61.11E	B 477,892	E	Mar. 30, 1976
151	B 491,650	E	Mar. 9, 1976
151.1	B 520,063	E	Mar. 2, 1976
	B 520,075	E	Feb. 24, 1976
	B 520,076	E	Mar. 2, 1976
	B 520,082	E	Mar. 23, 1976
	B 535,268	C	Mar. 30, 1976
151.11	B 540,767	E	Mar. 16, 1976
151.12	B 504,156	E	Mar. 23, 1976
151.34	B 492,946	E	Jan. 27, 1976
152	B 484,121	E	Mar. 16, 1976
	B 559,737	E	Jan. 20, 1976
153AK	B 563,419	E	Mar. 23, 1976
153AM	B 587,936	E	Mar. 23, 1976
154	B 534,016	E	Feb. 3, 1976
156	B 536,009	E	Jan. 27, 1976
175	B 560,488	E	Mar. 16, 1976
181	B 520,924	E	Jan. 27, 1976
Class 236			
13	B 502,652	M	Feb. 24, 1976
15A	B 558,813	M	Feb. 3, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
Class 239			
265.39	B 567,892	M	Mar. 16, 1976
288.3	B 570,382	M	Apr. 13, 1976
424	B 580,921	M	Jan. 13, 1976
	B 586,215	M	Jan. 20, 1976
533	B 541,501	M	Apr. 13, 1976
652	B 520,534	M	Feb. 17, 1976
Class 240			
41.35R	B 454,283	E	Feb. 3, 1976
Class 241			
46.11	B 462,828	M	Mar. 9, 1976
81	B 425,462	M	Mar. 9, 1976
Class 242			
25A	B 420,321	M	Mar. 30, 1976
36	B 492,373	M	Mar. 30, 1976
43R	B 521,600	M	Jan. 27, 1976
56R	B 535,448	M	Mar. 16, 1976
107.4A	B 487,427	M	Mar. 2, 1976
129.8	B 506,167	M	Feb. 10, 1976
Class 244			
3.27	B 510,521	M	Mar. 2, 1976
134R	B 535,928	M	Jan. 13, 1976
140	B 419,173	M	Mar. 9, 1976
169	B 423,441	M	Feb. 17, 1976
	B 511,346	M	Jan. 27, 1976
Class 248			
49	B 398,488	M	Feb. 24, 1976
73	B 494,806	M	Feb. 3, 1976
205R	B 520,952	M	Mar. 16, 1976
309R	B 527,333	M	Mar. 23, 1976
Class 249			
135	B 548,155	M	Jan. 13, 1976
Class 250			
210	B 515,908	E	Jan. 20, 1976
227	B 522,577	E	Jan. 27, 1976
	B 560,765	E	Feb. 3, 1976
231SE	B 503,618	E	Mar. 9, 1976
291	B 500,981	E	Jan. 27, 1976
303	B 536,082	E	Mar. 16, 1976
310	B 485,926	E	Mar. 23, 1976
328	B 71,613	E	Mar. 16, 1976
345	B 374,553	E	Mar. 30, 1976
364	B 526,190	E	Feb. 17, 1976
397	B 569,293	E	Mar. 30, 1976
402	B 451,534	E	Jan. 13, 1976
445T	B 574,616	E	Mar. 2, 1976
564	B 566,572	E	Mar. 16, 1976
577	B 507,396	E	Feb. 10, 1976
Class 251			
1B	B 541,710	M	Feb. 24, 1976
28	B 480,384	M	Mar. 23, 1976
58	B 429,434	M	Feb. 17, 1976
129	B 534,333	M	Feb. 17, 1976
319	B 490,589	M	Feb. 3, 1976
Class 252			
12	B 559,142	C	Mar. 2, 1976
12.2	B 380,137	C	Mar. 23, 1976
25	B 468,603	C	Mar. 23, 1976
33.6	B 441,723	C	Mar. 16, 1976
62.1L	B 376,749	E	Mar. 30, 1976
105	B 479,969	C	Mar. 9, 1976
106	B 530,303	C	Mar. 23, 1976
156	B 520,546	C	Mar. 2, 1976
182	B 471,405	C	Feb. 10, 1976
299	B 559,394	C	Apr. 20, 1976
301.1W	B 548,058	C	Feb. 17, 1976
301.2W	B 528,297	C	Mar. 16, 1976
301.4S	B 535,813	C	Jan. 27, 1976
364	B 370,309	C	Jan. 20, 1976
404	B 569,125	C	Feb. 24, 1976
408R	B 544,476	C	Feb. 24, 1976
429R	B 457,850	C	Feb. 10, 1976
432	B 509,640	C	Feb. 17, 1976
454	B 450,967	C	Jan. 13, 1976
455R	B 390,979	C	Mar. 23, 1976
500	B 479,242	C	Feb. 17, 1976
514	B 553,421	C	Mar. 23, 1976
518	B 585,731	C	Feb. 3, 1976
543	B 403,766	C	Feb. 10, 1976
544	B 433,707	C	Mar. 23, 1976
545	B 458,819	C	Apr. 13, 1976
Class 254			
186R	B 511,407	M	Feb. 10, 1976
188	B 437,559	M	Feb. 3, 1976
190R	B 489,685	M	Feb. 24, 1976
Class 256			
65	B 523,129	M	Apr. 13, 1976
Class 259			
4	B 486,614	N	Feb. 17, 1976
8	B 547,016	M	Mar. 23, 1976
191	B 397,674	M	Mar. 16, 1976
	B 556,057	M	Jan. 13, 1976
Class 260			
2.5AC	B 497,194	C	Feb. 3, 1976
	B 537,102	C	Jan. 13, 1976
2.5AJ	B 557,856	C	Feb. 10, 1976
2.5AM	B 422,063	C	Feb. 3, 1976
2.5AR	B 483,606	C	Jan. 27, 1976
	B 502,589	C	Jan. 27, 1976
2.5AV	B 460,441	C	Jan. 13, 1976
2.5AW	B 483,762	C	Feb. 10, 1976
	B 486,828	C	Mar. 2, 1976
2.5B	B 554,380	C	Mar. 9, 1976
2.5R	B 471,579	C	Jan. 13, 1976
17R	B 510,998	C	Feb. 10, 1976
	B 519,487	C	Feb. 17, 1976
17.2	B 519,355	C	Apr. 13, 1976
17.4ST	B 530,580	C	Mar. 2, 1976
18TN	B 528,303	C	Feb. 10, 1976
23H	B 54,859	C	Feb. 17, 1976
23XA	B 483,865	C	Jan. 13, 1976
28P	B 489,331	C	Feb. 17, 1976
28R	B 507,456	C	Mar. 9, 1976
28.5AS	B 501,540	C	Jan. 13, 1976
29.2EP	B 455,686	C	Mar. 2, 1976
	B 522,629	C	Mar. 16, 1976
	B 526,997	C	Jan. 13, 1976
29.2TN	B 414,266	C	Feb. 10, 1976
29.6F	B 567,076	C	Mar. 23, 1976
29.6HN	B 494,439	C	Apr. 13, 1976
29.6N	B 494,440	C	Feb. 17, 1976
29.6TA	B 494,450	C	Feb. 17, 1976
29.7PT	B 358,260	C	Mar. 30, 1976
29.7T	B 573,114	C	Apr. 6, 1976
30.4R	B 485,060	C	Feb. 17, 1976
31.8N	B 592,658	C	Mar. 23, 1976
32.6R	B 596,692	C	Feb. 17, 1976
33.4R	B 487,467	C	Apr. 13, 1976
33.6AQ	B 470,945	C	Apr. 13, 1976
	B 520,658	C	Mar. 9, 1976
	B 657,438	C	Jan. 20, 1976
33.6R	B 479,175	C	Feb. 17, 1976
33.6UA	B 559,441	C	Mar. 23, 1976
33.8UA	B 497,780	C	Feb. 24, 1976
	B 570,721	C	Mar. 23, 1976
37EP	B 423,365	C	Feb. 17, 1976
	B 441,605	C	Feb. 3, 1976
37R	B 465,955	C	Feb. 3, 1976
37PC	B 520,878	C	Apr. 6, 1976
40P	B 485,188	C	Mar. 16, 1976
40R	B 590,502	C	Mar. 23, 1976
42.15	B 257,143	C	Mar. 16, 1976
	B 415,122	C	Feb. 10, 1976
42.18	B 519,095	C	Feb. 24, 1976
45.75H	B 487,529	C	Mar. 30, 1976
45.75W	B 561,387	C	Feb. 10, 1976
45.8N	B 506,648	C	Feb. 3, 1976
45.8NZ	B 500,959	C	Apr. 13, 1976
45.8R	B 479,556	C	Mar. 23, 1976
45.85R	B 236,342	C	Feb. 10, 1976
46.5UA	B 528,962	C	Feb. 24, 1976
	B 528,966	C	Feb. 24, 1976
47EP	B 440,633	C	Feb. 10, 1976
47EQ	B 444,078	C	Mar. 23, 1976
47UP	B 493,537	C	Mar. 23, 1976
63UY	B 470,576	C	Feb. 24, 1976
67.6R	B 530,437	C	Apr. 13, 1976
75N	B 521,125	C	Feb. 10, 1976
	B 521,126	C	Feb. 10, 1976
	B 521,127	C	Feb. 17, 1976
	B 521,128	C	Feb. 10, 1976
	B 552,489	C	Feb. 10, 1976
	B 559,700	C	Mar. 23, 1976
	B 559,701	C	Mar. 23, 1976
75R	B 236,266	C	Mar. 23, 1976
77.5AN	B 474,645	C	Mar. 2, 1976
77.5CR	B 306,668	C	Feb. 3, 1976
78S	B 451,308	C	Feb. 17, 1976
78.5R	B 437,209	C	Feb. 3, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
78UA	B 497,490	C	Mar. 23, 1976
79.5P	B 546,149	C	Mar. 2, 1976
80M	B 522,446	C	Mar. 30, 1976
80.73	B 505,221	C	Mar. 30, 1976
80.78	B 271,743	C	Mar. 16, 1976
82.1	B 443,563	C	Feb. 24, 1976
88.2B	B 456,384	C	Apr. 6, 1976
88.2C	B 417,014	C	Jan. 13, 1976
88.2F	B 632,416	C	Mar. 9, 1976
93.5A	B 530,174	C	Feb. 24, 1976
112R	B 328,077	C	Apr. 13, 1976
112.5R	B 471,617	C	Feb. 10, 1976
	B 485,972	C	Mar. 23, 1976
	B 503,817	C	Jan. 13, 1976
	B 520,514	C	Mar. 9, 1976
117	B 333,247	C	Mar. 16, 1976
140R	B 503,579	C	Feb. 10, 1976
143	B 419,582	C	Mar. 2, 1976
147	B 383,697	C	Feb. 17, 1976
156	B 411,624	C	Mar. 16, 1976
157	B 476,267	C	Apr. 6, 1976
	B 591,141	C	Mar. 23, 1976
167	B 444,294	C	Mar. 30, 1976
210AB	B 554,291	C	Mar. 9, 1976
220B	B 326,211	C	Mar. 23, 1976
239A	B 349,370	C	Jan. 27, 1976
239B	B 470,900	C	Mar. 2, 1976
239BC	B 403,326	C	Mar. 23, 1976
239D	B 382,120	C	Mar. 23, 1976
	B 487,423	C	Mar. 2, 1976
	B 520,256	C	Jan. 13, 1976
	B 536,935	C	Jan. 13, 1976
239.1	B 371,095	C	Mar. 23, 1976
	B 372,016	C	Mar. 9, 1976
	B 538,753	C	Feb. 10, 1976
	B 547,208	C	Feb. 24, 1976
239.3A	B 506,148	C	Feb. 3, 1976
239.5	B 561,365	C	Apr. 13, 1976
240A	B 484,067	C	Feb. 17, 1976
240G	B 482,709	C	Feb. 24, 1976
240R	B 491,711	C	Mar. 23, 1976
243C	B 442,810	C	Feb. 24, 1976
	B 473,039	C	Feb. 10, 1976
	B 473,040	C	Feb. 10, 1976
	B 516,047	C	Feb. 10, 1976
	B 516,296	C	Feb. 3, 1976
	B 526,096	C	Feb. 3, 1976
244R	B 348,433	C	Feb. 3, 1976
247.1R	B 457,931	C	Mar. 16, 1976
247.7T	B 468,052	C	Feb. 10, 1976
248AS	B 514,259	C	Mar. 23, 1976
248NS	B 537,711	C	Jan. 13, 1976
248.5	B 332,442	C	Mar. 30, 1976
249.6	B 344,669	C	Mar. 16, 1976
250BC	B 491,883	C	Feb. 3, 1976
250P	B 498,288	C	Mar. 23, 1976
251A	B 480,625	C	Feb. 24, 1976
256.4C	B 435,617	C	Mar. 16, 1976
256.4Q	B 503,345	C	Feb. 24, 1976
256.5R	B 531,096	C	Feb. 10, 1976
268BF	B 490,946	C	Feb. 17, 1976
268TR	B 539,374	C	Mar. 9, 1976
	B 563,070	C	Mar. 9, 1976
274SA	B 494,944	C	Feb. 17, 1976
283CN	B 461,685	C	Mar. 30, 1976
285.5	B 530,318	C	Jan. 13, 1976
287C	B 492,039	C	Feb. 24, 1976
287D	B 571,638	C	Mar. 9, 1976
288CF	B 402,657	C	Apr. 6, 1976
288R	B 402,162	C	Mar. 2, 1976
290HL	B 537,053	C	Mar. 23, 1976
290R	B 445,493	C	Mar. 2, 1976
293.52	B 552,508	C	Mar. 16, 1976
293.54	B 545,464	C	Feb. 10, 1976
293.56	B 447,000	C	Feb. 3, 1976
293.57	B 426,802	C	Feb. 17, 1976
293.79	B 403,243	C	Mar. 30, 1976
293.84	B 408,123	C	Apr. 13, 1976
294.8D	B 526,510	C	Jan. 20, 1976
294.8G	B 445,166	C	Mar. 2, 1976
294.9	B 494,339	C	Mar. 16, 1976
295.5A	B 515,642	C	Feb. 24, 1976
	B 545,299	C	Feb. 24, 1976
295.5B	B 458,617	C	Feb. 3, 1976
296R	B 429,027	C	Mar. 23, 1976
	B 477,252	C	Jan. 13, 1976
306.7C	B 385,024	C	Feb. 10, 1976
307D	B 486,280	C	Feb. 3, 1976
307G	B 568,405	C	Mar. 30, 1976
307H	B 471,836	C	Feb. 24, 1976
	B 554,848	C	Feb. 24, 1976
308A	B 488,111	C	Jan. 13, 1976
308D	B 532,005	C	Feb. 24, 1976
308R	B 471,494	C	Mar. 16, 1976
309.2	B 407,014	C	Mar. 16, 1976
	B 522,567	C	Feb. 17, 1976
	B 542,158	C	Jan. 13, 1976
309.6	B 521,025	C	Mar. 23, 1976
309.7	B 532,477	C	Apr. 13, 1976
310R	B 535,437	C	Feb. 24, 1976
314.5	B 426,266	C	Mar. 2, 1976
325PH	B 440,548	C	Mar. 16, 1976
325R	B 427,946	C	Mar. 23, 1976
326E	B 512,779	C	Apr. 13, 1976
326HL	B 536,322	C	Mar. 23, 1976
326R	B 486,678	C	Mar. 2, 1976
	B 398,084	C	Feb. 3, 1976
326.5B	B 276,026	C	Feb. 3, 1976
	B 490,812	C	Mar. 30, 1976
326.5FN	B 484,269	C	Feb. 10, 1976
326.9	B 477,481	C	Feb. 3, 1976
326.12R	B 446,107	C	Mar. 9, 1976
326.13R	B 456,869	C	Mar. 9, 1976
327C	B 480,452	C	Feb. 10, 1976
330.5	B 552,498	C	Jan. 13, 1976
	B 574,996	C	Feb. 17, 1976
340.5	B 504,877	C	Feb. 24, 1976
340.9	B 476,372	C	Feb. 24, 1976
	B 521,643	C	Mar. 2, 1976
343.2R	B 491,032	C	Feb. 10, 1976
343.3	B 536,675	C	Jan. 20, 1976
343.3R	B 495,550	C	Feb. 3, 1976
	B 495,554	C	Feb. 3, 1976
345.9	B 450,701	C	Mar. 16, 1976
	B 450,708	C	Mar. 9, 1976
346.2M	B 440,858	C	Feb. 3, 1976
	B 302,160	C	Feb. 3, 1976
346.2R	B 534,680	C	Apr. 20, 1976
346.3	B 392,798	C	Mar. 30, 1976
346.4	B 485,051	C	Feb. 17, 1976
346.8R	B 369,373	C	Mar. 23, 1976
347.3	B 359,768	C	Mar. 30, 1976
348.5L	B 521,324	C	Jan. 27, 1976
348.6	B 546,295	C	Jan. 20, 1976
378	B 431,713	C	Feb. 10, 1976
397.4	B 450,693	C	Mar. 9, 1976
	B 484,068	C	Mar. 2, 1976
408	B 442,953	C	Mar. 23, 1976
429.7	B 464,587	C	Feb. 3, 1976
429.9	B 455,481	C	Feb. 24, 1976
438.1	B 518,656	C	Feb. 17, 1976
448R	B 495,781	C	Mar. 23, 1976
448.2H	B 390,408	C	Feb. 3, 1976
448.2N	B 412,830	C	Mar. 30, 1976
	B 551,463	C	Feb. 17, 1976
449M	B 521,985	C	Mar. 23, 1976
449R	B 526,942	C	Mar. 30, 1976
453PH	B 518,076	C	Mar. 30, 1976
456NS	B 484,419	C	Mar. 9, 1976
465E	B 403,076	C	Apr. 20, 1976
465H	B 573,991	C	Mar. 30, 1976
465.3	B 159,570	C	Mar. 23, 1976
465.5R	B 747,785	C	Feb. 10, 1976
465.7	B 564,252	C	Mar. 2, 1976
465.9	B 456,900	C	Feb. 3, 1976
	B 530,925	C	Feb. 24, 1976
471C	B 367,092	C	Apr. 13, 1976
471R	B 385,483	C	Feb. 17, 1976
	B 388,521	C	Jan. 13, 1976
472	B 472,256	C	Jan. 13, 1976
	B 491,052	C	Mar. 2, 1976
473S	B 532,140	C	Mar. 2, 1976
479C	B 483,746	C	Mar. 23, 1976
483	B 410,074	C	Feb. 24, 1976
493	B 351,455	C	Feb. 24, 1976
501.12	B 544,899	C	Feb. 17, 1976
513R	B 494,669	C	Feb. 3, 1976
514D	B 494,138	C	Mar. 23, 1976
514J	B 442,431	C	Mar. 23, 1976
515A	B 390,031	C	Jan. 13, 1976
516	B 386,828	C	Feb. 3, 1976
527R	B 467,328	C	Mar. 9, 1976
534R	B 301,143	C	Jan. 27, 1976
535P	B 426,157	C	Mar. 23, 1976
543F	B 504,582	C	Mar. 30, 1976
544C	B 471,116	C	Feb. 17, 1976
545R	B 357,526	C	Mar. 23, 1976
553R	B 391,473	C	Mar. 2, 1976
554	B 529,974	C	Feb. 17, 1976
557R	B 386,257	C	Feb. 3, 1976
561R	B 513,781	C	Feb. 24, 1976
562B	B 413,379	C	Mar. 9, 1976
563R	B 391,828	C	Apr. 6, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
565	B 533,652	C	Mar. 23, 1976
566A	B 513,014	C	Feb. 10, 1976
566R	B 421,373	C	Mar. 23, 1976
567.6M	B 480,114	C	Mar. 2, 1976
568	B 529,974	C	Feb. 17, 1976
570.6	B 472,760	C	Apr. 13, 1976
578	B 449,837	C	Mar. 2, 1976
580	B 503,742	C	Feb. 17, 1976
586C	B 438,484	C	Feb. 17, 1976
591	B 416,257	C	Mar. 16, 1976
593R	B 468,350	C	Jan. 13, 1976
598	B 465,202	C	Feb. 24, 1976
	B 524,849	C	Mar. 23, 1976
601R	B 208,916	C	Jan. 13, 1976
604HF	B 472,241	C	Feb. 17, 1976
606.5P	B 518,326	C	Mar. 23, 1976
609E	B 474,573	C	Jan. 20, 1976
610A	B 845,044	C	Mar. 30, 1976
615A	B 409,310	C	Mar. 23, 1976
621H	B 501,128	C	Feb. 24, 1976
621K	B 470,348	C	Jan. 13, 1976
632R	B 553,584	C	Feb. 17, 1976
637R	B 519,446	C	Feb. 24, 1976
643R	B 480,662	C	Mar. 2, 1976
647	B 394,248	C	Jan. 27, 1976
648F	B 330,736	C	Feb. 3, 1976
665R	B 460,846	C	Feb. 24, 1976
668D	B 430,157	C	Feb. 17, 1976
674SA	B 426,274	C	Jan. 20, 1976
683.15D	B 428,103	C	Feb. 10, 1976
683.48	B 526,027	C	Feb. 17, 1976
831	B 440,632	C	Apr. 13, 1976
859R	B 519,485	C	Feb. 10, 1976
873	B 388,675	C	Mar. 30, 1976
	B 465,688	C	Jan. 27, 1976
	B 519,486	C	Feb. 17, 1976
876B	B 575,851	C	Feb. 10, 1976
876R	B 589,966	C	Feb. 17, 1976
	B 461,184	C	Feb. 17, 1976
	B 580,826	C	Feb. 17, 1976
	B 589,966	C	Feb. 17, 1976
878R	B 469,468	C	Mar. 16, 1976
880B	B 510,458	C	Feb. 10, 1976
884	B 456,579	C	Feb. 10, 1976
890	B 495,408	C	Feb. 3, 1976
900	B 564,902	C	Mar. 23, 1976
927N	B 369,221	C	Feb. 24, 1976
	B 484,437	C	Mar. 30, 1976
929	B 502,993	C	Feb. 17, 1976
937	B 512,373	C	Feb. 10, 1976
940	B 496,430	C	Feb. 10, 1976
942	B 386,673	C	Feb. 3, 1976
948	B 534,591	C	Feb. 17, 1976
984	B 455,486	C	Mar. 16, 1976
Class 261			
39A	B 562,462	C	Jan. 13, 1976
98	B 480,702	C	Jan. 27, 1976
Class 264			
11	B 335,783	C	Mar. 30, 1976
36	B 308,659	C	Jan. 27, 1976
37	B 579,153	C	Mar. 30, 1976
49	B 417,164	C	Mar. 2, 1976
51	B 506,144	C	Feb. 10, 1976
	B 508,369	C	Jan. 13, 1976
140	B 214,925	C	Mar. 9, 1976
150	B 455,806	C	Mar. 23, 1976
161	B 555,437	C	Feb. 3, 1976
225	B 453,759	C	Jan. 27, 1976
315	B 485,169	C	Mar. 16, 1976
Class 270			
62	B 516,609	M	Feb. 24, 1976
Class 271			
180	B 435,481	M	Mar. 9, 1976
Class 274			
37	B 526,388	M	Feb. 3, 1976
Class 277			
27	B 519,623	M	Apr. 6, 1976
	B 544,034	M	Feb. 17, 1976
34.6	B 430,326	M	Mar. 23, 1976
81P	B 515,216	M	Feb. 17, 1976
184	B 426,819	M	Feb. 17, 1976
Class 280			
11.35R	B 435,570	M	Mar. 16, 1976
124F	B 471,706	M	Mar. 16, 1976
	B 550,810	M	Mar. 23, 1976
150AB	B 520,341	M	Mar. 16, 1976
150SB	B 363,565	M	Mar. 30, 1976
150.5	B 583,051	M	Feb. 3, 1976
236	B 572,642	M	Feb. 10, 1976
Class 281			
25R	B 491,618	M	Mar. 16, 1976
Class 285			
110	B 313,280	M	Apr. 6, 1976
Class 290			
17	B 477,597	E	Feb. 17, 1976
Class 292			
254	B 549,964	M	Feb. 24, 1976
Class 293			
71P	B 552,932	M	Feb. 3, 1976
Class 296			
35R	B 443,647	M	Feb. 17, 1976
	B 463,671	M	Jan. 13, 1976
137A	B 452,034	M	Mar. 23, 1976
Class 297			
304	B 597,410	M	Mar. 30, 1976
Class 298			
35M	B 510,588	M	Jan. 27, 1976
Class 299			
31	B 499,209	M	Feb. 24, 1976
Class 303			
21BE	B 575,583	M	Mar. 16, 1976
71	B 545,856	M	Mar. 30, 1976
Class 305			
27	B 506,566	M	Jan. 20, 1976
Class 307			
88.3	B 540,872	E	Jan. 20, 1976
137	B 466,444	E	Jan. 20, 1976
205	B 444,437	E	Mar. 9, 1976
	B 513,368	E	Feb. 3, 1976
232	B 540,078	E	Jan. 13, 1976
251	B 503,371	E	Mar. 30, 1976
	B 506,840	E	Mar. 23, 1976
	B 548,302	E	Feb. 17, 1976
252B	B 523,226	E	Mar. 23, 1976
255	B 492,688	E	Jan. 20, 1976
262	B 525,133	E	Mar. 23, 1976
270	B 497,960	E	Jan. 20, 1976
293	B 519,932	E	Feb. 3, 1976
296	B 512,849	E	Feb. 3, 1976
300	B 530,285	E	Apr. 6, 1976
Class 308			
9	B 391,797	M	Mar. 9, 1976
36.3	B 562,413	M	Mar. 16, 1976
207R	B 507,661	M	Mar. 2, 1976
Class 310			
4R	B 539,746	E	Feb. 17, 1976
9.6	B 501,482	E	Jan. 13, 1976
41	B 561,784	E	Jan. 27, 1976
90	B 458,500	E	Feb. 24, 1976
155	B 592,143	C	Jan. 27, 1976
168	B 526,289	E	Feb. 24, 1976
254	B 521,045	E	Feb. 24, 1976
	B 521,046	E	Feb. 24, 1976
259	B 521,044	E	Feb. 24, 1976
Class 313			
42	B 534,443	E	Jan. 27, 1976
60	B 513,706	M	Jan. 13, 1976
94	B 517,762	E	Mar. 16, 1976
99	B 518,859	E	Feb. 3, 1976
231.4	B 571,659	E	Apr. 13, 1976
273	B 531,929	E	Jan. 20, 1976
330	B 504,056	C	Feb. 24, 1976
	B 520,884	E	Mar. 16, 1976
366	B 515,455	E	Jan. 27, 1976
404	B 523,696	E	Jan. 13, 1976
452	B 160,045	E	Jan. 13, 1976
477	B 279,969	E	Jan. 13, 1976
Class 315			
169TV	B 463,322	E	Jan. 20, 1976
	B 520,613	E	Mar. 16, 1976
241P	B 501,503	E	Mar. 2, 1976
371	B 483,615	E	Jan. 27, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
379	B 422,156	E	Mar. 23, 1976
388	B 516,002	E	Jan. 13, 1976
399	B 467,971	E	Jan. 13, 1976
408	B 516,564	E	Feb. 17, 1976
Class 317			
9R	B 488,634	E	Jan. 20, 1976
18D	B 340,170	E	Mar. 30, 1976
	B 534,915	E	Mar. 23, 1976
36TD	B 504,404	E	Feb. 24, 1976
	B 504,405	E	Apr. 13, 1976
100	B 508,639	E	Mar. 23, 1976
101A	B 420,472	E	Feb. 24, 1976
120	B 527,187	E	Feb. 17, 1976
	B 531,566	M	Mar. 16, 1976
124	B 509,606	E	Feb. 3, 1976
259	B 506,461	E	Jan. 20, 1976
Class 318			
98	B 475,801	E	Mar. 30, 1976
119	B 505,582	E	Mar. 23, 1976
139	B 475,236	E	Feb. 3, 1976
231	B 511,886	E	Feb. 3, 1976
257	B 502,973	E	Jan. 27, 1976
467	B 452,915	E	Mar. 30, 1976
481	B 451,396	E	Apr. 13, 1976
574	B 412,023	E	Apr. 6, 1976
593	B 476,967	E	Mar. 9, 1976
Class 321			
2	B 533,734	E	Jan. 27, 1976
7	B 509,185	E	Feb. 3, 1976
61	B 495,759	E	Feb. 3, 1976
Class 322			
25	B 466,318	E	Mar. 9, 1976
Class 323			
1	B 430,276	E	Jan. 20, 1976
17	B 459,811	E	Jan. 20, 1976
	B 583,089	E	Jan. 27, 1976
22T	B 501,181	E	Feb. 10, 1976
Class 324			
13	B 79,099	E	Jan. 13, 1976
15	B 495,331	E	Mar. 16, 1976
51	B 534,767	E	Feb. 3, 1976
60C	B 540,218	E	Feb. 10, 1976
62	B 465,393	E	Jan. 27, 1976
83D	B 458,010	E	Mar. 16, 1976
158R	B 483,268	E	Mar. 9, 1976
Class 325			
38A	B 478,234	E	Mar. 30, 1976
40	B 558,220	E	Jan. 27, 1976
468	B 544,961	E	Jan. 13, 1976
Class 328			
129	B 78,315	E	Feb. 10, 1976
155	B 550,693	E	Jan. 20, 1976
167	B 532,326	E	Mar. 23, 1976
168	B 573,033	E	Mar. 23, 1976
Class 329			
2	B 565,717	E	Apr. 13, 1976
Class 330			
15	B 530,813	E	Feb. 17, 1976
17	B 531,686	E	Mar. 23, 1976
33	B 439,542	E	Jan. 27, 1976
110	B 381,006	E	Apr. 6, 1976
207P	B 553,460	E	Feb. 3, 1976
Class 331			
44ST	B 527,669	E	Jan. 13, 1976
51	B 538,686	E	Jan. 13, 1976
94.5C	B 549,931	E	Jan. 20, 1976
94.5G	B 442,295	E	Mar. 16, 1976
94.5L	B 506,916	E	Feb. 3, 1976
94.5M	B 384,654	E	Feb. 24, 1976
94.5P	B 394,350	E	Jan. 13, 1976
116R	B 527,693	E	Feb. 3, 1976
117R	B 571,219	E	Feb. 24, 1976
Class 332			
9R	B 507,087	E	Feb. 17, 1976
Class 333			
10	B 535,256	E	Mar. 23, 1976
30R	B 453,616	E	Jan. 27, 1976
31A	B 568,770	E	Feb. 10, 1976
72	B 534,991	E	Jan. 27, 1976
73W	B 339,194	E	Feb. 3, 1976
81A	B 493,370	E	Mar. 16, 1976
Class 335			
7	B 509,165	E	Mar. 2, 1976
186	B 526,654	E	Mar. 23, 1976
210	B 541,517	E	Jan. 13, 1976
253	B 515,452	E	Feb. 10, 1976
Class 336			
65	B 523,952	E	Mar. 23, 1976
Class 338			
166	B 489,526	E	Feb. 3, 1976
202	B 528,761	E	Feb. 10, 1976
Class 339			
5M	B 566,556	C	Mar. 23, 1976
Class 340			
8L	B 270,274	E	Feb. 17, 1976
146.1AB	B 428,408	E	Mar. 2, 1976
167B	B 568,226	E	Feb. 24, 1976
171R	B 529,925	E	Mar. 30, 1976
172.5	B 391,844	E	Mar. 16, 1976
	B 428,271	E	Mar. 23, 1976
	B 432,140	E	Mar. 23, 1976
	B 452,138	E	Mar. 23, 1976
	B 461,336	E	Feb. 3, 1976
	B 461,752	E	Apr. 20, 1976
	B 482,907	E	Jan. 20, 1976
	B 485,575	E	Feb. 24, 1976
	B 503,780	E	Mar. 16, 1976
	B 506,839	E	Mar. 23, 1976
	B 533,454	E	Mar. 2, 1976
173FF	B 495,185	E	Mar. 9, 1976
173LM	B 453,067	E	Mar. 23, 1976
173R	B 545,945	M	Jan. 27, 1976
174DC	B 443,712	E	Jan. 27, 1976
174TF	B 429,018	C	Feb. 10, 1976
	B 455,425	E	Feb. 3, 1976
	B 472,276	E	Mar. 9, 1976
	B 476,681	E	Jan. 13, 1976
	B 499,718	E	Jan. 27, 1976
198	B 546,665	E	Jan. 20, 1976
347AD	B 507,647	E	Jan. 27, 1976
	B 526,106	E	Jan. 27, 1976
347CC	B 498,500	E	Jan. 20, 1976
347SY	B 270,351	E	Mar. 30, 1976
Class 343			
7A	B 248,240	E	Jan. 13, 1976
7.7	B 484,029	E	Feb. 10, 1976
8	B 497,702	E	Mar. 2, 1976
100LE	B 488,395	E	Jan. 27, 1976
	B 496,502	E	Jan. 20, 1976
786	B 547,994	E	Jan. 20, 1976
815	B 563,244	E	Jan. 27, 1976
840	B 494,691	E	Mar. 16, 1976
Class 346			
35	B 545,344	E	Mar. 30, 1976
75	B 450,413	E	Mar. 23, 1976
	B 512,964	E	Feb. 10, 1976
139C	B 560,261	E	Mar. 16, 1976
Class 350			
7	B 469,036	M	Mar. 16, 1976
96WG	B 381,985	M	Feb. 3, 1976
	B 537,722	M	Feb. 3, 1976
103	B 586,663	M	Feb. 3, 1976
150	B 384,225	M	Mar. 16, 1976
160LC	B 527,054	M	Feb. 17, 1976
173	B 469,947	M	Jan. 20, 1976
310	B 520,543	M	Jan. 27, 1976
320	B 548,440	M	Feb. 3, 1976
Class 354			
23D	B 492,774	E	Mar. 9, 1976
46	B 515,135	E	Feb. 17, 1976
70	B 533,580	E	Feb. 3, 1976
156	B 507,131	E	Mar. 2, 1976
174	B 502,161	E	Mar. 2, 1976
288	B 559,111	E	Feb. 24, 1976
298	B 489,328	E	Jan. 20, 1976
Class 355			
8	B 509,474	M	Feb. 17, 1976
11	B 500,171	M	Mar. 30, 1976
16	B 481,048	M	Mar. 16, 1976
17	B 493,501	M	Feb. 3, 1976
Class 356			
103	B 517,504	M	Mar. 9, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
110	B 492,093	M	Mar. 23, 1976
201	B 450,521	M	Feb. 17, 1976
239	B 530,569	M	Mar. 16, 1976
Class 357			
15	B 281,162	E	Mar. 23, 1976
16	B 496,487	E	Jan. 20, 1976
22	B 480,749	E	Mar. 9, 1976
	B 504,503	E	Mar. 9, 1976
23	B 516,060	E	Feb. 17, 1976
36	B 508,961	E	Feb. 3, 1976
52	B 520,115	E	Mar. 23, 1976
55	B 480,292	E	Mar. 16, 1976
59	B 535,209	E	Mar. 16, 1976
65	B 470,798	E	Jan. 20, 1976
72	B 481,930	E	Feb. 24, 1976
Class 358			
8	B 554,939	E	Feb. 10, 1976
28	B 73,017	E	Mar. 9, 1976
41	B 502,289	E	Jan. 13, 1976
Class 360			
1	B 484,365	E	Jan. 27, 1976
15	B 283,941	E	Feb. 3, 1976
17	B 461,874	E	Jan. 27, 1976
27	B 427,883	E	Jan. 20, 1976
35	B 347,661	E	Mar. 16, 1976
49	B 516,069	E	Mar. 16, 1976
60	B 453,432	E	Mar. 16, 1976
	B 491,111	E	Feb. 17, 1976
78	B 487,411	E	Feb. 24, 1976
80	B 403,477	E	Feb. 3, 1976
81	B 500,176	E	Feb. 3, 1976
85	B 501,253	E	Feb. 3, 1976
92	B 496,964	E	Apr. 20, 1976
98	B 484,482	E	Mar. 23, 1976
102	B 458,964	E	Mar. 2, 1976
104	B 483,247	E	Apr. 13, 1976
125	B 59,512	E	Mar. 16, 1976
130	B 579,806	E	Feb. 3, 1976
137	B 449,892	E	Mar. 23, 1976
	B 470,305	M	Apr. 6, 1976
Class 401			
219	B 557,621	M	Feb. 3, 1976
Class 403			
107	B 513,789	M	Feb. 3, 1976
318	B 540,632	M	Jan. 13, 1976
341	B 510,278	M	Mar. 30, 1976
Class 404			
71	B 452,672	M	Jan. 13, 1976
77	B 434,206	M	Feb. 3, 1976
Class 408			
124	B 501,993	M	Jan. 13, 1976
146	B 521,986	M	Feb. 3, 1976
Class 415			
14	B 471,735	M	Feb. 3, 1976
115	B 561,712	C	Feb. 17, 1976
136	B 563,412	M	Feb. 24, 1976
213R	B 512,547	M	Jan. 13, 1976
214	B 552,006	M	Feb. 3, 1976
Class 416			
61	B 549,394	M	Jan. 27, 1976
145	B 567,158	M	Mar. 23, 1976
157B	B 513,346	M	Mar. 9, 1976
Class 417			
274	B 570,615	M	Mar. 23, 1976
Class 423			
15	B 372,722	C	Mar. 9, 1976
27	B 369,379	C	Mar. 30, 1976
238	B 485,401	C	Jan. 27, 1976
242	B 66,272	C	Feb. 24, 1976
244	B 499,324	C	Mar. 16, 1976
249	B 402,553	C	Feb. 17, 1976
	B 428,386	C	Mar. 23, 1976
283	B 521,984	C	Feb. 17, 1976
315	B 471,221	C	Jan. 13, 1976
390	B 549,198	C	Jan. 13, 1976
393	B 491,455	C	Feb. 3, 1976
406	B 111,130	C	Mar. 16, 1976
448	B 414,028	C	Feb. 17, 1976
462	B 336,754	C	Mar. 16, 1976
471	B 521,612	C	Mar. 9, 1976
573G	B 481,778	C	Mar. 30, 1976
580	B 379,177	C	Jan. 27, 1976

		CAT.	PUB. DATE
Class 424			
9	B 426,424	C	Feb. 3, 1976
45	B 181,208	C	Mar. 9, 1976
62	B 464,593	C	Mar. 9, 1976
70	B 438,048	C	Mar. 23, 1976
115	B 482,660	C	Feb. 10, 1976
118	B 542,226	C	Feb. 24, 1976
122	B 482,058	C	Mar. 2, 1976
	B 524,179	C	Jan. 13, 1976
129	B 848,336	C	Mar. 30, 1976
177	B 490,995	C	Feb. 3, 1976
203	B 576,903	C	Feb. 3, 1976
219	B 510,836	C	Mar. 23, 1976
230	B 487,133	C	Jan. 27, 1976
243	B 337,823	C	Mar. 23, 1976
245	B 493,955	C	Mar. 9, 1976
246	B 399,098	C	Feb. 24, 1976
251	B 450,870	C	Mar. 16, 1976
257	B 374,588	C	Jan. 27, 1976
258	B 426,639	C	Feb. 3, 1976
263	B 466,929	C	Jan. 27, 1976
267	B 307,698	C	Feb. 3, 1976
	B 407,737	C	Feb. 3, 1976
270	B 521,711	C	Feb. 10, 1976
273	B 459,408	C	Mar. 23, 1976
	B 566,464	C	Feb. 3, 1976
274	B 496,431	C	Jan. 13, 1976
	B 547,547	C	Feb. 24, 1976
281	B 587,786	C	Feb. 17, 1976
311	B 457,862	C	Jan. 27, 1976
317	B 510,850	C	Feb. 3, 1976
321	B 516,804	C	Mar. 23, 1976
326	B 510,957	C	Mar. 30, 1976
362	B 495,489	C	Feb. 3, 1976
Class 425			
222	B 163,463	M	Jan. 27, 1976
237	B 431,334	M	Mar. 16, 1976
339	B 555,456	M	Mar. 30, 1976
384	B 562,813	C	Feb. 3, 1976
521	B 411,765	M	Feb. 24, 1976
	B 548,688	M	Mar. 9, 1976
Class 426			
3	B 583,712	C	Feb. 10, 1976
8	B 394,742	C	Apr. 13, 1976
73	B 493,950	C	Mar. 2, 1976
239	B 572,726	C	Feb. 24, 1976
276	B 535,944	C	Jan. 13, 1976
281	B 48,560	C	Mar. 30, 1976
	B 481,989	C	Mar. 23, 1976
	B 493,686	C	Mar. 23, 1976
332	B 441,789	C	Mar. 30, 1976
535	B 560,717	C	Feb. 10, 1976
548	B 439,778	C	Feb. 3, 1976
561	B 389,605	C	Mar. 23, 1976
594	B 333,838	C	Mar. 23, 1976
	B 431,797	C	Mar. 30, 1976
656	B 478,759	C	Mar. 16, 1976
	B 480,987	C	Mar. 30, 1976
Class 427			
39	B 476,837	C	Jan. 20, 1976
54	B 421,608	C	Mar. 23, 1976
70	B 381,709	C	Jan. 13, 1976
93	B 371,635	C	Mar. 23, 1976
123	B 552,709	C	Mar. 23, 1976
145	B 457,547	C	Feb. 17, 1976
186	B 537,085	C	Feb. 17, 1976
207	B 501,415	C	Jan. 13, 1976
343	B 160,099	C	Jan. 13, 1976
372	B 409,848	C	Jan. 27, 1976
389	B 519,377	C	Jan. 27, 1976
Class 428			
73	B 481,737	C	Jan. 13, 1976
132	B 333,110	C	Mar. 16, 1976
175	B 468,330	M	Mar. 16, 1976
224	B 378,760	C	Mar. 9, 1976
289	B 402,929	C	Feb. 3, 1976
315	B 373,354	C	Jan. 27, 1976
341	B 450,196	C	Feb. 10, 1976
378	B 415,590	C	Mar. 23, 1976
411	B 498,208	C	Apr. 13, 1976
412	B 501,379	C	Mar. 30, 1976
418	B 465,376	C	Apr. 13, 1976
428	B 554,655	C	Feb. 24, 1976
434	B 457,886	C	Jan. 13, 1976
447	B 456,069	C	Mar. 9, 1976
469	B 403,883	C	Mar. 23, 1976
515	B 474,747	C	Feb. 24, 1976

NOTE.—First number, class; second number, subclass; third number, document number

		CAT.	PUB. DATE
523	B 463,591	C	Mar. 30, 1976
537	B 459,821	C	Mar. 30, 1976
Class 431			
1	B 412,124	M	Mar. 23, 1976

		CAT.	PUB. DATE
175	B 534,313	M	Jan. 27, 1976
264	B 398,220	M	Feb. 3, 1976
Class 432			
49	B 536,511	M	Mar. 9, 1976

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF APRIL, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See—*
Bond, John L.; Rogols, Saul; and Salter, John W., 3,951,948.
Drury, Raymond L., Jr.; Nevin, Charles S.; and Hines, James W., 3,951,892.
Schanefelt, Robert V.; Eastman, James E.; and Campbell, Michael F., 3,951,947.

A P Products Incorporated: *See—*
Braund, Kenneth W., 3,951,492.

A/S Dumex: *See—*
Jorgensen, Dan, 3,952,005.

Abe, Masahiro, to Glory Kogyo Kabushiki Kaisha. Sheet counting apparatus. 3,952,183, Cl. 235-92.0SB.

Abel Morrall Limited: *See—*
Vale, Albert Hugh, 3,951,263.

Abernathy, William J.; and Snoddy, Lowell G. Hanger. 3,951,366, Cl. 248-15.000.

ABG Apparatebau Gesellschaft mbH: *See—*
Heinz, Dieter; and Sittmann, Manfred, 3,951,304.

Abita, Joseph L.; and Bebee, Jack G., to United States of America, Navy. Method for resist coating of a glass substrate. 3,951,659, Cl. 96-36.000.

Abrahams, Jacobus Hubertus; and Walters, Robertus Aloysius Tarcisius, to U.S. Philips Corporation. Seal between members which are rotatable relative to each other. 3,951,419, Cl. 277-135.000.

Abramson, Daniel J. Method of recording medical and surgical patient information. 3,951,062, Cl. 101-426.000.

Abrash, Muriel: *See—*
Langley, Robert C.; and Abrash, Muriel, 3,951,672.

Abt, Jurgen: *See—*
Wessel, Wolf; Sautter, Wilfried; Handtmann, Dieter; and Abt, Jurgen, 3,951,113.

Accelerators, Inc.: *See—*
Templeton, Larry F.; and Gault, Roger B., 3,951,695.

Acerbi, Virgilio. Greasing device for cables. 3,951,235, Cl. 184-15.00R.

Acres, Gary James Keith; and Cooper, Barry John, to Johnson, Matthey & Co., Limited. Catalyst. 3,951,860, Cl. 252-432.000.

Acton, Edward M.; Lerom, Michael W.; and Stone, Herbert, to Stanford Research Institute. 1,4-Cyclohexadiene-1-carboxaldehyde synoxime synthetic sweetening agents. 3,952,114, Cl. 426-548.000.

Adachi, Kin-ichi: *See—*
Yoshino, Kimiaki; Shimotsuma, Wataru; Adachi, Kin-ichi; Sekine, Yoichi; and Oda, Fujio, 3,951,757.

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Schmidlin, Fred W.; Haas, Werner E.; and Adams, James E., 3,951,519.

Adams, John F. Bathtub book stand. 3,950,793, Cl. 4-1.000.

Adams, Marshall C. Horse racing board game apparatus. 3,951,412, Cl. 273-134.0CH.

Adams, Richard J., to Beloit Corporation. Roll covering composition. 3,950,833, Cl. 29-132.000.

Adamson, Howard R.: *See—*
Reilly, Raymond J.; and Adamson, Howard R., 3,951,890.

Adelman, Robert L.: *See—*
Robertson, James A.; Adelman, Robert L.; and Bergna, Horacio Enrique, 3,951,680.

Adler, Robert H., to Norvell Corporation. Necktie. 3,950,790, Cl. 2-144.000.

Advance Housing Corporation: *See—*
Lerch, Adolph F.; Otis, Nick C.; and Montgomery, John D., 3,950,903.

Advanced Memory Systems, Inc.: *See—*
Donaher, Charles Joseph; and Lee, James C. K., 3,951,495.

Aebi, Rudolph: *See—*
Vogel, Christian; and Aebi, Rudolph, 3,952,056.

Aerojet-General Corporation: *See—*
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Aerospace Materials Inc.: *See—*
Gates, John E.; Veigel, Neil D.; and Browning, Melvin F., 3,951,612.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Gresser, Ion; and Tovey, Michael G., 3,951,740.

Agency of Industrial Science and Technology: *See—*
Seki, Yachio; and Nakamura, Masaya, 3,951,632.

AGFA-Gevaert, A.G.: *See—*
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von Konig, Anita; Kampfer, Helmut; Roos, Ernst; and Ley, Kurt, 3,951,664.

Aiken, Howard H., deceased: *See—*
Bailey, Paul T.; Sandfort, Robert M.; and Aiken, Howard H., deceased, 3,952,291.

Aiken, John J.: *See—*
Bleier, Andrew Y.; Burnstein, Philip J.; and Aiken, John J., 3,950,972.

Aiken, Mary E., executrix: *See—*
Bailey, Paul T.; Sandfort, Robert M.; and Aiken, Howard H., deceased, 3,952,291.

Air-Industrie: *See—*
Point, Marcel, 3,951,340.

Aisan Kogyo Kabushiki Kaisha: *See—*
Sakai, Toshimitsu; and Suzuki, Isamu, 3,950,946.

Aitken, Thomas Wilson, to Science Research Council. Electrostatic generators. 3,952,214, Cl. 310-6.000.

Ajinomoto Co., Inc.: *See—*
Hamuro, Junji; and Yoshinari, Yayoi, 3,951,949.

Ajinomoto Company, Ltd.: *See—*
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Akita, Shigeyuki: *See—*
Wakamatsu, Hisato; Arai, Hiroshi; Kuno, Akira; and Akita, Shigeyuki, 3,952,286.

Akopov, Ernest Mikhailovich. Device for gripping soft tissues during surgical intervention. 3,951,138, Cl. 128-17.000.

Aktiebolaget Carl Munters: *See—*
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Aktiebolaget Svenska Flaktfabriken: *See—*
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Aktiebolaget Thulinverken: *See—*
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Alanen, M. A.: *See—*
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Alar Engineering Corporation: *See—*
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Albany International Corporation: *See—*
Nicholson, Charles B., 3,951,480.

Albertazzi, Gastone, to Finike Italiana Marposs,Soc. In Accomandita Semplice di Mario Possati & C. Method and relevant apparatus for measuring through mobile elements, the longitudinal development of seats of grooves in mechanical workpieces. 3,950,856, Cl. 33-174.00R.

Albrecht, Konrad; Frensch, Heinz; and Bock, Klaus-Detlev, to Hoechst Aktiengesellschaft. Insecticidal composition for ultra low volume application. 3,952,102, Cl. 424-276.000.

Albrecht, William L.; and Fleming, Robert W., to Richardson-Merrell Inc. Bis-basic esters and amides of dibenzothiophene. 3,952,014, Cl. 260-329.300.

Alcan Research and Development Limited: *See—*
Wallace, Eric Robert; and Dewing, Ernest William, 3,951,328.

Alexander, Dale Bruce: *See—*
Holder, Paul Dalton; and Alexander, Dale Bruce, 3,952,176.

Alexander, Gordon A., to Emhart Corporation. Lock case having adjustable front. 3,950,974, Cl. 70-450.000.

Alexeeva, Natalia Ilinichna; Bogorad, Edgar Evelevich; Vexler, Georgy Borisovich; Kelzon, Anatoly Saulovich; Klochkov, Boris Fedorovich; Fainerman, Igor Avshnovich; Yakovlev, Valentin Ivanovich; Yaroslavtsev, Robert Alexeevich; Vishnyakov, Valery Viktrovich; Gutina, Nina Ivanovna; Pryadilov, Vadim Ivanovich; Yanvarev, Nikolai Vladimirovich; Vasiliev, Vasily Dmitrievich; and Rachitsky, Vladimir Alexandrovich. Support assembly of vertical rotor. 3,950,964, Cl. 64-1.00V.

Alfa-Laval AB: *See—*
Johansson, Bjorn-Olow, 3,951,311.

Allard, Frederick C., to United States of America, Navy. Fiber optic hull penetrator with high channel density. 3,951,515, Cl. 350-96.00C.

Allen & Hanburys Limited: *See—*
Price, Barry John, 3,952,050.

Allen, James Austin, to RCA Corporation. Pickup arm cartridge apparatus. 3,952,145, Cl. 178-6.60R.

Allen, Roger Anthony, to Wiggins Teape Research & Development Limited. Roller coating apparatus. 3,951,102, Cl. 118-249.000.

Allied Chemical Corporation: *See—*
Lee, Lester T. C.; Ho, Win-Sow; and Liu, Kang-Jen, 3,951,789.
Schevey, William Russell; Jones, Harold Freeman; and Spielman, Burton A., 3,951,682.

Alliegro, Richard A.; and Coes, Samuel H., to Norton Company. Silicon carbide diffusion furnace components. 3,951,587, Cl. 432-253.000.

Almag Pollution Control Corporation: *See—*
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Aloia, Romeo Raymond, to American Cyanamid Company. Vulcanizable elastomers from polythiodiethanol. 3,951,927, Cl. 260-79.000.

Alperin, George; Feinland, Raymond; and Howard, Winfield H., to Clairol Incorporated. Aqueous alkaline hair dye compositions. 3,951,589, Cl. 8-10.100.

Alphameric Keyboards Limited: *See—*
Pointon, Peter; Prince, Ian Robert; and Bial, Wolfgang, 3,951,250.

Alps Electric Co., Ltd.: *See—*
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Altes, Richard A., to ESL Incorporated. Radiation monitoring of an object space with a clutter suppression technique. 3,952,280, Cl. 340-3.00R.

Altman, Gerald. Short throw, oblique incidence, visual transparency projector. 3,951,534, Cl. 353-64.000.

Altman, Gerald. Low profile episcopic projector. 3,951,535, Cl. 353-66.000.

Aluminum Company of America: *See—*
Sleppy, William C.; Cochran, C. Norman; Foster, Perry A., Jr.; and Haupin, Warren E., 3,951,763.

Alvino, William M.: *See—*
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Ambe, Mitsuko: *See—*
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Amberg, Stephen W., to Owens-Illinois, Inc. Pilfer-proof neckband for a bottle. 3,951,292, Cl. 215-230.000.

American Air Filter Company, Inc.: *See—*
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American Can Company: *See—*
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American Cyanamid Company: *See—*
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American Gold Chain Company, Inc.: *See—*
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American Tatra, Inc.: *See—*
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American Videonetics Corporation: *See—*
Becker, Charles J., 3,951,536.

Amos, Homer C.; and Strickland, Edward T. Pressure-sensitive display board. 3,952,133, Cl. 428-354.000.

Anchor Hocking Corporation: *See—*
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Anderson, Joseph C., to Great Canadian Oil Sands Limited. Improved hydroseparation process for aqueous extraction of bitumen from tar sands. 3,951,779, Cl. 208-11.0LE.

Anderson, Mardis V.: *See—*
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Anderson, Norman Richard, to Bunker Ramo Corporation. Circular rack and panel connector. 3,951,500, Cl. 339-64.00M.

Anderson, Robert V., to Producers Specialty and Mfg. Co., Inc. Self-mounting support rod. 3,951,269, Cl. 211-105.400.

Anderson, Victor O. Automatic casting machine. 3,951,202, Cl. 164-262.000.

Ando, Hirokazu: *See—*
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Andrew, William H. Track type drafting machine. 3,950,853, Cl. 33-79.00R.

Anstalt Egra: *See—*
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Anthenien, Conrad A.; Anthenien, Mark C.; and Anthenien, Dale C. Asphaltic compound and process for making the same. 3,951,895, Cl. 260-28.5AS.

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Antonsen, Randolph; Morgan, Allan Clark; Ball, Roger T.; Hurst, Ronald C.; Potter, Dennis J.; and Wood, Robert I., to Cabot Corporation. Production of high structure carbon blacks. 3,952,087, Cl. 423-450.000.

Anxionnaz, Rene. Device for regulating and recovering the boundary layer over the surface of a body such as an aircraft in flight. 3,951,360, Cl. 244-42.0CE.

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Apollo Plastics, Inc.: *See—*
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Arashi, Masahiro; Iwano, Kazuko; and Nakamura, Akira, to Nippon Kayaku Kabushiki Kaisha; and Komatsu Seiren Kabushiki Kaisha. Viscous water-in-oil type dye or fluorescent brightening agent emulsion and method for the manufacture thereof. 3,951,598, Cl. 8-169.000.

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Arff, Uwe F., to Outboard Marine Corporation. Saw chain. 3,951,027, Cl. 83-834.000.

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Arnaud, Guy. Method for forming an expanded-resin container about a body. 3,952,082, Cl. 264-46.600.

Arrigoni, Virgilio; Gaetani, Bruno; and Manotti, Afro, to Snam Progetti S.p.A. Automatic system for suppressing the ground noise of apparatus for measuring the knocking. 3,950,981, Cl. 73-35.000.

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Asano, Shiro; Yoshimura, Kiyotaka; Tsuchiya, Ryoji; and Honda, Tadatoshi. Acrylamide aqueous solution handling method. 3,951,600, Cl. 21-2.000.

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Asbury, Charles T. Automatic carpet kicker. 3,951,382, Cl. 254-62.000.

Ashburner, Adi Kaikhushiroo, to Harper & Tunstall Limited. Transport guide for pliable sheet material. 3,951,023, Cl. 83-110.000.

Ashton, John E.; and Davitt, H. James, to Great Canadian Oil Sands Limited. Method of storing sludge recovered from the hot water extraction of bitumen from tar sands. 3,951,800, Cl. 210-83.000.

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Audifferd, Sidney J., Jr.; and Schmitt, James L., to Caterpillar Tractor Co. Override control system for a controlled slippable clutch. 3,951,009, Cl. 74-732.000.

Auger, Bernard; Pesnelle, Pierre; and Teisseire, Paul Jose. Perfume compositions. 3,951,875, Cl. 252-522.000.

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Ayers, Orval E.; and Van Landuyt, Dennis C., to United States of America, Army. Ballistic modification of composite propellants by use of 2-ferrocenyltetrahydrofuran novel liquid compound. 3,951,703, Cl. 149-19.200.

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Ayres, Waldemar A., to Becton, Dickinson and Company. Serum/plasma separator-strut stop type. 3,951,801, Cl. 210-117.000.

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Bade, Louis W.; and Avensbo, Eric, to Houbigant, Inc. Aerosol water bath. 3,950,982, Cl. 73-41.200.

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Bagby, James A. Fishing reel loading and unloading device. 3,951,354, Cl. 242-129.800.

Baiburina, Zoya Stephanovna: *See—*
Liakumovich, Alexandr Grigorievich; Pantukh, Boris Izrailevich; Zakharova, Aida Pavlovna; Butin, Vitaly Ivanovich; Tulupov, Vladimir Alexeevich; and Baiburina, Zoya Stephanovna, 3,951,754.

Bailey, Paul T.; Sandfort, Robert M.; and Aiken, Howard H., deceased (by Aiken, Mary E., executrix), to Monsanto Company. Readout system for magnetic bubbles. 3,952,291, Cl. 340-174.0TF.

Bailey, Raymond E.: *See—*
DuPree, Donald G.; Bailey, Raymond E.; and Ling, Chester H. K., 3,950,839.

Bain, Thomas G.: *See—*
Stellwagen, Frank W.; and Bain, Thomas G., 3,951,014.

Baird-Atomic, Inc.: *See—*
Westell, William E., 3,951,548.

Baker, Charles: *See—*
Hill, Christopher; Baker, Charles; and Blundun, Leonard, 3,951,411.

Baker, James R., to Petro-Tex Chemical Corporation. Modified zinc ferrite oxidative dehydrogenation catalysts. 3,951,869, Cl. 252-471.000.

Baker, Kenneth Vincent, to Rockwell International Corporation. Rotary cutting die and method for its production. 3,952,179, Cl. 219-69.00M.

Baker, Roland E., to United States of America, Navy. Propellant grain. 3,951,072, Cl. 102-99.000.

Baker, Thomas C.: *See—*
Roelofs, Wendell L.; Hill, Ada S.; Baker, Thomas C.; and Carde, Ring T., 3,952,093.

Baker, William H., Jr., to Aerojet-General Corporation. Extendible nozzle for a rocket motor or the like. 3,951,342, Cl. 239-265.330.

Baligant, Jacques A., to Burroughs Corporation. Controller for linking a typewriter console to a processor unit. 3,952,289, Cl. 340-172.500.

Ball, Roger T.: *See—*
Antonsen, Randolph; Morgan, Allan Clark; Ball, Roger T.; Hurst, Ronald C.; Potter, Dennis J.; and Wood, Robert I., 3,952,087.

Ballantine, John Douglas; and Smith, Norman Alfred, to Ciba-Geigy AG. Method of producing a hardened gelatin layer using aqueous solution of a 2-halogeno pyridinium compound. 3,951,940, Cl. 260-117.000.

Ballentine, John D., to PPG Industries, Inc. Heat and light reflecting spandrel. 3,951,525, Cl. 350-259.000.

Balmer, Hans-Willi, to Ciba-Geigy AG. Direct-positive silver halide emulsion fogged with a tin (II) chelate. 3,951,665, Cl. 96-108.000.

Balzano, Alfiero F.; and Ohlrich, David W., to Logic Dynamics, Inc. Electrical buss connector. 3,951,497, Cl. 339-19.000.

Bandag Incorporated: *See—*
Brodie, Edwin T., 3,951,720.

Bandel, Kurt; Honegg, Adolf; and Stahl, Heinz, to Daimler-Benz Aktiengesellschaft. Cushioned seat, especially motor vehicle seat. 3,951,455, Cl. 297-452.000.

Banister Continental Ltd.: *See—*
Meeres, Richard Donald, 3,950,955.

Bar-on, Ari, to Xerox Corporation. Permanently nipped contact image fuser system incorporating a one-way clutch. 3,951,538, Cl. 355-3.00R.

Baraglia, Nathan A.: *See—*
Kozel, Charles A.; Baraglia, Nathan A.; and Velluer, Edgar, 3,951,493.

Barber, Eugene, to International Telephone and Telegraph Corporation. Rotary telephone dial structure. 3,952,168, Cl. 179-90.00R.

Barcus, Lester M.; and Berry, John F. Bridge. 3,951,031, Cl. 84-307.000.

Barillo, Joseph; Payne, Thomas A., Jr.; and Urban, Warren J., to Lever Brothers Company. 2-Keto-6-substituted dioxane-(1,4) compounds. 3,952,016, Cl. 260-340.200.

Barker, Sidney Alan: *See—*
Bowen, William Henry; and Barker, Sidney Alan, 3,952,092.

Barker, Theodore L., to MBI Corporation. Bottle uncaser. 3,951,285, Cl. 214-309.000.

Barnaby, Perry J., to Fruehauf Corporation. Security lock. 3,951,443, Cl. 292-327.000.

Barr, Harry S., Jr.; and Mullinax, Thomas E., to Pneumafil Corporation. Air filtering apparatus. 3,951,627, Cl. 55-284.000.

Barrett, Lawrence R.: *See—*
Fleming, John A.; and Barrett, Lawrence R., 3,951,334.

Bartolles, Rolf, to Rheinmetall G.m.b.H. Breech mechanism with separate clearance for misfired primer cartridge. 3,951,041, Cl. 89-27.00B.

Barton, Bruce E.: *See—*
Cardwell, Paul H.; and Barton, Bruce E., 3,951,647.

Bascope, Alberto H.; and Grizzard, Eugene H., to Burmah Oil and Gas Company. Clarification tank. 3,951,816, Cl. 210-519.000.

BASF Aktiengesellschaft: *See—*
Burchard, Walther; and Eschwey, Helmut, 3,951,931.
Rotter, Gerhard, 3,952,326.
Schick, Hannes; Hennenberger, Peter; Staiger, Gerhard; and Mueller-Tamm, Heinz, 3,951,858.

BASF Farben und Fasern AG: *See—*
Bauer, Wolfgang; Herion, Dieter; Martin, Wolfgang; and Metzger, Klaus, 3,950,831.

Basi, Jagtar S., to International Business Machines Corporation. Method for removing copper contaminant from semiconductor surfaces. 3,951,710, Cl. 156-17.000.

Basic Incorporated: *See—*
Vickery, Glenn C.; and Mozynski, Donald M., 3,951,849.

Bassard, Paul F., to Societe de Depot de Margues Sodema, Societe Anonyme. Apparatus for the automatic classifying and finding of groupings of series of distinguishing signs according to the risks of conflict they involve with given groupings. 3,952,184, Cl. 235-150.000.

Bata Shoe Company, Inc.: *See—*
Gray, B. Everett, 3,950,865.

Bates, Roger D., to Xerox Corporation. Video signal generating apparatus with separate and simultaneous processing of odd and even video bits. 3,952,296, Cl. 340-324.0AD.

Bath, Wesley W., to National Gypsum Company. Fire-retardant adhesive. 3,951,900, Cl. 260-29.70S.

Battaerd, Hendrik Adriaan Jacobus: *See—*
Weiss, Donald Eric; and Battaerd, Hendrik Adriaan Jacobus, 3,951,799.

Bauer, Wolfgang; Herion, Dieter; Martin, Wolfgang; and Metzger, Klaus, to BASF Farben und Fasern AG. Apparatus for the manufacture of crimped filaments. 3,950,831, Cl. 28-1.400.

Bauerle, Gerhard; and Hubner, Oswald, to Bunker Ramo Corporation. Housing for electrical connector. 3,951,501, Cl. 339-91.00R.

Baumann, Hans; Halfmann, Manfred; and Janke, Rudolf, to GEA Luftkuhlergesellschaft Happpel GmbH & Co. KG. Heat exchange arrangement. 3,951,207, Cl. 165-133.000.

Baxendale, Charles L., to Mechanics, Incorporated. Hydraulic disc brake. 3,951,241, Cl. 188-72.400.

Bayer Aktiengesellschaft: *See—*
Herweg, Peter; and Guse, Roland, 3,951,717.
Hofer, Wolfgang; Maurer, Fritz; and Hammann, Ingeborg, 3,951,975.
Hoffmann, Hellmut; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,952,098.
Knofel, Hartmut, 3,952,042.
Kramer, Wolfgang; Buchel, Karl Heinz; Meiser, Werner; Kaspers, Helmut; and Frohberger, Paul-Ernst, 3,952,002.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,951,988.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,951,990.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,951,991.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,951,992.

Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,951,993.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,951,994.
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, 3,952,008.
Voss, Peter; Niederprum, Hans; and Wechsberg, Manfred, 3,951,762.

Bayonnet, Jack L., to Goodyear Tire & Rubber Company, The. Device for identifying the location of defects in a tire being X-rayed. 3,952,194, Cl. 250-358.00T.

BBC Brown Boveri & Company Limited: *See—*
Buchwald, Kurt; and Busse, Ludwig, 3,950,985.
Muller, Gunter, 3,951,183.

Beale, Julian Robert Anthony; and Daniel, Peter James, to U.S. Philips Corporation. Semiconductor memory elements. 3,952,325, Cl. 357-23.000.

Beaubien, Bruce: *See—*
Williams, Norman E.; Phillips, David L.; Ley, Richard A.; Beaubien, Bruce; and Brown, Richard L., 3,951,206.

Beaucamp, Klaus: *See—*
Roder, Albert; Beaucamp, Klaus; Weimann, Gunter; Schneider, Walter; and Muhlegger, Klaus, 3,951,744.

Beaudoin, Guy; and Vincent, Marcel. Variable diameter pulley (ventilating). 3,951,224, Cl. 180-54.00A.

Beauplat, Philippe L. Punching and nibbling device for a press having a turret. 3,951,026, Cl. 83-552.000.

Bebee, Jack G.: *See—*
Abita, Joseph L.; and Bebee, Jack G., 3,951,659.

Becker, Charles J., to American Videonetics Corporation. Film projection system. 3,951,536, Cl. 353-76.000.

Beckering, Jacobus Jan: *See—*
Owings, Peter Russell; Beckering, Jacobus Jan; and Bunyea, Roderick Francis, 3,952,239.

Becton, Dickinson and Company: *See—*
Ayres, Waldemar A., 3,951,801.
Coniglione, Roy, 3,951,313.

Becuwe, Jacques, to Rhone-Progil. Method of condensing phthalic anhydride. 3,952,022, Cl. 260-346.700.

Beecham Group Limited: *See—*
Cole, Martin; and Sutherland, Robert, 3,952,094.
Khan, Mohammad Zafar, 3,951,953.
Smale, Terence Charles, 3,951,951.

Beer, Andrew E. Magnetostrictive fastener arrangement. 3,951,560, Cl. 403-273.000.

Beghin, Marcel: *See—*
Libossart, Henri; and Beghin, Marcel, 3,951,323.

Behnken, William L.: *See—*
Bremmer, David F., Jr.; Deeter, Ray D.; Goetz, Daniel L.; Behnken, William L.; and Madden, Julian F., 3,951,061.

Behringwerke Aktiengesellschaft: *See—*
Fritz, Hans; Beress, Laszlo; Beress, Rosemarie; and Forg-Brey, Brunhilde, 3,951,939.

Belitsky, Georgy Mironovich: *See—*
Slezinger, Isaak Isaevich; Belitsky, Georgy Mironovich; Shiryaev, Vladimir Alexandrovich; Mironov, Jury Vasilievich; and Kaplinskaya, Natalia Lvovna, 3,950,987.

Bell & Howell Company: *See—*
Carpenter, Charles Howe; and Stodolski, Thomas Raymond, 3,952,288.

Bell, John R.: *See—*
Luyckx, Leon; and Bell, John R., 3,951,645.

Bell Telephone Laboratories, Incorporated: *See—*
Fabricius, Wayne Nixon, 3,952,189.
Feiner, Alexander; James, Dennis Bryan; and McEowen, James Royce, 3,951,248.
Pasternack, Gerald Philip; Stevenson, Lawrence Oliver; and Strong, Gary Wayne, 3,952,160.

Beloit Corporation: *See—*
Adams, Richard J., 3,950,833.

Bendix Corporation, The: *See—*
Bennett, Frederick L.; Bridges, Robert M.; and Gray, Harold A., 3,951,506.
Fannin, Richard C.; and Stellato, Anthony B., 3,951,463.
Schulien, Howard E.; and Ficken, William H., 3,951,476.

Bengt Petersson New Products Investment AB: *See—*
Hagelberg, Anders Torvald Sverker, 3,951,367.

Bennett, Frederick L.; Bridges, Robert M.; and Gray, Harold A., to Bendix Corporation, The. Fail-safe connector. 3,951,506, Cl. 339-104.000.

Bennink, William D.; and Griffin, Charles K., to Carrier Corporation. Fan assembly and method of manufacturing same. 3,950,835, Cl. 29-156.40R.

Benson Mfg. Corporation: *See—*
Littman, Bruce A., 3,950,904.

Bentley, Floyd Edward: *See—*
Gipson, Robert Malone; Milligan, John Gordon; and Bentley, Floyd Edward, 3,952,068.

Benton, Noel B., to United States of America, Air Force. Serrodyne generator. 3,952,306, Cl. 343-18.00E.

Beppu, Tatsuro; Iwamoto, Masami; and Sekiwa, Tetsuo, to Tokyo Shibaura Electric Co., Ltd. Method of manufacturing a gallium phosphide light-emitting device. 3,951,700, Cl. 148-171.000.

Beress, Laszlo: *See—*
Fritz, Hans; Beress, Laszlo; Beress, Rosemarie; and Forg-Brey, Brunhilde, 3,951,939.

Beress, Rosemarie: *See—*
Fritz, Hans; Beress, Laszlo; Beress, Rosemarie; and Forg-Brey, Brunhilde, 3,951,939.

Bergen, Richard F., to Xerox Corporation. Color image reproduction system. 3,951,533, Cl. 353-31.000.

Bergersen, Earl O. Orthodontic positioner and method for improving retention of tooth alignment therewith. 3,950,851, Cl. 32-14.00B.

Bergna, Horacio Enrique: *See—*
Robertson, James A.; Adelman, Robert L.; and Bergna, Horacio Enrique, 3,951,680.

Berlin, Aaron S.; and Little, Vincent C., to United States of America, Army. Method of payload delivery at low altitude. 3,951,069, Cl. 102-70.20R.

Berndt, Otto; Dolfen, Edmund; and Strese, Gerhard, to Grunzweig & Hartmann und Glasfaser AG. Mold with tensioned cable adjusting means. 3,951,376, Cl. 249-146.000.

Bernhard, Horst; Stein, Alfred; Esselborn, Reiner; Hesse, Reiner; and Russmann, Horst, to Merck Patent Gesellschaft mit beschrankter Haftung. Colored pigments. 3,951,679, Cl. 106-291.000.

Bernstein, Harold: *See—*
Kurtz, Anthony D.; Mallon, Joseph R.; Bernsteln, Harold; and Weber, Richard Alan, 3,951,707.

Berry, John F.: *See—*
Barcus, Lester M.; and Berry, John F., 3,951,031.

Best Barricade Company: *See—*
Stehle, John J.; and Davis, Robert E., 3,950,873.

Bethlehem Steel Corporation: *See—*
Horton, James B.; and Borzillo, Angelo R., 3,952,120.

Bial, Wolfgang: *See—*
Pointon, Peter; Prince, Ian Robert; and Bial, Wolfgang, 3,951,250.

Biber, Conrad H., to Polaroid Corporation. Film scanner for color television. 3,952,328, Cl. 358-54.000.

Bick, Maurice; Lochet, Jean A.; Dubas, Donald J.; and Di Murro, Richard J., to Auric Corporation. Selective plating apparatus. 3,951,772, Cl. 204-198.000.

Bik-Lok, Inc.: *See—*
Bleier, Andrew Y.; Burnstein, Philip J.; and Aiken, John J., 3,950,972.

Billi S.p.A.: *See—*
Manini, Benito, 3,950,965.

Bilyeu, Bill. Golf club driver with center of gravity movable during swing. 3,951,413, Cl. 273-170.000.

Birchall, Donald Jack. Pressure transducers. 3,952,234, Cl. 317-246.000.

Bird, Joseph W., to Ralph Pill Electric Supply Co. Wiring system retainer. 3,951,396, Cl. 269-321.0WE.

Birke, Walter; Schickfluss, Rudolf; and Schon, Franz, to Hoechst Aktiengesellschaft. Process for dyeing synthetic fiber materials. 3,951,591, Cl. 8-41.00A.

Birkenstack, Dieter; and Jager, Otto, to Gebr. Hofmann KG. Multichambered fluid balancing apparatus. 3,950,897, Cl. 51-169.000.

Birkhofer, Hans: *See—*
Schrammel, Werner; Stohr, Arno; and Birkhofer, Hans, 3,951,388.

Bjork, Jan; and Holmgren, Kjell Ake Bertil, to Aktiebolaget Thulinverken. Mine anchor. 3,951,064, Cl. 102-13.000.

Black Clawson Company, The: *See—*
Nowisch, Heinz K.; and Phelps, Richard W., 3,950,988.

Black and Decker Manufacturing Company, The: *See—*
Owings, Peter Russell; Beckering, Jacobus Jan; and Bunyea, Roderick Francis, 3,952,239.

Blaha, Gerald E.: *See—*
Gudmestad, Ragnar; Gorski, Leon J.; and Blaha, Gerald E., 3,951,016.

Blanc, Guy-Francois: *See—*
Donner, Meinrad; Walliser, Urs; and Blanc, Guy-Francois, 3,950,858.

Blane, Troy F. Saw sharpening file. 3,950,832, Cl. 29-78.000.

Blankschein, Werner. Method of manufacturing brushes and the like. 3,951,460, Cl. 300-21.000.

Blanz, John H., to Narco Scientific Industries, Inc. Target image projector. 3,951,527, Cl. 351-30.000.

Blaydon, Bonnie J., administratrix: *See—*
Blaydon, Thomas J., deceased; and Linser, Edward W., 3,951,482.

Blaydon, Thomas J., deceased (by Blaydon, Bonnie J., administratrix); and Linser, Edward W., to Garlock Inc. Unitized thrust bearing and seal assembly. 3,951,482, Cl. 308-187.100.

Blecher, Hartmut: *See—*
Pfaender, Peter; Pratzel, Helmut; and Blecher, Hartmut, 3,951,741.

Bleeck, Heinz, to Saurer-Allma GmbH, Allgaeuer Maschinenbau. Traveler brakes for ring-twining and ring-spinning machines. 3,950,931, Cl. 57-113.000.

Bleier, Andrew Y.; Burnstein, Philip J.; and Aiken, John J., to Bik-Lok, Inc. Bicycle lock. 3,950,972, Cl. 70-234.000.

Blessing, Hubert; Eckerson, Robert D.; and Mally, Alfred E., to Levi Strauss & Co. Cloth mover and stacker. 3,951,400, Cl. 271-85.000.

Block Engineering, Inc.: *See—*
Hirschfeld, Michael, 3,950,875.

Block, Robert J.; and Christensen, James H., to HeaTran, Inc. Method of producing iron and steel from iron ore. 3,951,644, Cl. 75-42.000.

Bloom, John J., Jr.; McAdams, Paul F.; Hand, Gene F.; and Katowich, Ronald F., to Clark Equipment Company. Piston and rod connection. 3,951,048, Cl. 92-258.000.

Blount, Richard, to General Electric Company. Multiple flash lamp unit. 3,952,320, Cl. 354-126.000.

Bluemel, Harald; and Schleich, Georg, to Chemische Werke Huls Aktiengesellschaft. Process for the production of homogeneous polyolefin rubber-oil mixtures. 3,951,901, Cl. 260-33.6AQ.

Blundun, Leonard: *See—*
Hill, Christopher; Baker, Charles; and Blundun, Leonard, 3,951,411.

Bock, Klaus-Detlev: *See—*
Albrecht, Konrad; Frensch, Heinz; and Bock, Klaus-Detlev, 3,952,102.

Boehringer Mannheim G.m.b.H.: *See—*
Roder, Albert; Beaucamp, Klaus; Weimann, Gunter; Schneider, Walter; and Muhlegger, Klaus, 3,951,744.

Boeing Company, The: *See—*
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Boeker, Gilbert F.: *See—*
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Boggs, Robert Wayne: *See—*
Damico, Ralph Anthony; and Boggs, Robert Wayne, 3,952,115.

Bogorad, Edgar Evelevich: *See—*
Alexeeva, Natalia Ilinichna; Bogorad, Edgar Evelevich; Vexler, Georgy Borisovich; Kelzon, Anatoly Saulovich; Klochkov, Boris Fedorovich; Fainerman, Igor Avshnovich; Yakovlev, Valentin Ivanovich; Yaroslavtsev, Robert Alexeevich; Vishnyakov, Valery Viktrovich; Gutina, Nina Ivanovna; Pryadilov, Vadim Ivanovich; Yanvarev, Nikolai Vladimirovich; Vasiliev, Vasily Dmitrievich; and Rachitsky, Vladimir Alexandrovich, 3,950,964.

Bohringer, Werner K.; Goller, Horst B.; Kollmar, Hans K.; Mossinger, Hans A.; and Zeltner, Rudolph H., to Bunker Ramo Corporation. Method and apparatus for electro-plating strip contacts. 3,951,761, Cl. 204-15.000.

Boller, Arthur: *See—*
Scherrer, Hanspeter; and Boller, Arthur, 3,952,046.

Bolli, Giuseppe. Device for manufacturing a silver used to produce jaspe yarn. 3,950,822, Cl. 19-155.000.

Bond, John L.; Rogols, Saul; and Salter, John W., to A. E. Staley Manufacturing Company. Size classified cereal starch granules. 3,951,948, Cl. 260-233.30A.

Boorse, Henry A.: *See—*
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Booth, David L., to Morton-Norwich Products, Inc. Isocyanophenyl carbamates. 3,952,106, Cl. 424-300.000.

Boots Company Limited, The: *See—*
Brookes, Robert Frederick; Godson, David Henry; Greenwood, Douglas; Tulley, Margaret; and Wakerley, Stanley Brice, 3,952,001.

Borg-Warner Corporation: *See—*
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Davis, Virgil W., Jr., 3,951,356.
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Schneider, Raymond C.; Meyer, Robert W.; and Borgelt, Gerald C., 3,951,008.

Bornand, Robert M., to Valinor Anstalt. Projectile launching device. 3,951,037, Cl. 89-1.00F.

Borsini, Latino. Easily washable and reconstructable mattress. 3,950,798, Cl. 5-337.000.

Borzillo, Angelo R.: *See—*
Horton, James B.; and Borzillo, Angelo R., 3,952,120.

Bosch-Siemens Hausgerate GmbH: *See—*
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Bosnjak, Milovan. Chevron clarifier. 3,951,818, Cl. 210-522.000.

Bossert, Friedrich: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,951,988.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,951,990.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,951,991.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,951,992.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,951,993.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,951,994.

Bosshard, Ernst, to Sulzer Brothers Limited. Apparatus for irradiating flowable material. 3,952,202, Cl. 250-432.00R.

Botros, Raouf, to American Color & Chemical Corporation. Polyester fabric materials dyed with monoazo dyes made from 4-amino-7-nitrobenzotriazole. 3,951,592, Cl. 8-41.00C.

Bott, John A. Luggage rack. 3,951,320, Cl. 224-42.10D.

Bouet, Jacques Eugenes: *See—*
Martensen, Uwe; Bouet, Jacques Eugenes; and Cottenier, Arthur Louis, 3,950,923.

Boulanger, Henry J.; and Midon, William J., to Texas Instruments Incorporated. Pushbutton keyboard system. 3,952,174, Cl. 200-5.00A.

Bourcier de Carbon de Previnquieres, Alain J. M. Anti-skid device. 3,951,194, Cl. 152-221.000.

Bowen, Hilary T. Safety razor blade water honer. 3,950,898, Cl. 51-216.00R.

Bowen, William Henry; and Barker, Sidney Alan. Oral preparations. 3,952,092, Cl. 424-50.000.

Bower, James C.; and Roach, Sidney V., to Pyronauts, Inc. Hydrostatic tester for fire extinguisher. 3,951,185, Cl. 141-1.00R.

Bowman, John H., Jr., to Nicholson, Albert G.; and Nicholson, Robert W. Roller assembly in a turn chain assembly. 3,951,484, Cl. 308-228.000.

Boyd, Philip R.: *See—*
Ennulat, Reinhard D.; LoVecchio, Paul; Elser, Wolfgang; and Boyd, Philip R., 3,952,275.

BPA Byggproduktion AB: *See—*
Lundberg, Borje; and Samuelsson, Bjorn, 3,950,912.

Brackmann, Warren A.; Dilanni, Daniel; Bunnell, Arthur K.; and Hrboticky, Karel, to Carling O'Keefe Limited. Method and apparatus for forming packaging structures. 3,951,049, Cl. 93-39.00R.

Bradley, John Kenneth, to Fisons Limited. Prilling. 3,951,638, Cl. 71-11.000.

Bradley, John Kenneth, to Fisons Limited. Method of prilling ammonium nitrate and urea through epoxy-resin lined bores. 3,952,078, Cl. 264-13.000.

Bradley, Ward J., Jr.; and Nikkel, Willem A., to Westvaco Corporation. Two piece stripper finger for corrugating machine. 3,951,725, Cl. 156-473.000.

Brady, William A.: *See—*
Reiner, Lawrence L.; and Brady, William A., 3,951,408.

Braithwaite, David G.; and Darlington, R. Keith, to NL Industries, Inc. Removal of boron from $MgCl_2$ brines. 3,952,085, Cl. 423-158.000.

Bralorne Resources Limited: *See—*
McLean, Donald F., 3,951,470.

Brandenstein, Manfred: *See—*
Olschewski, Armin; Burkl, Erich; Walter, Lothar; and Brandenstein, Manfred, 3,951,473.

Brandt Engineering Co.: *See—*
Zilbermann, Andre H., 3,951,205.

Brangenberg, Egidius Arnold, to Thon, Dieter. Ski fixture. 3,951,421, Cl. 280-601.000.

Branks, Joseph R.: *See—*
Wittnebert, Frederick R.; Meinhardt, Francis J.; Branks, Joseph R.; Herold, Gerald C.; and Stambaugh, Daniel P., 3,951,555.

Brantley, Jordan W.: *See—*
Horton, Arthur E.; Brantley, Jordan W.; Smith, Paul R.; Lightfoot, Cecil W.; and Hanneman, Richard L., 3,950,843.

Brantley, Lott W., Jr., to United States of America, National Aeronautics and Space Administration. Solar energy absorber. 3,951,129, Cl. 126-271.000.

Braun, David L.; and Trine, John A., to Minnesota Mining and Manufacturing Company. Vapor sampling device. 3,950,980, Cl. 73-23.000.

Braund, Kenneth W., to A P Products Incorporated. Trapped bow contact and connector using the same. 3,951,492, Cl. 339-17.0LC.

Bremer, Hans: *See—*
Schumacher, Ernst; Bremer, Hans; and Herold, Rolf, 3,951,668.

Bremmer, David F., Jr.; Deeter, Ray D.; Goetz, Daniel L.; Behnken, William L.; and Madden, Julian F., to Custom Printers, Inc. Label printing apparatus. 3,951,061, Cl. 101-93.120.

Breslerman, Yakow: *See—*
Backlund, Gerald Richard; and Breslerman, Yakow, 3,952,080.

Brewer, Clarence T., to Solo Cup Company. Thin walled cup. 3,951,266, Cl. 206-520.000.

Brewer, John C., to Garbalizer Corporation of America. Revolvable blade structure. 3,951,346, Cl. 241-32.000.

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Brodie, Edwin T., to Bandag Incorporated. Material and methods for bonding treads to tires. 3,951,720, Cl. 156-96.000.

Broding, Robert A., to Standard Oil Company. Group recorder alarm. 3,952,283, Cl. 340-15.5TS.

Bromberg, Menashe, to Thomas & Betts Corporation. Electrical receptacle. 3,951,489, Cl. 339-14.00R.

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Broniwitz, Laurence E.; Pearson, John B., III; and Landau, Mark I., to Hughes Aircraft Company. Tracking system utilizing Kalman filter concepts. 3,952,304, Cl. 343-16.00M.

Bronstien, Edward L., Jr., to United States Bedding Company, The. Mattress base. 3,950,797, Cl. 5-200.00R.

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Brookes, Robert Frederick; Godson, David Henry; Greenwood, Douglas; Tulley, Margaret; and Wakerley, Stanley Brice, to Boots Company Limited, The. 1-Carbamoyl-1,2,4-triazoles. 3,952,001, Cl. 260-308.00R.

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Brown, George E., Jr.; and O'Brien, Richard C., to Safetech, Inc. Method for recovering terephthalic acid and ethylene glycol from polyester materials. 3,952,053, Cl. 260-525.000.

Brown, Jasper H.; Morgan, Albert W.; and Cooper, John A., to Monsanto Company. Fire retardant composition for urethane polymers. 3,951,822, Cl. 252-8.100.

Brown, Michael H. Exercising device having tubular lengths of stretchable material the ends of which have connecting means to form the lengths into endless bands. 3,951,404, Cl. 272-142.000.

Brown, Peter John Nicholas; and Capp, Clifford William, to Petro-Tex Chemical Corporation. Effluent treatment. 3,952,088, Cl. 423-499.000.

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Brumfield, James W. Collapsible raft. 3,950,804, Cl. 9-2.00C.

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Buck, S. Keith. Squeegee. 3,950,813, Cl. 15-245.000.

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Burdick, Herbert L. Match book safety case. 3,951,258, Cl. 206-107.000.

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Burroughs, James E.; and Nowak, James A., to Borg-Warner Corporation. Composition and method for removing insoluble scale deposits from surfaces. 3,951,827, Cl. 252-8.55B.

Bush, Edward A., to Corning Glass Works. Cristobalite suppression in high-silica Li_2O-Al_2O-SiO_2 devitrified glass frits. 3,951,670, Cl. 106-39.700.

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Calacurcio, Frank C. Device for use on a golf shoe. 3,951,407, Cl. 273-32.00C.

Calais, Bernard; and Vidal, Luis, to Societe Bernard Calais S.A.R.L. Control apparatus for hermetically closing an opening in a wall. 3,950,893, Cl. 49-224.000.

Campbell, Donald G. Sonar target converter. 3,952,300, Cl. 343-6.00R.

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Carpenter, Charles Howe; and Stodolski, Thomas Raymond, to Bell & Howell Company. Multifrequency linear filter networks with active elements. 3,952,288, Cl. 340-171.00R.

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Casadio, Silvano; and Donetti, Arturo, to Istituto de Angeli S.p.A. Scopolamine derivatives for treating ulcers and spasms. 3,952,108, Cl. 424-265.000.

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Caulkins, Robert M. Cable splice assembly for multiconductor cables. 3,951,503, Cl. 339-100.000.

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Cecco, Valentino S., to Atomic Energy of Canada Limited. Eddy current discontinuity probe utilizing a permanent magnet bobbin with at least one A.C. energized coil mounted in a groove thereon. 3,952,315, Cl. 324-37.000.

Celanese Corporation: *See—*
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Chiquiar-Arias, Marcelo. Disposable self-destructible syringes which render themselves unreusable. 3,951,146, Cl. 128-218.00R.

Chisso Corporation: *See—*
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Chisum, Finis Lavell. Machine to prepare logs for log houses. 3,951,187, Cl. 144-1.00R.

Choksi, Pradip V.; and Steidley, Roy B., to American Hospital Supply Corporation. Method of opening a double screw cap system for sterile medical container. 3,950,917, Cl. 53-3.000.

Chouings, Leslie Cyril. Torque limitation device for a drum brake. 3,951,243, Cl. 188-328.000.

Christensen, Birte; Christensen, Borge; Hovad, Helge; and Hovad, Karl Erik. Mandrel for winding spherical containers. 3,951,349, Cl. 242-1.000.

Christensen, Borge: *See—*
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Clairol Incorporated: *See—*
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Clark, Wallace. Hydraulic motor or pump. 3,951,097, Cl. 115-34.00A.
Cleary, James W., to Phillips Petroleum Company. Preparation of amino-benzenesulfonate-modified polyamides. 3,951,923, Cl. 260-78.00A.
Clocker, Edwin T.; Paterek, William; Farel, Newton D.; and Selsley, Michael J. Conversion of clay to its colloidal form by hydrodynamic attrition. 3,951,850, Cl. 252-313.00R.
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Colafati, Ralph A., III: *See—*
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Cole, Martin; and Sutherland, Robert, to Beecham Group Limited. Antibacterial compositions. 3,952,094, Cl. 424-114.000.
Cole, Wayne C. T., to Empire Sheet Metal Mfg. Co. Ltd. Attaching means for members at an angle to one another. 3,950,915, Cl. 52-753.00D.
Coleman Company, Inc., The: *See—*
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Cortes, Abel C., to Compagnie Francaise des Petroles. Drill tool comprising a core barrel and a removable central portion. 3,951,219, Cl. 175-107.000.
Costa, Allan A. Dispensing device composed of a can and a nozzle fixedly attachable thereto. 3,951,318, Cl. 222-569.000.
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Crawshay, Richard; Hradil, John Helmut; and MacDonald, Charles Duncan, to Canadian Mine Services Ltd. Diamond drill supporting apparatus. 3,951,216, Cl. 173-32.000.
Crisafulli, Angelo J. Oil skimmer module with free floating weir trough. 3,951,810, Cl. 210-242.00S.
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Csillag, Andreas, to Licentia Patent-Verwaltungs-G.m.b.H. Mask for use in production of semiconductor arrangements. 3,951,701, Cl. 148-187.000.
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Dakin, Roland Peter, to Olin Energy Systems Limited. Method and apparatus for grinding work pieces. 3,950,895, Cl. 51-5.00B.
Dalla Vecchia, Gino, to Rimar S.p.A. Fabric washing machine with continuous feed system. 3,950,968, Cl. 68-53.000.
Dalton, Gerald J. Camp toilet. 3,950,794, Cl. 4-110.000.
Damico, Ralph Anthony; and Boggs, Robert Wayne, to Procter & Gamble Company, The. Fortification of foodstuffs with N-acyl derivatives of sulfur-containing L-amino acid esters. 3,952,115, Cl. 426-590.000.
D'Angelo, Antonio Joseph; and Mageli, Orville Leonard, to Pennwalt Corporation. Peroxy compounds containing an acid halide group. 3,952,041, Cl. 260-453.00R.
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Danilewicz, John Christopher; Kemp, John Edward Glyn; Snarey, Michael; and Wright, James Robert, to Pfizer Inc. Phenoxypropanol-piperazines. 3,951,983, Cl. 260-268.0PH.
D'Antoni, Augustus J., Sr. Apparatus for pulling a force-fitted pole piece. 3,950,837, Cl. 29-205.00R.
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Davidson, Lewis A.; Duffy, Michael C.; Erickson, Alvard J.; Gunther-Mohr, Gerard R.; and Williams, Richard A., to International Business Machines Corporation. Functional package for complex electronic systems with polymer-metal laminates and thermal transposer. 3,952,231, Cl. 317-100.000.
Davidson, William G., to Dow Chemical Company, The. Disintegrating agent for tablets. 3,951,821, Cl. 252-1.000.
Davies, Johnson York; Jamin, Guillaume Ward; Renshaw, Thomas; Saunders, Roy Anthony; Taylor, Geoffrey; and Williams, John Prys, to Imperial Chemical Industries Limited. Colouration process. 3,950,967, Cl. 68-5.00D.
Davis, D. Carter; Sawant, Ulhas S.; and Scaffidi, Francis, to Rexnord Inc. Crusher bowl clamping system. 3,951,348, Cl. 241-290.000.
Davis, Earl V.; and Foster, Billy E., to United States of America, Energy Research and Development Administration. Film holder for radiographing tubing. 3,952,204, Cl. 250-475.000.
Davis, Gerald Wayne; and Sheats, Jimmy Bernard, to Fiber Industries, Inc. Polyamides having improved dyeability prepared from aromatic carboxylic monosulfonated compounds. 3,951,599, Cl. 8-178.00R.
Davis, Larry: *See—*
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Dawson, Kenneth R., to Raymond Lee Organization, Inc., The, a part interest. Tree de-limber. 3,951,188, Cl. 144-2.00Z.
Dayco Corporation: *See—*
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Dazai, Miyoji; Sugiyama, Katsumi; Iida, Masaaki; Tazuke, Hideo; and Kageyama, Hiroo, to Ajinomoto Company, Ltd. Process for producing hemi-alkali metal salt of 2-pyrrolidone-5-carboxylic acid. 3,952,011, Cl. 260-326.450.
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Dean, Raymond Harkless, to RCA Corporation. Method of manufacturing a semiconductor device. 3,951,708, Cl. 156-3.000.
Deasley, Peter John; Curtis, Howard Donald; and Castle, Paul, to Decca Limited. Determination of softening temperatures for thin films. 3,951,601, Cl. 73-17.00R.
De Biaggi, Gianfranco. Pumping unit for extracorporeal haematic circulation, in particular in artificial kidneys. 3,951,570, Cl. 417-319.000.
deCaussin, David Edward, to Fadal Engineering Company, Inc. Removable attachment for automating milling machines. 3,951,273, Cl. 214-1.0BB.
Decca Limited: *See—*
Deasley, Peter John; Curtis, Howard Donald; and Castle, Paul, 3,951,601.
Plows, Graham Stuart; and Edge, Gordon Malcolm, 3,952,146.
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Deeter, Ray D.: *See—*
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De Feudis, Sergio, to Aktiebolaget Svenska Flaktfabriken. Pneumatic conveying pipe system for collection and intermittent conveyance of different types of goods. 3,951,461, Cl. 302-27.000.

Deflorin, Alberto: *See—*
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De Francisci, Leonard, to De Francisi Machine Corporation. Apparatus for feeding a powdered substance. 3,951,462, Cl. 302-56.000.

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DeHaas, Gerrit G.; and Lang, Charles J., to Weyerhaeuser Company. Ammonia-ketone pulping process. 3,951,734, Cl. 162-72.000.

DeHove, Michel Roger, to General Electronic Seet - G. E. S. Method and device for forming tubes. 3,950,976, Cl. 72-128.000.

de Kermadec, Alain; and Vilella, Paul, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Printing paper with a leader element attached to the end thereof. 3,952,122, Cl. 428-77.000.

Delalande S.A.: *See—*
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Delano, Charles G. Technique for cementing well bore casing. 3,951,208, Cl. 166-78.000.

DeLano, Richard H.; Griest, Raymond H.; and Wooldridge, Dean E., to Hughes Aircraft Company. Guidance and control system for target-seeking devices. 3,951,358, Cl. 244-3.150.

Delap, Joseph A., to Phillips Petroleum Company. Silica xerogel production. 3,951,863, Cl. 252-454.000.

DeLong, Donald C.: *See—*
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Delta-Benco-Cascade Limited: *See—*
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Denckla, William Donner, to Hoffmann-La Roche Inc. Isoelectric focusing devices. 3,951,777, Cl. 204-299.00R.

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Dent, Robert K.; and DuBuque, Douglas K., to Tyee Aircarft, Inc. Linear motion arresting device. 3,951,238, Cl. 188-1.00B.

Dent, Roy F., III; and Schneider, Richard C., to International Business Machines Corporation. Pulse compression recording. 3,952,329, Cl. 360-40.000.

Derouineau, Rene. Water softener. 3,951,802, Cl. 210-134.000.

Desmond, John D., to Container Corporation of America. Carton top closure arrangement. 3,951,330, Cl. 229-38.000.

Desrosier, Norman W. Meat extender and process of making the same. 3,952,111, Cl. 426-302.000.

Desrosiers, Wilfrid. Animal trap. 3,950,884, Cl. 43-81.000.

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Desvignes, Francois; and Hebert, Marcel Georges, to U.S. Philips Corporation. Device for controlling the position of a first body relative to that of a second body. 3,952,208, Cl. 250-578.000.

Detector Electronics Corporation: *See—*
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Deters, Elmer M., to Weil-McLain Co., Inc. Grounded electrical connector for submersible apparatus. 3,952,218, Cl. 310-71.000.

Deutsch, Ralph, to Nippon Gakki Seizo Kabushiki Kaisha. Implementation of delayed vibrato in a computor organ. 3,951,030, Cl. 84-1.250.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
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Devendorf, Alan E., to Magnavox Company, The. Cable system distribution substation with novel center conductor seizure apparatus. 3,951,490, Cl. 339-17.00C.

Devlin, Barry R. J.: *See—*
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Devlin, Robert Francis, to Medical Products, Inc. Sensitized matrix for detection of disease. 3,951,748, Cl. 195-103.50R.

DeVolpi, Alexander; Pecina, Ronald J.; and Travis, Dale J., to United States of America, Energy Research and Development Administration. Method and means for generating a synchronizing pulse from a repetitive wave of varying frequency. 3,952,253, Cl. 328-63.000.

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di Carlo, Joseph Scotto, to Scorpio Industries Inc. Demand responsive positive feed device for knitting machine. 3,950,966, Cl. 66-132.00T.

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Dietch, Leonard, to Zenith Radio Corporation. Cathode-ray tube having phosphor screen interposed between composite mesh and reflective layer. 3,952,225, Cl. 313-472.000.

Dieter, Norman H., Jr., to Micro/Acoustics Corporation. Stereo phonograph cartridge. 3,952,171, Cl. 179-100.41K.

Dietrich, Hans, to Losinger AG. Method of anchoring a ring tensioning member in a circular container, especially a concrete tank or a concrete tube. 3,950,840, Cl. 29-452.000.

Diggs, Richard E. Universal mounting bracket for signs. 3,950,874, Cl. 40-145.00R.

Dilanni, Daniel: *See—*
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Dilo, Richard, to Rontex America, Inc. Felted web and method of making the same. 3,952,121, Cl. 428-36.000.

DiMaio, Vincent, to Structural Plastics Incorporated. Reinforced polyester door. 3,950,894, Cl. 49-501.000.

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DiPalma, Dominic R.: *See—*
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Dirks, Jerald Edson; and Fisher, Gene Jordan, to Celanese Corporation. Purification of alkyl esters. 3,951,756, Cl. 203-95.000.

Dirne, Adrianus Petrus; Asselman, George Albert Apolonia; and Van Der, Herman Henricus Maria, to U.S. Philips Corporation. Hot-gas machine comprising a heat transfer device. 3,950,947, Cl. 60-524.000.

Dischert, William A., to United States of America, Navy. Metal spray forming of waveguide for phase shifter case. 3,952,267, Cl. 333-24.100.

Discwasher Inc.: *See—*
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Dixon, Jack R., to Indian Head Inc. Football passer. 3,951,125, Cl. 124-8.000.

Dr. C. Otto & Comp. G.m.b.H.: *See—*
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Gernhardt, Paul; Haese, Egon; and Dangullier, Wilhelm, 3,951,615.

Dr. -Ing. H.c.F. Porsche Aktiengesellschaft: *See—*
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Dodd, Joseph C. Algae harvester. 3,951,805, Cl. 210-193.000.

Doench, Thomas Judson, to Omnifac Corporation. Bilge blower ignition interceptor. 3,951,091, Cl. 114-211.000.

Doerner, William A.; and Van Buskirk, Oral R., to Du Pont de Nemours, E. I., and Company. Rotary Rankine engine powered electric generating apparatus. 3,950,950, Cl. 60-657.000.

Doi, Yoshikazu; and Hirano, Nagayoshi, to Fuji Photo Optical Co., Ltd. Projection lens system for motion picture projector. 3,951,524, Cl. 350-216.000.

Dolder, Guido, to Escher Wyss Limited. Pipe branch piece. 3,951,440, Cl. 285-150.000.

Dolfen, Edmund: *See—*
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Dolnick, Seymour S., to Glen Mfg. Inc. Bathtub cover. 3,950,795, Cl. 4-173.00R.

Domenech, Joseph, to Societe Industrielle des Vetements Merignac. Belt loop for garments. 3,950,791, Cl. 2-236.000.

Donaher, Charles Joseph; and Lee, James C. K., to Advanced Memory Systems, Inc. Leadless package receptacle. 3,951,495, Cl. 339-17.0CF.

Donahue, James C.; and Ramsey, John T. Truck-trailer brake system with independent control of trailer brakes. 3,951,464, Cl. 303-7.000.

Doncer, Alex J.; and White, Harold R., to Alar Engineering Corporation. Process and apparatus for treating fatty waste water. 3,951,795, Cl. 210-61.000.

Donetti, Arturo: *See—*
Casadio, Silvano; and Donetti, Arturo, 3,952,108.

Donner, Meinrad; Walliser, Urs; and Blanc, Guy-Francois, to Maag Gear-Wheel & Machine Company Limited. Electronic pitch tester for gears. 3,950,858, Cl. 33-179.50R.

Dorne & Margolin Inc.: *See—*
Malech, Robert G., 3,951,134.

Dorschner, Kenneth P., to SCM Corporation. Organometallic agricultural fungicidal compositions and methods for making and using same. 3,952,105, Cl. 424-287.000.

Doty, Harry D. Animal feeder. 3,951,107, Cl. 119-52.00R.

Douglas, George H.; and Santora, Norman J., to William H. Rorer, Inc. Ethynylbenzenes. 3,952,067, Cl. 260-618.00D.

Douglas, Lawrence M., to Polaroid Corporation. Exposure control system for photographic apparatus. 3,952,312, Cl. 354-29.000.

Dow Chemical Company, The: *See—*
Davidson, William G., 3,951,821.
Jezic, Zdravko, 3,952,028.

Dow Corning Corporation: *See—*
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Schroeder, Fred, 3,951,067.
Schroeder, Fred, 3,951,068.

Dowa Mining Co., Ltd.: *See—*
Hamada, Kunitomo; and Sato, Kiyoshi, 3,951,646.

Dowell, Frederick S.; and Healy, Benedict P., to Dunlop Limited. Frictional disc arrangement for a disc brake. 3,951,240, Cl. 188-71.500.

Downer, John Michael; and Kinnear, Colin Greig, to Imperial Chemical Industries Limited. Extrusion powder. 3,951,930, Cl. 526-82.000.

Dransfield, Clifford D., to Atlantic Richfield Company. Method and apparatus for imparting a seismic pulse to the earth. 3,951,229, Cl. 181-114.000.

Draugelis, Vaidevutis C., to Xerox Corporation. Electrostatic reproduction machine with improved toner dispensing apparatus. 3,951,539, Cl. 355-3.0DD.

Drebes, Friedrich Wilhelm, to Dr. C. Otto & Comp. G.m.b.H. Apparatus for charging preheated coal into coke ovens. 3,951,750, Cl. 202-262.000.

Dresser Europe, S.A.: *See—*
Butcher, Alan George, 3,950,990.

Dresser Industries, Inc.: *See—*
Ellis, Gary Dale, 3,951,211.

Drew-It Corporation: *See—*
Morris, Drew W., 3,951,059.

Driscoll, Richard: *See—*
Flanagan, Allan L.; Driscoll, Richard; and Richardson, David A., 3,952,293.

Driskell, Thomas D.; Heller, Alfred L.; and Koenigs, Joseph F., to Miter, Inc. Dental prosthetic implants. 3,950,850, Cl. 32-10.00A.

Drohomirecky, Walter, to Raymond Lee Organization, Inc., The, a part interest. Backboards with hoops thereon and scoreboard. 3,951,409, Cl. 273-95.00H.

Druckfarbenfabrik Gebr. Schmidt GmbH: *See—*
Schumacher, Ernst; Bremer, Hans; and Herold, Rolf, 3,951,668.

Drury, Raymond L., Jr.; Nevin, Charles S.; and Hines, James W., to A. E. Staley Manufacturing Company. Aqueous printing vehicle. 3,951,892, Cl. 260-23.0EM.

Dry, Hal, to Wallace-Murray Corporation. Dampers. 3,951,051, Cl. 98-42.00R.

Dryer, Eldon O., to W. S. Shamban & Co. Moving captive seal construction usable under high temperature and cryogenic conditions. 3,951,418, Cl. 277-124.000.

Du Pont of Canada, Ltd.: *See—*
Fell, Don Russell; and Leonard, Robert Wilson, 3,951,284.
Lovell, Peter John, 3,951,375.
Poole, Robert Norman, 3,951,050.

Dubas, Donald J.: *See—*
Bick, Maurice; Lochet, Jean A.; Dubas, Donald J.; and Di Murro, Richard J., 3,951,772.

DuBuque, Douglas K.: *See—*
Dent, Robert K.; and DuBuque, Douglas K., 3,951,238.

Duda, Herbert, to U.S. Philips Corporation. Dry shaver. 3,950,847, Cl. 30-34.100.

Dudzinski, Zdzislaw J.: *See—*
Wakeman, Reginald L.; Dudzinski, Zdzislaw J.; and Lada, Arnold, 3,951,878.

Duffy, Michael C.: *See—*
Davidson, Lewis A.; Duffy, Michael C.; Erickson, Alvard J.; Gunther-Mohr, Gerard R.; and Williams, Richard A., 3,952,231.

Dufour, Paul: *See—*
Vrancken, August; Dufour, Paul; Noat, Jacques; and Holderic, Jean, 3,952,032.

DuFresne, Armand F. Liquid distribution system for irrigation and the like. 3,951,339, Cl. 239-66.000.

Duke, Arthur W., to Great American Silver Company, Method and apparatus for separating gold and other heavy materials from ore. 3,951,787, Cl. 209-458.000.

Duncan, Carolyn L.: *See—*
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Duncan Creations, Inc.: *See—*
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Duncan, Jerry R.: *See—*
Konz, Stephan A.; and Duncan, Jerry R., 3,950,789.

Duncan, William D.; Duncan, Carolyn L.; Stants, Richard O.; Sims, James J.; and Staley, David C., to Duncan Creations, Inc. Poultry cutter. 3,950,820, Cl. 17-11.000.

Dunhem, Francois; and Hettler, Andre, to Foseco International Limited. Method of casting of molten metals. 3,951,201, Cl. 164-123.000.

Dunlap, Clifford E. Marine drive system. 3,951,096, Cl. 115-34.00R.

Dunlop Limited: *See—*
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Holmes, Thomas, 3,951,226.
Ravenhall, Alan, 3,951,563.
Scales, William, 3,951,438.

Dunning, John R.; Boorse, Henry A.; and Boeker, Gilbert F., to United States of America, Energy Research and Development Administration. Fluid lubricated bearing construction. 3,951,573, Cl. 417-424.000.

Dunning, Reginald: *See—*
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Du Pont de Nemours, E. I., and Company: *See—*
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Fleming, John A.; and Barrett, Lawrence R., 3,951,334.
Howell, Gary W.; and Ryan, Danahey, 3,951,167.
Jayawant, Madhusudan D.; and Yates, Paul C., 3,951,838.
Kwolek, Stephanie Louise, 3,951,914.
Langsdorf, William P., 3,952,074.
Robertson, James A.; Adelman, Robert L.; and Bergna, Horacio Enrique, 3,951,680.
Thompson, Douglas Stuart, 3,951,602.
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Dupre, Marcel J.; and Webster, Walter C., to Rockwell International Corporation. Loom shuttle. 3,951,180, Cl. 139-196.100.

DuPree, Donald G.; Bailey, Raymond E.; and Ling, Chester H. K., to Xerox Corporation. Method of making an electroforming mandrel. 3,950,839, Cl. 29-447.000.

Duprez, Wayne R., to Standard-Thomson Corporation. Quick attachment and release worm gear type hose clamp. 3,950,830, Cl. 24-274.00R.

Durling, William Woodbridge, to Concorde Fibers Inc. Cabled stuffer box crimped yarn and method of producing the same. 3,950,932, Cl. 57-140.00R.

Dycks, Christian C. Resilient carpet padding sheet. 3,952,126, Cl. 428-235.000.

Dynapol: *See—*
Crosby, Guy A.; and Saffron, Patrick M., 3,952,058.

Dynastor, Inc.: *See—*
Heidecker, Robert F.; Johnson, Albin Kenneth; and Royer, Galen B., 3,951,264.

Dynatech Corporation: *See—*
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E. R. Squibb & Sons, Inc.: *See—*
Narayanan, Venkatachala Lakshmi; and Setescak, Linda Louise, 3,951,950.

Eakins, Thomas C.: *See—*
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East/West Industries, Inc.: *See—*
Knoll, Frank; and Skridul, George, 3,950,826.

Easter, Holton C., to Inland Steel Company. Switching apparatus for elongated, hot rolled articles. 3,951,021, Cl. 83-81.000.

Eastman, James E.: *See—*
Schanefelt, Robert V.; Eastman, James E.; and Campbell, Michael F., 3,951,947.

Eastman Kodak Company: *See—*
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Galbraith, Floyd M., Jr., 3,952,317.
Jones, Glenn C., 3,951,774.
Krutak, James J., Sr.; and Burpitt, Robert D., 3,952,029.
Machiele, Delwyn Earl, 3,952,009.
White, Neil S.; and Schindler, George R., 3,951,003.
White, Neil S., 3,951,025.

Eberhard, Everett, to Motorola, Inc. System for controlling the threshold setting of a field effect memory device. 3,952,211, Cl. 307-238.000.

Eberhardt, Heinrich. Sealing head. 3,950,922, Cl. 53-356.000.

Eberhart, Wolfgang R. External internal channels in glass tubing. 3,951,175, Cl. 138-178.000.

Eberle, Jeannine A.: *See—*
Fauran, Claude P.; Eberle, Jeannine A.; Turin, Michel J.; Raynaud, Guy M.; and Gouret, Claude J., 3,951,968.

Ebersberger, Hans: *See—*
Friedel, Rudolf; and Ebersberger, Hans, 3,950,836.

Eckerson, Robert D.: *See—*
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Ecodyne Corporation: *See—*
Shaffer, Robert L.; and Mason, Donald G., 3,951,819.
Young, Daniel A., 3,951,806.

Economy, James; Mason, John H.; and Smith, William D., to Carborundum Company, The. Superconductive transition metal carbonitride fibers and method for the preparation thereof. 3,951,870, Cl. 252-506.000.

Eda, Yasuko: *See—*
Tobiki, Hisao; Shimago, Kozo; Okano, Shigeru; Komatsu, Toshiaki; Katsura, Toyozo; Taira, Yasushi; and Eda, Yasuko, 3,951,955.

Edelman, Leonard E.; and Alvino, William M., to Westinghouse Electric Corporation. Polyimide and polyamide-imide precursors prepared from esters, dianhydrides, and diisocyanates. 3,952,084, Cl. 260-77.5AM.

Edenhofer, Albrecht, to Hoffmann-La Roche Inc. Tetrahydropyridine derivatives. 3,951,987, Cl. 260-294.80G.

Eder, Gerald: *See—*
Eibl, Johann; Molinari, Ewald; and Eder, Gerald, 3,951,776.

Edge, Gordon Malcolm: *See—*
Plows, Graham Stuart; and Edge, Gordon Malcolm, 3,952,146.

Edwards & Jones Limited: *See—*
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Edwards, Vernon T. Sampling apparatus for liquids. 3,950,999, Cl. 73-425.40R.

Effland, Richard C.; Davis, Larry; and Helsley, Grover C., to American Hoechst Corporation. Substituted 2-phenyl-4,6,7,8-tetrahydrofuro and 1,4,5,6,7,8-hexahydropyrrolo[3,2,-c]azepines. 3,952,025, Cl. 260-347.300.

Egashira, Etsuo; Miyoshi, Shinichiro; Takei, Yukio; and Fujita, Masato, to Hitachi, Ltd. Method of treating semiconductor wafers. 3,951,728, Cl. 156-600.000.

Eggert, Horst: *See—*
Noack, Dieter; Diekmann, Joachim; Eggert, Horst; and Kugler, Robert, 3,951,237.

Eggleton, Reginald C.; and Fry, Francis J., to Indianapolis Center for Advanced Research. Ultrasonic therapy apparatus and method. 3,951,140, Cl. 128-24.00A.

Eibl, Johann; Molinari, Ewald; and Eder, Gerald, to Medizinische Produkte Immuno Aktiengesellschaft fur Chemish. Low-voltage cross migration electrophoresis apparatus. 3,951,776, Cl. 204-299.00R.

Eickmann, Karl. Rotary radial piston machines with fluidflow supply in substantial axial direction. 3,951,044, Cl. 91-485.000.

Eickmann, Karl. Radial piston machine with piston shoes. 3,951,047, Cl. 92-157.000.

Eimen, Shawn H.: *See—*
Swenson, Richard F.; and Eimen, Shawn H., 3,951,373.

Elastometal Limited: *See—*
Fyfe, Edward Robert, 3,951,562.

Eldridge, Judson B. Solid propellant mixtures and process of preparation. 3,951,706, Cl. 149-19.800.

Electricite de France (Service National): *See—*
Gerardin, Jean Pierre; and Dessus, Benjamin, 3,952,150.
Mattei, Jean; Simon, Bernard; and Vuong nee Adlerberg, Ingrid, 3,951,566.

Electrostatic Equipment Corporation: *See—*
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Eli Lilly and Company: *See—*
Hamill, Robert L.; Stark, William M.; and DeLong, Donald C., 3,952,095.

Elixir Industries: *See—*
Shull, Paul H., 3,951,444.

Ellis, Gary Dale, to Dresser Industries, Inc. Method for selectively retrieving a plurality of well packers. 3,951,211, Cl. 166-315.000.

Elser, Wolfgang: *See—*
Ennulat, Reinhard D.; LoVecchio, Paul; Elser, Wolfgang; and Boyd, Philip R., 3,952,275.

Elste, Edward G., Jr., to Chevron Research Company. Cationic bituminous emulsions forming residuum having improved temperature characteristics. 3,951,676, Cl. 106-277.000.

Emerson, Frank W.; and Novacek, George J., to General Time Corporation. Smoke detection alarm system. 3,952,294, Cl. 340-237.00S.

Emhart Corporation: *See—*
Alexander, Gordon A., 3,950,974.

EMI Limited: *See—*
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Emmel, Leroy L., to Fortin Laminating Corporation. Method and apparatus for insulating electrically conductive elements. 3,951,713, Cl. 156-52.000.

Empire Sheet Metal Mfg. Co. Ltd.: *See—*
Cole, Wayne C. T., 3,950,915.

Emtrol Corporation: *See—*
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Energy Technology Incorporated: *See—*
Martin, Cecil G.; and Swenson, Paul F., 3,950,949.

Engelhard Minerals & Chemicals Corporation: *See—*
Langley, Robert C.; and Abrash, Muriel, 3,951,672.

Engelmann, Manfred, to Hoechst Aktiengesellschaft. Process for polymerizing α-olefines. 3,951,935, Cl. 526-129.000.

Engineered Metal Products Company, Inc.: *See—*
Wunsche, Edgar, 3,952,140.

Engler, Peter: *See—*
Nerbas, Dieter; and Engler, Peter, 3,951,249.

English Clays Lovering Pochin & Company Limited: *See—*
Luke, William George, 3,950,948.

Ennulat, Reinhard D.; LoVecchio, Paul; Elser, Wolfgang; and Boyd, Philip R., to United States of America, Army. Photon sensor and method of fabrication. 3,952,275, Cl. 338-18.000.

Entwistle, Ian D.; Williams, Peter J.; and Devlin, Barry R. J., to Shell Oil Company. Certain benzotriazole-4,7-dione derivatives. 3,952,003, Cl. 260-308.00B.

Enviro-Gro, Inc.: *See—*
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Epstein, Martin E.; and George, Henry H., Jr., to Celanese Corporation. Production of cellulose acetate filamentary material. 3,952,081, Cl. 264-207.000.

Erickson, Alvard J.: *See—*
Davidson, Lewis A.; Duffy, Michael C.; Erickson, Alvard J.; Gunther-Mohr, Gerard R.; and Williams, Richard A., 3,952,231.

Ernst, Arnold E. Planter apparatus. 3,951,306, Cl. 221-263.000.

Ernst Brandli: *See—*
Turler, Hans J., 3,952,137.

Ernster, Peter Jacob; Collins, William Joseph; and Schaefer, George Henry, to Oster Corporation. Multi-purpose kitchen appliance. 3,951,351, Cl. 241-101.100.

Escher Wyss Limited: *See—*
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Eschwey, Helmut: *See—*
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Eskijian, Luther. Portable filter bag assembly. 3,951,628, Cl. 55-300.000.

ESL Incorporated: *See—*
Altes, Richard A., 3,952,280.

Espy, Herbert H.; and Putnam, Stearns T., to Hercules Incorporated. Cationic water soluble resinous reaction product of polyaminopolyamide-epichlorohydrin and nitrogen compound. 3,951,921, Cl. 260-78.0SC.

Esselborn, Reiner: *See—*
Bernhard, Horst; Stein, Alfred; Esselborn, Reiner; Hesse, Reiner; and Russmann, Horst, 3,951,679.

Esselte Obergs AB: *See—*
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Etat Francais: *See—*
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Ethicon, Inc.: *See—*
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Etienne, Georges F. M. P.: *See—*
Crovatto, Dino; and Etienne, Georges F. M. P., 3,951,432.

Evans, David M.; and Rogers, Edward J., to S & C Electric Company. Fuse handling tool. 3,951,015, Cl. 81-3.800.

Evans, Frances M., executrix: *See—*
Evans, John, Jr., deceased, 3,952,224.

Evans, John, Jr., deceased (by Evans, Frances M., executrix), to RCA Corporation. In-line electron guns having consecutive grids with aligned vertical, substantially elliptical apertures. 3,952,224, Cl. 313-414.000.

Everett, Peter Kenneth. Production of electrolytic battery active manganese dioxide. 3,951,765, Cl. 204-96.000.

Exxon Research and Engineering Company: *See—*
Woo, Charles; and Sankey, Bruce M., 3,951,780.

Eyelet Specialty Co., Inc.: *See—*
Idec, Eric J., 3,951,157.
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Fabricius, Wayne Nixon, to Bell Telephone Laboratories, Incorporated. Complex analog waveform generator. 3,952,189, Cl. 235-197.000.

Fachbach, Heinz; Thien, Gerhard; and Kirchweger, Karl, to List, Hans. Cooling of internal combustion engines with sound-proof encasings. 3,951,114, Cl. 123-41.700.

Fadal Engineering Company, Inc.: *See—*
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Fainerman, Igor Avshnovich: *See—*
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Fairbanks, Eugene A.; and Fairbanks, Robert D., to Fairbanks, Robert D. Pollution reducing and fuel saving device. 3,951,124, Cl. 123-122.00E.

Fairbanks, John B., Jr.; and Brimhall, Gary C. Tar sand processing apparatus. 3,951,749, Cl. 196-46.000.

Fairbanks, Robert D.: *See—*
Fairbanks, Eugene A.; and Fairbanks, Robert D., 3,951,124.

Falck, Melvin S., Jr., to Morse Products Manufacturing. Security polling transponder system. 3,952,285, Cl. 340-152.00T.

Fannin, Richard C.; and Stellato, Anthony B., to Bendix Corporation, The. Fluid pressure braking system including a pressure differential responsive valve device. 3,951,463, Cl. 303-7.000.

Far-Mar-Co., Inc.: *See—*
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Farber, Milton; and Petersen, Henno A., to Uniroyal Inc. Reinforced styrene-acrylonitrile polymers. 3,951,906, Cl. 260-42.180.

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Farrer, Richard E.; and Starks, Glendon D., to General Motors Corporation. Internal combustion engine ignition distributor cap. 3,951,508, Cl. 339-214.00R.

Fauran, Claude P.; Eberle, Jeannine A.; Turin, Michel J.; Raynaud, Guy M.; and Gouret, Claude J., to Delalande S.A. (2-6-Oxymethylene) morpholino (4,3a) benzimidazoles. 3,951,968, Cl. 260-244.00R.

Faxon Communications Corporation: *See—*
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Feinauer, Roland: *See—*
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Feiner, Alexander; James, Dennis Bryan; and McEowen, James Royce, to Bell Telephone Laboratories, Incorporated. Telephone line visual status indication circuit. 3,951,248, Cl. 179-81.00C.

Feinland, Raymond: *See—*
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Feldmann, Rainer; and Feinauer, Roland, to Chemische Werke Huls Aktiengesellschaft. Polylaurryllactam low in fisheye gel content. 3,951,909, Cl. 260-45.8NZ.

Fell, Don Russell; and Leonard, Robert Wilson, to Du Pont of Canada, Ltd. Device for transporting bulk materials and methods. 3,951,284, Cl. 214-152.000.

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Ferrieu, Gilbert Marie Marcel: *See—*
David, Guy Albert Jules; Ferrieu, Gilbert Marie Marcel; Lorand, Pierre; and Cartier, Michel, 3,952,164.

Ferriss, Lincoln S.; and Hohenstein, Robert M., to Singer Company, The. Electrostatic motor. 3,951,000, Cl. 74-5.60D.

Fiat Societa per Azioni: *See—*
Guagliumi, Renato; and Cuzzucoli, Giuseppe, 3,951,466.

Fiber Industries, Inc.: *See—*
Davis, Gerald Wayne; and Sheats, Jimmy Bernard, 3,951,599.

Ficken, William H.: *See—*
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Fieldhouse, John William, to Firestone Tire & Rubber Company, The. Purification of crude chlorophosphazene compounds by treatment with Bronsted bases. 3,952,086, Cl. 423-300.000.

Findl, Eugene, to Xerox Corporation. Reversible radiant energy filter and process of using same. 3,951,521, Cl. 350-160.00R.

Finike Italiana Marposs,Soc. In Accomandita Semplice di Mario Possati & C.: *See—*
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Firestone Tire & Rubber Company, The: *See—*
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Firmenich & Cie: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 3,952,024.
Winter, Max; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 3,952,026.

Fischer, Hans; and Liebel, Julius, to Maschinenfabrik Augsburg-Nurnberg AG. Hydraulic brake for heavy vehicles. 3,951,242, Cl. 188-296.000.

Fisher Controls Company, Inc.: *See—*
Roberts, Bob R., 3,951,168.

Fisher, David G.; and Gladden, Robert G., to Dayco Corporation. Endless power transmission belt drive system. 3,951,006, Cl. 74-233.000.

Fisher, Eugene J.: *See—*
Lloyd, Keith A.; Fisher, Eugene J.; and Ongchin, Lucio, 3,951,871.

Fisher, Gene Jordan: *See—*
Dirks, Jerald Edson; and Fisher, Gene Jordan, 3,951,756.

Fisher, John A.; and Zoroglu, Demir S., to Motorola, Inc. Ion-implanted self-aligned transistor device including the fabrication method therefor. 3,951,693, Cl. 148-1.500.

Fisher, Noel McNeill, to Associated Mines (Malaya) Sendirian Berhad. Pin bearings. 3,951,234, Cl. 184-7.00R.

Fisons Limited: *See—*
Bradley, John Kenneth, 3,951,638.
Bradley, John Kenneth, 3,952,078.
Cairns, Hugh; Chambers, Albert; and Lee, Thomas Brian, 3,952,104.
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Winter, Max; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 3,952,026.

Flanagan, Allan L.; Driscoll, Richard; and Richardson, David A., to Foxboro Company, The. Method and apparatus for displaying industrial process control parameters. 3,952,293, Cl. 340-213.00Q.

Flanders, Robert D. Instantaneous electric fluid heater. 3,952,182, Cl. 219-309.000.

Flatau, Abraham; Olson, Donald N.; and Miller, Miles C. Non-hazardous ring airfoil projectile of non-lethal material. 3,951,070, Cl. 102-92.400.

Fleagle, Joseph E., to Wagner Electric Corporation. Wheel slip control system for automotive vehicles and the like. 3,951,467, Cl. 303-21.0BE.

Flegel, George J., to Josam Manufacturing Co. Adjustable cleanout plumbing fitting. 3,951,172, Cl. 138-89.000.

Flegel, George J.: *See—*
Scheuer, Nicholas G.; and Flegel, George J., 3,951,441.

Fleischhauer, Eugene T. Vacuum cleaners. 3,950,814, Cl. 15-327.00E.

Fleming, John A.; and Barrett, Lawrence R., to Du Pont de Nemours, E. I., and Company. Method and apparatus for automatically positioning centrifuge tubes. 3,951,334, Cl. 233-26.000.

Fleming, Robert W.: *See—*
Albrecht, William L.; and Fleming, Robert W., 3,952,014.

Flemings, Merton C.: *See—*
Mehrabian, Robert; and Flemings, Merton C., 3,951,651.

Fletcher, Maurice C. Lightweight automobile. 3,951,222, Cl. 180-1.00R.

Florida Celery Exchange: *See—*
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Floyd, Middleton Brawner, Jr., to American Cyanamid Company. Furan intermediates and process for synthesis of 4-hydroxycyclopetenones, prostaglandin synthesis intermediates. 3,952,033, Cl. 260-405.500.

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Fortin, William O. Pre-shipment protective device. 3,950,970, Cl. 70-63.000.

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Fujino, Takashi; Yamanaka, Makoto; and Deguchi, Keiichi, to Kao Soap Co., Ltd. Stable bleaching composition. 3,951,840, Cl. 252-102.000.
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Galis, Alex J. Mobile drilling and bolting machine. 3,951,215, Cl. 173-23.000.
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Gilbert, William F.; Schertz, Burtron D.; Smith, Wayne A.; and Wilkinson, Lester, to General Motors Corporation. Audio processor circuit for an FM-stereo radio receiver. 3,952,161, Cl. 179-15.0BT.
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Godfrey, John Carl; MacNintch, John Edwin; and Rubinfeld, Joseph, to Bristol-Myers Company. Mixture of calcium carbonate and calcium-α-p-chlorophenoxyisobutyrate as an antihyperlipemic agent. 3,952,096, Cl. 424-156.000.
Godson, David Henry: *See—*
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Golbeck, Bernard J.; and Lewandowski, Raymond F., to Oak Industries Inc. Pushbutton switch mechanism having block out members with common mounting and discrete latch bar. 3,952,175, Cl. 200-5.00E.
Goldberg, Herbert Emanuel; Cannon, Robert Lee; and Smith, David L., to American Optical Corporation. Compressed data display system. 3,951,135, Cl. 128-2.06G.

Goldsmith, David S.: *See—*
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Goldstein, Michael. Safety razor. 3,950,848, Cl. 30-47.000.

Goller, Horst B.: *See—*
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Gomez, Magdalena Usategui: *See—*
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Gondo, Hisashi; Takechi, Hiroshi; Masui, Hiroaki; and Namba, Kazuo, to Nippon Steel Corporation. Method for producing a high-strength cold rolled steel sheet having excellent press-formability. 3,951,696, Cl. 148-12.00R.

Gonzalez, Rodolfo, to McDonnell Douglas Corporation. Method for producing reinforced insulating foam. 3,951,718, Cl. 156-79.000.

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Goto, Sotoji, to Mitsubishi Jukogyo Kabushiki Kaisha. Process for preparing catalysts. 3,951,866, Cl. 252-461.000.

Gouret, Claude J.: *See—*
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Grass, Ben, to Multi-State Devices Ltd. Apparatus for measuring an absolute temperature or a temperature differential with regenerative switching sensors. 3,950,991, Cl. 73-342.000.

Graudums, Ivars; Muckter, Heinrich; and Frankus, Ernst, to Chemie Grunenthal GmbH. Lactams and process for their manufacture. 3,951,985, Cl. 260-293.570.

Grauel, Edwin L. Keeled kite construction. 3,951,363, Cl. 244-153.00R.

Gray, B. Everett, to Bata Shoe Company, Inc. Safety box toe. 3,950,865, Cl. 36-77.00R.

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Guenther, Larry L., to Hoover Ball and Bearing Company. Top opening insulated tank. 3,951,295, Cl. 220-9.00F.

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Haldopoulos, Ioakim, to Glasrock Products, Inc. Container filter combination. 3,951,798, Cl. 210-452.000.

Hale, John K.; and Campbell, Willis R., to Sperry Rand Corporation. Large round bale handling apparatus. 3,951,288. Cl. 214-506.000.

Halfmann, Manfred: *See—*
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Hamanaka, Ernest S.; and Stam, John G., to Pfizer Inc. Broad spectrum antibiotics. 3,951,952, Cl. 260-239.100.

Hamill, Robert L.; Stark, William M.; and DeLong, Donald C., to Eli Lilly and Company. Novel antibiotic and a process for the production thereof. 3,952,095, Cl. 424-118.000.

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Hampton, William J. Fuel oil nozzle. 3,951,343, Cl. 239-399.000.

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Hanauer, Richard H.: *See—*
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Hawie, Frederick. Receptacle armrest for motor vehicles. 3,951,448, Cl. 297-113.000.

Hay, Allan S., to General Electric Company. Process for the preparation of an organomercaptophenol from sulfur, a phenol, and an activated olefin or an epoxy compound. 3,952,063, Cl. 260-609.00D.

Hayashi, Takao: *See—*
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Heesen, Jan Gerhard; Kuipers, Pieter Koenraad; and van Velthuijsen, John Adriaan, to B.V. Chemie Combinatie Amsterdam C.C.A. Method for the preparation of esters of polyalcohols. 3,951,945, Cl. 260-210.00R.

Hegelman, Theodore N., to Standard Alliance Industries. Stacker storage system. 3,951,277, Cl. 214-16.40A.

Heidecker, Robert F.; Johnson, Albin Kenneth; and Royer, Galen B., to Dynastor, Inc. Flexible disc cartridge. 3,951,264, Cl. 206-444.000.

Heinz, Dieter; and Sittmann, Manfred, to ABG Apparatebau Gesellschaft mbH. Apparatus for transporting small objects. 3,951,304, Cl. 221-124.000.

Heinze, Christoph: *See—*
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Helsley, Grover C.: *See—*
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Henry, David W.; and Sturm, Priscilla A., to Stanford Research Institute. 3-Substituted-8-methyl-3,8-diazabicyclo[3.2.1]octanes. 3,951,980, Cl. 260-268.0BF.

Henson, Ralph B., to Caterpillar Tractor Co. Engine timing device. 3,951,118, Cl. 123-139.0AP.

Herb, John R., to Pharmachem Corporation. Blood component storage bag and glycerolizing set therefor. 3,951,148, Cl. 128-272.000.

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Heusser, Eduard, to Zellweger, Ltd. Method of, apparatus for, transporting yarns through measuring units. 3,951,321, Cl. 226-97.000.

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Hieronymus, Hans: *See—*
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Hildreth, Robert E., Jr. Impact absorbing device. 3,951,384, Cl. 256-1.000.

Hill, Ada S.: *See—*
Roelofs, Wendell L.; Hill, Ada S.; Baker, Thomas C.; and Carde, Ring T., 3,952,093.

Hill, Charles C., to Rohr Industries, Inc. Engine driven accessory mounting and drive system for buses and other vehicles. 3,951,123, Cl. 123-195.00A.

Hill, Christopher; Baker, Charles; and Blundun, Leonard. Board game apparatus. 3,951,411, Cl. 273-134.0AD.

Hill, Harvey J., to Roberts Consolidated Industries, Inc. Carpet gripper with headless carpet anchoring pins. 3,950,816, Cl. 16-16.000.

Hill, Ralph W. Fluid control valve. 3,951,170, Cl. 137-625.480.

Hilti Aktiengesellschaft: *See—*
Chromy, Franz, 3,951,034.

Hinata, Masanao; Ohki, Masanaga; Takei, Haruo; Sato, Akira; and Ikeda, Tadashi, to Fuji Photo Film Co., Ltd. Spectrally sensitized silver halide photographic emulsion. 3,951,666, Cl. 96-126.000.

Hinchcliffe, Alan; and Johnson, Kenneth, to British Steel Corporation. Apparatus for creating protective coatings on carbon articles. 3,951,103, Cl. 118-315.000.

Hines, James W.: *See—*
Drury, Raymond L., Jr.; Nevin, Charles S.; and Hines, James W., 3,951,892.

Hinkes, Thomas M., to Florida Celery Exchange. Seed coating composition and coated seed. 3,950,891, Cl. 47-57.600.

Hirano, Nagayoshi: *See—*
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Hirata, Noritsugu; Takahashi, Kiyoshi; and Ogiso, Mitsutoshi, to Canon Kabushiki Kaisha. Plural image camera having automatic exposure control. 3,952,319, Cl. 354-109.000.

Hirschfeld, Michael, to Block Engineering, Inc. Trigger for selectively discharging simultaneously any number of barrels on a multiple-barrelled firearm. 3,950,875, Cl. 42-42.00R.

Hitachi, Ltd.: *See—*
Egashira, Etsuo; Miyoshi, Shinichiro; Takei, Yukio; and Fujita, Masato, 3,951,728.
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Takagi, Kazumasa; Fukazawa, Tokuumi; Ishii, Mitsuru; and Kishino, Seigo, 3,951,729.

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Okayama, Akira; Ando, Hisashi; Soeno, Ko; Takeuchi, Hisasuke; and Kamada, Atsuya, 3,951,577.

Hittman, Fred; and Bustard, Thomas S., to Nuclear Battery Corporation. Microwatt thermoelectric generator. 3,951,692, Cl. 136-202.000.

Ho, Win-Sow: *See—*
Lee, Lester T. C.; Ho, Win-Sow; and Liu, Kang-Jen, 3,951,789.

Hobart Corporation: *See—*
Houfek, Lyman Joseph, 3,951,131.

Hobden, Nigel Mark; Mair, Barrie; Taylor, Michael; and Withnall, Malcolm Douglas Norman, to Mars Limited. Beverage-dispensing machine. 3,951,303, Cl. 221-96.000.

Hobson, Carroll D., to Goshen Rubber Co., Inc. Positive pressure mold. 3,951,580, Cl. 425-233.000.

Hoda, Masahiro: *See—*
Konishi, Kenzo; Kotone, Akira; Nakane, Yoshihiko; Hori, Takeshi; and Hoda, Masahiro, 3,951,941.

Hodge, Allan M.: *See—*
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Hodge, Winston W.; and Rosenstock, David, to Rockwell International Corporation. Data line correlator. 3,952,299, Cl. 343-5.0MM.

Hoechst Aktiengesellschaft: *See—*
Albrecht, Konrad; Frensch, Heinz; and Bock, Klaus-Detlev, 3,952,102.
Birke, Walter; Schickfluss, Rudolf; and Schon, Franz, 3,951,591.
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Ruchlak, Kasimir; Heinze, Christoph; and Kranzle, Rolf, 3,951,883.
Sartorius, Rudolf; and Stapf, Hans, 3,951,755.
Winkelmann, Erhardt; Gebert, Ulrich; and Raether, Wolfgang, 3,951,963.

Hoes, Jan, to Globe-Lak N.V. Fixation for a plate sheathing. 3,951,371, Cl. 248-223.000.

Hofer, Wolfgang; Maurer, Fritz; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. O-Alkyl-S-alkyl-O-[2-substituted-pyrimidin(4)yl]thionothiolphosphoric acid esters. 3,951,975, Cl. 260-251.00P.

Hoffmann, Hellmut; Hammann, Ingeborg; and Unterstenhofer, Gunter, to Bayer Aktiengesellschaft. Compositions and methods of combatting insects and acarids using pyrazolo-(thiono)-phosphoric(phosphonic) acid esters. 3,952,098, Cl. 424-200.000.

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Edenhofer, Albrecht, 3,951,987.
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Rosen, Perry, 3,952,018.
Scherrer, Hanspeter; and Boller, Arthur, 3,952,046.
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Hofius, David V., to Textron, Inc. Slide fasteners and method of making the same. 3,951,715, Cl. 156-66.000.

Hofman, Jan August Marcel; and Tan, Sing Liong, to U.S. Philips Corporation. Aperture correction circuit for television. 3,952,327, Cl. 358-37.000.

Hofmeister, Helmut: *See—*
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Hogan, John P. Homohedral module. 3,950,888, Cl. 46-25.000.

Hohenstein, Robert M.: *See—*
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Holcombe, Richard L. Building block laying level indicating device. 3,950,860, Cl. 33-371.000.

Holder, Paul Dalton; and Alexander, Dale Bruce, to Texas Instruments Incorporated. Multiple pole pushbutton rotary switch. 3,952,176, Cl. 200-11.00R.

Holderic, Jean: *See—*
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Holland, Melvin G.: *See—*
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Hollingsworth, Gary R., to Novel Furnishings Ltd. Article of furniture. 3,950,796, Cl. 5-2.00R.

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Holmes, Frank A., to Jaybee Manufacturing Corporation. Self latching cabinet hinge having a resilient tension strap. 3,950,818, Cl. 16-180.000.

Holmes, Thomas, to Dunlop Limited. Skid-control system. 3,951,226, Cl. 180-82.00R.

Holmgren, Kjell Ake Bertil: *See—*
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Holroyd, George C.; and Austin, Dennis T., to Uniroyal Inc. Cover cloth fabric. 3,950,868, Cl. 38-66.000.

Holub, Fred F.; and Szymaszek, Jan Walter, to General Electric Company. Switching devices for photoflash unit. 3,951,582, Cl. 431-95.00R.

Honda, Tadatoshi: *See—*
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Honegg, Adolf: *See—*
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Honeycutt, Dewitt W., Jr. Coal mining apparatus and method. 3,951,459, Cl. 299-11.000.

Honmaru, Shigeru: *See—*
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Honnen, Lewis R.; and Coon, Marvin D., to Chevron Research Company. Fuel detergents. 3,951,614, Cl. 44-58.000.

Hooker Chemicals & Plastics Corporation: *See—*
Cook, Edward H., Jr., 3,951,766.

Hoover Ball and Bearing Company: *See—*
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Hoover, James William, to General Electric Company. Vehicle speed regulation system. 3,952,236, Cl. 318-139.000.

Hopkins, Delaney C., to Caterpillar Tractor Co. Self-storing vehicle step assembly. 3,951,431, Cl. 280-166.000.

Hoppe, Walter, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Object adjustment device for a charged particle beam apparatus. 3,952,203, Cl. 250-442.000.

Hori, Kikuo: *See—*
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Hori, Ryuji: *See—*
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Horichi, Tetsuya, to Sony Corporation. Level indicating apparatus for P.C.M. transmitting system. 3,952,247, Cl. 324-133.000.

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Horii, Hideo: *See—*
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Horiuchi, Yoshiaki; Hanawa, Masaaki; and Hasegawa, Shinzo, to Nippon Concrete Industries Co. Ltd. Apparatus for automatically adjusting center-height of a mold and the like used for manufacturing concrete pipes. 3,951,578, Cl. 425-150.000.

Hornsby, Guyton Ellis. Shock absorber for skates. 3,951,422, Cl. 280-11.280.

Horst, Ray J. Hand truck fork lift. 3,951,286, Cl. 214-370.000.

Horstmann, Harald: *See—*
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Hortig, Wilhelm, to KM-Engineering AG. Device for forming a smooth, i.e. in particular a crease- and undulation-free inwards convex flange-bearing edge-groove or -corrugation onto the open end of a metal hollow body or container formed in a press. 3,951,083, Cl. 113-7.00A.

Horton, Arthur E.; Brantley, Jordan W.; Smith, Paul R.; Lightfoot, Cecil W.; and Hanneman, Richard L., to Texas Instruments Incorporated. Continuous film transistor fabrication process. 3,950,843, Cl. 29-574.000.

Horton, David M.; and Mitchell, William S., to George Koch Sons, Inc. Electrocoating tank arrangement. 3,951,775, Cl. 204-299.0EC.

Horton, James B.; and Borzillo, Angelo R., to Bethlehem Steel Corporation. Aluminum-zinc coated low-alloy ferrous product and method. 3,952,120, Cl. 427-433.000.

Hoshiyama, Masao: *See—*
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Houdaille Industries, Inc.: *See—*
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Houfek, Lyman Joseph, to Hobart Corporation. Pressure vessel with multiple outlet connections. 3,951,131, Cl. 126-369.000.

Hough, Dean R. Vehicle tire construction and method of making same. 3,951,719, Cl. 156-96.000.

Hounsfield, Godfrey Newbold, to EMI Limited. Radiography. 3,952,201, Cl. 250-403.000.

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Howell, Alleyne C., Jr. Solenoid core construction. 3,952,272, Cl. 335-264.000.

Howell, Gary W.; and Ryan, Danahey, to Du Pont de Nemours, E. I., and Company. Fluid handling assembly. 3,951,167, Cl. 137-608.000.

Howell, Robert G., to Corning Glass Works. Coprecipitated CeO_2—SnO_2 catalyst supports. 3,951,867, Cl. 252-462.000.

Howson, John Charles; and Brooke, Thomas Emsley. Contact adhesives. 3,951,722, Cl. 156-307.000.

Hoyer, Karl; and Stockle, Heinrich, to Robert Bosch G.m.b.H. Method and apparatus for measuring area under a curve. 3,950,854, Cl. 33-123.000.

Hradil, John Helmut: *See—*
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Hrusch, Louis C., to Pneumo Corporation. Articulated main landing gear. 3,951,361, Cl. 244-102.00R.

Hsu, Charles Jui-Cheng. Water extractor. 3,951,812, Cl. 210-282.000.

Hu, Shengen, to Monsanto Company. Cross-linked ethylene-maleic anhydride interpolymers. 3,951,926, Cl. 526-232.000.

Huang, Ching Yun; Takashina, Naomitsu; and Nishimura, Toshiaki, to Mitsubishi Gas Chemical Co., Ltd. Method for treating fouled water. 3,951,791, Cl. 210-47.000.

Huber-Emden, Helmut; and Deflorin, Alberto, to Ciba-Geigy AG. Perfluorinated amino compounds and process for their manufacture. 3,952,060, Cl. 260-584.00R.

Hubner, Ernst, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Socket-to-cable connection for liquid cooled heavy current cable. 3,952,141, Cl. 174-19.000.

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Hughes, Robert D.; and Steigelmann, Edward F., to Standard Oil Company. Process for separating one or more components of a gaseous mixture. 3,951,621, Cl. 55-16.000.

Huizinga, Martin: *See—*
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Hunsperger, Robert G., to Hughes Aircraft Company. Monolithic dual mode emitter-detector terminal for optical waveguide transmission lines. 3,952,265, Cl. 331-94.50H.

Hunter Douglas International N.V.: *See—*
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Hunter, Lee. Rotary internal combustion engine with rotating circular piston. 3,951,112, Cl. 123-8.450.

Huntress, Inez A., to Raymond Lee Organization, Inc., The, a part interest. Zipper puller (zipper zip). 3,951,319, Cl. 223-111.000.

Huntt, Robert L. Method for making recording head. 3,950,845, Cl. 29-603.000.

Hurst, Ronald C.: *See—*
Antonsen, Randolph; Morgan, Allan Clark; Ball, Roger T.; Hurst, Ronald C.; Potter, Dennis J.; and Wood, Robert I., 3,952,087.

Hurtes, Walter. Device for cutting and transporting plural aligned fibers. 3,951,022, Cl. 83-152.000.

Hyde, David F., Jr., to Midwest Electric Manufacturing Company. Water resistant conduit fitting. 3,951,436, Cl. 285-27.000.

Hyde, Gene A.: *See—*
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Hyman, Mark, Jr. Scintillator composition. 3,951,847, Cl. 252-301.170.
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Igel, Wolfgang, to Zinser Textilmaschinen GmbH. Method and apparatus for automatic re-attachment of thread in spinning machines. 3,950,925, Cl. 57-34.00R.
Iida, Masaaki: *See—*
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Isa, Hiroshi; Ukigai, Toshiyuki; Tominaga, Anri; Taniyasu, Ryozo; and Nagayama, Masuzo, to Lion Fat & Oil Co., Ltd. Method for preparation of olefin oligomer. 3,952,071, Cl. 260-683.15B.
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Isohata, Susumu; Sasaki, Kyoichi; and Minamitani, Yoshihiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Inorganic hardening composition. 3,951,673, Cl. 106-84.000.
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Ito, Nobuo: *See—*
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Ito, Yoshio; Takahashi, Toru; Kitajima, Tadayuki; and Kadowaki, Syujiro, to Canon Kabushiki Kaisha. Developer conveyor device. 3,951,542, Cl. 355-15.000.
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Iwamoto, Masami: *See—*
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Izumi, Kaichi; and Kono, Hiroshi, to Kao Soap Co., Ltd. Process of cold plastic deformation of metals. 3,950,975, Cl. 72-42.000.
J. G. Anschutz GmbH: *See—*
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Wild, Hermann; and Jaedicke, Ludwig, 3,950,876.
J. I. Case Company: *See—*
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Jacob, Adir, to LFE Corporation. Process and material for semiconductor photomask fabrication. 3,951,709, Cl. 156-8.000.
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Jacobs, James W., to General Motors Corporation. Air conditioning compressor. 3,951,569, Cl. 417-269.000.
Jacobson, Howard Wayne; and Lewis, George Leoutsacos. Mullite fibrils. 3,951,677, Cl. 106-288.00B.
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Jaggle, Gunther; Peters, Klaus-Jurgen; Stein, Volkhard; and Scharl, Herbert, to Robert Bosch G.m.b.H. Fuel injection system. 3,951,119, Cl. 123-139.0AW.
Jakimowicz, Christopher C.; Jones, Larry C.; and Raugh, Donald D., to National Steel Corporation. Pollutant collection system for coke oven discharge operation. 3,951,751, Cl. 202-263.000.
Jalco, Inc.: *See—*
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James, Dennis Bryan: *See—*
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Jamison, Richard S., to Hughes Aircraft Company. Balanced signal processing circuit. 3,952,262, Cl. 331-55.000.
Janiak, Stefan, to Ciba-Geigy AG. Use of N-(4-isopropoxy-3-chlorophenyl)-N'-methyl-N'-methoxyurea for control of weeds in maize cultures. 3,951,641, Cl. 71-120.000.
Janke, Rudolf: *See—*
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Jarvis, Wilbur W., Jr.; and Toth, Leslie, to Whirlpool Corporation. Water distribution system for dishwashing appliance. 3,951,683, Cl. 134-144.000.
Jastram, Claus; Weiss, Fritz; and Voss, Hans, to Jastram-Werke GmbH KG. Gas-driven, pulsating water jet propulsive duct drive for watercraft. 3,951,094, Cl. 115-15.000.
Jastram-Werke GmbH KG: *See—*
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Jayawant, Madhusudan D.; and Yates, Paul C., to Du Pont de Nemours, E. I., and Company. Silica sol stabilizers for improving the stability of sodium percarbonate in solid bleaches and detergents. 3,951,838, Cl. 252-99.000.
Jaybee Manufacturing Corporation: *See—*
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Jefferson Chemical Company, Inc.: *See—*
Gipson, Robert Malone; Milligan, John Gordon; and Bentley, Floyd Edward, 3,952,068.
Jen, Timothy Yu-Wen; and Kaiser, Carl, to SmithKline Corporation. α-Amino methyl-5-hydroxy-2-pyridinemethanols. 3,952,101, Cl. 424-263.000.
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Jenkin, Keith R., to TRW Inc. Method and apparatus for stabilized reproduction of remotely-sensed images. 3,952,151, Cl. 178-6.800.
Jenkins, Ellis H., to West Point-Pepperell, Inc. Bobbin support assembly. 3,951,353, Cl. 242-129.700.
Jenkins, Elton E. Irrigation vehicle. 3,951,341, Cl. 239-212.000.
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Jeter, John D. Method for prestressing a structural member. 3,950,905, Cl. 52-741.000.
Jetzer Engineering AG: *See—*
Jetzer, Raimund, 3,951,731.
Jetzer, Raimund, to Jetzer Engineering AG. Process for aerobic decomposition and solvent treatment of waste material. 3,951,731, Cl. 162-5.000.
Jewett, Harold A. Crossbar with oar guides for boats having frontward-rowing boat-spanning oars. 3,951,095, Cl. 115-24.100.
Jezic, Zdravko, to Dow Chemical Company, The. Bis(dichloroacetoxy)-iodobenzenes and bis(trichloroacetoxy)iodobenzenes and their preparation. 3,952,028, Cl. 260-350.00R.
Johann A. Wulfing Fabrik Pharmazeutischer Praparate: *See—*
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Johansson, Bjorn-Olow, to Alfa-Laval AB. Liquid measuring and mixing apparatus. 3,951,311, Cl. 222-145.000.
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Johnson, Robert A.: *See—*
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Johnson, Terence C.; and Reed, Malcolm E., to Seal Incorporated. Vacuum press. 3,951,724, Cl. 156-382.000.
Johnson, Wendell C., to Xerox Corporation. Method of forming a deformed, integral switching device. 3,950,846, Cl. 29-630.00R.
Jones, Glenn C., to Eastman Kodak Company. Electrolytic cell construction. 3,951,774, Cl. 204-272.000.
Jones, Harold Freeman: *See—*
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Jones, Michael Edward Benet, to Imperial Chemical Industries Limited. Manufacture of polysulphones. 3,951,918, Cl. 260-49.000.
Jones, Robert E. Truck mounted extendable flexible conveyor. 3,951,279, Cl. 214-83.260.
Jones, Robert J.; Cassey, Howard N.; and Green, Howard E., to TRW Inc. Polyimide sealant composition. 3,951,902, Cl. 260-37.00N.
Jones, Robert M.: *See—*
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Jonkers, Martinus Karel Petrus. Writing appliance. 3,951,554, Cl. 401-112.000.
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Josam Manufacturing Co.: *See—*
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Juhrend, Eugene F., to Mojonnier Bros. Co. Stack accumulator. 3,951,254, Cl. 198-37.000.
Jung, Werner, to Teletype Corporation. Constant pressure pump. 3,951,571, Cl. 417-328.000.
Jurd, Leonard; King, A. Douglas, Jr.; and Stanley, William L., to United States of America, Agriculture. Mixture of cinnamylphenols and normally spoilable substance. 3,951,820, Cl. 252-1.000.
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Kabisch, Gerhard; and Trube, Rudolf, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the concentration of hydrogen peroxide. 3,952,089, Cl. 423-588.000.
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Kahn, Leonard R. Narrow bandwidth, compatible single sideband (CSSB) transmission system, and three tone generator used therein. 3,952,251, Cl. 325-137.000.
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Kaiser, Robert; Mir, Leon; and Curtis, Richard A., to Avco Corporation. Fine powder classification by ferrofluid density separation. 3,951,784, Cl. 209-1.000.
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Kaiya, Atsushi; Otsuki, Yutaka; and Horii, Hideo, to Nippon Oil Company Ltd. Method for preparing adduct of butadiene polymer or copolymer and α, β-ethylenically unsaturated dicarboxylic acid compound. 3,952,023, Cl. 260-346.80R.
Kalasek, Karl, to Vereinigte Edelstahlwerke Aktiengesellschaft (VEW). Pressure vessel. 3,951,300, Cl. 220-327.000.
Kalen, Bodo, to Emtrol Corporation. High temperature support for cyclone separators. 3,951,629, Cl. 55-349.000.
Kallman, Jurgen, to Palitex Project-Company G.m.b.H. Apparatus and method for measuring yarn storage at a spindle assembly station in a textile yarn processing machine. 3,950,927, Cl. 57-34.00R.
Kalmokoff, Donald M.; DiPalma, Dominic R.; Glasstetter, David J.; and Gordon, Jack K., to Western Broadcasting Co., Ltd. Magnetic tape guidance device. 3,951,352, Cl. 242-55.19A.
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Karami, Hamzeh, to Kendall Company, The. Pressure sensitive diaper fastener. 3,950,824, Cl. 24-67.0AR.
Karls, Albert J., to Moeller Mfg. Co., Inc. Expansion plug lock. 3,950,971, Cl. 70-164.000.
Karn, Jack Lee, to Lubrizol Corporation, The. Basic metal salts of sulfur- and methylene-bridged polyphenol compositions, and epoxide-reacted derivatives thereof, and lubricants containing them. 3,951,830, Cl. 252-42.700.
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Kemper, James M., to Monogram Industries, Inc. Oil recirculating toilets. 3,951,796, Cl. 210-62.000.
Kendall Company, The: *See—*
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Kerkkonen, H. K.; Laine, K. M. J.; Alanen, M. A.; and Renner, H. V., to Oy Vehna Ab. Method of separating gluten from wheat flour. 3,951,938, Cl. 260-112.00G.
Kern, Edmund R., to International Telephone and Telegraph Corporation. Method for preparing electron emissive coatings. 3,951,874, Cl. 252-521.000.
Khan, Mohammad Zafar, to Beecham Group Limited. Pharmaceutical compositions. 3,951,953, Cl. 260-239.100.
Khoury, Nick S., to Continental Can Company, Inc. Horse-shoe shaped vent score. 3,951,299, Cl. 220-273.000.
Kiele, Francis S., to Stewart Hall Chemical Co. Anti-pollution heating oil products and processes. 3,951,613, Cl. 44-5.000.
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Kobayashi, Kazuki; and Takita, Kikuo, to Ricoh Co., Ltd. Projector and projection screen assembly. 3,951,518, Cl. 350-117.000.

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Kobayashi, Tadashi. Single-layer and multi-layer paper making apparatus. 3,951,736, Cl. 162-274.000.

Kobayashi, Teruo: *See—*
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Kocay, Witold R.; and Denmark, James B., to Monsanto Company. Low-moisture regain meat shrouds. 3,951,182, Cl. 139-420.00R.

Koch, Karl W.; and Sherry, J. Joseph, to Koch-Sherry Inc. Golf training device. 3,951,416, Cl. 273-183.00B.

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Koda, Akio: *See—*
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Koizumi, Shun: *See—*
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Kolbeck, Engelbert; and Sammer, Erich, to Knorr-Bremse GmbH. Air brake system for railway vehicles. 3,951,468, Cl. 303-81.000.

Kolene Corporation: *See—*
Shoemaker, Robert H.; and Wood, William G., 3,951,681.

Kolker, Carl Raymond, to Faxon Communications Corporation. Methods and apparatus for automatic background and contrast control. 3,952,144, Cl. 178-6.000.

Koller, Horst; Hartl, Alfons E.; and Kirchner, Gerhard, to Atlantic Research Institute Limited. Method of isomerizing humulone to isohumulone by catalytic acceleration with metal salts. 3,952,061, Cl. 260-586.00D.

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Kollmar, Ulrich, to Gebrueder Bellmer KG. Maschinenfabrik. Filter press. 3,951,809, Cl. 210-241.000.

Komarov, Anatoli N. Apparatus for demountably coupling two members. 3,951,558, Cl. 403-231.000.

Komatsu, Masahiro; Takai, Sakan; Maegawa, Harumi; and Takasu, Masaki, to Fujitsu Ltd. Magnetic bubble device driver. 3,952,292, Cl. 340-174.0TF.

Komatsu Seiren Kabushiki Kaisha: *See—*
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Komatsu, Toshiaki: *See—*
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Kondo, Asaji: *See—*
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Kondo, Minoru; and Hatou, Yoshinori, to Nihon Cement Co. Ltd.; and Asano Slate Co. Ltd. Process for preparing gypsum board. 3,951,735, Cl. 162-133.000.

Konishi, Kenzo; Kotone, Akira; Nakane, Yoshihiko; Hori, Takeshi; and Hoda, Masahiro, to Sakai Chemical Industry Company, Limited. Trisazo compounds containing a diphenyl-tetrazinyl component. 3,951,941, Cl. 260-152.000.

Konishiroku Photo Industry Co.: *See—*
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Konishiroku Photo Industry Co., Ltd.: *See—*
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Konopnicki, Daniel T.: *See—*
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Konz, Stephan A.; and Duncan, Jerry R., to Kansas State University Research Foundation. Dry ice cooling jacket. 3,950,789, Cl. 2-93.000.

Kopelowicz, Alberto. Preservative of elastic material. 3,951,141, Cl. 128-294.000.

Kopernik, Dror, to Turner Manufacturing Company. Injection molding a plastic article having a density approximating wood. 3,952,123, Cl. 428-178.000.

Koppers Company, Inc.: *See—*
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Kort, Fred. Bubble-making device. 3,950,887, Cl. 46-6.000.

Kosaka, Tadao: *See—*
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Kosinski, Frank J.; and Franquciro, Anthony Ernest, to Unicord Incorporated. Multi-impedance output for transistor power amplifier. 3,952,256, Cl. 330-15.000.

Kotera, Norio: *See—*
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Kotone, Akira: *See—*
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Koyama, Akira, to Yamada Dobby Co., Ltd. Hook connecting apparatus in a chain disc-type dobby machine. 3,951,176, Cl. 139-68.000.

Kozel, Charles A.; Baraglia, Nathan A.; and Velluer, Edgar, to Methode Manufacturing Corporation. Flexible electrical connector and method of making same. 3,951,493, Cl. 339-17.00M.

Kramer, Cornelis: *See—*
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Kramer, Gunter: *See—*
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Kramer, Melvin G., to Brunton Company, The. Angular displacement measuring apparatus. 3,950,859, Cl. 33-352.000.

Kramer, Wolfgang; Buchel, Karl Heinz; Meiser, Werner; Kaspers, Helmut; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Triazolyl-O,N-acetals. 3,952,002, Cl. 260-308.00R.

Kranzle, Rolf: *See—*
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Krause, Richard P.; and Montgomery, Harry T., to Pennsylvania Engineering Corporation. Thrust bearing device for metal treating vessel. 3,951,390, Cl. 266-221.000.

Kreisler Manufacturing Corporation: *See—*
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Krempff, Robert, to Centre d'Etudes et de Recherches des Phosphates Mineraux Cerphos. Method for the treatment of phosphogypsum. 3,951,675, Cl. 106-109.000.

Krenzer, John, to Velsicol Chemical Corporation. Heterocyclic thiadiazolylureas. 3,951,640, Cl. 71-90.000.

Krenzer, John, to Velsicol Chemical Corporation. 1-Thiadiazoly-6-carbamoyloxytetrahydropyrimidinones. 3,951,976, Cl. 260-256.60R.

Krespan, Carl George. Macrocyclic compounds having oxa and aza linkages in the ring and containing spirooxetane groups. 3,952,015, Cl. 260-338.000.

Krings, Josef. Guided head for a trench brace of trench sheeting devices. 3,950,952, Cl. 61-41.00A.

Kronenberg, Marvin L., to Union Carbide Corporation. Nonaqueous cell utilizing a 3Me2Ox-based electrolyte. 3,951,685, Cl. 136-6.0LN.

Kropp, Willis A., to Personal Communications, Inc. Microfiche reader employing dual incremental advancing means. 3,951,532, Cl. 353-25.000.

Krueger, Dennis L., to Minnesota Mining and Manufacturing Company. Coalescing unit for gravity separator. 3,951,814, Cl. 210-488.000.

Krutak, James J., Sr.; and Burpitt, Robert D., to Eastman Kodak Company. 2-(Fluorosulfonyl)ethylamino anthraquinones. 3,952,029, Cl. 260-371.000.

Kubota, Kazuo: *See—*
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Kuchinsky, Saul; Wolfe, Roger W.; Maloney, Thomas C.; and Hennessey, William M., to Burroughs Corporation. Multiple character flat panel display device. 3,952,223, Cl. 313-519.000.

Kuehnle, Manfred R., to Coulter Information Systems, Inc. Duplicator processor. 3,951,541, Cl. 355-8.000.

Kugler, Robert: *See—*
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Kuipers, Pieter Koenraad: *See—*
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Kuno, Akira: *See—*
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Kupcik, Milan: *See—*
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Kuratsuji, Takatoshi; Shima, Hiroo; Shima, Takeo; Kawase, Shoji; Shimotsuma, Sakae; and Hosoi, Masahiro, to Teijin Limited. Electrically insulating material. 3,952,125, Cl. 428-220.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Tomonaga, Atsushi, 3,951,904.

Kurita, Hidehiko; Nakano, Tokutaka; and Mizui, Kenji, to Fujitsu Ltd. Timing signal regenerating circuit. 3,952,254, Cl. 328-63.000.

Kuriyama, Hiroshi: *See—*
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Kurtz, Anthony D.; Mallon, Joseph R.; Bernstein, Harold; and Weber, Richard Alan, to Kulite Semiconductor Products, Inc. Method for fabricating glass-backed transducers and glass-backed structures. 3,951,707, Cl. 156-3.000.

Kuwada, Yutaka; Meguro, Kanji; Sato, Yoshiaki; and Fugono, Takeshi, to Takeda Chemical Industries, Ltd. Thienopyridine-carboxylic acid derivatives. 3,951,989, Cl. 260-294.80C.

Kwako, Stanley J. Decoy weight-carrier. 3,950,879, Cl. 43-3.000.

Kwolek, Stephanie Louise, to Du Pont de Nemours, E. I., and Company. Process for preparing poly(1,4-benzamide) in cyclic sulfone media. 3,951,914, Cl. 260-47.0CZ.

Kyburz, Emilio; and Spiegelberg, Hans, to Hoffmann-La Roche Inc. Tricyclic compounds. 3,952,017, Cl. 260-340.900.

Kyle, Gordon L.; and Hays, John D., Jr. Ear protection and hearing device. 3,952,158, Cl. 179-1.00P.

La Telemecanique Electrique: *See—*
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Labaz: *See—*
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Laboratorios Made, S.A.: *See—*
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Lada, Arnold: *See—*
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Lafont, Andre, to Societe d'Etudes et de Developpement des Aerogliss-eurs Marins, Terrestres et Amphibies S.E.D.A.M. Ground-effect vehicles. 3,951,227, Cl. 180-121.000.

LaForest, Pierre: *See—*
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Lahr, Roy J., to Xerox Corporation. Signal processing system. 3,952,156, Cl. 179-1.0GQ.

Laine, K. M. J.: *See—*
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Laitram Corporation, The: *See—*
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Lamb, Charles Carlisle T. Head and crown suspension for protective helmet. 3,950,788, Cl. 2-3.00R.

Lambert, George L., III, to Kearney-National, Inc. Electric connector apparatus. 3,951,507, Cl. 339-111.000.

Lammens, Arthur E.: *See—*
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Lammers, Uve H. W. Perspective navigation system employing the inner comparisons of signal phases received on an aircraft by a plurality of sensors. 3,952,308, Cl. 343-108.00R.

Lammers, Uve H. W., to United States of America, Air Force. Doppler perspective navigation system employing the comparisons with a reference source of signal phases received on an aircraft by a plurality of sensors. 3,952,309, Cl. 343-108.00R.

Lamparsky, Dietmar; and Schudel, Peter, to Givaudan Corporation. Mercapto- or alkylthio-substituted menthenones. 3,952,062, Cl. 260-586.00R.

Lancaster, Paul W.: *See—*
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Landau, Mark I.: *See—*
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Landen, William James, to Eyelet Specialty Co., Inc. Safety-closure device. 3,951,289, Cl. 215-211.000.

Lang, Charles J.: *See—*
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Langenstein, Joseph G., to Caterpillar Tractor Co. Recirculating ball bearing assembly for fork lift mast units. 3,951,471, Cl. 308-6.00C.

Langley, Robert C.; and Abrash, Muriel, to Engelhard Minerals & Chemicals Corporation. Glass frit containing lead ruthenate or lead iridate in relatively uniform dispersion and method to produce same. 3,951,672, Cl. 106-53.000.

Langsdorf, William P., to Du Pont de Nemours, E. I., and Company. Carbamoylphosphonates. 3,952,074, Cl. 260-924.000.

Lapeyre, James M., to Laitram Corporation, The. Electro-optical printing system. 3,952,311, Cl. 354-5.000.

LaPorta, Louis F.; and Goldsmith, David S. Muffler-brakes for drums. 3,951,032, Cl. 84-419.000.

LaPrad, Paul J.; Wassilak, Chester W.; and Johnson, Philip P., to Whirlpool Corporation. Liquid distribution system for dishwasher. 3,951,684, Cl. 134-144.000.

Larkin, Terrance M.: *See—*
Pankow, Herbert G.; Larkin, Terrance M.; Young, Roland L.; and McClelland, Donald H., 3,951,688.

Larsen, Theodore E., to Detector Electronics Corporation. Radiation detection apparatus. 3,952,196, Cl. 250-372.000.

Larson, Harold J., to Raymond Lee Organization, Inc., The. Sweeper attachment for a factory fork lift truck. 3,950,811, Cl. 15-49.00C.

Larson, Richard E., to Cherne Industrial, Inc. Method and apparatus for sealing large diameter pipes. 3,951,173, Cl. 138-97.000.

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Mandel, Harvey B.; and Thyen, Eberhard Heinrich, to Ethicon, Inc. Needled suture mounting and dispensing device and package. 3,951,261, Cl. 206-227.000.

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Matsumoto, Raymond T.; and Higashi, Stanley T., to Rockwell International Corporation. Driver circuit. 3,952,212, Cl. 307-243.000.

Matsumoto, Seiji, to Rank Xerox Ltd. Method of preventing toner build-up on electrodes during liquid development. 3,951,653, Cl. 96-1.0PE.

Matsumoto, Takuzo: *See—*
Morioka, Joji; Matsumoto, Takuzo; Otani, Kanji; and Uedono, Katsuhisa, 3,951,355.

Matsunaga, Masatsugu: *See—*
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Matsushita Electric Industrial Co., Ltd.: *See—*
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Shimizu, Tadao; Hashimoto, Koshiro; and Yanagida, Hiroaki, 3,952,090.
Takemura, Takehide; and Minami, Shunji, 3,952,241.
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Watanabe, Masahiro; Shibuya, Hideo; Sakai, Yasuhide; Hori, Ryuji; Kamiharako, Mistuaki; and Sato, Kazuo, 3,952,303.
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Matsuzaki, Hideomi: *See—*
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Mattei, Anthony: *See—*
Robinson, John L.; and Mattei, Anthony, 3,952,187.

Mattei, Jean; Simon, Bernard; and Vuong nee Adlerberg, Ingrid, to Electricite de France (Service National). Axial-flow fan with by-pass pipe or pipes. 3,951,566, Cl. 415-115.000.

Matthews, Joseph E. Piling fender. 3,950,953, Cl. 61-48.000.

Matui, Sei, to Nippon Kogaku K.K. Optical system for effecting indication within a finder in a single lens reflex camera. 3,952,321, Cl. 354-225.000.

Maurer, Fritz: *See—*
Hofer, Wolfgang; Maurer, Fritz; and Hammann, Ingeborg, 3,951,975.

Mausner, Marvin; and Kapur, Brij L., to Witco Chemical Corporation. Anti-dusting alpha-olefin sulfonate detergent compositions. 3,951,880, Cl. 252-555.000.

Mauvernary, Roland Yves; Bush, Norbert; Moleyre, Jacques; Monteil, Andre; and Simond, Jacques. New amino propanediol derivatives. 3,951,979, Cl. 260-268.0PH.

Mavrovic, Ivo. Urea synthesis with improved heat recovery and conversion. 3,952,055, Cl. 260-555.00A.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See—*
Hoppe, Walter, 3,952,203.

Maxson, Orwin G.; Myers, George M.; and Lescarboura, Jaime A., to Continental Oil Company. Dry drilling fluid composition. 3,951,824, Cl. 252-8.50B.

Mazzolla, Dan D. Reflector sheet and pad for ironer roll. 3,950,867, Cl. 38-66.000.

MBI Corporation: *See—*
Barker, Theodore L., 3,951,285.

McAdams, Paul F.: *See—*
Bloom, John J., Jr.; McAdams, Paul F.; Hand, Gene F.; and Katowich, Ronald F., 3,951,048.

McArthur, David A.; and Tollefsrud, Philip B., to United States of America, Energy Research and Development Administration. Fission fragment excited laser system. 3,952,263, Cl. 331-94.50P.

McClelland, Donald H.: *See—*
Pankow, Herbert G.; Larkin, Terrance M.; Young, Roland L.; and McClelland, Donald H., 3,951,688.

McCord, Thomas B.; and Westphal, James A., to Massachusetts Institute of Technology. Photometer-digitizer system. 3,951,552, Cl. 356-215.000.

McCoy, David R.; and Taylor, Dennis R., to Texaco Inc. Hydrocarbon conversion. 3,951,770, Cl. 204-163.00R.

McCoy, Frederic C., to Texaco Inc. Stabilized polysiloxane-polyglycol foam inhibitors for mineral oils. 3,951,832, Cl. 252-49.600.

McCoy, Frederic C.; and Cole, Edward L., to Texaco Inc. Alkylation catalyst additive. 3,951,857, Cl. 252-428.000.

McDonnell Douglas Corporation: *See—*
Gonzalez, Rodolfo, 3,951,718.
Grossman, Jack J., 3,951,526.
Sheratte, Martin B., 3,951,837.
Speakman, Eugene R., 3,951,561.

McEowen, James Royce: *See—*
Feiner, Alexander; James, Dennis Bryan; and McEowen, James Royce, 3,951,248.

McGehee, Roger N. Portable pecan cleaner. 3,951,056, Cl. 99-569.000.

McGraw-Edison Company: *See—*
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McKaig, Russel Marius, to Gilson Brothers Company (Canada) Ltd. Collapsible handle for lawn mower or the like. 3,950,817, Cl. 16-111.00A.

McLaughlin Gormley King Company: *See—*
Moore, Joseph B.; and Kassera, Dean C., 3,952,047.

McLean, Donald F., to Bralorne Resources Limited. Drill steel idler guide. 3,951,470, Cl. 308-3.900.

McNeil, Andrew R. Board game apparatus. 3,951,410, Cl. 273-134.0AC.

McNeil Laboratories, Incorporated: *See—*
Carson, John Robert, 3,952,012.

Mechanics, Incorporated: *See—*
Baxendale, Charles L., 3,951,241.

Medical Products, Inc.: *See—*
Devlin, Robert Francis, 3,951,748.

Medina, Jose M., Jr., to International Telephone and Telegraph Corporation. Connector member. 3,951,514, Cl. 350-96.00C.

Medizinische Produkte Immuno Aktiengesellschaft fur Chemish: *See—*
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Medtronic, Inc.: *See—*
Hartlaub, Jerome T., 3,951,154.

Meeres, Richard Donald, to Banister Continental Ltd. Underwater pipelaying system. 3,950,955, Cl. 61-72.300.

Meginnis, Charles E. Sight glass assembly. 3,951,301, Cl. 220-328.000.

Meguro, Kanji: *See—*
Kuwada, Yutaka; Meguro, Kanji; Sato, Yoshiaki; and Fugono, Takeshi, 3,951,989.

Mehn, Robert P., to IPCO Hospital Supply Corporation. Animal cage lid. 3,951,105, Cl. 119-18.000.

Mehoudar, Raphael. Drip level irrigation. 3,951,345, Cl. 239-542.000.

Mehrabian, Robert; and Flemings, Merton C., to Massachusetts Institute of Technology. Metal composition and methods for preparing liquid-solid alloy metal compositions and for casting the metal compositions. 3,951,651, Cl. 75-135.000.

Mehta, Povindar Kumar, to University of California, The Regents of the. Elastomeric and plastomeric materials containing amorphous carbonaceous silica. 3,951,907, Cl. 260-42.460.

Meinhardt, Francis J.: *See—*
Wittnebert, Frederick R.; Meinhardt, Francis J.; Branks, Joseph R.; Herold, Gerald C.; and Stambaugh, Daniel P., 3,951,555.

Meirowitz, Richard L. DC to frequency conversion circuit. 3,950,989, Cl. 73-231.00R.

Meiser, Werner: *See—*
Kramer, Wolfgang; Buchel, Karl Heinz; Meiser, Werner; Kaspers, Helmut; and Frohberger, Paul-Ernst, 3,952,002.

Meisner, Alfred; Oellig, Oskar; Neubauer, Josef; Trimpler, Walter; and Potthof, Erwin, to DIEHL. Digital display with stepping device. 3,950,939, Cl. 58-125.00C.

Mencacci, Samuel A., to FMC Corporation. Gas flushing system for beverage filler. 3,951,186, Cl. 141-5.000.

Meng, Karl: *See—*
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, 3,952,008.

Mengler, Helmut; Schinzel, Erich; and Rosch, Gunter, to Hoechst Aktiengesellschaft. Bis-triazinyl-amino)-stilbene-disulfonic acid derivatives. 3,951,965, Cl. 260-240.00B.

Menzel & Company: *See—*
Porsch, Rudolf, 3,951,758.

Mercer, James B. Herpes viral infection treatment. 3,952,103, Cl. 424-273.000.

Merck & Co., Inc.: *See—*
Novello, Frederick C., 3,951,966.
Novello, Frederick C., 3,951,967.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Bernhard, Horst; Stein, Alfred; Esselborn, Reiner; Hesse, Reiner; and Russmann, Horst, 3,951,679.

Mesek, Frederick K., to Johnson & Johnson. Back-to-back transition web and method of making said. 3,952,124, Cl. 428-218.000.

Messier, Russell F.: *See—*
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Metal Bellows Company: *See—*
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Metallgesellschaft Aktiengesellschaft: *See—*
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Methode Manufacturing Corporation: *See—*
Kozel, Charles A.; Baraglia, Nathan A.; and Velluer, Edgar, 3,951,493.

Mette, Klaus-Hermann. Robot control device. 3,951,271, Cl. 214-1.0CM.

Metzger, Klaus: *See—*
Bauer, Wolfgang; Herion, Dieter; Martin, Wolfgang; and Metzger, Klaus, 3,950,831.

Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. 1,2-Pentamethylene-1,4-dihydropyridine derivatives. 3,951,988, Cl. 260-294.900.

Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. 4-Aryl or hetero-6-amino-3,4-dihydropyrid-2-one-3,5-dicarboxylic acid ester. 3,951,990, Cl. 260-294.80D.

Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. 4-Aryl-6-amino-3,4-dihydropyrid-2-one-3,5-dicarboxylic acid ester. 3,951,991, Cl. 260-294.80F.

Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. 4-Thenyl-or furyl-6-amino-3,4-dihydropyrid-2-one-3,5-dicarboxylic acid ester. 3,951,992, Cl. 260-294.80D.

Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. 2-Amino-4,5-dihydropyridine derivatives and process for their preparation. 3,951,993, Cl. 260-294.80G.

Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. Tetrahydroindolizine derivatives. 3,951,994, Cl. 260-294.900.

Meyer, Jarold A., to Chevron Research Company. Hydrocarbon conversion catalyst. 3,951,864, Cl. 252-455.00Z.

Meyer, Robert W.: *See—*
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Meyers, Daniel. Collapsible sawhorse. 3,951,233, Cl. 182-155.000.

Meyers, Edward F., to Enviro-Gro, Inc. House plant water content indicator. 3,951,098, Cl. 116-114.0AM.

Michaels, Leonard H.; and Cooney, Edgar W., to Molex Incorporated. Electrical connector. 3,951,498, Cl. 339-19.000.

Michalke, Max: *See—*
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Michon, Maurice: *See—*
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Micro Devices Corporation: *See—*
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Midwest Electric Manufacturing Company: *See—*
Hyde, David F., Jr., 3,951,436.

Miericke, Jurgen; Hieronymus, Hans; Pawlitschek, Franz; and Urankar, Laxmikant, to Siemens Aktiengesellschaft. Electro dynamic suspension and guidance system for a moving vehicle. 3,951,075, Cl. 104-148.0SS.

Mikasa, Yoshio, to Minolta Camera Kabushiki Kaisha. Printing paper cutting device for use in copying apparatus. 3,951,544, Cl. 355-29.000.

Millard, Frederick William, to GAF Corporation. Direct-positive silver halide emulsion fogged with a cyanoborohydride anion. 3,951,656, Cl. 96-107.000.

Miller, Charles E.: *See—*
Repik, Albert J.; Miller, Charles E.; and Johnson, Homer R., 3,951,856.

Miller, John S., to United States of America, Air Force. Calibrated quadraxial system for measuring shielding transfer impedance. 3,952,245, Cl. 324-57.00R.

Miller, Loren C.; and Walsh, Kenneth G., to Miller and Sons Structures, Inc. Ventilation system for livestock housing. 3,951,336, Cl. 98-1.500.

Miller, Miles C.: *See—*
Flatau, Abraham; Olson, Donald N.; and Miller, Miles C., 3,951,070.

Miller, Roy W., to Pullman Incorporated. Railway hopper car door and latch actuating means. 3,951,077, Cl. 105-241.00C.

Miller and Sons Structures, Inc.: *See—*
Miller, Loren C.; and Walsh, Kenneth G., 3,951,336.

Milligan, John Gordon: *See—*
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Millmaster Onyx Corporation: *See—*
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Milroy, Richard A., to United States of America, Navy. Rolling-gate, quiet-throttling, flow-control valve. 3,951,377, Cl. 251-35.000.

Milsco Manufacturing Company: *See—*
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Mimco Incorporated: *See—*
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Minami, Shunji: *See—*
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Minamitani, Yoshihiro: *See—*
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Minckler, G. Mark, to Electrostatic Equipment Corporation. Automatic feed fluidized bed system. 3,951,099, Cl. 118-7.000.

Mineo, Hiroki: *See—*
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Mineo, Masatoshi: *See—*
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Mino, Junryo; and Arai, Haruhiko, to Kao Soap Co., Ltd. Detergent composition. 3,951,839, Cl. 252-95.000.

Minolta Camera Kabushiki Kaisha: *See—*
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Mishima, Sanetsugu; Matsubara, Tsutomu; Fujii, Hiroyuki; Funada, Kazumasa; and Torigoe, Masataka, to Chisso Corporation. Process for producing improved vinyl chloride polymers. 3,951,925, Cl. 526-72.000.

Mitchell, William S.: *See—*
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Mitsubishi Gas Chemical Company, Inc.: *See—*
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Mitsubishi Gas Chemical Co., Ltd.: *See—*
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Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
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Mitsuhashi, Yoshio. Stapler with a punch mechanism. 3,951,325, Cl. 227-76.000.

Mitsui Shipbuilding & Engineering Co., Ltd.: *See—*
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Mitsui, Yoshihiro; Arai, Kenichiro; and Kamakura, Hiroshi, to Kabushiki Kaisha Suwa Seikosha; and Shinshu Seiki Kabushiki Kaisha. Compact motor. 3,952,219, Cl. 310-156.000.

Miura, Nobuaki: *See—*
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Miura, Yoshinori: *See—*
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Miyake, Hideo; Makimura, Osamu; and Tsuchida, Toshio, to Toyo Boseki Kabushiki Kaisha. Process for producing polyester resin. 3,951,886, Cl. 260-2.300.

Miyamoto, Akio, to Fuji Photo Film Co., Ltd. Method of desensitizing. 3,952,117, Cl. 427-150.000.

Miyamoto, Mikizo: *See—*
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Miyashita, Akitoshi: *See—*
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Miyashita, Kakunosuke, to Hitachi Metals, Ltd. Low carbon, Ni-Cr-Mo system cast iron roll. 3,951,650, Cl. 75-128.00D.

Miyoshi, Hiroshi; Mori, Hirohumi; and Tanoue, Yoriko, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Photo-degrading resinous composition and shaped article manufactured therefrom. 3,951,884, Cl. 260-2.50B.

Miyoshi, Shinichiro: *See—*
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Mobil Oil Corporation: *See—*
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Moehlenpah, Walter George. Connector plate. 3,951,033, Cl. 85-13.000.

Moeller Mfg. Co., Inc.: *See—*
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Mohr, Harold R. Portable wiping machine for wet surfaces. 3,950,812, Cl. 15-98.000.

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Molex Incorporated: *See—*
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Molina, Orlando G., to Rockwell International Corporation. Method of magnetic particle testing using strippable coatings. 3,951,881, Cl. 252-62.520.

Molinari, Ewald: *See—*
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Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, to Bayer Aktiengesellschaft. Pyrazol-5-ones. 3,952,008, Cl. 260-310.00A.

Mollinger, Sebastian. Flexible curtain wall. 3,950,906, Cl. 52-235.000.

Monarch Tool & Manufacturing Company: *See—*
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Monchil, Donald L. Fixed bill fishing lure. 3,950,882, Cl. 43-42.370.

Monfret, Alain Gerard, to U.S. Philips Corporation. Method of manufacturing a semiconductor device and device manufactured according to the method. 3,951,694, Cl. 148-1.500.

Monkhouse, Donald C., to Pfizer Inc. Stabilized E-series prostaglandins. 3,952,004, Cl. 260-308.00D.

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Montanari, Lucio, to Ing. C. Olivetti & C., S.p.A. Electrothermal printing unit. 3,951,247, Cl. 197-1.00R.

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Montgomery, George R. Pipe or tube cutter for hand drills. 3,951,564, Cl. 408-29.000.

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Montron Corporation: *See—*
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Moore, Joseph B.; and Kassera, Dean C., to McLaughlin Gormley King Company. Method of purifying pyrethrum extract. 3,952,047, Cl. 260-468.00H.

Mooring, Scott W., to Steamatic, Inc. Method of dry cleaning fabrics. 3,951,597, Cl. 8-142.000.

Morawiec, Robert: *See—*
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Mori, Chiharu; Kawasaki, Masahiro; and Ando, Hirokazu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Shutter control circuit for cameras. 3,952,318, Cl. 354-51.000.

Mori, Hirohumi: *See—*
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Mori, Shigeru, to Mitsui Shipbuilding & Engineering Co., Ltd. Method and apparatus for constructing a suspension bridge tower. 3,950,913, Cl. 52-747.000.

Morifuji, Yukio: *See—*
Soma, Nobuo; Kawamoto, Isao; Nakajima, Tomio; Sugita, Sadao; Wada, Tsuneo; Saito, Shizuo; Inokuma, Hiroyuki; Horigome, Koichi; and Morifuji, Yukio, 3,951,661.

Morikawa, Takashi; Kihara, Hidetoshi; Urifu, Tooru; and Takahashi, Hisateru, to Daiwa Boseki Kabushiki Kaisha; and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method of feeding a sliver into a combing section of an open end spinning machine and a presser therefor. 3,950,929, Cl. 57-58.950.

Morioka, Joji; Matsumoto, Takuzo; Otani, Kanji; and Uedono, Katsuhisa, to Sumitomo Electric Industries, Ltd. Automatic cable winding apparatus. 3,951,355, Cl. 242-158.00R.

Morishita, Masataka: *See—*
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Morozowich, Walter, to Upjohn Company, The. Substituted anilide esters of PGA. 3,952,048, Cl. 260-468.00D.

Morrien, Albertus Marinus, to U.S. Philips Corporation. Receiver for a selective paging system. 3,952,250, Cl. 325-55.000.

Morrill, Wayne J. Blank for fan blade. 3,951,611, Cl. 29-190.000.

Morris, Drew W., to Drew-It Corporation. Apparatus for crushing material. 3,951,059, Cl. 100-173.000.

Morrison, Howard J., to Marvin Glass & Associates. Combination jar and can opener. 3,950,801, Cl. 7-14.250.

Morrow, Darrell R.; and Schuler, Michael. Method of making a disposable package. 3,950,918, Cl. 53-14.000.

Morse Products Manufacturing: *See—*
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Morton-Norwich Products, Inc.: *See—*
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Moses, Daniel H., to Champion International Corporation. Handling and dispensing system and apparatus for cylindrical objects. 3,951,276, Cl. 214-16.40A.

Mossinger, Hans A.: *See—*
Bohringer, Werner K.; Goller, Horst B.; Kollmar, Hans K.; Mossinger, Hans A.; and Zeltner, Rudolph H., 3,951,761.

Motomura, Mitsuteru; Futamata, Masayuki; and Kitta, Yasuo, to Kabushiki Kaisha Komatsu Seisakusho. Controlled output gear pump and motor. 3,951,575, Cl. 417-283.000.

Motorola, Inc.: *See—*
Eberhard, Everett, 3,952,211.
Fisher, John A.; and Zoroglu, Demir S., 3,951,693.

Movick, Nyle O. Method and apparatus for thermally circulating a liquid. 3,951,204, Cl. 165-1.000.

Moyer, Rudolph H.; and Sibbett, Donald J., to Geomet, Inc. Apparatus for prothrombin testing. 3,951,606, Cl. 23-253.00R.

Mozynski, Donald M.: *See—*
Vickery, Glenn C.; and Mozynski, Donald M., 3,951,849.

Mrva, Bohumir; Macko, Josef; Kupcik, Milan; and Truchlik, Stefan, to Vyskumny ustav agrochemickej Technologie. Method of producing chlorobenzenes from benzene sulphonyl chlorides. 3,952,065, Cl. 260-612.00D.

Muckter, Heinrich: *See—*
Graudums, Ivars; Muckter, Heinrich; and Frankus, Ernst, 3,951,985.

Mueller-Tamm, Heinz: *See—*
Schick, Hannes; Hennenberger, Peter; Staiger, Gerhard; and Mueller-Tamm, Heinz, 3,951,858.

Muhlegger, Klaus: *See—*
Roder, Albert; Beaucamp, Klaus; Weimann, Gunter; Schneider, Walter; and Muhlegger, Klaus, 3,951,744.

Mukai, Kunio: *See—*
Fujimoto, Keimei; Mukai, Kunio; Yamamoto, Takaji; and Ishibe, Kouichi, 3,952,100.

Mullen, Theodore R.; and Lendener, William J., to Cities Service Company. Two-cycle and rotary combustion engine lubricant. 3,951,829, Cl. 252-32.500.

Muller, Bernhard: *See—*
Muller, Felix; Hummel, Dietmar; and Muller, Bernhard, 3,951,307.

Muller, Felix; Hummel, Dietmar; and Muller, Bernhard, to Kienzle Apparate GmbH. Timing of the control and resetting motor in a fuel dispensing arrangement. 3,951,307, Cl. 222-33.000.

Muller, Gunter, to BBC Brown Boveri & Company Limited. Forming tool for coil-end components of electric machines. 3,951,183, Cl. 140-92.100.

Muller, Jurgen: *See—*
Lohrberg, Karl; Haas, Gunther; and Muller, Jurgen, 3,951,767.

Mulligan, David D. Manually operated reader-printer. 3,951,543, Cl. 355-27.000.

Mullinax, Thomas E.: *See—*
Barr, Harry S., Jr.; and Mullinax, Thomas E., 3,951,627.

Mullins, William H., to Hughes Aircraft Company. Synchronous detector with pulse repetition frequency modulation. 3,952,302, Cl. 343-7.700.

Multi-State Devices Ltd.: *See—*
Grass, Ben, 3,950,991.

Munehiro, Tomiji: *See—*
Tsukamoto, Masao; Kawai, Makito; and Munehiro, Tomiji, 3,951,029.

Murakami, Masuo; Isaka, Ichiro; Kashiwagi, Teruya; Matsui, Hidefumi; Nakano, Kohzi; Takahashi, Kozo; Horiguchi, Hiroshi; and Koda, Akio, to Yamanouchi Pharmaceutical Co., Ltd. Novel oxofuryl ester derivatives of penicillin and cephalosporin. 3,951,954, Cl. 260-239.100.

Murakami, Masuo; Iwanami, Masaru; Shibanuma, Tadao; Fujimoto, Masaharu; Sato, Norio; Kawai, Ryutaro; and Yano, Kuniichiro, to Yamanouchi Pharmaceutical Co., Ltd. Novel N-alkenyltetracycline derivatives. 3,951,962, Cl. 260-240.00R.

Murakami, Shiro; and Hori, Kikuo, to Teijin Limited. Draw-texturing apparatus. 3,950,928, Cl. 57-34.0HS.

Murata, Kenji: *See—*
Takamura, Tsutomu; Shirogami, Tamotsu; Sato, Yuichi; Murata, Kenji; and Niki, Hirokazu, 3,951,687.

Murata Kikai Kabushiki Kaisha: *See—*
Shindo, Noboru; Hashizume, Hiroshi; and Kikuchi, Shuichi, 3,950,930.
Uchida, Hiroshi, 3,951,350.

Murata, Kingo; Nishimura, Shigeyuki; and Ogihara, Hiroshi, to Copal Company Limited. Timer for multi-purpose use. 3,952,177, Cl. 200-35.00R.

Murayama, Yukio: *See—*
Hara, Takao; and Murayama, Yukio, 3,952,261.

Murphy, Christopher J., to Parson, Brinkerhoff, Quade & Douglas, Inc. Combination providing safety berthing, unloading of oil, and conduit carriage to refineries on land, of large deep-sea-requiring tankers. 3,950,805, Cl. 9-8.00P.

Murphy, Frank W., Jr.; and Nunneley, J. David, to Frank W. Murphy Manufacturer, Inc. Pressure gage and venting means for use with machinery. 3,950,998, Cl. 73-411.000.

Musgrave, Daniel D. Ballistic cutting devices. 3,950,877, Cl. 42-90.000.

Musgrave, Daniel D. Suppressive ballistic cutters. 3,950,878, Cl. 42-90.000.

Myers, Gary L.; and Staiger, Donald W., to Koehring Company. Apparatus for facilitating access to the mold halves of a molding machine. 3,951,579, Cl. 425-190.000.

Myers, George M.: *See—*
Maxson, Orwin G.; Myers, George M.; and Lescarboura, Jaime A., 3,951,824.

Mysiak, Eugene J., to Molex Incorporated. Electrical connector. 3,951,491, Cl. 339-17.0CF.

Nacoral, S.A.: *See—*
Goitia, Felix Oginaga, 3,950,872.

Nadella: *See—*
Pitner, Alfred, 3,950,834.

Nagao, Taku: *See—*
Ikezaki, Muneyoshi; Okazaki, Yasushi; Ito, Nobuo; Nagao, Taku; Hoshiyama, Masao; and Nakajima, Hiromichi, 3,952,021.

Nagaoka, Yoshihiko: *See—*
Shiraishi, Tatsuo; Kishiwada, Susumu; Shimizu, Shinkichi; Honmaru, Shigeru; Atsumi, Akihiko; Ichihashi, Hiroshi; and Nagaoka, Yoshihiko, 3,951,861.

Nagayama, Masuzo: *See—*
Isa, Hiroshi; Ukigai, Toshiyuki; Tominaga, Anri; Taniyasu, Ryozo; and Nagayama, Masuzo, 3,952,071.
Okumura, Osamu; Ohbu, Kazuo; Kachi, Mitsuharu; and Nagayama, Masuzo, 3,951,877.

Nagler, Robert T., to United States of America, Air Force. Deactivating radar chaff. 3,952,307, Cl. 343-18.00B.

Naito, Makoto; Kasami, Akinobu; Kawachi, Masaru; Sadamasa, Tetsuo; and Mineo, Hiroki, to Tokyo Shibaura Electric Co., Ltd. Method of manufacturing a gallium phosphide red-emitting device. 3,951,699, Cl. 148-171.000.

Naito, Okito, to Kabushiki Kaisha Suwa Seikosha. Chronograph wristwatch. 3,950,935, Cl. 58-39.500.

Nakada, Masahiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Mixture gas heating device for use in internal combustion engine. 3,951,116, Cl. 123-122.0AC.

Nakai, Hiroshi; Nishizawa, Tetsuo; and Sekine, Ziro, to Fuji Photo Optical Co., Ltd. Motion picture camera with exposure time prolonging means. 3,951,531, Cl. 352-216.000.

Nakai, Shiro: *See—*
Itoda, Masaru; Nakai, Shiro; Ushio, Masatoshi; Matono, Hirokuni; and Baba, Takao, 3,950,921.

Nakajima, Hiromichi: *See—*
Ikezaki, Muneyoshi; Okazaki, Yasushi; Ito, Nobuo; Nagao, Taku; Hoshiyama, Masao; and Nakajima, Hiromichi, 3,952,021.

Nakajima, Takeshi: *See—*
Kimura, Michio; Nakajima, Takeshi; Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; Inaba, Shigeho; and Yamamoto, Hisao, 3,951,984.

Nakajima, Tomio: *See—*
Soma, Nobuo; Kawamoto, Isao; Nakajima, Tomio; Sugita, Sadao; Wada, Tsuneo; Saito, Shizuo; Inokuma, Hiroyuki; Horigome, Koichi; and Morifuji, Yukio, 3,951,661.

Nakakita, Fumihiko: *See—*
Kogure, Hideo; Kuriyama, Hiroshi; and Nakakita, Fumihiko, 3,951,667.

Nakamura, Akira: *See—*
Arashi, Masahiro; Iwano, Kazuko; and Nakamura, Akira, 3,951,598.

Nakamura, Masaya: *See—*
Seki, Yachio; and Nakamura, Masaya, 3,951,632.

Nakamura, Takeshi, to Nippon Seiko Kabushiki Kaisha. Conical roller bearing. 3,951,483, Cl. 308-214.000.

Nakamura, Yasusi; Umemura, Masashi; and Yonekura, Michimasa, to Asahi Denka Kogyo K.K. Fluorine-containing compounds. 3,952,075, Cl. 260-950.000.

Nakane, Yoshihiko: *See—*
Konishi, Kenzo; Kotone, Akira; Nakane, Yoshihiko; Hori, Takeshi; and Hoda, Masahiro, 3,951,941.

Nakano, Kohzi: *See—*
Murakami, Masuo; Isaka, Ichiro; Kashiwagi, Teruya; Matsui, Hidefumi; Nakano, Kohzi; Takahashi, Kozo; Horiguchi, Hiroshi; and Koda, Akio, 3,951,954.

Nakano, Tokutaka: *See—*
Kurita, Hidehiko; Nakano, Tokutaka; and Mizui, Kenji, 3,952,254.

Nakao, Masaru: *See—*
Maruyama, Isamu; Nakao, Masaru; Sasajima, Kikuo; Inaba, Shigeho; and Yamamoto, Hisao, 3,951,986.

Nakata, Roy, to General Electric Company. Method for applying high-voltage electrical insulation by filtering out suspended particles from a slurry. 3,951,712, Cl. 156-48.000.

Nakayama, Hirokazu: *See—*
Inamoto, Yoshiaki; Nakayama, Hirokazu; Takenaka, Hidetsugu; and Kadono, Takeji, 3,952,049.

Nakayama, Minoru; and Yamahata, Yusai, to Mitsui Shipbuilding & Engineering Co., Ltd. Combustion method of paint waste disposal. 3,951,581, Cl. 431-4.000.

Nakayama, Takao: *See—*
Inove, Eiichi; Nakayama, Takao; and Nose, Taiji, 3,951,652.

Namba, Kazuo: *See—*
Gondo, Hisashi; Takechi, Hiroshi; Masui, Hiroaki; and Namba, Kazuo, 3,951,696.

Namura, Yukio; Mashimo, Tooru; Kosaka, Tadao; and Ofude, Kooichi, to Kabushiki Kaisha Matsuura Kikai Seisakusho. Control apparatus for a warp knitting machine. 3,950,942, Cl. 66-86.00C.

Nanjyo, Toshio; and Yasukawa, Shozo, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Power control system for electric arc or refining furnace electrically directly coupled to independent power generating unit or units. 3,952,138, Cl. 13-12.000.

Napflin, Hans. Safety ski binding. 3,951,424, Cl. 280-618.000.

Narayanan, Venkatachala Lakshmi; and Setescak, Linda Louise, to E. R. Squibb & Sons, Inc. 4-Azatricyclo[4.3.1.1^{3,8}]undecane and related compounds. 3,951,950, Cl. 260-239.00B.

Narco Scientific Industries, Inc.: *See—*
Blanz, John H., 3,951,527.

Nason, Stephen G., to United States Gypsum Company. Mineral wool paper. 3,952,130, Cl. 428-332.000.

Nasser, Benny E., Jr., to Phillips Petroleum Company. Production of hydrogenated ethylene polymers using chromium-containing catalyst. 3,951,933, Cl. 526-25.000.

Natelson, Samuel, to Rohe Scientific Corporation. Instrument for automated immunochemical analysis. 3,951,605, Cl. 23-253.00R.

National Controls, Inc.: *See—*
Rock, Frank C., 3,951,221.

National Gypsum Company: *See—*
Bath, Wesley W., 3,951,900.

National Semiconductor Corporation: *See—*
Frederiksen, Thomas M.; and Howard, William M., 3,952,279.

National Steel Corporation: *See—*
Jakimowicz, Christopher C.; Jones, Larry C.; and Raugh, Donald D., 3,951,751.
Pell, Raymond H., 3,951,268.
Swanson, William D.; and Spencer, Edward P., 3,951,296.

Naulin, Michel, to La Telemecanique Electrique. Cams. 3,951,007, Cl. 74-568.00R.

Nebzydoski, John W., to Texaco Inc. Di and tri (hydrocarbylammonium) trithiocyanurate. 3,951,973, Cl. 260-248.0CS.

Nebzydoski, John W.; Brockway, Harry; Patmore, Edwin L.; and Oberender, Frederick G., to Texaco Inc. Alkyl ammonium thiocyanate manufacture and lube containing same. 3,952,059, Cl. 260-583.00R.

Neder, Gunter, to SKF Industrial Trading and Development Company, B.V. Clutch release bearings. 3,951,244, Cl. 192-98.000.

Nederlandsche Wapen-en Munitiefabriek De Kruithoorn N.V.: *See—*
Dautzenberg, Norbert; Hewing, Josef; Michalke, Max; and Weber, Henri, 3,951,035.

Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel en Verkeer: *See—*
de la Faille, Jacob Baart, 3,951,392.

Neely, Lloyd F., to P. R. Mallory & Co., Inc. Electrical contact material. 3,951,872, Cl. 252-513.000.

Neff, Gregor N. Collection and feeding of insects to animals and the sorting of aquatic animals. 3,951,104, Cl. 119-3.000.

Nelh, Georges: *See—*
Staudt, Heinrich; and Nelh, Georges, 3,952,220.

Nelson, George D.; and Nissing, Kenneth J., to Monsanto Company. Control of sodium dichlorocyanurate hydration through airstream flash drying. 3,951,972, Cl. 260-248.00C.

Nelson, Keith E.: *See—*
Crandell, William H.; Lisenbee, Wayne F.; and Nelson, Keith E., 3,951,152.

Nelson, Philip E.: *See—*
Rechtsteiner, Steve A.; Nelson, Philip E.; and Heron, John R., 3,951,184.

Nerbas, Dieter; and Engler, Peter, to U.S. Philips Corporation. Drive for the movable portion of a printer. 3,951,249, Cl. 197-82.000.

Ness, Irving Stanley; and Surowitz, Philip, to Johnson & Johnson. Tape tab system for opening and refastening disposable diapers. 3,951,149, Cl. 128-287.000.

Ness, Peter; Kramer, Gunter; and Tisch, Elvira, to Varta Batterie Aktiengesellschaft. Electrode mass containing nickel hydroxide. 3,951,686, Cl. 136-28.000.

Netion Limited: *See—*
Orr, Brian, 3,952,127.

Neubauer, Josef: *See—*
Meisner, Alfred; Oellig, Oskar; Neubauer, Josef; Trimpler, Walter; and Potthof, Erwin, 3,950,939.

Neumann, Friedmund: *See—*
Prezewowsky, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Neumann, Friedmund; and Nishino, Yukishige, 3,951,958.
Prezewowsky, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Neumann, Friedmund; and Nishino, Yukishige, 3,951,959.

Neumann, Julius: *See—*
Shaklee, Francis Sowersby; Neumann, Julius; and Irving, Evans James, 3,952,209.

Nevin, Charles S.: *See—*
Drury, Raymond L., Jr.; Nevin, Charles S.; and Hines, James W., 3,951,892.

New Zealand Limited: *See—*
Weiss, Donald Eric; and Battaerd, Hendrik Adriaan Jacobus, 3,951,799.

Newall, Christopher Earle: *See—*
Phillipps, Gordon Hanley; Newall, Christopher Earle; and Ayres, Barry Edward, 3,952,031.

Newell, James Campbell: *See—*
Gregory, George Keith Emerson; Peach, James Marchant; and Newell, James Campbell, 3,951,852.

Newhall, Albert F.; and Rule, Clinton, to Rule Industries, Inc. Insect electrocution device. 3,950,886, Cl. 43-112.000.

Newstead, Charles, to Girling Limited. Plural disc brake systems. 3,951,239, Cl. 188-71.500.

Nicholson, Albert G.: *See—*
Bowman, John H., Jr., 3,951,484.

Nicholson, Charles B., to Albany International Corporation. Bearing lubrication system for bowed rolls. 3,951,480, Cl. 308-187.000.

Nicholson, Robert W.: *See—*
Bowman, John H., Jr., 3,951,484.

Niedecker, Herbert. Assembly of loops for suspending sausages. 3,951,262, Cl. 206-343.000.

Niederprum, Hans: *See—*
Voss, Peter; Niederprum, Hans; and Wechsberg, Manfred, 3,951,762.

Nienhold, George O.: *See—*
Knudsen, Kenneth F.; and Nienhold, George O., 3,951,076.

Nihon Cement Co. Ltd.: *See—*
Kondo, Minoru; and Hatou, Yoshinori, 3,951,735.

Nihon Denshi Kabushiki Kaisha: *See—*
Harada, Yoshiyasu; and Someya, Teruo, 3,952,198.

Nihon Nohyaku Kabushiki Kaisha: *See—*
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Niimi, Yukihisa: *See—*
Ogata, Yuzuru; and Niimi, Yukihisa, 3,952,128.

Nijenhuis, Emil Johan; and Kramer, Cornelis, to De Staat der Nederlanden, ten dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie. Dot matrix printer having selectively actuated printed bars. 3,952,153, Cl. 178-30.000.

Niki, Hirokazu: *See—*
Takamura, Tsutomu; Shirogami, Tamotsu; Sato, Yuichi; Murata, Kenji; and Niki, Hirokazu, 3,951,687.

Nikkel, Willem A.: *See—*
Bradley, Ward J., Jr.; and Nikkel, Willem A., 3,951,725.

Nippon Concrete Industries Co. Ltd.: *See—*
Horiuchi, Yoshiaki; Hanawa, Masaaki; and Hasegawa, Shinzo, 3,951,578.

Nippon Electric Company Limited: *See—*
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Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Hoso Kyokai: *See—*
Kamegaya, Takeo; Kaneko, Ryuichi; Yokozawa, Minori; and Matsuzaki, Hideomi, 3,952,221.
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Nippon Kayaku Kabushiki Kaisha: *See—*
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Nippon Kogaku K.K.: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Oil Company Ltd.: *See—*
Kaiya, Atsushi; Otsuki, Yutaka; and Horii, Hideo, 3,952,023.

Nippon Seiko Kabushiki Kaisha: *See—*
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Nippon Soken, Inc.: *See—*
Wakamatsu, Hisato; Arai, Hiroshi; Kuno, Akira; and Akita, Shigeyuki, 3,952,286.

Nippon Steel Corporation: *See—*
Gondo, Hisashi; Takechi, Hiroshi; Masui, Hiroaki; and Namba, Kazuo, 3,951,696.

Nippon Telegraph and Telephone Public Corporation: *See—*
Kato, Kunihiro; Matsuda, Ryoichi; and Okayasu, Ryoichi, 3,952,166.

Nirasawa, Tomiji; and Ota, Hiroshi, to Kabushiki Kaisha Tokyo Keiki. Marine radar transmission and reception system. 3,952,305, Cl. 343-17.10R.

Nirschl, Joseph P.: *See—*
Curry, John D.; Diehl, Francis L.; and Nirschl, Joseph P., 3,951,674.

Nishida, Yoshimasa: *See—*
Sano, Keizo; Nishida, Yoshimasa; Kagiya, Yoshio; Tanaka, Michihiko; and Mineo, Masatoshi, 3,951,905.

Nishikawa, Kazuo: *See—*
Hikai, Akio; and Nishikawa, Kazuo, 3,951,088.

Nishimoto, Yoshio, to Olympus Optical Co., Ltd. Photographic lens system with a short overall length. 3,951,523, Cl. 350-189.000.

Nishimura, Izuhiko; and Fushimi, Satoshi, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece. 3,950,940, Cl. 58-23.00A.

Nishimura, Shigeyuki: *See—*
Murata, Kingo; Nishimura, Shigeyuki; and Ogihara, Hiroshi, 3,952,177.

Nishimura, Toshiaki: *See—*
Huang, Ching Yun; Takashina, Naomitsu; and Nishimura, Toshiaki, 3,951,791.

Nishino, Yukishige: *See—*
Prezewowsky, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Neumann, Friedmund; and Nishino, Yukishige, 3,951,958.
Prezewowsky, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Neumann, Friedmund; and Nishino, Yukishige, 3,951,959.

Nishioka, Matsuo; Oka, Shunzo; Miyashita, Akitoshi; and Oshima, Kazuo, to Matsushita Electric Industrial Co., Ltd. Combined variable resistor assembly provided with position indicator means. 3,952,277, Cl. 338-119.000.

Nishizawa, Tetsuo: *See—*
Nakai, Hiroshi; Nishizawa, Tetsuo; and Sekine, Ziro, 3,951,531.

Nissing, Kenneth J.: *See—*
Nelson, George D.; and Nissing, Kenneth J., 3,951,972.

Nitto Chemical Industry Co., Ltd.: *See—*
Ohshima, Iwao; Chiba, Seiichi; Ariyama, Kenzo; Ogawa, Yasuo; and Kawamura, Zengiro, 3,951,934.

Nitu, Jon E. Ball umbrella. 3,951,160, Cl. 135-20.00B.

Nixdorf Computer AG: *See—*
Selke, Reimund; Obersteller, Udo; and Richter, Kurt, 3,951,252.

NL Industries, Inc.: *See—*
Braithwaite, David G.; and Darlington, R. Keith, 3,952,085.

Noack, Dieter; Diekmann, Joachim; Eggert, Horst; and Kugler, Robert, to Siemens Aktiengesellschaft. Shock absorber. 3,951,237, Cl. 188-1.00B.

Noat, Jacques: *See—*
Vrancken, August; Dufour, Paul; Noat, Jacques; and Holderic, Jean, 3,952,032.

Noguchi, Masaru; Takahashi, Tsunehiko; and Oosaka, Shigenori, to Fuji Photo Film Co., Ltd. Apparatus for deflecting light and scanning line conversion system. 3,951,509, Cl. 350-7.000.

Noranda Mines Limited: *See—*
Claessens, Pierre L.; and Cromwell, John L., 3,951,773.

Norback, Per G., to Aktiebolaget Carl Munters. Catalytic purifier unit. 3,951,865, Cl. 252-457.000.

Norton Company: *See—*
Alliegro, Richard A.; and Coes, Samuel H., 3,951,587.

Norvell Corporation: *See—*
Adler, Robert H., 3,950,790.

Nose, Taiji: *See—*
Inove, Eiichi; Nakayama, Takao; and Nose, Taiji, 3,951,652.

Nourse, Billie Eugene: *See—*
Ray, Jess B., Jr.; and Nourse, Billie Eugene, 3,951,572.

Novacek, George J.: *See—*
Emerson, Frank W.; and Novacek, George J., 3,952,294.

Novak, Joseph A. Water ski tow communication system. 3,952,155, Cl. 179-1.0VE.

Novel Furnishings Ltd.: *See—*
Hollingsworth, Gary R., 3,950,796.

Novello, Frederick C., to Merck & Co., Inc. 3-Pyrazinyl substituted-1,2,4-benzothiadiazines. 3,951,966, Cl. 260-243.00D.

Novello, Frederick C., to Merck & Co., Inc. 7-Mercapto(or thio)-benzothiadiazine products. 3,951,967, Cl. 260-243.00D.

Novice, Michael A., to Dart Industries Inc. Method for hot-end coating of glass containers. 3,952,118, Cl. 427-255.000.

Nowak, Edward N.; and Frech, Kenneth J., to Goodyear Tire & Rubber Company, The. Process of olefin metathesis. 3,952,070, Cl. 260-683.00D.

Nowak, James A.: *See—*
Burroughs, James E.; and Nowak, James A., 3,951,827.

Nowisch, Heinz K.; and Phelps, Richard W., to Black Clawson Company, The. Apparatus for measuring tension in a moving web. 3,950,988, Cl. 73-144.000.

Nuclear Battery Corporation: *See—*
Hittman, Fred; and Bustard, Thomas S., 3,951,692.

Nunez, Bernard E. Golf putting aid. 3,951,414, Cl. 273-183.00B.

Nunneley, J. David: *See—*
Murphy, Frank W., Jr.; and Nunneley, J. David, 3,950,998.

Nuovo Pignone S.p.A.: *See—*
Santucci, Nicola, 3,951,177.

Oak Industries Inc.: *See—*
Golbeck, Bernard J.; and Lewandowski, Raymond F., 3,952,175.

Obayashi, Hidehito; and Gejyo, Tetsuo, to Hitachi, Ltd. Gas-sensor element and method for detecting reducing gas or oxygen gas. 3,951,603, Cl. 23-232.00E.

Oberender, Frederick G.: *See—*
Nebzydoski, John W.; Brockway, Harry; Patmore, Edwin L.; and Oberender, Frederick G., 3,952,059.

Oberhauser, Peter: *See—*
Olsen, Harry G.; and Oberhauser, Peter, 3,951,478.

Oberheuser, Joseph H., to Perkin-Elmer Corporation, The. Apparatus for aiming a gun. 3,951,553, Cl. 356-251.000.

Obersteller, Udo: *See—*
Selke, Reimund; Obersteller, Udo; and Richter, Kurt, 3,951,252.

O'Brien, Richard C.: *See—*
Brown, George E., Jr.; and O'Brien, Richard C., 3,952,053.

Occidental Petroleum Corporation: *See—*
Ridley, Richard D., 3,951,456.

Oce-van der Grinten N.V.: *See—*
Schoustra, Bauke; and Roncken, Hubertus W. H. M., 3,951,655.

Oda, Fujio: *See—*
Yoshino, Kimiaki; Shimotsuma, Wataru; Adachi, Kin-ichi; Sekine, Yoichi; and Oda, Fujio, 3,951,757.

Odashima, Takeshi, to Kabushiki Kaisha Saginomiya Seisakusho. System for defrosting in a heat pump. 3,950,962, Cl. 62-156.000.

Oeckl, Otto, to Maschinenfabrik Augsburg-Nurnberg AG. Apparatus for producing tubular bodies from two shells. 3,951,394, Cl. 269-43.000.

Oellig, Oskar: *See—*
Meisner, Alfred; Oellig, Oskar; Neubauer, Josef; Trimpler, Walter; and Potthof, Erwin, 3,950,939.

Ofude, Kooichi: *See—*
Namura, Yukio; Mashimo, Tooru; Kosaka, Tadao; and Ofude, Kooichi, 3,950,942.

Ogata, Yuzuru; and Niimi, Yukihisa, to Kao Soap Co., Ltd.; and Kanebo, Ltd. Durable antistatic agent, hydrophobic fibers and fibrous structures having durable antistatic property and method of making same. 3,952,128, Cl. 428-265.000.

Ogawa, Kazuhiro: *See—*
Fueki, Shimetomo; Tada, Junichi; Osawa, Kenji; Sakai, Naomi; and Ogawa, Kazuhiro, 3,951,760.

Ogawa, Masaya, to Minolta Camera Kabushiki Kaisha. Electrophotographic copier of transfer type. 3,951,540, Cl. 355-8.000.

Ogawa, Shinsaku; Yamazaki, Yoshiaki; and Takeuchi, Hiroshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for crystallization of diamine dicarboxylate. 3,952,051, Cl. 260-501.200.

Ogawa, Yasuo: *See—*
Ohshima, Iwao; Chiba, Seiichi; Ariyama, Kenzo; Ogawa, Yasuo; and Kawamura, Zengiro, 3,951,934.

Ogihara, Hiroshi: *See—*
Murata, Kingo; Nishimura, Shigeyuki; and Ogihara, Hiroshi, 3,952,177.

Ogiso, Mitsutoshi: *See—*
Hirata, Noritsugu; Takahashi, Kiyoshi; and Ogiso, Mitsutoshi, 3,952,319.

Oglesbee, Richard K., to Anchor Hocking Corporation. Package for tumblers and the like. 3,951,259, Cl. 206-164.000.

Oguey, Henri J.; and Vittoz, Eric Andre, to Centre Electronique Horloger S.A. Device for providing an electro-optical display of time. 3,950,936, Cl. 58-23.00R.

Ogura, Katsuyuki: *See—*
Tsuchihashi, Genichi; and Ogura, Katsuyuki, 3,952,044.

Ohbu, Kazuo: *See—*
Okumura, Osamu; Ohbu, Kazuo; Kachi, Mitsuharu; and Nagayama, Masuzo, 3,951,877.

Ohki, Masanaga: *See—*
Hinata, Masanao; Ohki, Masanaga; Takei, Haruo; Sato, Akira; and Ikeda, Tadashi, 3,951,666.

Ohlrich, David W.: *See—*
Balzano, Alfiero F.; and Ohlrich, David W., 3,951,497.

Ohmura, Hidemasa: *See—*
Matsuda, Kazuo; Ohmura, Hidemasa; and Aritaki, Hirakazu, 3,951,897.

Ohrn, Gosta, to Bulten-Kanthal AB. Lift chain with end connector. 3,950,941, Cl. 59-93.000.

Ohshima, Iwao; Chiba, Seiichi; Ariyama, Kenzo; Ogawa, Yasuo; and Kawamura, Zengiro, to Nitto Chemical Industry Co., Ltd. Polymerization of acrylamide in the presence of water-soluble nitrogen compounds. 3,951,934, Cl. 526-83.000.

Oka, Shunzo: *See—*
Nishioka, Matsuo; Oka, Shunzo; Miyashita, Akitoshi; and Oshima, Kazuo, 3,952,277.

Okabe, Masao: *See—*
Yonemitsu, Eiichi; Sugio, Akitoshi; Masu, Masanobu; Kimura, Masaharu; Okabe, Masao; Sayama, Norio; and Matsunaga, Masatsugu, 3,952,072.

Okada, Satoshi, to Toyo Shutter Co., Ltd. Multifloor-type escape bridge apparatus for use in multistory building. 3,951,232, Cl. 182-84.000.

Okano, Hiroshi; and Yasuda, Yushiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Resiliently mounted gas bearing device. 3,951,475, Cl. 308-9.000.

Okano, Shigeru: *See—*
Hibino, Toshihiko; Suzuki, Yoshio; Okano, Shigeru; Hara, Yoichi; and Sato, Etsuro, 3,951,998.
Tobiki, Hisao; Shimago, Kozo; Okano, Shigeru; Komatsu, Toshiaki; Katsura, Toyozo; Taira, Yasushi; and Eda, Yasuko, 3,951,955.

Okayama, Akira; Ando, Hisashi; Soeno, Ko; Takeuchi, Hisasuke; and Kamada, Atsuya, to Hitachi, Ltd.; and Hitachi Metals, Ltd. Apparatus for production of metal powder according water atomizing method. 3,951,577, Cl. 425-7.000.

Okayasu, Ryoichi: *See—*
Kato, Kunihiro; Matsuda, Ryoichi; and Okayasu, Ryoichi, 3,952,166.

Okazaki, Yasushi: *See—*
Ikezaki, Muneyoshi; Okazaki, Yasushi; Ito, Nobuo; Nagao, Taku; Hoshiyama, Masao; and Nakajima, Hiromichi, 3,952,021.

Okumura, Osamu; Ohbu, Kazuo; Kachi, Mitsuharu; and Nagayama, Masuzo, to Lion Fat & Oil Co., Ltd. Heavy-duty granular detergent composition with sodium citrate builder. 3,951,877, Cl. 252-526.000.

Olesker, Alain: *See—*
Cier, Andre; Gero, Stephan; Olesker, Alain; and Leboul, Jean, 3,952,027.

Olin Corporation: *See—*
Juda, Robert H.; Hyde, Gene A.; and Ardis, Alan E., 3,951,833.
Schnabel, Wilhelm J.; and Colafati, Ralph A., III, 3,952,043.

Olin Energy Systems Limited: *See—*
Dakin, Roland Peter, 3,950,895.

Oliva-Bonino, Lucien, to Gachot S.A. Demountable valve. 3,951,380, Cl. 251-304.000.

Olschewski, Armin; Burkl, Erich; Walter, Lothar; and Brandenstein, Manfred, to SKF Industrial Trading and Development Company, B.V. Ball bearing for longitudinal movements. 3,951,473, Cl. 308-6.00C.

Olschewski, Armin: *See—*
Schurger, Rainer; Olschewski, Armin; Burkl, Erich; and Walter, Lothar, 3,951,472.

Olsen, Harry G.; and Oberhauser, Peter, to GTE Laboratories Incorporated. Vacuum assembly. 3,951,478, Cl. 308-36.100.

Olson, Donald N.: *See—*
Flatau, Abraham; Olson, Donald N.; and Miller, Miles C., 3,951,070.

Olympus Optical Co., Ltd.: *See—*
Nishimoto, Yoshio, 3,951,523.

Omnifac Corporation: *See—*
Doench, Thomas Judson, 3,951,091.

Omron Tateisi Electronics Co., Ltd.: *See—*
Tanimura, Shigeru; Miura, Nobuaki; and Miyamoto, Mikizo, 3,952,323.

O'Neal, Chester L. Sanitary drinking spout for liquid container. 3,951,316, Cl. 222-529.000.

Ongchin, Lucio: *See—*
Lloyd, Keith A.; Fisher, Eugene J.; and Ongchin, Lucio, 3,951,871.

Ono, Junji: *See—*
Yoshikawa, Kanji; Tatsukami, Yoshiharu; Kitamura, Shuji; Ono, Junji; and Tateiwa, Haruo, 3,952,136.

Oosaka, Shigenori: *See—*
Noguchi, Masaru; Takahashi, Tsunehiko; and Oosaka, Shigenori, 3,951,509.

Oramt Turbines Ltd.: *See—*
Manor, Aharon, 3,951,378.

Ori, Masaru: *See—*
Shimizu, Katsuhisa; Ori, Masaru; and Oseto, Osamu, 3,951,896.

Orr, Brian, to Netion Limited. Extrusion of plastics netting. 3,952,127, Cl. 428-255.000.

Osakeyhtio, A. Ahlstrom: *See—*
Sjostrom, Eero Vilhelm; and Valttila, Olli Tapio, 3,951,732.

Osawa, Akiko: *See—*
Fujisawa, Tamotsu; Ambe, Mitsuko; Kobayashi, Norio; Osawa, Akiko; and Shimizu, Kiwako, 3,951,790.

Osawa, Kenji: *See—*
Fueki, Shimetomo; Tada, Junichi; Osawa, Kenji; Sakai, Naomi; and Ogawa, Kazuhiro, 3,951,760.

Osborn, Stephen W.: *See—*
Glickman, Samuel A.; and Osborn, Stephen W., 3,952,066.

Oseroff, Herbert B.; and Sparks, William J. Process for manufacture of grips for hand powered and hand guided equipment. 3,950,838, Cl. 29-407.000.

Oseto, Osamu: *See—*
Shimizu, Katsuhisa; Ori, Masaru; and Oseto, Osamu, 3,951,896.

Oshima, Kazuo: *See—*
Nishioka, Matsuo; Oka, Shunzo; Miyashita, Akitoshi; and Oshima, Kazuo, 3,952,277.

Oster Corporation: *See—*
Ernster, Peter Jacob; Collins, William Joseph; and Schaefer, George Henry, 3,951,351.

Ota, Hiroshi: *See—*
Nirasawa, Tomiji; and Ota, Hiroshi, 3,952,305.

Otani, Kanji: *See—*
Morioka, Joji; Matsumoto, Takuzo; Otani, Kanji; and Uedono, Katsuhisa, 3,951,355.

Otis, Nick C.: *See—*
Lerch, Adolph F.; Otis, Nick C.; and Montgomery, John D., 3,950,903.

Otsuki, Yutaka: *See—*
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Outboard Marine Corporation: *See—*
Arff, Uwe F., 3,951,027.

Owen, Calvin P., to Hodge, Allan M. Trash bin lid. 3,951,302, Cl. 220-331.000.

Owen, Hartley; and Venuto, Paul B., to Mobil Oil Corporation. Combination process for solvent deasphalting and catalytic upgrading of heavy petroleum stocks. 3,951,781, Cl. 208-86.000.

Owens-Corning Fiberglas Corporation: *See—*
Fulk, Walter F., 3,951,631.
Gillilan, Warren, 3,951,834.

Owens-Illinois, Inc.: *See—*
Amberg, Stephen W., 3,951,292.
Rough, Robert R., Sr., 3,951,635.

Owings, Peter Russell; Beckering, Jacobus Jan; and Bunyea, Roderick Francis, to Black and Decker Manufacturing Company, The. Modular cordless tools. 3,952,239, Cl. 320-2.000.

Oy Tampella Ab: *See—*
Manninen, Paavo Erkki; and Asikainen, Niilo, 3,951,039.

Oy Vehna Ab: *See—*
Kerkkonen, H. K.; Laine, K. M. J.; Alanen, M. A.; and Renner, H. V., 3,951,938.

Ozawa, Shuji: *See—*
Senoo, Masao; Hara, Shigeyoshi; and Ozawa, Shuji, 3,951,920.

Ozelli, Riza Nur; Klement, Gunter; and Scheidt, Eugen, to Henkel & Cie G.m.b.H. Process of releasing polyurethane foams using aluminum salts of fatty acid mixtures. 3,952,079, Cl. 264-45.500.

Ozero, Adam H. Sanding attachment for reciprocal saw machines. 3,950,896, Cl. 51-170.0TL.

P. R. Mallory & Co., Inc.: *See—*
Neely, Lloyd F., 3,951,872.

Pache, Raymond, executor: *See—*
Wittgenstein, Gerard F., deceased; and Pache, Raymond, executor, 3,951,437.

Paddock, Gordon R.; and Ranft, Ernst L., to General Motors Corporation. Air diverter valve. 3,950,943, Cl. 60-290.000.

Pajaczkowski, Andrzej: *See—*
Priddle, John Edward; Pajaczkowski, Andrzej; and Vincent, Peter Incledon, 3,952,135.

Palenscar, William J. Sampling apparatus. 3,951,609, Cl. 23-259.000.

Palitex Project-Company G.m.b.H.: *See—*
Kallman, Jurgen, 3,950,927.

Pallishusky, Sylvia Minka. Method and means for teaching alphabet recognition and learning handwriting. 3,950,863, Cl. 35-36.000.

Palma, James R. Fluid separator or mixer. 3,951,813, Cl. 210-374.000.

Paluchniak, Michael J.; and Cummings, John T., to Industrial Machinery Engineering Corporation. Vapor casting method and apparatus. 3,951,200, Cl. 164-119.000.

Pankow, Herbert G.; Larkin, Terrance M.; Young, Roland L.; and McClelland, Donald H., to Gates Rubber Company, The. Method and apparatus for pasting battery plates. 3,951,688, Cl. 136-67.000.

Pantukh, Boris Izrailevich: *See—*
Liakumovich, Alexandr Grigorievich; Pantukh, Boris Izrailevich; Zakharova, Aida Pavlovna; Butin, Vitaly Ivanovich; Tulupov, Vladimir Alexeevich; and Baiburina, Zoya Stephanovna, 3,951,754.

Panuline, George, to D-Cycle Power Systems, Inc. Reciprocating plunger type pump with stroke adjustment means. 3,951,574, Cl. 417-510.000.

Papousek, Robert D. Shock absorber. 3,951,391, Cl. 267-8.00R.

Parke, Davis & Company: *See—*
Goel, Om P., 3,951,982.

Parker Pen Company, The: *See—*
Wittnebert, Frederick R.; Meinhardt, Francis J.; Branks, Joseph R.; Herold, Gerald C.; and Stambaugh, Daniel P., 3,951,555.

Parkinson, James R., to Simmonds Precision Products, Inc. Non-contacting shaft horsepower measurement system. 3,950,986, Cl. 73-136.00A.

Parquet, Donald J., to J. I. Case Company. Apparatus with pivotal latching means for retaining an outrigger in an inoperative position. 3,951,281, Cl. 214-140.000.

Parrack, Alvin L., to Texaco Inc. Method of marine reflection-type seismic exploration. 3,952,281, Cl. 340-7.00R.

Parry, Richard John; and Dunning, Reginald, to Pilkington Brothers Limited. Ophthalmic glass compositions. 3,951,671, Cl. 106-52.000.

Pars, Harry George: *See—*
Razdan, Raj Kumar; and Pars, Harry George, 3,951,970.

Parson, Brinkerhoff, Quade & Douglas, Inc.: *See—*
Murphy, Christopher J., 3,950,805.

Parsons, J. Howard. Astronomical telescope mount. 3,951,511, Cl. 350-83.000.

Pase, Hugh H., to Mimco Incorporated. Apparatus for unloading bulk material. 3,951,278, Cl. 214-44.00R.

Passera, Ludwig, heir: *See—*
Passera, Walter, deceased; and Stein, Volkhard, 3,951,121.

Passera, Walter, deceased (by Passera, Ludwig, heir); and Stein, Volkhard, to Robert Bosch G.m.b.H. Fuel injection system. 3,951,121, Cl. 123-139.0AW.

Passow, Cord, to Gesellschaft fur Kernforschung m.b.H. Linear acceleration system for high energy electrons with preacceleration and main acceleration means. 3,952,255, Cl. 328-233.000.

Pasternack, Gerald Philip; Stevenson, Lawrence Oliver; and Strong, Gary Wayne, to Bell Telephone Laboratories, Incorporated. Coin telephone arrangement to obviate acoustically coupled fraud. 3,952,160, Cl. 179-7.10R.

Patent Structures, Inc.: *See—*
Leeds, Harry R., 3,951,528.

Paterek, William: *See—*
Clocker, Edwin T.; Paterek, William; Farel, Newton D.; and Selsley, Michael J., 3,951,850.

Patmore, Edwin L.: *See—*
Nebzydoski, John W.; Brockway, Harry; Patmore, Edwin L.; and Oberender, Frederick G., 3,952,059.

Paul, Henry N., III, to Thiokol Corporation. Blends of polysulfide polymer latices with urethane prepolymers to produce an improved sealant and caulking composition. 3,951,898, Cl. 260-29.6NR.

Pawlitschek, Franz: *See—*
Miericke, Jurgen; Hieronymus, Hans; Pawlitschek, Franz; and Urankar, Laxmikant, 3,951,075.

Payne, Thomas A., Jr.: *See—*
Barillo, Joseph; Payne, Thomas A., Jr.; and Urban, Warren J., 3,952,016.

Peach, James Marchant: *See—*
Gregory, George Keith Emerson; Peach, James Marchant; and Newell, James Campbell, 3,951,852.

Pearce, Jai K.: *See—*
Schempp, Eberhard G.; and Pearce, Jai K., 3,951,643.

Pearson, John B., III: *See-*
Broniwitz, Laurence E.; Pearson, John B., III; and Landau, Mark I., 3,952,304.

Pecina, Ronald J.: *See—*
DeVolpi, Alexander; Pecina, Ronald J.; and Travis, Dale J., 3,952,253.

Peck, Albert William, to John Ratcliff (Tail Lifts) Limited. Vehicle-transporting apparatus. 3,951,280, Cl. 214-86.00A.

Peel, Richard Philip; and Sutherland, James Kenneth, to Imperial Chemical Industries Limited. Bicyclo-octane derivatives. 3,952,019, Cl. 260-343.20R.

Pell, Raymond H., to National Steel Corporation. Method and apparatus for changing rolls for a rolling mill. 3,951,268, Cl. 211-13.000.

Penn, Corentin Jean Louis; Castex, Paul Jean; and Tarridec, Andre, to SOCOTEL, a Societe Mixte pour le Developpement de la Technique de la Commutation dans le Domaine des Telecommunications. Telephone call simulator. 3,952,172, Cl. 179-175.20R.

Pennsylvania Engineering Corporation: *See—*
Krause, Richard P.; and Montgomery, Harry T., 3,951,390.
Schempp, Eberhard G.; and Pearce, Jai K., 3,951,643.

Pennwalt Corporation: *See—*
D'Angelo, Antonio Joseph; and Mageli, Orville Leonard, 3,952,041.
Simkin, Joseph, 3,950,892.
Smolens, Harry Gregory, 3,951,594.

Peonski, Edward, to American Gage & Machine Company. Gaging apparatus for double disc grinder or the like. 3,950,855, Cl. 33-143.00L.

Perdue, Richard Russell, to W. R. Grace & Co. Apparatus and process for vacuum skin packaging. 3,950,919, Cl. 53-22.00A.

Pereira, Joseph Augustine Terence, to Soag Machinery Limited. Method and apparatus for low pressure die casting. 3,951,199, Cl. 164-4.000.

Perkin-Elmer Corporation, The: *See—*
Markle, David A., 3,951,546.
Oberheuser, Joseph H., 3,951,553.
Rawlings, John L., 3,952,217.

Perkins, Ronald L. Underwater strobe flash unit. 3,952,190, Cl. 240-26.000.

Perr, Julius P., to Cummins Engine Company, Inc. Fuel supply system for an internal combustion engine. 3,951,117, Cl. 123-139.0AQ.

Perrin, Pierre; Schmutz, Arthur; Defago, Raymond; and Schaub, Andres, to Ciba-Geigy Corporation. Process for dyeing and printing or optical brightening of cellulose materials. 3,951,588, Cl. 8-1.00A.

Perry, Roger L., to Gillette Company, The. Razor with rotatably mounted shaving unit. 3,950,849, Cl. 30-47.000.

Personal Communications, Inc.: *See—*
Kropp, Willis A., 3,951,532.

Pesnelle, Pierre: *See—*
Auger, Bernard; Pesnelle, Pierre; and Teisseire, Paul Jose, 3,951,875.

Peters, Klaus-Jurgen: *See—*
Jaggle, Gunther; Peters, Klaus-Jurgen; Stein, Volkhard; and Scharl, Herbert, 3,951,119.

Peters, Leslie B., to Tru-Eze Manufacturing Co., Inc. Control system for electrodynamic mechanism. 3,952,235, Cl. 318-48.000.

Petersen, Henno A.: *See—*
Farber, Milton; and Petersen, Henno A., 3,951,906.

Petree, Donald K.: *See—*
Small, William M.; and Petree, Donald K., 3,951,386.

Petro-Tex Chemical Corporation: *See—*
Baker, James R., 3,951,869.
Brown, Peter John Nicholas; and Capp, Clifford William, 3,952,088.

Petrovich, Vojislav. Oxidizing method in froth flotation of minerals. 3,951,786, Cl. 209-166.000.

Pfaender, Peter; Pratzel, Helmut; and Blecher, Hartmut. Process and apparatus for the synthesis of peptides by use of n-carboxyanhydrides. 3,951,741, Cl. 195-29.000.

Pfarrwaller, Erwin, to Sulzer Brothers Limited. Device for severing a thread in a textile machine. 3,951,179, Cl. 139-302.000.

Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., to Syntex (U.S.A.) Inc. Method of use of, and compositions containing, disubstituted xanthone carboxylic acid compounds. 3,951,618, Cl. 424-283.000.

Pfizer Inc.: *See—*
Danilewicz, John Christopher; Kemp, John Edward Glyn; Snarey, Michael; and Wright, James Robert, 3,951,983.
Hamanaka, Ernest S.; and Stam, John G., 3,951,952.
Monkhouse, Donald C., 3,952,004.

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Phelps, Richard W.: *See—*
Nowisch, Heinz K.; and Phelps, Richard W., 3,950,988.

Philip Morris Incorporated: *See—*
Stultz, Edward B.; and Budne, Thomas A., 3,952,185.

Phillipps, Gordon Hanley; Newall, Christopher Earle; and Ayres, Barry Edward, to Glaxo Laboratories Limited. Anaesthetic composition containing a steroid of the 5α-pregnane series and method of using same. 3,952,031, Cl. 260-397.450.

Phillips, David L.: *See—*
Williams, Norman E.; Phillips, David L.; Ley, Richard A.; Beaubien, Bruce; and Brown, Richard L., 3,951,206.

Phillips, Edwin Leslie, Jr.; and Carrigan, James David, to Vance Industries, Inc. Archimedes spiral drill bit. 3,951,220, Cl. 175-393.000.

Phillips Petroleum Company: *See—*
Carroll, James C., 3,951,265.
Cleary, James W., 3,951,923.
Delap, Joseph A., 3,951,863.
Nasser, Benny E., Jr., 3,951,933.
Sherk, Fred T., 3,952,052.
Small, William M.; and Petree, Donald K., 3,951,386.
Smith, Dexter E.; and Stewart, William S., 3,951,604.
Smith, Ernest L.; and MacEwen, George E., 3,951,331.
Stapp, Paul R., 3,952,020.

Phillips, Richard B., to International Paper Company. Delignification and bleaching of wood pulp with oxygen. 3,951,733, Cl. 162-65.000.

Picker Corporation: *See—*
Heisner, Donald N., 3,952,195.

Pignons S.A.: *See—*
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Pilas Secas Juipter S.A.: *See—*
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Pilkington Brothers Limited: *See—*
Parry, Richard John; and Dunning, Reginald, 3,951,671.

Pinfold, Raymond N. F.; Carpenter, Austin T.; Hall, John R.; Hardy, Alan; and Johl, Jogindar, to USM Corporation. Heat-softenable polyesterurethane adhesive. 3,951,919, Cl. 260-75.0NK.

Pitner, Alfred, to Nadella, a part interest. Process for providing bearing surfaces on trunnions of a universal joint. 3,950,834, Cl. 29-149.50R.

Pitney-Bowes, Inc.: *See—*
Storace, Anthony; and Sette, Paul R., 3,951,257.

Plant, Ernest M., II: *See—*
Frei, William R.; and Plant, Ernest M., II, 3,951,045.

Plant, William V.: *See—*
Forbes, Hampton E., Jr.; and Plant, William V., 3,951,333.

Plasek, Edmund J.; and Puskas, Imre, to Standard Oil Company. 4-High molecular weight alkyl-substituted carbophenoxy phthalic acid-containing compounds. 3,951,977, Cl. 260-268.0BC.

Plasko, Emil Robert, to Micro Devices Corporation. Thermally actuatable switch construction. 3,952,274, Cl. 337-407.000.

Plattier, Marcel: *See—*
Celli, Charles Jerome Louis; Plattier, Marcel; and Teisseire, Paul Jose, 3,951,876.

Plessey Handel und Investments A.G.: *See—*
Townshend, Maurice Philip, 3,951,477.

Plewa, Manfred, to VEMAG Verdener Maschinen und Apparatebau GmbH. Sausage stuffing device. 3,950,821, Cl. 17-41.000.

Ploeger, Kenneth C., to Rupert Manufacturing Company. Electric lamp mounting assembly. 3,951,499, Cl. 339-59.00L.

Plows, Graham Stuart; and Edge, Gordon Malcolm, to Decca Limited. Electron beam recording of wide-band signals on thermoplastic film. 3,952,146, Cl. 178-6.6TP.

Plummer, Mark A., to Marathon Oil Company. Process of injecting a micellar dispersion into a subterranean reservoir. 3,951,828, Cl. 252-8.55B.

Pneumafil Corporation: *See—*
Barr, Harry S., Jr.; and Mullinax, Thomas E., 3,951,627.

Pneumo Corporation: *See—*
Hrusch, Louis C., 3,951,361.

Pobanz, Walter Kent, to American Air Filter Company, Inc. Shelter panel. 3,950,910, Cl. 52-618.000.

Poche, John M. Amphibious air track vehicle. 3,951,093, Cl. 115-1.00R.

Pohan, Kurt: *See—*
Hench, Hans, Sr.; Hunke, Friedrich; and Pohan, Kurt, 3,951,245.

Point, Marcel, to Air-Industrie. Electrostatic powder projection system and method. 3,951,340, Cl. 239-3.000.

Pointon, Peter; Prince, Ian Robert; and Bial, Wolfgang, to Alphameric Keyboards Limited. Capacitive key for electronic circuit. 3,951,250, Cl. 197-98.000.

Polak, James C., to General Motors Corporation. Extended range four speed transmission. 3,951,010, Cl. 74-759.000.

Polaroid Corporation: *See—*
Biber, Conrad H., 3,952,328.
Czumak, Frank M.; Mason, Paul B.; and Stella, Joseph A., 3,951,530.
Douglas, Lawrence M., 3,952,312.

Polaszek, Frank John. Bite signal device for fishing rods. 3,950,880, Cl. 43-17.000.

Polycase, Inc.: *See—*
Weiss, Irving F., 3,952,142.

Polysius AG: *See—*
Tiggesbaumker, Peter; and Lohnherr, Ludger, 3,951,347.

Pommerening, Uwe A.; and Richards, Glenn L., to Stromberg-Carlson Corporation. Tie trunk control arrangement. 3,952,165, Cl. 179-27.0CA.

Poole, Robert Norman, to Du Pont of Canada, Ltd. Tube forming process. 3,951,050, Cl. 93-35.00R.

Porsch, Rudolf, to Menzel & Company. Method of operating a purifying plant and tank for practicing said method. 3,951,758, Cl. 210-14.000.

Porter, John P., to B. F. Goodrich Company, The. Elastomer processing method. 3,951,389, Cl. 259-192.000.

Porter, Stuart M.: *See—*
Weimer, Ervin C.; Porter, Stuart M.; and Hayes, Clark G., 3,950,861.

Potter, Dennis J.: *See—*
Antonsen, Randolph; Morgan, Allan Clark; Ball, Roger T.; Hurst, Ronald C.; Potter, Dennis J.; and Wood, Robert I., 3,952,087.

Potter Instrument Company, Inc.: *See—*
Potter, John T., 3,951,090.

Potter, John T., to Potter Instrument Company, Inc. Hydraulic system for raising and lowering keel. 3,951,090, Cl. 114-141.000.

Potthof, Erwin: *See—*
Meisner, Alfred; Oellig, Oskar; Neubauer, Josef; Trimpler, Walter; and Potthof, Erwin, 3,950,939.

Potts, Thomas James: *See—*
Johnson, Reginald Francis; Potts, Thomas James; and Jennings, Gordon Bridgman, 3,951,019.

Poulson, Roger: *See—*
Prouse, Ronald Ernest; West, Anthony Alfred; King, Derek Anthony; and Poulson, Roger, 3,951,155.

PPG Industries, Inc.: *See—*
Ballentine, John D., 3,951,525.
Seiner, Jerome A., 3,951,899.
Sopko, John F.; and Simhan, Krishna, 3,951,100.

Pratzel, Helmut: *See—*
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Presse, Donald E.: *See—*
Leggett, Ronald L.; Presse, Donald E.; Smith, Carl J.; and Teter, Alton R., 3,951,082.

Prezewowsky, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Neumann, Friedmund; and Nishino, Yukishige, to Schering Aktiengesellschaft. 1,3-Oxygenated-8α-estratrienes. 3,951,958, Cl. 260-239.500.

Prezewowsky, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Neumann, Friedmund; and Nishino, Yukishige, to Schering Aktiengesellschaft. 1,3-Oxygenated 8α-estratrienes. 3,951,959, Cl. 260-239.55R.

Price, Barry John, to Allen & Hanburys Limited. Cyclopent [a] indene compounds. 3,952,050, Cl. 260-501.100.

Priddle, John Edward; Pajaczkowski, Andrzej; and Vincent, Peter Incledon, to Imperial Chemical Industries Limited. Laminated glass windows for vehicles. 3,952,135, Cl. 428-442.000.

Prince, Alfred M.: *See—*
Vnek, John; and Prince, Alfred M., 3,951,937.

Prince, Ian Robert: *See—*
Pointon, Peter; Prince, Ian Robert; and Bial, Wolfgang, 3,951,250.

Prince, Leon M.; and Furrier, Joseph P., to Lever Brothers Company. Synthetic detergent bar with antimushing agent. 3,951,842, Cl. 252-117.000.

Principe, Andrew H.; and Glynn, Emmett P., to Cand-Aire Industries, Inc. Breath alcohol test medium. 3,951,855, Cl. 252-408.000.

Prochazka, Antonin; and Lancaster, Paul W., to Delta-Benco-Cascade Limited. Distortion correction circuit. 3,952,260, Cl. 330-149.000.

Procter & Gamble Company, The: *See—*
Curry, John D.; Diehl, Francis L.; and Nirschl, Joseph P., 3,951,674.
Damico, Ralph Anthony; and Boggs, Robert Wayne, 3,952,115.
Smith, Donald Edward, 3,952,099.

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Produits Chimiques Ugine Kuhlmann: *See—*
Tellier, Pierre; Mathais, Henri; Schirmann, Jean-Pierre; and Weiss, Francis, 3,951,964.

Prokai, Bela, to Union Carbide Corporation. Polyether urethane foam. 3,952,038, Cl. 260-448.20N.

Prosl, Frank: *See—*
Tucker, Elton M.; Kamperman, Elwood F.; Hatch, Richard W., Jr.; Carswell, Charles; and Prosl, Frank, 3,951,147.

Prouse, Ronald Ernest; West, Anthony Alfred; King, Derek Anthony; and Poulson, Roger, to Carreras Rothmans Limited. Smoking materials. 3,951,155, Cl. 131-2.000.

Prunier, Louis J., to American Optical Corporation. Universal lens blocking fixture. 3,951,203, Cl. 164-334.000.

Pryadilov, Vadim Ivanovich: *See—*
Alexeeva, Natalia Ilinichna; Bogorad, Edgar Evelevich; Vexler, Georgy Borisovich; Kelzon, Anatoly Saulovich; Klochkov, Boris Fedorovich; Fainerman, Igor Avshnovich; Yakovlev, Valentin Ivanovich; Yaroslavtsev, Robert Alexeevich; Vishnyakov, Valery Viktrovich; Gutina, Nina Ivanovna; Pryadilov, Vadim Ivanovich; Yanvarev, Nikolai Vladimirovich; Vasiliev, Vasily Dmitrievich; and Rachitsky, Vladimir Alexandrovich, 3,950,964.

Puchalski, Walter J.: *See—*
Mancinelli, Dennis J.; and Puchalski, Walter J., 3,951,705.

Puchois, Gilbert F. Mooring buoy. 3,950,806, Cl. 9-8.00R.

Pullman Incorporated: *See—*
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Puls, Walter: *See—*
Frommer, Werner; Puls, Walter; Schafer, Dietmar; and Schmidt, Delf, 3,951,745.

Pundsack, Arnold L., to Xerox Corporation. Camera/processor/projector and sub-systems. 3,951,324, Cl. 226-195.000.

Purdue Research Foundation: *See—*
Rechtsteiner, Steve A.; Nelson, Philip E.; and Heron, John R., 3,951,184.

Puskas, Imre: *See—*
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Quick, Donald Jonathon, to Massey-Ferguson Services N.V. Stick feeding roller for sugar cane harvesters. 3,950,924, Cl. 56-13.900.

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Quigley, Wanda L. Book holder. 3,951,374, Cl. 248-451.000.

R. M. Wade & Co.: *See—*
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Rachitsky, Vladimir Alexandrovich: *See—*
Alexeeva, Natalia Ilinichna; Bogorad, Edgar Evelevich; Vexler, Georgy Borisovich; Kelzon, Anatoly Saulovich; Klochkov, Boris Fedorovich; Fainerman, Igor Avshnovich; Yakovlev, Valentin Ivanovich; Yaroslavtsev, Robert Alexeevich; Vishnyakov, Valery Viktrovich; Gutina, Nina Ivanovna; Pryadilov, Vadim Ivanovich; Yanvarev, Nikolai Vladimirovich; Vasiliev, Vasily

Dmitrievich; and Rachitsky, Vladimir Alexandrovich, 3,950,964.

Rachlin, Schneur: *See—*
von Daehne, Welf; Frederiksen, Erling Knud; Godtfredsen, Wagn Ole; and Rachlin, Schneur, 3,951,957.

Radiochemical Centre Ltd., The: *See—*
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Rahrig, Donald D.: *See—*
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Ralph Pill Electric Supply Co.: *See—*
Bird, Joseph W., 3,951,396.

Ramsey, John T.: *See—*
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Ramsower, Vernon. Apparatus for removably supporting farm tool bars. 3,951,214, Cl. 172-274.000.

Ramstad, David L., to United States of America, Navy. Safe and arm device. 3,951,036, Cl. 89-1.00B.

Randall, David I.; and Wynn, Robert W., to GAF Corporation. N-substituted-p-(2-chloroethyl)-phosphonamidates. 3,951,969, Cl. 260-247.000.

Ranft, Ernst L.: *See—*
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Rank Xerox Ltd.: *See—*
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Rao, Ganta V.; and Gerrish, Oliver B., to Far-Mar-Co., Inc. Low salt protein hydrolyzates. 3,952,109, Cl. 426-48.000.

Rapid S.A.: *See—*
Manhes, Raymond Jean, 3,950,825.

Rasmussen, Per Hforth, to Colgate-Palmolive Company. All purpose liquid detergent. 3,951,826, Cl. 252-8.900.

Rau, Arthur, to J. G. Anschutz GmbH. Compressed air firearm construction. 3,951,126, Cl. 124-67.000.

Raugh, Donald D.: *See—*
Jakimowicz, Christopher C.; Jones, Larry C.; and Raugh, Donald D., 3,951,751.

Ravenhall, Alan, to Dunlop Limited. Manufacture of vehicle disc wheels. 3,951,563, Cl. 408-1.00R.

Rawlings, John L., to Perkin-Elmer Corporation, The. Drive for scanning mirror. 3,952,217, Cl. 310-36.000.

Ray, Jess B., Jr.; and Nourse, Billie Eugene. Apparatus for pumping cement slurry. 3,951,572, Cl. 417-389.000.

Ray, Marshall W.: *See—*
Ward, Thomas D.; and Ray, Marshall W., 3,951,788.

Raymond International, Inc.: *See—*
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Raymond Lee Organization, Inc., The: *See—*
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Razdan, Raj Kumar; and Pars, Harry George, to Sharps Associates. Resorcinol amine derivatives. 3,951,970, Cl. 260-247.70Z.

RCA Corporation: *See—*
Allen, James Austin, 3,952,145.
Dean, Raymond Harkless, 3,951,708.
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Rose, Albert; and Cope, Appleton D., 3,952,222.
Ross, Daniel Louis, 3,951,663.
Schade, Otto Heinrich, Jr., 3,952,257.
Turnbull, John Coryell, 3,952,226.

Reader, Paul D.; and Kaufman, Harold R., to Ion Tech, Inc. Electron-bombardment ion source including alternating potential means for cyclically varying the focussing of ion beamlets. 3,952,228, Cl. 315-111.800.

Recchia, Frank P.; and Shah, Tilak M., to Upjohn Company, The. Process for making a relief printing plate. 3,951,657, Cl. 96-35.100.

Rechtsteiner, Steve A.; Nelson, Philip E.; and Heron, John R., to Purdue Research Foundation. Method of filling, sampling and sealing an aseptic tank with sterile product without destroying asepsis of either the sterile product or the tank and its associated valves and fittings. 3,951,184, Cl. 141-1.00R.

Redding, Arnold H.: *See—*
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Redford, David Arthur, to Texaco Exploration Canada Ltd. Hydraulic mining technique for recovering bitumen from tar sand deposit. 3,951,457, Cl. 299-5.000.

Reed, Hugh T. Humidifier. 3,952,181, Cl. 219-272.000.

Reed, Malcolm E.: *See—*
Johnson, Terence C.; and Reed, Malcolm E., 3,951,724.

Rees, Karl, to Sulzer Brothers Limited. Means for supporting a displaceable mass on a stationary frame. 3,951,108, Cl. 122-510.000.

Reese, Cleve Lloyd; and Kelly, John P., to Square D Company. Switch construction. 3,952,178, Cl. 200-47.000.

Reese, John P. Device to display skin temperature changes by changes in color. 3,951,133, Cl. 128-2.00H.

Rege, Nils, to Esselte Obergs AB. Device for containing information bearing articles. 3,950,871, Cl. 40-67.000.

Regie Nationale des Usines Renault: *See—*
Chatelain, Lucien; and Lemonnier, Jean-Yves, 3,952,076.

Reidy, Nicholas D.: *See—*
Folden, Clarence Lee; and Reidy, Nicholas D., 3,951,385.

Reilly, Raymond J.; and Adamson, Howard R., to Unitech Chemical Inc. Tail control and transfer adhesives for rolled paper products. 3,951,890, Cl. 260-17.4ST.

Reiner, Eugen, to Aktiengesellschaft Adolph Saurer. Arrangement, in a weather-dependent advance controller of temperature of a heating installation, for facilitating adjustment of controller characteristics to heating characteristics. 3,951,337, Cl. 236-91.00F.

Reiner, Lawrence L.; and Brady, William A. Pendulum bowling game. 3,951,408, Cl. 273-38.000.

Reist, Walter, to Ferag AG. Article-handling apparatus. 3,951,399, Cl. 270-58.000.

Rekow, Heinz-Peter, to Siemens Aktiengesellschaft. Display device having signal lamps. 3,952,229, Cl. 315-131.000.

Renner, H. V.: *See—*
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Repik, Albert J.; Miller, Charles E.; and Johnson, Homer R., to Westvaco Corporation. Process for making activated carbon from agglomerative coal. 3,951,856, Cl. 252-421.000.

Reuland, Joachim, to Hauni-Werke Korber & Co., KG. Apparatus for testing the end portions of cigarettes or the like. 3,951,267, Cl. 209-73.000.

Revells, Robert G.: *See—*
Hall, Harold R.; Herrington, Richard A.; Huizinga, Martin; Rahrig, Donald D.; and Revells, Robert G., 3,951,634.

Rexnord Inc.: *See—*
Davis, D. Carter; Sawant, Ulhas S.; and Scaffidi, Francis, 3,951,348.

Reynolds, Clarke; and Quigley, Richard J. Boat stanchion. 3,950,803, Cl. 9-1.00D.

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Rhone-Progil: *See—*
Becuwe, Jacques, 3,952,022.

Rice, George A., to Work Wear Corporation. Shade marking machine. 3,951,397, Cl. 270-31.000.

Richards, Glenn L.: *See—*
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Richardson, David A.: *See—*
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Richter, Reinhard H.; and Ulrich, Henri, to Upjohn Company, The. Process for preparing polyimides from derivatives of phthalic anhydride. 3,951,922, Cl. 260-78.00A.

Ricoh Co., Ltd.: *See—*
Fujimoto, Sakae, 3,951,585.
Kobayashi, Kazuki; and Takita, Kikuo, 3,951,518.
Ukai, Takeshi, 3,952,242.
Yamada, Hiroshi; and Kojima, Kenji, 3,951,357.

Ridley, Richard D., to Occidental Petroleum Corporation. Process for effecting even retort working fluid flow throughout an in situ retort containing carbonaceous deposits. 3,951,456, Cl. 299-2.000.

Riedel-De Haen Aktiengesellschaft: *See—*
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Riegel Textile Corperation: *See—*
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Rihm, Peter L. Movable two tone bicycle reflector and its support. 3,951,516, Cl. 350-99.000.

Riley, Anthony Leonard Mark: *See—*
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Rimar S.p.A.: *See—*
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Rimkus, Hans-Georg; and Hess, Ludwig, to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Max Grundig. Electronic control circuit for the drive motor of a magnetic sound device. 3,952,330, Cl. 360-61.000.

Ringo, Acey. Barbecuing apparatus. 3,951,052, Cl. 99-427.000.

Ripley, Ian Stanley, to Imperial Chemical Industries Limited. Resin derivatives. 3,951,924, Cl. 260-878.00R.

Riquelme, Carlos A.: *See—*
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Ritter, Arthur J., Jr., to Caterpillar Tractor Co. Planetary reaction hub and bearing retainer. 3,951,481, Cl. 308-187.000.

Roach, Sidney V.: *See—*
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Wessel, Wolf; Sautter, Wilfried; Handtmann, Dieter; and Abt, Jurgen, 3,951,113.

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Roberts Consolidated Industries, Inc.: *See—*
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Roberts, Wallace M. Concealed hardware for adjustable shelving. 3,951,080, Cl. 108-109.000.

Robertson, James A.; Adelman, Robert L.; and Bergna, Horacio Enrique, to Du Pont de Nemours, E. I., and Company. Filled polyolefin compositions. 3,951,680, Cl. 106-302.000.

Robin, Gary I.: *See—*
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Robinson, Denis W.; and Madison, George B., to Coleman Company, Inc., The. Tent structure. 3,951,159, Cl. 135-3.00E.

Robinson, John L.; and Mattei, Anthony, to Ford Motor Company. Circuit for transforming rectangular coordinates to polar coordinates. 3,952,187, Cl. 235-186.000.

Robinson, John William, to Kimball International, Inc. Electronic organ and method of operation. 3,951,028, Cl. 84-1.010.

Robinson, Robert K.; and Whitener, Philip C., to Boeing Company, The. Cryogenic tank and aircraft structural interface. 3,951,362, Cl. 244-118.00R.

Robinson, Thomas C.: *See—*
Kitrilakis, Sotiris; and Robinson, Thomas C., 3,951,143.

Rochat, Charles-Louis, to Pignons S.A. Slide projector control device. 3,951,537, Cl. 353-85.000.

Rock, Frank C., to National Controls, Inc. Computing postal scale. 3,951,221, Cl. 177-1.000.

Rock, James H., to American Platform Tennis Systems. Portable platform tennis court. 3,951,406, Cl. 273-29.00R.

Rockwell International Corporation: *See—*
Baker, Kenneth Vincent, 3,952,179.
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Roder, Albert; Beaucamp, Klaus; Weimann, Gunter; Schneider, Walter; and Muhlegger, Klaus, to Boehringer Mannheim G.m.b.H. Purification of dehydrogenases. 3,951,744, Cl. 195-66.00R.

Rodieck, Chester C. Automatic anti-siphon valve. 3,951,163, Cl. 137-122.000.

Roelofs, Wendell L.; Hill, Ada S.; Baker, Thomas C.; and Carde, Ring T. Novel attractant components for males of the tobacco budworm moth. 3,952,093, Cl. 424-84.000.

Rogers, Edward J., to S & C Electric Company. High voltage switch mechanism. 3,952,273, Cl. 337-7.000.

Rogers, Edward J.: *See—*
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Rohr Industries, Inc.: *See—*
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Rohrback, Gilson H.; and Holmes, Elmond A., to Magna Corporation. Method of detecting the onset of formation of adherent precipitates on surfaces immersed in liquids, and controlling the formation of such precipitates. 3,951,161, Cl. 137-3.000.

Rohs, Ulrich. Side channel compressor. 3,951,567, Cl. 415-119.000.

Roller, Paul S. Method and apparatus for converting saline water to fresh water. 3,951,752, Cl. 203-7.000.

Roller, Paul S. Method and apparatus for the conversion of an aqueous scale-formed liquid. 3,951,753, Cl. 203-7.000.

Rolls-Royce (1971) Limited: *See—*
Johnson, Reginald Francis; Potts, Thomas James; and Jennings, Gordon Bridgman, 3,951,019.

Romine, Edward L., to Molex Incorporated. Electrical connector. 3,951,494, Cl. 339-17.00L.

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Rondas, Ivan V., to GTI Corporation. Magnetic feeder and method of feeding magnetic parts. 3,951,305, Cl. 221-212.000.

Rontex America, Inc.: *See—*
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Roos, Ernst: *See—*
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Rose, Albert; and Cope, Appleton D., to RCA Corporation. Pickup tube target. 3,952,222, Cl. 313-366.000.

Rosen, Perry, to Hoffmann-La Roche Inc. 15-Oxasteroids. 3,952,018, Cl. 260-340.900.

Rosenbusch, Marvin A.: *See—*
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Rosenstock, David: *See—*
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Ross, Daniel Louis, to RCA Corporation. Organic volume phase holographic recording media comprising an α di-ketone. 3,951,663, Cl. 96-67.000.

Ross, Lawrence James: *See—*
Garber, Murray; Ross, Lawrence James; and Stepek, Walter Joseph, 3,952,010.

Ross, Sigmund Lance; and Shuffman, Oscar, deceased (Shuffman, Rose, executrix), to Shuffman, Rose, executrix. Apparatus and method for recovering pure water from natural sources and industrial polluted waste sources. 3,951,198, Cl. 165-65.000.

Rotel-Holding AG: *See—*
Studer, Walter, 3,951,759.

Rothe, Kurt; and Furst, Raymond B., to Rockwell International Corporation. High suction inducer. 3,951,565, Cl. 415-1.000.

Rotter, Gerhard, to BASF Aktiengesellschaft. Dropout compensator for a trisequential color video playback system. 3,952,326, Cl. 358-8.000.

Rough, Robert R., Sr., to Owens-Illinois, Inc. Method for rapidly melting and refining glass. 3,951,635, Cl. 65-135.000.

Royer, Galen B.: *See—*
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Ruchlak, Kasimir; Heinze, Christoph; and Kranzle, Rolf, to Hoechst Aktiengesellschaft. Process for the manufacture of pulverulent polyvinyl chloride molding compositions. 3,951,883, Cl. 260-2.50M.

Rudolph, Paul, to Metallgesellschaft Aktiengesellschaft. Apparatus for the continuous gasification of coal. 3,951,616, Cl. 48-85.200.

Rufer, Clemens; and Schroder, Eberhard, to Schering Aktiengesellschaft. Processes for preparing 5-nitro-1-methyl-2-(2-dialkylaminovinyl)-imidazole and 5-nitro-1-methyl-2-imidazolyl carboxaldehyde. 3,952,007, Cl. 260-309.000.

Rule, Clinton: *See—*
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Rule Industries, Inc.: *See—*
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Russell, John D. Force transducer for strain gage. 3,950,984, Cl. 73-88.50R.

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Rutshtein, Alexander; and Staroselsky, Naum, to Compressor Controls Corporation. Method of operating the heating stoves. 3,951,586, Cl. 432-30.000.

Ruumpol, Geurt J., to Veco Zeefplatenfabriek B.V. Device for regulating the current in a load. 3,952,240, Cl. 323-1.000.

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S.T. Dupont: *See—*
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Sadamasa, Tetsuo: *See—*
Naito, Makoto; Kasami, Akinobu; Kawachi, Masaru; Sadamasa, Tetsuo; and Mineo, Hiroki, 3,951,699.

Safetech, Inc.: *See—*
Brown, George E., Jr.; and O'Brien, Richard C., 3,952,053.

Saffron, Patrick M.: *See—*
Crosby, Guy A.; and Saffron, Patrick M., 3,952,058.

Safir, Sidney Robert, to American Cyanamid Company. Substituted benzodiazepines and method of use. 3,951,981, Cl. 260-268.0TR.

Sagami Chemical Research Center: *See—*
Fujisawa, Tamotsu; Ambe, Mitsuko; Kobayashi, Norio; Osawa, Akiko; and Shimizu, Kiwako, 3,951,790.
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Saito, Shizuo: *See—*
Soma, Nobuo; Kawamoto, Isao; Nakajima, Tomio; Sugita, Sadao; Wada, Tsuneo; Saito, Shizuo; Inokuma, Hiroyuki; Horigome, Koichi; and Morifuji, Yukio, 3,951,661.

Saito, Takayoshi; and Saito, Taro. Vernier drive mechanism. 3,951,001, Cl. 74-10.520.

Saito, Taro: *See—*
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Sakai Chemical Industry Company, Limited: *See—*
Konishi, Kenzo; Kotone, Akira; Nakane, Yoshihiko; Hori, Takeshi; and Hoda, Masahiro, 3,951,941.

Sakai, Naomi: *See—*
Fueki, Shimetomo; Tada, Junichi; Osawa, Kenji; Sakai, Naomi; and Ogawa, Kazuhiro, 3,951,760.

Sakai, Tetsuo, to Nippon Hoso Kyokai. Matrix type gas discharge display device. 3,952,230, Cl. 315-169.0TV.

Sakai, Toshimitsu; and Suzuki, Isamu, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisan Kogyo Kabushiki Kaisha. Vacuum producing system. 3,950,946, Cl. 60-407.000.

Sakai, Yasuhide: *See—*
Watanabe, Masahiro; Shibuya, Hideo; Sakai, Yasuhide; Hori, Ryuji; Kamiharako, Mistuaki; and Sato, Kazuo, 3,952,303.

Sakitani, Yoshio, to Hitachi, Ltd. Stepwise fine adjustment. 3,952,215, Cl. 310-8.100.

Sale Tilney AG: *See—*
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Salter, John W.: *See—*
Bond, John L.; Rogols, Saul; and Salter, John W., 3,951,948.

Salzmann, Ferdinand F., to Consolidated Foods Corporation. Drapery rod and brackets. 3,951,195, Cl. 160-345.000.

Salzmann, Ferdinand F., to Consolidated Foods Corporation. Traverse rod assembly. 3,951,196, Cl. 160-345.000.

Samarin, John Jacob. Stretcher frame. 3,950,869, Cl. 38-102.910.

Sammer, Erich: *See—*
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Sammes, Peter George; and Coates, Ian Harold, to Glaxo Laboratories Limited. Process for the preparation of 3-hydroxy penam-1-oxides and derivatives thereof. 3,951,956, Cl. 260-239.100.

Samson, James A. R. Ion chambers. 3,952,197, Cl. 250-382.000.

Samuelsson, Bjorn: *See—*
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Sanderson, Charles H. Water conditioning apparatus. 3,951,807, Cl. 210-222.000.

Sandfort, Robert M.: *See—*
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Sandoz Ltd., (Sandoz AG): *See—*
Galantay, Eugene Ervin; and Wagner, Heribert, 3,952,035.
Studer, Martin, 3,951,590.

Sankey, Bruce M.: *See—*
Woo, Charles; and Sankey, Bruce M., 3,951,780.

Sankovich, Stanley, to Champion Spark Plug Company. Article transfer apparatus. 3,951,272, Cl. 214-1.0BC.

Sankyo Company Limited: *See—*
Soma, Nobuo; Kawamoto, Isao; Nakajima, Tomio; Sugita, Sadao; Wada, Tsuneo; Saito, Shizuo; Inokuma, Hiroyuki; Horigome, Koichi; and Morifuji, Yukio, 3,951,661.

Sano, Keizo; Nishida, Yoshimasa; Kagiya, Yoshio; Tanaka, Michihiko; and Mineo, Masatoshi, to Toray Industries, Inc. Fiber- and film-forming polyester composition. 3,951,905, Cl. 260-40.00R.

Sansui Electric Co., Ltd.: *See—*
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Santora, Norman J.: *See—*
Douglas, George H.; and Santora, Norman J., 3,952,067.

Santucci, Nicola, to Nuovo Pignone S.p.A. Devices for folding into the warp shed both ends of a weft thread in a fabric made by a shuttleless loom having a continuous weft supply mechanism. 3,951,177, Cl. 139-431.000.

Sarlos, Gerassimos: *See—*
Frutschi, Hans; Sarlos, Gerassimos; Dupont, Jean-Francois; and Haschke, Dieter, 3,951,737.

Sartorius, Rudolf; and Stapf, Hans, to Hoechst Aktiengesellschaft. Process for preparing technically pure acetic acid by extractive distillation. 3,951,755, Cl. 203-16.000.

Sasajima, Kikuo: *See—*
Maruyama, Isamu; Nakao, Masaru; Sasajima, Kikuo; Inaba, Shigeho; and Yamamoto, Hisao, 3,951,986.

Sasaki, Kyoichi: *See—*
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Sato, Akira: *See—*
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Sato, Etsuro: *See—*
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Sato, Kazuo: *See—*
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Sato, Kiyoshi: *See—*
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Sato, Norio: *See—*
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Sato, Yoshiaki: *See—*
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Sato, Yuichi: *See—*
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Satzinger, Gerhard: *See—*
Stoss, Peter; and Satzinger, Gerhard, 3,951,997.

Satzinger, Roland. Safety device for the occupants of vehicles, especially motor vehicles. 3,951,429, Cl. 280-727.000.

Saunders, John Christopher; and Williamson, William Robert Nigel, to Lilly Industries, Ltd. Anti-inflammatory 1,2-benzisoxazole derivatives. 3,951,999, Cl. 260-307.0DA.

Saunders, Roy Anthony: *See—*
Davies, Johnson York; Jamin, Guillaume Ward; Renshaw, Thomas; Saunders, Roy Anthony; Taylor, Geoffrey; and Williams, John Prys, 3,950,967.

Saurenman, Phillip E.: *See—*
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Saurer-Allma GmbH, Allgaeuer Maschinenbau: *See—*
Bleeck, Heinz, 3,950,931.

Sausaman, David K., to Commercial Solvents Corporation. Epoxy resin composition having improved wetting properties. 3,951,916, Cl. 260-47.0EN.

Sause, Alfred J. Three-way trailer hitch. 3,951,434, Cl. 280-415.00A.

Sautter, Wilfried: *See—*
Wessel, Wolf; Sautter, Wilfried; Handtmann, Dieter; and Abt, Jurgen, 3,951,113.

Sawant, Ulhas S.: *See—*
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Sayama, Norio: *See—*
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Scaffidi, Francis: *See—*
Davis, D. Carter; Sawant, Ulhas S.; and Scaffidi, Francis, 3,951,348.

Scales, William, to Dunlop Limited. Fastening means. 3,951,438, Cl. 285-55.000.

Schaar, Charles H., to Colgate-Palmolive Company. Diaper with elastic waist means. 3,951,150, Cl. 128-287.000.

Schaar, Lothar, to Heye, Hermann. Forming station for a machine for forming hollow articles of vitreous material. 3,951,637, Cl. 65-229.000.

Schade, Otto Heinrich, Jr., to RCA Corporation. Current proportioning circuits. 3,952,257, Cl. 330-22.000.

Schaefer, George Henry: *See—*
Ernster, Peter Jacob; Collins, William Joseph; and Schaefer, George Henry, 3,951,351.

Schafer, Dietmar: *See—*
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Schaller, Daryl R.: *See—*
Fulger, Charles V.; and Schaller, Daryl R., 3,952,112.

Schanefelt, Robert V.; Eastman, James E.; and Campbell, Michael F., to A. E. Staley Manufacturing Company. Thin-thick waxy malze based starch derivative for acid and neutral retort media. 3,951,947, Cl. 260-233.30R.

Schank, Richard L., to Xerox Corporation. Process for preparing reversible cure waterless lithographic masters. 3,951,063, Cl. 101-466.000.

Scharl, Herbert: *See—*
Jaggle, Gunther; Peters, Klaus-Jurgen; Stein, Volkhard; and Scharl, Herbert, 3,951,119.

Schatzmann, Rudolf Emil. Combination sweeper and vacuum cleaner for swimming pools. 3,950,809, Cl. 15-1.700.

Schaub, Andres: *See—*
Perrin, Pierre; Schmutz, Arthur; Defago, Raymond; and Schaub, Andres, 3,951,588.

Scheidt, Eugen: *See—*
Ozelli, Riza Nur; Klement, Gunter; and Scheidt, Eugen, 3,952,079.

Schempp, Eberhard G.; and Pearce, Jai K., to Pennsylvania Engineering Corporation. Steel production method. 3,951,643, Cl. 75-10.00R.

Schering Aktiengesellschaft: *See—*
Prezewowsky, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Neumann, Friedmund; and Nishino, Yukishige, 3,951,958.
Prezewowsky, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Neumann, Friedmund; and Nishino, Yukishige, 3,951,959.
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Schering Corporation: *See—*
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Scherrer, Hanspeter; and Boller, Arthur, to Hoffmann-La Roche Inc. Liquid crystalline biphenyls. 3,952,046, Cl. 260-463.000.

Schertz, Burtron D.: *See—*
Gilbert, William F.; Schertz, Burtron D.; Smith, Wayne A.; and Wilkinson, Lester, 3,952,161.

Scheuer, Nicholas G.; and Flegel, George J., to Josam Manufacturing Co. Adjustable plumbing fitting. 3,951,441, Cl. 285-391.000.

Schevey, William Russell; Jones, Harold Freeman; and Spielman, Burton A., to Allied Chemical Corporation. Multi-phase rinse and recovery apparatus. 3,951,682, Cl. 134-102.000.

Schick, Hannes; Hennenberger, Peter; Staiger, Gerhard; and Mueller-Tamm, Heinz, to BASF Aktiengesellschaft. Manufacture of a modified titanium component for catalysts of the Ziegler/Natta type. 3,951,858, Cl. 252-429.00B.

Schickfluss, Rudolf: *See—*
Birke, Walter; Schickfluss, Rudolf; and Schon, Franz, 3,951,591.

Schiel, Ernst J.; and Gammarino, Rudolph R., to United States of America, Army. Solar cell detector array for engagement simulation. 3,950,862, Cl. 35-25.000.

Schiemann, Heinz: *See—*
Herrmann, Albert; Kleen, Gerhard; and Schiemann, Heinz, 3,952,243.

Schiffer, Gunter; and Lopata, Karl Peter, to Kleinewefers Industrie Companie GmbH. Process of continuously washing textile web. 3,950,802, Cl. 8-149.100.

Schindler, George R.: *See—*
White, Neil S.; and Schindler, George R., 3,951,003.

Schinzel, Erich: *See—*
Mengler, Helmut; Schinzel, Erich; and Rosch, Gunter, 3,951,965.

Schirmann, Jean-Pierre: *See—*
Tellier, Pierre; Mathais, Henri; Schirmann, Jean-Pierre; and Weiss, Francis, 3,951,964.

Schlage, Ernest L., to Schlage Lock Company. Pivoting latch and lock. 3,951,442, Cl. 292-71.000.

Schlage Lock Company: *See—*
Schlage, Ernest L., 3,951,442.

Schleich, Georg: *See—*
Bluemel, Harald; and Schleich, Georg, 3,951,901.

Schlesinger, Sheldon Irwin, to American Can Company. Epoxide photopolymerizable compositions containing cyclic amides as gelation inhibitor and methods of polymerizing. 3,951,769, Cl. 204-159.110.

Schlott, Walter, to Robert Bosch G.m.b.H. Diaphragm-controlled pressure control valve assembly. 3,951,120, Cl. 123-139.0AW.

Schlumberger Technology Corporation: *See—*
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Schmidlin, Fred W.; Haas, Werner E.; and Adams, James E., to Xerox Corporation. Liquid crystal imaging system. 3,951,519, Cl. 350-160.0LC.

Schmidt, Alfred; Wegleitner, Karlheinz; Hatzl, Josef Herbert; Sykora, Rudolf; and Weinrotter, Ferdinand, to Chemie Linz AG. Process for the preparation of guanidine carbonate. 3,952,057, Cl. 260-564.00D.

Schmidt, Delf: *See—*
Frommer, Werner; Puls, Walter; Schafer, Dietmar; and Schmidt, Delf, 3,951,745.

Schmidt, Kurt H., to Johann A. Wulfing Fabrik Pharmazeutischer Praparate. Cardioglycoside derivatives of the strophanthidin type, a process for their manufacture and medicinal preparations containing these compounds. 3,951,946, Cl. 260-210.500.

Schmitt, James L.: *See—*
Audifferd, Sidney J., Jr.; and Schmitt, James L., 3,951,009.

Schmunk, John D., to Hancor, Inc. Modular cellular conduit assembly. 3,951,439, Cl. 285-137.00R.

Schmutz, Arthur: *See—*
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Schnabel, Wilhelm J.; and Colafati, Ralph A., III, to Olin Corporation. Bis (diisocyanatobenzyl) -chlorobenzene. 3,952,043, Cl. 260-453.0AM.

Schneider, Raymond C.; Meyer, Robert W.; and Borgelt, Gerald C., to Twin Disc, Incorporated. Power transmitting mechanism for starting a high inertia load and having retarder means for auxiliary starting motor. 3,951,008, Cl. 74-661.000.

Schneider, Richard C.: *See—*
Dent, Roy F., III; and Schneider, Richard C., 3,952,329.

Schneider, Walter: *See—*
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Schnell, Albert C., to Continental Can Company, Inc. Noise reduction enclosure for a machine. 3,951,228, Cl. 181-33.00K.

Schnurbusch, Horst; and Kirchner, Peter, to Veba-Chemie AG. Urea derivative containing isocyanate groups. 3,952,040, Cl. 260-453.00A.

Schnyder, Conrad W.; and Kullik, Gunter, to Schnyder, Conrad W. Dispenser for textile hand towelling web. 3,951,485, Cl. 312-38.000.

Schoenfelder, James L., to Sun Power, Inc. Combined flat plate - focal point solar heat collector. 3,951,128, Cl. 126-271.000.

Schon, Franz: *See—*
Birke, Walter; Schickfluss, Rudolf; and Schon, Franz, 3,951,591.

Schott, Wayne M., to Zenith Radio Corporation. Ducted port reflex enclosure. 3,952,159, Cl. 179-1.00E.

Schoustra, Bauke; and Roncken, Hubertus W. H. M., to Oce-van der Grinten N.V. Dye sensitized photoconductive material. 3,951,655, Cl. 96-1.700.

Schrammel, Werner; Stohr, Arno; and Birkhofer, Hans, to Klockner-Werke AG. Apparatus for controlling the operation of injection molding machines. 3,951,388, Cl. 259-191.000.

Schreiber, Raymond H.; and Hagan, James Lamont, Jr. Mountable hoist. 3,951,236, Cl. 187-2.000.

Schreter, Arnold H. Tie clasp. 3,950,823, Cl. 24-49.00C.

Schroder, Eberhard: *See—*
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Schroeder, Fred, to Dow Corning Corporation. Incendiary fragmentation device. 3,951,066, Cl. 102-65.000.

Schroeder, Fred, to Dow Corning Corporation. Wide dispersion incendiary device. 3,951,067, Cl. 102-65.000.

Schroeder, Fred, to Dow Corning Corporation. Incendiary device. 3,951,068, Cl. 102-65.000.

Schroeder, Guenter: *See—*
Gaenzler, Wolfgang; Schroeder, Guenter; and Kabs, Klaus, 3,952,045.

Schudel, Peter: *See—*
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Schuler, Michael: *See—*
Morrow, Darrell R.; and Schuler, Michael, 3,950,918.

Schulien, Howard E.; and Ficken, William H., to Bendix Corporation, The. Centrifugally flow controlled lubricated bearing. 3,951,476, Cl. 308-114.000.

Schulz, Horst, to Riedel-De Haen Aktiengesellschaft. Gas-permeable, liquid-tight closure. 3,951,293, Cl. 215-261.000.

Schulz, Manfred B.; and Holland, Melvin G., to Raytheon Company. Temperature compensated acoustic surface wave device. 3,952,268, Cl. 333-30.00R.

Schumacher, Ernst; Bremer, Hans; and Herold, Rolf, to Druckfarbenfabrik Gebr. Schmidt GmbH. Multicolor printing. 3,951,668, Cl. 106-20.000.

Schurger, Rainer; Olschewski, Armin; Burkl, Erich; and Walter, Lothar, to SKF Industrial Trading and Development Company, B.V. Box with double row track carriers. 3,951,472, Cl. 308-6.00C.

Schwank, Max: *See—*
Topfl, Rosemarie; Schwank, Max; and Maeder, Arthur, 3,951,891.

Schwanz, Wilfried; and Seiffert, Ulrich, to Volkswagenwerk Aktiengesellschaft. Safety belt take-up device. 3,951,430, Cl. 280-744.000.

Schwenk, Kurt. Torsion axle for motor vehicles. 3,951,225, Cl. 180-73.00R.

Science Research Council: *See—*
Aitken, Thomas Wilson, 3,952,214.

SCM Corporation: *See—*
Dorschner, Kenneth P., 3,952,105.

Scorpio Industries Inc.: *See—*
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Seal Incorporated: *See—*
Johnson, Terence C.; and Reed, Malcolm E., 3,951,724.

Searle Cardio-Pulmonary Systems Inc.: *See—*
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Sears, Roebuck and Co.: *See—*
Folden, Clarence Lee; and Reidy, Nicholas D., 3,951,385.

Seely, Gilbert R., to Charles F. Kettering Foundation. Photooxidative destruction of organic wastes. 3,951,797, Cl. 210-63.00R.

Seger, Gary V.; and Fluhr, Wallace E. Irrigation system pivot swivel. 3,951,165, Cl. 137-344.000.

Seiffert, Ulrich: *See—*
Schwanz, Wilfried; and Seiffert, Ulrich, 3,951,430.

Seiner, Jerome A., to PPG Industries, Inc. Opaque, microcellular films from latex compositions, process and composition for preparing the same. 3,951,899, Cl. 260-29.6MH.

Seki, Yachio; and Nakamura, Masaya, to Agency of Industrial Science and Technology. Method for manufacture of foam glass. 3,951,632, Cl. 65-22.000.

Sekine, Yoichi: *See—*
Yoshino, Kimiaki; Shimotsuma, Wataru; Adachi, Kin-ichi; Sekine, Yoichi; and Oda, Fujio, 3,951,757.

Sekine, Ziro: *See—*
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Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
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Sekiwa, Tetsuo: *See—*
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Selke, Reimund; Obersteller, Udo; and Richter, Kurt, to Nixdorf Computer AG. Electromechanical writing device. 3,951,252, Cl. 197-133.00A.

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Senoo, Masao; Hara, Shigeyoshi; and Ozawa, Shuji, to Teijin Limited. Permselective polymeric membrane prepared from polybenzimidazoles. 3,951,920, Cl. 260-78.0TF.

Serck Industries Limited: *See—*
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Setescak, Linda Louise: *See—*
Narayanan, Venkatachala Lakshmi; and Setescak, Linda Louise, 3,951,950.

Sette, Paul R.: *See—*
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Shaffer, Clifford K.; and Weiss, Joe B., to United States of America, Navy. Brake system for cart. 3,951,426, Cl. 280-47.340.

Shaffer, John W., to GTE Sylvania Incorporated. Modified polycarbonate resin. 3,951,903, Cl. 260-37.0PC.

Shaffer, Robert L.; and Mason, Donald G., to Ecodyne Corporation. Sludge removal system. 3,951,819, Cl. 210-527.000.

Shah, Tilak M.: *See—*
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Shaklee, Francis Sowersby; Neumann, Julius; and Irving, Evans James, to International Telephone and Telegraph Corporation. Electrical system for automotive vehicles and the like. 3,952,209, Cl. 307-9.000.

Sharman, Samuel H.: *See—*
Straus, Alan E.; Sweeney, William A.; House, Ralph; and Sharman, Samuel H., 3,951,823.

Sharp, Maurice C. Trailer top with lifting and mounting means. 3,951,447, Cl. 296-137.00B.

Sharpe, Roderick P. Water ski. 3,950,807, Cl. 9-310.00A.

Sharps Associates: *See—*
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Shaw, Barry Leigh: *See—*
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Sheats, Jimmy Bernard: *See—*
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Shell Oil Company: *See—*
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Frischmuth, Robert W., Jr., 3,951,620.
Gibbs, Sam G., 3,951,209.

Shelton, Thomas S., to McGraw-Edison Company. Vapor phase process for cellulose fabrics. 3,951,595, Cl. 8-116.400.

Shen, Chung Y., to Monsanto Company. Process for preparing diglycolic acid. 3,952,054, Cl. 260-535.00P.

Shepherd, Bob Gene, to Columbia Products Company. Fishing rod handle assembly. 3,950,883, Cl. 43-22.000.

Shepherd, David; and Dasek, Jaroslav, to Societe d'Assistance Technique pour Produits Nestle S.A. Production of zeaxanthin. 3,951,742, Cl. 195-28.00R.

Shepherd, David; Dasek, Jaroslav; and Carels, Mariette Suzanne Catherine, to Societe d'Assistance Technique pour Produits Nestle S.A. Production of zeaxanthin. 3,951,743, Cl. 195-28.00R.

Sheratte, Martin B., to McDonnell Douglas Corporation. Functional fluid compositions. 3,951,837, Cl. 252-78.000.

Sherby, Oleg D.; Young, Conrad M.; Walser, Bruno; and Cady, Eldon M., Jr., to Leland Stanford Junior University, The Board of Trustees of. Superplastic ultra high carbon steel. 3,951,697, Cl. 148-12.00R.

Sherk, Fred T., to Phillips Petroleum Company. Process for producing alkali metal salts of aromatic polycarboxylic acids. 3,952,052, Cl. 260-525.000.

Sherry, J. Joseph: *See—*
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Shibanuma, Tadao: *See—*
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Shibata, Fumio, to Nihon Nohyaku Kabushiki Kaisha. Growth promotion using a certain glyceride mixture. 3,952,107, Cl. 424-311.000.

Shibuya, Hideo: *See—*
Watanabe, Masahiro; Shibuya, Hideo; Sakai, Yasuhide; Hori, Ryuji; Kamiharako, Mistuaki; and Sato, Kazuo, 3,952,303.

Shidahara, Yasuhiro; and Miura, Yoshinori, to Toyo Kogyo Co., Ltd. Exhaust gas cleaning system for the internal combustion engine. 3,950,944, Cl. 60-301.000.

Shima, Hiroo: *See—*
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Shima, Takeo: *See—*
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Shimago, Kozo: *See—*
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Shimizu, Katsuhisa; Ori, Masaru; and Oseto, Osamu, to Arakawa Rinsan Kagaku Kogyo Kabushiki Kaisha. Amido-containing resins and compositions containing the same. 3,951,896, Cl. 260-29.70R.

Shimizu, Kiwako: *See—*
Fujisawa, Tamotsu; Ambe, Mitsuko; Kobayashi, Norio; Osawa, Akiko; and Shimizu, Kiwako, 3,951,790.

Shimizu, Shinkichi: *See—*
Shiraishi, Tatsuo; Kishiwada, Susumu; Shimizu, Shinkichi; Honmaru, Shigeru; Atsumi, Akihiko; Ichihashi, Hiroshi; and Nagaoka, Yoshihiko, 3,951,861.

Shimizu, Tadao; Hashimoto, Koshiro; and Yanagida, Hiroaki, to Matsushita Electric Industrial Co., Ltd. Method of making fibrous alkali titanates. 3,952,090, Cl. 423-598.000.

Shimotsuma, Sakae: *See—*
Kuratsuji, Takatoshi; Shima, Hiroo; Shima, Takeo; Kawase, Shoji; Shimotsuma, Sakae; and Hosoi, Masahiro, 3,952,125.

Shimotsuma, Wataru: *See—*
Yoshino, Kimiaki; Shimotsuma, Wataru; Adachi, Kin-ichi; Sekine, Yoichi; and Oda, Fujio, 3,951,757.

Shindo, Noboru; Hashizume, Hiroshi; and Kikuchi, Shuichi, to Murata Kikai Kabushiki Kaisha. False twisting device. 3,950,930, Cl. 57-77.450.

Shinshu Seiki Kabushiki Kaisha: *See—*
Mitsui, Yoshihiro; Arai, Kenichiro; and Kamakura, Hiroshi, 3,952,219.

Shiraishi, Tatsuo; Kishiwada, Susumu; Shimizu, Shinkichi; Honmaru, Shigeru; Atsumi, Akihiko; Ichihashi, Hiroshi; and Nagaoka, Yoshihiko, to Sumitomo Chemical Company, Limited. Catalysts for the preparation of acrolein. 3,951,861, Cl. 252-437.000.

Shirogami, Tamotsu: *See—*
Takamura, Tsutomu; Shirogami, Tamotsu; Sato, Yuichi; Murata, Kenji; and Niki, Hirokazu, 3,951,687.

Shiroki, Masami: *See—*
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Shiryaev, Vladimir Alexandrovich: *See—*
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Shoemaker, Robert H.; and Wood, William G., to Kolene Corporation. Method for descaling ferrous metals. 3,951,681, Cl. 134-2.000.

Shoffa, Vadim Nikolaevich: *See—*
Smirnov, Vladimir Alexeevich; and Shoffa, Vadim Nikolaevich, 3,952,271.

Shuffman, Oscar, deceased: *See—*
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Ross, Sigmund Lance; and Shuffman, Oscar, deceased, 3,951,198.

Shull, Paul H., to Elixir Industries. Lock assembly with resilient latch. 3,951,444, Cl. 292-359.000.

Shuttleworth, Inc.: *See—*
Shuttleworth, James J.; and Sprague, Carlton S., 3,951,255.

Shuttleworth, James J.; and Sprague, Carlton S., to Shuttleworth, Inc. Conveyor with driven slippable rollers. 3,951,255, Cl. 198-127.00R.

Sias, Roy C.; and Groves, William L., Jr., to Continental Oil Company. Stabilized analytical standards. 3,951,854, Cl. 252-408.000.

Sibbett, Donald J.: *See—*
Moyer, Rudolph H.; and Sibbett, Donald J., 3,951,606.

Sibley, Henry C., to General Signal Corporation. Track circuit. 3,951,364, Cl. 246-34.0CT.

Sideman, Carl E. Heat transfer print sheet and printed product. 3,952,131, Cl. 428-334.000.

Sidi, Henri; and Johnson, Hilding R., to Tenneco Chemicals, Inc. Biocidal bicyclic polyoxymethyleneoxazolidines. 3,952,000, Cl. 260-307.0FA.

Sidor, Edward F., to Illinois Tool Works Inc. Temperature sensors with improved operating characteristics utilizing magnetic elements. 3,950,993, Cl. 73-362.00R.

Siegel, Norman H. Marine sewage disposal device. 3,951,803, Cl. 210-149.000.

Siegle, Gert, to Robert Bosch GmbH. Motor ignition distribution system with controllable auxiliary gaps. 3,951,144, Cl. 123-148.00E.

Siemens Aktiengesellschaft: *See—*
Burkle, Peter; Timpe, Wolfgang; and Thomas, Friedrich Werner, 3,952,139.
Deckert, Andreas, 3,952,233.
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Friedel, Rudolf; and Ebersberger, Hans, 3,950,836.
Herrmann, Albert; Kleen, Gerhard; and Schiemann, Heinz, 3,952,243.
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Noack, Dieter; Diekmann, Joachim; Eggert, Horst; and Kugler, Robert, 3,951,237.
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Walch, Horst; and Walter, Urlich, 3,952,276.
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Simeti, Samuel. Molded one-piece plastic crab trap with integral outwardly biased hinge elements. 3,950,885, Cl. 43-105.000.

Simhan, Krishna: *See—*
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Simkin, Joseph, to Pennwalt Corporation. Freeze drying of seeds. 3,950,892, Cl. 47-58.000.

Simmonds Precision Products, Inc.: *See—*
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Simmons, James W., Jr., to Cox Foundry and Machine Co. Shuttleless loom. 3,951,178, Cl. 139-446.000.

Simon, Bernard: *See—*
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Simond, Jacques: *See—*
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Simpson, Ronnie C. Method and clip for installation of insulation. 3,950,900, Cl. 52-22.000.

Sims, James J.: *See—*
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Singer Company, The: *See—*
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Sittmann, Manfred: *See—*
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Siwko, Karol, to GTE Sylvania Incorporated. Wide band AFC system. 3,952,143, Cl. 178-5.8AF.

Sjogren, Charles A., to Schlumberger Technology Corporation. Perforating apparatus. 3,951,218, Cl. 175-4.600.

Sjostrom, Eero Vilhelm; and Valttila, Olli Tapio, to Osakeyhtio, A. Ahlstrom. Delignification and bleaching of wood pulp with oxygen in the presence of triethanolamine. 3,951,732, Cl. 162-65.000.

SKF Industrial Trading and Development Company, B.V.: *See—*
Neder, Gunter, 3,951,244.
Olschewski, Armin; Burkl, Erich; Walter, Lothar; and Brandenstein, Manfred, 3,951,473.
Schurger, Rainer; Olschewski, Armin; Burkl, Erich; and Walter, Lothar, 3,951,472.

Skinner, Lloyd D. Paper conveyor and guidance system. 3,951,402, Cl. 271-273.000.

Skridul, George: *See—*
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Sleppy, William C.; Cochran, C. Norman; Foster, Perry A., Jr.; and Haupin, Warren E., to Aluminum Company of America. Aluminum smelting temperature selection. 3,951,763, Cl. 204-67.000.

Slezinger, Isaak Isaevich; Belitsky, Georgy Mironovich; Shiryaev, Vladimir Alexandrovich; Mironov, Jury Vasilievich; and Kaplinskaya, Natalia Lvovna. Piezo-optic measuring transducer and accelerometer, pressure gauge, dynamometer, and thermometer based thereon. 3,950,987, Cl. 73-141.00A.

Slick, E. Paul, to Magnavox Company, The. Direction-sensing virtual aperture radiation detector. 3,951,550, Cl. 356-141.000.

Sliepcevich, Cedomir M.: *See—*
Kieswetter, Olmedo, Jr.; and Sliepcevich, Cedomir M., 3,951,649.

Slinger, William R., to Treadwell Corporation. Air leak detector. 3,950,983, Cl. 73-46.000.

Sloate, Harry M.; and Cappon, Arthur M., to Sperry Rand Corporation. Monolithic transversal filter with charge transfer delay line. 3,952,188, Cl. 235-193.000.

Smale, Terence Charles, to Beecham Group Limited. Azetidinones. 3,951,951, Cl. 260-239.00A.

Small, William M.; and Petree, Donald K., to Phillips Petroleum Company. Uniform mixing in vessels. 3,951,386, Cl. 259-1.00R.

Smirl, Richard L., to Borg-Warner Corporation. Fulcrums for Belleville springs. 3,951,393, Cl. 267-161.000.

Smirnov, Vladimir Alexeevich; and Shoffa, Vadim Nikolaevich. Electromagnetic device using hermetically sealed contacts. 3,952,271, Cl. 335-151.000.

Smith, Alvin Jack. Aerated sewerage disposal. 3,951,804, Cl. 210-170.000.

Smith, Bob Lee. Intravenous measuring chamber. 3,951,145, Cl. 128-214.00R.

Smith, Carl J.: *See—*
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Smith, David L.: *See—*
Goldberg, Herbert Emanuel; Cannon, Robert Lee; and Smith, David L., 3,951,135.

Smith, Dexter E.; and Stewart, William S., to Phillips Petroleum Company. Controlled polymerization apparatus. 3,951,604, Cl. 23-253.00A.

Smith, Donald Edward, to Procter & Gamble Company, The. Dermatological compositions. 3,952,099, Cl. 424-227.000.

Smith, Ernest L.; and MacEwen, George E., to Phillips Petroleum Company. Reclosable closure. 3,951,331, Cl. 229-43.000.

Smith, Frederick R., to FMC Corporation. Fluid absorbent alloy fibers. 3,951,889, Cl. 260-17.00R.

Smith, Marnell: *See—*
United States of America, National Aeronautics and Space Administration; Goldstein, Howard E.; Smith, Marnell; and Leiser, Daniel, 3,952,083.

Smith, Norman Alfred: *See—*
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SmithKline Corporation: *See—*
Jen, Timothy Yu-Wen; and Kaiser, Carl, 3,952,101.

Smolens, Harry Gregory, to Pennwalt Corporation. Hydrogen peroxide bleaching solutions and process. 3,951,594, Cl. 8-111.000.

Smulders, Walter Henricus Maria Magdala, to U.S. Philips Corporation. Parellel-connection of semiconductor systems with an arrangement for preventing thermal instability. 3,952,258, Cl. 330-23.000.

Snader, Earle Stuart, to Koppers Company, Inc. Electrostatic precipitator. 3,951,624, Cl. 55-128.000.

Snam Progetti S.p.A.: *See—*
Arrigoni, Virgilio; Gaetani, Bruno; and Manotti, Afro, 3,950,981.

Snarey, Michael: *See—*
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Snoddy, Lowell G.: *See—*
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Snow, Gary S.; and Wilcox, Paul D., to United States of America, Energy Research and Development Administration. Ceramic to metal seal. 3,951,327, Cl. 228-121.000.

Snyder, H. Ben, to General Dynamics Corporation. System for maintaining uniform copper etching efficiency. 3,951,711, Cl. 156-19.000.

Snyder, John R., to Jet Aeration Company. Sewage treatment tank and tube settler. 3,951,817, Cl. 210-521.000.

Soag Machinery Limited: *See—*
Pereira, Joseph Augustine Terence, 3,951,199.

Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
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Societe Anonyme des Etablissements Roure-Bertrand Fils & Justin Dupont: *See—*
Celli, Charles Jerome Louis; Plattier, Marcel; and Teisseire, Paul Jose, 3,951,876.

Societe Anonyme dite RECPRO: *See—*
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Societe Bernard Calais S.A.R.L.: *See—*
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Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Shepherd, David; and Dasek, Jaroslav, 3,951,742.
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Societe de Depot de Margues Sodema, Societe Anonyme: *See—*
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Societe d'Etudes et de Developpement des Aeroglisseurs Marins, Terrestres et Amphibies S.E.D.A.M.: *See—*
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Societe Industrielle des Vetements Merignac: *See—*
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Societe Meusienne de Constructions Mecaniques: *See—*
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SOCOTEL, a Societe Mixte pour le Developpement de la Technique de la Commutation dans le Domaine des Telecommunications: *See—*
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Soeno, Ko: *See—*
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Solo Cup Company: *See—*
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Soma, Nobuo; Kawamoto, Isao; Nakajima, Tomio; Sugita, Sadao; Wada, Tsuneo; Saito, Shizuo; Inokuma, Hiroyuki; Horigome, Koichi; and Morifuji, Yukio, to Konishiroku Photo Industry Co.; and Sankyo Company Limited. Silver halide emulsion containing an arylphosphonium salt as antifoggant. 3,951,661, Cl. 96-76.00R.

Someya, Teruo: *See—*
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Sony Corporation: *See—*
Fueki, Shimetomo; Tada, Junichi; Osawa, Kenji; Sakai, Naomi; and Ogawa, Kazuhiro, 3,951,760.
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Sopko, John F.; and Simhan, Krishna, to PPG Industries, Inc. Chemical vapor deposition of coatings. 3,951,100, Cl. 118-48.000.

Sorenson, Hugh E. Buoyancy circular water ski. 3,950,808, Cl. 9-310.00G.

Sorkin, Morris, to TRW Inc. Digital adaptive speed control for vehicles. 3,952,301, Cl. 343-7.0VM.

Sowder, Tony R. Self centering tension drive terminal for tramway. 3,951,073, Cl. 104-117.000.

Sparks, William J.: *See—*
Oseroff, Herbert B.; and Sparks, William J., 3,950,838.

Speakman, Eugene R., to McDonnell Douglas Corporation. Stress coining tool fastened joint. 3,951,561, Cl. 403-279.000.

Spear, Richard R., to Communications Technology Corporation. Tester for three wire grounding electrical outlet. 3,952,244, Cl. 324-51.000.

Spector, George: *See—*
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Spectradyne, Inc.: *See—*
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Speiser, Jeffrey M.; and Whitehouse, Harper John, to United States of America, Navy. Apparatus for the generation of a two-dimensional discrete fourier transform. 3,952,186, Cl. 235-156.000.

Spencer, Edward P.: *See—*
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Sperry Rand Corporation: *See—*
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Fournier, Lawrence E.; Daigneault, Martin J.; and Tarbin, Frederick G., 3,950,842.

Sprott, Julien C.; Lovell, Thomas W.; and Holly, Donald J., to United States of America, Energy Research and Development Administration. Plasma digital density determining device. 3,952,246, Cl. 324-58.50C.

Square D Company: *See—*
Reese, Cleve Lloyd; and Kelly, John P., 3,952,178.

Srock, Rainer, to Dr.-Ing. H.c.F. Porsche Aktiengesellschaft. Shell seat for passenger motor vehicles. 3,951,451, Cl. 297-366.000.

Stack, Joseph S., to United States of America, Army. Double-base propellants with combustion modifier. 3,951,704, Cl. 149-19.800.

Stage, Jack W. Anti-skid device including a gear-driven cam pumping unit with fail-safe features. 3,951,465, Cl. 303-21.00F.

Stahl, Heinz: *See—*
Bandel, Kurt; Honegg, Adolf; and Stahl, Heinz, 3,951,455.

Stahlecker, Fritz, to Stanlecker, Fritz; and Stahlecker, Hans. Open-end spinning machine with a shiftable apparatus for start-spinning. 3,950,926, Cl. 57-34.00R.

Stahlecker, Fritz, to Stahlecker, Hans; and Stahlecker, Fritz. Thrust bearing for open-end spinning rotors. 3,951,479, Cl. 308-172.000.

Stahlecker, Hans: *See*—
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Staley, Edward W., Jr., to Wallace-Murray Corporation. Process for making a file and article resulting therefrom. 3,951,012, Cl. 76-24.00R.

Stam, John G.: *See*—
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Stambaugh, Daniel P.: *See*—
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Standard Oil Company: *See*—
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Stanford Research Institute: *See*—
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Stanley, Robert Holroyd; and Shaw, Barry Leigh, to British Titan Limited. Process for making nicotinic acid hydrazides. 3,951,996, Cl. 260-295.00H.

Stanley Tools Limited: *See*—
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Stanley, William L.: *See*—
Jurd, Leonard; King, A. Douglas, Jr.; and Stanley, William L., 3,951,820.

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Starks, Glendon D.: *See*—
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Staudt, Heinrich; and Nelh, Georges, to Robert Bosch GmbH. RPM Measuring apparatus. 3,952,220, Cl. 310-168.000.

Stauffer, Franklin K.; and Smith, Phillip R., to Raytheon Company. Constant writing rate digital stroke character generator having minimal data storage requirements. 3,952,297, Cl. 340-324.00A.

Steamatic, Inc.: *See*—
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Stearns-Roger Corporation: *See*—
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Stehle, John J.; and Davis, Robert E., to Best Barricade Company. Support post for use with a plurality of traffic warning devices. 3,950,873, Cl. 40-125.00H.

Steidley, Roy B.: *See*—
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Stein, Alfred: *See*—
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Stern, Robert; Franck, Jean-Pierre; and Le Page, Jean-Francois, to Institut Francais du Petrole. Process for recovering palladium, more particularly from alumina containing catalysts. 3,951,648, Cl. 75-83.000.

Stevenson, Lawrence Oliver: *See*—
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Storace, Anthony; and Sette, Paul R., to Pitney-Bowes, Inc. Mail transporting mechanism. 3,951,257, Cl. 198-208.000.

Stoss, Peter; and Satzinger, Gerhard, to Warner-Lambert Company. Cyclic sulphoximides. 3,951,997, Cl. 260-304.00A.

Stout, Robert K. Concrete structure including modular concrete beams. 3,950,902, Cl. 52-91.000.

Straley, James M.: *See*—
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Structural Plastics Incorporated: *See*—
DiMaio, Vincent, 3,950,894.

Stuart, William H. Golf club putter sighting device. 3,951,415, Cl. 273-183.00D.

Studer, Martin, to Sandoz Ltd., (Sandoz AG). Mixtures of optionally substituted sulfophenyl-azo-naphthylene or tetrahydronaphthylene-azo-para-alkoxyphenyl dyes. 3,951,590, Cl. 8-26.000.

Studer, Walter, to Rotel-Holding AG. Chromium electroplating baths and method of electrodepositing chromium. 3,951,759, Cl. 204-32.00R.

Stultz, Edward B.; and Budne, Thomas A., to Philip Morris Incorporated. Standard deviation determining apparatus. 3,952,185, Cl. 235-151.130.

Stumpf, Gunter. Fabric layering machine. 3,951,398, Cl. 270-31.000.

Sturm, Priscilla A.: *See*—
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Suard, Jean: *See*—
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Sugiura, Fumio; and Ura, Mitsuhiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Gas bag inflating device. 3,951,428, Cl. 280-737.000.

Sugiyama, Katsumi: *See*—
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Suh, John T., to Richardson-Merrell Inc. 1,1-(Thiadialkylidene) ferrocene S-oxides. 3,952,036, Cl. 260-439.0CY.

Sulzer Brothers Limited: *See*—
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Hosokawa, Yoshio; Ichihashi, Hiroyuki; Toyota, Mamoru; and Takahashi, Kenzi, 3,951,317.

Sumner, John S. Domical structure with novel beam interlocking connections. 3,950,901, Cl. 52-80.000.

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Suter, Charles A., to Goodyear Aerospace Corporation. Heat-resistant fuel cell. 3,951,190, Cl. 150-.500.

Sutherland, David Theodore, to Virtis Company, The. Portable refrigerating unit for freeze drying apparatus. 3,950,963, Cl. 62-268.000.

Sutherland, James Kenneth: *See*—
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Suzuki, Isamu: *See*—
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Suzuki, Matsumi; and Toyoshima, Toshihiko, to Fuji Xerox Co., Ltd. Electromagnetic coupler for use with a telephone set. 3,952,167, Cl. 179-81.00R.

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Swearingen, Judson S. Geothermal power method. 3,951,794, Cl. 210-58.000.

Sweeney, William A.: *See*—
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Sweeney, William M., to Texaco Inc. Polyacrylates and waxy residual fuel compositions thereof. 3,951,929, Cl. 526-328.000.

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Syntex (U.S.A.) Inc.: *See*—
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Szamborski, Edmund, to American Gold Chain Company, Inc. Chain clasp. 3,950,828, Cl. 24-232.00R.

Sze, Morgan C., to Lummus Company, The. Process for the preparation of ammonia synthesis catalyst. 3,951,862, Cl. 252-446.000.

Szumowska, Krystyna: *See*—
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Szymaszek, Jan Walter: *See*—
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Tahara, Tetsuya; Matsuki, Hideo; Araki, Kazuhiko; and Shiroki, Masami, to Yoshitomi Pharmaceutical Industries, Ltd. Thiophene derivatives. 3,952,006, Cl. 260-309.000.

Taira, Yasushi: *See*—
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Takahashi, Hisateru: *See*—
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Ito, Yoshio; Takahashi, Toru; Kitajima, Tadayuki; and Kadowaki, Syujiro, 3,951,542.

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Takamatsu, Ikuo, to Yoshida Kogyo Kabushiki Kaisha. Process for production of slide fastener chain. 3,951,716, Cl. 156-73.200.

Takamura, Tsutomu; Shirogami, Tamotsu; Sato, Yuichi; Murata, Kenji; and Niki, Hirokazu, to Tokyo Shibaura Electric Co., Ltd. Nickel-zinc storage battery. 3,951,687, Cl. 136-28.000.

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Takemura, Takehide; and Minami, Shunji, to Matsushita Electric Industrial Co., Ltd. Electronic power varying controller device. 3,952,241, Cl. 323-19.000.

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Tanimura, Syozo; Harada, Masahiko; and Tsuyama, Ryohei, to Sumitomo Chemical Company, Limited. Adhesion of rubber to reinforcing materials. 3,951,887, Cl. 260-3.000.

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Tatom, John W., to Vanderbilt University. Drag reduction apparatus and method. 3,951,445, Cl. 296-1.00S.

Tatsukami, Yoshiharu: *See—*
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TDK Electronics Company, Limited: *See—*
Kikuchi, Nobuaki; Yoshioka, Tsunehiko; Furukawa, Kiyoshi; and Fujiwara, Shinobu, 3,951,873.

Tedden, Erhard. Apparatus for automatically cleaning reusable foodstuff containers with reduced quantities of fresh water and chemicals. 3,951,158, Cl. 134-60.000.

Teed, Richard K., to Riegel Textile Corporation. Disposable diaper. 3,951,151, Cl. 128-287.000.

Teijin Limited: *See—*
Kuratsuji, Takatoshi; Shima, Hiroo; Shima, Takeo; Kawase, Shoji; Shimotsuma, Sakae; and Hosoi, Masahiro, 3,952,125.
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Tellier, Pierre; Mathais, Henri; Schirmann, Jean-Pierre; and Weiss, Francis, to Produits Chimiques Ugine Kuhlmann. Method for preparing azines. 3,951,964, Cl. 260-240.00G.

Templeton, Larry F.; and Gault, Roger B., to Accelerators, Inc. Automatic end station for ion implantation system. 3,951,695, Cl. 148-1.500.

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Tenney, David N., Jr. Trailer jack. 3,951,383, Cl. 254-94.000.

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Teramoto, Satoshi: *See—*
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Thekdi, Arvind C., to Midland-Ross Corporation. Self-stabilizing burner. 3,951,584, Cl. 431-352.000.

Thermo-Technical Development Limited: *See—*
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Thirtle, David Colin, to Sale Tilney AG. Apparatus for dispensing adhesive material. 3,951,308, Cl. 222-39.000.

Thomas & Betts Corporation: *See—*
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Thompson Chemicals, Inc.: *See—*
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Thompson, David Thomas; and Jackson, Reginald, to Imperial Chemical Industries Limited. Carbonylation of olefins and acetylenes. 3,952,034, Cl. 260-410.500.

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Thompson, Elwood J.: *See—*
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Thompson, Henry Clark, to Thompson Chemicals, Inc. Method of making magnesium oxychloride cement cofoamed with synthetic resin. 3,951,885, Cl. 260-2.5AK.

Thomsen, Jorgen Thyrsted; and Juul, Aage, to J. P. Schmidt Jun. A/S. Collecting system for batchwise collection of rod-shaped objects. 3,950,920, Cl. 53-59.00R.

Thomson-Brandt: *See—*
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Tibay, Eulogio C.; and Tibay, Alfredo C. Typewriter ribbon re-inker. 3,951,253, Cl. 197-171.000.

Tiggesbaumker, Peter; and Lohnherr, Ludger, to Polysius AG. Apparatus for crushing material containing particles that are hard to pulverize. 3,951,347, Cl. 241-52.000.

Tilse, Wilhelm; Suard, Jean; and Champion, Patrick de Havilland, to Timex Corporation. Two conductor hairspring-hub arrangement for electric watches. 3,950,938, Cl. 58-114.000.

Timex Corporation: *See—*
Tilse, Wilhelm; Suard, Jean; and Champion, Patrick de Havilland, 3,950,938.

Timpe, Wolfgang: *See—*
Burkle, Peter; Timpe, Wolfgang; and Thomas, Friedrich Werner, 3,952,139.

Tinet, Claude, to Thomson-Brandt. Controlled system for focussing a read-out light beam. 3,952,191, Cl. 250-201.000.

Tisch, Elvira: *See—*
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Tixi, Pietro: *See—*
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Tobey, Morley C., Jr.; and Colicchio, David F., to Hewlett-Packard Company. Linear photon coupled isolator. 3,952,205, Cl. 250-551.000.

Tobiki, Hisao; Shimago, Kozo, Okano, Shigeru; Komatsu, Toshiaki; Katsura, Toyozo; Taira, Yasushi; and Eda, Yasuko, to Sumitomo Chemical Company, Limited. Penicillins substituted with heterocyclic groups. 3,951,955, Cl. 260-239.100.

Tokico Ltd.: *See—*
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Tokyo Shibaura Electric Co., Ltd.: *See—*
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Naito, Makoto; Kasami, Akinobu; Kawachi, Masaru; Sadamasa, Tetsuo; and Mineo, Hiroki, 3,951,699.
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Tollefsrud, Philip B.: *See—*
McArthur, David A.; and Tollefsrud, Philip B., 3,952,263.

Tolles, Walter E. Microscope slide reference apparatus. 3,951,512, Cl. 350-90.000.

Tolleson, Morris L. Tiered space saver for dining table and the like. 3,951,079, Cl. 108-94.000.

Tominaga, Anri: *See—*
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Tomoda, Masayasu: *See—*
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Tomonaga, Atsushi, to Kureha Kagaku Kogyo Kabushiki Kaisha; and Toyo Boseki Kabushiki Kaisha. Electromagnetic wave absorbing material containing carbon microspheres. 3,951,904, Cl. 260-40.00R.

Tomono, Makoto; and Tarumi, Noriyoshi, to Konishiroku Photo Industry Co., Ltd. Toner for developing electrostatic latent images containing an alkylene-bis fatty acid amide. 3,951,835, Cl. 252-62.10R.

Tompkins, E. Allen, to Raymond Lee Organization, Inc., The, a part interest. Leveling device. 3,951,370, Cl. 248-188.300.

Topfl, Rosemarie; Schwank, Max; and Maeder, Arthur, to Ciba-Geigy Corporation. Preparations of reaction products of epoxides, fatty amines and fatty acids, process for their manufacture and their use. 3,951,891, Cl. 260-21.000.

Topping, Alanson D.: *See—*
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Toray Industries, Inc.: *See—*
Sano, Keizo; Nishida, Yoshimasa; Kagiya, Yoshio; Tanaka, Michihiko; and Mineo, Masatoshi, 3,951,905.

Torbeck, Frank W. Container closure with tuck-under tab. 3,951,332, Cl. 229-44.00R.

Torigoe, Masataka: *See—*
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Toro, Anthony S. Spraying device with liquid-vapor withdrawal valve. 3,951,314, Cl. 222-402.170.

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Trimpler, Walter: *See—*
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Trod, Ernest. Mixing cuvette and timing turntable for providing reaction mixtures. 3,951,608, Cl. 23-259.000.

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Trube, Rudolf: *See—*
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Tsuji, Takehiro; and Takagi, Katsuyuki, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Switching apparatus. 3,952,173, Cl. 200-264.000.

Tsukamoto, Masao; Kawai, Makito; and Munehiro, Tomiji, to Matsushita Electric Industrial Co., Ltd. Automatic accompaniment system for use with an electronic musical instrument. 3,951,029, Cl. 84-1.030.

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Turner, Charlie B.; and Laughter, Clifford M., to General Electric Company. Thermal switch device. 3,952,192, Cl. 250-239.000.

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Uhlmann, Otto; and Stephan, Norbert, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Drawing of elongated stock. 3,950,977, Cl. 72-281.000.
Ujvari, Georg; and Hansen, Peter Bregnedal, to Kefalas A/S. Xanthene and thioxanthene derivatives, compositions thereof and a method of preparation thereof. 3,951,961, Cl. 260-240.0TC.
Ukai, Takeshi, to Ricoh Co., Ltd. Automatic voltage regulator with optical feedback. 3,952,242, Cl. 323-21.000.
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National Aeronautics and Space Administration; administrator; with respect to an invention of:
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Walker, Wellington E.; Bryant, David R.; and Brown, Earle S., Jr., to Union Carbide Corporation. Catalytic process for polyhydric alcohols and derivatives. 3,952,039, Cl. 260-449.00R.
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Warden, Fuller; and Lewis, Eugene W., to Grace Development Company. Cartridge for storing and mixing at least two independent ingredients. 3,951,387, Cl. 259-67.000.
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Willemin, Andre. Machine-tool, especially automatic lathe. 3,951,017, Cl. 82-2.00R.
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Ackermann, Karl, to Robert Bosch Elektronik GmbH. Control system for terminating the discharge of a flash lamp. Re. 28,783, Cl. 315-151.000.
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Tarpinian, Haig D.; and Friedmann, Harry, to Uniroyal Inc. Harmonic signal analyzer system for testing tires. Re. 28,775, Cl. 73-146.000.
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281 3,951,610

CLASS 24
49C 3,950,823
67AR 3,950,824
73B 3,950,825
171 3,950,826
206B 3,950,827
232R 3,950,828
274R 3,950,830

CLASS 28
1.4 3,950,831

CLASS 29
78 3,950,832
132 3,950,833
149.5R 3,950,834
156.4R 3,950,835
190 3,951,611
191.6 3,950,836
195 3,951,612
205R 3,950,837
407 3,950,838
447 3,950,839
452 3,950,840
570 3,950,842
574 3,950,843
577 3,950,844
603 3,950,845
630R 3,950,846

CLASS 30
34.1 3,950,847
47 3,950,848
3,950,849

CLASS 32
10A 3,950,850
14B 3,950,851
71 3,950,852

CLASS 33
79R 3,950,853
123 3,950,854
143L 3,950,855
174G 3,950,857
174R 3,950,856
179.5R 3,950,858
352 3,950,859
371 3,950,860

CLASS 34
130 3,950,861

CLASS 35
25 3,950,862
36 3,950,863

CLASS 36
77R 3,950,865

CLASS 37
8 3,950,866

CLASS 38
66 3,950,867
3,950,868
102.91 3,950,869

CLASS 40
2R 3,950,870
67 3,950,871
96 3,950,872
125H 3,950,873
145R 3,950,874

CLASS 42
42R 3,950,875
69A 3,950,876
90 3,950,877
3,950,878

CLASS 43
3 3,950,879
17 3,950,880
22 3,950,883
25 3,950,881
42.37 3,950,882
81 3,950,884
105 3,950,885
112 3,950,886

CLASS 44
5 3,951,613
58 3,951,614

CLASS 46
6 3,950,887
25 3,950,888
44 3,950,889
45 3,950,890

CLASS 47
57.6 3,950,891
58 3,950,892
89 3,951,038

CLASS 48
71 3,951,615
85.2 3,951,616
197R 3,951,617

CLASS 49
224 3,950,893
501 3,950,894

CLASS 51
5B 3,950,895
169 3,950,897
170TL 3,950,896
216R 3,950,898
221R 3,950,899
308 3,951,619

CLASS 52
22 3,950,900
80 3,950,901
91 3,950,902
93 3,950,903
105 3,950,904
235 3,950,906
287 3,950,907
436 3,950,908
483 3,950,909
618 3,950,910
664 3,950,911
727 3,950,912
741 3,950,905
747 3,950,913
749 3,950,914
753D 3,950,915
760 3,950,916

CLASS 53
3 3,950,917
14 3,950,918
22A 3,950,919
59R 3,950,920
67 3,950,921
356 3,950,922

CLASS 55
1 3,951,620
16 3,951,621
3,951,622
96 3,951,623
128 3,951,624
232 3,951,625
278 3,951,626
284 3,951,627
300 3,951,628
349 3,951,629
378 3,951,630

CLASS 56
6 3,950,923
13.9 3,950,924

CLASS 57
34HS 3,950,928
34R 3,950,925
3,950,926
3,950,927
58.95 3,950,929
77.45 3,950,930
113 3,950,931
140R 3,950,932
3,950,933
149 3,950,934

CLASS 58
23A 3,950,940
23R 3,950,936
39.5 3,950,935
90R 3,950,937
114 3,950,938
125C 3,950,939

CLASS 59
93 3,950,941

CLASS 60
290 3,950,943
301 3,950,944
322 3,950,945
407 3,950,946
524 3,950,947
538 3,950,948
641 3,950,949
657 3,950,950

CLASS 61
15 3,950,951
41A 3,950,952
48 3,950,953
53.5 3,950,954
72.3 3,950,955
85 3,950,956

CLASS 62
30 3,950,957
45 3,950,958
48 3,950,960
55 3,950,959
149 3,950,961
156 3,950,962
268 3,950,963

CLASS 64
1V 3,950,964

CLASS 65
11W 3,951,631
22 3,951,632
23 3,951,633
104 3,951,634
135 3,951,635
207 3,951,636
229 3,951,637

CLASS 66
50R 3,950,965
86C 3,950,942
132T 3,950,966

CLASS 68
5D 3,950,967
53 3,950,968

CLASS 69
22 3,950,969

CLASS 70
63 3,950,970
164 3,950,971
234 3,950,972
395 3,950,973
450 3,950,974

CLASS 71
11 3,951,638
27 3,951,639
90 3,951,640
120 3,951,641

CLASS 72
42 3,950,975
128 3,950,976
281 3,950,977
283 3,950,978
370 3,950,979

CLASS 73
17R 3,951,601
23 3,950,980
35 3,950,981
41.2 3,950,982
46 3,950,983
88.5R 3,950,984
116 3,950,985
136A 3,950,986
141A 3,950,987
144 3,950,988
146 Re.28,775
231R 3,950,989
253 3,950,990
342 3,950,991
354 3,950,992
362R 3,950,993
371 3,950,994
388R 3,950,995
407R 3,950,996
410 3,950,997
411 3,950,998
425.4R 3,950,999

CLASS 74
5.6D 3,951,000
10.52 3,951,001
29 3,951,002
44 3,951,003
89.15 3,951,004
125.5 3,951,005
233 3,951,006
568R 3,951,007
661 3,951,008
732 3,951,009
759 3,951,010
869 3,951,011

CLASS 75
.5R 3,951,642
10R 3,951,643
42 3,951,644
58 3,951,645
74 3,951,646
80 3,951,647
83 3,951,648
117 3,951,649
128D 3,951,650
135 3,951,651

CLASS 76
24R 3,951,012
104A 3,951,013

CLASS 81
3R 3,951,014
3.8 3,951,015
9.51 3,951,016

CLASS 82
2R 3,951,017
4C 3,951,018
24R 3,951,019
33R 3,951,020

CLASS 83
81 3,951,021
110 3,951,023
152 3,951,022
498 3,951,024
543 3,951,025
552 3,951,026
834 3,951,027

CLASS 84
1.01 3,951,028
1.03 3,951,029
1.25 3,951,030
307 3,951,031
419 3,951,032

CLASS 85
13 3,951,033
79 3,951,034

CLASS 86
10 3,951,035

CLASS 89
1B 3,951,036
1F 3,951,037
14C 3,951,039
14R 3,951,040
27B 3,951,041

CLASS 91
363R 3,951,042
372 3,951,043
467 3,951,045
485 3,951,044

CLASS 92
113 3,951,046
157 3,951,047
258 3,951,048

CLASS 93
35R 3,951,050
39R 3,951,049

CLASS 96
1PE 3,951,653
1R 3,951,652
1.6 3,951,654
1.7 3,951,655
27R 3,951,658
35.1 3,951,657
36 3,951,659
67 3,951,660
3,951,663
76R 3,951,661
84R 3,951,662
95 3,951,664
107 3,951,656
108 3,951,665
126 3,951,666

CLASS 98
1.5 3,951,336
42R 3,951,051

CLASS 99
427 3,951,052
433 3,951,053
538 3,951,054
568 3,951,055
569 3,951,056
629 3,951,057

CLASS 100
107 3,951,058
173 3,951,059

CLASS 101
93.12 3,951,061
150 3,951,060
426 3,951,062
466 3,951,063

CLASS 102
13 3,951,064
22 3,951,065
65 3,951,066
3,951,067
3,951,068
70.2R 3,951,069
92.4 3,951,070
93 3,951,071
99 3,951,072

CLASS 104
117 3,951,073
148MS 3,951,074
148SS 3,951,075

CLASS 105
155 3,951,076
241C 3,951,077

CLASS 106
1 3,951,667
20 3,951,668
39.6 3,951,669
39.7 3,951,670
52 3,951,671
53 3,951,672
84 3,951,673
88 3,951,674
109 3,951,675
277 3,951,676
288B 3,951,677
288Q 3,951,678
291 3,951,679
302 3,951,680

CLASS 108
51 3,951,078
94 3,951,079
109 3,951,080

CLASS 110
8A 3,951,082
8P 3,951,081

CLASS 113
7A 3,951,083
121C 3,951,084

CLASS 114
.5D 3,951,086
.5F 3,951,085
45 3,951,087
65R 3,951,088
125 3,951,089
141 3,951,090
211 3,951,091
222 3,951,092

CLASS 115
1R 3,951,093
15 3,951,094
24.1 3,951,095
34A 3,951,097
34R 3,951,096

CLASS 116
114AM 3,951,098

CLASS 118
7 3,951,099
48 3,951,100
249 3,951,102
301 3,951,101
315 3,951,103

CLASS 119
3 3,951,104
18 3,951,105
19 3,951,106
52R 3,951,107

CLASS 122
510 3,951,108

CLASS 123
8.23 3,951,109
8.33 3,951,110
8.41 3,951,111
8.45 3,951,112

32EA 3,951,113
41.7 3,951,114
119B 3,951,115
122AC 3,951,116
122E 3,951,124
139AP 3,951,118
139AQ 3,951,117
139AW 3,951,119
3,951,120
3,951,121
148CC 3,951,122
148 3,951,144
195A 3,951,123

CLASS 124

8 3,951,125
67 3,951,126

CLASS 126

206 3,951,127
271 3,951,128
3,951,129
285B 3,951,130
369 3,951,131

CLASS 128

1R 3,951,132
2H 3,951,133
2.06E 3,951,136
2.06G 3,951,135
2.08 3,951,137
2.1B 3,951,134
17 3,951,138
23 3,951,139
24A 3,951,140
145A 3,951,142
145.8 3,951,143
214R 3,951,145
218R 3,951,146
266 3,951,147
272 3,951,148
287 3,951,149
3,951,150
3,951,151
294 3,951,141
303.1 3,951,152
349R 3,951,153
419P 3,951,154

CLASS 131

2 3,951,155

CLASS 132

7 3,951,156
88.7 3,951,157

CLASS 134

2 3,951,681
60 3,951,158
102 3,951,682
144 3,951,683
3,951,684

CLASS 135

3E 3,951,159
20B 3,951,160

CLASS 136

6LN 3,951,685
28 3,951,686
3,951,687
67 3,951,688
86A 3,951,689
133 3,951,690
144 3,951,691
202 3,951,692

CLASS 137

3 3,951,161
106 3,951,162
122 3,951,163
218 3,951,164
344 3,951,165
608 3,951,167
625.27 3,951,166
625.28 3,951,168
625.41 3,951,169
625.48 3,951,170

CLASS 138

42 3,951,171
89 3,951,172
97 3,951,173
150 3,951,174
178 3,951,175

CLASS 139

68 3,951,176
196.1 3,951,180
302 3,951,179
384B 3,951,181
420R 3,951,182
431 3,951,177
446 3,951,178

CLASS 140

92.1 3,951,183

CLASS 141

1R 3,951,184
3,951,185
5 3,951,186

CLASS 144

1R 3,951,187
2Z 3,951,188
91 3,951,189

CLASS 148

1.5 3,951,693
3,951,694
3,951,695
12R 3,951,696
3,951,697
33.4 3,951,698
171 3,951,699
3,951,700
187 3,951,701
3,951,702

CLASS 149

19.2 3,951,703
19.8 3,951,704
3,951,706
41 3,951,705

CLASS 150

.5 3,951,190

CLASS 152

209R 3,951,191
3,951,193
221 3,951,194
379R 3,951,192

CLASS 156

3 3,951,707
3,951,708
8 3,951,709
17 3,951,710
19 3,951,711
48 3,951,712
52 3,951,713
62.2 3,951,714
66 3,951,715
73.2 3,951,716
79 3,951,717
3,951,718
96 3,951,719
3,951,720
154 3,951,721
307 3,951,722
331 3,951,723
382 3,951,724
473 3,951,725
527 3,951,726
584 3,951,727
600 3,951,728
617 3,951,729

CLASS 160

345 3,951,195
3,951,196
346 3,951,197

CLASS 162

5 3,951,731
25 Re.28,777
65 3,951,732
3,951,733
72 3,951,734
133 3,951,735
274 3,951,736

CLASS 164

4 3,951,199
119 3,951,200
123 3,951,201
262 3,951,202
334 3,951,203

CLASS 165

1 3,951,204
16 3,951,205
65 3,951,198
92 3,951,206
133 3,951,207

CLASS 166

78 3,951,208
250 3,951,209
288 3,951,210
315 3,951,211

CLASS 172

19 3,951,212
59 3,951,213
274 3,951,214

CLASS 173

23 3,951,215
32 3,951,216
169 3,951,217

CLASS 174

19 3,952,141
52R 3,952,142

CLASS 175

4.6 3,951,218
107 3,951,219
393 3,951,220

CLASS 176

60 3,951,737
65 3,951,738
78 3,951,739

CLASS 177

1 3,951,221

CLASS 178

5.8AF 3,952,143
6 3,952,144
6.6TP 3,952,146
6.6R 3,952,145
3,952,147
3,952,148
6.8 3,952,149
3,952,150
3,952,151
7.82 3,952,152
30 3,952,153

CLASS 179

1GQ 3,952,156
3,952,157
1SW 3,952,154
1VE 3,952,155
1E 3,952,159
1P 3,952,158
7.1R 3,952,160
15AT 3,952,162
15BF 3,952,163
15BT 3,952,161
15.55R 3,952,164
27CA 3,952,165
81B 3,952,166
81C 3,951,248
81R 3,952,167
90R 3,952,168
99 3,952,169
100.4R 3,952,170
100.41K 3,952,171
175.2R 3,952,172

CLASS 180

1R 3,951,222
11 3,951,223
54A 3,951,224
73R 3,951,225
82R 3,951,226
121 3,951,227

CLASS 181

33K 3,951,228
114 3,951,229
131 3,951,230
140 3,951,231

CLASS 182

84 3,951,232
155 3,951,233

CLASS 184

7R 3,951,234
15R 3,951,235

CLASS 187

2 3,951,236

CLASS 188

1B 3,951,237
3,951,238
71.5 3,951,239
3,951,240
72.4 3,951,241
296 3,951,242
328 3,951,243

CLASS 192

98 3,951,244

CLASS 193

32 3,951,245

CLASS 194

9R 3,951,246

CLASS 195

1.8 3,951,740
28R 3,951,742
3,951,743
29 3,951,741
66R 3,951,744
80R 3,951,745
96 3,951,746
103.5R 3,951,747
3,951,748

CLASS 196

46 3,951,749

CLASS 197

1R 3,951,247
82 3,951,249
98 3,951,250
127R 3,951,251
133A 3,951,252
171 3,951,253

CLASS 198

37 3,951,254
127R 3,951,255
182 3,951,256
208 3,951,257

CLASS 200

5A 3,952,174
5E 3,952,175
11R 3,952,176
35R 3,952,177
47 3,952,178
264 3,952,173

CLASS 202

262 3,951,750
263 3,951,751

CLASS 203

7 3,951,752
3,951,753
9 3,951,754
16 3,951,755
95 3,951,756

CLASS 204

2 3,951,757
15 3,951,761
32R 3,951,759
43S 3,951,760
59F 3,951,762
67 3,951,763
71 3,951,764
96 3,951,765
98 3,951,766
99 3,951,767
157.1R 3,951,768
159.11 3,951,769
163R 3,951,770
190 3,951,771
198 3,951,772
263 3,951,773
272 3,951,774
299EC 3,951,775
299R 3,951,776
3,951,777

CLASS 206

107 3,951,258
164 3,951,259
223 3,951,260
227 3,951,261
343 3,951,262
382 3,951,263
444 3,951,264
506 3,951,265
520 3,951,266

CLASS 208

11LE 3,951,778
3,951,779
14 3,951,780
86 3,951,781
139 3,951,782

CLASS 209

1 3,951,784
3,951,785
3,951,267
73 3,951,786
166 3,951,786
458 3,951,787

CLASS 210

8 3,951,788
14 3,951,758
22C 3,951,789
38B 3,951,790
47 3,951,791
52 3,951,792
58 3,951,793
3,951,794
61 3,951,795
62 3,951,796
63R 3,951,797
75 3,951,799
83 3,951,800
117 3,951,801
134 3,951,802
149 3,951,803
170 3,951,804
193 3,951,805
197 3,951,806
222 3,951,807
230 3,951,808
241 3,951,809
242S 3,951,810
281 3,951,811
282 3,951,812
374 3,951,813
452 3,951,798
488 3,951,814
500M 3,951,815
519 3,951,816
521 3,951,817
522 3,951,818
527 3,951,819

CLASS 211

13 3,951,268
105.4 3,951,269
119 3,951,270
124 3,950,829

CLASS 214

1BB 3,951,273
1BC 3,951,272
1CM 3,951,271
6FS 3,951,274
6C 3,951,275
16.4A 3,951,276
3,951,277
44R 3,951,278
83.26 3,951,279
86A 3,951,280
140 3,951,281
152 3,951,282
3,951,283
3,951,284
309 3,951,285
331 3,951,287
370 3,951,286
506 3,951,288

CLASS 215

211 3,951,289
219 3,951,290
220 3,951,291
230 3,951,292
261 3,951,293

CLASS 219

69M 3,952,179
121LM 3,952,180
272 3,952,181
309 3,952,182

CLASS 229

5R 3,951,294
9F 3,951,295
72 3,951,296
86T 3,951,297
268 3,951,298
270 Re.28,776
273 3,951,299
327 3,951,300
328 3,951,301
331 3,951,302

CLASS 221

96 3,951,303
124 3,951,304
212 3,951,305
263 3,951,306

CLASS 222

33 3,951,307
39 3,951,308
64 3,951,309
95 3,951,310
145 3,951,311
177 3,951,312
186 3,951,313
402.17 3,951,314
491 3,951,315
529 3,951,316
566 3,951,317
569 3,951,318

CLASS 223

111 3,951,319

CLASS 224

42.1D 3,951,320

CLASS 226

97 3,951,321
119 3,951,322
189 3,951,323
195 3,951,324

CLASS 227

76 3,951,325

CLASS 228

2.5 3,951,326
3,951,327
3,950,841
207 3,951,328

CLASS 229

23BT 3,951,329
38 3,951,330
43 3,951,331
44R 3,951,332
51TS 3,951,333

CLASS 233

26 3,951,334

CLASS 235

92SB 3,952,183
150 3,952,184
151.13 3,952,185
156 3,952,186
186 3,952,187
193 3,952,188
197 3,952,189

CLASS 236

15A 3,951,335
91F 3,951,337
93A 3,951,338

CLASS 239

3 3,951,340
66 3,951,339
212 3,951,341
265.33 3,951,342
399 3,951,343
421 3,951,344
542 3,951,345

CLASS 240

26 3,952,190

CLASS 241

32 3,951,346
52 3,951,347
101.1 3,951,351
290 3,951,348

CLASS 242

1 3,951,349
35.5A 3,951,350
55.19A 3,951,352
129.7 3,951,353
129.8 3,951,354
158R 3,951,355
192 3,951,356
195 3,951,357

CLASS 244

3.14 3,951,359
3.15 3,951,358
42CE 3,951,360
102R 3,951,361
118R 3,951,362
153R 3,951,363

CLASS 246

34CT 3,951,364
465 3,951,365

CLASS 248

15 3,951,366
71 3,951,367
74R 3,951,368
117.6 3,951,369
188.3 3,951,370
223 3,951,371
230 3,951,372
400 3,951,373
451 3,951,374

CLASS 249

107 3,951,375
146 3,951,376

CLASS 250

201 3,952,191
239 3,952,192
331 3,952,193
358T 3,952,194
3,952,195
372 3,952,196
382 3,952,197
396ML 3,952,198
402 3,952,199
3,952,200
403 3,952,201
432R 3,952,202
442 3,952,203
475 3,952,204
551 3,952,205
565 3,952,206
573 3,952,207
578 3,952,208

CLASS 251

35 3,951,377
65 3,951,378
118 3,951,379
304 3,951,380
356 3,951,381

CLASS 252

1 3,951,820
3,951,821
8.1 3,951,822
8.5B 3,951,824
8.5C 3,951,823
8.55B 3,951,827
3,951,828
8.7 3,951,825
8.9 3,951,826
32.5 3,951,829
42.7 3,951,830
3,951,831
49.6 3,951,832
51.5R 3,951,833
62 3,951,834
62.1R 3,951,835
62.52 3,951,881
63.5 3,951,882
78 3,951,837
95 3,951,839
99 3,951,838
102 3,951,840
106 Re.28,778
3,951,841
117 3,951,842
187R 3,951,843
192 3,951,844
299 3,951,845
3,951,846
301.17 3,951,847
301.4H 3,951,848
309 3,951,849
313R 3,951,850
316 Re.28,779
3,951,851
317 3,951,852
321 3,951,853
408 3,951,854
3,951,855
421 3,951,856
428 3,951,857
429B 3,951,858
430 3,951,859
432 3,951,860
437 3,951,861
446 3,951,862
454 3,951,863
455Z 3,951,864
457 3,951,865
461 3,951,866
462 3,951,867
466PT 3,951,868
471 3,951,869
506 3,951,870
511 3,951,871

513 3,951,872
520 3,951,873
521 3,951,874
522 3,951,875
3,951,876
526 3,951,877
542 3,951,878
547 3,951,879
555 3,951,880

CLASS 254

62 3,951,382
94 3,951,383

CLASS 256

1 3,951,384
47 3,951,385

CLASS 259

1R 3,951,386
67 3,951,387
191 3,951,388
192 3,951,389

CLASS 260

2.3 3,951,886
2.5AK 3,951,885
2.5B 3,951,884
2.5M 3,951,883
3 3,951,887
17R 3,951,889
17.4ST 3,951,890
21 3,951,891
23AR 3,951,893
23EM 3,951,892
27BB 3,951,894
28.5AS 3,951,895
29.2TN 3,951,897
29.6MH 3,951,899
29.6NR 3,951,898
29.7R 3,951,896
29.7S 3,951,900
33.6AQ 3,951,901
37PC 3,951,903
37N 3,951,902
40R 3,951,904
3,951,905
42.18 3,951,906
42.46 3,951,907
45.7P 3,951,908
45.8NZ 3,951,909
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47EN 3,951,916
47ET 3,951,917
47UA 3,951,913
47C 3,951,915
49 3,951,918
75NK 3,951,919
77.5AM 3,952,084
78SC 3,951,921
78TF 3,951,920
78A 3,951,922
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79 3,951,927
112B 3,951,937
112G 3,951,938
112R 3,951,939
117 3,951,940
152 3,951,941
155 3,951,942
176 3,951,943
186 3,951,944
210R 3,951,945
210.5 3,951,946
233.3A 3,951,948
233.3R 3,951,947
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239A 3,951,951
239B 3,951,950
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239.5 3,951,958
239.55R 3,951,959
240MS 3,951,971
240TC 3,951,961
240B 3,951,960
3,951,965
240G 3,951,963
3,951,964
240R 3,951,962
243D 3,951,966
3,951,967
244R 3,951,968
247 3,951,969
247.7Z 3,951,970
248CS 3,951,973
248C 3,951,972
249.5 3,951,974
251P 3,951,975
256.6R 3,951,976
268BC 3,951,977
268BF 3,951,980
268PH 3,951,978
3,951,979
3,951,982
3,951,983
268TR 3,951,981
283R 3,951,984
293.57 3,951,985
293.73 3,951,986
294.8C 3,951,989
294.8D 3,951,990
3,951,992
294.8F 3,951,991
294.8G 3,951,987
3,951,993
294.9 3,951,988
3,951,994
295AM 3,951,995
295H 3,951,996
304A 3,951,997
306.6R 3,951,998
307DA 3,951,999
307FA 3,952,000
308B 3,952,003
308D 3,952,004
308R 3,952,001
3,952,002
309 3,952,005
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310A 3,952,008
3,952,009
310R 3,952,010
326.45 3,952,011
326.47 3,952,012
327TH 3,952,013
329.3 3,952,014
338 3,952,015
340.2 3,952,016
340.9 3,952,017
3,952,018
343.2R 3,952,019
343.6 3,952,020
343.7 3,952,021
346.7 3,952,022
346.8R 3,952,023
347.2 3,952,024
347.3 3,952,025
347.8 3,952,026
349 3,952,027
350R 3,952,028
371 3,952,029
397.4 3,952,030
397.45 3,952,031
404.8 3,952,032
405.5 3,952,033
410.5 3,952,034
413 3,952,035
439CY 3,952,036
448R 3,952,037
448.2N 3,952,038
449R 3,952,039
453AM 3,952,043
453PH 3,952,042
453A 3,952,040
453R 3,952,041
455R 3,952,044
463 3,952,045
3,952,046
468D 3,952,048
468H 3,952,047
476CZ 3,951,914
485L 3,952,049
501.1 3,952,050
501.2 3,952,051
525 3,952,052
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555A 3,952,055
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564D 3,952,057
575 3,952,058
583R 3,952,059
584R 3,952,060
586D 3,952,061
586R 3,952,062
609D 3,952,063
3,952,064
612D 3,952,065
615BF 3,952,066
618D 3,952,067
632R 3,952,068
667 3,952,069
683D 3,952,070
683.15B 3,952,071
823 3,951,888
856 Re.28,780
874 3,952,072
878R 3,951,924
879 3,951,931
897A 3,952,073
924 3,952,074
950 3,952,075

CLASS 261

41D 3,952,076
112 3,952,077

CLASS 264

13 3,952,078
45.5 3,952,079
46.6 3,952,082
63 3,952,083
176F 3,952,080
207 3,952,081

CLASS 266

221 3,951,390

CLASS 267

8R 3,951,391
64R 3,951,392
161 3,951,393

CLASS 269

43 3,951,394
266 3,951,395
321WE 3,951,396

CLASS 270

31 3,951,397
3,951,398
58 3,951,399

CLASS 271

85 3,951,400
158 3,951,401
273 3,951,402

CLASS 272

4 3,951,403
142 3,951,404

CLASS 273

1R 3,951,405
29R 3,951,406
32C 3,951,407
38 3,951,408
95H 3,951,409
134AC 3,951,410
134AD 3,951,411
134CH 3,951,412
170 3,951,413
183B 3,951,414
3,951,416
183D 3,951,415

CLASS 277

33 3,951,417
124 3,951,418
135 3,951,419
207R 3,951,420

CLASS 280

11.28 3,951,422
11.37E 3,951,425
47.34 3,951,426
166 3,951,431
179R 3,951,432
414R 3,951,433
415A 3,951,434
477 3,951,435
601 3,951,421
618 3,951,424
629 3,951,423
727 3,951,429
732 3,951,427
737 3,951,428
744 3,951,430

CLASS 285

27 3,951,436
47 3,951,437
55 3,951,438
137R 3,951,439
150 3,951,440
391 3,951,441

CLASS 292

71 3,951,442
327 3,951,443
359 3,951,444

CLASS 296

1S 3,951,445
37R 3,951,446
137B 3,951,447

CLASS 297

113 3,951,448
142 3,951,449
238 3,951,450
366 3,951,451
417 3,951,452
440 3,951,453
452 3,951,454
3,951,455

CLASS 299

2 3,951,456
5 3,951,457
3,951,458
11 3,951,459

CLASS 300

21 3,951,460

CLASS 302

27 3,951,461
56 3,951,462

CLASS 303

7 3,951,463
3,951,464
21BE 3,951,467
21CG 3,951,466
21F 3,951,465
81 3,951,468
84A 3,951,469

CLASS 307

9 3,952,209
82 3,952,210
238 3,952,211
243 3,952,212
265 3,952,213

CLASS 308

3.9 3,951,470
6C 3,951,471
3,951,472
3,951,473
9 3,951,474
3,951,475
22 3,951,477
36.1 3,951,478
114 3,951,476
172 3,951,479
187 3,951,480
3,951,481
187.1 3,951,482
3,951,783
214 3,951,483
278 3,951,484

CLASS 310

6 3,952,214
8.1 3,952,215
9.1 3,952,216
36 3,952,217
71 3,952,218
156 3,952,219
168 3,952,220

CLASS 312

38 3,951,485
235R 3,951,486

CLASS 313

188 3,952,221
366 3,952,222
414 3,952,224
472 3,952,225
481 3,952,226
519 3,952,223

CLASS 315

3.5 Re.28,782
17 3,952,227
111.8 3,952,228
131 3,952,229
151 Re.28,783
169TV 3,952,230
376 Re.28,784

CLASS 317

100 3,952,231
101DH 3,952,232
230 3,952,233
246 3,952,234

CLASS 318

48 3,952,235
138 3,952,236
310 3,952,237
571 3,952,238

CLASS 320

2 3,952,239

CLASS 323

1 3,952,240
19 3,952,241
21 3,952,242
44R 3,952,243

CLASS 324

37 3,952,315
51 3,952,244
57R 3,952,245
58.5C 3,952,246
133 3,952,247
140D 3,952,248
156 3,952,249

CLASS 325

55 3,952,250
137 3,952,251
319 3,952,252

CLASS 328

63 3,952,253
3,952,254
233 3,952,255

CLASS 330

15 3,952,256
22 3,952,257
23 3,952,258
29 3,952,259
149 3,952,260

CLASS 331

1R 3,952,261

CLASS 352

55 3,952,262
94.5G 3,952,266
94.5H 3,952,265
94.5P 3,952,263
94.5T 3,952,264

CLASS 333

24.1 3,952,267
30R 3,952,268
3,952,269
73W 3,952,270

CLASS 335

151 3,952,271
264 3,952,272

CLASS 337

7 3,952,273
407 3,952,274

CLASS 338

18 3,952,275
28 3,952,276
119 3,952,277
198 3,952,278

CLASS 339

8R 3,951,487
14R 3,951,488
3,951,489
17CF 3,951,491
3,951,495
17LC 3,951,492
17C 3,951,490
17L 3,951,494
17M 3,951,493
19 3,951,496
3,951,497
3,951,498
59L 3,951,499
64M 3,951,500
91R 3,951,501
99R 3,951,502
100 3,951,503
103M 3,951,505
103R 3,951,504
104 3,951,506
111 3,951,507
214R 3,951,508

CLASS 340

3R 3,952,279
3,952,280
7R 3,952,281
15.5TN 3,952,282
15.5TS 3,952,283
71 3,952,284
152T 3,952,285
163 3,952,286
166R 3,952,287
171R 3,952,288
172.5 3,952,289
173LM 3,952,290
174TF 3,952,291
3,952,292
213Q 3,952,293
237S 3,952,294
273 3,952,295
324AD 3,952,296
324A 3,952,297
347DD 3,952,298

CLASS 343

5MM 3,952,299
6R 3,952,300
7VM 3,952,301
7.7 3,952,302
9 3,952,303
16M 3,952,304
17.1R 3,952,305
18B 3,952,307
18E 3,952,306
108R 3,952,308
3,952,309
730 3,952,310

CLASS 346

82 3,952,313
140R 3,952,314

CLASS 350

7 3,951,509
16 3,951,510
83 3,951,511
90 3,951,512
96WG 3,951,513
96C 3,951,514
3,951,515
99 3,951,516
3,951,517
117 3,951,518
160LC 3,951,519
160R 3,951,520
3,951,521
187 3,951,522
189 3,951,523
216 3,951,524
259 3,951,525
293 3,951,526

CLASS 351

30 3,951,527
177 3,951,528

CLASS 352

100 3,951,529
130 3,951,530
216 3,951,531

CLASS 353

25 3,951,532
31 3,951,533
64 3,951,534
66 3,951,535
76 3,951,536
85 3,951,537

CLASS 354

5 3,952,311
29 3,952,312
40 3,952,316
48 3,952,317
51 3,952,318
109 3,952,319
126 3,952,320
225 3,952,321
290 3,952,322
292 Re.28,785

CLASS 355

3DD 3,951,539
3R 3,951,538
8 3,951,540
3,951,541
15 3,951,542
27 3,951,543
29 3,951,544
46 3,951,545
51 3,951,546
133 3,951,547

CLASS 356

4 3,951,548
5 3,951,549
141 3,951,550
155 3,951,551
215 3,951,552
251 3,951,553

CLASS 357

15 3,952,323
19 3,952,324
23 3,952,325

CLASS 358

8 3,952,326
37 3,952,327
54 3,952,328

CLASS 360

40 3,952,329
61 3,952,330

CLASS 401

112 3,951,554
217 3,951,555

CLASS 403

2 3,951,556
138 3,951,557
231 3,951,558
268 3,951,559
273 3,951,560
279 3,951,561

CLASS 404

68 3,951,562

CLASS 408

1R 3,951,563
29 3,951,564

CLASS 415

1 3,951,565
115 3,951,566
119 3,951,567

CLASS 417

27 3,951,568
269 3,951,569
283 3,951,575
319 3,951,570
328 3,951,571
389 3,951,572
424 3,951,573
510 3,951,574

CLASS 418

5 3,951,576

CLASS 423

158 3,952,085
300 3,952,086
450 3,952,087
499 3,952,088
588 3,952,089
598 3,952,090

CLASS 424

1.5 3,952,091
50 3,952,092
84 3,952,093
114 3,952,094
118 3,952,095
156 3,952,096
177 3,952,097
200 3,952,098
219 3,952,100
227 3,952,099
263 3,952,101
265 3,952,108
273 3,952,103
276 3,952,102
283 3,951,618
3,952,104
287 3,952,105
300 3,952,106
311 3,952,107
361 Re.28,781

CLASS 425

7 3,951,577

CLASSIFICATION OF PATENTS

150	3,951,578	590	3,952,115	77	3,952,122	334	3,952,131	95R	3,951,582	66	3,951,928
190	3,951,579		CLASS 427	116	3,951,730	341	3,952,132	352	3,951,584	72	3,951,925
233	3,951,580	122	3,952,116	178	3,952,123	354	3,952,133		CLASS 432	82	3,951,930
	CLASS 426	150	3,952,117	218	3,952,124	391	3,952,134	8	3,951,585	83	3,951,934
48	3,952,109	255	3,952,118	220	3,952,125	442	3,952,135	30	3,951,586	85	3,951,932
296	3,952,110	382	3,952,119	235	3,952,126	463	3,952,136	124	3,951,583	116	3,951,936
302	3,952,111	433	3,952,120	255	3,952,127	489	3,952,137	253	3,951,587	129	3,951,935
321	3,952,112		CLASS 428	265	3,952,128		CLASS 431		CLASS 526	232	3,951,926
456	3,952,113	36	3,952,121	323	3,952,129	4	3,951,581	25	3,951,933	328	3,951,929
548	3,952,114			332	3,952,130						

CLASSIFICATION OF DESIGNS

D2—	350	239,577	D8—	228	239,592			239,607			239,622		5GG	239,639	D49—	9.1	239,652
	400	239,578		233	239,593		292	239,608	D22—	1	239,623		GH	239,637	D56—	1R	239,656
D6—	24	239,579		273	239,594	D10—	111	239,609	D23—	29	239,624			239,640		2	239,655
	63	239,580	D9—	159	239,595	D12—	53	239,610		32	239,625		JJ	239,638		4B	239,653
	66	239,581		174	239,596		57	239,611		57	239,626		K	239,641			239,654
	68	239,582		193	239,597		64	239,612			239,627			239,642			239,657
	71	239,583		224	239,598		65	239,613	D25—	13R	239,628			239,643	D57—	1E	239,658
	175	239,584		253	239,599		111	239,614	D26—	14G	239,629		14D	239,645	D61—	Q	239,659
	181	239,585			239,600		146	239,615	D27—	27	239,630		15AJ	239,644	D64—	18	239,660
	256	239,586			239,601		155	239,616		42	239,631		GG	239,646	D86—	10C	239,661
D7—	5	239,587			239,602			239,617	D30—	21	239,632			239,647		E	239,662
		239,588			239,603		157	239,618		41	239,633		R	239,648			239,663
	6	239,589			239,604		204	239,619	D34—	4R	239,634	D37—	1	239,649	D87—	1R	239,664
	173	239,590			239,605	D19—	69	239,620			239,635	D39—		239,650			239,665
		239,591			239,606		76	239,621			239,636	D45—	B	239,651	D88—	3	239,666

CLASSIFICATION OF PLANTS

P. —	9	3,869	P. —	47	3,870	P. —	56	3,866	P. —	68	3,868	P. —	78	3,867

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

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Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
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Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	3,951,129		3,951,221		3,951,718	8 :	3,950,861		3,951,971		3,951,299
	3,951,353		3,951,222		3,951,764		3,951,082		3,952,015		3,951,356
	3,951,366		3,951,273		3,951,782		3,951,165		3,952,074		3,951,368
	3,951,703		3,951,279		3,951,792		3,951,204	11 :	3,950,960		3,951,385
	3,952,158		3,951,297		3,951,794		3,951,264		3,951,095		3,951,393
4 :	3,950,901		3,951,302		3,951,796		3,951,298		3,951,752		3,951,407
	3,951,085		3,951,305		3,951,804		3,951,688		3,951,753		3,951,431
	3,951,384		3,951,315		3,951,815		3,951,818	12 :	Re.28,782		3,951,436
	3,951,474		3,951,319		3,951,816		3,951,828		3,950,829		3,951,452
	3,951,693		3,951,339		3,951,820		3,952,228		3,950,838		3,951,471
	3,951,706		3,951,342		3,951,823		3,952,329		3,950,916		3,951,481
	3,952,154		3,951,343		3,951,837	9 :	3,950,792		3,951,014		3,951,484
5 :	3,951,038		3,951,344		3,951,864		3,950,814		3,951,314		3,951,491
6 :	Re.28,784		3,951,358		3,951,881		3,950,857		3,951,382		3,951,493
	3,950,800		3,951,372		3,951,885		3,950,890		3,951,486		3,951,494
	3,950,803		3,951,383		3,951,895		3,950,974		3,951,532		3,951,498
	3,950,807		3,951,391		3,951,902		3,951,099		3,951,564		3,951,500
	3,950,809		3,951,415		3,951,907		3,951,157		3,951,619		3,951,504
	3,950,812		3,951,418		3,951,980		3,951,251		3,951,803		3,951,517
	3,950,813		3,951,442		3,952,058		3,951,278		3,952,105		3,951,571
	3,950,816		3,951,444		3,952,083		3,951,289		3,952,206		3,951,605
	3,950,818		3,951,449		3,952,114		3,951,310	13 :	3,950,868		3,951,621
	3,950,832		3,951,454		3,952,126		3,951,334		3,951,174		3,951,640
	3,950,839		3,951,456		3,952,133		3,951,448		3,951,178		3,951,763
	3,950,841		3,951,465		3,952,144		3,951,513		3,951,445		3,951,783
	3,950,846		3,951,495		3,952,151		3,951,515		3,951,507		3,951,786
	3,950,848		3,951,497		3,952,155		3,951,546		3,951,787		3,951,795
	3,950,887		3,951,506		3,952,156		3,951,553		3,951,798		3,951,822
	3,950,917		3,951,511		3,952,169		3,951,589	16 :	3,951,260		3,951,827
	3,950,934		3,951,514		3,952,170		3,951,657	17 :	3,950,801		3,951,855
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April 27, 1976

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

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PATENT NOTICES

Certificates of Correction for the Week of April 27, 1976

R. 28,704	3,889,254	3,918,501	3,931,084
D. 238,302	3,889,277	3,918,799	3,931,411
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D. 238,429	3,890,137	3,918,936	3,931,615
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3,875,228	3,916,383	3,930,138	3,938,762
3,875,433	3,916,647	3,930,425	3,938,910
3,881,652	3,916,845	3,930,497	3,939,300
3,884,146	3,917,041	3,930,616	3,939,591
3,886,034	3,917,230	3,930,767	3,940,739
3,886,999	3,917,353	3,930,820	
3,887,357	3,918,050	3,930,834	

Disclaimer and Dedication

3,904,059.—*David Bellamy, Jr.*, Kenilworth, and *James L. Gould*, Springfield, Ill. STERILE CLOSURE FOR SOLUTION BOTTLES. Patent dated Sept. 9, 1975. Disclaimer and dedication filed Mar. 8, 1976, by the assignee, *Baxter Laboratories, Inc.*

Hereby disclaims and dedicates to the Public claims 1 and 3 of said patent.

Dedications

Design No. 228,051.—*Calvin Masaru Shimaoka*, Harbor City, and *Anton A. Sixt*, Laguna Hills, Calif. STUDY CARREL. Patent dated Aug. 7, 1973. Dedication filed Mar. 1, 1976, by the assignee, *Carter Industries, Inc.*

Hereby dedicates to the Public the remaining term of said patent.

Design No. 229,048.—*Alexander I. Newman*, River Forest, Ill. MULTI-BLOCK-TYPE TEST TUBE HEATER. Patent dated Nov. 6, 1973. Dedication filed Mar. 18, 1976 by the assignee, *Lab-Line Instruments, Inc.*

Hereby enters this disclaimer to the claim of said patent.

2,876,413.—*Dean F. Saurenman* and *Maurice P. Lebourg*, Houston, Tex. BOREHOLE APPARATUS. Patent dated Mar. 3, 1959. Dedication filed Feb. 23, 1976, by the assignee, *Schlumberger Technology Corporation.*

Hereby dedicates to the Public the remainder of the term of said patent.

3,684,993.—*Hazen Curtis III*, Andover, and *Gerd Achim Tuchen*, Boxford, Mass. VARIABLE INDUCTANCE COIL FORM ASSEMBLY. Patent dated Aug. 15, 1972. Dedication filed Mar. 11, 1976, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,802,099.—*Leonard E. Mell*, Orange, *Loran A. Norton*, Santa Ana, and *David Keith Crosser*, Placentia, Calif. METHOD AND APPARATUS FOR TRAINING POLICEMEN. Patent dated Apr. 9, 1974. Dedication filed Mar. 1, 1976, by the assignee, *Carter Industries, Inc.*

Hereby dedicates to the Public the remaining term of said patent.

3,812,532.—*David Keith Crosser*, Placentia, *Leonard E. Mell*, Orange, and *John F. Reuvers*, Santa Ana, Calif. RANDOM ACCESS MEMORY WITH TAPE RETURN TO A MIDTAPE REFERENCE POSITION AFTER READING. Patent dated May 21, 1974. Dedication filed Mar. 1, 1976, by the assignee, *Carter Industries, Inc.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimers

Re. 27,798.—*Rein Raymond Laane*, Wheaton, Ill. ELECTRICAL COMMUNICATION SWITCHING NETWORK. Patent dated Oct. 30, 1973. Disclaimer filed Apr. 5, 1974, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to claims 1 through 16 and 18 through 20 of said patent.

3,119,549.—*Walter A. Schoen*, Milwaukee, Wis. RECLOSABLE COMMODITY BAG. Patent dated Jan. 28, 1964. Disclaimer filed Feb. 27, 1976, by the assignee, *Milprint, Inc.*

Hereby enters this disclaimer to claims 1 through 4, inclusive, of said patent.

3,475,926.—*Jakob E. Ruckstuhl*, Zurich, Switzerland. RAISED WARP KNIT FABRICS. Patent dated Nov. 4, 1969. Disclaimer filed Feb. 26, 1976, by the assignee, *Terlinden & Company.*

The term of this patent subsequent to May 21, 1980, has been disclaimed.

3,564,912.—*James T. Malone*, Arnold, Md., and *Donald K. Whirlow*, Murrysville, Pa. FLUID FLOW MEASUREMENT SYSTEM. Patent dated Feb. 23, 1971. Disclaimer filed Feb. 17, 1976, by the assignee, *Westinghouse Electric Corporation.*

Hereby enters this disclaimer to claims 1 to 4 of said patent.

3,594,047. *Richard A. Pucher* and *James Gordon Greincr*, Leola, Pa. FEED MATERIAL HANDLING APPARATUS. Patent dated July 20, 1971. Disclaimer filed Nov. 28, 1975, by the assignee, *Sperry Rand Corporation.*

Hereby enters this disclaimer to claims 1–19 of said patent.

3,666,609. *Frank Kalwaites*, Somerville, and *Peter L. Doviak*, South Brunswick, N.J. RETICULATE SHEET MATERIAL. Patent dated May 30, 1972. Disclaimer filed Feb. 11, 1976, by the assignee, *Johnson & Johnson.*

Hereby enters this disclaimer to claims 1–5, inclusive, and claims 9–12, inclusive, of said patent.

3,727,475.—*William W. Steil*, Wauwatosa, Wis. PULLEY-AND-SHAFT ASSEMBLY FOR ROTARY LAWN MOWERS AND METHOD OF MANUFACTURING THE SAME. Patent dated Apr. 17, 1973. Disclaimer filed Feb. 25, 1976, by the assignee, *Production Stamping Corporation.*

Hereby enters this disclaimer to claims 1 and 5 of said patent.

3,749,859.—*Richard C. Webb* and *James R. Webb*, Boulder, and *Tommy N. Tyler*, Broomfield, Colo. KEYBOARD SWITCH ASSEMBLY WITH IMPROVED HERMETICALLY SEALED DIAPHRAGM CONTACT STRUCTURE. Patent dated July 31, 1973. Disclaimer filed Jan. 13, 1976, by the assignee, *Mohawk Data Sciences Corp.*

Hereby enters this disclaimer to claim 1 of said patent.

3,815,288.—*Harold R. Wilson*, Wilmington, N.C. PATTERN MACHINING SYSTEM FOR DIE ROLLS. Patent dated June 11, 1974. Disclaimer filed Mar. 8, 1976, by the assignee, *General Electric Company.*

Hereby enters this disclaimer to claims 1, 4, 5, 6, 7, 8, 9, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, and 28 of said patent.

3,824,741.—*Harold R. Wilson*, Wilmington, N.C. METHOD AND APPARATUS FOR TRAVERSING A CAM FOLLOWER. Patent dated July 23, 1974. Disclaimer filed Mar. 8, 1976, by the assignee, *General Electric Company.*

Hereby enters the disclaimer to claim 4 of said patent.

3,865,818.—*John Krapcho*, Somerset, and *Chester F. Turk*, Elizabeth, N.J. SUBSTITUTED BENZOXAZINES. Patent dated Feb. 11, 1975. Disclaimer filed Mar. 8, 1976, by the assignee, *E. R. Squibb & Sons, Inc.*

Hereby enters this disclaimer to claims 1 to 13 of said patent.

3,898,643.—*Adrian B. Ettlinger*, Westchester, N.Y. ELECTRONIC DISPLAY CONTROLLED STAGE LIGHTING SYSTEM. Patent dated Aug. 5, 1975. Disclaimer filed Jan. 29, 1976, by the assignee, *Skirpan Lighting Control Corporation.*

Hereby enters this disclaimer to claims 2, 3 and 4 of said patent.

3,937,321.—*Thomas James Delaney*, Piscataway, and *William Grant Pierson*, Flanders, N.J. TOOTHPASTE. Patent dated Feb. 10, 1976. Disclaimer filed Feb. 17, 1976, by the assignee, *Colgate-Palmolive Company.*

The term of this patent subsequent to Jan. 27, 1993, has been disclaimed.

3,937,803.—*Thomas James Delaney*, Piscataway, and *William Grant Pierson*, Flanders, N.J. FLAVORED DENTAL CREAMS. Patent dated Feb. 10, 1976. Disclaimer filed Feb. 17, 1976, by the assignee, *Colgate-Palmolive Company.*

The term of this patent subsequent to Jan. 27, 1993, has been disclaimed.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 10, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds: Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry: Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-15-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur: Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-8-75
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-14-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products: Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-5-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-5-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures: Illumination: Horology; Acoustics; Recorders; Weighing Scales.	2-27-75
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-16-76
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-22-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	10-10-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-19-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-10-75
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-19-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	9-29-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-13-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-15-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-30-75

Expiration of patents: The patents within the range of numbers indicated below expire during April 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,880,419 to 2,884,633 inclusive
Plant Patents ..... Numbers 1,825 to 1,828 inclusive

REISSUES

APRIL 27, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,786

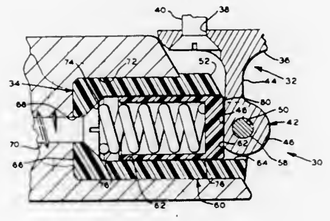
HINGE FOR LATCHLESS DOOR

Robert D. MacDonald, Grand Blanc, Mich., assignor to Cardinal of Adrian, Inc., Dryden, Mich.

Original No. 3,212,124, dated Oct. 19, 1965, Ser. No. 405,016, Oct. 12, 1964. Continuation of Ser. No. 203,944, June 20, 1962, abandoned. Application for reissue May 13, 1975, Ser. No. 575,774

Int. Cl.[2] **E05D** *11/08*

U.S. Cl. 16—141 **6 Claims**



4. A hinge to pivotally connect a door to a frame in a manner such that the door will close tightly without a latch, said hinge comprising a first portion and a second portion, said first portion having a first flange, a first ear, and a connection between said flange and said ear, one of said portions being attachable to the frame and the other portion being attachable to the door, *said connection between said first flange and said first ear being of sufficient length to space the hinged end of the door from the frame in the closed position of the door when the door has been pivotally connected to the frame*, said first portion being attachable along any part of said frame or said door, said second portion including a second flange, a second ear on one side of said second flange connected to said second flange, said first ear and said second ear being pivotally connected by a hinge pin, guide means extending from said second flange, a [pressure member] *plunger* carried by said second portion and guided with the aid of said guide means in a direction toward and away from said hinge pin, spring means carried by said second portion urging said [pressure member] *plunger* toward said hinge pin, said ear of said first portion having an arcuate portion and an engageable edge to be engaged by said [pressure member] *plunger*, said edge being positioned so that the force of said spring means acting through said [pressure member] *plunger* and said edge can be directed to one side of said hinge pin to produce a torque tending to move the door beyond its closed position, when the door is closed, and said arcuate portion being [positioned so that] *continuous from one end thereof at its juncture with said edge to its other end and being of sufficient length to have portions thereof receive* the force of said spring means acting through said [pressure member can be] *plunger against said arcuate portion and* directed through said hinge pin when said door is in any open position *between the near-closed position and the fully open position* and said [pressure member] *plunger* is spaced from said edge.

Re. 28,787

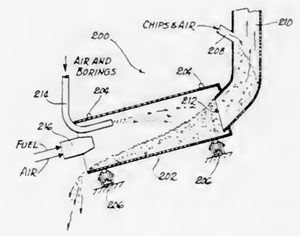
METHOD AND SYSTEM FOR HOT DE-OILING AND HOT BRIQUETTING

James E. Moore, Glenview, Ill., assignor to K-G Industries, Inc., Rosemont, Ill.

Original No. 3,564,699, dated Feb. 23, 1971, Ser. No. 886,337, Dec. 18, 1969. Division of Ser. No. 721,474, April 15, 1968, Pat. No. 3,497,190. Application for reissue Feb. 21, 1973, Ser. No. 334,283

Int. Cl.[2] **B23Q** *17/00*; **F27B** *7/14*

U.S. Cl. 29—403 **10 Claims**



1. In a system for heating material formed of a mass of small, individual metallic pieces carrying foreign substances at least part of which are combustible whereby the burning of said substances assists in the heating of the material, and for forming the hot metallic pieces into briquets, the improvement comprising a furnace construction for heating the material, said furnace construction including a combustion zone, at least one inlet opening adjacent the combustion zone, means for feeding a portion of said material carrying said substances through said inlet opening for movement of the material directly into the combustion zone, a second inlet opening located in an upstream position relative to said first inlet opening, and means for feeding a separate portion of said material into said second inlet opening, a first outlet defined by the furnace, means for moving the material fed through said inlet openings across said combustion zone towards said first outlet with the material fed through said second inlet moving past said first inlet, and a second outlet defined by said furnace upstream of said second inlet opening, the gases resulting from said combustion passing out through the material fed through said second inlet opening and out of said furnace through said second outlet, and wherein hot pieces of material previously in said combustion zone serve to ignite material newly introduced into the combustion zone, a briquetting machine, and including means connected to said construction for delivering said metallic pieces from said first outlet directly to said briquetting machine for thereby forming briquets made up of large numbers of said pieces.

Re. 28,788

LOAD RESTRAINER

George R. Williamson, III, 1034 Lioncrest Drive, Richton Park, Ill. 60471

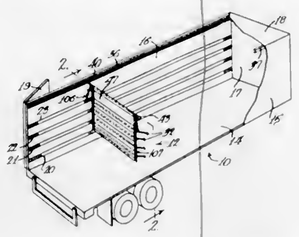
Original No. 3,782,758, dated Jan. 1, 1974, Ser. No. 289,955, Sept. 18, 1972. Application for reissue Apr. 10, 1975, Ser. No. 566,838

Int. Cl.[2] **B60P** *7/00*

U.S. Cl. 280—179 R **21 Claims**

1. A load restrainer, comprising: vertically extending support means adapted to be supported within a container, a plurality of horizontal restraining belts engaging said support means, fasteners on each end of said restraining belts cooper-

ating with fasteners means adapted to be mounted on the container walls, and means permitting vertical adjustment of



the belts with respect to the support means to accommodate different location fasteners within the container.

Re. 28,789

PHOTOPOLYMERIZABLE COMPOSITIONS CONTAINING CYCLIC CIS-α-DICARBONYL COMPOUNDS AND SELECTED SENSITIZERS

Catherine Teh-Lin Chang, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 3,756,827, dated Sept. 4, 1973, Ser. No. 220,694, Jan. 25, 1972. Application for reissue Aug. 28, 1975, Ser. No. 608,673

Int. Cl.² G03C *1/94, 1/68;* **C08F** *2/46*

U.S. Cl. 96—86 P **12 Claims**

1. A photopolymerizable composition comprising

(a) at least one non-gaseous ethylenically unsaturated compound having a boiling point above 100° C. at normal atomspheric pressure and being capable of forming a high polymer by photoinitiated, addition polymerization;

(b) a cyclic cis-α-dicarbonyl compound, the excited state of which cannot react intramolecularly, *the atoms adjacent to the two vicinyl carbonyl groups being saturated when they are carbon atoms*; and

(c) an actinic radiation absorbing compound capable of sensitizing the polymerization initiating action of said cyclic cis-α-dicarbonyl compound, said actinic radiation absorbing compound being a nitrogen-containing aromatic or heterocyclic compound, having maximum absorption below 520 nm., selected from the class consisting of bis(p-aminophenyl-α,β-unsaturated) ketones; bis-(alkylamino) acridine dyes; cyanine dyes containing two heterocyclic rings joined by a single methine group; styryl dye bases; 7-diloweralkylamino-4 lower alkyl coumarins; p-aminophenyl ketones; p-dialkylaminophenyl unsaturated compounds; and 6-dialkylaminoquinaldines.

Re. 28,790

HIGH-STRENGTH LOW-ALLOY STEELS HAVING IMPROVED FORMABILITY

Michael Korchynsky; John David Grozier, and John L. Mihelich, all of Bethel Park, Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Original No. 3,666,570, dated May 30, 1972, Ser. No. 842,407, July 16, 1969. Application for reissue Nov. 11, 1974, Ser. No. 522,524

Int. Cl.² C22C *38/04*

U.S. Cl. 148—36 **9 Claims**

1. A [kill] *killed* high-strength low-alloy steel which has been hot-rolled finished in the temperature range 1550° F. to 1650° F., cooled at a rate within the range of 20° F. to 135° F. per second, and collected within a temperature range of 1025° F. to 1175° F., the steel being characterized in a hot-rolled condition by a yield strength in excess of 45,000 p.s.i., an ultimate tensile strength in excess of 60,000 p.s.i., ductility as measured by percent elongation (2 inches) in excess of 20%, good toughness and formability and reduced directionality, said steel consisting essentially of .06% to .20% carbon, .50% to 1.4% manganese, a strengthening agent selected from the group consisting of .01% to .08% columbium and .04% to .12% vanadium, .5% maximum silicon, suflur in an amount up to .04%, .04% maximum phosphorus, a sulfide inclusion shape-control agent selected from the group consisting of



.06% to .20% zirconium, .01% to .10% of a rare earth and .01% to .10% mischmetal, balance iron, the sulfide inclusions in the steel having a substantially spherical shape, *said zirconium being present in a minimum of 0.02 zirconium +6.5 (wt. percent N).*

Re. 28,791

HIGH-STRENGTH PLAIN CARBON STEELS HAVING IMPROVED FORMABILITY

Michael Korchynsky; John David Grozier, and John L. Mihelich, all of Bethel Park, Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Original No. 3,671,336, dated June 20, 1972, Ser. No. 842,338, July 16, 1969. Application for reissue Nov. 11, 1974, Ser. No. 522,526

Int. Cl.² C22C *38/02*

U.S. Cl. 148—36 **6 Claims**

1. A killed high-strength plain carbon steel which has been hot-rolled finished in the temperature range 1550° F. to 1650° F., cooled at a rate within the range of 20° F. to 135° F. per second, and collected within a preferred temperature range of 1025° F. to 1175° F., the steel being characterized in a hot rolled condition by a yield strength in excess of 35,000 p.s.i., an ultimate tensile strength in excess of 55,000 p.s.i., ductility as measured by percent elongation (2 inches) in excess of 30%, good toughness and formability, said steel consisting essentially of .06% to .20% carbon, .4% to 1.2% manganese, .005% to .3% silicon, sulfur in an amount up to .04%, .04% maximum phosphorus, a sulfide inclusion shape-control agent selected from the group consisting of .05% to .20% zirconium, .01% to .10% of a rare earth and .01% to .10% mischmetal, balance iron, the sulfide inclusions in the steel having a substantially spherical shape.

CHEMICAL

Re. 28,792

ELECTROCHEMICAL METHOD FOR SEPARATING O_2 FROM A GAS; GENERATING ELECTRICITY; MEASURING O_2 PARTIAL PRESSURE; AND FUEL CELL

Roswell J. Ruka, Pittsburgh, Pa., and Joseph Weissbart, Palo Alto, Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original No. 3,400,054, dated Sept. 3, 1968, Ser. No. 534,322, Mar. 15, 1966. Continuation-in-part of Ser. No. 126,098, July 24, 1961, abandoned. Application for reissue Mar. 22, 1974, Ser. No. 454,021

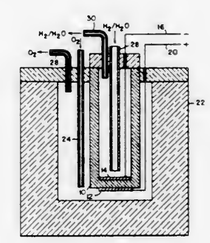
Int. Cl.² H01M *8/12;* **C25B** *1/02*

U.S. Cl. 204—1 T **11 Claims**

1. A fuel cell comprising: a solid partition of a solid electrolyte consisting essentially of a solid solution of oxides having a high degree of oxygen ion conductivity compared with either electronic conductivity or cation conductivity, said solid electrolyte having the formula

$$(MO_2)_{1-x}(R_yO_z)_x$$

where M represents at least one tetravalent element forming an oxide highly stable at temperatures of about 500°C to about 1200°C selected from the group consisting of zirconium, thorium and hafnium, R represents at least one element from the group consisting of elements of Groups II-A and III-B of the Periodic Table which form cations with stable +2 and +3 valences in the oxide, x represents a number having a value from about 0.05 to about 0.3 and y and z represent numbers having values necessary to make (R_yO_z) electrically neutral; a first porous electrode consisting of lanthanum nickel oxide applied to a first face of said partition; a second porous electrode consisting of a mixture of nickel and platinum applied to the opposite face of said partition; said electrodes being stable at temperatures of about 500°C to about 1200°C; [mean] *means* for supplying gas containing oxygen to said first electrode; means for supplying a fuel capable of reacting with oxygen on the opposite side of said partition near to said second electrode; means for heating said electrodes to an elevated temperature of about 500°C to 1200°C



whereby oxygen forms ions at said first electrode which migrate through said partition upon placing it in a closed circuit and react with said fuel at the second electrode, said electrodes thereby developing a potential difference; and means for withdrawing the reaction products from near said second electrode.

PLANT PATENTS

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

GRANTED APRIL 27, 1976

3,871
KALANCHOE PLANT
Norbert Bull, Gonnebek, Germany, assignor to Mikkelsens, Inc., Ashtabula, Ohio
Filed Dec. 20, 1974, Ser. No. 535,128
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant particularly characterized by its beautiful and distinctive leaf structure, leaf size and shape of margins; very quick propagation, ease of flowering under adverse conditions during summer months; strong stems which carry large umbels; relatively large blooms, which have a diameter of 18 mm.; coral red flower color, and by its durability and long keeping quality.

3,872
KALANCHOE PLANT
Norbert Bull, Gonnebek, Germany, assignor to Mikkelsens, Inc., Ashtabula, Ohio
Filed Dec. 20, 1974, Ser. No. 535,199
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Kalanchoe plant characterized particularly by its firm and uniform growth, numerous medium sized umbels on strong stems, with the red flowers comprising each umbel being arranged to form a round flower ball; superior blooming habit, and by its excellent keeping qualities.

3,873
KALANCHOE PLANT
Norbert Bull, Gonnebek, Germany, assignor to Mikkelsens, Inc., Ashtabula, Ohio
Filed Dec. 20, 1974, Ser. No. 535,200
Int. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Kalanchoe plant characterized particularly by its bright deep red flowers which possess strong luminous power and in which a bulging white pistil is prominently contrasted; large umbels on very strong stems; relatively large blooms, and by its long keeping qualities.

3,874
GERANIUM PLANT
William E. Duffett, Akron, Ohio, and Walter W. Knicely, Inwood, W. Va., assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Mar. 6, 1975, Ser. No. 556,126
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium plant characterized particularly by its red flower color with minimal color oxidation, prolific flowering traits under outdoor summer conditions in Ohio, medium green glossy foliage, vigorous trailing growth habit with long internode length, and by its fair foliage durability with slight breakdown under outdoor summer conditions in Ohio.

3,875
GERANIUM PLANT
William E. Duffett, Akron, Ohio, and Walter W. Knicely, Inwood, W. Va., assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Mar. 6, 1975, Ser. No. 556,127
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium characterized particularly by its maroon red flower color with minimal color oxidation, prolific flowering traits under outdoor summer conditions in Ohio, medium green glossy foliage, vigorous trailing growth with long internode length, and by its fair foliage durability with slight breakdown under outdoor summer conditions in Ohio.

PATENTS

GRANTED APRIL 27, 1976

ERRATA

For CLASS	See PATENT NO.
061-072.4	3,952,532
073-010	3,952,566
073-023	3,952,567
099-474	3,952,609
092-184	3,953,213
151-013	3,953,267
526-247	3,953,413
526-348	3,953,414
526-304	3,953,544
357-044	3,953,866

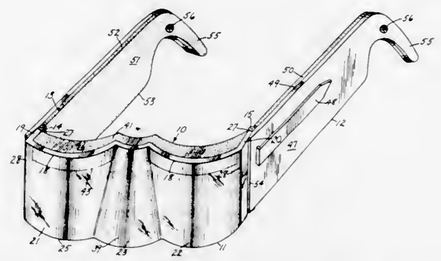
PATENTS

GRANTED APRIL 27, 1976

NOTE – A cross reference listing of applications published under Trial Voluntary Protest Program on January 28, 1975 is located in the back of this Issue. These entries will be in numerical order by document publication number.

GENERAL AND MECHANICAL

3,952,331
PROTECTIVE EYE SHADE FOR SPORTSMEN
Thomas Melville, 65-46 100th St., Flushing, N.Y. 11365
Filed Oct. 9, 1974, Ser. No. 513,326
Int. Cl.² A61F *9/00*
U.S. Cl. 2—14 H **3 Claims**



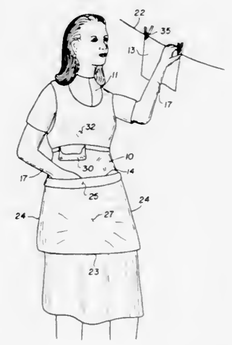
1. A protective eye and face shield for sportsmen comprising: a unitary transparent front element of high impact synthetic resinous material, said element including integrally molded first and second covers adapted to overlie the eyes of a wearer, and a nose piece interconnecting said covers and adapted to overlie at least a portion of the nose of said wearer, said nose piece being so contoured that the weight of said element is distributed along the length thereof when the device is worn; said front element being bounded by an upper edge lying in a horizontal plane, and a lower edge substantially parallel to said upper edge; and left and right planar temple elements pivotally interconnected substantially at forward edges thereof to side edges of said front element, said temple elements having a vertical height substantially equal to that of said frontal element; a padding member of generally elongated configuration secured to an upper edge portion of the inner surface of said front element, and extending between left and right temple elements, said padding member having an exposed rearward surface adapted to lightly contact the brow of a wearer; and planar padded members secured to the inner surfaces of said temple elements to cushion said temple elements relative to the sides of head of said wearer, said temple elements having rearwardly positioned means for engaging the ears of said wearer; whereby upon the occurrence of an impact from a golf ball or similar missile upon an exposed surface of said shield, said impact is absorbed by the flexing of said resinous material and compression of said padding member.

3,952,332
APRON
Opal B. Tanner, 802 W. Chambers, Cleburne, Tex. 76031
Filed Mar. 17, 1975, Ser. No. 558,853
Int. Cl.² A41B *13/10*
U.S. Cl. 2—48 **1 Claim**

1. An apron for use in hanging wash items on a clothesline, said apron formed on its front with a continuous open pouch extending the full width of the apron, for the carrying of wash items to be hung on a line,

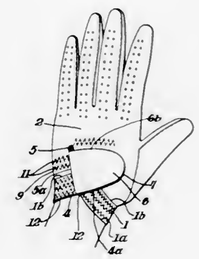
said apron and pouch formed of a continuous sheet of flexible waterproof material, said sheet externally folded about the bottom border of the apron to form the pouch, with the side edges of the pouch bonded to the front of the apron, together with a pocket formed on the apron front, located above the mouth of the pouch of a size to contain clothespins,

said pouch formed with a lip folded over the mouth of the pouch and extending over the front of the pouch to form



a rounded front top pouch edge for ease in inserting wash items into the pouch.

3,952,333
GOLF GLOVE
Isamu Fujita, 6-1, 8-chome, Arakawa, Arakawa, Tokyo, Japan
Filed Feb. 13, 1975, Ser. No. 549,670
Claims priority, application Japan, Nov. 27, 1974, 49-142670[U]
Int. Cl.² A41D *19/00*
U.S. Cl. 2—161 A **8 Claims**



1. A golf glove comprising a body including a front palm, back and finger portions, a wrist encircling bottom edge, a notch in the back portion of the body extending from the bottom edge toward the finger portion, a band secured to the wrist encircling bottom edge and terminating at the boundary of the notch, the band extending along the bottom of the front body portion slightly below the palm bulge thereof, each end of the band extending to the back body portion at an oblique angle in a direction toward the finger portion so that the projected ends of the band cross each other at the back body portion, and fastener members secured to opposite sides of the notch for closing it.

3,952,334
BIOCOMPATIBLE CARBON PROSTHETIC DEVICES

Jack C. Bokros, and Jere B. Horsley, Jr., both of San Diego, Calif., assignors to General Atomic Company, San Diego, Calif.

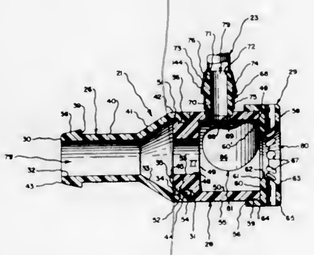
Filed Nov. 29, 1974, Ser. No. 527,971
Int. Cl.² A61F *1/24, 1/22*
U.S. Cl. 3—1 **11 Claims**

1. A biocompatible prosthetic device comprising a metal alloy substrate, an intermediate, continuous layer of an organic high-temperature polymer which is strongly bonded thereto, and an exterior in-situ-deposited coating of continuous dense vapor-deposited carbon at least 1000A thick which carbon layer is biocompatible and strongly adherent to said intermediate layer as a result of its in situ vapor deposition.

3,952,335
LARYNGEAL PROSTHESIS

Peter S. Sorce, Tonawanda, and Earl W. Clifford, Getzville, both of N.Y., assignors to The Aro Corporation, Bryan, Ohio

Filed Sept. 25, 1974, Ser. No. 509,262
Int. Cl.² A61F *1/20*
U.S. Cl. 3—1.3 **15 Claims**



10. A control valve for a tracheotomy patient provided with a trachael fistula and enabling said patient to automatically inhale, exhale, cough and talk without having to cover said trachael fistula, said control valve comprising:

a housing defining a chamber therewithin, said housing having a trachael opening adapted to communicate said chamber with the trachea of said patient through said trachael fistula and having a control opening communicating said chamber with ambient atmosphere, a marginal portion of said housing about said control opening defining a seat facing into said chamber;

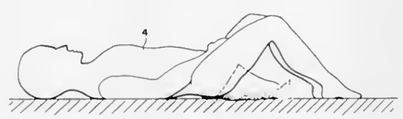
a flapper mounted on said housing in said chamber and having a flexible peripheral marginal portion, said flapper being adapted to move away from said control opening when said patient inhales, toward said control opening when said patient normally exhales, toward said control opening to cause said flapper marginal portion to sealingly assume the contour of said seat when said patient selectively exhales air with sufficient force, and to pass through said control opening by deformation of said flapper marginal portion when said patient coughs;

whereby said patient may inhale, exhale and cough through said control opening, and may speak by selectively exhaling air at such force sufficient to cause said flapper to move toward and close said control opening.

3,952,336
DISPOSABLE BEDPAN DEVICE

Sona V. Kunter, and Margaret Harrison, both of New York, N.Y., assignors to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Feb. 25, 1975, Ser. No. 552,843
Int. Cl.² A61G *9/00*
U.S. Cl. 4—112 **1 Claim**



1. A disposable bedpan device, comprising

a bag made of waterproof soft-textured material having an open mouth and a bottom;

a collar of soft foam material around the mouth of the bag, said foam material being adherent to the skin of a user to insure a snug fit when in use;

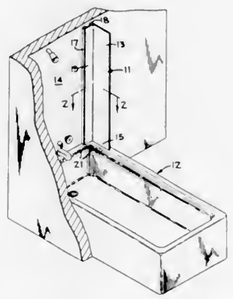
substantially flexible wire embedded in the collar and extending around the mouth for adjusting the opening of the mouth of the bag; and

a sheet of substantially flexible material in the bag and extending substantially parallel to the bottom and intermediate the bottom and the mouth of the bag, said sheet having openings formed therethrough whereby said sheet obstructs solid matter and permits liquids to pass to the bottom of the bag.

3,952,337
WATER DEFLECTOR FOR BATHING FACILITIES

Carol S. Hansow, 3247 Impala Drive, Apt. 1, San Jose, Calif. 95117

Filed Mar. 13, 1974, Ser. No. 450,652
Int. Cl.² A47K *3/14, 3/22*
U.S. Cl. 4—148 **1 Claim**



1. A water deflecting rib for confining water in bathing facilities comprising,

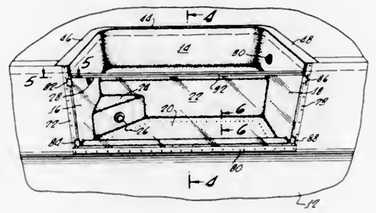
an upright body portion adapted for mounting on a wall, and including a fixed base member and a co-extensive member overlapping and slidably adjustable relative to said fixed base member so that said upright body portion may be extended to meet a selected drain path, and

means inter-connecting said fixed base member and said adjustable member for holding said members in relatively adjusted positions.

3,952,338
THERAPY BASIN

Robert S. Troxclair, 1365 Norman Road, Colton, Calif. 92324

Filed Apr. 21, 1975, Ser. No. 570,171
Int. Cl.² E04H *3/16, 3/18*
U.S. Cl. 4—172.15 **14 Claims**



1. A combined pool entry and therapy basin for a swimming pool comprising

wall means defining a self-contained water impervious basin open at one side thereof and adapted to be connected as a unit to an opening in the wall of a pool,

means for connecting said basin at its open side in water tight relation to the wall of a pool at said opening thereof,

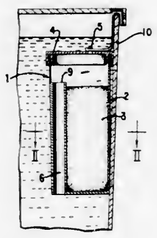
support means carried on said wall means for supporting the body of a person in said basin, below the water line, and

air jet means in said wall means for directing a plurality of airjets into the interior of said basin.

3,952,339
AUTOMATIC TOILET CLEANING DEVICE

Edmund Baur, Ratingen; Bernd-Dieter Holdt, Dusseldorf; Hans Werner Ratering, Sturzelberg; Georg Thesing, Monheim, and Erich Turk, Langenfeld-Reusrath, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

Filed Sept. 23, 1974, Ser. No. 508,053
Claims priority, application Germany, Sept. 29, 1973, 2349067
Int. Cl.² E03D *9/04, 9/02*
U.S. Cl. 4—228 **4 Claims**



1. In an automatic toilet cleaning device made of a solid water-insoluble material consisting essentially of a container adapted for holding a solid cleanser to be dissolved, a cover for said container, a suspension means for holding said device in a water tank, an inlet means and an outlet means adapted for conducting flushing water, the improvement which comprises the combination of:

a. said container having an essentially oval cross-section with an even flat side-wall, and said container having a specific gravity greater than that of water;

b. a standpipe adapted for conducting flushing water, said standpipe being open at the top and at the bottom; said standpipe being attached to approximately the center of said ovally curved side of and within said container;

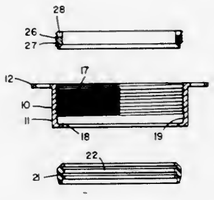
c. said standpipe having a height of about 80% of the height of said container and having at its upper end an open cross-sectional area positioned above said standpipe of about 2 to 10 mm²;

d. said cover being seated tightly fitting onto said container and having two holes which are located at about the same distance from the standpipe as well as being close to said even flat side-wall, and said holes being a distance from each other that is equal to or greater than the horizontal distance to the standpipe, and said cover having a specific gravity lower than that of water.

3,952,340
TOILET DRAIN

Casper Cuschera, 31650 Medinah St., Hayward, Calif. 94544

Filed Nov. 25, 1974, Ser. No. 527,125
Int. Cl.² E03D *11/00;* **E03C** *1/26*
U.S. Cl. 4—252 R **2 Claims**



1. A toilet drain comprising a drain body having a bore extending therethrough for receiving a waste discharge pipe, said bore including an inwardly directed taper at the lower end thereof and internal threads in the upper portion thereof; a flange entending outwardly from the upper end outwardly from the upper end of said drain body, said flange including first means for securing said drain body to a floor, and second means for securing said drain body to a toilet; a resilient sealing gasket disposed within said bore and about said discharge pipe, said gasket including a tapered lower exterior surface to accommodate said taper of said bore and upper surface bevelled downwardly and outwardly; and nut means for expanding said gasket radially and compressing said gasket axially, said nut means including an externally threaded nut received in said bore and including a lower surface extending obliquely downwardly to cooperatively impinge on said bevelled upper end of said gasket.

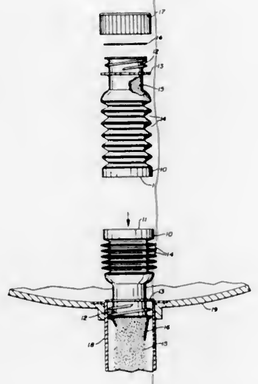
3,952,341
METHOD AND DEVICE FOR CLEARING A STOPPED UP DRAIN

James F. Cain, 1221 Velma Court, Youngstown, Ohio 44512

Filed Apr. 18, 1975, Ser. No. 569,538
Int. Cl.² E03D *11/00*
U.S. Cl. 4—255 **6 Claims**

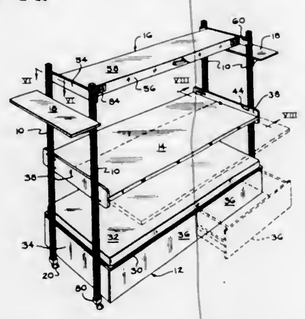
1. A collapsible container for a caustic material useful in opening a stopped up drain, said collapsible container having a tubular body with a closed end and an open end, a sealing disc secured to said open end and a cap-like closure removably positioned thereover and mechanically engaged on said container, the body of said container comprising a bellows-

like configuration movable from a first position wherein said bellows is extended to a second position where said bellows is



contracted and means on said open end of said container for registry with the open end of a drain pipe.

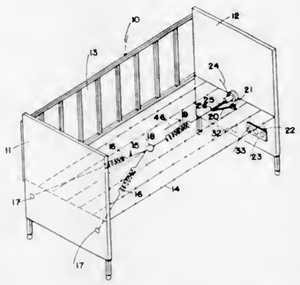
3,952,342
MULTIPURPOSE FURNITURE
James E. Hart, 1420 Harpst, Ann Arbor, Mich. 48104
Filed Jan. 27, 1975, Ser. No. 544,227
Int. Cl.² A47C *13/38;* **A47B** *81/00;* **108** *10;147*
U.S. Cl. 5—2 R **9 Claims**



1. Multipurpose furniture comprising a combination bed and table comprising, in combination, a plurality of spaced, substantially parallel, vertically disposed elongated columns, a bed platform mounted upon said columns and supported thereby, a substantially flat table mounted on said columns disposed vertically above said bed platform and extending thereover, adjustable means mounting said bed platform and said table upon said columns whereby said platform and table may be vertically adjustably positioned upon said columns, and vertically adjusted relative to each other.

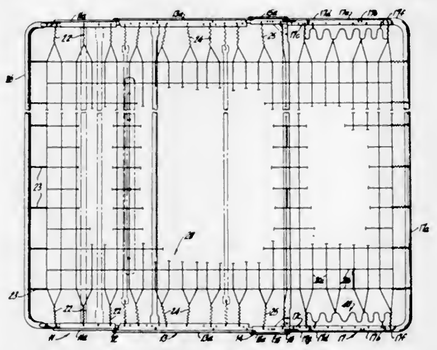
3,952,343
AUTOMATIC BABY CRIB ROCKER
Gim Wong, 1849 Gibbs Road, Estevan, Saskatchewan, Canada
Filed July 29, 1974, Ser. No. 492,416
Int. Cl.² A47D *9/02*
U.S. Cl. 5—109 **3 Claims**

1. A voice actuated rocking mechanism for operative attachment to a baby's crib or the like and including a source of electrical power; comprising in combination a normally stable spring system operatively connected to the associated crib, solenoid coil means operatively connected to said spring system and being connectable to said source of electrical power, a microphone, an audio amplifier circuit operatively connected to said microphone and to said source of electrical power, means operated by the output of said audio amplifier circuit to operate said solenoid coil means and being connectable to said source of electrical power, a timer circuit for disconnecting said solenoid coil means from said means operated by the output of said audio amplifier circuit and from said



source of electrical power, said timer circuit including means to adjust the duration of said timer circuit within limits by an RC time constant, means operatively connected to said solenoid coil means to make and break the electrical circuit thereto, manually operated switch means operatively connected to said circuit to initiate said rocking action manually if desired and adjustable speed control means operatively connected to said solenoid coil means to control the actuation of said means to make and break the electrical circuit to said solenoid coil means.

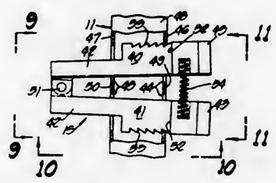
3,952,344
PULL-OUT FOLDING SOFA BEDS
Izchak Cycowicz, Brooklyn, N.Y., and John Wong, Jersey City, N.J., assignors to Mohasco Corporation, Amsterdam, N.Y.
Filed Apr. 16, 1975, Ser. No. 568,714
Int. Cl.² A47C *17/14*
U.S. Cl. 5—186 R **13 Claims**



1. A folding, pull-out sofa-bed comprising a plurality of interpivoted bed sections including a front foot section projecting forwardly in the open, sleeping position of said bed, said foot section comprising a frame member having a front cross bar and side arms extending rearwardly therefrom, in said open, sleeping position of said bed, said side arms having vertically, upwardly offset portions in said open, sleeping position of said bed, mattress supporting fabric and means to attach said fabric to said sections of said bed, said offset portions being vertically offset, downwardly in the fully folded position of said bed, zig-zag springs at the inner sides of said side arms, and extending longitudinally of and longside of the

offset portions of said side arms, and means to attach said zig-zag springs adjacent outer ends thereof, to the respective side arms, and means to attach said zig-zag springs to said mattress supporting fabric between the outer ends of said offset portions, said zig-zag springs each having inwardly projecting bends, and outwardly projecting bends.

3,952,345
BED FRAME HAVING RELEASABLY INTERLOCKED SIDE RAILS AND CROSSBARS
Melvin P. Spitz, 619 N. Elm Drive, Beverly Hills, Calif. 90210
Division of Ser. No. 556,914, March 10, 1975. This application Aug. 18, 1975, Ser. No. 605,543
Int. Cl.² A47C *19/04*
U.S. Cl. 5—207 **13 Claims**



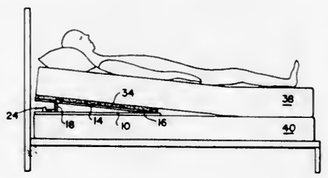
1. In a bed frame having an elongate side rail with an upper flange providing a support for a box spring adapted to project outwardly therebeyond, a box spring locating and retaining clip structure, comprising:

a. a generally L-shaped body structure having a base leg and a shorter right angled leg at one end thereof;

b. means adjustably mounting said body on said rail for movements in extendable and retractable directions with said base leg extending transversely of the rail below said upper flange and with said end leg being positioned outwardly of said upper flange and projecting above the plane thereof to engage a projecting side of the box spring; and

c. means for releasably latching said body against movement in said extendable direction from an adjusted position.

3,952,346
COLLAPSIBLE ELEVATING BOARD FOR BED MATTRESSES
Maurice F. Carlson, 6345 Oakman Blvd., Dearborn, Mich. 48126
Filed Mar. 14, 1975, Ser. No. 558,482
Int. Cl.² A47C *21/00*
U.S. Cl. 5—327 B **1 Claim**

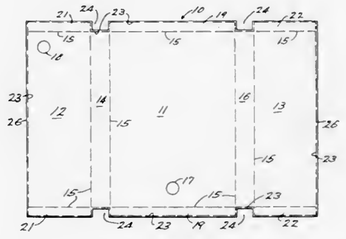


1. A collapsible elevating board for bed mattresses comprising a flat base, a tiltable member pivotally connected on the forward end to the flat base, a transverse foot pivotally attached to the lower side of the tiltable member having both an extended and a retracted position, a pivoted riser on the flat base disposed below the transverse foot having both an upright and a collapsed position, such riser being adapted in both its upright and collapsed positions to holdably engage the transverse foot when the latter is in its extended position so as to provide selective alternate elevations for the tiltable member.

3,952,347
BIODEGRADABLE BARRIER FILM AND ABSORBENT PAD UTILIZING SAME
John M. Comerford, Morganville, and Chandra Kapur, East Brunswick, both of N.J., assignors to Personal Products Company, Milltown, N.J.
Filed Dec. 13, 1973, Ser. No. 424,404
Int. Cl.² A61F *13/00;* **A61G** *7/04;* **C08L** *3/02, 89/00*
U.S. Cl. 5—335 **13 Claims**

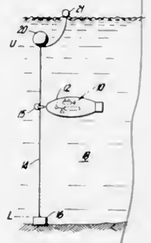
1. A biodegradable barrier film comprising a matrix of a non-biodegradable film-forming material which is resistant to solubility in water having a biodegradable material homogeneously dispersed therein, said biodegradable material being present in said film in an amount from about 40 to about 60 percent by weight based on the total weight of said biodegradable material and said non-biodegradable film-forming material in said film, said film resisting the passage of body discharge fluids therethrough.

3,952,348
WATER MATTRESS CONSTRUCTION
Gary L. Benjamin, Mount Blanchard, Ohio, assignor to R. L. Kuss & Co., Inc., Findlay, Ohio
Filed Sept. 2, 1975, Ser. No. 609,437
Int. Cl.² A47C *27/08*
U.S. Cl. 5—370 WI **2 Claims**



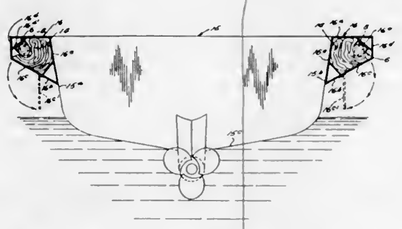
1. A water mattress of three-dimensional, rectangular box-like construction fabricated from a unitary sheet of a flexible material, comprising a top panel, a pair of vertical side panels folded downward on either side of the top panel, a pair of upper end panels folded downward at either end of the top panel, a first bottom panel portion folded horizontally inwardly from the lower edge of one of the vertical side panels, a second bottom panel portion folded horizontally inwardly from the lower edge of the other of the vertical side panels and in lap-seamed engagement with the first bottom panel portion, a first pair of lower end panels folded vertically upward at either end of the first bottom panel portion and in lap-seamed engagement with the corresponding edges of the upper end panels above, a second pair of lower end panels folded vertically upward at either end of the second bottom panel porton and in lap-seamed engagement with the corresponding edges of the upper end panels above, a lap seam between the adjacent edges of adjacent lower end panels at each end of the mattress, and lap seams at each corner of the mattress among the side panels, the upper end panels and the lower end panels.

3,952,349
VARIABLE BUOYANCY DEVICE
Robert L. Erath, Seaford; Mathias A. Speidel, St. James, and Edward J. Kennelly, Bayport, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Nov. 18, 1974, Ser. No. 524,950
Int. Cl.² B63G 8/14
U.S. Cl. 9—8 R 23 Claims



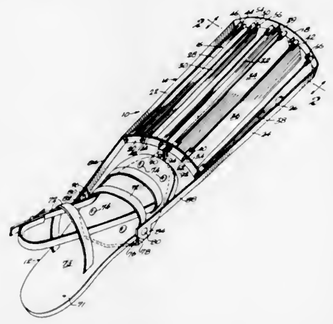
16. A variable buoyancy device for automatically cycling an instrument between upward and downward limits on a cable moored in water, comprising:
a SCUBA tank including a pressurized gas of low molecular weight;
a regulator valve coupled to said SCUBA tank to reduce the output gas pressure to a predetermined level which is greater than the ambient water pressure;
a bladder mechanically coupled to said regulator valve for inflation in response to gas exiting from said SCUBA tank;
an adjustably presettable deep dive control valve coupling said regulator valve to said bladder to provide inflation of said bladder and positive buoyancy to the device when said deep dive control valve descends to a predetermined lower depth limit; and
an adjustably presettable shallow dive control valve coupled to said bladder to provide deflation of said bladder and negative buoyancy to the device when said shallow dive control valve ascends to a predetermined upper depth limit, said adjustably presettable deep and shallow dive control valves coacting to provide continuous automatic cycling of the variable buoyancy device between the predetermined upper and lower depth limits.

3,952,350
GRAVITY WEIGHT TRIGGER FOR A LIFE RAFT
Emil Moucka, Rte. 4, Ennis, Tex. 75119
Filed Oct. 4, 1974, Ser. No. 512,000
Int. Cl.² B63C 9/04
U.S. Cl. 9—11 A 11 Claims



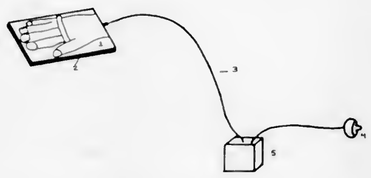
9. In a life raft inflating device, a pressurized cylinder; a deflated life raft; conduit means between the life raft and the cylinder; a valve member; resilient seat; a spring urging the valve member away from said seat; and a counterweight means adapted to hold said valve member closed until the inflating device becomes inverted when said counterweight means is actuated to release said valve member, to allow said spring to open said valve and inflate said life raft.

3,952,351
SWIMMING AID DEVICE
Miguel Gisbert, 4355 E. 8th Lane, Hialeah, Fla. 33013
Filed Mar. 24, 1975, Ser. No. 561,211
Int. Cl.² A63B 31/14
U.S. Cl. 9—304 9 Claims



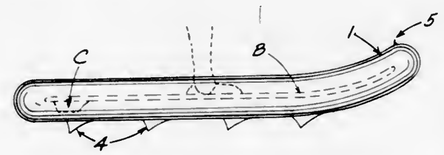
1. A swimming aid device comprising:
A. an article of footwear including,
1. means to attach said article to the foot of a wearer;
B. a main, elongated frame assembly, extending forwardly of said article of footwear, including,
1. front and back walls, and
2. spaced apart side walls defining an elongated central opening;
C. a plurality of vanes pivotally connected in said central opening at their respective upper edge end portions between said front and back walls and being pivotal between first, generally parallel open positions relative to said central opening, and second, overlapping positions in a substantially closing relation to said central opening;
D. means to connect said main elongated frame assembly to said article of footwear;
E. said means to connect comprises a pair of rearwardly extending arms from the respective side walls of said main frame and a sole plate connected between said rearwardly extending arms and a sole portion of said article of footwear.

3,952,352
ELECTRONIC STROKE EFFECTIVENESS SENSOR FOR COMPETITIVE SWIMMERS
Lawrence A. Wan, and Sara J. Wan, both of 17819 Joshua Circle, Fountain Valley, Calif. 92708
Filed May 2, 1975, Ser. No. 573,876
Int. Cl.² A63B 31/02
U.S. Cl. 9—307 5 Claims



1. A hand and/or arm worn apparatus that senses and measures the propulsion generated in water by a swimmer's arm stroke as the swimmer strokes through the water comprising of:
a. pressure sensitive transducers worn on the hand and/or arm that convert the thrust generated by the arm stroke as water pressure is created against the transducers into electric signals,
b. a miniature electronic battery powered package worn on the swimmer that generates an audible tone into the swimmer's ear through a small earpiece such that the tone frequency or pitch is heard by the swimmer and varies directly as a function of the water pressure as thrust is generated against the transducers to give the swimmer a feedback indication of the effectiveness of his stroke form in delivering propulsion through the water, and
c. a miniature radio transmitter worn on the swimmer's body that transmits the signals from the transducer to a remote pool-side meter and recorder to provide remote monitoring, measurement, and recording of the thrust generated in quantitative units.

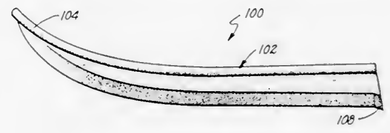
3,952,353
SKI WALKERS
John H. Word, Rte. No. 2, Box 341, Frankfort, Ky. 40601
Filed July 22, 1974, Ser. No. 490,880
Int. Cl.² A63C 15/02, 15/04
U.S. Cl. 9—310 D 1 Claim



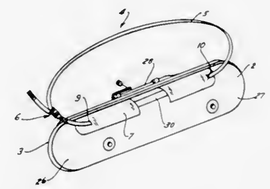
1. A one piece, flexible, inflatable device for converting a water ski to a buoyant water walking apparatus, comprising:
a pair of integrally formed inflatable tubes, one of said tubes extending around and engaging the entire periphery of said water ski and the other of said tubes extending along and forming a support for a bottom portion of said water ski,
said tubes being provided with openings to allow air to pass from one tube to the other;
the tubes, when inflated, forming an elongated pocket for receiving and gripping said water ski;
the one of said tube being provided with transversely extending strap means to assist in attaching the inflatable device to said water ski, and
the other of said tubes being provided with propulsion cups on a bottom portion thereof to assist in moving said buoyant apparatus over the surface of the water.

3,952,354
SLED
Richard W. Turner, 1786 Tubbs St., Thousand Oaks, Calif. 91360
Continuation of Ser. No. 380,832, July 19, 1973, abandoned, which is a continuation-in-part of Ser. No. 272,097, July 17, 1972, abandoned, which is a continuation of Ser. No. 94,878, Dec. 3, 1970, abandoned. This application Oct. 23, 1974, Ser. No. 517,152
Int. Cl.² B62B 13/00
U.S. Cl. 9—310 B 2 Claims

1. A sled comprising:
a body having front and rear ends,
said body having an undersurface which slopes upwardly in each lateral direction from its longitudinal centerline and longitudinal edges whose forward portions curve inwardly toward and merge at said centerline to provide said body with a rounded prow,
a seat extending across the extreme rear end of said body, at least the forward portion of said body curving upwardly with a relatively sharp curvature, whereby said prow is upswept and rises above said seat in a normal sledding position of said sled with a rider on said seat, and
a downwardly and rearwardly sloping inclined ramp surface at the underside of said body and extending across the extreme rear end of said body directly below said seat, whereby in the normal sledding position of said sled in water with a rider on said seat, said ramp surface is submerged in the water and produces on the rear end of said body an upwardly planing force for holding said prow down in the water when the sled is towed forwardly through the water.



3,952,355
INFLATABLE BUOYANCY AIDS
David Paul Bardebes, 12 Yatton St., Tauranga, New Zealand
Continuation-in-part of Ser. No. 468,355, May 9, 1974, abandoned. This application Oct. 30, 1974, Ser. No. 519,392
Claims priority, application New Zealand, Sept. 24, 1973, 172049
Int. Cl.² B63C 9/18
U.S. Cl. 9—316 9 Claims

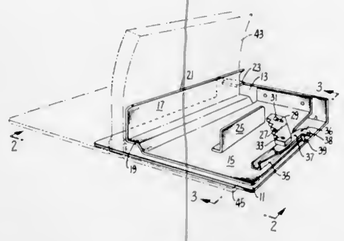


1. An inflatable bouyant device comprising an elongate inflatable member having a straight longitudinal axis extending from end to end of the member, securing means attached to and extending from said inflatable member and adapted to encircle the trunk part of the body of a person so that said securing means lies substantially in a plane substantially parallel to the longitudinal axis of the elongate member, an actuating device associated with a gas producing means located in or adjacent the inflatable member such that on operation of the actuating device an amount of gas flows into the inflatable member so as to inflate it and provide buoyancy for a person about which the securing means has been secured characterized in that the securing means extends from two positions spaced apart and removed from each end of the inflatable member to leave two end portions of the inflatable member, when inflated and when secured to the front of the trunk part of the body of the person by the securing means, extending in substantial tangential fashion from the body of the person.

3,952,356
GAUGE AND ALIGNMENT DEVICE FOR ATTACHING COVERS TO BOOKS

Joe D. Giulie, and Leslie E. Worcester, both of Palo Alto, Calif., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Feb. 21, 1975, Ser. No. 551,752
Int. Cl. B42c *11/00*
U.S. Cl. 11—3 **7 Claims**



1. A device providing a combined cover alignment gauge for selecting a cover of a proper size to fit a given document and a cover alignment jig whereby a prebound document to be covered can be centered on a cover of the selected size, said device being for use with prefabricated covers having front and back members of uniform size to accommodate pages of a given size, said front and back members being flexibly connected through a central spine member, said spine member being manufactured in a variety of width increments to accommodate documents of various thicknesses, said prefabricated covers having attachment means whereby said covers can be attached to a prebound document, said device comprising in combination:

a. a frame including a plate having a surface for supporting a cover, an alignment plate perpendicular to said surface, a fixed gauge stop member, and a movable gauge plate supported on said frame, and movable toward and away from said fixed gauge stop member, said gauge plate having a series of steps thereon in increments corresponding to the spine width appropriate for various documents to be bound and having indicia thereon to identify the individual steps, whereby a document can be placed between said fixed gauge stop and said movable gauge plate to permit proper selection of a cover sized for binding the document chosen, and

b. means for movably mounting said gauge plate on said frame for engaging a chosen document between a step of the movable gauge plate and said fixed gauge stop and means for engaging a cover supported on said surface to position said cover with respect to said surface at a position related to the amount of movement of the gauge plate with respect to said fixed gauge stop for aligning the center of the cover at a spaced position from said alignment plate.

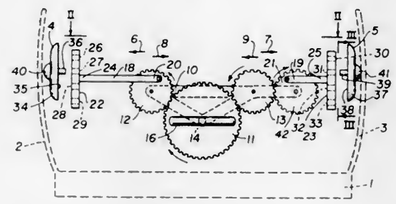
3,952,357
SHOE STRETCHING DEVICE

Bernard O'Sullivan, 120-31 DeKruif Place, Bronx, N.Y. 10475

Filed Jan. 30, 1975, Ser. No. 545,335
Int. Cl.² A43D *5/00*
U.S. Cl. 12—115.2 **2 Claims**

1. A shoe stretching device for corns and bunions for stretching a shoe having a pair of opposite sides each of which is adjacent a corresponding one of the big toe and the small toe of the foot of a wearer of the shoe, said shoe stretching device comprising

a pair of stretching members each shaped to stretch a substantially concave area in a side of a shoe to relieve pressure on a corn, bunion, and the like; and manually operated moving means coupling the stretching members to each other and selectively moving each of the stretching members into and away from the corresponding side of the shoe for stretching the side to a desired extent, said moving means comprising a frame, gear means including a drive gear and driven gears rotatably mounted on the frame, a shaft affixed at one end to and rotatable with the drive gear, a handle at the other end of

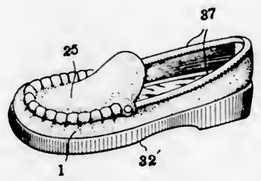


the shaft for rotating the drive gear, and coupling means releasably coupling each of the stretching members to a corresponding one of the driven gears for selective reciprocating movement, said coupling means comprising a pair of arms each pivotally eccentrically affixed at one end to a corresponding one of the driven gears, and a pair of adjustable coupling members each affixed to the other end of a corresponding one of the arms for removably coupling the stretching members to the arms.

3,952,358
SHOE AND A METHOD FOR MANUFACTURING THE SAME

Tatsuo Fukuoka, No. 3, 3-Ban, 2-Chome, Shin-Minami-Fukushima, Tokushima, Japan

Continuation-in-part of Ser. No. 402,967, Oct. 3, 1973, abandoned. This application Oct. 2, 1974, Ser. No. 511,243
Claims priority, application Japan, Nov. 2, 1973, 48-127548[U]; Jan. 18, 1974, 49-8507[U]; May 4, 1974, 49-51055[U]
Int. Cl.² A43D *9/00*
U.S. Cl. 12—142 MC **1 Claim**



1. In a method for integrally manufacturing a shoe of resinous material, the improvement comprising a first step of three-dimensionally molding a lateral side section of plastic resinous material in a molding cavity, a second step of connecting an upper vamp section with said lateral side section, and a third step of connecting a sole with the lateral side section.

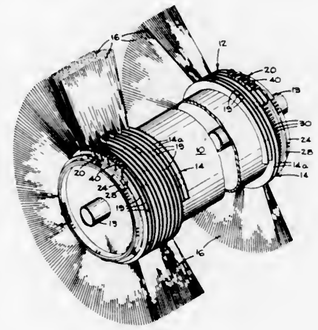
3,952,359
BRUSH STRIP FOR ROTARY COILED BROOM

Richard B. Rosseau, Claremont, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 20, 1975, Ser. No. 542,316
Int. Cl.² A46B *7/10*
U.S. Cl. 15—182 **8 Claims**

1. In a rotary coiled broom which includes a cylindrical core, a helically coiled brush strip wound about the cylindrical face of said core, said brush strip being comprised of a channel

element and a plurality of radially extending bristles secured within said channel element, and means for securing the ends of said brush strip to the longitudinal ends of said core, the improvement wherein said channel element is provided with a plurality of protrusions on the underside of the base thereof which is in engagement with the cylindrical face of the core, said protrusions being spaced apart by distances along the

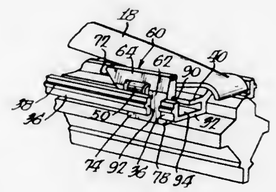


length of said channel element so that there are no more than two protrusions per turn; and said channel element having sufficiently flexibility so that the application of a tensioning force on said channel element, such as that occurring when said broom is loaded, causes it to distort and assume a non-cylindrical shape about said core with portions thereof being spring-loaded into engagement with said core face about said protrusions.

3,952,360
INTEGRAL RETAINING CLIP-REFILL ASSEMBLY

John J. Plisky, Munster, and William H. Harbison, both of Merrillville, Ind., assignors to The Anderson Company, Gary, Ind.

Filed Mar. 25, 1975, Ser. No. 561,908
Int. Cl.² B60S *1/38*
U.S. Cl. 15—250.42 **5 Claims**

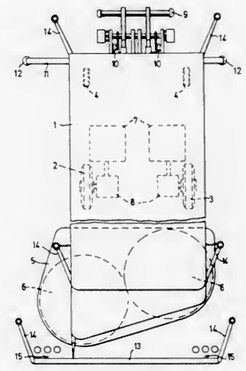


1. A retaining clip for a wiper blade for holding a backing member in assemlbed relationship with a superstructure, said retaining clip having a body member of resiliently flexible material with an outwardly extending head portion projecting transversely from the upper portion thereof, an abutment extending downwardly from the outer end portion of said head portion and having a wall lying substantially parallel to and facing a wall of the body member, said abutment and said head portion having an outwardly facing angled wall converging toward the lower edge of said wall on said abutment, and a foot portion connected to said body member and lying parallel to said foot portion, said foor portion being spaced from said head portion and extending in opposite directions from said body portion.

3,952,361
FLOOR TREATING MACHINES

John Thomas Wilkins, Bushey Heath, England, assignor to R. G. Dixon & Company Limited, Wembley, England

Filed Oct. 4, 1974, Ser. No. 512,310
Claims priority, application United Kingdom, Oct. 5, 1973, 46685/73
Int. Cl.² A47L *5/00*
U.S. Cl. 15—319 **6 Claims**



1. In a floor treating machine comprising laterally spaced drive wheels, separate traction motors drivably connected to the wheels and electronic control means to provide separate trains of pulses to operate the motors conjointly for straight line motion and differentially for steering motion: the improvement of means for recording the trains of pulses to the traction motors for recording the path followed by said machine and means for replaying the record to reproduce the trains of pulses whereby the machine will reproduce the original path followed by the machine, and a course correction system coupled between the control means and the motors comprising first sensing devices for sensing the presence of a wall or other physical obstruction in the immediate path of the machine and further sensing devices for sensing the condition of the floor in a predetermined location with respect to the machine, said sensing devices producing overriding signal control to the motors to thereby effect course correction in response to said signals from the sensing devices.

5. A floor treating machine as claimed in claim 1, including a plurality of rotary floor-engaging brushes, means associated with each brush for feeding fresh cleaning solution into the region thereof, and further sensing devices consisting of transparent take-up pipes associated with the individual brushes for collecting the cleaning solution after brushing on the floor, light sources mounted adjacent each pipe and photo-electric cells mounted opposite thereto, said photo-cells measuring the clarity of the solution taken up and producing a signal that is coupled to the overriding signal control.

3,952,362
NOZZLE DEVICE FOR CLEANSER FOAM SUCTION APPARATUS

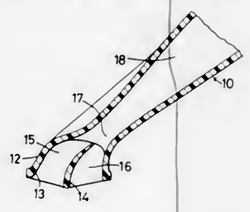
Osamu Torii, No. 10-1,Ueda-8-chome, Matsubara, Osaka, Japan

Filed Nov. 16, 1973, Ser. No. 416,462
Claims priority, application Japan, Dec. 18, 1972, 47-127458
Int. Cl.² A47L *9/02*
U.S. Cl. 15—353 **5 Claims**

1. A suction nozzle device to be connected to a vacuum source for removing material from a surface being treated comprising:

hollow intake means having an inlet portion and an outlet portion for receiving and discharging the material to be carried away from the surface and the air coming from the atmosphere by the applied suction;

guide wall means arranged within and projecting beyond the inlet to said intake means for partitioning the hollow space of said inlet means into a plurality of flow passages having inlet openings at the inlet portion of said intake means, said flow passages being completely isolated from each other between the inlet openings of said flow passages and the discharge portion of said intake means, and for leaving at least one inlet opening of said flow passages open to the atmosphere when the intake means is placed against the surface to be treated; and



ejector means extending from the discharge portion of the said intake means for connecting said intake means to a vacuum source, said ejector means having a throttle portion formed at the trailing edge of said guide wall means in said discharge portion and a diffuser portion succeeding said throttle portion.

3,952,363

VACUUM CLEANER NOZZLE

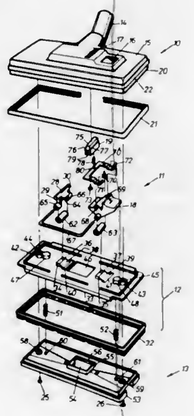
Fred Henry Lindman, Hagersten, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Nov. 4, 1974, Ser. No. 520,668

Claims priority, application Sweden, Nov. 8, 1973, 7315151

Int. Cl.² A47L *9/06*

U.S. Cl. 15—373 **8 Claims**



1. A vacuum cleaner nozzle provided with a spring-urged brush that is movable from a first position in engagement with the surface to be cleaned to a second position out of engagement with said surface to be cleaned and vice-versa comprising; a housing, means at the bottom of said housing for confining said brush in said housing but permitting limited movement therein, a cam device including spaced, pivotable roller members, a bracket interconnecting said roller members, said brush including a plate provided with brush bristles, the upper surface of said plate being provided with spaced, shaped shoulder elements that are each adapted to be engaged by a corresponding roller member, said shoulder elements being part of said cam device, linking means joining each roller to said nozzle, the linking means of one of said rollers having an arm provided with a first foot actuated operating means for moving said roller members on said shaped shoulders whereby said brush is moved to a selected position in which a portion thereof projects outside of said housing, and a second foot actuated operating means accessible from the outside of said housing acting upon an inner part of the linking means for moving said roller members on said shaped shoulders whereby said brush is moved to another position located within the interior of said housing.

3,952,364

MOUNTING PLATE FOR FURNITURE HINGES

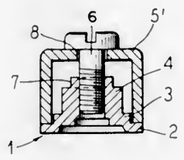
Karl Lautenschlaeger, Jr., Reinheim, Odenwald, Germany, assignor to Karl Lautenschlaeger KG, Germany

Filed Oct. 31, 1973, Ser. No. 411,282

Claims priority, application Germany, Oct. 31, 1972, 2253370

Int. Cl.² A47G *1/10;* **E05D** *3/06*

U.S. Cl. 16—1 R **2 Claims**



1. A furniture hinge unit comprising:

a longitudinally extending U-shaped supporting arm of a predetermined width;

a hinge mounting plate for mounting said longitudinally extending U-shaped supporting arm, said mounting plate including,

a rigid longitudinal base plate adapted to be secured to a furniture piece and having two substantially parallel longitudinal margins, and

a plurality of step-shaped mounting shoulders along said two longitudinal margins of said base plate to accommodate the U-shape supporting arm of said hinge unit as well as U-shaped supporting arms of a different width.

3,952,365

DAMPING DEVICE FOR HINGES AND THE LIKE

Hans-Theodor Grisebach, Kampstrasse 7, 475 Unna, Germany

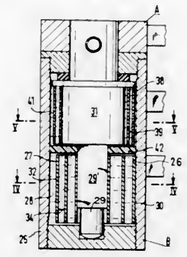
Continuation-in-part of Ser. No. 345,304, March 27, 1973, abandoned. This application Jan. 21, 1975, Ser. No. 542,805

Claims priority, application Germany, Mar. 27, 1972, 2214965

Int. Cl.² E05F *3/10*

U.S. Cl. 16—52 **11 Claims**

1. A device for applying spring force to, and damping movement of, a movable structure such as a door relative to a stationary structure such as a door frame, said device comprising first and second parts for attachment to the movable and stationary structures respectively; one of said parts including a housing and the other part including a member supported by the housing for rotation relative thereto; the housing have therein two working chambers which contain a damping fluid and intercommunicate by way of a constricted opening, the relative volumes of the working chambers varying as the member rotates relative to the housing, and a spring interconnecting the housing and the member and biasing the member in a pre-determined rotational direction relative to the housing; distortion of the spring during relative rotation of the member and housing serving to produce the variation in the relative volumes of said chambers.



3,952,366

HINGE DEVICE

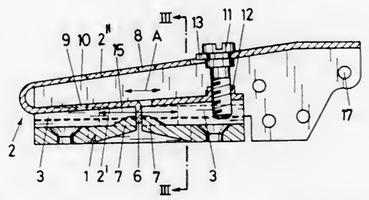
Erich Röck, Hochst, and Bernhard Mages, Dornbirn, both of Austria, assignors to Blum Gesellschaft m.b.H., Hochst, Austria

Filed Feb. 24, 1975, Ser. No. 552,149

Claims priority, application Austria, Feb. 26, 1974, 1567/74; Apr. 2, 1974, 2745/74

Int. Cl.² E05D *7/04*

U.S. Cl. 16—129 **8 Claims**



1. In a hinge device, especially for furniture doors, of the type including at least one mounting plate that can be fixed to one part of a piece of furniture, and a hinge arm which can be anchored directly or indirectly to said mounting plate and which bears swivel arms for connection to another part of a piece of furniture, the improvement wherein:

said mounting plate is provided with at least one centering part means for centering said hinge arm;

said hinge arm is provided with a centering part means for snap fitting engagement into the mounting plate.

3,952,367

STABILIZING HINGE FOR FURNITURE WITH GLASS DOORS

Manfred Schnelle, Hiddenhausen; Ernst Zernig, Hemer, and Jürgen Wilke, Bunde, all of Germany, assignors to Firma Richard Heinze, Herford, Germany

Filed Sept. 19, 1974, Ser. No. 507,513

Claims priority, application Germany, Sept. 20, 1973, 2347290; June 14, 1974, 2428749

Int. Cl.² E04D *15/50*

U.S. Cl. 16—147 **5 Claims**

1. A hinge for pivotally supporting a glass door to a furniture part or the like and comprising:

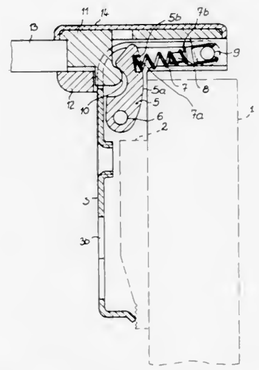
housing means fitting within a mating through aperture in the door,

said housing means defining a peripheral flange which abuts one surface of the door adjacent the recess therein and having clamping means detachably secured thereto for abuting the opposite surface of the door to thereby tightly secure said housing means in said glass door,

a generally L-shaped hinge arm secured to the furniture part and defining a hollow interior portion,

pivot means for pivotally supporting said hinge arm relative to said housing means,

a latch member pivotally supported in said interior portion and spring means also supported within said interior



portion and resiliently urging said latch member in a first direction,

and further means included within said housing means which latchingly engages said latch member when the door is moved to its closed position,

said latch member being movable in an opposite direction against the action of said spring means as the door is moved to and from its closed condition thereby causing said further means to engage said latch member.

3,952,368

HINGES

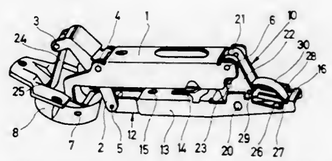
Ernst Zernig, Muhlenweg, D-5870 Hemer, and Manfred Rüther, Friedhofsweg 13, D-5992 Nachrodt, both of Germany

Filed Jan. 9, 1975, Ser. No. 539,829

Claims priority, application Germany, Jan. 16, 1974, 2401915; Feb. 6, 1974, 2405604; Apr. 2, 1974, 2415999

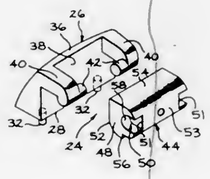
Int. Cl.² E05D *3/06, 15/52*

U.S. Cl. 16—163 **34 Claims**



1. A scissor hinge for articulated connection of two components, said hinge comprising (a) a fixing bracket having means operable to fix said hinge to one of the components; (b) a guide lever pivotably mounted at one end to said fixing bracket in the area of a first end of said bracket; (c) two crossed and pivotably joined hinge arms, a first end of the first of said hinge arms being pivotably mounted on said fixing bracket and a first end of the second of said hinge arms being pivotably joined to the second end of said guide lever; (d) fitting means articulately connected to the second ends of said first and second hinge arms and having means operable to fix said fitting means to the second of the components; and (e) spring means operable to urge said hinge to a fully open or fully closed position.

3,952,369
HINGE STRUCTURE
Clifford E. Erickson, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Mar. 7, 1975, Ser. No. 556,226
Int. Cl.² E05D 1/06
U.S. Cl. 16—171 6 Claims



1. A hinge structure for pivotally connecting a first and second member at a pivot axis including:
a first hinge portion having a base secured to the first hinged member and having rearwardly extending arms spaced from each other, the arms terminating with laterally extending spaced pivot pins,
a second hinge portion secured to the second hinged member and having a rear wall, top wall, bottom wall, front wall and end walls, both of the end walls having an open-ended recess that is open at the back wall and receives each of the respective pivot pins, the rear wall being adjacent the second hinged member and the second hinged member is a bearing surface for the pivot pins.

3,952,370
LOADING TUBE SLEEVE FOR USE WITH AN ENCASING MACHINE
Charles Austin Greider, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa
Continuation of Ser. No. 307,057, Nov. 16, 1972, abandoned. This application Jan. 29, 1975, Ser. No. 544,889
Int. Cl.² A22C 11/02
U.S. Cl. 17—41 2 Claims



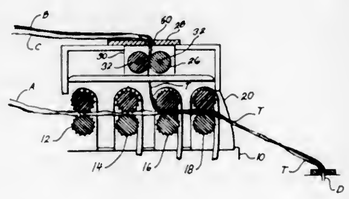
1. In combination with an encasing machine having a stuffing tube means, comprising,
an elongated loading tube sleeve embracing the stuffing tube means, said loading tube sleeve having a plurality of perforations formed therein,
said loading tube sleeve having a length sufficient to support a folded casing thereon and having an irregular diameter to provide a constantly changing geometry for a tight section of casing as it moves longitudinally along the sleeve,
said perforations being arranged on said loading tube sleeve so that said loading tube sleeve has less than a full circumference at any position along the substantial length thereof to reduce the drag imposed on the casing by said loading tube sleeve.

3,952,371
METHOD AND APPARATUS FOR PROCESSING SHRIMP
Robert L. LaPine, 700 1st Ave. North, Wells, Mich. 49894, and Bernard C. Brower, 720 Minnesota Ave., Glastone, Mich. 49837
Division of Ser. No. 326,158, Jan. 24, 1973, Pat. No. 3,867,740. This application Dec. 12, 1974, Ser. No. 531,938
Int. Cl.² A22C 25/18
U.S. Cl. 17—52 6 Claims



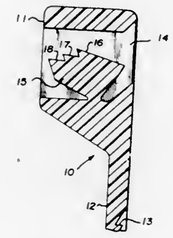
1. A method of processing a de-headed but unshelled shrimp comprising the following steps:
a. cutting into the belly of the body of the shrimp to the point at which the alimentary canal of the shrimp is located, said cutting step not extending through the shell of the shrimp so that upon completion of the cutting step the shell thereof will remain intact and will be attached to the body of the shrimp; and
b. spreading the portions of the shrimp on opposite sides of the cut therein to thereby cause the shrimp to assume a substantially flat position with the shell still intact and with the body of the shrimp attached thereto.

3,952,372
METHOD AND MEANS FOR BLENDING FIBER STRAND SEGMENTS IN A BASE STRAND
Robert Lewis Howell, Jr., Fayetteville, N.C., assignor to Holt Williamson Mfg. Co., Fayetteville and Davant Yarns, Inc., Charlotte, both of, N.C.
Filed June 3, 1974, Ser. No. 475,572
Int. Cl.² D01H 5/00
U.S. Cl. 19—243 10 Claims



1. A method of adding segments of at least one supplemental strand of fibers of at least one characteristic of color, texture and construction into at least one base strand of fibers of at least one other characteistic of color, texture and construction to produce a composite strand of blended fibers with an unpredictable random distribution of said supplemental strand segments therein, said method comprising separately and continuously advancing said at least one base strand and said at least one supplement strand indiscriminately pulling from said at least one supplemental strand segments of lengths greater than the length of individual fibers thereof and of unpredictably random size and occurrence, adding said pulled supplemental strand segments to said advancing at least one base strand for incorporation therein to form a composite strand, and in advancing said at least one base strand during adding of said pulled supplemental strand segments thereto said at least one base strand is attenuated by drafting.

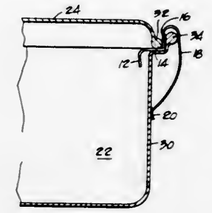
3,952,373
CABLE BUNDLING STRAP
Peter Noorily, Holliswood, Queens, N.Y., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Sept. 27, 1974, Ser. No. 509,919
Int. Cl.² B65D 63/00
U.S. Cl. 24—16 PB 4 Claims



1. A self-clinching bundling strap comprising: a head end portion, a tail end portion and an elongated strap body portion therebetween; said strap body portion having a first surface and a second surface and a plurality of teeth extending inwardly from said first surface towards said second surface and terminating short of said second surface to form a third surface, said third surface separated from said second surface by a first predetermined distance; said head end portion having an aperture extending transversely therethrough, the surfaces adjacent said head end portion aperture defining a ceiling, a floor and two side walls of said aperture; a rigid tongue portion rigidly coupled to said ceiling of said aperture and extending into said aperture towards said floor thereof, said tongue portion having a generally rectangular configuration in transverse section, the free end of said rigid tongue portion being separated from said floor of said aperture by a second predetermined distance, smaller than said first predetermined distance; and an elongate stiffening rib originating substantially at the juncture between said tongue portion and said ceiling of said aperture and extending along said head end portion away from said tongue portion and coaxial therewith, said stiffening rib having a width generally equal to the width of said tongue portion; stiffening means on each of said side walls to prevent the stretching of said head end portion; said stiffening rib and said stiffening means cooperating so as to cause said tongue portion and the head end portion above said ceiling to flex as a unit in a first direction about an axis extending along said ceiling of said head end portion aperture away from said strap body portion as said strap body portion is pulled through said head end portion aperture to tighten said strap about a plurality of articles to be bundled, said tongue portion being caused to flex in a second direction opposite said first direction about said axis as a unit with the head end portion above said ceiling towards said strap body portion when pulling on said strap body portion is terminated to lockingly engage said tongue portion with at least one of said teeth and a portion of said third surface therebetween and prevent removal of said strap body portion from said head end portion aperture.

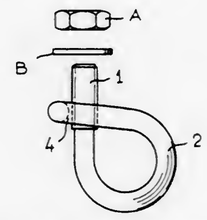
3,952,374
ANTI-SPLATTER CLIP
Victor P. Mohorovich, 2119 46th Ave., San Francisco, Calif. 94116
Filed Dec. 9, 1974, Ser. No. 530,676
Int. Cl.² A44B 21/00; B65D 7/42
U.S. Cl. 24—73 B 6 Claims

1. An anti-splatter clip suitable for use with many different sized cooking pots and lids to prevent steam build-up, comprising:
a. a short run,
b. an inner run extending perpendicular from said short run,
c. a connecting run extending perpendicular from said inner run,



d. an ear-shaped run extending above said connecting run and terminating below said short run, said inner run being greater in length than the parallel distance between said connecting run and said ear-shaped run, and
e. an abutment run extending from said ear-shaped run.

3,952,375
DOUBLE CLAMPING RINGS
Jean Mailliet, Boulogne-Billancourt, France, assignor to Regie Nationale des Usines Renault and Automobiles Peugeot, both of, France
Filed June 13, 1975, Ser. No. 586,588
Claims priority, application France, June 28, 1974, 74.22623
Int. Cl.² A44B 21/00
U.S. Cl. 24—81 PE 4 Claims

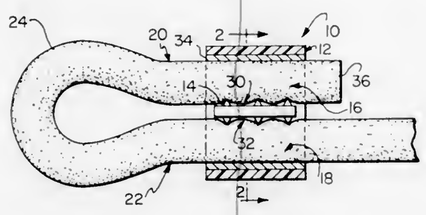


1. A double clamping ring for clamping coaxial or non-coaxial couplings of circular-sectioned or tubular members or members having any other cross-sectional contour, said clamping ring comprising a single piece of metal or non-metallic wire screw-threaded at at least its two ends, and two end sections consisting each of at least the three-fourths of a turn, said end sections being interconnected by a rectilinear or loop-shaped section, the curved junction sections between each partial turn and said rectilinear or loop-shaped section surrounding partially said screw-threaded ends to constitute bearing surfaces for the tightening nuts to be engaged on said screw-threaded ends.

3,952,376
LINE CONNECTING APPARATUS
J. Scott Ellis, Rockville, Md., assignor to Ellis Industries, Inc., Gaithersburg, Md.
Filed Jan. 7, 1975, Ser. No. 539,259
Int. Cl.² B65D 63/00; F16G 11/00; A44C 5/18
U.S. Cl. 24—115 A 9 Claims

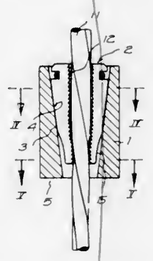
1. An apparatus for securing two portions of two elongated members together in parallel side by side relationship comprising:
friction means, interposed between adjacent sidates of said two portions of said two elongated members, for increasing the friction between said two portions; and

a heat shrinkable tube surrounding said two elongated members at said portions to be secured, said tube adapted to bind said members and said friction means together after being heated,



said friction means comprising an elongated body member and a plurality of protuberances extending from the surface of said body member into contact with each of said adjacent sides of said two portions.

3,952,377
CONICAL WEDGES FOR GRIPPING MULTI-PLY ROPE OR CABLE
Juan Coll Morell, Calle Amilcar, 209, Barcelona, Spain
Filed Aug. 19, 1974, Ser. No. 498,612
Claims priority, application Spain, Jan. 25, 1974, 199828
Int. Cl.² F16G *11/04*
U.S. Cl. 24—136 R **2 Claims**



1. A tendon-gripping assembly comprising a tapered wedge for gripping a multi-ply rope or cable, wherein the wedge is circumferentially divided into a plurality of parts surrounding an axial aperture for the rope or cable, each of the said parts having, for at least part of its axial length, opposed inwardly curved side edge portions, and a sleeve for receiving in its interior said parts of said tapered wedge, said sleeve having an inner tapered surface of the same inclination as and engaging exterior surfaces of said wedge parts including regions of said exterior surfaces which are situated between said inwardly curved side edge portions of said wedge parts, the exterior surface regions of said inwardly curved side edge portions of said wedge parts being situated inwardly of and spaced inwardly from the inner surface of said sleeve.

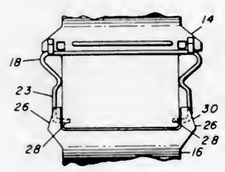
3,952,378
MECHANICAL CLOSURE DEVICE
Carl Dodges, Sparta, and Ernest Petrocco, Dover, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Feb. 4, 1975, Ser. No. 546,955
Int. Cl.² A44B *17/00*
U.S. Cl. 24—201 LP **8 Claims**

1. A device for coupling adjoining member ends which comprises in combination:

a first member end;

a second member end having two fixed jaws for containing said first member end, wherein each of said jaws is provided with a hole therethrough which aligns with a corresponding hole in the first member end when the ends are in coupled position;

a pivotable resilient fastening means having arms terminating in pins, which are pivotably mounted in said jaw holes and extend into said first member holes;

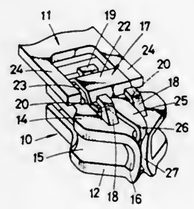


means on each of said jaws adapted to cam and thereby spread the arms of said fastening means when said means is pivoted to cause said pins to be withdrawn from said first member holes; and

means on said first member end adapted to catch said fastening means in coupled position;

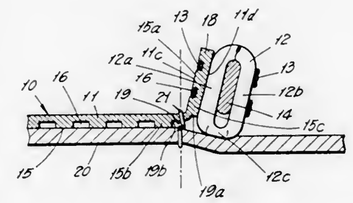
whereby said first and second member ends are coupled when the pins of said pivotable resilient fastening means extend into said holes of the first member end, and are uncoupled when said pins are withdrawn from said holes of the first member end by pivoting said resilient fastening means to engage said cam means.

3,952,379
AUTOMATICALLY LOCKING SLIDER
Takeo Fukuroi, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan
Filed Dec. 20, 1974, Ser. No. 535,103
Claims priority, application Japan, Dec. 29, 1973, 49-4185[U]
Int. Cl.² A44F *19/30*
U.S. Cl. 24—205.14 R **3 Claims**



1. In a slide fastener slider of the type having a single pull tab and a body, said slider body including a top wing and a bottom wing which are interconnected by a web located centrally at its front end to define a generally Y-shaped guide channel therethrough, an automatic lock mechanism comprising, in combination, a locking leaf spring generally arranged longitudinally over said top wing of said slider body and having one end adjacent to and secured to said front end of said slider body in such a manner that said locking leaf spring is yieldably urged against said slider body, said locking leaf spring having a widened portion and an elongate neck extending from said widened portion toward said one end thereof, said widened portion and a portion of said neck adjacent thereto being coplanar, and forming a pair of shoulders at both sides of said neck, a pair of spring retainers projecting upwardly from said top wing of said slider body to engage said shoulders, respectively, of said locking leaf spring so that said neck of said locking leaf spring is at least partly arranged between said spring retainers, said spring retainers extending over the top surface of said widened portion at said shoulders, and a locking pawl at the other end of said locking leaf spring, said locking pawl normally projecting into said guide channel in said slider body through an aperture formed in said top wing, said locking leaf spring further including a portion between said shoulders and said locking pawl which portion is disposed to enclose a part of said pull tab in such a manner that when a pull is exerted on said pull tab, said locking leaf spring is generally raised away from said slider body whereby said locking pawl retracts from said guide channel in said slider body.

3,952,380
CONCEALED SLIDE FASTENER HAVING WARP-KNITTED STRINGER TAPES
Ikuo Takamatsu, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan
Filed Oct. 29, 1974, Ser. No. 518,632
Claims priority, application Japan, Nov. 9, 1973, 48-130074[U]
Int. Cl.² A44B *19/12, 19/40*
U.S. Cl. 24—205.13 C **2 Claims**



1. A concealed slide fastener comprising a pair of opposed stringer tapes carrying respective rows of fastener elements, each of said stringer tapes having a longitudinal extending marginal edge portion to which a corresponding row of fastener elements is secured, a web portion, and a longitudinal extending flexing portion connecting said marginal edge and web portions and defining a longitudinal axis of fold to accommodate folding of the tape along said axis into a configuration in which part of the web portion overlaps the marginal edge portion, said web portion having a plurality of longitudinally extending alternate wales and grooves all on one side of the tape, and said edge portion having a generally flat surface on said one side of the tape, said flat surface being in contact with said row of fastener elements, said edge portion having a plurality of longitudinally extending alternate wales and grooves all on the opposite side of the tape, said flexing portion having a surface recessed in relation to the flat surface of the edge portion to accommodate folding the tape into said configuration with the edge portion and said part of the web portion facing each other on said opposite side of the tape and without interfering abutment between wales of said portions.

3,952,381
BUCKLE FOR RETARDED AUTOMATIC UNLOCKING OF SAFETY BELTS AND HARNESSES OF PARACHUTING EQUIPMENT AND OF VEHICLES
Guy Barbe, Marseille, France, assignor to Etudes et Fabrications Aeronautiques, Paris, France
Filed Sept. 20, 1974, Ser. No. 507,874
Int. Cl.² B64D *17/38*
U.S. Cl. 24—230 A **16 Claims**

1. A buckle for retarded automatic unlocking the shackle of safety belts and harnesses, said buckle comprising:

a casing for receiving the shackle;

a frame means slideably mounted with respect to said casing and including a frame means return spring connected to said casing for biasing said frame means to an initial position;

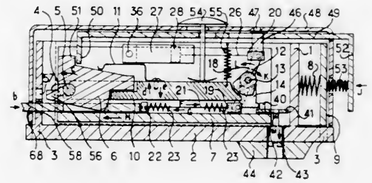
a shaft mounted through said frame means;

a bolt rotatably mounted on said shaft for releasably engaging and locking the shackle;

an automatic unlocking control rotatably mounted on said shaft and engaging said bolt for disengaging said bolt from the shackle for unlocking the shackle from said bolt;

an auxiliary locking means including a movable means supported by said frame means and releasably engaging and locking said automatic unlocking control so as to block rotation of said control to prevent unlocking the shackle from said bolt;

at least one drive spring, connected to said movable means, compressed by the shackle when the shackle is inserted into said casing and biasing said movable means for

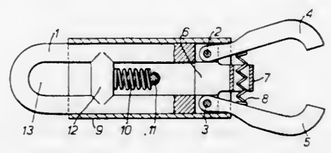


movement out of engagement with said automatic unlocking control for unlocking said automatic unlocking control

said auxiliary locking means further including a movable latch means withdrawably abutting said movable means for securing said movable means against the biasing of said drive spring and a brake means connected to said movable means for retarding rapid acceleration of said movable means under the urging of said drive spring when said movable latch means is withdrawn from abutting said movable means;

whereby said automatic unlocking control is slowly unlocked under the action of a traction force exerted by the shackle on said bolt, which traction force is sufficient to slideably move said frame means against the bias of said frame means return spring, said frame means return spring returning said frame means to its initial position as soon as the traction force of the shackle on said bolt substantially diminishes.

3,952,382
RAPID RELEASE HOOK
Einar Vaage, Vestfossen, Norway, assignor to Einar Vaage, Vestfossen, Norway
Filed July 22, 1974, Ser. No. 490,283
Int. Cl.² A44B *13/02*
U.S. Cl. 24—241 PS **2 Claims**



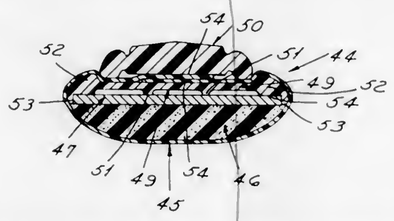
1. A rapid-release hook comprising a U-shaped member having two substantially parallel legs, a pair of cooperating bail members, one of said bail members being pivoted to the outer end of one of the legs of said U-shaped member, the other of said pair of bail members being pivoted to the outer end of the other leg of said U-shaped member, each of said

bail members being pivotable between an open and a closed position, said bail members when in the closed position defining a second U-shaped member of substantially the same thickness and of substantially the same lateral dimension as said first U-shaped member and defining therewith a flat oval link, a sleeve, said sleeve slidingly embracing said flat oval link, one end of said sleeve extending about the opening in said second U-shaped member when said bail members are closed to form said second U-shaped member, said sleeve being slideable longitudinally of said oval link from a first position to a second position to open and close said bail members, a spring between said bail members urging said bail members to the open position, a bridge between the legs of said first U-shaped member, a second spring being secured at one end to, within and laterally confined by said sleeve and bearing at its other end against said bridge to urge said sleeve towards said second position to close said bail members, and in the closed position of said bail members said sleeve comprising the largest lateral dimension of said rapid-release hook.

3,952,383
STRAP FITTING FOR AUTOMOBILE INTERIOR AND OTHER USES

Ronald D. Moore, Grosse Pointe, and Everett L. Bethel, Sterling Heights, both of Mich., assignors to Chivas Products Limited, Warren, Mich.

Filed Jan. 6, 1975, Ser. No. 538,538
Int. Cl.² A47B 95/02; B60J 7/20
U.S. Cl. 24—265 R **26 Claims**



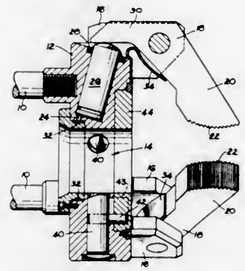
1. A strap construction for mounting on and across at least a portion of a panel or like surface, comprising an assembly of an elongated base strip, a cushion strip of a relatively shorter length than said base strip disposed lengthwise along said base strip on the side of the assembly to face said surface portion as the strap construction is mounted thereto, and a facing strip slightly longer than said cushion strip but shorter than said base strip wrapped around said base and cushion strips, said facing strip having longitudinal edge members adjacent one another which extend along the side of said assembly opposite the side on which the cushion strip is disposed thus to face away from said surface portion, said longitudinal edges and elongated base strip being secured by suitable bonding means to prevent shifting of said facing strip relative to said base strip, and the ends of said assembly being adapted to connect the strap construction to said surface portion.

3,952,384
PIPE JACKS

Philip Edward Goldry, Northampton, and Keith Thomas Skinner, Birmingham, both of England, assignors to Kelly Bros. (Northampton) Limited, Northampton, England

Filed Oct. 7, 1974, Ser. No. 512,501
Claims priority, application United Kingdom, Nov. 21, 1973, 53954/73
Int. Cl.² E21B 19/00
U.S. Cl. 24—249 HA **5 Claims**

1. An annular pass-through gripping head for a pipe jack, having minimal axial length to permit the head to be reciprocated with a maximum stroke, comprising a flat annular block having a central aperture adapted to surround a pipe, a plurality of jaws, each of which is pivoted to the block so as to swing substantially in a plane radial to the axis of said aperture, and each of which terminates in a pipe-gripping face, wherein the improvement comprises an arm integral with each jaw, which

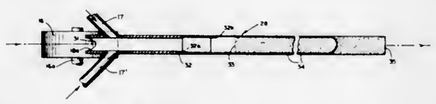


extends along the periphery of the block and is substantially parallel to said axis, a bore extending into the periphery of the block in a generally radial direction in alignment with each such arm, a passage in the block which is connected to supply hydraulic fluid to the inner end of each bore, and a piston in each bore for hydraulic actuation of the corresponding jaw.

3,952,385
STRAND TREATMENT APPARATUS

Robert K. Stanley, Media, Pa., assignor to Textured Yarn Co., Inc., Kennett Square, Pa.

Continuation-in-part of Ser. Nos. 343,644, March 22, 1973, Pat. No. 3,840,950, and Ser. No. 124,213, March 15, 1971, Pat. No. 3,753,275, which is a continuation-in-part of Ser. No. 822,429, May 7, 1969, Pat. No. 3,570,083, which is a continuation-in-part of Ser. No. 678,428, Oct. 26, 1967, Pat. No. 3,462,814, and Ser. No. 302,758, July 31, 1963, Pat. No. 3,376,622. This application July 5, 1973, Ser. No. 376,890
Int. Cl.² D02G 1/20, 1/16, 1/12
U.S. Cl. 28—1.3 **3 Claims**



1. Apparatus for crimping textile strands, comprising nip roll feed means for engaging a textile strand and feeding it into stuffing chamber means located downstream of the roll means for laterally confining the textile strand temporarily, a plurality of jet means flanked at least in part by the roll means at the entrance end of the chamber for applying fluid obliquely in the downstream direction to the strand, and a screen surrounding the strand laterally at the exit end of the chamber.

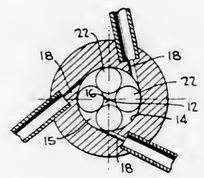
3,952,386
APPARATUS FOR INTERLACING STRANDS OF A TEXTILE YARN

Jean Joly, Craponne, and Silvio Sangalli, Caluire, both of France, assignors to Rhone-Poulenc-Textile, Paris, France

Division of Ser. No. 363,561, May 24, 1973, Pat. No. 3,889,327. This application Dec. 5, 1974, Ser. No. 529,906
Claims priority, application France, May 26, 1972, 72.19404
Int. Cl.² D02G 1/16
U.S. Cl. 28—1.4 **6 Claims**

1. Apparatus for interlacing strands of a textile yarn comprising:

a housing defining a cylindrical interlacing chamber for passage of the textile yarn axially therethrough;
means for introducing a fluid current into said interlacing chamber for treating the yarn, including at least a nozzle disposed to direct a fluid current non-radially into said interlacing chamber;

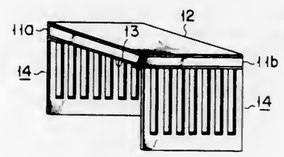


disturbing means including at least one element movably disposed in said interlacing chamber and movably by the fluid current, for disturbing the fluid current introduced into said interlacing chamber.

3,952,387
METHOD OF MANUFACTURING AN ULTRASONIC PROBE

Kazuhiro Iinuma, Yokohama, and Einoshin Itamura, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed July 1, 1974, Ser. No. 484,929
Claims priority, application Japan, July 3, 1973, 48-75152
Int. Cl.² H01L 41/22
U.S. Cl. 29—25.35 **6 Claims**

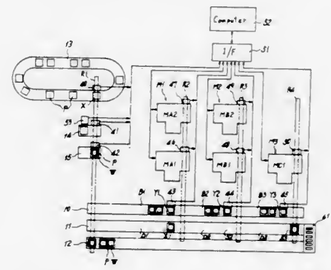


1. A method of manufacturing an ultrasonic probe which comprises the steps of forming mutually insulated first and second metal electrode layers on both surfaces of a plate-shaped piezoelectric vibrator; brazing to each of the first and second metal electrode layers a common connection section of a slitted metal plate to which a plurality of leads are jointly connected at least at one end; bonding an ultrasonic absorber to substantially the whole surface of one of said first and second metal electrode layers; cutting through the first and second metal electrode layers, the piezoelectric and the brazed common connection section of the slitted metal plate all assembled together at prescribed intervals, such that each cut element of the piezoelectric vibrator contains one pair of leads, thereby producing an array of a plurality of independently operative piezoelectric vibrator elements arranged on the ultrasonic absorber in a substantially flush relationship and provided with an ultrasonic wave-emitting surface.

3,952,388
MACHINE TOOL APPARATUS

Kazuhiko Hasegawa, Toyota; Yoshio Shima, Obu, and Shigeo Noda, Nagoya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha, both of, Japan

Filed July 22, 1974, Ser. No. 490,364
Claims priority, application Japan, July 24, 1973, 48-83397
Int. Cl.² B23Q 7/00
U.S. Cl. 29—33 P **10 Claims**



1. Machine tool apparatus for handling routine pallets and priority pallets with loading and unloading stations comprising:
a plurality of machine tools for performing machining operations on a workpiece mounted on a pallet;
main conveyer means for carrying a pallet in one direction;
buffer conveyer means for storing a pallet to be loaded onto a machine tool;
return conveyer means for returning a pallet to an unloading station;
pallet transfer means for moving a pallet among the conveyer means, the stations and the machine tools;
central control means for controlling the machine tools and the conveyer means comprising:
means to discriminate a priority pallet from a routine pallet mounted on a machine tool or a loading station;
means to reserve a machine tool onto which a priority pallet is to be loaded to prohibit use of said machine tool with respect to a routine pallet;
means to control the pallet transfer means to carry a priority pallet from the main conveyer means to one of the machine tools;
means to control the pallet transfer means to move a routine pallet from the main conveyer means to the buffer conveyer means;
means to control the pallet transfer means to move a routine pallet from the buffer conveyer means to one of the machine tools when the machine tool on which the routine pallet is to be loaded is not reserved by a priority pallet and is not occupied by another pallet.

3,952,389
BURNISHING TOOL

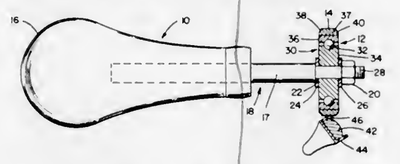
Carl L. Corder, 1351 Acton St., Berkeley, Calif. 94710

Filed Feb. 20, 1975, Ser. No. 551,371
Int. Cl.² B21C 37/30; B21D 9/08
U.S. Cl. 29—90 R **7 Claims**

1. A hand-held burnishing tool for working soft metals comprising:
an elongated cylindrical handle means capable of being manually held;
a shaft means having one end fixedly retained in said handle means and the other end projecting therefrom, said shaft means having its longitudinal axis generally aligned with the longitudinal axis of said elongated cylindrical handle means;

bearing means mounted on the distal end of the projecting end of said shaft means; and

a cylindrical shaped burnishing wheel rotatably mounted on said bearing means so its axis of rotation is coaxial with the longitudinal axis of said shaft means, said burnishing wheel having a hardened first peripheral central surface



or revolution which is a flat surface of revolution and at least one hardened second peripheral surface of revolution adjacent to one edge thereof which is angularly disposed with reference to said first peripheral surface of revolution whereby a craftsman may employ either of said two surfaces of revolution when utilizing the tool to work soft metal surfaces.

3,952,390

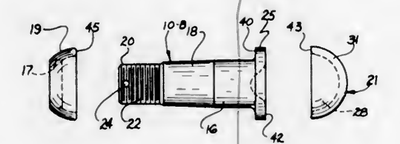
METHOD OF PRODUCING BALL JOINTS

James J. Amos, 568 Hyatts Road, Delaware, Ohio 43015

Division of Ser. No. 337,154, March 1, 1973, Pat. No. 3,831,244. This application Mar. 27, 1974, Ser. No. 455,055

Int. Cl.² B21D *53/10*

U.S. Cl. 29—149.5 B **2 Claims**



1. The method of making ball studs for pivot joints comprising, in combination, forming a shank portion by heading a work-piece to provide an enlarged head portion provided with an outwardly convex generally spherical surface and an inwardly facing junction forming surface; forming a second head portion from a second work-piece provided with a generally spherical outer surface, a second inwardly facing junction forming surface, and a central bore; assembling said first and second work-pieces by extending said shank through said bore with said junction forming surfaces in confronting relationship; welding said first and second head portions together at said confronting junction forming surfaces to provide a fused junction; and machining said junction and bearing surfaces to provide a finished bearing head of substantially spherical contour.

3,952,391

TURBINE BLADE WITH CONFIGURED STALK

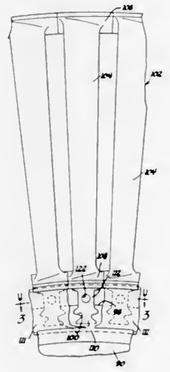
Ted F. Gee, Greenwood, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed July 22, 1974, Ser. No. 489,606

Int. Cl.² B23P *15/00, 15/02*

U.S. Cl. 29—156.8 R **1 Claim**

1. A method for preventing average tangential stress buildup in a gas turbine engine rotor wheel having a ring of turbine blades supported thereon each having a dovetail configured root fit in a dovetail blade slot in the peripheral rim of the wheel and wherein each blade includes a stalk portion with end walls and parallel side walls comprising the steps of selecting a blade material having a high tensile strength and with material strength development under operating conditions not to exceed 1.5 standard deviations from a statistical mean strength, selecting a rotor wheel material having a high tensile strength and with material strength reduction not to exceed 3.3 standard deviations from a statistical mean strength, machining all peripheral walls of said stalk to establish a controlled rectangular area therethrough, drilling and reaming a circular hole through said stalk area with an inner surface parallel to and bounded by the side walls, chemically machining said hole surface to eliminate stress risers therein thereby



to define a critical separation section, and locating the stalk at a point radially outwardly of the rim so that the pre-treated hole and bounding parallel side walls of said stalk are unsupported therein to assure that at least 60 percent of the blades will separate at the hole prior to the average tangential stress of said wheel reaching 90 percent of the ultimate tensile strength of said wheel with the blade separation serving to reduce the speed of the wheel.

3,952,392

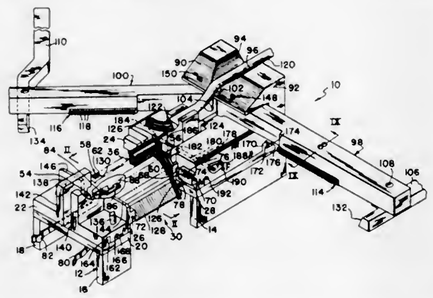
FIELD TERMINATION TOOL HAVING CONNECTOR REFERENCE PLANE APPARATUS AND HINGED INSERTION ARMS

John Peter Nijman, West Hill, and Terence Neil Patterson, Toronto, both of Canada, assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Jan. 11, 1974, Ser. No. 432,484

Int. Cl.² H01R *43/04*

U.S. Cl. 29—203 MW **20 Claims**



1. Apparatus for terminating a plurality of free-ended insulated electrical conductors in respective contact portions of contacts mounted in an electrical connector, comprising:

connector support means for supporting an electrical connector;

a pair of cutting members on opposite sides of said connector support means, each of said cutting members having a cutting edge;

a pair of arms mounted for movement toward respective sides of the supported connector, each of said arms carrying a plurality of insertion blades for engaging and pressing individual conductors into respective contact portions, each of said insertion blades including a cutting edge which is cooperable with a cutting edge of a respective cutting member to sever a corresponding conductor immediately prior to insertion into the respective contact portions; and

means urging said arms perpendicularly with respect to their directions of movement to urge said cutting edges of said insertion blades toward said cutting edges of said cutting members.

3,952,393

MACHINE AND METHOD FOR ASSEMBLING PISTONS INTO ENGINES

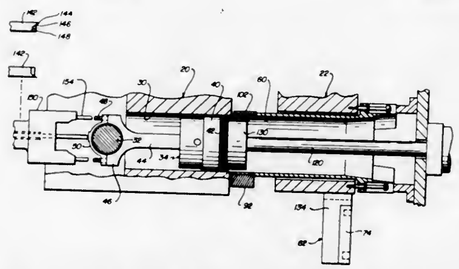
Jacob van Ravenzwaay, Richmond Hill; Larry Ord, Orton, and Norman Nicol, Richmond Hill, all of Canada, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 30, 1974, Ser. No. 522,237

Claims priority, application Canada, Jan. 17, 1974, 190424

Int. Cl.² B23P *19/04*

U.S. Cl. 29—208 R **10 Claims**



1. A multiple station automatic assembly apparatus for inserting piston sub-assemblies into the bores of a piston engine block in which each piston sub-assembly includes a piston member with piston rings and a connecting rod with the remote end of said rod having one portion of a split bearing affixed thereat and in which the engine block has its crankshaft assembled thereon, the apparatus comprising a platform for holding an engine block on end with the engine crankshaft extending along one side of the engine block with the engine cylinder bores positioned in an alignment, a magazine block resting on said platform a predetermined distance from said engine block, a plurality of openings in said magazine block, a tubular member in each opening adapted to hold a piston sub-assembly axially alignable with a cylinder bore, means at certain of said stations for advancing selected pistons from respective tubular members into bores of said cylinder block, and means at said certain stations movable into the cylinder bores for receiving the bearing portion of a piston sub-assembly being advanced to carry the bearing portion of the piston sub-assembly onto the crankshaft.

3,952,394

VALVE CORE EXTRACTION TOOL

Ezekiel Seminario, 15500 Tustin Village Way, Tustin, Calif. 92680

Filed Oct. 4, 1974, Ser. No. 512,171

Int. Cl.² B25P *19/04*

U.S. Cl. 29—263 **12 Claims**

1. An extraction tool for extracting valve cores and sleeves from valves, comprising in combination:

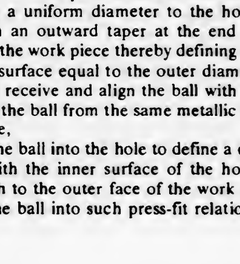
a base;

expansible means in the form of an expansible member carried by said base for insertion into a valve sleeve;

expanding means carried by said base for expanding said expandable member;

connecting means for completing a connection to a valve core;

a threaded rod having threaded connection to said base at a point removed from said expansible means, said con-



necting means being fixed to an end of said threaded rod such that said connecting means is moved to change its distance from said base as an incident to rotation of the rod relative to the base on the axis of the rod; and

spacer means in the form of a cylinder disposed over said rod with one end abutting said base for engaging a valve body and maintaining said base at a given distance from said valve body whereby rotation of the rod will result in movement of valve core to which said connecting means is connected relative to said valve body.

3,952,395

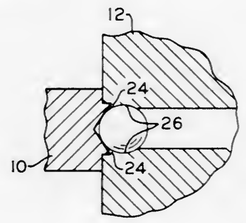
METHOD OF CLOSING THE END OF A DRILLED PASSAGE

Richard L. Crossman, Tallmadge, and Harold E. Correll, Uniontown, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Dec. 30, 1974, Ser. No. 537,070

Int. Cl.² B22D *19/10;* **B23P** *7/00*

U.S. Cl. 29—401 C **6 Claims**



1. A method for plugging holes in a work piece utilizing a spherical ball which includes the steps of:

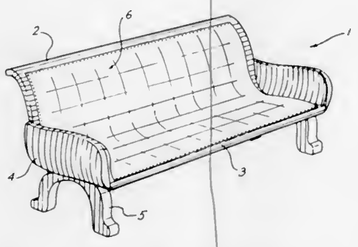
1. preparing the work piece from a ductile metallic material,
2. preparing a uniform diameter to the hole in the work piece with an outward taper at the end thereof to the surface of the work piece thereby defining a larger diameter at the surface equal to the outer diameter of the ball to initially receive and align the ball with the hole,
3. preparing the ball from the same metallic material as the work piece,
4. pressing the ball into the hole to define a continuous line contact with the inner surface of the hole so that it is about flush to the outer face of the work piece, and
5. holding the ball into such press-fit relationship with the hole.

3,952,396

METHOD FOR FABRICATING A SOFA

Harvey Albert Werner, 6531 Kessler Ave., Woodland Hills, Calif. 91364

Filed May 23, 1975, Ser. No. 580,361
Int. Cl.² B23P *17/00*
U.S. Cl. 29—416 **6 Claims**



1. A method for fabricating a sofa comprising:
providing a pair of spaced apart leg members;
constructing an integral seat and back by:
providing a form having spaced apart members, each of said end members having an edge extending to form a generally L-shaped contour,
placing boards having a quadrilateral cross section on said edges to span the space between said end members,
joining abuting sides of said boards to form a surface having an upwardly extending back portion and a generally horizontally extending seat portion;
joining the underside of said seat portion to the top of said pair of leg members, whereby said integral seat and back are supported by said pair of leg members;
constructing a pair of arms for said sofa by:
providing a generally rectangular block of wood,
forming mating curved surfaces by cutting through said block to form a convex piece and a mating concave piece,
joining the planar sides opposite said curved surface of each piece to each other so that said curved surfaces on the pieces face outwardly in opposite directions, said concave piece being offset vertically a short distance from said convex piece to form joint surfaces at right angles to each other,
cutting off the upwardly extending portion of said vertically offset concave piece to form the top of said arm; and
fastening respective arms of said pair of arms to respective ends of said integral seat and back by joining said right angle joint surfaces of respective arms to respective ends of said seat portion and by joining respective ends of said back portion to respective arms.

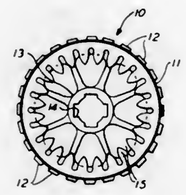
3,952,397

METHOD FOR FORMING A PRINT WHEEL WITH METAL RIM

Joseph B. Lohr, Wayne, N.J., assignor to Litton Business Systems, Inc., Pinebrook, N.J.

Filed June 17, 1974, Ser. No. 479,852
Int. Cl.² B23P *17/00*
U.S. Cl. 29—421 R **6 Claims**

1. A method of forming a print wheel having a rim bearing characters comprising the steps of:
positioning a blank member in a die assembly containing the characters to be formed on the print wheel;
forcing fluid material against said blank member to urge said member against the characters in said assembly to thereby deform said member to assume the configuration of said characters;
allowing said fluid material to harden;



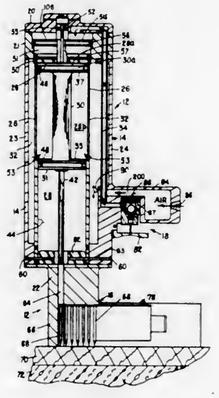
and removing the finished print wheel from said die assembly.

3,952,398

PROCESS FOR PNEUMATICALLY IMPELLING A HAMMER TO DRIVE A NAIL INTO A SUBSTRATE

Harry M. Haytayan, Sunnyside Lane, Lincoln, Mass. 01773

Division of Ser. No. 312,665, Dec. 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 68,423, Aug. 31, 1970, Pat. No. 3,711,008. This application Aug. 12, 1974, Ser. No. 496,693
Int. Cl.² B23P *11/00*
U.S. Cl. 29—432 **2 Claims**



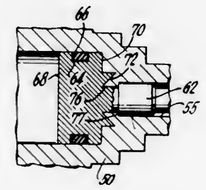
1. A process for driving a pneumatic hammer to drive a sharp, pre-selected and pre-positioned nail into a preselected substrate comprising metal or concrete, said process comprising the steps of:
1. driving said hammer by means of a pneumatically-operated piston through a drive stroke without transferring energy from said drive stroke to a spring;
2. providing a continuous supply of motivating air to said piston and valving said air supply so as to increase the acceleration of the hammer throughout the major portion of said drive stroke; and
3. driving the nail into the substrate with said hammer on said drive stroke after said hammer has travelled along said drive stroke for a distance at least as long as the length of said nail.

3,952,399

UNITING TWO ELEMENTS

Robert H. Sawyer, Bernardsville, N.J., assignor to Cartridge Actuated Devices, Inc., Fairfield, N.J.

Division of Ser. No. 381,321, July 20, 1973, Pat. No. 3,896,621, which is a continuation-in-part of Ser. No. 230,837, March 1, 1972, Pat. No. 3,748,413. This application June 28, 1974, Ser. No. 483,995
Int. Cl.² B23P *11/00*
U.S. Cl. 29—432 **3 Claims**



1. A fastening method which comprises forming registering holes in two workpieces to be united, the hole in a first of said workpieces being of greater diameter than that in the second of said workpieces, forming a fastener with a head and a shank projecting from said head, the shank including a neck defined on that side thereof adjacent the head by a knife edged forming configuration and on the other side thereof by a square shoulder facing the head the junction of said shoulder and the shank being defined by a sharp edge, the shank on that side of the neck remote from the head having a diameter to fit said hole in said second workpiece and on that side of the neck adjacent to the head having a diameter to fit the hole of the first workpiece, inserting said shank through the hole in the first workpiece and into the hole of the second workpiece to the extent that the forming configuration abuts the second workpiece and driving said fastener to deform the material of the second workpiece adjacent the hole therein into the neck of the shank and to cause the head to abut said first workpiece, the head and material deformed into said neck holding said workpieces together and said sharp edge preventing the separation of the two workpieces other than by shearing the material deformed into said neck at said sharp edge.

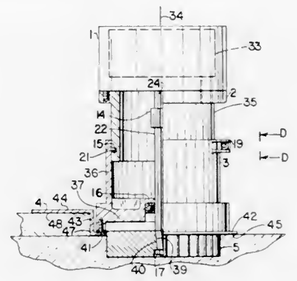
3,952,400

METHODS FOR CUTTING ALIGNED NOTCHES IN PARALLEL WOODEN FRAME MEMBERS

Hans J. Wowczyk, 2 N. Atlas Ave., Thousand Oaks, Calif. 91360

Division of Ser. No. 492,404, July 29, 1974. This application Mar. 13, 1975, Ser. No. 558,062
Int. Cl.² B21D *39/03*; B23P *11/00*
U.S. Cl. 29—432 **2 Claims**

1. The method that comprises:
positioning a series of boards in parallel relation with outer similar faces of said boards lying in a common plane;
temporarily connecting an elongated guide member to said boards in a position of extension across said outer faces thereof in close proximity to said faces;
moving a portable power driven cutting tool into engagement with said guide member and directing said tool along a path parallel to said guide member and across said faces of the boards by engagement with the guide member;
cutting aligned similar notches of predetermined cross section in said series of boards by said tool as the latter is advanced along said guide member;
removing said guide member from said position of extension across said outer faces of said boards; and



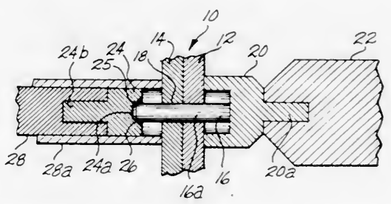
connecting said guide member to said boards in a position of extension thereacross and reception within said similar notches of the different boards.

3,952,401

PROCESS FOR INSTALLING FATIGUE-RATED RIVETS

David Lee Wagner, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed June 30, 1975, Ser. No. 591,971
Int. Cl.² B21D *39/00*; B23P *11/02*
U.S. Cl. 29—522 **4 Claims**



1. A method of forming an interference fit between a rivet shank and the perimeter of an aperture through which the rivet shank is inserted comprising:
preventing the rivet shank from longitudinal movement in a first direction by providing an obstruction adjacent to a first end thereof;
upsetting in a single impact the opposite end of the rivet shank with an impacting means to thereby radially expand the rivet shank against the perimeter of the aperture to compression stress same;
preventing the rivet shank from longitudinal movement in a second direction by providing an obstruction adjacent to the upset opposite end; and
upsetting in a single impact the first end of the rivet shank with an impacting means to thereby radially expand the rivet shank against the perimeter of the aperture to compression stress same.

3,952,402

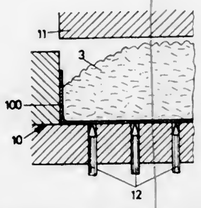
COMPOSITE STRUCTURAL PANEL AND PROCESS OF MAKING

Max Mengeringhausen, Wurzburg, Germany, assignor to Mero AG, Wurzburg, Germany

Continuation-in-part of Ser. No. 111,820, Feb. 2, 1971, abandoned. This application Feb. 8, 1974, Ser. No. 440,762
Int. Cl.² B22D *11/126*
U.S. Cl. 29—527.1 **3 Claims**

1. A process for the production of a self-supporting composite structural panel comprising,

a. preforming a thin-walled large area, open top metallic trough having a depth substantially the thickness of the panel to be produced and having openings in the bottom of the trough;
b. introducing a plastic-like, hardenable, pourable material into the trough in an amount slightly less than the volume of the trough cavity;



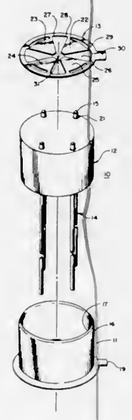
c. extending impressing tools into the material through the openings in the bottom of the trough and then retracting the impressing tools therefrom while the pourable material is being hardened, to thereby form cavities in the pourable material to obtain the desired volume; and
d. allowing the pourable material to harden within the trough in such a manner that it forms a composite with the trough, whereby the trough becomes an externally disposed reinforcement for the panel.

3,952,403

SHELL EYELET AXIAL LEAD HEADER FOR PLANAR CONTACT SEMICONDUCTIVE DEVICE

Ben H. Copeland, Tempe, and Richard L. Schaffert, Mesa, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Continuation of Ser. No. 408,203, Oct. 19, 1973, abandoned. This application Oct. 24, 1974, Ser. No. 517,726
Int. Cl.² B01J *17/00*
U.S. Cl. 29—588 **7 Claims**



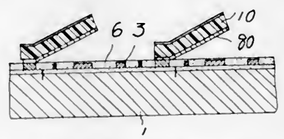
1. A method for electrically contacting a multiple bonding pad led frame, said multiple bonding pads being attached to an exterior supporting ring, to terminal leads of an axial led header, comprising the steps of:
disposing said multiple bonding pad lead frame within a flat supporting member;
placing a supporting base onto said bonding pad lead frame, said supporting base having a shell eyelet, a glass preform disposed interiorly of said shell eyelet, and said terminal leads disposed within and extending therethrough to the bonding surface of said glass preform;
bonding said multiple bonding pads to said terminal leads, said glass preform being softened during said bonding step for sealing said terminal leads interiorly of and to said shell eyelet with said glass preform being simultaneously bonded at the surface thereof to said multiple bonding pads; and
removing said circular supporting ring for electrically isolating said bonding pads from each other.

3,952,404

BEAM LEAD FORMATION METHOD

Mituo Matunami, Izumisano, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 29, 1974, Ser. No. 456,269
Claims priority, application Japan, July 30, 1973, 48-85651; July 31, 1973, 48-86500; Sept. 25, 1973, 48-108829
Int. Cl.² B01J *17/00*
U.S. Cl. 29—589 **10 Claims**



1. A method of making semiconductor devices having a predetermined number of beam leads for electrical connections to external terminals, said method comprising the steps of:
preparing a semiconductor wafer including one or more circuit elements thereon;
forming a predetermined number of electrode pads to which the corresponding beam leads are connected;
depositing over the surface of the semiconductor wafer except the electrode pads an undercoating metal film which does not adhere strongly to the wafer surface;
forming in a desired pattern a metal film which adheres closely to the electrode pads and the undercoating metal film and forms the aforementioned beam leads;
applying physical force to the semiconductor wafer in order to cause the undercoating metal film to be spaced away from the surface; and
dividing the semiconductor wafer into a plurality of semiconductor devices.

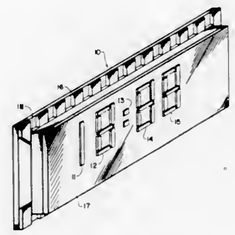
3,952,405

METHOD FOR FABRICATING A LIQUID CRYSTAL DISPLAY

Clovis R. Vest, Phoenix, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Nov. 4, 1974, Ser. No. 520,598
Int. Cl.² G02F *1/13*
U.S. Cl. 29—592 **10 Claims**

1. A method for fabricating a liquid crystal display device comprising the steps of providing a pair of insulated electrode-carrying plates, depositing on the surface of one of the plates, overlying the electrodes, a layer of photopolymeric material approximately 0.0005 inches in thickness, masking and light exposing the photopolymeric layer and thereafter developing away with a suitable solvent a predetermined area of material to provide a cavity in the photopolymeric layer through which the electrodes on the plate are accessible, depositing on the surface of the second one of the plates whereat the second set of electrodes are located a layer of photopolymeric material of approximately 0.0005 inches in thickness, masking and light exposing the second photopolymeric material and thereafter developing away with a suitable solvent a predetermined area of material which is slightly smaller than the area provided by the first area of material to provide a cavity in the photopolymeric layer through which the electrodes on the second plate are accessible, bonding the first and second



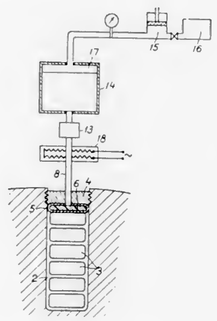
electrode-carrying plates together to seal the edges of the cavity, and filling the cavity with a liquid crystal composition.

3,952,406

METHOD OF SECURING THE ROTOR WINDING OF A TURBO-GENERATOR ROTOR

Kristian Dahl Madsen, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Division of Ser. No. 448,367, March 5, 1975. This application July 14, 1975, Ser. No. 595,620
Int. Cl.² H02K *15/14*
U.S. Cl. 29—598 **2 Claims**



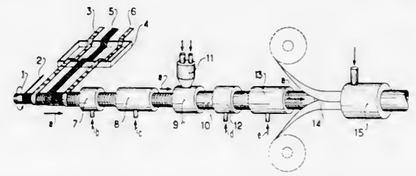
1. Method of manufacturing a turbo-generator rotor provided with a plurality of rotor slots, comprising a rotor winding in the slots, means securing the winding in the slots, a plurality of axially and consecutively arranged slot wedges (**4**) of a material of high electrical conductivity, a plurality of slot wedges (**4**) lying in the same slot, which comprises inserting a pressure tube (**5**) of a plastically deformable metal, sealed at the ends and furnished with a radially oriented filling tube (**8**), in a winding slot of a turbo-generator rotor, arranging a plurality of metallic slot wedges (**4**) at the top of each slot outside said tube, said filling tube projecting radially between two of said slot wedges, connecting said filling tube (**8**) to a pressure container (**14**), injecting a thermosetting resin from the pressure container into the pressure tube with a pressure in the range of 200–800 bar and in sufficient quantity to increase the pressure tube volume by at least 50 percent, mainly by means of plastic deformation of the tube material, elastic deformation being restricted to the initial stage of expansion and constituting at the most 15 percent of the total deformation, and allowing the injected thermosetting resin to solidify under pressure.

3,952,407

METHOD FOR THE MANUFACTURE OF WAVEGUIDE

Marcel Aupoix, Paris, and Jean-Pierre Trezeguet, Venissieux, both of France, assignors to Les Cables de Lyon, Lyon Cedex, France

Filed Apr. 18, 1975, Ser. No. 569,428
Claims priority, application France, Apr. 25, 1974, 74.14461
Int. Cl.² H01P *11/00*; H01Q *13/00*
U.S. Cl. 29—600 **4 Claims**



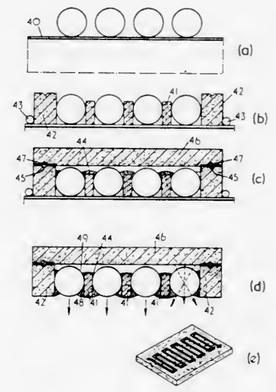
1. A method for manufacturing a wave guide comprising the steps of:
forming a hollow conductor;
arranging, round the hollow conductor, layers of porous dielectric or conductive materials previously impregnated with a mixture of phenolic resin with an isocyanate;
spraying on said layers to cause the hardening of the isocure resin an amine carried by a gas current; and
removing any excess amine.

3,952,408

METHOD OF ASSEMBLING A RESISTANCE FURNACE

Albert George Docx, 70 Ellesmere Road, Altrincham, Cheshire, England

Continuation-in-part of Ser. No. 286,336, Sept. 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 123,807, March 12, 1971, abandoned. This application July 30, 1974, Ser. No. 493,642
Claims priority, application United Kingdom, Mar. 26, 1970, 14789/70; May 2, 1970, 21219/70
Int. Cl.² H05B *3/18*
U.S. Cl. 29—611 **2 Claims**



1. A method of producing a muffle and muffle section in which an electric heating element is temporarily supported in a desired position and ceramic fibers are applied to the supported electrical heating element to form a support for the electric heating element, comprising the steps of:

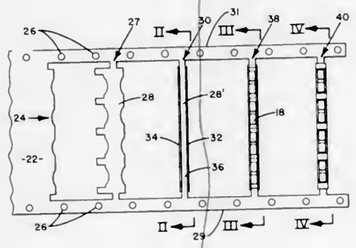
a. winding a prepared spiral heating element around a former with a ceramic fiber spacer between each turn of the coil so formed,
b. placing ceramic fiber end pads at the ends of the former so as to grip the coil and spacers lightly together,
c. applying cement formed of chopped ceramic fibers and a liquid rigidizer to the exposed top of the spacer allowing it to permeate slightly into the coil to lock the coil and spacer together,
d. passing a tube of ceramic fiber over the coil and spacer assembly and cementing the tube to the end pads,
e. drying the assembly so formed,
f. removing the former, and
g. applying cement to the revealed surface of the spacer allowing the cement to permeate slightly into the coil to further lock the coil and spacer together.

3,952,409

METHOD OF MANUFACTURE OF ELECTRIC HEATING ASSEMBLY

William L. Allison, Strawberry Plains, and Donald E. Alexander, Knoxville, both of Tenn., assignors to Carrier Corporation, Syracuse, N.Y.

Filed June 30, 1975, Ser. No. 591,976
Int. Cl.² H05B *3/00*
U.S. Cl. 29—611 **3 Claims**



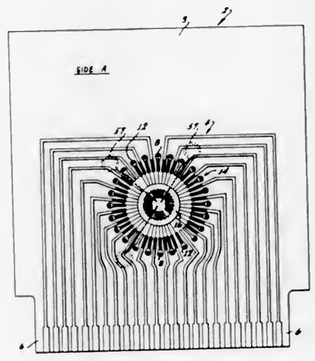
1. The method of forming a support structure for an electric heating element assembly by advancing a piece of sheet metal through a plurality of work stations comprising the steps of:
removing portions of excess material from said piece of sheet metal to provide first strips of sheet metal extending transversely between second and third strips of metal extending in transversely between second and third strips of metal extending in the direction of advance of said piece of sheet metal and lying substantially in a horizontal plane;
bending the transversely extending first strips of metal to form channel-like sections for receiving insulators to support the electric heating elements of the assembly;
loading the insulators onto the channel-like sections; and
bending the second and third strips of metal substantially at right angles to said first strips to provide integral side supports for the support structure of said assembly.

3,952,410

PROBE CARD INCLUDING A MULTIPLICITY OF PROBE CONTACTS AND METHOD OF MAKING

Oliver R. Garretson, and Richard C. Harmon, both of Mountain View, Calif., assignors to Xynetics, Inc., Mountain View, Calif.

Continuation of Ser. No. 455,599, March 28, 1974, Pat. No. 3,905,098, which is a division of Ser. No. 386,999, Aug. 9, 1973, Pat. No. 3,835,381, which is a continuation of Ser. No. 799,472, Feb. 14, 1969, abandoned. This application July 16, 1975, Ser. No. 596,269
The portion of the term of this patent subsequent to Sept. 10, 1991, has been disclaimed.
Int. Cl.² H01R *43/00*
U.S. Cl. 29—628 **6 Claims**



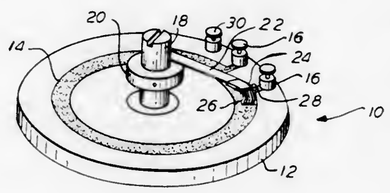
1. A method of producing an electrically conductive probe assembly for testing a substrate having a plurality of terminals,
providing a support member having a support surface with a tapered configuration and having a central aperture,
providing positioning means with a plurality of apertures corresponding to the positions at which the tips of a plurality of electrically conductive probes are to be disposed in the central aperture of the support member,
providing a printed circuit board with an aperture positioned at an intermediate position on the board and with a plurality of printed circuit leads disposed in spaced relationship to one another on the board and with the printed circuit leads extending at one end to a position adjacent to the aperture and at the other end to a position adjacent to at least one edge of the board,
disposing a plurality of electrically conductive probes on the tapered support surface of the support member in spaced relationship to one another and with the tips of the probes extending through the apertures in the positioning means and with the opposite ends of the probes adjacent individual ones of the printed circuit leads,
electrically connecting the probes to the associated ones of the printed circuit leads on the printed circuit board,
providing a base having a support surface with a central aperture,
adhering the support surface on the base to the conductive probes such that the electrically conductive probes are supported on the support surface on the support member, and
removing the support member from the probes after adhering the tapered support surface on the base to the probes.

3,952,411

MULTI-WIRE WIPER CONTACT FOR POTENTIOMETERS AND OTHER ELECTROMECHANICAL DEVICES AND METHOD FOR MAKING SAME

Arnold S. Louis, Hastings-on-Hudson, N.Y., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Sept. 30, 1974, Ser. No. 510,794
Int. Cl.² H01R *9/00*
U.S. Cl. 29—630 E **8 Claims**



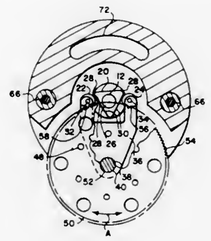
1. A method of forming multi-wire contacts comprising the steps of:
wrapping a plurality of wires including conductive wires and at least one nonconductive wire upon a mandrel to form helical sets of said wires into a single layered coil thereon;
covering longitudinal strips of said coil with circumferentially spaced conductive metal strips which cover said plurality of conductive wires forming said helical sets of wire and do not cover said at least one nonconductive wire;
cutting at least one helical set of said conductive wires including said at least one nonconductive wire;
unwrapping said plurality of wires freed by said cutting of at least one helical set of said conductive wires including said at least one nonconductive wire in a continuous flat strand including only said conductive wires covered by said conductive metal strips; and
forming said continuous flat strand into individual multi-wire contacts.

3,952,412

OSCILLATORY SAW

William A. Rhodes, 4421 N. 13th Place, Phoenix, Ariz. 85014

Filed Mar. 28, 1975, Ser. No. 563,146
Int. Cl.² B23D *45/00;* **B27B** *5/29;* **B26B** *19/02;* **A61B** *17/14*
U.S. Cl. 30—166 R **14 Claims**



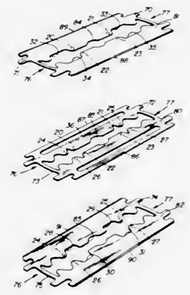
1. In an oscillatory saw; a frame; a motor fixed to said frame; said motor having a rotary output shaft; a multi-lobe cam having an uneven number of lobes in excess of two; said cam fixed on said shaft; a blade pivot bearing fixed on said frame; said blade pivot bearing being generally laterally spaced and axially parallel to said rotary output shaft of said motor; a yoke pivoted on said pivot bearing; a blade carried by said yoke; said blade having an arcuate row of cutting teeth concentric with said pivot bearing; said yoke having a pair of opposed cam follower bearings disposed to straddle said multi-lobe cam such that one of said cam follower bearings may be engaged by one of said lobes while the opposed cam follower bearing is disposed at an area of said cam which is intermediate two of said lobes of said cam; said yoke thus disposed to be oscillated about said pivot bearing; said blade coupled to said yoke for unison oscillatory operation therewith about the axis of said blade pivot bearing.

3,952,413

SHAVING UNIT FOR SAFETY RAZOR

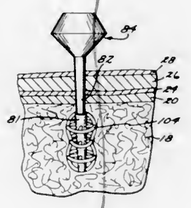
Frank A. Ferraro, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 13, 1974, Ser. No. 532,430
Int. Cl.² B26B *21/54*
U.S. Cl. 30—346.58 **9 Claims**



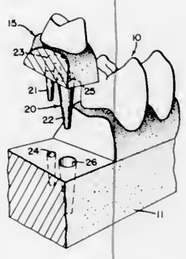
1. A shaving unit for a double edge safety razor, said shaving unit comprising:
a. a first flexible member including a pair of transversely extending opposite sides, and a pair of spaced end tabs, each one of the first member opposite sides having a cutting edge;
b. a second flexible member including a pair of tansversely extending opposite sides, and a pair of spaced end tabs, each one of the second member opposite sides having a cutting edge, said second member being located above said first member with the cutting edges of said second member being positioned upwardly and inwardly of the cutting edges of said first member, and with the end tabs of said second member being positioned above the end tabs of said first member;
c. flexible means between said first member and said second member for spacing said second member from said first member;
d. a transversely elongated aperture between the tab ends of said shaving unit extending through said first member, said spacing means and said second member between the cutting edges of said first member and said second member for locating said shaving unit in said safety razor;
e. first weld means between said aperture and the cutting edges to each side of said aperture for permanently connecting only one of said first and second members to said spacing means;
f. second weld means between said first weld means and each one of the tab ends of said shaving unit and between said aperture and the cutting edges to each side of said aperture for permanently connecting only the other of said first and second members to said spacing means, said weld means being the only means connecting the blades to the spacing means; and
g. a transversely elongated perforation in said spacing means between said first and second weld means and the cutting edges to each side of said aperture.

3,952,414
BONE IMPLANT
Aaron H. Shovers, 2704 Del Amo Blvd., Lakewood, Calif. 90712, and Norman M. Pokras, 4448 Village Road, Long Beach, Calif. 90808
Filed Oct. 29, 1974, Ser. No. 518,476
Int. Cl.² A61C 13/00
U.S. Cl. 32—10 A 20 Claims



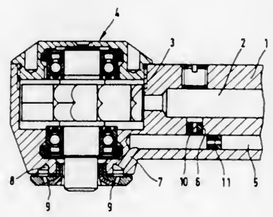
13. A dental endosseous implant that comprises a body of tissue-compatible material having a non-wedge shape with a continuous and smoothly rounded exterior surface characterized by gibbous and nodular protuberances with generally spherical ends and at least one waist section intermediate its length for embedding totally within a bone cavity and at least 2 to about 5 millimeters beneath the surrounding layer of boney tissue, sufficient to permit growth of said boney tissue thereover.

3,952,415
J-SHAPED PIN FOR MAKING DENTAL PROTHESIS
Robert A. Samuel, 3603 Ethan Court, San Jose, Calif. 95123, and Michael W. Layne, 112 Capistrano Drive, Los Gatos, Calif. 95030
Filed Feb. 18, 1975, Ser. No. 550,370
Int. Cl.² A61C 13/00
U.S. Cl. 32—11 23 Claims



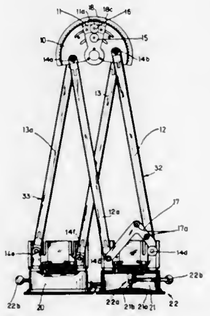
1. An assembly for prothetic dentistry comprising:
a. a base, said base being formed with a plurality of openings;
b. a model secured to said base;
c. a die in said model removably attached to said base; and
d. a pin fixed in said die, said pin comprising:
1. a locating leg projecting from said die and received by one of said openings in said base, said locating leg having a wall with a configuration in which the cross-sectional area of the wall gradually and uniformly decreases;
2. an indexing leg projecting from said die and received by another of said openings in said base, said indexing leg having a wall with a configuration in which the cross-sectional area of indexing leg wall gradually and uniformly decreases; and
3. a retention portion interconnecting said locating leg and said indexing leg and embodied in said die.

3,952,416
DENTAL HANDPIECE
Bernhard Lingenhole, Biberbach, Germany, assignor to Kaltenbach & Voigt, Biberach an der Riss, Germany
Filed Dec. 9, 1974, Ser. No. 531,191
Claims priority, application Germany, Dec. 7, 1973, 7343581[U]
Int. Cl.² A61C 1/10
U.S. Cl. 32—27 5 Claims



1. A dental handpiece including a head and a holding sleeve associated therewith having at least one coolant line therein, said head having discharge nozzle means for the discharge of a coolant spray, said handpiece having separate gaseous and liquid coolant lines in said holding sleeve in communication with each other, a mixing line positioned downstream of the point of communication between said gaseous and liquid coolant lines adapted to receive gaseous and liquid coolant from said respective lines and to admix same, said discharge nozzle means being in fluid communication with said mixing line and having a smaller effective cross-sectional area than that of said mixing line, and throttle means being positioned in each of said gaseous and liquid coolant lines, the sum of the cross-sectional areas of both of said throttle means being not greater than the effective cross-sectional area of said discharge nozzle means.

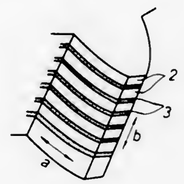
3,952,417
ANGLE MEASURING DEVICE
Peter Bestehorn, Jakobneuharting, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany
Filed Sept. 12, 1974, Ser. No. 505,358
Claims priority, application Germany, Sept. 19, 1973, 2347054
Int. Cl.² G01B 5/24
U.S. Cl. 33—75 R 5 Claims

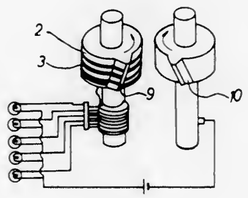


1. A device for the measurement of angles and angular variations between two surfaces, at least one of which is pivotal relative to the other, comprising:

a disk having vernier indicia means thereon;
a scale carrier having angle indicating indicia means thereon, said angle indicating indicia being positioned adjacent said vernier indicia means, means for rotatably securing said disk and said scale carrier together for rotatable movement with respect to each other and about a common axis of rotation;
first and second foot members each having locking means for separately securing both of said foot members to different ones of two surfaces;
first parallelogram linkage means comprising a pair of first rails and first pivot means pivotally securing said pair of first rails at one end to said scale carrier at locations spaced from said common axis of rotation and, at the other end, and at spaced locations to said first foot member; and
second parallelogram linkage means comprising a pair of second rails and second pivot means pivotally securing said pair of second rails at one end to said scale carrier at locations spaced from said common axis of rotation and, at the other end, and at spaced locations to said second foot member, at least one of said first and said second pivot means being spherical pivot bearings for permitting an angle measurement regardless of translational position changes between said two surfaces in the orthogonally related z and x directions.

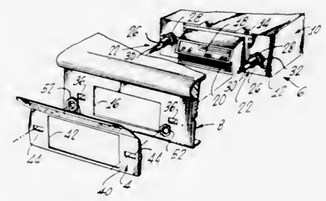
3,952,418
MASTER GEAR FOR CHECKING TOOTH CONTACT
Toshiaki Akamatsu, Okazaki; Masahiko Yasugi, and Mitsuyuki Bito, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Jan. 30, 1975, Ser. No. 545,632
Claims priority, application Japan, Sept. 21, 1974, 49-114681[U]
Int. Cl.² G01B 7/28; G01M 13/02
U.S. Cl. 33—174 L 5 Claims





1. Master gear for checking tooth contact comprising:
a. at least one terminal tooth,
b. insulating layers provided on the contact surfaces of said terminal tooth, and
c. a plurality of conductive detectors which are embedded at regular intervals in said insulating layers some of which extend in a direction parallel and others of which extend in a direction perpendicular to the flat sides of said tooth.

3,952,419
TEMPLATE FOR USE IN INSTALLATION OF AN AUTO RADIO
Fred P. Fohl, Encino, Calif., assignor to Kraco Industries, Compton, Calif.
Filed May 16, 1975, Ser. No. 578,325
Int. Cl.² G01B 3/00
U.S. Cl. 33—174 G 1 Claim

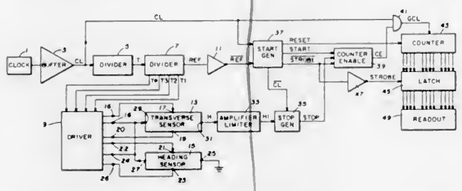


1. A disposable template for determining whether a combined auto radio and tape cartridge unit of predetermined external configuration can be installed in an auto dash, the dash having, a dash opening of predetermined size and two shaft receiving openings spaced on opposite sides of the dash opening; the combined auto radio unit and tape cartridge playing unit having, a main housing, a through-dash housing which extends outwardly from the main housing and is intended to pass through the dash opening, the through-dash housing including a radio tuning panel and a tape cartridge-receiving slot disposed in vertically stacked adjacent relation, two tuning shafts extending outwardly from the main housing parallel to and spaced from the through-dash housing spaced on opposite sides thereof, and adjustment structure permitting limited sideward adjustment of the spacing of each tuning shaft towards and away from the through-dash housing to enable the shafts to be aligned with the shaft receiving openings in the auto dash; the template comprising:
a generally flat sheet of paper; and
a main opening through said sheet of at least adequate size and shape to permit said through-dash housing to pass through said main opening;
two minor openings through said sheet, each said minor opening being of at least adequate size to permit one of the tuning shafts of the auto radio unit to pass through, the relative locations of said minor openings in said sheet to said main opening therein corresponding to the location in the auto radio unit of the tuning shafts relative to the through-dash housing, each said minor opening in said sheet being elongate in a sideward direction relative to said main opening for a distance corresponding to the range of sideward adjustment of the corresponding one of the tuning shafts relative to the auto radio unit;
whereby when said sheet is placed against the auto dash with said openings in said sheet in alignment with the corresponding openings in the auto dash, it can be determined by visual inspection of the extent to which the openings in the dash overlap said openings in said sheet whether the dash opening and the shaft-receiving openings in the dash are of adequate size and correct placement to permit the through-dash housing and tuning shafts of the auto radio unit to pass through the dash and whether the tuning shafts of the auto radio can be adjusted sufficiently to bring them into alignment with the shaft-receiving openings in the auto dash.

3,952,420
DIGITAL SOLID STATE COMPASS

Robert P. Benjamin, and Harley D. Peter, both of Dallas, Tex., assignors to E-Systems, Inc., Dallas, Tex.

Filed Aug. 5, 1974, Ser. No. 494,620
Int. Cl.² G01C *17/28*
U.S. Cl. 33—361 **11 Claims**



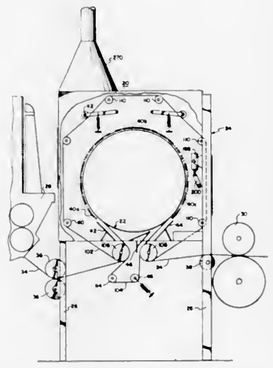
1. A solid state compass comprising:
clock means for generating a series of clock signals at a first predetermined frequency;
Hall effect generating means;
timing signal generating means connected to said clock means, said timing signal generating means being responsive to said clock signals for providing a reference signal and a series of timing signals;
driving means connecting said timing signal generating means, said driving means being responsive to said timing signals for providing driving signals for driving said Hall effect generating means, said Hall effect generating means being operative for providing a heading signal representative of an orientation angle between a direction of orientation of said Hall effect generating means and magnetic north;
start signal generating means connected to said clock means, and said timing signal generating means, said start signal generating means being responsive to said clock signals and said reference signals for providing a series of start signals at a second predetermined frequency;
counter means; and
control means connecting said Hall effect generating means and said clock means with said counter means, said control means being responsive to said start signal for enabling said counter means to begin counting said clock signals, said counter means being operable to provide a count signal representative of the number of clock signals counted, said control means being further responsive to said heading signal to disable said counter means when said count signal is representative of said orientation angle.

3,952,421
DIELECTRIC HEATING ARRANGEMENT FOR DRYING A CONTINUOUSLY MOVING WEB OF MATERIAL

Thomas L. Wilson, Louisville; Charles M. Loring, Jr., and Peter H. Smith, both of Anchorage, all of Ky., assignors to Chemetron Corporation, Chicago, Ill.

Filed Oct. 18, 1974, Ser. No. 515,923
Int. Cl.² F26B *3/34*
U.S. Cl. 34—1 **28 Claims**

1. In a system for drying a web of flexible material, the combination of, means defining a cylinder whose axis is perpendicular to the length of the web, means for moving the web to be dried in an arcuate path conforming to the periphery of said cylinder over a substantial portion of the circumference thereof, a first series of electrodes positioned close to but out of contact with said web around said substantial portion of the circumference of said cylinder, a second series of electrodes interspersed with said first series of electrodes, said first and second series of electrodes collectively forming a surface which is concentric with said cylinder and outside the periphery thereof, and means for applying and R.F. voltage between said first and second series of electrodes, whereby said web is dried by dielectric heating due to the R.F. field developed

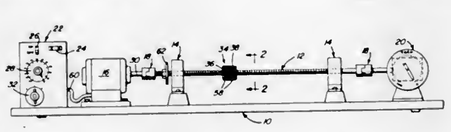


between said first and second series of electrodes as said web is moved in said arcuate path.

3,952,422
PERSISTENCE TEST APPARATUS

David B. Roberts, Jr., 211 4th Place, SW., Largo, Fla. 33540

Filed Nov. 15, 1974, Ser. No. 524,344
Int. Cl.² G09B *19/00*
U.S. Cl. 35—22 R **10 Claims**



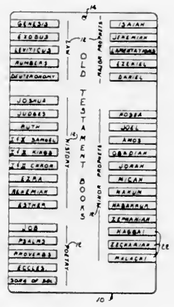
1. Apparatus for testing the persistence of an individual subject including a threaded rod, spaced supports for said rod, nut means movable along the portion of the length of said threaded rod between said spaced supports, power means connected to one end of said threaded rod, means for controlling the speed and direction of rotation of said threaded rod, and a tachometer connected to the end of said threaded rod opposite to said power means.

3,952,423
BIBLE BOARD GAME

Dale R. Gentry, Box 117, Carrollton, Mo. 64633

Continuation-in-part of Ser. No. 432,300, Jan. 10, 1974, abandoned. This application Mar. 14, 1975, Ser. No. 558,228
Int. Cl.² G09B *1/14*
U.S. Cl. 35—23 R **8 Claims**

1. An educational game device for use in teaching the books of the Bible comprising:
a board having a plurality of spaced, three-sided uniform slots formed therein, said board defining slot edges extending the entire thickness of said board along the opposite sides of each slot; and
a plurality of blocks representing the books of the Bible, each of said blocks being of considerably greater thickness than said board and each of said blocks including opposite sides having elongate grooves therein sized to mate with said slot edges, each groove having a width substantially equal to the thickness of said board and slot edges, whereby said blocks are slidably insertable into said slots with said grooves receiving said slot edges to interlockingly retain said blocks in place on said board

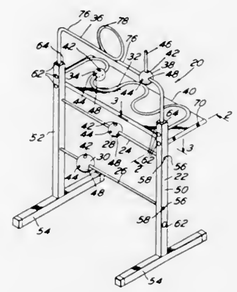


with each block projecting a substantial distance from the board in opposite directions.

3,952,424
METHOD AND APPARATUS FOR IMPROVING MUSCULAR COORDINATION

Paul Herr, Huntingdon Valley, and Dubi Leumi, Philadelphia, both of Pa., assignors to Motor Skills Research, Inc., Horsham, Pa.

Filed Dec. 19, 1974, Ser. No. 534,499
Int. Cl.² G09B *11/00*
U.S. Cl. 35—29 R **8 Claims**

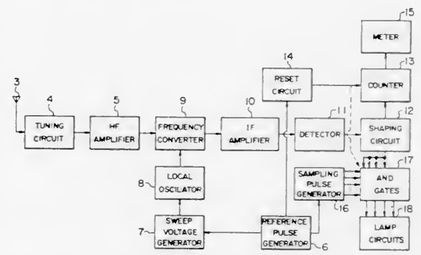


1. Apparatus for developing muscular coordination to facilitate the learning of writing skills comprising first means for establishing a first linear path, a first movable member supported by said first means for movement along said path, second means for establishing a second linear path, a second movable member, supported by said second means for movement along said second path, third means for establishing an undulating path, a third member supported by the third means for movement along said undulating path, fourth means for establishing a looped path, a fourth member supported by said fourth means for movement along said looped path and a frame including support means for supporting said first and second means, with the linear paths established thereby, horizontally and including additional support means for supporting either said third means or said fourth means so that the path established thereby is either oriented horizontally or vertically.

3,952,425
RESPONSE ANALYZER

Koich Tanaka, Soka; Genichi Tagata, Koshigaya, and Kiyomi Abe, Noda, all of Japan, assignors to Pentel Kabushiki Kaisha, Japan

Filed Oct. 8, 1974, Ser. No. 513,052
Int. Cl.² G09B *5/00*; **G07C** *13/00*
U.S. Cl. 35—48 R **2 Claims**



1. A response analyzing system comprising, in combination:
a plurality of answering devices each comprising, a transmitter operable for transmitting a continuous wave response signal, and means for operating said transmitter to transmit or not transmit the response signal in response to a question asked, wherein the transmitters all develop response signals having mutually different frequencies; and
a determination unit comprising, a tuned circuit for receiving the response signals developed by said plurality of answering devices and having a bandwidth sufficient to pass all the received response signals, a reference pulse generator for developing a train of periodic reference pulses, a sweep voltage generator responsive to the periodic reference pulses for developing a periodic time-varying sweep voltage having a period synchronized with the period of the reference pulses, a voltage-controlled local oscillator receptive of and controlled by the time-varying sweep voltage for developing a local oscillator signal having a continuously and periodically varying frequency which varies with a period synchronized with the period of the reference pulses, a frequency converter receptive of the response signals and the local oscillator signal for developing a plurality of intermediate frequency signals each having a periodically time-varying frequency and each corresponding to a respective one of the received continuous wave response signals passed by said tuned circuit, a narrow band frequency-selective circuit receptive of the plurality of intermediate frequency signals for passing segments of respective ones of the intermediate frequency signals for periods of time in which the respective ones of the intermediate frequency signals are within the passband of said frequency selective circuit, pulse generating means responsive to the segments of the respective ones of the intermediate frequency signals passed through said frequency-selective circuit for developing a pulse during each occurrence of each respective segment of the intermediate frequency signals passed through said frequency selective circuit, a sampling pulse generator responsive to the periodic pulses for developing a sequence of sampling pulses each corresponding to a different one of the response signals and each occurring when the intermediate frequency signal which corresponds to the corresponding response signal is within the passband of said frequency-selective circuit, a plurality of AND gates each recepetive of a respective pulse of the sequence of sampling pulses and all receptive of the pulses developed by said pulse generating means whereby one of said AND gates develops an output signal upon the simultaneous occurrence of a pulse developed by said

pulse generating means and a pulse developed by said sampling pulse generator, and a plurality of indicators each responsive to the output of a respective one of said AND gates for indicating when the respective one of said AND gates develops an output, whereby each of said indicators corresponds to a different one of the response signals and is effective to indicate when the corresponding response signal has been received.

3,952,426

QUESTION AND ANSWER EDUCATIONAL GAME WITH AN ANSWER CONTROL DEVICE

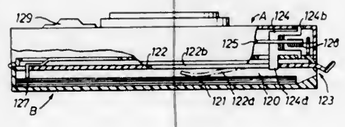
Walter Hesener, 66, rue de la Prulay, 1217 Meyrin-Geneva, Switzerland

Division of Ser. No. 404,907, Oct. 10, 1973, Pat. No. 3,890,724, which is a division of Ser. No. 129,469, March 30, 1971, Pat. No. 3,780,453. This application Mar. 25, 1975, Ser. No. 561,912

Claims priority, application Switzerland, Mar. 31, 1970, 4696/70; May 29, 1970, 8136/70; Sept. 5, 1970, 13300/70; Nov. 20, 1970, 17285/70; Nov. 30, 1970, 17659/70

Int. Cl.² G09B *3/00*

U.S. Cl. 35—48 A 3 Claims



1. In a educational game, which game comprises the combination of a set of question carrying elements, a code bearing means carrying a plurality of code means, a predetermined number of separate setting means each being movable in a first direction relative to the code means into one of several possible positions corresponding to answers to a given question, one such answer being the correct answer, means for permitting relative movement in a second direction transverse to the first direction between the code bearing means and the plurality of setting means, engagement means on a predetermined number of the setting means which selectively engage cooperating portions of the code means to prevent relative movement in the second direction between the code bearing means and the setting means when any one of the setting means is in a position corresponding to an incorrect answer, and to permit relative movement in the second direction between the code bearing means and the setting means only when a predetermined number of the setting means are in positions corresponding to respective correct answers, first indicating means for indicating the relative position between the setting means and the code bearing means, code orienting means adapted to move relative to the code bearing means when preparing the game for use and adapted to be fixed relative to the code bearing means when the game is in use, and second indicating means for indicating the relative position between the code orienting means and the code bearing means: a set of question-carrying elements, each element containing a first correlating means for displaying the requisite setting of said first indicating means for effective use of said selected question-carrying element, a second correlating means for displaying the requisite setting of said second indicating means for effective use of said selected question-carrying element, and a plurality of questions, the respective answers to which are designed to be entered on said game by moving corresponding ones of said setting means, whereby when said predetermined number of said setting means are in positions corresponding to correct answers to the plurality of questions on the question-carrying element, relative movement in said second direction is permitted between said code bearing means and said setting means, and when any one of said setting means is in a position corresponding to an incorrect answer, such relative movement is prevented.

3,952,427

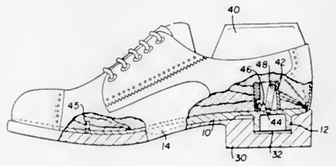
INSOLE FOR FOOTWEAR

Elisabeth von den Benken, and Henry von den Benken, both of 2212 Centre St., West Roxbury, Mass. 02132

Filed May 9, 1974, Ser. No. 468,223

Int. Cl.² A43B *00/00*

U.S. Cl. 36—103 WI 2 Claims



1. An insole for footwear having a molded shank reinforcement rib for which a clearance cavity is provided in a corresponding outer sole and a molded aligning protrusion located in its heel area pointing toward the outer sole of a shoe and being shaped so as to fit a cavity in a corresponding outer sole thereby assuring correct alignment of outer sole and insole, and a plurality of molded lasting hooks located along its edge pointing toward the outer sole and being so shaped that an upper will not slip off when it is tied to said lasting hooks.

3,952,428

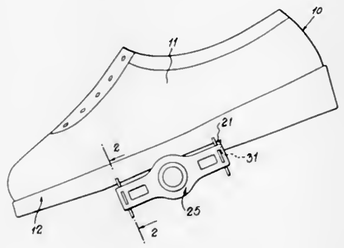
BICYCLE SHOE

Robert A. Polsky, 31 Mayer Drive, Suffern, N.Y. 10901

Filed Feb. 24, 1975, Ser. No. 552,838

Int. Cl.² A43B *13/04*

U.S. Cl. 36—131 WI 8 Claims



1. A shoe for use in propelling bicycles equipped with pedals, said shoe comprising, in combination, an upper and an outsole, said outsole consisting of heel, instep and toe portions, said instep portion being substantially recessed with respect to said heel and toe portions, said heel portion including a sloping face having a forward point adapted to engage said bicycle pedal, and a plurality of spaced protuberances and cavities in said instep portion adapted for respective engagement with similarly spaced cavities and protuberances on said bicycle pedals, whereby said bicycle pedals are gripped by said shoes.

3,952,429

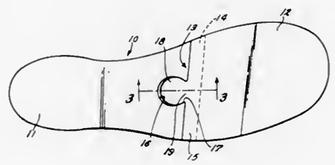
SECTIONAL SHOE MID-SOLE

Dwight L. Thomas, Blanchester, Ohio, assignor to Vulcan Corporation, Cincinnati, Ohio

Filed Jan. 13, 1975, Ser. No. 540,720

Int. Cl.² A43B *13/14*

U.S. Cl. 36—31 2 Claims



1. A mid-sole for use in the construction of footwear comprising a one-piece heel and shank part composed of a rigid, moldable material, a lateral shelf formed on the forward edge portion of the heel and shank part, a socket molded into the upper surface of the heel and shank part and having a restricted mouth opening onto the shelf, a forepart composed of a flexible, moldable material, a lateral, downwardly facing lip formed on the rear edge portion of the forepart interfitted with the shelf on the heel and shank part, a tongue connected to the rear edge of the forepart by a restricted neck, said tongue and neck on the forepart respectively interfitting with the socket and mouth on the heel and shank part to form a connection between the mid-sole parts.

3,952,430

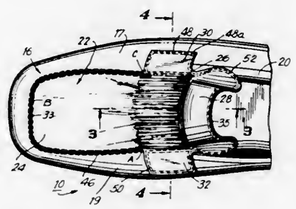
SHOE CONSTRUCTION

Jerome Pankin, New York, N.Y., and Beverly Ann Feldman, Albufera, Spain, assignors to Pankin International, Ltd., New York, N.Y.

Continuation of Ser. No. 569,284, April 18, 1974, Pat. No. 3,916,539. This application Oct. 29, 1975, Ser. No. 626,751

Int. Cl.² A43B *11/00*

U.S. Cl. 36—51 9 Claims



1. A construction for a shoe including a vamp, a sole, and a heel, the construction comprising:

a. a tongue member,

b. a lining member, the tongue member and the lining member being joined to one another and to the vamp, and forming a continuous tunnel across the throat of the shoe, and

c. an elastic gore running from one side of the vamp across the throat of the shoe to the other side of the vamp and fixed within the tunnel,

d. the gore having one face secured to the tongue member along the length of the gore within the tunnel and having its other face secured to the liner member along the length of the gore within the tunnel,

e. the gore, when relaxed, shirring the tongue member at its mid-section and the lining member.

3,952,431

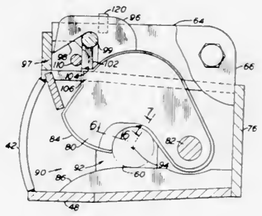
VEHICULAR CARRIED PLOW COUPLING

William Gledhill, and Philip Leland Sherman, both of Galion, Ohio, assignors to Gledhill Road Machinery Company, Galion, Ohio

Continuation of Ser. No. 516,563, Oct. 21, 1974, abandoned, which is a continuation of Ser. No. 379,966, July 17, 1973, abandoned, which is a continuation-in-part of Ser. No. 211,076, Dec. 22, 1971, Pat. No. 3,746,368. This application May 29, 1975, Ser. No. 581,853

Int. Cl.² E01H *5/00*

U.S. Cl. 37—41 3 Claims



1. The combination of a snow plow and a truck,

the truck including a female coupling member attached to its front,

the snow plow including a male coupling member carried on its rear,

means on said truck for raising and lowering the blade of the snow plow,

means on the plow to facilitate limited universal angular movement thereof, the improvement comprising:

said female coupling member comprising a housing having a convex, forward force receiving surface having a substantially horizontal axis, said surface including a recess area therein;

latching hook means mounted within said recess area for pivotal movement about a substantially horizontal axis between opened and closed positions, said latching hook means including a latching surface;

said male coupling member comprising a rigid, generally planar frame having a loop protruding outwardly thereof extending into and retained in said recess area by latching engagement with said latching surface of said latching hook means, said force receiving surface of said female coupling member and said frame of said male coupling member being juxtaposed for transmitting force from one to the other, said latching surface and the cooperating engaging surface of said loop each being such to facilitate relative movement therebetween for permitting, raising, lowering, and tilting of said snow plow between different desired positions while said male coupling member is engaged with said female coupling member.

3,952,432

MECHANISM FOR MOVING SCRAPER BOWL EJECTOR BLADE

Richard F. Boersma, Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

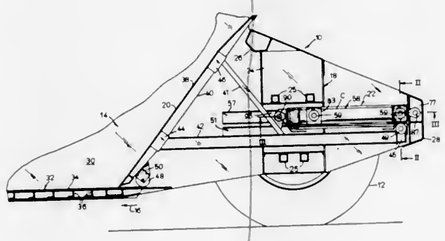
Filed Aug. 5, 1974, Ser. No. 494,812

Int. Cl.² E02F *5/00*

U.S. Cl. 37—126 AE 7 Claims

1. In a machine including a supporting frame and a component movable with respect to said frame to perform a function, said component being movable from a retracted position to a fully extended position, a carriage mounted on said frame for movement with respect to said frame between a retracted position and an extended position, a plurality of extendable and retractable hydraulic rams mounted on and movable with said carriage, at least two of said rams being connected to said

component, and at least another of said rams being connected to said frame, said two rams embodying a total effective piston area greater than that of said other ram, and means including a plurality of fluid lines interconnecting said rams and movable with said carriage to supply pressurized fluid simultaneously to all of said rams while said rams are retracted and said carriage is in retracted position to initially cause said two

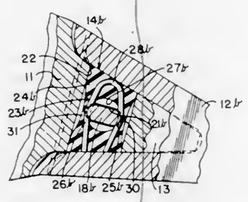


rams to exert more force than said other ram and to extend fully and move said component from retracted position part way toward fully extended position while said carriage remains in retracted position and to subsequently cause said other ram to extend fully and move said carriage from retracted position to extended position and thereby cause said component to move further to fully extended position.

3,952,433
SPRING CLIP RETAINING MEANS FOR EARTHWORKING TIPS

Lloyd K. Heinold; Eugene L. Helton, both of Peoria, and Donald J. Larson, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 3, 1974, Ser. No. 502,827
Int. Cl.² E02F 9/28; F16B 21/07, 21/18
U.S. Cl. 37—142 A **15 Claims**

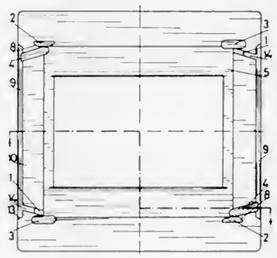


1. In an earthworking device comprising a support member, a work tool mounted on a forward end of said support member, a pin disposed in aligned bores formed through said support member and said work tool and retaining means releasably holding said pin in said bore, the improvement wherein said retaining means comprises an at least generally U-shaped spring clip straddling diametrically opposite sides of said pin in locked, frictional engagement therewith and an elastomeric member at least substantially encapsulating said spring clip, said elastomeric member at least substantially filling a complementary recess formed in one of said support member and said work tool and further comprising concavities formed on opposite sides of said elastomeric member and located in that portion of the side of the member which is closest to the point of contact between said pin and said spring clip for creating space to permit expansion of said spring clip in said recess.

3,952,434
SLIDE-FRAME

Peter Florjancic, St.-Martin-Strasse 12, D-81 Garmisch-Partenkirchen, Germany

Continuation of Ser. No. 206,687, Dec. 10, 1971, abandoned. This application Oct. 15, 1973, Ser. No. 406,384
Claims priority, application Austria, Dec. 16, 1970, 11328/70
Int. Cl.² G09F 1/12
U.S. Cl. 40—152 **5 Claims**



1. A unitary frame for a section of photographic film consisting of a pair of masks made of plastic material, each mask comprising

a central view opening therein, said opening having relieved inner edges thereon

a recess in the inner face which surrounds said central view opening, said recess being defined by

a pair of parallel longitudinal bridges and

a pair of parallel transverse bridges,

said masks being fixed together along said longitudinal bridges with the inner faces of the masks facing one another,

said recess forming an enclosed film bed,

the inner faces of the transverse bridges of one mask being substantially in contact with the corresponding inner faces of the transverse bridges of the other mask,

at least one facing pair of the transverse bridges of said masks being unfixed to one another across at least the corresponding width of said film bed,

at least one transverse bridge of said unfixed pair of transverse bridges having an outward facing chamfered face the length of which corresponds at least to the corresponding width of said film bed providing a funnel into said frame through which a section of photographic film may pass with slight bulging of said unfixed pair of transverse bridges for insertion of said section of film into said film bed and said unfixed pair of transverse bridges return to being substantially in contact upon completion of the insertion of said section of film into said film bed.

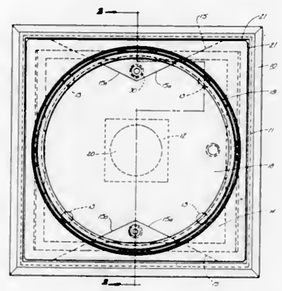
3,952,435
PHOTO FRAME AND THE LIKE

Daniel H. Olsen, Toledo, Ohio, assignor to Midland Insta-Change Company, Cincinnati, Ohio

Filed July 17, 1974, Ser. No. 489,232
Int. Cl.² G09F 1/12
U.S. Cl. 40—152.1 **4 Claims**

1. In combination with a photo frame and the like, a back pan having a back surface, and side walls extending between said back surface and said frame, and removably secured to the rear of said frame, said back pan having a recess in each

side wall, each said recess providing a slot between said back pan and the rear of said frame, said back pan having a hole

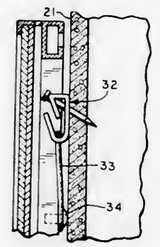


centrally disposed on at least two adjacent sides near said recesses.

3,952,436
DEVICE FOR LOCKING A FRAMED PICTURE TO A WALL

Horst Kuhnke, 9 Echo Court, Hawthorn Woods, Ill. 60047

Filed July 7, 1975, Ser. No. 593,758
Int. Cl.² G09F 1/12
U.S. Cl. 40—152.1 **7 Claims**



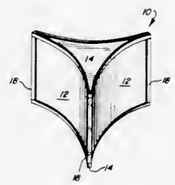
1. A device for locking a picture or the like in a frame to a wall, wherein the framed picture is hung at its upper end by conventional means, said device comprising a body, an arm connected to and extending from the body along one side thereof, a fastener for mounting the body and arm to the wall, hole means through the arm and body for receiving said fastener so as to secure the device to the wall and allow the device to rotate on the fastener, said body and arm coacting with the frame to selectively lock the framed picture substantially flush to the wall when rotated to lock position or permit the same to be removed therefrom when rotated to unlock position, and a wrench-engaging portion on said body adapted to be engaged by a wrench and rotated between lock and unlock positions when the frame is substantially flush with the wall said wrench-engaging portion being on the side of the body adjacent the wall.

3,952,437
PICTURE FRAME CONSTRUCTION

Robert W. Mitchell, Saint Joseph, Mich., assignor to Photo Systems, Inc., Ann Arbor, Mich.

Filed Apr. 5, 1974, Ser. No. 458,087
Int. Cl.² G09F 1/12
U.S. Cl. 40—152.1 **14 Claims**

1. A display frame construction for supporting a plurality of display sheet means, each sheet having opposed, generally parallel edges, said frame comprising opposed plates having respective slot-defining portions which follow the contour of the plate edges and define closed congruent slot patterns, each of said slot patterns having arcuate portions receiving one of said opposed edges, and retractable means urging said plates toward one another and against said edges to entrap the display sheet means therebetween whereby said retractable means is operatively connected to each of said plates and maintains said plates in spaced, generally parallel relationship

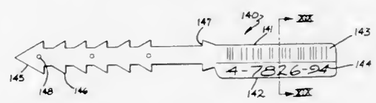


with said display means lockingly disposed therebetween to form a display assembly having a cylindrical surface portion; said sheet means comprising a plurality of adjacent display sheet means abutting along edges generally normal to said plates to form a closed cylindrical display.

3,952,438
ANIMAL MARKING APPARATUS

Robert L. Propst, and Howard B. Propst, both of Ann Arbor, Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Continuation of Ser. No. 159,784, July 6, 1971, abandoned, which is a continuation-in-part of Ser. No. 12,056, Feb. 17, 1970, abandoned. This application Dec. 26, 1973, Ser. No. 427,831
Int. Cl.² G09F 3/00
U.S. Cl. 40—300 **18 Claims**



1. A tag particularly adapted to be affixed to an animal to identify the same with certain information comprising at least one information bearing portion and an animal attaching portion, said portions being formed out of a single integral piece of flexible material, and said information bearing portion having said information coded thereon in machine readable form; said attaching portion including means for holding said tag in a predetermined, standardized position on an animal whereby said machine readable, coded information can be read by a suitable machine; said tag being sickle shaped, said information bearing portion extending in a generally straight direction and said attaching portion curving out of said direction.

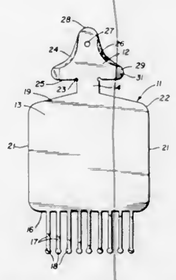
3,952,439
ANIMAL TAG

Walter R. Armand, 1918 Newton St., Denver, Colo. 80204

Filed June 17, 1974, Ser. No. 479,915
Int. Cl.² G09F 3/04
U.S. Cl. 40—301 **6 Claims**

1. An animal identification tag for attachment in a cut slit passing through an ear or other skin area of an animal comprising insert and body sections for forward and rearward disposition, respectively, and an interconnecting neck portion therebetween, said identification tag being formed unitarily of resilient sheet material having generally planar top and bottom faces, said body section being of larger size than said insert section and adapted to receive identification markings on the opposed top and bottom faces thereof, said neck portion extending forwardly from said body section and being of width corresponding to the width of the cut slit through which it will extend and of substantially reduced width with respect

to said body section, angularly disposed introductory side edges for said insert section diverging outwardly from a forward entrance end, a terminal or base edge for said insert section connected to said narrower neck portion and extending outwardly therefrom to intersect said introductory side edges, and an angled surface intersecting a planar face of said



insert section at said introductory side edges to provide a tapered section that reduces the thickness of said sheet material at positions disposed apart a distance greater than the width of said neck portion whereby the insert section of said tag interacts with a tag receiving slit cut in an animal's skin to cooperatively enfold said insert section as it is moved in a forward direction through said cut slit.

3,952,440

FIREARMS HAVING TWO ORIFICES FOR EJECTION OF THE EMPTY SHELLS

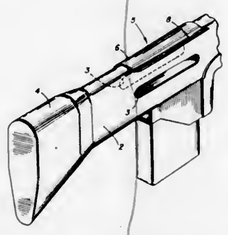
Paul E. Tellié, 20 rue Bergson, 42000 St. Etienne, France

Filed May 16, 1974, Ser. No. 470,460

Claims priority, application France, May 29, 1973, 73.19394

Int. Cl.² F41C *27/08*

U.S. Cl. 42—1 R **11 Claims**



1. A firearm having two separate orifices for the ejection of empty shells so that a marksman can use as desired a selected one of either of the two ejection orifices, said firearm being provided with closure means, adapted to be actuated by the marksman, for closing that one of the two ejection orifices which is not in use.

3,952,441

CLIP FOR SEMI-AUTOMATIC FIREARM

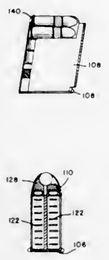
William A. Tant, 1220 Daladams St., Raleigh, N.C. 27603

Continuation-in-part of Ser. No. 350,747, April 13, 1973, Pat. No. 3,857,324. This application Oct. 18, 1974, Ser. No. 515,882

Int. Cl.² F41C *25/02*

U.S. Cl. 42—50 **4 Claims**

1. In a firearm having means for inserting one cartridge at a time into a chamber, the improvement comprising: a magazine adapted to hold a plurality of cartridges, said magazine including a pair of side-by-side cartridge chambers separated by a partition extending longitudinally through said magazine and laterally in spaced relationship to the rear wall thereof, the upper outer side of each cartridge chamber being tapered



inwardly toward each other so as to converge the upwardly moving cartridges of each chamber into single file for feeding to the firearm chamber.

3,952,442

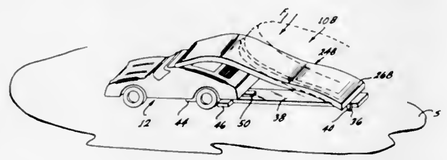
LAUNCHER FOR A TOY VEHICLE, INCLUDING A SHIM FOR SUPPORTING THE VEHICLE REAR END

James Robert Livesey, Hawthorne, and Felix Griauzde, Pleasonton, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Apr. 4, 1975, Ser. No. 565,186

Int. Cl.² A63H *17/26*

U.S. Cl. 46—206 **1 Claim**



1. A launcher for launching a toy wheeled vehicle adapted to travel on a supporting surface, said vehicle having a body with a sloping roof portion and a bottom portion normally spaced from said surface, said launcher comprising:

a first elongated member having first and second ends;

means provided at said first end of said first elongated member for guiding said vehicle during launching;

means provided intermediate said first and second ends of said first elongated member for positioning said vehicle preparatory to launching;

a second elongated member having first and second ends;

means pivotally connecting said second end of said first elongated member to said first end of said second elongated member with said second elongated member overlying said first elongated member, said second end of said second elongated member imparting a forward thrust to said vehicle when it is in position on said vehicle guide means with said second end of said second elongated member contacting said sloping roof portion of said body and with a downward force being exerted on said second elongated member between the first and second ends thereof; and

control means comprising a shim provided on said vehicle guide means beneath said vehicle bottom portion when said vehicle is in position on said guiding means for engagement by the rear end of said vehicle bottom portion to limit the amount the front end of said vehicle will become elevated while said second end of said second member is transmitting said downward force during launching of said vehicle.

3,952,443

FISHING REEL ACCESSORY

Joseph F. Kaminski, Utica, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Aug. 12, 1974, Ser. No. 496,350

Int. Cl.² A01K *89/00*

U.S. Cl. 43—25 **2 Claims**



1. A fishing reel accessory for a fishing reel mounted on a fishing pole at the handle thereof and having fishing line wound therearound, said fishing reel accessory comprising

a brake member mounted on the pole adjacent the handle and the reel for selectively and manually preventing unwinding of the reel, said brake member comprising a bore formed through the pole between the handle and the reel, an arm having first and second spaced opposite ends and a center substantially equidistantly spaced from the first and second ends, said arm being pivotally mounted at substantially its center in the bore and extending beyond the pole at both ends, a recess formed in the arm at the first end to accommodate a finger of a user and braking material affixed to the arm at the second end in a manner whereby the second end of the arm is normally spaced from the line on the reel and when the first end of the arm is gripped and pulled by a finger of the user, the braking material at the second end of the arm abuts the line on the reel and prevents the unwinding of the reel.

3,952,444

SPOON LURE

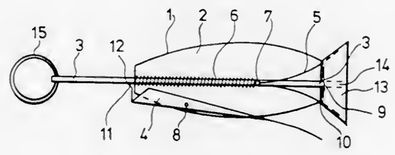
Yrjö Sakari Hämeen-Anttila, Alakiventie 1 C 35, Helsinki, Finland (00920)

Filed July 22, 1974, Ser. No. 490,671

Claims priority, application Finland, Oct. 31, 1973, 3372/73

Int. Cl.² A01K *83/02*

U.S. Cl. 43—34 **4 Claims**



1. A spoon lure comprising a lure body;

a plunger extending axially through the length of the lure body and extending beyond one end thereof;

at least one hook located within the lure body and connected to the plunger, the hook having a slightly arcuate curvature without a reversal of curvature;

a spring located entirely within the lure body and helically surrounding the plunger for substantially its entire length when the spring is in its released state, the spring urging the vigourous projection of the hook externally of the lure body;

trigger means for maintaining the spring in compression and to release the spring, the trigger means comprising a trigger located externally of and pivotably connected to the lure body and extending substantially for the entire length of the lure body, the trigger having a latch for engagement with a notch in a portion of the plunger adjacent to but extending beyond said one end of the lure body;

means in the other end of said lure body for guiding the hook or hooks during projection externally of the lure body;

the hook or hooks being loaded by being drawn into the lure body by moving said plunger against the force of the spring away from the hook or hooks and engaging said latch with said notch.

3,952,445

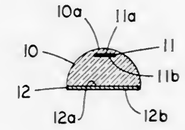
SIMULATED EYE CONSTRUCTION

Ronald K. Liebert, 7514 W. 93rd St., Zionsville, Ind. 46077

Filed Aug. 25, 1975, Ser. No. 607,140

Int. Cl.² A01K *85/00*

U.S. Cl. 43—42.34 **8 Claims**



1. A simulated eye construction comprising a generally cup-shaped substantially transparent body presenting a curved outer front surface and a generally flat planar rear surface, a thin wafer having its opposite faces of contrasting colors imbedded in said body at the apex area of the body and oriented so that one of its colored faces is spaced from and faces said rear surface of the body and its other colored face is directly visible through the apex area of the body, and means overlying said rear surface of the body providing a reflecting mirror-like surface adjacent thereto whereby said one colored face of the wafer is reflected through said body to provide a contrastingly colored penumbra for the face of said wafer visible through the body.

3,952,446

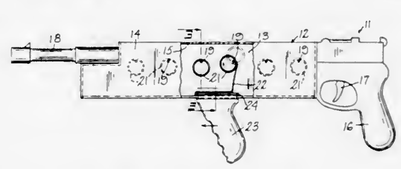
TOY HAVING LOOSELY MOUNTED CYLINDERS AND SLIDABLE STRIKER

Frank Gybowski, 34 Edgewood Way, New Haven, Conn. 06515

Filed Aug. 8, 1974, Ser. No. 495,864

Int. Cl.² A63H *5/00*

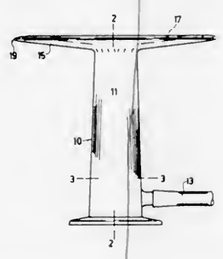
U.S. Cl. 46—1 R **5 Claims**



1. A toy comprising the combination of:

a housing having two opposing, generally parallel walls;
a plurality of rods mounted between said walls in parallel, spaced apart rectilinear relationship;
each said rod loosely carrying a hollow cylinder adapted to swing eccentrically on and around said rod; and
a hand operable member slidably mounted in said housing; guide means in said housing defining a generally longitudinal path of travel for said member transverse to the axes of said rods, said member having a generally upright tongue-like portion extending upwardly to a height sufficient for tangentially striking said cylinders during said travel of said member, whereby said cylinders are sequentially activated on said rods when said member is moved along said path.

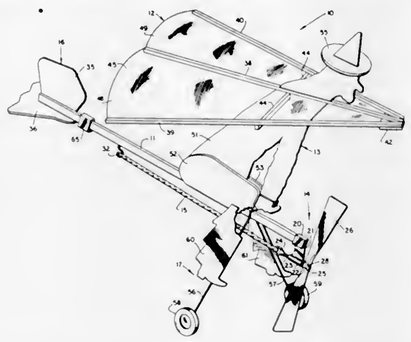
3,952,447
BUBBLE FORMING DEVICE
Walter Edward Hackell, 73 Alexander Ave., Napier, New Zealand
Filed Aug. 13, 1974, Ser. No. 497,054
Claims priority, application New Zealand, Aug. 16, 1973, 171710
Int. Cl.² A63H *33/28*
U.S. Cl. 46—6 **20 Claims**



1. A bubble forming device comprising a body having an annular open topped chamber, an air supply tube or pipe the bore of which is in communication with the said chamber and is so positioned that air passing therethrough enters the annular chamber tangentially to the axis thereof, a disc mounted on said body covering the open top of the chamber and having a central opening in communication with said chamber, the disc and opening being concentric with said chamber and the outer face of the disc is provided with a series of slots extending radially from the central opening.

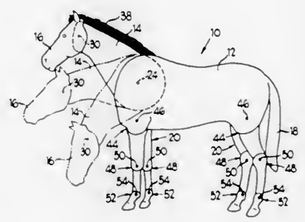
3,952,448
TOY AIRPLANE
Robert G. Kabchef, 217 Donna Lyn Drive, Smyrna, Ga. 30080
Filed Sept. 26, 1974, Ser. No. 509,436
Int. Cl.² A63H *27/00*
U.S. Cl. 46—78 **6 Claims**

1. A toy airplane comprising an elongated fuselage, a tail assembly at one end of said fuselage and a propeller at the other end of said fuselage, said propeller having an axis of rotation inclined downwardly in a forward direction with respect to said fuselage, power means for rotating said propeller, a paraglide wing positioned over said fuselage with a center spar extending approximately in the same vertical plane as said fuselage and inclined upwardly in a forward direction with respect to said fuselage and side spars each connected at one end to the forward end of said center spar and diverging approximately equally on opposite sides rearwardly from said center spar, flexible sheet material connected to each of said center and side spars, an approximately flat connecting structure connected between said fuselage and the center spar of said paraglide wing with the plane of said



approximately flat connecting structure extending parallel to said fuselage and said center spar.

3,952,449
ARTICULATED FIGURE TOY
Rouben T. Terzian, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Apr. 18, 1975, Ser. No. 569,167
Int. Cl.² A63H *3/46*
U.S. Cl. 46—161 **22 Claims**

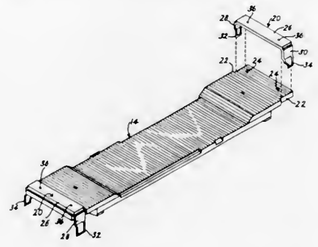


21. An articulated figure toy in the form of a four legged animal, comprising:
a torso portion having four legs depending therefrom;
an elongated neck portion having a head portion on one end thereof;
means defining a position retaining frictional rotary joint between the other end of said neck portion and the front of said torso portion to provide for relative articulated movement therebetween, including means for limiting said relative movement to a vertical direction when the figure toy is in an erect position; and
said neck portion being fabricated of resiliently flexible material for increased relative articulated movement between said head portion and said torso portion by bending said neck portion relative to the torso portion.

3,952,450
PROTRUDING LADDER STEPS FOR MODEL RAILWAY BOXCARS
Clarence K. Edwards, 865 Morrison St., and Lawrence D. Edwards, 2816 Rosemont Ave., both of Medford, Oreg.
Filed Feb. 16, 1972, Ser. No. 226,701
Int. Cl.² A63H *19/16*
U.S. Cl. 46—218 **4 Claims**

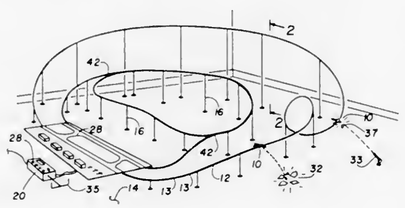
1. A model railway boxcar comprising, in combination,

a. a rigid car floor unit
b. a substantially rigid, unitary car body unit, and
c. a protruding-step-simulating unit distinct from the floor and body units, composed of more highly flexible and resilient, moldable material than the floor and body units, said protruding-step-simulating unit constructed and arranged to have fixed interfitting relation with at least



one of said other units and to be retained in place by them, said protruding-step-simulating unit comprising a cross-member engageable with the upper surface of a floor end, at least one downwardly extending side member, and at least one terminal step member integral with such side member, and constructed and arranged to extend below and beyond the lower boundary of the car body.

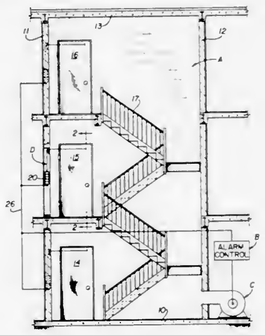
3,952,451
MODEL AIRPLANE TRACK
Emil G. Innocenti, Hawthorne, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Nov. 4, 1974, Ser. No. 520,300
Int. Cl.² A63H *27/04*
U.S. Cl. 46—249 **1 Claim**



1. A toy airplane and track assembly comprising a track which may be mounted on vertical support members and an airplane-shaped vehicle fitted with wheels which ride on said track, said vehicle wheels being driven by an electrical motor in the vehicle, together with means to conduct electricity from an external control panel and power supply mounted on the track and means to conduct electricity from the track to the airplane motor mounted on the airplane vehicle, in which the airplane-shaped vehicle is fitted with detachable wing sections which separate from the vehicle when hit by a pellet from a toy gun.

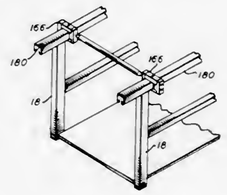
3,952,452
DEVICE FOR ASSISTING THE OPENING OF A DOOR
Thomas Hebda, 235 Vance, Lombard, Ill. 60148
Filed Mar. 14, 1974, Ser. No. 451,042
Int. Cl.² E05F *15/20*
U.S. Cl. 49—3 **4 Claims**

1. A device for assisting the opening of a door comprising a chamber having a door which opens into said chamber, means for providing a signal, means responsive to said signal for generating a pressure within said chamber and against said door to thereby produce a draft from the interior of said chamber to the exterior thereof when said door is opened, and means responsive to said signal for urging said door toward open position to compensate at least in part for said pressure which is applicable against said door, said means for urging said door including a track mounted within a vertical wall of



said chamber, a weight within said track, means for supporting said weight at an inoperative position, a cable connected at one end to said door and at the other end to said weight, and including also an auxiliary weight smaller than said first-mentioned weight and which is attached to said cable at a point above said first-mentioned weight for preventing sagging of said cable between said door and said wall, and means responsive to said signal for rendering said supporting means inoperative whereby said urging means is brought into operation.

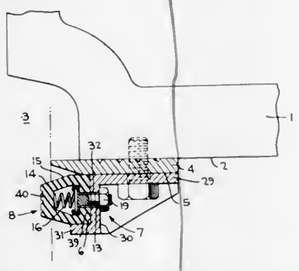
3,952,453
SAFETY BARRIER
Ossie Amburgey, 28445 Weddell, Trenton, Mich. 48183
Filed May 31, 1974, Ser. No. 475,349
Int. Cl.² E01F *13/00*
U.S. Cl. 49—34 **8 Claims**



1. A portable safety barrier for preventing access to a restricted passageway comprising:
a bar means adapted to extend substantially across said passageway; and,
a clamp connected to at least one end of said bar means, said clamp having a generally rectangular shape and including at least a base means adapted for attachment to said bar means, a pair of side means attached to said base means and an end plate means attached to said side means at the end of said clamp furthest removed from said base means, and
at least one screw urged means for securing said clamp to a support means, said screw urged means comprising a threaded bolt means, a locking plate attachable to said threaded bolt means and a locking plate plug means receivable in said locking plate,
wherein said threaded bolt means passes through one of said side means and is threadably receivable in said locking

plate means, the depth of penetration of said threaded bolt means into said locking plate means being determined by the locking plate plug means, whereby said locking plate may be urged against a flat section of said support means by said threaded bolt means, thereby securing said clamp to said support means.

3,952,454
DEVICE FOR SEALING DOORS OF COKE OVEN
Osamu Sudo, Fijisawa, Japan, assignor to Nippon Oil Seal Industry Co., Ltd., Japan
Filed Aug. 2, 1974, Ser. No. 494,363
Int. Cl.² E06B 7/22; C10B 25/06
U.S. Cl. 49—480 **4 Claims**



1. A device for sealing a steel door of a coke oven comprising: a ring-shaped steel packing fitted over an outer surface of the steel door so as to contact a side wall of the coke oven when the steel door is closed; a packing retainer fitted over and joined to the outer surface of the steel packing and provided with a ring-shaped groove opened toward the side wall of the coke oven; a ring-shaped packing assembly fitted into the groove so as to press elastically against the side wall when the steel door is closed, thereby sealing the steel door; the packing assembly extending closer to the side wall of the coke oven than the steel packing and comprising an elastic member having a front section and a rear section with an opening, a spring stop disposed within the elastic member in contact with the rear section and a plurality of springs loaded between the inner side wall of the front section of the elastic member and the spring stop; the spring stop comprising a bottom section in contact with the inner wall of the rear section of the elastic member and flange sections bent inwardly from both sides of the bottom section so as to retain the springs therebetween; and each of the springs having a bottom coil of larger diameter than the remaining coils and the bottom coil being held between the flange sections of the spring stop so that the remaining coils of the springs are spaced apart from each other.

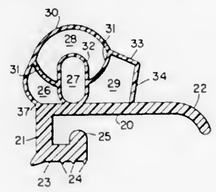
3,952,455
SEALING GASKET
Fred R. McAlarney, Seymour, Ind., assignor to The Pantasote Company, Greenwich, Conn.
Filed Jan. 20, 1975, Ser. No. 542,392
Int. Cl.² E06B 7/16
U.S. Cl. 49—497 **10 Claims**

1. A hollow flexible sealing gasket having a uniform cross section throughout its length, said gasket being formed of plastic material and comprising in its normal unstressed condition a relatively stiff base member;

an outer cell wall extending upwardly from said base member and having spaced side wall portions and a top wall portion;

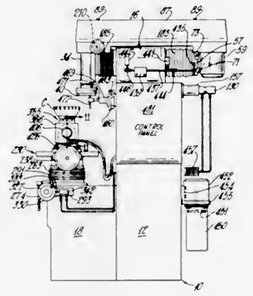
an inner central cell wall extending upwardly from said base member, said inner central wall having spaced side wall portions and a curved top wall portion, the top wall portion of said inner central cell wall curving forward and spaced from said top wall portion of said outer cell wall, said inner central cell wall defining an oblong central cell extending longitudinally upwardly from said base member;

two upwardly diverging, inner divider cell walls, each divider cell wall extending from a side wall portion of said inner central cell wall to said outer cell wall;



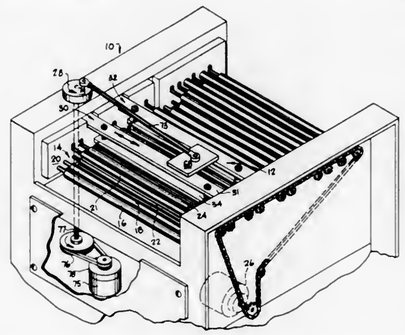
all of said cell walls being flexible and substantially more flexible than said base member, said cell walls defining said oblong central cell, a pair of side cells on either side of said oblong central cell, and a top cell above said oblong central cell and said side cells.

3,952,456
GRINDING MACHINE
Burton R. Leathley; Clifford L. Garrison; Rollo L. Garrison, and Richard F. Snyder, all of Adrian, Mich., assignors to Oliver Instrument Company, Adrian, Mich.
Filed Feb. 7, 1975, Ser. No. 548,156
Int. Cl.² B24B 7/00
U.S. Cl. 51—56 R **11 Claims**



6. Apparatus for performing processing operations in effecting the grinding of the teeth of a rotatable cutting tool including, in combination, a frame construction, a reciprocable ram mounted by the frame construction, a rotatable shaft adapted to support a grinding wheel, a housing mounting the shaft and supported by the ram for movement relative to the ram, an electrically energizable motor for rotating the shaft for rotating the grinding wheel, means mounted by the frame construction for supporting a cutting tool to be ground, means for reciprocating the ram including a driving shaft having a spiral recess, ball nut means mounted on the spirally recessed portion of the shaft having operative connection with the ram, said ball nut means having spiral grooves containing bearing balls adapted for traverse in the spiral recess on the shaft for transmitting rotation of the shaft for reciprocating the ram, a hydraulically actuated rotary motor for rotating the shaft, solenoid operated valve means for directing fluid to the hydraulically actuated motor for rotating the motor, and control means for said solenoid operated valve means to effect flow of fluid in alternate directions to the hydraulically actuated motor for successively rotating the motor in opposite directions to effect reciprocation of the ram.

3,952,457
DUAL SURFACE ARTICLE ABRADING APPARATUS
Thomas Gutierrez, 395 Madison St., Santa Clara, Calif. 95050
Filed Mar. 4, 1974, Ser. No. 448,000
Int. Cl.² B24B 7/00
U.S. Cl. 51—66 **9 Claims**



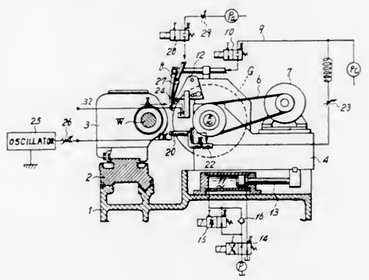
1. Apparatus for abrading both sides of flat articles comprising,

feed means for receiving flat articles, said feed means having motive means connected thereto for advancing flat articles in a line of travel,

an abrading tool having a first carriage mounted adjacent said feed means for reciprocal motion transverse to said line of travel, said first carriage having a first pair of opposed article abrading surfaces and having a first spring means for suspending said first pair of article abrading surfaces on said first carriage in a floating upward and downward relationship to said flat articles at an elevation proximate to the line of travel of said flat articles between said pair of surfaces, and having a second spring means compressibly connecting opposed ends of said first pair of opposed article abrading surfaces, and

power means for providing reciprocal motion to said carriage.

3,952,458
GRINDING MACHINE WITH FEED RATE CHANGING APPARATUS
Tamaki Tomita, Okazaki; Mineo Ishikawa, Kariya; Hayashi Kodama, Kariya, and Kazuo Moriya, Kariya, all of Japan, assignors to Toyoda-Koki Kabushiki-Kaisha, Japan
Filed July 16, 1974, Ser. No. 488,998
Claims priority, application Japan, July 17, 1973, 48-81085
Int. Cl.² B24B 49/08
U.S. Cl. 51—165.77 **4 Claims**



1. A grinding machine comprising:

a bed;

a wheel slide slidably mounted on said bed;

a grinding wheel rotatably mounted on said wheel slide;

a work table for supporting a workpiece;

feed means for moving said wheel slide toward and away from said workpiece;

an electric power source;

electrode means mounted adjacent to said grinding wheel and connected to said electric power source for applying a potential to the surface of said grinding wheel;

coolant means for connecting said electrode means and said grinding wheel so as to charge said grinding wheel by creating a conductive coolant film thereon;

detecting means for detecting a difference of potential between said grinding wheel and said workpiece to generate an output voltage proportional thereto at every grinding operation, said difference of potential being changeable due to the application of coolant to said grinding wheel;

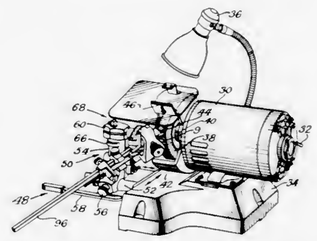
memory means for memorizing the output voltage detected by said detecting means before said coolant film on said grinding wheel is engaged with said workpiece;

setting means for reducing the memorized output voltage at a predetermined rate to provide a reference voltage corresponding to a predetermined constant gap between said grinding wheel and the workpiece;

comparator circuit means for comparing the output voltage with the reference voltage to generate a feed rate changing signal when said output voltage attains said reference voltage; and

control means for controlling said feed means so as to change the feed rate of said wheel slide in accordance with said feed rate changing signal.

3,952,459
DRILL GRINDER
Marvin C. Negley, Clarinda, Iowa, assignor to Lisle Corporation, Clarinda, Iowa
Filed Oct. 29, 1974, Ser. No. 518,757
Int. Cl.² B24B 19/00
U.S. Cl. 51—219 R **2 Claims**



1. In a drill grinder apparatus of the type including a support adjacent a grinding wheel, an arm pivoted to said support and thereby providing an axis of oscillation for a drill holder, a drill holder having a slot to receive said arm whereby said axis of oscillation, in all positions of the arm relative to the slot, passes through the slot, a slotted flange extending laterally from said shank, a clamp screw carried by said drill holder and coacting with the slot of said flange to retain the flange in any position of adjustment of said arm relative to said slot in said drill holder, the axis of a drill when in said holder being at an angle to the axis of said slot whereby said drill axis is variable by shifting said arm along said slot to increase the distance from the cutting end of the drill to said axis of oscillation whereby to increase the radius of the arc on which the cutting lip of a larger drill is ground as a result of swinging of said drill holder on said axis of oscillation, the improvement comprising means for adjusting and setting the angle of inclination of the

slot defined in the drill holder thereby to adjust the lip clearance angle of the drill, said means for adjusting including a block defining said slot, said block being pivotally attached to said drill holder and including fastening means for retaining said block in a fixed pivotal position.

3,952,460

METHOD OF MANUFACTURE OF TOOTHED CLUTCHES

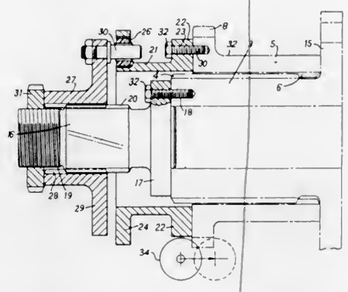
Herbert Arthur Clements, Weybridge, England, assignor to S.S.S. Patents Limited, London, England

Filed Aug. 5, 1974, Ser. No. 494,869

Claims priority, application United Kingdom, Aug. 28, 1973, 40420/73

Int. Cl.² B24B 1/00

U.S. Cl. 51—323 **2 Claims**



1. A method of manufacturing a toothed clutch of the type comprising a first rotary clutch part provided with clutch teeth, a second rotary clutch part, and an intermediate member which is provided with clutch teeth and is slidably connected to said second rotary clutch part via interengaged splines so as to be capable of movement relative to said second rotary clutch part to bring the clutch teeth of said intermediate member into and out of interengagement with the clutch teeth of said first rotary clutch part, the improvement including the steps of assembling together said intermediate member and said second rotary clutch part in the relative positions that they will eventually assume when the clutch is fully engaged and thereupon creating torque between said intermediate member and said second rotary clutch part to simulate in at least some degree the torque condition that will eventually exist between said intermediate member and said second rotary clutch part when the clutch is transmitting torque, and grinding the working surfaces of the clutch teeth of said intermediate member whilst such created torque condition is present between said intermediate member and said second rotary clutch part.

3,952,461

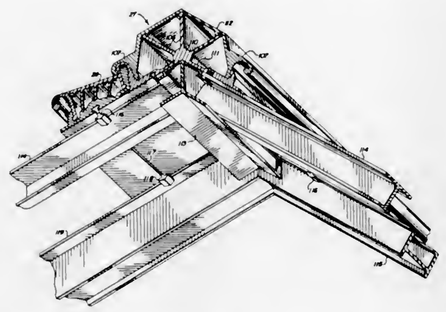
MULTI-LAYER WALLS FOR FRAMELESS BUILDINGS FORMED FROM EXTRUDED ALUMINUM OR PLASTIC INTERLOCKING WALL ELEMENTS

Lewis R. Kinsey, 108 S. 25th St., Phoenix, Ariz. 85034

Filed Dec. 26, 1974, Ser. No. 536,449

Int. Cl.² E04B 7/00, 1/343

U.S. Cl. 52—57 **2 Claims**



1. A metallic building erected from interlocking elements comprising in combination:

a sill plate for mounting on a substantially horizontal surface,

a slipper guide longitudinally positionable in said sill plate,

tie-rods demountably secured to and extending vertically upwardly from said slipper guide,

a series of upstanding, interlocking elongated wall extrusions supported on their ends side by side on said sill plate, embracing said vertical tie-rods at the interlocking junction of said wall extrusions and comprising an inside portion and an outside portion,

said inside and outside portions defining cooperating demountable hinge connections,

each of said hinged connections comprising a pair of hinge portions spacedly arranged on the inside extruded portion and on the outside extruded portion,

one of said hinge portions on said inside extruded portion cooperating with one of said hinged portions on said outside portion to form said hinged connection,

at least one latch device comprising cooperating members one on each of the extruded portions and demountably interconnected between the extruded portions,

the extruded portions being swung together on either one of their hinged portions and snapped and swung together positioned by the latch device to form the wall extrusions,

an eave plate secured by clamping means on the upper end of said tie-rod to the top of said wall extrusions,

floor extrusions supported on horizontally inwardly projecting flanges of said sill plate,

the inside portions of said wall extrusions extending vertically the height of a room of the building, with the surfaces of said inside portions serving as the inside wall of the room and the upper ends of said inside portions serving as a support for a second story floor of said building,

outside portions of further wall extrusions being positioned in end-to-end alignment with said outside portions of said wall extensions forming the first floor of the building,

inside portions of said further wall extrusions arranged in spaced end-to-end alignment with said inside portions forming a part of the first floor wall extensions to form the walls of the rooms of the second floor of the building,

a ceiling for the rooms in the building mounted on the upper ends of said inside portions of said further wall extensions,

said further wall extrusions and said ceiling supporting a roof comb,

a roof comb comprising an elongated crest member fitted for extending along the crest of the roof of the building,

a pair of elongated support members arranged to extend angularly downwardly from said crest member along each side of the crest of a roof,

at least a pair of reinforcing ribs extending outwardly and upwardly from said crest member,

an elongated cover arranged to extend along said support members, said cover being fastened to and enclosing the outer ends of said ribs,

said cover defining back portions at its peripheral edge on each side of the crest for receiving and supporting roofing members of the roof in dependent fashion, and

a frameless hollow portion wall panel arranged between floor and ceiling of a room in the building comprising an extruded inside panel portion,

an extruded outside panel portion parallelly positioned to said inside panel portion,

inner portions arranged between said inside and said outside panel portions with one juxtapositioned to each of said inside and outside panel portions,

each of said inside and outside panel portions and inner portions comprising a pair of hinge elements spacedly arranged thereon,

said hinge elements on said inside and outside panel portions cooperating with hinge elements on a different one of said inner portions to form hinge connections,

the combined inner portion and inside panel portion and the other inner portion and outside panel portion forming a pair of cooperating wall layers.

3,952,462

PANEL WALL SYSTEMS

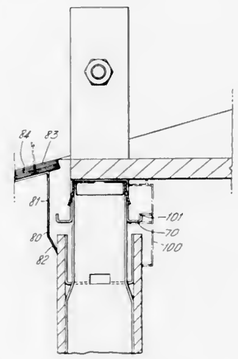
Jack Darcy Heise, Mount Maunganui, New Zealand, assignor to Barry Albert Beazley, Mount Maunganui, New Zealand

Continuation of Ser. No. 236,121, March 20, 1972, abandoned. This application May 20, 1974, Ser. No. 471,711

Claims priority, application New Zealand, Mar. 18, 1971, 163125

Int. Cl.² E04B 2/72, 2/74

U.S. Cl. 52—62 **4 Claims**



1. A panel wall system including a plurality of panels, each panel comprising at least two spaced upright members having upper and lower ends and two spaced horizontal members interconnected to the upright members inwardly of the upper and lower ends of the upright members to provide upper and lower extensions for each upright member, each upright member having a base and parallel sides extending normal to the base, each horizontal member having a base and parallel sides extending normal to the base, said upright and horizontal members constituting a frame and cladding sheets fixed to the sides of the upright members and horizontal members inwardly of the horizontal members, a base plate having a base and parallel sides extending normal to the base, each side of the base plate being provided with axially spaced slots, the lower extension of each upright member having an ear cracked out of each side thereof adjacent the base whereby the ears lie in a plane substantially parallel to the plane of the base, the lower extensions of the upright members fitting between the sides of the base plate, the ears of each side of each lower extension being engaged in two adjacent slots in the sides of the base plate by expanding the sides of the base plate slightly during insertion, the sides of the base plate, after insertion, closing to engage suitable edges of the ears, an upper edge of the ears engaging an upper edge of the slots to resist uplift, a capping member having a base and spaced parallel sides, each side of the capping member being provided with axially spaced slots, the upper extension of each upright member having an ear cracked out of each side adjacent the base whereby the ears lie in a plane substantially parallel to the plane of the base, the upper extensions of the upright members fitted between the sides of the capping member, the ears of each side of each upper extension being engaged in two adjacent slots in the sides of the capping member by expanding the sides of the capping members slightly during insertion, the sides of the capping member, after insertion, closing to engage suitable edges of the ears, a lower edge of the ears of the upper extensions engaging an upper edge of the slots of the capping member to resist uplift, each side of the base plate and capping member, at its free end, being turned to provide a substantially U-shaped member, and flashing provided in operative arrangement with one of the U-shaped members of each of the base plate and capping member.

3,952,463

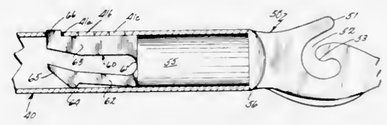
FLEXIBLE COVER SUPPORT STRUCTURE

Duane W. Lane, Charlotte, Mich., assignor to General Aluminum Products, Inc., Charlotte, Mich.

Filed May 29, 1974, Ser. No. 474,314

Int. Cl.² E04B 1/12

U.S. Cl. 52—63 **4 Claims**



1. In a collapsible enclosure having a series of wall panels hingedly connected at their upright edges and arranged in a closed polygon; a dome-shaped framework above said panels including a series of outwardly and downwardly curved interconnected tubes, the tubes including means at their outer ends for engaging said panels to retain the framework in compression; and, a flexible roof overlying said framework, said roof being interlocked at circumferentially spaced points with said engaging means; the improvement comprising: said tubes having at least two apertures adjacent the outer extremity thereof, means for adjusting the effective length of said tubes and engaging means whereby variations in the size of said roof can be accommodated,

said engaging means being integrally molded from plastic and including a shank portion telescopically slidable within the extremities of said tubes,

said adjusting means including means for restraining sliding of said shank portion within said tube when said shank portion is in at least two differing positions within said tube, and

said restraining means comprising a pair of spaced resilient legs attached to said shank portion and extendible into said tube therewith, detent means extending from one of said legs so as to be resiliently urged into one of said apertures when aligned therewith, for restraining sliding of said shank portion within said tube, the other of said legs including means for engaging the wall of said tube to compress said legs toward one another, the distance between said engaging means and said detent exceeding the diameter of said shank and the inner diameter of said tube prior to insertion of said restraining means into said tube.

3,952,464

VEHICLE CUPOLA STRUCTURE AND LIFT MEANS

Adam Edward Stupak, 10027 Baltic Ave., Cleveland, Ohio 44102

Filed Jan. 22, 1974, Ser. No. 435,480

Int. Cl.² E04B 7/16

U.S. Cl. 52—72 **1 Claim**

1. A power operated collapsible cupola for a vehicle and comprising

a quadrilateral top,

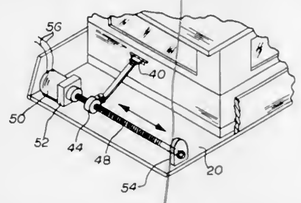
a pair of rectangular sides of the same length as said top and hingedly secured to the side edges thereof, each of said

sides formed from two longitudinally extending pieces hinged together along their adjacent edges so that said sides break inwardly under said top when said top is lowered,

a pair of ends of the same width as said top and hingedly secured thereto at the ends thereof, said ends and sides being of the same height, said ends being formed in top and bottom pieces hingedly secured together at their adjacent edges,

a control means pivotally secured to each of the bottom pieces of said ends, said control means each including a member having a tapped aperture therein,

a threaded control rod for each of said control members and each operably engaging a said aperture in one of each



control members, said control rods being horizontally positioned adjacent said ends and extend transversely of the cupola,

drive means engaging said control rods for rotating them to move said ends, sides, and top to raised operative positions and for retracting them to lowered inoperative positions, and

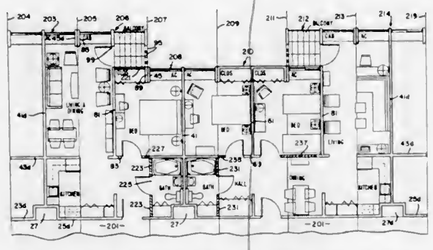
said control means including a connector link hingedly and pivotally connected at one end to said bottom end piece, and hingedly and pivotally secured at its other end to said control member for raising and lowering said cupola by axial movement of said control member, the pivotal positioning of said connector link permitting movement thereof in a direction extending transversely of the cupola.

3,952,465

BUILDING STRUCTURE FORMED OF MODULAR UNITS WITH CANTILEVERED PORTIONS FOR FORMING A CORRIDOR FLOOR

Dominic J. Masiello, Rochester, N.Y., assignor to Dominic Joseph Masiello and Louise A. Masiello, both of Rochester, N.Y.

Filed Mar. 19, 1971, Ser. No. 125,939
Int. Cl.² E04B *1/348*
U.S. Cl. 52—73 **1 Claim**



1. A habitable building structure comprising a series of separate living areas intended for occupancy by different persons, said living areas being formed at least mainly from a series of separate modular units assembled in side by side relation to each other, said modular units being of a plurality of different kinds, at least some of said modular units each having a rigid floor slab portion and a corridor wall portion rising from and formed integrally with the floor slab portion, adjacent modular units being assembled with their respective corridor wall portions in alignment with each other and with the respective side edges of the floor slab portions substantially engaging each other, the respective modular units extending from a composite corridor wall in a direction perpendicular to such corridor wall to an outer end arranged generally parallel to said corridor wall, at least some of said modular units having an approximately central wall portion rising from and formed integrally with the floor slab portion of that unit and extending from said corridor wall to said outer end in a position set materially inwardly from both lateral edges of that modular unit so that a substantial part of the floor area of that modular unit lies on each side of said central wall portion, each of said separate living areas being formed in part from that portion of one modular unit lying on one side of its central wall portion and that portion of an adjacent modular unit lying on the adjacent side of its central wall portion, a series of said modular units being assembled in a row on one side of a corridor, another series of modular units being assembled in a second row on the opposite side of the same corridor, the floor slab portions of certain of said modular units being extended in cantilever fashion beyond the respective corridor wall portions thereof to form portions of the floor of the corridor.

3,952,466

SPRING-LOADED WEAR PADS FOR CRANE BOOMS

Stanley R. Spain, Greencastle, Pa., assignor to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Aug. 8, 1974, Ser. No. 495,770
Int. Cl.² E04H *12/34*
U.S. Cl. 52—118 **10 Claims**



1. In a crane boom having relatively movable telescopic sections including at least one circumscribing boom section having a top plate which is subject to transverse bending moments and stresses during normal operations and a pair of side plates connected therewith, the improvement comprising a pair of upper wear pads arranged between said telescopically interfitting boom sections, means connected to the interior boom section of said interfitting pair of boom sections and supporting such wear pads on the interior boom section in sliding contact with said top plate of said circumscribing boom section, said wear pads slidably connected on said supporting means for lateral sliding movement relative thereto and to said boom sections, and wear pad expander means connected between and in contact with said wear pads and constantly expanding the wear pads laterally relative to the interior boom section and urging the outer sides of the wear pads into sliding contact with the side plates of said circumscribing boom section at the connection of the side plates with the top plate thereof.

3,952,467

EXTENDIBLE TOWER STRUCTURE

Jackson A. Partlow, Rock Hill, S.C., assignor to Zip-Up Lighting Tower Company, Inc., Spartanburg, S.C.

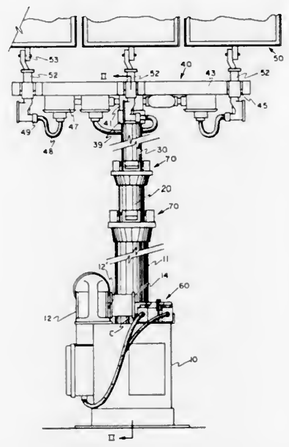
Continuation of Ser. No. 121,443, March 5, 1971, abandoned.
This application Nov. 15, 1974, Ser. No. 524,064
Int. Cl.² B66C *23/06;* **E04H** *12/34*
U.S. Cl. 52—121 **11 Claims**

1. An extendible tower comprising:

a. a base section;

b. at least one intermediate section associated with said base section, each intermediate section being nestable within a next larger section, said base and said at least one intermediate section having rotatable pulleys received within the upper and lower ends thereof, all of said upper pulleys being mounted in a plane normal to the plane of said lower pulleys,

c. a top section, said top section being nestable in the next adjacent intermediate section and having a rotatable pulley received in a lower end thereof and cable securing means received in an upper end thereof;



d. an individually adjustable external guide means for each side of each nestable section; and

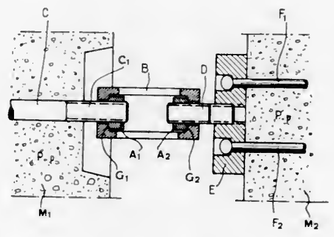
e. a single cable drive system, said system comprising a cable and drive means therefor, said cable being secured to said drive means, passing partially around said pulleys and an opposite end thereof being secured to said cable securing means within said top section, said cable passing substantially across the bottom of each intermediate section and being internally located all along said sections.

3,952,468

ASSEMBLY OF PREFABRICATED PRESTRESSED CONCRETE ELEMENTS WITH THE USE OF A POSTSTRESSING LINK MEANS

Rene Soum, 2, rue Joliment, 31 Toulouse, France

Continuation of Ser. No. 310,163, Nov. 28, 1972, abandoned.
This application May 1, 1974, Ser. No. 465,948
Claims priority, application France, Jan. 4, 1972, 72.00691
Int. Cl.² E04C *2/06, 5/12, 3/26*
U.S. Cl. 52—227 **8 Claims**



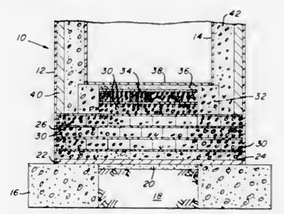
1. An assembly of prefabricated pre-stressed reinforced concrete elements, wherein each element comprises reinforcing members solid with said element and subjected to predetermined amounts of stress applied before the assembling of the elements, said assembly comprising a plurality of linking means rendering said assembly statically indeterminate through applying selectively to any reinforcement of an element supplemental stress independently of said predetermined stress, said linking means being respectively provided between any couple of said concrete elements, and each comprising: a first and a second cages (*3a*, *3b*, FIG. 3), each cage having opposite opened-ends, a first externally threaded rod made integral with one of said elements of said couple and threaded into said first cage, a second externally threaded rod made integral with the other one of said elements of said couple and threaded into said second cage, a third rod having a first and a second externally threaded extremities respectively inserted in opened ends of said first and second cages, and a first and second nuts screwed respectively in said cages onto said first and second extremities and abutting respectively against said cages by means of ball-and-socket bearings.

3,952,469

METHOD AND APPARATUS FOR CAPPING CELLULAR GLASS BLOCKS FOR THE LOAD BEARING INSULATION OF LIQUEFIED GAS STORAGE TANKS

Stanley J. Dudzinski, Trafford, Pa., assignor to Pittsburgh Corning Corporation, Pittsburgh, Pa.

Filed Feb. 6, 1975, Ser. No. 547,754
Int. Cl.² B65D *25/18*
U.S. Cl. 52—249 **12 Claims**



1. Load bearing insulation for the base of a liquefied gas storage tank having a cylindrical outer wall spaced from a cylindrical inner wall comprising,

first support means for supporting said tank outer wall, said first support means having an upper horizontal surface,

a plurality of horizontally positioned insulation blocks arranged in layers on said first support means upper horizontal surface within said tank outer wall, said layers of insulation blocks each having an upper horizontal surface,

a capping layer of irreversibly compressible inorganic particulate material applied to each horizontal surface of said layers of insulation block to form a load bearing insulation therefor, and

second support means for supporting said tank inner wall and said tank base.

3,952,470

FURNACE LINING APPARATUS

Carlisle O. Byrd, Jr., Houston, Tex., assignor to J T Thorpe Company, Houston, Tex.

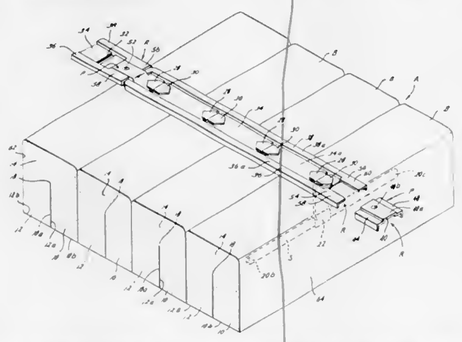
Filed June 3, 1974, Ser. No. 475,439
Int. Cl.² E04B *1/80*
U.S. Cl. 52—509 **8 Claims**

1. An apparatus for lining a wall of a furnace and like equipment, comprising:

a. a folded ceramic fiber blanket having a fold formed in a central portion thereof and having two end portions thereof folded together and extending from said fold for insulating the furnace;

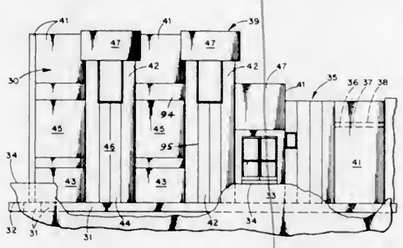
b. a support beam mounted extending along the length of said fold in said folded blanket, said folded end portions

of said folded blanket also extending inwardly from said support beam to assist in insulating said support beam;
c. a suspension arm having said support beam mounted therewith at a position on said support beam within said fold in said folded blanket;
d. said suspension arm extending from an inner end portion in said fold through said central portion of said folded blanket to an outer end portion;
e. an attachment beam for mounting with the wall of the furnace, said attachment beam having a mounting orifice formed therein;



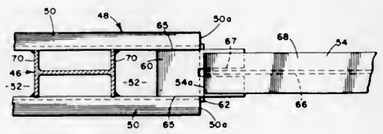
f. said suspension arm further having a mounting lug, formed at said outer end portion thereof, inserted into said mounting orifice in said attachment beam for attaching said folded blanket and said suspension arm to said attachment beam; and
g. said attachment beam further having connecting openings formed therein for passage of connecting members therethrough to attach said attachment beam to the wall of the furnace wherein said folded blanket forms an insulating lining for the wall of the furnace.

3,952,471
PRECAST WALL PANEL AND BUILDING ERECTED ON SITE THEREFROM
Edward L. Mooney, 468 Webster St., Manchester, Mass. 03101
Filed Aug. 5, 1974, Ser. No. 494,772
Int. Cl.² E04B *5/04 1/00*
U.S. Cl. 52—602 **14 Claims**



1. A pre-fabricated wall panel, adapted to be erected with similar panels to form the vertical side wall of a building, said panel comprising:
a pre-cast concrete slab of predetermined height and width extending vertically from an integral subground level, portion, supported on the building footing, to an integral above ground portion for at least one story above ground level, thereby combining in one piece both an upstanding foundation wall and an integral, unitary upstanding, side wall;
said slab being load bearing and having a main body of predetermined thickness and substantial width with a pair of spaced apart, projecting, integral, vertical side edge flanges of increased thickness substantially twice the predetermined thickness of said main body forming integral reinforced concrete vertical columns for resisting compressive stresses with a vertically extending shallow recess therebetween free of intermediate cross flanges;
vertical joint connecting and sealing means along each said vertical side edge flange for structurally affixing and sealing said slab to adjacent panels;
quick attachable affixation means along the horizontal top and bottom edges of said slab for affixing the same to said footing and to the next upper part of said building.

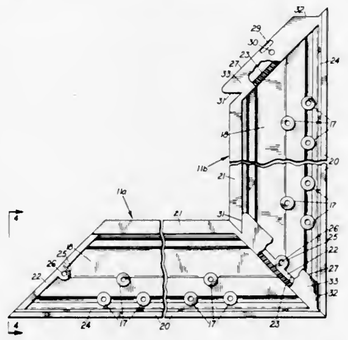
3,952,472
JOINT FOR TRANSFERRING BENDING MOMENTS
Robert L. Boehmig, 3030 Peachtree Road, Atlanta, Ga. 30305
Continuation of Ser. No. 295,216, Oct. 5, 1972, abandoned, which is a division of Ser. No. 103,665, Jan. 4, 1971, Pat. No. 3,722,169. This application Dec. 6, 1974, Ser. No. 530,450
Int. Cl.² E04B *1/35*
U.S. Cl. 52—648 **13 Claims**



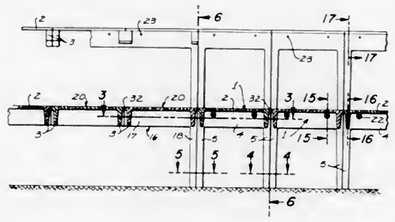
1. A joint for transferring bending moments comprising:
an elongated rigid continuous beam structure comprising first and second elongated main beam members disposed in longitudinally aligned relationship to one another and terminating, respectively, in first and second ends spaced apart longitudinally to define therebetween an elongated gap for accomodating a vertical column, and a pair of elongated spanning beam portions of sufficient length to span said gap disposed in opposed spaced relationship to one another and defining the sides of said gap, said spanning beam portions being attached to said main beam members by moment connections to provide a continuous rigid beam structure across said gap;
a vertical column extending through said gap, the cross-sectional dimensions of said vertical column and said gap being such that said beam structure is relatively movable with respect to said column so as to be relocatable vertically along said column; and
fastening means connecting said column to said spanning beam portions.

3,952,473
UNIVERSAL FRAME MEMBER
Edwin L. Jesse, West Caldwell, N.J., assignor to Evans Products Company, Portland, Oreg.
Filed Oct. 30, 1974, Ser. No. 519,066
Int. Cl.² E04C *2/38;* **F16B** *12/44*
U.S. Cl. 52—656 **7 Claims**

1. A universal frame member designed to be assembled together with other frame members of identical cross-section and end configuration into a generally rectangular-shaped frame comprising a body having a decorative surface and an under side to said decorative surface, a first and second end wall and an inner and outer side wall extending from said under side, said end walls being at a mitered angle with respect to the side walls, said side walls being relatively longer than said end walls, a flange extending perpendicularly outwardly from a first of said end walls, at least one fastening means receiving receptacle located along the second of said end walls, and means located on said flange for effecting a snap lock fit when two or more of said frame members are assembled together, said means for effecting a snap lock comprising a lug member extending perpendicularly downwardly from said flange at a location spaced outwardly from said first of said end walls to press fit against the periphery of the fastening means receiving receptacle of an adjacently positioned frame member.

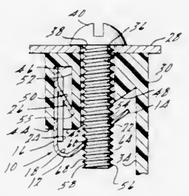


3,952,474
METHOD OF ASSEMBLING BUILDING STRUCTURES
Edward K. Rice, 2077 Linda Flora Drive, Los Angeles, Calif. 90024
Division of Ser. No. 837,986, June 2, 1969, Pat. No. 3,744,200. This application Mar. 12, 1973, Ser. No. 340,391
Int. Cl.² E04B *1/348;* **E04G** *21/14*
U.S. Cl. 52—747 **4 Claims**



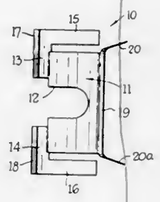
1. A method of assembling a multiple story building utilizing precast concrete modules each having one elongated slab and at least one beam extending the length thereof and legs at the ends of the beam, the legs having free lower ends terminating in generally planar end surfaces and having vertical tendon guideways extending therethrough and through the ends of the beams and slabs, the method characterized by:
a. preparing a foundation with tendons each having an end anchored therein;
b. raising a module over said foundation sufficiently to permit threading corresponding anchored tendons in its guideways;
c. threading said tendons through said guideways;
d. lowering said module along said threaded tendons until said end surfaces abut a supporting surface;
e. raising and lowering succeeding modules and threading said tendons through the guideways thereof to form a stack of modules, wherein the legs of succeeding modules rest on the slabs of preceding modules;
f. and applying tension force throughout the length of each tendon protruding from the uppermost module and reacting said tension force against the uppermost module to simultaneously apply throughout the stack of modules a corresponding compression force sufficient to provide a frictional bond between the end surfaces of the legs of the modules with respect to the underlying surface of the foundation and preceding modules.

3,952,475
FASTENER AND JOINT FORMED THEREWITH
Joseph H. Paskert, Lakewood, Ohio, assignor to Eaton Corporation, Cleveland, Ohio
Division of Ser. No. 526,887, Nov. 27, 1974. This application May 9, 1975, Ser. No. 576,391
Int. Cl.² F16B *5/02*
U.S. Cl. 52—758 F **2 Claims**



1. Means for joining a cover plate to a housing comprising:
A. a plurality of screws;
B. a plurality of clearance holes formed through said cover plate for receiving said screws;
C. a plurality of bosses disposed at the periphery of said housing, registering with said cover plate clearance holes and having clearance bores formed therethrough for receiving said screws, each of said bosses including:
1. an edge surface substantially parallel to the axis of said clearance bore,
2. a substantially flat, top flange surface adjacent said plate and having disposed thereon
a. a raised bearing surface extending inwardly from the periphery of said boss and a slot extending from said edge surface encompassing said clearance bore; and
b. a raised, semicircular retaining surface disposed at the inner periphery of said clearance bore and spaced radially inward from said bearing surface,
3. an inclinded bottom surface forming an acute included angle with said innermost edge;
and
D. a plurality of generally U-shaped resilient clips engaging said bosses, each of said clips comprising:
1. a straight side portion adapted to abut said edge surface;
2. a top, retaining portion extending perpendicularly from said side portion and having an aperture formed therethrough, and receiving said semicircular retaining surface to prevent movement of said clip toward said edge; and
3. a bottom, locking portion resiliently extending from said side portion having an aperture formed therethrough sized to receive said screw and having a relaxed position wherein said locking portion is disposed in an angular relationship relative to the axis of the clearance bore such that the axis of said aperture describes an acute angle with the axis of the clearance bore; and being movable
a. in response to the insertion of said screw through said clearance bore to a loaded position wherein the axis of said aperture is more nearly coincident with the axis of said clearance bore to operatively engage said locking portion, thereby allowing the ratcheting passage of said screw; and being further movable
b. in response to tightening engagement of the screw to a locked position intermediate said relaxed and loaded positions wherein the surfaces of the locking portion adjacent the through bore threadedly engage the screw.

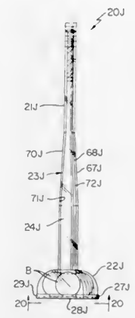
3,952,476
BEADING CLIP
Barry Roger Michael Barnett, West Drayton, and Edward Harry Frederick Ferguson, Harefield, both of England, assignors to TRW Inc., Cleveland, Ohio
Filed Apr. 25, 1974, Ser. No. 463,945
Claims priority, application United Kingdom, May 25, 1973, 25093/73
Int. Cl.² F16B *1/00*
U.S. Cl. 52—760 **3 Claims**



1. A sheet metal clip for attaching a beading to a support having a headed stud shank attached to and projecting outwardly from a surface of the support with the stud head being spaced from the support, the clip comprising an arcuate body portion having a stud shank receiving slot formed therein and opening out of one side thereof, at least one support surface engaging, substantially planar leg joined to said one side of the arcuate body portion and extending toward the opposite side thereof and being axially spaced from the remainder of said body portion a distance which is not less than the length of the stud shank so that said body portion is depressed toward the plane of the leg and tensioned against the undersurface of the stud head by the leg when the stud shank is seated in the slot in said body portion, and abutment means for clamping the edges of a beading to the support, said abutment means being joined to each side of said body portion, portions of the abutment means on one side of the body portion lying substantially in the plane of said leg and the abutment means on the opposite side of said body portion being located substantially above the plane of said leg.

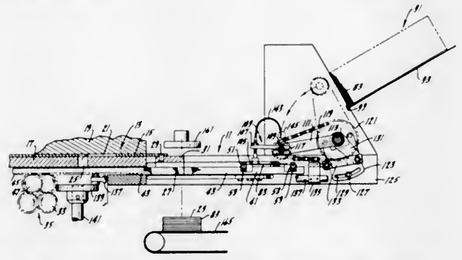
3,952,477
METHOD OF MAKING A PACKAGE CONSTRUCTION FOR BASEBALL TYPE PLAYING COMPONENTS
James T. Candor, 5440 Cynthia Lane, Dayton, Ohio 45429, and Joseph V. Tassone, 2425 Rawnsdale Road, Kettering, Ohio 45440
Continuation-in-part of Ser. Nos. 320,206, Jan. 2, 1973, Pat. No. 3,819,038, and Ser. No. 326,805, Jan. 26, 1973, Pat. No. 3,830,362. This application June 21, 1974, Ser. No. 481,776
Int. Cl.² B65B *5/04*
U.S. Cl. 53—3 **9 Claims**

1. A method of making a package construction comprising the steps of providing a tubular baseball and softball tee member having a chamber therein of a size to accommodate an entire bat of a conventional baseball or softball ballbat configuration, providing a bat of generally conventional baseball or softball ballbat configuration for hitting a ball off of said tee member, and telescopically disposing the entire said bat into



said chamber of said tee member to provide a self-contained package construction thereof.

3,952,478
VACUUM SHEET APPLICATOR
Louis R. Richards, Mokena, and Kenneth F. Sandberg, Lockport, both of Ill., assignors to Formax, Inc., Mokena, Ill.
Filed Oct. 10, 1974, Ser. No. 513,737
Int. Cl.² B65B *25/08, 41/06*
U.S. Cl. 53—122 **30 Claims**



1. A sheet applicator for applying thin, flexible sheets of paper, cellophane, plastic film or like material, individually, to a series of hamburger patties or like flat articles of given surface configuration, as the articles traverse a given discharge path in sequential spaced relation to one another, the sheet applicator comprising:

a vacuum transfer shuttle reciprocally movable along a shuttle path between a sheet application position intersecting the article discharge path and a sheet transfer position adjacent to, but spaced from the discharge path,

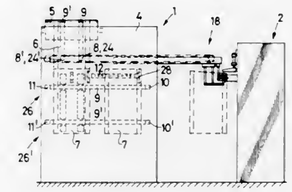
the shuttle having a central opening which encompasses the article discharge path, through which one of the articles may pass freely, when the shuttle is in its application position,

the shuttle including at least three small vacuum grippers distributed around the peripheral edges of the central opening in the shuttle, just beyond the edges of an article passing therethrough, with said vacuum grippers being distributed around at least a major portion of the peripheral edges of said central opening;

a sheet feeder, including releasable sheet holder means, for depositing a single, thin, flexible sheet on the shuttle in registry with the shuttle vacuum grippers whenever the shuttle reaches its sheet transfer position, each sheet being of a size and configuration to cover all of the shuttle vacuum grippers; and

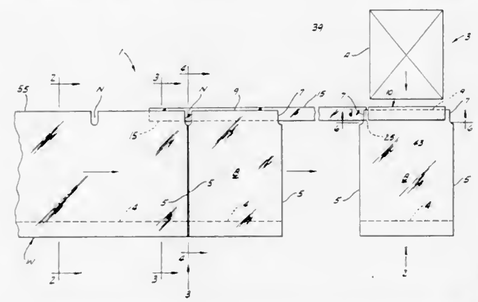
actuating means for actuating the shuttle and the sheet feeder in synchronism with the movement of the articles along the discharge path and in synchronism with each other, so that the sheet holder means of the sheet feeder releases each sheet as it arrives at the transfer position in registry with the shuttle vacuum grippers and so that the shuttle is in its sheet application position each time an article moves therethrough.

3,952,479
MACHINE FOR SLIDING VALVED SACKS ONTO THE FILLING NIPPLE OF A FILLING MACHINE
Fritz Achelpohl, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany
Filed Dec. 26, 1974, Ser. No. 536,473
Claims priority, application Germany, Jan. 4, 1974, 2400265
Int. Cl.² B65B *43/12, 43/30*
U.S. Cl. 53—187 **8 Claims**



1. An apparatus for placing valved sacks onto the filling nipple of a filling machine, comprising storage means for valved sacks having a valve in the side wall of the sack, means for feeding the valved sacks individually in a vertical position with the valve positioned at the upper end of the sack, said feeding means including a double belt conveyor mounted for movement about vertical axes and a double suction belt for opening the valve, said double suction belt mounted for movement parallel to the double belt conveyor at the vertical level of the valve in the side wall of the sack, guide means mounted parallel to the filling nipple, and tong means mounted on the guide means for movement between the feeding means and the filling nipple, said tong means having means for engaging the sack below the valve and spreading tong means carrying finger means for engaging in the pre-opened valve so that the valve is maintained open and placed onto the filling nipple during the movement of said tong means.

3,952,480
PACKAGING APPARATUS
John E. Nordstrom, Two Rivers, Wis., assignor to Hayssen Manufacturing Co., Sheboygan, Wis.
Filed Apr. 28, 1975, Ser. No. 572,094
Int. Cl.² B65B *5/02, 43/30, 47/06*
U.S. Cl. 53—187 **24 Claims**



1. Packaging apparatus comprising means for feeding bags sidewise to a loading station, each bag being an open mouth bag and each wall of the bag having a flap at its mouth end;

a pair of clamps at the loading station for clamping the flaps, each clamp comprising a pair of jaws movable relatively to one another between an open position for sidewise entry of a flap therebetween and a closed position for clamping the flap;

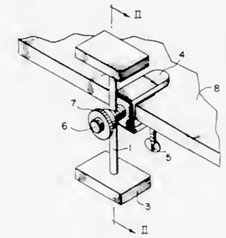
means mounting the clamps for movement relatively to one another between a flap-receiving position wherein the clamps are relatively close together and a bag-opening position wherein the clamps are spread apart, said clamps when in flap-receiving position with their jaws open being adapted for sidewise entry therein of the flaps of a bag as the bag is fed sidewise to the loading station;

means for closing the jaws of each clamp for clamping the flaps;

means for moving the clamps relatively to one another with the flaps clamped therein to said bag-opening position for opening the bag; and

means at the loading station for loading the opened bag.

3,952,481
CONTAINER LOADING DEVICE
Anders Albertsen, Leonardo, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Jan. 9, 1975, Ser. No. 539,645
Int. Cl.² B65B *67/04*
U.S. Cl. 53—392 **6 Claims**



1. A container loading and unloading device for attaching to a counter surface comprising:

a. a support arm having a first end and a second end opposite each other;

b. a clamp means rotatably mounted to the support arm between the first end and the second end and fixedly attached to the counter surface in such a manner that the support arm rotates in a vertical plane, wherein the clamp means is comprised of:

i. a U-shaped channel having a first side and a second side parallel to each other and a third side perpendicular to the first side and the second side;

i.i. a clamp screw passing through the first side for fixedly attaching the clamp means to the counter surface;

i.i.i. a shaft passing through the third side for rotatably mounting the support arm to the clamp means; and

i.v. a shaft nut screwably attached to the shaft for preventing axial motion of the support arm on the shaft;

c. a first pedestal attached to the first end of the support arm; and

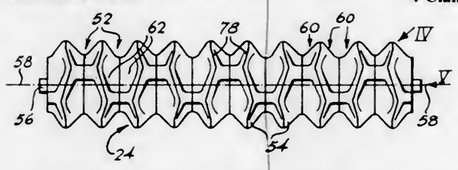
d. a second pedestal attached to the second end of the support arm;

each said pedestal being adapted in turn to support an article with a bag thereover and the device being arranged to unload the bagged article from the pedestal when the support arm is rotated in the vertical plane.

3,952,482
BUTT LIFTING ROLLER FOR SUGAR CANE HARVESTERS

Donald Jonathon Quick, Bundaberg, Australia, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Oct. 4, 1974, Ser. No. 512,274
Claims priority, application United Kingdom, Oct. 13, 1973, 47911/73
Int. Cl.² A01D *45/10*
U.S. Cl. 56—13.9 **4 Claims**

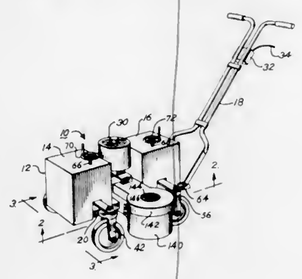


1. A sugar cane harvester comprising base cutting means capable of severing canes from their roots, a rotatable feed member positioned adjacent the base cutting means to intercept canes severed by the base cutting means, and drive means capable of rotating the feed member, characterized in that the feed member includes spaced corrugated discs that form ridges which define grooves extending around its axis of rotation with a width that varies from place to place along the length of said grooves, the dimensions of each groove being such that the end of a cane stick can at least partially enter therein.

3,952,483
TRIMMER WITH LATERALLY POSITIONED BLADE AND SEPARATELY ADJUSTABLE FRONT AND REAR WHEELS

Dean H. Masterson, R.R. No. 5, Box 467, LaPorte, Ind. 46350

Filed Mar. 1, 1974, Ser. No. 447,069
Int. Cl.² A01D *35/262*
U.S. Cl. 56—17.2 **5 Claims**

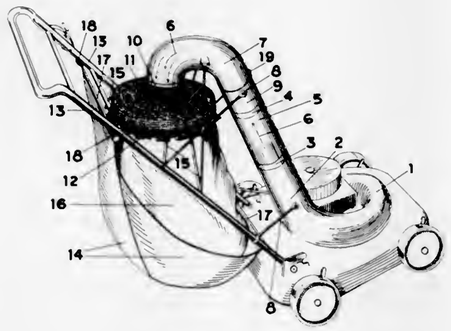


1. A lawn trimmer comprising a frame having a lateral extension on only one side, forward and rearward wheel means supporting said frame above the ground and being disposed forwardly and rearwardly of said frame extension, said forward wheel means including a transversely disposed cross member and a caster mounted on each end of said member and said rearward wheel means including a transversely disposed cross member and a wheel mounted on each end of said member, a rotary blade mounted on said frame extension near the outer end thereof for rotation on a substantially horizontal plane and being disposed principally laterally outwardly from each wheel means, a motor on said frame, power transmission means interconnecting said motor and blade, an adjustment means for said forward and rearward wheel means for adjusting the said frame vertically relative to said wheel means and said blade relative to the ground, each said adjustment means including a vertically extending screw rotatably secured to said frame, a nut fixed to the respective one of said members, said screw and nut being threadedly connected, and means for manually rotating said screw, whereby said frame may be vertically adjusted by rotating said screws.

3,952,484
LAWN MOWER

Earl C. Van Swearingen, 5714 Driftwood Parkway, Cape Coral, Fla. 33904

Filed May 14, 1974, Ser. No. 469,880
Int. Cl.² A01D *35/22*
U.S. Cl. 56—202 **1 Claim**



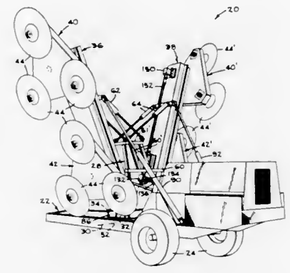
1. An improved lawn mower of the rotary cutter type having a rotary cutter housing, handles to guide said lawn mower, said handles attached to and projecting upwardly from said rotary cutter housing, a substantially horizontal circular bag holding frame attached to said handles, a cut grass elevating tube carried by said rotary cutter housing, said tube curved near its upper grass outlet end to deliver cut grass substantially vertically downward into a cut grass circular bag recepticle, a circular air release mesh surrounding and attached to said tube and attached to said circular bag holding frame and fastening means fastening said circular mesh and said circular bag to said circular bag holding frame, said elevating tube extending upwardly above said air release mesh and curved downwardly with its outlet end entering said air release mesh substantially centrally therein.

3,952,485
ADJUSTABLE HEDGER

Leon R. McRobert, Ocoee, Fla., assignor to FMC Corporation, San Jose, Calif.

Filed Apr. 16, 1975, Ser. No. 568,645
Int. Cl.² A01D *55/18*
U.S. Cl. 56—235 **15 Claims**

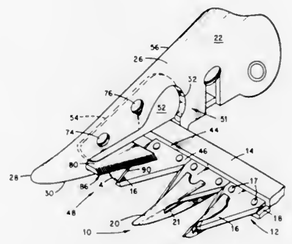
1. An adjustable hedger movable between rows of trees or the like to be trimmed comprising; a mobile vehicle having a longitudinal axis and including a chassis, a sub-frame supported on said chassis for pivotal movement about a transverse pivot axis, a cutter boom supported by said sub-frame for translatory movement parallel to said transverse pivot axis and for pivotal movement in a transverse plane containing said transverse pivot axis, rotatable cutter means on said boom, and power means on said vehicle for driving said rotatable cutter means and for independently translating and pivoting said boom relative to said sub-frame.



3,952,486
RECIPROCATING MOWER SHOE ATTACHMENT

Elmer E. Bryant, Rte. No. 2, Townsend, Tenn. 37882

Filed Jan. 20, 1975, Ser. No. 542,169
Int. Cl.² A01D *55/02*
U.S. Cl. 56—303 **2 Claims**

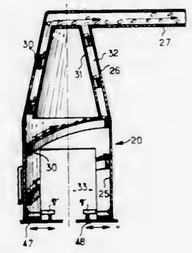


1. An attachment in combination with a shoe of a reciprocating type mower having a reciprocating sickle blade including sickle knives mounted on a sickle bar, said shoe having a generally upright portion in which there is provided a slot through which the outermost end portion of the sickle blade together with the outermost sickle knife passes during its reciprocatory movement, said attachment including
- a generally planar upright shield disposed in substantially parallel relationship to said shoe and covering said slot in said shoe, said shield defining vertically oriented elongated holes in said shield, means adjustably received in said holes and releasably mounting said shield on said shoe in a selectable vertical position relative to said slot in said shoe, and
- a generally rectangular planar blade mounted in substantially perpendicular relation to said shield on the lower edge of said shield and extending therefrom and through said slot in said shoe and disposed in cantilevered relationship to said outermost sickle knife at a location spaced apart from means mounting said sickle knife on said sickle bar, said blade terminating adjacent the outermost sickle knife in a cutting edge having serrations along the length thereof and coacting with said sickle knife for performing a cutting function.

3,952,487
MACHINE FOR AUTOMATICALLY GATHERING FRUITS AND IN PARTICULAR ENABLING VINTAGING

Georges Guibeaud, 58, rue Marechal Foch, 66000 Perpignan, France

Filed July 22, 1974, Ser. No. 490,859
Claims priority, application France, July 23, 1973, 73.26974
Int. Cl.² A01D *46/00*
U.S. Cl. 56—328 R **13 Claims**

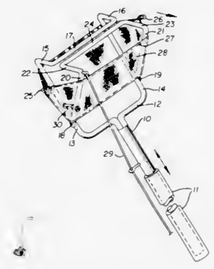


1. A machine for automatically picking fruits and berries on shrubs comprising means for enclosing the shrubs within an enclosed space which is subjected to the action of an air stream likely to sever the fruits and berries, said enclosed space comprises at least one bell which encloses in substantially fluid-tight relationship the major part of the shrub; means for blowing within the enclosed space an air flow of rising gyratory displacement, means for modulating and vibrating the gyratory rising air flow in the bell, and means for receiving within a top portion of the bell the severed fruits which have risen to the top portion by the centrifugal motion of the air flow.

3,952,488
FRUIT PICKER

Mark B. Coulter, P.O. Box 3352, St. Petersburg, Fla. 33731

Filed Jan. 7, 1975, Ser. No. 539,257
Int. Cl.² A01D *46/24*
U.S. Cl. 56—333 **6 Claims**



1. A fruit picker comprising a fixed jaw on a pole-like handle, a movable jaw and means pivotally securing said movable jaw to said fixed jaw, means for moving said movable jaw relative to said fixed jaw, said fixed jaw being bifurcated and having spaced parallel portions, right angular parallel extensions on said spaced parallel portions and an elongated straight portion joining said right angular extensions, said movable jaw having secondary spaced parallel portions, secondary right angular extensions on said secondary parallel portions of said movable jaw and a secondary elongated straight portion joining said secondary right angular extensions, said means pivoting said movable jaw to said fixed jaw

engaging said spaced parallel portions and secondary spaced parallel portions respectively, said straight portions arranged in normally closely spaced parallel relation to one another, a bag having an enlarged open upper end secured to said jaws in outwardly spaced relation to said straight portions.

3,952,489

HAY-MAKING MACHINES

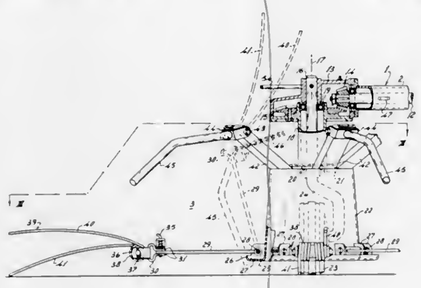
Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Filed June 11, 1974, Ser. No. 478,227

Claims priority, application Netherlands, June 13, 1973, 7308237

Int. Cl.² A01D 79/00

U.S. Cl. 56—370 47 Claims



1. A hay making machine comprising a frame and at least one rake head rotatably mounted on said frame, said rake head comprising a first group of crop working elements and a second group of crop working elements, each of said groups having corresponding arms which are different for each group and fastening portions that pivotably connect same to a central hub-like portion, said groups each being pivotable and vertically movable relative to said hub-like portion independent of the other group and driving means connected to said head to rotate same about a non-horizontal axis, said first group of elements including raking elements which are pivotable about an axis that is substantially perpendicular to the axis of rotation of said head.

3,952,490

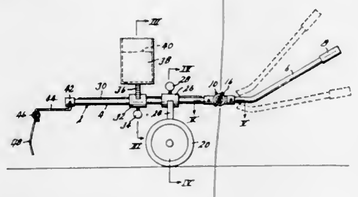
LAWN RAKE

Furn O. Brockman, 3843 61st St., Kansas City, Mo. 64130

Filed Nov. 15, 1974, Ser. No. 524,366

Int. Cl.² A01D 7/00

U.S. Cl. 56—400.14 2 Claims



1. A lawn rake comprising:

a. an elongated longitudinally extending frame consisting of a substantially horizontal front bar section and an inclined rear bar section which constitutes a handle,

b. a generally horizontal transverse rake bar at the forward end of said frame,

c. means securing said rake bar to said frame,

d. rake tines carried by said rake bar and projecting downwardly therefrom,

e. ground-engaging wheels carried rotatably by said frame intermediate its ends and operable to support said frame above the ground, whereby upward and downward movement of the handle end of said frame will respectively lower said tines to the ground and raise them above the ground,

f. a weight carried by said frame intermediate said wheels and said tines, whereby to bias said tines against the ground, said weight comprising an open-topped container mounted on said frame and adapted to contain material of any desired density and mass, and

g. means operable to permit adjustable forward and rearward movement of said container relative to said frame.

3,952,491

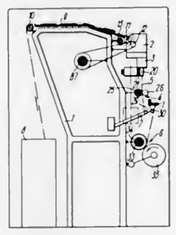
OPEN-END SPINNING FRAME

Alexandr Alexeevich Sharychenkov, Ternovka, ulitsa Experimentalnaya, 1, kv. 67, Penza, U.S.S.R.

Filed June 21, 1974, Ser. No. 481,822

Int. Cl.² D01H 1/12

U.S. Cl. 57—34 R 6 Claims



1. An open-end spinning frame comprising a plurality of spinning arrangements, each of which comprises: a combing drive roll; a feed roller; a means for rotating said feed roller; a clutch to transmit rotation from said means to said feed roller; a twister having a shaft provided with a flexible coupling running thereover to impart rotation thereto; a motion for retracting said flexible coupling from the twister shaft; a motion for delivering the yarn out of said twister installed beneath said twister; s building motion provided with a brake member; a yarn tension pickup lever disposed intermediate said building motion and said delivery motion; a motion for simultaneously disconnecting and sequentially actuating said feed roller, twister and building motion incorporating a bar displacable to two positions for disconnection and actuation, respectively, and a hollow cylinder, with said bar running through said hollow cylinder, a means for spring-urging said bar to said cylinder; a means for positively displacing said bar in a vertical plane to one of said positions to effect said disconnection; a means positively displacing said bar in a vertical plane to the other of said positions to effect said actuation; a stop mounted on the bar and adapted to cooperate with said feed roller clutch in the two positions of said bar; another stop mounted on the bar and adapted to cooperate with said motion for retracting said flexible coupling from the twister shaft; said cylinder being linked with the bar in order to be able to travel therewith to said disconnection position thereof; a stop provided on said cylinder and adapted to cooperate with the brake member of the building motion; and a means for temporarily restraining the cylinder from accompanying the bar in the travel thereof to the position of actuation of the building motion in the course of resumption of operation of the spinning arrangement.

3,952,492

METHOD AND APPARATUS FOR CONTINUOUSLY CONNECTING A DISPLACEABLE PNEUMATIC CONDUIT WITH A MAIN PNEUMATIC DUCT IN A TEXTILE MACHINE

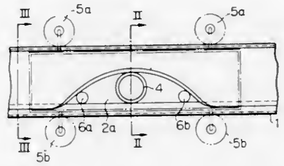
Tsutomu Miyazaki; Takashi Kato, both of Kariya; Toshio Yoshizawa, Chiryu, and Yasuo Yamada, Kariya, all of Japan, assignors to Daiwa Boseki Kabushiki Kaisha, Osaka and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, both of, Japan

Filed June 27, 1974, Ser. No. 483,560

Claims priority, application Japan, June 28, 1973, 48-73410; July 24, 1973, 48-83469; Nov. 22, 1973, 48-131552; Dec. 4, 1973, 48-135962

Int. Cl.² D01H 11/00

U.S. Cl. 57—34.5 13 Claims



1. In a textile machine provided with displaceable means for carrying out an operation utilizing suction air and a main pneumatic duct disposed along the entire length of the machine for applying suction air pressure to said displaceable means, and a suction source for creating said suction pressure, the improvement comprising means for continuously connecting said main duct with said displaceable means, said means for continuously connecting said main duct comprising a continuous aperture formed in said main duct along the longitudinal direction of said duct, means for covering said continuous aperture to form a space along said continuous aperture; said displaceable means comprising a pneumatic pipe means, a connecting pipe with an end portion thereof inserted into said duct through said space and connected to said pneumatic pipe means, means for sealing said space on either side of said connecting pipe when said connecting pipe is displaced along said aperture according to displacement of said displaceable means.

3,952,493

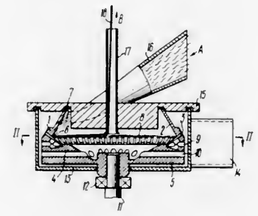
APPARATUS FOR RINGLESS SPINNING OF FIBERS

Igor Stepanovich Khomyakov, ulitsa Sovetskaya, 125, kv. 23, and Albert Arturovich Leinek, ulitsa Sovetskaya, 111, kv. 39, both of Kostroma, U.S.S.R.

Filed Feb. 20, 1974, Ser. No. 444,113

Int. Cl.² D01H 1/12

U.S. Cl. 57—58.89 5 Claims



1. An apparatus for ringless spinning of fibres comprising, in combination, a rotatably mounted spinning bowl having a side wall, said bowl side wall being provided with an inwardly inclined, inner surface of frusto-conical shape, a circumferentially extending row of downwardly inclined pins mounted in their upper ends on said side wall inner surface with a lower portion of said inner surface extending below said row of pins to define with said inner surface a circumferentially extending trough, said pins being arranged in a uniform, spaced-apart relationship to permit the passage therethrough of unspinnable fibres and dust only, said side wall being provided with a plurality of circumferentially spaced, radially extending apertures having inner ends opening into said inner surface wall portion below said row of pins, means for introducing fibres into said bowl, means for rotating said bowl to draw fibres through said introducing means into said bowl and to deposit said fibres in said trough in the form of a sliver whereby unspinnable fibres and dust are moved downwardly along said inclined inner surface through the passages between said pins and into said apertures for discharge from said bowl by the centrifugal forces generated by the rotation of said bowl and means for conducting said sliver out of said bowl in the form of spun yarn.

3,952,494

OPEN-END SPINNING UNIT WITH A SPINNING ROTOR

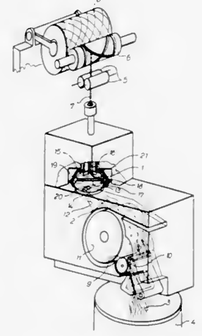
Jan Junek; Josef Ripka, both of Usti nad Orlici; Vaclav Vobornik, Letohrad; Frantisek Hortlik; Frantisek Jaros, both of Usti nad Orlici; Jiri Elias, Brandys nad Orlici; Vaclav Brynda; Karel Mares, both of Usti nad Orlici; Zdenek Kotrba; Ludmila Lihtarova, both of Usti nad Orlici; Marie Brozkova, and Bozena Rehackova, both of Usti nad Orlici, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed Oct. 22, 1974, Ser. No. 516,885

Claims priority, application Czechoslovakia, Oct. 24, 1973, 7303-73

Int. Cl.² D01H 1/12

U.S. Cl. 57—58.89 16 Claims



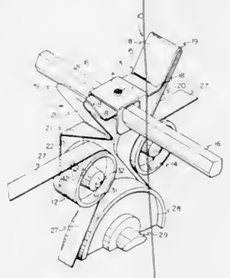
1. An open-end spinning unit comprising a spinning rotor having a lower side and an upper side, a lid inserted into a front opening provided in said lower side, said lid being bored so as to form a fiber supply duct to convey separated fibers into the interior of said spinning rotor; a yarn take-off duct extending through said upper side of the spinning rotor and adapted to convey the yarn via an outlet port out of the interior of the spinning rotor; a separator secured to said lid and designed to divide the rotor interior into a fiber zone and a yarn producing and take-off zone, the front surface of said separator, which faces said yarn take-off duct, constituting a directing wall for directing the yarn end being returned to be spun-in, the circumferential edge of said directing wall being located in a space defined by a pair of planes perpendicular to

the spinning rotor axis, one of said planes passing through the maximum yarn producing and take-off zone diameter and the other being spaced 6 mm therefrom in the direction toward the yarn take-off duct.

3,952,495
TENSION PULLEY ASSEMBLY FOR TEXTILE SPINNING MACHINES

Robert H. Petty, Sanford, N.C., assignor to Roberts Company, Sanford, N.C.

Filed Feb. 20, 1974, Ser. No. 443,972
Int. Cl.² D01H *1/20*
U.S. Cl. 57—105 **7 Claims**

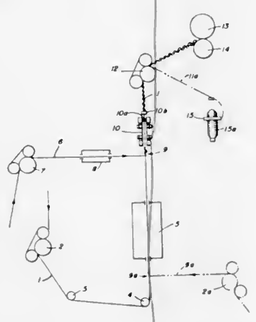


1. A drive tape tension pulley assembly of the type used on textile spinning frames comprising: means for attaching said assembly to a support bar means of said frame; and a resiliently flexible unitary tensioning and support means extending from said attaching means and operatively mounting at least one pulley means, the main tensioning effect of the assembly being a J-shaped portion of said unitary tension support means which is inherently limited in movement in one direction but is tensionly moveable in the opposite direction whereby both mounting support and drive tape tension is imparted to said pulley.

3,952,496
COMPOSITE THREAD

Manfred Nagel, Wawern, and Rainer Seuss, Konz, both of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 12,220, Feb. 19, 1970, Pat. No. 3,763,640.
This application May 21, 1973, Ser. No. 362,183
Claims priority, application Germany, Feb. 19, 1969, 1908219
Int. Cl.² D02G *3/34, 1/02*
U.S. Cl. 57—144 **14 Claims**

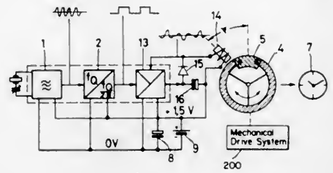


1. A composite thread comprising at least one false-twisted multifilament core thread and a sheath consisting of at least one additional multifilament thread wrapped around the core thread with at least a partial separation and spreading out of the sheath thread into its individual filaments longitudinally of the core thread in an irregular and fluctuating enveloping pattern of the individual filaments along the core thread, said sheath exhibiting along random portions of the core thread an enlarged nodule characterized by a reverse overlapping application of an individual filament or group of filaments wrapped forwardly and backwardly over the nodule longitudinally of the core thread.

3,952,497
METHOD AND APPARATUS FOR SYNCHRONIZING ANDOSCILLATING SYSTEM WHICH IS DRIVEN BY AN ENERGY STORAGE DEVICE

Hansrichard Schulz, VS-Villingen, and Herbert Hummel, Niedereschach, both of Germany, assignors to Heinz Jauch, VS-Schwenningen, Germany

Filed Oct. 23, 1974, Ser. No. 517,430
Claims priority, application Germany, Oct. 24, 1973, 2353200
Int. Cl.² G04C *3/04*
U.S. Cl. 58—28 R **30 Claims**



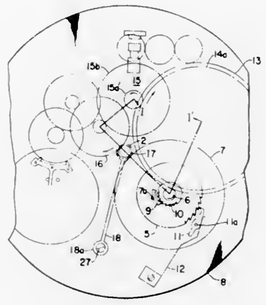
1. A timing apparatus comprising an oscillating system driven by a mechanical energy storage means, a quartz timing oscillator, a frequency divider coupled to said oscillator for forming timing pulses, a synchronization means acted on by said pulses and controlling said system and deriving movement pulses from said system, a phase comparison stage connected to the divider and to the synchronization means, said synchronization means being subjected to a synchronizing action corresponding to the relative phase position between the timing pulses and the movement pulses.

3,952,498
AUTOMATIC BARREL WINDING MECHANISM

Mituo Saito, and Kotaro Takahashi, both of Tokyo, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Sept. 26, 1974, Ser. No. 509,401
Claims priority, application Japan, Sept. 28, 1973, 48-108972
Int. Cl.² G04B *5/02*
U.S. Cl. 58—82 A **3 Claims**

1. In an automatic barrel winding mechanism of a watch movement, comprising: a rigid frame; a member preferably a barrel bridge or pillar plate provided for the rigid frame; a winding eccentric mass pivotably mounted on said member; a pinion member rigidly connected with said eccentric mass for unitary rotation therewith; a barrel including a power spring; and a reduction gear train including a winding gear wheel which cooperates with said barrel, and a second gear means in mesh with the winding gear wheel and the pinion member, the improvement that means allowing the second gear means to rotate exclusively only in the barrel winding direction is provided, said means including a pawl mounted on said member, a ratchet wheel integral with the second gear means, and a spring mounted on said member for resiliently urging the pawl towards the ratchet wheel in which the winding torque ratio of said mechanism is 0.5 – 1.1.



3,952,499
WATCH CASES, DIALS AND BEZELS

Emeric Reisman, 4705 16th Ave., Brooklyn, N.Y. 11204

Filed Mar. 4, 1975, Ser. No. 555,235
Int. Cl.² G04B *19/24, 37/06*
U.S. Cl. 58—88 R **2 Claims**



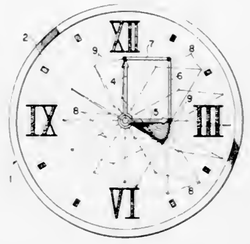
1. A one piece construction forming the entire top cover for a timepiece movement except at the center thereof comprising the dial for the timepiece and the entire case therefor except at the bottom surface of the movement, said case having a groove thereon for receipt of a crystal.

3,952,500
ORNAMENTAL CLOCK

Hiroshi Tomura, Tokyo, Japan, assignor to Aoki Ltd., Japan

Filed Dec. 30, 1974, Ser. No. 537,425
Claims priority, application Japan, Jan. 23, 1974, 49-9663[U]
Int. Cl.² G04B *19/04, 45/00*
U.S. Cl. 58—126 D **4 Claims**

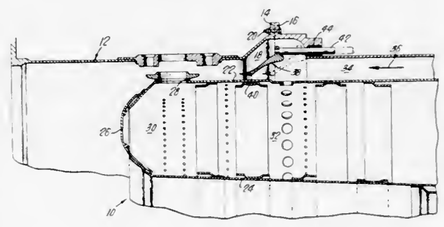
1. In a timepiece having time indicia on a face thereof, a minute hand and an hour hand shorter in length than said minute hand, said minute hand and said hour hand being driven rotationally about a common axis of rotation for indicating time in conjunction with said time indicia, said minute hand and said hour hand each having an end portion remote from said axis of rotation, a first link of a length substantially equal in length to the minute hand and having a first end portion pivotally connected to said end portion of said hour hand remote from said axis of rotation for rotation therewith, a second link of a length substantially equal in length to the hour hand and having a first end portion pivotally connected to said end portion of said minute hand remote from said axis of rotation for rotation therewith, said first link and said second link having second end portions, and means pivotally connecting said second end portions of said first link and said second link remote from said axis of rotation, whereby as the minute hand, the hour hand, the first link, and said second link are rotationally driven parallelograms of varying configuration are defined thereby.



3,952,501
GAS TURBINE CONTROL

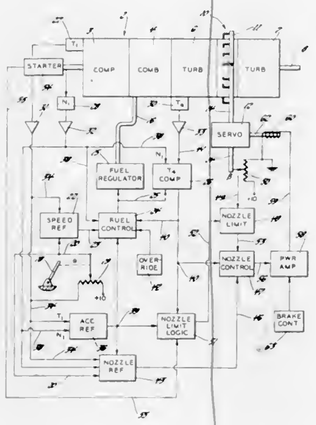
John A. Saintsbury, St. Bruno, Canada, assignor to United Aircraft of Canada Limited, Longueuil, Canada

Continuation-in-part of Ser. No. 244,134, April 14, 1972, abandoned. This application Jan. 2, 1974, Ser. No. 429,946
Claims priority, application United Kingdom, Apr. 15, 1971, 9530/71
Int. Cl.² F02C *9/14*
U.S. Cl. 60—39.23 **11 Claims**



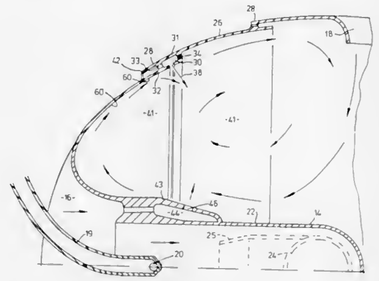
1. In a continuous combustion device, a combustion chamber having a peripheral wall, means defining an air passage surrounding said combustion chamber, at least a fuel injector for feeding fuel into said combustion chamber, a primary combustion zone within said chamber defined around said fuel injector, at least a secondary combustion zone within said chamber defined adjacent said primary zone and downstream thereof, first air inlets in said peripheral wall in the area of said primary zone communicating with said air passage, second air inlets in said peripheral wall in the area of said secondary zone communicating with said air passage, a baffle provided in said air passage between the air inlets for said primary zone and the air inlets for said secondary zone, means for moving said baffle between a first position and a second position whereby in said first position air passes relatively unimpeded to both the primary zone and the secondary zone, and at the second position the baffle impedes the flow of air to said primary zone by deflecting a larger proportion of the air to the secondary combustion zone thereby modifying the characteristics and flow path of the primary zone and said secondary zone providing a richer fuel/air mixture in the primary zone to thereby reduce the relative carbon monoxide and hydrocarbon emissions from said combustion chamber.

3,952,502
GAS TURBINE CONTROL
James L. Davis; Edward L. Lopke, both of Kokomo, and Leslie Joseph Pechous, Carmel, all of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Mar. 4, 1974, Ser. No. 447,846
Int. Cl.² F02C 9/02
U.S. Cl. 60—39.25 7 Claims



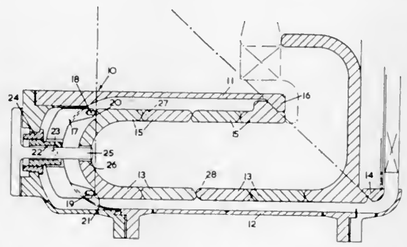
1. A control system for a gas turbine engine having a compressor-combustor-turbine gas generator, a power turbine energized by the gas generator having a variable nozzle, servo means for varying the nozzle, and a settable engine power level control, the system including input means responsive respectively to engine inlet air temperature, the power level control setting, gas generator speed, and gas generator motive fluid temperature, each responsive means generating an electrical signal representing the value of the respective condition responded to: the system comprising, in combination, fuel loop control means responsive to the gas generator speed signal, the power level control signal and the inlet air level signal to maintain gas generator speed at a constant idle speed through a predetermined low end of the power level signal range, means responsive to the inlet air temperature signal for generating an acceleration reference temperature signal increasing with inlet air temperature only up to a predetermined value of inlet air temperature; a nozzle reference temperature signal generating means responsive to the acceleration ration reference temperature signal and to the gas generator speed signal effective to generate a nozzle reference temperature signal increasing with gas generator speed and with the acceleration reference temperature signal; and signal generating means responsive to the inlet air temperature signal and the power level control signal coupled to the nozzle reference temperature circuit so as to reduce the nozzle reference temperature signal at idle gas generator speed as a function of the inlet air temperature and power level signals at the predetermined low end of the power level signal range below a predetermined ratio of power level signal to inlet air temperature signal; so that the nozzle reference temperature signal increases at constant gas generator idle speed over the said low end as maintained by said fuel loop control means and then increases with gas generator speed up to maximum rated speed; the servo means being responsive to the nozzle reference temperature signal and the motive fluid temperature signal for varying the power turbine nozzle.

3,952,503
GAS TURBINE ENGINE COMBUSTION EQUIPMENT
Roger Geoffrey Fox, and Vernon Frederick Cox, both of Bristol, England, assignors to Rolls-Royce (1971) Limited, Bristol, England
Filed Mar. 13, 1974, Ser. No. 450,689
Claims priority, application United Kingdom, Mar. 20, 1973, 13274/73
Int. Cl.² F02C 3/14, 7/22
U.S. Cl. 60—39.65 6 Claims



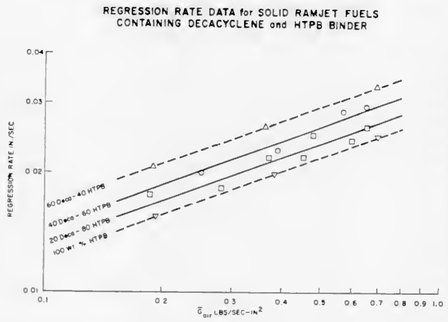
1. A gas turbine engine combustion chamber comprising a flame tube having an annular wall, an upstream end wall and a fuel vaporizer extending into said flame tube from the end wall; a hollow stem for said vaporizer extending in a generally downstream direction from the end wall and to which, in operation, air and fuel are delivered separately; at least one radial branch connected to the hollow stem through which there passes a mixture of said fuel and air from the hollow stem, said radial branch terminating in a generally upstream facing opening for delivery of said mixture into the flame tube; radially inner and radially outer wall portions for said annular wall; means defined by said inner and outer wall portions for allowing air to pass into the flame tube and means provided by said inner wall portion defining a substantially continuous inwardly facing slot extending around the annular wall of the flame tube and communicating with the interior of the flame tube for the passage of air therethrough into the interior of the flame tube in a continuous inwardly directed curtain normal to the inner wall portion.

3,952,504
FLAME TUBES
Gordon Sedgwick, Lancashire, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Dec. 14, 1973, Ser. No. 424,736
Int. Cl.² F02G 1/00
U.S. Cl. 60—39.69 10 Claims



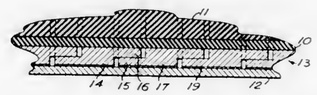
1. A flame tube comprising a casing having an outer annular wall and an inner annular wall, a plurality of monolithic ceramic rings within the casing in a side-by-side row, abutment means at one end of said row of ceramic rings, clamping means at the opposite end of said row urging said row against said abutment means, engaging surfaces between said abutment means and said row of ceramic rings and between said clamping means and said row of ceramic rings lying on straight lines emanating from a point on a longitudinal axis of the flame tube, said row of ceramic rings being mounted radially inwardly of said outer annular wall of said casing and a further row of ceramic rings and adjacent said inner annular wall of said casing, and further abutment means disposed at one end of said further row, and further clamping means at the opposite end of said further row urging said further row against said further abutment means.

3,952,505
HIGH PERFORMANCE RAMJET FUELS
Bertram O. Stull, and David M. Bullat, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed July 26, 1974, Ser. No. 493,444
Int. Cl.² F23R 1/14
U.S. Cl. 60—219 3 Claims



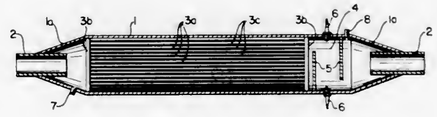
1. In a method for propelling a ramjet engine wherein a solid fuel is combusted in the presence of air within a combustion chamber and gases produced by the combustion process are exited through a nozzle to propel the engine, the improvement residing in utilizing as said solid fuel a composition comprising a combination of hydroxy terminated polybutadiene and a member selected from the group of high density additives consisting of anthracene and decacyclene.

3,952,506
ROCKET MOTOR CONSTRUCTION
Albert W. Macbeth, Brigham City, Utah, assignor to Thiokol Corporation, Newtown, Pa.
Filed Nov. 7, 1973, Ser. No. 413,477
Int. Cl.² F02K 9/04
U.S. Cl. 60—255 7 Claims



1. In a rocket motor that includes a case and a solid propellant grain therein, the improvement comprising:
an elastomeric sheath surrounding and bonded to the propellant grain on surfaces thereof that are adjacent the case; and
a bearing sleeve of noncombustible material bonded to the elastomeric sheath, and unbonded to the case, the bearing sleeve comprising a series of overlapping segments, whereby longitudinal expansion and contraction of the propellant grain relative to the case are permitted without harmful stress.

3,952,507
CANISTER REBURN EXHAUST SYSTEMS
Henry Bonarski, P.O. Box 1191, Savona, N.Y. 14879
Filed Mar. 29, 1974, Ser. No. 456,262
Int. Cl.² F02M 25/06; F01N 3/14
U.S. Cl. 60—278 5 Claims

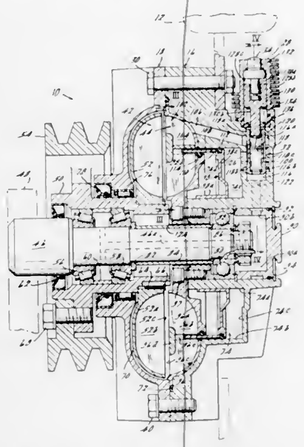


1. An axial flow reburn canister system for an internal combustion engine having an electrical ignition system and a carburetor and having an exhaust pipe leading to a muffler, comprising a cylindrical casing of greater diameter than the exhaust pipe and having axially disposed inlet and outlet end portions shaped to couple into the exhaust pipe in advance of the muffler; at least one canister tube unit tranversely filling said casing and approaching its ends, said unit comprising a pair of spaced end plates peripherally welded to the casing and having perforations extending therethrough receiving the ends of canister tubes which are welded therein, whereby the exhaust gases must pass through the canister tubes on their way to the muffler; the casing having an axial space located downstream of one of the end plates to provide an exhaust reburn chamber; axially-spaced transversely disposed baffle plates within the chamber spaced downstream of said one end plate, each baffle plate covering substantially three-fourths of the cross-sectional chamber area and being shaped to provide a zig-zag path through the chamber; at least one spark plug in said chamber disposed between the baffle plates and connected in the ignition system; means for admitting air into the casing at the inlet end portion of the casing; and means for returning burnt gases from the downstream end of the chamber to the carburetor.

3,952,508
CONTROL FOR FLUID COUPLING
Warren G. Bopp, Farmington, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Mar. 31, 1975, Ser. No. 563,551
Int. Cl.² F16D 33/00
U.S. Cl. 60—330 45 Claims

1. A fluid coupling comprising:
a first rotatable member defining a housing rotatable about an axis;
a second member disposed in the interior of said housing and rotatable about said axis;
a working chamber defined by said members and containing an inventory of fluid for transmitting torque from one of said members to the other of said members via said fluid in response to relative rotation between said members;
control means including means moveable between first and second positions for varying the torque transmitted by said fluid; and
temperature sensing means radially disposed with respect to said axis and mounted on the exterior of said housing and

including means operative to urge said moveable means between said first and second positions in response to changes in temperature ambient to the exterior of said housing.

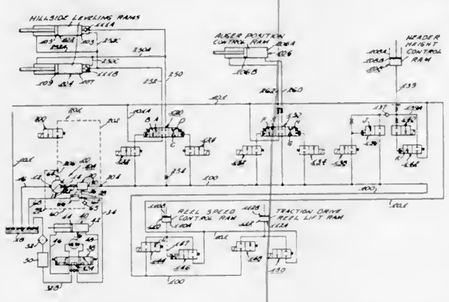


3,952,509

HYDRAULIC SYSTEM COMBINING OPEN CENTER AND CLOSED CENTER HYDRAULIC CIRCUITS

Martin W. Coleman, Independence, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Apr. 10, 1975, Ser. No. 566,965
Int. Cl.² F15B *11/16;* **F16H** *39/46*
U.S. Cl. 60—422 **16 Claims**



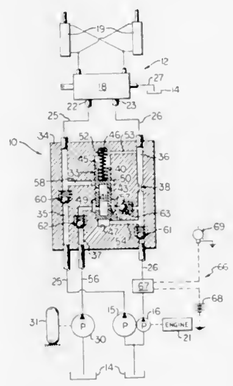
1. In a hydraulic system, the combination comprising a variable displacement pump, said pump including a hydraulically actuated stroke control means which may be actuated to vary the displacement of said pump, said pump including an inlet through which hydraulic fluid is admitted to said pump, said pump including an outlet through which hydraulic fluid is discharged from said pump, a flow divider having an inlet connected to said outlet of said pump, said flow divider having first and second outlets, said flow divider being operable to divide the pump flow to said first and said second outlets, with said first outlet receiving a priority constant magnitude flow, an open center hydraulic circuit connected to said first outlet whereby to receive said priority constant magnitude flow, a closed center hydraulic circuit connected to said second outlet, a first pilot circuit responsive to the pressure condition in said open center hydraulic circuit and operatively connected to said hydraulically actuated stroke control means whereby to vary the condition of said hydraulically actuated stroke control means as a function of the pressure condition in said open center hydraulic circuit, and a second pilot circuit operatively connectable to said hydraulically actuated stroke control means, whereby to vary the condition of said hydraulically actuated stroke control means, and means effective to operatively connect said second pilot circuit to said hydraulically actuated stroke control means only when there is a demand for hydraulic fluid flow from said second outlet to said closed center hydraulic circuit.

3,952,510

FLOW SENSING AND CONTROL APPARATUS

Wayne A. Peterson, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 6, 1975, Ser. No. 584,426
Int. Cl.² F15B *13/09*
U.S. Cl. 60—403 **26 Claims**



1. Flow sensing and control apparatus, for use in combination with a hydraulic system including a pair of primary pumps and a control valve having a separate inlet for each of such pumps, to selectively combine the output of an auxiliary pump with such hydraulic system, comprising;

a valve body having a primary pump passage through which fluid from one of said primary pumps is conducted to its respective inlet of the control valve, auxiliary pump passage means interconnected between the auxiliary pump and said primary pump passage, and fluid receiving passage means connected to said auxiliary pump passage means; and

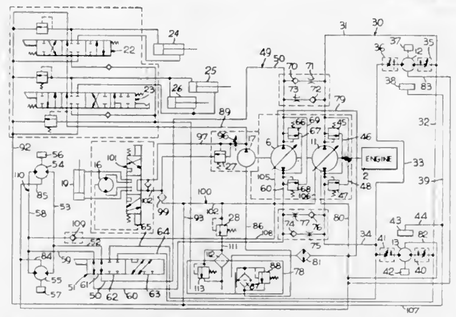
pilot operated valve means disposed within said fluid receiving passage means and operative in response to fluid flow through said primary pump passage to selectively control the admission of fluid to the fluid receiving passage means so as to permit the combining of any available fluid from the auxiliary pump with that of the primary pump up to a predetermined minimum flow rate through the primary pump passage and to permit diversion to the receiving passage means of any excess fluid of the auxiliary pump above that necessary to maintain said minimum flow rate in the primary pump passage.

3,952,511

HYDROSTATIC DRIVE CIRCUIT

Robert M. Turner, Great Bend, and Herbert Z. Langland, Topeka, both of Kans., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 30, 1974, Ser. No. 537,609
Int. Cl.² F15B *18/00*
U.S. Cl. 60—430 **10 Claims**



1. A hydrostatic vehicle drive system comprising, a rear wheel drive circuit including a reversible variable volume rear wheel drive pump, a pair of reversible rear wheel drive motors, fluid flow control valve means for controlling the maximum rate of flow through said rear wheel drive motors, a front wheel drive circuit including a reversible, variable volume front wheel drive pump, a pair of reversible front wheel drive motors, a control valve for selectively and alternatively connecting said front wheel drive pump to drive said front wheel drive motors and said rear wheel drive motors, bi-directional pressure compensating flow control valves connected between said rear wheel drive circuit and said front wheel drive circuit, a reservoir, a fixed volume pump connected to said reservoir, at least one hydraulic actuator for controlling operation of auxiliary equipment, auxiliary equipment control valve means connected between said fixed volume pump and said hydraulic actuators, a hydraulic actuator for operating a steering mechanism, a priority flow control divider for supplying hydraulic fluid to said steering hydraulic actuator, a pump charging circuit connected to said priority flow control divider including a pressure relief valve for connecting said charging circuit to said reservoir for maintaining a predetermined pressure in said charging circuit, means connecting said fluid charging circuit to the inlet of said variable volume pumps, to thereby assure satisfactory charging of fluid to said variable volume drive pumps and said drive wheel motors.

3,952,512

FOOT PEDAL CONTROL MECHANISM FOR HYDROSTATIC TRANSMISSION VEHICLES

Murray D. Feller, Richmond, Canada, assignor to Towmotor Corporation, Mentor, Ohio

Filed Jan. 30, 1975, Ser. No. 545,643
Int. Cl.² F16H *39/46;* **F15B** *15/18*
U.S. Cl. 60—431 **8 Claims**

1. Control mechanism enabling selection of vehicle speed and drive direction in a vehicle having a motor speed control element movable from an idling position to increase motor speed and also having a hydrostatic transmission control element movable in one direction from a neutral position to progressively increase forward drive ratio and movable in an opposite direction from said neutral position to progressively increase reverse drive ratio, said control mechanism comprising:

an operator's control member supported for forward and backward rocking movement from a neutral position,

a first shaft supported for rotational motion about the axis thereof and being coupled to said operator's control member to be turned in a first rotational sense upon forward rocking of said control member and to be turned in an opposite rotational sense upon backward rocking of said control member,

a first arm extending radially from said first shaft for turning therewith,

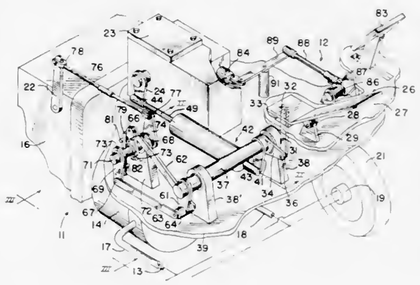
a first link means for connecting said first arm and said transmission control element whereby said transmission control element is moved in said one direction in response to forward rocking of said control member and is moved in said opposite direction in response to said backward rocking of said control member,

a second arm extending radially from said first shaft for turning therewith,

a secons shaft supported for rotational movement about the axis thereof,

a third arm extending radially from said second shaft for turning therewith,

an engine speed control rod connecting said third arm with said engine speed control element whereby engine speed is increased upon rotational movement of said second shaft in a specific direction,



first and second spaced apart levers mounted upon said second shaft and extending radially therefrom in substantially opposite directions when said control member is at said neutral position, said first and second levers being turnable relative to said second shaft,

second and third link means for connecting said first and second levers respectively to said second arm whereby said first and second levers are turned in opposite rotational directions in response to movement of said second arm,

rod means extending radially from opposite sides of said second shaft and being secured thereto for turning motion therewith,

means on said first lever for contacting said rod means to turn said rod means and said second shaft in said specific direction when said first shaft is turned in said first rotational sense, and

means on said second lever for contacting the other end of said rod means to turn said rod means and said second shaft in said specific direction when said first shaft is turned in said opposite rotational sense.

3,952,513

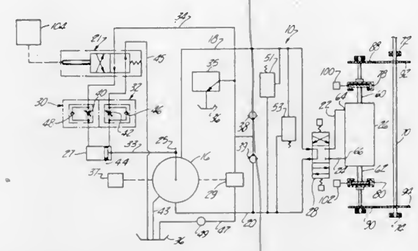
VARIABLE SPEED AND TORQUE FEED SYSTEM

Philip A. Kubik, 251 Minnesota, Troy, Mich. 48084

Filed Jan. 6, 1975, Ser. No. 538,808
Int. Cl.² F16H *39/46;* **F15B** *11/02*
U.S. Cl. 60—435 **5 Claims**

1. A rapid traverse and feed device comprising a fluid motor having two output shafts and a common fluid pressure responsive means operable upon communication with fluid pressure to translate said fluid pressure to one of said shafts in the form of a high torque output while rotating said one shaft at a low speed, said fluid pressure responsive means being operable to translate fluid pressure to the other of said shafts in the form of a low torque output while rotating said other shaft at a high

speed; means for communicating fluid pressure to said fluid pressure responsive means; a system drive shaft; and means for alternate, independent coupling of said two output shafts

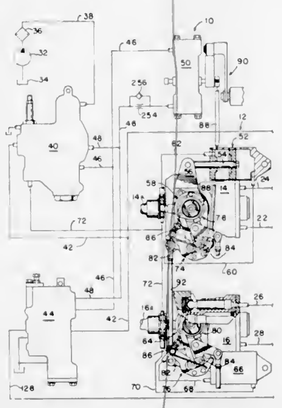


to said drive shaft to permit the selective and independent driving of said system drive shaft selectively at high and low output torques and with variable speed control.

3,952,514
UNDERSPEED ACTUATOR FOR HYDROSTATIC TRANSMISSION

Cyril W. Habiger, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 20, 1975, Ser. No. 551,474
Int. Cl.² F16H *39/46*
U.S. Cl. 60—445 **22 Claims**



1. A control system for regulating displacement of a pump unit in a hydrostatic transmission including input means and output means, the control system having a positive displacement pump means driven in conjunction with the transmission input means to produce output fluid flow proportional to the operating speed of the transmission input means, and comprising

lever means coupled with the pump unit for selectively adjusting its displacement,

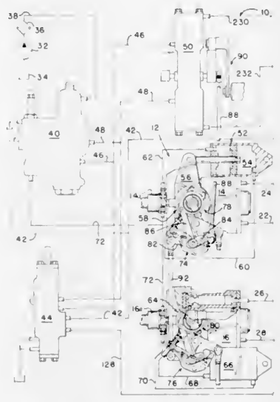
a hydraulically responsive underspeed actuator operatively coupled with the lever means in order to adjust its effective moment arm and thereby vary the amount of actual change in pump displacement relative to movement of the lever means, and

signal means for receiving output fluid flow from the positive displacement pump means and communicating a variable fluid signal to which the underspeed actuator is responsive.

3,952,515
SPEED AND LOAD RESPONSIVE UNDERSPEED ACTUATOR FOR HYDROSTATIC TRANSMISSIONS

Cyril W. Habiger; William D. McMillan, both of Joliet; David L. Persson, Chillicothe, all of Ill., and Glenn E. Ferre, deceased, late of Peoria, Ill. (by Marjorie E. Ferre, legal representative and executrix), assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 20, 1975, Ser. No. 551,465
Int. Cl.² F16H *39/46*
U.S. Cl. 60—447 **9 Claims**



1. A control system for regulating displacement of a pump unit in a hydrostatic transmission for communicating output fluid under pressure to a motor unit, the control system having a proportional pump means driven in conjunction with the transmission input means to produce output fluid flow proportional to the operating speed of a transmission input means, and comprising

control means coupled with the pump unit for selectively adjusting its displacement,

a hydraulically responsive underspeed actuator operatively coupled with the control means in order to adjust the amount of actual change in pump displacement relative to movement of the control means,

signal means for receiving output fluid flow from the proportional pump means and communicating a variable fluid signal to which the underspeed actuator is responsive, and

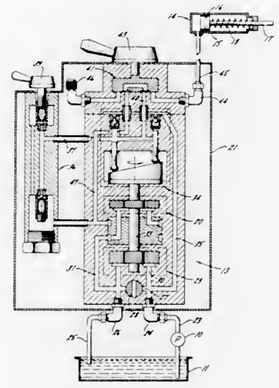
means for sensing changes in output fluid pressure of the pump unit and biasing the underspeed actuator in response to such pressure changes in order to further stabilize the displacement setting of the pump unit, its output fluid pressure and operating speed of the transmission input means.

3,952,516
HYDRAULIC PRESSURE AMPLIFIER

Ellsworth W. Lapp, Lapp Engineering, c/o Kinroth & Son Mfg. Co., 3423 Lonergan Drive, Rockford, Ill. 61105

Filed May 7, 1975, Ser. No. 575,187
Int. Cl.² F15B *15/18*
U.S. Cl. 60—477 **3 Claims**

1. A hydraulic amplifier operable to receive low pressure fluid from a low pressure pump, to increase the pressure of said fluid, and to deliver the high pressure fluid to a utilization device, said amplifier being selectively operable to conduct fluid from said utilization device to a reservoir associated with said pump, said amplifier comprising, in combination, a hydraulic motor connected to receive and be actuated by part of the low pressure fluid delivered from said pump, a high pressure pump connected to receive part of the low pressure fluid delivered from said low pressure pump and operable when driven to increase the pressure of such fluid, means connecting said high pressure pump with said motor and operable to drive said high pressure pump when said motor is actuated, a scavenging pump connected to be driven by said motor and having an outlet adapted to communicate with said reservoir, and valve means selectively movable between a first position

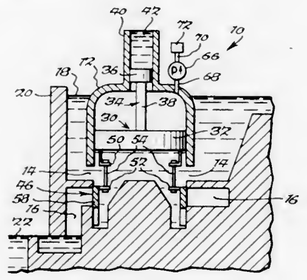


connecting the outlet of said high pressure pump with said utilization device and a second position connecting the inlet of said scavenging pump with said utilization device whereby high pressure fluid is delivered to said utilization device by said high pressure pump when said valve means are in said first position and is pumped from said utilization device and delivered to said reservoir by said scavenging pump when said valve means are in said second position.

3,952,517
BUOYANT RAM MOTOR AND PUMPING SYSTEM

Bert J. Decker, 136 Capen Blvd., Buffalo, N.Y. 14226

Filed Oct. 3, 1973, Ser. No. 403,111
Int. Cl.² F03B *13/12*
U.S. Cl. 60—502 **1 Claim**



1. A buoyant ram motor comprising:

a. a housing capable of retaining liquid;

b. a buoyant ram positioned within said housing for reciprocal movement in a generally vertical direction;

c. controlled passage means for admitting liquid from a source into said housing beneath said buoyant ram and for removing liquid from said housing beneath said ram;

d. means for providing a vacuum in the region of said housing over said ram; and

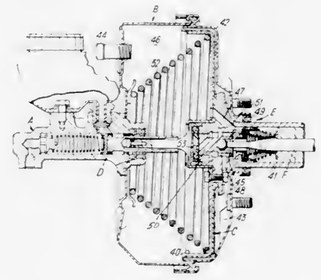
e. means for coupling said ram to a mechanical load;

f. whereby during each cycle of operation of said motor liquid first is admitted to said housing below the buoyant ram, thereby forcing said ram in an upward direction and then liquid is removed from said housing below said ram, thereby returning said ram in a downward direction.

3,952,518
DEVICE FOR THE TRANSMISSION OF FORCES IN BRAKE BOOSTERS

Franz Pech, Neu-Isenburg; Armin Lauterwasser, and Horst Quitmann, both of Frankfurt am Main, all of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed June 22, 1972, Ser. No. 265,135
Claims priority, application Germany, July 20, 1971, 2136252
Int. Cl.² F15B *9/10*
U.S. Cl. 60—553 **35 Claims**



1. A device for the transmission of forces in a brake booster comprising:

a brake booster housing having a longitudinal axis;

a control means disposed coaxially of said axis;

a servo motor disposed coaxially of said axis and in a cooperative relation with said control means;

a hydraulic system actuation device disposed coaxially of said axis; and

a plurality of two-arm radially disposed levers disposed coaxially of said axis and in a cooperative contacting relationship with said control means, said servo motor and said actution device to sum up the control force of said control means and the boosting force of said servo motor and to transmit the resultant sum of said forces to said actuation device during an entire braking operation

each arm of said plurality of two-arm levers being interconnected by an elastic connection at a point radially spaced from the outer edges of said arms to form a preassembled single structural element.

3,952,519
HEAT TRANSFER SYSTEM EMPLOYING SUPERCOOLED FLUIDS

William K. R. Watson, San Diego, Calif., assignor to Kay Laboratories, Inc., San Diego, Calif.

Filed July 2, 1973, Ser. No. 375,512
Int. Cl.² F03G *7/02*
U.S. Cl. 60—641 **20 Claims**

1. In combination for providing a controlled transfer of heat from a first chemical:

means for providing for a heating of the first chemical;

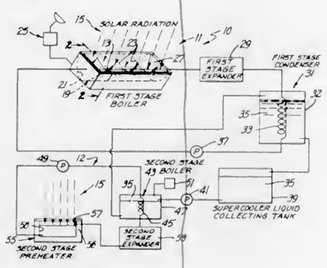
a container;

conducting means providing for a flow of the first chemical in the heated state through the container;

second chemical means disposed in the container separated from the conducting means but in heat-conducting relationship to the first chemical for absorbing heat from the first chemical in the heated state, the second chemical

means being normally disposed in a solid crystalline state and being provided with characteristics for being converted from the solid crystalline state to a liquid state at a controlled temperature and for being retained in the liquid state at temperatures below the controlled temperature;

the second chemical means having characteristics for storing the absorbed heat energy without any heat loss of such heat energy until triggered at a predetermined time at the controlled temperature and for releasing the absorbed heat at the controlled temperature upon such triggering;



means for providing for a triggering of the second chemical means into the crystalline state at the controlled temperature to provide for a release of heat from the second chemical means;

means responsive to the heat released by the second chemical means for using such released heat to provide work energy; and means for providing for the heating of the second chemical means by the first chemical flowing through the container to convert the second chemical means from the crystalline state to the liquid state at the controlled temperature.

3,952,520

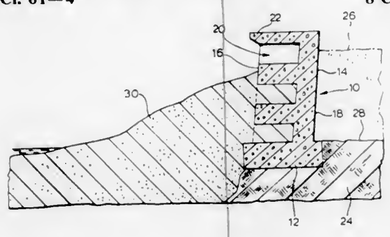
SHORELINE RETAINING WALL

Thomas H. Shillingford, 26 Underhill Drive, Suite 709, Don Mills, Ontario, Canada

Continuation-in-part of Ser. No. 453,693, March 22, 1974, abandoned. This application Apr. 28, 1975, Ser. No. 572,261

Int. Cl.² E02B *3/04*

U.S. Cl. 61—4 **8 Claims**



1. A retaining wall for use in stabilizing shoreline erosion, comprising a footing and an upright wall portion, the front face of the wall portion having a plurality of recesses spaced apart one from another to form a pattern extending substantially the length and the height of the wall, each recess being horizontally oriented and being uniform in cross-section throughout the depth thereof, the lateral dimension of the recess being not less than 18 inches in any direction, the depth of each recess being not greater than the width thereof, and not greater than 2 feet, the wall being located along the shoreline at a distance from the waterline reached by an average wave.

3,952,521

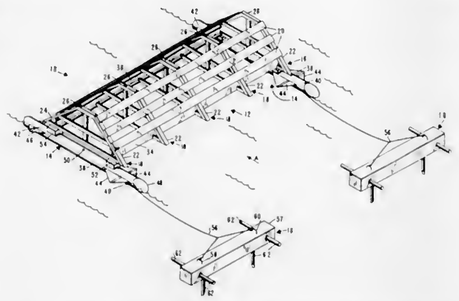
PORTABLE FLOATING WAVE TRIPPER

John M. Potter, 1828 S. Woodhouse Road, Virginia Beach, Va. 23454

Filed Oct. 29, 1974, Ser. No. 518,541

Int. Cl.² E02B *3/06*

U.S. Cl. 61—5 **5 Claims**



1. A portable wave tripper or breakwater adapted for floating in a body of water and for use in reducing the size of waves in the water striking said wave tripper, comprising:

a plurality of spaced apart, generally vertical A-shaped supports;

a plurality of elongated spaced breaker bars secured to and extending generally horizontally between said supports to form a breaker panel;

at least two hollow, elongated, spaced pontoons attached to said breaker panel generally perpendicular to the waves for floatably supporting said breaker panel in the water, each said pontoon having a forwardly projecting angled front face, each said pontoon further having a plug so that ballast may be added to or removed from said pontoons whereby the buoyancy of each said pontoon may be adjusted whereby said front face of each said pontoon is positioned at least partly beneath the surface of the water so that the waves striking said wave tripper are caused to flow over said pontoons thereby causing said wave tripper to cut through the waves; and

means securing said wave tripper at a desired location in the water.

3,952,522

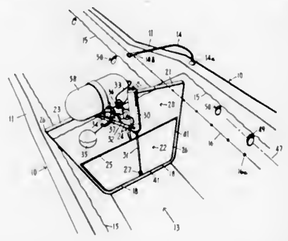
IRRIGATION SYSTEMS AUTOMATION

Ralph E. Shettel, Rte. 1, Twin Falls, Idaho 83301

Filed Nov. 19, 1971, Ser. No. 200,410

Int. Cl.² E02B *7/20, 13/00*

U.S. Cl. 61—29 **25 Claims**



1. A check structure elevating channeled waters for automatic diversion comprising:

a dam means upper stationary portion interconnecting the walls of a channel liner means above passing waters, a portion of the top surface thereof disposed as a base for actuator component mounting clear of checked water through elevation provided by a lower spillway means

adjacent thereto, the surface of said dam having extension in a lower planar framework means,

a panel means lower opening portion depending from said dam for support and acting against said framework for a closing,

control means interconnecting said lower panel and said mounting base providing selective position in regulating a diversion of water and in controlling the release of accumulated water.

3,952,523

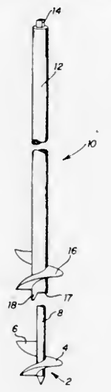
METHOD OF INSTALLING A SCREW-TYPE ANCHOR

Jack D. Gale, Rte. 1, Crowley Road, Crowley, Tex. 76036

Division of Ser. No. 435,224, Jan. 21, 1974, Pat. No. 3,896,890. This application July 28, 1975, Ser. No. 599,764

Int. Cl.² E02D *5/80*

U.S. Cl. 61—39 **4 Claims**



1. The method of securely placing a screw-type anchor in the earth without unduly disturbing the surrounding soil, said anchor having a shank and a flight of given pitch, comprising the steps of:

a. enveloping the anchor's shank in a tubular mandrel, said mandrel having a flight near its bottom end of substantially the same pitch as the anchor's flight, with the mandrel's flight constituting an effective continuation of the anchor's flight;

b. placing the tip of the anchor in contact with the earth and rotating the anchor in a direction to cause its entrance into the earth, with anchor rotation being accomplished by rotating the enveloping mandrel so as to apply torsional loads to the anchor near the anchor's flight; and

c. after the anchor has been rotated sufficiently to achieve a desired depth in the earth, rotating the mandrel in the opposite direction to cause it to separate from the anchor and to back out of the earth through substantially the same cut that was made when the anchor was turned into the earth.

3,952,524

PIPE LAYING METHOD AND APPARATUS

Burgess F. Rand, 1011 NE. Eighth Ave., Fort Lauderdale, Fla. 33304, and Dane R. Hancock, 822 SW. 14th St., Fort Lauderdale, Fla. 33315

Filed Jan. 4, 1974, Ser. No. 430,701

Int. Cl.² E01G *4/04*

U.S. Cl. 61—43 **2 Claims**

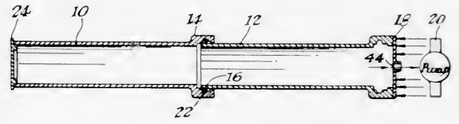
1. The method of joining together a first conduit having first and second open ends and a second conduit having first and second open ends in a substantially incompressible liquid environment comprising the steps of:

a. positioning the second free end of said first conduit adjacent the first free end of said second conduit;

b. placing a sealed liquid barrier over the first free end of said first conduit;

c. placing a sealed liquid barrier over the second free end of said second conduit, said second free end barrier having a pump disposed therethrough;

d. pumping said substantially incompressible liquid from within said first and second conduits out through the second free end of said second conduit along the longitu-



dinal axis of said first conduit whereby the reduced liquid pressure within the first and second conduit form a pressure differential across the first end of said conduit and the second end of said second conduit creating a longitudinal axial force joining the first and second conduits together.

3,952,525

MINE ROOF SUPPORT

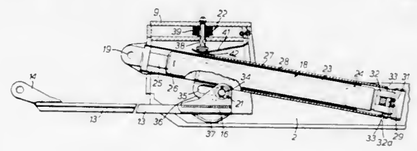
John Hirst Walker; Dennis Franklin Rutherford, and James Anthony Sutton, all of Cheltenham, England, assignors to Dowty Mining Equipment Limited, Tewkesbury, England

Filed Oct. 11, 1974, Ser. No. 514,261

Claims priority, application United Kingdom, Oct. 18, 1973, 48620/73; July 20, 1974, 32251/74

Int. Cl.² E21D *15/52*

U.S. Cl. 61—45 D **19 Claims**



1. A mine roof support intended to stand on a mine floor and having an advancing jack capable of advancing the support by extension of its length, a first pivotal joint on the support to which the advancing jack is secured, a second pivotal joint secured to the jack such that change of jack length will change the spacing between the pivotal joints, an anchorage connection secured to the second pivotal joint to locate the second pivotal joint closer to the floor than the first pivotal joint such that extension of the advancing jack to advance the support exerts on the first pivotal joint a force having one component parallel to the direction of advancing and another component which lifts, or tends to lift, the support from the floor.

3,952,526

FLEXIBLE SUPPORTIVE JOINT FOR SUB-SEA RISER FLOTATION MEANS

Bruce J. Watkins, Rancho Palos Verdes; Albert M. Regan, Huntington Beach, and William P. Slota, Northridge, all of Calif., assignors to Regan Offshore International, Inc., Torrance, Calif.

Filed Feb. 3, 1975, Ser. No. 546,710

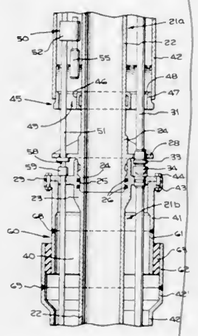
Int. Cl.² E21B *7/12*

U.S. Cl. 61—46 **23 Claims**

1. In a flotation means for a subsea well riser including at least one bouyancy chamber, the improvement comprising the provision of:

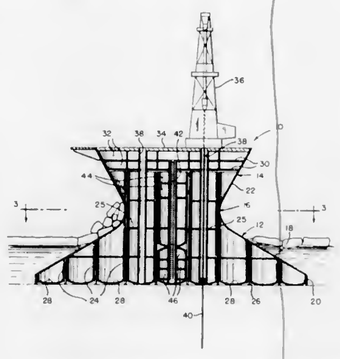
means comprising an elastomeric member in sole supporting relation between said chamber and said riser for

providing a flexible supportive joint between said buoyance chamber and said riser whereby said chamber is



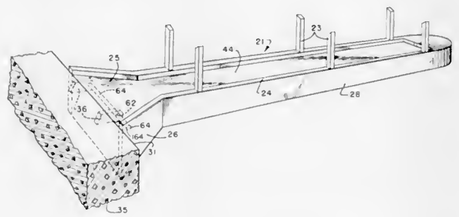
supported only by said elastomeric member from and flexible relative to said riser.

3,952,527
OFFSHORE PLATFORM FOR ARCTIC ENVIRONMENTS
Edward R. Vinieratos, Oxnard, Calif.; Robert E. Levien, Seattle, and Frank W. Purdy, Lynnwood, both of Wash.
Continuation of Ser. No. 313,862, Dec. 11, 1972, abandoned. This application Nov. 11, 1974, Ser. No. 522,776
Int. Cl.² E02B *15/02*; **F24J** *1/00*; **F25D** *23/12*
U.S. Cl. 61—46.5 **15 Claims**



1. A movable offshore structure for resisting external ice forces and for supporting working platforms and the like comprising:
   a. a generally side-enclosed external shell defined by a lower base position with an upwardly and inwardly angling surface and an upper supporting section with an upwardly and outwardly extending surface, said upper and lower sections together defining a waist deflector area, said offshore structure being substantially closed on the bottom so as to be made bouyant and floatable,
   b. a plurality of compartments within said shell, each capable of being independently filled with and emptied of freezable fill material, so that when said compartments are filled the structure will rest on the ocean floor and when empty the structure will be floatable and movable, said compartments being supported relative to one another by an internal supporting framework,
   c. refrigeration means for freezing said fill material, and
   d. at least one working deck located generally on top of said shell and said compartments for supporting work equipment and the like.

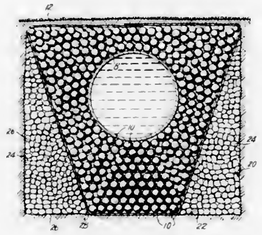
3,952,528
BOAT DOCK STRUCTURES
Arie Donkersloot, P.O. Box 50, St. James, Fla. 33956
Continuation-in-part of Ser. No. 335,710, Feb. 26, 1973. This application Mar. 28, 1974, Ser. No. 455,736
Int. Cl.² E02B *3/20*
U.S. Cl. 61—48 **17 Claims**



13. A boat dock structure to be installed at a water situs such as a seashore, river bank or the like, wherein the dock structure is secured at the edge of the shore ground, said dock structure including:
   a. an elongate body comprising a base portion at a first end thereof and a head portion at the second end thereof, the elongate body formed of steel sheet sections defining a top wall, two side walls and a bottom such as to form a generally rectangular cross section,
   b. structural means embedded at the edge of the shore ground and constructed to receive the base portion of the elongate body, said structural means including a metal boundary wall,
   c. connecting means directly engaged between the base portion of the elongate body and the boundary wall for rigidly affixing the base portion to the structural receiving means embedded at the shore,
      1. said connecting means including mating angular components affixed respectively to the metal boundary wall and the base portion, and means rigidly uniting said components to preclude movement therebetween,
      2. said connecting means firmly holding and supporting the elongate body horizontally such as to extend over and above the body of water without touching the water,
   d. pillar means engaged with and depending from the head portion of the elongate body, said pillar means being anchored in the floor beneath the water and constituting in conjunction with the connecting means for connecting the base portion to the structural receiving means, the support structure for said elongate body, and
   e. individual guard rail stanchions fastened to the top of the elongate body for tying boats to the dock.

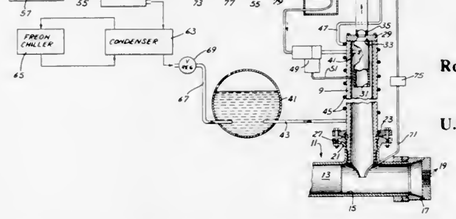
3,952,529
EARTHQUAKE FAULT ZONE PIPELINE CONSTRUCTION METHOD AND ARRANGEMENT
Kenneth W. Lefever, Waterford, Va. 20246
Filed Apr. 12, 1974, Ser. No. 460,592
Int. Cl.² E02D *27/46*, *31/00*; **F16L** *1/00*
U.S. Cl. 61—72.1 **15 Claims**

1. The method of installing a pipeline across an earthquake fault zone whereby earth shocks and shifts in the position of the earth resulting from an earthquake can be accommodated without rupturing the pipeline, comprising the steps of: digging a trench across said zone, said trench being of sufficient width and depth to accommodate the diameter of the pipeline, and to further accommodate expected shifts of the earth that might occur during an earthquake, the sidewalls of said trench being spaced apart a distance substantially greater than the diameter of said pipeline; placing a lower bed of spherical bodies within said trench, up to a depth where it is desired to position a pipeline; laying the pipeline in the trench upon said lower bed of spherical bodies and spaced substantially from the sidewalls of the trench; and filling said trench with an upper bed of said spherical bodies to bury said pipeline, with



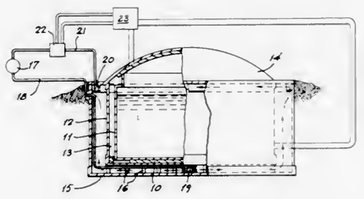
the top surface of said upper bed of spherical bodies being left substantially unrestrained to allow for substantially free upward vertical movement of one or more of said spherical bodies during an earthquake.

3,952,530
CO_2-SNOW-MAKING
Lewis Tyree, Jr., 10401 S. Oakley Ave., Chicago, Ill. 60643
Filed Aug. 20, 1974, Ser. No. 499,035
Int. Cl.² F25J *1/00*
U.S. Cl. 62—10 **13 Claims**



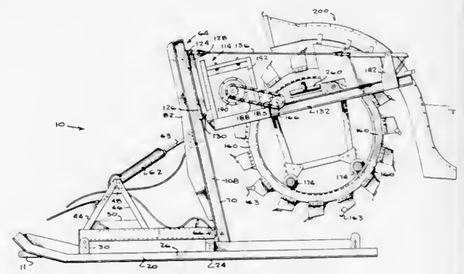
1. In a method of controlling a CO_2 snow-making operation, which method includes
   expanding liquid CO_2 through a nozzle to create a mixture of CO_2 snow and cold CO_2 vapor,
   centrifugally separating said snow and vapor and feeding said snow to a generally closed chamber, and removing a major portion of said cold CO_2 vapor through first conduit means during normal operation,
   the improvement comprises continuously warming said cold CO_2 vapor flowing through said first conduit means, measuring a thermodynamic variable characteristic of said CO_2 vapor, selected from the group consisting of temperature and pressure, subsequent to said warming step to detect a change in said variable, and
   decreasing the rate of flow of said CO_2 vapor in said first conduit means responsive to said change in said variable and
   controlling flow of CO_2 vapor from the generally closed chamber at a greater rate than that characteristic of normal operation
   whereby temporary reduction of the rate of flow of said CO_2 vapor through said first conduit means resultant from said decrease, upon detecting change in said variable indicative of incomplete separation of snow from vapor due to an upset in said method results in prompt correction of the said upset.

3,952,531
CRYOGENIC STORAGE TANKS
Frederick Henry Turner, Reading, England, assignor to Simon-Carves Limited, Stockport, England
Filed Jan. 2, 1974, Ser. No. 429,842
Claims priority, application United Kingdom, Jan. 31, 1973, 4923/73
Int. Cl.² F17C *3/10*
U.S. Cl. 62—45 **12 Claims**



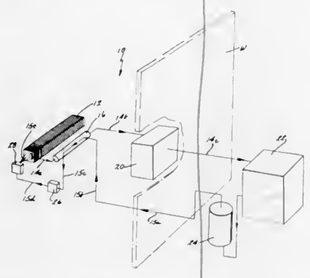
1. An at least partially subterranean cryogenic storage tank for the storage of low temperature liquids characterised by the provision of means defining an enclosed fluid conductive space between the bottom and side walls of the tank and the adjacent ground below ground level, and means for continually introducing heated air into said space at the lower regions thereof for heat exchange flow therethrough along said bottom wall and upwardly along said side wall.

3,952,532
UNDERWATER TRENCHING AND CABLE LAYING APPARATUS
Robert R. Spearman, 2367 Bay Circle, Lake Park, Fla. 33410
Filed Apr. 23, 1975, Ser. No. 570,945
Int. Cl.² E02F *5/02*; **B63B** *35/04*
U.S. Cl. 61—72.4 **11 Claims**



1. An underwater excavating means for digging a trench in the bottom of a body of water comprising:
   a supporting vehicle capable of movement across the bottom of a body of water,
   mechanical digging means capable of underwater operation including a power driven rotary digging wheel,
   adjustable support means supporting said rotary digging wheel for rotation about a horizontal axis and for vertical adjustment with respect to said vehicle, and hydraulic motor means mounted on said adjustable support means drivingly connected to said rotary digging wheel for rotating said digging wheel.

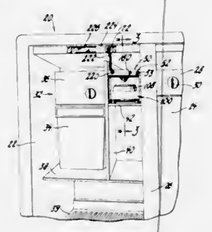
3,952,533
MULTIPLE VALVE REFRIGERATION SYSTEM
William C. Johnston, Atlanta, Ga., and Sterling Beckwith, Menlo Park, Calif., assignors to Kysor Industrial Corporation, Cadillac, Mich.
Filed Sept. 3, 1974, Ser. No. 502,439
Int. Cl.² F25B 41/00
U.S. Cl. 62—115 5 Claims



1. A continuous two-phase refrigeration system including refrigerant compressor means for compressing gaseous refrigerant, outside air cooled condenser means for cooling the compressed refrigerant, sub-cooler means for further cooling the compressed refrigerant with evaporator discharge refrigerant gas, evaporator means for heat exchange cooling of fluid therearound, and conduit means interconnecting said several means, the improvement comprising:

two-phase-refrigerant pressure regulator valve means for regulating refrigerant pressure and two-phase-refrigerant expansion valve means for refrigerant expansion, in succession along said conduit means, downstream of said sub-cooler means and upstream of said evaporator means, whereby a two-phase liquid-gas refrigerant can be continuously recirculated through the system.

3,952,534
ICE CREAM MAKER FOR REFRIGERATOR
James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 24, 1975, Ser. No. 552,429
Int. Cl.² A23G 9/12
U.S. Cl. 62—136 5 Claims



1. A frozen confection-making appliance for use in the freezer compartment of a refrigerator normally maintained at a below-freezing temperature, said appliance including a housing with an access opening having a freezing chamber and a machinery compartment separated by partition means, a freezing container for holding the confection to be congealed with said container adapted for removable reception in said housing freezing chamber, confection mixing means supported in said container, an electric motor disposed within said machinery compartment, said motor including an armature having first and second shaft portions, said first shaft portion connected to drive train means, said second shaft portion being drivingly connected to fan means, releasable coupling means for connecting said mixing means to the output of said drive train means upon insertion of said container into said chamber, thermostatic control means for declutching said first shaft portion from said drive train means, said fan means operative for drawing below-freezing air from said freezer compartment into said housing and through passage means into said freezing chamber in heat exchange relation with the confection, and said thermostatic control means being operative to sense the reduced temperature of the confection in said container, whereby said first shaft portion is automatically declutched from said drive train resulting in the stoppage of said mixing means while said motor continues to drive said blower means to circulate below freezing air over said container.

3,952,535
AUTOMATIC EXPANSION VALVE FOR REFRIGERANT
Thomas H. Putman, Pittsburgh, Pa., assignor to Westinghouse Corporation, Cleveland, Ohio
Continuation of Ser. No. 383,425, July 27, 1973, abandoned.
This application Oct. 3, 1974, Ser. No. 511,972
Int. Cl.² F25B 41/04
U.S. Cl. 62—222 10 Claims

1. A mechanical refrigeration air conditioning system including:

a refrigeration compressor;

a refrigeration condenser operating at varying relatively higher pressures in normal operation;

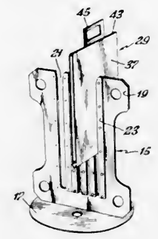
a refrigerant evaporator operating at varying relatively lower pressures in normal operation;

a refrigeration expansion valve connected to receive substantially liquid refrigerant from said condenser and to discharge substantially expanded vaporous refrigerant to said evaporator, said valve having a deflectable member and stationary structure spaced therefrom to define a variable size refrigerant expansion orifice therebetween,

the face areas of said member upstream from said orifice being exposed to the pressure of said liquid refrigerant, and the face areas of said member downstream from said orifice being exposed to the pressure of said vaporous refrigerant,

the transverse area of said orifice, the stiffness of said deflectable member, and the distance between said member and said stationary structure being related to the range of differential pressures encountered in normal operation of the system to provide on the average increasing and decreasing refrigerant flow rates with increasing and decreasing differential pressures, respectively, of said liquid and vaporous refrigerant.

3,952,536
APPARATUS FOR CRYOGENIC FREEZING OF FLUID FILLED POUCHES
Clifford C. Faust, Riverside, and Philip F. Cilia, Bridgeview, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.
Filed Aug. 30, 1971, Ser. No. 176,214
Int. Cl.² F25D 3/10
U.S. Cl. 62—293 7 Claims



1. Apparatus for cryogenically freezing fluids in flexible pouches into thin layer-like unitary articles comprising, in combination,

a. a container suitable for containing a cryogenic medium having a temperature on the order of about −196°C.

b. a pair of substantially flat parallel planar plates separable to permit enclosure of a slack filled pouch of a fluid to be frozen,

c. a jig fixture for restraining said plates against separation from the slack filled pouch of a fluid to be frozen, said jig fixture being immersible in said container and being provided with a vertically extending slot of a width to accommodate a pair of said plates enclosing a slack filled pouch of fluid in a slideable contact fit, and

d. manipulative holder means for immersing the plates enclosing the unfrozen slack filled pouch of fluid into said container, holding the plates enclosing the pouch of fluid being frozen in an upright vertical orientation during freezing, and removing said plates enclosing the frozen pouch of fluid from said container.

3,952,537
REVERSING VALVE MEANS FOR USE WITH A REVERSIBLE REFRIGERATING CYCLE SYSTEM
Tadashi Aoki, Iruma, and Yasuo Komiya, Tokyo, both of Japan, assignors to Kabushiki Kaisha Saginomiya Seisakusho, Tokyo, Japan
Filed Oct. 2, 1974, Ser. No. 511,273
Int. Cl.² F25B 29/00
U.S. Cl. 62—324 7 Claims

1. A reversing valve means for use with a reversible refrigerating cycle system comprising first and second means functioning alternately and in reverse as a condenser and an evaporator;

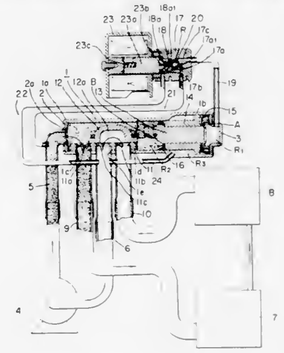
a compressor means associated with said first and second means;

a cylindrical reversing valve body associated with said first and second means and with said compressor means, said reversing valve body having first and second ports communicating with pipes of said first and second means respectively, a third port located between said first and second ports and communicating with a suction pipe of the compressor and a fourth port communicating with a discharge pipe of the compressor, said first, second and third ports being provided at one side of said reversing valve body in alignment with one another axially of said reversing valve body;

a valve seat having three holes each corresponding to said first, second and third ports, respectively;

a selector valve connected with a valve rod, said valve rod having a first larger pressure-sensing portion and a second smaller pressure-sensing portion, said selector valve and valve rod being movable within said reversing valve body in the axial direction thereof by means of differing pressures on said first and second pressure-sensing portions, said selector valve having a concave thereunder adapted to connect said third port selectively with said second port and said first port and being slidable on said valve seat;

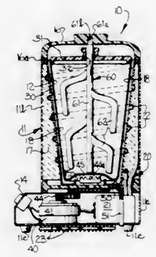
a switchover section associated with said reversing valve body and having a common passage, a first passage in communication with said compressor discharge pipe for



introducing high-pressure refrigerant to said switchover section, a second passage in communication with said compressor suction pipe for introducing low-pressure refrigerant to said switchover section; and

a pilot electromagnetic valve means adapted to connect said common passage selectively with said first passage and said second passage, said movable valve rod dividing the valve body into fixedly located first and second rooms each having an end closed by said larger pressure-sensing portion and smaller pressure-sensing portion, respectively, said fourth port opening into said second room, said larger pressure-sensing portion of said valve rod being in communication with said common passage of said switchover section.

3,952,538
PORTABLE SELF-CONTAINED APPARATUS FOR FREEZING LIQUIDS
Stearn W. Warlick, Rte. 1, Box 85, Lincolnton, N.C. 28092
Filed Nov. 20, 1974, Ser. No. 525,475
Int. Cl.² A23G 9/10
U.S. Cl. 62—342 11 Claims



6. A portable self-contained apparatus for freezing liquids, such as ice cream, without the use of ice and salt and being characterized by a construction providing efficient and uni-

form freezing of the liquid and ease of removal of the frozen liquid therefrom while compensating for frost accumulation during the freezing operation, said apparatus comprising:

a housing;

a heat conductive wall of generally frusto-conical configuration carried by said housing and defining therein an upwardly flaring frustoconical cooling chamber having an open upper end;

refrigeration means contained in said housing and cooperating with said heat conductive wall over substantially the entire extent thereof for circulating a refrigerant therealong for uniformly cooling the inner surface of said wall;

a heat conductive liquid container of generally frusto-conical shape corresponding to the shape of said cooling chamber, said container being removably positioned in said cooling chamber and adapted for rotation relative thereto, and said container being positioned in closely spaced relation with the uniformly cooled inner surface of said heat conductive wall for being quickly and uniformly cooled thereby while allowing upward axial movement of said container with respect to said conductive wall for compensating for accumulation of frost thereon; and

drive means extending into a lower portion of said cooling chamber and being disengageably connected to said liquid container for rotating the container relative to said wall to thereby provide agitation for the liquid in the container during freezing thereof.

11. A portable self-contained apparatus for freezing liquids, such as ice cream, without the use of ice and salt and being characterized by a construction providing efficient and uniform freezing of the liquid and ease of removal of the frozen liquid therefrom while compensating for frost accumulation during the freezing operation, said apparatus comprising:

a housing, including a hollow base portion and an upper housing portion carried by said base portion and extending upwardly therefrom;

a heat conductive wall of generally frusto-conical configuration located in said upper housing portion and defining therein an upwardly flaring frusto-conical cooling chamber having an open upper end;

refrigeration means cooperating with said heat conductive wall over substantially the entire extent thereof for circulating a refrigerant therearound for uniformly cooling the inner surface of said wall, said refrigeration means including a refrigeration compressor located in said hollow base portion below said cooling chamber, a condenser coil operatively connected to said refrigeration compressor, and an evaporator coil surrounding said heat conductive wall and being operatively connected to said refrigeration compressor and to said condensor coil;

a heat conductive liquid container of generally frusto-conical shape corresponding to the shape of said cooling chamber, said container being removably positioned in said cooling chamber and adapted for rotation relative thereto, and said container being positioned in closely spaced relation with the uniformly cooled inner surface of said heat conductive wall for being quickly and uniformly cooled thereby while allowing upward axial movement of said container with respect to said heat conductive wall for compensating for accumulation of frost thereon;

drive means cooperating with said liquid container for rotating the container within said liquid chamber to thereby provide agitation for the liquid in the container during freezing thereof, said drive means including an electric motor located in said hollow base portion, a drive gear located in the lower portion of said cooling chamber and being releasably connected in driving engagement to said liquid container for imparting rotation thereto, and means operatively interconnecting said electric motor and said drive gear;

a dasher extending into said liquid container from the upper end thereof; and

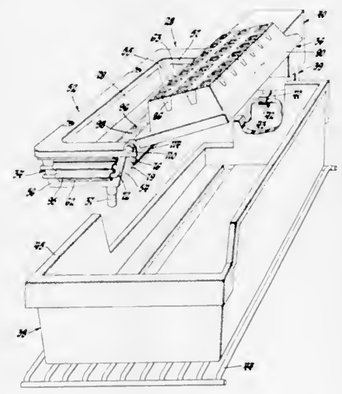
a cooling chamber cover carried by said upper housing and enclosing the open end of said cooling chamber, said cover including means engaging the upper end of said dasher for holding the dasher stationary during rotation of the liquid container to thereby provide further agitation to the liquid in said container to facilitate uniform freezing thereof.

3,952,539

WATER TRAY FOR CLEAR ICE MAKER

Robert S. Hanson, 159 Marbrook Drive, Kettering, and Cecil C. Pugh, 1210 Claybourne Road, Dayton, both of Ohio 45429, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 18, 1974, Ser. No. 524,974
Int. Cl.² F25C *5/08*
U.S. Cl. 62—351 **2 Claims**



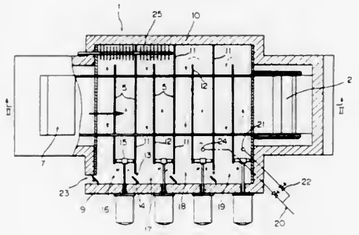
2. A clear ice maker in a freezer comprising a tray having side and bottom walls adapted to contain a body of water, a grid in said tray having cavity-forming means for displacing the body of water contained by said walls into the cavity, fan means distributing sub-freezing air over the top planar surface of said body of water in said grid cavity for a sufficient period to initiate the freezing of clear ice in said grid cavity along the interface between said air and said top planar surface and to continue the freezing of clear ice downwardly in said grid cavity, and a bucket for storing said clear ice in said freezer and being removable from said freezer, heating means energizable to maintain said body of water in a liquid state adjacent said tray below the freezing clear ice, harvesting mechanism for removing said grid and clear ice from said tray before the freezing of clear ice downwardly in said grid cavity reaches the bottom wall of said tray and depositing said clear ice in said bucket, the improvement in said tray heating means comprising a composite tray having a polypropylene plastic frame with side, end and bottom walls formed with window-like apertures therein, aluminum metal insert plates positioned in said apertures, said plates having a thickness of about one and one-half times the thickness of said tray plastic frame, said plate peripheral edges formed with undercut grooves to provide a single lap-butt sealed joint with the edges of the tray apertures, a first resistance heater for said side and end wall insert, a second heater for said bottom wall insert, said side and end wall metal inserts having a vertical dimension substantially coextensive with the clear ice cubes in said grid from said top planar surface to the lower surface of the clear ice cubes, said bottom wall insert of a dimension to be coextensive with the bottom openings of said grid cavities, said first side wall heater operative to heat said side and end wall inserts, and said second bottom wall heater operative to maintain said body of water beneath the freezing clear ice at an above freezing temperature.

3,952,540

APPARATUS FOR COOLING GOODS BY CONTACTING THE GOODS WITH LOW TEMPERATURE GAS

Nobuhiko Okada, Nara; Shunroku Yamashita, Takatsuki, both of Japan, and Teikoku Sanso Kabushiki Kaisha, 03, Tokyo, both of Japan, assignors to Osaka Gas Kabushiki Kaisha, Osaka and Teikoku Sanso Kabushiki Kaisha, Tokyo, both of, Japan

Filed Oct. 30, 1973, Ser. No. 410,998
Claims priority, application Japan, Oct. 31, 1972, 47-109709; Sept. 27, 1973, 48-109035
Int. Cl.² F25D *17/02*
U.S. Cl. 62—374 **10 Claims**



1. An apparatus for cooling goods through contact with a low temperature gas comprising, in combination:

a housing;

a conveying means mounted in said housing for intermittently transferring the goods in a substantially rectilinear direction through said housing;

wall means arranged substantially equidistantly in vertical relation to a goods transferring path through a space between an upper surface of said conveying means and an upper surface of said housing, said wall means being adapted to shift intermittently together with said conveying means;

recesses in said housing defined by outwardly protruding portions of two side walls thereof which face said space between an upper surface of said conveying means and an upper inner surface of said housing;

first and second partition means provided in said recesses in substantially parallel relation to and respectively at intervals twice those of said wall means, said first and second partition means being arranged alternatingly and equidistantly, said second partition means having oppositely disposed end portions adapted to stop short of said side walls to thereby form gaps between the said partitions and said side walls, said wall means being placed in alignment respectively with said first partition means and with said second partition means when said conveying means is standing still;

at least one precooling space and at least one cooling space defined by said wall means, said first partition means, and said housing, said cooling space being located forward of said precooling space with respect to a direction of transferring goods, said first partition means being provided with a passage for supplying a low temperature gas from said cooling space into said precooling space;

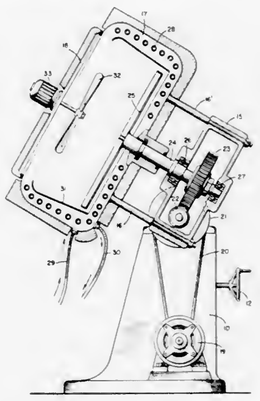
fan means provided in said cooling space and said precooling space respectively for propelling the low temperature gas so as to cause it to circulate in a substantially horizontal circuitous path in a direction transverse to the path of travel of said goods under guidance of said second partition means and said wall means placed in alignment within both of said cooling and precooling spaces.

3,952,541

APPARATUS FOR QUICK FREEZING OF AQUEOUS SOLUTIONS OR SUSPENSIONS TO BE SUBMITTED TO LYOPHILIZATION

Mario Rigoli, Via Falloppio, 5, Milan, Italy

Continuation of Ser. No. 194,070, Oct. 29, 1971, abandoned, which is a continuation of Ser. No. 872,679, Oct. 30, 1969, abandoned. This application Dec. 20, 1974, Ser. No. 534,775
Claims priority, application Italy, Nov. 5, 1968, 133846/68[U]; Oct. 16, 1969, 23480/69
Int. Cl.² F26B *5/06*
U.S. Cl. 62—381 **2 Claims**



1. An apparatus for quick freezing aqueous solutions or suspensions contained in vials, for subsequent lyophilization, in such a manner that said solution or suspension forms a thin frozen layer substantially on the entire inner surface of the side walls of the vials, said apparatus comprising: a tank having integral bottom and side walls and one open end, an air-tight cover for closing said open end, refrigeration means in said bottom and side walls of said tank, tank mounting means to adjustably position the longitudinal axis of the tank between horizontal and vertical positions, at least one rotatable frame mounted within said tank, means on said frame for holding trays for housing a plurality of vials, a centrally disposed rotatably driven shaft passing through the bottom of the tank and connected for driving said rotating frame, and means for refrigerating each vial from its top to its bottom including an impeller disposed centrally inside the cover, a motor disposed externally of the cover and connected for rotatably driving said impeller for producing a descending stream of refrigerated air within the central portion of said tank, air conveyor means mounted within the tank parallel to, but spaced from, said side walls defining an annular outer chamber and a coaxial cylindrical inner chamber, said impeller and air conveyor means forming a closed air circuit for said descending refrigerated stream of air in said inner chamber for lapping the entire surface of the vials from top to bottom and for a rising stream of air in said annular chamber for rapidly freezing the solution or suspension within the vials starting from the top until a thin frozen layer covers the walls of the vials.

3,952,542

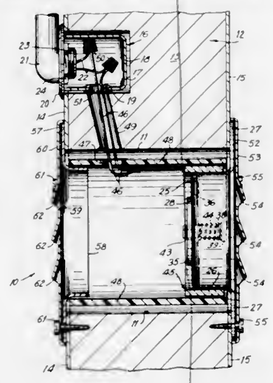
VENTILATOR

Irving L. Berkowitz, Binghamton, N.Y., assignor to Kason Hardware Corporation, Binghamton, N.Y.

Filed Nov. 22, 1974, Ser. No. 526,265
Int. Cl.² F25D *17/04*
U.S. Cl. 62—409 **10 Claims**

1. A ventilator for use in controlling the flow of fluid such as air to and from an enclosure or the like, the enclosure including a supporting wall defining a ventilating opening

therethrough, the improvement comprising: a valve assembly having portions thereof disposed within said ventilating opening, said valve assembly including a substantially fluid impervious wall formed with a guide opening therethrough and further defining first and second fluid ports therethrough, a first closure member springbiased toward a normally closed position such that portions thereof substantially cover said first fluid port, a second closure member spring-biased toward a normally closed position such that portions thereof substantially cover said second fluid port, spring means for causing said biasing of said first and second closure members, and guide means carrying said spring means for both guiding each of said closure members between said closed positions and open positions, respectively, and for maintaining a substantially predetermined alignment between said closure members with respect to one another as well as with respect to the disposition of said ports, said valve assembly permitting substantial equalization of fluid pressure differentials at said ventilating opening.

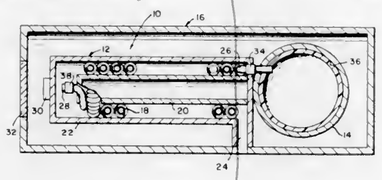


3,952,543

QUICK COOLING CRYOSTAT WITH VALVE UTILIZING SIMON COOLING AND JOULE THOMPSON EXPANSION

J. Stanley Buller, Santa Barbara, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 13, 1974, Ser. No. 532,355
Int. Cl.² F25B *19/00*
U.S. Cl. 62—514 JT **9 Claims**



1. A cryostat comprising:

a Simon expansion tank for containing refrigerant gas under pressure, at least an interior layer in said Simon expansion tank having a lower thermal conductivity than of solid metal, outlet means from said Simon expansion tank for discharging expansion cooled gas from the interior of said Simon expansion tank for the cooling of the remaining gas in said Simon expansion tank, said outlet means also being constructed for minimizing heating of said expansion cooled gas during transfer;

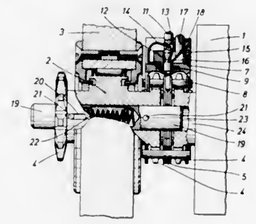
a Joule Thomson coldfinger having its inlet coupled to the outlet of said Simon expansion tank to receive the expansion cooled gas by transfer from said outlet means and valve means for holding the refrigerant gas under pressure in said Simon expansion tank until cooldown and for releasing refrigerant gas from said Simon expansion tank directly through said Joule Thomson coldfinger upon opening of said valve.

3,952,544

SHAFT-CONNECTING CHAIN COUPLING

Walther Filter, Langenhagen, Germany, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke - Alpine Montan Aktiengesellschaft, Vienna, Austria and Etablissement Wanderfield & Co., Schaan, Liechtenstein

Filed June 27, 1974, Ser. No. 483,685
Claims priority, application Austria, July 25, 1973, 6563/73
Int. Cl.² F16D *3/70*; F16H *57/04*
U.S. Cl. 64—19 **4 Claims**



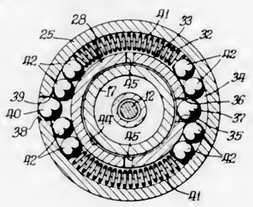
1. In a chain coupling for connecting two shafts, which comprises two substantially coaxial sprockets, a chain trained around the sprockets, and a chain fastener comprising two fastener members connected to respective ends of the chain, the improvement of one of the fastener members defining an aperture, a keeper mounted in the other fastener member and extending in the longitudinal direction of the chain, the keeper being matingly received in the aperture and defining an aperture having an axis normal to the axis of the sprockets, and a locking pin adapted to assume a first position, in which the locking pin locks the two fastener members together, and a second position, in which the locking pin permits the two fastener members to be separated from each other, the locking pin being movable between the first and second positions in a plane normal to the axis of the sprockets, and the locking pin extending into the aperture in the keeper in the first position and being disposed outside the aperture in the keeper in the second position.

3,952,545

FLUID DAMPED RESILIENT DRIVE FOR A GOVERNOR

Werner H. Koeslin, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 3, 1974, Ser. No. 485,338
Int. Cl.² F16D *3/14*
U.S. Cl. 64—27 C **11 Claims**



1. A resilient drive mechanism in combination with a governor controlled fuel control means, said resilient drive mechanism comprising

a rotary driving member,

a rotary driven member,

means defining an annular raceway between said driving and driven members, and

resilient coupling means interconnecting said driving and driven members together comprising spring means, a plurality of connecting members loosely mounted in said raceway to abut said spring means in circumferentially disposed relationship therewith for damping vibrations in said resilient drive mechanism and stop means secured to each of said driving and driven members to radially extend into said raceway and each stop means interposed between and solely abutting a respective pair of circumferentially adjacent connecting members, and wherein

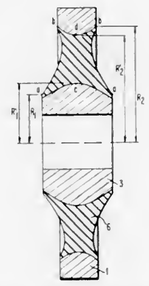
said governor controlled fuel control means includes a movable fuel control member and is operatively connected to said driven member for moving said fuel control member in response to rotation of said driven member.

3,952,546

ELASTIC COUPLING

Hideaki Nakano; Tadahiro Ozu, and Takashi Okayama, all of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Aug. 23, 1974, Ser. No. 499,952
Int. Cl.² F16D *3/14*
U.S. Cl. 64—27 NM **6 Claims**



1. An elastic coupling comprising an inner metal ring having its radially outer surface radially curvilinearly convexed, an outer metal ring having its radially inner surface radially curvilinearly convexed, and an elastomer ring interposed between said inner and outer metal rings and having its radially inner and outer surfaces radially curvilinearly concaved and vulcanized, respectively, to the correspondingly contoured outer surface of said inner metal ring and to the inner surface of said outer metal ring, such that the modulus of shearing strain of a surface portion at the side of said elastomer ring is smaller than that of an inside portion of the same to eliminate initial tension within the surfaces of said elastomer ring.

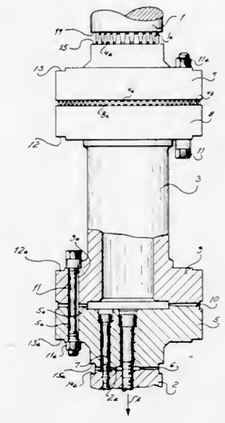
3,952,547

METHOD AND MEANS FOR ACCURATELY ALIGNING THE AXES OF SHAFTS IN PUMP ASSEMBLIES OR THE LIKE

Johannes Klein, Frankenthal; Wolfgang Schneider, Hessheim, and Karl Fetzer, Heidenheim, all of Germany, assignors to KSB Kernkraftwerkspumpen GmbH, Frankenthal, Germany

Filed Dec. 5, 1974, Ser. No. 530,043
Claims priority, application Germany, Dec. 10, 1973, 2361367
Int. Cl.² F16D *3/18*
U.S. Cl. 64—9 R **10 Claims**

1. In a pump assembly, particularly in a centrifugal pump assembly for use in nuclear reactor plants, a combination comprising a first rotary member having a first face gear at one end thereof; a second rotary member having a second face gear at one end thereof, said face gears being normally in mesh with each other and at least one of said rotary members having an annular control surface located in a plane which is normal to the axis of said one rotary member so that a monitoring of said control surface can detect eventual deviations of the axis of said one rotary member from a position of accurate alignment with the axis of the other rotary member; and means for changing the inclination of at least one of said rotary members with respect to the other rotary member upon



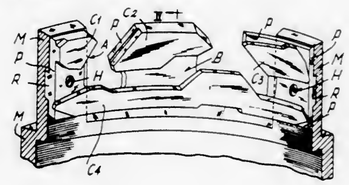
detection of said deviations, including a plurality of adjusting elements spaced apart from each other in the circumferential direction of said rotary members and each urging different portions of said face gears into mesh with each other with a force which is variable to allow for tilting of at least one of said rotary members with respect to the other rotary member upon detection of said deviations until the axes of said rotary members are accurately aligned with each other so that the plane of said control surface is normal to the axes of both rotary members.

3,952,548

CAM RING

Francesco Lonati, Brescia, Italy, assignor to Costruzioni Meccaniche Lonati di Lonati Francesco & Figli (Ettore, Fausto, Tiberio) S.n.c., Brescia, Italy

Filed Jan. 2, 1974, Ser. No. 429,976
Claims priority, application Italy, Jan. 31, 1973, 5104/73
Int. Cl.² D04B *15/32*
U.S. Cl. 66—57 **1 Claim**



1. An improvement in the drive cam ring set of a circular knitting machine, comprising:

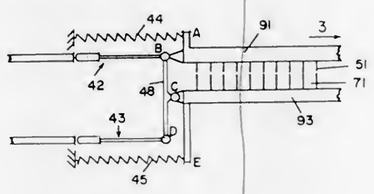
an annular shaped rigid skirt;

a plurality of arcuate plate members each having a positioning means for positioning each said arcuate plate member within said annular shaped rigid skirt; and

at least two cams formed integrally on each of said arcuate plate members, said cams forming a guide path having slots along portions of said path between portions of said

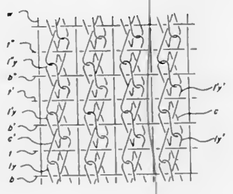
cams, said annular shaped rigid skirt having apertures at locations around its circumference adjacent said slots thereby providing radial openings through both said annular shaped rigid skirt and said arcuate plate members.

3,952,549
GUIDEBAR COMPENSATION APPARATUS FOR USE ON WARP KNITTING MACHINES EQUIPPED WITH JACQUARD CONTROLS
Karl Kohl, Chlorodont Str. 10, Obertshausen, Germany
Filed Dec. 18, 1974, Ser. No. 534,056
Claims priority, application Germany, Jan. 15, 1974, 2401688
Int. Cl.² D04B *23/00, 27/00*
U.S. Cl. 66—86 E **7 Claims**



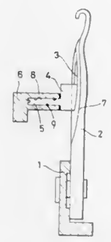
1. An apparatus adapted for use on a warp knitting machine equipped with Jacquard controls, the apparatus comprising:
a guide bar;
a guide bar control means;
a dropper bar associated with said guide bar;
a dropper bar control means;
return means for biasing said guide bar and dropper bar against their respective control means; and,
a compensation means for increasing the bias force upon said guide bar in one direction when the movement of said dropper bar is in the opposite direction, said compensation means comprising a lever means pivotally connected to said guide bar and to said dropper bar.

3,952,550
KNIT FABRIC INCORPORATING A WARP STITCH WEAVE
Kurt W. Niederer, Charlotte, N.C., assignor to W. Schlafhorst & Co., Monchengladbach, Germany
Division of Ser. No. 423,484, Dec. 10, 1973, Pat. No. 3,884,054. This application Jan. 6, 1975, Ser. No. 538,892
Int. Cl.² D04B *23/02*
U.S. Cl. 66—87 **8 Claims**



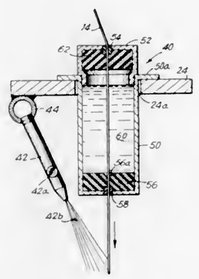
1. In the formation of knit fabric incorporating an inlay of spaced warp ends with filling ends laid at opposite sides of said warp ends across the full fabric width and warp knit stitch chains formed in the spaces between said warp ends, the improvement which comprises feeding said warp and filling end inlay while forming said stitch chains from knitting ends and causing loops of the stitch chains as they are formed to interlace sinuously with filling ends at both sides of the warp ends, so that the filling ends are held against the warp ends and are forced inwardly therebetween causing both warp and filling ends to undulate as a result of mutual interaction in a manner producing an appearance approaching that of woven structure.

3,952,551
SELF-ALIGNING APPARATUS FOR USE ON A WRAP KNITTING MACHINE
Karl Kohl, 10 Chlorodont Strasse, Obertshausen, Germany (6053)
Filed Dec. 24, 1974, Ser. No. 536,138
Claims priority, application Germany, Jan. 15, 1974, 2401687
Int. Cl.² D04B *35/04, 35/06*
U.S. Cl. 66—120 **4 Claims**



1. A self-aligning apparatus for use on a warp knitting machine equipped with grooved needles, said apparatus comprising:
a needle means; a needle closer means adapted for interaction with said needle means; and a self-aligning means for automatically aligning said closer means with respect to said needle means, said self-aligning means comprising a closer mounting bar having a slot therein and, a slot engaging closer mounting means for carrying said closer means and adapted to move freely along the length of at least a portion of said slot.

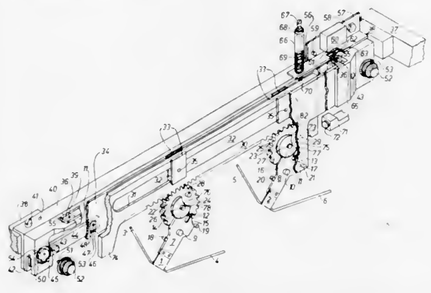
3,952,552
AUXILIARY YARN DYEING MECHANISM
Allan Rozner, Fresh Meadows, N.Y., assignor to C.J.I. Industries, Inc., New York, N.Y.
Filed Sept. 29, 1972, Ser. No. 293,352
Int. Cl.² D04B *35/00*
U.S. Cl. 66—125 A **2 Claims**



2. In a fabric forming machine having a plurality of means each for supplying a yarn to be used in forming a fabric, operating means for incorporating the yarn into a fabric, and means for guiding the yarn toward said operating means, the improvement comprising a plurality of containers each having a dye therein and a yarn passageway therethrough, each of said yarns which is to be dyed being passed through one of said

containers in its path of travel between the respective supplying means and operating means, wherein the yarn passing through each of said containers exits from the container through a hole at one end thereof, and each of said containers includes at least one layer of resilient absorbent material having a channel therethrough and disposed at said one end thereof for guiding a yarn toward said hole in said container, and including a needle for threading said yarn through said container, said needle being of sufficient length for one end thereof to protrude from said hole at said one end of said container while the other end of said needle carrying said yarn protrudes from the other end of said container.

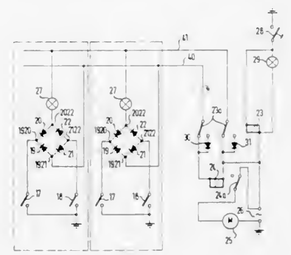
3,952,553
STOPPING APPARATUS FOR A RECTILINEAR KNITTING MACHINE
Fritz Kohler, Couvet, Switzerland, assignor to Edouard Dubied et Cie (Societe Anonyme), Couvet, Switzerland
Filed Mar. 21, 1975, Ser. No. 560,968
Claims priority, application Switzerland, Mar. 27, 1974, 4262/74
Int. Cl.² D04B *35/10*
U.S. Cl. 66—157 **2 Claims**



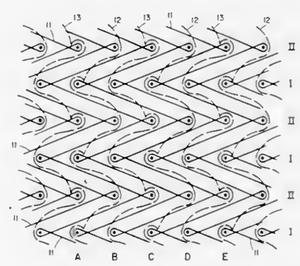
1. A stopping apparatus for a rectilinear knitting machine comprising at least two needlebeds arranged in roof form and provided with needles, a carriage being displaced in an oscillating movement above the frame parts for the control of the needles during its displacement in alternating directions, and at least one apparatus forming one piece with said knitting carriage to move the fabric away from the knitting area of the needles, said stopping means comprising a switch, feed means arranged parallel with the direction of movement of the knitting carriage and control means for this switch, characterized by the fact that it forms one piece with a support concealable about an axis which in turn forms one piece with an apparatus separating the fabric from the operating field of the needles, and that the control means of the switch are adjustable by adjustment means forming one piece with members capable of being displaced perpendicularly to the operating direction of the carriage during a malfunctioning of the knitting machine.

3,952,554
YARN FEED STOP MOTION
Anton Kerff, Ulricehamn, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden
Filed Dec. 27, 1974, Ser. No. 536,900
Claims priority, application Sweden, Dec. 28, 1973, 7317606
Int. Cl.² D04B *35/10*
U.S. Cl. 66—163 **5 Claims**

1. A control device for a textile machine, in particular for a knitting machine having at least one yarn feeding device, each yarn feeding device being provided with two stop-motion devices each respectively having one electrical stop-motion switch, and a relay connected to all stop-motion switches for stopping the mechanical drive of the textile machine, wherein the stop-motion switches of the yarn feeding device are connected to an a-c voltage supplied rectifier circuit in such a manner that the two stop-motion switches of the yarn feeding device are supplied with voltage half-waves of different polarity, and wherein a control unit is provided which is common to all stop-motion switches and which is capable of suppressing voltage half-waves of one polarity in order to neutralize the stop-motion switch supplied with the voltage half-waves of said one polarity with reference to said relay which stops the mechanical drive of the textile machine.



3,952,555
WARP KNIT DENIM FABRICS
Bascum G. Lesley, Pickens, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Aug. 13, 1974, Ser. No. 496,952
Int. Cl.² D04B *21/00*
U.S. Cl. 66—195 **16 Claims**



1. A warp knit fabric comprising in combination;
a knitted ground structure comprising a set of similarly colored or colorable yarns disposed in plural, substantially identical paths throughout the structure to form a loop in every wale and in every course, the yarn of each path forming a loop in every course with successive loops being alternately positioned in two non-adjacent wales from course to course, and
a plurality of sets of surface effect yarns of lighter color or colorability than said set of ground structure yarns forming loops in the ground structure,
1. the yarns of a first set of the surface effect yarns disposed in plural substantially identical paths throughout the structure to form loops only in alternate courses, the yarn of each path in said first set forming loops in each alternate course of a single wale and forming inlaid lap portions between said loops, and
2. the yarns of a second set of the surface effect yarns disposed in plural substantially identical paths throughout the structure to form loops only in intervening courses to the courses in which loops of said first set of effect yarns are disposed, the yarn of each path of said second set forming loops in each of said intervening

courses of a single wale and forming inlaid lap portions between said loops,

the yarns of said first and second sets of surface effect yarns forming said loops only in every other wale of the ground structure with the paths of all inlaid lap portions of yarns in said first and second sets extending in the same general direction and being exposed on the technical back surface of the ground structure and lying generally parallel to the wales thereof.

3,952,556

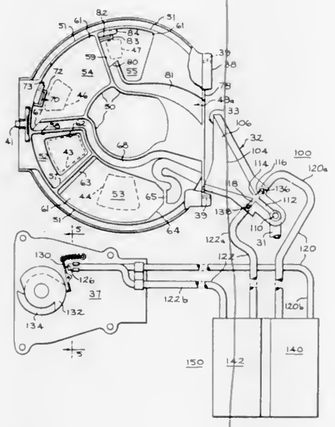
LIQUID FLOW DIVERSION ARRANGEMENT

Ved P. Gakhar, and Lawrence P. Dendinger, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Division of Ser. No. 406,577, Oct. 15, 1973, Pat. No. 3,903,927. This application May 19, 1975, Ser. No. 578,634

Int. Cl.² D06F *39/02*

U.S. Cl. 68—12 R **5 Claims**



1. In an automatic washer having an additive dispensing system including a multi-compartmented dispenser, a liquid flow diversion arrangement having a liquid diverter for selectively diverting liquid into preselected dispenser compartments for flushing the additives into the washer at predetermined times during a cycle of the washer, the liquid diverter having a main inlet for liquid to enter, a liquid outlet providing a plurality of exit paths for the liquid, and at least two control ports coupled respectively to ambient, the arrangement further including means for selectively closing each of the control ports respectively from ambient at predetermined times for determining through which exit path and thereby into which dispenser compartment liquid entering the main inlet will emerge, wherein the improvement comprises:

a check valve associated with each control port for preventing the emergence of liquid from the respective control ports; and

a chamber coupled respectively between each control port and its respective closing means for accumulating liquid that may bypass the respective check valves, the chambers being dimensioned for preventing sonic oscillations in the liquid flow diversion arrangement.

3,952,557

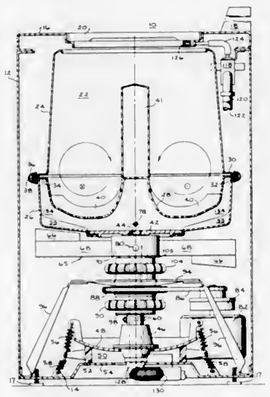
WOBBLE WASHING MACHINE

John Bochan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed June 20, 1974, Ser. No. 481,201

Int. Cl.² D06F *23/02*

U.S. Cl. 68—23.3 **8 Claims**



1. A washing machine comprising:

a cabinet;

an imperforate wash basket arranged in the cabinet for receiving items to be washed, the basket being statically and dynamically balanced and arranged for concentric rotation about a vertical axis thereof for effecting centrifugal water extraction from items being washed;

inertia means including a pair of masses diametrically opposed and dislocated vertically with respect to each other secured to a connecting member and arranged in the cabinet below the wash basket for rotation about a vertical axis coaxial with that of the wash basket, the inertia means being balanced statically and forming a dynamically unbalanced couple, and when rotated the basket is caused to oscillate relative to its vertical axis for effecting turnover of items placed therein to be washed, and when the basket is rotated, the inertia means acts to stabilize the mass by counteracting unbalance resulting therefrom;

means arranged in the cabinet for rotating the inertia means while preventing the basket from simultaneously rotating and alternatively for rotating the basket while preventing the inertia means from simultaneously rotating; and

a damped, gyratory suspension system arranged in the cabinet for isolating the cabinet from forces induced by oscillating and rotational motions.

3,952,558

MACHINE FOR DYEING OR OTHER WET-TREATMENT OF TEXTILES

Sven Olof Sandberg, and Sven Robert E:son Smith, both of Avesta, Sweden, assignors to Avesta Jernverks Aktiebolag, Avesta, Sweden

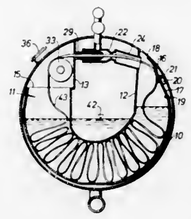
Filed Apr. 1, 1974, Ser. No. 457,097

Claims priority, application Sweden, Mar. 28, 1973, 734386

Int. Cl.² D06B *3/28*

U.S. Cl. 68—177 **8 Claims**

1. Apparatus for dyeing or other wet-treatment of knitted, crocheted or woven textile goods, comprising a vessel containing a bath of treatment liquid, means for circulating the textile goods in web form through said bath, means including a driving jet nozzle above said bath supplied with part of said treatment liquid under pressure for producing a jet drawing the textile goods in the form of a string or rope through said nozzle, the driving nozzle being directed at an angle within the range of + 45° to the horizontal towards a deflector surface for deflecting the jet and the accompanying textile string or rope in a downward direction towards said bath, said jet nozzle and said deflector surface being separated by a space allowing said web to be carried substantially solely by said jet and unob-



structed to said deflector surface to impinge thereagainst so as to spread the jet and the string or rope laterally to cause the textile goods to enter the liquid bath spread out into web form, and means for adjusting said deflector surface into various angular positions.

3,952,559

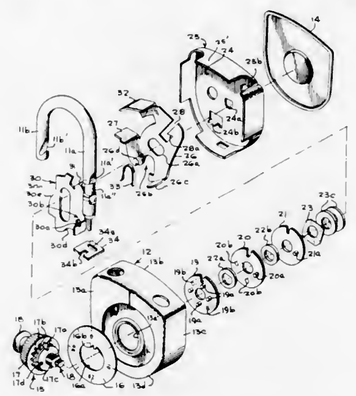
EXPOSED SHACKLE PADLOCK

Wallace E. Atkinson, Petersburg, Va., assignor to Long Manufacturing Co., Inc., Petersburg, Va.

Filed May 10, 1974, Ser. No. 469,039

Int. Cl.² E05B *37/10, 67/22, 67/24*

U.S. Cl. 70—25 **29 Claims**



1. An exposed shackle padlock comprising a casing having shackle openings in a top wall thereof for reception of shackle legs, a shackle movable relative to the casing between inner locking and outer release positions having legs extending through said openings including a longer leg supported for axial and rotary movement within the casing and a shorter leg having a latching notch, means defining a stationary pivot in a lower region in the casing, a fence plate having a fence flange and a locking flange integrally formed thereon supported for rocking movement between latching and unlatching positions about a first pivot axis adjacent the pivot and having a slot shaped to accommodate lateral translatory relative movement of the pivot in the slot, said locking flange projecting into locking relation in said latching notch at the inner locking position of the shackle when the fence plate is in latching position, rotatable locking means in said casing including a peripherally gated rotatable tumbler wheel member normally occupying a locking position wherein peripheral portions thereof adjacent said fence flange prevent fence plate movement from said latching position and operable from externally of the casing to occupy an unlocking position disposing its gate to receive the fence flange and accommodate rocking of the fence plate to unlatching position, means operable when the locking means is in said unlocking position for moving the fence plate to unlatching position responsive to initial inward force on the shackle causing inward shackle travel followed by outward withdrawing force on the shackle causing outward shackle travel including an actuator plate coupled to and movable with said longer shackle leg located within the casing in adjacent parallelism with the fence plate having a lug projecting therefrom, the fence plate having a shouldered slot therein receiving said lug shaped to dispose the shoulder portion of the slot in adjacent overlying relation to the lug when the fence plate occupies the latching position to intercept the lug and prevent movement toward release position of the actuator plate and interconnected shackle, the shouldered slot having a passage shaped and located when the fence plate is in unlatching position to accommodate travel of the lug during shackle releasing movement of the actuator plate responsive to said outward withdrawing force on the shackle, means for initially rocking said fence plate about said pivot from latching to unlatching position responsive to application of said initial inward force on the shackle when the locking means is in said unlocking position to withdraw the locking flange from the latching notch and shift said shouldered portion of the shouldered slot out of intercepting relation to said lug, said fence plate remaining in unlatching position during an initial portion of said outward shackle travel until the latching notch is disposed outwardly beyond the locking flange and said actuator plate having a cam surface formation for engaging the fence plate and returning it to said latching position during a second portion of outward shackle travel following said initial portion, the end of said shorter shackle leg and said locking flange being shaped for rocking the fence plate toward unlatching position to admit the shackle to said inner locking position during inward travel of the shackle, and spring means for returning the locking flange into locking relation in said latching notch when the shackle reaches said inner locking position following said inward travel.

3,952,560

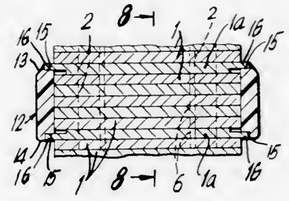
PADLOCK WITH BUMPER

Lurk Ming Lee, Hong Kong, Hong Kong, assignor to Po Wah Company, Hong Kong, Hong Kong

Filed Aug. 4, 1975, Ser. No. 601,472

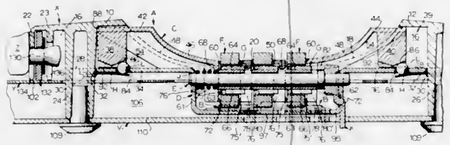
Int. Cl.² E05B *67/02*

U.S. Cl. 70—52 **15 Claims**



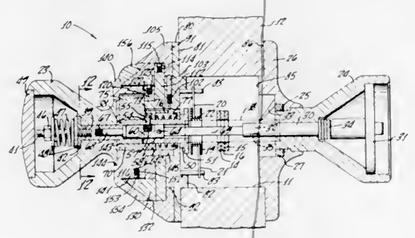
1. A padlock comprising a body, said body comprising a plurality of superimposed metal plates, a band of material softer than the metal of said plates, surrounding a group of said plates, one or more of the plates of said group being provided with one or more projections, and said band having perimetric upper and lower edges and being formed with recesses receiving said projections, to retain the band in place on said body.

3,952,561
COMBINATION LOCK IN A LUGGAGE CASE HANDLE STUD
Lazlo Bako, Woodcliff Lake, N.J., assignor to Presto Lock Company, Elmwood Park, N.J.
Filed Nov. 5, 1974, Ser. No. 521,042
Int. Cl.² E05B *65/52, 37/02*
U.S. Cl. 70—70 **11 Claims**



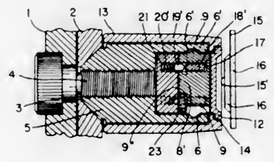
1. A combination lock cooperable with a hasp, the lock comprising a longitudinally movable puller having means for engaging the hasp and having a plurality of longitudinally spaced slots each receiving a rotatable dial, the dials being longitudinally movable with the puller, and a sleeve for each dial rotatable therewith, the dials and the sleeves having cooperable means permitting movement of a dial longitudinally relative to its associated sleeve, the sleeves being cooperable with means provided by the puller for blocking movement of the puller from latching position when the dials are off combination and for permitting movement of the puller between latching and unlatching positions when the dials are on combination.

3,952,562
COMBINED KNOB AND PERMUTATION LOCK ASSEMBLY FOR DOOR LATCHES
A. Ray Snow, 1327 S. 14th East, Salt Lake City, Utah 84105
Filed June 9, 1975, Ser. No. 585,313
Int. Cl.² E05B *13/10, 37/08*
U.S. Cl. 70—146 **19 Claims**



15. A combination knob and permutation lock assembly adapted to be mounted in a door for controlling a door latch comprising:
coaxial external and internal knobs mounted for rotation on opposite sides of said door;
shaft means extending coaxially between said door knobs for rotation therewith, said shaft means engaging and activating said door latch upon rotation thereof by either of said knobs;
sleeve means mounted on said shaft means for axial movement only relative to said assembly as said shaft means is rotated by either said external or said internal knob, said sleeve means including a radially extending key;
first and second coplanar locking rings mounted coaxially with said shaft means, said locking rings having first and second slot means therein, respectively, alignable with each other to define a continuous slot which is alignable with said sleeve means key, said locking rings preventing axial movement of said sleeve means and activation of said door latch except when both said first and second slot means are aligned with said sleeve means key; and
means mounted coaxially with and adjacent said external door knob and operatively connected to said first and second locking rings for independently moving said locking rings to align said first and second slot means with said sleeve means key so as to unlock said assembly.

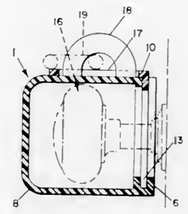
3,952,563
LOCK ASSEMBLY
Saburo Yamashita, Takarazuka, Japan, assignor to Kyo-ei Industrial Corporation, Japan
Filed Aug. 12, 1974, Ser. No. 496,630
Claims priority, application Japan, Nov. 21, 1973, 48-131516
Int. Cl.² E05B *35/14, 47/00, 65/12*; **F16B** *41/00*
U.S. Cl. 70—232 **7 Claims**



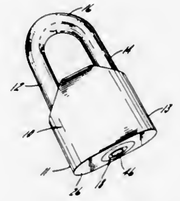
1. A lock assembly having a locked state comprising, in combination:
a magnetic key;
a nut defining a cavity and a peripheral groove about said cavity;
a shell detachably mountable on said nut, said shell being rotatable substantially about said nut in said locked state, whereby access to said nut is substantially avoided;
a locking member adapted to be received by said cavity in said nut, said locking member and said shell cooperating to define engagement means for securing said shell about said nut in said locked state, said locking member including latch means for securing said locking member within said cavity, said latch means being operative in an extended state and a retracted state, bias means for normally biasing said latch means to said extended state and magnetic pin means for selectively locking said latch means in said extended state, said locking member and said latch means defining at least one pin receiving cavity and at least one pin slot, respectively, said pin receiving cavity and said pin slot substantially aligning whenever said latch means is in said extended state, said magnetic pin means being operable in said pin receiving cavity and said pin slot and responsive to said magnetic key, said latch means including at least one tip having inclined sides for engaging said groove in said locked state, said tip and said inclined sides cooperating to define means for overcoming said bias means whenever said latch means is urged against said nut.

3,952,564
PROTECTIVE DEVICE FOR DOOR KNOBS AND THE LIKE
Peter Maines, 1350-20th St. A-24, Boulder, Colo. 80302
Filed May 28, 1975, Ser. No. 581,693
Int. Cl.² E05B *13/00*
U.S. Cl. 70—416 **3 Claims**

1. A protective device for mounting on a lock operating member and the like comprising a generally rectangular casing including flat walls, a generally rectangular opening in the front wall thereof, a guide track being formed in the sides and bottom of said opening, a right-angularly disposed closure member having a downwardly depending slotted front plate and a horizontally disposed top plate, said slotted plate being slidably disposed in said guide track to straddle said lock operating member when positioned within said casing, said top plate being slotted, and an apertured ear on the top wall of said casing adapted to project through the slot in said top plate whereby a locking member is positionable therethrough to lock and retain said casing on said lock operating member and prevent access thereto and normal actuation thereof.



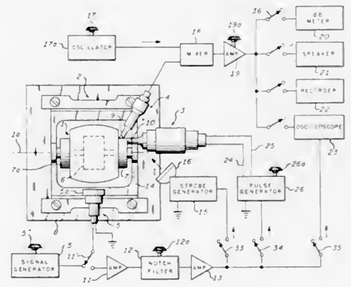
3,952,565
HARDENABLE LOCK
Morris Falk, Palm Springs, Calif., assignor to Fort Lock Corporation, River Grove, Ill.
Filed Oct. 17, 1974, Ser. No. 515,580
Int. Cl.² E05B *67/04*
U.S. Cl. 70—417 **6 Claims**



1. In a maximum security lock of the type having a monolithic lock body with a plurality of bores therein, hardened steel shackle means receivable in first and second bores, one leg of said shackle means being non-removable and the other being removable, a pair of shackle-fixing members within another bore in said lock body for preventing and for permitting opening of said shackle, and a key-receiving lock mechanism in an additional bore in said body which, when actuated by a proper key inserted in the lock mechanism, permits retraction of said shackle-fixing members and opening of the padlock, the improvement wherein said monolithic lock body is made of a compressed and sintered powdered metal alloy of an austenitic stainless steel containing about 16–26 weight percent chromium, about 8–22% nickel, and a maximum of 0.45% carbon and 2.0% manganese, whereby the resulting lock body is substantially softer than said shackle means, but, when an attempt is made to saw through said body, said stainless steel work-hardens to resist further sawing.

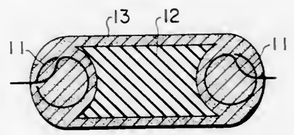
3,952,566
BEARING AND LUBRICANT FILM TEST METHOD AND APPARATUS
Peter E. Jacobson, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Mar. 3, 1975, Ser. No. 554,948
Int. Cl.² G01N *29/00*
U.S. Cl. 73—10 **32 Claims**

29. The method of testing a rotary bearing supporting a rotor member for rotation about a spin axis, said rotary bearing comprising a stationary bearing race resiliently supported for motion in a direction normal to said spin axis, a rotatable bearing race on said rotor member, and a plurality of spaced ball elements between said bearing races, said rotary bearing being under normal assembled preload for said rotor member, said method consisting in:
rotating said rotor member about said spin axis at an arbitrary rotation frequency,
determining the angular position with respect to said spin axis of a selected ball element relative to said stationary bearing race,



applying a pulse of ultrasonic carrier energy to said stationary bearing race adjacent said selected ball element when at said angular position whereby said selected ball element in combination with said bearing races oscillates in response to said ultrasonic energy in a pattern characteristic of said combination, and
detecting a characteristic of said pattern for determining an operating condition of said rotary bearing.

3,952,567
GAS SENSOR
Kiminari Shinagawa, Hachioji; Sadao Hishiyama, Sayama; Shinichi Ito, Kokubunji; Kunifusa Kayama, Tokyo, and Satoshi Taniguchi, Tokorozawa, all of Japan, assignors to The Hitachi Heating Appliances Co., Ltd., Kashiwa, Japan
Filed June 13, 1975, Ser. No. 586,813
Claims priority, application Japan, June 14, 1974, 49-67125
Int. Cl.² G01N *27/04*
U.S. Cl. 73—23 **8 Claims**

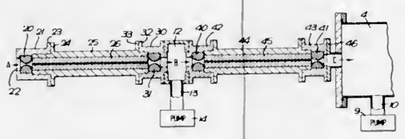


1. A gas sensor for detection and measurement of reducing gases, which comprises a spinel-type ferrite, means for maintaining said spinel-type ferrite at a desired temperature, and means for measuring the electric resistance of said spinel-type ferrite.

3,952,568
VACUUM PROCESSING OF ROD, WIRE OR STRIP MATERIAL

Joseph Brian Wareing, Chester, and Herbert Hall, Wakefield, both of England, assignors to The Electricity Council, London and Johnson & Nephew (Non-Ferrous), Manchester, both of, England

Filed Sept. 4, 1974, Ser. No. 503,193
Int. Cl.² B21D 37/16; C23C 13/10; F27D 1/00
U.S. Cl. 72—38 7 Claims

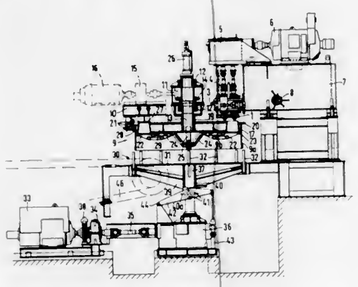


1. A seal permitting the feeding of a rod or wire material of predetermined uniform section through a wall separating regions at different pressures in vacuum apparatus for processing the rod or wire, said seal comprising a pair of spaced die-holders; a pair of die-shaped elements located one in each of said spaced die-holders, each die-shaped element being formed of a hard rigid material and being of parabolic form in axial section to have a smoothly-curved convergent entry portion leading to the narrowest portion and a smoothly-curved divergent exit portion, said die-shaped elements furthermore having dimensions to give a clearance of between 0.1 and 0.2 mm around the rod or wire to be fed therethrough; a tube sealed between said spaced die-holders; and a removable insert of non-abrasive material in said tube closely fitting within the tube, and having an opening extending therethrough for receiving the rod or wire to be fed through said seal.

3,952,569
METHOD AND APPARATUS FOR COILING LONG PRODUCTS

Gunter Lauterjung, Solingen, Germany, assignor to Firma Friedrich Kocks, Dusseldorf, Germany

Filed Sept. 11, 1974, Ser. No. 505,134
Claims priority, application Germany, Sept. 15, 1973, 2346554
Int. Cl.² B21C 47/00
U.S. Cl. 72—134 13 Claims

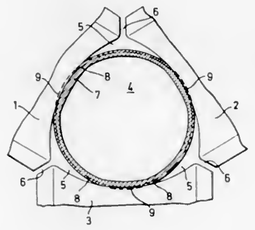


1. A method of winding long, rod-like material, such as tubes, into coils comprising the steps of continuously bending the material to be coiled, continuously depositing the bent material into a rotating coiler, collecting the bent material on the coiler until a preselected size coil has been accumulated, ejecting the completed coil downwardly from the continuously rotating coiler into a delivery recepticle rotating substantially in synchronism with the coiler, while maintaining the rotating speed of said coiler, reducing the speed of the delivery receptacle, and reaccelerating the delivery receptacle to the speed of rotation of the coiler while feeding material for the next succeeding coil into the coiler during such speed reduction, coil removal and reacceleration.

3,952,570
STRETCH REDUCING MILLS

Werner Demny, and Hermann Moeltner, both of Dusseldorf, Germany, assignors to Firma Friedrich Kocks, Dusseldorf, Germany

Filed June 26, 1974, Ser. No. 483,371
Claims priority, application Germany, July 4, 1973, 2333916
Int. Cl.² B21B 19/02
U.S. Cl. 72—224 5 Claims



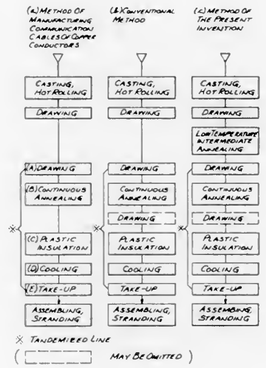
1. A stretch reducing mill for tubes being rolled without mandrels, said mill having a number of successive motor driven roll stands which are arranged directly one behind the other with successively smaller sizing passes to a final finishing pass, each stand having three grooved rolls defining a said sizing pass and arranged at 120° to one another, in which at least the first sizing pass is defined by groove means of a non-circular curved configuration to effect the reduction of incoming tubes having a range of external diameters.

3,952,571
METHOD OF MANUFACTURING ALUMINUM CONDUCTOR WIRES

Minoru Yokota; Ken-Ichi Sato, both of Osaka, and Takenobu Higashimoto, Yokohama, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 30, 1975, Ser. No. 545,693
Claims priority, application Japan, Feb. 12, 1974, 49-17334
Int. Cl.² B21C 9/00
U.S. Cl. 72—286 2 Claims

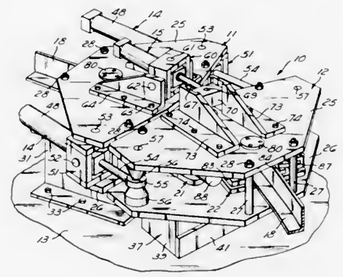
1. A method of manufacturing aluminum wires for communication cables, insulated electric wires and the like from an initial work material of aluminum for electrical purposes or an aluminum alloy for electrical conductors containing various additive elements, comprising the steps of hot working the initial work material, then cold working the material 80% or more, then applying a low temperature intermediate annealing treatment to the material at 100°C to 280°C, then further cold drawing the material 50% or more, and then continuously annealing the worked material.



3,952,572
BEAM BENDER

Harry W. Mergler, Westlake; Daniel K. Wright, Cleveland Heights; Thomas P. Kicher, South Euclid; Michael Savage, Cleveland, and Wieslaw Kosc, Parma, all of Ohio, assignors to Case Western Reserve University, Cleveland, Ohio

Filed Jan. 23, 1974, Ser. No. 435,713
Int. Cl.² B21D 11/04, 7/03
U.S. Cl. 72—298 16 Claims

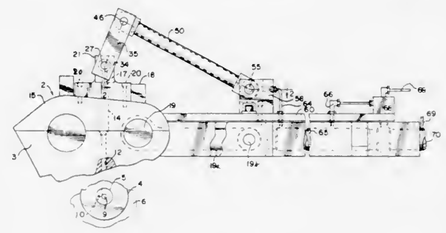


1. A method of bending a beam comprising the steps of providing a beam having a nonsymmetrical cross section with respect to a first axial plane, laterally engaging the beam at two spaced points with surfaces provided on a pair of longitudinally spaced bending heads, applying a force couple on one of the heads, with sufficient magnitude to cause rotation of the one head relative to the other, in a longitudinal plane oriented from said first axial plane and a second axial plane perpendicular to said first axial plane and having an orientation determined by the cross section of the beam whereby a permanent deflection of the beam is produced solely in said first axial plane.

3,952,573
ARTICULATED AIR LEAD-IN LINKAGE FOR CAN BODY MAKER

Roy E. Sorensen, Lombard, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Apr. 21, 1975, Ser. No. 569,911
Int. Cl.² B21D 22/20
U.S. Cl. 72—342 11 Claims



1. In a metal forming apparatus of the type comprising a main frame and a longitudinally reciprocal ram having an air passage leading to a can forming use area, and heat generative means mounting the ram from the frame, the improvement comprising:

A linkage for delivering air from a supply source through the air passage in the ram to said use area,

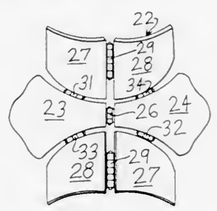
said linkage including a plurality of metal links with air passages therein, means pivotally interconnecting said links and having air passages providing communication between the passages in the links,

and connection means in thermal conductivity with said linkage and said heat generative means providing a heat sink therefor.

3,952,574
PROCESS AND APPARATUS FOR FORMING SHEET METAL STRUCTURES

John A. Speidel, 7205 Kings Mills Road, Maineville, Ohio 45039

Filed Oct. 31, 1974, Ser. No. 519,430
Int. Cl.² B21D 11/20
U.S. Cl. 72—379 4 Claims

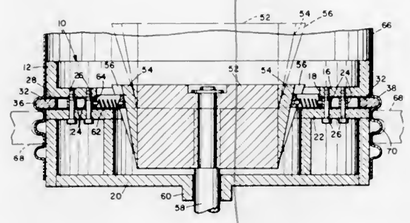


1. The process of forming, by folding, a sheet metal structure which is developable without slitting, by folding a sheet of metal without stretching, crumpling or tearing said sheet which structure has at least two adjacent surface segments which collectively form a complex surface and is further characterized in that straight bend lines meet at a curved bend line upon the complex surface and the images of those straight bend lines when projected on the developed pattern of said structure meet upon the projected image of the curved bend line upon the developed pattern, comprising:

a. commencing the folding of said metal along selected curved bend lines, and

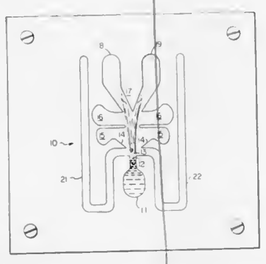
b. simultaneously folding the metal along said straight bend lines and along said curved bend lines.

3,952,575
BELLOWS FORMING APPARATUS
George T. Straza, and Edward L. Parr, both of El Cajon, Calif., assignors to Straza Enterprises Ltd., El Cajon, Calif.
Filed Jan. 30, 1975, Ser. No. 545,337
Int. Cl.² B21D *41/02*
U.S. Cl. 72—393 4 Claims



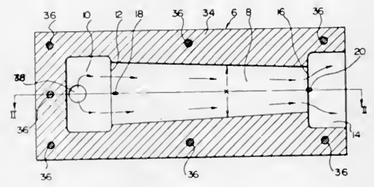
1. Bellows forming apparatus, comprising:
a rigid cylindrical sleeve for supporting, with a close axial sliding fit, a tube to be formed into a bellows,
said sleeve having a radially opening circumferential channel,
a mandrel composed of alternate primary and secondary sections radially slidably mounted in said channel,
actuating means for moving said mandrel sections between a retracted position within the channel and an expanded position extending circumferentially from the channel,
said primary and secondary sections interfitting and having edge portions which form, in the expanded position, an unbroken peripheral ring conforming to the inner contour of a bellows corrugation to be formed in the tube.

3,952,576
LAMINAR JET FLUID PROPERTY SENSOR
Tadeusz M. Drzewiecki, Silver Spring, and Francis M. Manion, Rockville, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Apr. 10, 1975, Ser. No. 566,900
Int. Cl.² G01N *11/00*
U.S. Cl. 73—54 4 Claims



1. A laminar fluidic device for sensing fluid properties that affect viscosity, said device comprising: a source of supply for directing a jet of fluid outwardly from a nozzle; a pair of control channel means disposed on opposite sides of said jet of fluid for deflecting said jet in response to a difference in the resistence of one control channel means with respect to the other control channel means, said resistence difference effecting a pressure differential across said jet; a pair of output chanels for receiving said jet of fluid in accordance with the deflection thereof; vent means disposed between said nozzle and said output channels; and wherein each said control channel means normally exhibits a channel resistence equal to the jet edge resistence.

3,952,577
APPARATUS FOR MEASURING THE FLOW RATE AND/OR VISCOUS CHARACTERISTICS OF FLUIDS
William F. Hayes; John W. Tanney, both of Ottawa, and Helen G. Tucker, Orleans, all of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada
Filed Feb. 6, 1975, Ser. No. 547,607
Claims priority, application Canada, Mar. 22, 1974, 195776
Int. Cl.² G01F *1/46, 1/48;* G01N *11/08*
U.S. Cl. 73—55 38 Claims



1. Apparatus for measuring the flow rate and/or the viscous characteristics of a fluid, comprising:
a. a casing having a fluid passage, a fluid inlet cavity for connection to a source of pressurized fluid and forming a substantially unobstructed flow path for fluid to the whole area of an inlet end of the fluid passage, normal to the direction for flow of fluid in the fluid passage, and a fluid outlet cavity for the escape of fluid from the casing and forming a substantially unobstructed flow path for fluid from substantially the whole area of an outlet end of the fluid passage, normal to the direction for flow of fluid in the fluid passage,
b. fluid pressure detecting means in the casing for detecting a fluid pressure differential between spaced positions in the fluid passage in the direction for flow of fluid therein, and
c. fluid pressure indicating means, connected to the fluid pressure detecting means, from which the fluid pressure differential in the fluid passage can be deduced, and wherein,
d. the ratio of the mean breadth to the mean width of the fluid passare area, normal to the direction for flow of fluid therein, is at least ten to one for at least the portion of the fluid passage which extends between the said spaced positions,
e. the area of the fluid passage, normal to the direction for flow of fluid in the fluid passage, and for at least the portion of the fluid passage which extends between the said spaced positions, continuously reduces in size in the direction for flow of the fluid such that laminar flow will be maintained of the fluid flowing in the passage, and such that when using substantially pure water at 70°F as a standard,
i. the static pressure differential at said spaced locations is dependant upon the mass flow rate G of the substantially pure water through the fluid passage and satisfies the relationship in consistent units:

$$\Delta p = K_1 (G)^2 + K_2 (G), \text{ and}$$

ii. the total pressure differential at said spaced locations is linearily dependant upon the mass flow rate G of the substantially pure water in the fluid passage, and
the above pressure differential relationships for static and total pressure differential (Δp and ΔP respectively) are over a range of flow rates for the substantially pure water for which the difference between the maximum Reynolds numbers in the fluid passage between the said spaced positions therein is within the range 0 and 8000, where the Reynolds number R_e is defined, in consistent units, by:

$R_e = h\rho U/\mu$,

where
h = the mean width of the fluid passage at the position between the said spaced positions for which the Reynolds number is a maximum,
ρ = the fluid density of the substantially pure water,
U = the means velocity of the substantially pure water at the position between the said spaced positions for which the Reynolds number is a maximum, and
μ = the absolute viscosity of the substantially pure water,
and where in the case of static pressure differential the ratio K_1/K_2 is greater than 0.01, where K_1 and K_2 are constants for a given fluid passage geometry and are determined from the relationships:

$$K_2 = \frac{\Delta P_1 - \Delta P_2 \left(\frac{G_1}{G_2}\right)^2}{G_1 - \left(\frac{G_1}{G_2}\right)^2},$$

and

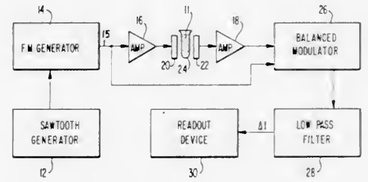
$$K_1 = \frac{\Delta P_1 - K_2 (G_1)}{(G_1)^2} = \frac{\Delta P_2 - K_2 (G_2)}{(G_2)^2},$$

where
Δp_1 = static pressure differential between the said spaced positions when the maximum Reynolds number in the fluid passage between the said spaced positions is 8000,
G_1 = the fluid mass flow rate of the substantially pure water through the fluid passage when the maximum Reynolds number in the fluid passage between the said spaced positions is 8000,
Δp_2 = static pressure differential between the said spaced positions when the maximum Reynolds number in the fluid passage between the said spaced positions is 3500,
G_2 = the fluid mass flow rate of the substantially pure water through the fluid passage when the maximum Reynolds number in the fluid passage between the said spaced positions is 3500, so that
f. the fluid characteristic to be measured is related to the pressure differential, indicated by the fluid pressure differential indicating means, and is deducible therefrom in a consistent manner for different fluids.

3,952,578
SCANNING ULTRASONIC SPECTROGRAPH FOR FLUID ANALYSIS
John E. Jacobs, Evanston, Ill., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.
Filed Oct. 7, 1974, Ser. No. 512,622
Int. Cl.² G01N *33/16*
U.S. Cl. 73—64.1 4 Claims

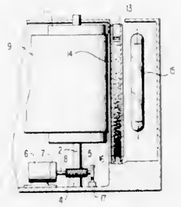
1. A scanning acoustic spectrographic analyser for time delay acoustic spectrography in investigating the changes in fluid properties undergone by a fluid in a short period of time comprising:
signal generating means for generating a frequency modulated first electrical signal having a periodic linear increase in frequency;
first transducer means for converting said frequency modulated first electrical signal into an acoustic wave signal and transmitting said acoustic wave signal through the fluid to be analyzed, wherein said first transducer means transmits but does not receive acoustical signals;

second transducer means for receiving said acoustic wave signal transmitted through the fluid and coverting said received acoustic wave signal to a second electrical signal, wherein said second transducer means receives, but does not transmit acoustical signals;



comparing means, having as first and second inputs said first and second electrical signals, for comparing said first and second electrical signals and generating an output signal dependent upon the difference in frequency between said first and second electrical signals;
display means for displaying said output signal in visual form.

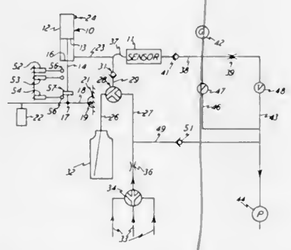
3,952,579
AUTOMATIC BLOOD SEDIMENTATION RATE MEASURING DEVICE
Hiroyuki Nakajima, Ashiya, Japan, assignor to Konan Electric Co., Ltd., Nishinomiya, Japan
Filed July 1, 1974, Ser. No. 484,499
Claims priority, application Japan, June 30, 1973, 48-74215
Int. Cl.² G01N *15/04*
U.S. Cl. 73—61.4 13 Claims



1. An automatic blood sedimentation rate measuring device for photographic recording the blood sedimentation rate on individual, light-sensitive paper sheets, said device comprising:
a light-proof casing,
a cylindrical drum,
means for mounting said cylindrical drum for rotation within said light-proof casing about a vertical axis,
said light-proof casing including a curved wall portion conforming to a portion of the periphery of said drum and being spaced slightly therefrom to define a narrow gap for receiving said light-sensitive paper sheet during rotation of said drum,
an elongated blood sedimentation measuring tube mounted within said casing and extending vertically parallel to the axis of said drum,
said light-proof casing including means defining a light barrier between said tube and said paper sheet,
a vertical slit within said barrier and parallel to the axis of said tube,
a lamp provided on the side of the blood sedimentation measuring tube opposite said slit,
motor means for moving said drum to cause light-sensitive paper sheet to move with the drum periphery across said slit,

means for pressing said paper sheet to said drum periphery during drum rotation,
switch means for controlling energization of said lamp, and
means driven by said motor means for periodically operating said switch means to synchronize lamp energization and production of light pulses with drum movement;
whereby, the shade of the sedimented red blood corpuscles in the measuring tube formed as the light from the lamp means passes through the measuring tube is projected through the slit onto the light-sensitive paper sheet and the rate of the blood sedimentation is automatically recorded with time on the moving paper sheet.

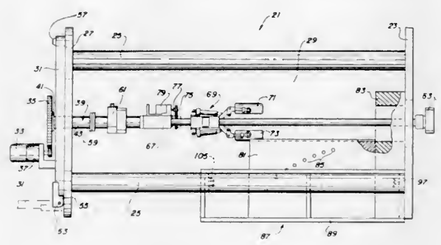
3,952,580
APPARATUS FOR COUNTING PARTICLE CONTAMINATION IN A LIQUID
Milton C. Bennett, Moline, Ill., assignor to J. I. Case Company, Racine, Wis.
Filed June 19, 1975, Ser. No. 588,406
Int. Cl.² G01N *15/00*
U.S. Cl. 73—61.4 **9 Claims**



1. Apparatus for counting particle contamination in a liquid, comprising a hydraulic cylinder having a liquid outlet opening in one end thereof, a liquid inlet line connected with said cylinder for introducing into said cylinder a charge of the liquid to be examined, a liquid valve connected with said inlet line for controlling liquid flow through said inlet line, a piston and rod assembly operatively associated with said cylinder and movable therein and with the rod extending from said cylinder, mechanism attached to the extending end of said rod for applying a uniform force on the piston in the axial direction of said cylinder and from the other end thereof and toward said outlet opening for forcing liquid from said cylinder and out said outlet opening, a particle counter sensor, a liquid flow line connected between said cylinder outlet opening and said sensor for directing liquid from said cylinder to said sensor, and a liquid flow restrictor connected with said sensor and downstream therefrom for establishing a pressure in the liquid flowing from said cylinder and through said sensor, to thereby establish a liquid pressure and flow rate through said sensor to enable said sensor to count contamination particles in the liquid flowing therethrough.

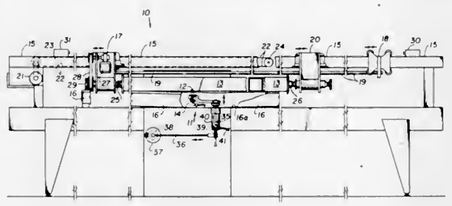
3,952,581
ULTRASONIC FLAW DETECTING APPARATUS FOR TURBINE ROTORS
Herbert R. Gottelt, Mount Prospect, Ill., assignor to Alco Standard Corporation, Valley Forge, Pa.
Filed Nov. 29, 1974, Ser. No. 528,586
Int. Cl.² G01N *29/04*
U.S. Cl. 73—67.8 S **9 Claims**

1. An ultrasonic flaw detecting arrangement for rotor bores comprising:
a primary mounting plate secured to the rotor and having a central opening therein permitting access to the bore of the rotor;
a motor mounting plate spaced from said primary mounting plate;
supporting means extending between said mounting plates to rigidly support said motor mounting plate on said primary mounting plate in a cantilever fashion;
a chamber defined by said mounting plates and said supporting means, said supporting means being a plurality of



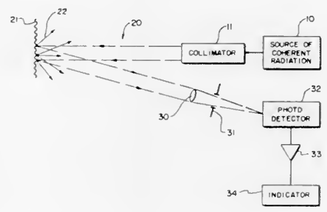
spaced extending members so that said chamber is accessible to an operator;
an ultrasonic test unit insertable into the bore of the rotor, said test unit being positionable in said chamber for inspection and servicing while said primary mounting plate remains secured to the rotor; and
a motor mounted on said motor mounting plate to actuate a drive shaft for said test unit.

3,952,582
ULTRASONIC INSPECTION DEVICE AND SYSTEM
Joe D. Graham, Poway; Kenneth W. Mead, and Henry Edgar Babb, both of El Cajon, all of Calif., assignors to Carpenter Technology Corporation, Reading, Pa.
Filed Mar. 7, 1975, Ser. No. 556,422
Int. Cl.² G01N *29/04*
U.S. Cl. 73—67.8 S **7 Claims**



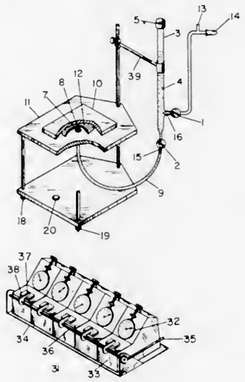
1. An apparatus for ultrasonically inspecting a part, comprising an ultrasonic head assembly including a transducer, a plurality of relatively large bearing bodies rotatably mounted in and projecting from the surface of said head assembly, a plurality of arrays of relatively small bearing bodies one for each of said large bearing bodies and rotatably supporting the same, means for selectively adjusting the distance and inclination between said transducer and said large bearing bodies to a predetermined relationship, means for supporting and resiliently biasing said ultrasonic head assembly for placing said large bearing bodies into engagement with the surface of said part, means for maintaining a substantially continuous column of water between said transducer and the surface of said part, and means for displacing said part and said ultrasonic head assembly relative to each other.

3,952,583
APPARATUS AND METHOD FOR THE REMOTE DETECTION OF VIBRATIONS OF DIFFUSE SURFACES
Vincent J. Rosati, Oakhurst, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jan. 2, 1975, Ser. No. 538,050
Int. Cl.² G01H *9/00*
U.S. Cl. 73—71.3 **14 Claims**



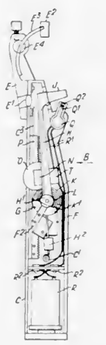
1. Apparatus for the remote detection of vibrations of a diffuse surface having randomly distributed points comprising:
means for providing a source of coherent radiation;
means for projecting a beam of said coherent radiation onto said diffuse surface; and
means, separate and independent of said source, for detecting a reflected time-varying intensity distribution resulting from a scattering of the photons of said beam of coherent radiation by said randomly distributed points on said surface as said surface vibrates and producing corresponding electrical signals.

3,952,584
MEASUREMENT OF ABSORBENCY CHARACTERISTICS OF ABSORBENT STRUCTURES
Bernard M. Lichstein, 887 Colonia Road, Elizabeth, N.J. 07208
Filed Mar. 4, 1975, Ser. No. 555,101
Int. Cl.² G01N *13/00*
U.S. Cl. 73—73 **11 Claims**



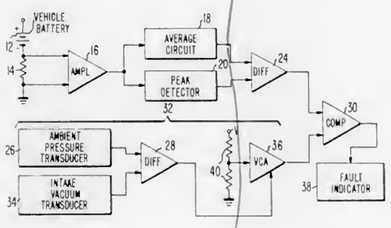
1. A device for measuring the characteristics of materials for absorbing a liquid comprising: a liquid reservoir having an opening at its bottom and a closed air tight top; an orifice plate having a liquid delivery orifice therethrough and said liquid delivery orifice in fluid tight flow communication with said opening in said reservoir through flow communication means; an air bleed orifice in said liquid reservoir intermediate between the top and bottom thereof and in fluid communication with the atmosphere; and means for adjusting the relative heights of the air bleed orifice to the orifice plate whereby when the liquid is introduced into said liquid reservoir and fills the flow communication means, the relative height of the orifice plate to the air bleed orifice may be adjusted so that there is no fluid driving force acting to cause liquid to flow through said liquid delivery orifice and when said absorbent material is placed over said liquid delivery orifice in contact with said liquid and said liquid is drawn into said absorbent material, the fluid system will be balanced so that in the absence of said absorbent material there will be no flow through said orifice plate.

3,952,585
APPLANATION TONOMETERS
Edward Sylvester Perkins, 16 Loom Lane, Radlett, Hertford, and Henry James Stockwell, Cymru, Epping Road, Roydon, Essex, both of England
Filed June 30, 1971, Ser. No. 158,508
Claims priority, application United Kingdom, July 1, 1970, 32010/70
Int. Cl.² A61B *3/16*
U.S. Cl. 73—80 **4 Claims**



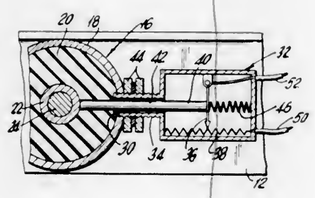
1. An applanation tonometer for measuring the intraocular pressure of a patient's eye by applying an applanating pressure to the cornea and measuring the amount of pressure needed to produce a flattened area of predetermined size thereon, comprising an applanating member for engaging with the cornea, a lever arm carrying such member, and mounted to pivot about an axis, a pivot member which is mounted on such axis and from which the lever arm extends, means for applying a turning force to such pivot member for causing pressure to be exerted on the cornea, such force applying means including an adjustable main spiral spring surrounding the said axis, control means for effecting adjustment of the main spring, means for anchoring the inner end of the main spring to the pivot member, and an anchorage member for the outer end of the main spring mounted for rotational movement about the said axis in accordance with the operation of the control means, such rotational movement causing rotation of the pivot member and thereby causing the applanating pressure to be applied to the cornea, an indicating member actuated by the control means for giving an indication of the applanating pressure applied to the cornea, and at least one compensating spiral spring surrounding the said axis, means for anchoring the inner end of the compensating spring to the pivot member and means for anchoring the outer end of the compensating spring to the casing of the tonometer, the characteristics of the compensating spring being such in relation to those of the main spring that the total applanating pressure will bear an approximately linear relationship to the movement of the indicating member.

3,952,586
DETERMINING ENGINE COMPRESSION FROM STARTER MOTOR CURRENT
Richard Eric Hanson, Winchester, and Thomas Edward Nolan, Jr., Medfield, both of Mass., assignors to RCA Corporation, New York, N.Y.
Filed June 19, 1975, Ser. No. 588,386
Int. Cl.² G01M 15/00
U.S. Cl. 73—117.2 10 Claims



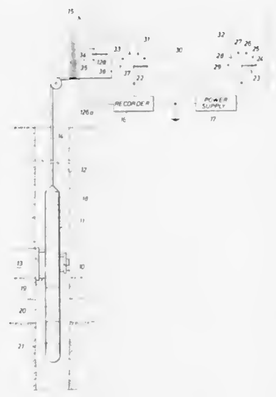
6. The method of determining the mechanical conditions in an engine which affect compression, comprising the steps of
measuring the amplitude of the starter motor current when cranking the engine with ignition inhibited,
measuring the intake manifold absolute pressure,
multiplying a known value of starter motor current when cranking a good engine operating with a given intake manifold absolute pressure by the ratio of said measured intake manifold absolute pressure divided by said given intake manifold absolute pressure, to provide an adjusted value, and
comparing said measured starter motor current with said adjusted value of starter motor current.

3,952,587
VEHICLE TORQUE SENSING DEVICE
Richard Goodhart, 528 Atlanta Ave., Massapequa, N.Y. 11758
Filed Sept. 24, 1974, Ser. No. 508,820
Int. Cl.² G01L 5/13
U.S. Cl. 73—136 R 5 Claims



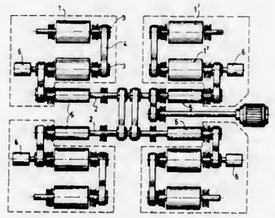
1. A device for determining potential skid conditions of a moving vehicle, comprising in combination,
a. a resilient bushing yieldably connecting the driven axle of the vehicle to the vehicle frame, said bushing having a rubber insert and a steel outer shell; sensing means responsive to distortions of said rubber insert effected by pressure changes betwen said axle and said frame, said sensing means including a housing fixed relative to said outer shell and a relatively movable member; and
b. indicating means connected to said sensing means to visually indicate the relative pressure changes during acceleration or deceleration of the vehicle.

3,952,588
APPARATUS FOR TESTING EARTH FORMATIONS
Frank R. Whitten, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Jan. 22, 1975, Ser. No. 543,086
Int. Cl.² E21B 47/10
U.S. Cl. 73—155 25 Claims



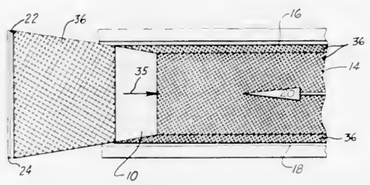
1. Formation-testing apparatus adapted for testing earth formations penetrated by a borehole and comprising:
a support;
fluid-admitting means on said support defining a fluid entry adapted for engagement with a borehole wall, fluid passage means in said fluid-admitting means, and filtering means cooperatively intercommunicating said fluid entry and said fluid passage means and adapted to retain inflowing loose formation particles as connate fluids from earth formations therebeyond pass through said filtering means into said fluid passage means;
means on said support adapted for selectively engaging said fluid-admitting means with an adjacent borehole wall to place said fluid entry into isolated communication with earth formations therebeyond;
particle-collecting means on said support adapted for clearing said fluid entry of particles of plugging materials situated on an adjacent borehole wall and in isolated communication therewith and including a first movable member defining a forwardly-opening particle-receiving chamber normally situated at an advanced position in said fluid entry ahead of said filtering means and adapted for movement rearwardly therefrom to a retracted position for carrying such plugging materials from said fluid entry and communicating said fluid entry with said filtering means, a second movable member cooperatively arranged within said particle-receiving chamber and adapted for movement therein between an advanced position for blocking said particle-receiving chamber and an intermediate position for expanding said particle-receiving chamber to induct such plugging materials into said particle-receiving chamber ahead of said second member, and means cooperatively arranged on said first and second movable members and adapted for moving said first movable member toward its said retracted position as said second movable member is moved further beyond its said intermediate position toward a more-retracted position; and
selectively-operable actuating means on said support cooperatively arranged for repetitively moving said first and second movable members back and forth between their respective said positions.

3,952,589
APPARATUS FOR TESTING A WHEELED VEHICLE
Herman Robert Geul, Leiden, Netherlands, assignor to Sun Electric Corporation, Chicago, Ill.
Filed Dec. 18, 1974, Ser. No. 534,152
Claims priority, application Netherlands, Dec. 20, 1973, 7317442
Int. Cl.² G01L 5/28
U.S. Cl. 73—117 5 Claims



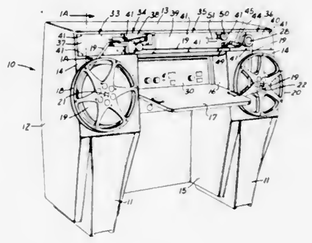
1. Apparatus for testing a wheeled vehicle, comprising a plurality of wheel supporting units, each adapted to support a respective wheel of a vehicle and each including at least one wheel supporting roller, the wheel supporting units each being coupled to a transmission system via a respective torque meausuring device, said wheel supporting units and said transmission system being so constructed that all said wheel supporting rollers are constrained to rotate with the same peripheral speed as each other, and each said wheel supporting unit having a respective means for measuring the angular acceleration or deceleration of at least said one wheel supporting roller of the unit.

3,952,590
APPARATUS FOR REDUCING AERODYNAMIC NOISE IN A WIND TUNNEL
Paul W. Howard, and Luke A. Schutzenhofer, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Aug. 26, 1975, Ser. No. 607,969
Int. Cl.² G01M 9/00
U.S. Cl. 73—147 4 Claims



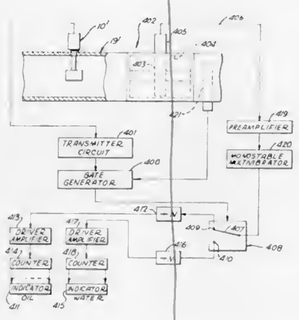
1. In a fluid duct apparatus for aerodynamic testing and the like having a passage portion of substantially constant cross section, means for conveying a mass of air through said passage portion at least substantially at sonic speeds, said passage portion comprising:
a. a wall member enclosing and defining said passage portion therethrough having perforations formed therein providing porosity to said wall member;
b. a mesh screen member carried on an interior surface of said wall member covering said perforations for reducing background noise produced by the air flow passing over the edges of said perforations;
whereby interference of the background noise with the aerodynamic measurements taken within said passage portion is minimized increasing the accuracy and reliability of the measurements.

3,952,591
MACHINE FOR CLEANING AND INSPECTING MOTION PICTURE FILMS
Warren C. Manske; Robert Bretl, and Donald Dupont, all of Menominee, Mich., assignors to Bay Electric Company, Menominee, Mich.
Filed Aug. 15, 1974, Ser. No. 497,658
Int. Cl.² G01B 5/16; G01D 11/30
U.S. Cl. 73—157 17 Claims



1. In a machine which is capable of cleaning motion picture films and inspecting motion picture films with respect to splices, tears or breaks, sprocket hole elongations, or the like, including a supporting frame having a front face portion, a rewind motor assembly carried by the supporting frame having a rewind spindle for removably receiving a rewind reel at the front face portion of the supporting frame containing a motion picture film to be cleaned and/or inspected and/or a motion picture film to be rewound thereon, a take up motor assembly carried by the supporting frame, spaced from the rewind motor assembly, having a take up spindle for removably receiving a take up reel at the front face portion of the supporting frame to receive and wind thereon a motion picture film which has been cleaned and/or inspected, said motion picture film extending along the front face portion of the supporting frame between said rewind reel and said take up reel, motor control means for controlling said take up motor assembly and said rewind motor assembly, the improvement in said combination wherein said supporting frame has module receiving means selectively to receive separate modules along the motion picture film between said rewind reel and said take up reel and including an opening in the front face portion of the supporting frame and adjacent securing means, one of said modules comprising a motion picture film cleaning module having a panel removably securable to the securing means of the module receiving means of the supporting frame and cleaning means carried by the panel extending rearwardly therefrom into the opening of the module securing means and forwardly therefrom for cleaning both sides of the motion picture film as it passes thereby, another of said modules comprising a motion picture film inspecting module having a panel removably securable to the securing means of the module receiving means of the supporting frame and detecting means carried by the panel extending rearwardly therefrom into the opening of the module receiving means and forwardly therefrom for inspecting the motion picture film as it passes thereby with respect to splices, tears or breaks, sprocket hole elongation, or the like, said motion picture inspecting module being selectively coupled to said motor control means to stop said take up motor assembly and rewind motor assembly in the event of improper splices, tears or breaks, sprocket hole elongation, or the like in the motion picture film as it passes the motion picture film inspecting module.

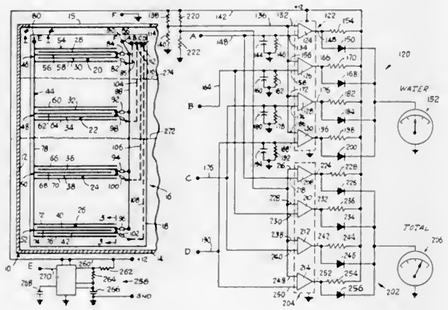
3,952,592
FLUID SENSING SYSTEMS
Gerald Lance Schlatter, and Charles Eveleigh Miller, both of Boulder, Colo., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Division of Ser. No. 187,948, Oct. 12, 1971. This application Nov. 24, 1972, Ser. No. 309,250
Int. Cl.² G01F 1/115
U.S. Cl. 73—194 R 13 Claims



1. A fluid flow sensing system, said system comprising: a flowmeter having an output lead and a first device for producing a train of pulses thereon of a pulse repetition frequency directly proportional to the volume rate of flow of a fluid through said flowmeter; a densitometer having an output lead and a second device for producing a signal thereon directly proportional to the specific gravity of said fluid; a first switch connected from said flowmeter output, said first switch having a switch position control lead; a first digital pulse counter connected from said first switch; and a gate generator connected from said densitometer output lead to said first switch, said gate generator producing an output pulse having a time width which is a predetermined percent of the period thereof, said predetermined percent being the percent of one of at least two different parts of said fluid, said first switch having first and second positions, said gate generator being adapted to hold said first switch in said first position during the generation of each output pulse of said gate generator and to hold said first switch in said second position thereof at all other times during normal operation, said first switch connecting said flowmeter output lead to the input of said first counter when said first switch is in one of said first and second positions and to disconnect said flowmeter output lead from said first counter all the normal operating time that said first switch is in the other of said first and second positions.

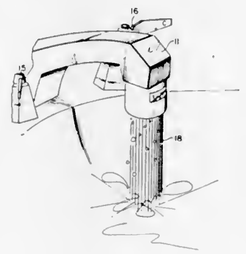
3,952,593
LIQUID LEVEL GAUGE
Edward G. Ells, Norwich, N.Y., assignor to Liquidometer Corporation, Norwich, N.Y.
Filed Aug. 1, 1974, Ser. No. 493,565
Int. Cl.² G01R 27/26
U.S. Cl. 73—304 C 15 Claims

1. A liquid indicator device for gauging relative proportions of two immiscible liquids of different density disposed one above the other in a storage tank, comprising in combination:
- a. a source of electrical signals,
- b. an upright, electrically conducting probe part immersed in the liquids being gauged and passing through the interface formed therebetween, said probe part being connected with the source to receive signals therefrom,
- c. A second probe part cooperable with the first part, said second part comprising an upright row of electrodes insulated from each other and immersed in said liquids in proximity to the first-mentioned probe part,
- d. first detector means responsive to signals from said source and connected with said second probe part for designating which of the electrodes of said upright row are submerged in one of said liquids, and



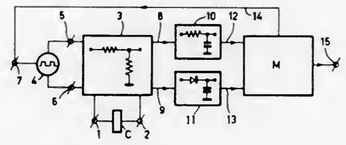
- e. additional detector means operative substantially at the same time as said first detector means, responsive to signals from said source and connected with said second probe part for designating which of the electrodes of said upright row are submerged by either of said liquids.

3,952,594
TEMPERATURE REGISTERING FAUCET ATTACHMENT
W. Glenn McMahan, Broomfield, Colo., assignor to The Raymond Lee Organization,. Inc., New York, N.Y., a part interest
Filed Feb. 11, 1975, Ser. No. 549,005
Int. Cl.² G01K 13/02, 1/08, 1/14, 5/48
U.S. Cl. 73—349 1 Claim



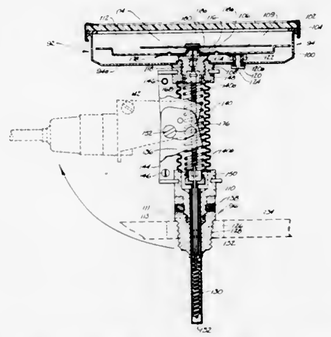
1. A gauge device adaptable for permanent attachment to the end of a spout of a sink which is fitted with means to indicate the temperature of water pouring out of said spout and through said device, in the form of
- a tube open fitted at each end with a screw thread at one end for attachment to a mating screw thread at the end of the spout, with the interior of said tube fitted with a movable indicator needle responsive in position to the temperature of water passing through and out of the tube, together with a fixed transparent section of tube wall positioned so as to make the position of the indicator visible to the exterior of the device, said fixed section marked with a temperature scale.

3,952,595
TEMPERATURE CORRECTING CIRCUIT
Petrus Jacobus Poolman, and Frans Meijer, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 26, 1974, Ser. No. 500,457
Claims priority, application Netherlands, Sept. 4, 1973, 7312147
Int. Cl.² G01K 1/20, 7/02
U.S. Cl. 73—359 12 Claims



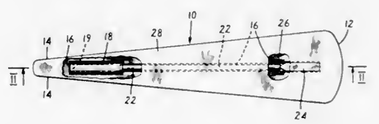
1. A temperature correcting circuit for a transducer element having a temperature-dependent internal resistance and which, in a temperature-dependent manner, converts a physical quantity to be measured into an EMF which can be derived as a measuring voltage from the terminals of the element comprising a source of alternating voltage, means connecting the element in a voltage-dividing network which is connected to said alternating-voltage source so that an alternating current flows through the element to derive an alternating voltage which, owing to the internal resistance of the element, contains information about the temperature of the element, a low-pass filter which allows only the measuring voltage to pass, an alternating-voltage amplitude detector which includes a smoothing filter, means connecting said low-pass filter and said amplitude detector to the output terminals of the voltage dividing network, and means for processing the output voltage from the low-pass filter to produce an output voltage at the output terminals of the circuit which is a function of the physical quantity and is corrected for the temperature-dependent conversion, at least for a given temperature operating range.

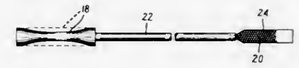
3,952,596
UNIVERSAL MOUNTING FOR BI-METALLIC THERMOMETER
Jagdish Patel, Cincinnati, Ohio, assignor to Palmer Instruments, Inc., Cincinnati, Ohio
Filed Dec. 17, 1974, Ser. No. 533,667
Int. Cl.² G01K 5/64
U.S. Cl. 73—363.9 6 Claims



1. In a bi-metallic thermometer of the type having an enclosure consisting of a stem terminating in a case, a bi-metal helical temperature sensing coil disposed within said stem, a shaft extending from said coil into said case, said bi-metal helical temperature coil imparting rotory motion to said shaft, and a pointer secured to said shaft and cooperating with a calibrated scale to provide a direct indication of the temperature effecting said bi-metal coil, the improvement, in combination therewith, comprising a case connector secured to the underside of said case, said case connector having an aperture therein for receiving said shaft, a stem connector at the uppermost end of said stem, said stem and stem connector providing a separate socket or well, said case connector being telescopingly received within said stem connector, said case connector being rotatably adjustable in said stem connector, resilient sealing means exterior of said case connector to engage the interior of said stem connector, and means in association with said stem connector and case connector only to lock said case connector in any desired rotative position, whereby said case connector, and thus said case, pointer, shaft and bi-metal coil, may be rotated and locked in any desired rotative position for easy reading of said calibrated scale, or if necessary, removed from or replaced in said stem connector.

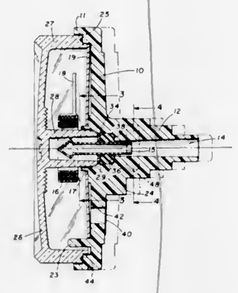
3,952,597
DISPOSABLE FOOD THERMOMETER
Robert J. Witonsky, Princeton, and Raymond P. Larsson, Danville, both of N.J., assignors to Bio-Medical Sciences, Inc., Fairfield, N.J.
Filed Nov. 8, 1974, Ser. No. 522,222
Int. Cl.² G01K 5/32; B29B 3/00; G01K 1/14
U.S. Cl. 73—371 14 Claims





1. A disposable thermometer for use in a foodstuff to indicate the degree of cooking to which said foodstuff has been subjected comprising
- a reservoir having a volumetric capacity of predetermined value at ambient temperatures,
- a fluid filling said reservoir,
- capillary means, and
- indicator means,
- said capillary tube means communicating at one end with said reservoir and at the other end with said indicator means,
- said reservoir being characterized by being of a material having the property of undergoing shrinkage when heated from an ambient temperature to temperatures associated with the cooking of foodstuffs whereby the volumetric capacity of said reservoir is caused to reduce from said predetermined value to a lesser volumetric capacity, reduction of the volumetric capacity of said reservoir being effective to expel fluid from said reservoir thru said capillary tube and onto said indicator means.

3,952,598
PRESSURE GAUGE CONSTRUCTION
Walter James Ferguson, Middlebury, and Ronald Joseph Luich, Shelton, both of Conn., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed July 28, 1975, Ser. No. 599,507
Int. Cl.² G01L 7/04
U.S. Cl. 73—415 10 Claims



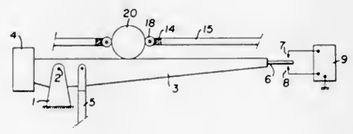
1. A pressure gauge comprising:
a. a casing having a hollow stem for mounting into a receptacle of a pressure source with which the gauge is to be utilized;
b. a dial plate having graduated pressure indicia and supported secured against rotation on a radially extending inward surface of said casing;
c. a Bourdon tube having a pressure inlet supported in said casing stem and including a pointer supported on its free end opposite the indicia on said dial plate; and
d. a viewing crystal cooperating with said casing to enclose said pointer and dial plate in visible relation therethrough, said crystal including means operably defining an initial position of said pointer relative to the indicia on said dial plate.

3,952,599
FRACTIONAL-FILL CAPILLARY PIPETTE AND METHOD
Waldemar A. Ayers, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, New Jersey
Filed May 18, 1972, Ser. No. 254,607
Int. Cl. B01l 3/02
U.S. Cl. 73—425.4 P 16 Claims



1. A fractional-fill pipette for the quantitation of a liquid comprising;
a. a capillary tube having a bore with non-uniform wettability characteristics relative to the liquid to be quantitated, the non-uniform wettability characteristics being provided in at least two adjacent zones; and
b. said two adjacent zones including a first zone having substantial wettability characteristics in relation to said liquid throughout a bore length and cross-section providing a desired predetermined volumetric capacity when said first zone is filled with said liquid by capillarity, and a second zone of said bore having lower wettability characteristics relative to said liquid so that a resistance to filling of the second zone by capillarity is obtained.

3,952,600
SELF-EQUILIBRATING BALANCE
Adriaan B. Mann, and Jacobus J. C. Vermeulen, both of Delft, Netherlands, assignors to Stichting Waterbouwkundig Laboratorium, Delf, Netherlands
Filed Mar. 26, 1974, Ser. No. 454,815
Claims priority, application Netherlands, Mar. 30, 1973, 7304524
Int. Cl.² G01G 1/38
U.S. Cl. 73—433 8 Claims



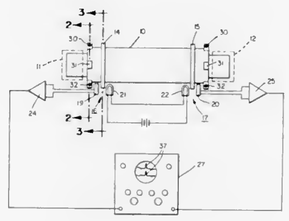
1. In a self-equilibrating balance for measuring a progressively changing parameter,
a balance arm,
means defining a fulcrum supporting said balance arm,
a fixed mass mounted at one end of the balance arm,
means for applying a force related to said parameter to the arm,
a screwed spindle extending alongside the balance arm,
a travelling mass mounted on the screwed spindle, said travelling mass having the shape of a body of revolution being arranged to roll along the upper edge of the balance arm and comprising
a frame mounted on said screwed spindle and confining the body of revolution,
two rotary driving members mounted on the frame and both contacting only in the equilibrium position of the balance arm the body of revolution substantially without friction at an equatorial plane, the arrangement being such that in all unbalanced conditions only one said rotary driving member contacts the body, and
centering means serving to maintain the body of revolution centrally, in the transverse sense, on the arm,
drive means for the travelling mass separated from the balance arm, and
guide means for the frame extending parallel to the balance arm.

3,952,601
HELICOPTER ROTOR BLADE BALANCING METHOD
Charles V. Galli, Trumbull, and Robert Zincone, Norwalk, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Dec. 18, 1974, Ser. No. 533,916
Int. Cl.² G01M 1/22
U.S. Cl. 73—455 3 Claims



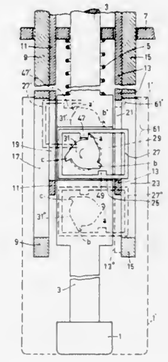
1. The method of eliminating pitching moment dynamic unbalance in a helicopter rotor blade comprising the steps of:
A. whirling the blade in rotor motion fashion to determine its degree of pitching moment dynamic unbalance,
B. temporarily attaching at least one ramp-shaped tab of selected weight, span dimension, chord dimension and external surface angularity with respect to the blade chord at a selected station along the blade span and at the blade trailing edge upper or lower surface so as to be positioned totally within the blade chord profile and not extend therebeyond,
C. whirling the blade with the ramp tab or tabs so temporarily attached to determine blade pitching moment dynamic unbalance,
D. adjusting the span dimension, span location or number of ramp tabs and rewhirling the blade until all pitching moment dynamic unbalance is eliminated or reduced to acceptable limits, and
E. permanently bonding the tab or tabs so selected in the final tested position.

3,952,602
ROTOR BALANCING APPARATUS AND SYSTEM
Frank Lyman, Cambridge, Mass., and Joseph Lyman, Northport, N.Y., assignors to Cambridge Thermionic Corporation, Cambridge, Mass.
Filed Mar. 3, 1971, Ser. No. 120,393
Int. Cl.² G01M 1/28
U.S. Cl. 73—457 8 Claims



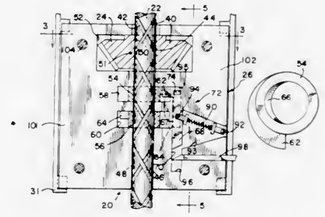
1. Balancing apparatus comprising:
an elongated movable object having a longitudinal axis and a fiducial mark applied to said movable object as a standard for measuring the radial variations of relative movement,
magnetic bearing means at opposite ends of said movable object for magnetically suspending the movable object,
means for rotating the movable object about its longitudinal axis,
each said magnetic bearing means constituting a stator portion spaced apart from the rotor portion of the elongated movable object such that a space gap exists between the stator and rotor portions through which magnetic lines of force extend,
said apparatus being characterized by the fact that mass asymmetry of said movable object about said longitudinal axis tends to cause variations in the space gaps of said magnetic bearing means during rotation of said movable object,
said apparatus further including means for detecting unbalance in said rotor, said means comprising a probe in the vicinity of at least one end of said movable object for detecting radial variations of movement thereof relative to the stator portions of said magnetic bearing means,
said probe being fixedly positioned relative to the stators of said magnetic bearing means and being free from physical contact with said movable object, and
means responsive to said probe for indicating the radial variations of relative movement within said magnetic bearing means during the revolution of said movable object.

3,952,603
PUSHBUTTON SYSTEM, IN PARTICULAR FOR A PUSHBUTTON OPERATED CAR RADIO RECEIVER
Werner Bernhardt, Wetzlar, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 18, 1974, Ser. No. 461,974
Claims priority, application Germany, Apr. 27, 1973, 2321308
Int. Cl.² F16H 38/18
U.S. Cl. 74—10.33 7 Claims



1. A pushbutton assembly of the type having reset, normal, and depressed positions, in which movement of the pushbutton from the normal to the depressed position moves one of a plurality of members to an operating position, comprising sequencing means for selecting the member to be moved upon sequential depressions of the pushbutton, and means for disabling said sequencing means upon movement of the pushbutton to the reset position, such that the most recently selected member remains selected, and for restoring sequencing for subsequent depressions only upon depression of the pushbutton substantially fully to the depressed position.

3,952,604
DEVICE FOR CONVERTING LINEAR MOTION TO ROTARY MOTION
James P. Baudler, 6306 N. Louise Ave., Chicago, Ill. 60646
Filed July 15, 1974, Ser. No. 488,519
Int. Cl.² F16H 25/12
U.S. Cl. 74—57 12 Claims



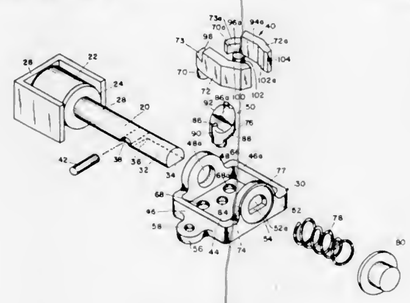
1. A device for converting linear motion to rotary motion, said device comprising a double channel drive shaft having a right-hand channel and a left-hand channel, one end of said shaft being connected to means for cyclically imparting linear movement of said shaft and having a central bore through which said shaft is received, fixedly mounted housing means in which said shaft is axially slidably mounted and in which said gear is rotatably mounted and restrained from a spline connection between said shaft and said gear operatively con-

necting said shaft to said gear and permitting said shaft to move axially of said power gear, first and second directional sleeves spaced axially from said gear and adapted to receive said shaft therethrough, each of said directional sleeves having at least one cam therein positioned to engage one of said channels, said sleeves being rotatably mounted in said housing means while being restrained against axial movement therein, and means operable during each cycle of linear movement of said shaft for automatically locking said first sleeve against rotation during a stroke of linear movement of said shaft in a first direction to thereby cause rotation of said shaft in one direction and for automatically unlocking said first sleeve and then locking said second sleeve against rotation at the end of said stroke so that, upon a reverse stroke of linear movement of said shaft in the opposite direction, said gear will continue to rotate in said one direction, or upon continued rotation of said gear in said one direction, said shaft will be driven in the opposite linear direction until said shaft completes its stroke in said opposite direction at which time said automatic locking means will unlock said second sleeve and lock said first sleeve to repeat the cycle of operation of said automatic locking means.

3,952,605
LOCK ACTUATOR

Carl H. Little, Jamestown, N.Y., assignor to Keeler Brass Company, Grand Rapids, Mich.

Filed Aug. 14, 1974, Ser. No. 497,330
Int. Cl.² F16H *25/18*
U.S. Cl. 74—99 R **17 Claims**

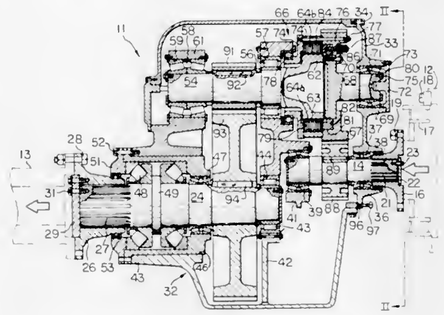


1. An actuator assembly for converting linear movement to alternating rotational movement comprising:
a shaft member;
means mounting said shaft member for movement along its linear axis;
means for moving said shaft member between first and second positions along said linear axis;
a rotatable member mounted for rotation about an axis generally perpendicular to said linear axis;
engaging means associated with said shaft member and said rotatable member for rotating said rotatable member to produce alternating rotation in a first direction and in the opposite direction with linear movement of said shaft member between said first and second positions, said engaging means including a follower member shiftable between first and second operating positions, said follower member including a pin member on said shaft member slidably mounted for movement transverse to said linear axis, said rotatable member having a pair of abutment members thereon positioned on opposite sides of said shaft for engagement with said pin member;
means for shifting said follower member from said first operating position to said second operating position with movement of said shaft member between said first and second positions, said shifting means including a pair of arm members pivotally mounted on said mounting means for movement about axes perpendicular to said linear axis; and
first cam means on said rotatable member engageable with said arm members to alternately pivot said arm members into engagement with said pin member to urge said pin member into a position for engagement with one of said pair of abutment members with movement of said shaft between said first and second positions, said follower member in said first operating position urging said rotatable member to rotate in said first direction and in said second operating position urging said rotatable member to rotate in the opposite direction.

3,952,606
MARINE GEAR ASSEMBLY

Gunter W. Schulz, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 15, 1974, Ser. No. 488,746
Int. Cl.² F16H *3/44, 3/08;* **F16D** *19/00*
U.S. Cl. 74—377 **8 Claims**



1. A marine gear assembly comprising:
a housing having at least one disengageable and removable end section,
an input shaft supported for rotation within said housing and having a front end extending therefrom for connection with a source of rotary drive,
an output shaft supported for rotation within said housing in parallel relationship to said input shaft and having a back end extending therefrom for delivering rotary drive to a driven load,
a forward drive countershaft journaled for rotation within said housing in parallel relationship to said input shaft and said output shaft and having one end adjacent said removable end section thereof,
a reverse drive countershaft journaled for rotation within said housing about an axis parallel to that of said forward drive countershaft and also having one end adjacent said removable end section of said housing,
first and second transfer gears disposed on said input shaft and said output shaft respectively for rotation therewith,
third and fourth transfer gears disposed on said forward drive countershaft and respectively engaging said first and second transfer gears, one of said third and fourth transfer gears being constrained to rotate with said forward drive countershaft and the other thereof being supported thereon for relative rotation with respect thereto,
fifth and sixth transfer gears disposed coaxially on said reverse drive countershaft, one of said fifth and sixth transfer gears being engaged with said second transfer gear and the other of said fifth and sixth transfer gears being driven by one of said third and fourth gears,
forward drive clutch means for selectively constraining said other of said third and fourth transfer gears to rotate with said forward drive countershaft, said forward drive clutch means including annular clutch elements disposed coaxially with respect to said forward drive countershaft in proximity to said removable section of said housing, and
reverse drive clutch means for selectively constraining said reverse drive countershaft to rotate with said one of said fifth and sixth gears, said reverse drive clutch means including additional annular clutch elements disposed coaxially with respect to said reverse drive countershaft in proximity to said removable section of said housing.

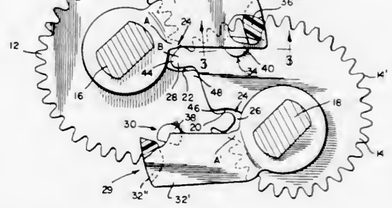
7. A marine gear assembly comprising:
a housing having a front and a back end and having a disengagable and removable end closure member at said front end,
an input shaft supported for rotation within said housing and having a front end extending through said end closure for connection with a driving engine,
a first transfer gear disposed coaxially upon said input shaft for rotation therewith within said housing,
an output shaft supported for rotation within said housing and having a back end extending through said back end thereof for delivering rotary drive to a driven load,
a second transfer gear disposed coaxially on said output shaft for rotation therewith within said housing,
a forward drive countershaft supported for rotation within said housing, said forward drive countershaft being parallel to said input shaft and said output shaft and having a forward end adjacent to said end closure of said housing,
a third transfer gear disposed adjacent said forward end of said forward drive countershaft in proximity to said removable end closure and being engaged with said first transfer gear,
bearing means mounted in said removable end closure for supporting said third transfer gear,
a fourth transfer gear disposed coaxially on said forward drive countershaft for rotation therewith and being engaged with said second transfer gear,
forward drive clutch means situated between said forward end of said forward drive countershaft and said third transfer gear,
a reverse drive countershaft supported for rotation within said housing and having a forward end adjacent said end closure member,
a fifth transfer gear disposed adjacent said forward end of said reverse drive countershaft in coaxial therewith and being engaged with said third transfer gear,
a sixth transfer gear being disposed coaxially on said reverse drive countershaft for rotation therewith and being engaged with said second transfer gear,
additional bearing means mounted in said end closure for supporting said fifth transfer gear, and
reverse drive clutch means situated between said front end of said reverse drive countershaft and said fifth transfer gear.

8. A marine gear assembly comprising:
a housing having a front and a back end and having a disengageable and removable end closure at said back end,
an input shaft supported for rotation within said housing and having a front end extending from said front end of said housing for connection to a driving engine,
a first transfer gear disposed coaxially on said input shaft for rotation therewith within said housing,
an output shaft supported for rotation within said housing and having a back end extending through said back end thereof for delivering rotary drive to a driven load,
a second transfer gear disposed coaxially on said output shaft for rotation therewith within said housing,
a forward drive countershaft supported for rotation within said housing, said forward drive countershaft being parallel to said input shaft and said output shaft and having a back end adjacent said end closure of said housing,
bearing means in said end closure for supporting said back end of said forward drive countershaft,
a third transfer gear disposed coaxially on said forward drive countershaft for rotation therewith and being engaged with said first transfer gear,
a fourth transfer gear disposed coaxially with respect to said forward drive countershaft and supported for rotation relative thereto and being engaged with said second transfer gear,
forward drive clutch means for selectively causing said fourth transfer gear to rotate with said forward drive countershaft, said forward drive clutch means being adjacent to said end closure of said housing,
a reverse drive countershaft supported for rotation within said housing, said reverse drive countershaft being parallel to said forward drive countershaft and having a back end adjacent said end closure of said housing,
additional bearing means in said end closure for supporting said back end of said reverse drive countershaft,
a fifth transfer gear disposed coaxially on said reverse drive countershaft and being engaged with said fourth transfer gear,
a sixth transfer gear disposed coaxially on said reverse drive countershaft and being engaged with said second transfer gear, and
reverse drive clutch means for selectively causing said sixth transfer gear to rotate with said fifth transfer gear, said reverse drive clutch means being adjacent said end closure of said housing.

3,952,607
VARIABLE SPEED DRIVE MEANS

Thomas F. Ring, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Jan. 24, 1975, Ser. No. 543,782
Int. Cl.² F16H *55/04, 35/02*
U.S. Cl. 74—393 **11 Claims**



1. A drive means comprising:
a. a driver member carried on a shaft and rotating at a constant speed through and past 360°,
b. a driven member carried on a shaft and responsive to the rotation of said driver member and rotating through and past 360° and at a variable speed through at least a major portion of said 360° rotation, and
c. means maintaining said driver and driven members in engagement continuously during and past said 360° rotations.

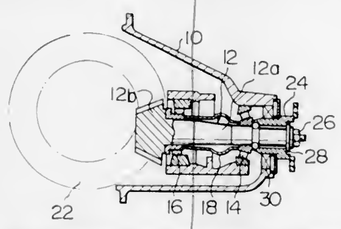
3,952,608
COLLAPSIBLE SPACER IN FINAL DRIVE UNIT OF MOTOR VEHICLE

Hukashi Kanai; Yasuo Mori, and Kyoichi Toyoda, all of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Nov. 26, 1974, Ser. No. 527,376
Claims priority, application Japan, Nov. 27, 1973, 48-136359[U]
Int. Cl.² F16H *57/00*
U.S. Cl. 74—411 **12 Claims**

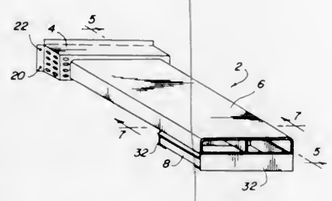
1. A final drive unit of a motor vehicle comprising: a carrier housing; a drive pinion having a shaft and disposed within said carrier housing; front and rear pinion bearings disposed around the pinion shaft of said drive pinion and being sepa-

rated from each other, said pinion bearings rotatably supporting said pinion shaft within said carrier housing; and a collapsible tubular spacer made of a metal cylinder with a shaped thin wall, disposed around said pinion shaft and interposed in a compressed state between the inner bearing races of said front and rear pinion bearings for supplying a preload to said pinion



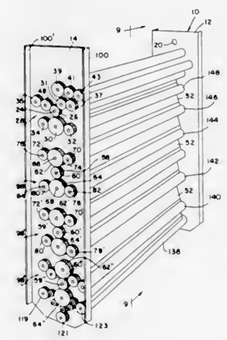
bearings, said collapsible spacer including a cylindrical portion having at least one lateral opening therethrough so as to be able to be twisted by torsion applied on the pinion shaft, said at least one opening being larger in the longitudinal direction of the collapsible spacer than in the circumferential direction of the same.

3,952,609
FOOD WARMING CABINET HUMIDIFIER
Richard O. Klemm, Crystal Lake, Ill., assignor to Food Warming Equipment Company, Elk Grove Village, Ill.
Filed Aug. 5, 1974, Ser. No. 494,454
Int. Cl.² A47J *27/00*
U.S. Cl. 99—474 **9 Claims**



1. In a food warming cabinet having stationary open rack shelves for supporting food trays whereby hot air is allowed to circulate around food held therein and further having at least one access door, apparatus for warming and humidifying the food held within said food warming cabinet said apparatus comprising:
- a cool air intake chamber defining at least one cool air intake opening and at least one exhaust opening, said cool air intake chamber housed within said food warming cabinet;
- a heating element adjacent said at least one exhaust opening of said cool air intake chamber for heating air passing through said at least one exhaust opening;
- a hot air tunnel having first and second ends, said first end connected to said cool air intake chamber to enclose said at least one exhaust opening and said heating element, said hot air tunnel for directing the flow of hot air passing through said at least one exhaust opening;
- a circulation fan housed within said cool air intake chamber for drawing cool air into said cool air intake chamber through said at least one cool air intake opening and forcing air out of said cool air intake chamber through said at least one exhaust opening, over said heating element and through said hot air tunnel;
- a humidifier pan located directly below said second end of said hot air tunnel, said humidifer pan having a liquid reservoir with a top opening, said top opening of said liquid reservoir lying in the path of air being forced through hot-air tunnel.

3,952,610
GEAR SYSTEM
Henry F. Hope, and Stephen F. Hope, both of 2548 Wyandotte Road, Willow Grove, Pa. 19090
Continuation-in-part of Ser. No. 457,829, April 4, 1974, abandoned. This application Oct. 9, 1974, Ser. No. 513,244
Int. Cl.² F16H *1/12, 1/20*
U.S. Cl. 74—421 R **39 Claims**

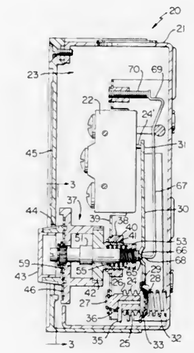


1. In an improved gear system of greater efficiency, less bearing loading and less power requirement, having a multiplicity of gears vertically mounted in a rack and connected to rotate respective work-producing shafts, said rack including at least one side carrier, the improvement in the gear system which comprises:
- a plurality of large power gears positioned vertically one above the other along the side carrier;
- a plurality of cluster drive gears of a smaller diameter than the power gears, the cluster drive gears being coaxially rotated by respective power gears at the same rate of rotation;
- a plurality of clusters of a plurality of gears, said gears being positioned to be driven by the cluster drive gears, at least some driven gears being connected to rotate the work-producing shafts, the difference in diameter between the large power gear and the cluster drive gear which is coaxially rotated by the respective power gear providing a multiplication of forces from each one of the power gear to each one of cluster drive gear which is rotated by the respective power gear.

3,952,611
CONTROL UNIT HAVING ADJUSTABLE DIFFERENTIAL AND METHOD OF MAKING THE SAME
Edward P. Cumming, Milford, Conn., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Apr. 1, 1974, Ser. No. 456,813
Int. Cl.² G05G *1/04*
U.S. Cl. 74—522 **15 Claims**

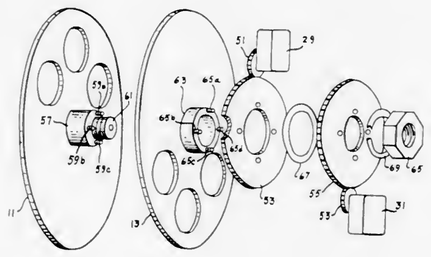
1. In a control unit having a condition selector means, an actuator and a condition responsive device for actuating said actuator when said condition responsive device senses a condition selected by said selector means, the improvement comprising a lever carried by said unit and being operatively associated with said actuator and said device whereby said device can actuate said actuator by said lever, said selector means having an adjustable part thereof engageable with said lever for providing a pivot point for said lever, said adjustable part

having an adjustable lost motion with said selector means and thereby being adapted to adjust the differential in the opera-



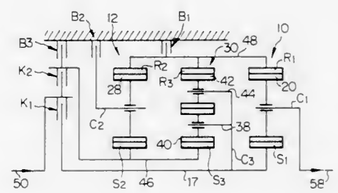
tion of said actuator by said device through the adjustment of said lost motion thereof.

3,952,612
REMOTE CONTROL TRIM BALANCER
Leonard S. Kurkowski, 822 Koehler Court, San Antonio, Tex. 78223, and Clarence C. Burris, Rte. 15, Box 219 C, San Antonio, Tex. 78228
Filed Feb. 22, 1974, Ser. No. 445,003
Int. Cl.² F16F *15/10*
U.S. Cl. 74—573 R **3 Claims**



1. A system for controlling the balance of a rotating body comprising:
- a. a first counterweight disc mounted at the hub of a fan and having a plurality of holes;
- b. a second counterweight disc mounted concentrically with the first disc and having a plurality of holes;
- c. means for positioning the holes of the first and second discs with respect to each other and with respect to the hub of a fan;
- d. a transmitter for communicating positioning signals to the positioning means; and
- e. a receiver for receiving positioning signals from the transmitter, the receiver being connected to the positioning means.

3,952,613
CHANGE-SPEED TRANSMISSION FOR A PASSENGER AUTOMOBILE
Tetsuya Iijima, Tokyo, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan
Filed June 18, 1974, Ser. No. 480,520
Claims priority, application Japan, June 20, 1973, 48-68663
Int. Cl.² F16H *57/10*
U.S. Cl. 74—759 **1 Claim**

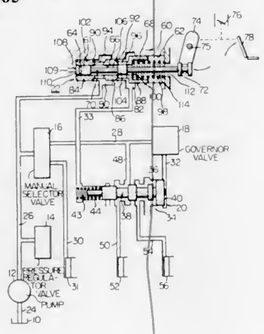


1. A change-speed transmission, comprising a first basic planetary gearset which has a sun gear, a carrier as an output and a ring gear, the sun gear being connectable by a forward input clutch to an input, the ring gear being brakeable by a first brake; a second basic planetary gearset which has a sun gear, a carrier, and a ring gear, the carrier of said second basic planetary gearset being breakable by a second brake, the sun gear of said second basic planetary gearset being connectable by a second clutch to the input and brakeable by a third brake; and dual-pinions planetary gearset which has a sun gear, a carrier and a ring gear, the sun gear of said dual-pinions planetary gearset being connected to the sun gear of said second planetary gear set for simultaneous rotation therewith, the carrier of said dual-pinions planetary gearset being connected to the sun gear of said first basic planetary gearset for simultaneous rotation therewith, and the ring gears of said first and second basic planetary gearsets and the ring gear of said dual-pinions planetary gearset being connected with each other for simultaneous rotation, in which axes of said first and second basic planetary gearsets and said dual-pinions planetary gearset are alined with the input and output, in which said dual-pinions planetary gearset is located between said first and second basic planetary gearsets, and in which the sun gear of said first basic planetary gearset is connected to the input and the ring gear of said first basic planetary gearset is breakeable during first forward speed; the carrier of said dual-pinions planetary gearset and the sun gear of said first simple planetary gear units are connectable to the input and the carrier of said second basic planetary gearset is brakeable during the second forward speed; the carrier of said dual-pinions planetary gearset and the sun gear of said first basic planetary gearset are connectable to the input and the sun gears of said second basic planetary gearset and said dual-pinions planetary gearset are brakeable during the third forward speed; the carrier of said dual-pinions planetary gearset and the sun gear of said second basic planetary gearset and said dual-pinions planetary gearset are connectable to the input during the fourth forward speed; and the sun gears of said second basic planetary gearset and said dual-pinions planetary gearset are connectable to the input and the ring gears of said first and second basic planetary gearset and said dual-pinions planetary gearset are brakeable during a reverse speed.

3,952,614
AUTOMATIC POWER TRANSMISSION HYDRAULIC CONTROL THROTTLE VALVE

Tetsuya Iijima, Tokyo, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed Oct. 3, 1974, Ser. No. 511,722
Claims priority, application Japan, Oct. 6, 1973, 48-111933
Int. Cl.² B60K *21/00*
U.S. Cl. 74—865 **6 Claims**



1. A throttle valve for a hydraulic control system of an automatic power transmission of a motor vehicle, comprising a housing formed therein with a cavity, an inlet port into which hydraulic fluid output pressure is produced and which is communicable with a drain, an external valve spool slidably fitted in said cavity and formed therein with a bore and urged in one direction by said output pressure, said bore communicating with said inlet port and being communicable with said outlet port to produce said output pressure therein, biasing means urging said external valve spool in another direction opposite to said one direction, an internal valve spool slidably fitted in said bore and movable in accordance with an output of an engine in said one and another directions to provide fluid communication between said outlet port and said bore and between said outlet port and said drain to increase and decrease said output pressure, said external and internal valve spools having a common neutral position which is constant with respect to each other and in which said output pressure is equal to a throttle pressure varied in accordance with the output of the engine, said external valve spool being responsive to movements of said internal valve spool from said neutral position in said one and another directions to be movable toward said neutral position by said output pressure and the action of said biasing means, respectively.

6. A throttle valve as claimed in claim **1**, wherein the output of the engine is controlled by an accelerator pedal, in which said internal valve spool is adapted to be connected to said accelerator pedal of said motor vehicle through a linkage mechanism.

3,952,615
SAW CHAIN SHARPENING SYSTEM

Clarence Eugene Benson, Milwaukie, Oreg., assignor to Carlton Company, Portland, Oreg.

Filed Jan. 22, 1975, Ser. No. 542,925
Int. Cl.² B23D *63/16*; **B24B** *3/36*
U.S. Cl. 76—25 A **9 Claims**



1. Apparatus for sharpening cutters distributed along a saw chain comprising

support means defining a support path along which an elongate reach of saw chain may be moved longitudinally through the apparatus,

a plurality of spaced-apart sharpening stations distributed along said path,

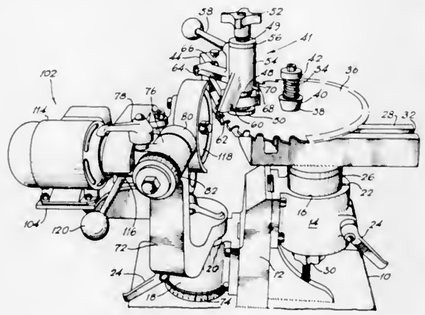
sharpening means adjacent each station for sharpening a cutter positioned therein, and

positioning means adjacent said path operable to advance said reach of chain along said path to position selected cutters on said reach of saw chain in different sharpening stations with slack existing in portions of said reach between said sharpening stations.

3,952,616
ADJUSTABLE GRINDING APPARATUS

Bernard Scott Varley, Sabden, near Blackburn, England, assignor to Automatic Machine & Engineering Co. Limited, England

Filed Nov. 20, 1974, Ser. No. 525,706
Claims priority, application United Kingdom, Nov. 24, 1973, 54645/73
Int. Cl.² B23D *63/14*
U.S. Cl. 76—40 **11 Claims**



1. A grinding machine comprising:

a. a base,

b. a work-piece support mounted on said base,

c. a grinding wheel assembly having a grinding wheel rotatably mounted thereon,

d. means mounting said grinding wheel assembly on said base, said mounting means including first means for pivotally adjusting the plane of rotation of the grinding wheel relative to said work-piece support about a first axis and a second axis and second means for pivotally adjusting the grinding wheel about a third axis for arcuate movement in a direction which is parallel to or included within a plane containing at least part of the cutting surface of the grinding wheel, and

e. feed means for moving the grinding wheel along said third axis in a direction parallel to the rotational axis of said wheel.

3,952,617
WRENCH

Michael Joseph Gegg, Harahan, La., assignor to Ray & Spielman, Baton Rouge, La.

Continuation-in-part of Ser. No. 410,281, Oct. 26, 1973, abandoned. This application Mar. 19, 1975, Ser. No. 559,889
Int. Cl.² B25B *13/46*
U.S. Cl. 81—62 **5 Claims**

1. A two-ended, elongated lever bar having:

a. at one end of said bar a socket holding means for holding a socket in engagement with said bar, said socket holding means being rotatable in a plane perpendicular to the long axis of said bar;

b. force transference means engageable with said socket holding means;

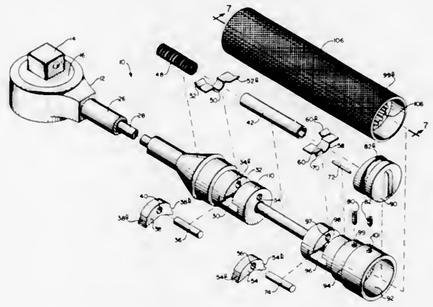
c. a shaft means cooperative with said force transference means and extending through said bar, said shaft means being rotatable within said bar and extending beyond the other end of said bar, and said shaft means being for application of force applied thereto to said force transference means;

d. a hollow handle which,

i. covers at least a portion of said shaft means extending beyond the other end of said bar;

ii. is rotatable about the long axis of said bar;

iii. has a first engagement means within its interior for engaging a handle rotation control means, said handle rotation control means being carried by a first carrier means, said first carrier means being rigidly attached to said other end of said bar and encasing at least a portion of shaft means which extends beyond the other end



of said bar, said handle rotation control means being selectively positionable with respect to said first engagement means so as to render the handle only rotatable in the direction dictated by the selected position of said handle rotation means, and

iv. has a second engagement means within its interior for engaging a shaft rotation control means, said shaft rotation control means being carried by a second carrier means, said second carrier means being rigidly attached to said shaft means, and said shaft rotation control means being selectively positionable with respect to said second engagement means so that rotation of the handle in the direction dictated by the selected position of said shaft rotation control means results in rotation of said shaft means in the same direction; and

e. selection means for selectively positioning said handle rotation control means and said shaft rotation control means.

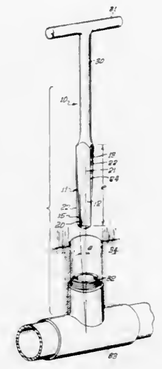
3,952,618
EXTRACTOR FOR PLASTIC RISERS

Paul Seamon, Garden Grove, Calif., assignor to Honey Bee Tool Company, Whittier, Calif.

Filed May 23, 1975, Ser. No. 580,429
Int. Cl.² B25B *13/48*
U.S. Cl. 81—71 **6 Claims**

1. A device for extracting plastic risers from threaded fittings such as a tee located in a sprinkler pipe, said device comprising:

a shallow, frustro-pyramidal shank having slightly concaval sides, each corner of said frustro-pyramidal shank being at an angle of between 1.5° and 5° with respect to the longitudinal axis of said shank, and said shank having a left-handed twist between 4° and 36° per inch of shank length;



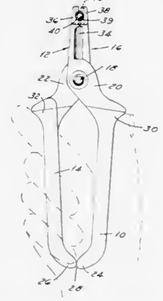
an extension rod affixed to said shank; and

handle means affixed to said extension rod.

3,952,619
TUBE ASSEMBLY TOOL

Roger J. Cook, Highland, Mich., assignor to Numatics, Incorporated, Highland, Mich.

Filed Feb. 27, 1975, Ser. No. 553,454
Int. Cl.² B25B *7/02*
U.S. Cl. 81—420 **1 Claim**



1. A hand tool for use in forcing plastic tubing into a retaining socket which comprises:

a. a pair of handles lying in a plane,

b. a cross-over portion on each of said handles,

c. means pivoting said handles together at the cross-over portions,

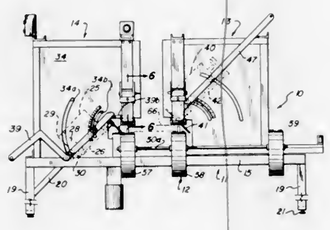
d. a head end on each of said cross-over portions positioned to provide a clamping action, each of said head ends having a portion extending laterally away from the general plane of the handles, said laterally extending portions having a first facing smooth surface groove on an axis extending transverse to the plane of said handles and a second facing smooth surface groove on an axis perpendicular to said first groove parallel to the plane of said handles, said grooves being shaped to receive a portion of a sidewall of a tube to be gripped,

e. each of the handles being formed at the digital ends with a curved portion extending in the direction of the other handle and dimensioned to contact to prevent full closing of the

head ends on each handle and having a curved, outwardly extending nub adjacent the pivoting means to serve as pressure areas for the thumb and forefinger of a user, and

f. blades formed on said head ends between said laterally extending portions and said pivoting means having portions terminating at cutting edges which respectively lie in a common plane whereby said blades will overlap in scissors fashion as said head ends are brought together to serve as a cutter for plastic tubing.

3,952,620
SMALL COMPONENT SAWING ASSEMBLY
James D. Adams, Box 7462, Colorado Springs, Colo. 80933
Filed May 16, 1974, Ser. No. 470,625
Int. Cl.² B23D *45/14*; **B26D** *3/02*; **B27B** *5/04*
U.S. Cl. 83—422 **6 Claims**



1. A small component sawing assembly comprising

a. base means including upstanding legs;

b. stationary saw mount means depending from one side of said base means including a pair of walls each having a pair of spaced apart registered arcuate slots, and a saw assembly having forward and rear mounts arcuately moveable at a variable angle in said slots providing a pair of spaced apart opposed motor mounting means for the saw providing optimum contact between said saw and lumber being cut,

c. a laterally movable saw mount means mounted on said base means moving toward and away from said stationary mount including a pair of walls each having a pair of spaced apart registered arcuate slots, and a saw assembly having forward and rear mounts pivotally mounted at a variable angle in said slots providing a pair of spaced apart opposed motor mounting means utilizing a variable pivot point for the saw providing optimum contact between said saw and lumber being cut;

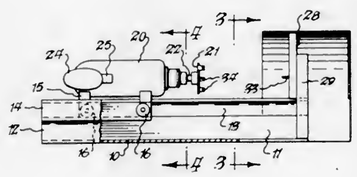
d. a first endless conveyor assembly including lumber hooks mounted closely adjacent said stationary saw mount;

e. a second endless conveyor assembly including lumber hooks mounted closely adjacent to and movable with said movable saw mount means;

f. means for conjointly rotating said conveyors for moving lumber through said saws; and

g. variable lumber hold-down means including a pair of elongated, horizontally disposed shoe means positioned above and parallel with said first conveyor assembly, and elongated, horizontally disposed shoe means positioned above and parallel with said second conveyor assemblys, and each including upwardly extending pivoted links on each end of each said shoe means providing pivot mounting means for each said shoe means permitting each shoe means to swing rearwardly and upwardly holding lumber on said conveyor means.

3,952,621
POTATO CUTTING MACHINE
James Chambos, 218 Garrison Road, Williamsville, N.Y. 14221
Filed Dec. 6, 1974, Ser. No. 530,081
Int. Cl.² B26D *1/02*
U.S. Cl. 83—733 **3 Claims**



1. A vegetable cutter comprising a longitudinally extending frame member which is channel shaped in transverse cross section and comprises a base portion and side walls extending upwardly at the opposite longitudinal edges of said base portion, a cutter support fixed to one end thereof, means for presenting an article of vegetable to said cutter support comprising a carriage and means supporting said carriage for guided linear movement toward and away from said cutter support, a driving motor on said carriage including an output shaft having vegetable engaging means at one end thereof toward said cutter support, said shaft being rotatable on an axis parallel to the direction of movement of the carriage, said cutter support including a series of parallel blades projecting toward said carriage and extending in a radial row with respect to the axis of said shaft to score said vegetable along concentric circles, and a slicing blade extending generally at right angles to said shaft axis and spaced toward said carriage from said cutter support for continuously slicing said scored portions during rotation of said shaft to form a series of helical strips of said vegetable, said carriage supporting and guiding means comprising longitudinal guiding formations extending along said frame member side walls, and means on said carriage engaging said guiding formations for free movement of said carriage longitudinally of said frame member, said carriage being movable manually to hold said vegetable against said cutter support during operation of said cutter to produce sliced strips of uniform thickness.

3,952,622
VICE MOUNTED MULTIPLE-USE BAND SAW WITH DETACHABLE WORK SURFACE
Joseph Majus, Box 99, Camp Lake, Wis. 53109
Continuation-in-part of Ser. No. 320,094, Jan. 2, 1973, abandoned. This application Aug. 30, 1974, Ser. No. 502,017
Int. Cl.² B23D *53/04*, *55/04*; **B27B** *13/04*
U.S. Cl. 83—799 **3 Claims**

1. A multiple position band saw device for mounting on the fixed jaw portion of a bench vice comprising

a band saw with driving motor, and

clamping means for mounting said band saw on the fixed jaw portion of said vice comprising,

a substantially C-shaped section,

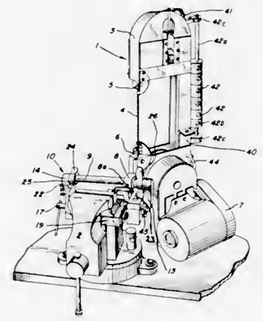
a tongue means attached to the bight portion of said C-shaped section and extending toward the fixed jaw of said vice for stabilizing said band saw during horizontal cutting,

an adjustable L-shaped section movably attached to one of the arms of said C-shaped section for engaging said vice adjacent said fixed jaw to stabilize said band saw,

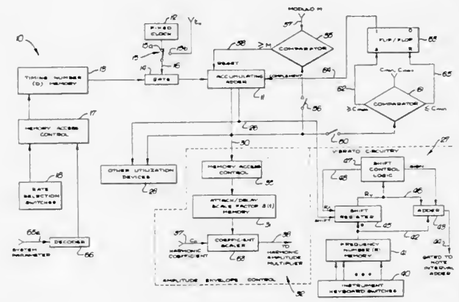
a shaft secured to and extending the length of the bight portion of said C-shaped section for rotatably carrying said band saw; and a work surface for use when the band saw is in the vertical position comprising,

a table, and

at least three leg members connecting three spaced points on said table only to said clamping means.



3,952,623
DIGITAL TIMING SYSTEM FOR AN ELECTRONIC MUSICAL INSTRUMENT
Ralph Deutsch, Sherman Oaks, Calif., assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan
Filed Nov. 12, 1974, Ser. No. 523,034
Int. Cl.² G10H *1/02*
U.S. Cl. 84—1.24 **10 Claims**



1. In an electronic musical instrument, a digital timing system comprising:

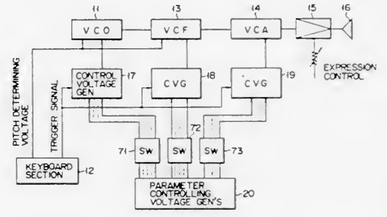
timing number selection means for selecting a digital number from a set of such numbers,

an accumulating adder, and

gating means for repetitively gating said selected digital number to said accumulating adder for arithmetic addition to the previous contents thereof at a regular rate, digital timing signals being obtained from selected bit positions of said accumulating adder, and

utilization means in said electronic musical instrument for employing said obtained digital timing signals to implement tone modification functions.

3,952,624
ELECTRONIC MUSICAL INSTRUMENT CAPABLE OF GENERATING TONE SIGNALS HAVING PITCH FREQUENCY, TONE COLOR AND VOLUME ENVELOPE VARIED WITH TIME
Genichi Kawakami, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan
Filed Nov. 1, 1974, Ser. No. 520,146
Claims priority, application Japan, Nov. 2, 1973, 48-123710
Int. Cl.² G10H *1/02*, *5/02*
U.S. Cl. 84—1.26 **3 Claims**



1. An electronic musical instrument of the keyboard type comprising:

a keyboard section including first means responsive to key operation on a keyboard for providing a pitch determining voltage the amplitude of which is a function of the note of an operated key on said keyboard, and second means responsive to key operation on said keyboard for providing a trigger signal indicative of key operation on said keyboard;

voltage controlled tone signal generating means including a voltage controlled oscillating means connected to receive said pitch determining voltage from said first means and for generating a tone signal the frequency of which is a function of the amplitude of said pitch determining voltage;

first envelope generating means connected to receive said trigger signal from said second means for generating a first envelope signal the amplitude of which varies with time, the envelope signal having voltage controlled parameters including at least one of rise time and decay time;

means coupling said first envelope signal of said first envelope generating means to said voltage controlled oscillating means for varying the oscillation frequency thereof as a function of said first envelope signal;

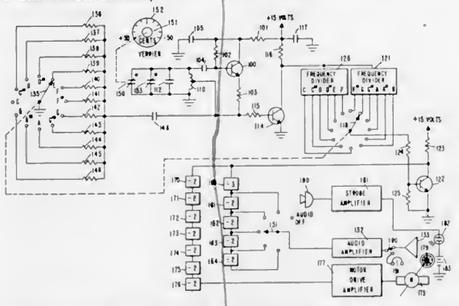
first parameter controlling voltage generating means for generating and coupling parameter controlling voltages to said envelope signal generating means, the parameter controlling voltages including a rise time controlling voltage and a decay time controlling voltage; and

first switching means connected between said first envelope generating means and said first parameter controlling voltage generating means for interchanging between said rise time controlling voltage and said decay time controlling voltage, both being selectively coupled to said first envelope generating means.

3,952,625
ELECTRONIC TUNING DEVICE
Richard H. Peterson, 11748 Walnut Ridge Drive, Palos Park, Ill. 60464
Filed Feb. 18, 1975, Ser. No. 550,523
Int. Cl.² G10G *7/02*; **G01R** *23/14*
U.S. Cl. 84—454 **10 Claims**

1. A tuning device for tuning musical instruments and for intonation training, comprising:

a master oscillator operating at a radio frequency;
means including frequency dividers for simultaneously deriving from said master oscillator a series of audio frequencies that approximate the notes of a predetermined musical scale over a range of at least an octave;
a utilization circuit;

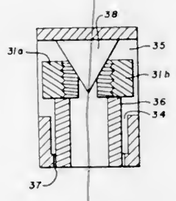


selector means for selecting only one of said notes and connecting it to said utilization circuit, whereby the selected note can be compared with the pitch of a musical instrument to be tuned; and
additional means controlled by said selector means for shifting the frequency of said master oscillator slightly so as to place the selected note at its exact position in the predetermined musical scale.

3,952,626
QUICK-RELEASE FASTENERS

Phillip Townsend, 87 Wentworth Road, Vaucluse, 2030 New South Wales, Australia

Division of Ser. No. 295,016, Oct. 4, 1972, abandoned. This application Oct. 25, 1974, Ser. No. 517,863
Claims priority, application Australia, Oct. 7, 1971, 6559/71; Nov. 18, 1971, 7080/71
Int. Cl.[2] F16B *37/10*
U.S. Cl. 85—33 **3 Claims**

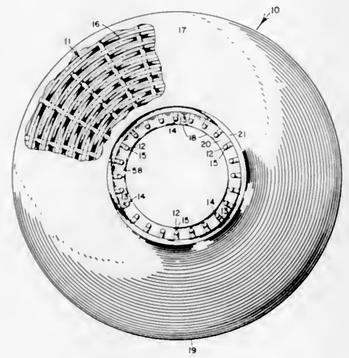


1. A quick release fastener device which is adapted to engage with the threaded shank of a screwed member and to clamp against a work piece, the fastener device comprising:
a. a collet member comprising at least two independent segmental collet elements which are adapted to be fitted together in cooperating relationship to define a threaded aperture, said collet elements having notches formed therein at one end thereof and converging to respective planes of separation along which the collet elements separate from one another upon being fitted together;
b. a retaining member for retaining the collet elements in said cooperating relationship and including engaging means adapted to hold said collet elements against rotation with respect to one another and with respect to said retaining member;
c. said retaining member being in the form of a rigid cage having first and second zones spaced axially of the threaded shank, the first zone comprising a pocket in which the collet member is snugly fit to retain the collet elements in said cooperating relationship, and the second zone providing for lateral separation of the collet elements and being of larger cross-section than said collet members in said cooperating relationship;
d. an anvil surface on the end of said retaining member remote from said pocket;
e. wedge means formed within and being integral with the second zone of the retaining member, said wedge means flanking said second zone and converging towards a wedge tip normally directed at and aligned axially with said notches formed in the collet members;
f. a spacer member disposed between the surface of the work piece and the collet member and which resists axial movement of the collet member toward the work piece surface during displacement of the collet member from the first zone to the second zone of the retaining member;
g. the arrangement being such that the retaining member is movable when struck on the anvil surface and forced in an axial direction toward the work piece surface effects relative axial displacement of the collet member from the first to the second zone of the retaining member simultaneously with said wedge tips entering the collet member notches whereby the collet elements are forced apart by the divergence of the wedge members to effect complete separation of said collet elements from one another and from the threaded shank before the limit of the axial movement of the retaining member is attained.

3,952,627
SLOT FORMER ASSEMBLY FOR USE IN SOLID PROPELLANT ROCKET MOTORS

Franklyn A. Gardiner; Oscar M. Hawkins, and Garland K. Grace, all of Huntsville, Ala., assignors to Thiokol Corporation, Newtown, Pa.

Filed Aug. 27, 1962, Ser. No. 219,569
Int. Cl.[2] C06B *21/00*
U.S. Cl. 86—1 R **3 Claims**

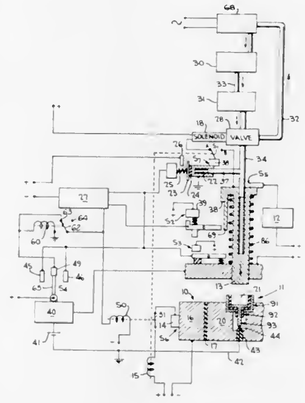


1. A slot former assembly for use in fabricating the solid propellant in a motor case for a solid propellant rocket motor comprising an outer hollow core, an inner tubular core and a flexible slot former comprising a skeleton frame consisting of stiffening rods that are retained in spaced relation to each other by means of a cord woven thereon in a basket weave and provided with a covering of flexible material operatively connected to said hollow core, whereby when said assembly is positioned in said motor case and the solid propellant is cast therein about said assembly, a slotted cavity configuration will be provided in the solid propellant in said motor case.

3,952,628
APPARATUS FOR MANUFACTURING DETONATORS AND RESISTORS

George T. Boswell, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 18, 1974, Ser. No. 452,478
Int. Cl.[2] C06B *21/00*; **F42B** *33/10*
U.S. Cl. 86—1 R **8 Claims**



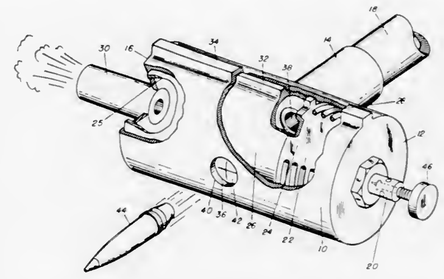
1. An apparatus for assemblying electronic detonators wherein a mass of pyrotechnic composition is loaded into a housing and compressed by a ram, and including an electric means for controlling movement of said ram, the improvement which comprises:
first means electrically connected to said mass during compression for detecting the instant at which a predetermined electrical resistance of said mass has been attained;
second means for simultaneously sensing when said ram is at a predetermined maximum travel distance, indicating insufficient volume of pyrotechnic composition in said housing; and
third means interconnecting said first and second means to said electric means for causing said electrical means to terminate compression by said ram at said instant of predetermined electrical resistance and for insufficient volume.

3,952,629
SMALL ARMS SILENCER

Jack Boccarossa, Rock Island County, Ill., and John S. Post, Scott County, Iowa, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 13, 1975, Ser. No. 549,575
Int. Cl.[2] F41C *21/18*
U.S. Cl. 89—14 D **4 Claims**

1. A small arms silencer for reducing the muzzle blast gas flash and barrel compensation which comprises:
a "T" shaped hollow tubular housing having a partially closed front end, a partially closed rear end, and a tubularly shaped transversely positioned integral middle muzzle member which slidably fits on a muzzle barrel, the wall of said tubular housing having an exit orifice therein axially aligned with said muzzle member and said muzzle barrel, said wall having a longitudinally positioned keyway groove therein;
a split plastic restrictor fixedly positioned in said exit orifice;
an adjustable relief valve fixedly positioned in the front end of said housing;
means for releasing said muzzle blast gas from said housing at a frequency which is inaudible, said means being fixedly attached to the rear end of said housing and which communicates therewith;
piston means slidably positioned in said housing for allowing a projectile to pass through said piston means and said

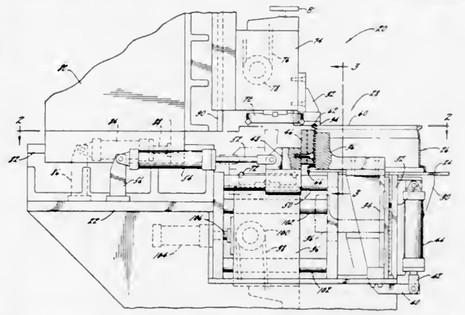


housing when said means is in an "open" position, for closing off said exit orifice of said housing after said projectile has passed through said housing, for providing barrel compensation, and for blocking the view of said muzzle blast gas flash; and
spring means for returning said piston means from a "closed" position to said "open" position to permit use of said silencer on a rapid automatic fire weapon.

3,952,630
TRUCK RIM EDGE MILLING APPARATUS

Vernon Fencl, Northbrook, and Alberts Roze, Chicago, both of Ill., assignors to Grotnes Machine Works, Inc., Chicago, Ill.

Continuation of Ser. No. 414,705, Nov. 12, 1973, abandoned. This application Mar. 5, 1975, Ser. No. 555,686
Int. Cl.[2] B23C *3/12*
U.S. Cl. 90—15 R **7 Claims**



1. Apparatus for machining the end edge surfaces of generally cylindrical truck rims for removing the weld projections thereon in an automated production line comprising in combination a frame having a work station for receiving rims transported along a pass line with the rim axis being perpendicular to the pass line, clamping means including an inner clamp member movable transversely with respect to the rim in the work station and an outer clamp member movable radially with respect to said rim and adapted to hold the rim stationary against said inner clamp member, a pair of spaced apart power heads carrying rotatable cutting tools mounted on said frame adjacent said work station, said power heads and cutting tools being movable transversely relative to the axis of a rim held in said fixed position in said work station and actuator means for moving said power heads and cutting tools located at a prede-

termined spaced apart distance transversely with respect to the axis of said fixed rim into said work station to remove the weld projections at opposite ends of said rim.

3,952,631

PRESSURE MEDIUM CONTROL DEVICE

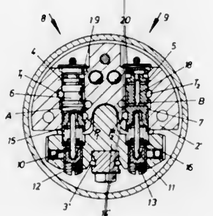
Günther Strauff, Kaarst, Germany, assignor to Langen & Co., Duesseldorf, Germany

Continuation-in-part of Ser. No. 391,271, Aug. 24, 1973. This application Dec. 21, 1973, Ser. No. 427,131

Claims priority, application Germany, Dec. 21, 1972, 2242021

Int. Cl.² F15B *9/10*

U.S. Cl. 91—372 **3 Claims**



1. In a pressure fluid control device for controlling working chambers of a servo-motor comprising two control valves operatively connectable to actuating means fixedly connected to a power input member through relative movements between the input member and a power output member connected to the power input member by resilient coupling means, the servo-motor is connected to the power output member, means including reaction areas on the control valves for reflecting developing pressures to the power input member, power transmission necessary for actuating the control valves being effected from the actuating means to the control valves via a lost motion coupling comprising prestressed coupling means connected in parallel, the two control valves being arranged transversely and off-center relative to the power input member, the improvement characterized in that the prestressed coupling means comprises resilient elements which are interposed and operable directly between control pistons and an actuating member comprising a portion of the actuating means.

3,952,632

DEVICE USED AS A POWER TRANSMISSION COMPONENT FOR ELEVATION OF A GUN BARREL

Nils Borje Eriksson, and Gustav Hilmer Tidemalm, both of Karlskoga, Sweden, assignors to AB Bofors, Bofors, Sweden

Filed May 14, 1974, Ser. No. 469,711

Claims priority, application Sweden, May 23, 1973, 7307218

Int. Cl.² F01B *15/02, 31/00*

U.S. Cl. 92—117 R **3 Claims**

1. Power transmission apparatus for controlling the elevation of a gun barrel comprising:

first and second parts in telescopic relation with each other with said first part being secured to a base for the gun and with said second part being attached to the gun barrel,

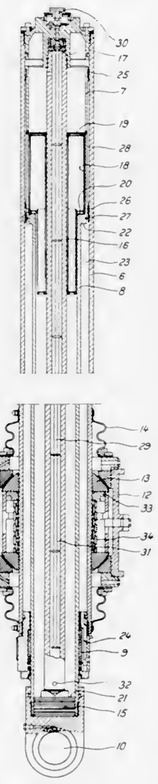
said first part including a first piston and a first piston rod secured to said first piston, said first piston being slidable in a first cylinder defined by said second part,

a second piston having a second piston rod secured thereto, said second piston being slidable within a second cylinder defined by said first part and said second piston rod being attached to an end portion of said second part,

a first chamber defined at least in part by the inner wall of said first cylinder and the outer wall of said first piston rod and filled with a low compressibility fluid.

a second chamber defined at least in part by the outer surface of said second piston rod and the inner wall of said first piston rod and filled with a high compressibility fluid

said second piston rod being tubular and having a port communicating with said second chamber,



an inner tube supported within said second piston rod,

a filling and draining valve connected to one end of said inner tube and terminating a predetermined distance from said second piston,

said second chamber communicating with a gap betwen the inner wall of said first cylinder and the outer wall of said first piston,

and sealing means between the inner wall of said first cylinder and the outer wall of said first piston.

3,952,633

DEVICE FOR INSERTING PARTITION LATTICE IN CARTON

Hidekazu Nakai, No. 34-9, 1-chome, Kami-Ikebukuro, Toshima, Tokyo, Japan

Filed Apr. 10, 1974, Ser. No. 459,855

Claims priority, application Japan, Apr. 16, 1973, 48-44561

Int. Cl.² B31D *3/04*; **B31B** *11/02*

U.S. Cl. 93—37 R **2 Claims**

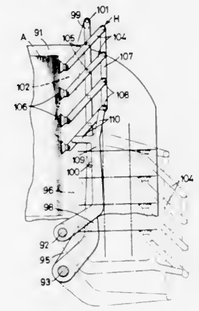
1. An apparatus for inserting into a hollow carton a partition lattice which is assembled from longitudinal partition panels having slits at equal spaces extending upward from the lower edges thereof and transverse partition panels having slits at equal spaces extending downward from the upper edges thereof, whereby inserting said slits into one another forms a lattice-like shape, said apparatus comprising:

a support table;

feeder means toward the front of said table for feeding the folded partition lattices overlapping one on the other in a vertical arrangement on the table towards the front end of said table;

opening means for opening the folded partition lattice, said opening means comprising:

a plate member in front of the leading partition lattice, said plate member being parallel to the longitudinal partition panel at one side thereof and movable therefrom while maintaining the parallel relation in respect to the partition lattice;



pivoted arms, equal to the number of partition panels, pivoted on said plate member at an angle of 45° before the panel is moved with the same intervals therebetween as between said transverse partition panels;

suction discs provided on the ends of said arms sucking the end portions of said transverse partition panels; and

a turnable plate adapted to cause said arms to turn synchronously 90° when said plate member moves away from said partition lattice;

lifting means at the front of said opening device for lifting the opened partition lattice as said lifting means elevates;

transfer means for transferring the lifted partition lattice to a position directly above a waiting hollow carton; and

means for inserting the partition lattice into said carton and for releasing the partition lattice from being held by said transfer means.

3,952,634

CARTON BLANK FORMING APPARATUS

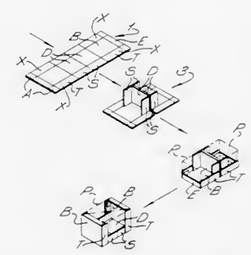
Paul Ferdinand Rollins, Stevenage, and Christopher John Chamberlain, St. Neots, both of England, assignors to Bowater Packaging Limited, London, England

Filed Sept. 9, 1974, Ser. No. 503,941

Int. Cl.² B31B *3/26*

U.S. Cl. 93—49 R **14 Claims**

1. Blank folding apparatus for folding a blank of the type described into a carton comprising a frame, means on said frame for supporting a blank at a first folding station, folding means for folding such blank at said first folding station from a lay-flat condition into a condition with its divider panels in back-to-back relationship and upstanding relative to the base panels with the side flaps connected to the divider panels upstanding relative to the divider panels, means on said frame for supporting the partially folded blank at a second folding station, folding means associated with said second folding station to fold the side and end flaps connected to the base panels upwardly relative to the base panels and to fold in the glue flaps to lie against said side flaps, whereupon the carton may then be removed from said second folding station, said blank support means at said first folding station including a pair of oppositely disposed plates spaced apart a distance slightly greater than the width of the divider panels and on which the side flaps foldably connected to the divider panels rest, and ledges on which the end flaps rest, a first folding device at said first folding station for pushing the blank past the plates towards said second folding station and at the same time to fold the divider panels into back-to-back relationship and the side flaps connected to them into their upstanding positions, said first folding device including a sub-frame, two



generally L-shaped folding members, means pivotally connecting each of said L-shaped members adjacent the end of one of the arms of the L to said sub-frame, means supporting said sub-frame on said main frame and a reciprocatable cross-member vertically slidable relative to said sub-frame under the action of a ram, a link pivotally connecting said cross-member to each L-shaped folding member so that, upon sliding movement of the cross-member, relative to the sub-frame, each L-shaped folding member will be rocked through 90°, thereby folding the divider flaps into back-to-back relationship from their lay-flat condition.

3,952,635

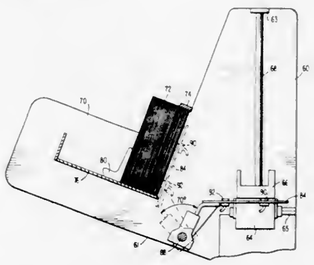
VERTICAL CARTON ERECTOR

Herman Dewitt Mims, Charlotte, N.C., assignor to D and B Machine Company, Charlotte, N.C.

Continuation-in-part of Ser. No. 347,494, April 3, 1973, Pat. No. 3,859,896. This application Sept. 20, 1974, Ser. No. 507,919

Int. Cl.² B31B *1/06*

U.S. Cl. 93—51 R **5 Claims**



1. In a carton erecting apparatus of the type wherein a stationary die, reciprocable plunger and carton blank feeding means are carried by a frame, said apparatus including a carton blank reservoir remote from said die and said plunger and comprising a carton hopper to releasably and sequentially present said carton blanks to said carton blank feeding means, said feeding means being capable of advancing to said hopper, engaging the presented carton blank and placing said blank on said die in carton erecting position, the improvement compris-

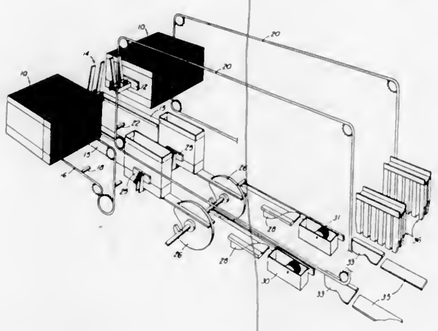
ing said hopper having a straight inclined smooth carton blank support surface upon which a stack of flat carton blanks can rest on edge, the angle of inclination of said support surface relative to the horizontal being substantially equal to the angle of repose so that the carton blanks are on the verge of sliding down said inclined surface under their own weight, carton blank pusher means carried by said hopper to push said stack of cartons down said inclined support surface, spring means biasing said pusher means to maintain substantially equal pressure on the leading carton regardless of the length of the stack, said pusher means exerting a pressure against the stack directly porportional to the length of the stack, lateral guide means to guide said stack down said support surface and a plurality of carton stops positioned around the lower most end of said hopper to prevent said carton blanks from being pushed out of said hopper; said stops being located in a plane parallel to the plane of said pusher means with both of said planes being located at an angle relative to the support surface intermediate a vertical plane and a plane perpendicular to said support surface.

3,952,636

CASE ERECTOR

Donald G. Reichert, Tarpon Springs, Fla., assignor to ABC Packaging Machine Corporation, Tarpon Springs, Fla.

Filed Aug. 9, 1974, Ser. No. 496,028
Int. Cl.² B31B *1/06, 1/76*
U.S. Cl. 93—53 SD **11 Claims**



1. In a case erecting machine dispensing apparatus for dispensing cases one at a time from a stack of cases juxtaposed in upright, flattened positions, said dispensing appratus comprising

a. suction cup coupled with a vacuum pump;

b. a carriage supporting said suction cup for reciprocal movement along a generally horizontal path into and out of engagement with end case members of the stack, said carriage comprising a pair of parallelogrammatic linkages and biasing means for biasing said linkages;

c. a drop chute disposed beneath said path;

d. means for controlling the suction applied to said suction cup by said vacuum pump whereby the suction cup may grip and remove end case members one at a time from the stack along said path to a position over said drop chute and there release the cases enabling them to fall down into the drop chute; and

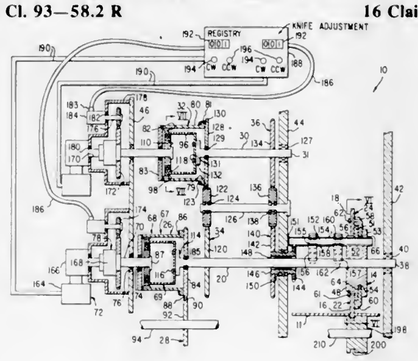
e. a magazine for storing a stack of flattened cases, said magazine including a pair of externally threaded support shafts upon which the cases may be manually supported and drive means for rotating said shafts and for advancing the flattened cases toward said suction cup.

3,952,637

APPARATUS FOR CHANGING THE ROTARY POSITION OF A SLOTTER MEMBER AND FOR CHANGING THE RELATIVE POSITION BETWEEN FIXED AND MOVABLE KNIVES ON THE SLOTTER MEMBER

Roy Ralph Lambert, and Gordon Lawrence Morgret, both of Baltimore, Md., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Apr. 14, 1975, Ser. No. 567,488
Int. Cl.² B31B *1/22;* **B26D** *7/26*
U.S. Cl. 93—58.2 R **16 Claims**



1. Apparatus for changing the rotary position of a slotter member and for changing the relative position of fixed and movable knife means on said slotter member, comprising:

a first rotatable shaft means having at least one of said slotter members secured thereto;

said slotter member having a fixed knife means secured thereto and a movable knife means mounted thereon;

a drive means;

a first phase changing means connected between said first shaft means and said drive means for rotating said slotter member;

a second rotatable shaft means spaced from said first shaft means;

a linking means connected between said second shaft means and said movable knife means;

a second phase changing means connected between said first shaft means and said movable knife means through said linking means; and

a selectively operable remote control means for:

1. operating said first phase changing means to selectively change the rotary position of said slotter member forward and backward with respect to said drive means said second phase changing means and said linking means maintaining the relative position of said fixed and movable knife means during operation of said first phase changing means, and for

2. operating said second phase changing means independently of said drive means to selectively change the position of said movable knife means forward and backward relative to the position of said fixed knife means.

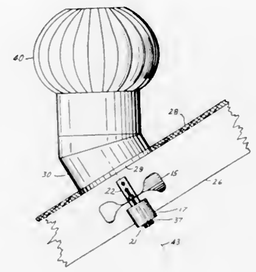
3,952,638

FANS FOR USE WITH TURBINE VENTILATORS, AND METHODS AND APPARATUS FOR SUPPORTING THE SAME

John V. Felter; John A. Bond, and Kenneth M. Rudine, all of P.O. Box 7464, Houston, Tex. 77008

Filed Mar. 10, 1975, Ser. No. 556,694
Int. Cl.² F24F *7/02*
U.S. Cl. 98—43 R **20 Claims**

6. In combination with a rotary ventilator and a fan-motor assembly mounted beneath said ventilator, apparatus comprising a first elongate element adapted for connection at an intermediate point of its length to the motor of said fan-motor assembly, second and third elongate elements each bendable to L-shaped form intermediate of their lengths whereby one end of each of said second and third elongate elements may be connected to supports at opposite sides of said rotary ventilator and the other end of each of said second and third



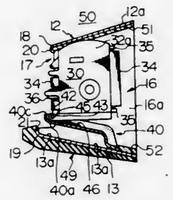
elongate elements may be connected against the opposite ends of said first elongate element, said other ends of said second and third elongate elements being disposable in line with or at any angle to said first elongate element whereby said one ends of said second and third elongate elements may be connected to supports at different distances apart, said second and third elongate elements being bendable at different points of their lengths to adjust the fan distance from the rotary ventilator.

3,952,639

LOUVER ASSEMBLY

Tetsuo Nobata, c/o Universal Climb Co., Ltd., 6-6, Horita-dori, Mizuho, Nagoya, Aichi, Japan

Filed Dec. 30, 1974, Ser. No. 537,419
Claims priority, application Japan, Sept. 26, 1974, 49-115934
Int. Cl.² F24F *7/00*
U.S. Cl. 98—110 **3 Claims**



1. A louver assembly for attachment to the airflow outlet of an air conditioner system, said assembly comprising:

a casing surrounding said airflow outlet and having at least one airflow opening;

adjustable louver means rotatably mounted to said casing within said airflow opening for rotation about a horizontal axis to adjust and direct the flow of air flowing out of the outlet; and

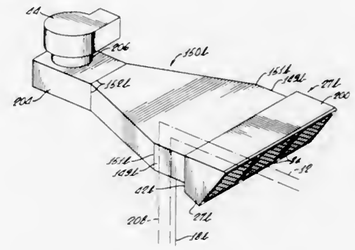
closure means pivotally attached at one end to the lower portion of the louver means for movement with the rotation of the louver means and cooperating with the lower wall of the casing, for blocking the flow of air under the louver and forcing the air to exit from the outlet only through the louver means, and for completely closing the airflow opening when the louver means is rotated upward.

3,952,640

APPARATUS AND METHOD FOR EXTRACTING GREASE AND SMOKE, AND METHOD OF INSTALLING THE SAME

Irvin R. Kuechler, San Bernardino, Calif., assignor to Vent-Cair, Inc., San Bernardino, Calif.

Continuation-in-part of Ser. No. 336,970, March 1, 1973, abandoned, and a continuation-in-part of Ser. No. 497,690, Aug. 15, 1974. This application Sept. 26, 1974, Ser. No. 509,555
Int. Cl.² F23J *11/00*
U.S. Cl. 98—115 K **8 Claims**



1. Apparatus for exhausting fumes from a space above a cooking appliance in a room in a restaurant, which comprises:

a. filter means adapted to be mounted above a cooking appliance in a room in a restaurant, and adapted to remove grease from the air and fumes passes through said filter means,

said grease filter means being of a type which effects both impingement and centrifugal filtering actions,

b. means to effect flow of a curtain of air across a space above said cooking appliance and toward said filter means,

said air curtain containing fumes from said cooking appliance,

c. means to create a relatively large-diameter vortex of air and fumes above said air curtain,

said vortex containing air and fumes from said curtain and which deflect off said filter means,

d. blower means to exhaust air and fumes to the exterior of said room, and to effect forced supply of at least air to said air curtain without depleting said room of major amounts or air, and

e. means to conduct air and fumes from said filter means to said blower means,

said last-named means comprising means to define a plenum chamber located on the opposite side of said filter means from said cooking appliance,

one major wall portion of said plenum chamber being formed by said grease filter means,

said last-named means further comprising means to define extended plenum chamber means which greatly extends said plenum chamber,

said extended plenum chamber means extending sufficiently far from said grease filter means that the velocity of flow through said grease filter means is substantially uniform across the entire width of the apparatus.

3,952,641

BEVERAGE BREWER APPARATUS

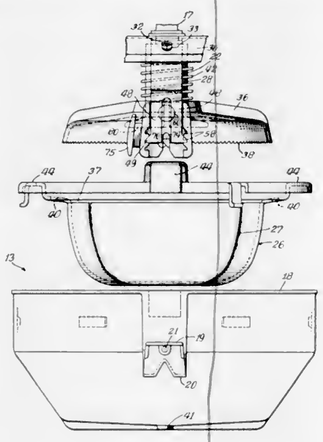
Charles J. Vitous, Berwyn, Ill., assignor to Cory Food Services, Inc., Chicago, Ill.

Filed Jan. 27, 1975, Ser. No. 544,488
Int. Cl.² A47J *31/00*
U.S. Cl. 99—295 **14 Claims**

1. In a beverage brewer having a brewing receptacle for holding bagged charges of beverage forming material, and

means for providing brewing liquid to said receptacle for treating the beverage forming material to brew a desired beverage therein, said liquid providing means including a delivery element defining a surface through which the liquid is delivered into the receptacle, the improvement comprising

means for selectively arranging the brewer to accommodate any one of a plurality of different volume bagged charges for brewing corresponding different quantities of beverage defined by means for mounting the receptacle below



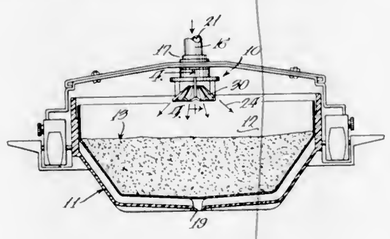
said liquid providing means surface in any one of a plurality of preselected different positions to cause each corresponding one of said different volume bagged charges selectively disposed in said receptacle to be urged against said surface with less than a preselected maximum pressure to preclude rupture of the bagged charge while providing good sealed contact of the bagged charge with said surface during delivery of the brewing liquid thereto by said liquid providing means.

3,952,642

LIQUID DISTRIBUTOR

Charles J. Vitous, Berwyn, Ill., assignor to Cory Food Services, Inc., Chicago, Ill.

Filed Nov. 4, 1974, Ser. No. 521,367
Int. Cl.² A47J *31/00*
U.S. Cl. 99—300 **15 Claims**



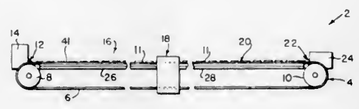
1. A liquid distributor for absorbing kinetic energy from a downwardly directed liquid stream and guiding the liquid therefrom in a distributed plurality of divergent paths to a subjacent receiver, said distributor comprising: wall means defining a flat surface having a center portion; a frustoconical element extending laterally outwardly from said wall means defining a plurality of divergent channels; and means for supporting the wall means and frustoconical element with said center portion of said flat surface in transversely extending centered relation to a downwardly directed liquid stream for absorbing kinetic energy therefrom, said flat surface having a lateral extent substantially greater than the cross section of the liquid stream, said supporting means being disposed intermediate said channels whereby said channels may guide liquid falling from the periphery of said flat wall surface into a distributed plurality of paths substantially without interference by said support means.

3,952,643

APPARATUS FOR COOKING FRENCH TOAST AND THE LIKE

Robert Wolfelsperger, Fairfield, and Richard J. Bozzo, Wyckoff, both of N.J., assignors to Sandco Limited, Ottawa, Canada

Filed Mar. 11, 1974, Ser. No. 449,703
Int. Cl.² A47J *37/06*
U.S. Cl. 99—337 **20 Claims**



1. In a system for cooking individual food products, the combination of an endless belt having a product-carrying run with a product-supporting surface upon which the product is carried from a product-receiving station to a product-discharge station, means to deposit product portions on said surface in a predetermined relationship at said product-receiving station, inverting means positioned generally intermediate said stations and adapted to invert the product portions within a product-inverting zone, heating means to subject the product portions to cooking upon one side when upstream from said inverting means and upon the other side when downstream from said inverting means, said endless belt having indicating means spaced longitudinally therealong, first detector means at said product-receiving station which is responsive to moment thereby of said indicating means and which controls the positioning of said product portions upon said belt, second detector means upstream from said product-inverting zone which is responsive to movement thereby of said indicating means and which controls said inverting means, said first detector means being utilized to determine the relative position of each product portion longitudinally of said belt and said second detector means acting in response to the arrival of each product portion at said product-inverting zone to operate said inverting means.

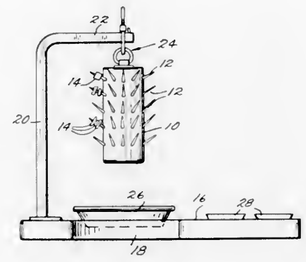
3,952,644

FOOD SERVING DEVICE

George A. Wales, 1519 S. Andrews Ave., Fort Lauderdale, Fla. 33316

Filed Apr. 30, 1974, Ser. No. 465,559
Int. Cl.² A47J *37/04*
U.S. Cl. 99—419 **7 Claims**

1. A table-top food serving device from which a diner may be served individual pieces of food each of which is maintained in a heated condition, said device comprising: an inert body capable of being heated and constructed of high heat-absorbing and heat-radiating material, said body having a plurality of food-holding skewers fixedly secured to and extending from the outer surface of said body, said skewers being arranged side by side and one above another and each of said skewers being of a size to receive at least one bit-size piece of food, the mass and heat-absorbing properties of said body and said skewers being sufficient, when said body has been heated, to maintain pieces of food on said skewers in a heated condition by conduction and radiation from said body and said skewers; and means for supporting said body in an



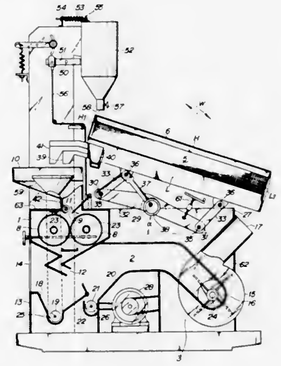
upright suspended position in which said skewers retain pieces of food placed thereon.

3,952,645

GRAIN HULLING AND SORTING APPARATUS

Toshihiko Satake, Saijo-cho, 2-38, Nishihon, Kamo, Hiroshima, Japan

Filed Dec. 2, 1974, Ser. No. 528,687
Int. Cl.² B02B *3/04*
U.S. Cl. 99—524 **5 Claims**



1. A grain hulling and sorting apparatus comprising:

a supporting frame box having two longitudinal side walls and two transverse end walls, said longitudinal walls being longer in length than said transverse end walls;

a hulling chamber provided in the upper portion of said frame box, adjacent to one of said transverse walls;

hulling means provided in said hulling chamber for hulling the grain;

winnowing means contained in said frame box, said winnowing means operatively connected to said hulling chamber;

a first hopper located above said hulling chamber for supplying grain thereto;

sorting means containing a single sorting pan moveably fitted above said frame box for sorting hulled and unhulled grain;

a second hopper located above said sorting means for supplying grain thereto;

conveyor means located adjacent to said frame box and operatively connected to said hulling chamber for upwardly transferring said hulled and unhulled grain to said second hopper through a discharge opening at the upper end of said second hopper; and

oscillating means connected between said sorting means and said frame box for obliquely oscillating said sorting means parallel to said longitudinal side walls of said frame box.

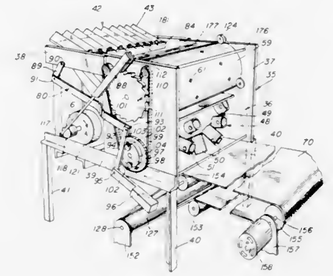
5. Apparatus as claimed in claim 1, wherein said second hopper is connected to the discharge opening of said conveyor means, said second hopper being movable upwardly and downwardly in accordance with the amount of grain stored therein and operatively connected with said first hopper so that the amount of grain to be supplied to the hulling chamber can be controlled according to the amount of grain supplied to and stored in said second hopper.

3,952,646

APPARATUS FOR DECAPPING THE STEMS OR CAPS OF STRAWBERRIES

Evan Leban, 7266 River Road, Sodus, Mich. 49126

Filed Dec. 9, 1974, Ser. No. 530,980
Int. Cl.² A23N *15/02, 15/04*
U.S. Cl. 99—639 **41 Claims**



2. Strawberry decapping apparatus for decapping or cutting the stems or caps from the bodies of strawberries comprising:

a. a supporting frame;

b. decapping means mounted on the said supporting frame for decapping or cutting the stems or caps from the bodies of the strawberries;

c. a first rotary carrier means rotatably mounted on the said supporting frame and including

1. a first generally cylindrical rotary carrier member rotatably mounted on the said supporting frame and having

a. a hollow interior;

b. an outer peripheral surface; and

c. a plurality of strawberry conveying units mounted on the said outer peripheral surface of the said generally cylindrical first rotary carrier member and each adapted to receive and to convey a strawberry and each having

1. an open radially inner or lower end; and

2. an open radially outer or upper end;

d. a second rotary carrier means including

1. a second generally cylindrical second rotary carrier member rotatably mounted on the said supporting frame above the said first generally cylindrical rotary carrier member and having

2. a hollow interior;

e. strawberry feeding means mounted on the said supporting frame for feeding strawberries one at a time into each of the said strawberry conveying units through the said open radially outer or upper end thereof;

f. air pressure supply means for supplying air under pressure sequentially from the hollow interior of the said first generally cylindrical rotary carrier member into each of the said strawberry conveying units thereon through the said open radially inner or lower end thereof against the body of a strawberry disposed in one of the said strawberry conveying units to initiate movement of the straw-

berry radially outwardly in one of the said strawberry conveying units toward and into engagement with the said second generally cylindrical rotary carrier member;

g. vacuum means for applying vacuum sequentially from the said hollow interior of the said second generally cylindrical rotary carrier member to the said open radially outer or upper end of each of the said strawberry conveying units;

h. the said air pressure supply means and the said vacuum means coacting sequentially to move the strawberries in the said strawberry conveying units outwardly therein toward and into engagement with the said second generally cylindrical rotary carrier member while at the same time positioning and holding the strawberry in the said strawberry conveying unit in position to enable the strawberry to engage the said decapping means and to enable the said decapping means to cut or decap the stem or cap from the body of the strawberry as the strawberry is moved by the coaction of the said first generally cylindrical rotary carrier member and the said second generally cylindrical rotary carrier member into engagement with the said decapping means; and

i. power means for rotating the said first generally cylindrical rotary carrier member and the said strawberry conveying units thereon and the said second generally cylindrical rotary carrier member in timed relationship with each other.

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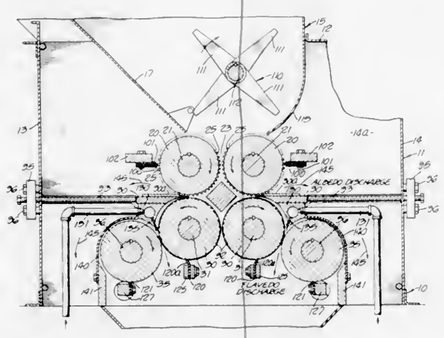
ROLL FOR EXTRACTING OIL FROM SHAVED FLAVEDO

Franklin K. Holbrook, Whittier, and Donald R. James, West Covina, both of Calif., assignors to Brown International Corporation, Covina, Calif.

Continuation-in-part of Ser. No. 398,686, Sept. 19, 1973, abandoned. This application Sept. 13, 1974, Ser. No. 505,541

Int. Cl.² B30B *9/02*

U.S. Cl. 100—98 R **3 Claims**



1. In a device for extracting oil from the peel of citrus fruit, the device including a metallic roll cooperating with a cleated drum and a knife to separate the albedo from the flavedo of the citrus peel, the roll also cooperating with a knurled roller to extract oil from the flavedo, the improvement comprising: a series of circumferential closely spaced sharp, knife-like, circular fins on the periphery of the roll cooperating with the knurled roller to puncture oil cells in the flavedo, said fins having smooth flanks connected by smooth annular grooves, and a flexible non-metallic stationary wiper blade having an edge in resilient contact with said fins.

3,952,648

CHARACTER PRINTING DEVICE

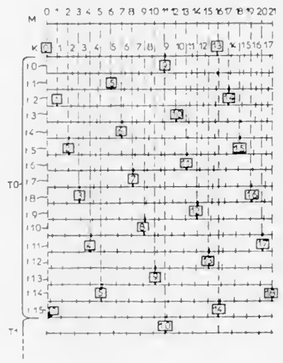
Jacques Sery, Vitry (Seine), and Serge Andre Emmanuel Couture, Plessis-Robinson, both of France, assignors to Compagnie Honeywell Bull (Societe Anonyme), Paris, France

Filed Jan. 18, 1974, Ser. No. 434,612

Claims priority, application France, Jan. 19, 1973, 73.01993

Int. Cl.² B41D *7/08*

U.S. Cl. 101—93.14 **15 Claims**



1. A character printing device comprising:

successive series of character-holder matrices, regularly spaced and passing continuously opposite possible printing positions on a line, each character being marked in any one of said identical series by a rank number N counting from a reference character of said series;

selective character printing units, these units being situated opposite possible printing positions and being marked by order numbers N′ counting from a reference printing unit;

a recording memory to record data concerning the characters to be printed on a line and the order number of these characters on the line;

a coincidence detection unit to detect coincidences which appear between the print control units and the characters as the latter pass by, these coincidences appearing by successive groups, in the course of scan periods T_n where *n* represents the numbers of these periods, each of them being the interval of time that separates two coincidences of characters with a predetermined printing unit; and

a printing-unit control system for said printing units which is connected to the outputs of said recording memory and to the outputs of said coincidence detection unit, and which permits the printing of a character of rank N by a printing unit of order number N′ in the course of a scan period T_n in such manner that the relation

$$n = N - N_o, \text{ for } N > N_o, \text{ and}$$

$$n = C + N - N_o, \text{ for } N_o > N$$

is satisfied, N_o representing the rank of the character that would be printed by this same unit of number N′ in the course of an initial scan T_o and C representing the number of different characters in said series.

3,952,649

CHECK PRINTER HAVING RIBBON CARTRIDGE

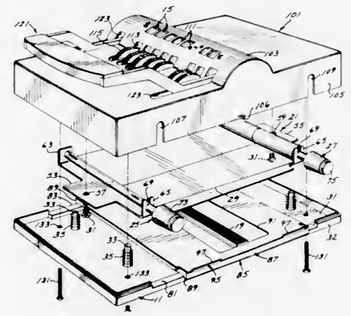
Joseph K. Dikoff, No. 4 Privateer, Apt. 3, Marina Del Rey, Calif. 90291

Filed Apr. 25, 1974, Ser. No. 463,961

The portion of the term of this patent subsequent to Aug. 13, 1991, has been disclaimed.

Int. Cl.² B41J *17/32*

U.S. Cl. 101—100 **7 Claims**



1. A check printer comprising:

a horizontally projecting base;

a check support surface mounted on said base;

a chassis removably mounted on said base for movement toward and away from said support surface, said chassis being formed with a flat underside cooperating with said base to form a straight pathway leading from one side to the other of said check support surface and including ink ribbon cartridge mounting means;

a plurality of printing wheels disposed over said support surface and mounted on said base in side-by-side relationship for independent rotation thereof, said wheels being formed in their peripheries with printing members;

an ink ribbon cartridge including a flat plate underlying said flat underside and formed with a window overlying said check support surface for passage therethrough of the peripheries of said wheels and including two pairs of upturned ears formed on opposite ends thereof with the ears of said pairs being disposed at opposite sides of said plate, said ears including reel mounting means, said cartridge further including feed and take-up reels mounted on their opposite ends on said reel mounting means and an ink ribbon leading from said feed reel across said pathway to said take-up reel and advance means on said take-up reel for rotating said take-up reel to advance said ribbon;

fastening means for removably mounting said cartridge to said cartridge mounting means;

an actuating handle engaging said chassis for depression thereof to press the periphery of said wheels into engagement with said ribbon to, in turn, press it through said window and against a check on said check support surface; and

a cover removably mounted on said base to cover said chassis whereby said take-up reel may be advanced incrementally to position fresh ribbon under said wheels and when the ink in said ribbon becomes depleted said cover and chassis may be removed, said fastening means unfastened and said cartridge removed as a unit and replaced with a replacement cartridge.

3,952,650

DOCTOR-BLADE HOLDER WITH CLEANING MEANS

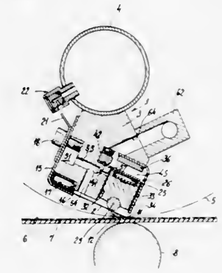
Andre Lotte, Mulhausе, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse Cedex, France

Filed Sept. 23, 1974, Ser. No. 508,340

Claims priority, application France, Sept. 21, 1973, 73.34033

Int. Cl.² B41F *15/42, 35/00, 41/00*

U.S. Cl. 101—120 **6 Claims**



1. An apparatus for use with a printing machine having a screen, said apparatus comprising:

an elongated doctor-holder including a body and a color supply unit secured to said body for supply of colorant onto the outer surface of said body,

a doctor including an elongated strip of thin flexible material having an inner face, an outer face, a longitudinal free wiping marginal portion to be operably engaged at said outer face against the screen of said printing machine and an opposite longitudinal marginal securing portion, said colorant flowing on said outer surface of the body to the space between the outer face of the doctor and the screen,

holding means on said doctor-holder for firmly holding said marginal securing portion of said doctor,

resilient means in said doctor-holder for applying pressure on said longitudinal free wiping marginal portion of said doctor to urge the same against the printing screen during a printing process,

said body having a longitudinal conduit communicating with said inner face of said doctor and with said resilient means,

and union means carried by said doctor-holder and communicating with said longitudinal conduit for connection to a source of cleaning pressure fluid to supply such cleaning pressure fluid to said inner face of the doctor and said resilient means via said conduit to clean accumulated colorant thereat.

3,952,651

SHEET FEEDING APPARATUS FOR PRINTING MACHINES

Hans Bernhard Bolza-Schünemann, Wurzburg, Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany

Filed Mar. 4, 1974, Ser. No. 447,698

Claims priority, application Germany, Mar. 16, 1973, 2313150

Int. Cl.² B41F *21/04*

U.S. Cl. 101—242 **4 Claims**

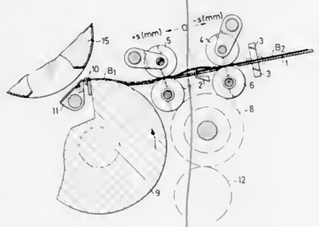
1. Sheet feeding apparatus for printing presses for sequentially feeding sheets to the constantly rotating impression cylinder of a printing press, the impression cylinder having front stops and sheet grippers, said sheet feeding apparatus including in combination:

a sheet feeding table having front register lays, said front register lays being vertically reciprocatable cyclically

with rotation of the impression cylinder to register sheets thereat;

a first push type conveying means positioned adjacent the feed table and in advance of the feed table's front register lays, said first push type conveyor being operable intermittently to advance a first one of said sheets from its registered position against the front register lays along the feed table toward the impression cylinder; and

a second push type conveying means positioned adjacent the feed table and between the front register lays and the impression cylinder, said second push type conveying means receiving said first one of said sheets from said first conveying means upon release of said first one of said sheets from said first conveying means, said second conveying means intermittently conveying said first one of said sheets along the feed table to the sheet grippers of the impression cylinder at a speed higher than the peripheral speed of the impression cylinder, said second conveying means releasing said first one of said sheets to the impression cylinder grippers as said first conveying means advances a second one of said sheets from its registered position against said front register lays toward said second conveyor, said front register lays being positioned beneath said feed table to lift a trailing edge of said first sheet to permit said second sheet to move thereunder, whereby the first and second conveying means sequentially feed sheets along the feed table to the impression cylinder.



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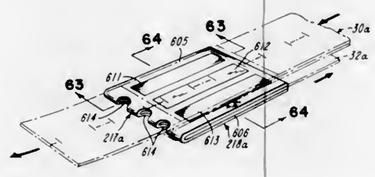
LABEL PRINTING AND APPLYING APPARATUS

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 312,454, Dec. 6, 1972, which is a continuation-in-part of Ser. No. 208,035, Dec. 8, 1971, abandoned. This application Jan. 10, 1975, Ser. No. 540,051

Int. Cl.² B41F *1/06, 1/00;* **B41J** *11/08, 11/20*

U.S. Cl. 101—316 **4 Claims**



1. Printing apparatus, comprising a printing platen comprising a pair of spaced apart plates having aligned sets of openings, flexible resilient material between the plates and in the sets of openings to provide flexible resilient platen sections, and a print head having a plurality of printing members cooperable with the respective platen sections, and support means in contact with the plates but not with the flexible resilient platen sections, the platen sections being supported solely by the pair of plates, thus enabling the platen sections to yield independently of each other during printing.

3,952,653

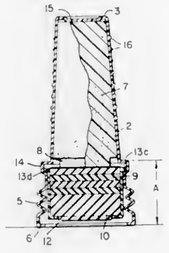
STAMP DEVICE

Donald L. McFarland, Santa Barbara, Calif., assignor to Fairfield Marking Products, Inc., Greenwich, Conn.

Filed Mar. 24, 1975, Ser. No. 561,319

Int. Cl.² B41K *1/02, 1/38*

U.S. Cl. 101—327 **3 Claims**



1. A stamping device which comprises a housing having a portion suitable to be gripped by a person's hand one end of which is closed and the other end of which is integral with a shoulder portion which is integral with a bellows portion having a mating ridge where the bellows joins the shoulder portion and which terminates in an open end, a rigid member constructed of the same general configuration as the gripping portion of the housing and having a projection extending from one surface thereof, said rigid member being inserted into the housing, an end member having a retaining lip around one surface thereof and having protuberances positioned on a second surface, a self-inked stamp totally disposed within said end member so that the word or words to be stamped are in contact with that portion of the end member having the retaining lip, a depressible member disposed within said end member on top of said self-inked stamp, said end member containing said self-inked stamp and said depressible member being fitted into the bellows portion of said housing so that the protuberances on the end member contact the mating ridge between said bellows and said shoulder to retain said end member within said housing in a removable manner.

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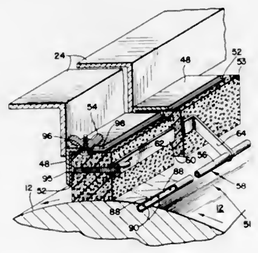
AUTOMATIC BLANKET WASH-UP SYSTEM

Robert E. Evans, 1205 Second Ave. S., Clinton, Iowa 52732

Filed Apr. 8, 1974, Ser. No. 459,096

Int. Cl.² B41L *41/00, 41/06*

U.S. Cl. 101—425 **5 Claims**



1. A cleaning attachment for a cylindrical surface, such as a blanket cylinder in an offset printing press, comprising:

an elongated frame adapted for mounting adjacent said cylindrical surface parallel to the axis of said cylinder;

a sponge;

actuating means mounted on said frame to support and move said sponge into engaging pressure wiping relationship with said cylindrical surface to form a presssure nip;

a single elongated spray tube means supported adjacent said sponge just upstream of said pressure nip and substantially parallel thereto, said spray tube means having a plurality of orifices directed to dispense a spray of said cleaning solvent adjacent said pressure nip against both said sponge and said cylindrical surface;

an angle bracket for directly supporting and stabilizing said sponge along substantially its full length, said actuating means including at least one fluid cylinder unit, and fluid pressure means to operate said cylinder unit, said cylinder unit directly supporting said angle bracket and said sponge; and

first disengageable fastener means for mounting said sponge to said angle bracket; and second disengageable fastener means for mounting said spray tube means directly to said sponge, whereby said sponge and said spray tube are moved together by said cylinder unit when said first and second fastener means are engaged, said sponge and said spray tube means being releasable for cleaning from said angle bracket as an integral unit by disengagement of said first fastener means and releasable from each other by disengagement of said second fastener means.

3,952,655

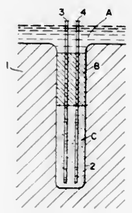
UNDERWATER BLASTING METHOD AND EXPLOSIVES AND DEVICES USED THEREIN

Masao Kusakabe; Shuzo Fuziwara, both of Hiratsuka, and Kazuo Shiino, Odawara, all of Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Feb. 26, 1974, Ser. No. 445,911

Int. Cl.² F42D *1/00*

U.S. Cl. 102—23 **5 Claims**



1. A method of blasting underwater objects to be removed by the use of a water soluble fluid explosive, characterized by the successive steps of injecting an inert fluid immiscible with both the fluid explosive and water and having an intermediate specific gravity between the two into a blasting hole in the object to be blasted, injecting a water soluble fluid explosive having a specific gravity greater than water to form a layer of the inert fluid on the fluid explosive thereby enabling the fluid explosive to be loaded into the blasting hole in such manner that the fluid explosive is isolated from water, and thereafter detonating the fluid explosive thus loaded.

3,952,656

DEVICE AND PROCESS

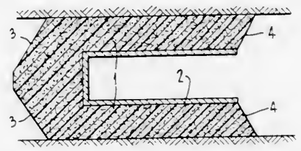
Richard Fox, Rosanna; David Gilbert Hay, Balaclava, and Ronald John Herniman, North Balwyn, all of Australia, assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Australia

Continuation of Ser. No. 181,161, Sept. 16, 1971, abandoned. This application Sept. 5, 1973, Ser. No. 394,479

Claims priority, application Australia, Sept. 21, 1970, 2604/70; Apr. 13, 1971, 4561/71

Int. Cl.² F42B *3/20*

U.S. Cl. 102—30 **3 Claims**



1. A stemming device for holes which device comprises a generally cylindrical object formed of a solidified material selected from a group consisting of natural rubber, synthetic rubbers and plastic materials having a generally circular top and bottom and a lateral surface corrugated to form a series of frustrated cones, a series of O-rings placed in the corrugations of the lateral surface, said device being capable of forming a seal in conjunction with the wall of a hole and being characterized in that it prevents, minimizes or substantially retards the flow of flowable, pourable or pumpable material from said hole when said device is moved in the direction opposite that of insertion whereby the O-rings expand and form a seal between the device and the wall of said hole.

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RIFLE CARTRIDGE

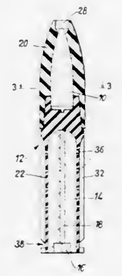
Hans-Joachim Kaltmann, Dusseldorf, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany

Filed Apr. 11, 1974, Ser. No. 460,137

Claims priority, application Germany, Apr. 21, 1973, 2320399

Int. Cl.² F42B *5/02*

U.S. Cl. 102—38 **4 Claims**



1. A rifle cartridge for firing in a weapon having a barrel, said cartridge comprising:

an elongate projectile having a diameter less than the caliber of said barrel;

a shell of plastic material affixed to said projectile and having a diameter substantially corresponding to the caliber of said barrel, said shell comprising a tubular rear portion extending rearwardly of said projectile and a forward portion substantially enveloping said projectile and forming a sabot therefor, said rear and forward portion being interconnected, said shell being formed with weakened zones enabling separation of said projectile

therefrom upon emergence of the cartridge from the barrel, said forward portion being formed with an opening at a leading end of said projectile enabling air to enter between said projectile and said forward portion, said forward portion and said rear portion being each formed with a plurality of angularly spaced radial ribs defining said weakened zones between them, said rear portion being provided with orifices communicating between the interior of said rear portion and the exterior thereof between the ribs of said rear portion to enable pressure equalization across the wall of said rear portion upon ignition of said charge; and

a propellant charge received in said rear portion and adapted to ignite upon firing to produce propellant gases driving said projectile and said shell from said barrel.

3,952,658

ELECTRICALLY FIRED SUPERIMPOSED PROJECTILE

Howard F. Broyles, 4841 Maryland Ave., La Crescenta, Calif. 92014

Division of Ser. No. 773,691, Sept. 26, 1968, Pat. No. 3,854,231. This application Dec. 7, 1973, Ser. No. 422,512 The portion of the term of this patent subsequent to Jan. 27, 1993, has been disclaimed.

Int. Cl.² F42B 7/02

U.S. Cl. 102—40 **8 Claims**



1. A cartridge for an electrically fired weapon system comprising;

an elongated casing including an end opening;

a plurality of individual superimposed charges in said casing, each positioned to be propelled in sequence through said end opening; each of said superimposed charges comprising projectile means and a propellant charge;

detonator means for each of said charges and positioned to detonate and propel each projectile means in sequence through said end opening;

electrical contact means extending longitudinally along said casing in energizing relationship with respective detonator means;

including fusible link means short circuiting at least one of said squib means;

said fusible link means positioned to be fired by detonation of the charge preceeding the charge associated with said squib means of the next succeeding charge; and

further including pressure responsive switch means positioned within the wall of said casing in detonation pressure communication with at least one of said charges.

3,952,659

FLATTENED SPHERICAL SHOT

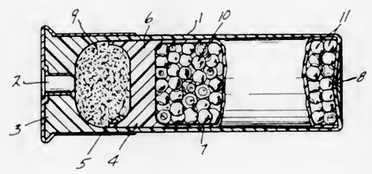
Alphonse J. Sistino, Guilford, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed June 20, 1974, Ser. No. 481,074

Int. Cl.² F42B 7/04, 11/00

U.S. Cl. 102—42 R **7 Claims**

6. A shotshell including a casing, a primer, a powder charge, a wad structure, pellets, and a closure, the improvement comprising the pellets in the shot column being formed with six equally spaced, substantially flattened faces entirely surrounded by spherical surfaces so that the randomly loaded shot column in said shotshell contains from 12 to 16 per cent



more shot pellets than a shotshell loaded with spherical pellets of the same weight.

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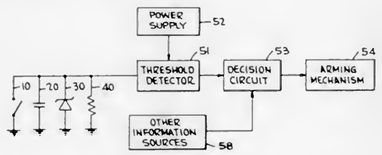
FUZE SAFING AND ARMING DEVICE UTILIZING PROPELLANT IONIZATION

Harry J. Davis, Wheaton, and Philip F. Ingersol, Silver Spring, both of Md., assignors to The United states of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 17, 1974, Ser. No. 489,306

Int. Cl.² F42C 11/00, 15/40

U.S. Cl. 102—70.2 R **10 Claims**



1. In combination with an electrically actuated arming mechanism for a fuze, an electrical safety device comprising:

a. an ionization sensor;

b. a threshold detector connected to said sensor; and

c. a decision circuit connected to said detector.

3,952,661

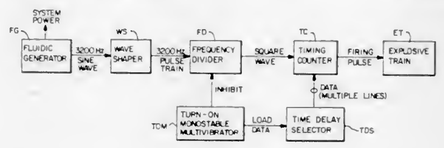
FLUIDIC FUZE

Frank Vrataric, Jr., Wheaton, Md.; James E. Forrest, Jr., Alexandria, Va.; Carl J. Campagnuolo, Potomac, and Francis E. Blodgett, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 25, 1974, Ser. No. 491,897

Int. Cl.² F42C 11/00

U.S. Cl. 102—70.2 R **9 Claims**



1. A time fuze for firing an explosive train in a projectile at a predetermined time after said projectile is fired comprising in combination:

a. a fluidic generator means for generating an electrical signal in response to the flow of ram air into said fluidic generator means, said electrical signal having a characteristic resonant frequency;

b. electrical circuit means coupled to said fluidic generator means for generating an output pulse in response to the receipt of a selected number of cycles of said electrical signal;

c. time delay selection means coupled to said electrical circuit means for controlling said selected number of cycles to which said circuit means responds to generate said output pulse; and

d. detonating means for receiving said output pulse and for firing said explosive train in said projectile in response thereto.

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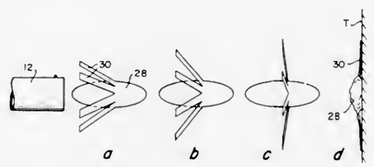
NON-LETHAL PROJECTILE FOR RIOT CONTROL

William D. Greenlees, Rte. No. 1, Box 711-L, Accokeek, Md. 20607

Filed May 29, 1974, Ser. No. 474,472

Int. Cl.² F42B 11/02

U.S. Cl. 102—92.7 **8 Claims**



1. A non-lethal projectile adapted to be fired from a gun barrel comprising:

a central, pliant, deformable, non-rupturable body having a plurality of flexible finger-like arms integral therewith and extending rearwardly, each of said arms being affixed to said body only at the end which is nearer the front of said body for extension transversely to said body after firing of said projectile,

said body flattening out upon impacting an object, so that impact force of said projectile is reduced,

said arms swinging forward to strike said object at a time slightly later than said body, thereby further absorbing said impact and spreading said impact over a large area whereby said projectile does not penetrate said object.

3,952,663

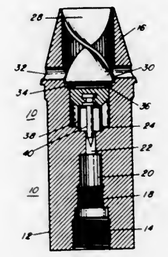
DIFFUSER

John J. Forst, 14 Round Top Road, Warren, N.J. 07060, and Kenneth L. Willison, 16 Woodland Ave., Hamburg, N.J. 07419

Filed June 21, 1974, Ser. No. 481,927

Int. Cl.² F42C 1/00

U.S. Cl. 102—73 R **1 Claim**



1. An impact sensitive fuze for explosive missiles comprising:

a truncated conically shaped body having a longitudinal axis and an axial bore;

said body having a plurality of apertures in its base extending transversely of said axial bore and communicating with said bore;

means for detonating said missile mounted in said bore; and

barrier means, mounted in said bore intermediate the front end of said bore and said detonating means, adapted to provide an effective cover for said detonating means, thereby preventing moving objects from striking said detonating means, while permitting objects, such as droplets of water, to pass through said barrier means in directions inclined to the longitudinal axis;

wherein said barrier means is in the form of a twisted plate having a twist angle of at least 180°.

3,952,664

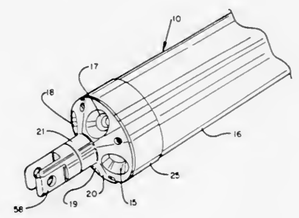
ROCKET NOZZLE MULTI FUNCTION

Joseph A. Schmidt, Ridgecrest, and W. James Stone, China Lake, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 10, 1974, Ser. No. 478,009

Int. Cl.² F42B 13/56, 15/06

U.S. Cl. 102—89 **1 Claim**



1. A rocket motor assembly having a cylindrical casing containing a rocket propellant for use with a rocket motor that is utilized for towing a load during powered flight by means of a tow line, the improvement comprising:

an integral removable cylindrical end portion having a generally conical portion with a base and an apex, a boss portion on the apex end, a generally cylindrical annular portion of a lesser diameter than the major diameter of the conical base section extending transversely outwardly from a plane parallel with the base of said conical portion to provide a protrusion that slidably fits within a rocket motor casing;

a circumferential flange portion formed by the intersection of the base of said conical section and an outer wall of said cylindrical annular portion;

four nozzle apertures opening on a tapered surface of said conical portion and extending through said conical portion so as to be in direct communication to an interior part of said cylindrical annular portion;

an igniter chamber formed by an axial bore extending a substantial distance into said boss portion;

igniter means adapted to fit in said igniter chamber;

shackle means connected to said igniter means for connecting said tow line to said rocket motor;

propellant booster container fastened within and concentric with the center of said cylindrical annular portion;

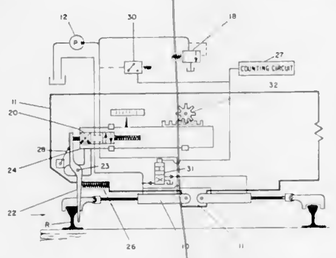
sealing means positioned on an outer circumferential surface of said cylindrical porton; and

a locking groove on an outer circumferential surface of said cylindrical annular portion for rigidly fastening said cylindrical end portion to an interior portion of a rocket motor casing by means of a locking wire.

3,952,665
DEVICE FOR LATERALLY DISPLACING A RAILROAD TRACK

John Kenneth Stewart, and Helmuth von Beckmann, both of Columbia, S.C., assignors to Canron, Inc., Phillipsburg, N.J.

Filed Mar. 28, 1975, Ser. No. 562,923
Int. Cl.² E01B *33/02*
U.S. Cl. 104—8 **8 Claims**

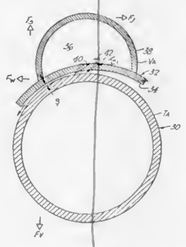


5. A control system for the cycling of a railroad track aligning jack comprising an hydraulic pressure source; hydraulic connections between jack and source, a valve means in said connections; rail position feeler means operatively connected to said valve means and operable to close said valve means to terminate a track aligning jacking action; a pressure sensitive means operatively connected in the hydraulic connections between said valve means and said source and operable to exhaust said jack when a predetermined hydraulic pressure has been built up in the hydraulic connections between the source and valve means, to permit the track to react to a preceeding track aligning jacking action and move from said feeler means to re-open the valve means and reinstitute a track aligning jacking action; and means for monitoring the number of operations of the valve means to control the number of jacking actions in an aligning operation.

3,952,666
VEHICULAR TRANSPORTATION SYSTEM

Herbert E. Gladish, 724 Echo Drive, Ottawa, Ontario, Canada (K1S 1P3)

Filed Nov. 7, 1974, Ser. No. 521,594
Claims priority, application Canada, Nov. 15, 1973, 185869
Int. Cl.² B61B *13/08*
U.S. Cl. 104—23 FS **7 Claims**



1. A vehicular transportation system comprising a vehicle for guided longitudinal movement along a prepared track having a transversely curved support surface, said vehicle comprising body means, propulsion means, and at least two longitudinally spaced apart vehicle support members having flexible connection with said vehicle for limited articulation relative thereto, each of said support members having an outer surface transversely curved to be complementary with said track support surface, one of said curved surfaces being generally concave in cross-section, the other being generally convex in cross-section, the two surfaces converging laterally, the generally concave surface being provided with nozzle means asymmetrically disposed substantially on one side of the longitudinal axis thereof for projecting fluid at an angle thereto to form a wedge of supporting fluid diminishing in thickness in the direction of convergence between said support surface and said outer surfaces whereby said support members are supported above said track by said wedge.

3,952,667
PNEUMATIC LOAD TRANSPORTATION SYSTEM

Pavel Vasilievich Kovanov, B.Bronnaya, 19-21, kv. 23; Adolf Moritsovich Alexandrov, Federativny prospekt, 6, korpus 3, kv. 8; Jury Abramovich Tsimbler, Sojuzny prospekt, 10, kv. 261, and Vladimir Efimovich Aglitsky, Zatsepsky val, 6/13, kv. 61, all of Moscow, U.S.S.R.

Filed Apr. 28, 1975, Ser. No. 572,164
Claims priority, application U.S.S.R., May 14, 1974, 2023614
Int. Cl.² B65G *51/04*; F16C *33/10*
U.S. Cl. 104—138 R **9 Claims**



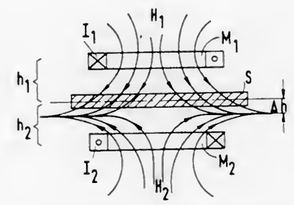
1. A pneumatic load transportation system comprising: receiving and dispatching stations; a pipeline interconnecting said receiving and dispatching stations; guides rigidly fixed opposite to each other to the inner side walls of said pipeline substantially in a diametrical plane along the entire length thereof; containers in said pipeline; an annular space between each of said containers and said pipeline; a leading seal mounted on each container at the forward end side thereof in the direction of movement of said containers, said seal closing the lower half of said annular space; a trailing seal mounted on each container at the rear end side thereof in the direction of movement of said containers, said seal closing the upper half of said annular space; through slots in said leading and trailing seals for the passage of said guides; longitudinally extending lateral seals which are made stiff and fixed to the opposite lateral sides of each of said containers substantially in a diametrical plane between said leading and trailing seals; said longitudinally extending lateral seals of each of said containers being supported by said guides and serving as bearing supports for sliding of said containers; a source providing a flow of gas in said pipeline for moving said containers therealong.

3,952,668
ELECTRODYNAMIC SUSPENSION GUIDANCE SYSTEM

Laxmikant Urankar, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 24, 1974, Ser. No. 517,589
Claims priority, application Germany, Nov. 16, 1973, 2357325
Int. Cl.² B61B *13/08*
U.S. Cl. 104—148 SS **5 Claims**

1. In an electrodynamic suspension guidance system for a track-bound moving vehicle which includes rows of vehicle mounted pairs of magnet coils the coils in each pair disposed horizontally one over the other with a gap between, the pairs disposed one behind the other in the travel direction and which magnet pairs cooperate with secondary conductor means, of a nonmagnetic electrically conductive material mounted to the roadbed and disposed in said gap, to form a zero flux system, which is self-controlling wherein the improvement comprises at least some of the magnet coil pairs arranged so that the upper magnet coil generates a magnetic field which is stronger than the magnetic field generated by the lower magnet coil the difference being such as to cause the

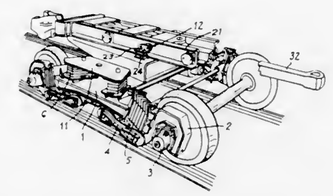


distances between the reaction rail and the respective magnet coils to be approximately equal.

3,952,669
SNUBBED RAILWAY VEHICLE BOGIE

Andre E. Mauzin, 25, rue Jean Dolent, Paris 14 eme; Pierre P. Truffart, 70, rue de Sannois - (95), Ermont, and Ferdinand L. Tharel, 10 Square des Credos, (93), Epinay-sur-Seine, all of France

Continuation of Ser. No. 86,238, Nov. 2, 1970, abandoned. This application Apr. 23, 1973, Ser. No. 354,156
Claims priority, application France, Nov. 2, 1969, 69.37973
Int. Cl.² B61F *3/08*, *5/08*, *5/24*, *5/30*
U.S. Cl. 105—171 **4 Claims**

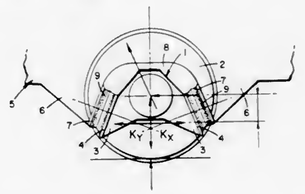


1. A bogie for a railway vehicle having a bogie frame carrying axle boxes, which bogie also includes a resilient suspension having two stages namely: (a) a primary stage between said bogie frame and said axle boxes, said primary stage consisting of resilient chevron-shaped blocks of high vertical flexibility and transverse rigidity; and (b) a second stage between said bogie frame and the vehicle body, said second stage having reduced vertical flexibility and high horizontal flexibility, said secondary suspension stage being formed only from interleaved resilient blocks operating in compression, said blocks being distributed about an imaginary center of pivotal movement of said bogie with respect to said body and having an axis of compression which is slightly inclined with respect to said body so as to converge upwardly and to operate in shear to ensure transverse and rotational adjustment of said bogie and reduced inclination of said body on a curved track, and a device adapted to change the transverse characteristics of the second stage of the suspension in dependence upon the load, and said device comprising a rigid body stop fixed to said vehicle body and cooperating with a rigid bogie stop, the latter being coupled to said bogie frame vertically by means of a first set of resilient blocks and horizontally by means of a second set of resilient blocks, said resilient blocks mounted on said bogie frame, said rigid body stop and said rigid bogie stop having mutually cooperating oblique surfaces which are spaced apart when said vehicle is unloaded but engaged when said body is loaded, whereby any given transverse movement of said bogie causes greater compression of said second set of resilient blocks when said body is loaded than when it is unloaded.

3,952,670
RAILWAY VEHICLE PRIMARY SUSPENSIONS

Reginald Harrison, Oadby, England, assignor to Dunlop Limited, London, England

Filed July 24, 1974, Ser. No. 491,245
Claims priority, application United Kingdom, Aug. 1, 1973, 36507/73
Int. Cl.² B61F *5/26*
U.S. Cl. 105—224.1 **5 Claims**

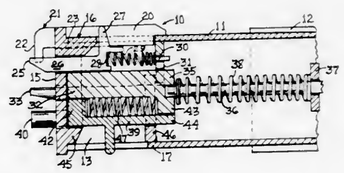


1. A railway vehicle including a body and a primary suspension comprising a downwardly inclined pair of longitudinally opposed springs of elastomeric material each mounted at their lower end upon an axlebox having an axle and supporting an axleset and adapted for connection at their other end to the vehicle body wherein the axis of the axleset is substantially vertically displaced from the plane of action of the resultant longitudinal stiffness of the suspension so that the effective longitudinal stiffness at the axle is reduced.

3,952,671
UNIVERSAL CROSSBAR HEAD FOR ENGAGING BELTRAILS

Emanuel Val Verde, Chicago, Ill., assignor to Transco Inc., Chicago, Ill.

Filed Feb. 5, 1975, Ser. No. 547,102
Int. Cl.² B60P *7/08*, *7/16*; B61D *45/00*, *49/00*
U.S. Cl. 105—498 **8 Claims**



1. A universal head structure for a crossbar of a freight-retaining system including belt rails mounted on opposite side walls of a load-carrying chamber having various different configurations requiring different connections between the head structure and the belt rails, wherein the improvement comprises

a. a hollow housing adapted to be connected to the end of an elongated crossbar,

b. said housing providing a substantially flat front wall extending perpendicularly to the longitudinal plane of the crossbar,

c. a pair of fixed hook members carried by said housing projecting frontwardly and downwardly from said front wall,

d. a first means slidably mounted in said housing and providing a portion movable through an opening in said front wall so as to cooperate with said hook members to releasably connect the crossbar to a belt rail providing a horizontal flange having vertically directed openings formed therein,

e. a second means slidably mounted in said housing providing a pair of locking fingers movable through openings in

said front wall in a plane parallel to said first means beneath and outwardly of said hook members so as to cooperate independently of said first means with said hook members to releasably connect said crossbar to a belt rail having a raised retaining lip and a spaced angularly directed opening,

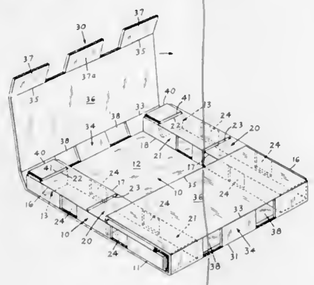
f. and a third means slidably mounted in said housing providing a pair of retaining pins movable through openings formed in said front wall in a spaced parallel plane with respect to said locking fingers of said second means so as to cooperate independently of said first and second means with said hook members to releasably connect the crossbar to a belt rail providing a substantially horizontally directed opening.

3,952,672

CORRUGATED DISPOSABLE PALLET

Robert Lewis Gordon, and Keith Alan Cooper, both of Monroe, N.Y., assignors to International Paper Company, New York, N.Y.

Filed Dec. 19, 1974, Ser. No. 534,467
Int. Cl.² B65D *19/34*
U.S. Cl. 108—56 **18 Claims**



1. A pallet which comprises:

a. a unitary inner structure of foldable material comprising

i. a flat deck,

ii. two folded support cells extending along opposite sides of the flat deck containing at least an outside vertical wall, an upper horizontal wall, and an inside vertical wall;

iii. at least one set of aligned slots along the upper horizontal and inside vertical walls of the support cells; and

b. a unitary outer structure of foldable material comprising,

i. a flat deck abutting the flat deck of the inner structure,

ii. two vertical walls extending from opposite edges of said flat deck and folded about the ends of said inner structure support cells,

iii. two flaps extending respectively from said vertical walls and folded along the upper horizontal support cell walls,

iv. two tuck flaps extending respectively from said flaps and inserted into said slots in said support cells.

3,952,673

AUTOMATIC METHOD AND APPARATUS FOR CLOSING THE TOE OF SEAMLESS HOSE

Yoshinobu Fukuyama, Kashiwara, Japan, assignor to Takatori Machinery Works, Ltd., Yamatotakada, Japan

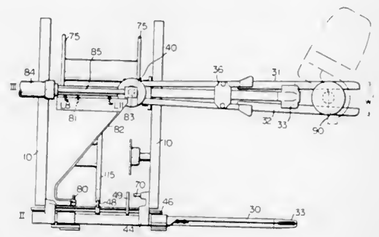
Division of Ser. No. 477,824, June 10, 1974. This application Apr. 14, 1975, Ser. No. 567,822
Claims priority, application Japan, Dec. 28, 1973, 49-3466
Int. Cl.² D05B *19/00, 21/00*
U.S. Cl. 112—121.15 **9 Claims**

7. An apparatus for automatically closing the toe of seamless hose comprising:

a plurality of parallel holding units, each said holding unit including a suction tube for receiving a toe portion of a hose and a pair of finger pieces mounted adjacent said suction tube;

means for moving said holding units in an endless path with said suction tubes disposed perpendicularly of said path;

means for spreading a welt portion of a hose having a toe portion in a suction tube of one of said holding units over said suction tube while pulling the toe portion out of said suction tube and over said finger pieces;



means for moving said finger pieces of a holding unit relative to the suction tube thereof to flatten a toe portion of a hose located thereover while carrying the toe portion away from said suction tube;

a sewing machine mounted outside said endless path and having a clamp for receiving and clamping a toe portion of a hose carried on the extended finger pieces of a holding unit and means for sewing the toe portion closed; and

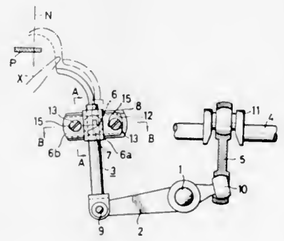
a pneumatic system connected to the suction tubes of said holding units to selectively apply a suction force to each of said tubes to suck a hose having a closed toe portion into said suction tube.

3,952,674

METHOD AND APPARATUS FOR ADJUSTING THE LOOPER OPERATION LOCUS OF A SEWING MACHINE

Tetsuro Hirayama, Tokyo, Japan, assignor to Juki Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1974, Ser. No. 523,707
Claims priority, application Japan, Nov. 16, 1973, 48-132573
Int. Cl.² D05B *1/06*
U.S. Cl. 112—199 **7 Claims**



1. An apparatus for adjusting the looper operation locus of a sewing machine, comprising:

a. a shaft,

b. a rotary carriage integrally formed with the shaft,

c. a looper guide,

d. means for slidably fixably mounting the looper guide on the rotary carriage,

e. a looper guided and supported by the looper guide at an intermediate section thereof,

f. a reciprocally rotatable rocking arm having the looper connected thereto in the end part thereof,

g. a rotatable driving shaft,

h. a driving rod connected to the driving shaft at one end thereof and rocking forward and rearward, the driving rod being connected at its other end to the rocking arm to reciprocally rotate the arm, and

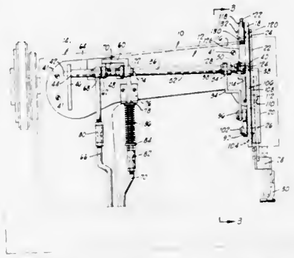
wherein the looper is held in the intermediate part and moves in its lengthwise direction while supported by the looper guide, the guide being movable and adjustable in a direction intersecting with the looper guiding direction with respect to the carriage.

3,952,675

SEWING MACHINE FEED CONVERSION APPARATUS

Elmer R. Thompson, 4712 Avenue Q, Lubbock, Tex. 79412

Filed Mar. 26, 1975, Ser. No. 562,209
Int. Cl.² D05B *27/04*
U.S. Cl. 112—212 **4 Claims**



1. Apparatus for attachment to a sewing machine having a bottom workpiece feed mechanism comprised of a feed dog positioned in the work supporting surface of said machine which is raised and lowered by the oscillating motion of a lifting shaft and moved in the direction of feed and returned in the opposite direction by the oscillating motion of a feed shaft, a vertically oscillated needle bar, and a presser foot attached to a presser bar for urging the workpiece being stitched against said work supporting surface and said feed dog, said apparatus converting said sewing machine to one having a top and bottom workpiece gripping feed mechanism whereby workpieces of extra thickness can be fed through said mechanism and stitched by said machine, the apparatus comprising:

a frame adapted to be attached to a side of said sewing machine;

a vertically positioned tubular member pivotally attached to said frame so that said member is free to move horizontally but not vertically;

a feed foot bar telescopically mounted within the lower end of said tubular member so that said feed foot bar is free to move vertically and is moved horizontally with the movement of said tubular member;

a feed foot attached to said feed foot bar and positioned above said sewing machine work supporting surface adjacent said feed dog;

bell crank means for converting vertical oscillating motion to horizontal oscillating motion pivotally attached to said frame and to said tubular member so that horizontal oscillating motion is imparted to said tubular member;

feed rod means adapted to be operably connected to said feed shaft of said sewing machine so that vertical oscillating motion corresponding to the oscillating motion of said shaft is imparted to said feed rod means;

means for transmitting the vertical oscillating motion of said feed rod means to said bell crank means attached to said frame and connected between said feed rod means and said bell crank means so that when said feed dog is moved in the direction of feed and returned by the oscillating motion of said feed shaft, said tubular member is moved horizontally in a like manner;

link means attached to said feed foot bar for imparting vertical oscillating motion thereto;

lift rod means adapted to be operably connected to said lifting shaft of said sewing machine so that vertical oscillating motion corresponding with the oscillating motion of said shaft but in reverse directions is imparted to said lift rod means;

means for transmitting the vertical oscillating motion of said lift rod means to said link means attached to said frame and connected between said lift rod means and said link means so that when said feed dog is raised and lowered by the oscillating motion of said lifting shaft, said feed foot bar and feed foot attached thereto are simultaneously lowered and raised respectively.

3,952,676

DISPENSING CONTAINER MANUFACTURING APPARATUS AND METHODS

Winston G. Rockefeller, Woodcliffe Lake, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 308,999, Nov. 24, 1972, Pat. No. 3,832,964. This application Apr. 16, 1974, Ser. No. 461,299
Int. Cl.² B21D *51/36*
U.S. Cl. 113—1 B **15 Claims**

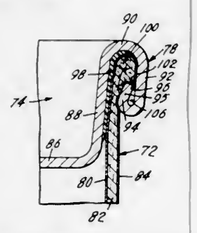
1. A method of making a collapsible tube body from a flat flexible sheet of composite metal-synthetic plastics material of predetermined dimensions that bears a finish coating on the side that is to be the outer surface of the tube body, which comprises the steps of positioning said sheet in a predetermined location across the mouth of an upwardly open forming die below a mandrel having a surface contour corresponding to the desired shape of the tube body with the longitudinal edges of the sheet substantially parallel to the mandrel axis, lowering the mandrel for clamping a longitudinally extending intermediate portion of said sheet against the mandrel surface with the side of said sheet that is to be the interior of said tube body contacting the mandrel surface and then displacing said mandrel and sheet downwardly into said forming die and wrapping said sheet substantially entirely around said mandrel with said longitudinal edges in predermined overlap, applying heat and pressure to said overlapped longitudinal edges while said mandrel holds the sheet in said die to form a longitudinally continuous body seam, and then removing the mandrel from said forming die and sliding the body off said mandrel.

3,952,677

CURLED CONTAINER BODIES, METHOD OF SECURING CLOSURES THERETO AND CONTAINERS FORMED THEREBY

William Herman Hartman, Rolling Meadows; Frank Bruno Pas, Carpentersville, and Joseph Lambert Godar, Wauconda, all of Ill., assignors to American Can Company, Greenwich, Conn.

Filed June 27, 1974, Ser. No. 483,761
Int. Cl.² B21D 51/26
U.S. Cl. 113—120 Y **4 Claims**



1. A method of securing a metal container end closure to the marginal open end portion of an open-ended metallic cylindrical container body having an integral bottom and a metal body wall having a marginal open end portion whose thickness is less than about 0.0057 inch, to form a hermetically sealed container capable of holding internal pressures of up to about 90 psi developed at elevated temperatures of up to 140°F., which comprises:

providing an open-ended metallic cylindrical container body having an integral bottom and a metal body wall having a marginal open end portion whose thickness is less than about 0.0057 inch,

forming an annular body curl of the marginal open end portion so that the curl has an edge which points toward the container body wall,

providing a metal container end closure having merging panel portions including a central panel, an annular substantially vertical countersink wall portion peripheral to the central panel, and a peripheral flange, and

hermetically securing the end closure to the curled marginal open end poriton of the body wall to form a container capable of holding internal pressures of up to about 90 psi developed at elevated temperatures of up to about 140°F. by

providing a sealant material between the end closure countersink wall portion and the container body wall,

bending the closure flange into a skirt and closure hook having an edge,

mechanically engaging and exerting a compressive force by an end portion of the closure hook substantially axially against an end portion of the body curl, and

axially compressing the body curl with the end portion of the closure hook to hermetically pressure-resistantly secure the end closure to the container body.

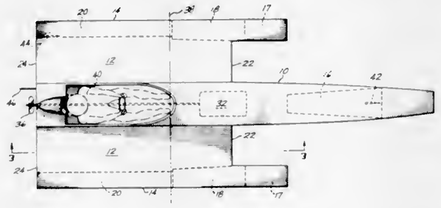
3,952,678

POWER BOAT

Paul H. Weston, 16422 NE. 29, Bellevue, Wash. 98008

Filed Jan. 27, 1975, Ser. No. 544,414
Int. Cl.² B63B 1/18
U.S. Cl. 114—66.5 S **3 Claims**

1. A power boat comprising a central, longitudinally extending, main body portion extending substantially the full length of the boat, having a rear end portion engaging the water when the boat is traveling on water, and having a stepped planing surface on its underside, which stepped surface is disposed forward of the center of gravity of the power boat; two side sponsons disposed parallel to each other, parallel to, and connected with, said main body portion and extending from substantially the stepped surface on the main body portion to the rear end portion of the boat, each side sponson having a forward stepped planing surface on its underside and disposed forward of the center of gravity of the power boat, and each having a rear stepped planing surface on its underside and disposed rearward of the center of gravity of the power boat, thereby providing five stepped planing surfaces on which the power boat may be supported while traveling on water; a power plant, propeller drive shaft, and propeller disposed in the main body section of the power boat, providing for travel



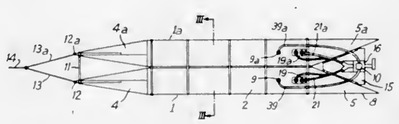
thereof, said propeller being located in close proximity to a transverse line coinciding with the rear end portions of the rear stepped planing surfaces on the side sponsons and having a circular path of operation, part of which is below the surface of the water supporting the boat and part of which is above such water surface; and a steering rudder disposed on the forward end bottom portion of the main body portion of the power boat, extending downwardly therefrom, and engaging the water when the boat is traveling on water.

3,952,679

FLEXIBLE MARINE TRANSPORT TANK

André Grihangne, Paris, France, assignor to Ste Superflexit, Courbevoie, France

Filed Nov. 29, 1973, Ser. No. 420,315
Claims priority, application France, Dec. 12, 1972, 72.44227
Int. Cl.² B63B 25/14
U.S. Cl. 114—74 T **12 Claims**



1. A floating flexible marine transport tank assembly having means for loading and unloading liquid cargo comprising at least two flexible elements of revolution longitudinally and transversely connected by flexible harnesses prestressed by the pressurizing of said flexible elements, said flexible elements maintaining their geometry to internal pressurization thereof.

3,952,680

ROLL STABILIZER FOR VESSELS AT REST

Edward N. Griffin, 213 S. Pacific, No. C, Oceanside, Calif. 92054

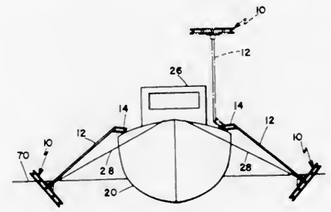
Filed Sept. 30, 1974, Ser. No. 510,241
Int. Cl.² B63B 43/14
U.S. Cl. 114—123 **13 Claims**

1. A roll stabilizer for reducing the swell induced rolling motion of a vessel in a body of water comprising:

a stabilizer disc means comprising a generally planer disc having a net buoyancy for floating said planer disc on a water surface and maintaining a major portion of said planar disc submerged,

pivot means secured to the vessel at a point spaced above the nominal water line of said vessel,

stabilizer arm means connected between said stabilizer disc and said pivot means for pivotal movement of said stabi-



lizer disc about a generally horizontal axis in response to the passage of a swell,

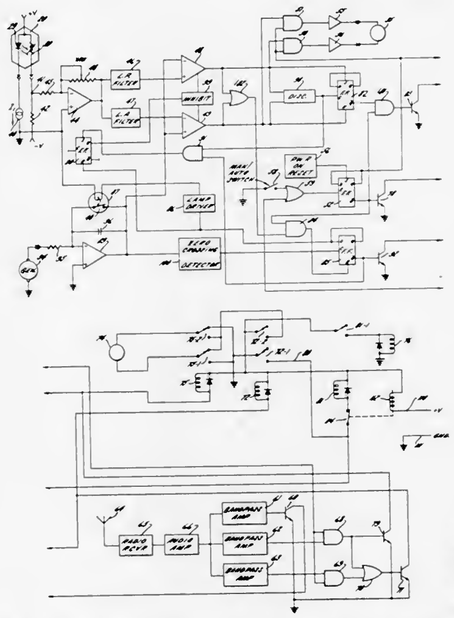
one of said stabilizer disc means being secured on each of the two opposite sides of the vessel.

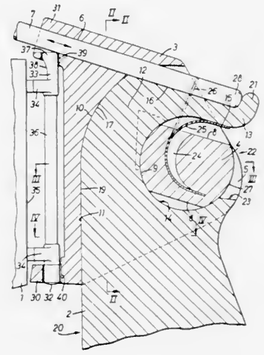
3,952,681

AUTOMATIC STEERING SYSTEM FOR VESSELS WITH A WIRELESS REMOTE CONTROL AND COURSE CHANGE CAPABILITY

Kenneth Tucker, Miami Lakes, Fla., assignor to Tucker Systems, Inc., Miami Lakes, Fla.

Continuation-in-part of Ser. No. 456,447, April 1, 1974, abandoned. This application May 27, 1975, Ser. No. 580,934
Int. Cl.² B63H 25/02
U.S. Cl. 114—144 A **29 Claims**





25. An automatic pilot for a vessel having a steering mechanism comprising in combination, means for producing a deviation signal dependent upon the amount of deviation between an actual heading and a selected heading, a reversible steering motor coupled to the steering mechanism, measuring means for measuring the amount and direction of steering motor rotation, detector means responsive to the deviation signal and to the measuring means for energizing the steering motor for rotation in a corrective direction and for reversing the direction of rotation of the steering motor after an amount of corrective rotation proportional to the deviation signal, means for disabling the detector means during said reverse rotation, and means coupled to the measuring means and responsive solely to the measured amount of steering motor rotation for deenergizing the steering motor when said steering mechanism is returned to a neutral position.

29. A method of steering a vessel having a helm comprising the steps of selecting a desired heading, measuring the amount of deviation of an actual heading from the selected heading, moving the helm in a corrective direction a distance proportional to the amount of deviation, measuring the amount of corrective helm movement, and disregarding said deviation while returning the helm in dependence upon the measured amount of corrective helm movement to its initial position less a small predetermined angle.

3,952,682

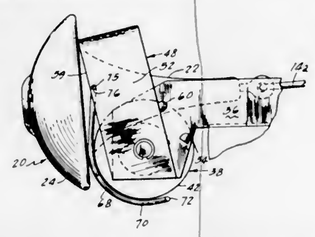
STEERING ASSEMBLY FOR A MARINE CRAFT

Michael J. Ingham, Epsom, England, assignor to Richard Marine Limited, Twickenham, England

Filed Dec. 2, 1974, Ser. No. 528,628
Claims priority, application United Kingdom, Dec. 4, 1973, 56244/73
Int. Cl.² B63H 25/06
U.S. Cl. 114—162 **19 Claims**

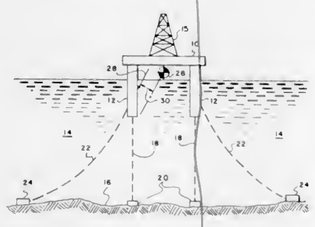
1. A marine craft steering assembly comprising a rudder stock having an aft edge and a forward edge adapted to be mounted on a craft for substantially horizontal steering movements, said stock having an internal space extending fore-and-aft with an opening through one of said edges of said stock and an inner wall which is spaced inwardly from the other edge of said stock, said inner wall being curved throughout at least a part of its extent with said curved part facing said opening and extending vertically with respect to and above said space; a pivot boss on said stock traversing said space horizontally; and a rudder blade having an internally curved surface pivotally mounting said blade on said boss, the walls of said internal space and said pivot boss defining a curved passage within said stock into which a part of said blade is insertable through said opening for mounting said blade pivotally on said boss.

3,952,683
ANCHOR DAVIT
Charles Nelson Eudy, P.O. Box 129, Houston, Miss. 38851, and Charles Ellis Eudy, 219 S. Park Drive, Jackson, Miss. 39211
Continuation-in-part of Ser. No. 430,098, Jan. 2, 1974, abandoned. This application Apr. 28, 1975, Ser. No. 572,208
Int. Cl.² B63B 21/22
U.S. Cl. 114—210 10 Claims



2. A davit for guiding the anchor line and supporting a boat anchor secured to said line which comprises a bracket having a rear end adapted to be secured to a boat and a front end adapted to extend outwardly beyond the side of the boat and including a pair of spaced sides, a shaft spanning the space between said spaced sides and mounted at its ends in said sides, a roller between said sides mounted on said shaft, a U-shaped strap having side legs overlapping said sides and a bight portion spaced outwardly from said roller, means swingably mounting said side legs of the strap on said sides of the bracket, a first stop limiting the downward swinging movement of the strap to hold the bight portion of the strap in front of the front end of the bracket, a second stop limiting the upward swinging movement of the strap to a downwardly disposed angle with respect to a vertical plane through the axis of the shaft whereby said strap will drop by gravity from the second stop to the first stop, said davit adapted to receive an anchor line over the bracket, through the strap, and around the roller to an anchor, said strap guiding said line over the roller and swingable from its first stop position to its second stop position by the anchor when the anchor line pulls the anchor to a stowing position on the roller and said second stop holding the strap to maintain the anchor in a gravitationally responsive stowed position so that when the anchor line is released the anchor will drop by gravity with the strap following the anchor to the first stop position for guiding the anchor line.

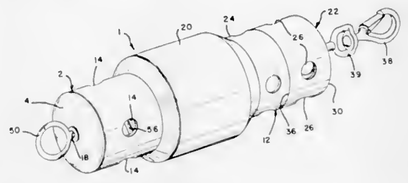
3,952,684
ADJUSTABLE MOORING SYSTEM
Hobart D. Ferguson, Richardson, and George W. Morgan, Dallas, both of Tex., assignors to Sun Oil Company (Delaware), Dallas, Tex.
Filed May 21, 1974, Ser. No. 472,032
Int. Cl.² B63B 21/50
U.S. Cl. 114—230 2 Claims



1. System for mooring a floating platform to the floor of a body of water, comprising: first anchors on the floor at a plurality of locations about the platform and laterally displaced therefrom; attachment devices vertically positionable relative to said platform and positioned about the periphery of the platform, said devices corresponding in number to the first anchors; first mooring lines connected between the first anchors and the attachment devices in a catenary configuration; second mooring lines connected to the platform about its periphery and extending downwardly to the floor in a parallelogram configuration; and anchors, corresponding in number to the second mooring lines, on the floor and connected to said second mooring lines.

2. A system for mooring a buoyant body to the floor of a body of water, comprising: a plurality of mooring lines connected between the buoyant body and the floor in a catenary configuration, said connection to the buoyant body being vertically adjustable relative to said body; and a plurality of mooring lines connected between the buoyant body and the floor in a parallelogram configuration.

3,952,685
TOW ROPE DEVICE
Richard Lewis Hollenbush, 709 Benton St., Harrisburg, Pa. 17111
Filed July 30, 1975, Ser. No. 600,490
Int. Cl.² B63B 21/56
U.S. Cl. 114—235 R 4 Claims

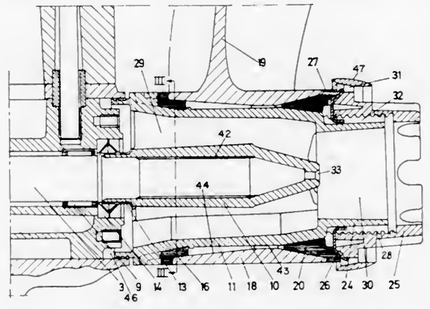


1. An aquatic tow rope shock absorbing device comprising:
an elongated first cylindrical housing having a first end and a reduced externally threaded section,
a cylindrical sidewall between said first end and said threaded section provided with drain apertures therein,
a removable cap threadably received over said threaded section,
an end wall of said cap having an eye means projecting therefrom for connection to an aquatic tow rope,
a cylindrical sidewall of said cap provided with spaced drain apertures therein,
a piston rod projecting through said first end and provided with an eye means for connection to an aquatic tow rope,
said piston rod having a coil spring thereover,
a piston on said piston rod and removable therefrom for assembly of said spring over said piston rod, and
a collar of flotation material encircling and fixedly secured on said first cylindrical portion between said drain apertures and said threaded section, said spring being visible through said drain apertures and said apertures serving as gripping means during assembly or disassembly of said cap on said housing.

3,952,686
SHAFT PROTECTING AND PROPELLER MOUNTING SHEATH
Heinz Pichl, Bergtallsvagen 3, 75256 Uppsala, Sweden
Filed Dec. 11, 1974, Ser. No. 531,716
Int. Cl.² B63H 1/20
U.S. Cl. 115—17 12 Claims

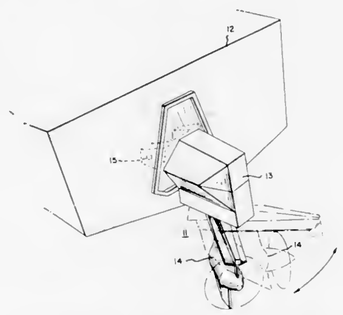
1. In an outboard power leg for a boat comprising an underwater propeller shaft housing with a propeller shaft extending from a driven portion in said housing through an opening in said housing to a rearward portion for mounting a propeller

outwardly of said housing, said shaft being of a material subject to sea water corrosion, a sheath of corrosion resistant material fixed on and enclosing said rearward portion, hollow hub means of corrosion resistant material outwardly surrounding said sheath, spokes mounting said hub means on said sheath, said hub means and sheath defining an exhaust gas passage between said spokes, a propeller comprising a hollow



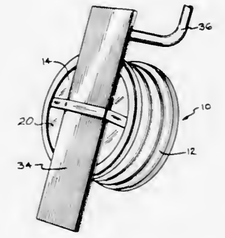
hub sleeve and blades extending outwardly therefrom, rubber or the like coupling means surrounding said hub means, said hub sleeve being engaged on and mounted by said coupling means, a hollow nut threadedly engaged on said hollow hub means rearwardly of said hub sleeve for retaining said sleeve on said coupling means, and means for directing engine exhaust gas rearwardly into said passage.

3,952,687
MARINE DRIVE
Alan Brownlie, Skaneateles, and Lewis J. Daly, E. Syracuse, both of N.Y., assignors to American Challenger Corporation, Fulton, N.Y.
Continuation of Ser. No. 416,228, Nov. 15, 1973, abandoned. This application May 5, 1975, Ser. No. 574,620
Int. Cl.² B63H 5/12
U.S. Cl. 115—41 R 14 Claims



13. An outboard drive for a marine engine disposed within a boat, having a transom, comprising:
a rigid housing adapted to extend through an aperture in the transom and having a forward end and having a stern end adapted to be coupled to the transom, said housing having an aperture in the forward end thereof said housing further including a portion which is normally disposed below the water line of the boat, said portion being watertight;
a drive shaft extending through said aperture and adapted to be connected to said engine;
an input shaft disposed generally parallel to the path of motion of said boat when said drive is in its normal position;
a vertical shaft connected to said input shaft and disposed substantially transverse to said path when said drive is in its normal position;
an upper unit disposed within said housing and mounted thereto by pivot means by which said upper unit may be rotated about a substantially horizontal axis disposed forward of said transom, said upper unit enclosing a transmission connected between said input shaft and said vertical shaft;
a flexible boot closing the stern end of said rigid housing and having an outer periphery coupled in watertight relationship about said housing and an inner periphery coupled in watertight relationship to said upper unit;
a propeller shaft connected to said vertical shaft;
a pivot joint between said drive shaft and said input shaft, said pivot point being disposed in said drive at a pivot point which is inside said boat when said drive is mounted on said boat, said drive being rotatable out of its normal position about said pivot point.

3,952,688
ACCELERATOR MOVEMENT INDICATOR
Henry H. Merriman, 751 W. Washington Ave., Jackson, Mich. 49203
Filed May 16, 1974, Ser. No. 470,418
Int. Cl.² B60Q 5/00
U.S. Cl. 116—28 R 10 Claims



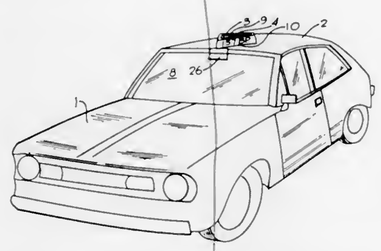
1. An accelerator foot pedal movement indicator for vehicle internal combustion engine foot pedal accelerators comprising, in combination, a vibratable reed for producing a signal discernable by the vehicle operator, a compressible bellows operatively associated with said reed responsive to depression of the accelerator foot pedal for activating said reed upon depression of the foot pedal at and above a predetermined rate of movement, and third means for attaching said bellows to the foot pedal for operation thereby during foot pedal depression, said bellows being operative to actuate said reed upon the foot pedal being depressed at said predetermined rate of movement.

3,952,689
VEHICLE REGISTRATION AND VELOCITY DISPLAY DEVICE
Pierre-Rene Joubert, Dollard des Ormeaux, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Mar. 12, 1975, Ser. No. 557,676
Int. Cl.² B60Q 1/54
U.S. Cl. 116—57 2 Claims

1. A vehicle registration and velocity display device for a vehicle having a roof, a windshield and a registration number, said display device comprising
a housing mounted on a vehicle and having a top substantially parallel the roof of the vehicle and a plurality of

sides extending substantially perpendicularly between the top of the housing and the roof of the vehicle, said housing being positioned on the roof of the vehicle at the front thereof adjacent the windshield;

translucent visual indicating means on the top and each of the sides of the housing visually indicating the registration number of the vehicle;



lamp means in the housing for illuminating the indicating means, said lamp means producing a plurality of colors corresponding to the speed of the vehicle; and

a light conducting member extending from the housing over part of the windshield for indicating to an operator of the vehicle the color of the lamp means and therefore the speed of the vehicle.

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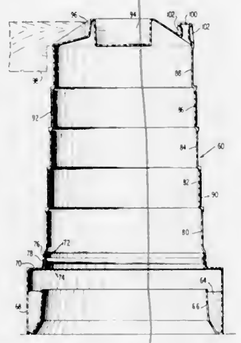
HIGHWAY BARRICADE

Rudolph R. Rizzo, Longwood, Pa., and Gabriel L. Julian, Hockessin, Del., assignors to Flexicade Ltd., Elsmere, Wilmington, Del.

Continuation-in-part of Ser. No. 218,758, Jan. 18, 1972, abandoned. This application Aug. 28, 1972, Ser. No. 284,186

Int. Cl.² E01F *9/01*; **G02B** *5/122*

U.S. Cl. 116—63 P **5 Claims**



1. A highway barricade comprising

a main body having upright sidewalls symmetrically arranged about a central vertical axis, said sidewalls having opposed portions horizontally spaced about 2 feet apart, said sidewalls converging upwardly toward said axis to permit nesting of a plurality of identical main bodies,

weighting means connected to a lower portion of the main body to stabilize the barricade and prevent its tipping when subjected to horizontally directed forces, said weighting means being a trough substantially coextensive with the sidewalls for receiving a weighting material, said trough being open upwardly to the interior of the barricade and having an inner wall inclined upwardly and inwardly, with the extent of inward extension of said inner wall being less than that which would contact the entire periphery of an identical barricade nested therewithin, and a stop means for supporting an identical unit nested thereon to prevent wedging together of the sidewalls.

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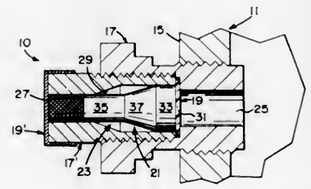
FLUID PRESSURE SENSOR DEVICE

John Robert Peltz, and Nikolaus A. Szeverenyi, both of Warren, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jan. 6, 1975, Ser. No. 538,546

Int. Cl.² G08B *1/04*; **F16K** *37/00*

U.S. Cl. 116—65 **4 Claims**



1. A sensor device for providing an indication when the fluid pressure within a container exceeds a pre-established level, said sensor device comprising:

a. a housing member adapted for being positioned within a wall of said container, said housing member defining a chamber having a first portion in communication with said fluid pressure within said container, a second portion in communication with the environment substantially about said container, and a tapered wall portion positioned between said first and second portions;

responsive means secured to said housing relative to said second portion of said chamber for being dislodged only when said fluid pressure within said container exceeds said pre-established level; a piston actuation member sealingly and retainedly located between oppositely disposed ends of the first and second portions of said chamber for moving within said chamber of said housing member and providing an indication only when said fluid pressure exceeds said preestablished level, said piston actuation member having first and second opposing end portions and a centrally located tapered portion, said second opposing end portion dislodging said responsive means and thereafter extending from said housing to provide said indication when said piston actuation member moves within said chamber, said tapered portion mating with said tapered wall portion of said chamber to provide a seal between said first and second portions of said chamber upon completion of said movement of said piston actuation member within said chamber.

3,952,692

TEMPERATURE CHANGE SENSING DEVICE

Edwards A. Griggs, 63 W. McClellan Ave., Livingston, N.J. 07039

Filed July 30, 1975, Ser. No. 600,411

Int. Cl.² G08B *7/02*, *21/00*

U.S. Cl. 116—102 **10 Claims**

1. A temperature sensing device which comprises:

a. a first disc having at least one of a first cooperative coupling disposed about the surface thereof;

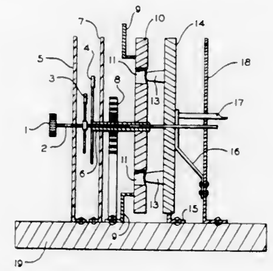
b. a second disc having at least one of a second cooperative coupling disposed about its surface;

c. a first shaft fixably attached to said first disc at its center and extending axially therefrom;

d. means fixably attached to said first shaft for translating changes in ambient temperature into rotational movement of said shaft;

e. a second shaft fixably attached to said second disc;

f. means for rotating said second shaft an amount equal to a desired temperature change, said first and second disc axially disposed and oriented relative to one another such that said first and second cooperative couplings align themselves when said means for translating changes in



ambient temperature rotates said first shaft an amount proportional to the desired temperature change;

g. biasing means for urging said second disc axially towards said first disc when said first and second cooperative couplings are aligned; and

h. alarm trip means responsive to the movement of said second disc towards said first disc.

3,952,693

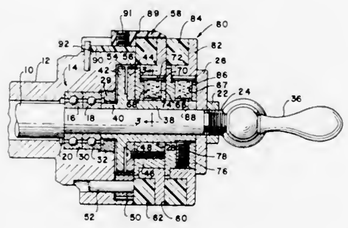
MACHINE TOOL DIAL ASSEMBLY

Hubert J. Parsons, Belleair Beach, Fla., and Charles D. Sherwood, Elmira, N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Aug. 20, 1974, Ser. No. 498,976

Int. Cl.² B23Q *17/00*

U.S. Cl. 116—115.5 **21 Claims**



1. A machine tool dial assembly comprising:

a. a rotatable shaft,

b. a first frictionally adjustable indicator dial having indicia in a first scale thereon representative of linear displacement, said dial being positioned around a said shaft,

c. connecting means between said shaft and said dial for rotating said dial in unison with said shaft,

d. said connecting means including a first spring biased friction shoe urged into frictional contact with said dial,

e. a second frictionally adjustable indicator dial having indicia in a second scale thereon representative of linear displacement, said second dial being positioned around said shaft,

f. gearing means connected between said shaft and said second dial for rotating said second dial through more or less than one revolution as said first dial rotates through one revolution,

g. said gearing means including a second spring biased friction shoe urged into frictional contact with said second dial,

h. said gearing means including first and second externally toothed gears and third gear means in intermeshing engagement with said first and second gears.

3,952,694

MARINE SIGNALLING DEVICE

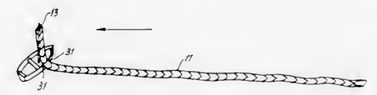
Ean Lawrence McDonald, 48 Ord St., West Perth, Australia

Continuation-in-part of Ser. No. 384,421, Aug. 1, 1973, abandoned. This application Nov. 15, 1974, Ser. No. 524,278

Claims priority, application Australia, Aug. 4, 1972, 58668/73

Int. Cl.² B63B *45/00*

U.S. Cl. 116—124 B **13 Claims**



1. A signalling device for indicating the position of a boat in the water comprising a buoyant member adapted to be attached to the boat and being of a color contrasting with that of the sea, the buoyant member being of a length of sheeting which has a specific gravity of less than one and which is rolled or folded to occupy a small space for storage or transport and is adapted to unroll or unfold in the water, drag means, said sheeting including a free end and an end adapted to be attached to the boat, said drag means being operatively associated with said free end so that when in use will unroll or unfold and stream from the boat by remaining upwind from the boat, the length of said sheeting substantially greater than that of said boat.

3,952,695

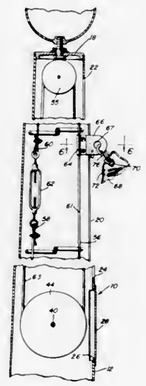
SLOTTED TUBULAR FLAGPOLE

Otto A. Vollstedt, 5415 Palestine Ave., NW., Albany, Oreg. 97321

Filed Oct. 30, 1974, Ser. No. 519,285

Int. Cl.² G09F *17/00*

U.S. Cl. 116—173 **4 Claims**



1. A flagpole construction including a tubular staff, said staff being provided with a longitudinal slot extending therealong throughout at least a major portion of the length of said staff, a plurality of bracing structures spaced along the slotted portion of said staff internally thereof and rigidly bracing the wall portions of said staff disposed on opposite sides of said

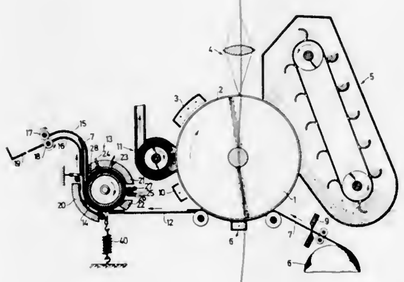
slot relative to remote peripheral portions thereof, generally aligned first and second pulley means journaled in opposite end portions of said staff for rotation about transverse axes, and an endless tension member trained about and frictionally engaged with said pulley means and including one reach thereof extending between said pulley means spaced closely inwardly of and extending along said slot, follower means attached to said one reach for movement therewith and including portions thereof spaced along said one reach and slidingly engaged in and projecting through said slot, and first and second anchor means carried by said follower means, disposed exteriorly of said staff and spaced along the latter for supportive engagement of the upper and lower inner corner portions of a flag therewith, at least one of said pulley means including drive input means adapting that pulley means to have rotational torque applied thereto, each of said bracing structures comprising a pair of crossed rod members generally bisecting the interior of said staff and having their opposite end portions anchored to the wall portions of said staff with which they are aligned, one pair of adjacent ends of each pair of crossed rod members being substantially equally spaced from and disposed on opposite sides of said slot, said one reach of said tension member being generally centered between said adjacent crossed rod member ends.

3,952,696

FIXING DEVICE FOR ELECTROPHOTOGRAPHIC COPYING APPARATUS

Wolfram Saupe, Mammolshain, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 24, 1974, Ser. No. 491,350
Int. Cl.² G03G *15/20*
U.S. Cl. 118—60 **15 Claims**



1. Contact fixing means adapted for use in an electrophotographic apparatus to fix an electrophotographically produced toner image on an image carrier, comprising

a. a web member adapted for continuous movement;

b. a continuous fixing layer of electrodonductive material comprising silicone rubber operable to define a heatable contact surface;

c. insulating means for mounting said electroconductive layer in electrically insulated relation on said web member; and

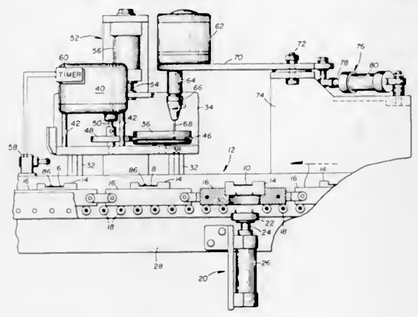
d. means for connecting said electroconductive fixing layer with a source of electrical energy, thereby to heat said fixing layer, said connecting means including a pair of contact means engaging the edges of said fixing layer, respectively, throughout substantially the entire length thereof.

3,952,697

SPOT-COATING APPARATUS

Gerry L. Bonkoske, Skokie, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Oct. 16, 1974, Ser. No. 515,389
Int. Cl.² B05C *1/02*
U.S. Cl. 118—263 **6 Claims**



1. An apparatus for dispensing a controlled quantity of solder cream on a workpiece at a predetermined location comprising:

a support for a said workpiece;

an elongated member having a rotational axis;

means coupled to said member for slowly rotating said member about said axis;

a container having a continuous surface defining an open cavity for retaining a stored amount of the solder cream;

means for selectively positioning one end of said elongated member from a first position in surface contact with the solder cream contained within said container to a second position removed from said container whereat the solder cream adhering to said elongated member is in contact with the workpiece thereby depositing a predetermined quantity of the solder cream upon the workpiece;

means for repositioning said one end of the elongated member in surface contact with the solder cream; and

means for repositioning said container after removal of said elongated member from the solder cream so that said elongated member when reintroduced into the solder cream encounters adjacent portions of the solder cream at each successive insertion thereby assuring that a controlled quantity of solder cream will adhere to said elongated member upon removal therefrom.

3,952,698

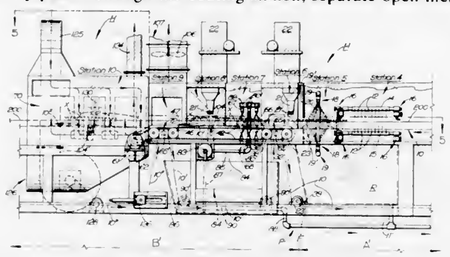
CAN TREATING SYSTEM

Arnold D. Beyer, Newark; Charles R. Crockett, and Patrick G. Mitchell, both of Oakland, all of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Continuation-in-part of Ser. No. 401,401, Sept. 27, 1973. This application June 19, 1974, Ser. No. 480,807
Int. Cl.² B05C *7/02*
U.S. Cl. 118—314 **25 Claims**

1. A system for treating a closed end thin walled metal container body and the like comprising a plurality of treatment stations wherein a plurality of metal container bodies are simultaneously selectively advanced in substantially the same inverted position and with their closed ends up to and through the various treatment stations, means for applying water dilutable wash and rinse solutions to and for removing selected amounts of said wash and rinse solutions from the surfaces of the container bodies as the bodies pass through certain stations of the system, means for directing a free flowing coating material at relatively high volumes and in the form of full cone overlapping flood-like sprays simultaneously against substantially all inside and outside surface portions of at least one metal container body as it is advanced through another station

of said system, said coating material directing means being arranged to direct said overlapping sprays simultaneously against substantially all of the said surface portions of the container body in such fashion as to effect a hydro-fluidic balancing and stabilization of the container body in a predetermined coating material receiving position by selective fluid pressure contact of the closed end of the container body as the body passes through the coating station, separate open mesh



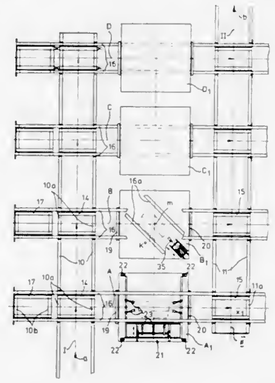
conveyors for supporting and moving a container body in substantially the same inverted position and with its closed end up through the stations for applying the wash and rinse solutions and the coating material applying station, and means interposed between said conveyors for transferring the container body from one open mesh conveyor to the other without effecting any material change in the said inverted position of the container body.

3,952,699

METHOD AND APPARATUS FOR TREATING A WORKPIECE AT A TREATING STATION

Heinz Dürr, Stuttgart-Feuerbach, and Klaus Gäfgen, Hemmingen, both of Germany, assignor to Otto Durr Stuttgart-Zuffenhausen, Germany

Filed Mar. 19, 1974, Ser. No. 452,552
Int. Cl.² B05C *11/12, 5/00;* **B05B** *13/04*
U.S. Cl. 118—315 **12 Claims**



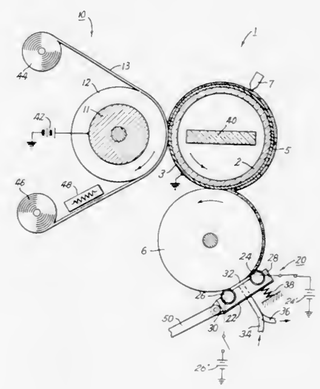
1. An apparatus for treating a workpiece at treating stations, particularly for applying a surface coating to a vehicle body or the like, comprising a first elongated conveyor defining a first path for travel of a suspended workpiece; a second elongated conveyor defining a second path transversely spaced from said first path for travel of a suspended treated workpiece; a plurality of treating stations intermediate said paths and spaced from one another longitudinally of said paths; and a plurality of guide tracks, each extending from said first to said second conveyor at a respective one of said treating stations, at least some of said guide tracks are provided at the respectively associated treating station with a track station which is turnable about a vertical axis, so that a workpiece suspended from said track section is turnable about said axis with reference to the respective treating station.

3,952,700

LIQUID APPLICATOR

William S. Little, Jr., Rochester, and Robert H. Townsend, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 87,720, Nov. 9, 1970, Pat. No. 3,703,459. This application Aug. 30, 1972, Ser. No. 284,803
Int. Cl.² G03G *15/10*
U.S. Cl. 118—637 **6 Claims**



1. An apparatus adapted to supply a liquid to a surface comprising:

i. a backing member having leading and trailing endwalls and opposed sidewalls;

ii. endwall sealing means affixed to said backing member for effecting a seal with the surface to which a liquid is to be applied comprising one sealing member situated proximate the leading endwall, and another member situated proximate the trailing endwall; said latter sealing member being adapted to effect a seal with the surface to which a liquid is to be applied wherein at least the endwall sealing member affixed to the backing member proximate the leading endwall thereon is a roller;

iii. sidewall sealing means for effecting a seal with the surface to which a liquid is to be applied affixed to the sidewalls of said backing member and extending to said endwall sealing member;

said backing member, the trailing endwall sealing member and said sidewall sealing means cooperating with the surface to which a liquid is to be applied to define a chamber therebetween adapted to contain a liquid;

iv. means for supplying liquid for said chamber;

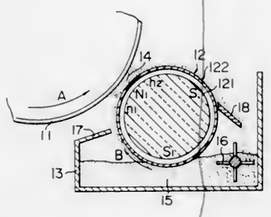
v. means for regulating the contact pressure of said apparatus with the surface to which a liquid film is to be applied, whereby upon relative motion between said apparatus and said surface, a uniform film of liquid is applied to said surface only between the leading endwall sealing member and the surface; and

vi. a power source connected to at least one endwall sealing member to electrically bias said sealing member.

3,952,701
ELECTROSTATIC DEVELOPING APPARATUS

Keitarou Yamashita, Kamisato, and Takafumi Aoyama, Kumagaya, both of Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Nov. 5, 1974, Ser. No. 521,091
Int. Cl.² G03G *15/08*
U.S. Cl. 118—637 **10 Claims**



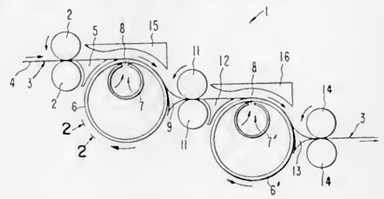
1. An electrostatic developing apparatus comprising:
an electrostatic copy paper having an electrostatic latent image formed thereon according to an electrophotographic process;
a hollow, non-magnetic cylinder which is rotatable and disposed in the close vicinity of said electrostatic copy paper;
a permanent magnet stationary within said hollow, non-magnetic cylinder, said permanent magnet having a plurality of elongated magnetic poles of the same polarity extending in the axial direction of said non-magnetic cylinder, in a portion adjacent to said electrostatic copy paper, said elongated magnetic poles being closely located whereby the lines of the magnetic forces produced from said elongated magnetic poles repel against each other and said elongated magnetic poles serve as developing magnetic poles;
means for supplying developer to a periphery of said hollow, non-magnetic cylinder;
means for moving said electrostatic copy paper in relation to said hollow non-magnetic cylinder; and
means for rotating said hollow non-magnetic cylinder about its center around the outer periphery of said fixed permanent magnet;
whereby a magnetic brush having a large width in the circumferential direction is formed with developer on such a portion of said hollow, non-magnetic cylinder which faces said electrostatic copy paper, by means of the developing magnetic poles on said non-magnetic cylinder, and then the surface of said electrostatic copy paper is rubbed with said magnetic brush, as said electrostatic copy paper moves, thereby developing said electrostatic latent image to a visible image.

3,952,702
ELECTROPHOTOGRAPHIC LIQUID TONER DEVELOPMENT APPARATUS

Raymond L. Levy, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

Continuation of Ser. No. 127,683, March 24, 1971, abandoned. This application Dec. 9, 1974, Ser. No. 530,783
Int. Cl.² G03G *15/10*
U.S. Cl. 118—637 **6 Claims**

1. Apparatus for developing a charge image on the surface of a flexible recording medium through the use of a dielectric development fluid comprising, in cooperative combination:
a. a perforated development electrode having an upwardly-facing surface,
b. means for positioning a charge image bearing surface of a recording medium above and facing downwardly so as to be in physical contact with said upwardly-facing surface of said development electrode such that the portion of said recording medium in physical contact with said development electrode conforms directly to the configuration of the portion of said development electrode with which it is in contact, said means for positioning being free of the surface of said recording medium opposite said charge image bearing surface thereof over the portion of said recording medium adjacent said development electrode so that in absence of said recording medium, said means will not become wet by flow of said dielectric development fluid whereby said opposite surface of said recording medium will always remain dry, even if continuity thereof is interrupted,
c. means for continuously causing said dielectric development fluid to flow upwardly through the perforations in

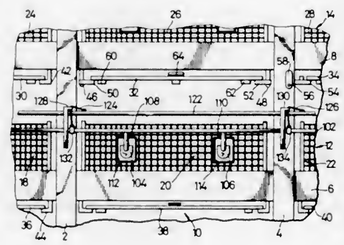


said development electrode and against said charge image bearing surface of said recording medium, when present, so as to tend to form a fluid boundary layer on said recording medium, said development electrode, said recording medium, and said means for positioning all positioned to be free of said fluid in absence of said dielectric development fluid flow, and
d. means for causing relative motion between said development electrode and said recording medium so as to cause the surface of said development electrode to remove continuously and substantially and replenish said boundary layer of said dielectric development fluid from between said development electrode and said recording medium.

3,952,703
BATTERY-LIKE ARRANGEMENT OF CAGES FOR REARING AND TRANSPORTING POULTRY

Arthur Erfeling, Cuxhaven-Altenwalde, Germany, assignor to Lohmann Apparatebau GmbH, Altenwalder Chausse, Germany

Filed Feb. 3, 1975, Ser. No. 546,752
Claims priority, application Germany, Aug. 16, 1974, 2439368
Int. Cl.² A01K *31/00*
U.S. Cl. 119—17 **11 Claims**

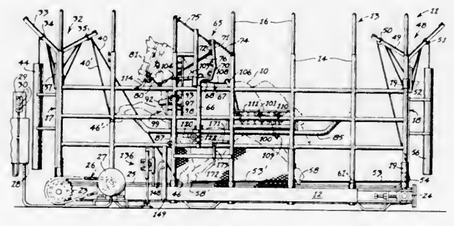


1. A battery of cages for rearing and transporting poultry comprising, in combination, a battery frame including a plurality of vertical support columns, a plurality of vertically spaced horizontal carriers mounted upon said columns defining a plurality of stories, a plurality of separate cage units supported upon said carriers at predetermined positions, said cage units each having an open top and a marginal height less than the vertical spacing of said carriers and substantially corresponding to the transporting height of said cage units, a plurality of separate covers to selectively close said cage units open tops, and cover holding fittings defined on said battery frame adjacent each of said predetermined positions holding a cover vertically spaced above a cage unit open top whereby a cover may be readily placed upon a cage unit open top to close said cage units for transport.

3,952,704
HEAD-SET APPARATUS FOR TRAINING HORSES

Joe A. Webb, E. Lincoln St., Searcy, Ark. 72143

Division of Ser. No. 364,632, May 29, 1973, Pat. No. 3,824,961. This application July 18, 1974, Ser. No. 489,528
Int. Cl.² A01K *15/00*
U.S. Cl. 119—29 **14 Claims**



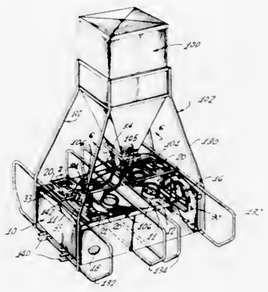
1. An apparatus for training a horse comprising:
a. an elongated enclosure frame for receiving a horse, said frame comprising opposed side frame members and front and rear ends,
b. a head-set device comprising an arm member and at least one linear member, each linear member having first and second end portions,
c. means mounting said arm member on said side frame member to project from said side frame member transversely over a horse within said enclosure frame and behind the horse's head, in operative position, said mounting means mounting said arm member for fore-and-aft movement with the horse's head relative to said enclosure frame,
d. first connector means detachably connecting each of said first end portions to the head harness worn by a horse within said enclosure frame, and
d. second connector means detachably connecting each of said second end portions to said arm member for holding the horse's head in a predetermined attitude.

3,952,705
ANIMAL OPERATED DEVICE FOR COORDINATED FEEDING OF LIQUID AND GRAIN SUPPLEMENT TO LIVESTOCK

Bill B. Witmer, Sioux Falls; Mylo A. Hellickson, Brooking, and David B. Goos, Esteline, all of S. Dak., assignors to Farmers Union Grain Terminal Association, St. Paul, Minn.

Filed Apr. 9, 1975, Ser. No. 566,229
Int. Cl.² A01K *5/00*
U.S. Cl. 119—51 R **12 Claims**

1. In a liquid and solid grain feeder having a liquid feed container, a closure for said liquid feed container and at least one lick wheel rotatably mounted therein with a portion of the circumference of said lick wheel extending through an opening in said closure, the improvement which comprises;
means for providing an adjustable opening over the said portion of said lick wheel extending through said opening of said closure;
means for adjusting said lick wheel, along a substantially vertical axis, to a predetermined spacing with respect to said means for providing said adjustable opening;
a drive means fixedly mounted to said vertically adjustable lick wheel and including a drive shaft rotatable in proportion to the rotation of said drive means;
a solid feed bin;

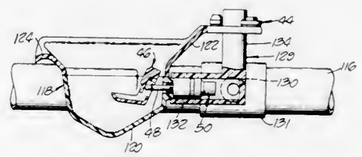


feed conveyor means, communicating with said solid feed bin, and operatively connected to said drive shaft to rotate in proportion to the rotation of said drive shaft;
means to vary the amount of solid feed fed to said conveyor means independently of the rate of rotation of said drive shaft;
a feed trough; and
feed outlet means leading from said conveyor means to said feed trough.

3,952,706
POULTRY WATERING DEVICE

Harold W. Hart, Glendale, Calif., assignor to H. W. Hart Mfg. Co., Glendale, Calif.

Division of Ser. No. 342,387, March 19, 1973, Pat. No. 3,870,022. This application Dec. 16, 1974, Ser. No. 532,764
Int. Cl.² A01K *39/02*
U.S. Cl. 119—75 **3 Claims**



1. A poultry drinking cup comprising:
a cup body having a vertical axis and a water input opening;
means to connect said cup body to a water feeder line for receipt of water by said cup body through said input opening;
valve means to control the flow of water through said input opening into said cup body;
means actuatable by poultry using the drinking cup to control said valve means and to admit water into said cup body on the demand of the poultry;
an outwardly-flared, upwardly-directed skirt on said cup body positioned to increase the drinking area of the cup and to reduce the incidence of water spillage from the cup body during usage;
said skirt having a straight upper edge surface positioned in a plane transverse to the vertical axis of said cup body;

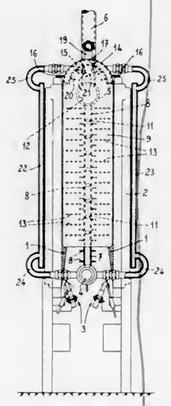
a spout formed at the upper edge surface of said skirt;
said spout extending outwardly from said skirt in a generally transverse direction with respect to the vertical axis of said cup body, and
said spout extending outwardly from said skirt for a sufficient distance to divert overflowing water away from said cup body.

3,952,707

HOT-FLUID GENERATOR USING CATALYTIC COMBUSTION

André Brulfert, 6 rue des Peintres Parrocel, Avignon, France

Filed Dec. 18, 1974, Ser. No. 533,811
Int. Cl.² F22B *7/00*
U.S. Cl. 122—367 R **13 Claims**



1. A hot-fluid generator comprising:
at least two vertical catalyst elements having spacedly juxtaposed broad surfaces for the combustion of a hydrocarbon fuel to generate heat;
a thin hollow vertical panel forming a main vessel and composed of continuous heat-conductive walls interposed between and substantially coextensive with said surfaces;
a supply pipe below said vessel and communicating therewith for supplying a fluid to said vessel at the bottom thereof; and
a dome-shaped vessel lying above said main vessel and communicating therewith while overlying the space between said catalyst elements, said dome-shaped vessel having a downwardly concave wall formed with inwardly projecting fins, and
a distribution pipe above said vessel and communicating therewith for withdrawing heated fluid from said vessel, said fluid passing in a continuous sheet through said main vessel between said elements.

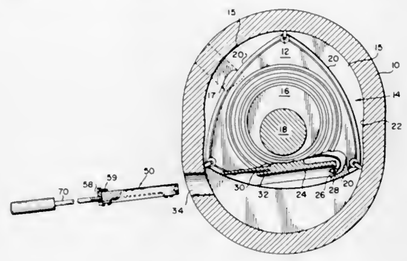
3,952,708

ROTOR MOUNTED SPARK PLUG FOR ROTARY ENGINE

Harvey A. Burley, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1973, Ser. No. 406,800
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl. F02b *53/12*
U.S. Cl. 123—8.09 **5 Claims**

1. In a rotor mounted spark plug for a rotary combustion engine, the engine comprising a housing having a cavity, a rotor disposed in said cavity, said rotor having a plurality of adjoining peripheral faces, an output shaft rotatably supported by said housing and having an eccentric rotatably supporting said rotor, said rotor peripheral faces and said housing cooperatively providing a plurality of variable volume working chambers spaced around said rotor that move with said rotor within said housing, intake passage means periodically connected to said working chambers as said rotor moves, exhaust passage means periodically connected to each of said working chambers as said rotor moves; the improvement comprising: said rotor peripheral faces each having an elongated spark plug receiving recess extending laterally thereacross, an elongated



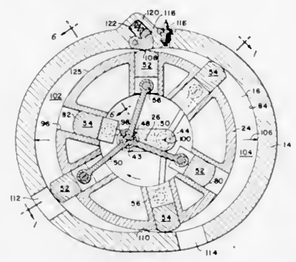
spark plug assembly mating with and being slidably and removably positioned in said recess and having one or more spaced spark gaps, and means releasably retaining said spark plug in said recess during engine operation, said means being operable to release said spark plug for slidaale removal and insertion of said spark plug assembly out of and into said laterally extending recess through said exhaust passage means.

3,952,709

ORBITAL VANE ROTARY MACHINE

John W. Riddel, Fenton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 23, 1974, Ser. No. 517,211
Int. Cl.² F02B *53/04*
U.S. Cl. 123—8.31 **3 Claims**



1. A rotary internal combustion engine comprising a housing having a cavity, a first half of said cavity being in the form of a segment of a cylinder having a first center axis and a predetermined radius, a second half of said cavity being in the form of a segment of a cylinder having a second center axis and a radius equal to that of said first half of said cavity, said center axes being spaced a predetermined distance providing a cavity major axis and a cavity minor axis at top dead center and bottom dead center positions of said housing cavity, a rotor having a diameter substantially equal to said minor axis centrally positioned in said cavity, an output shaft rotatably supported in said housing, said output shaft being secured to said rotor for rotation therewith, a first trunnion secured to said housing at the first center axis within said cavity, a first vane set including three equiangularly spaced vanes extending across the axial length of said cavity parallel to said output shaft, each vane being slidably mounted in said rotor for extension and retraction relative thereto, a plurality of connecting links pivotally connecting each of the vanes in said first vane set with said first trunnion for rotation thereabout, a second trunnion secured to said housing at the second center

axis within said cavity, a second vane set including three equiangularly spaced vanes slidably mounted in said rotor and being specifically spaced relative to the vanes of said first vane set while also extending the axial length of said cavity parallel to said output shaft, a plurality of connecting links pivotally connecting the vanes of said second vane set to said second trunnion for rotation thereabout, the pivotal connection of each link to a respective vane permitting pivotal movement of the link relative to its respective vane such that in a full extended position the length of the link and its respective vane substantially equals the radius of said first and second one-halves of said cavity thereby assuring engagement of said vane with said cavity wall in such position, the vanes terminating in a curved end surface insuring engagement of the vane with said housing during rotation through the cavity while being in its extended position permitting operation of the internal combustion engine without incorporating seal assembles in the vane end surfaces, an intake port position in said housing directing an air-fuel mixture into said first one-half of said cavity, an exhaust port positioned in said housing in fluid connection with said second one-half of said cavity, ignition means connected to said housing adjacent the top dead cener position of said cavity for igniting a compressed fuel mixture therein, the vanes of said first vane set being extended from said rotor engaging said housing compressing the air-fuel mixture entering through said intake port during rotation through said first one-half of said cavity and retracting into said rotor out of engagement with said housing during rotation through said second one-half of said cavity, the vanes of said second vane set being extended from said rotor engaging said housing during combustion of said mixture powering said rotor and sweeping burned gases out of said exhaust port during rotation through said second one-half of said cavity and retracting into said rotor out of engagement with said housing during rotation through said first one-half of said cavity, and a transfer valve being positioned at the top dead center position of said housing, said valve being spring biased into engagement with said rotor preventing back flow of the compressed air-fuel mixture contained between a vane of said second vane set in engagement with said housing at a predetermined distance past dead center position permitting combustion of the compressed mixture by said ignition means and subsequent power output to said shaft.

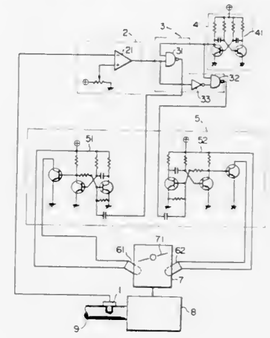
3,952,710

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Junji Kawarada, Kariya; Kunio Endo, Anjo; Susumu Harada, Oobu, and Motoharu Sueishi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 15, 1973, Ser. No. 416,277
Claims priority, application Japan, Nov. 17, 1972, 47-115934
Int. Cl.² F02D *5/02*
U.S. Cl. 123—32 EA **4 Claims**

1. An air-fuel ratio control system for an internal combustion engine comprising:
an oxygen concentration detector mounted in an exhaust manifold of an internal combustion engine for detecting the concentration of oxygen contained in the exhaust gases from the engine to produce a detected signal,
an air-fuel ratio discriminating circuit connected to said oxygen concentration detector for comparing the detected signal with a predetermined value to produce a discrimination signal having a first value when said discrimination signal is greater than said predetermined value and a second value when said discrimination signal is less than said predetermined value of said detected signal,
a sampling signal generating circuit for generating a sequence of sampling signals at a predetermined frequency,
an injection command circuit connected to said air-fuel ratio discriminating circuit and said sampling signal generating circuit for generating a first command signal for causing injection of air into the engine in response to one of said first and second values of said discrimination signal and a second command signal for causing injection of fuel in response to the other one of said first and second values every time said sampling signal is delivered to said injection command circuit,
an air-injection electromagnetic valve mounted in an intake manifold of the engine for injecting air into the engine,



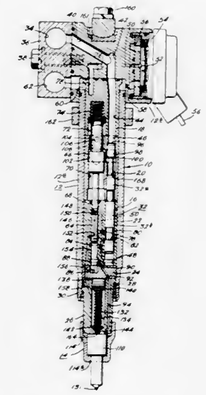
a fuel-injection electromagnetic valve mounted in said intake manifold of the engine for injecting fuel into the engine, and
injection control means connected to said injection command circuit for opening said air-injection valve in response to said first command signal and said fuel-injection valve in response to said second command signal.

3,952,711

DIESEL INJECTION NOZZLE WITH INDEPENDENT OPENING AND CLOSING CONTROL

John A. Kimberley, East Granby, Conn., and Richard D. Kraus, Chicopee, Mass., assignors to Ambac Industries, Inc., Springfield, Mass.

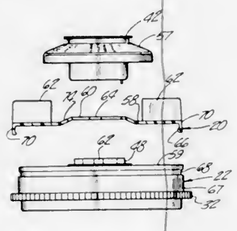
Filed Mar. 4, 1975, Ser. No. 555,243
Int. Cl.² B05B *1/30*; **F02M** *47/00*
U.S. Cl. 123—32 JV **9 Claims**



3. In a fuel injection apparatus comprising a nozzle assembly having a nozzle valve, spring means for biasing said nozzle valve toward a normally closed position, conduit means for directing a metered flow of high pressure fuel into said nozzle to open said nozzle valve, and means for delivering metered

fuel under a high pressure into said conduit means in timed relation with an engine operating cycle, the improvement comprising means augmenting said spring means for hydraulically closing said nozzle valve, said latter means comprising a chamber, said valve extending into said chamber and presenting a radial surface therewithin, means for delivering a fluid at injection pressure into said chamber to effect a closing force on said nozzle valve in conjunction with said spring means immediately upon conclusion of said metered fuel delivery, and means for returning said chamber to a low ambient pressure prior to the opening of said nozzle valve.

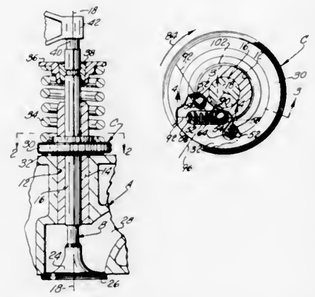
3,952,712
COMPOSITE FLYWHEEL ASSEMBLY
William O. Hermanson, Kiel, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.
Filed Jan. 30, 1975, Ser. No. 545,484
Int. Cl.² F01P *7/04*
U.S. Cl. 123—41.65 **7 Claims**



1. A composite flywheel assembly for an air-cooled internal combustion engine comprising a metallic flywheel having a flat axially facing surface and a peripheral surface with a continuous radially facing groove, an impeller integrally molded of resilient material having a base which rests upon said axially facing flywheel surface, a circumferential array of axially extending blower vanes and an axially extending flange depending from said impeller base about said peripheral surface with a radially inwardly protruding tongue at the free edge of said flange, said tongue having a free-state diameter which is less than the diameter of said groove and being received in snap-fit engagement in said groove, and means centrally urging said impeller base against said axially facing flywheel surface.

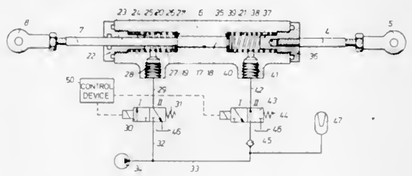
3,952,713
VALVE ROTATOR
Max J. Tauschek, South Euclid, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Apr. 23, 1975, Ser. No. 570,625
Int. Cl.² F01L *1/32*; **F16K** *29/00*
U.S. Cl. 123—90.3 **14 Claims**

10. A rotator for a valve reciprocable between open and closed positions along a longitudinal axis and being rotatable about said axis, said rotator including first and second parts movable axially and rotatably relative to one another along and about said axis, variable force applying means for urging said valve toward said closed position and urging said parts toward one another with forces which alternately increase and decrease, a plurality of shiftable elements between said parts movable along separate paths for imparting relative rotation thereto during relative axial movement therebetween, said parts being mounted for imparting rotational movement to said valve during relative rotational movement between said parts, said paths having midpoints, a reference circle intersecting said midpoints and having a center coincidental with said longitudinal axis, said paths being positioned to have path components extending generally along said circle and path components extending both inwardly and outwardly of said circle from said midpoints, and all of said paths together



having a total path length which is greater than the circumference of said circle.

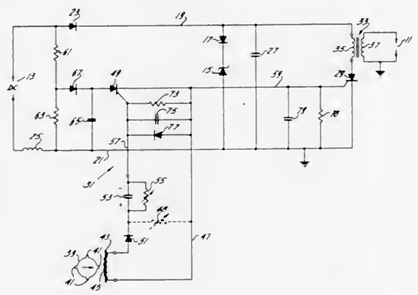
3,952,714
LINK LENGTH ADJUSTING APPARATUS
Herbert Weyer, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Continuation of Ser. No. 266,752, June 27, 1972, abandoned.
This application Mar. 14, 1974, Ser. No. 451,374
Claims priority, application Germany, July 5, 1971, 2133244
Int. Cl.² F02D *31/00*, *11/02*
U.S. Cl. 123—103 C **7 Claims**



1. In an internal combustion engine, a combination comprising a fuel-dosing arrangement comprised of a movable fuel-dosing control member movable through a plurality of positions to vary the amount of fuel entering the cylinders of the engine per combustion cycle; a footcontrolled gas pedal member; elongated linkage means connected between said gas pedal member and said control member for transmitting force from said gas pedal member to said control member in direction substantially longitudinally of said elongated linkage means in order to position said fuel-dosing control member in dependence upon the extent to which said foot-controlled gas pedal member is depressed by the foot of a driver, said linkage means comprising a double-acting hydraulic cylinder-and-piston unit comprised of a cylinder and of a piston in said cylinder dividing the interior of said cylinder into two cylinder chambers, said cylinder and piston being slidable relative to each other substantially in the direction of elongation of said elongated linkage means, with one of said members being connected to said cylinder and the other of said members being connected to said piston, and wherein said cylinder has a first fluid port communicating with the first of the cylinder chambers and a second fluid port communicating with the second of the cylinder chambers; and length-varying means for effecting movements of said fuel-dosing control member independently of movement of said gas pedal member by effecting changes in the length of said linkage means, and comprising a source of pressurized fluid, a tank, and valve means connecting said first and second fluid ports of said cylinder to said source of pressurized fluid and to said tank

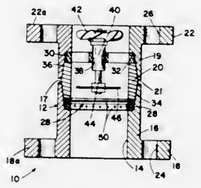
and operative for changing the length of said elongated linkage means by causing hydraulic fluid to flow into and out of said cylinder chambers to effect relative movement between said cylinder and said piston.

3,952,715
VARIABLE AND CONSTANT TIMING FOR BREAKERLESS IGNITION
Howard E. Van Siclen, Jr., Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.
Filed May 6, 1974, Ser. No. 467,325
Int. Cl.² F02P *1/00*, *5/04*
U.S. Cl. 123—117 R **9 Claims**



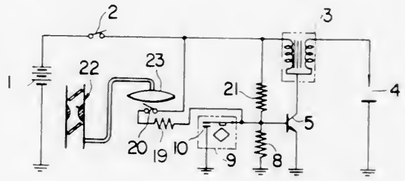
1. A triggering circuit comprising a solid state electronic switching device, pulse generating means for generating a succession of electrical trigger pulses which change amplitude in response to a condition to switch the switching device, voltage bias means connected between the pulse generating means and the switching device to change the switching time relative to the trigger pulses in response to the condition, and means for controlling the voltage on the bias means independently of pulse amplitude to control the switching time relative to the trigger pulses, the means for controlling the voltage on the bias means being connected in parallel with the bias means and including a resistor connected in parallel with a series connected second resistor and Zener diode.

3,952,716
FUEL CONSERVATION MEANS FOR INTERNAL COMBUSTION ENGINES AND THE LIKE
Roger A. McCauley, Tulsa, Okla., assignor to Rexar Industries, Inc., Tulsa, Okla.
Filed June 24, 1974, Ser. No. 482,269
Int. Cl.² F02M *29/00*
U.S. Cl. 123—141 **12 Claims**



1. A fuel conservation device adapted to be interposed in a flow stream for receiving a fuel-air mixture therethrough and comprising rotor means initially intercepting the fuel-air mixture and being rotated thereby, sonic reed means disposed downstream of the rotor means for impressing sonic vibrations on said fuel-air mixture to facilitate mixing of the fuel and air components thereof, and heated grid means disposed downstream of the sonic reed means for substantial vaporization of the fuel-air mixture.

3,952,717
IGNITION SYSTEM WITH ADJUSTABLE CONTACT BREAKER CURRENT
Kenji Goto, and Daisaku Sawada, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan
Filed Oct. 24, 1973, Ser. No. 409,084
Claims priority, application Japan, Feb. 6, 1973, 48-14247
Int. Cl.² F02N *17/00*
U.S. Cl. 123—179 BG **8 Claims**



1. An engine ignition system for supplying at least two different current magnitudes to the breaker points of a circuit interrupter of said ignition system, the second current magnitude being greater than the first current magnitude and sufficient to remove contaminants from said breaker points to prevent fouling or damage thereof, said ignition system comprising:

an ignition coil having primary and secondary windings; a D.C. source coupled to said primary winding; a spark plug coupled to the secondary winding of said ignition coil;

a semiconductor amplifier operated in its saturated mode and having a first grounded terminal, a second output terminal connected in common to said primary and secondary ignition coil windings and a third control terminal coupled to ground through first bias impedance means and to said D.C. source through second bias impedance means;

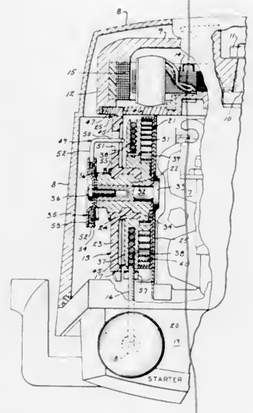
circuit interrupter means having a first breaker contact connected to ground and a second breaker contact connected to the junction of said first and second impedance means and said third control electrode, for intermittently making and breaking contacts between ground and said junction; and

means for changing the resistance value of said second imedpance means from said first to said second magnitude as a function of a preset operating condition of said engine to increase the current magnitude supplied to said breaker contacts.

3,952,718
STARTER APPARATUS FOR INTERNAL COMBUSTION ENGINES
James A. Meyer, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.
Filed Aug. 12, 1974, Ser. No. 496,882
Int. Cl.² F02N *17/00*
U.S. Cl. 123—179 SE **21 Claims**

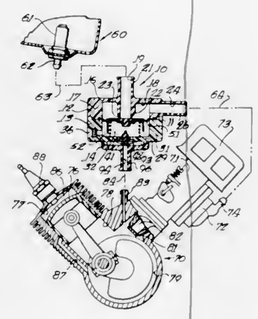
1. In combination with an internal combustion engine having a starter member secured to the engine crankshaft and having an outer wall located laterally outwardly of the engine, a starter assembly having mounting means for securement to the side of the engine beneath said starter member and comprising, a drive member rotatably mounted immediately adjacent to the engine and having a rotating axis generally normal to the axis of the starter member and movable outwardly from the engine into driving engagement with the starter member,

and means to rotate the drive member to move the drive member outwardly into and inwardly from engagement with



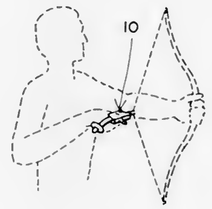
said starter member to rotate the starter member and crankshaft for starting of the engine.

3,952,719
VACUUM PULSE ACTUATED FUEL CONTROL VALVE
Robert A. Fenton, St. Louis, Mo., and Daniel L. Donovan, Decatur, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Mar. 28, 1975, Ser. No. 563,032
Int. Cl.[2] F02B *77/00*; **F02M** *17/00*
U.S. Cl. 123—198 DB **3 Claims**



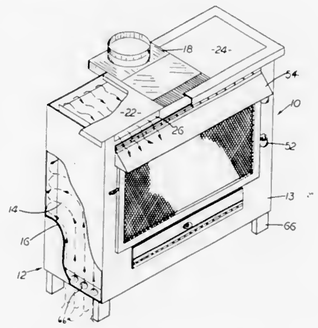
1. A fuel control valve for use with an internal combustion engine having a fuel supply circuit and an air induction system subject to subambient pressure pulses while running, said valve comprising;
- a body having wall portions defining a shell-like structure and including fuel inlet and outlet ports adapted for connection in said fuel supply circuit and a control port adapted for connection to said air induction system;
- valve means disposed in said body arranged for controlling flow from said fuel inlet port to said fuel outlet port, said valve means being normally biased to a closed fuel port condition and being actuatable to an open fuel port condition;
- a flexible diaphragm disposed within said body operatively associated with said valve means, said diaphragm forming a movable wall of a control chamber defined in part by wall portions of said body, said diaphragm being movable in response to subambient pressure in said control chamber for actuating said valve means to said open fuel port condition;
- a restricted vent passage disposed in a wall portion of said body communicating said control chamber with ambient atmosphere; and
- a flexible resilient one-way check valve disposed between said control chamber and said control port arranged for permitting flow from said control chamber, said restricted vent passage and said flexible resilient check valve providing means for sustaining a subambient pressure condition in said control chamber in response to recurrent subambient pressure pulses in said control port, whereby said fuel inlet and outlet ports are maintained in communication with each other while said engine is running.

3,952,720
BOWSTRING RELEASE MECHANISM
Hugh R. Wilson, 10840 SW. 120th St., Miami, Fla. 33176
Filed Apr. 11, 1975, Ser. No. 567,056
Int. Cl.[2] F41B *5/00*
U.S. Cl. 124—35 A **2 Claims**



2. A bowstring holding and release device comprising in combination:
- a handle member adapted to be gripped by the human hand, holding and release means mounted on said handle for releasably engaging a bowstring, said holding and release means comprising a rotating holding member for movement between first and second position for holding and releasing a bowstring, respectively,
- sear means engaging a first surface portion of said holding member to retain said holding member in said first position when said sear member is in a first pivoted position,
- trigger means engaging a first end portion of said sear means to retain said sear means in a first position, when said trigger means is in a first sliding position,
- said trigger means being slideable to a second position out of engagement with said portion to permit said sear means to pivot to said second position out of engagement with said surface portion of said holding member to permit said holding member to rotate to said second position for releasing a bowstring, said holding member when manually moved to said first position being engaged by said sear means and said sear means being engaged by said trigger means,
- locking means for selectively holding said trigger means in first sliding position and said sear means in first pivoted position for retaining said holding member in said first position,
- said locking means including biasing means for automatically sliding the trigger means back to said first position after sliding of said trigger means from said first position to said second position and an additional means for automatically pivoting said sear means back to said first position after pivoting of said sear means from said first position to said second position,
- flexible rope means connected to said holding and release means and looped around a bowstring and over a second surface of said holding member,
- whereby said locking means holds said holding member and said rope means around said second surface of said holding member when said trigger means and said sear means are in first positions and said bowstring is tensed and when said trigger means and said sear means move to said second position said rope means slips off of said second surface of said holding member and from around a bowstring as a bowstring moves to a released position,
- trigger adjusting means limiting or increasing the engagement of said trigger means with said sear means.

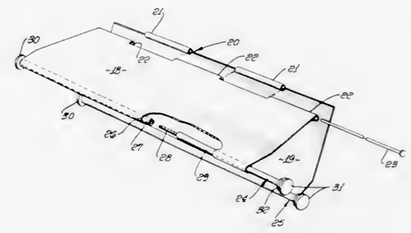
3,952,721
STOVE WITH COOKING PLATE
Tommy W. Patterson, P.O. Box 65, Hayesville, Ohio 44838
Filed July 10, 1974, Ser. No. 487,125
Int. Cl.[2] F24B *1/26*; **F24C** *15/10*
U.S. Cl. 126—63 **5 Claims**



1. A stove comprising:
- a frame means including spaced inner and outer walls with the inner wall operatively defining a fire chamber,
- said frame means having an air inlet means formed therein at a lower portion thereof connecting to the space between said walls,
- said frame means also comprising a horizontally extending heater duct extending substantially the depth of said frame means at each end of said frame means, and connecting to the space between said walls, which ducts are positioned at the upper portion of the frame means and are open at the front of the stove for discharge of heated air, and are open at the rear of the frame means to the space between said walls to receive air flowing up between said walls, said frame means including a top section having a flat top surface with a center opening therein between said ducts and directly above the fire chamber to have the combustion products flow directly upwardly thereto, a metal plate positioned over said opening for receiving food thereon to be cooked or warmed by the stove, the combustion products contacting the lower surface of said plate and an exhaust stack operatively connected at its lower end to said frame means at a rear portion thereof at the level of said metal plate for flow of the combustion products up against said metal plate and then horizontally rearwardly to and up said exhaust stack.

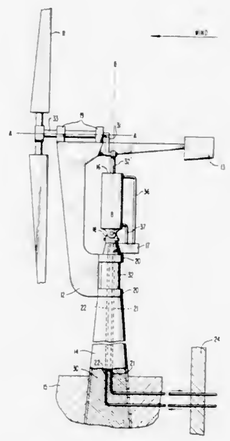
3,952,722
FIREPLACE ROOM HEATER ACCESSORY
Yoshishige Yamagishi, 796 Merritt Drive, Pasadena, Calif. 91104
Filed July 17, 1974, Ser. No. 489,130
Int. Cl.[2] F23L *11/00*; **F24C** *15/22*
U.S. Cl. 126—141 **2 Claims**

1. A heat deflector assembly for installation in a fireplace opening defined by spaced sidewalls, a rear wall and a floor, said assembly comprising an upper sheet metal panel mounted in spaced relation to said rear wall to permit combustion gas to escape to a flue, a lower sheet metal panel joined to said upper panel to extend therefrom at downward and forward inclination overlying the fireplace heat source on said floor to deflect heat into the fireplace room and conduct heat to the upper panel, said panels having looped free edges, and mounting means separately and releasably supporting the panels against the side walls of the fireplace opening, said mounting



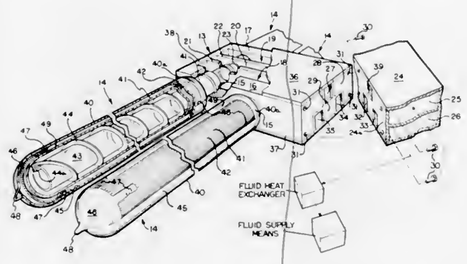
means comprising for each panel spaced rod sections contained within said looped free edges of the panels, said sections being threadedly interconnected for relative axial movement, one of the sections carrying a pad to bear against the fireplace sidewall by relative expansive axial adjustment of the sections.

3,952,723
WINDMILLS
James A. Browning, Hanover, N.H., assignor to Browning Engineering Corporation, Hanover, N.H.
Filed Feb. 14, 1975, Ser. No. 549,924
Int. Cl.[2] F24C *9/00*; **F22B** *9/06*; **F03D** *9/00*
U.S. Cl. 126—247 **5 Claims**



1. A system for extracting useful energy from the wind, comprising a windmill; a closed circuit containing a liquid; pump means driven by said windmill to place said liquid under pressure in said circuit; and a flow control impedance to permit a predetermined constant volumetric flow of said liquid in said circuit per unit of time and across which said pressure drops to yield heat.

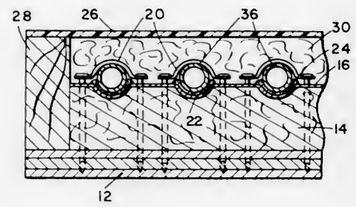
3,952,724
SOLAR ENERGY CONVERTER
Yu K. Pei, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed June 24, 1974, Ser. No. 482,092
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 18 Claims



1. A solar energy collector apparatus comprising an outer hollow, elongated tubular member of transparent glass, closed at its one end and normally open at its other end, a hollow, elongated tubular glass absorber member defining a glass wall of lesser O.D. than the I.D. of said outer member which is closed at its one end and open at its other end, the absorber member having its exterior surface comprised of an energy absorbing coating applied thereon over a substantial portion of its axial length, said coating having high absorptivity and low emissivity, said absorber member being inserted within said outer member such that the other open end of the absorber member projects out of the other normally open end of said outer member, spring-like, snap on means engaging said closed end of the absorber member supporting it in spaced relation to the interior surface of said outer member near the closed end of the latter, an annular portion of the glass at the other normally open end of said outer member being fused annularly onto the glass wall of the absorber member, thereby sealing it to said absorber member near its other end and closing the space therebetween, said space being evacuated, a fluid handling member of lesser O.D. than the I.D. of said absorber member positioned within the latter, said fluid handling member extending substantially the length of the absorber member and the inner end thereof being open and communicating with the hollow interior of said absorber member and providing a space between the latter two members for circulation of fluid medium, a fluid media supply means, means connecting the supply means to the fluid handling member, and separate fluid conduit means connected to the other open end of said absorber member to receive fluid media flowing therefrom, the fluid media flowing between said fluid handling member and said absorber member in heat exchange relation with the energy absorbing surface of said absorber member.

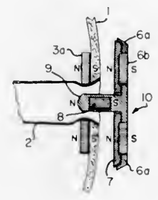
3,952,725
SOLAR WATER HEATER
William B. Edmondson, 4701 Salerno St., San Diego, Calif. 92111
Filed June 24, 1974, Ser. No. 482,206
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 12 Claims

1. A method of constructing a solar fluid heater comprising the following steps:
a. placing a layer of deformable insulating material on the forward face of a panel;
b. placing a heat-conductive deformable sheet on said insulating layer;
c. placing conductive hollow tubing on said sheet;
d. pressing said tubing against said sheet and insulating layer to form a trough in said sheet beneath said tube; and



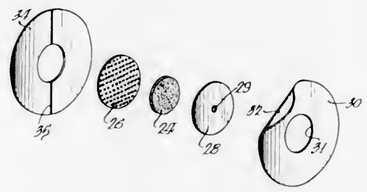
e. attaching fastener means to and between said tubing and said panel to hold said tubing, sheet, and insulation in compressed relationship.

3,952,726
MEDICAL DEVICE
Gerhard R. Hennig, Gauting, and Klaus G. Hennig, Graben-Neufeld, both of Germany, assignors to Gerhard R. Hennig, Germany
Filed Dec. 4, 1974, Ser. No. 529,586
Claims priority, application Germany, Dec. 20, 1973, 2363563; United Kingdom, Aug. 19, 1974, 36341/74
Int. Cl.² A61B 19/00
U.S. Cl. 128—1 R 5 Claims



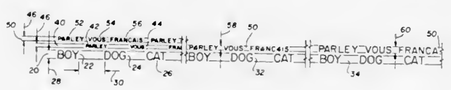
1. In combination, means for closing the intestinal opening on an anus praeter patient, which comprises an axially magnetized ring-shaped permanent magnet means comprising at least one permanent magnet, said ring-shaped permanent magnet means being adapted to be positioned around the intestinal opening and a magnetic sealing cap means for closing the intestinal opening, said sealing cap means including a cap member adapted to contact the abdominal wall of the patient and at least one ferromagnetic material arranged to be magnetically attracted to the ring-shaped magnet when the sealing cap means is in the closed position, said sealing cap means also including an axially magnetized permanent magnetic core member extending away from said ferromagnetic material in said sealing cap means and disposed to be inside the ring-shaped permanent magnet means when the sealing cap means is in the closed position, the magnetic core member being axially magnetized in such a way as to increase the magnetic attraction between the permanent magnet means and the ferromagnetic material of the sealing cap means when the distance between the ring-shaped permanent magnet means and the ferromagnetic material of the sealing cap means is greater than a predetermined value and to decrease said magnetic attraction when said distance is less than said predetermined value, said sealing cap means being operable to close said intestinal opening by magnetic attraction to said permanent magnet means and to be manually separable from said permanent magnet.

3,952,727
VENT DEVICE FOR OSTOMY APPLIANCE
John L. Nolan, Glenview, Ill., assignor to Hollister Incorporated, Chicago, Ill.
Continuation of Ser. No. 401,337, Sept. 27, 1973, abandoned. This application Dec. 5, 1974, Ser. No. 529,961
Int. Cl. A61f 5/44
U.S. Cl. 128—283 2 Claims



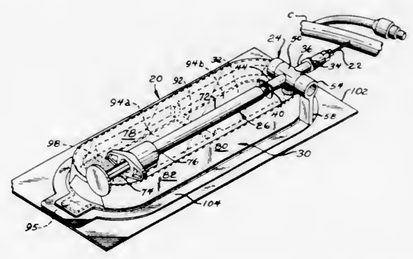
1. A charcoal filter vent device for use with an ostomy appliance of the type used for venting gas from an abdominal opening following surgery, comprising,
a. a filter disc of matted fibers and charcoal particles having opposite inner and outer surfaces,
b. an inner pervious film disc larger than the filter disc disposed on the inner surface of the filter disc, and positionable over a vent opening in an ostomy appliance for admitting gas to the filter disc,
c. an outer impervious cover disc larger than the filter disc, disposed on the outer surface of the filter disc, and having a central aperture therein for exhausting gas from the filter disc,
d. said inner and outer discs having outer peripheries secured together, and
e. an annular adhesive disc having an adhesive surface with an inner peripheral portion adhesively secured to an outer peripheral portion of the cover disc and an outer peripheral portion adhesively attachable to an ostomy appliance around a vent opening therein.

3,952,728
METHOD OF MEASURING DYNAMIC (A) AUDITORY AND (B) TACTILE SEQUENCING OR TRACKING, AND DIAGNOSING CEREBELLAR-VESTIBULAR DYSFUNCTION AND DYSMETRIC DYSLEXIA
Harold N. Levinson, 15 Lake Road, Great Neck, N.Y. 11020, and Jan Frank, 45 E. 82nd St., New York, N.Y. 10028
Continuation-in-part of Ser. No. 535,507, Dec. 23, 1974, abandoned. This application Feb. 24, 1975, Ser. No. 552,700
Int. Cl.² A61B 5/00
U.S. Cl. 128—2 R 12 Claims



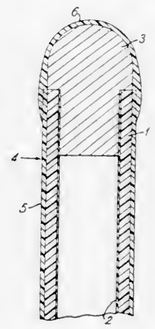
1. A group diagnostic screening procedure for identifying those in said group possibly having the condition of dysmetric dyslexia, which is based on the discoveries of a cerebellar-vestibular dysfunction and resulting impaired accoustical suppression by said cerebellar-vestibular indicative of said condition, said procedure comprising the steps of reciting words at a selected volume level and in a language known to said group for the purpose of requiring identification of said recited words by members of said group, simultaneously with the aforesaid recitation of words causing in background relation thereto auditory material to be presented to said group starting at a volume at a selected level below that of said recited words, and progressively increasing the volume level of said background auditory material while requiring said identification of said recited words by said group members, whereby any group member unable to make said identification of recited words because of improper suppression of said background auditory material is automatically identified as possibly being dysmetric dyslexic.

3,952,729
DIAGNOSTIC DEVICE FOR A LIQUID SAMPLE
Gary Libman, Des Plaines, and Frank K. Villari, Oak Park, both of Ill., assignors to The Kendall Company, Walpole, Mass.
Filed Aug. 29, 1974, Ser. No. 495,978
Int. Cl.² A61B 5/00
U.S. Cl. 128—2 F 21 Claims



1. A diagnostic device for a liquid sample, comprising:
a receptacle having a cavity containing a culture medium;
means for establishing communication with the sample;
pump means for withdrawing and expelling liquid; and
valve means for separately establishing communication of the establishing means and the receptacle with the pump means, whereby a liquid sample may be withdrawn by the pump means through the establishing and valve means and expelled by the pump means through the valve means into the receptacle for inoculation of the culture medium.

3,952,730
INSTRUMENT FOR USE IN THE MEASUREMENT OF BLOOD GASES
Alan Key, Newbury, England, assignor to National Research Development Corporation, London, England
Filed Oct. 22, 1974, Ser. No. 517,058
Claims priority, application United Kingdom, Oct. 30, 1973, 50392/73
Int. Cl.² A61B 5/00
U.S. Cl. 128—2 G 3 Claims



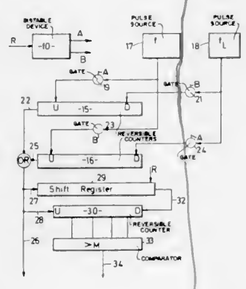
1. An instrument for use in the measurement of blood gases, the instrument comprising:

a flexible catheter in the form of a nylon tube having its internal surface coated with a material which will effectively inhibit outgassing of water vapour into the interior of the tube under vacuum;

a rigid porous body extending across the whole of the end of said tube, said porous body having a first portion secured within said tube adjacent said end and having a smoothly rounded second portion projecting from said end; and

a sheath of a non-thrombogenic polymeric material part of which closely envelops said tube and part of which constitutes a gas-permeable membrane completely covering said second portion of said porous body.

3,952,731
CARDIAC MONITORING APPARATUS
Gerald Worstencroft, Manchester, England, assignor to Ferranti, Limited, Hollinwood, England
Filed Dec. 12, 1974, Ser. No. 532,018
Claims priority, application United Kingdom, Dec. 15, 1973, 58213/73
Int. Cl.² A61B *5/04*
U.S. Cl. 128—206 A **9 Claims**



1. Cardiac monitoring apparatus comprising means for detecting normal and/or ectopic complexes in an electrocardiogram waveform, and means for comparing the intervals between successive detected complexes, the means for comparing comprising binary counting means, means for causing the binary counting means to count at different rates during successive said intervals, and means responsive to the contents of the counting means for detecting that successive said intervals differ by more than a predetermined amount.

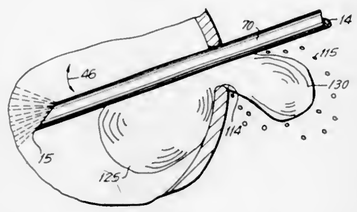
3,952,732
ULTRASONIC CATARACT REMOVAL METHOD AND APPARATUS
John P. Shock, 83 Mount Tallac Court, San Rafael, Calif. 94903
Division of Ser. No. 318,429, Dec. 26, 1972, Pat. No. 3,857,387. This application Oct. 21, 1974, Ser. No. 516,211
Int. Cl.² A61H *23/00*
U.S. Cl. 128—24 A **17 Claims**

1. The method of removing a mass of unwanted tissue substantially intact from an enclosed area in an animal through an incision with a tool member having an output edge, comprising the steps of:

A. forming an incision having a length smaller than the largest cross-sectional dimension of the mass of unwanted tissue in an area proximate to the mass of tissue to be removed,

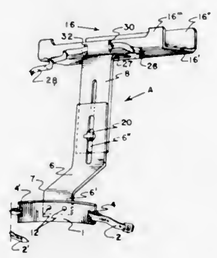
B. reducing the volume of the mass in its enclosed area by engaging the output edge of the tool member against the mass and ultrasonically vibrating the output edge to form at least one aperture in the mass,

C. continuously supplying a treatment fluid to the enclosed area to obtain a hydrostatic pressure differential between the enclosed area and the atmosphere, and



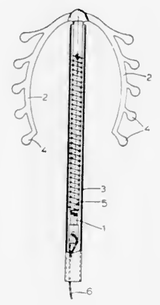
D. removing the reduced mass substantially intact from the incision, whereby the mass progressively alters its shape due to the reduced volume and hydrostatic pressure to conform to the length of the incision as it exits therethrough.

3,952,733
ARM SUPPORT
Ester B. Williams, 4807 Gilray Drive, Baltimore, Md. 21214
Filed Apr. 23, 1975, Ser. No. 570,739
Int. Cl.² A61F *5/40*
U.S. Cl. 128—94 **1 Claim**



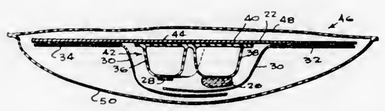
1. An arm support comprising a short, flat, concave, rigid body-engaging member having an opening in each end thereof for attaching a belt thereto for encircling the waist of the wearer, a bracket section having one end thereof adapted to be fixed to the said body-engaging member along one of its flat sides, said bracket section being angled outwardly at an obtuse angle immediately above the body-engaging member, a second obtuse angle formed in the opposite direction in the said bracket section outwardly from the first obtuse angle, a second bracket section of substantially the same width and length as the first bracket section, the outer end of which is formed outwardly at an angle perpendicular to the rigid, flat, body-engaging member, an arm supporting member having a bottom and two side walls, the outer side wall being higher than the inner side wall, said bottom being fixed to the angled portion of the second section of the bracket, the second section of the bracket having a central slot therein for adjusting the same relative to the first bracket section, and a thumb screw adapted to clamp the two bracket sections in adjusted fixed position, the shorter side wall of the arm support having slots therein and means extending through said slots and adapted to extend about a part of the body of the wearer for limiting the outward movement of the arm supporting member.

3,952,734
INTRA-UTERINE-DEVICE
Willem Arthur Adriann Algernon Van Os, Aerdenhout, and Pieter Eduard Reinier Rhemrev, Heemstede, both of Netherlands, assignors to Multilan S.A., Fribourg, Switzerland
Filed Feb. 6, 1975, Ser. No. 547,657
Claims priority, application Netherlands, Feb. 14, 1974 7402008
Int. Cl.² A61F *5/46*
U.S. Cl. 128—130 **5 Claims**



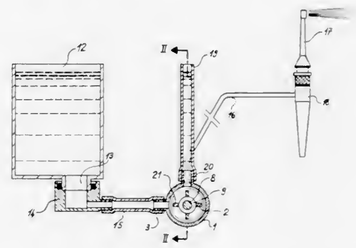
1. Intra-uterine-device meant to be inserted into the uterus, comprising an elongated stem, carrying at one end two resilient, canti-levered arms, extending sideways on either side of the stem, which stem is contained within a tube shaped sheath by means of which the device may be inserted into the uterine cavity through the cervix, after which the sheath may be pulled back, characterized in that, the sheath narrowly encloses the stem, whereas the shape and flexibility of the arms are choosen in such manner that the arms, when passing the cervix, are pressed together onto the outer surface of the sheath by the cervix wall, said arms, when relaxed after insertion, curving back towards said stem so that they substantially form a portion of an ellipse, the longer axis of which coincides with said stem.

3,952,735
EYE BANDAGE
Jonathan D. Wirtschafter, 1147 Athenia Drive, Lexington, Ky. 40504; Juan L. Zauberman, 26 Ben Maimon St., and Samuel Moscowitz, c/o School of Applied Science, Hebrew University of Jerusalem, both of Jerusalem, Israel
Filed May 27, 1975, Ser. No. 580,885
Int. Cl.² A61F *13/12*
U.S. Cl. 128—163 **19 Claims**



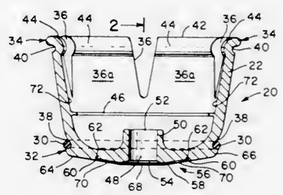
1. An eye bandage for protecting the eye of a patient comprising a unitary, flexible outer cover panel and a pneumatic cushion centrally positioned on the outer cover panel and formed of a flexible thin impervious material for defining at least one air cell having a flexible wall positioned adjacent the eye of the patient, said cover panel having adhesive surface portions laterally adjacent the cushion for attachment to the facial surface surrounding the eye of the patient.

3,952,736
HAND-OPERATED BODY CARE APPLIANCE
Michel Antoine Moret, Chene-Bourg, Gva; Pierre-Jean Jousson, Geneva, and Jean-Pierre Musy, Puplinge, Gva, all of Switzerland, assignors to 4 P Limited, United Kingdom
Filed Dec. 19, 1974, Ser. No. 534,380
Claims priority, application Switzerland, Dec. 21, 1973, 17991/73; Dec. 21, 1973, 17992/73
Int. Cl.² A61H *9/00*
U.S. Cl. 128—66 **17 Claims**



1. Hand-operated appliance for body care by means of an intermittent liquid jet, in particular for massaging the gums and for cleaning the teeth, comprising: a liquid pump which comprises a working chamber, an outlet pipe connected to said working chamber, a piston reciprocable axially therein and driven by an electric motor, an inlet chamber, an inlet pipe connected to said inlet chamber, and an inlet valve located in the connecting aperture between the inlet chamber and working chamber, which valve is closed at the time of the working stroke of the piston and opened at the time of the suction stroke; a liquid reservoir connected to the inlet pipe; a spray nozzle connected to the outlet pipe; and a stop valve actuated by the user for opening and closing the pipe leading to the spray nozzle aperture, and wherein the inlet valve is constructed and arranged such that is assumes its open position in the inoperative position, when the pump is switched off.

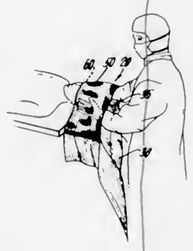
3,952,737
CONTRACEPTIVE
Donald E. Lipfert, Woolwich, Maine; Seymour L. Romney; Robert Zeidman, both of Mamaroneck, N.Y., and Willfred Goldschmidt, Greenwich, Conn., assignors to The Medevice Company, Greenwich, Conn.
Filed Aug. 28, 1974, Ser. No. 501,060
Int. Cl.² A61F *5/46*
U.S. Cl. 128—127 **45 Claims**



1. A contraceptive device for positioning in relation to the cervix of the uterus, comprising a body portion, means for holding said body portion to the cervix, and closure means to close the entrance of the cervix from the inflow of material; said closure means comprising valve means comprising at least one opening in said body portion, stretchable diaphragm means including valve gate means and port means, biasing

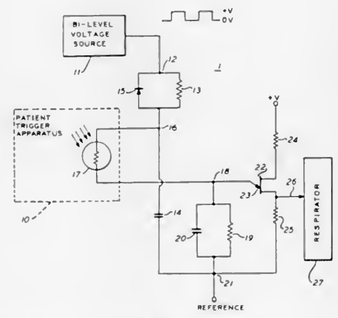
means for biasing said diaphragm means against said body portion with said diaphragm valve gate means against said body portion opening and with said diaphragm port means in offset relationship to said body portion opening; wherein said valve means open upon the application of internal pressure from within the uterus and close upon application of external pressure from without the uterus, to permit the outflow of material under pressure from the uterus and prevent the inflow of material into the uterus.

3,952,738
FOLDED SURGICAL DRAPE
Henrietta K. Krzewinski, Old Bridge, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.
Filed Jan. 29, 1975, Ser. No. 545,289
Int. Cl.² A61F *13/00*
U.S. Cl. 128—132 D **11 Claims**



1. A surgical drape comprising:
a. a main sheet of flexible, drapable material, said main sheet having an upper surface and a lower surface, a top edge, a bottom edge, and opposed side edges, an upper portion adjacent said top edge and a remainder portion adjoining said upper portion; said upper portion comprising a top part and a bottom part, said top part of said upper portion being not larger than said bottom part of said upper portion, said top part joining said bottom part along a first line running transversely of said main sheet;
b. a cuff overlying the upper surface of said upper portion of said main sheet, said cuff having a top edge, a bottom edge, and opposed side edges, said cuff being integral with said main sheet along the respective top edges of said cuff and said main sheet, said cuff being further secured to the upper surface of said main sheet along generally longitudinally extending lines of attachment which are spaced inwardly a substantial distance from the side edges of said main sheet, whereby, after said cuff has been attached to said main sheet along said lines of attachment, a hand receiving pocket is provided in said drape; and
c. a strip of adhesive for removably adhering the drape to the body of a patient, said strip of adhesive being secured to the lower surface of the top part of the upper portion of said main sheet,
said drape being folded longitudinally at least two times, the first fold being made by forward folding said top part around said first transverse line; the second fold being made by reverse folding the drape around a line extending transversely of the drape and through said remainder portion whereby, when the folding is completed, a longitudinally folded drape is provided which is reduced in length and wherein said adhesive is exposed on the upper surface of the folded drape.

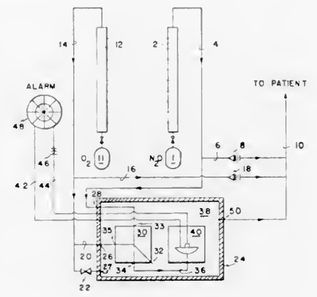
3,952,739
FAIL SAFE SYSTEM FOR A PATIENT TRIGGERED RESPIRATOR
Anthony B. Cibulka, Poynette, Wis., assignor to AIRCO, Inc., Montvale, N.J.
Filed Oct. 21, 1974, Ser. No. 516,567
Int. Cl.² A61M *16/00*
U.S. Cl. 128—145.8 **11 Claims**



1. A fail safe system for preventing erroneous inspiratory operation of a respirator during the expiratory phase of a patient respiratory cycle comprising:
means for supplying a potential during the expiratory phase of said respiratory cycle;
sensing means coupled to said potential means for detecting an inspiratory effort of a patient during said expiratory phase;
threshold means connected to said sensing means for producing an output signal for activating said respirator in response to said sensing means detecting said inspiratory effort;
circuit means connected to said sensing means and to said threshold means for precluding the production of said output signal in response to said sensing means detecting said inspiratory effort before a predetermined portion of said expiratory phase has elapsed; and
means coupled to said threshold means and said sensing means for inhibiting production of said output signal upon said sensing means detecting an inspiratory effort at the start of said expiratory phase.

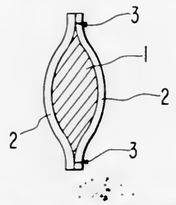
3,952,740
GAS FLOW MONITOR FOR ANESTHETIC MACHINES
James E. Scurlock, Fort Devens, Mass., assignor to The United States of America as represented by the National Institute of Health, Washington, D.C.
Filed May 12, 1975, Ser. No. 576,581
Int. Cl.² A61M *16/00*
U.S. Cl. 128—145.8 **8 Claims**

1. In an anesthetic machine including a source of pressurized anesthetic gas and a source of pressurized respiratory gas, a gas flow monitor comprising:
A fluidic OR/NOR gate having a power stream input connected to said source of anesthetic gas and a control stream input connected to said source of respiratory gas and having an OR output leg and a NOR output leg;
A breathing circuit for a patient connected to said OR output leg of said fluidic gate;
Said anesthetic gas and said respiratory gas being mixed in said fluidic gate and the resulting gas mixture flowing through said OR output leg thereof and into said breathing circuit, when the flow rate of said respiratory gas in said control stream is sufficiently great;
An alarm means connected to said NOR output leg of said fluidic gate, for manifesting an alarm signal when a reduction in flow rate of said respiratory gas in said control



stream causes said power stream to flow through said NOR output leg of said fluidic gate.

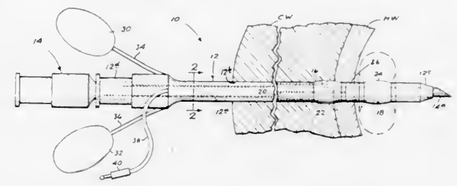
3,952,741
CONTROLLED RELEASE DELIVERY SYSTEM BY AN OSMOTIC BURSTING MECHANISM
Richard William Baker, Bend, Oreg., assignor to Bend Research Inc., Bend, Oreg.
Filed Jan. 9, 1975, Ser. No. 539,637
Int. Cl.² A61M *7/00;* **B65D** *35/08*
U.S. Cl. 128—260 **14 Claims**



1. A water actuated osmatic type active agent dispenser including a means for dispensing a dosage of active agent into an aqueous fluid or humid environment comprising (1) a fluid permable membrane defining at least a part of a walled enclosure, said enclosure containing therein an active agent which exhibits an osmatic pressure upon exposure of the enclosure to the environment, the thickness and permibility of said membrane comprising a means for controlling the water diffusion therethrough until the osmotic pressure in the enclosure is sufficient to distort, stretch and finally rupture the enclosure resulting in release of the agent to the environment.

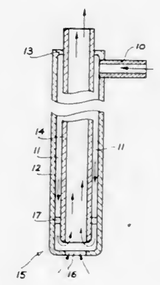
3,952,742
NEEDLE-CARRIED, TRANSTHORACIC, CANNULA-TYPE CARDIAC RESUSCITATION INSTRUMENT
Duane F. Taylor, 680 Winter St., SE., Salem, Oreg. 97301
Filed June 12, 1974, Ser. No. 478,790
Int. Cl.² A61M *25/00;* **A61N** *1/04*
U.S. Cl. 128—172.1 **13 Claims**

1. A transthoracic, cannula-type cardiac resuscitation instrument comprising
an elongated catheter needle, or the like, of a certain length,
an elongated flexible tube having distal and proximal ends, and including, extending along its length which is less than said certain length, wall means defining an elongated double-open-ended passage for accommodating the slidable and removable reception therein of said needle, with said needle when received therein being circumferentially surrounded by said tube with an end of said needle projecting axially from said distal end of the tube,
means mounted on the outside of said tube defining an exposed electrically conductive expanse adjacent but inwardly of the tube's distal end,
conductor means connected to said expanse for operatively connecting said expanse to electrical pacing apparatus,



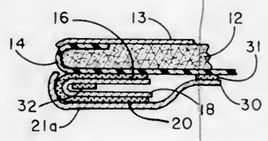
a pair of spaced, selectively and independently changeable-geometry elements mounted on the outside of said tube on axially opposite sides of said expanse, and
means operable for selectively altering the geometry of each element by changing each element's overall radial projection from the outside of said tube.

3,952,743
SUCTION DEVICE
John Young Harrison, Sydney, Australia, assignor to Unisearch Limited, New South Wales, Australia
Filed Mar. 25, 1974, Ser. No. 454,765
Claims priority, application Australia, Mar. 28, 1973, 2780/73
Int. Cl.² A61M *1/00*
U.S. Cl. 128—276 **2 Claims**



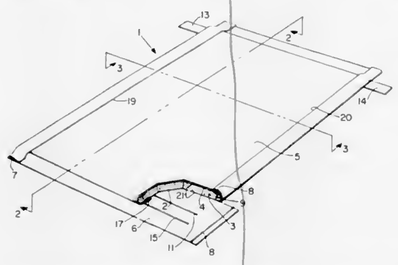
1. A suction device for medical purposes comprising inner and outer concentric tubes, each having first and second ends, wherein the first end of said outer tube is formed with an orifice for receiving unwanted tissue and the second end thereof comprises a transverse end wall through which the inner tube protrudes, and the first end of the inner tube is located within the outer tube adjacent the orifice and the second end thereof is located externally of the outer tube and is adapted to be connected to suction means, liquid inlet means being provided in the outer tube adjacent said wall, and a swirl member being provided between said inner and outer tubes and between said inlet means and said orifice, said first end of said outer tube comprising a second transverse end wall a short distance beyond the first end of said inner tube and in which said orifice is located, said second wall limiting said orifice to an area in alignment with said inner tube and having a cross-section no greater than the cross-section of said inner tube, so that when suction means is applied to the second end of said inner tube liquid traveling from the second to the first end of the outer tube is given a swirling motion by said swirl member and then sucked into said inner tube without emerging from said first end of said outer tube.

3,952,744
TAPE ATTACHMENT SYSTEM FOR DISPOSABLE DIAPERS
Karl E. Aldinger, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 28, 1975, Ser. No. 562,926
Int. Cl.² A61F *13/16; A41B 13/02*
U.S. Cl. 128—287 **5 Claims**



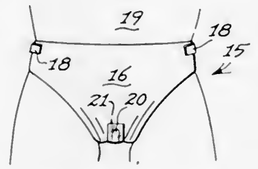
1. In a tape fastening system for a disposable diaper which has pressure-sensitive adhesive fastening tapes disposed at opposite corners of one end thereof for fastening the diaper about the waist, wherein said diaper comprises an absorbent core disposed between a bottom backing sheet and a top body-contacting cover sheet, wherein said tape has pressure sensitive adhesive on one surface, and wherein one end portion of said tape has a surface permanently attached to said backing sheet near one corner of the diaper and an opposite non-adhering surface the other end portion of the tape is free and has a length to extend beyond the edge of said diaper, the improvement comprising a means for holding said tape wherein said free end portion is folded back over the attached end portion of said tape with the non-adherent surfaces of the tape in contact and the pressure sensitive adhesive surface of said folded-over free end portion is releasably covered by an elongate release-coated protective sheet, a section of said protective sheet having a portion extending beyond the folded portion of said tape and a terminal portion of said protective sheet being permanently secured to said backing sheet.

3,952,745
DISPOSABLE DIAPER HAVING READILY FLUSHABLE ABSORBENT MEDIA AND IMPROVED PAD INTERGRITY IN USE
Robert C. Duncan, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Nov. 19, 1974, Ser. No. 525,254
Int. Cl.² A61F *13/16*
U.S. Cl. 128—287 **8 Claims**



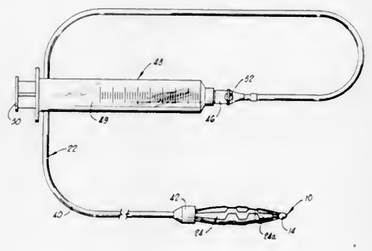
1. In a disposable diaper having a liquid-retaining backsheet, a liquid-absorbent pad comprised of a liquid-absorbent media contained within an envelope of wet strength tissue superimposed on said liquid-retaining backsheet and a liquid-pervious topsheet secured in superposed relation to said liquid-absorbent pad and said liquid-retaining backsheet, the improvement which comprises attachment means for securing at least a portion of said wet strength tissue envelope located adjacent said liquid-retaining backsheet directly to said backsheet, said attachment means and said liquid-retaining backsheet having greater strength than said wet strength tissue envelope, whereby said wet strength tissue envelope is ruptured to provide exposure of the liquid-absorbent media contained therein when said backsheet is stripped from said diaper.

3,952,746
HUMIDITY INDICATING DIAPER COVER
F. Wayne Summers, 256 Craigmeade Drive, Nashville, Tenn. 37214
Filed July 29, 1974, Ser. No. 492,686
Int. Cl.² A61F *13/16*
U.S. Cl. 128—287 **7 Claims**



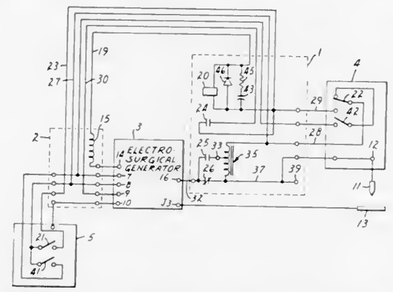
1. A humidity indicating diaper comprising:
a. an outer sheet of material substantially impervious to liquid, having an outer face and an inner face,
b. an inner sheet of liquid-absorbing material against the inner face of said outer sheet,
c. a hole extending through said outer sheet from said outer face to said inner face and in liquid communication with said inner sheet,
d. a moisture indicator strip of material impregnated with a chemical agent adapted to change state in the presence of moisture,
e. means mounting at least a portion of said indicator strip on the outer face of said outer sheet so that said portion of said indicator strip is visible from the outer face of said outer sheet,
f. said mounting means mounting at least a portion of said indicator strip in registry with said hole for communication with liquid through said hole.

3,952,747
FILTER AND FILTER INSERTION INSTRUMENT
Garman O. Kimmell, Jr., 3125 N. Virginia, Oklahoma City, Okla. 73118
Filed Mar. 28, 1974, Ser. No. 455,582
Int. Cl.² A61B *17/00*
U.S. Cl. 128—303 R **19 Claims**



7. A filter for filtering solid and semi-solid materials from a liquid moving axially in a cylindrical vessel, said filter comprising:
at least six resilient wire legs of substantially equal length positioned in conical array symmetrically about a central axis, each of said legs having at least two spaced U-shaped bends intermediate the length thereof, with the two bends forming together the configuration of a letter W, that portion of each leg which is in, and forms, said bends, lying substantially in the conical figure formed by the collective legs; and
a hub at the apex of the conical figure formed by the collective legs and having an end of each of the legs secured thereto.

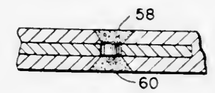
3,952,748
ELECTROSURGICAL SYSTEM PROVIDING A FULGURATION CURRENT
Paul L. Kaliher, White Bear Lake; Fred W. Nelson, Cottage Grove, and Bryan K. Roos, North St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed July 18, 1974, Ser. No. 489,519
Int. Cl.² A61B *17/36;* **A61N** *3/02*
U.S. Cl. 128—303.14 **3 Claims**



1. A fulguration adaptor for enabling an electrosurgical system including a solid state generator for providing a cut mode electrosurgical current waveform of RF electric energy having a first voltage amplitude to an active electrode terminal to which an electrosurgical instrument is connected during use of the system, to alternatively provide a fulguration mode current waveform from the generator to the active electrode terminal,
said adaptor comprising
transformer means for enabling the generator to provide a fulguration mode waveform having a second higher voltage amplitude;
switching means connected to the transformer means for selectively connecting the transformer means to the generator for providing said fulguration mode waveform, for disconnecting the transformer means from the generator, and for switching off the current from the generator when operated to disconnect the transformer means; and
delay circuit means connected to the switching means for delaying said disconnection of the transformer means until after the current from the generator has been switched off.

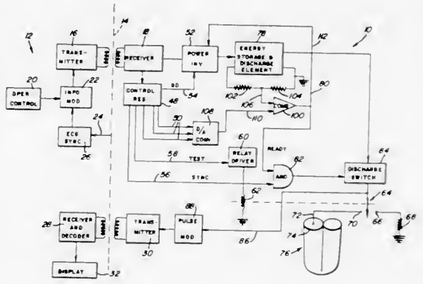
3,952,749
BOX LOCK SURGICAL INSTRUMENT
John Fridolph, Berlin, N.J.; Robert Wilson, Dresher, and Rodney Kulp, Harleysville, both of Pa., assignors to Pilling Co., Fort Washington, Pa.
Division of Ser. No. 469,967, May 15, 1974, Pat. No. 3,911,766. This application May 7, 1975, Ser. No. 575,353
Int. Cl.² A61B *17/28;* **B21K** *11/06;* **B25B** *7/06*
U.S. Cl. 128—321 **4 Claims**

1. A box lock surgical instrument comprising first and second members each having, at one end, operative means adapted to cooperate with the operative means of the other member, and each having at its opposite end manipulable means for controlling the movement of the operative means on the said member, the first member having a bifurcated portion at an intermediate location whereby its operative means and its manipulable means are connected by two separate elements having a slot between them and the second member extending through said slot with its operative means and its manipulable means on opposite sides of said bifurcated portion, a hole extending through the portion of the second



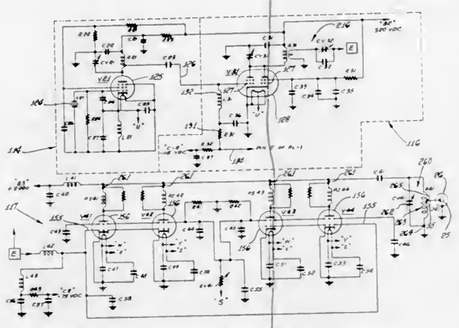
member located between said separate elements, and a pin extending through said hole and welded at its opposite ends to said separate elements, said pin being welded, at each of its opposite ends, to one of said separate elements throughout a weld zone which extends through at least 75% of the thickness of said one of said separate elements.

3,952,750
COMMAND ATRIAL CARDIOVERTING DEVICE
Mieczyslaw Mirowski, Owings Mills; Morton M. Mower, Baltimore, both of Md., and Alois A. Langer, Pittsburgh, Pa., assignors to Mieczyslaw Mirowski, Owings Mills, Md.
Filed Apr. 25, 1974, Ser. No. 464,180
Int. Cl.² A61N *1/36*
U.S. Cl. 128—419 D **30 Claims**



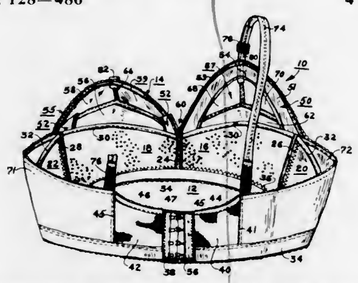
8. A system for cardioverting a heart experiencing supra-ventricular cardiac rhythm, said system being controlled directly by the wearer and external to the skin of the wearer, and comprising: a cardioverting unit implanted beneath the skin of the wearer including a storage element for receiving and storing predetermined amounts of energy for converting an abnormal supra-ventricular cardiac rhythm to normal sinus rhythm, electrode means associated with said storage element and the heart of the wearer for delivering the stored energy to the atrium for converting the heart, switch means for enabling the discharge of the stored energy into the atrium upon storage by said storage means of said predetermined amounts of energy, charging means for delivering said predetermined amounts of energy to the storage element, means for disabling said charging means once said storage element has stored said predetermined amounts of energy, and a receiver for receiving commands from external to the skin of the wearer, for controlling the operation of said switch means and for initiating the discharge of the stored energy into the atrium in response to such commands; and a portable transmitter external to the skin of the wearer and operated by said wearer upon said wearer's sensing of a condition requiring cardioversion of the atrium, for transmitting command signals across the skin to said receiver for controlling the operation of said implanted cardioverting unit.

3,952,751
HIGH-PERFORMANCE ELECTROTHERAPEUTIC APPARATUS
Frank A. Yarger, Harbor City, Calif., assignor to W. Denis Kendall, Los Angeles, Calif.
Filed Jan. 8, 1975, Ser. No. 539,283
Int. Cl.² A61N 1/40
U.S. Cl. 128—422 **8 Claims**



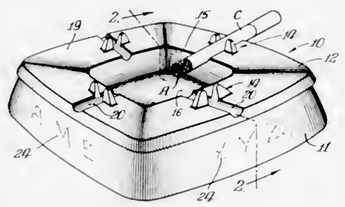
1. Improved electrotherapeutic apparatus comprising
a. an electromagnetic energy radiating head including primary and secondary coils and a capacitor electrically connected across the secondary coil,
b. and input circuit means connected with the primary coil of the head and including a source of high frequency oscillations, power amplifier means, and control means for creating and transmitting to the primary coil of the head a sequence of pulses of high frequency electrical energy and for controlling the amplitude of the pulses and the intervals therebetween, the pulses having substantially rectangular shape and having a repetition rate and duration characterized in that they define a duty factor of between 0.35 and 0.55, where
(duty factor) = (pulse repetition rate in pulses per second) × (pulse duration in micro seconds)
c. said power amplifier means being electrically connected in series sequence with said source of high frequency oscillations, said power amplifier means including at least four ceramic type vacuum tubes having parallel outputs producing said substantially rectangular pulses.

3,952,752
SUSPENSION BRASSIERE
Frank Huttle, Jr., 530 Pratt St., Hammonton, N.J. 08037
Filed Aug. 7, 1974, Ser. No. 495,317
Int. Cl.² A41C 3/00
U.S. Cl. 128—486 **4 Claims**



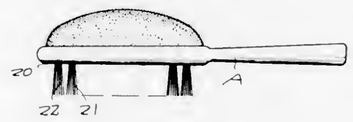
1. A suspension brassiere comprising an inner support section, and an outer cup section;
said inner section including two breast support panels joined at the inner edges thereof along a medial seam,
two side panels respectively joined at the inner edges thereof to the outer edges of said breast support panels along panel seams;
separate stretch and brassiere attachment means joined to the outer edges of said side panels for completing the body encircling brassiere when used;
a narrow, elongated elastic band extending along and joined by seams directly to the lower edges of said support and side panels and of said stretch and attachment means, said elastic band being extensible along the length thereof and substantially inextensible and resistant to folding along the width thereof so as to provide a yieldable body-encircling anchor band for said support panels;
a separate angular suspension strip having ends connected to the respective outer edge seam of the associated one of said support panels and to said medial seam;
and a separate shoulder strap connected to the apex of each of said suspension strips;
said outer cup section icluding two separate fabric cups joined at the inner edges thereof along a medial seam separated from said inner support section, and at the outer edges thereof to said support panels along the associated panel seams,
two fabric side panels respectively joined at the inner edges to said fabric cups along said panel seams and at the outer edges to said stretch and attachment means;
and means at the apex of each of said cups for connecting to one of said shoulder straps;
said anchor band being joined to the lower edges of said fabric cups and fabric side panels along said anchor band seams of said inner support section;
whereby said inner support section and outer cup section are each directly secured along the lower edges thereof to the body of the user and there retained during use.

3,952,753
SAFETY ASHTRAY
Josef F. Klingler, 1335 Gregory, Wilmette, Ill. 60091
Continuation of Ser. No. 409,708, Oct. 25, 1973, abandoned.
This application Feb. 10, 1975, Ser. No. 548,245
Int. Cl.² A24F 19/14
U.S. Cl. 131—235 R **13 Claims**



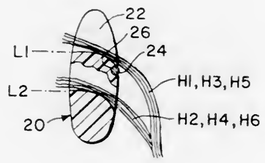
1. A safety ashtray comprising:
cup-shaped wall means integrally defining a well for receiving ashes from a conventional cigarette, an outer periphery, and a segmentally cylindrical upwardly opening channel for receiving the lower longitudinal extending segmentally cylindrical portion of the cigarette with a lighted end thereof overlying said well;
pincer means integrally upstanding from said wall at opposite sides of said channel and spaced substantially equidistantly outwardly from said well and inwardly from said outer periphery for compressively retaining an inserted portion of the cigarette to retain the portion of the cigarette between said pincer means and well on said wall means in said channel for causing extinguishing of the burning portion as it contacts said wall means in the channel and for providing an effectively positive snuffing action on the burning portion in the event it is not extinguished by said contact with the wall means in the channel before reaching said pincer means; and
a base portion removably secured to said wall means outwardly of said pincer means and formed of a relatively soft plastic material for effectively wall scratching and similar deformation of a surface on which the ashtray may be set.

3,952,754
DANDRUFF REMOVING DEVICE
Yoshiaki Kondo, 1-12, Sakuranocho-5, Toyonaka, Osaka, Japan
Filed June 6, 1974, Ser. No. 477,034
Int. Cl.² A45D 24/16
U.S. Cl. 132—120 **7 Claims**



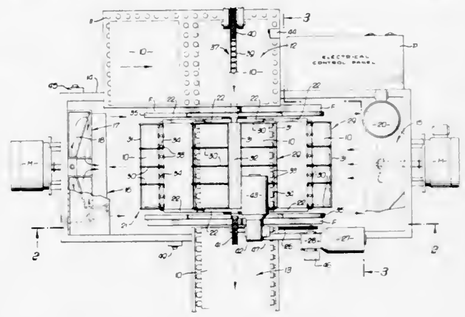
1. A dandruff removing device comprising
a. a body,
b. a particle removing portion having a curved configuration comprising:
a light weight thin metal plate,
a chemical film layer coated thereon, and
electrostatic means including short lengths of synthetic resin filaments set in the outer surface of said portion by use of a binding agent for attracting particles thereto,
c. a mounting thread engraved on one side of said device body so as to permit said portion to be detachably mounted on said mounting thread,
d. a plurality of holes bored on the other side of said device body, and
e. substantially long lengths of synthetic resin filament bristles inseparably set in said other side of the device body through said holes substantially in a normal direction with respect to said device body.

3,952,755
HAIR DRESSING APPARATUS AND METHOD
Karol C. Fisher, Penthouse East, 183-11 Hillside Ave., Queens, N.Y. 11432
Filed Dec. 26, 1974, Ser. No. 536,609
Int. Cl.² A45D 24/00
U.S. Cl. 132—161 **1 Claim**



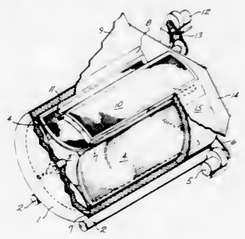
1. In a comb of the class described having teeth arranged in pairs, with shallow roots between some of the pairs and deep roots between the teeth of the other pairs, said roots connecting the inner portions of the teeth, the improvement comprising:
a recess extending longitudinally along a side face between the tops of the shallow roots and the tops of the deep roots and a removeable wire member adapted to fit into the recess.

3,952,756
SEMI AUTOMATIC PARTS CLEANING MACHINE
Richard H. Sheppard, Rancho Palos Verdes, Calif., assignor to Purex Corporation, Lakewood, Calif.
Filed June 14, 1974, Ser. No. 479,203
Int. Cl.² B08B 3/04
U.S. Cl. 134—133 **3 Claims**



1. Apparatus operable to clean parts by movement through a tank-contained liquid cleaning solution, comprising
a. a revolving carrier immersed in the solution and having a transverse axis of rotation,
b. parts receiving cages each permeable by the cleaning solution and mounted on said carrier to travel through the agitated solution to a parts loading and unloading position above the liquid,
c. said cages having open sides through which the parts are loaded and unloaded along a transverse path from one side to the opposite side of the carrier,
d. stationary means in the tank operable to block movement of the immersed parts out of the open sides of the cages, said means comprising arcuate barriers extending at opposite sides of the cages substantially throughout the parts movement through the tank solution,
e. each cage defining a transverse slot at its radially outer side, and
f. there being a series of pushers carried by and spaced along an endless power driven element to move in succession and transversely through successive of the cage slots to displace the parts into and out of the cages through the open sides thereof, at said parts loading and unloading position.

3,952,757
ROTARY PROCESSING APPARATUS
John A. Huey, 830-84th Ave. NE., Bellevue, Wash. 98004
Filed Mar. 19, 1974, Ser. No. 452,703
Int. Cl.² B08B 3/00
U.S. Cl. 134—134 **10 Claims**



1. Processing apparatus comprising a processing chamber having an upper access opening, a spider rotor mounted for rotation about a generally horizontal axis and having a plurality of radiating partitions dividing said rotor into a plurality of circumferentially spaced pockets between adjacent partitions,

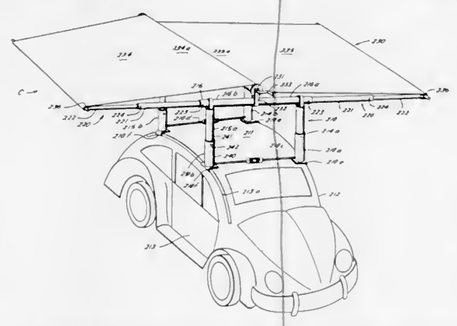
respectively, the outer edges of said partitions being movable through an orbit by rotation of said rotor, product-unloading means guided for movement downward along a path crossing the upper portion of the orbit of said partition edges and through said access opening, and means for rotating said spider rotor and for positioning said spider rotor with adjacent partitions thereof located at opposite sides of that portion of the path of said pocket-unloading means crossing the upper portion of the orbit of said partition edges for movement of said product-unloading means between said adjacent partitions into the pocket of said rotor therebetween in registration with said access opening to unload product from such rotor pocket through said access opening.

3,952,758

CANOPY

Frank F. Addison, and James B. Montgomery, both of Lafayette, La.

Filed Sept. 3, 1971, Ser. No. 177,786
Int. Cl. E04f *10/00*
U.S. Cl. 135—5 AT 11 Claims



1. A retractable canopy adapted to be mounted on a vehicle and extendable sidewardly from opposing sides thereof, comprising:

a. a frame adapted to be mounted on top of said vehicle, said frame having opposing side sections and including a plurality of outer casing members transversely mounted on each of said opposing side sections;

b. telescoping means slidably mounted in each outer casing member to provide a plurality thereof on each opposing side section of said frame for telescoping between a retracted position where said telescoping means are disposed substantially in said outer casing members, and an extended position, where said telescoping means extend outwardly from opposing sides of said vehicle and are supported by said casing members; and

c. a cover means mounted on said frame and connected to each of said telescoping means, the cover means including:

1. a first shaft member mounted for rotation on one side section of said frame;

2. a first cover attached at one end to the first shaft member and at the opposing end to the telescoping means mounted on said one side section;

3. a second shaft member mounted for rotation on the opposing side section of said frame; and

4. a second cover attached at one end to said second shaft member and at the opposite end to the telescoping means mounted on said opposing side section, whereby said first and second covers are respectively wound on said first and second shaft members in said retracted position and are respectively unwound from said shaft members in said extended position from opposing sides to provide a canopy for said vehicle;

d. vertically extendable mounting means for mounting said telescoping means on said frame; and

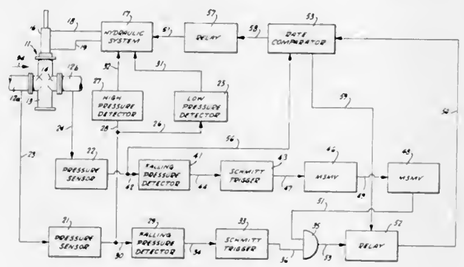
e. means for extending said mounting means whereby the height of said telescoping means and said cover means above the top of said vehicle is controlled.

3,952,759

LIQUID LINE BREAK CONTROL SYSTEM AND METHOD

Sidney Allan Ottenstein, Spring, Tex., assignor to M & J Valve Company, Houston, Tex.

Filed Aug. 14, 1974, Ser. No. 497,248
Int. Cl.² F16K *31/00*
U.S. Cl. 137—12 20 Claims



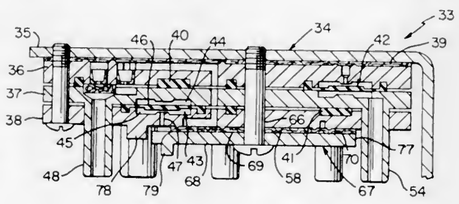
1. In a method for controlling the operation of a valve controlling fluid flow in a pipeline to close the valve in the event of a leak or break in the line, the steps of: monitoring the static fluid pressure in the pipeline to detect the occurrence of a negative pressure wave originating on the downstream side of the valve, distinguishing said wave from a like wave originating on the upstream side, monitoring the rate of static pressure drop on the downstream side in the event that a negative pressure wave originating on that side of the valve is detected, and closing the valve in the event that the pressure on the downstream side decreases faster than a predetermined rate after the negative pressure wave is detected.

3,952,760

MULTIPLE LOW PRESSURE SELECTOR RELAY AND METHOD OF MAKING THE SAME

Edward N. Caldwell, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 25, 1975, Ser. No. 607,354
Int. Cl.² G05D *11/58*
U.S. Cl. 137—82 11 Claims



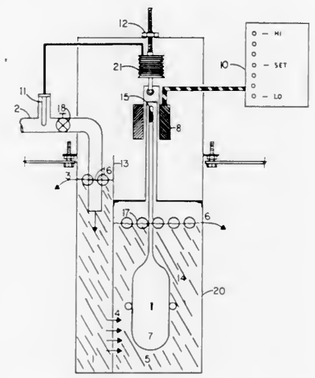
1. In a multiple low pressure selector relay having a housing means provided with a plurality of low pressure relays each having an exhaust port, the improvement comprising movable selector means carried by said housing means and having means for closing all of said exhaust ports except two thereof when said selector means is in one position thereof, said selector means having said means opening other of said exhaust ports when said selector means is moved to other positions thereof whereby the desired number of exhaust ports in addition to said two thereof can be opened.

3,952,761

SYSTEM FOR CONTROLLING DENSITY OF LIQUIDS

Donald Friedland, 3619 Bedford Ave., Brooklyn, N.Y. 11210

Filed Mar. 25, 1974, Ser. No. 454,667
Int. Cl.² G01N *9/18*
U.S. Cl. 137—91 7 Claims



1. An apparatus for determining the density of a liquid sample from a processing unit which comprises:

a first chamber and a second chamber for holding liquid sample from said processing unit,

said second chamber having a finned hydrometer adapted to freely rotate in sample liquid contained therein,

said first chamber having a liquid overflow passage, and said second chamber having a liquid overflow passage, the overflow passage of said first chamber being at a higher elevation than that of said second chamber,

said first chamber and said second chamber being separated by a wall having openings provided therein so as to cause liquid to flow as a plurality of lateral streams from said first chamber to said second chamber,

means for feeding sample liquid from said processing system to said first chamber,

the aforesaid means causing liquid to flow from said first chamber laterally into said second chamber in the form of a liquid stream entering said second chamber in the form of a liquid stream entering said second chamber at about a height corresponding to the position of the body of the finned hydrometer so as to turn said finned hydrometer, and

means for sensing the relative height of said hydrometer so as to indicate the density of the sample liquid.

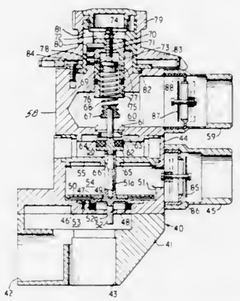
3,952,762

ANAESTHETIC INFLATION VALVES

Wilfred Jones, 155 Bradford Road, Riddlesden, Keighley, Yorkshire, England (BD20 5JH)

Filed May 14, 1974, Ser. No. 469,634
Claims priority, application United Kingdom, May 17, 1973, 23546/73
Int. Cl.² F16K *15/14*
U.S. Cl. 137—102 6 Claims

1. An inflation valve for controlling flow of fluid from an inlet to a work outlet and from the work outlet to exhaust, said valve comprising: an inlet valve seat; an inlet valve member having an input face to which incoming fluid is directed, part of said input face being engageable with said inlet valve seat, and an output face; a restricted passageway connecting a first space on the input face side of the inlet valve member to a second space on the output face side of the inlet valve member; an exhaust valve seat; an exhaust valve member having a first face engageable with said exhaust valve seat and capable of being exposed to pressure in one of said first and said second spaces, and a second face exposed to exhaust pressure; work outlet connection means for receiving input fluid from said second space and for directing fluid for exhaust to said first face of said exhaust valve member; and mechanical connecting means between said inlet and exhaust valve members, said mechanical connecting means and the relationship between the surface areas of said faces of said valve members



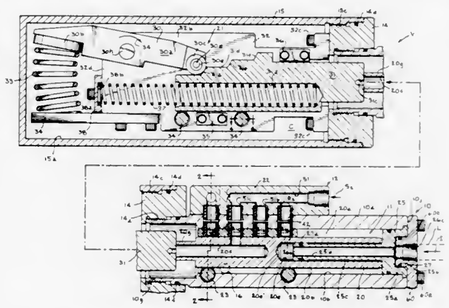
being such that when the pressure differential between said first and second spaces is above a given value said exhaust valve member is held closed and said inlet valve member is held open to allow fluid to flow from said inlet to said work outlet, but when said pressure differential falls below said given value said inlet valve member is closed and said exhaust valve member is opened to allow fluid to flow from said work outlet to said exhaust.

3,952,763

SEQUENCE CONTROL VALVE

Benton F. Baugh, Houston, Tex., assignor to Vetco Offshore Industries, Inc.

Filed Apr. 29, 1974, Ser. No. 464,771
Int. Cl.² B15B *13/06*
U.S. Cl. 137—119 16 Claims



1. A valve for providing various predesignated output signals in response to selected pressure levels of a fluid input signal from a remote signal source, comprising:

a housing connectable to a remote input signal source for providing a fluid input signal at selected, different pressure levels, each of which pressure levels is associated with a different valve position;

position responsive means mounted in said housing for movement from a first position to any desired position of a plurality of other positions in response to an input signal pressure level associated with said desired position;

cam means operably engaging said position responsive means for allowing movement of said position responsive means from said first position to any desired position of said plurality of other positions only in response to the

selected pressure level of said plurality of different input signal pressure levels which is associated with said desired positions;

output signal means operably connected to said position responsive means for directin fluid from said signal source to form a predesignated output signal in response to the position of said position responsive means as determined by the selected pressure levels of said fluid input signal, whereby an input signal source is used to provide various predesignated output signals.

3,952,764

SINGLE LEVER FAUCET CONSTRUCTION

Robert J. Keller, III, Richmond, Va., assignor to Kel-Win Manufacturing Co., Inc., Chester, Va.

Filed June 19, 1974, Ser. No. 480,848
Int. Cl.² F16K *11/14*
U.S. Cl. 137—119 **24 Claims**

1. A single lever mixing faucet construction comprising:
a. a fixedly mounted underbody member having an open-mouthed socket at one end adapted to receive a removable cartridge therein,
1. said underbody member being in fluid communication with sources of hot and cold water,
b. a removable cartridge member at least partially received in said socket of said underbody member,
c. means for retaining said removable cartridge member in said socket of said underbody member,
d. said removable cartridge member comprising:
1. a cartridge housing member,
2. a cam member mounted within said cartridge housing member for substantially universal motion about a pair of intersecting axes,
3. means for moving said cam member manually about said pair of intersecting axes,
4. first cam restraining means serving to prevent outward movement of said cam member,
5. second cam restraining means serving to prevent inward movement of said cam member, said second cam restraining means comprising:
i. at least three cam follower members engageable with said cam member,
6. a pair of valve members respectively actuated by a pair of said cam follower members and adapted to establish fluid communication between said sources of hot and cold water and a spigot,
7. said third cam follower member being constantly in engagement with said cam member and serving to counterbalance the forces on said cam member by said pair of cam follower members and to prevent an inadvertent change of position of said cam member,
8. mixing chamber means within said cartridge member located downstream from and in fluid communication with said pair of valve members,
e. and spigot means in fluid communication with said mixing chamber means.

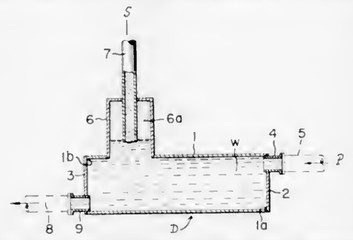
3,952,765

DEVICE FOR SEPARATING AIR BUBBLES OF FLUIDS IN PIPING, AND SILENCING WATER FLOW

Shinichi Kimura, 5-34, 5 jo, Misono, Toyohira, Sapporo, Hokkaido, Japan

Filed Dec. 4, 1974, Ser. No. 529,459
Int. Cl.² B01D *19/00*
U.S. Cl. 137—171 **6 Claims**

1. A device for separating air bubbles from a fluid flow and for silencing sound carried from the fluid flow into a pipe system which includes a pump-side and a consumer-side pipe and respective fittings thereat, the device comprising a hollow cylinder which is large in comparison with the cross-sectional measurements of said pipes in the system, said cylinder having respective inlet and outlet ends as well as end walls in parallel alignment with each other at said ends, said pump-side pipe being connected to an upper region of one end wall, and said consumer-side pipe being connected to a lower region of another end wall, a cylinrical air-cushion member protruding on the top of said cylinder at a position nearer to said outlet end than to said inlet end, the height of said member being



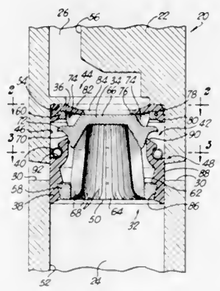
greater than the diameter of said cylinder, and an exhaust pipe protruding from above into said member by about ½ to 4/5 of said height of the member, said exhaust pipe being surrounded by an air cushion formed in said member, and wherein said cylinder has welded portions at said ends, which are made substantially perpendicular to the respective end walls.

3,952,766

BACKFLOW PREVENTER

Dwight N. Johnson, Anaheim, Calif., assignor to JH Industries, Inc., Santa Ana, Calif.

Filed Aug. 13, 1974, Ser. No. 497,111
Int. Cl.² F16K *24/00*
U.S. Cl. 137—218 **20 Claims**



1. A backflow preventer comprising a housing having a bore therein including inlet and outlet portions separated by an intermediate zone, vent passage means extending from said intermediate zone, a unitary and relatively rigid body member in said bore overlying said vent passage means, spaced first and second valve seats defined on said body member adjacent said inlet and outlet portions respectively, a first resilient valve member having a first portion held between said body member and the wall of said bore and having a movable second portion engageable with said first valve seat to define a first check valve for flow from said inlet portion to said intermediate zone, a second resilient valve member having a first portion held between said body member and the wall of said bore and having a movable second portion engageable with said second valve seat to define a second check valve for flow from said intermediate zone to said outlet portion, said first valve member including a third movable portion engageable with the wall of said bore adjacent said vent passage means.

12. A cartridge assembly adapted to be inserted into and frictionally retained in a bore in order to form a backflow preventer, said cartridge assembly comprising:
a rigid, one-piece body member of generally spool-shape including a spaced pair of annular rims and a generally cylindrical portion extending axially between said rims;

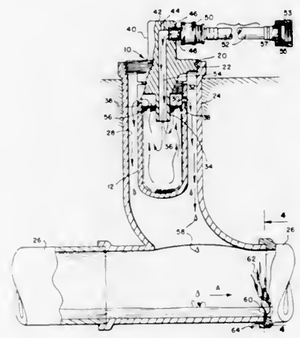
passage means defining a flow path extending through said body;
first and second valve seats defined by said body in spaced positions along said flow path; and
first and second resilient valve members each including a first portion encircling one said rim and a second portion engageable with one said valve seat.

3,952,767

MEANS FOR TREATING ROOTS ABOUT DRAIN LINES

Fred Farage, 1002 E. Northern Ave., Phoenix, Ariz. 85020

Division of Ser. No. 272,030, July 14, 1972, Pat. No. 3,830,659. This application June 21, 1974, Ser. No. 481,521
Int. Cl.² B08B *9/04*
U.S. Cl. 137—268 **1 Claim**



1. Means for treating roots about drain lines, comprising: a male fitting having peripheral structure adapted to fit a generally tubular female plumbing cleanout structure; a hollow chemicals container coupled to said male fitting and normally suspendingly supporting said container therebelow; said container having a closed bottom and sidewall structure extending upwardly from said bottom; said sidewall structure having an overflow outlet opening therein; said overflow outlet opening being spaced substantially above said bottom; and water inlet means coupled to said male fitting and disposed for introducing water into said chemicals container; said male fitting at said peripheral structure is provided with screw threads adapted screwthreadably to engage conventional internal screwthreads of a female plumbing cleanout structure; said threads comprising a plurality of groups of screw threads; each group of screw threads being of a different pitch diameter; said groups diametrically stepped relative to each other; one of said group of threads having the largest pitch diameter; another of said groups of threads having the smallest pitch diameter; the group having the smallest pitch diameter being closest to a normally lower end of said container.

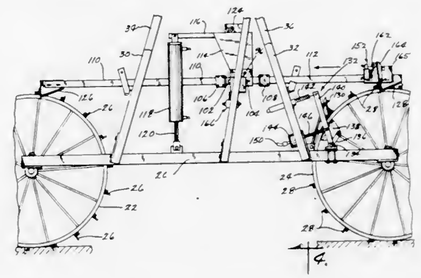
3,952,768

BRAKE MEANS FOR AN AIR-POWERED SPRINKLER SYSTEM

Loren R. Townsend, Sidney, Nebr. 69162

Filed Jan. 10, 1975, Ser. No. 540,114
Int. Cl.² B05B *3/12*
U.S. Cl. 137—344 **15 Claims**

1. A self-propelled sprinkling apparatus commprising,
a water supply pipe moveable about a central pivot point,
a plurality of spaced-apart, wheeled drive towers supporting said supply pipe above the area to be sprinkled,
an air operated drive means on each of said towers to propel said towers and said supply pipe about said central pivot point,
a source of compressed air for supplying air under pressure to said drive means,
control means on said towers for controlling the operation of said drive means so that said towers will be selectively driven to maintain said supply pipe in an aligned condition as said pipe is moved about said central pivot point,
each of said drive towers comprising at least a pair of wheels,
and a brake means on at least one of said towers which selectively moves into braking engagement with at least one of said wheels on said one tower to prevent the said tower from undesirable rolling.
said tower comprising a frame means having the said pair of wheels mounted thereon, a trojan bar means reciprocata-



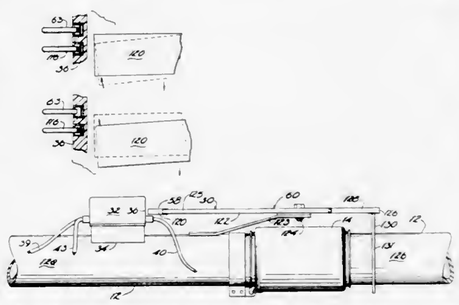
bly mounted on said frame means and moveable between first and second positions for engagement with at least one of said wheels for driving said wheel when said trojan bar means moves in at least one direction,
said drive means including means operatively connected to said trojan bar means for reciprocating said trojan bar means,
said brake means comprising means normally maintained in braking engagement with said one wheel,
and brake release means for selectively moving said means out of braking engagement with said one wheel when said trojan bar means is moving in at least said one direction.

3,952,769

ALIGNMENT CONTROL APPARATUS FOR CENTER PIVOT IRRIGATION EQUIPMENT

Eduard Karl Ott, Bothell, Wash., assignor to Frontier Machinery Company, Walla Walla, Wash.

Filed Nov. 13, 1976, Ser. No. 523,225
Int. Cl.² B05B *9/02*
U.S. Cl. 137—344 **9 Claims**



1. Alignment control apparatus for a self-propelled center pivot irrigation system having a plurality of pipe sections pivotally interconnected to form an elongated multi-joint water distribution conduit, with each pipe section being supported by a respective mobile frame having a reversible electric drive motor thereon to propel the mobile frame in reversible arcuate paths about one end of the conduit, in which the alignment control apparatus maintains the pipe sections in

general longitudinal alignment as the conduit is pivoted in the arcuate paths, comprising:

an enclosure associated with a pipe section;

a solid state contactor mounted in the enclosure and electrically connected to the electrical motor for applying electrical power to the electric motor to propel the pipe section;

a magnetically operable electrical switch mounted in the enclosure having a stable state and an unstable state;

a movable magnetic element generating a magnetic field;

means responsive to the pivotal movement of the adjacent section about a common joint for moving the magnetic element into magnetic field alignment with the electrical switch to change the electrical switch from the stable state to the unstable state and for moving the magnetic element out of magnetic field alignment with the magnetic switch to permit the switch to automatically change from the unstable state to the stable state;

electrical control network operatively connected between the magnetically operable electrical switch and the solid state contactor and having (1) a forward operational mode circuit means for energizing the solid state contactor when the electrical switch is in the unstable state to drive the mobile frame in a forward arcuate direction and for de-energizing the solid state contactor when the electrical switch is in the stable state to stop the forward arcuate movement of the mobile frame, and (2) a reverse operational mode circuit means for energizing the solid state contactor when the electrical switch is in the stable state to drive the mobile frame in a reverse arcuate direction and for de-energizing the solid state contactor when the electrical switch is in the unstable state to stop the reverse arcuate movement of the mobile frame.

3,952,770

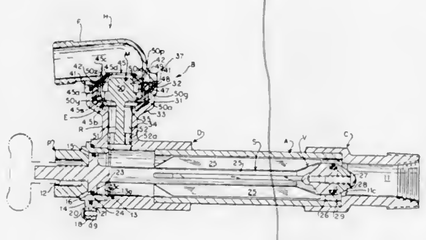
NON-FREEZE WALL HYDRANT WITH VACUUM BREAKER

Irlin H. Botnick, 3155 Kersdale, Pepper Pike, Ohio 44124

Filed Dec. 17, 1973, Ser. No. 425,503

Int. Cl.² F16K *24/00*

U.S. Cl. 137—360 **9 Claims**



1. In a wall hydrant including a building wall penetrating straight tubular conduit element, a water pipe inlet connection element joined on one end of the conduit element as a hydrant inner end, and a hollow open-ended operating and discharge end element with its inner end joined on the other end of the conduit element, as a hydrant outer end to be accessible at the outside of the building wall, the discharge end element having a lateral outlet, said element *s* constituting a hydrant body, and a water valving member axially shiftable in and out of an inlet passage closing position at a valving bore of said inlet element for opening and closing the hydrant, the structure comprising:

operating shaft means extending through and axially shiftably supported in said body to shift axially said valving member in and out of said closing position,

a closure element secured to and sealed in the other, outer, end of said discharge element as a plug and providing an end wall with a threaded central aperture coaxially aligned with the conduit element and said valving bore and having said shaft means threaded therethrough to be rotationally operated to effect axial shifting,

said closure element and said discharge element defining a valving recess between the location of said outlet and end wall,

said recess comprising two hollow cylindrical wall portions of different diameters and joined through a circumferential wall shoulder, with at least that cylindrical wall portion having the smaller diameter being coaxial with said shaft means, air inlet and drainage outlet passages running to the hydrant exterior, opening at the plug outer end, and having passage inner ends opening in said recess at circumferentially spaced wall locations therein,

said shaft means including

a concentric radial flange therewith axially shiftable past said shoulder into and out of, and rotationally and slideably sealable with the cylindrical wall of, the recess portion of smaller diameter,

said passage inner ends being so located that, upon hydrant closing motion, radial flange escape from the recess portion of smaller diameter opens the interior of said discharge end element to said passages;

said valving member being moved by said shaft means to a closed position before said flange escape; whereafter continued shaft rotation in hydrant closing direction continues shift of the flange to an escape enabling hydrant drainage and venting.

9. A hydrant as described in claim **1**, wherein

the said valving bore opens inwardly toward said conduit element through a shouldered formation of said inlet element surrounding the flow path to the conduit element,

said shoulder formation being provided with an apertured valving seat facing said valving bore;

said valving member comprises a shuttle-like element axially slideable in the valving bore to and from a valve closing position with one end sealingly engaging said valving seat,

said shuttle-like element with a surrounding cylindrical surface of the valving bore defining flow space from the inlet connection to the apertured seat; and

said operating shaft means includes a push-rod extending co-axially through said conduit element and engageable with said one end of the shuttle element to displace it axially from said seat, and to hold it displaced in an open position against forces urging it back to closed position.

3,952,771

RELIEF VALVES WITH PILOT VALVES

Armin Lang, Schwabisch Gmund-Bettringen, Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Filed May 29, 1975, Ser. No. 581,978

Claims priority, application Germany, Jan. 8, 1975, 2500537; Jan. 8, 1975, 2300480

Int. Cl.² F16K *31/383*

U.S. Cl. 137—491 **24 Claims**

1. A relief valve having pilot valve control comprising:

a housing having an inlet passage and an outlet passage and a pressure chamber;

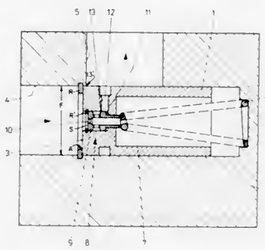
a relief valve intermediate said passages and disposed in said housing so as to be exposed to inlet pressure opening force from said inlet passage and closing pressure force in said pressure chamber;

restricted flow means for providing the inlet pressure of said inlet passage in said pressure chamber;

a pilot valve means comprising means effecting differential area surfaces;

means whereby said surfaces are exposed to inlet passage pressure in opposed directions wherein one surface is larger to effect an opening force when subjected to predetermined inlet pressure to actuate said pilot valve means;

said pilot valve means being thus movable and responsive to predetermined inlet pressure and being connected to vent said pressure chamber so that the reduction in closing pressure force on said relief valve permits opening



thereof by inlet passage pressure to relieve pressure in said inlet passage;

a spring in said pressure chamber biasing said pilot valve means to closed position and means whereby said spring has reaction support to effect closing bias on said relief valve.

3,952,772

INTAKE PIECE ADAPTED FOR EMPTYING CONTAINERS WITH LIQUID

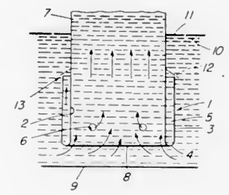
Hendrik Kaarsmaker, Herrjansdam, Netherlands, assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 5, 1973, Ser. No. 404,067

Claims priority, application Netherlands, Oct. 9, 1972, 7213653

Int. Cl.² E03B *11/16*

U.S. Cl. 137—565 **3 Claims**



2. In a system for discharging liquid from a container portion of a vessel, said container portion having a top and a floor, said system comprising liquid pumping means connected to an inlet suction tube extending substantially vertically into said container from the top of said container, the tube having an open lower end adjacent the floor of said container, the improvement comprising at least one second tube situated exteriorly of said inlet tube and having a lower end and an upper end and open at both said upper and lower ends, the lower end of said second tube being in fluid flow communication with the interior of said inlet tube through a first port adjacent to and spaced from said open end of said inlet tube and disposed in the wall of said inlet tube, said second tube extending upwardly from said first port to said open upper end at a level above said first port and adjacent said floor of said container to define a second port permitting fluid flow communication between the interior of the second tube and the space surrounding said second tube.

3,952,773

BREATHING GAS SUPPLY CONTROLLER

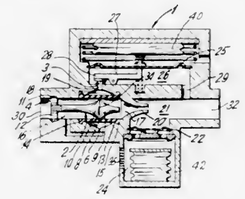
Rainer Hahn, Afrade, Germany, assignor to Dragerwerk Aktiengesellschaft, Germany

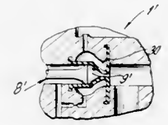
Filed Jan. 20, 1975, Ser. No. 542,511

Claims priority, application Germany, Jan. 29, 1974, 2404062

Int. Cl.² F16K *19/00*

U.S. Cl. 137—604 **5 Claims**





1. A breathing gas supply controller, comprising a housing having a gas inlet, a gas supply opening spaced from said inlet, an interior gas passage extending from said inlet to said gas supply opening and having an intermediate widened portion, an elastic valve tube in said gas passage widened portion and separating said widened portion into an annular pressure chamber around the exterior of said elastic valve tube from a central flow passage portion within the interior of said valve tube, a valve member having an annular intermediate portion of maximum diameter engageable against the interior of said valve tube in a closed position closing off said gas passage, a control chamber defined in said housing having a first control passage communicating with the prressure chamber and having a second control passage communicating from said control chamber to said gas passage on the gas supply opening end of said valve member downstream of said valve member, a one-way flow atmospheric connection into said passage on the gas opening side of said valve member, and diaphragm valve control means in said control chamber and connected to said first control passage to vent said pressure chamber to permit inflation of said elastic valve tube and opening of said gas passage upon separation of the valve tube from the valve member, said valve member comprising a forward valve portion of cone-shaped configuration extending from said maximum diameter portion toward said gas supply opening, and a rear valve portion of cone-shape configuration extending in a direction toward said valve inlet, and an intermediate piece positioned in said gas passage and connected to the wall surrounding said gas passage of said housing and supporting said valve member and having openings therein for the flow of gas therethrough.

3,952,774

ELECTRICALLY OPERATED MINI-VALVE

Stanely M. Loveless, Oshtemo Township, Kalamazoo County, Mich., assignor to General Gas Light Company, Kalamazoo, Mich.

Filed Jan. 24, 1975, Ser. No. 543,822

Int. Cl.² F16K *11/02*

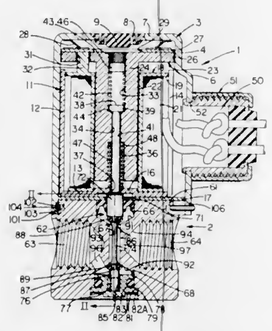
U.S. Cl. 137—625.5 **11 Claims**

1. In an electrically responsive valve assembly having a valve housing and an axially movable valve unit wherein one end of said valve unit is accessible from the exterior of said valve housing, the improvement comprising:

a pair of telescoped oppositely facing cup-shaped housings each having an axially elongated cylindrical sidewall, the outer of said cup-shaped housings having the free end of the sidewall thereof fixedly connected to said valve housing, and the sidewall of the inner cup-shaped housing being concentrically disposed within and axially movable relative to the sidewall of said outer cup-shaped housing;

an annular spool-shaped receptacle having an annularly arranged solenoid winding thereon, said receptacle being coaxially positioned within said inner cup-shaped housing;

the sidewall of said inner cup-shaped housing being positioned closely adjacent and in surrounding relationship to said solenoid winding throughout the axial extent thereof, said latter-mentioned sidewall being of a magnetically conductive material so as to guide the magnetic flux generated by the solenoid winding;



resilient pressure means backed against said outer cup-shaped housing and bearing against said annular receptacle for urging said receptacle against the bottom of said inner cup-shaped housing and thereby urging said inner cup-shaped housing into a limit position determined by said valve housing;

a plunger coaxially movably supported within said annular receptacle;

movable actuator means carried by said plunger for contacting and bearing against the exposed end of said valve unit when said solenoid winding is in one condition of energization or de-energization, and return means effective to urge said actuator means away from said valve unit when said solenoid winding is in the other condition of energization or de-energization.

3,952,775

ELECTROMAGNETIC CHANGE-OVER VALVE

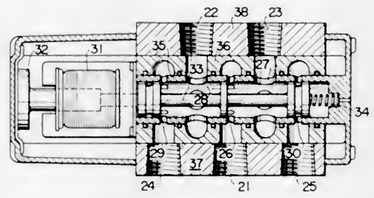
Syunshi Ogata, Koshigaya, Japan, assignor to Shoketsu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 558,474, March 14, 1975, abandoned, which is a continuation of Ser. No. 395,112, Sept. 17, 1973, abandoned, which is a continuation-in-part of Ser. No. 190,941, Oct. 20, 1971, abandoned. This application Apr. 8, 1975, Ser. No. 566,088

Int. Cl.² F16K *11/07, 47/00*

U.S. Cl. 137—625.38 **5 Claims**

1. A spool-sleeve type valve including an axially elongated sleeve having a plurality of annular rows of holes extending therethrough, a spool located within and being displaceable through said sleeve in the axial direction thereof, said spool having spaced apart lands on its outer surface with the dimension of each of said lands in the axial direction of said sleeve at least equal to the axial dimension of a corresponding one of said rows of holes and being displaceable across said ones of said rows of holes from one side to the other thereof for varying the direction of flow between adjacent pairs of said rows of holes, said rows of holes including rows of first holes and rows of second holes alternating with said rows of first holes with the lands on the outer surface of said spool being displaceable across said rows of first holes from one side to the other, said holes in said rows of first holes having a smaller



dimension in the axial direction of said sleeve than said holes in said row of second holes and the total flow area of the holes in each of said row of first holes traversed by said land on said spool being at least 25% smaller than the total flow area of the holes in the adjacent said rows of second holes.

3,952,776

FLUID FLOW DEVICE

James F. Eversole, Mamaroneck, N.Y., and Lester P. Berriman, Irvine, Calif., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 151,373, June 9, 1971, Pat. No. 3,778,038, which is a continuation-in-part of Ser. No. 17,086, March 6, 1970, abandoned. This application Aug. 16, 1973, Ser. No. 388,761

Int. Cl.² F15D *1/04, 1/02, 1/10, 1/00*

U.S. Cl. 138—39 **2 Claims**

1. A device for delivering a gaseous medium to utilization equipment having variable pressure conditions at its intake comprising, in combination, means defining a gaseous medium intake zone connecting with means defining a variable area throat zone for constricting the flow of the gaseous medium to increase the velocity thereof to sonic, means for adjustably varying the area of the throat zone in correlation with operating demands imposed upon the utilization equipment, and wall means downstream from the throat zone arranged to provide a gradually increasing cross-sectional area substantially corresponding to that of a conical section having an apex angle in the range of about 6° to 18° for efficiently recovering a substantial portion of the kinetic energy of the high velocity gaseous medium as static pressure whereby the velocity of the gaseous medium through the throat zone is sonic when the pressure at the intake of the utilization equipment is at or below a predetermined value less than the gaseous medium pressure at the entry to the intake zone and substantially more than 60% thereof.

3,952,777

HOLLOW BODY FOR HEATED GASES

Klaus Uhlig, Zurich, Switzerland, assignor to Brown Boveri-Sulzer Turbomaschinen Aktiengesellschaft, Zurich, Switzerland

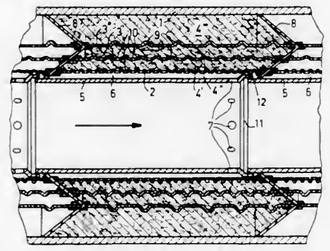
Filed Dec. 18, 1973, Ser. No. 425,882

Claims priority, application Switzerland, Dec. 20, 1972, 018588/72; Germany, Dec. 29, 1972, 2264354

Int. Cl.² F16L *9/18, 9/22*

U.S. Cl. 138—149 **7 Claims**

1. A hollow body for heated gases which are subjected to positive pressure comprising a rotationally symmetrical external wall and a spaced perforated partition wall which extends substantially parallel to said external wall within said hollow body; heat-insulating material completely filling the intermediate space between said external wall and said partition wall; and at least one perforated intermediate wall in said intermediate space and situated substantially parallel to said external wall and said partition wall, the intermediate wall being embedded in said insulating material and sub-dividing said inter-



mediate space into layer chambers, the throttling effects of said perforated partition and intermediate walls increasing from wall to wall outwardly from the inside of said hollow body.

3,952,778

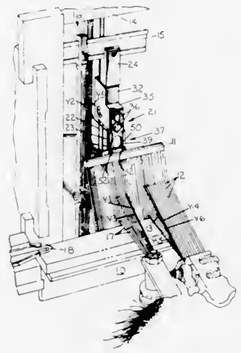
SELVAGE FORMING DEVICE

Richard L. Volpe, Hopedale, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Apr. 28, 1975, Ser. No. 572,212

Int. Cl.² D03D *7/00*

U.S. Cl. 139—54 **1 Claim**



1. Apparatus for forming a leno selvage along the edge of fabric being woven on a loom having harnesses extending widthwise of the loom that are vertically movable for crossing sheets of warp threads to form warp sheds for the reception of weft yarn, said apparatus comprising:

a. first and second elongated carrier members mountable on adjacent harness frames;

b. first and second means mounted for sliding movement on said first and second carrier members;

c. biasing means interconnecting said first and second sliding means and continuously urging said sliding means away from each other;

d. first selvage thread guide means mounted in a preselected position on one of said first and second sliding means;

e. second selvage thread guide means mounted on the other of said sliding means, said second thread guide means being mounted for pivotal movement between an innermost and an outermost position;

f. means operatively associated with said second selvage thread guide means to cause pivotal movement thereof between said innermost and outermost positions when the said one of said sliding means on which said second selvage guide means is mounted slides on said elongated carrier members which includes:

1. a roller member assembled to the lower arm of said double armed lever with said roller member being disposed in operative association with a cam surface integrally formed on one of said elongated carrier members.

3,952,779

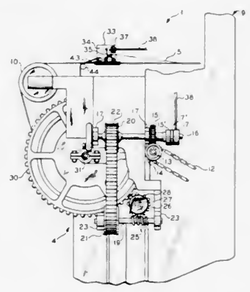
TENSION CONTROL AND DRIVE APPARATUS FOR A FABRIC LOOM

Rudolfs Kodis, Greenville, S.C., assignor to Phillips Fibers Corporation, Greenville, S.C.

Filed Oct. 17, 1974, Ser. No. 515,548

Int. Cl.² D03D *49/10, 48/18*

U.S. Cl. 139—110 **3 Claims**



1. A tension control apparatus for use on a fabric loom having a let-off beam with a plurality of warp threads wrapped thereon, said apparatus comprising:

a. power means;

b. speed reducing drive means operably connecting said power means to a let-off beam of a loom to selectively drive same, said drive means includes an electrically actuated clutch to selectively effect driving of said let-off beam:

c. a base member adapted to engage a plurality of warp threads and has an upstanding member with indicia thereon, an indicator is movably mounted on said upstanding member and is operable to indicate tension in a thread cooperating therewith;

d. a switch cooperating with said indicator and selectively actuatable thereby, said switch is operably connected to said clutch for actuation thereof, said switch is selectively movable relative to said indicator for adjusting the amount of thread tension required to actuate said switch; and

e. means cooperating with said base member to prevent same from moving with said warp threads.

3,952,780

FABRIC STABILIZING APPARATUS DISPOSABLE AT THE INPUT OF THE WEFT BEAT-UP ZONE OF TRAVELLING-WAVE SHEDDING LOOMS

Dalibor Sejbal; Vitezslav Vasek; Zbynek Miks, and Karel Prazak, all of Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny ustav bavlsnarsky, Usti nad Orlici, Czechoslovakia

Filed Sept. 19, 1974, Ser. No. 507,566

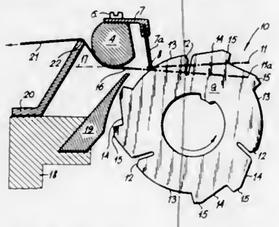
Claims priority, application Czechoslovakia, Oct. 24, 1973, 7316-73

Int. Cl.² D03D *49/00, 47/26;* **D03J** *1/22*

U.S. Cl. 139—291 R **9 Claims**

1. In an apparatus for stabilizing the fabric within the weft beat-up area in a travelling-wave shedding loom, wherein the beat-up is effected by means of a rotary reed, the apparatus

having means forming a stabilization slot, and a deflection rail downstream of said means, the top portion of said deflection rail lying above the level of the weaving plane, the means forming the stabilization slot including an upper delimitation rail having a lower edge and fixed on a continuous crossbar along the weaving plane, and a lower rail, the improvement wherein the upper delimitation rail is an elastic stabilizing strip secured at its upper edge to the crossbar, the elastic stabilizing strip being disposed generally above the rotary reed at the



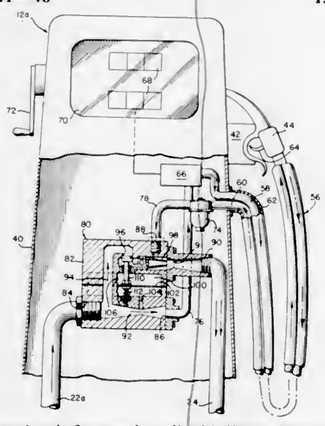
input portion of the said zone wherein the weft is beaten up, the stabilizing strip having its lower edge disposed above and resiliently engaging the upper shed warp ends and the outer circumferential edges of the discs of the rotary reed at the intersection of the upper shed warp ends with the outermost disc periphery circle downstream of the fabric fell, whereby the stabilizing strip prevents the warp threads of the upper shed sheet from being lifted owing to the tension of the warp threads and of the woven fabric produced in the front edge zone over the outer circumferential edges of the rotary reed.

3,952,781

LIQUID DISPENSING AND VAPOR RECOVERY SYSTEM AND A VAPOR FLOW CONTROL UNIT USED THEREIN

Trueman W. Hiller, and Klaus D. Jarr, both of Bettendorf, Iowa, assignors to Weil-McLain Company, Inc., Davenport, Iowa

Filed Jan. 27, 1975, Ser. No. 544,376
Int. Cl.² B67D *5/04*
U.S. Cl. 141—46 **13 Claims**



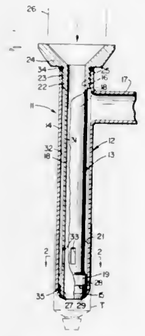
1. A control unit for use in a liquid dispensing and vapor recovery system, said unit comprising a housing having first and second inlets for receiving liquid and vapor, respectively, and first and second outlets for discharging liquid and a mixture of liquid and vapor, respectively, first passage means in said housing connecting said liquid inlet and said liquid outlet, second passage means in said housing for diverting a portion of said liquid from said first passage means, said second passage means registering with said second inlet and said second outlet, means disposed in said second passage means for continuously changing the flow rate of liquid through said second passage means in proportion to changes in the flow rate of liquid through said first passage means, and means for drawing vapor through said second inlet and into said second passage means in proportion to the flow of liquid through said second passage means, said liquid and said vapor combining in said second passage means and discharging from said second outlet.

3,952,782

APPARATUS FOR FILLING CONTAINERS WITH COMPOSITE FLUENT MATERIAL

Giuseppe Mannara, Rome, Italy, assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 419,624, Nov. 28, 1973, Pat. No. 3,881,529. This application Mar. 5, 1975, Ser. No. 555,634
Int. Cl.² B67C *3/02*; **B05B** *7/00*
U.S. Cl. 141—100 **10 Claims**



1. A nozzle assembly for filling containers with fluent materials arranged in desired composite relation comprising longitudinally coextensive inner and outer tubular members removably secured together to form an annular space therebetween, said tubular members being threadedly connected at one end, means for introducing a first fluent material into one end of the inner tubular member, means forming a discharge opening at the other end of said inner tubular member, said inner tubular member having an enlarged portion adjacent its other end slidably fitting within the outer tube, means for introducing a second fluent material into said space, means providing a plurality of spaced orifices in said inner tubular member providing communication between said space and the interior of said inner tubular member, resilient sealing means between the tubes at opposite ends for preventing fluent material from leaving said annular space except through said orifices and axially aligned material flow modifying means disposed upstream of said orifices.

3,952,783

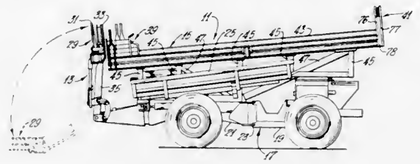
METHOD AND APPARATUS FOR HARVESTING TREES

Robert N. Windsor, Cowie Road Aspley, Brisbane, Australia (Q. 4034)

Filed June 19, 1975, Ser. No. 589,154
Claims priority, application Australia, Feb. 6, 1975, 488/75
Int. Cl.² A01G *23/08*
U.S. Cl. 144—3 D **15 Claims**

1. A method of processing trees comprising:
a. holding the trunk of a felled tree adjacent the butt end thereof;
b. delimbing a first portion of the trunk, said first portion being defined by said butt end and a first predetermined point along the trunk of the tree;
c. severing a first bolt defined generally by said butt end and said first predetermined point;
d. releasing the hold on the trunk adjacent said butt end;
e. holding the undelimbed portion of the tree at a second predetermined point spaced from the butt end of said portion toward the top end thereof;

f. delimbing a second portion of the tree trunk, said second portion being defined by the butt end of said portion and a point adjacent said second predetermined point; and



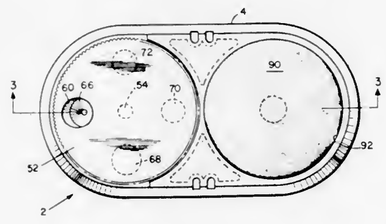
g. severing a second bolt corresponding generally to the second delimbed portion.

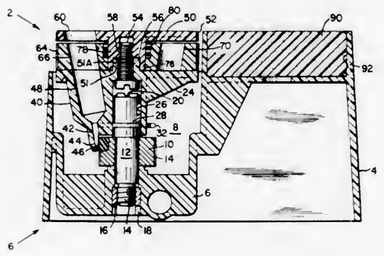
3,952,784

PENCIL POINTER

Donald L. Holland, Statesville, N.C., assignor to Hunt Manufacturing Co., Philadelphia, Pa.

Filed Apr. 16, 1975, Ser. No. 568,479
Int. Cl.² B43L *23/00*
U.S. Cl. 144—28.1 **2 Claims**





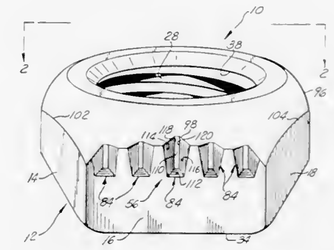
1. A pencil pointer comprising:
a base,
a cylindrical cutter mounted on the base,
a rotatable pencil holder coaxial with the cutter,
first guide means on said holder having an opening to guide the lead to a position adjacent the cutter,
second guide means rotatably mounted above said first guide means and having a plurality of selectable openings of different diameters adapted to be rotated into registry with said first guide means,
detent means to hold the second guide means in a selected position, and
third guide means overlying the second guide means, fixedly secured to the pencil holder and having an opening coaxial with the first guide means opening and having a diameter at least as large as the diameter of the largest opening in the second guide means.

3,952,785

LOCKNUT

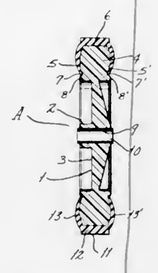
Adalbert Werner, Plettenberg, Germany, assignor to The Lamson & Sessions Co., Cleveland, Ohio

Filed Dec. 2, 1974, Ser. No. 528,848
Claims priority, application Germany, May 30, 1974, 2425897
Int. Cl.² F16B *39/284*
U.S. Cl. 151—21 B **12 Claims**



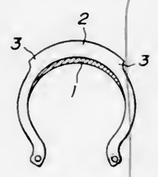
1. A locknut comprising a metallic nut body having a plurality of intersecting side surfaces, an arcuate crown end portion extending between said side surfaces at one end of said nut body, and a bottom end portion extending between said side surfaces at an end of said nut body opposite from said one end, said nut body defining a threaded central opening with noncircular thread convolutions adjacent to the crown end portion of said nut body to interfere with a mating thread convolution and circular thread convolutions adjacent to said bottom end portion of said nut body to freely engage the mating thread convolution, said noncircular thread convolutions being formed by plastically displacing the metal of the nut body to form a plurality of series of longitudinally extending indentations in a pair of side surfaces disposed on opposite sides of said nut body, each series of indentations extending from one edge portion of an associated side surface of said nut body to the opposite edge portion of the associated side surface of said nut body, each of said indentations having an end surface which extends inwardly and upwardly from the associated side surface of the nut body at a location adjacent to an axially inner end of said noncircular thread convolutions and between said crown and bottom end portions, a substantially flat inner surface which extends upwardly from said end surface and intersects said crown end portion of the nut body, said inner surface sloping inwardly toward the central axis of the threaded opening so that said indentation has a first depth adjacent to said end surface and a second depth which is greater than said first depth at a location spaced apart from said end surface to provide for greater noncircularity of the noncircular thread convolutions adjacent to said crown end portion of the nut body than adjacent to the axially inner end of the non-circular thread convolutions, and a pair of side surfaces which intersect said end surface and said inner surface and diverge outwardly from said inner surface so that said indentation has a first width at the intersections of said side surfaces and said inner surfaces and a second width which is greater than said first width at the intersection of said indentation side surfaces and the associated one of said body side surfaces, each of the end surfaces of a series of indentations intersecting the associated one of said body side surfaces along a line extending parallel to said bottom end of said nut body, at least a central one of said indentations of a series of indentations having an inner surface which is longer than the inner surface of another one of said indentations of the series of indentations.

3,952,786
UNITARY WHEEL AND TIRE ASSEMBLY
William F. Kreling, St. Louis, Mo., and Vernon W. Sappington, Granite City, Ill., assignors to Plasco, Inc., St. Louis, Mo.
Filed July 1, 1974, Ser. No. 484,615
Int. Cl.² B60C 7/00; B60B 5/02
U.S. Cl. 152—323 3 Claims



1. A wheel structure comprising a wheel portion and a tire portion, said wheel and tire portions being unitary and inseparable without wheel structure destruction, said wheel portion having a hub section, a web section disposed radially outwardly of said hub section, said web section having side walls and a cylindrical end wall, means connecting said hub section and said web section, said tire portion having a first surface of substantially corresponding extent as said wheel portion cylindrical surface and lateral components having inner surfaces of substantially coincident extent as said wheel web section side walls, said tire first surface and said lateral component inner surfaces being secured substantially throughout the entirety of their said surfaces with the cylindrical surface and side wall surfaces respectively of said wheel section whereby the same are intimately united throughout substantially the entirety of the respective interfaces, the material of construction of said wheel section and tire section being mutually adhesively compatible without the intervention of glutinous substances.

3,952,787
PUNCTURE-SEALING RUBBER COMPOSITION
Yosuke Okado; Hiroshi Fujikawa, both of Kodaira, and Takashi Takusagawa, Ohme, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Continuation of Ser. No. 388,666, Aug. 15, 1973, abandoned.
This application Aug. 12, 1974, Ser. No. 496,688
Claims priority, application Japan, Aug. 21, 1972, 47-82796
Int. Cl.² B60C 21/08
U.S. Cl. 152—347 4 Claims



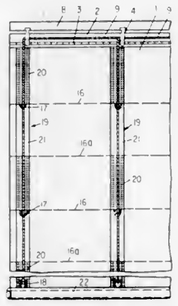
1. A tubeless tire carrying on the inner surface thereof a puncture-sealing rubber composition comprising

1. 100 parts by weight of a rubber containing at least 30% by weight of a polymer selected from the group consisting of ethylene-propylene copolymer and ethylene-propylene-diene terpolymer, the remainder being at least one rubber selected from the group consisting of natural rubber, polybutadiene rubber, styrene-butadiene rubber, chloroprene rubber, acrylonitrilebutadiene rubber and isobutylene-isoprene rubber,

2. from 50 to 500 parts by weight of polybutene having a number average molecular weight of from 1,000 to 5,000, and

3. from 5 to 700 parts by weight of an inorganic filler having an average particle diameter of less than 500 mm.

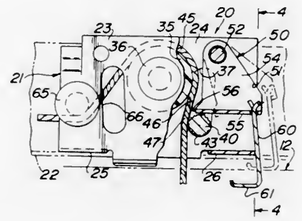
3,952,788
PLEATED PULL-UP CURTAIN
Alfred Schöler, Wuppertal, Germany, assignor to Vorwerk & Sohn, Textil- und Gummiwerke, Wuppertal-Barmen, Germany
Filed Apr. 2, 1975, Ser. No. 564,295
Claims priority, application Germany, Apr. 3, 1974, 7411620[U]
Int. Cl.² A47H 13/14
U.S. Cl. 160—84 R 6 Claims



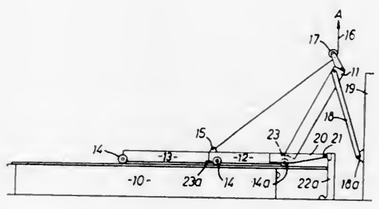
1. A pleated pull-up curtain having horizontal pleats when in a pulled-up position, said pleats defining pleat fold lines, said curtain having a width, an upper part, a back side, a bottom portion, and a longitudinal direction extending from the upper part to the bottom portion, comprising: a supporting tape attached to said upper part of said curtain on said back side; hangers being attached to said supporting tape, serving as carrying and cord-guiding elements, and being guided in curtain rails; tapes fastened in a spaced apart fashion having a longitudinal direction and running in said longitudinal direction of said curtain, said tapes being provided with intermittent, alternatingly reinforced and unreinforced zones having a length and running in said longitudinal direction of said tape, said length of said zones being determined by said pleat fold lines; cord-guiding loops worked into said tapes at the level of each second pleat fold line; and pull-cords being fastened to said bottom portion of said curtain and guided in vertical and horizontal pull directions so that under simultaneous activation of all pull-cords, said curtain is evenly pulled upwards and thereby placed into said horizontal pleats over the width of said curtain.

3,952,789
TOP POSITION LOCK FOR VENETIAN BLINDS
Anthony F. Marotto, Philadelphia, Pa., assignor to Marathon Manufacturing Company, Philadelphia, Pa.
Filed June 26, 1975, Ser. No. 590,595
Int. Cl.² E06B 9/30, 9/324
U.S. Cl. 160—168 R 7 Claims

1. A top position lock for a venetian blind including a head and a depending slat assembly, said top position lock comprising: a mounting structure in the head, a cord guide carried by the mounting structure, a jam member shiftably carried by the mounting structure for movement between a lower free position spaced below said guide and along a path obliquely upwardly toward said guide to an upper locking position proximate to said guide, a pull cord connected to said slat assembly for raising and lowering the latter upon respective downward and upward cord movement, said pull cord being trained over said guide and depending gravitationally between said guide and jam member in engagement with the latter, downward cord movement in engagement with said jam member urging the latter downwardly to its free position and upward cord movement in engagement with said jam member urging the jam member upward to jam said cord against said guide, detent means shiftably carried by said head extending across said jam member path in upward limiting engagement with said jam member to maintain the latter in its free position, and detent shifting means operative to shift said detent means out of said path to release said jam member for upward movement to jam said cord against said guide, said detent shifting means depending into the path of said slat assembly at its top position for release of said jam member to its upper position only when said slat assembly is fully raised.

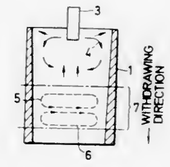


3,952,790
ARRANGEMENT FOR HATCH COVERS
George Leitch, Newcastle-upon-Tyne, England, assignor to MacGregor International, S. A., Basel, Switzerland
Filed Dec. 9, 1974, Ser. No. 531,198
Claims priority, application United Kingdom, Dec. 7, 1973, 56909/73
Int. Cl.² E05F 11/06
U.S. Cl. 160—193 12 Claims



1. A cover arrangement for a container comprising first and second cover elements hinged together and movable together to open and close the container, pulling means attached to said first cover element and direction changing means, through which the pulling means passes on said second cover element, to enable opening of the container to be carried out by applying an upward pull on said pulling means after it has passed through said direction changing means, a tripping lever on said first cover element extending in the direction of said second cover element, and guide ramp means cooperating with said tripping lever to guide said tripping lever in a downward direction, and to pivot said first cover element, with the assistance of said pulling means, into a substantially vertical position on opening of the cover arrangement.

3,952,791
METHOD OF CONTINUOUS CASTING USING LINEAR MAGNETIC FIELD FOR CORE AGITATION
Yasuo Ito, and Yoshitake Suzuki, both of Kisarazu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Jan. 8, 1974, Ser. No. 431,605
Int. Cl.² B22D 11/12, 27/02
U.S. Cl. 164—49 11 Claims

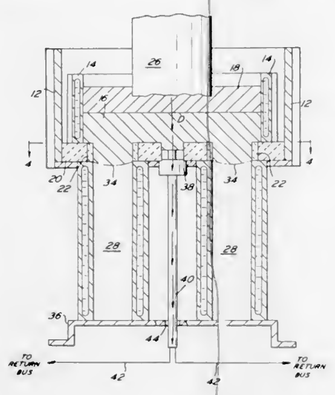


1. In a continuous casting method wherein molten metal is poured into a mold and a casting having a cross-section of substantially rectangular shape is withdrawn from the mold and supported to maintain the desired cross-sectional shape as it is slowly cooled from the outside thereof, the improvement which comprises applying to the molten metal in the crater of said casting, at a position which is between a location right beneath said mold to a location at which the casting has first completely solidified and which is along the side of said casting, a magnetic field traveling linearly in a direction perpendicular to the direction of withdrawing of the casting so as to agitate the molten metal in the crater, and giving to the magnetic field in intensity and traveling speed and direction for inducing substantially all of the molten metal at the position of application of the magnetic field to flow in an agitated stream in a plane perpendicular to the direction of withdrawing of the casting at the position of application of the magnetic field at a velocity such that the downwardly and rearwardly and upwardly and rearwardly diverging stream portions produced by the stream of molten metal striking the solidified shell are substantially immediately drawn back into the stream of the molten metal, said flow in the crater being confined within a narrow region in the direction of withdrawing the casting, whereby the secondary dendrite is broken up and the molten metal outside the region is prevented from coming thereinto for keeping the temperature distribution of the molten metal in said region substantially uniform thereby preventing production of white band and producing a grain structure in the cross-section of the casting which is nearly all equiaxed grain in the center portion, having dendrite on the periphery, and with substantially no secondary dendrite zone or segregation zone.

3,952,792
METHOD AND APPARATUS FOR CASTING A PLURALITY OF INGOTS
Raymond J. Roberts, Willingboro, N.J., assignor to Consarc Corporation, Rancocas, N.J.
Filed July 25, 1974, Ser. No. 491,981
Int. Cl.² B22D 11/10, 27/02
U.S. Cl. 164—52 22 Claims

1. A method of casting a plurality of ingots in a furnace comprising a main mold section in direct, open communication with a plurality of ingot mold sections having a total cross-sectional area less than the main mold section cross-sectional area, an electrode, and a conductor disposed outside the ingot mold sections, comprising the steps of forming a pool of molten metal in the main mold section, maintaining the molten metal pool in a molten state by directing an electrical current through the electrode and conductor, casting the plurality of ingots from the pool of molten metal by flowing the molten metal from the pool into the ingot mold sections

while preventing the molten metal from freezing at the interface between the main mold section and the ingot mold sec-



tions, and preventing the current from entering the molten metal in the ingot mold sections.

3,952,793

MOULDING FLASK FOR VACUUM SEALED MOULDING PROCESS

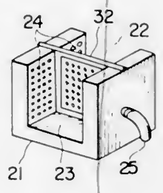
Itsuo Hijikata, Nagoya, and Hideto Terada, Toyokawa, both of Japan, assignors to Sintokogio, Ltd., Nagoya, Japan

Division of Ser. No. 329,082, Feb. 2, 1973, abandoned. This application Nov. 26, 1974, Ser. No. 527,368

Claims priority, application Japan, Feb. 4, 1972, 47-15117[U]; Mar. 14, 1972, 47-31295[U]

Int. Cl.[2] B22C *15/22*

U.S. Cl. 164—160 **3 Claims**



1. A molding flask for use in a vacuum sealed molding process comprising a frame having two openings disposed opposite to each other and closable by pattern plates covered by a shield membrane of synthetic resin which forms a mold surface; a pair of spaced impervious resilient membranes disposed between said two openings; a pair of spaced supporting means disposed between said pair of spaced membranes whereby each of the supporting means supports respectively each of the spaced membranes at the outside thereof, said spaced membranes and said supporting means dividing the interior of the flask into two parts; at least one opening disposed at each of said parts for supplying charging material into each of said parts; means for transmitting atmospheric pressure into the space between the supporting means whereby the outside of each spaced membrane is subjected to the atmospheric pressure; and at least one opening disposed at each of said parts for communicating with a vacuum source, said source being protected against ingressing of the charged material, and whereby said charged material in each of said two parts is subjected to reduced pressure.

3,952,794

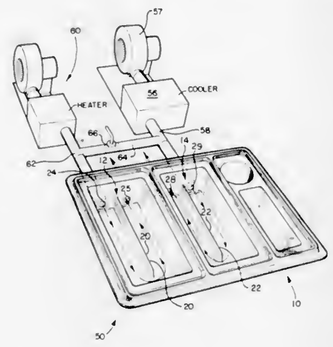
FOOD SERVICE TRAY

Louis Spanoudis, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 19, 1974, Ser. No. 480,946

Int. Cl.[2] F28D *21/00*

U.S. Cl. 165—2 **2 Claims**



2. In a method for the preparation of an individual meal wherein the components of said meal are placed in individual thermally conductive receptacles, the improvement in said method which comprises the steps of:

a. placing said individual thermally conductive receptacles carrying the components of said meal into compartments formed in a thermally insulating base member;

b. thermally isolating said individual receptacles from the outside atmosphere;

c. thermally isolating those individual receptacles which contain meal components to be served hot from those individual receptacles which contain meal components to be served cold;

d. flowing a refrigerated fluid within said base member around said receptacles containing said meal components to thereby maintain at least part of said meal in a chilled condition;

e. ceasing the flow of refrigerated fluid around selected ones of said receptacles which contain meal components to be served hot when it is desired to serve said meal;

f. flowing a heated fluid around those selected ones of said receptacles to thereby heat the contents thereof for serving; and

g. simultaneously with step (f), continuing the flow of refrigerated fluid around those receptacles not in the group of said selected ones of said receptacles.

3,952,795

AIR CONDITIONING SYSTEM

William E. Clark, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 29, 1974, Ser. No. 527,991

Int. Cl.[2] F25B *29/00*

U.S. Cl. 165—30 **4 Claims**

1. An air conditioning system for conditioning air in a plurality of enclosed areas in a building, each of the enclosed areas having a peripheral portion requiring conditioned air having a variable temperature, and an interior portion requiring conditioned air at a constant temperature, said system comprising:

terminal means disposed in each of said enclosed areas for the supply of conditioned air thereinto;

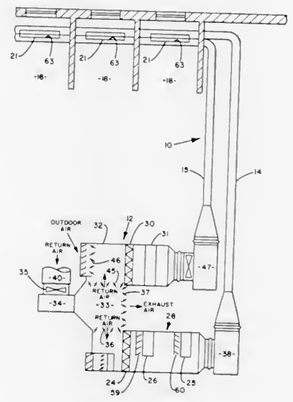
first air conditioning apparatus to provide conditioned air at a temperature level which may be varied;

means to supply said varying temperature conditioned air to a first portion of said terminal means;

second air conditioning apparatus to provide conditioned air at a relatively constant temperature level;

means to supply said relatively constant temperature air to a second portion of said terminal means;

said terminal means including first control means to regulate the quantity of said constant temperature air discharged into said area in accordance with the temperature in said interior portion of said area, said first control means including means to generate a variable magnitude control signal indicative of the quantity of constant temperature air discharged into said area; and



means to receive said signal including second air quantity regulating means operable, when the temperature of said varying temperature conditioned air is at a relatively warm level, to vary the quantity of said warm temperature air discharged from said first portion of said terminal means; as the magnitude of the control signal varies to indicate that the quantity of said constant temperature air discharged into said area is increasing, said second regulating means operates to reduce the quantity of said warm temperature air discharged into said area, and as the magnitude of the control signal further varies to indicate that the quantity of said constant temperature air discharged into said area is decreasing, said second regulating means operates to increase the quantity of said warm temperature air discharged into said area.

3,952,796

TEMPERATURE CONTROL SYSTEM

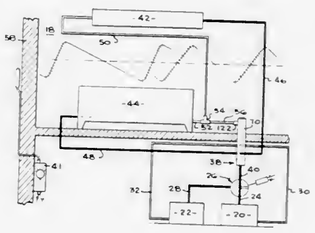
Richard C. Larson, 220 Crescent Parkway, Sea Girt, N.J. 08750

Filed Apr. 7, 1975, Ser. No. 565,613

Int. Cl.[2] F25B *29/00*

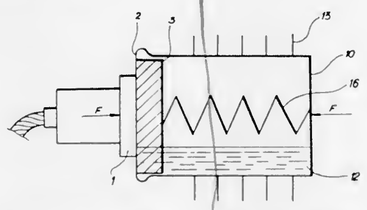
U.S. Cl. 165—40 **41 Claims**

1. An automatic cooling and heating system for providing temperature control for an enclosed control area, said system comprising a source of heated work fluid, a source of chilled work fluid, a heating heat exchanger in said control area, a cooling heat exchanger in said control area, said heating heat exchanger and said cooling heat exchanger both including a work fluid inlet and a work fluid exhaust, a temperature responsive control valve including a hollow valve housing, a first cylindrical valve sleeve mounted for axial rotation in said valve housing and having first and second open-ended internal sleeve chambers on each end separated by a transverse internal wall, said first cylindrical valve sleeve separating the interior of said hollow valve into first and second flow control chambers, a nested cylindrical valve sleeve matingly received within said second internal sleeve chamber of said first valve sleeve for axial rotation therein with respect to said first valve sleeve and said housing, a main supply inlet port in said valve housing communicating with said first flow chamber, selectively operable flow control means including conduit means and solenoid valve means alternatively providing communication between said main supply fluid inlet port and said source of hot work fluid or said source of chilled work fluid, a hot supply outlet port in said valve housing communicating with said first flow control chamber and connected to a supply pipe extending to the work fluid supply inlet of said heating heat exchanger, a cold supply outlet port in said valve housing communicating with said first flow control chamber and connected to a cold fluid supply pipe extending to the work fluid



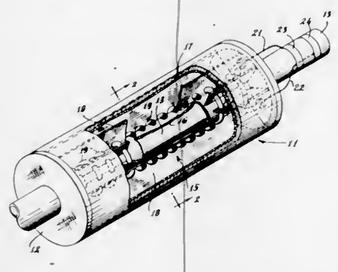
inlet of said cooling heat exchanger, a spent fluid return in said valve housing communicating with said second flow control chamber and connected to conduit means connected to the work fluid exhaust of both said cooling heat exchanger and heating heat exchanger, a hot feed return port in said housing communicating with said second flow chamber and connected by conduit means to a feed inlet on said source of hot work fluid, a main supply sleeve port in said first internal chamber of said first cylindrical valve sleeve, said main supply sleeve port being alternatively alignable with said hot supply outlet port or said cold supply outlet port by rotation of said first cylindrical valve sleeve in said valve housing, a chiller fed return port on said housing communicating with said second chamber and connected by conduit means to an infeed inlet on said source of chilled work fluid, a spent fluid return sleeve port in said second internal chamber of said cylindrical valve sleeve, a first control means responsive to the temperature of work fluid in said first flow control chamber for positioning said first cylindrical valve sleeve in a heat mode position to align said main supply sleeve port with said hot supply outlet port and to simultaneously align said spent fluid return sleeve port with said hot feed return port in said housing when the temperature of fluid in said first flow chamber exceeds a first predetermined value and for positioning said first valve sleeve in a cooling mode position in which said main supply sleeve port is in alignment with said cold supply port in said housing and said spent fluid return sleeve port is in alignment with said chiller feed return port when the temperature in said first flow chamber is less than a predetermined second temperature, a flow modulating sleeve port in said nested cylindrical valve sleeve rotationally positionable in varying degrees of alignment with said spent fluid return sleeve port, a second control means connected to said nested cylindrical valve sleeve responsive to the temperature of fluid in said second flow chamber for positioning said flow modulating sleeve port with respect to said spent fluid return sleeve port for adjusting the degree of alignment between said flow modulating sleeve port and said spent fluid return sleeve port in accordance with the temperature in said second chamber for controlling flow through the system to maintain a desired temperature in said control area.

3,952,797
SEMI CONDUCTOR COOLING SYSTEM
Bohuslav Voboril; Pavel Reichel, and Pavel Kafunek, all of Prague, Czechoslovakia, assignors to CKD Praha, oborovy podnik, Prague, Czechoslovakia
Filed Dec. 21, 1973, Ser. No. 427,225
Claims priority, application Czechoslovakia, Dec. 28, 1972, 9004/72
Int. Cl.² F28D 15/00
U.S. Cl. 165—80 14 Claims



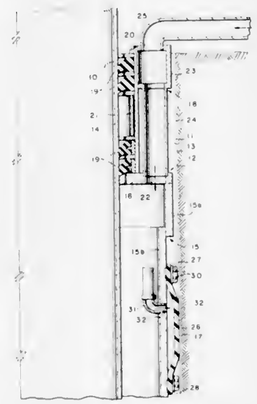
1. Apparatus for cooling semi-conductor devices comprising an enclosed container forming an inner chamber, said container having a wall portion of yieldable material adapted to contact said semi-conductor device, a porous member disposed within said chamber adjacent said yieldable wall portion, resilient means for biasing said porous member against said yieldable wall and a liquid medium partially filling the remainder of said chamber and immersing at least a portion of said porous member, whereby the latent heat of said device is dissipated in a closed evaporator-condenser cycle.

3,952,798
INTERNALLY HEATED HEAT PIPE ROLLER
Dean L. Jacobson, Monrovia, and Randolph W. Hamerdinger, Glendora, both of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Aug. 31, 1970, Ser. No. 68,299
Int. Cl.² F28D 15/00
U.S. Cl. 165—105 4 Claims



1. An internally heated heat pipe for heating the outer surface of the heat pipe substantially uniformly over the length thereof comprising:
a. a container comprising a cylindrical side wall and two end walls for providing a closed space, said side wall having inner and outer surfaces,
b. an elongated member positioned within said container and extending substantially parallel to the axis of said container,
c. a wick structure comprising first, second and third portions, said first wick portion overlying said elongated member, said second wick portion overlying the inner surface of said side wall, said third wick portion extending in a radial direction from said first wick portion to said second wick portion, said first, second and third wick portions being saturated with a heat transer fluid, said heat transfer fluid being vaporized when a predetermined amount of heat is applied thereto, and
d. means for applying heat to said heat transfer fluid in an amount sufficient to vaporize said heat transfer fluid, said heat applying means overlying said first wick portion, the heat in said vapor being transferred substantially uniformly to said outer side wall surface along the length thereof.

3,952,799
APPARATUS FOR BOREHOLE DRILLING
Harry Elwood Simpson, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Oct. 24, 1974, Ser. No. 517,661
Int. Cl.² E21B 33/12, 33/127
U.S. Cl. 166—116 3 Claims

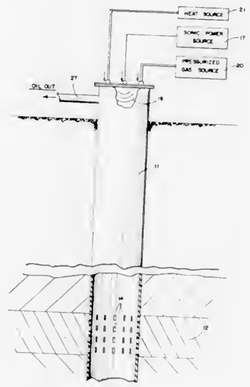


1. An independent seal assembly for placement in an annulus between a rotatable drillpipe and a borehole and arranged for sealing engagement therewith, said seal assembly comprising:
generally cylindrical tubular housing means adapted for telescopic placement over a drillpipe into a well bore annulus;
inner resilient seal means inside said housing means arranged for sealingly and circumferentially contacting the drillpipe;
outer resilient seal means on said housing means adapted to circumferentially sealingly engage the borehole wall;
wherein said inner resilient seal means comprises one or more resilient circular rings attached to said housing means and arranged to contact the drillpipe in flexed sealing relationship; and,
latch means attached to said housing means and adapted to latch to the drillpipe upon upward movement thereof, said latch means comprising one or more hinged angular cogs arranged to be selectively rotated into engagement with discontinuities on the drillpipe outer surface.

3,952,800
SONIC TECHNIQUE FOR AUGMENTING THE FLOW OF OIL FROM OIL BEARING FORMATIONS
Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406
Filed Mar. 14, 1974, Ser. No. 450,989
Int. Cl.² E21B 43/24, 43/25
U.S. Cl. 166—249 9 Claims

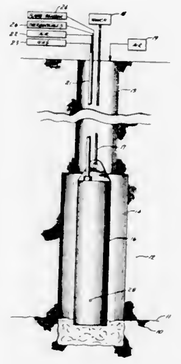
1. A method for augmenting the flow of fluid through an oil well casing installed in the ground, said casing having a gas column formed therein which extends from the head of the well down to the region of the source of said fluid, comprising the steps of:

generating high-level sonic energy, and
coupling said sonic energy to said gas column at the head of said well, whereby the sonic energy is transmitted down said column and into said formation to provide the high level sonic energy therein,



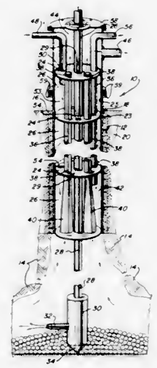
said sonic energy being generated at a frequency such as to set up resonant standing wave vibration within said gas column.

3,952,801
METHOD FOR IGNITING OIL SHALE RETORT
Robert S. Burton, III, Grand Junction, Colo., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.
Filed July 26, 1974, Ser. No. 492,593
Int. Cl.² E21B 43/24
U.S. Cl. 166—256 7 Claims



1. A method for igniting a rubble pile of expanded oil shale in an in situ oil shale retort comprising the steps of:
forming an in situ oil shale retort containing a rubble pile of fragmented oil shale;
boring a hole to the top of the rubble pile;
underreaming a region at the bottom of the hole after forming the rubble pile for forming a plenum at the bottom of the hole adjacent the area of the rubble pile to be ignited, the plenum having a larger cross section than the hole;
lowering a burner through the hole at least part way into the plenum;
burning a mixture of combustible material and oxidizing gas in the burner for directing a flame towards the rubble pile; and
forcing a quantity of oxidizing gas through the hole into the plenum around the burner for cooling the burner, carrying heat downwardly into the shale, and providing oxygen for combustion of carbonaceous material in the oil shale.

3,952,802
METHOD AND APPARATUS FOR IN SITU GASIFICATION OF COAL AND THE COMMERCIAL PRODUCTS DERIVED THEREFROM
Ruel C. Terry, Denver, Colo., assignor to In Situ Technology, Inc., Denver, Colo.
Filed Dec. 11, 1974, Ser. No. 531,453
Int. Cl.² E21B 43/24
U.S. Cl. 166—262 25 Claims



1. Apparatus for in situ gasification of a subsurface coal formation which is in communication with a surface location by an open passage comprising in combination:
a casing in said passage, said casing having divider means defning vertically aligned compartments in said casing, each of said divider means, with the exception of the uppermost and lowermost ones of said divider means, having openings therethrough establishing fluid communication between adjacent compartments defined between said uppermost and lowermost divider means for the passage of fluid material between adjacent compartments,
injection conduit means extending from said surface location to the coal formation,
gas removal conduit means extending from the coal formation to the surface location, said gas removal conduit means passing through said compartments in the casing,
fluid inlet means for introducing a heat receptive fluid into the uppermost one of said compartments whereby said heat receptive fluid can flow downwardly through successive compartments to strip sensible heat from the gases passing through said gas removal conduit means, and
fluid removal means for transferring the heat receptive fluid from the lower end of the casing to the surface location where the heat in the fluid can be removed for useful purposes.
7. A method of in situ gasification of a subsurface coal formation comprising the steps of:
establishing a passage between a surface location and the coal formation,

setting a casing in the passage,
injecting a plurality of hot particles in a non-flammable environment into said casing, said particles having a temperature in excess of the ignition temperature of coal, and
allowing at least some of the particles to come into contact with the coal to ignite the coal causing it to burn and give off useful gases.

3,952,803
OIL RECOVERY METHOD USING OVERBASED WATERFLOOD ADDITIVE CONTAINING SULFONATES DERIVED FROM ALKYLATION REACTION PRODUCTS

Oliver C. Kerfoot; Charles R. Clark, both of Ponca City, Okla., and Carl D. Kennedy, San Diego, Calif., assignors to Continental Oil Company, Ponca City, Okla.

Continuation of Ser. No. 388,689, Aug. 15, 1973, abandoned.
This application Jan. 8, 1975, Ser. No. 539,218
Int. Cl.² E21B *43/22*
U.S. Cl. 166—270 **4 Claims**

1. A process for recovering hydrocarbons from a petroliferous formation comprising injecting into the formation an effective amount of an aqueous mixture containing about 0.5 to 25 wt. % of a waterflood additive comprising (a) a base component; (b) a first sulfonate component derived from an alkylation reaction product produced by alkylating an aromatic hydrocarbon with a branched-chain alkene having about 10 to 35 carbon atoms; and (c) a second sulfonate component derived from an alkylation reaction product produced by alkylating an aromatic hydrocarbon with a partially chlorinated normal alkane having about 10 to 18 carbon atoms, said partially chlorinated alkane being prepared by chlorinating said alkane to about 2 to 15 wt. % chlorine content; wherein the base component is present in a weight ratio range of 3/100 to 300/100, base component to total sulfonate of (b) and (c), and wherein the weight ratio of the first sulfonate component to the second sulfonate component is in the range of about 9/1 to 1/9; and waterflooding the formation to recover the displaced hydrocarbons.

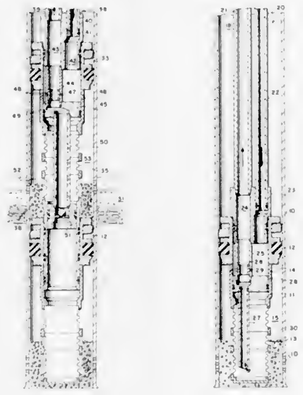
3,952,804
SAND CONTROL FOR TREATING WELLS WITH ULTRA HIGH-PRESSURE ZONES

Kenneth E. Smyrl, Marrero, La., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 2, 1975, Ser. No. 537,878
Int. Cl.² E21B *43/04*
U.S. Cl. 166—278 **11 Claims**

1. Apparatus for treating an underground formation penetrated by a well bore, said apparatus comprising:
an elongated ported tubular mandrel;
a well packer mounted on said mandrel;
a sandscreen mounted on said mandrel;
a first conduit means adapted for passing through said packer and mandrel and into said sandscreen;
valve means in said first conduit means arranged to communicate with port means in said mandrel;
seal means below said valve means and said port means and adapted to seal between said first conduit means and said mandrel; and,
a second conduit means beside said first conduit means communicating with said mandrel above said seal means.

7. A method of placing an aggregate pack in a high-pressure formation in a well bore, comprising:
setting in the producing interval of the well bore a packer having a ported mandrel and sandscreen therebelow;
flowing through a first conduit a suspension of aggregate in a carrier fluid down the well bore and out the ported mandrel into the annulus below the packer;
returning the carrier fluid through the sandscreen and up a second flow conduit in the well bore;
diverting the flow path from the first conduit through said packer and directly into the second conduit; and,



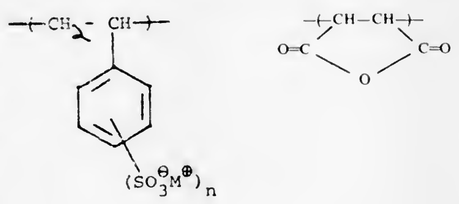
flowing a well killing fluid through said first conduit and up said second conduit.

3,952,805
WELL CEMENTING METHOD USING A COMPOSITION HAVING IMPROVED FLOW PROPERTIES, CONTAINING SULFONATED COPOLYMERS OF STYRENE-MALEIC ANHYDRIDE

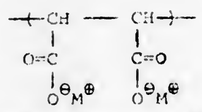
Leonard J. Persinski, Pittsburgh; Fred David Martin, McMurray, and Sally Lee Adams, Pittsburgh, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Feb. 27, 1975, Ser. No. 553,391
Int. Cl.² E21B *33/14, 33/138*
U.S. Cl. 166—293 **8 Claims**

1. In the method of cementing a well comprising the step of pumping an aqueous hydraulic cement slurry into place in the annular space between the well casing and the well bore-hole, the improvement comprising employing therein an aqueous hydraulic cement slurry composition having improved flow properties comprising dry hydraulic cement in admixture with from about 0.01 to about 5.0 percent by weight, based on weight of dry hydraulic cement, of a copolymer of randomly repeating units of the following formulas:



and



where M is hydrogen, ammonium or alkali metal ion, and *n* is an integer of 1 to 3; and
sufficient water to make a pumpable slurry which is capable of setting to form a monolithic solid.

3,952,806
METHOD FOR ALTERING PERMEABILITY OF A HYDROCARBON-CONTAINING FORMATION

Joseph C. Trantham, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

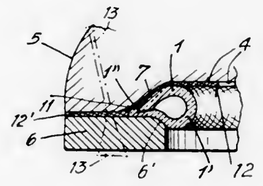
Filed June 16, 1975, Ser. No. 587,181
Int. Cl.² E21B *33/138*
U.S. Cl. 166—294 **12 Claims**

1. A method for altering the permeability of at least a portion of a subterranean hydrocarbon-containing formation penetrated by a wellbore, comprising:
1. passing a micellar dispersion downwardly through the wellbore and outwardly into the formation;
2. passing a polymer solution having at least one contacting aluminum citrate solution downwardly through the wellbore and outwardly into the formation to a preselected location; and
3. closing the well for a period of time sufficient for gelling the polymer in situ.

3,952,807
DEVICE FOR PREVENTING HORSES' HOOVES SLIDING ON ICE OR SNOW

Guiseppe Cattaneo, CH-7500, St. Moritz, Switzerland

Filed Dec. 20, 1974, Ser. No. 534,929
Claims priority, application Switzerland, Dec. 21, 1973, 17984/73
Int. Cl.² A01L *7/02*
U.S. Cl. 168—28 **10 Claims**

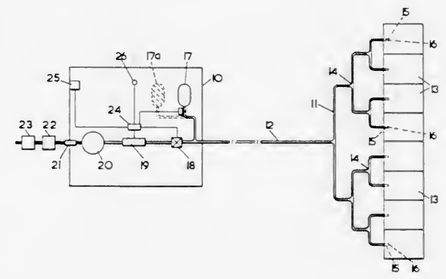


1. In combination with a horseshoe which is adapted to be affixed to the sole of a horse's hoof, a resilient U-shaped device for preventing the ingress and freezing of snow and ice between the horseshoe and hoof and for preventing the formation of lumps of ice on the sole, said U-shaped device comprising a comparatively thin, flat supporting flap oriented parallel to the upper face of said horseshoe and having a shape similar to that of said horseshoe, said flap being disposed in the region between said horseshoe upper face and the facing portion of the sole of said hoof for clamping said device in place, said horseshoe having a curved inner flange adapted to be extending below said sole in a direction transverse to the upper face of said horseshoe, the radially inner edge of said flap being located adjacent to said inner flange of said horseshoe and having substantially the same curvature as the inner flange of said horseshoe, and said device including an elastically deformable, U-shaped member which is significantly thicker than said flap and which is attached to said inner edge of said flap, said deformable U-shaped member being substantially coextensive with the curved inner flange of said horseshoe, said elastically deformable member including a first surface which extends below said flap in at least partially overlying relation to the inner flange of said horseshoe to an extent no greater than the lower face of said horseshoe and in resilient engagement with said curved inner flange of said horse-shoe, and said elastically deformable member including a second surface which extends radially inward of said flap to a limited extent and which resiliently engages said sole along a confined U-shaped arcuate region located radially inward of the inner flange of said horseshoe, the opposite ends of said U-shaped member being spaced from one another at positions closely adjacent the opposing ends of said horseshoe to leave exposed the portion of said sole radially inward of said confined arcuate region.

3,952,808
FIRE PROTECTION SYSTEMS

Edward Gregory Richardson, Bathford, England, assignor to National Research Development Corporation, London, England

Filed Jan. 21, 1975, Ser. No. 542,676
Claims priority, application United Kingdom, Jan. 23, 1974, 3193/74; Mar. 15, 1974, 11608/74
Int. Cl.² A62C *37/04*
U.S. Cl. 169—61 **10 Claims**



1. A protection system for use in the detection of smoke from one or more of a plurality of locations and the subsequent release of an extinguishant into these locations including a main tube, a plurality of sensing tubes in a pre-arranged distribution network in fluid connection with one end of said main tube and with the open ends of said tubes of said network extending into said locations to be protected, each of said sensing tubes containing a restrictor nozzle in its open end to restrict and control flow through said network, a control unit in fluid connection with the other end of said main tube and including a pump arranged to draw air through said tube network and said main tube, a smoke detector arranged to sample said air and provide warning of the presence of smoke in said sampled air, a source of extinguishant, and valve means which upon activation from said smoke detector will operate to seal off the smoke detection capability and initiate the release of extinguishant through the same said main tube and distribution network as that utilized for the detection operation of the system.

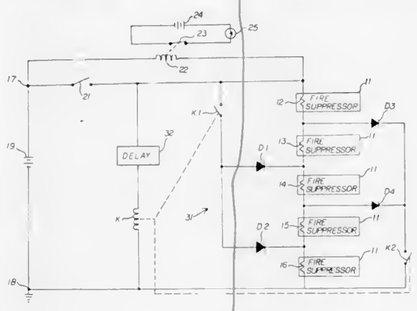
3,952,809
SERIES TO PARALLEL TRANSFER CIRCUIT FOR INITIATOR STRING

William B. Osborne, Marlboro, Mass., assignor to Walter Kidde & Co., Inc., Clifton, N.J.

Filed Mar. 14, 1975, Ser. No. 558,471
Int. Cl.² A62C *37/04*
U.S. Cl. 169—61 **10 Claims**

1. An electrical protection system comprising:
a plurality of suppressor units activatable to suppress an abnormal condition;
a plurality of electrical current responsive activators, one associated with each of said suppressor units and adapted to induce activation thereof;
electrical current supply means;
control circuit means connecting said activators in series and comprising actuator means for initiating activating current flow from said supply means to said series connected activators; and
auxiliary circuit means comprising switch means for connecting said activators in parallel in response to initiation of activating current flow by said actuator means, said

switch means comprising a plurality of electronic switches, one connected between each of the junctions



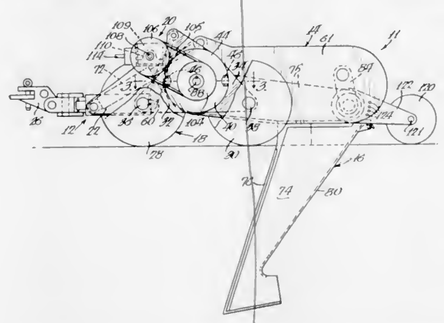
between each pair of said series connected activators and said supply means.

3,952,810

SLIT TRENCHING AND CABLE LAYING DEVICE

Raymond M. Ulrich, Washington, Ill., assignor to Ulrich Foundation, Inc., Washington, Ill.

Filed June 27, 1974, Ser. No. 483,679
Int. Cl.² F16L *1/02*; **E02F** *5/18*
U.S. Cl. 172—40 **23 Claims**



1. In a slit trenching and cable laying device, in combination, frame means, support means for holding said frame means above the ground, said frame means carrying plow means for forming a trench and laying a cable or line therein, first means on said frame means for imparting an oscillating digging motion to said plow means in the plane of the trench, and second means on said frame means for imparting a motion to said plow means to reduce the surface contact between said plow means and the sides of the trench, whereby the power necessary to drive said device is reduced.

3,952,811

ROCK CRUSHER

Francois Carre, 89730 Mailly-la-Ville, France

Filed Sept. 13, 1973, Ser. No. 396,850
Claims priority, application France, Sept. 5, 1973, 73.32086
Int. Cl.² A01B *33/00*
U.S. Cl. 172—45 **8 Claims**

1. Rock crusher comprising

a frame adjustably supported upon a plurality of wheels,

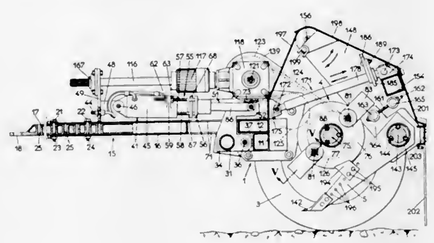
a drawbar for connecting said frame to a tractor,

a row of plowshares extending transversely of said frame, with the individual plowshares extending in a direction having a substantial vertical component,

a rotor rotatably mounted in said frame substantially parallel to said row of plowshares and on the same side of said plowshares as said drawbar,

a plurality of hammers each pivotally attached at one end thereof to a point on the circumferential periphery of said rotor between said plowshares so that said hammers may swing freely about said points and the other ends of said hammers are urged radially outward to points between the lower ends of said plowshares by centrifugal force when said rotor turns,

drive means for said rotor adapted to be connected to the power take-off of a tractor.



said rotor comprising a shaft which carries a series of circular discs separated by spacer rings, said discs being pierced near their peripheries by rods to at least one of which said hammers are pivotally connected between said discs, and said hammers are thick plates which are generally rectangular in shape and mounted for limited axial movement along the rod to which they are connected between two resilient members, and

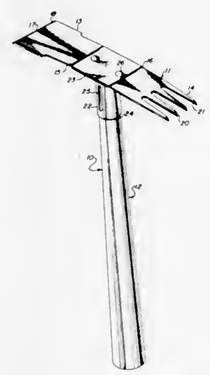
said plowshares carrying stops which are adjustable along the plowshares and adapted to prevent the rocks from becoming squeezed between the discs of the rotor and the plowshares.

3,952,812

GARDEN TOOL

Joseph L. Lucan, 16 545 Armstead St., Granada Hills, Calif. 91344

Filed Aug. 28, 1972, Ser. No. 284,427
Disclosure was also published under Trial Voluntary Protest Program on Jan. 28, 1975.
Int. Cl. A01b *1/20*
U.S. Cl. 172—375 **6 Claims**



1. A gardener's hand tool, comprising:

a. a head member, said head member having a blade, intermediate and tine sections, said tine section including a plurality of tines, each of said tines being relieved on the under side of said tine so as to provide the space between said tines with a wedge-shaped cross-section;

b. a handle, said handle being provided with a tapered configuration;

c. a ferrule, said ferrule being provided with a tapered configuration and fitting over a portion of said handle and being firmly attached to said handle; and

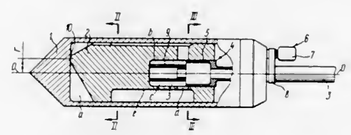
d. a flange member attached to said ferrule, said flange member having one side attached to one end of said ferrule and the opposite side attached to the intermediate section of said head member so as thereby to attach said handle to said head member, said intermediate section and said flange member being disposed at an angle of substantially 90° to said handle, said blade section and said tine section being disposed on opposite sides of said intermediate section, said blade section and said tine section being disposed at a predetermined angle to said intermediate section.

3,952,813

PERCUSSIVE DEVICE FOR DRIVING HOLES IN SOIL

Nikolai Prokhorovich Chepurnoi, 107, ulitsa Televizionnaya, 11, kv. 20; Alexandr Dmitrievich Kostylev, 91, ulitsa Derzhavina, 19, kv. 44; Konstantin Stepanovich Gurkov, ulitsa Derzhavina, 19, kv. 13; Konstantin Konstantinovich Tupitsyn, ulitsa Krylova, 3, kv. 37; Sergei Konstantinovich Tupitsyn, ulitsa Zorge, 123, kv. 31; Nikolai Grigorievich Nazarov, ulitsa Gogolya, 3, kv. 10; Vladimir Dmitrievich Plavskikh, ulitsa Kamenskaya, 84v, kv. 33; Khaim Berkovich Tkach, ulitsa Gogolya, 17, kv. 49; Evgeny Nikolaevich Cherednikov, ulitsa Lenina, 32, kv. 6, all of Novosibirsk; Alexandr Nisovich Galbinshtein, Leninsky prospekt, 89, kv. 214, Moscow; Mikhail Vladimirovich Borshtein, Pirogovskaya, 5, kv. 78, Odessa; Andron Trofimovich Karavaev, ulitsa Pervomaiskaya, 118, kv. 19, Novosibirsk; Valery Anatolievich Menzorov, ulitsa Sorevnovania, 40, Novosibirsk, and Alexei Mikhailovich Makarov, Vostochny poselok, 8a, kv. 16, Novosibirsk, all of U.S.S.R.

Filed Feb. 7, 1975, Ser. No. 548,137
Int. Cl.² E21B *1/00, 11/02*
U.S. Cl. 173—91 **12 Claims**



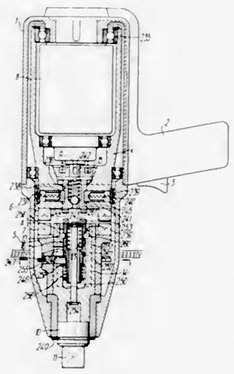
1. A percussive device for driving holes in the soil, comprising: a hollow cylindrical housing with a pointed front end; a hammer piston accommodated in said housing for reciprocation under the action of compressed air, said piston having a cavity in permanent communication with a source of compressed air used to reciprocate said hammer piston, said hammer piston being positively rotatable relative to said housing and forming together therewith a front working chamber; an air distribution mechanism including a tube mounted in said housing within the cavity of said hammer piston so as to form a rear working chamber together therewith, said piston having air passages therein positioned so that during the reciprocation of said hammer piston, said tube alternately communicates, via said passages, said front working chamber with said rear working chamber and ambient atmosphere; and means for controlling the direction in which the hole is driven in the soil, said means being consituted by a construction wherein said hammer piston has a center of gravity offset with respect to the longitudinal axis of said housing, said hammer piston having a contact point at which it strikes said housing located on a line substantially extending through the center of gravity of said hammer piston.

3,952,814

IMPACT WRENCH

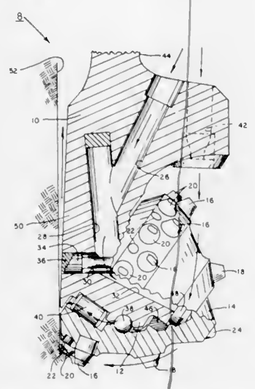
Mikhail Lvovich Gelfand, Yaroslarskoe shosse, 129, kv. 44, Moscow; Yakov Isaakovich Tsipenjuk, ulitsa Kirova, 5, kv. 30, Moskovskaya oblast, Solntsevo; Petr Ivanovich Podlesnykh, ulitsa Raschupkina, 12, korpus 1, kv.29, Moscow; Georgy Afanasievich Antipov, ulitsa Krasny Mayak, 3, kv. 146, Moscow; Boris Grigorievich Goldshtein, ulitsa Molodogvardeiskaya, 24, korpus 1, kv. 26, Moscow; Nikolai Stanislavovich Lavnikov, ulitsa Kustanaiskaya, 117, kv. 10, Rostov-na-Donu; Leonid Nikolaevich Teres, ulitsa 2 Koltsevaya, 61/21, Rostov-na-Donu; Ivan Ivanovich Urazhdin, ulitsa Engelsa, 52/56, kv. 18, Rostov-na-Donu, and Petr Stepanovich Yakubovsky, Podshipnikovy pereulok, 12, kv. 36, Rostov-na-Donu, all of U.S.S.R.

Filed Mar. 14, 1975, Ser. No. 558,715
Int. Cl.² B25D *15/00*
U.S. Cl. 173—93 **24 Claims**



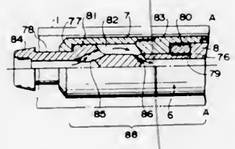
1. An impact wrench comprising: a housing; a hammer mounted in said housing and having impact jaws; an anvil mounted in said housing and having impact jaws; said hammer and anvil being mounted coaxially in a space relationship and axially movable with respect to each other; a drive having an output shaft connected to said hammer for transmitting rotary motion thereto; a device for said relative axial displacement of said hammer and anvil for engagement of their jaws and for transmitting a blow to the anvil; a spindle journalled in said housing connected to said anvil for rotation together therewith, said spindle having means for receiving a socket wrench; a device for preliminary interaction of said hammer and anvil prior to the engagement of their impact jaws, said device having two parts axially movable relative to each other; the first part of said device for said preliminary interaction of said hammer and anvil being disposed in said hammer; the second part of said device for said preliminary interaction of said hammer and anvil being disposed in said anvil; members engaging each other upon relative displacement of said parts disposed on said parts and providing for said preliminary interaction of said hammer and anvil; said members of said first and second parts being at the same angle to said impact jaws of the hammer and anvil, respectively, whereby, upon said preliminary interaction of said hammer and anvil their impact jaws engage each other as they are mutually oriented; a device for disengaging the said impact jaws of the hammer and anvil.

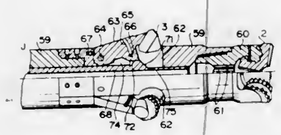
3,952,815
LAND EROSION PROTECTION ON A ROCK CUTTER
Theodore Rivers Dysart, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Mar. 24, 1975, Ser. No. 561,576
Int. Cl.² E21C 13/01; E21B 9/35
U.S. Cl. 175—374 6 Claims



3. A rolling cutter member having a body with at least one annular row of outwardly projecting, circumferentially-spaced inserts embedded in said body and a multiplicity of substantially flush inserts embedded in said body in said annular row circumferentially-spaced between said outwardly projecting inserts.

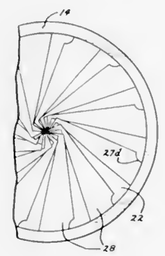
3,952,816
DRILLING SYSTEM AND METHOD OF PULLING IT UP
Sho Takano; Yasushi Okuyama, both of Tokyo; Ryokuya Suzuki, Kunitachi, Japan, and Ikuma Kinoshita, Chigasaki, all of Japan, assignors to Sumitomo Metal Mining Company Limited, Tokyo, Japan
Division of Ser. No. 406,482, Oct. 15, 1973, Pat. No. 3,894,590. This application Sept. 23, 1974, Ser. No. 508,459
Int. Cl.² E21B 7/18, 3/12
U.S. Cl. 175—67 2 Claims





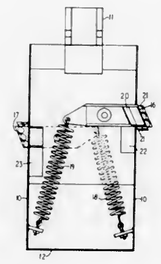
1. In a drilling system, comprising a hollow drill pipe located below ground surface and cutting means disposed within said drill pipe, said cutting means having an axial passageway therein through which water is fed at a first predetermined rate of pressure for operating a hydraulic motor which rotates said cutting means during a drilling operation; said cutting means having reaming bits resiliently urged outwardly thereof under said first pressure rate, a pressing piece on said cutting means resiliently urged into engagement with an inner surface of said drill pipe under said first pressure rate for maintaining said cutting means concentrically within said drill pipe, a method of pulling up said cutting means out of said drill pipe, comprising the steps of feeding water through a hollow wire connected to said cutting means and through said axial passageway at a second predetermined rate of pressure lower than said first pressure rate, bypassing the water at said second pressure rate away from said motor and to said reaming bits and said pressure piece for permitting same to move inwardly of said cutting means against the action of said lower second pressure rate, the water being fed out through the underground end of said cutting means so as to avoid any vacuum pressure produced during pulling up and to assist in the pulling up and winding up said wire by a winding means.

3,952,817
BASKET TYPE CORE RETAINER
John Forrest Anderson, Minneapolis, Minn., assignor to Longyear Company, Minneapolis, Minn.
Filed Mar. 8, 1974, Ser. No. 449,463
Int. Cl.² E21B 9/20
U.S. Cl. 175—240 16 Claims



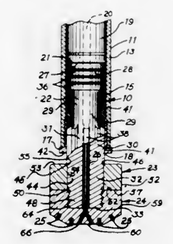
1. For being mounted in the axially inner end portion of a core tube or a soil sampler tube, a core retainer mountable in said tube for retaining core in the tube axially outwardly thereof, said core retainer having a central axis and comprising a mounting ring and spring finger means mounted by the mounting ring for movement between a closed position for retaining core in said tube and an open position extending further axially away from the mounting ring than in the closed position to permit passage of a core therethrough, said spring means including a plurality a elongated fingers having one end portions axially adjacent the mounting ring that are at least partially interleaved, and opposite end portions that are at least partially interleaved in the spring means closed position, said spring means including a first spring finger assembly and a second spring finger assembly, each of the first and second assemblies respectively including a first plurality and a second plurality of said fingers and a first and a second band portion, the band portion of the first assembly being located radially outwardly of the band portion of the second assembly, the first fingers being joined to the first band portion to extend axially outwardly thereof and the second fingers being joined to the second band portion to extend axially outwardly thereof.

3,952,818
GROOVING BUCKET
Terence George Jasper, Sydney, Australia, assignor to Frankipile Australia Pty Limited, Australia
Filed Nov. 7, 1974, Ser. No. 521,628
Claims priority, application Australia, Dec. 21, 1973, 6083/73; July 10, 1974, 71450/74
Int. Cl.² E21B 9/26
U.S. Cl. 175—277 15 Claims



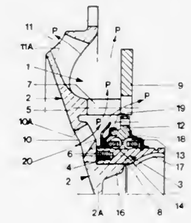
1. A grooving bucket for forming grooves or bells in the ground around a hole or socket that has been drilled into the ground to allow casting of a concrete pile, said grooving bucket comprising a cylindrical bucket portion adapted to be attached to a drilling machine, there being provided within the bucket portion at least one cutter which is movably mounted so as to be movable from a retracted position in which said cutter lies wholly within the circumference of the bucket portion, to a cutting position in which said cutter projects substantially radially from the circumference of the bucket, said cutter being held in the retracted position by means of a removable wedge and said cutter being movable from the retracted position to the cutting position by means of at least one tension spring attached to said cutter, and wherein said cutter is shaped to cause spoil to be led into the interiors of the bucket during the rotation of said bucket to cut a groove in the ground.

3,952,819
FATIGUE RESISTANT ANVIL BIT FOR PERCUSSION ROCK DRILL
Gerald L. Adcock, Lewiston, Idaho, assignor to A & W Deep-Well Drilling, Inc., Lewiston, Idaho
Filed Mar. 10, 1975, Ser. No. 556,673
Int. Cl.² E21B 1/06, 9/22
U.S. Cl. 175—293 9 Claims



1. A fatigue resistant anvil bit for a percussion rock drill, comprising:
an elongated anvil body having a rear impact end with an anvil head section of a prescribed diameter and having an integrally formed shank extending from the rear end to a threaded bit end in which the diameter of shank from the anvil head section to the threaded end does not exceed the prescribed diameter of the anvil head section;
an enlarged removable bit head threadably mounted on the threaded bit end with a plurality of cutting elements mounted in a face surface thereof; said enlarged bit head having a rear surface extending laterally from the shank; and
an enlarged anvil ring shrunk fit on the shank adjacent the threaded bit end having a forward support surface complementary to and engaging the rear surface of the bit head to provide lateral support to the bit head without increasing the cross section of the anvil body adjacent the threaded bit end.

3,952,820
HUB DEVICE FOR A WHEEL OF A ROAD VEHICLE
Sture Lennart Asberg, Partille, Sweden, assignor to SKF Nova A.B., Goteborg, Sweden
Filed Dec. 3, 1973, Ser. No. 420,807
Claims priority, application Sweden, Dec. 8, 1972, 16001/72; Dec. 8, 1972, 16000/72
Int. Cl.² B60T 5/00
U.S. Cl. 180—1 R 19 Claims

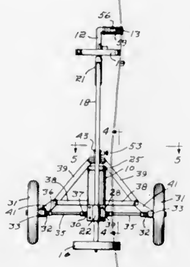


1. A wheel and a bearing structure for a vehicle, comprising a roller bearing having an inner ring, an outer ring, two rows of rolling bodies between said inner and outer rings, and sealing means for said rolling bodies, a wheel disc affixed coaxially to one of said rings and having a smooth surface away from said one ring, said wheel disc extending conical outward with the outer edge of the disc being spaced laterally away from said one ring, a brake device affixed coaxially to the side of said wheel disc opposite said smooth surface, said disc having air cooling apertures with edges positioned to direct cooling air streams through said wheel disc and against said brake device.

3,952,821
MOTOR DRIVEN GOLF BAG CART
Charles G. Craven, 35 Will Drive, Canton, Mass. 02021
Filed Jan. 22, 1975, Ser. No. 543,157
Int. Cl.² B62D 51/04
U.S. Cl. 180—19 R 9 Claims

1. A golf bag cart including a support, an upright attached to said support and including a handle, a bag holder attached to said support and said upright, a drive mounted on said support and including a battery powered electric motor, a pair of coaxial shaft portions at least one of which is part of said drive, a pair of wheels, each including a hub and a stub shaft extending therethrough, an intermediate shaft for each wheel and including universal joints, one connected to the appropriate shaft portion and one connected to the appropriate stub shaft, first and second links for each wheel and pivotally connected thereto with their pivot axes coaxial, the first links pivotally connected to the support, a slide on said upright, the second links pivotally connected to said slide, and means releasably locking said slide to said upright in a first position in which said wheels are spaced apart with said stub and shaft portions substantially coaxial, said locking means, when re-

leased, permitting said slide to be moved towards said handle into a second position in which said links are folded upwardly



close to the upright and substantially parallel and with said wheels spaced substantially closer together.

3,952,822
ELECTRICALLY POWERED WHEEL-CHAIR FOR INDOOR AND OUTDOOR USE

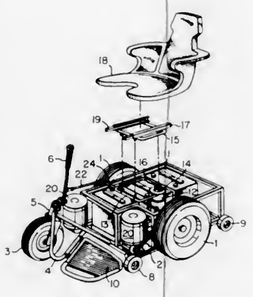
Per Udden, Timra; Siegfrid Graf, Fagervik, and Bert Engman, Soberge, all of Sweden, assignors to Stiftelsen Teknisk Hjalp at Handikappade Permobilstiftelsen, Timra, Sweden

Filed Mar. 18, 1974, Ser. No. 452,146

Claims priority, application Sweden, Mar. 19, 1973, 7303827

Int. Cl.² B62D *61/12*

U.S. Cl. 180—21 **7 Claims**



1. An electrically powered wheel-chair for stable and maneuverable indoor and outdoor use, comprising in combination:

a pair of rear main wheels, which are rigidly connected with the frame of the chair, at least one of said main wheels being driven by an electric traction motor,

a front steering wheel, which is rotatably connected with the frame and located on one side of a longitudinal axis through the middle of the chair,

a support wheel with less diameter than the steering wheel, said support wheel being connected with the frame and located on the other side of said longitudinal axis relative to said steering wheel at such a level that it will not touch a horizontal and even support surface when the steering wheel is directed straight ahead, whereby the fore-most point of the steering wheel is located ahead of the fore-most point of the support wheel, a portion of the frame positioned between the main wheels being designed in the form of a case, adapted to contain batteries, the common center of gravity of which will be located on the same side of the longitudinal axis of the chair as the steering wheel.

3,952,823
VEHICLE GAS EXTRACTOR

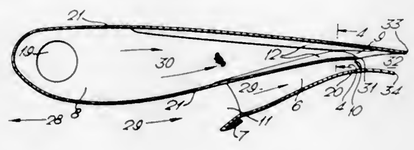
Mitja Victor Hinderks, 15a Adamson Road, Hampstead, London N.W.3, England

Continuation-in-part of Ser. No. 270,034, July 10, 1972, abandoned. This application Mar. 25, 1974, Ser. No. 454,607

Claims priority, application United Kingdom, Feb. 1, 1974, 4731/74

Int. Cl.² F01N *7/20*

U.S. Cl. 180—64 A **17 Claims**



1. In combination with a surface vehicle, at least one chamber mounted to said vehicle such that said chamber is disposed in the air-flow past said vehicle when said vehicle is in motion, said chamber having an exhaust gas inlet and an exhaust gas outlet, the flow of exhaust gases between said inlet and outlet being substantially unidirectional and parallel to the air-flow past said vehicle, said discharge outlet comprising an elongated aperture arranged to discharge the flow of exhaust gases from said chamber in a direction substantially parallel to the direction of air-flow past said vehicle and at least one aerofoil member mounted externally of said chamber in the air-flow past said vehicle, said aerofoil member being oriented relative to said elongated aperture to effect an increase in air-flow velocity past said aperture during forward motion of said vehicle.

3,952,824
RIGID REAR AXLE FOR MOTOR VEHICLES

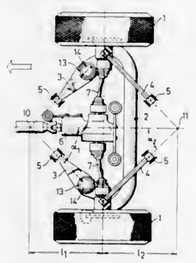
Wolfgang Matschinsky, Munich, Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Germany

Filed Apr. 10, 1974, Ser. No. 459,799

Claims priority, application Germany, Apr. 11, 1973, 2318231

Int. Cl.² B60G *7/02*

U.S. Cl. 180—73 D **23 Claims**



1. A rear axle assembly for motor vehicles comprising:

rear axle gear means for driving wheels of a vehicle by way of drive shafts, said rear axle gear means being supported by a fixed vehicle parts,

an axle member supporting said wheels, said axle member being capable of substantial vertical movement relative to said rear axle gear means, and

guide means for suspending said axle member from fixed vehicle parts, said guide means including four guide members of approximately the same length, each of said four guide members being arranged approximately at an angle of 45° to the driving direction as viewed in plan view,

wherein said four guide members include two lower guide members extending forwardly and two upper guide members extending rearwardly, each of said four guide members being pivotally connected at one end to the axle member in proximity to a respective wheel with the points of pivotal connection of a respective upper guide member and lower guide member being disposed approximately one above the other, and the respective forward and rearward points, formed by the intersection of lines extending parallel to the longitudinal dimension of each of said two lower guide members and each of said two upper guide members, defining a connecting line being arranged such that the forward point of intersection is at most at the height of the rearward point of intersection, and

wherein at least said two upper guide members are arranged sloping down rearwardly, as viewed in side view.

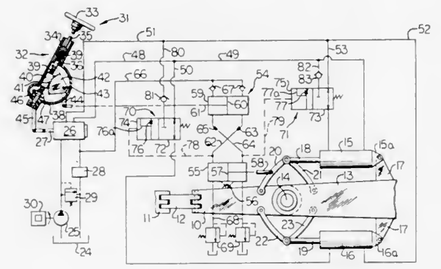
3,952,825
HYDRAULIC STEERING SYSTEM FOR ARTICULATED VEHICLES

Marvin Edward Beyers, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 7, 1975, Ser. No. 593,593

Int. Cl.² B62D *5/06*

U.S. Cl. 180—139 **14 Claims**



1. In a wheeled vehicle having two members connected by an upright joint about which the members pivot for steering the vehicle, a steering wheel on one of said members, a hydraulic system including two fluid operated jacks coupled between said members on opposite sides of the joint for effecting said pivoting, each of said jacks having a head end and a rod end provided with fluid connections, a constant displacement hydraulic pump in said system which is driven from the vehicle engine, a three position control valve in said system, a valve control element operable by rotation of the steering wheel for moving said control valve between a neutral position and two offset positions for simultaneously driving both jacks to pivot the members in a desired direction, and follow-up means in said system which includes a master cylinder coupled between the wheeled members for detecting pivoting at the joint, together with a slave cylinder hydraulically connected to the master cylinder for synchronized movement therewith, said slave cylinder being coupled to the valve control element to move said element in a direction opposite to that produced by turning of the steering wheel, the improvement comprising:

means for sensing back pressure in the system resulting from insufficient fluid volume for driving the jacks and followup system as rapidly as is required by the speed of steering wheel rotation;

selector valve means which has a normal position, said selector valve means being movable from said normal position in response to the sensing of back pressure by said sensing means;

and fluid connections between said selector valve means, the control valve, and the jacks to selectively direct substantially the entire flow of fluid from the pump to one of the two jacks, which is then an active jack, upon movement of the selector valve means from said normal position, while the other of said jacks is substantially idle.

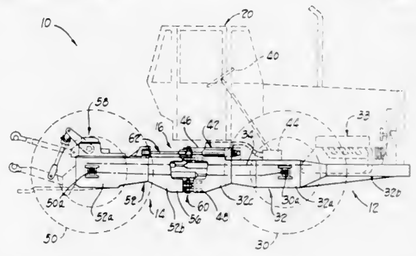
3,952,826
ARTICULATED VEHICLE

Dean Marshall Barker, Rockford, and Mark Harold Sickman, Hopkins, both of Minn., assignors to White Farm Equipment Company, Cleveland, Ohio

Filed Apr. 4, 1974, Ser. No. 457,997

Int. Cl.² B62D *5/10*

U.S. Cl. 180—136 **13 Claims**



1. In an articulated vehicle comprising:

a. a first vehicle section comprising a first frame supported by ground engaging members;

b. a second vehicle section comprising a second frame supported by ground engaging members; and,

c. articulating means for interconnecting said first and second vehicle sections and comprising:

i. universal joint means connected between said first and second frames defining a vertically extending steering axis about which said first and second vehicle sections are relatively pivoted to enable steering of the vehicle;

ii. pantograph linkage means interconnecting said vehicle sections and comprising a first link structure pivoted to one of said vehicle sections in substantial alignment with said vertical axis and having portions which extend laterally oppositely away from said axis, second and third links connected to respective lateral portions of said first link structure and extending to connecting locations on the other of said vehicle sections, said connecting locations and said other vehicle section defining a fourth link structure of said pantograph linkage means; and,

iii. steering actuator means connected to said one vehicle section and cooperating with said pantograph linkage means to provide for articulation of said vehicle sections about said steering axis.

3,952,827
ACCELERATION CONTROL SYSTEM

Gilbert H. Drutchas, Birmingham, Mich., assignor to TRW Inc., Cleveland, Ohio

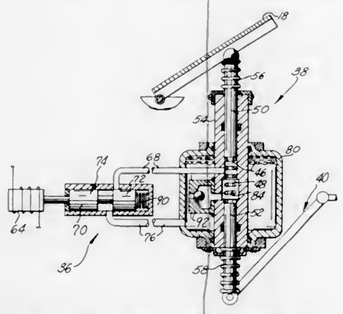
Filed Nov. 7, 1974, Ser. No. 521,939

Int. Cl.² B60K *31/00*

U.S. Cl. 180—82 R **8 Claims**

1. An apparatus for use in a vehicle having nondriven and engine driven wheels, said apparatus comprising throttle actuator means operable against the influence of a biasing force to increase the operating speed of the engine, said throttle actuator means including input and output members and variable volume chamber means for holding a body of fluid for transmitting pressure forces between said input and output members, said chamber means including surface means for defining a longitudinally extending chamber having openings at opposite ends thereof, said input member extending through one of said openings into said chamber, said output member extending through the other opening into said chamber, said body of fluid being disposed in said chamber between said input and output members, said input member being movable relative to said surface means to effect movement of said

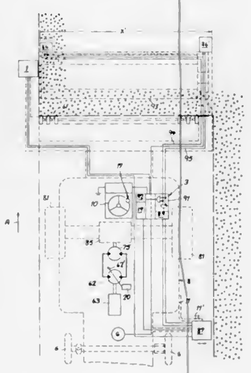
output member relative to said surface means under the influence of fluid pressure forces transmitted from said input member to said output member by the body of fluid, sensor means for detecting when the rate of rotation of a driven wheel exceeds the rate of rotation of a nondriven wheel by more than a predetermined amount, and control means for effecting a variation in the volume of said variable volume chamber means from a first volume to a second volume to effect relative movement between said members and a decrease in engine speed in response to detection of a rate of driven wheel rotation which exceeds the rate of nondriven wheel rotation by more than the predetermined amount to thereby decrease the rate at which the driven wheel is rotated by the engine and for maintaining the volume of said chamber means constant at said second volume during continued operation of the vehicle with the rate of rotation of the driven wheel exceeding the rate of rotation of the nondriven wheel by an amount which is less than the predetermined amount.



3,952,828
AUTOMATIC STEERING SYSTEM FOR ROW-CROP HARVESTER AND SENSOR THEREFOR

Michael Stampfer, Gottmadingen; Ewald Graeber, Weiterdingen; Helmut Oni, Gottmadingen, and Ernst Rüede, Bietingen, all of Germany, assignors to Maschinenfabrik FAHR AG, Gottmadingen, Germany

Filed Dec. 16, 1974, Ser. No. 532,859
Claims priority, application Germany, Jan. 3, 1974, 2400125; Dec. 18, 1973, 2362899
Int. Cl. B62d *5/00*
U.S. Cl. 180—97 **6 Claims**



1. An automatic steering system for a standing-crop harvester having a chassis adapted to travel along the ground in a transport direction determined by guide wheels on said chassis and carrying a cutter for cutting a swath in the crop, said system comprising:

front sensor means on said chassis to one side of and ahead of said cutter in said transport direction for detecting the edge of uncut standing crop and generating an output corresponding to the position of said edge relative to said chassis;

back sensor means on said chassis to the other side of and behind said cutter in said transport direction for detecting the edge of a swath made by said cutter and generating an output corresponding to the position of the swath edge relative to said chassis;

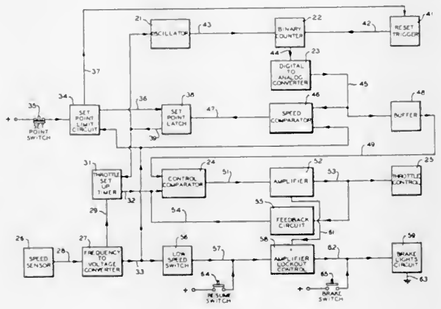
steering means on said chassis operable by said outputs and connected to said guide wheels for guiding said chassis along the edge of said uncut crop; and

cutout means including a detector on said chassis ahead of said cutter and inboard of both of said front and back sensor means and connected between said front sensor means and said steering means for disconnecting said front sensor means from said steering means during detection of a gap in said crop ahead of said cutter and between said front and back sensor means and for simultaneously connecting said back sensor means to said steering means for operating said steering means with said output of said back sensor means.

3,952,829
VEHICLE SPEED CONTROL CIRCUIT

Larry O. Gray, Greensfork, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed May 22, 1975, Ser. No. 580,063
Int. Cl.² B60K *31/00*
U.S. Cl. 180—105 E **11 Claims**



1. In a vehicle having a source of a pulsed vehicle road speed signal of a frequency proportional to the vehicle road speed and a throttle control means, a speed control circuit for automatically maintaining the speed of the vehicle at a desired road speed, comprising:

means actuated by the vehicle operator when the vehicle reaches the desired road speed and responsive to the first vehicle road speed signal pulse to occur after said actuation for generating a first signal having a magnitude which is a function of the time elapsed from the occurrence of said first pulse;

means responsive to said first pulse generating a second signal having a magnitude which is a different function of the time elapsed from the occurence of said first pulse;

means for comparing the magnitudes of said first and second signals and for terminating the generation of said first signal when said magnitudes coincide wherein said means for generating said first signal stores said first signal as the desired road speed signal; and

comparator and control signal generating means responsive to the vehicle road speed signal and said desired road speed signal for generating a control signal to have the throttle control means to maintain the speed of the vehicle at the desired road speed.

3,952,830
MINERAL AGGREGATE (PERLITE) ACOUSTICAL BOARD

Otto A. Oshida, Fountain Valley; John B. Gilmour, Whittier, and Nadeem U. Siddiqui, Torrance, all of Calif., assignors to Grefco, Inc., Los Angeles, Calif.

Filed May 7, 1974, Ser. No. 468,008
Int. Cl.² E04B *1/99*
U.S. Cl. 181—33 G **11 Claims**

1. A monolithic acoustical panel comprising by weight,

a. 45 to 75% of an expanded volcanic glass of which 65–100% will pass an 8 mesh U.S. Standard screen and will be retained on a 50 mesh U.S. Standard screen, said expanded volcanic glass having a bulk density of about 6 to 15 lbs./cu.ft.;

b. 10 to 30% of mineral fiber;

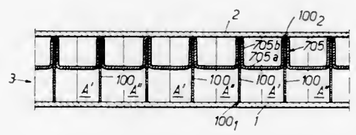
c. 10 to 20% of nongelatinous cellulosic fiber having lengths in the range of about 0.5 to 3.5 mm.; and

d. 10 to 25% total of binder and sizing agent.

3,952,831
COMPOSITE MATERIAL WITH ACOUSTIC ABSORPTION PROPERTIES

Jean-Paul Bernard, Dammarie-les-Lys; Pierre Jules Henry Brussieux, Alfortville; Louis Francois Jumelle, Ris-Orangis, and Jean Lucien Simonin, Issy-les-Moulineaux, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Feb. 25, 1975, Ser. No. 552,744
Claims priority, application France, Feb. 26, 1974, 74.06433
Int. Cl.² E04B *1/74*
U.S. Cl. 181—33 G **25 Claims**

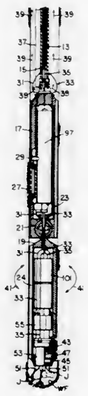


1. A composite material with acoustic absorption properties of the sandwich type comprising, two substantially parallel skins one of which is cut-out by orifices while the other is devoid of orifices, a core of cellular structure disposed between said two skins and composed of a plurality of cells each of which extends from one skin to the other, a plurality of small plates inserted into said cellular structure made of material with high acoustic resistivity, and an active part for each of said cells contained in a plane substantially parallel to the said skins, the said plane being common to the respective active parts of all the said small plates, so that the said active parts form, together, the acoustic equivalent of an intermediary wall with high acoustic resistivity dividing, in the direction of thickness, the said cellular structure into two superposed layers each formed by a mass of sub-cells.

3,952,832
PULSED HIGH PRESSURE LIQUID PROPELLANT COMBUSTION POWERED SEISMIC SOURCES

Lester C. Elmore, Portola Valley, and Thomas M. Broxholm, Palo Alto, both of Calif., assignors to Pulsepower Systems, Inc., San Carlos, Calif.

Division of Ser. No. 869,660, Oct. 27, 1969, Pat. No. 3,620,313. This application Mar. 29, 1971, Ser. No. 129,208
Int. Cl.² G01V *1/06*
U.S. Cl. 181—116 **5 Claims**



1. A method of producing a sound wave from a seismic source for exploration purposes, said method comprising, loading a quantity of a liquid propellant into a container, said liquid propellant including a fuel and an oxidizer of the group comprising a liquid or a solid in a slurry form, said liquid propellant being a high energy density liquid which burns to produce high combustion chamber pressures, said liquid propellant also being a liquid which can be ignited in the bulk mode without the need to vaporize the propellant prior to ignition, placing the container in the position desired for the initiation of the sound wave, igniting the liquid propellant in the bulk mode without vaporizing the propellant prior to ignition by actuating an igniter mechanism and tranferring the high pressure expansion pulse produced by the bulk burning of the small quantity of the liquid propellant from the container to the media to produce the sound wave in the media surrounding the container and wherein the container has a combustion chamber defined by a cylinder and a piston reciprocable within the cylinder and acoustic ports extending through the walls of the cylinder and located to be uncovered by downward movement of the piston in the cylinder, and said method including placing the container underwater and burning the liquid propellant in the combustion chamber to produce high pressure gases, expanding the high pressure gases produced in the combustion chamber and ejecting the expanded gases through acoustic ports to produce a bubble pulse sound wave in the water surrounding the container.

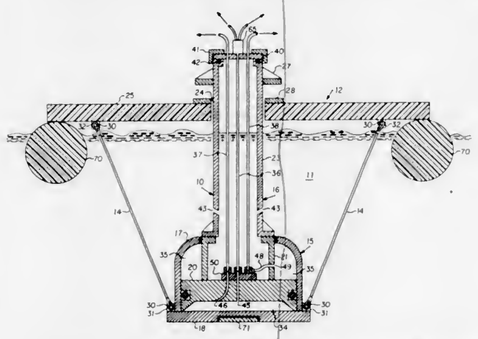
3,952,833
METHOD AND APPARATUS FOR GENERATING PRESSURE WAVES IN WATER BY IMPLOSION

Dale H. Reed, and Alpheus A. Franklin, both of Dallas, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 26, 1974, Ser. No. 536,356
Int. Cl.² G01V *1/38;* **G01K** *11/00*
U.S. Cl. 181—118 **18 Claims**

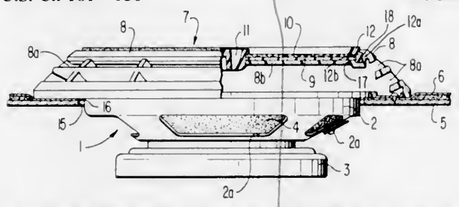
1. A device for generating acoustic waves by implosion of a vapor bubble in water comprising:

a. means defining an expansible sealed combustion chamber between a rigid lower member and a rigid upper member telescoping therein so as to permit limited relative vertical movement therebetween;
b. means for supporting said lower member beneath the surface of the water so as to apply a predetermined restraint to downward movement thereof; and



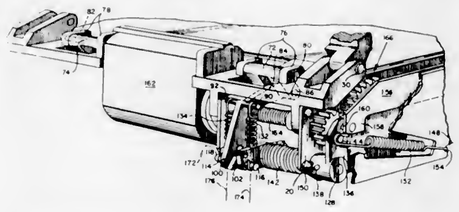
c. means for confining an explosion within said chamber to lift said upper member and to thereby transmit a further lifting force to said lower member, whereby said vapor bubble is created beneath and adjacent said lower member.

3,952,834
EMBEDDED TYPE SPEAKER WITH OVER LYING GRILL
Hiroshi Soma, Tokyo; Yutaka Tamura, and Kenzo Miyazawa, both of Tokorozawa, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Oct. 18, 1974, Ser. No. 515,954
Claims priority, application Japan, Oct. 18, 1973, 48-120848[U]; Oct. 18, 1973, 48-120849[U]
Int. Cl.² H05K *5/00*
U.S. Cl. 181—150 **6 Claims**



1. In an embedded type speaker of the type wherein a speaker body is mounted within a opening formed within a wall and a grill is mounted in front of the speaker body and overlying the opening and the speaker body, the improvement comprising: said grill consisting of an annular grill frame having circumferentially spaced sound communicating holes within a peripheral portion thereof, said peripheral portion defining a central opening, said grill including a supporting portion extending transversely across said grill frame central opening from one side to the other and at least a circular grill sheet spanning said opening in front of said supporting portion to close off the central opening of the grill frame, and having an external surface appearance compatible with the exterior surface of the wall supporting the speaker body and the grill, means for mounting said grill sheet to the peripheral portion of the annular grill frame, said means for mounting said grill sheet to said annular grill frame comprises an annular elastic packing interposed between the inner periphery of said annular grill frame and the outer periphery of said circular grill sheet and means including said annular packing for pressing the peripheral edge of said circular grill sheet against said annular grill frame to prevent vibration therebetween, and a mounting member for connecting the center of the grill sheet to said supporting portion.

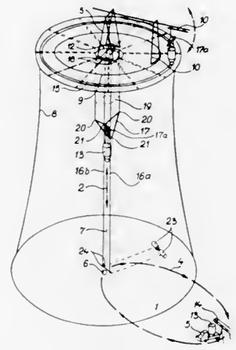
3,952,835
FLAT TORQUE RATE DRIVE SYSTEM
Igor Blinow, Millis, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Division of Ser. No. 246,715, April 24, 1972, Pat. No. 3,894,294. This application Nov. 18, 1974, Ser. No. 524,756
Int. Cl.² F03G *1/00;* **G03B** *19/12*
U.S. Cl. 185—11 **12 Claims**



1. Apparatus for use with a reflex camera of the type having a frame and an operator assembly movably mounted on said frame for movement from a first position in which it functions as a focusing screen to a second position in which it functions as a reflex member for reflecting the image of a subject toward an exposure plane; said apparatus including: erecting means engageable with said operator assembly for moving said operator assembly from said first position to said second position and thence to said first position when in engagement with said operator assembly, said erecting means comprising a shaft rotatably securable to said frame and a crank arm secured to said shaft for rotation therewith, and spring drive means connected to said erecting means to deliver a generally uniform torque to said erecting means, said spring drive means including a first spring connected to said shaft and connectable to said frame for providing an output torque which decreases as said operator assembly moves from said first position to said second position and a tension spring that provides an output torque which increases as said operator assembly moves from said first position to said second position, said tension spring being connectable between said crank and said frame such that its extension decreases and the perpendicular distance from its longitudinal axis to the center of rotation of said shaft increases as said operator assembly moves from said first position to said second position.

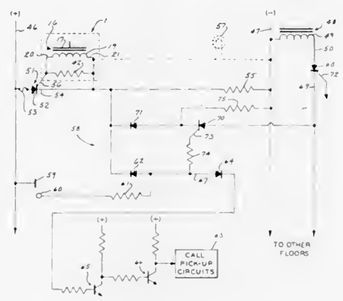
3,952,836
CONSTRUCTION HOIST CONVEYING SYSTEM
Jozsef Thoma, Budapest, Hungary, assignor to Linden-Alimak AB, Skelleftea, Sweden
Filed Sept. 27, 1973, Ser. No. 401,488
Claims priority, application Hungary, Sept. 27, 1972, TO 889
Int. Cl.² B65G *37/00, 49/00;* **B66B** *9/18;* **E04G** *21/04*
U.S. Cl. 187—2 **5 Claims**

1. In the known type of hoisting arrangement that is useful in connection with the construction of a high tower-like structure and which includes a vertically movable carrier frame for transporting a load from a loading position adjacent the base of the tower-like structure to an elevated working platform which rises as to the tower-like structure rises, the improvement in said carrier frame which comprises:
a. two mutually independent hoisting ropes arranged to suspend said carrier frame,
b. said carrier frame having a shape corresponding to that achieved by bending a rhombus along its shorter diagonal to form a V-shaped configuration,
c. two hoist connection points for the hoist ropes located on said carrier frame at points on said carrier frame corresponding to the ends of the longer diagonal of said rhombus,
d. two guiding connecting points for the hoist ropes located on said carrier frame at points on said carrier frame



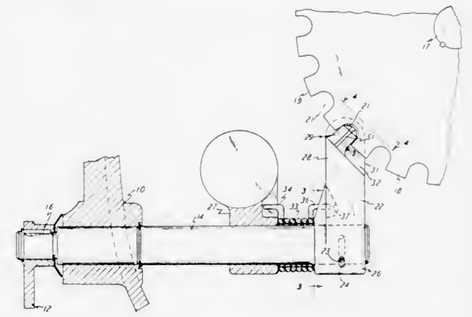
corresponding to the ends of the shorter diagonal of said rhombus,
e. said two hoist connection points being located at a higher level on said frame than said two guiding connection points.

3,952,837
SIGNALING SYSTEM FOR AN ELEVATOR
Lyman A. Rice, Grafton, Wis., assignor to Armor Elevator Company, Louisville, Ky.
Filed Nov. 1, 1974, Ser. No. 520,026
Int. Cl.² B66B *1/46*
U.S. Cl. 187—29 R **22 Claims**



1. An elevator system connected to a structure having a plurality of landings comprising an elevator car, means mounting said car for movement relative to the structure to serve said landings, and control means moving said car and stopping said car, said control means including signaling means having means providing first and second permanent magnetic poles, output means including core means electromagnetically coupled to coil means and selectively providing a signaling output, flux conducting means connecting said core means and said first pole, and means pivotally connected to said core means and including a first portion magnetically coupled to said core means and to said second pole and a second portion including resilient means selectively manually actuated and rapidly varying the magnetic coupling between said first portion and said second pole to provide said signaling output indicative of the manual operation.

3,952,838
TRANSMISSION PARK-LOCK MECHANISM
John H. Osten, Caledonia; Peter D. Ruffalo, and Donald L. Johnson, both of Kenosha, all of Wis., assignors to J. I. Case Company, Racine, Wis.
Filed Mar. 17, 1975, Ser. No. 559,125
Int. Cl.² B60T *1/06*
U.S. Cl. 188—31 **6 Claims**

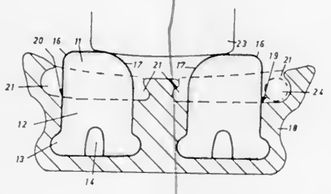


1. A transmission park-lock mechanism comprising a rotatable transmission shaft, a gear mounted on said shaft for rotation therewith and including side portions and including peripheral teeth, an additional shaft rotatably mounted and at an angle relative to the axis of the first said shaft, a latch mounted on said additional shaft and to one side of said gear for movement in the plane transverse to the axis of said additional shaft and toward said gear for engagement with the teeth of said gear in response to rotation of said additional shaft for restraining said gear from rotating, said latch having a tooth adjacent to and facing said one side of said gear and an abutment portion remote from said gear, said abutment portion extending into abutment with said gear when said latch is engaged with the teeth of said gear, to thereby limit the movement of said latch toward said gear and align said latch tooth into engagement with said gear teeth, a spring engaged with said latch for yieldingly urging said latch into the engaged position with said gear teeth, a lost motion connection between said additional shaft and said latch and having a limit position for limiting the movement of said latch relative to said shaft and with said limit position being arranged to permit said latch abutment portion to move into contact with said gear, and a control member on said additional shaft for rotating the latter and thereby move said latch into and out of engagement with said gear.

3,952,839
RAIL TRACKWAY FITTED WITH BRAKING DEVICES
Patrick R. Brown, Zumikon, and Max A. Buehler, Thalwil, both of Switzerland, assignors to Weelpal, A. G., Zug, Switzerland
Filed Dec. 19, 1974, Ser. No. 534,413
Claims priority, application Switzerland, Dec. 20, 1973, 18118/73; July 18, 1974, 10025/74
Int. Cl.² B61K *7/02*
U.S. Cl. 188—62 **8 Claims**

1. In combination, a rail trackway provided with braking devices which are arranged at predetermined intervals and consist of elastically deformable braking bodies, the improvement comprising:
said braking devices in the form of beads which are inserted into the trackway and which project in the unloaded state beyond the surface of said trackway and being made of elastic material having high inherent damping;
receiving means along one of the rails of said rail trackway comprising two parallel extending groove-like channels, for the reception of the braking bodies; and,

the lower part of said braking body which sits in the track being symmetrical and having along its lower edges a



longitudinally extending and laterally projecting extension.

3,952,840

ELASTOMERIC BUSHING CLEARANCE DEVICE FOR A CLOSED-LOOP DISC BRAKE

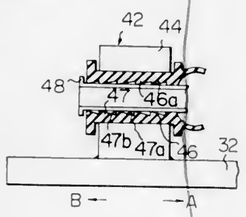
Tetu Yamazaki, Yokohama, and Kazuaki Shimizu, Yokosuka, both of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed Dec. 23, 1974, Ser. No. 535,681

Claims priority, application Japan, Dec. 28, 1973, 48-147847[U]

Int. Cl.² F16D *65/54*

U.S. Cl. 188—71.8 **4 Claims**



1. A disc brake of a wheeled vehicle, including:

a rotatable braking disc;

a stationary hydraulic cylinder having inner and outer pistons slidable in opposite directions which are substantially parallel to the axis of said braking disc, said pistons defining a fluid chamber therebetween into which fluid under pressure is supplied when braking;

directly and indirectly actuated friction pad assemblies positioned adjacent to opposite faces of said braking disc, said directly actuated friction pad assembly being in abutting engagement with said inner piston which forces it against said braking disc when said inner piston is moved by said fluid;

a yoke movable in a direction parallel to said axis of said braking disc by said outer piston to move said indirectly actuated friction pad assembly; and

two guide means for guiding said yoke in said direction parallel to said axis of said disc to allow smooth engagement of said indirectly actuated friction pad assembly with said braking disc, each of said guide means including a support member provided with a bore therethrough and fixed to said yoke, a guide rod secured to a portion of said stationary hydraulic cylinder and passing through the bore of each said support member, said guide rod securely provided with a cylindrical collar around the periphery of said guide rod; the improvement comprising an elastomeric bushing tightly disposed between the inner surface of said bore of each said support member and the outer peripheral surface of said cylindrical collar and secured to each said support member, each said elastomeric bushing being, at its portion contacting the outer peripheral surface of said cylindrical collar, configured to slide on the outer peripheral surface of said cylindrical collar, in a direction for applying the brake, with a lower friction resistance than that in the reverse direction for releasing the brake.

3,952,841

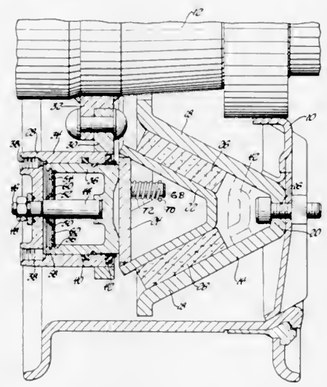
DISC BRAKE WEAR TAKE-UP

William L. Pringle, Grosse Pointe Shores, Mich., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 410,701, Oct. 29, 1973, abandoned. This application Jan. 30, 1975, Ser. No. 545,622

Int. Cl.² F16D *65/54*

U.S. Cl. 188—71.8 **5 Claims**



1. A brake assembly comprising: support means; a friction element directly supported by said support means for movement into and out of frictional engagement with a friction disc to apply a braking force thereto; an actuator supported by said support means for moving said friction element into engagement with the friction disc; biasing means reacting between said supporting means and said friction element for moving said friction element out of engagement with the friction disc and against said actuator; said actuator including a housing defining a cavity, a hollow piston member slidably supported in said cavity of said housing and having a front end engageable with said friction element, said piston member being open from the rear end thereof, a shaft-like member supported by said housing and extending into said cavity and into said open rear end of said piston member to a distal end thereof, said piston member having a recess on the interior thereof and extending about the axis of said shaft-like member to define a first shoulder facing said open rear end, said recess extending axially from said first shoulder to said rear end of said piston member, integral gripping means including a conical gripping portion in gripping engagement with said shaft-like member for moving along said shaft-like member only in the direction toward said distal end of said shaft-like member and a disc-like support portion extending radially of said gripping portion and into said recess for movement axially toward and away from said first shoulder, said piston member having a groove on the interior thereof extending about the axis of said shaft-like member, said groove being disposed in said recess and axially spaced from said first shoulder in the direction of said rear end, retaining means disposed in said groove and defining a second shoulder axially spaced from said first shoulder to define a channel between said shoulders, said retaining means being annular with an inner opening surrounding and disposed radially outwardly of said conical gripping portion, said disc-like support portion of said gripping means being disposed in said channel between said first and second shoulders, the distance between said shoulders being greater than the thickness of said disc-like support portion whereby said

gripping portion may move along said shaft-like member toward said friction element to compensate for wear of said friction element and whereby said disc-like support portion of said gripping means is allowed to move axially between said shoulders to allow said piston to retract to allow said biasing means to move said friction element out of engagement with said friction disc.

3,952,842

SPREADING DISC BRAKE AND ACTUATOR STRUCTURE

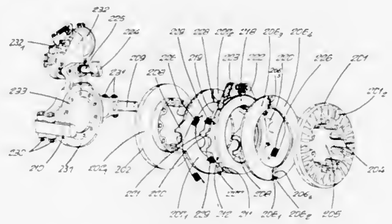
Hermann Klaue, Tour d'Ivoire 24 e, 1820 Montreux, Switzerland

Continuation-in-part of Ser. No. 288,287, Sept. 12, 1972, Pat. No. 3,885,650, which is a continuation-in-part of Ser. No. 73,566, Sept. 18, 1970, abandoned, Continuation-in-part of Ser. No. 415,681, Nov. 14, 1973, and a continuation-in-part of Ser. No. 457,261, April 2, 1974. This application May 15, 1974, Ser. No. 470,303

Claims priority, application Germany, Dec. 2, 1969, 1960286; Dec. 27, 1969, 1965171; Dec. 27, 1969, 1965170; Aug. 25, 1973, 2343004; Switzerland, Nov. 17, 1972, 16741/72

Int. Cl.² F16D *55/04*

U.S. Cl. 188—71.4 **9 Claims**



1. A fully lined disk brake assembly for a vehicle wheel comprising

a brake housing comprising an annular member having an annular gap of channel-like cross-section open on its radially exterior side, said channel-like gap having inner sides which provide annular braking sufaces, said brake housing being attached to be rotatable jointly with a wheel of an assembly to be braked;

at least one pair of segmental disk brake shoes disposed from the radially exterior side into the channel-like gap having friction races facing the adjacent braking surface;

means for non-rotatably supporting each pair of brake shoes in the gap comprising a pair of diametrically opposite members attachable to a non-rotating part of a brake and wheel assembly, at least one of the pair being adapted to be removed from over the open side to permit replacement of the brake shoes without dismantling the means for actuating the brake shoes; and

means for moving said brake shoes into contact with said braking surfaces disposed between the brake shoes and comprising thrust rings disposed between and against the brake shoes, said thrust rings having means adapted to be disposed on the said diametrically opposite members which extend over the open side of the channel to support the thrust rings in the channel between the brake shoes, a pair of actuating rings disposed between the thrust rings, a pair of concentric races filled with ball-bearings extending around the peripheries of a first of said actuating rings facing a first thrust ring, a pair of concentric races filled with ball-bearings around the peripheries of the second thrust ring and facing the second of said actuating rings, and a plurality of circumferentially spaced slot-like races each having a ball-bearing therein disposed to contact the second thrust ring and the first actuating ring between the concentric bearing races when the actuating rings and thrust rings are associated together between the brake shoes, whereby rotation of the actuating rings moves the thrust rings and the brake shoes towards the braking surface;

said brake shoes having an extension means thereon which is associated with said members to support the brake shoes in the gap.

3,952,843

SPREADING DISC BRAKE AND CAM ACTUATOR THEREFOR

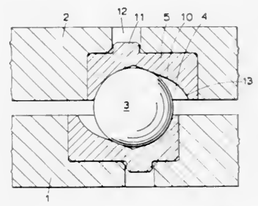
Roy Campbell, Lickey Rock, Nr. Bromsgrove, and Anthony George Price, Birmingham, both of England, assignors to Girling Limited, Birmingham, England

Filed Aug. 22, 1974, Ser. No. 499,795

Claims priority, application United Kingdom, Aug. 23, 1973, 39951/73; Nov. 2, 1973, 51086/73

Int. Cl.² F16D *55/16*

U.S. Cl. 188—71.4 **11 Claims**



1. An insert for a pressure plate in a brake of the spreading disc kind which includes pressure plates having opposed cooperating camming surfaces thereon and balls co-operating with said surfaces to spread said plates upon relative rotation therebetween, said inserts comprising a circular member adapted to be rotatably mounted in a recess in a pressure plate and incorporating on one face a straight groove having a longitudinal axis and of progressively varying depth along said axis for co-operation with a ball located in the groove and in a complementary groove in an insert in a co-operating pressure plate, the circular member also incorporating on a face opposite said one face a rearwardly projecting peg adapted to be received in an opening in the pressure plate offset from the axis of the circular member.

3,952,844

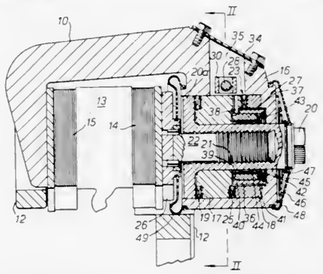
HELICAL CAM ACTUATOR FOR A DISC BRAKE

Charles Newstead, Walsall, and Robert Joseph Warnock, Stourport-on-Severn, both of England, assignors to Girling Limited, Birmingham, England

Filed Jan. 13, 1975, Ser. No. 540,452

Int. Cl.² F16D *55/08*

U.S. Cl. 188—72.8 **13 Claims**



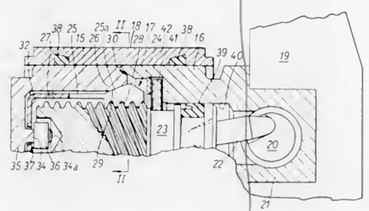
1. In a vehicle brake system: a mechanical brake actuator comprising relatively rotatable cam components, two complementary axially cooperating parallel helical cam tracks respectively on said cam components, and a helical thrust bear-

ing between said components comprising a plurality of rolling members between said two cam tracks said cam components being constructed and arranged that rotation of one of said cam components in an appropriate direction relative to the other of said cam components effects axial displacement of said one cam component relative to said other cam component.

3,952,845
BRAKE ADJUSTERS

Anthony Asquith, Nuneaton, England, assignor to Girling Limited, Birmingham, England

Filed Feb. 18, 1975, Ser. No. 550,717
Claims priority, application United Kingdom, Feb. 16, 1974, 7157/74
Int. Cl.² F16D *65/56*
U.S. Cl. 188—196 D **23 Claims**



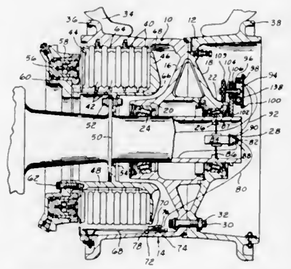
1. A slack adjuster for a vehicle brake system which includes first and second members having a reversible screw-thread connection therebetween for effecting relative rotation therebetween in one direction of axial load between said first and second members, said second member having a plurality of individual portions disposed circumferentially with respect to said first member and having respective portions of said screw-thread connection, a third member, each of said portions of said second member and said third member having interengageable wedging surfaces thereon effective upon axial loading in a direction opposite to said one direction for urging relative radial displacement between said first member and said portions of said second member to hold the first and second members in frictional engagement with one another at said reversible screw-thread connection to prevent reverse relative rotation therebetween, and spring means effective in a radial direction on each of said portions of said second member to bias such portions towards said first member at said reversible screw-thread connection to inhibit undesired rotation at said reversible screw-thread connection.

3,952,846
ELECTROSTATICALLY COOLED BRAKE

Chung Ping Han, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed June 11, 1973, Ser. No. 368,784
Int. Cl.² F16D *65/84*
U.S. Cl. 188—264 R **2 Claims**

1. An electrostatically cooled brake for retarding movement of a rotatable wheel or the like comprising:
- a rotatable member provided with a first friction surface and operatively connected to a rotatable wheel for rotation therewith;
- a stationary member provided with a second friction surface adapted to frictionally engage said rotatable member to retard rotation thereof;
- actuating means operatively connected to one of said rotatable and stationary members for actuating the same to cause frictional engagement of said first and second friction surfaces;
- a source of electric power provided with negative and positive charge terminals;
- probe means electrically connected to one of said terminals and electrically charged accordingly and arranged in spaced apart relationship to said rotatable and stationary members;
- coil means operatively connected to said electrical connection between said probe means and said one terminal for increasing the voltage applied to said probe means;
- breaker means operatively connected to said electrical connection for intermittingly interrupting the electrical flow to said coil means;

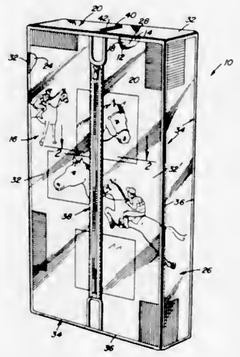


- cam means operatively connected to said rotatable wheel and said breaker means for actuating said breaker means in response to rotation of said wheel; and
- conductor means operatively connecting the other of said terminals to said rotatable and stationary members for electrically charging said other terminal accordingly to establish an electrical potential and corresponding electrostatic discharge between said probe means and said rotatable stationary members to effectively reduce the temperature of said rotatable and stationary members.

3,952,847
WEATHERPROOF ARTICLE ENCLOSURE

Hazel H. Via, Box 7429-V Wyndotte St., Rte. No. 1, Sarasota, Fla. 33577

Filed May 28, 1975, Ser. No. 573,139
Int. Cl.² B65D *85/18*
U.S. Cl. 190—41 Z **3 Claims**

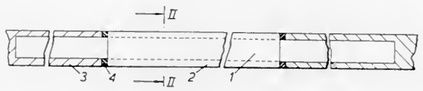


1. A weatherproof article enclosure for sporting equipment and accessories, comprising, in combination:
- a. a bag constructed from a flexible, planar material arranged forming an article receiving cavity and provided with an opening communicating with the cavity for facilitating access to the cavity;
- b. a transparent sheet material arranged over, contacting, and connected to the planar material for protecting the planar material and weatherproofing the bag, said planar material including an opaque, print fabric arranged with a pattern of the fabric facing the sheet material for viewing the pattern through the sheet material, protions of said planar material being attached along seams to form the bag with the sheet material being connected to the planar material at the seams, and leather welting covering the seams for facilitating attachment of the planar material portions to one another and to the sheet material, and assuring weatherproofing of the bag.

3,952,848
SECTION INSULATORS OF ELECTRIC TRACTION SYSTEMS

Wilfred Arthur Walker, Harrow, and Joseph Littler, Huyton, both of England, assignors to BICC Limited, London, England

Division of Ser. No. 236,412, March 20, 1972, abandoned.
This application May 8, 1974, Ser. No. 467,956
Claims priority, application United Kingdom, Mar. 24, 1971, 7697/71
Int. Cl.² B60M *5/00*; **B32B** *27/38*, *17/04*
U.S. Cl. 191—33 R **12 Claims**



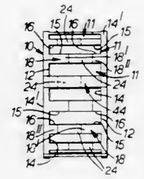
1. A section insulator adapted to be inserted directly in a contact wire in an electric traction system having at least one vehicle constrained to move in at least one predetermined path and having a pick-up shoe, and at least one contact wire for supplying electric current to the said shoe comprising an elongate body of synthetic resin, reinforced with glass fibres or other fibres of high tensile strength, the improvement whereby substantially the whole of the exposed surface of said insulator is formed of a composition based on a cycloaliphatic epoxy resin cured with an acidic curing agent and having a running surface for engagement with said shoe that is continuous from end to end over at least a major portion of the length of the body and is formed by a composition comprising the cured reaction product of 100 parts of a cycloaliphatic epoxy resin, 40 – 250 parts of an acidic hardener therefor and an effective amount of an accelerator, and dispersed in the said reaction product 50 – 400 parts of a mineral filler substantially wholly in the form of particles not greater in any dimension than 80 micrometers and 10–100 parts of a low-friction fluorocarbon polymer.

3,952,849
SPRAG CLUTCHES

Edward Joseph Brownhill, Cheadle; Roy Heaton, Timperley, and Ralph Booth, Gatley, Cheadle, all of England, assignors to Renold Limited, Manchester, England

Filed May 12, 1975, Ser. No. 576,654
Claims priority, application United Kingdom, May 28, 1974, 23531/74
Int. Cl.² F16D *41/07*
U.S. Cl. 192—41 A **15 Claims**

1. In a sprag retainer assemblage for use in an annular gap defined between confronting cylindrical surfaces of inner and outer races of a sprag clutch to transmit uni-directional drive between the clutch driving and driven race, the assemblage comprising an annular sprag retainer, a ring of sprags in the retainer, and for each sprag, an energising spring individual to the sprag and comprising a spring arm for biasing the sprag into substantially line contact with the inner race of the clutch, by tilting the sprag about substantially a line of contact with the outer race of the clutch, an improved sprag retainer comprising axially extending bars having first lengthwise portions presenting sprag positioning faces acting to position the sprags circumferentially with respect to one another, and wherein each energising spring has a mounting portion at least in part enwrapping a further lengthwise portion of one of the bars, the

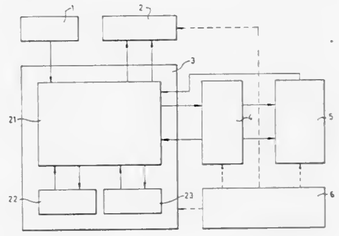


mounting portion thereby mounting the energising spring fixedly on the bar.

3,952,850
AUTOMATIC TICKET MACHINE

Carl-Axel Andersson, and Béla Farkas, both of Alvsjo, Sweden, assignors to AB Cale Industri, Gavle, Sweden

Filed Jan. 16, 1975, Ser. No. 541,619
Claims priority, application Sweden, Jan. 21, 1974, 7400728
Int. Cl.² G06F *9/00*
U.S. Cl. 194—1 N **14 Claims**



1. An automatic ticket machine for utilization in parking areas and comprising a casing provided with a coin unit including one or more coin apertures, pushbuttons for requesting a receipt and requesting coin refund, respectively, a window for displaying time information and coin denomination information, if desired, and openings for dispensing a ticket and a refunded-coin, respectively, wherein said automatic ticket machine comprises:
- a. a central unit including a time generator, current time registers, outgoing time registers, a temporary coin register, an outgoing coin register, a flag register, a pulse distributor, a supervisory unit, and a data table;
- b. a display unit including said display window; and
- c. a printing mechanism;

said supervisory unit operative to set said display unit to one of three conditions, namely unlit, lit with a steady light, and showing a flashing light, and operative to indicate electronically the time of the hour in the form of digits and the days of the week in the form of text; said display unit, when the automatic ticket machine is unactuated by coins, continuously showing the contents of the outgoing time register in the form of digits and in the form of text with a steady light; said outgoing time register receiving its information in binary coded decimal form by means of the supervisory unit from the current time registers, which always contain information on the current time; said current time registers receiving their time information in the form of pulses with predetermined intervals and derived from said supervisory unit, said pulses being initiated by the time generator over the flag register; said supervisory unit initiated by the flag register for addressing a portion of the data table, corresponding to an insert coin; the pulse distributor, upon a coin being introduced into the automatic ticket machine and under the control of the supervisory

unit, distributing to the temporary coin register a number of pulses corresponding to the value of the introduced coin; an address in the data table thereafter being changed by the supervisory unit to a time portion corresponding to the introduced coin, a number of pulses being derived from the time portion code of the data table, corresponding to the coin, and being distributed via the pulse distributor to the outgoing time registers, said number of pulses being added to the contents of the outgoing time registers; the addresses of the data table thereafter being changed again by the supervisory unit to a coin denomination portion corresponding to the introduced coin, a number of pulses derived from the coin denomination code of the data table, corresponding to the coin, being added to the outgoing coin register concurrently with the same number of pulses being subtracted from the temporary coin register; the above being repeated until the contents of the temporary coin register are equal to zero, so that the display unit shows the contents of the outgoing time registers in the form of digits and in the form of text, respectively, in a flashing light; the described process being repeated upon a new coin being introduced; and, when a request for a receipt is performed by external actuation of a pushbutton for requesting a receipt, the control unit being actuated over the flag register, thereby operating a motor of a printing mechanism, so as to perform printing on a ticket advanced therein, with the imprint corresponding to the contents of the outgoing time registers and the outgoing coin register with the display units being unlit during the printing process.

3,952,851

COIN SELECTION METHOD AND APPARATUS

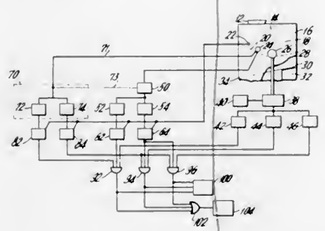
Guy L. Fougere, Arlington, and Dennis C. Jeffreys, Bedford, both of Mass., assignors to Mars, Inc., McLean, Va.

Filed May 8, 1974, Ser. No. 468,204

Claims priority, application United Kingdom, May 18, 1973, 23884/73

Int. Cl.² G07F *3/02*

U.S. Cl. 194—100 A **6 Claims**



1. Apparatus for examining conductive coins with respect to authenticity and denomination comprising

an oscillator circuit including an inductor arranged to subject a face of a coin to an electromagnetic field, wherein the presence of the coin or other conductive object within the field affects the frequency of the oscillator,

first means for producing a first alternating current signal representative of the output of the oscillator with respect to the effect of the presence of a coin within the field upon the amplitude of oscillations of the oscillator, said first means comprising a first detecting circuit having a time constant greater than one machine cycle to produce a reference signal, a second detecting circuit having a time constant greater than one period of oscillation of the lowest oscillator frequency and substantially less than 20 milliseconds, and a comparator to compare the output of the first detecting circuit with the output of the second detecting circuit,

second means for producing a second signal representative of the output of the oscillator with respect to the effect of the presence of a coin within the field upon the oscillator frequency,

means for comparing a value of each of the first and second signals respectively to correspondng values representative of an acceptable coin and indicating the presence of an acceptable coin, and

combinatorial means to produce a third signal when the comparing means indicate the presence in the field of an acceptable coin of the same denomination as indicated by the first and second signals.

3,952,852

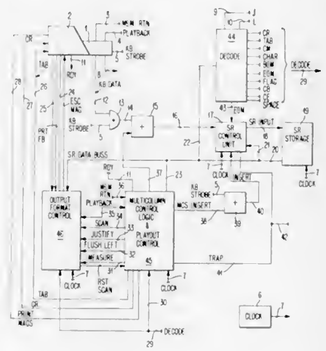
COLUMN FORMAT CONTROL SYSTEM

John Charlie Greek, Jr.; Michael Eudell McBride, and Howard Carl Tanner, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 22, 1975, Ser. No. 543,090

Int. Cl.² B41J *21/00*

U.S. Cl. 197—19 **11 Claims**



1. A system for causing corresponding portions of a plurality of text columns to be printed on the same print line to form a side-by-side column format prior to causing a printer carrier return, said system comprising:

a. memory means having said text columns sequentially stored therein;

b. means for causing a marking in said memory means of (1) initial print locations in each of said text columns for defining each beginning of the first of said corresponding portions of said text columns to be printed, prior to printing, and (2) after a portion of one of said text columns has been printed, a print location defining a beginning of the next portion to be printed from said one of said text columns on a subsequent print line;

c. means for defining locations for printing each of said text columns;

d. means for causing printing, from a print location, of a portion of one of said text columns on a print line in an appropriate one of said defined locations; and

e. means for causing printing, from print locations any corresponding portions from succeeding text columns on said print line in appropriate ones of said defined locations.

3,952,853

VERTICAL SHIFT MECHANISM

Edward Feldman, Teaneck, N.J., assignor to Litton Business Systems, Inc., Pinebrook, N.J.

Filed Oct. 29, 1974, Ser. No. 518,394

Int. Cl.² B41J *1/32*

U.S. Cl. 197—55 **7 Claims**

1. A mechanism for shifting a print head containing a plurality of type bands into a number of operative positions comprising:

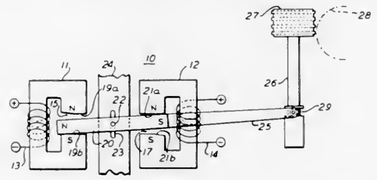
electromagnet means comprising core means and winding means;

said winding means being selectively coupled to a source of electrical energy for establishing a magnetic field;

actuating means for causing variations in said magnetic field;

a shifting element comprising magnet means in operative proximity to said magnetic means and being moved in response to said magnetic field;

said electromagnet means comprising a pair of electromagnets each having a core including a gap region defined by a pair of separated opposed pole faces and a winding;



said magnet means comprising a member having a first portion with an associated first magnetic polarity extending into the gap region of a first of said electromagnets and a second portion with an associated second magnetic polarity extending into the gap region of a second of said electromagnets; and

a print head coupled to said shifting element;

said shifting element being movable into any one of a plurality of positions in accordance with variations in said magnetic field; whereby

said print head is correspondingly moved into any one of a plurality of positions.

3,952,854

APPARATUS FOR DIRECT AND CIRCUITOUS TRANSPORT OF CIGARETTES OR THE LIKE FROM MANUFACTURING TO PROCESSING MACHINES

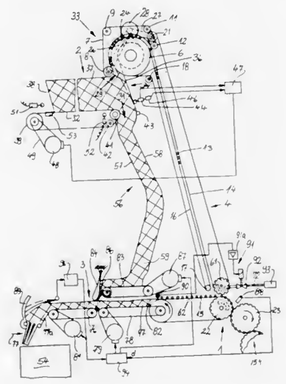
Fritz Selonke, and Ulrich Bornfleth, both of Hamburg, Germany, assignors to Hauni-Werke Korber & Co., KG, Hamburg-Bergedorf, Germany

Filed Sept. 25, 1974, Ser. No. 509,123

Claims priority, application Germany, Sept. 27, 1973, 2348597

Int. Cl.² B65G *47/24*

U.S. Cl. 198—20 C **45 Claims**



1. Apparatus for effecting and regulating the delivery of rod-shaped articles from a source which supplies articles at a first variable rate to a consumer which accepts articles at a second variable rate, particularly for effecting and regulating the delivery of smokers' products from a producing machine to a consuming machine, comprising first transporting means for moving articles from said source directly to said consumer along a first path; second transporting means for moving articles from said source to said consumer along a second path; switchover means actuatable to direct articles from said source into a selected path; a variable-volume magazine communicating with said second path; and means for changing the volume of said magazine in response to changes in the proportion of said rates so that the volume of said magazine increases and the magazine receives articles from said second path when said first rate exceeds said second rate and said volume decreases whereby said magazine feeds articles into said second path when said second rate exceeds said first rate.

3,952,855

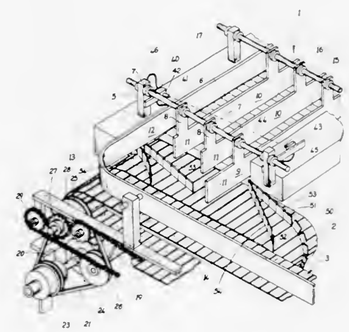
HIGH SPEED BOTTLE TRANSFER MACHINE

James H. Rogers, Lebanon Junction, Ky., assignor to Mac Manufacturing Company, Inc., Lebanon Junction, Ky.

Filed Aug. 20, 1974, Ser. No. 498,995

Int. Cl.² B65G *47/30*

U.S. Cl. 198—32 **11 Claims**



1. A machine for feeding groups of articles in one-by-one fashion onto an outlet conveyor, which comprises

A. a longitudinal feed conveyor located at right angles to said outlet conveyor for receiving groups of articles and for moving same toward said outlet conveyor;

B. channel means comprising proximal middle and distal channel members disposed above said feed conveyor for orienting said articles into a plurality of side-by-side rows on said conveyor,

1. said distal channel member extending to the edge of said outlet conveyor;

C. the improvement of a spacing conveyor interposed between said feed conveyor and said outlet conveyor,

2. said spacing conveyor lying adjacent and parallel to said outlet conveyor and normal to said feed conveyor so as to receive articles from said feed conveyor for delivery onto said outlet conveyor,

2. the direction of the conveying surface of said spacing conveyor being opposite to the direction of the conveying surface of said outlet conveyor;

D. drive means for said spacing conveyor;

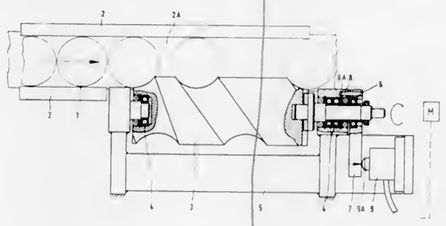
E. the further improvement of an obliquely disposed guide means on said spacing conveyor for simultaneously retaining, guiding and pushing articles transversely across said spacing conveyor, and onto said outlet conveyor in a one-by-one fashion.

3,952,856

APPARATUS FOR REGULATING ARTICLE-TREATING MACHINES THAT MAINTAIN AN ACCUMULATION OF ARTICLES AT AN INLET END

Lubor Kurzweil, Kondringen-Landeck, and Joachim Linde, Leiselheim, both of Germany, assignors to Firma Otto Sick KG, Metallwarenfabrik, Mundingen (Baden), Germany

Filed Aug. 16, 1974, Ser. No. 498,251
Claims priority, application Germany, Aug. 21, 1973, 2342252
Int. Cl.[2] B65G *43/08*
U.S. Cl. 198—37 3 Claims



1. An article handling mechanism comprising:
a machine for treating individual articles, said machine including a driven infeed conveyor;
said infeed conveyor being arranged for translational movement and having an inlet end for receiving articles and an outlet end for advancing said articles toward a treatment section of said machine;
motor means for driving said machine;
supply means for continuously supplying said articles to said inlet end of said infeed conveyor such that an accumulation of said articles at said infeed conveyor inlet end produces a pressure head against said infeed conveyor that is related in magnitude to the number of accumulated articles, said pressure head tending to urge said infeed conveyor for translational movement against an opposing bias; and
speed control means for regulating the speed of said motor means;
said infeed conveyor including means for actuating a control element of said speed control means in accordance with translational movement of said infeed conveyor, to regulate the speed of said machine in accordance with the number of articles that have accumulated at said infeed conveyor inlet end in a manner maintaining a substantially constant number of articles accumulated.

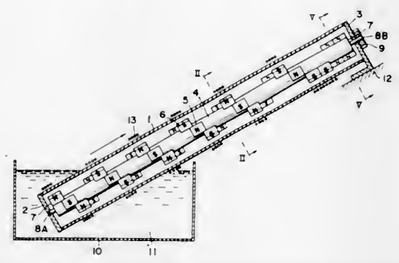
3,952,857

MAGNETIC SUBSTANCE CONVEYING APPARATUS

Iwao Nazuka, Tokyo, Japan, assignor to Bunri Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1974, Ser. No. 496,581
Claims priority, application Japan, Mar. 22, 1974, 49-31497
Int. Cl.[2] B03C *1/00*
U.S. Cl. 198—41 8 Claims

1. In a magnetic substance conveying apparatus for conveying a magnetic substance from a first position to a second position, comprising:
an inner cylinder having magnets spirally wound thereon;
an outer cylinder made of non-magnetic material and surrounding said inner cylinder over at least a portion of the length of said inner cylinder; and
means for providing relative rotational movement between said outer cylinder and said inner cylinder for conveying the magnetic substance along the outer periphery of said outer cylinder;
the improvement wherein the angle of the magnet spiral at the end portion thereof, in the vicinity of said second



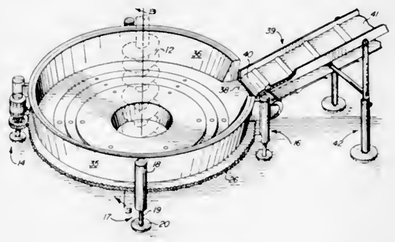
position, is larger than the angle of the magnet spiral at the beginning portion thereof.

3,952,858

COLLECTOR AND LOADING APPARATUS FOR AUGER SPOIL

James P. Watts, 6930 E. Pinchot Ave., Scottsdale, Ariz. 85251

Filed Mar. 25, 1975, Ser. No. 561,850
Int. Cl.[2] B65G *29/00, 31/00, 37/00*
U.S. Cl. 198—103 9 Claims



1. In apparatus for collecting and loading auger spoil, said apparatus including:
a. a spinning annular plate supported above the ground surface about an auger hole and presenting a central opening in alignment with said hole,
b. power means for rotating said spinning plate,
c. fixed circular wall structure spaced from the periphery of said spinning plate and having a lower edge spaced from the upper surface of said spinning plate,
d. a gap in said wall structure, and
e. a conveyor belt having one end located at said gap;
the improvement consisting of:
f. means for adjusting the diameter of said opening in said spinning plate comprising an assembly of rings arranged in series and means for detachably securing adjacent rings of said assembly together in stepped relation and the outermost ring of said assembly to said spinning plate at the edge defining the central opening whereby the diameter of said opening in the spinning plate may be adjusted to substantially the diameter of a particular auger hold.

3,952,859

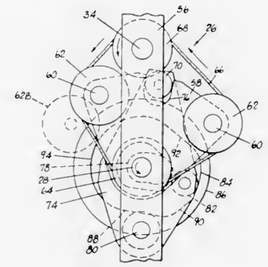
INTERMITTENT DRIVE FOR ROLL WRAPPER

Ronald Holt, and Paul W. Birman, Jr., both of Battle Creek, Mich., assignors to Franklin Electric Subsidiaries, Inc., Bluffton, Ind.

Filed June 6, 1975, Ser. No. 584,630
Int. Cl.[2] B65G *23/30*
U.S. Cl. 198—110 10 Claims

1. In combination with a wrapping machine having a wrapping conveyor and an article feed conveyor with an article

accelerating and separating conveyor disposed in article transferring relation between the first two conveyors, an intermittent drive connected to be driven in timed relation to said wrapping conveyor and to drive said accelerating conveyor, said intermittent drive comprising:
an input shaft,
an output shaft in spaced parallel relation to said input shaft,
coplanar rolls connected to said shafts to rotate therewith,



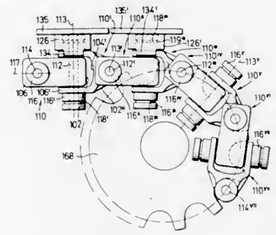
an idler roll support member mounted to move transversely of the plane of said shafts and on opposite sides of the plane of the shafts,
a pair of spaced idler rolls mounted on said support member in coplanar relation to the rolls on said shafts and on opposite sides of the plane of the shafts,
a belt loop trained around said rolls on said shafts and said idler rolls,
and cyclically operated means driven continuously by one of said shafts and connected to oscillate said support member toward and away from the plane of said shafts.

3,952,860

PLASTIC LINK FOR CONVEYOR CHAIN HAVING OPTIMAL THREE DIMENSIONAL MOBILITY

Dieter Specht, Dhunn, Germany, assignor to Interroll Fordertechnik GmbH & Co. KG, Dhunn, Germany

Filed July 30, 1974, Ser. No. 493,058
Claims priority, application Germany, Aug. 4, 1973, 2339644; June 28, 1974, 2431266
Int. Cl.[2] B65G *17/00*
U.S. Cl. 198—189 17 Claims



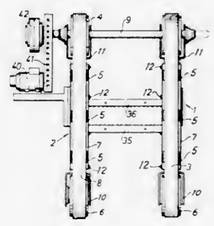
1. A link to be assembled to other similar links to form a chain capable of movement in three mutually perpendicular directions comprising a plastic material member of generally U-shaped configuration including a cross piece and two opposed arms, a first hub formed unitary with said cross piece and having a bore therein for receiving a first swivel axle means for pivotally securing said link to a second link, a pair of hubs respectively formed unitary with said opposed arms and having aligned bores therein for receiving a second swivel axle means for pivotally securing said link to a third link, with the longitudinal axis of said first swivel axle means being perpendicular to the longitudinal axis of said second swivel axle means, and wherein each of said pair of hubs constitutes means for attachment of supplementary parts.

3,952,861

CONVEYOR BELT SUPPORT ASSEMBLY

Ture Rickard Leopold Holmqvist, Dalkarrsleden 36, 162 24 Vallingby, and Adolf Gunnar Gustafson, Musseronvagen 18, 14146 Huddinge, both of Sweden

Filed June 26, 1974, Ser. No. 483,113
Claims priority, application Sweden, July 9, 1973, 7309622
Int. Cl.[2] B65G *15/60*
U.S. Cl. 198—204 4 Claims



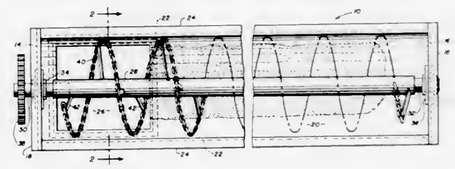
1. In a belt conveyor having an endless belt trained around both a drive roller and idling roller journalled respectively within the arms of fork-shaped holders, the improvement comprising a tube interconnecting, spacing and alining said holders, said tube being non-round in cross section, said holders having correspondingly non-round shanks slidably fitted into the opposite ends of said tube so as to adjust the spacing of said rollers, the longitudinal axes of said tube and said shanks being substantially alined with and intersecting the axes of said rollers, and attachment means for fixing the tube and holders in adjusted position, whereby said holders, shanks and tube provide a rigid adjustable frame centered within and supporting said belt, said attachment means including screws threaded through said tube so as to bear on and force said shanks into a non-rounded corner of said tube.

3,952,862

RIBBON FLIGHT CONVEYOR FORMED OF WELDED CHAIN LINKS

Franklin M. McCorkel, Leola, Pa., assignor to Aggregates Equipment, Inc., Leola, Pa.

Filed July 16, 1975, Ser. No. 596,214
Int. Cl.[2] B65G *33/26*
U.S. Cl. 198—213 5 Claims

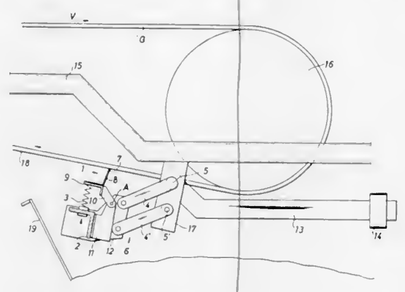


4. Ribbon flighting for a conveyor comprising:
a mounting shaft;
a rigid spiral formed of a length of chain having adjacent links welded to each other, said rigid spiral being disposed concentrically about said mounting shaft; and
a plurality of support straps interconnecting said rigid spiral to said mounting shaft.

3,952,863
CLEANING APPARATUS FOR ENDLESS BELT INSTALLATION

Manfred Schattauer, Ledderken 8, D 581 Witten, Germany

Filed Apr. 15, 1974, Ser. No. 460,903
Claims priority, application Germany, Apr. 18, 1973, 2319736
Int. Cl.² B65G *45/00*
U.S. Cl. 198—230 **9 Claims**



1. An improved belt cleaning apparatus for cleaning the belt surface of an endless belt moving in a first direction, said belt cleaning apparatus comprising:

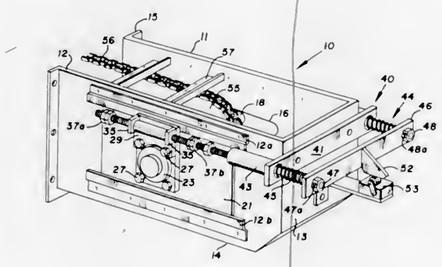
a scraper element having a scraping edge for contacting said belt surface to clean said belt surface,

mounting arm means upon which said scraper element is mounted, said mounting arm means being movable about an axis lying at the intersection of a first plane parallel to said belt surface and spaced therefrom a first distance and a second plane perpendicular to said belt surface and spaced a second distance upstream along said belt from said scraping edge when said scraping edge is in contact with said belt, said first distance being from two to ten times the magnitude of said second distance, whereby upon deflection of said scraper element in said first direction the movement of said scraping edge about said axis defines an arc, said mounting arm means comprising an arm pivotal about said axis and a spring having one end engaging a support fixed with respect to said mounting arm means and the other end engaging said arm, said spring urging said scraping edge into contact with said belt surface.

3,952,864
CONVEYOR SAFETY DEVICE

William A. Schlagel, Coon Rapids, Minn., assignor to Schlagel, Inc., Cambridge, Minn.

Filed Dec. 5, 1974, Ser. No. 529,917
Int. Cl.² B65G *43/00*
U.S. Cl. 198—232 **8 Claims**



1. A detection and control unit for a continuous conveyor, which conveyor includes a supporting frame, a continuous material conveying member, a drive sprocket at one end of the conveyor and a controllable driving mechanism for driving the drive sprocket, said unit including:

a. a housing having generally upstanding sides, attachable to the supporting frame of the conveyor at a first end thereof;

b. a transversely extending shaft in said housing arranged and constructed for mounting at least one idler sprocket thereon for carrying the conveying member;

c. a pair of bearing members arranged on said sides of said housing, rotatably receiving the ends of said shaft and being shiftable along said housing for adjusting the tension on the conveying member;

d. a loading and control assembly arranged on the second end of said housing and including;

1. a first mounting member on each side of said housing;

2. a pair of connecting rods having one end thereof associated with each of said bearing members to position the same longitudinally of said housing and extending rearwardly therefrom through said first mounting members;

3. a detector bar element arranged to receive the other end of said rods and to move longitudinally therewith;

4. means biasing said bar member longitudinally outwardly of said housing and away from said first mounting members;

5. a detector cam on said detector bar element;

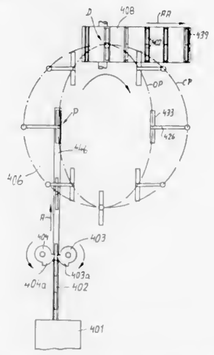
6. a control switch arranged for actuation by said cam for control of the controllable drive mechanism of the conveyor; and,

7. means for adjusting said connecting rods for initially shifting said transverse shaft and tension the conveying member and locating said cam with respect to said switch.

3,952,865
TRANSFER APPARATUS FOR CIGARETTES OR THE LIKE

Willy Rudszinat, Dassendorf; Dieter Schwenke, Hamburg, and Werner Ringe, Geesthacht, all of Germany, assignors to Hauni-Werke Korber & Co., KG, Hamburg-Bergedorf, Germany

Filed May 17, 1974, Ser. No. 470,961
Claims priority, application Germany, May 23, 1973, 2326181; July 26, 1973, 2337945
Int. Cl.² B65G *47/24*
U.S. Cl. 198—240 **35 Claims**

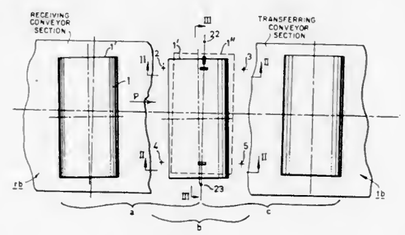


1. Apparatus for transferring cigarettes or analogous rod-shaped articles between first and second stations where the articles respectively move lengthwise in a single file and sideways in at least one row, comprising means for feeding articles to one of said stations; article-receiving means at the other of said stations; a carrier rotatable about a predetermined axis; a pick-up device rotatable relative to said carrier about a second axis located at a fixed distance from said predetermined axis to travel past said stations along a circular path in response to rotation of said carrier; orienting means for rotating said device relative to said carrier while the carrier rotates thereby respectively align said device with at least one article at said one station and with said receiving means at said other station so that said device can pick up articles at said one station and deliver the picked up articles to said receiving means at said other station; and means for rotating said carrier at a plurality of speeds including first and second speeds while said device respectively travels past said first and second stations, including a rotary driving member, means for normally driving said member at a constant speed, and means for driving said carrier at a plurality of speeds in response to rotation of said driving member at said predetermined speed.

3,952,866
DEVICE FOR DIRECTING STRIPS OF THERMOPLASTIC MATERIAL

Arnoldus Willem Jan Leloux, Dedemsvaart, Netherlands, assignor to Industriele Onderneming Wavin N.V., Zwolle, Netherlands

Continuation of Ser. No. 176,349, Sept. 8, 1971, abandoned. This application Dec. 17, 1973, Ser. No. 425,544
Claims priority, application Netherlands, Sept. 8, 1970, 013280
Int. Cl.² B65G *47/24*
U.S. Cl. 198—262 **6 Claims**

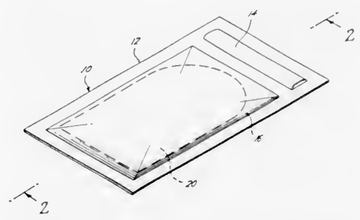


1. A device for directing strips of translucent thermoplastic material, particularly cut pieces of thermoplastic foil for producing bags in which each piece has front, rear and side edges and the pieces are adapted to be supplied to a sealing means, including a conveyor section receiving cut pieces, a positioning section downstream of the conveyor section and in which the position of the strips is corrected with respect to the main direction of movement, and a second conveyor section downstream of the positioning section for transferring the cut pieces to the sealing means, said positioning section comprising two pairs of needles located in the path of movement of the cut pieces, the needles of each pair being located one behind the other viewed in the main direction of conveyance and being at equal distances at both sides of the center of the positioning section, said needles being capable of movement upward and away from each other, means mounting the needles of each pair for upward and downward movement, a driven roller located below the plane of movement of the cut pieces in line with each pair of needles, a separate drive operably related to the needles of each pair for moving the needles relative to each other and for driving the driven roller associated with such pair, the needles of each pair having switch means for activating and deactivating the drive, the arrangement being such that when a strip is arrested at the positioning section, the needles move downwardly and the drives activated for moving the needles of each pair toward each other, and if the piece is in a skew position, the needle of one pair adjacent the rear edge and the needle of the other pair adjacent the front edge will make contact with the piece whereby the driven roller will be rotated to move the piece at the same rate as said one needle and in the same direction, and upon the piece making contact with the other needle of said one pair, the switch means of said one pair deactivates the drive thus stopping the driven roller and arresting the movement of the needles of said one pair, and further means operably related to the side edges of the piece for correcting the position of the piece in a tranverse direction.

3,952,867
DISPOSABLE TOOTH CLEANING APPARATUS

William F. McCord, 1026 Shorewood Drive, Seabrook, Tex. 77586

Filed Mar. 19, 1975, Ser. No. 560,016
Int. Cl.² B65D *35/22, 85/00*
U.S. Cl. 206—229 **2 Claims**



1. A disposable tooth cleaning apparatus comprising,

a sealed package having first and second separate compartments,

the first compartment includes ingestible non-foaming toothpaste,

the second compartment includes an applicator having an opening and sized and shaped for insertion over the index finger,

said applicator having an outer layer including a soft absorbent non-woven fabric for supporting the toothpaste and moisture, said fabric being interwoven with reenforcing fibers for supporting the fabric and providing a non-smooth surface for cleaning the teeth,

said applicator having an inner layer of plastic bonded to the outer layer for providing a support backing to the outer layer and for keeping the finger dry, and

the edges of the applicator being joined together by heat sealing the outer edge of the inner layer together.

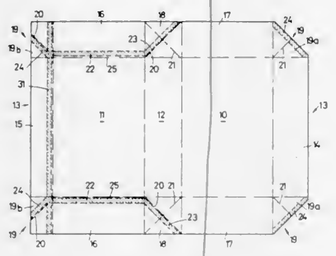
3,952,868
CIGARETTE PACKET OF LAMINATED SHEETING AND METHOD FOR THE PRODUCTION THEREOF

Dietrich Müller; Hans-Jürgen Blichenberg, both of Hamburg; Dieter Schmidt, Halstenbek; Heinz Focke, and Kurt Liedtke, both of Verden, all of Germany, assignors to Focke & Pfuhl, Verden, Aller, Germany

Filed June 20, 1974, Ser. No. 481,418
Claims priority, application Germany, June 20, 1973, 2331335
Int. Cl.² B65D *65/02, 75/20, 75/26, 85/10*
U.S. Cl. 206—273 **4 Claims**

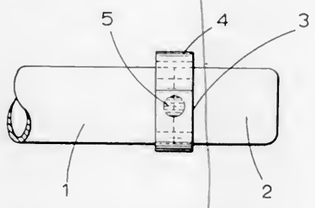
1. In a cigarette packet of a laminated sheeting comprising an outer, thermally bondable layer, wherein a blank encloses the contents of the pack in a tubular manner and end flaps are provided which are joined to each other and project beyond the end sides, said end flaps being folded such that an inner longitudinal end flap bears on the packet contents, two side end flaps being folded on this longitudinal end flap and the second outer longitudinal end flap on the side end flaps and the first inner longitudinal end flaps, the improvement characterized in that the outer longitudinal end flap of the laminated foil comprises on both sides an outer thermally bondable layer which extends over the entire end face and along an edge turned towards the packet edge of the inner longitudinal end

flap, a first activated bondable welding strip extending the length of the end face, and said side end flaps folded at their



diagonals are joined together along second and third welding strips on a diagonal fold line adjoining the first welding strip.

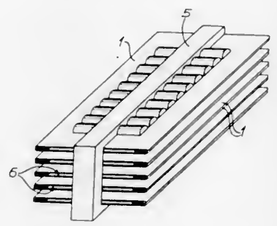
3,952,869
SEALED CONTAINER
Michael Sansom, London, England, assignor to Matburn (Holdings) Limited, London, England
Filed Oct. 7, 1974, Ser. No. 512,843
Claims priority, application United Kingdom, Oct. 11, 1973, 47519/73
Int. Cl.² B65D *17/20, 77/30*
U.S. Cl. 206—363 **1 Claim**



1. A container for surgical instruments or other articles comprising a body, a cap fitted to the body and closing an end thereof, a sealing band of self-adhesive thermoplastic material spanning the area at which the cap and body abut, the band being wound about the periphery of the body and cap for at least two complete convolutions, which windings seal the cap and the body together in a sterile manner, and a welded sealing area formed by welding together into integral relationship overlying portions of the convolutions of the band whereby a visible blemished area is produced either in the outermost convolution or in the convolution adjacent thereto and underlying same when the seal at the welded area is broken.

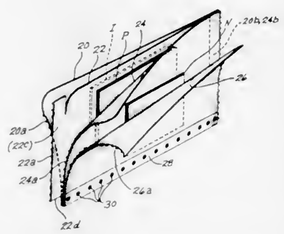
3,952,870
CONTAINER FOR DENTAL INSTRUMENTS
Marcel Garnier, Besancon, France, assignor to Micro-Mega, France
Division of Ser. No. 422,190, Dec. 6, 1973, abandoned. This application July 8, 1975, Ser. No. 593,956
Claims priority, application France, Dec. 19, 1972, 72.45279
Int. Cl.² A61C *19/02*
U.S. Cl. 206—369 **5 Claims**

1. In combination:
   a. a plurality of containers for dental instruments each having a covered side and an opposite side, said plurality of containers being stacked in pairs having the covered sides of the containers in said pairs opposed to each other, each of said containers comprising a thin plate having a first and second major surface and a pair of opposed longitudinal edges, said first major surface corresponding to the covered side being provided with a plurality of pairs of opposed recesses connected by a channel therebetween disposed in two parallel rows for receiving dental instruments therein, and said second major surface having a plurality of pairs of opposed bulges disposed in two parallel rows with a space defined therebetween, said bulges corresponding to said recesses in said first major surface, a cover disposed on said first major surface for



covering said recesses to protect dental instruments contained therein and to hold them in the container, and means for securing said cover to said thin plate; and
   b. a substantially U-shaped clamp having two legs engaging said stack of containers with a leg of said clamp inserted in said space between said parallel rows of bulges of an uppermost container of said stack, and another leg of said clamp inserted in said space between said parallel rows of bulges of a lowermost container of said stack.

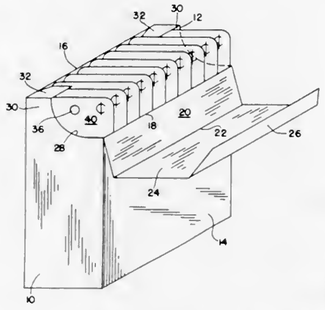
3,952,871
MACHINE LOADABLE MULTI-POCKET, MULTI-SECTION ARTICLE CARRIER STOCK
Arlen J. Erickson, Bainbridge Island, Wash., assignor to CX Corporation, Seattle, Wash.
Filed Nov. 18, 1974, Ser. No. 524,398
Int. Cl.² B65D *85/30, 27/10*
U.S. Cl. 206—455 **14 Claims**



1. In mechanical packaging of sheet articles and the like, elongated multi-leaf packaging carrier stock having flexible leaves joined together along one longitudinal edge and free to be spread apart at their opposite edge for insertion of articles transversely between the leaves at an insertion station and thereafter reclosed in timed relation with longitudinal advancement of the stock, said stock comprising mutually superimposed first and second leaves and a third leaf interposed therebetween, the leaves having corresponding sets of transverse score lines at interval locations spaced lengthwise of the stock defining lines of severance of successive carrier length sections when torn from the stock at such locations, the first and second leaves at each such interval location having mutually opposed patches of contact adhesive applied thereto adjacent their respective score lines, the third leaf, separating such adhesive patches with the relatively adjoining carrier-length sections unsevered, having its transverse score lines

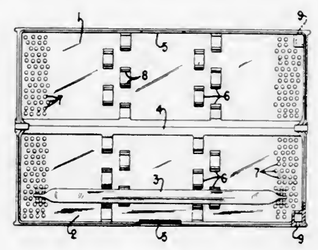
offset from the correspondingly related score lines of the first and third leaves so as to withdraw a portion of the third leaf from between such contact adhesive patches when the relatively adjoining sections are severed and the leaves parted at the intervening associated score lines.

3,952,872
PACKAGE FOR CARDED MERCHANDISE
Peter A. Consiglio, Jr., c/o Parker Metal Corp., 85 Prescott St., Worcester, Mass. 01601
Filed Nov. 18, 1974, Ser. No. 524,496
Int. Cl.² B65D *5/66, 85/54*
U.S. Cl. 206—526 **2 Claims**



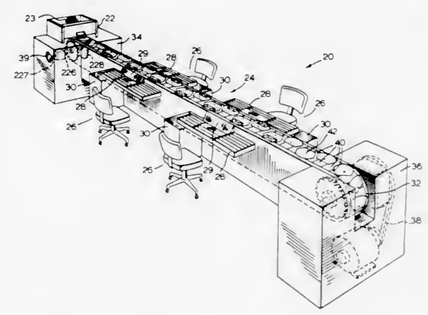
1. A package comprising a box having an open top, a bottom, front and rear walls, a pair of opposite side walls, and a lid for said box, a series of merchandise display cards stacked uprightly in said box in substantially parallel relationship with said front and rear walls, each of said cards having merchandise mounted thereon and being of a length substantially equal to the distance from the bottom to the open top of said box, an aperture in each card, said apertures being aligned at the area of the box adjacent the open top thereof, one of the side walls of said box having an upper side wall portion which is integrally hinged to said one side wall below said open top along a first fold line which is parallel to the top and bottom of said box, said lid including said upper side wall portion, a top member hinged to the top edge of said upper side wall portion along a second fold line parallel to said first fold line for closing said open top, and an end flap hinged to said top member along a third fold line parallel to said second fold line and opposite said upper wall portion, for securing said lid in closed position, said front and rear walls each having an opening therein extending downwardly from said open top and inwardly from said one side wall, said openings providing a corner recess in said front and rear walls adjacent said one side wall which is of a depth along said one side wall substantially equal to the depth of said upper side wall portion between said first and second fold lines and is of a width adjacent said open top sufficient to expose the apertures in said cards, solid portions on each of said front and rear walls along the side of said openings which is opposite said one side wall, said solid portions extending upwardly to said open top and providing support for said top member of said lid in its closed position, said lid being swingable about said first hinge line to close said box by raising said upper side wall portion into substantially the same plane with the remainder of said one side wall, swinging said top member down about said second fold line over said open top and folding said end flap down in adjacent parallel relationship with said side wall opposite said one side wall, said openings when the lid is closed exposing the aligned apertures in said series of cards whereby a hanger rod for said cards may be inserted through said openings and the aligned apertures, said lid alternatively being swingable about said first hinge line to swing the lid outwardly and down below said first hinge line whereby aligned like corners of all of the cards are fully exposed for the application of price markings thereon.

3,952,873
CONTAINER FOR TUBULAR GLASS EQUIPMENT
Klaus Pampuch, Neubrucker Str. 40, 1 Berlin 28, and Gunter Wanke, Suderoder Str. 30, 1 Berlin 47, both of Germany
Filed Oct. 31, 1974, Ser. No. 519,397
Claims priority, application Germany, Nov. 23, 1973, 2359041
Int. Cl.² B65D *83/02, 85/20, 85/42*
U.S. Cl. 206—528 **7 Claims**



1. A synthetic plastic container for receiving easily breakable tubular glass articles having sealed ends therein comprising a housing having an upper and lower part connected by hinge strip means along one side, a snap closure means along the other side of said upper and lower parts, holding clips extending from at least one of said upper and lower parts for holding said tubular glass articles therein and having groups of spaced pins arranged in a brushwise manner extending inwardly from said housing at opposing ends of at least one of said parts and located at zones where the sealed ends of said glass articles are reduced and sensitive.

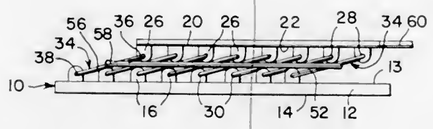
3,952,874
MAIL PROCESSING EQUIPMENT
Trevor Wynne Owen, Mississauga, Canada, assignor to Owen Tri-Cut Limited, Mississauga, Canada
Filed Jan. 8, 1975, Ser. No. 539,489
Int. Cl.² B65G *47/24*
U.S. Cl. 209—73 **6 Claims**



1. Mail processing equipment for use in receiving open items of mail and for presenting such items to operators positioned at either side of the mail processing equipment, the equipment comprising:
   a mail feeder adapted to feed items of mail individually; and
   a mail transporter located adjacent the mail feeder for receiving individual items of mail from the feeder, the mail transporter including a closed loop conveyor means following a path having a top part extending from the mail feeder past the operators, individual mail carriers carried by the conveyor means, each of the mail carriers having a gripper mechanism operable to move between a closed

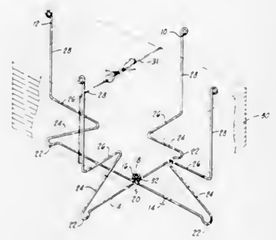
position for holding an item of mail when the item of mail is in portions of said path not serviced directly by the operators, and an open position where this item of mail rests on the mail carrier as the carrier passes along at least a portion of said top part and is available for removal from the mail carrier by at least one of the operators, and rotation mechanisms coupling the respective mail carriers to the conveyor means and operable to rotate each of the mail carriers between a first position for receiving an item of mail moving longitudinally from the mail feeder and a second position as the mail carrier passes along said top part so that the mail carrier then lies at about 90 degrees relative to the first position whereby the item of mail is readily available to be removed transversely from the mail transporter by an operator, the mail transporter further including cam means associated with the mail carriers to control the positions of the respective gripper mechanisms and the rotation of the mail carriers so that from an initial position, where the mail carrier receives an item of mail from the mail feeder in passing the mail feeder, the associated gripper mechanism on each mail carrier is open when the mail carrier is in the first position to receive the item of mail and then closes as the mail carrier moves from the first to the second position before again opening with the mail carrier in the second position to carry the item of mail past the operators for removal by one of the operators, the cam means then causing the gripper mechanism to close and the mail carrier to return to the first position before carrying any remaining item of mail back to said initial position.

3,952,875
DISH DRAINER
Virginia Lombardo, Valley Stream, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Dec. 23, 1974, Ser. No. 535,374
Int. Cl.[2] A47G *19/08*
U.S. Cl. 211—41 **8 Claims**



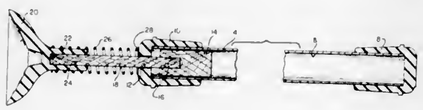
1. A collapsible dish rack, comprising:
a. a base portion comprising a first surface;
b. a number of apertured projecting first elements extending from said first surface;
c. a frame member disposed above said first surface and comprising a second surface facing said first surface;
d. a number of apertured projecting second elements extending from said second surface
e. intermediate linking elements disposed between said first and second projecting elements, said linking elements individually comprising a first end portion pivotally disposed in an associated aperture of a said first projecting element and a second end portion pivotally disposed in an associated aperture of a said second projecting element;
f. a detente portion located at at least one of said first and second projecting elements so as to engage the linking element associated therewith; and
g. a rod element pivotally disposed at central parts of said linking elements.

3,952,876
STORAGE RACK FOR PAPERS
David D. Price, 1435 Duffner, Oklahoma City, Okla. 73118
Filed Aug. 14, 1974, Ser. No. 497,181
Int. Cl.[2] A47F *7/00*; **A47G** *23/02*
U.S. Cl. 211—50 **1 Claim**



1. A rack for storing newspapers, comprising:
a pair of crossed pivotally connected wire members, each of said wire members including:
a substantially flat lower horizontal portion having an at least semicircular shaped bend intermediate its ends aligned with the similar portion of the other member;
a pair of upwardly and inwardly slanting portions each connected to the horizontal portion in spaced apart relation;
an upper horizontal portion extending outwardly from the upper end of each slanting portion;
an upper vertically extending portion; and
means pivotally connecting said semicircular shaped bend portions, said pivotally connecting means including:
an apertured clam shell-shaped retainer partially enclosing the upper bend;
an apertured clam shell-shaped retainer partially enclosing the lower bend; and
a bolt fastener extending though the bends and the retainers holding the retainers and bends in assembled relation.

3,952,877
HANGER ROD HAVING SPRING LOADED SUCTION CUP
George F. Kindl, Newington, Conn., assignor to Loc-Rite, Incorporated, Newington, Conn.
Filed Apr. 23, 1975, Ser. No. 570,662
Int. Cl.[2] A47H *1/08*
U.S. Cl. 211—105.5 **2 Claims**



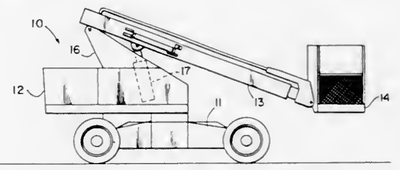
1. A hanger rod adapted to be inserted between two parallel surfaces comprising:
a rod having a hollow interior portion defining a cylindrical wall;
means mounted upon one end of the rod for engaging one of the surfaces;
a suction cup, having a hub portion with a cavity therein, located adjacent the other end of the rod, the suction cup being adapted for compressive engagement with the other surface;
a first dowel mounted within the hollow portion for axial sliding movement over the wall thereof;
a second dowel having one end thereof received in the cavity in the hub portion of the suction cup and the other end thereof fixedly connected to the first dowel;
a spring in contact with the suction cup interposed between the suction cup and the second mentioned end of the rod to urge the suction cup away from the rod, the spring being coiled about the hub portion of the suction cup so as to exert a radially inward force on the hub portion which secures the second dowel thereto; and
means to provide a seat for the spring at the second mentioned end of the rod.

3,952,878
GUN STAND
Jack R. Gorham, 3966 Lugo Ave., Lynwood, Calif. 90262
Filed Feb. 18, 1975, Ser. No. 550,758
Int. Cl.[2] A47F *7/00*
U.S. Cl. 211—64 **6 Claims**



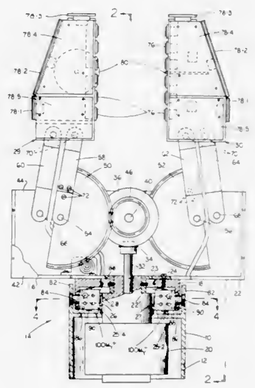
1. A folding collapsible earth engaging gun rack comprising an elongate vertical plate with front and rear surfaces and having a central elongate, vertical, earth engaging lower spike portion of limited lateral extent with a downwardly convergent pointed lower end, laterally spaced laterally outwardly and rearwardly projecting horizontal flanges with lower earth engaging surfaces and upper foot engaging surface at the upper end and at opposite sides of the spike portion and laterally outwardly projecting flat vertical hinge plates in vertical spaced relationship above the flanges, laterally spaced elongate normally horizontally disposed forwardly projecting gun butt receiving trays with inner and outer ends and normally vertical hinge plates at their rear ends with upper edges pivotally connected with upper edges of related hinge plates of said plate and normally establishing flat, stopped bearing engagement on the said related hinge plates, said trays being pivotally shiftable upwardly rearwardly and downwardly to a folded vertical position at the rear of the plate with their outer ends adjacent to and opposing said flanges related thereto, an elongate vertically extending column having an elongate outer upwardly opening lower tube section substantially coextensive with and fixed to and extending longitudinally of the central vertical axis of the plate, an elongate vertical inner tube section telescopically engaged in the outer tube and normally projecting upwardly therefrom, a yoke at the upper end of the inner tube and defining laterally spaced laterally outwardly projecting vertically and forwardly opening gun barrel engaging hooks normally spaced above and rearward of the trays, and releasable lock means between said tube sections, said inner tube sections being shiftable downwardly to a collapsed position within the outer section where said hooks engage the hinge plates of the trays when said trays are in said folded position.

3,952,879
OVERLOAD CONTROL FOR LIFTING BOOM
John L. Grove, Greencastle, Pa., assignor to Fulton Industries, Inc., McConnellsburg, Pa.
Filed Feb. 14, 1975, Ser. No. 550,073
Int. Cl.[2] B66C *13/48*
U.S. Cl. 212—39 MS **19 Claims**



1. In a machine having a movable boom for lifting a load, the boom being thereby subjected to bending stresses which strain the boom,
a beam extending along and generally parallel to a side of said boom;
means securing one end only of said beam to the side of said boom for twisting of said one end of said beam upon the imposition of bending stresses on said boom, said securing means comprising a pair of spaced anchor means vertically spaced when the boom axis is horizontal secured to said boom side and being spaced apart a substantially greater distance than the depth required for a beam in order to prevent significant deflection thereof,
and means spaced from said anchor means for sensing movement of said beam relative to said boom as said boom is stressed toward an overload condition,
whereby the movement of said beam relative to said boom is enhanced by the twisting of said end thereof to provide greater sensitivity of measurement of boom strain.
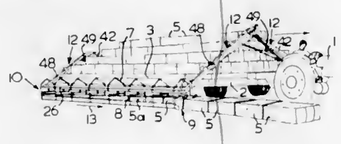
3,952,880
FORCE AND TORQUE SENSING METHOD AND MEANS FOR MANIPULATORS AND THE LIKE
John W. Hill, Palo Alto, and Antony J. Sword, San Francisco, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.
Division of Ser. No. 406,553, Oct. 15, 1973, Pat. No. 3,921,445. This application Jan. 28, 1975, Ser. No. 544,695
Int. Cl.[2] B25B *11/00*
U.S. Cl. 214—1 CM **1 Claim**



1. A manipulator comprising:

a motor operated end effector;
end effector supporting means;
means coupling said end effector and end effector supporting means along a longitudinal axis extending therethrough;
sensing means connected between said end effector and end effector supporting means for sensing at least one component of torque transmitted therebetween through said coupling means about a cross axis which intersects the longitudinal axis;
a motor for operating said end effector; and
means for mounting said motor and end effector at opposite sides of said sensing means along the longitudinal axis such that the motor counterbalances said end effector to substantially null torque components produced by the weight of said end effector about said cross axis.

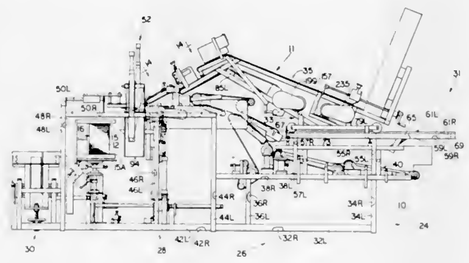
3,952,881
BALE LOADER
LeRoy Andrew Knudson, P.O. Box 3, Consort, Alberta, Canada
Filed Aug. 14, 1974, Ser. No. 497,350
Claims priority, application Canada, May 22, 1974, 200520
Int. Cl.² A01D *87/12* **; B65G** *57/32*
U.S. Cl. 214—6 B **8 Claims**



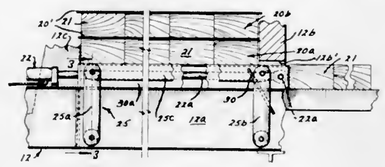
1. A bale loader adapted to be secured to a mobile platform on which bales are to be loaded, comprising:
a. an elongated suspended mechanical grab assembly including depending, pivoted jaws defining the sides of the assembly, said assembly having a front end and a rear end generally coincident with front and rear ends of said platform, respectively;
b. grab lifting means supported by said platform;
c. said grab lifting means being secured to said grab assembly so as to suspend same, and being arranged to lift said grab assembly from a load engagement position wherein said grab assembly extends along one side of said platform a short distance above the ground, to a load release position in which the jaws release the load to deposit same on said platform;
d. locking means operatively connected to said grab assembly for releasably maintaining said jaws in open position;
e. a movable feeler means operatively connected with the locking means to release same upon actuation of the feeler; said feeler means being located at the rear end of the grab assembly and being actuated by horizontal relative movement thereagainst of a bale as the grab assembly with the jaws open is moved along and over at least one bale, with the bale resting on the ground and being located between the jaws, when said end of the bale reaches said rear end of the grab assembly to actuate said movable feeler.

3,952,882
DEVICE FOR DELIVERING PADS TO A BUNDLING MACHINE
Edwin A. Molitor, Miami Township, Clermont County, Ohio, assignor to Multifold-International, Inc., Milford, Ohio
Filed Aug. 21, 1974, Ser. No. 499,180
Int. Cl.² B65G *60/00*
U.S. Cl. 214—6 D **7 Claims**

7. A device for delivering pads to a machine for bundling flat articles which comprises a pad hopper, means for guiding a conveyor belt under the pad hopper, the conveyor belt supporting a stack of pads in the pad hopper, means for delivering pads into the pad hopper on top of the stack of pads therein, means for stopping pads on the stack as they are delivered into the pad hopper, a discriminator having a lower edge terminating spaced above the conveyor belt a sufficient distance to permit a pad to pass thereunder, means for arresting the pad delivering means when the stack of pads reaches a predetermined height, means for advancing the conveyor belt to advance the lowermost pad in the stack under the discriminator, a switch actuator in the path of the lowermost pad, means controlled by the switch actuator for arresting advance of the conveyor belt when the lowermost pad has been advanced to a predetermined position in engagement with the switch actuator, and means for removing the lowermost pad when required, the switch actuator returning to a position at which the conveyor belt is advanced when the switch actuator is released.

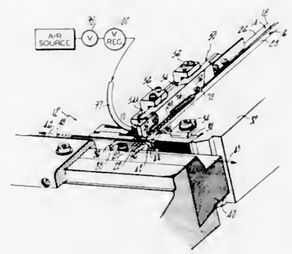


3,952,883
AUTOMATIC MATERIAL FEEDING APPARATUS
Stewart A. Phillips, 1404 Continental Drive, Evansville, Ind. 47715
Filed Feb. 20, 1974, Ser. No. 444,105
Int. Cl.² B65G *59/06*
U.S. Cl. 214—8.5 K **6 Claims**



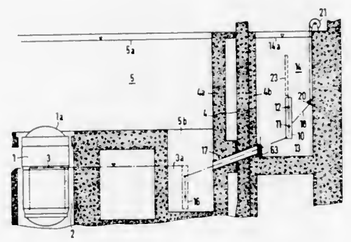
1. Apparatus for automatically feeding a material comprising a framework including support members, multi-layers of material on said support members, means movable from a non-ejecting position to a position ejecting one of said layers of material from said apparatus, and means including a portion of a linkage assembly maintaining layers of material above said one of said layers after withdrawal of said ejecting means upon reaching an ejecting position to said non-ejecting position and permitting the dropping of the next succeeding layer of material into an ejecting position, said linkage assembly having a first movable component, a second movable component, a third movable eomponent and a fourth stationary component in a parallelogram relationship, and where said second movable component is said portion of said maintaining means.

3,952,884
APPARATUS FOR FEEDING HEADED WORK BLANKS
Chester Thomas Babiarz, Windsor Locks, Conn., assignor to The Hartford Special Machinery Company, Simsbury, Conn.
Filed Feb. 26, 1975, Ser. No. 553,243
Int. Cl.² B65G *53/00*
U.S. Cl. 214—8.5 E **10 Claims**



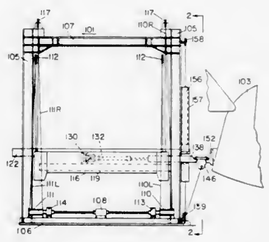
1. For use in feeding work blanks to an entrance of a work station wherein the work blanks each have a shank and a head of enlarged diameter relative to the shank, an apparatus comprising a pair of spaced feed rails defining a track leading to the entrance of the work station, the feed rails having a discharge end, the work station entrance being located in adjacent downstream relation to the discharge end of the feed rails, the feed rails and the work station respectively having a pair of work blank supporting surfaces spaced apart for supporting heads of the work blanks being handled, a track cover in overlying spaced relation to the feed rails, the track cover having an end projecting beyond the discharge end of the feed rails, an air ejection orifice formed in said end of the track cover in overlying relation to the entrance of the work station, and passage means including an air supply line connected to the orifice for directing air under pressure from the orifice onto the top of each work blank upon its discharge from the feed rails to positively seat the work blank head on the supporting surfaces at the entrance of the work station.

3,952,885
NUCLEAR REACTOR INSTALLATION
Hans-Peter Schabert, Erlangen; Robert Weber, Uttenreuth, and Artur Bauer, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed July 25, 1974, Ser. No. 491,663
Claims priority, application Germany, July 27, 1973, 2338228
Int. Cl.² G21C *19/20*
U.S. Cl. 214—18 N **2 Claims**



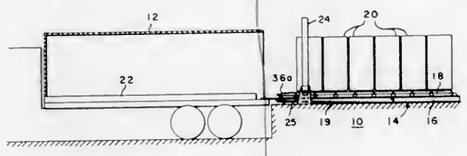
1. A nuclear reactor installation comprising a containment forming an upstanding wall having opposite sides, a fuel element transfer tube having opposite ends and extending transversely through said wall, said ends respectively opening on said opposite sides of said wall, an elongated fuel element carrier, guide means for guiding said carrier to travel endwise through said tube, said tube being positioned at an angle from horizontal so that one of said ends is a higher end and the other of said ends is a lower end, said angle being sufficient to cause gravity to move said carrier in a downhill direction while guided by said guide means, a flexible cable connected to said carrier, means for applying tension to said cable to pull said carrier uphill while guided by said guide means, said containment forming a fuel element handling pit on the said side of said wall to which said tube's said upper ends opens, said pit being water-flooded, said cable being directed to pull said carrier at said angle of said tube into said pit from said upper end of said tube, and means in said pit for turning said carrier from said angle to a vertical position, said pit having a vertical passage extending downwardly far enough to at least substantially completely receive a fuel element carried by said carrier.

3,952,886
ARRANGEMENT FOR STABILIZING AN AIRCRAFT DURING LOADING AND UNLOADING OPERATIONS
Edis Hazne, 9000 Pleasantview Drive, Northfield, Ohio 44067
Filed Mar. 10, 1975, Ser. No. 557,148
Int. Cl.² B65G *67/00*
U.S. Cl. 214—38 BA **6 Claims**



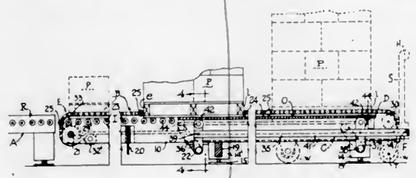
1. An arrangement for use with aircraft having a nose opening through which cargo can be loaded and unloaded, said arrangement being operable to suspend a stabilizing weight from a hook mounted in the nose opening of each such aircraft, including,
conveying equipment for transferring cargo through the nose opening of an aircraft appropriately positioned adjacent one end of said conveying equipment;
hoisting means for raising and lowering said conveying equipment;
a support bar having an upwardly disposed hook formed in one end, said support bar being mounted for longitudinal movement on said conveying equipment with its hooked end being disposed at said one end thereof;
motive means mounted on said conveying equipment and connected to said support bar said motive means being capable of extending said support bar beyond said one end of said conveying equipment;
a transfer member having a first end releasably engageable with the hook of said support and a second end releasably engageable with the hook on an aircraft appropriately positioned as aforesaid; and
means suspending said stabilizing weight from said transfer member, whereby upon an aircraft being appropriately positioned as aforesaid and upon said stabilizing weight being suspended from said one end of said transfer member, said weight can be suspended from the hook on said aircraft by raising said conveying equipment and extending said support bar until said second end of said transfer member is suitably positioned above the hook on said aircraft and by lowering said conveying equipment until said second end of said transfer member engages the hook on said aircraft and said first end of said transfer member is released from the hook on said support bar.

3,952,887
VEHICLE LOADING AND UNLOADING APPARATUS
David Edward Lutz, 330 Washington Lane, Carlisle, Pa. 17013
Filed Apr. 16, 1974, Ser. No. 461,467
Int. Cl.² B65G 67/02
U.S. Cl. 214—38 C 14 Claims



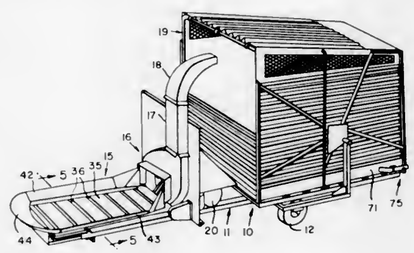
1. Apparatus mounted on a loading dock for loading and unloading from vehicles loads supported in spaced relationship to the floor of the vehicle comprising an elongated base mounted on said dock, an elongated extensible element mounted on said base for movement in a longitudinal path relative to said base and into and out of a vehicle to be loaded or unloaded, reversible drive means operably connected to said base and said extensible element to effect said movement, said extensible element comprising a framework, load supporting rollers journaled in said framework, second rollers journaled in said framework and movably supporting said extensible member during said longitudinal movement, said extensible element being of greater height than the distance said load is spaced from said floor, a tapered leading edge on said extensible element whereby said extensible element can be wedged beneath said load as it is driven longitudinally into the vehicle, and means on said extensible element for preventing said load from moving off of said extensible element as said extensible element is moved out of said vehicle carrying said load therewith.

3,952,888
DISCHARGE CONVEYOR FOR TRANSFERRING PALLETIZED CARTONS ONTO A TRUCK, CART AND THE LIKE
Richard W. Currie, Saratoga, Calif., assignor to Currie Machinery Company, Santa Clara, Calif.
Filed Aug. 2, 1974, Ser. No. 494,090
Int. Cl.² B65G 67/04
U.S. Cl. 214—41 R 6 Claims



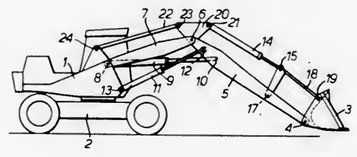
1. A discharge conveyor for receiving palletized cartons at a predetermined level at one end for discharge at its opposite end and at a lower level onto the top surface of the truck bed of a cart and the like without tilting of such palletized cartons, comprising in combination:
a. a frame;
b. a roller conveyor at the receiving end of said frame for receiving and supporting a unit of palletized cartons at said predetermined level;
c. pallet moving means supported on the side walls of said frame for engaging each unit of palletized cartons arriving on said roller conveyor for moving said pallet of cartons toward the opposite end of said conveyor;
d. a skid plate at the opposite end of said conveyor;
e. an elevator-lift mechanism on the side walls of said frame and below said skid plate for normally supporting the latter at said predetermined level for receiving a unit of palletized cartons therefrom;
f. a tunnel-like space below said skid plate for receiving the truck bed of a cart disposed therebelow;
g. a cart having a flat truck bed for supporting said skid plate thereon and means on the top surface of the truck bed of such cart engageable by the pallet of a unit of palletized cartons discharging from said conveyor for simultaneously moving the cart from below said skid plate in unison with the movement of said unit of palletized cartons off of said skid plate and onto the truck bed of the cart; and
h. control means operatively associated with said elevator-lift mechanism and including:
1. an electric motor for driving said pallet moving means;
2. an electrical switch disposed at the mid zone of said roller conveyor adapted to be engaged by the pallet of a unit of palletized containers fully arrived on said skid plate for cutting off electrical current to said electric motor during lowering of said skid plate by said elevator-lift mechanism; and
3. a limit switch engageable by said elevator-lift mechanism as it arrives at its lowered condition for re-establishing electrical current to said electrical motor for driving said pallet moving means to move the pallet on said skid plate further toward the discharge end of said conveyor and onto the flat bed of said cart.

3,952,889
APPARATUS FOR COLLECTING COMBINE WASTE
William C. Wanker, Culver; James J. Quinn, and Fred E. Kirby, both of Madras, all of Oreg., assignors to Foster Manufacturing Company, Inc., Madras, Oreg.
Filed Nov. 18, 1974, Ser. No. 524,781
Int. Cl.² B65G 67/22
U.S. Cl. 214—42 R 8 Claims



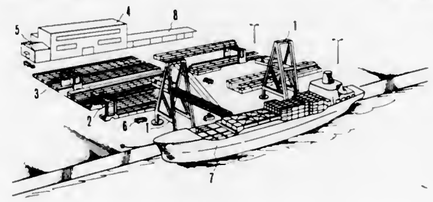
1. In combination with a combine having a rearwardly extending hood located above the ground and discharging waste material downwardly under gravity from said hood, apparatus for collecting said waste material comprising: a frame provided with supporting wheels and extending forwardly thereof and mounted to said combine; conveyor means carried by the forward end of said frame and located beneath said hood of said combine when said frame is attached thereto, said conveyor receiving said waste material under gravity flow; blower means on said frame having an inlet opening extending in a generally vertical plane for receiving material from said conveyor means and forcing the same through a discharge conduit; independent power means on said frame for supplying power to drive said blower means and said conveyor means; said power means including means for operating said blower means at a higher discharge rate than the delivery rate of said conveyor means to prevent accumulation of material received from said combine adjacent the inlet opening of said blower means; and collection bin means mounted on the rear of said frame above said wheels for collecting material forced through said discharge conduit.

3,952,890
HYDRAULICALLY OPERATED SHOVELS
Anthony Clubley Armstrong, Abergavenny, Wales, assignor to Hy-Mac Limited, Wales
Filed Mar. 6, 1975, Ser. No. 556,187
Claims priority, application United Kingdom, Mar. 12, 1974, 10876/74
Int. Cl.² E02F 3/32
U.S. Cl. 214—138 R 12 Claims



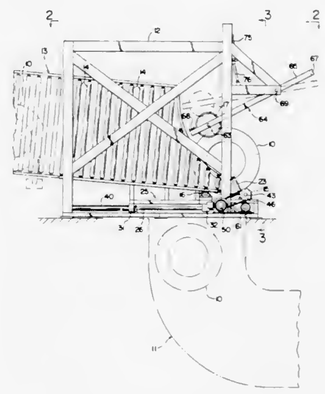
1. A hydraulically operated shovel having a bucket mounted at one end of a bucket arm, the other end of which is pivotally mounted on a main arm shorter than the bucket arm, the main arm being mounted on a pivot on a chassis member, a luffing ram or rams acting on the bucket arm, and a lifting ram or rams acting between an intermediate point on the bucket arm and a point on the chassis member spaced from the mounting point thereon of the main arm in such a way that the lifting ram or rams cannot lie in the same straight line as the part of the bucket arm between the pivot of the bucket arm on the main arm and the intermediate point, and also that the bucket can be caused to describe a substantiallyl straight line movement in a predetermined direction under the influence of the luffing ram or rams with the lifting ram or rams maintained at a constant length.

3,952,891
METHOD OF CONTAINERS HANDLING IN CONTAINER YARDS
Susumu Terayama, Okayama, and Noriyoshi Mameda, Tamano, both of Japan, assignors to Mitsui Shipbuilding & Engineering Co., Ltd., Tokyo, Japan
Filed Feb. 27, 1974, Ser. No. 446,295
Int. Cl.² B65G 63/00
U.S. Cl. 214—152 4 Claims



1. In a method for handling containerized cargo in a container yard having a first container handling machine installed in the transferring area of said container yard, a second container handling machine operating in said yard, a plurality of wheeled transport vehicles for transporting the containers within the container yard, each of said container handling machines having controllable display means controllable from a control center, and a control center having computer means for receiving and storing input and output information concerning both the containers being processed by the yard and transport vehicles operating in the yard for commanding and supervising the loading, storing and unloading operations of said first and second container handling machines and of said transport vehicles; the improved method of handling containers in said container yard comprising the steps of providing a corresponding unique container yard assigned sequence number to each container by said control center and suitably labeling the container with the number, said number being stored in the control center and effective for use only while the container is in said container yard, assigning and applying a predetermined and different vehicle number to each transport vehicle operating within the container yard by said control center, said predetermined vehicle number being stored and used by the control center only while the transport vehicle is within said container yard, and displaying said container number and said vehicle number by said controllable display means mounted on said first and second container handling machines substantially simultaneously in point of time in accordance with an operation command from said control center during each handling operation, thereby enabling the operators of said container handling machines and said transport vehicles to mutually confirm the handling operation command from said control center for each container by utilizing said centrally controlled and substantially simultaneously displayed container number and vehicle number as a common key word.

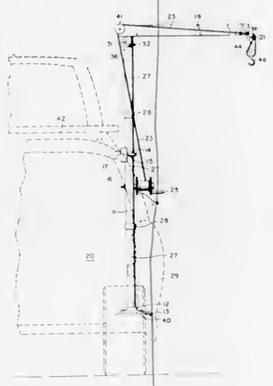
3,952,892
APPARATUS FOR HANDLING AND SPINNING TIRES AT A TRIMMING STATION
Jack Randall Robinson, Cuyahoga Falls, and Roger T. Hilton, Akron, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio
Filed Mar. 27, 1975, Ser. No. 562,389
Int. Cl.² B65G 7/04
U.S. Cl. 214—340 9 Claims



1. In a post-cure tire processing apparatus for sequentially receiving and discharging tires of various dimensions and for spinning a received tire about its axis of rotation to facilitate trimming therefrom vents, mold flash and the like, the improvement which comprises:
at least three parallel rollers adapted to engage at spaced circumferential locations, the tread portion of and rotatably locate therebetween a tire for spinning about its axis of rotation, said rollers including:
a drive roller and variable speed drive means therefore for spinning said tire,
a movably mounted retaining roller adapted to apply retaining pressure to said tire, and
a retractable roller adapted to be shifted between an operating tire supporting position and a retracted position permitting removal of a tire from between said rollers,
adjustable means engageable with opposite sides of a tire retained by said rollers for controlling the axial position of a tire while spinning, and

means for sensing and measuring the diameter of a tire to be trimmed and for adjusting the speed of said drive means in accordance with said measurement.

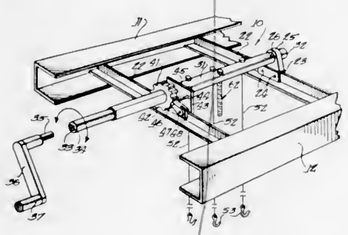
3,952,893
CAR CRANE
Joseph J. Kolesar, 48 Blackford Ave., Yonkers, N.Y. 10704
Filed Oct. 22, 1974, Ser. No. 516,898
Int. Cl.² B60R *9/00*
U.S. Cl. 214—450 **3 Claims**



1. A crane which may be readily attached to or detached from an automobile for the raising or lowering of loads to or from the top of the automobile, comprising a vertical member, a horizontal arm rotatably mounted to the top of the vertical member, a hoisting cable fastened over a pulley attached to the horizontal arm and fastened at one end to a take-up reel mounted on the vertical arm member,

said vertical member fitted on its base with means to fasten inside an automobile between the bottom of a door opening of the automobile and the frame of the closed door, with the vertical member mounted inside the automobile along the inside of the door and passing through the open window opening of the said door, such that the vertical member is held in place by its contact with the bottom of the door opening, the top of the inside of the door, and the outside of the top of the door opening.

3,952,894
SPARE TIRE HOIST
John Mendez, 1223 Essex St., Imperial Beach, Calif. 92032
Filed Dec. 2, 1974, Ser. No. 528,696
Int. Cl.² B62D *43/04*
U.S. Cl. 214—451 **1 Claim**



1. A spare tire hoist intended for use with a tire of a vehicle and adapted to be mounted intermediate a pair of opposed horizontal frame members of the vehicle, said hoist comprising, in combination:

a pair of parallel spaced apart support members each of an identical configuration and each having its end portions adapted to be affixed between said vehicle frame members to extend transversely therebetween;

a pair of ball bearing members mounted in associated housings, each housing associated with one of said support members affixed centrally thereof and extending upwardly therefrom;

an elongated cylindrically shaped shaft extending axially through said ball bearings and rotatably supported thereby for rotation in opposite directions about its axis, said shaft having a rectangular socket disposed in one end thereof and extending axially thereinto;

means for effecting rotation of said shaft in either direction about its axis including a drive bar member of rectangular cross-sectional configuration adapted to be removably inserted into said socket and to project outwardly therefrom, a lever arm having one end affixed to said drive bar with the opposite end extending outwardly radially therefrom and a hand grip handle member affixed to the free end of said lever arm and projecting outwardly normal thereto in a direction opposite of said drive bar for gripping by an individual hand to effect rotation of said lever arm about the axis of said drive bar to effect rotation of said shaft;

means for permitting unhindered rotation of said shaft in a first direction about its axis and for preventing rotation of said shaft in an opposite direction about its axis including a toothed sprocket type gear wheel affixed concentrically to said shaft positioned outwardly of said ball bearing housing adjacent one of said support members, a cog member pivotally secured at one end to said support member for pivotal rotation relative thereto in the vertical plane of said gear wheel between a position engaging said teeth of said gear wheel and a position free of said teeth of said gear wheel, a plate member affixed to said support member and extending upwardly therefrom, a boss member having one end affixed to said plate member with the opposite end thereof projecting into said plane of said cog member and a spring having one end connected to said boss member with its opposite end connected to said cog for resiliently biasing said cog into engagement with the teeth of the gear wheel;

three diametrically extending bores spaced longitudinally apart and disposed in said shaft between said support members;

three independent lengths of flexible cables each having one end extending through an associated one of said shaft bores and affixed thereto with the opposite end extending downwardly therefrom;

three hook members, each associated with the free end of one of said cables and affixed thereto;

means positively securing said tire to said support members after being hoisted thereto by operation of said shaft;

said tire hoist being further characterized by a cylindrical bore extending diametrically through said shaft parallel to said three cable bores and centrally of said shaft intermediate said support members;

a safety bolt having an enlarged head member and an elongated threaded shank member, said shank member being of a diameter to be removably inserted through said shaft aperture to project downwardly therefrom;

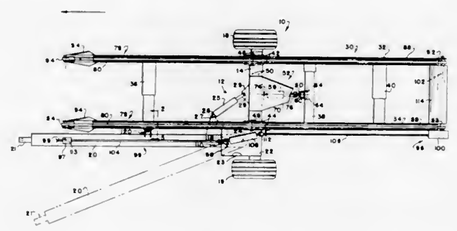
a safety plate of a diameter to engage the bottom surface surrounding the interior periphery of the rim of said tire;

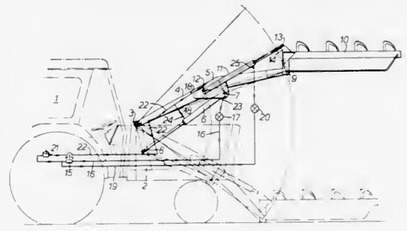
an aperture extending centrally through said safety plate of a diameter to receive said safety bolt shank therethrough; and

a nut threadably received on said safety bolt when said tire is in an elevated position supported by said hook members and engaging said support members, said nut retaining said safety plate positively secure to said safety bolt for positive retention of said tire with respect to said

hoist.

3,952,895
LARGE ROUND BALE HANDLING APPARATUS
Willis R. Campbell, Ephrata, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed Dec. 5, 1974, Ser. No. 529,990
Int. Cl.² B60P *1/16*
U.S. Cl. 214—506 **8 Claims**





1. An apparatus for handling crop material packages, such as large round bales or the like, comprising:

a transverse mobile frame adapted for movement across a field;

an elongated bed assembly mounted generally intermediately between its opposite ends to said frame at a position spaced above the field;

means for tilting said bed assembly about a horizontal axis relative to the field between a generally horizontal position and a inclined position in which one end of said bed assembly is disposed adjacent the field, said tilting means further for supporting said bed assembly at said positions relative to the field;

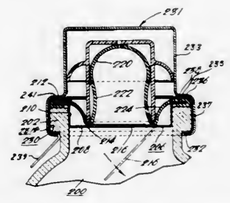
an elongated draft member pivotally interconnected at one end to said frame for lateral movement toward and away from one side of said bed assembly between a transport position in which a portion of said draft member is disposed closely adjacent said side of said bed assembly and a field operating position in which said portion of draft member is laterally offset from said side of said bed assembly, said draft member being adapted at the other end for attachment to a vehicle for towing said apparatus across the field; and

means for coupling said side of said bed assembly and said portion of said draft member together when said bed assembly and draft member are disposed at said transport position and said bed assembly is disposed at its horizontal position, said portion of said draft member and said side of said bed assembly being uncoupled when said draft member is disposed at said field operating position.

3,952,896
HYDRAULIC LINKAGES
John Albert David Hayward, Knoll Farm, Damerham, Fordingbridge, Hampshire, England
Filed Nov. 27, 1974, Ser. No. 527,936
Claims priority, application United Kingdom, Nov. 28, 1973, 55292/73
Int. Cl.² E02F *3/87*
U.S. Cl. 214—771 **6 Claims**

1. A hydraulic linkage intended for use with a vehicle, the linkage comprising means defining a substantially horizontal axis that occupies a fixed position relative to a vehicle to which the linkage is secured in the use thereof, at least two arms turnable upwardly and downwardly about said axis, first ram means pivoted between a frame part which, in the use of the linkage, occupies a fixed position relative to said vehicle and an intermediate arm location such that, as seen in side elevation, said axis and the pivotal connections of said first ram means are at the corners of a triangle, apparatus to be lifted and lowered by the linkage, said apparatus being pivotally connected to the arms in end regions thereof remote from said axis, second ram means in operative communication with said first ram means and pivoted between said apparatus and a second intermediate arm location such that, as seen in side elevation, the pivotal connection between the arms and the apparatus and the pivotal connections of the second ram means are at the corners of a second triangle, the rams of said ram means being double-acting rams, and wherein the operative communication between the first ram means and the second ram means comprises a hydraulic duct directly and constantly interconnecting chambers at opposite sides of the pistons of rams of the respective first and second ram means such that hydraulic pressure medium expelled from one such first ram chamber by movement of the corresponding piston will pass through said duct to the communicating second ram chamber and cause movement of the other piston whereby said apparatus to be lifted and lowered by said linkage will be maintained in a given attitude during such lifting and lowering.

3,952,897
PRIMARY NURSER ASSEMBLY
Fred T. Pickerell, Spring City, and Dominic J. Brignola, Phoenixville, both of Pa., assignors to The West Company, Phoenixville, Pa.
Continuation-in-part of Ser. No. 331,474, Feb. 12, 1973, abandoned, which is a division of Ser. No. 154,505, June 18, 1971, Pat. No. 3,779,413. This application Apr. 29, 1974, Ser. No. 464,773
Int. Cl.² A61J *9/00*
U.S. Cl. 215—11 C **3 Claims**



1. The combination of a container having an access opening and a primary nurser for mounting over said access opening in said container comprising a dam member overlying the opening in said container and having an outer terminal annular edge portion confronting the surface of said container surrounding said opening therein, said dam member having a portion at least partially detachable to provide a discharge opening, a nipple made of a resilient, stretchable material having a generally cylindrical base portion of a diameter in its relaxed state less than the largest cross section of said dam member so that in assembly the base portion of said nipple overlies and underlies the outer terminal annular edge portion of said dam member and retaining means securing said nipple and dam to said container pressing said base portion underlying said annular edge portion of said dam member against the

surface of said container surrounding said access opening to provide a seal therebetween and a pusher element disposed over the feeding tip of the nipple operative upon displacement toward said dam member to effect at least partial displacement of said portion to permit discharge of the contents of the container.

3,952,898

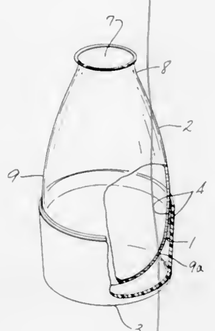
PREPARATION OF CRYSTALLINE HOT MELT COMPOSITION

John W. Bayer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

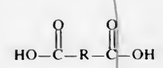
Division of Ser. No. 336,769, Feb. 28, 1973, abandoned, which is a division of Ser. No. 156,693, June 25, 1971, Pat. No. 3,749,630. This application Dec. 26, 1973, Ser. No. 462,845

Int. Cl.² B65D *23/08*

U.S. Cl. 215—12 R **8 Claims**



1. In a container of composite construction formed of a glass envelope having a mouth opening at one end thereof and being substantially continuous convexly arcuate in the axial section along a substantial extent of its end portion disposed opposite said mouth, and a cup-like polyethylene fitment bonded to said envelope by hot melt adhesive means the improvement wherein said adhesive means is an annular band of creep resistant thermoplastic adhesive having a tensile shear strength of about 75 to 140 pounds per 1 inch × ½ inch lap, and an average molecular weight of about 2,000 to 7,000, said thermoplastic adhesive being the polymeric product of the condensation of a monomer mixture consisting essentially of (a) a stoichiometric amount to about 7 mole percent excess of a compound of the formula



wherein R is a saturated aliphatic hydrocarbon radical of 4–10 carbon atoms, and (b) a compound of the formula NH_2—R-'—OH wherein R' is a saturated aliphatic hydrocarbon radical of 2 to 6 carbon atoms, or a mixture of 70 to 99 mole percent of a compound of the formula NH_2—R'—OH, wherein R' is a saturated aliphatic hydrocarbon radical of 2 to 6 carbon atoms with 1 to 30 mole percent of a compound of the formula NH_2—R''—NH_2 wherein R'' is a saturated aliphatic hydrocarbon radical of 2 to 6 carbon atoms or a symmetrical alicyclic hydrocarbon radical of 8 carbon atoms.

3,952,899

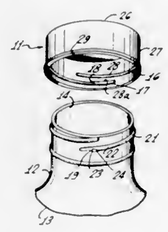
SAFETY CLOSURE CAP

Carl W. Cooke, Los Angeles, Calif., assignor to CWC Industries, Los Angeles, Calif.

Continuation-in-part of Ser. No. 479,044, June 13, 1974, Pat. No. 3,888,376. This application Nov. 8, 1974, Ser. No. 522,018

Int. Cl.² B65D *85/56, 55/02;* **A61J** *1/00*

U.S. Cl. 215—217 **6 Claims**



1. The combination of:

a container including a cylindrical neck having an open end;

a closure for said container having a top overlying said open end and a depending cylindrical skirt surrounding a portion of said neck adjacent said open end;

resilient sealing means carried by said closure and disposed between said top and said open end for sealing said open end;

continuous thread means carried on the exterior of said neck and defining a lower surface, and continuous thread means carried on the interior of said cylindrical skirt portion defining a start end and an upper surface, said thread means being adapted for engagement upon rotation of said closure to axially draw said closure into sealing relation with said resilient sealing means compressed between said open end and said closure; and

cooperating locking means carried by said continuous thread means for inter-engagement when said closure is in sealing relation with said open end, said locking means including;

a projection carried by one of said thread means and forming an integral part thereof and a corresponding cut out portion disposed on the other of said thread means, said projection and cut out portion being disposed on the respective surfaces of said thread means for registration when said closure is drawn into sealing relation with said open end, said projection being received in said cut out portion by the longitudinally upward movement of said closure responsive to the urging of said resilient sealing means whereby said upper and lower surfaces of said thread means are substantially contiguous and said thread means are locked together, and responsive to a longitudinally downward movement of said closure, said projection is moved out of said cut out portion to unlock said threads for removal of said closure from said container.

3,952,900

PACKING CONTAINER INTENDED IN PARTICULAR FOR PRESSURIZED CONTENTS

Ruben A. Rausing, Via Kenia 22-24, Rome, Italy

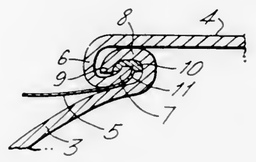
Filed Dec. 6, 1974, Ser. No. 530,427

Claims priority, application Switzerland, Dec. 17, 1973, 17631/73

Int. Cl.² B65D *41/48, 53/00*

U.S. Cl. 215—232 **3 Claims**

1. A packing container for pressurized contents comprising a container body provided with a pouring opening having an outwardly and downwardly turned peripheral flange, a sealing cap provided with a downwardly, inwardly and upwardly turned peripheral flange for interlockingly engaging the outwardly and downwardly turned flange of said container body, a sealing compound disposed circumferentially between the interlocking flanges to seal the circumferential edge of one of said flanges with the other flange, the edge of the upwardly turned portion of the flange of the sealing cap being provided with at least one slot, and a tear strip secured to the upwardly turned portion of the flange of the sealing cap adjacent said at least one slot, said tear strip extending to the outside of the package container for easy access to tear off said sealing cap.



3,952,901

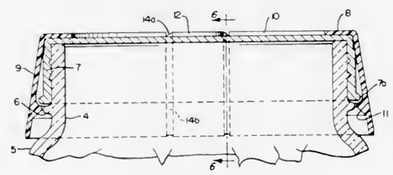
TAMPER-PROOF OVERCAP CONSTRUCTION

Vincent N. Conti, West Hempstead, N.Y., assignor to Dairy Cap Corporation, Jamaica, N.Y.

Continuation-in-part of Ser. No. 485,081, July 2, 1974, abandoned. This application Jan. 27, 1975, Ser. No. 544,518

Int. Cl.² B65D *41/62, 51/18*

U.S. Cl. 215—251 **14 Claims**



1. An overcap adapted for receipt on a container over a closure cap for said container and in surrounding relation with said closure cap to prevent unauthorized removal of said closure cap and opening of said container, said overcap comprising:

a. a body, said body including,

1. an upper surface adapted to overlie the top of the closure cap, and

2. a skirt depending circumferentially from the upper surface and adapted to encircle the closure cap, said skirt having an internal diameter which is greater than the external diameter of said closure cap to provide a radial space between said skirt and closure cap when the overcap is received on the container in surrounding relation with the closure cap to preclude frictional coupling of the overcap with the closure cap, said skirt further being formed of plastic, said plastic being relatively unyieldable to prevent movement of the skirt radially inwardly under compressive forces into surface-to-surface friction driving contact with said closure cap; and

b. pull tab means carried by said body for tearing said body in a telltale manner to permit access to said closure cap.

3,952,902

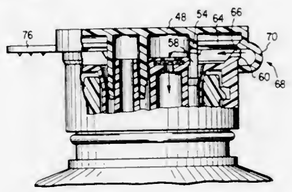
CLOSURE CAP FOR PLASMA RECEIVING ASSEMBLY

Myron R. Prouty, Oakland, and Robert D. Tuseth, Alameda, both of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Apr. 26, 1974, Ser. No. 464,463

Int. Cl.² B65D *51/16*

U.S. Cl. 215—306 **17 Claims**



1. A closure cap for covering the opening of a gas sterilizable container, comprising

a. a cover; and

b. base means for securing said cover to the container to seal the container opening, said base means including

1. liquid access means integral with said base means for permitting liquid to be introduced into said container through said base means,

2. gas access means integral with said base means for permitting gas to pass into and out of the container through the container opening,

3. cover retaining means for securing said cover to said base means in a fully closed position to hermetically seal the container, and

4. cover engaging means for engaging and supporting said cover in a stable partially open position relative to said base means displaced from the fully closed position, said cover engaging means forming a gas passage when said cover is in said partially open position for permitting gases to enter the container and contact all surfaces of said base means and said cover which are exposed to the interior of the container when said cover is secured to said base means in a fully closed position.

3,952,903

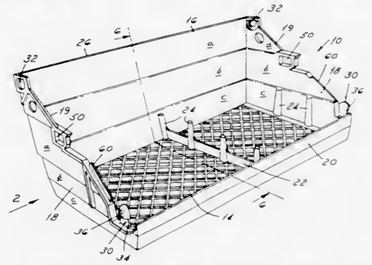
CLOSED CONTAINER

Ellsworth E. Sanders, Sanibel Island, Fla., and Elsmer W. Kreeger, Bloomfield, Mich., assignors to Pinckney Molded Plastics, Inc., Pinckney, Mich.

Filed Oct. 21, 1974, Ser. No. 516,460

Int. Cl.² B65D *21/02, 11/10*

U.S. Cl. 220—4 E **11 Claims**



1. A substantially closed container having spaced, parallel, substantially rectangular top and bottom walls, spaced parallel, substantially rectangular front and rear walls, and spaced, parallel, substantially rectangular side walls and being composed of identical separable upper and lower container parts each of one-piece construction, each part being adapted for

use independently of the other for display purposes and having a substantially rectangular base, a generally upright substantially rectangular high wall at the rear of said base, a generally upright substantially rectangular low wall at the front of said base of substantially lesser height than said high wall, a pair of generally upright side walls at each side of said base, the front and top of each part being substantially open and the upper edges of the side walls thereof extending generally diagonally from an upper level at the rear of said part near the top of said high wall to a lower level at the front of said part near the top of said low wall to expose the contents of said part when used independently for display purposes, the upper edge of each side wall of each part having intermediate the ends thereof a forwardly extending projection and a rearwardly extending recess, first connecting means at the rear of each part adjacent said upper level, and cooperating second connecting means at the front of each part adjacent said lower level releasably interengageable with said first connecting means of the other part, the upper part being inverted, turned end for end and superposed over the lower part and said first and second connecting means of one part being respectively interengaged with said second and first connecting means of the other to form said substantially closed container, the bases of said upper and lower parts respectively forming the top and bottom walls of said container, the high wall of said lower part cooperating with the low wall of said upper part to form the rear wall of said container and the low wall of said lower part copperating with the high wall of said upper part to form the front wall of said container, and the side walls of said upper part respectively cooperating with the side walls of said lower part to form the side walls of said container, the projections on the side walls of each part fitting in the recesses in the side walls of the other so as to resist vertical separation of the parts when assembled together to form said container as aforesaid.

3,952,904

CONTAINER, PARTICULARLY A BEER BARREL

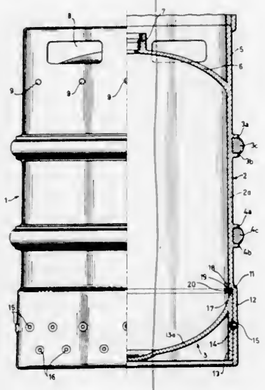
Marius Alphonsus Johannes Verlinden, 1061, Landrestraat, The Hague, Netherlands

Filed Sept. 3, 1974, Ser. No. 502,469

Claims priority, application Belgium, Sept. 12, 1973, 135571

Int. Cl.² B65D *7/02, 7/42*

U.S. Cl. 220—5 R **10 Claims**



1. Pressure barrel, particularly a beer barrel, comprising a first part made of plastics in the form of a vessel open at one end and having a peripheral wall, and a second part, also of plastics, fitted sealingly in said open end of said first part and forming a closure for said open end, the peripheral wall of the first part having an intermediate portion and an enlarged diameter cylindrical portion;

said intermediate portion merging radially with said enlarged diameter portion near said open end and forming an internal annular shoulder facing said open end;

said second part including an end wall portion and a cylindrical peripheral wall at the periphery of said end wall portion, said enlarged diameter portion of said first part receiving with a close fit therein the cylindrical peripheral wall of the second part to obtain a sealed transition between the shoulder and the opposed peripheral edge of the end wall portion, and a number of supersonic welds distributed circumferentially along and interconnecting the enlarged diameter cylindrical portion of the first part and the cylindrical peripheral wall of the second part, wherein said shoulder and said opposed peripheral edge of said end wall portion are axially separated by an undercut space and including a sealing ring compressably sandwiched axially in said space.

3,952,905

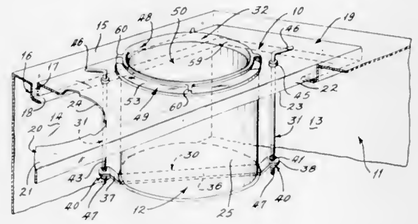
CONTAINER HOLDER FOR ICE CREAM CABINET OR THE LIKE

Howard J. Rumrill, Gloversville, N.Y., assignor to Pet Incorporated, St. Louis, Mo.

Filed Sept. 23, 1974, Ser. No. 508,686

Int. Cl.² A47B *57/18, 77/18;* **A47F** *3/022, 3/04*

U.S. Cl. 220—14 **11 Claims**



1. In a refrigerated cabinet operating at low refrigeration temperatures sufficient to maintain ice cream in a frozen dispensable condition, including a closed cabinet housing having a removable top plate with at least one opening adapted to receive a container for bulk ice cream; the improvement comprising multiple spaced apart cut-outs formed in said top plate in communication with said opening, and a container holder including an annular top retaining collar having outwardly extending means receivable in said cut-outs and movable laterally therefrom to removably lock said retaining collar with the top plate, said retaining collar having inwardly extending means to define a smaller opening for access to said container, bottom support means disposed below said retaining collar to support said container, and vertical adjusting rods extending through said top plate and threadedly engaged with said bottom support for vertically adjusting the bottom support to firmly engage the top of said container against said top retaining collar.

2. A container holder for use in a refrigerated cabinet having a top plate with an opening to receive a container of refrigerated product to be dispensed, said holder including a bottom support in spaced relation below the opening in the top plate and adapted to seat the container, top retaining means adapted to be positioned in the opening and removably locked with said top plate, said top retaining means including an inwardly extending abutment portion defining a central opening for access to the container, said abutment portion being spaced from said bottom support and adapted to be engaged by a container seated on the bottom support, and vertical means having an upper portion journalled substantially in the plane of said top plate and a lower end adjustably engaged with said bottom support whereby the bottom support is adapted to be vertically adjusted relative to the top

retaining means for removably securing the container therebetween.

3,952,906

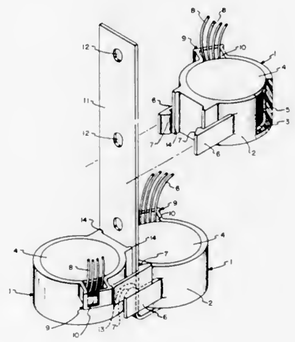
CASE FOR ELECTRICAL COMPONENTS

Thomas Georgopulos, Chicago, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 31, 1973, Ser. No. 411,583

Int. Cl.² B65D *25/24*

U.S. Cl. 220—18 **5 Claims**



1. A case for electrical components, said case being adapted to be releasably attached to a mounting standard having a pair of spaced apart edges and being of a predetermined thickness, said case comprising:

a floor;

a wall extending upward from said floor;

a spaced apart pair of flexible arms integral with and extending outward in spaced apart parallel planes from said wall, the free ends of said arms including curved, inwardly facing projections defining angled surfaces, which force said arms to flex outwardly when pressed against the edges of the support so that the free ends of said arms can pass over the edges of the support, and inner edges which engage and capture the mounting support between said arms; and

a pair of spacer ribs positioned between said arms and extending outward from said wall in spaced apart parallel planes so as to provide a free space between them for receiving therein fastening means, the length of said pair of spacer ribs being proportioned so that the distance between the terminal ends thereof and said inner edges of said arms is only slightly greater than the thickness of the mounting support to thereby form a reasonably tight fit between said case and the mounting support,

said case being attached to said mounting standard by pressing the angled surfaces on said free ends of said arms against said spaced apart edges of the mounting standard to thereby cause said arms to flex outward to pass said projections over said edges and behind the mounting standard to capture the mounting standard between the terminal ends of said spacer ribs and said inner edges of said projections, the free space between said spacer ribs permitting said case to be attached to the mounting standard directly opposite fastening means with said spacer means straddling the fastening means.

3,952,907

LIQUID STORAGE INSTALLATIONS

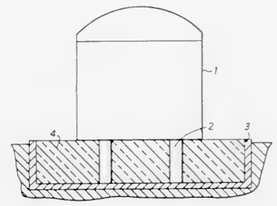
Dennis H. Ogden, Wolverhampton, and George Inverarity, Brierley Hill, both of England, assignors to British Industrial Plastics Limited, Manchester, England

Filed Nov. 25, 1974, Ser. No. 527,157

Claims priority, application United Kingdom, Nov. 24, 1973, 54674/73

Int. Cl.² B65D *87/00*

U.S. Cl. 220—18 **9 Claims**



1. A liquid storage installation comprising tank means for storage of a liquid of the class including inflammable liquids and liquids which produce fumes of the volatile, noxious, corrosive and the like type; bund means below the tank means for entrapment of such liquid spilled from the tank means and of a size generally corresponding in volume to at least that of said tank means, said bund means including bottom and side walls, and protective means for protecting the environment from harmful effects of such liquid when spilled into the bund means; the protective means comprising a body of non-inflammable material permeable to the liquid, essentially impermeable to water whereby it may be exposed to the elements, having relatively low thermal conductivity, and selected from the group consisting of an aminoplast resin foam, a phenolic resin foam and a urethane resin foam, said body of non-inflammable material covering the bund bottom wall.

3,952,908

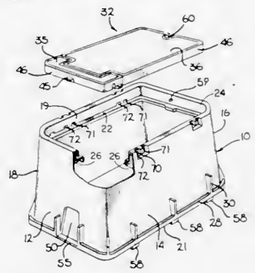
METER BOX AND COVER

John Reese Carson, Chapman Woods Road, Pasadena, Calif. 91107

Filed Aug. 1, 1975, Ser. No. 601,047

Int. Cl.² B65D *25/24*

U.S. Cl. 220—18 **13 Claims**



1. A meter box assembly comprising:

a. a meter box having an open upper top with an upwardly extending rim member terminating on the inside surface of said box near the top thereof in an inwardly extending ledge member; and

b. a cover arranged and configured so as to rest on said ledge member and confront said rim on said box, said cover comprising first and second sections and means for rotatably joining said first and second sections together,

said first section having means for engaging said meter box so as to render said fist section substantially immovable therein, said second section having means for lifting said second section and moving said second section about said means rotatably joining said first and said second sections together

whereby said meter box is selectively opened and closed.

3,952,909

BOTTLE CASE OF PLASTIC

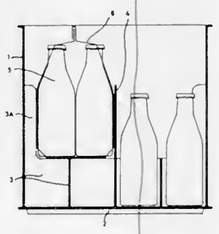
Ulrich Heinrich Prodel, Grunstrasse 13, 4902 Bad Salzuflen, Germany

Filed Feb. 27, 1974, Ser. No. 446,206

Claims priority, application Germany, Mar. 8, 1973, 2311419

Int. Cl.² B65D *1/24, 1/02*

U.S. Cl. 220—21 **4 Claims**



1. A bottle packing for returnable bottles having body portions and necks, comprising a stackable bottle case of plastic comprising four side walls provided on top and bottom with edge reinforcements, a bottom, and crossing partitions extending between opposite side walls and upwardly from said bottom to divide the interior of said case into individual bottle compartments, said partitions having upper edges parallel to said bottom, a plurality of multiple bottle packs disposed between said side walls and resting on the upper edges of at least some of said partitions, each of said packs comprising a plurality of bottles in a carriable container, the height of said side walls being at least equal to the height of said partitions on which said packs rest plus the height of said bottles, and the inside cross sectional area of said case being greater than the combined cross sectional area of the packs received therein, and spacers extending inwardly from side walls of said case, said spacers comprising upwardly extending portions of at least some of said partitions and having abutment edge faces extending upwardly parallel to the side walls and engaging said packs to prevent lateral shifting or tipping of said packs in said case, individual bottles not in packs being receivable in an upright position in said compartments and being supported by said bottom, said partitions having a height at least equal to half the height of the body portions of said bottles so as to prevent said individual bottles from bumping one another but not exceeding half the height of said bottles including said necks, said case alternatively accommodating the same number of bottles in said packs as in said individual bottle compartments.

3,952,910

SELF-SEALING CONTAINER CLOSURE

Richard A. Wheeler, 3711 San Felipe, Apartment 4A, Houston, Tex. 77027

Filed Sept. 4, 1975, Ser. No. 610,354

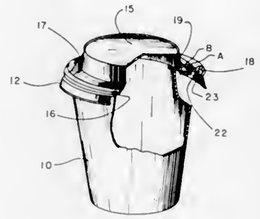
Int. Cl.² A47G *19/22*

U.S. Cl. 220—90.4 **16 Claims**

1. A self-sealing container closure comprising:

a central face having an aperture therethrough defined by overlapping edges,

a skirt extending from the periphery of the central face, said skirt having an integral engaging means formed on the inner face of the skirt for seating engagement with a rim portion of a container,



said means including an integral skirt member, said member having two adjacent sections, one section being disposed in one plane and the other section disposed in a second plane, said planes intersecting at an acute angle.

3,952,911

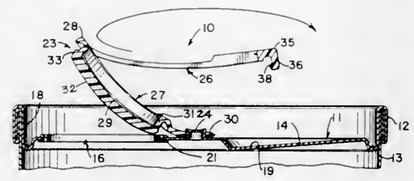
NON-DETACHABLE AND RECLOSABLE EASY OPENING CONTAINER CLOSURE STRUCTURE

John S. Bozek, Chicago, and Harry A. Peyser, Olympia Fields, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed June 8, 1973, Ser. No. 368,163

Int. Cl.² B65D *41/46*

U.S. Cl. 220—269 **9 Claims**



1. An easy opening end closure for a container, said end closure comprising a panel, an opening in said panel, a tab having an integral closure portion for said opening, means releasably bonding said closure portion to said panel surrounding said opening, pivot means pivotally connecting said closure portion to said panel for pivoting about an axis disposed substantially normal to said panel so that said closure portion may be turned between a position closing said opening and a position spaced from said opening when said closure portion is released from said panel, said tab including a finger grip portion in the form of a closed loop encompassing said closure portion, said loop being connected to said closure portion at a point located opposite the connection to said pivot means.

3,952,912

CONTAINER WITH ATTACHED CLOSURE

Walter Merton Perry, 76 Locust Hill Road, Darien, Conn. 06820

Continuation-in-part of Ser. No. 231,124, March 2, 1972, Pat. No. 3,843,011. This application Oct. 11, 1974, Ser. No. 514,069

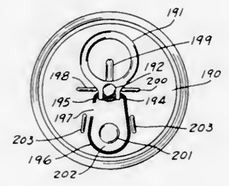
Int. Cl.² B65D *41/32*

U.S. Cl. 220—269 **17 Claims**

1. In an easy open container having a top with easy opening means therein, which said opening means comprises an opening formed in said container top, a downwardly hingeable closure positioned across and bridging said opening and positioned just below said opening and with said closure larger than said opening to resist pressure from within said container, and with part of the periphery of said closure attached to said top to form a hingeable attachment section, and with frangible sealing means between said closure and said container top to seal said top against leakage.

the improvement comprising

a lift tab to facilitate opening of said closure, said lift tab having at least a substantial portion thereof overlying said closure, and said lift tab having a fulcrum end and an



outer lift end, and with said fulcrum end secured to said closure at a point spaced away from said hingeable attachment section, and whereby raising said outer lift end of said lift tab will cause said fulcrum end to bend down an edge section of said closure and thereby rupture a section of said frangible sealing means and initiate opening of said container top, and whereby the further opening of said top is attained by pushing said closure downward, and causing it to hinge down into said container to form an opening.

3,952,913

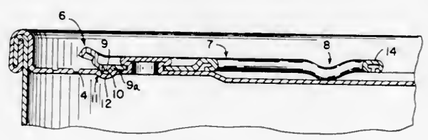
TAB ANTI-ROTATION AND HOLD DOWN DEVICE

Nick S. Khoury, Worth, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Nov. 18, 1974, Ser. No. 524,681

Int. Cl.² B65D *41/32*

U.S. Cl. 220—273 **1 Claim**



1. An improved pull tab mounting arrangement for an easy-open end closure member, said end closure member comprising an end panel, a pull tab, means attaching said tab to said end panel intermediate its ends, said tab having a nose portion at one end and a finger-grip portion at the other end, a score line formed in said end panel and defining an opening flap therein, the improvement comprising tang means on the nose portion for interlocking engagement of said tab and said end panel for holding the pull tab in opening association to said score line, and retention means formed in said end panel for retaining said tang means, said tang means comprising a panelwardly directed protrusion having sharp jagged points impaled into said retention means, said tang means holding said nose portion in spaced relation to said end panel and co-operating with said attaching means to panelwardly bias said finger-grip portion and hold the same against said end panel, said retention means comprising a recess formed in said end panel and having a base and said protrusion being impaled in said base.

3,952,914

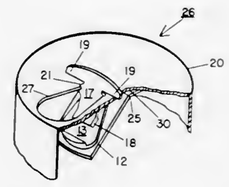
RE-SEALABLE CONTAINER LID

Kuno J. Vogt, 5854 Kantor Court, San Diego, Calif. 92122

Filed Feb. 24, 1975, Ser. No. 552,340

Int. Cl.² B65D *43/14, 51/04*

U.S. Cl. 220—339 **4 Claims**



1. A re-sealable container lid comprising:

a lid section constructed of rigid material and having a pouring aperture in proximity to one edge thereof;

a removable seal constructed of a displaceable material, sealably disposed in said pouring aperture;

a notched sealing recess around the periphery of said seal dimensioned for receiving the edge of said pouring aperture in a sealed condition; and

a mounting pad extending from said removable seal and being attached on one side to a bottom surface of said rigid lid section.

3,952,915

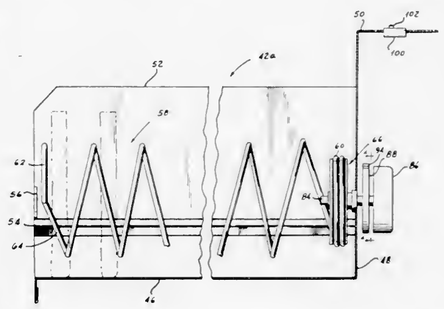
DELIVERY UNIT FOR HELICAL FEED MERCHANDISING MACHINE

Irving Pitel, Edison; Richard S. Silverman, Springfield, and Richard J. Mueller, Mountain Lakes, all of N.J., assignors to Rowe International, Inc., Whippany, N.J.

Filed Mar. 22, 1974, Ser. No. 453,885

Int. Cl.² G07F *11/36*

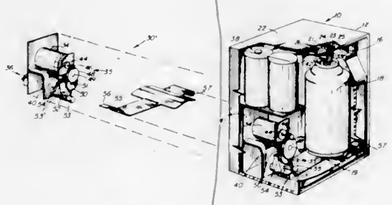
U.S. Cl. 221—75 **17 Claims**



1. A delivery unit for feeding articles to the delivery area of a merchandising machine including in combination, a generally horizontally disposed shelf, a pair of side walls extending from front to back of said shelf, a single helical delivery member formed with a plurality of turns, means on said side walls at locations spaced vertically from said shelf for rotatably supporting outer surface portions of the turns of said helical member on both sides of the longitudinal axis thereof to support said delivery member above the surface of said shelf with the turns thereof spaced vertically from the surface of said shelf throughout the length of said member and with said member extending generally from front to back of said shelf, at least the central portions of the spaces between adjacent turns of said helical member being free of obstructing structural members and said helical member being spaced above

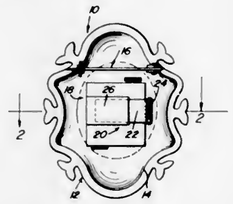
said shelf by such a distance that an article supported by said shelf at one of said central locations extends below the lower portions of the turns of said helix into engagement with said shelf and above the upper portions of the turns of said helical member to cause said lower portions of the turns of said helix to engage an article above the bottom thereof and said upper portions of the turns of said helical member to engage an article below the top thereof and means for rotating said member to advance the leading article over the front edge of said shelf.

3,952,916
AUTOMATIC DISPENSER FOR PERIODICALLY ACTUATING AN AEROSOL CONTAINER
Stanley J. Phillips, Wallingford, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jan. 6, 1975, Ser. No. 538,701
Int. Cl.² B67D *5/08, 5/64*
U.S. Cl. 222—70 **3 Claims**



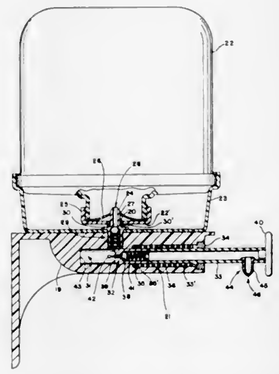
1. An automatic dispenser for periodically actuating a replaceable aerosol container to discharge a quantity of the contents of said container; said container including a valve, means for biasing said valve to a closed position, an outwardly extending valve stem having an internal passage in fluid communication with said valve, and a discharge outlet in fluid communication with said passage, said container discharging a quantity of the contents therein through said valve, said passage and said discharge outlet upon relative movement between said valve stem and said container against said biasing means to actuate said valve to an open position; said dispenser comprising:
   a. a housing for said container, said housing including an aperture,
   b. means connected to the interior of said housing for maintaining said discharge outlet and said valve stem in fixed alignment with said aperture during actuation of said valve to the open position, and
   c. means within said housing for automatically and periodically moving said container with respect to said valve stem against said biasing means to actuate said valve to the open positon, said moving means comprising a pivotally mounted lever in abutting engagement with the underside of said container, a DC motor, a reduction gear train positively connecting the DC motor to the lever to deliver sufficient torque to pivot the lever and lift said container upon DC motor energization, said reduction gear train and positively connected DC motor further enabling the bias of the weight of said container to return the lever to its normally disposed position when the DC motor is de-energized, a supply of DC power, and a timing circuit coupling the DC power supply to the DC motor, said timing circuit producing output power pulses to periodically energize the DC motor for sufficient duration to pivot the lever and lift said container to actuate said valve to the open position, the power pulses from said timing circuit being of sufficient duration to stall the DC motor after opening said valve, said lever being pivoted in a reverse direction to its normal position at the end of each power pulse to prepare for a succeeding power pulse from the timing circuit,
   d. whereby a quantity of the contents of said container is discharged from said discharge outlet through said aperture.

3,952,917
PERFUME OR COLOGNE DISPENSER
Lawrence J. Gause, Bakersfield, Calif., assignor to Otho C. Crouse, Bakersfield, Calif., a part interest
Filed Jan. 8, 1975, Ser. No. 539,525
Int. Cl.² A44C *15/00*
U.S. Cl. 222—78 **5 Claims**



1. A dispenser for perfume and cologne, comprising, in combination:
   a. a body member forming an ornamental setting and provided with a cavity;
   b. a dispensing unit removably arranged in the cavity of the body member; and
   c. retaining means for removably holding the dispensing unit within the cavity of the body member, said retaining means including an arm pivotally mounted on the body member, socket means provided on the dispensing unit for removably receiving the arm, the dispensing unit including a container, an outlet valve provided on the container for permitting selective dispensing of a substance in the container under pressure, and an intake valve also provided on the container for permitting selective refilling of the container with a substance to be dispensed.

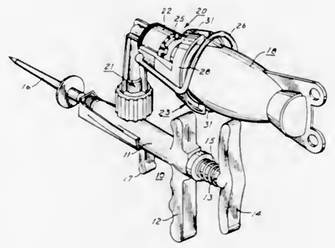
3,952,918
FLUID DISPENSER APPARATUS
Edward J. Poitras, Holliston, and Edwin W. Wlodyka, Ashland, both of Mass., assignors to Highland Laboratories, Ashland, Mass.
Filed Mar. 18, 1974, Ser. No. 451,813
Int. Cl.² B67B *7/24*
U.S. Cl. 222—82 **6 Claims**



1. A manually operated pump apparatus for dispensing fluids from a container and comprising:
   support means for receiving and supporting the container in an operating position;

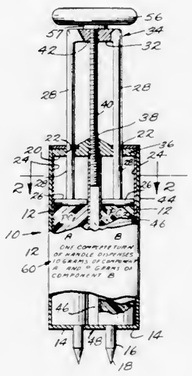
   puncture means for automatically puncturing the surface of the container in response to movement thereof into the operative position;
   passage means for receiving fluid through an opening in the container;
   pump means coupled to said passage means for receiving fluid therefrom, said pump means comprising chamber means for receiving a measured amount of fluid from said passage means, outlet means for draining said chamber means during operation of said pump means, and a hand operated piston means hollow thru-out its length with one end that defines a movable wall of said chamber means and a portion spaced from said one end and supporting said outlet means; and
   valve means positioned between said chamber means and said hollow piston means said outlet means comprising an outlet valve, opening in response to pressure in said hollow piston, spring bias means biasing said valve means closed and wherein said valve means comprises pressure release means for opening said valve means in response to a given differential pressure between said chamber and said hollow piston means sufficient to overcome said spring bias means and further comprises mechanical release means for opening said valve means at a predetermined position in the cycle of operation of said pump.

3,952,919
RESERVOIR ADAPTER FOR LIQUID DISPENSER
John Erik Hansen, Arvada, Colo.; Joseph M. Magrath, McCook, Nebr., and Leonard L. Hierath, Denver, Colo., assignors to Joseph M. Magrath, McCook, Nebr.
Filed July 3, 1975, Ser. No. 593,128
Int. Cl.² B67B *7/26*
U.S. Cl. 222—89 **9 Claims**



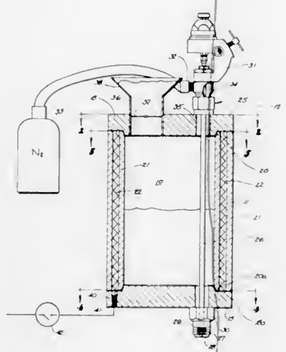
1. An adapter for connecting a closed collapsible liquid supply reservoir to a liquid metering dispenser of the repeating type comprising:
   a fitting having a passage therethrough for connection to the inlet of a dispenser;
   a hollow needle having a seal piercing end;
   means for mounting said needle on said fitting in communication with the passage therein, said means including a nut threaded on said fitting for securing said needle on the fitting with said seal piercing end extending axially beyond said nut;
   a clamping member mounted on said nut and having jaw members adjacent said piercing end for receiving and holding a supply reservoir; and,
   movable locking means mounted on said adapter for moving said jaw members into clamping position and locking them, to hold the supply reservoir securely against said nut.

3,952,920
DISPENSER FOR MULTI-COMPONENT PRODUCTS
Carl Bergman, Pompano Beach, Fla., assignor to Bridgeport Chemical Corporation, Pompano Beach, Fla.
Filed Dec. 30, 1974, Ser. No. 537,332
Int. Cl.² B67D *5/52*
U.S. Cl. 222—137 **5 Claims**



1. A dispenser for multi-component products, comprising:
   sidewall means defining a plurality of individual chambers;
   means including a unitary end wall member secured to each chamber maintaining the chambers fixed, laterally adjacent relationship as a unitary structure;
   one end wall means closing one end of each chamber, each one end wall means including a dispenser spout;
   a piston slidingly received in each chamber;
   an extrudable product component contained in each chamber between the respective piston and the respective dispenser spout;
   a piston rod secured to each piston and projecting out of the opposite end of the respective chamber through said unitary end wall member;
   yoke means rigidly interconnecting all the piston rods outside the respective chambers, so that all the piston rods and pistons advance as a unitary structure;
   a first threaded element provided on the interconnected piston rod unitary structure;
   a second threaded element provided on the unitary structure of said chambers;
   the first and second threaded elements being threadably engaged, and only one of the threaded elements being rotatable with respect to the unitary structure upon which it is provided the rotatable threaded element being constituted by an exteriorly threaded, elongated operator journalled in means defining an opening through said arm;
   the other one being fixed with respect to the unitary structure upon which it is provided, the nonrotatable threaded element is constituted by an internally threaded nut, so that as threaded element is rotated in one angular sense, the piston rod unitary structure is advanced further into said chambers, thereby dispensing a uniform amount of each product component from each respective spout for each unit of such rotation;
   an operating handle secured to the operator for use in rotating the same;
   the sidewall means of each chamber being constituted by a respective tubular member and said means secured to each chamber further comprising a common over-wrap of all said tubular members, said operator being received laterally among the exteriors of said tubular members but within the interior of said common over-wrap, whereby both threaded elements are disposed out of contact with the extrudable product components contained in the chambers of said dispenser.

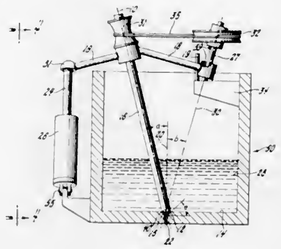
3,952,921
APPARATUS AND METHOD FOR APPLICATION OF HOT-MELT RESIN ADHESIVE
Donald E. Tanner, Owenton, Ky., assignor to D & T Manufacturing Co., Cincinnati, Ohio
Filed Nov. 15, 1973, Ser. No. 416,100
Int. Cl.[2] B67D *5/62*
U.S. Cl. 222—146 HE **8 Claims**



1. A method of applying a hot-melt resin adhesive of the type which becomes flowable at temperatures of about 600°F or higher, comprising the steps of:
providing an enclosed chamber having a restricted discharge orifice in the lower portion thereof, a valve element for opening and closing said orifice, and means for moving said valve element between open and closed positions;
introducing a particulate charge of said hot-melt resin adhesive into said chamber;
introducing a non-oxidizing gas into the upper portion of said chamber at super-atmospheric pressure;
applying uniformly distributed heat to said charge of resin;
controlling the temperature of said chamber to a predetermined maximum of 600° to 700° F sufficient to cause said resin adhesive to attain a highly viscous, flowable condition; and
causing said means for moving said valve element to reciprocate said valve element rapidly between open and closed positions up to 200 times per minute, whereby said non-oxidizing gas under super-atmospheric pressure forces a drop of said flowable resin adhesive through said orifice each time said valve element is in the open position.

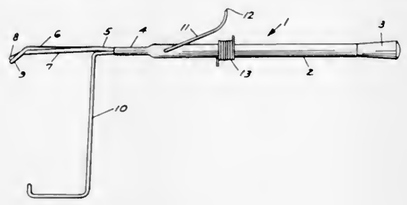
3,952,922
PRECESSING BOTTOM POUR STOPPER HAVING SWINGING MOVEMENT
Edwin D. Ditto, Bloomfield Hills, and A. Hadi K. Akeel, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed June 27, 1975, Ser. No. 591,141
Int. Cl.[2] B22D *41/10*
U.S. Cl. 222—148 **3 Claims**

1. A bottom pour stopper mechanism, suitable for use with a vessel for holding and pouring molten metal and the like, for precisely controlling the intermittent flow of molten metal through a tap hole in the bottom of the vessel over a prolonged period despite the presence of slag particles or other debris in the area of the tap hole, the tap hole having a substantially conical sealing surface at the inner surface of the vessel, the mechanism comprising:
a. a rigid cylindrical stopper disposed in the vessel and movable between a tap hole open position and a tap hole closed position, the stopper having a substantially hemispherical end adapted to fit in sealing engagement with the conical sealing surface of the tap hole in said closed position, the stopper further being disposed such that when it is in the closed position the longitudinal axis of the cylindrical stopper is at an acute angle with and intersecting the axis of the tap hole;
b. stopper support means mounted on the vessel;
c. means for raising and lowering the support means to move the stopper between its said open and closed positions;



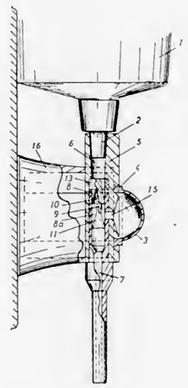
d. means for rotating the cylindrical stopper about its longitudinal axis, the stopper rotating means being mounted on the vessel; and
e. means for revolving the stopper about its lower end so as to define a portion of a conical surface as the stopper rotates on its own axis, the revolving means being mounted on the vessel, wherein the rotation and revolution of said stopper, as it engages the seat portion of the tap hole, acts to abrasively clean and seal the tap hole by directly pushing debris from between the engaging surfaces.

3,952,923
CANISTER TOOL
Thomas P. Tison, 3808 Reilly Lane, Shreveport, La. 71101
Filed June 30, 1975, Ser. No. 591,403
Int. Cl.[2] B67D *5/64;* **B05B** *15/06*
U.S. Cl. 222—174 **10 Claims**



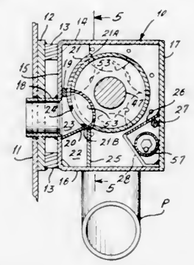
1. A canister tool comprising:
a. an arm of selected length;
b. at least one canister support attached to one end of said arm and disposed forward of and beneath said one end of said arm to receive a canister;
c. clamp means attached to the same end of said arm as said canister support to engage and secure a canister placed in said canister support;
d. a spray activator in pivotal cooperation with said arm and adapted to releasably engage the canister actuator of a canister; and
e. a slide keeper concentrically and slidably cooperating with said arm and said spray activator, whereby when a canister is fitted into said canister tool in cooperation with said canister support and said clamp means, and said spray activator is positioned to pivotally engage said canister actuator, and said slide keeper is positioned so as to slidably engage said spray activator to bias said spray activator downwardly against said canister actuator, spray emits from said canister.

3,952,924
DISPENSER FOR DISPENSING A LIQUID OR PASTY PRODUCT FROM A CONTAINER
Gustav Eric Valdemar Benson, Fridhemsvagen 20, 217 74 Malmo, Sweden
Continuation of Ser. No. 281,873, Aug. 18, 1972, abandoned, which is a continuation of Ser. No. 874,345, Nov. 5, 1969, abandoned. This application May 31, 1974, Ser. No. 475,303
Claims priority, application Sweden, Nov. 8, 1968, 15138/68
Int. Cl.[2] B67D *5/06*
U.S. Cl. 222—181 **7 Claims**



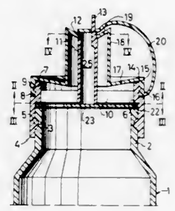
1. A dispenser for dispensing in dosage form a liquid or pasty product from a container comprising: a dispenser housing having means therein defining a product inlet for receiving therein the product to be dispensed, a product outlet for dispensing therefrom the product, and a passage providing fluid communication between said product inlet and said product outlet; means on said housing for connecting said product inlet to a container containing therein a product to be disposed during use of the dispenser; actuatable valve means for valving the flow of the product from said product inlet to said product outlet in dosage form, said valve means comprising means defining a valve chamber in said passage, and a pair of valve members fixedly disposed in said valve chamber in spaced-apart relationship from each other along the main direction of product flow, each valve member having a funnel-shaped configuration composed of a body portion and a resiliently flexible flared portion terminating in an annular lip which is resiliently flexible into and out of engagement with a peripheral portion of said valve chamber and each valve member having a normal at rest position wherein its annular lip contacts the valve chamber peripheral portion to block flow therepast of the product and actuatable to a closed position wherein its annular lip is flexed outwardly against said valve chamber peripheral portion to more effectively block flow therepast of the product and to an open position wherein its annular lip is flexed inwardly away from said valve chamber peripheral portion to permit flow therepast of the product; and actuating means for alternately actuating said pair of valve members to their open and closed positions in out of phase relationship with respect to each other so that one valve member is in the open position while the other valve member is in the closed position to effect dispensing of the product in dosage form from said product outlet.

3,952,925
FLOW CONTROL SYSTEM AND ROTARY FLOW CONTROL VALVE
Momir Babunovic, Des Peres, and Mihai A. Bulboaca, St. Louis County, both of Mo., assignors to Barry-Wehmiller Company, St. Louis, Mo.
Filed Feb. 5, 1975, Ser. No. 547,236
Int. Cl.[2] B67D *3/00*
U.S. Cl. 222—485 **10 Claims**



1. In a fluid flow control system having a pressure fluid supply and a plurality of discharge lines for receiving and discharging the same supply fluid, the improvement of a housing providing a chamber to receive the pressure fluid, means in said housing forming a plurality of separated fluid discharge ports in communication with the discharge lines, flow regulating means operably mounted in said housing adjacent said ports to successively open and close said ports such that the closing of one port is followed by the opening of another port, and an elongated fluid discharge flow-boosting flexible-walled expandable-collapsible means in said housing positioned adjacent all of said ports in position to absorb and store the energy of fluid flow interruption by each port closing and return the absorbed stored energy to freely boost the flow at the next port opening, whereby said flow boosting expandable-collapsible means substantially overcomes friction losses by being adjacent all of said ports.

3,952,926
SELF-CLOSING CLOSURES
Billy Nilson, Finnstugaten 30, 9500 Mjolby, Sweden
Filed Dec. 14, 1973, Ser. No. 424,919
Int. Cl.[2] B65D *35/50*
U.S. Cl. 222—494 **3 Claims**



1. A self-closing closure comprising a first member and a second member, said members being mutually connected along their outer portions, said first member having extending from said outer portion a flexible and resilient diaphragm portion having a centrally disposed discharge opening and said second member having a centrally located, axially extending stem, said stem being connected to the outer portion of said second member by means of rib like elements, one end of said stem being adapted to seal position discharge opening of said diaphragm portion in the initial possition of said members, said members being adapted to be connected to a squeezable container such that a pressure exerted upon the content of said container, preferably by exerting a manual pressure upon said container, will enable said diaphragm to raise into an

active position in which said discharge opening is free of said stem causing a dispensing of the content from said container through said discharge opening, said diaphragm returning by means of its resilient bias to its initial position when said pressure ceases, said stem having an air passage axially extending from said end formed therethrough, said air passage forming a communication between the atmosphere and the interior of said container, a valve means being adapted to normally contact with a resilient bias the opposite end of said stem to seal the air passage thereof, the bias of said valve means being however insufficient to hold said valve means in contact with said opposite end of said stem when the pressure in said container is below a predetermined value lower than the atmospheric pressure thereby enabling air to be sucked into said container through said air passage in said stem, the first mentioned end of said stem being adapted not to axially project over the upper surface of said diaphragm portion surrounding it and said air passage being calibrated to allow fluid of the kind contained in said container to flow therethrough thereby enabling excess fluid from the discharge process to be re-sucked into the container simultaneously with the sucking in of air.

3,952,927

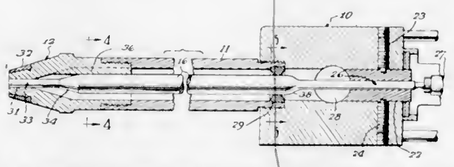
INJECTION NOZZLE HAVING GUIDES FOR NOZZLE ROD

Ernest C. Schaumburg, North St.Paul, and Robert K. Larson, St. Paul, both of Minn., assignors to Standard Oil Company, Chicago, Ill.

Continuation of Ser. No. 464,311, April 26, 1974, abandoned. This application June 23, 1975, Ser. No. 589,399

Int. Cl.[2] B29F *1/03*

U.S. Cl. 222—510 **6 Claims**



5. In an injection molding nozzle assembly wherein a nozzle rod moves back and forth to open and close an outlet port in a nozzle and wherein said nozzle rod is supported in the nozzle by a support means, the improvement which comprises said support means in said nozzle to guide the forward end of said nozzle rod being so arranged that no surface on said nozzle rod in the vicinity of the nozzle on which material can deposit during a closed cycle of the nozzle is scraped by said support means during movement between closed and opened positions.

3,952,928

MULTI-CHAMBERED TUNDISH TO INDUCE DAMPENED FLOW

Charles Christian Gerding, Pittsburgh, and Louis John Todora, Aliquippa, both of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 470,510, May 16, 1974, Pat. No. 3,907,163, which is a division of Ser. No. 324,700, Jan. 18, 1973, Pat. No. 3,831,659. This application May 31, 1975, Ser. No. 579,523

Int. Cl.[2] B22D *37/00*

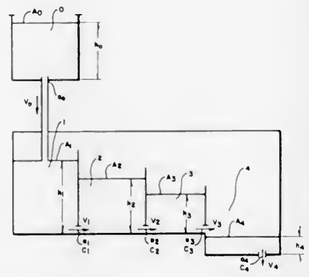
U.S. Cl. 222—564 **4 Claims**

1. A tundish for dispensing liquid material at a low velocity, comprising:

a. a container capable of holding liquid material having sidewalls attached to a generally sloped bottom;

b. partition means connected to said container bottom and sidewalls for separating said container into at least three chambers, which chambers comprise an initial chamber adapted for receiving and holding the liquid material, an intermediate chamber for holding the liquid material, and a final chamber for holding and dispensing the liquid material;

c. dispensing means connected to the final chamber for dispensing the liquid material; and



d. orifice means connected to said partition means for providing an interconnection between said chambers so as to permit the liquid metal to flow under the influence of gravity from the initial chamber to an intermediate chamber and from an intermediate chamber to the final chamber.

3,952,929

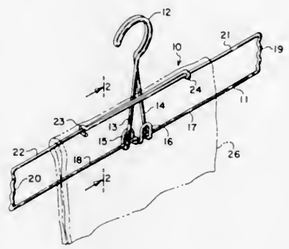
CLOTHES HANGER AND METHOD FOR THE MANUFACTURE THEREOF

Tibor Horvath, Brooklyn, N.Y., assignor to Abraham Douek, Brooklyn, N.Y., a part interest

Filed July 17, 1974, Ser. No. 489,075

Int. Cl.[2] A47J *51/11*

U.S. Cl. 223—94 **5 Claims**



1. A hanger of a single length of wire formed to expand and grip the waistband of a garment comprising, in combination, a 180° bend in the center of said length of wire forming parallel lengths of wire adjacent to said 180° bend, a hook to secure said hanger to a rack pole formed from said parallel lengths of wire adjacent to said 180° bend, two legs of said wire having lower ends extending downward from said hook and diverging from each other, an upward and inward facing guide loop at the lower end of each of said legs, arms of said wire extending horizontally from said guide loops, each of said arms being slidably supported by the guide loop from which the other of said arms extends, outer ends of said arms being bent upwards to engage the waistband of a garment, said guide loops contacting each other to serve as stops limiting the outward extension of said outer ends of said arms, bars of said wire extending inwards from said upward bent outer ends of said arms, and bar securing hooks at the ends of said bars, said bars overlapping each other, said bar securing hooks of each bar slidably engaging the other of said bars, said bars telescoping as said ends of said bars are compressed, compression of said outer

ends of said arms flexing said legs so that said legs urge said arms outward to engage the outer ends of said arms with the waistband of a garment to support it.

3,952,930

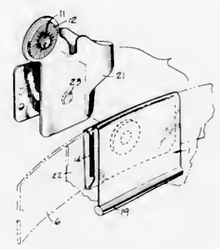
BELT ATTACHMENT DEVICE FOR HOLSTER OR THE LIKE

Archie Baldocchi, San Salvador, El Salvador

Filed Jan. 24, 1975, Ser. No. 543,766

Int. Cl.[2] F41C *33/04*

U.S. Cl. 224—2 C **6 Claims**



1. A holder attachment attached to a belt and belt supported garment for holding a holster and the like including,

a saddle of semi-flexible material being of generally U-shaped cross-section,

an inner saddle side and an outer saddle side being connected by a flexible joint whereby said sides can be pressed over the upper edge of a belt,

mounting means on the outer saddle side for attachment of the holster thereto,

releasable adhesive means on the exposed face of the inner saddle side,

a flexible middle strip portion extending as a continuation of the outer saddle side for encircling the belt,

an end portion of said strip,

releasable adhesive means on the inner face of the middle strip portion at such distance from said outer saddle side that when said middle portion is wrapped around said belt it releasably engages said releasable adhesive means on the exposed face of the inner saddle side,

and a portion between said middle strip portion and the end of said strip having a non-slip surface, wherein said end portion is insertable over the edge of the belt supported garment between the wearer's body and the belt.

3,952,931

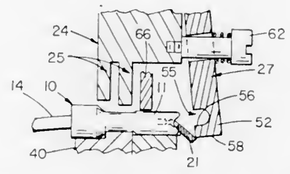
INSULATED TERMINAL SEPARATION

Donald R. Weber, Walpole, Mass., assignor to Ark-Les Switch Corporation, Watertown, Mass.

Filed Dec. 6, 1974, Ser. No. 530,199

Int. Cl.[2] B26F *3/00*

U.S. Cl. 225—103 **2 Claims**



1. Apparatus for separating an assembled insulated wire terminal from a carrier strip segment, the assembled terminal including a metal body having at its rear end wire receiving elements and at its forward end terminal receiving elements, and having an insulated plastic sleeve surrounding the metal body, the forward end being attached to the carrier strip segment at a separation line prescored on both surfaces of the metal and extending generally parallel to the length of the carrier strip and being within the sleeve, comprising

positioning means to retain the assembled wire terminal in a fixed position,

said positioning means comprising

a base defining a feed path for the carrier strip with attached terminals, and retaining means fixed with respect to said base adjacent said base feed path and cooperating therewith to retain an insulated terminal in a fixed position, and

flexing means to flex the carrier strip segment at the prescored separation line successively in two senses with respect to the wire terminal retained in said fixed position to separate the carrier strip segment from the terminal at the prescored separation line within the sleeve,

said flexing means comprising a separating tool having a segment-flexing end adjacent said base providing spaced first and second segment-flexing surfaces extending generally parallel to said feed path,

reciprocating means for reciprocating said separating tool with respect to said base feed path in engagement with the carrier strip,

connecting means connecting said separating tool and said reciprocating means at a point spaced from said segment-flexing end for motion of said segment-flexing end away from said reciprocating means and generally transverse to said feed path, and

biasing means for returning said segment-flexing end toward said reciprocating means,

whereby, as said reciprocating means moves said separating tool toward said base feed path, said separating tool first segment-flexing surface engages the carrier strip segment to flex the segment in a first sense from the pre-scored line and to cam said segment-flexing end into motion away from said reciprocating means and past the segment, said biasing means tending to return said separating tool toward said reciprocating means, and, as said reciprocating means reverses to move said separating tool away from said base feed path, said separating tool second segment-flexing surface engages the segment to flex the segment in a second sense from the pre-scored line to separate the terminal from the segment.

3,952,932

TRANSPORT SYSTEM FOR MAGNETIC TAPE RECORDER AND REPRODUCER SETS, PARTICULARLY FOR CASSETTE MAGNETIC TAPE RECORDERS

O. Hubert Richt, Buchenweg 14, Socking, Germany (8135)

Continuation of Ser. No. 442,166, Feb. 13, 1974, abandoned. This application May 2, 1975, Ser. No. 573,888

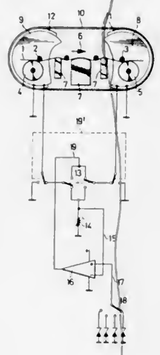
Claims priority, application Germany, Feb. 16, 1973, 2307825

Int. Cl.[2] B65H *17/20*

U.S. Cl. 226—49 **10 Claims**

1. In a tape transport system for use in a magnetic tape recorder and reproducer set wherein a magnetic tape is simultaneously driven by means of two capstans, the improvement comprising two motors, one of which is associated with one of said capstans, and the other with the other capstan, driving discs connected to said motors, transmission belt means connecting the driving discs of the two motors, means for operating the motor downstream relative to the moving magnetic tape as the driving motor for said tape, electrical circuit means

associatable with said upstream motor for adapting the latter as a tachometer-generator, and means for controlling the rpm of said downstream motor by applying thereto signals emitted by said tachometer-generator.

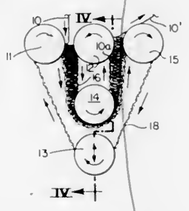


3,952,933

STRAND TREATMENT APPARATUS AND METHOD

Ralph W. List, East Lansdowne; Malcolm F. Irwin, West Chester, and Robert K. Stanley, Media, all of Pa., assignors to Textured Yarn Co., Inc., Kennett Square, Pa.

Filed Apr. 18, 1974, Ser. No. 461,976
Int. Cl.² B65H *17/34*
U.S. Cl. 226—118 **11 Claims**



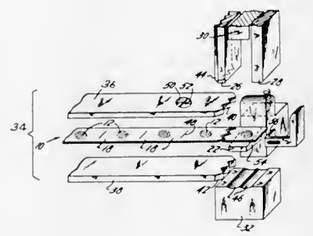
1. In apparatus for treating textile strands, improved temporary holdup means comprising a pair of conveyor screens with mutually parallel rolls supporting the respective screens; the first screen having a V configuration as viewed edge-on, in the direction of the roll axes, the first screen passing about a first upper roll at one arm extremity of the V, a lower roll at the apex of the V, and a second upper roll at the other arm extremity of the V; the second screen having an I configuration as viewed likewise, the second screen passing about an upper roll and a lower roll, the upper roll of the second screen being located between and spaced from the upper rolls of the first screen, and the lower roll of the second screen being located above and spaced from the lower roll of the first screen; the first screen also being constrained to pass below the lower roll of the second screen and contiguous with the second screen thereat.

3,952,934

APPARATUS FOR APPLYING DESIGNS TO PIERCEABLE MATERIALS

Irwin Zahn, New York, N.Y., assignor to General Staple Company, Inc., New York, N.Y.

Division of Ser. No. 396,462, Sept. 12, 1973, Pat. No. 3,902,866. This application June 23, 1975, Ser. No. 589,517
Int. Cl.² B27F *7/10*
U.S. Cl. 227—88 **10 Claims**



1. An apparatus for applying designs to pierceable materials from a continuous supply strip containing intermittent design portions equally spaced along the length of said supply strip; said apparatus comprising;

feeding means for intermittently feeding said supply strip to a shearing, bending, driving and clinching station positioned above a clinching die;

shearing means for severing a length of said supply strip from the end thereof;

bending means for bending said length into an approximately U-shaped member having a bight portion and side leg portions;

driving means for driving said U-shaped member into said clinching die and through any pierceable material positioned above said die; and

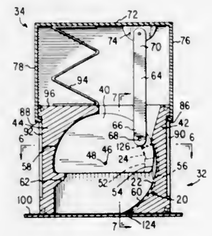
locater means for establishing a proper start position for said strip so that said design portions will constitute said bight portions of said U-shaped members.

3,952,935

CURVED PIN AND INSERTER

Kenneth B. Erkenbrack, Charlottesville, Va., assignor to New Products, Inc., Charlottesville, Va.

Continuation-in-part of Ser. No. 464,382, April 26, 1974, abandoned. This application Mar. 7, 1975, Ser. No. 556,241
Int. Cl.² B25C *1/02*
U.S. Cl. 227—120 **32 Claims**



1. Apparatus for use in inserting a curved pin into a workpiece, said apparatus comprising:

a body, said body defining a circular path for said pin to follow, said path terminating at an opening in said body thru which said pin passes for insertion into said workpiece;

means for supplying said pin to said circular path;

a drive plunger rotatably mounted in said body for engaging said pin to drive said pin along said circular path; and,

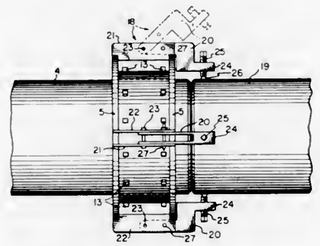
means slidably secured to and reciprocatable with respect to said body to drive said plunger along said circular path.

3,952,936

REFORMING PIPE CLAMP

Timothy C. Dearman, 4191 E. Stanley Road, Mt. Morris, Mich. 48458

Filed Oct. 7, 1974, Ser. No. 512,527
Int. Cl.² B23K *37/04*
U.S. Cl. 228—49 **12 Claims**



1. A reforming pipe clamp adapted to encircle a length of pipe adjacent one end thereof, said clamp comprising a rigid annulus having an inside diameter greater than the outside diameter of the pipe to be encircled; a plurality of circumferentially spaced, independent radially adjustable force applying members carried by said annulus for movement radially thereof into and out of forcible engagement with a pipe encircled by said annulus; a plurality of support members adapted to support a second length of pipe in end to end confrontation with a pipe encircled by said annulus; means mounting each of said support members on said annulus for movements relative thereto regardless of whether said force applying members forcibly engage a pipe encircled by said annulus, each of said support members being movable independently of said force applying members from a first position in which said support member extends axially beyond one side of said annulus a distance sufficient to project beyond said one end of a pipe encircled by said annulus and engage a second pipe confronting the encircled pipe, to a second position in which said support member does not extend beyond said one end of the encircled pipe; and means for releasably locking each of said support members in said first position.

3,952,937

METHOD AND APPARATUS FOR ULTRASONICALLY WELDING CONTINUOUS LENGTHS OF METAL STRIP

Robert P. Lamons, Hinsdale, Ill., and James Byron Jones, West Chester, Pa., assignors to Andrew Corporation, Orland Park, Ill.

Filed Nov. 11, 1974, Ser. No. 522,470
Int. Cl.² B23K *1/06*
U.S. Cl. 228—110 **11 Claims**

1. A method of ultrasonically welding the longitudinal edge portions of a continuous metal strip that has been rolled about a longitudinal axis to form a tubular product, said method comprising the steps of

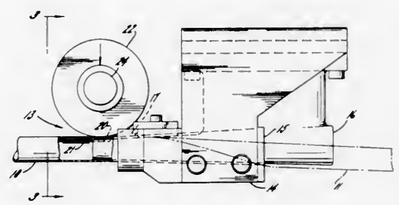
a. supporting the longitudinal edge portions of said strip with a stationary, rigid, non-resonant anvil located inside the rolled metal strip and supported by means extending between the longitudinal edges of the strip upstream of the point where said edges are brought together,

b. continuously advancing the rolled metal strip while slightly overlapping the longitudinal edge portions thereof and passing the overlapped edge portions over said anvil, and

c. continuously engaging the outermost surface of the overlapped edge portions with a non-traversing ultrasonic welding head which presses the overlapped edge portions against said anvil while vibrating at an ultrasonic frequency in a direction transverse to the direction of advancement of the rolled metal strip, said anvil supporting said edge portions along a plurality of spaced parallel strips only, said strips extending in the direction of advancement of the rolled metal strip to minimize friction between the metal strip and the anvil in the machine direction while providing a large amount of friction between the metal strip and the anvil in the direction of vibration of said welding head.

6. Apparatus for ultrasoncially welding the longitudinal edges of a continuous metal strip that has been rolled about a longitudinal axis to form a tubular product, said apparatus comprising the combination of

a. a stationary, rigid, non-resonant anvil supporting the inside longitudinal edge portions of said strip before such edge portions have been brought together, said anvil being located inside the rolled metal strip and supported by means extending between the longitudinal edge portions of the strip.



b. means for continuously advancing the rolled metal strip while slightly overlapping the longitudinal edge portions thereof and passing the overlapped edge portions over said anvil, and

c. a non-traversing ultrasonic welding head for continuously engaging the outermost surface of the overlapped edge portions and pressing the overlapped edge portions against said anvil while vibrating at an ultrasonic frequency in a direction transverse to the direction of advancement of the rolled metal strip, said anvil supporting the metal strip along a plurality of spaced parallel strips only, said strips extending in the direction of advancement of the metal strip to minimize friction between the metal strip and the anvil in the machine direction while providing a large amount of friction between the metal strip and the anvil in the direction of vibration of said welding head.

3,952,938

METHOD OF MAKING MULTIPLE MEMBER COMPOSITE METAL PRODUCTS

John B. Ulam, McMurray, Pa., assignor to Clad Metals, Inc., Cannonsburg, Pa.

Filed Dec. 10, 1973, Ser. No. 423,253
Int. Cl.² B23K *19/00, 21/00*
U.S. Cl. 228—190 **7 Claims**

1. The method of making a composite metal product characterized by a high rate of thermal transmission and by resistance to corrosion comprising the steps of:

a. mechanically cleaning the surfaces of each of a sheet from the group consisting of copper and copper alloys, a sheet from the group aluminum and aluminum alloys and a sheet of stainless steel;

b. heating said mechanically cleaned sheets to a temperature of about 600° to 800°F;

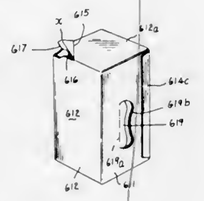
c. joining said sheets under pressure sufficient to reduce the total thickness of said sheets an amount between 25 to 60% with the aluminum sheet disposed between the copper and stainless steel; and
d. stress relieving the joined sheets to a temperature of about 700°F, to cause diffusion between the metal sheets.

3,952,939
SHEET CLADDING METHOD
William F. Schilling, Schenectady; Adrian M. Beltran, Ballston Lake, and Gerald E. Wasielewski, Rexford, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed July 28, 1975, Ser. No. 599,630
Int. Cl.² B23K *19/00*
U.S. Cl. 228—193 **9 Claims**



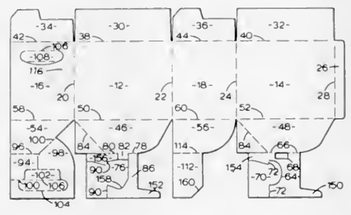
1. A method of applying a sheet cladding to a structural substrate, said method comprising the steps of:
a. assembling the sheet cladding to the substrate so that the cladding closely conforms to the substrate;
b. masking the seams between the cladding and substrate;
c. placing the cladding-substrate assembly into a deformable container;
d. filling the container with a pressure transmitting medium so as to completely immerse the cladding-substrate assembly therein;
e. sealing the container so that it is air-tight;
f. applying hot gas isostatic pressure to the exterior surfaces of the container for diffusion bonding the cladding to the substrate; and,
g. removing the diffusion bonded sheet-cladding assembly from the container.

3,952,940
PAPERBOARD CARTONS WITH LIQUID-PROOF LINERS
James A. Malcolm, Downsview, Canada, assignor to Flag Carton Corporation Ltd., Downsview, Canada
Division of Ser. No. 265,964, June 26, 1972, Pat. No. 3,878,771. This application Feb. 24, 1975, Ser. No. 552,567
Int. Cl.² B65D *5/40, 5/70*
U.S. Cl. 229—14 BA **13 Claims**



1. A knocked down container that can be erected into a rectangular box that has a liner and is suitable for holding and dispensing fluid material, comprising a paperboard blank having four rectangular side forming panels, flaps protruding beyond the ends of the panels for closing the ends of the box, a flexible tubular liner arranged flat on the inner surfaces of a pair of adjoining panels and coterminous with the total width of said pair of panels, the liner protruding longitudinally beyond the ends of said pair of panels, a seal closing one end of the liner, the other end of the liner being unsealed, said seal extending widthwise of the liner whereby when the box is erected, said seal extends adjacent one diagonal of one end of the box, areas on the blank being adhesively attached to the liner at locations adjacent the ends of the other diagonal of said box end, the adhesive at said locations being longitudinally spaced from said seal by a distance half the length of said other diagonal whereby when the box is erected the liner will be taut adjacent said other diagonal, and wherein the blank is weakened along a line extending into two adjacent side forming panels and across one of said areas, providing when the box is erected a corner of the box adhered to the liner which corner can be lifted to tear the box and liner simultaneously along the weakened line and leave a pouring lip on the container.

3,952,941
BOTTOM LOCKING CARTON
John Zimmerman, Willowdale, Canada, assignor to Somerville Industries Limited, London, Canada
Filed Oct. 3, 1975, Ser. No. 619,260
Claims priority, application Canada, Dec. 9, 1974, 215702
Int. Cl.² B65D *5/48*
U.S. Cl. 229—41 B **10 Claims**

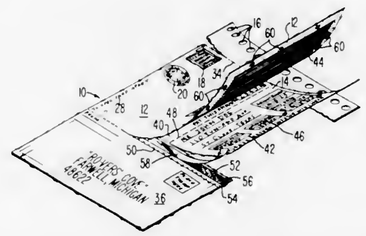


1. In a lay-flat carton having bottom wall forming side and end panels hingedly connected to side and end panels respectively, the divider panels hingedly connected to each of said bottom wall forming panels and projecting therefrom, the divider panel of each side bottom wall being articulately connected to the divider panel of an adjacent end bottom wall panel whereby upon movement from the lay-flat configuration to the erect configuration, the bottom wall forming panels draw the divider panels into a position dividing the container space into a plurality of compartments, the improvement of slot means opening through one of said divider panels at its hinged connection with respect to a side bottom wall panel, and lug means projecting outwardly from the other of said side bottom wall panels, said lug means mating with said slot means as said container moves to the erect configuration to provide a bottom wall interlock substantially in the plane of the bottom wall resisting a return to the lay-flat configuration.

3,952,942
CONTINUOUS FORM MAILER WITH INTEGRAL DETACHABLE INSERT MATERIAL AND RETURN ENVELOPE
John W. O'Leary, 14 Burncoat Way, Pittsford, N.Y. 14534; Ralph C. Wicker, 218 Williams St., Geneva, N.Y. 14456, and John Lewis Williams, 15 Terrace Villa, Fairport, N.Y. 14450
Continuation of Ser. No. 436,125, Jan. 24, 1974, abandoned. This application May 15, 1975, Ser. No. 577,569
Int. Cl.² B65D *27/10*
U.S. Cl. 229—69 **7 Claims**

1. A continuous form mailer including an invoice, return stub and integral return mailing envelope comprising:

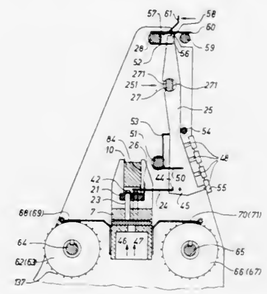
a first continuous upper web of material adapted for receiving intelligible data thereon;
a second continuous lower web of material capable of receiving intelligible data thereon;
means forming a transfer surface for said mailer effective to transfer printed intelligible data applied to said first web through said first upper web to the confronting surface of the adjacent second lower web;
separable tractor hole area means at the side edge of said webs for mounting said first and second continuous webs in substantial parallel confronting alignment while said form is printed;
an upper separation line parallel to said side edge dividing said first continuous upper web into easily separable segments including an easily detachable return area portion on said first web forming one half of a return envelope;



an lower separation line parallel to said upper separation line dividing said second lower web into easily separable segments including an easily detachable return area portion forming the other half of said return envelope;
means bonding said first and second webs together about three edges thereof in the return area portion of said envelope so that both halves of said return envelope are adapted for being formed into a full integral envelope assembly, and means to close and seal the return envelope; and
means bonding said webs together in the remaining confronting non-return areas at a portion of the confronting surface areas thereof, and a transverse separation line on said second web perpendicular to said side edge permitting said invoice and said return stub to be separated
and wherein said upper and lower separation lines dividing said continuous webs into separable segments are offset parallel lines of perforations straddling an area forming said means to close and seal said return envelope.

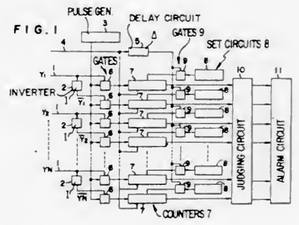
3,952,943
APPARATUS FOR SWAGING THE MOVEMENT CONTROL BELTS FOR CONTROLLING OPERATING GROUPS OF A KNITTING MACHINE
Michel Patthey, Couvet, Switzerland, assignor to Edouard Dubied et Cie (Societe Anonyme), Couvet, Switzerland
Filed Jan. 10, 1975, Ser. No. 539,988
Claims priority, application Switzerland, Jan. 14, 1974, 444/74
Int. Cl.² G06K *1/02*
U.S. Cl. 234—116 **9 Claims**

1. An apparatus for swaging or punching a movement control belt or tape for the control of the operational groups of a knitting machine, comprising a punching bar, a die, punches, a punch bearing plate, entrainment means, a movement control tape, punch selection means and a selector keyboard, characterized by the fact that for each of the possible perforations arranged over at least one row of a movement control belt there is a punch which is free from any mechanical attachment, that a selector corresponds to each punch which may be pivoted on its axis of rotation into at least two positions which it maintains by memory means constituted by a spring-comb, each tooth of said spring comb acting on at least one of the selectors, that memorized selectors are cancelled individually and/or by operations, each function requiring one or more selectors, and/or totally by cancellation or erasure means which are manual, independent of a swaging cycle, and/or automatic depending on a swaging cycle, that a selection bar corresponds to each selector which materializes the selection, that all, part of, or none of the perforations constituting on a movement control tape, at least one group of functions and arranged on at least one row and over the entire length of the



die and the punch holder, result from one single swaging cycle, that the step by step advance of a movement control belt during one swaging cycle is adjustable by entrainment means in at least two different sizes, that at least one of the entrainment means wheels is movable on a shaft, in at least two different positions allowing for the swaging or punching of at least two types of movement control belts of different widths, and that the posting of the keys making up the selector keyboard is identical for several types of movement control belts.

3,952,944
DEVICE FOR AUTOMATICALLY MONITORING THE OPERATING STATES OF CONTROLLED OBJECTS IN A SEQUENCE CONTROL SYSTEM
Haruo Koyanagi, Musashimurayama; Iwao Sato, Komae; Buhei Yasuhara; Jiro Sakai, both of Tokyo; Nobuharu Yamauchi, Amagasaki; Masaji Matsumura, Amagasaki, and Katsuhide Morimoto, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo and Nissan Motor Company Limited, both of, Japan
Filed May 21, 1974, Ser. No. 471,983
Claims priority, application Japan, May 22, 1973, 48-57453
Int. Cl.² H03K *21/06*
U.S. Cl. 235—92 CT **1 Claim**



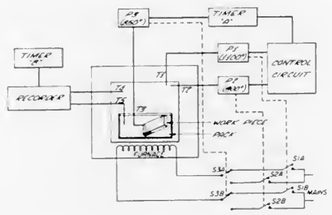
1. A sequence control monitoring system for monitoring the operating states of first and second controlled objects comprising:
a pulse generator for generating a series of pulses at a predetermined frequency,

a delay circuit having a delay time shorter than one period of the predetermined frequency,
a first inverter,
a second inverter,
a first gate,
a second gate,
a third gate,
a fourth gate,
a fifth gate,
a sixth gate,
a seventh gate,
an eighth gate,
a first counter circuit comprising a first input for resetting the counter circuit, a second input for setting the counter circuit to the number of pulses to be received from the pulse generator representative of the on time of the first controlled object if operation of the first controlled object is without error, a third input for receiving pulses from the pulse generator representative of the actual on time of the first controlled object and an output for generating a signal representative of the pulses to be received if operation is without error less the pulses actually received,
a second counter circuit comprising a first input for resetting the counter circuit, a second input for setting the counter circuit to the number of pulses to be received from the pulse generator representative of the off time of the first controlled object if operation of the first controlled object is without error, a third input for receiving pulses from the pulse generator representative of the actual off time of the first controlled object and an output for generating a signal representative of the pulses to be received if operation is without error less the pulses actually received,
a third counter circuit comprising a first input for resetting the counter circuit, a second input for setting the counter circuit to the number of pulses to be received from the pulse generator representative of the on time of the second controlled object if operation of the second controlled object is without error, a third input for receiving pulses from the pulse generator representative of the actual on time of the second controlled object and an output for generating a signal representative of the pulses to be received if operation is without error less the pulses actually received,
a fourth counter circuit comprising a first input for resetting the counter circuit, a second input for setting the counter circuit to the number of pulses to be received from the pulse generator representative of the off time of the second controlled object if operation of the second controlled object is without error, a third input for receiving pulses from the pulse generator representative of the actual off time of the second controlled object and an output for generating a signal representative of the pulses to be received if operation is without error less the pulses actually received,
a first set circuit for generating the number of pulses to be received from the pulse generator representative of the on time of the first controlled object if operation of the first controlled object is without error,
a second set circuit for generating the number of pulses to be received from the pulse generator representative of the off time of the first controlled object if operation of the first controlled object is without error,
a third set circuit for generating the number of pulses to be received from the pulse generator representative of the on time of the second controlled object if operation of the second controlled object is without error,
a fourth set circuit for generating the number of pulses to be received from the pulse generator representative of the off time of the second controlled object if operation of the second controlled object is without error,
a judging circuit for receiving the output of the first counter circuit and for generating a signal if the output of the first counter circuit is negative, for receiving the output of the second counter circuit and for generating a signal if the output of the second counter circuit is negative, for receiving the output of the third counter circuit and for generating a signal if the output of the third counter circuit is negative and for receiving the output of the fourth counter circuit and for generating a signal if the output of the fourth counter circuit is negative,
an alarm circuit for receiving the signal generated by the judging circuit,
a start signal line for receiving a start signal connected to the input of the delay circuit,
means connecting the output of the delay circuit to the first input of the fifth gate, to the first input of the sixth gate, to the first input of the seventh gate and to the first input of the eighth gate,
an input signal line for receiving an input signal for the first controlled object connected to the input of the first inverter and to a first input of the first gate,
a second input signal line for receiving an input signal for the second controlled object connected to the input of the second inverter and to a first input of the third gate,
means connecting the output of the first inverter to a first input of the second gate,
means connecting the output of the second inverter to a first input of the fourth gate,
means connecting the output of the pulse generator to a second input of the first gate, a second input of the second gate, a second input of the third gate and a second input of the fourth gate,
means connecting the start signal line to a first input of the first counter circuit, to a first input of the second counter circuit, to a first input of the third counter circuit and to a first input of the fourth counter circuit,
means connecting the output of the first gate to a third input of the first counter circuit,
means connecting the output of the second gate to a third input of the second counter circuit,
means connecting the output of the third gate to a third input of the third counter circuit,
means connecting the output of the fourth gate to a third input of the fourth counter circuit,
means connecting the output of the first set circuit to a second input of the fifth gate,
means connecting the output of the second set circuit to a second input of the sixth gate,
means connecting the output of the third set circuit to a second input of the seventh gate,
means connecting the output of the fourth set circuit to a second input of the eighth gate,
means connecting the output of the fifth gate to a second input of the first counter circuit,
means connecting the output of the sixth gate to a second input of the second counter circuit,
means connecting the output of the seventh gate to a second input of the third counter circuit,
means connecting the output of the eighth gate to a second input of the fourth counter circuit,
means connecting the output of the first counter circuit to the judging circuit,
means connecting the output of the second counter circuit to the judging circuit,
means connecting the output of the third counter circuit to the judging circuit,
means connecting the output of the fourth counter circuit to the judging circuit,
means connecting a first output of the judging circuit to a first input of the alarm circuit,
means connecting a second output of the judging circuit to a second input of the alarm circuit,
means connecting a third output of the judging circuit to a third input of the alarm circuit,
means connecting a fourth output of the judging circuit to a fourth input of the alarm circuit.

3,952,945
FURNACE TEMPERATURE CONTROL SYSTEM

Richard Hampton Biddulph, Worcester Park, England, assignor to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Nov. 18, 1974, Ser. No. 524,839
Claims priority, application United Kingdom, Nov. 16, 1973, 53278/73
Int. Cl.² G05D 23/22; F23N 1/00
U.S. Cl. 236—15 B **5 Claims**

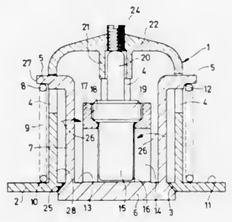


1. A furnace heating and control system which comprises a furnace heating means;
a first temperature controller, set to a temperature above the required treatment temperature, and connected to a first means for measuring the temperature of the furnace atmosphere, and to the heating means;
a second temperature controller, set to a temperature below the required treatment temperature, and connected to a means for measuring the temperature of an article being treated and via a timing mechanism and a change-over relay, adapted to change control of the heating means from the first temperature controller to a third temperature controller, to the heating means; and
a third temperature controller, set to the required treatment temperature, and connected to a second means, for measuring the temperature of the furnace atmosphere, and to the heating means.

3,952,946
THERMOSTATIC VALVE

Bernhard W. Braukmann, Am Rosenberg 1, 6950 Mosbach, Germany

Filed July 12, 1974, Ser. No. 488,153
Int. Cl.² F01P 7/02
U.S. Cl. 236—34 **5 Claims**

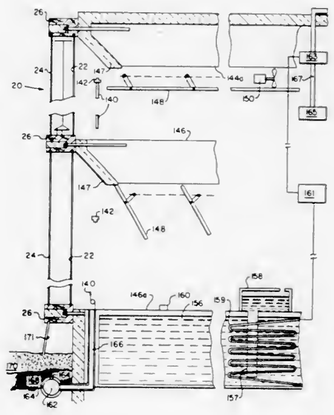


1. A thermostatic valve for use with heat engines employing a fluid circulating medium having a housing with opposed openings formed therethrough, a valve seat forming a further opening to said housing, spring means surrounding said housing, a valve plate positioned for abutment against and retraction from said seat, said valve plate supporting a thermostatically operable element which bears against the inside surface of said housing to activate said valve plate, a plurality of elastic bending arms to said valve plate, said arms being assembled from within said housing to protrude through said opposed openings and ends on said arms to form support members for one end of said spring means and outwardly formed flank members to said housing to support the other end of said spring means.

3,952,947
HEATING AND VENTILATION SYSTEM

Norman B. Saunders, 15 Ellis Road, Weston, Mass. 02193

Filed Dec. 3, 1974, Ser. No. 529,235
Int. Cl.² F24J 3/02
U.S. Cl. 237—1 A **28 Claims**

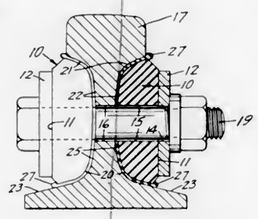


1. A system for controlling the temperature, ventilation, illumination and humidity within an enclosed building having at least one wall exposed to solar radiation comprising:
a double glazed window transmissive to light and sun energy mounted on said wall of said building;
means for measuring the net heat energy flow through said window;
means for automatically adjusting the heat energy flow through said window responsively to the measurement of said net heat energy flow;
means provided in said building for absorbing at least a portion of said light and sun energy transmitted by said window;
a heat sink thermally coupled to said building for storing and delaying some of said portion of light and sun energy so that said means provided in said building for absorbing said portion of energy can release energy when the interior temperature of said building drops; and
means for circulating exterior air through said building and including means for passing at least a portion of said air between the panes of said double glazed window and thence into said building so as to heat said portion of air with heat energy as the latter passes through said window, and also including means for changing the temperature and relative humidity of another portion of said air by passing said another portion of air through the ground in the area of said building prior to introducing said another portion of air into said building.

3,952,948
ADHESIVELY BONDED RAIL JOINT

Alfred Dwayne Nelson, Stillwater, and Garold L. Goken, Birchwood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 255,613, May 22, 1972, Pat. No. 3,837,948. This application Feb. 19, 1974, Ser. No. 443,369
Int. Cl.² E01B *11/00*
U.S. Cl. 238—243 **7 Claims**

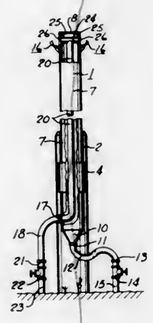


1. Adhesively bonded rail joint which is quick to assemble and easy to dismantle and reassemble comprising a pair of joint bars having broad faces shaped to conform to broad surfaces of the rails including at least major portions of the surfaces underlying the rail heads and the upper surfaces of the rail bases in the area of the rail joint, each of said broad faces carrying a thermoplastic adhesive layer about 10–60 mils in thickness and an adhesion-promoting coating of in-situ cured thermosetting resin between each thermoplastic adhesive layer and joint bar, which adhesive is characterized by:
a. modulus in tension of at least 200,000 psi at all temperatures from −20°F to 120°F,
b. tensile strength of at least 2000 psi at all temperatures from −20°F to 120°F,
c. sufficiently low softening point that it wets steel at less than 500°F under moderate pressure,
d. shear adhesion to cold rolled steel of at least 2000 psi at all temperatures from −20°F to 120°F, and
e. water absorption of less than 1 percent after 24-hour immersion.

3,952,949
METHOD OF MAKING SNOW

Herman K. Dupre, c/o Seven Springs, Champion, Pa. 15622

Division of Ser. No. 386,528, Aug. 8, 1973, Pat. No. 3,822,825. This application June 26, 1974, Ser. No. 483,237
The portion of the term of this patent subsequent to July 9, 1991, has been disclaimed.
Int. Cl.² F25C *3/04*
U.S. Cl. 239—2 S **5 Claims**

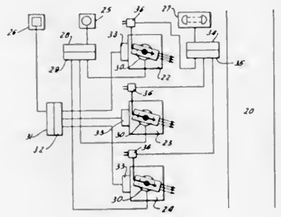


1. A method of making snow comprising the steps of:
supplying water under pressure to a point of discharge above ground;
discharging the supplied water through a nozzle into the ambient atmosphere in the form of a spray of discreet water particles when the atmosphere has a temperature lower than the freezing point of water;
independently supplying air under pressure to a second point of discharge above ground;
discharging the supplied air under pressure into the ambient atmosphere in the form of a jet directed into the throat of said sprayed water to produce snow; and
continually insulating said air supplied to said second point of discharge for at least substantially its entire supply length of exposure above ground by coextensively surrounding the same to said point of discharge with said water supplied under pressure.

3,952,950
APPARATUS FOR DEFOGGING A ROADWAY, LANDING STRIP OR THE LIKE

Anton Pocrnja, and Heribert Wenzel, both of Munich, Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Division of Ser. No. 485,000, July 1, 1974, abandoned, which is a division of Ser. No. 360,909, May 16, 1973, Pat. No. 3,851,822. This application May 9, 1975, Ser. No. 576,116
Claims priority, application Germany, May 19, 1972, 2224657; May 19, 1972, 2224671; May 19, 1972, 2224672
Int. Cl.² A01G *15/00;* **E01H** *13/00*
U.S. Cl. 239—14 **22 Claims**

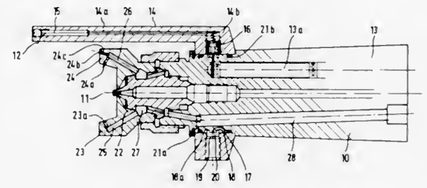


1. An apparatus for the defogging of an elongated region, comprising:
a respective row of blowers disposed along each longitudinal side of said region and having respective jets trained generally thereacross, the blowers of each row being oriented at progressively increasing angles away from a central blower of the respective row;
means for dehumidifying the air fed through at least some of said blowers;
a wind-direction detector responsive to the wind direction in said region; and
control means responsive to said detector for orienting the blowers of said rows in dependence upon the wind direction with the central blower of each row generally parallel to the wind direction.

3,952,951
APPARATUS FOR ELECTROSTATICALLY COATING OBJECTS WITH LIQUID, SOLID IN LIQUID, AND/OR POWDER-LIKE MATERIAL

Dieter Raetz, Neckarweihingen, and Fred Luderer, Weiler zum Stein, both of Germany, assignors to Firma Ernst Mueller K.G., Winnenden, Germany

Filed Mar. 3, 1975, Ser. No. 554,495
Claims priority, application Germany, Mar. 13, 1974, 2412131
Int. Cl.² B05B *5/02, 1/28*
U.S. Cl. 239—15 **2 Claims**

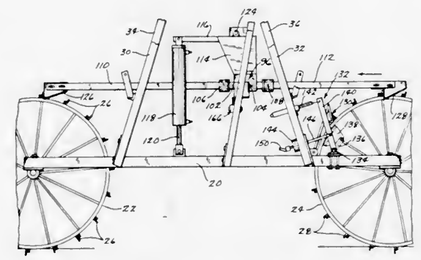


1. Apparatus for the electrostatic coating of objects, said apparatus comprising:
gun barrel means
atomizer nozzle means;
supply means operable to supply coating material to said atomizer nozzle means;
electrode means operable to charge a spray of dispersed material issuing from said atomizer nozzle means;
high voltage source means operable to charge said electrode means;
body means supporting said electrode means in spaced relation relative to said nozzle means;
blowing nozzle means operable to direct a flow of anti-fouling air into anti-fouling cooperation with said electrode means;
opposed jetting means operable to flatten a flow of material issuing from said atomizer nozzle means;
air supply means operable to transmit air to said jetting means; and
means including said air supply means, for diverting air supplied to one of said jetting means to said blowing nozzle means.

3,952,952
BRAKE MEANS FOR AN AIR-POWERED SPRINKLER SYSTEM

Loren R. Townsend, Sidney, Nebr. 69162

Filed Jan. 10, 1975, Ser. No. 540,111
Int. Cl.² B05B *3/12*
U.S. Cl. 239—177 **11 Claims**

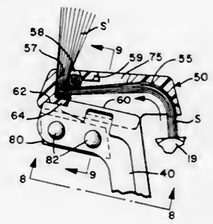


1. A self-propelled sprinkling apparatus comprising,
a water supply pipe moveable about a central pivot point,
a plurality of spaced apart, wheeled drive towers supporting said supply pipe above the area to be sprinkled,
an air operated drive means on each of said towers to propel said towers and said supply pipe about said central pivot point,
a source of compressed air for supplying air under pressure to said drive means,
control means on said towers for controlling the operation of said drive means so that said towers will be selectively driven to maintain said supply pipe in an aligned condition as said supply pipe is moved about said pivot point,
each of said drive towers comprising at least a pair of wheels,
and a brake means on at least one of said towers which selectively moves into braking engagement with at least one of said wheels on said one tower to prevent the said tower from undesirable rolling,
said tower comprising a frame means having the said pair of wheels mounted thereon,
a trojan bar means reciprocatably mounted on said frame means and moveable between first and second positions for engagement with at least one of said wheels for driving said wheel when said trojan bar means moves in at least one direction,
said drive means including a drive air cylinder operatively connected to said trojan bar means for reciprocating said trojan bar means,
said brake means comprising a brake shoe normally yieldably maintained in frictional engagement with said one wheel,
and brake release means for selectively moving said brake shoe out of frictional engagement with said one wheel when said trojan bar means is moving in at least said one direction.

3,952,953
REACTION ARM FOR ROTARY SPRINKLER

Ralph H. Eby, Cincinnati, Ohio, assignor to John S. Greeno Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 479,857, June 17, 1974. This application May 5, 1975, Ser. No. 574,536
Int. Cl.² B05B *3/02*
U.S. Cl. 239—230 **8 Claims**

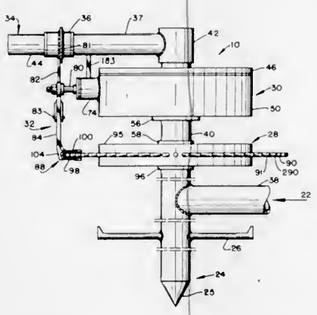


1. A reaction arm for a rotary sprinkler comprising a support portion having a head-supporting shoe on one end and a counterweight on the other end and defining a pivot portion therebetween, a spray deflecting reaction head mounted on said shoe, said head having a pair of side walls in spaced relation defining a rear opening at the side thereof facing said shoe, means on said head defining a front opening, said head having a front wall extended between said side walls opposite said rear opening to receive a water stream from the sprinkler through said rear opening to turn said stream therethrough substantially at a right angle to its original direction of flow, said head further having a transversely opposite wall extended between said side walls to receive said stream after it leaves said front wall and to direct the same through said front opening in a direction which is in converging relation with that of said water stream entering said head, said support portion and said head being injection molded of plastic resin material, said shoe fitting between said side walls, and said head being connected to said shoe at said side walls such that said rear opening is partially closed and a transverse flow passage leading

from said front wall to said transversely opposite wall is defined by said shoe and said front wall in combination with said side walls.

3,952,954
AUTOMATIC WATER SPRINKLER FOR IRREGULAR AREAS

Robert E. Taylor, 309 SW. 11th St., Andrews, Tex. 79714
Filed Feb. 28, 1975, Ser. No. 553,906
Int. Cl.² B05B *3/08*
U.S. Cl. 239—236 **6 Claims**



1. An automatic sprinkler for watering irregular areas comprising:

a ground engaging support means, a programmer having means by which data can be stored therein related to a geometrical configuration of an irregular area, a nozzle assembly, means forming a flow path by which water flows to said nozzle, means forming a rotatable head having a speed control associated therewith by which the rate of rotation of said head is controlled;

means mounting said rotatable head to said support means, means mounting said nozzle in swiveled relationship respective to said rotatable head such that said nozzle rotates with said head and can be swiveled to change the trajectory of any water flowing therefrom; means by which any water flowing through said nozzle tends to impart rotational motion into said rotatable head;

said programmer includes a plurality of radially spaced circumferentially extending protrusions mounted to said ground engaging support means, each said protrusion being bendable respective to one another to jointly form a circumferentially extending sinusoidal pattern;

a follower slidably engaged with said protrusions so that the follower must assume the path presented by a marginal outer peripheral area of said protrusions when said follower is moved relative to said programmer; means connecting said follower to said nozzle and to said speed controller in a manner such that movement of the follower along the sinusoidal path of the programmer causes the speed controller to change the rate of rotation of the head while the follower simultaneously swivels the nozzle to change the trajectory of water issuing therefrom.

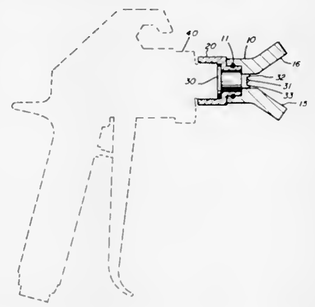
3,952,955
SAFETY TIP GUARD

William Clements, St. Louis Park, Minn., assignor to Graco Inc., Minneapolis, Minn.
Filed Dec. 12, 1974, Ser. No. 532,021
Int. Cl.² B05B *1/04*
U.S. Cl. 239—288.5 **3 Claims**

1. A safety guard apparatus for use in conjunction with an airless paint spray gun and spray tip, comprising:

a. a tip retainer nut sized and threaded to secure said spray tip against said spray gun with said spray tip protruding therethrough, said tip retainer nut having a forward circumferential flat surface with a circumferential groove therein;

b. a safety guard having forwardly projecting ears and a rearward cylindrical portion sized to fit over said tip retainer nut circumferential flat surface, said cylindrical portion having an inner circumferential groove in substantial alignment with said tip retainer nut circumferential groove when said rearward cylindrical portion is fitted over said circumferential flat surface, said safety guard having an internal slotted opening mated to accept said

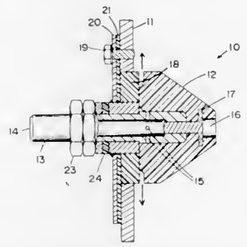


spray tip in keyed alignment therewith, said safety guard having a narrow slotted region, of width less than one-half inch, intermediate said forwardly projecting ears and opening said spray tip forwardly through said safety guard, and said ears each comprising a member shaped for outward divergence from the axis of said spray gun in the forward direction, said member having an inner beveled surface joining said narrow slotted region; and

c. a compressible spring clip held in compressed relation within both said tip retainer circumferential groove and said cylindrical portion inner circumferential groove.

3,952,956
BIN AERATOR

James R. Steele, Stillwater, Minn., assignor to Dynamic Air Inc., St. Paul, Minn.
Filed Mar. 31, 1975, Ser. No. 563,717
Int. Cl.² B05B *15/00, 1/30;* **B08B** *3/02*
U.S. Cl. 239—289 **4 Claims**



1. A bin aerator for dislodging material stuck to a bin wall comprising:

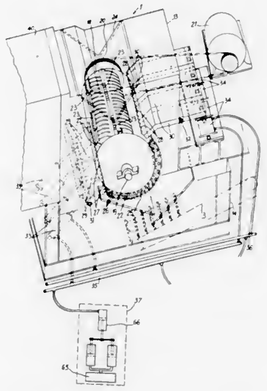
a first member for projecting through an opening in a bin wall and having means for fastening said bin aerator to said bin wall; and a fastening member for attachment to said first member;

a pliable body member for mounting inside a bin, said pliable body member having a surface for the discharge of air, a second member having a surface for the discharge of air and said pliable body member and said second member having a central opening therein for receiving said first member and said fastening member; said surface on said pliable body member and said surface on said second member located in pressure contact by the coaction of said fastening member and said first member;

means for suppying air to the surface on said pliable body member and the surface on said second member to thereby cause said pliable member to flex and bend as air is discharged over said surface on said pliable body member to thereby dislodge any material lodged on said bin wall.

3,952,957
SHREDDING UNIT FOR CONDITIONING SCRAP METAL PARTS HAVING A MAXIMUM THICKNESS OF 5 MILLIMETERS

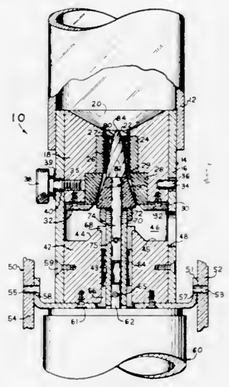
Edgard Jacques Maillet, Chateau de l'Ermitage, Ludon Medoc, Blanquefort, France (33290)
Filed Oct. 11, 1974, Ser. No. 514,085
Claims priority, application France, Oct. 15, 1973, 73.36684
Int. Cl.² B02C *13/06, 13/31*
U.S. Cl. 241—73 **10 Claims**



1. A shredding unit for conditioning thin scrap metal parts from motor vehicle wrecks or other metallic carcasses, said unit being intended to be placed directly after a supply unit at the inlet of a continuous conversion chain comprising conventional dust extraction equipment as well as screening and magnetic sorting equipment, and essentially constituted by a drum rotatably mounted on a substantially horizontal shaft extending transversely within the interior of a cage having a front feed opening, said drum being provided with a plurality of knives rigidly mounted on the circumference thereof and being partly surrounded over approximately two-thirds of its periphery starting from the threshold of the feed opening by an evacuation grid in the form of a wearing plate provided with calibrated holes, wherein an aligned array of substantially juxtaposed backing knives is placed at each end of the grid opposite to the drum and over the entire length of said drum, said backing knives being adapted in the active position thereof to project inwards with respect to the grid in such a manner as to ensure that the knives of the drum pass in the immediate proximity of said backing knives, said backing knives being each mounted at the extremity of a pivotal support plate in such a manner as to permit a movement of withdrawal under the pressure of an excessively large mass in opposition to an elastic means having a predetermined and substantially constant force which urges each backing knife to said active position.

3,952,958
GRINDER APPARATUS FOR WHEAT, GRAINS, AND THE LIKE

Dennis E. Rich, 3810 W. Cholla, Phoenix, Ariz. 85029
Filed Apr. 7, 1975, Ser. No. 565,785
Int. Cl.² B02C *9/04*
U.S. Cl. 241—162 **10 Claims**



1. Grinder apparatus, comprising, in combination:

a cutter adjacent the hopper means, including

a cylindrical bore extending axially through the cutter,

a helical cutting groove in the bore, and

slot means extending axially in the bore through the groove;

first grinding means having a conical grinding surface disposed in the cylindrical bore of the cutter and movable relative to the cutter;

fixed grinding means disposed adjacent the cutter and having a conical shaped interior grinding surface; and

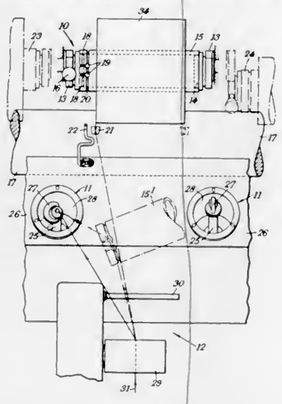
a second grinding means having a conical grinding surface disposed in the fixed grinding means and movable relative to the fixed grinding means.

3,952,959
TEXTILE YARN PROCESSING

Jack Shaw, Read, near Burnley, and Robert Lane, Accrington, both of England, assignors to Platt International Limited, England
Filed Aug. 20, 1974, Ser. No. 498,922
Claims priority, application United Kingdom, Aug. 23, 1973, 40055/73
Int. Cl.² B65H *54/02*
U.S. Cl. 242—18 PW **7 Claims**

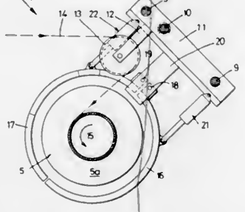
1. In a yarn processing machine having yarn collection means, a bobbin tube provided with first and second slots angularly spaced around the periphery and extending from one end thereof, support means for said bobbin tube comprising a pair of spigot members, each member being adapted for supporting the bobbin tube at a respective end, the spigot member supporting the bobbin tube at said one end projecting into the bobbin tube by a distance less than the distance that the first and second slots extend from the said one end such that when the bobbin tube is placed on the supports a first passage is provided between the first slot and the spigot member and a second passage is provided between the second slot and the spigot member, a method of winding yarn on an empty bobbin tube comprises the steps of delivering a running yarn to the yarn collection means through the first and second passages, before placing the bobbin tube on the support means passing the yarn to the inside of the bobbin tube through the first slot and exiting the yarn from the inside of the tube through the second slot, thereafter placing the bobbin tube on

the spigot members while allowing the yarn to continue to run to the yarn collection means through the first and second



passages and rotating the bobbin tube to wind the running yarn thereon.

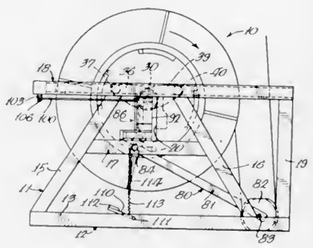
3,952,960
WINDING MACHINE EQUIPPED WITH A TRAVERSE MECHANISM
Louis Veyrassat, Rolle, Switzerland, assignor to Maillefer S.A., Switzerland
Filed Oct. 22, 1974, Ser. No. 517,024
Claims priority, application Switzerland, Oct. 26, 1973, 15104/73
Int. Cl.² B65H *67/04*
U.S. Cl. 242—25 A **6 Claims**



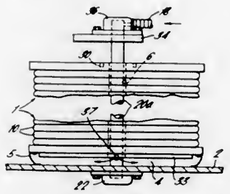
1. A winding machine equipped with a traverse mechanism comprising a carriage borne by a support, said carriage being reciprocatingly movable along the entire length of a reel and carrying a pulley for guiding wire being wound on said reel, a circular protective channel coaxial with said reel and borne by said carriage so as to move reciprocatingly with said carriage, said channel including at least one circular track portion extending in a plane parallel to and laterally offset with respect to that of the pulley, and a deflection portion situated in the same plane as the pulley and limited by a deflection wall.

3,952,961
STRAP DISPENSING METHOD AND APPARATUS
Robert F. Antepenko, Northlake, Ill., assignor to Signode Corporation, Glenview, Ill.
Filed Mar. 11, 1974, Ser. No. 449,924
Int. Cl.² B65H *75/32, 17/52*
U.S. Cl. 242—54 R **34 Claims**

6. A strap dispenser comprising: frame means; a hub having a coil of strap thereon; means mounting said hub on said frame means for movement between an elevated rest position and a lowered strap feeding position; latch means for retaining said hub in said rest position; strap sensing means for releasing said latch means in response to demand for strap and enabling said hub to fall toward said strap feeding position; means for accelerating said hub in response to the falling movement thereof; said strap sensing means re-engaging said latch means in the absence of demand for strap, whereby the rotational energy of said hub lifts the same from said strap feeding position to said rest position.



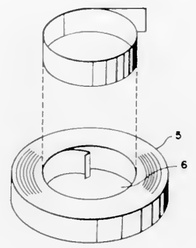
3,952,962
CABLE DRUMS
Patrick Michael Kidd, Southampton, England, assignor to Mackley-Ace Limited, Southampton, England
Filed Apr. 15, 1975, Ser. No. 568,182
Claims priority, application United Kingdom, July 20, 1974, 32268/74
Int. Cl.² B65H *75/00*
U.S. Cl. 242—54 R **8 Claims**



1. A cable drum penetrated from end to end by a central hole, and provided with means for supporting the drum in an up-ended position on a cushion of pressurised fluid, said means comprising a flexible skirt of annular form disposed around the periphery of what, in use, is the lower end of the drum so as to define a cushion space, whereby pressurised fluid can be supplied to said cushion space by way of the said central hole so as to support said drum.

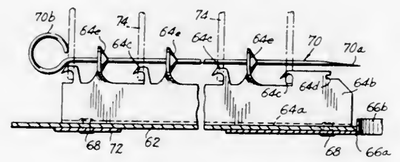
3,952,963
CYLINDRICAL WINDING CORE FOR CARRYING A ROLL OF ELONGATED WINDABLE MATERIAL
Niro Ueno, and Ippei Shiraishi, both of Tokyo, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated and Topacs, Incorporation, both of Tokyo, Japan
Filed Oct. 4, 1974, Ser. No. 512,144
Int. Cl.² B65H *17/02*
U.S. Cl. 242—68.5 **9 Claims**

1. A winding core for supporting thereon a wound length of an elongated material, said core having a cylindrical body formed by rolling a strip of resilient material into a cylindrical shape and securing one end of said resilient strip to a point spaced from the opposite end to leave the portion of said strip between said point of securement and said opposite end extending essentially on a tangent to said cylindrical body as a free convolute portion, whereby said convolute portion is



stressed by the winding of elongated material about said core to provide an outward bias against the wound material.

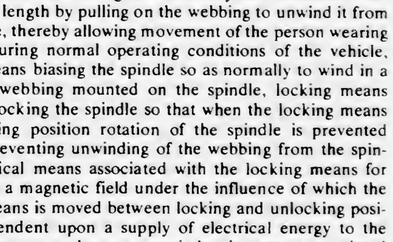
3,952,964
PACKAGES FOR PILE FABRICS
Frederic R. Arden, Salem, N.H., assignor to Malden Mills, Inc., Lawrence, Mass.
Filed Nov. 15, 1974, Ser. No. 524,135
Int. Cl.² B65D *85/67;* **B65H** *75/02*
U.S. Cl. 242—77.1 **44 Claims**



1. A reel for supporting a roll of pile fabric comprising a pair of end panels, separator means for holding said pair of end panels separated from and facing each other, a plurality of radial strips mounted on the inner face of each end panel, each of said radial strips including therealong a plurality of hooks integral with said strip for gripping a fabric edge and a substantially equal number of eyelets integral with said strip, said eyelets being arranged so that all adjacent layers of a rolled fabric secured to the hooks on each radial strip are separated by an eyelet, and means threaded through the eyelets on each radial strip and the fabric layers therebetween for securing said fabric layers in place even if a fabric edge is torn off from a hook.

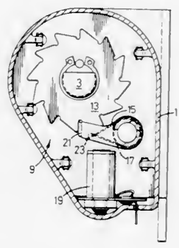
3,952,965
HAND LINE REEL
Pedro F. Falcon, 45 W. 46th Ave., Miami, Fla. 33127
Substitute for Ser. No. 152,214, June 11, 1971, abandoned. This application Dec. 11, 1974, Ser. No. 531,740
Int. Cl.² B65H *75/40, 17/44*
U.S. Cl. 242—96 **7 Claims**

1. A hand line reel comprising:
A. a housing providing,
1. an annular wall forming an inner annular cylindrical chamber, having an open mouth at one end,
2. a closure wall across the end opposed to said open mouth,
3. a fixed stub shaft extending axially into said annular chamber from said closure wall;
B. a spool rotatably mounted on said stub shaft within said annular chamber, said spool providing,
1. an annular, peripheral line storage groove,
2. an inner face,
3. an outer face,
4. a handle fixed relative to said outer face and extending outwardly through said mouth for manual actuation to impart rotational movement to said spool;
C. a fixed hand grip extending outwardly from said closure wall;



D. a manually operated brake means adjacent to said hand grip to apply selected amounts of friction forces to said inner face;
E. transverse slot means through said annular wall in general alignment with said line storage groove;
F. access slot means defined by space between said spool and annular wall opening between said transverse slot means and said open mouth.

3,952,966
SEAT BELT STORAGE REEL WITH ELECTRICALLY OPERATED LOCKING DEVICE
David William Burleigh, Yateley, England, assignor to Britax (London) Limited, Byfleet, England
Filed May 3, 1974, Ser. No. 466,795
Claims priority, application United Kingdom, May 4, 1973, 21290/73
Int. Cl.² B65H *75/48;* **H01H** *3/16*
U.S. Cl. 242—107.4 R **17 Claims**



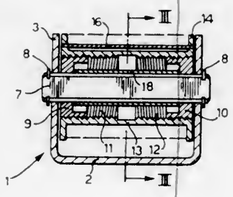
1. An electrically operated safety belt storage reel including a spindle on which a length of safety belt webbing is adapted to be wound, the reel being of the type which is for fitting in a vehicle and the webbing of which may be increased or decreased in length by pulling on the webbing to unwind it from the spindle, thereby allowing movement of the person wearing the belt during normal operating conditions of the vehicle, biasing means biasing the spindle so as normally to wind in a length of webbing mounted on the spindle, locking means normally locking the spindle so that when the locking means is in locking position rotation of the spindle is prevented thereby preventing unwinding of the webbing from the spindle, electrical means associated with the locking means for generating a magnetic field under the influence of which the locking means is moved between locking and unlocking positions, dependent upon a supply of electrical energy to the electrical means, and non-magnetic barrier means associated

with the locking means for minimizing remanence in the locking means subsequent to the supply of electrical energy to the electrical means.

3,952,967
ENERGY DISSIPATOR FOR MOTOR VEHICLE SAFETY BELTS

Mario Barile; Francesco Canavesi, and Pier Vincenzo Franchini, all of Turin, Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed Apr. 30, 1975, Ser. No. 573,230
Claims priority, application Italy, June 4, 1974, 68751/74
Int. Cl.[2] B65H *75/48;* **B60R** *21/10;* **A47C** *31/00*
U.S. Cl. 242—107.4 R **4 Claims**



1. Energy dissipator for motor vehicle safety belts, comprising a support adapted to be mounted at a vehicle anchorage point, a flanged reel on which the safety belt is wound in use of the dissipator and means for anchoring one end of the belt to the reel, wherein the improvement consists in the combination of two axially extending seatings at opposite ends of the reel, said seatings being screw-threaded with equal helical pitches of opposite directions, two correspondingly threaded bushes engaged with said threaded seatings, a shaft carried by the support, the bushes being mounted for axial sliding movement without rotation on said shaft, and means interposed between the two bushes for opposing by the dissipation of energy movement of the two bushes towards each other in the event of rotation of the reel caused by unwinding of the belt therefrom.

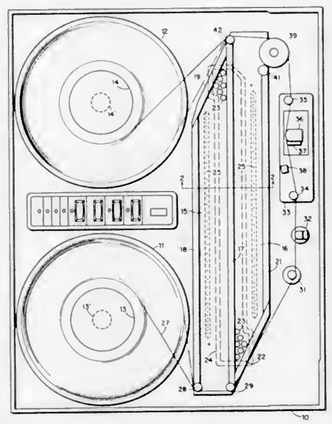
3,952,968
TAPE TRANSPORT SYSTEM

Richard Bruce McKinstry, Northboro, and Joseph Charles Godbout, Acton, both of Mass., assignors to Data General Corporation, Southboro, Mass.

Filed Apr. 10, 1974, Ser. No. 459,816
Int. Cl.[2] G11B *15/58, 23/12*
U.S. Cl. 242—182 **9 Claims**

1. In a digital magnetic tape transport having a pair of adjacent vacuum storage column means extending lengthwise in a first direction each with oppositely disposed closed and open ends, a magnetic head assembly defining a substantially linear tape threading path along one side of said vacuum storage column means and substantially parallel to the lengthwise direction thereof, a pair of tape reels adapted to be mounted at a second opposite side of said vacuum storage column means along a line parallel with said linear tape threading path, the improvement comprising:
   - a tapered vacuum column means closed end adjacent the storage reel and along the path traveled by the tape between the storage reel and one of said vacuum columns, the angle of taper being such that the tapered end if extended would not intersect said adjacent storage reel, and

wherein said second vacuum column means closed end is similarly tapered at an angle substantially parallel with

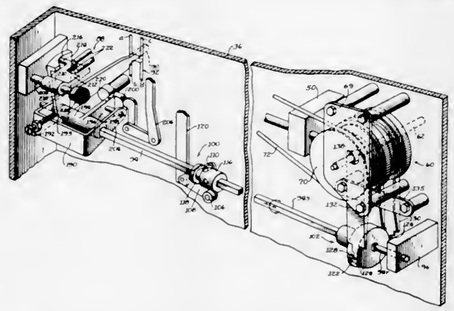


the tapered angle at said first vacuum column means closed end.

3,952,969
DRIVE CONTROL MECHANISM FOR MOTION PICTURE PROJECTOR

James G. Woodier, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Mar. 13, 1975, Ser. No. 557,862
Int. Cl.[2] G03B *1/04;* **G11B** *15/32*
U.S. Cl. 242—205 **10 Claims**



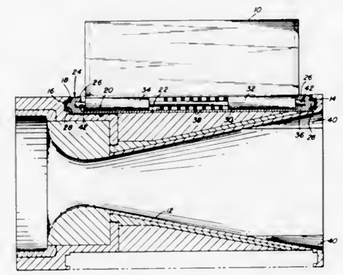
1. In a motion picture projector having means to project a motion picture film at a projection station and means to transport film from a supply means through the projection station to a take-up means, the projector including a control means adjustable to a plurality of positions for conditioning the operation of the projector to a plurality of operational modes, the improvement in the control means comprising:
   - a shiftable member manually actuatable between a plurality of positions;
   - a control shaft coupled with said shiftable member and being movable axially and rotationally responsive to positioning of said shiftable member;
   - a shuttle retractor and reverse control member operable by said control shaft;
   - a dual cam fixed on said control shaft for axial and rotational positioning responsive to adjustment of said shaft;
   - a plural clutch device actuated by said dual cam for controlling respectively a first output means and a second output means;

   - cam follower means coupling said cams to said clutch devices for actuating a respective one of said clutch devices to free condition, slip condition, and positive drive condition;
   - a shaft supporting said output means for rotation thereon;
   - keying portions provided on said output means;
   - keying members on said first and second clutch devices being in engagement with said keying portions for driving of said output means;
   - said clutch devices including driven means and driver means arranged for relative displacement from a non-coupled condition to a semi-coupled condition and to a positive coupled condition, said driven means being non-responsive to said driver means when in said non-coupled condition, being partially responsive to said driver means in said slip coupled condition, and being positively responsive to said driver means in said positive coupled condition; and
   - said output means driving said supply means and said take-up means and being drivable respectively by said driven portions of said clutch means.

3,952,970
MEANS FOR IMPROVING ROCKET MISSILE ACCURACY

Casimir T. Orzechowski, Kensington, and Nat Seiden, Brandywine, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 28, 1974, Ser. No. 501,307
Int. Cl.[2] F42B *13/32*
U.S. Cl. 244—3.23 **13 Claims**

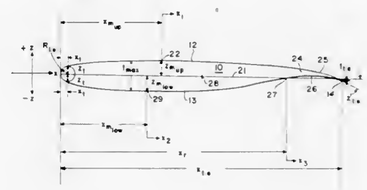


1. Means for improving the ballistic accuracy of a rocket missile which has a nozzle at the aft end formed with a narrower mid-section than its end sections, the end sections which project above said mid-section being formed each with a circular slot therein, the slots facing each other, said system comprising, in combination:
   - a plurality of fin means for guiding and stabilizing the flight of said missile, said fin means being of the wrap-around type;
   - biasing means for erecting said fin means when said fin means are clear of a missile launcher tube;
   - freely rotating runner means for mounting said fin means on said missile, said runner means being a spool-like member fitting around said mid-section of said nozzle and being free to rotate relative to said missile, said fin means rotating with said runner means, and said spool-like member having a circular flange at each end, the outer end of each flange being formed with a circular neck ring; and
   - a pair of circular bearings each of which fits securely into a different one of said circular slots in said end sections and each of which is formed with a corresponding circular slot therein, each said neck ring fitting into a different one of said circular slots in said bearings.

3,952,971
AIRFOIL SHAPE FOR FLIGHT AT SUBSONIC SPEEDS

Richard T. Whitcomb, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 9, 1971, Ser. No. 197,183
Int. Cl.[2] B64C *3/10*
U.S. Cl. 244—35 R **20 Claims**

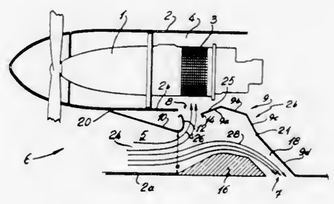


16. An airfoil designed to operate at a Mach number greater than the critical Mach number without boundary layer separation due to shock wave formation comprising:
   - an airfoil means, said airfoil means having an upper surface means including a first region means extending rearward from a near a leading edge station past a midchord station, said first region means for maintaining a supersonic flow and an approximately constant supersonic velocity over said first region means;
   - a second region means extending rearward from said first region means, said second region means for producing a drop in velocity from the supersonic velocity over said first region means to a near-sonic velocity, whereby a weak shock wave is formed over said second region means;
   - a third region means extending rearward from said second region means, said third region means for maintaining the near-sonic velocity produced by said second region means at an approximately constant value;
   - whereby shock wave energy is not sufficiently strong to cause boundary layer separation.

3,952,972
INERTIAL SEPARATOR

Donald Tedstone, St. Lambert; Hans-Herman Schaum, and John James Sanderson, both of St. Bruno, all of Canada, assignors to United Aircraft of Canada Limited, Longueuil, Canada

Filed Dec. 24, 1974, Ser. No. 536,155
Int. Cl.[2] B64D *33/02*
U.S. Cl. 244—53 B **8 Claims**



1. For an aircraft engine comprising an encasing nacelle and provided with an air intake and an installation for reducing ingress of super-cooled water, ice, snow and other debris to said air intake, said installation comprising a duct extending generally longitudinally of said engine, an open inlet at the forward end of said duct and an outlet, spaced from said inlet in the downstream direction of said duct, one of the walls of said duct being co-incident with a portion of said nacelle, an

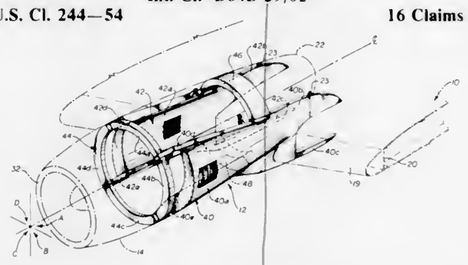
air deflecting surface in said duct extending rearwardly from said portion of said nacelle and in a direction away from said portion of said nacelle, the air deflecting surface extending over a part of the cross-section of said duct so as to confine incoming air to a passage of reduced cross-section, an opening in said portion of said nacelle downstream of the deflecting surface and formed between the trailing edge of the deflecting surface and the leading edge of a rearward part of said portion of said nacelle, said opening communicating with said air intake whereby air passing to said intake is deflected through a substantial angle around said deflecting surface whereas remaining air together with material of greater inertia passes without deflection to said opening through an outlet passage, one surface of said outlet passage being formed by said rearward part of said portion of said nacelle, the improvement comprising cyclic ice shedder means extending outwardly from and at right angles to said leading edge of said rearward part of said portion of said nacelle.

3,952,973

ENGINE MOUNTING ASSEMBLY

Varnell L. James, Enumclaw, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 20, 1974, Ser. No. 534,830
Int. Cl.² B64D *29/02*
U.S. Cl. 244—54 **16 Claims**



16. An assembly for mounting an engine on an aircraft wing having a leading edge, an upper surface, and a lower surface, said engine having a longitudinal dimension and a transverse dimension comprising:

an inboard beam having a rearward section and a forward section, said rearward section having an upper portion and a lower portion, said upper portion extending in a chordwise direction over the upper surface of said wing and having a bottom edge conforming to the shape of and engaging the upper surface of said wing, said lower portion extending in a chordwise direction over the lower surface of said wing and having a bottom edge conforming to the shape of and engaging the lower surface of said wing, said forward section being cantilevered from said rearward section and projecting forwardly from the leading edge of said wing,

a separate outboard beam having a rearward section and a forward section, said outboard beam being spaced outwardly in a spanwise direction from said inboard beam, said rearward section having an upper portion and a lower portion, said upper portion extending in a chordwise direction over the upper surface of said wing and having a bottom edge conforming to the shape of and engaging the upper surface of said wing, said lower portion extending in a chordwise direction over the lower surface of said wing and having an upper edge conforming to the shape of and engaging the lower surface of said wing, said forward section being cantilevered from said rearward section and projecting forwardly from the leading edge of said wing,

means for securing said engine to and between said inboard and outboard beams,

the forward sections of said inboard and outboard beams being spaced from each other by a distance at least as great as said transverse dimension of said engine so as to leave a space therebetween to allow insertion and removal of said engine in a generally downward and upward direction to and from a location between said beams, and

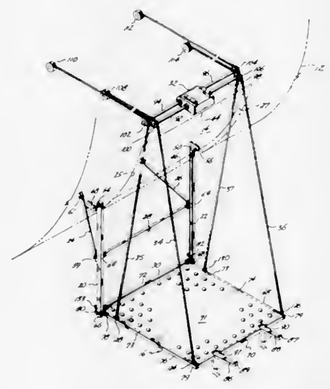
means for securing the upper and lower portions of the rearward sections of said outboard beams respectively to the upper and lower surfaces of said wing.

3,952,974

CARGO-HANDLING SYSTEM FOR STANDARD BODY AIRPLANES

John M. Lang, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 20, 1974, Ser. No. 534,829
Int. Cl.² B64D *9/00*
U.S. Cl. 244—137 R **14 Claims**



1. A stowable cargo-handling apparatus for use in an aircraft to load and unload cargo comprising:

a cargo platform movable vertically and pivotable about one edge thereof;

frame means for supporting and guiding said cargo platform and engaging said platform at said one edge comprising a pair of channel members pivotally attached to said aircraft adjacent a cargo hold opening, said channel members movable from a cargo lifting position extending substantially vertically downward from the cargo hold opening to a stowed position by rotation thereof through said cargo hold opening;

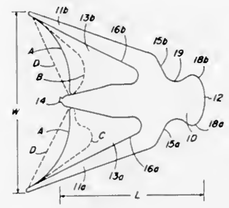
hoist means connected to said cargo platform by a first flexible lifting means engaging said one edge of said cargo platform and a second flexible lifting means engaging another edge of said cargo platform, said hoist means operable to move said cargo platform from a position adjacent the ground to a position adjacent said cargo hold opening by simultaneous upward movement of said first and said second flexible lifting means and operable to rotate said cargo platform from said position adjacent said cargo hold to a stowed position within said aircraft by further upward movement of said second flexible lifting means.

3,952,975

INFLATABLE KITE

Louis Lawrence Laske, Grayslake, Ill., assignor to Vonco Products, Inc., Lake Villa, Ill.

Continuation-in-part of Ser. No. 347,879, April 4, 1973, abandoned. This application May 13, 1974, Ser. No. 469,116
The portion of the term of this patent subsequent to Apr. 2, 1988, has been disclaimed.
Int. Cl.² A63H *27/08*
U.S. Cl. 244—153 R **12 Claims**



1. A kite comprising:

an inflatable rearwardly tapering body member provided with a rounded leading edge and having substantially teardrop shape, two inflatable opposing rearwardly projecting side members attached to said body member and together forming a single inflated volume wherein said rounded leading edge at its extremities defines lateral projections on each side which are shaped into a narrower neck portion, the width across said lateral projections being about 15 to about 200 percent greater than the width across said neck portion, said neck portion being shaped at the rearward end into the outer edges of said side members;

a non-inflatable web of flexible sheet material connected between the trailing edge of each rearwardly projecting side member and said body member and said web extending over at least 50 percent of the area defined by the edges of said body member, the inner edge of each side member and straight lines joining the rear extremities of said body member and each of said side members;

a line attachment means bonded to said body member; and

the ratio of the maximum width of the kite when inflated to the length of the kite being 0.5 to 1.5 and the maximum thickness of said body member when inflated is 0.15 to 0.45 of said length.

3,952,976

DEPLOYABLE FLEXIBLE TUNNEL

James C. Fletcher, Deputy Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Newton D. Brown; Gordon L. Jeppesen, both of Cuyahoga Falls, Ohio, and Nicholas C. Costakos, New Orleans, La.

Filed Dec. 27, 1974, Ser. No. 536,762
Int. Cl.² B64G *1/00*
U.S. Cl. 244—158 **2 Claims**

1. A deployable tunnel comprising:

a plurality of serially arranged frame members, each having an opening therethrough;

a flexible tubular member attached along, to, and between said frame members and together comprising an elongatable accordian-like tubular housing;

a first end frame at one end of said tubular member and a second end frame at an opposite end of said tubular member;

a first pulley assembly comprising an upper and lower pulley secured to an edge side region of said first end frame;

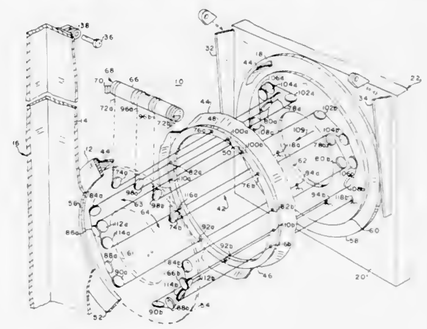
a second pulley assembly comprising an upper and lower pulley secured to an opposite edge side region of said first end frame;

a third pulley assembly secured to an edge side region of said second end frame;

a fourth pulley assembly secured to an opposite edge side region of said second end frame opposite to the position of said third pulley assembly;

a first cable assembly comprising at least one cable extending along and guidably engaging said frame members and including means for securing at least two runs of said cable, an upper run and a lower run, between said first and third pulley assemblies and for securing one end of said cable to a said end frame;

a second cable assembly comprising at least one second cable extending along and guidably engaging said frame members and including means for securing at least two runs of said second cable, an upper and a lower run,



between said second and fourth pulley assemblies and means for securing one end of said second cable to one of said end frames;

means for applying an elongating force to said housing;

cable operating means including a winch, having a winding drum, secured to one of said end frames and all of the other, otherwise free, ends of said cables being connected to, and simultaneously wound on, said drum, whereby said tubular housing may be elongated or shortened; and

deployment means including an arm member pivotally attached between said end frames for enabling said tunnel to be deployed in an arc upon operation of said cable operating means, said arm being selectively detachable from one of said end frames, whereby said deployable tunnel is selectively deployable either along a line or along an arc.

3,952,977

ELECTRICAL DETECTIVE CIRCUITS

Dirk J. Vermeulen, Johannesburg, South Africa, assignor to Western Industries (Proprietary) Limited, Johannesburg, South Africa

Filed Sept. 23, 1974, Ser. No. 508,167
Claims priority, application South Africa, June 11, 1974, 74/3701
Int. Cl.² B61L *23/16*
U.S. Cl. 246—37 **5 Claims**

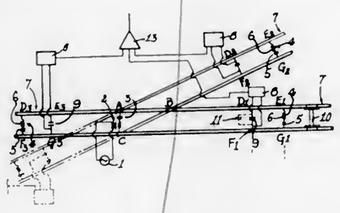
1. A detective circuit for railway points composed of three track sections connected together at a junction or for a railway crossing composed of four track sections connected together at a junction, said circuit comprising:

an ac generator means for supplying energy at a selected frequency across the junction of the points or crossing,

a first capacitor connected across the junction to form a tuned circuit at the said frequency with the inductance of first lengths of track between the junction and the intersection or intersections of the tracks,

a low impedance frequency selective link connected across the tracks of each section of the points or crossing, each

link comprising a second capacitor forming a tuned circuit at the said frequency with the inductance of an inductor connected in series therewith, characterised in that the detective circuit includes a third capacitor connected across the tracks of each section of the points or crossing at a position spaced from the link on the side thereof nearest the points or crossing junction, and,



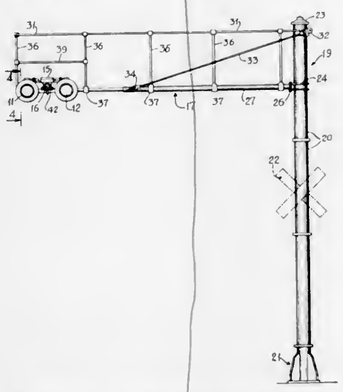
means for monitoring the voltage across each third capacitor, each third capacitor forming a tuned circuit at the said frequency with the inductance of second lengths of track between the third capacitor and the appropriate link, the tuned circuits formed by said second and third capacitors in the converging track section operating as a result of the voltage arising in the aforesaid first lengths of track during use of the detective circuit.

3,952,978

CANTILEVER ARM SIGNAL ASSEMBLY

Willard O. Reinitz, Louisville, Ky., assignor to Safetran Systems Corporation, Louisville, Ky.

Filed Sept. 19, 1974, Ser. No. 507,356
Int. Cl.² B61L *5/12*
U.S. Cl. 246—477 **26 Claims**



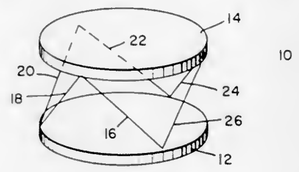
1. A traffic control signal assembly comprising
a vertical mast column having a lower end anchored to a supporting base beside a traffic roadway, and a free upper end,
a fixed cantilever arm extending laterally from the free upper end of the mast column above the traffic roadway,
a fixed catwalk extending along the cantilever arm,
and a transverse jury mast journalled at the free end of the cantilever arm above the catwalk, and supporting traffic control signal lamp means in offset operative mode position facing approaching traffic near the unsupported end of the arm,
the jury mast being journalled for angular movement about its own axis relative to the fixed arm and the catwalk to swing the offset signal lamp means angularly upward above the catwalk level for convenient servicing access.

3,952,979

ISOLATOR

Siegfried Hansen, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 19, 1975, Ser. No. 551,210
Int. Cl.² F16F *15/04*
U.S. Cl. 248—20 **3 Claims**



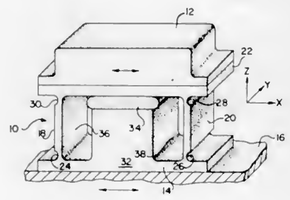
1. A vibration isolator comprising:
a base;
a platform supported on said base;
six support members, each support member being secured to both said base and said platform, said support members supporting said platform with respect to said base, each of said support members being at right angles to its adjacent support members, said support members being arranged in three pairs, the support members in each pair being parallel to each other, each of said support members having a motor therein connected for controlling the length of its support member;
six accelerometers on said platform, connection means connecting each of said accelerometers to one of said motors for controlling said motors, said connection means including a functional amplifier from each said accelerometer to its corresponding motor so that when each said accelerometer senses acceleration, each said corresponding motor is energized to reduce acceleration.

3,952,980

TRANSLATORY SHOCK ABSORBER FOR ATTITUDE SENSORS

George L. von Pragenau, Huntsville; Irvin T. Morgan, Jr., Madison, and Clifton A. Kirby, Huntsville, all of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 29, 1974, Ser. No. 518,545
Int. Cl.² F16F *1/26*
U.S. Cl. 248—22 **1 Claim**



1. A three-dimensional translatory shock absorber device for mounting a precision instrument or the like for reducing translatory vibrations or motion along each of the three axes defined by a cartesian-coordinate system comprising;
a first L-shaped base member having a horizontal planar leg normal to the Z-axis direction and a shorter vertical planar leg normal to the X-axis direction;
a second L-shaped member spaced above said first base member and having a horizontal planar leg and a shorter vertical planar leg is parallel alignment with said first L-shaped base member;

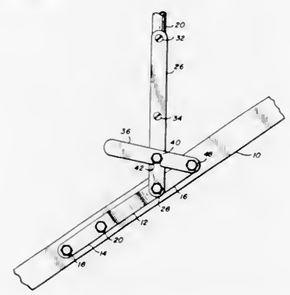
a first translatory shock absorber device interposed between said vertical planar legs of said first L-shaped base member and said second L-shaped member for reducing translatory vibrations in the direction of the Z-axis;
a cushioning spacer interposed between said horizontal planar legs of said first L-shaped base member and said second L-shaped member;
a second translatory shock absorber device mounted upon the top surface of said horizontal planar leg of said second L-shaped member for reducing translatory vibrations in the direction of the X-axis;
a third translatory shock absorber device mounted on the top plate of said second translatory shock absorber device for reducing translatory vibrations in the direction of the Y-axis;
each of said translatory shock absorber devices comprising a first pair of spaced parallel plates and a second pair of spaced parallel plates interposed between said first pair of plates and being integral therewith;
laterally extending grooves provided in said second pair of plates at the junctions between said first and second pair of plates;
damping means interposed between said first pair of plates for limiting movement of said first pair of plates relative to each other;
said precision instrument mounted on the top plate of said third translatory shock absorber device;
whereby said grooves provide a flexible joint between said first and second pair of plates and whereby said combination of translatory shock absorber devices effectively isolates said precision instrument from translatory vibration along each axis of motion without introducing rotational effects through said shock absorber devices.

3,952,981

FLAG HOLDER

Arnold E. Acker, No. 6B 20800 Homestead Road, Cupertino, Calif. 95014

Filed Sept. 17, 1975, Ser. No. 614,328
Int. Cl.² H01Q *3/02, 1/08;* **B60R** *19/00;* **H01Q** *1/32*
U.S. Cl. 248—291 **1 Claim**



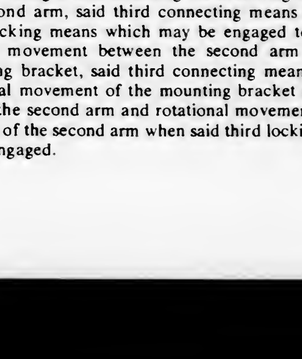
1. A flag holder for boats and the like craft, comprising
a. a retaining bracket having a retaining portion and an offset portion, said retaining portion being adapted to be mounted on a support of the craft on either side thereof with the offset portion spaced from that support,
b. a bar having one end thereof pivotally mounted adjacent one end of said offset portion and disposed for receiving a flag on the other end thereof,
c. a pin secured to said bar between the ends thereof,
d. a lever having a latching indentation and being pivotally mounted adjacent the other end of said offset portion, said pin being receivable in said indentation to hold said bar in a vertical position, and the length of said lever being greater than the distance from the attachment of said bar and said offset portion to said pin plus the distance from said attachment to the attachment of said lever with said offset portion, such that one edge of said lever rides on said pin as said bar is being raised to and lowered from a vertical position.

3,952,982

ALL ANGLE CAMERA MOUNT WITH VERNIER ADJUSTMENT

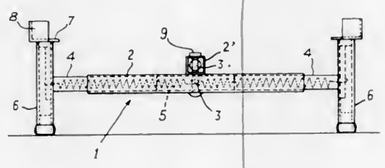
David P. Lewis, Box 20, Herold Rte. 1, Sutton, W. Va. 26601

Filed Jan. 7, 1975, Ser. No. 539,073
Int. Cl.² A47G *29/00*
U.S. Cl. 248—124 **1 Claim**



1. A camera mount comprising:
a cylindrical mast;
a first cylindrical arm;
first connecting means attaching the first arm perpendicularly to the cylindrical mast, said first connecting means including first locking means which may be engaged to prevent relative movement between the cylindrical mast and the first arm, said first connecting means permitting axial movement of the first arm along the axis of the cylindrical mast and rotational movement around the axis of the cylindrical mast when said first locking means is not engaged;
a second cylindrical arm;
second connecting means attaching the second arm perpendicularly to the first arm, said second connecting means including second locking means which may be engaged to prevent relative movement between the first arm and the second arm, said second connecting means permitting axial movement of the second arm along the axis of the first arm and rotational movement around the axis of the first arm when said second locking means is not engaged;
vernier adjustment means for accurately moving the second arm along its axis when said second locking means is either engaged or disengaged, said vernier adjustment means being attached to said second arm and to said second connecting means;
a camera mounting bracket; and
third connecting means attaching the mounting bracket to the second arm, said third connecting means including third locking means which may be engaged to prevent relative movement between the second arm and the mounting bracket, said third connecting means permitting axial movement of the mounting bracket along the axis of the second arm and rotational movement around the axis of the second arm when said third locking means is not engaged.

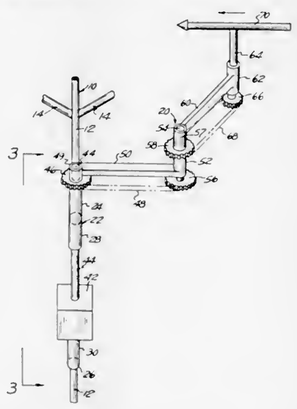
3,952,983
DEVICE FOR RAISING A CHAIR
Alain Crochet, "La Jordonniere", St-Pierre d'Entremont, 61800 Tinchebray, France
Filed Mar. 21, 1975, Ser. No. 560,862
Claims priority, application France, Mar. 27, 1974, 74.10479
Int. Cl.² F16M 11/38
U.S. Cl. 248—173 1 Claim



1. A device for raising a chair of the type having at least four legs, said device comprising:
first and second hollow tubular beams each having a mid-point and opposite open ends,
a pivot pin passing through both said mid-points of said first and second tubular beams so that said beams are freely rotatable about said pivot pins in planes extending substantially parallel to each other,
an extension beam for each end of said first and second hollow tubular beams, said extension beams having opposite open ends and a leg member rigidly secured to one of said ends of each extension beam, each end of said first and second tubular beams having the said other end of a said extension beam inserted therein, each said extension beam having a cross-sectional area that is slightly smaller than the cross-sectional area of its associated hollow tubular beam so that each said extension beam is movable into and out of its associated hollow tubular beam,
said leg members secured to each said one end of said extension beams being disposed to extend substantially perpendicular to each associated extension beam, each leg member having, at one end thereof, corner means for engaging a leg of a chair,
at least four coil springs, each coil spring having a first and a second end, each hollow tubular beam and associated inserted extension beam having a said coil spring disposed therein extending from said pivot pin to said leg member, with said first end of each coil spring connected to the pivot pin and said second end of each said coil spring being connected to the end of the extension beam in which said coil spring is disposed whereby said coil springs will exert a constant force tending to retract each said respective extension beam into its associated tubular beam.

3,952,984
MID-TOWER ROTARY ANTENNA MOUNT
Dracos Alexander Dimitry, 2317 Ardmore, Royal Oak, Mich. 48073
Filed Feb. 12, 1973, Ser. No. 331,826
Int. Cl.² H01Q 3/00
U.S. Cl. 248—282 1 Claim

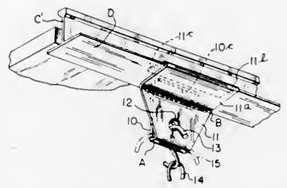
1. A rotating and swinging antenna-orienting contrivance for mounting upon an upright of an upstanding radio communication antenna supporting structure intermediate its upper and lower ends, said contrivance comprising
a bracket structure including a pair of substantially horizontal upper and lower bracket members disposed in vertically-spaced substantially parallel relationship and having upper and lower inner ends with attachment means thereon adapted to be attached to the upright of the antenna supporting sturcture in outwardly-projecting offset relationship thereto and having upper and lower outer ends spaced outwardly away from said inner ends,
upper and lower inner bearings mounted on said upper and lower outer ends respectively in vertically-spaced coaxial relationship,
an inner rotary member journalled in said inner bearings,
an inner arm fixedly secured to said inner rotary member and having an intermediate bearing thereon disposed remote from said inner bearing in spaced parallel relationship thereto,
an intermediate rotary member rotatably mounted in said intermediate bearing,
an outer arm fixedly secured to said intermediate rotary member and having an outer bearing thereon disposed remote from said intermediate bearing in spaced parallel relationship thereto,



an outer rotary load-carrying member rotatably mounted in said outer bearing,
an inner driving device drivingly connecting said bracket structure to said intermediate rotary member and constructed and arranged to rotate said intermediate rotary member in response to the swinging of said inner arm by the rotation of said inner rotary member,
an outer driving device drivingly connecting said inner arm to said outer rotary member and constructed and arranged to rotate said outer rotary member in response to the swinging of said outer arm relatively to said inner arm by the rotation of said intermediate rotary member,
and a motor drivingly connected to said inner rotary member for rotating said inner rotary member.

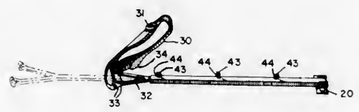
3,952,985
CLIP FOR HANGING SIGNS
Joseph A. Davenport, Middleburg Heights, Ohio, assignor to Fastway Fasteners, Inc., Lorain, Ohio
Filed Nov. 25, 1974, Ser. No. 526,634
Int. Cl.² F21S 1/02; A44B 21/00
U.S. Cl. 248—317 1 Claim

1. A unitary hanger clip, adapted to be manually clipped to an overhead beam having oppositely extending lower horizontal flanges extending a predetermined width, consisting of a single elongated strip of metal having spring characteristics, said strip having a sharp return bend at approximately midway of its length providing two upwardly extending legs; said legs lying close together but spaced apart to a predetermined substantially common level; both of said legs turning outwardly at said level at an obtuse angle forming inclined runs; said runs being of approximately equal length; and thereafter each leg being bent inwardly at approximately the same acute angle forming clipping runs; said clipping runs being of approximately equal length and having their terminal ends spaced from each other; and the space between said acute angle bends being less than said predetermined width of said horizontally extending flanges; whereby when said clip is applied to said horizontal flanges of a beam said spring characteristics of said metal holds said clip tightly to said beam; wherein each of said legs is bent slightly along a horizontal line



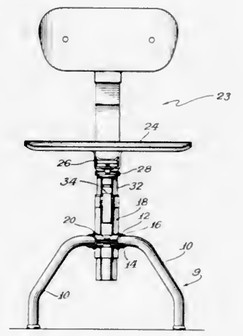
outwardly and then back inwardly at a level about 60 to 70 percent of the length upwardly from the sharp return bend to the outwardly turning obtuse angle, each of said legs at the end of said inclined runs being bent inwardly, each at an acute angle to cause said clipping runs each to be substantially parallel to its associated inclined run.

3,952,986
OUTBOARD MOTOR SUPPORT
Robert G. Wells, 2302 Liberty St., Erie, Pa. 16502
Filed Dec. 2, 1971, Ser. No. 203,979
Int. Cl.² B63H 5/12
U.S. Cl. 248—354 R 1 Claim



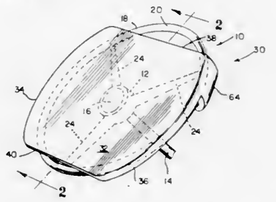
1. In combination, a boat trailer for carrying a boat having an attached outboard motor with a propeller shaft housing and arranged for tilting into horizontal transport position,
the combination comprising a longitudinally extending trailer frame,
means for supporting the boat against lateral movement on said trailer frame,
a tubular frame support member square in cross section,
said frame having a rear transversely extending frame member,
a bracket fixed to said transversely extending frame member,
said bracket being disposed completely above the lower edge of said frame and comprising,
hinge means swingably connecting the lower end of said tubular support member to said bracket for vertical swinging movement thereon,
a square bar substantially the same length as said tubular member comprising a male member slidably received in said female member, whereby the lower end of said bar is disposed above said transverse frame member in all positions of said bar in said female member,
a Y-shaped member at the upper end of said bar for receiving the said propeller shaft housing of said motor,
spaced locking threaded members threadably received in said tubular member engaging said bar for effecting adjustment of said bar relative to said female member for adjusting the effective length of said support,
and strap means received in stirrups integrally attached to the distal end of said Y-shaped member for fastening said propeller shaft housing to said upper end of said member for receiving said propeller shaft housing.

3,952,987
CHAIR ADJUSTMENT CONSTRUCTION
Kenneth A. Bevington, Evanston, Ill., assignor to Bevco Precision Manufacturing Company, Evanston, Ill.
Filed Oct. 24, 1974, Ser. No. 517,467
Int. Cl.² F16M 11/16; A47C 3/34
U.S. Cl. 248—408 9 Claims



1. In a chair construction of the type including a base having an upstanding supporting tube, and a seat with a depending guide tube connected at its upper end to said seat, said depending tube being telescopically fitted within said upstanding tube, the improvement comprising an elevation adjustment mechanism for the telescoped tubes;
said mechanism including a plurality of verically spaced openings, each opening defining a substantially horizontal planar bearing surface in said depending tube;
a lever arm attached to one side of said upstanding tube, said lever arm including a downwardly inclined member having a planar surface for engaging the bearing surface through a chosen one of said openings;
means for normally biasing said lever member downwardly into said one opening; and
said tubes including at least a pair of engaging, complementary, wedge surfaces generally opposite said lever arm, whereby the depending tube wedge surface is directed by said inclined member into frictional wedge locking engagement with the upstanding member wedge surface while simultaneously retaining said opening in alignment for engagement by said lever arm.

3,952,988
STEERING WHEEL MOUNTED DESK BOARD
Herbert D. Easterly, 117 W. Cleveland St., Crossville, Tenn. 38555
Filed Jan. 17, 1975, Ser. No. 541,733
Int. Cl.² A47B 19/00
U.S. Cl. 248—441 B 2 Claims



1. For use on a truck steering wheel having a central hub, an outer peripheral rim, a plurality of spokes extending radially outwardly from the hub to support the rim and a horn button on the hub extending axially above the level of the rim, said wheel being rotatable about an inclined axis such that it

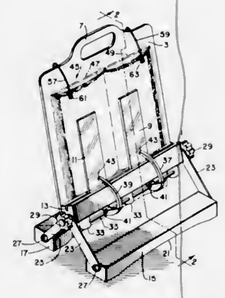
inclines downwardly from the top of its rim to the bottom of the rim, a removable desk board providing a generally flat upwardly facing work surface and a downwardly facing mounting surface, said mounting surface being contoured to provide a downwardly opening recess for receiving said horn button and generally radially extending downwardly directed abutments for engaging, respectively, said spokes to steady said board on said wheel such that said board can rest on said rim, downwardly projecting means for engaging the top of said rim, said recess opens also toward the bottom of said rim such that said board can move downwardly in a plane transverse to the inclined wheel axis over the wheel toward the bottom of the wheel rim to engage said projecting means with the top of said rim.

3,952,989

ADJUSTABLE READING MATERIAL STAND

Constance L. Bannister Hatcher, P.O. Box 8, Syosset, Long Island, N.Y. 11791

Filed Nov. 26, 1974, Ser. No. 527,253
Int. Cl.² A47B *97/04*
U.S. Cl. 248—453 **3 Claims**



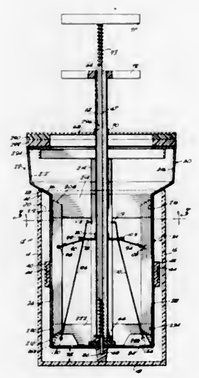
3. A portable reading material stand including, in combination, a base for supporting the reading material along its lower edges, a backing member fixed to and upstanding from said base, spaced apart means fixed to and extending upwardly from said base and spaced forwardly from said backing member and adapted to maintain the binding of the reading material between the upstanding backing member and said spaced apart means, the pages of the reading material when in operative position extending across the front surfaces of said spaced means, a finger movably mounted on said base relative to said spaced apart means for coaction with each of said spaced apart means and the pages extending thereacross, each of said fingers being biased towards said spaced apart means for releasable engagement with the pages of the reading material, and legs provided for supporting said base, one of said legs extending forwardly from said base and the other of said legs extending rearwardly therefrom, a pair of leg supporting arms extending forwardly from said base and a further pair of leg supporting arms extending rearwardly from said base, each leg supporting arm of said pairs of legs supporting arms being adjustably mounted at the ends of said base for varying the angle of inclination of the legs supporting arms with respect to said base, each leg extending between and pivotally mounted at each end to a pair of legs supporting arms and said base and the components fixed thereto being adjustable on the longitudinal axis of the base to vary the angular position of the base and the reading material mounted thereon with respect to the horizontal and releasable maintaining means is provided extending from each end of said base, one end of each pair of legs supporting arms extending between said releasable maintaining means and each end of said base and clampable therebetween to maintain the legs supporting arms in adjusted positions extended from the base.

3,952,990

CONTAINER TYPE MOLDING DEVICE OF MATCHED SEGMENTS

Onofre S. Garcia, 77 Prospect St., Newark, N.J. 07105

Substitute for Ser. No. 245,130, May 18, 1972, abandoned. This application Aug. 27, 1974, Ser. No. 500,922
Int. Cl.² B29C *11/00*
U.S. Cl. 249—63 **2 Claims**



1. A molding device comprising:
a female cup-shaped mold part of rigid material comprising a floor and upstanding walls defining a main chamber of predetermined size and configuration a male collapsible member of a normal uncollapsed predetermined size and configuration comprising a floor and upstanding walls and defining an inner operating chamber, said member being sized for receipt in said main chamber;
external, axially projecting spacer means on said device to space said floors a predetermined distance from one another;
guide means to space said upstanding walls of said cup-shaped mold part and said male collapsible member a predetermined distance from one another and to define a space between said upstanding walls and floor to hold a charge of flowable material to be solidified;
means to collapse the collapsible member in said female part through
a. a first stage of movement of said walls of said member generally inwardly, and
b. a second stage of axial movement of said floor of said member away from the floor of said female part;
said means to collapse including operator means to move said walls and floor of said member to a collapsed configuration and size;
said member comprising a flexible skin and rigid horizontally and vertically extending force transmitting elements fixed to the skin in the operating chamber and rigid means connecting the horizontal and vertical members to the operator means;
said operator means comprising (*a*) a rigid tube of an axial length greater than the axial length of said male member and having a first end in abutting engagement with the floor of said male member in said operating chamber and a second end extending out of said operating chamber and (*b*) an elongate rigid push rod having a first end and a second end, (*c*) means connecting said first end to the floor of said member and spring means normally urging said rod and said tube into a first normal uncollapsed size and configuration and yieldable upon telescoping movement of said tube along said rod to store energy in the spring to restore the member to the normal uncollapsed size and configuration;

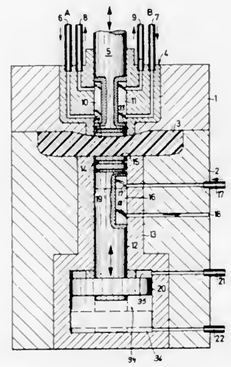
the rigid means connecting comprising a plurality of first struts secured to the rigid tube for movement therewith, and to the walls of said member;
said member including a network in the operating chamber of horizontal and vertical members fixed to said skin normally maintaining said member in said predetermined size and configuration and bendable to collapse said walls and floor and said member upon movement of said tube along said push rod;
handle means on said push rod and said tube to move said tube along said push rod;
said walls of said collapsible member including embossing means extending into said space for imprinting an image on an article being molded;
said rigid means connecting including a plurality of second rigid struts, each having a first end and a second end, the second end of each strut being secured to the floor of the member at spaced points and at the first end of each strut including sliding interconnecting means of said struts to said tube permitting a predetermined amount of sliding movement of said first ends upon relative axial movement of said tube and push rod, and hook means to constrain said struts to movement with said tube upon continued relative movement of said rod and tube; and
the sliding interconnecting means comprising a ring with spaced opening secured to said tube and each of said second struts slidingly extends to one of said openings and includes said strut means on the first end thereof.

3,952,991

APPARATUS FOR EJECTING A WORKPIECE FROM A MOLD CAVITY

Philipp Schneider, Pappenheim, Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed Apr. 12, 1974, Ser. No. 460,573
Claims priority, application Germany, May 12, 1973, 2324212
Int. Cl.² B29C *7/00*
U.S. Cl. 249—66 A **4 Claims**



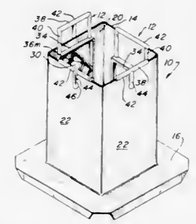
1. An apparatus for ejecting a workpiece, said apparatus comprising:
a mold having a cavity;
a cylinder formed with a bore opening into said cavity at a surface thereof;
a reciprocable piston having an end face and displaceable in said bore between a mold position with said face contiguous with said surface and an eject position with said face retracted in said bore from said surface;
a conduit opening into said bore at a location between said face and said surface with said piston in said eject position; and
means for introducing a gas into said bore through said conduit with said piston in said eject position to eject an object from said cavity with the gas thus introduced.

3,952,992

METHOD AND APPARATUS FOR FORMING DECORATIVE INLAYS IN WAX CANDLE WALLS

Emil Vyprachticky, Arvada, Colo., assignor to Premier Manufacturing Co., Arvada, Colo.

Filed Jan. 30, 1974, Ser. No. 437,870
Int. Cl.² B29C *1/14*; **B29D** *30/100*
U.S. Cl. 249—104 **2 Claims**



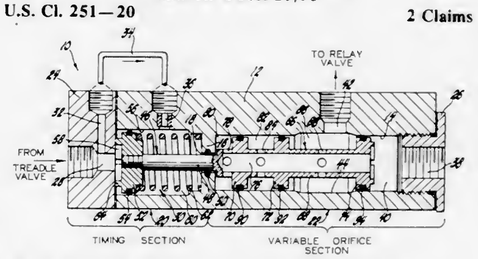
1. The inlay mold for use in inlaying wax inserted into the wall of a candle which comprises: an open-topped shallow marginally-rimmed reservoir adapted to receive molten wax poured therein and retain same until it hardens to form a wax insert, the underside of said reservoir being shaped to form an essentially wax tight seal with an upstanding wall of a candle mold when placed thereagainst; and, hanger means associated with said reservoir for hanging same against the wall thereof opening inwardly including an inverted generally U-shaped bail having the crossbar thereof provided with horizontally-spaced portions overhanging the rim of the candle mold cooperating therewith to prevent the reservoir from tilting from side to side and hook-forming means depending from said crossbar of the bail intermediate the upright portions at opposite ends of the latter, said hook-forming means defining a spring preloaded to press against the outside of the candle mold wall and normally hold the reservoir in wax tight sealed engagement thereagainst.

3,952,993

DUAL RATE VALVE ASSEMBLY

David E. Roberts, Ann Arbor, and Robert H. Wind, Grand Blanc, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 22, 1974, Ser. No. 490,378
Int. Cl.² F16K *21/16*
U.S. Cl. 251—20 **2 Claims**



1. A dual rate air brake pressure control valve assembly comprising:
a housing having a bore therein provided with a control pressure inlet, a supply air pressure inlet, and a supply air pressure outlet adapted to be connected to a relay valve controlling the application and release of supply air pressure to an air pressure operated brake;

a multiple chambered valve assembly in said bore having a spring biasing said valve assembly toward a first position in said bore and cyclically movable therein under influence of control pressure supplied at said control pressure inlet from said first position to a second position and back to said first position;

said housing including a timing conduit connecting said control pressure inlet where pressure acts on one end of said valve assembly to a portion of said bore where pressure tends to balance said valve assembly sufficiently for said spring to move said valve assembly from said second position to said first position at a predetermined time interval of said cyclical movement independently of supply air pressure at said supply air pressure inlet and outlet;

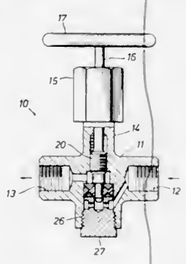
said valve assembly having a plurality of orifice means therein with one of said orifice means providing fluid communication between said supply air pressure inlet and outlet with said valve assembly in said first and second positions and another of said orifice means providing fluid communication between said supply air pressure inlet and outlet with said valve assembly in said second position, but not when in said first position, so that a larger flow of supply air flows from said supply air pressure inlet to said supply air pressure outlet when said valve assembly is in said second position than when in said first position, only the control air flowing through said timing conduit and action of said biasing spring on said valve assembly determining the length of time said valve assembly is in said second position.

3,952,994

THROTTLING AND SHUT-OFF VALVE

Michael A. Karr, Jr., 9353 Rosstown, Houston, Tex. 77055

Filed Oct. 21, 1974, Ser. No. 516,795
Int. Cl.² F16K *25/00*
U.S. Cl. 251—210 **6 Claims**



1. A throttling and shut-off valve comprising:

a valve body having inlet and outlet ports;

a valve stem extending into said body and having a downwardly facing shoulder on said stem;

a passage extending from said inlet port to an internal circular cavity within said valve body where said stem is positioned;

a valve seat member adapted to be positioned in said cavity;

means for delivering fluid through said passage to said seat member;

said seat member cooperating with said stem to throttle flow through the valve apparatus;

a ring of seal material surrounding said stem within said cavity;

a facing ring having a tapered face in contact with said seal ring within said cavity, said tapering face being constructed and arranged relative to the shoulder on said stem to move toward said seal ring to cause said seal ring to expand radially toward the stem which extends through said seal ring and thereby provide a seal along said stem and which seal ring expands radially outwardly against the well of said cavity to seal thereagainst; and,

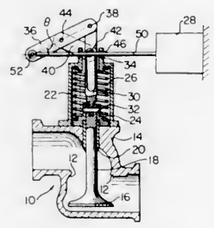
an outlet port communicated with said cavity for delivery of fluid flow along said stem on moving past said valve seat.

3,952,995

LIFTER MECHANISM FOR SPRING-LOADED VALVE

Shin-Ichi Nagumo, Yokohama, and Tatuhiro Yuta, Yokosuka, both of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed May 5, 1975, Ser. No. 574,258
Claims priority, application Japan, May 11, 1974, 49-52497
Int. Cl.² F16K *31/44*
U.S. Cl. 251—232 **6 Claims**



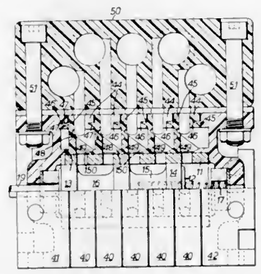
1. A valve lifter mechanism for a fluid flow control valve, which valve has a valve housing, a valve seat formed in the housing, a valve element formed on an axially movable valve stem, one end of the stem extending outwardly of the housing, and a compression spring arranged such that the valve element is normally held spaced from the valve seat due to a compression force exerted on the stem, the lifter mechanism comprising a first link member fixed to and extending from the extending end of the valve stem in the same axial direction, a second link member pivoted at a first end thereof to an extending end of said first link member, a third link member pivotally mounted at a first end thereof on a shaft fixedly supported by a stationary member, a second end of said third link member being pivoted to said second link member at an intermediate point of the latter, and an actuating means for exerting a force on the other end of said second link member and rotating the second link member about both the pivots for the first and third link members.

3,952,996

VALVES

John Charles Humphreys Hart, Sheffield, England, assignor to Bridon Engineering Limited, Sheffield, England

Filed Oct. 4, 1974, Ser. No. 512,255
Claims priority, application United Kingdom, Oct. 5, 1973, 46525/73
Int. Cl.² F16K *27/04*; **F15B** *13/04*
U.S. Cl. 251—324 **8 Claims**



1. A valve comprising:

a. a valve housing including a plurality of juxtaposed generally annular members of synthetic plastic material, each of said members having an integral diaphragm member;

b. a ported sleeve; and

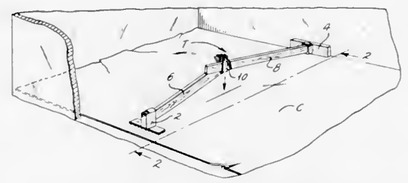
c. a spool member, the spool member being reciprocably mounted within the ported sleeve, said diaphragm members being located to mount the sleeve within the valve housing.

3,952,997

CARPET STRETCHING TOOL

Max D. Whitlock, Rte. 4, Mount Vernon, Ill. 62864

Filed Jan. 2, 1975, Ser. No. 537,918
Int. Cl.² A47G *27/04*
U.S. Cl. 254—63 **9 Claims**



1. A carpet stretching tool comprising: a gripping head having spikes positioned thereon to embed in a carpet, the gripping head further having spaced apart parallel walls which form a bracket thereon; a foot piece having a generally flat surface adapted to abut against a fixed surface and having its end between the parallel walls of the bracket on the gripping head; a first bolt extended through one of the walls of the bracket on the gripping head and bearing against first stretcher arm to secure the first stretcher arm to the bracket of the gripping head; a second stretcher arm pivotally connected to the foot peice and having its end between the walls of the bracket on the foot piece; a second bolt extended through one of the walls of the bracket on the foot piece and bearing against the second stretcher arm to secure the second stretcher arm to the bracket of the foot piece; and pivot means pivotally connecting the stretcher arms to enable the arms to pivot relative to each other to vary the angle between them, the pivot means being capable of firmly engaging the stretcher arms so as to not slide longitudinally along the arms, whereby when the included angle between the arms increases, the gripping head will move away from the foot piece and stretch the carpet.

3,952,998

DEVICE FOR INSTALLING ROCKET ENGINES

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Thomas R. George, Jr., Thousand Oaks, Calif.

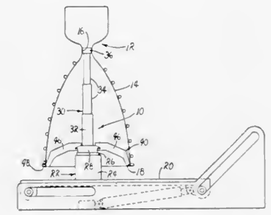
Filed Apr. 25, 1975, Ser. No. 571,821
Int. Cl.² B66F *3/00*; **F41F** *3/04*
U.S. Cl. 254—124 **6 Claims**

1. In a device for installing rocket engines of the type including a base, an extensible pedestal mounted on the base, a lift platform coaxially related to the pedestal having an annular support for receiving the thrust chamber exit of a rocket engine, and an extensible internal probe coaxially related to said pedestal and adapted to be extended into supporting engagement with the internal surface of the thrust chamber of the rocket engine, the improvement comprising:

coupling means for interconnecting said platform in pivotal relation with said pedestal;

said coupling means including a first bearing means affixed to said platform and defining a bearing mount of a concave configuration;

second bearing means affixed to said pedestal including a



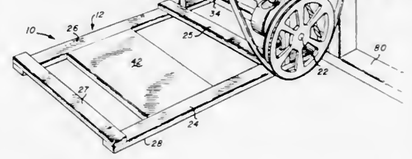
bearing surface defining a seat of a convex configuration for receiving said mount.

3,952,999

WIRE PULLING APPARATUS

Charles Robert Keller, 2816 Kring, San Jose, Calif. 95125, and William D. Martin, 12749 Quito Road, Saratoga, Calif. 95070

Filed May 12, 1975, Ser. No. 576,286
Int. Cl.² E21C *29/16*
U.S. Cl. 254—134.3 R **6 Claims**



1. An apparatus for use in pulling a wire through a conduit which terminates at an outlet box installed on a wall comprising:

a base including a planar bottom surface adapted to be positioned on a floor near the outlet box, said base including means for anchoring said base to the wall;

a pair of upstanding members each being affixed to said base;

a shaft oriented with its axis parallel to said base and journaled proximate each end to said upstanding members; and

a pulley having a grooved rim and being secured to a first end of said shaft, said rim being formed to receive the wire and having a diameter large enough to prevent the wire from acquiring a set.

3,953,000

HOIST WITH LOAD LIMITING DEVICE

William R. Zorbaugh, York, Pa., assignor to American Chain & Cable Company, Inc., Bridgeport, Conn.

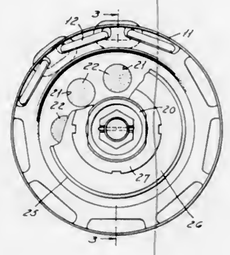
Filed Nov. 29, 1974, Ser. No. 528,166
Int. Cl.² B66D *1/00*
U.S. Cl. 254—169 **6 Claims**

1. In a hand hoist, the combination comprising

a hand wheel adapted to be moved by hand,

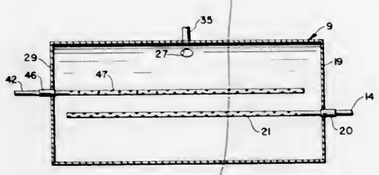
said wheel having a plurality of circular openings therein spaced circumferentially of said wheel,

a plurality of friction discs positioned in said openings and having opposed surfaces,
said discs being independently rotatable in said openings about the axis of said openings,
a driven member adapted to be connected to the hoist for providing a drive for lifting,



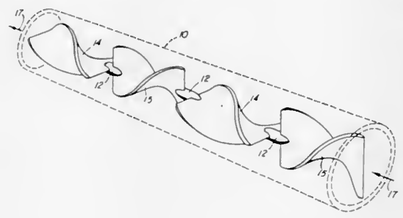
said driven member having a surface engaging one of said opposed surfaces of said discs,
a pressure member engaging the other of said surfaces of said discs,
and means yieldingly urging said pressure member toward said discs.

3,953,001
MIXING AND DISPENSING APPARATUS FOR POISON SPRAY
Frederick M. Gleockler, and Robert G. Gleockler, both of R.D. No. 1, Ridgely, Md. 21660
Filed June 11, 1974, Ser. No. 478,225
Int. Cl.² B01F *5/10*
U.S. Cl. 259—4 R **8 Claims**



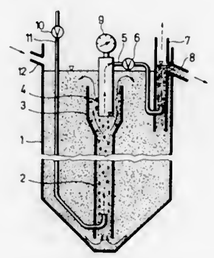
1. An apparatus for mixing and dispensing poisonous spray comprising a container, a conduit system connected to a source of water supply under pressure and having outlets discharging into top and bottom portions of the container, means for selectively controlling discharge of the water from said outlets, an access opening in the top portion of said container for supplying the container with a poison in powder form, a closure for said opening, a discharge conduit leading from said container, a pump for forcing the mixture under pressure through said discharge conduit from the container, a branch conduit leading from said discharge conduit, beyond said pump, and discharging back into the bottom portion of the container, and valve means for controlling the flow of the mixture either through said branch conduit or to the outlet end of the discharge conduit.

3,953,002
MOTIONLESS MIXING DEVICE
Herbert C. England, Jr., and William C. Voigt, Jr., both of 5018 1st Ave. N., Birmingham, Ala. 35212
Filed Sept. 21, 1973, Ser. No. 399,377
Int. Cl.² B01F *15/02*
U.S. Cl. 259—4 AB **4 Claims**



1. A mixing device for intermixing a plurality of fluids and comprising:
a. a tubular housing having an interior wall defining a cylindrical bore through which fluid may flow;
b. a right-hand helical baffle disposed within said bore, said right-hand baffle having an edge extending across said bore,
c. a left-hand helical baffle disposed within said bore and axially spaced from said right-hand helical baffle, said left hand helical baffle having an edge extending across said bore, the edge of said right-hand baffle being spaced from the edge of said left-hand edge, said edge of said left-hand baffle being angularly disposed with respect to said edge of said right hand baffle, and
d. a circular diffusion link in only the central portion of said bore and spaced inwardly from the interior wall of said housing, said link being supported solely by its end portions being secured to and extending between the central portions of the adjacent edges of said left-hand baffle and said right-hand baffle for spacing these edges apart, said link tapering toward both of its ends and overlapping on both sides the central end portion of each of said central portions.

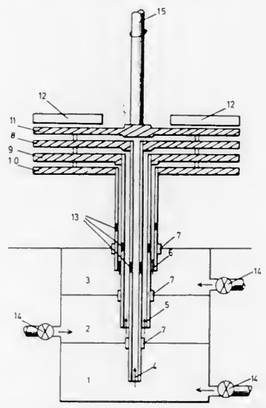
3,953,003
TANK PROVIDED WITH PNEUMATIC MIXING PIPE
Laszlo Mahig, Budapest XIV, Hungary, assignor to Aluterv Aluminiumipari Tervezo Vallalat, Budapest XIII, Hungary
Filed June 6, 1974, Ser. No. 477,551
Int. Cl.² B01F *13/02*
U.S. Cl. 259—4 R **3 Claims**



1. A tank for mixing fluid material, especially suspensions comprising a tank provided with a vertical mixing pipe, a vertical air lifting pipe, a gas collecting chamber located at the upper end of said mixing pipe, and a connecting pipe affixed at one end to said collecting chamber and communicating

therewith and affixed at its other end to the bottom of said air lifting pipe and communicating therewith.

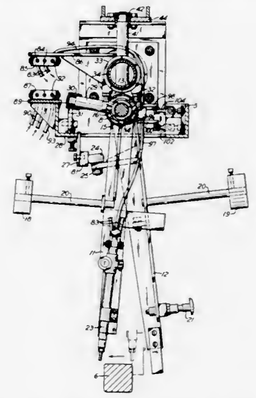
3,953,004
APPARATUS FOR THE SIMULTANEOUS PUMPING-MIXING OF SEVERAL NON-MISCIBLE LIQUIDS
Pablo Schmidt, and Alberto Sfeir, both of Santiago, Chile, assignors to Corporacion de Fomento de la Produccion, represented by Comite de Investigaciones Technologicas, Santiago, Chile
Filed Aug. 21, 1974, Ser. No. 499,277
Claims priority, application Chile, Aug. 22, 1973, 503
Int. Cl.² B01F *5/22, 7/26*
U.S. Cl. 259—23 **3 Claims**



1. Apparatus for the simultaneous pumping-mixing of several non-miscible liquids comprising a rotor disposed within an agitation tank, said motor comprising several rotatable centrifugal impellers superimposed one over the other; concentrical suction tubes inserted into each other, each of said suction tubes being attached to one of said impellers; a lower section of each said suction tube being introduced into corresponding separate flow boxes for each liquid, said lower section being screwable to an upper section of the same said suction tube; said separate flow-boxes being installed underneath and aligned axially to said rotor.

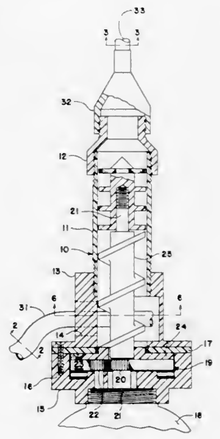
3,953,005
APPARATUS FOR CUTTING CONTINUOUSLY CAST METAL STRANDS INTO BILLETS
Joseph Rokop, Pittsburgh, and Geoffrey W. Hughes, McMurray, both of Pa., assignors to Rokop Corporation, Pittsburgh, Pa.
Filed Jan. 16, 1975, Ser. No. 541,414
Int. Cl.² B23K *7/02, 37/02*
U.S. Cl. 266—50 **9 Claims**

1. Apparatus for automatically cutting a continuously cast metal strand into billets, comprising a cutting table for supporting such a strand as it travels forward over the table, a guide rod above the rear end of the table and extending lengthwise of it, a torch arm and a feeler arm extending downwardly from the guide rod, means secured to the upper ends of said arms and slidably and rotatably mounted on the guide rod to support the arms independently of each other and permit their lower ends to be swung transversely of the table independently of each other, a cutting torch secured to the torch arm and directed downwardly therefrom, the feeler arm extending below the torch for engaging one side of a strand on the table but normally spaced laterally from the strand, the torch arm being rotatable on said guide rod toward the feeler arm, means carried by the feeler arm for engaging the torch arm to reverse said rotation of the torch arm and position the lower end of the torch over the upper edge of said side of a strand when the feeler arm swings into engagement with said side, a stop above the table forward of said guide rod for engagement by the leading end of the strand and movable



forward by it, means connecting the stop with said arms-supporting means for moving said arms forward on said guide rod with the stop, and means for swinging the torch arm away from the feeler arm and across the strand as said arms are moved forward with the strand, whereby to cut the strand and thereby form a billet.

3,953,006
PORTABLE CONVERSION AND DISPENSING APPARATUS FOR CURABLE ELASTOMERIC COMPOUNDS
Adam J. Patarcity, Levittown, and Daniel J. Smith, Washington Crossing, both of Pa., assignors to Thiokol Corporation, Newtown, Pa.
Continuation-in-part of Ser. No. 439,478, Feb. 4, 1974, which is a division of Ser. No. 315,710, Dec. 15, 1972, abandoned. This application Aug. 9, 1974, Ser. No. 496,231
Int. Cl.² B29B *1/10*
U.S. Cl. 259—191 **8 Claims**



1. A portable, hand held dispensing device for installing an in situ curable, elastomeric composition for sealing substrates

and the like, wherein said composition prior to installation, comprises at least one discrete, uncured polymeric composition and at least one discrete curing agent therefor, comprising, in combination:

a. an elongated housing comprising a barrel, a throat plate having an intake opening to receive said curable elastomeric composition, and a dispensing end oppositely disposed from said throat plate, means defining a vertical side wall extending from said opening to the bottom of said housing and terminating on the opposite side thereof;
b. a hollow, rotatable screw in said housing, one end of said screw communicating with said intake opening and adapted to receive said curable composition, fragment the same and convey said fragments toward said dispensing end of said housing;
c. a drive shaft in said housing in said hollow screw, the ends of said shaft extending from a respective end of said screw;
d. at least one mixing blade on one of said extending ends of said shaft rotatably mounted on said shaft and positioned in line with and adjacent the end of said screw opposite said intake opening for mixing said fragmented composition;
e. a dispensing nozzle on said housing on said dispensing end thereof adapted to receive said mixed composition and dispense the same into or on a substrate for in situ curing to seal said substrate;
f. single power means for rotating said shaft and said screw; and,
g. power transmission means operatively connect to said drive shaft, said screw and said power means whereby said screw and said shaft are rotated at different speeds and directions.

3,953,007

WALL CONSTRUCTION OF A SHAFT FURNACE

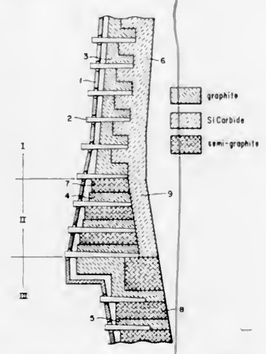
Jacobus van Laar, Santpoort, Netherlands, assignor to Hoogovens Ijmuiden B.V., Ijmuiden, Netherlands

Filed Sept. 6, 1974, Ser. No. 503,658

Claims priority, application Netherlands, Sept. 12, 1973, 7312549

Int. Cl.² C21B 7/10

U.S. Cl. 266—193 **10 Claims**



1. A shaft furnace having a refractory-lined wall at least part of which is provided with liquid-cooled cooling plates which extend into the lining and are grouped in a plurality of horizontal planes, the cooling plates in each said plane being in heat-transfer contact with an associated ring extending around the furnace and consisting of refractory material of a first kind having a heat conductivity coefficient (λ) at 20°C of at least 25 kcal/h.m.°C, and the interior face of the lining being provided at least partly by refractory material of a second kind which has high resistance to wear and chemical attack and has a minimum reaction temperature (Tu) of at least 600°C and a heat conductivity coefficient (λ) at 20°C of at least 8 kcal/h.m.°C.

3,953,008

BLAST FURNACE EVAPORATIVE COOLER

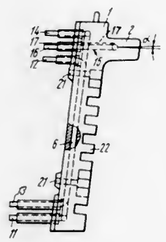
Kazimir Dominikovich Bashinsky, 521 mikroraion, 67, kv. 28; Leonid Davidovich Golod, prospekt Pravdy, 7, kv. 192; Boris Ruvimovich Granovsky, ulitsa O. Yarosha, 29, kv. 23; Leonid Markovich Dunaevsky, ulitsa Dzerzhinskogo, 95, kv. 19; Grigory Ivanovich Kasyanov, prospekt Lenina, 64b, kv. 63, and Gennady Alexandrovich Kudinov, prospekt Gagarina, 32, kv. 203, all of Kharkov, U.S.S.R.

Filed May 23, 1974, Ser. No. 472,915

Claims priority, application U.S.S.R., May 25, 1973, 1926807

Int. Cl.² C21B 7/10

U.S. Cl. 266—193 **2 Claims**



1. An evaporative cooler for a blast furnace comprising a stave having an end face; a projection on said stave extending crosswise adjacent to the end face thereof; pipes provided in said stave for a cooling agent to pass therethrough; inlet and outlet end portions for said pipes located on the side of said stave opposite to said projection and arranged vertically at different levels; and a pipe for circulation of a cooling agent provided in said projection and so arranged therein that its inlet and outlet end portions are interposed between said outlet end portions of the pipes incorporated within said stave.

3,953,009

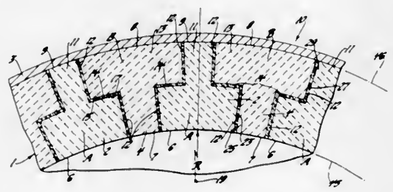
METALLURGICAL VESSEL

Yih-Renn Kan, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 19, 1975, Ser. No. 588,378

Int. Cl.² F27B 7/28

U.S. Cl. 266—283 **3 Claims**



1. A vessel for holding molten iron and the like, the vessel comprising,

a. an external hollow substantially cylindrical support member; and
b. a refractory lining disposed against the inner surface of the support member comprising at least one course of refractory bricks, the bricks having a head portion and a base portion arranged in a T-shaped configuration and the bricks being disposed in the course on their face surfaces in an intermeshing relationship where each brick is separated from, and bonded to, each adjacent brick by a layer of refractory mortar having a relatively uniform thickness and where adjacent bricks are oppositely oriented in the radial direction to define circumferentially oriented, registered and joining under surfaces between the head portions of adjacent bricks, the relationship also providing the course with a uniform radial thickness.

3,953,010

RESILIENT MOUNTING FOR A SHOCK ABSORBER

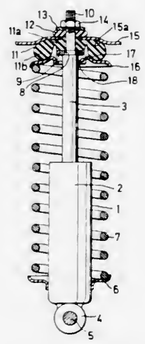
Jacob de Vos, Oud-Beijerland, Netherlands, assignor to ITT Industries, Inc., New York, N.Y.

Filed Feb. 3, 1975, Ser. No. 546,455

Claims priority, application Netherlands, Feb. 5, 1974, 7401538

Int. Cl.² B60G 11/56

U.S. Cl. 267—34 **6 Claims**



1. A resilient mounting for a supporting system including a shock absorber having two telescoping parts, each part including a cup to support one end of a helically wound spring coaxially arranged around the shock absorber between the cups, a first mounting for connecting one part to a supporting member, and a second mounting for connecting the other part to the member to be supported, one of said mountings including a resilient member against which the respective cup rests and through which both the bearing force of the spring and the damping forces occurring during the ingoing motions of the shock absorber are transferred to the supporting construction or the member to be supported, wherein the improvement comprises a cup having first and second portions resting against the resilient member which includes two portions, the first cup portion serving to transfer the damping force occurring during the ingoing stroke of the shock absorber and the second cup portion serving to transfer the carrying force of the helical spring onto the resilient member.

3,953,011

VEHICLE SHOCK ABSORBER

Paul M. Staehlin, 9307 S. McVickers, Chicago, Ill. 60453, and William Nicholas, 1415 W. Pratt Blvd., Chicago, Ill. 60626

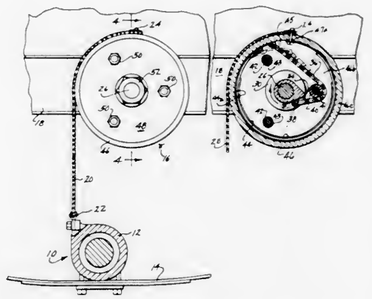
Filed Dec. 6, 1974, Ser. No. 530,075

Int. Cl.² F16F 1/22

U.S. Cl. 267—48 **5 Claims**

1. A shock absorber being adapted to be mounted on a vehicle between the body and the axle comprising,

shaft means adapted to be mounted on the vehicle body,
lever means including a roller sleeve rotatively supported on said shaft means and cam means carried by said roller sleeve and a flexible elongated motive conductor having a first end mounted on the roller sleeve and engageable with said cam means,
a housing surrounding said shaft means and said lever means and rotatively supported on said lever means,
resilient means being attached to said housing,
said flexible motive conductor having a second end being attached to said resilient means,
an elongated strain conductor having a first end being attached to and around the periphery of said housing and having a second end adapted to be attached with the vehicle axle, whereby said motive conductor, said resilient means and said strain conductor are concurrently placed in greater tension in one rotative direction than in the opposite rotative direction, and
means for constraining said roller sleeve against rotation on said shaft means,
said resilient means including arcuate shaped spring means engaging in an arcuate path about the inner periphery of the housing.



3,953,012

TORSIONAL EXTRUSION ENERGY ABSORBER OR EXTRUSION TORQUE LIMITER

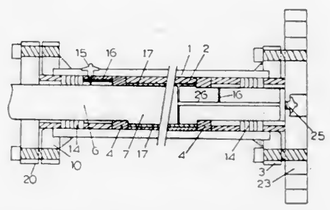
William Henry Robinson, Wellington, New Zealand, assignor to New Zealand Inventions Development Authority, Wellington, New Zealand

Filed Nov. 11, 1974, Ser. No. 522,838

Claims priority, application New Zealand, Nov. 21, 1973, 172665

Int. Cl.² F16F 1/14

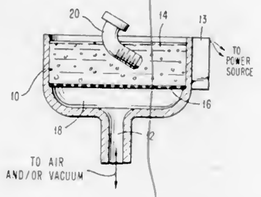
U.S. Cl. 267—154 **8 Claims**



1. A bi-modal device comprising a driven member and a driving member, said driven member being an outer cylinder and said driving member being a shaft extending coaxially through said cylinder for rotation therein, a radially extending projection on a portion of said shaft within said cylinder, seals to confine an annular space between the projection and the cylinder, a crystalline material filling said space, such material being adapted to transform energy to heat continuously by being extrudable and capable of spontaneous recovery and recrystallization at the working temperature of the device, wherein below a predetermined torque applied between the cylinder and the shaft the device rotates in a first mode as a whole, and that above the said predetermined torque the shaft and projection, in a second mode, rotate and extrude the said material, whereby in the second mode the device is an energy

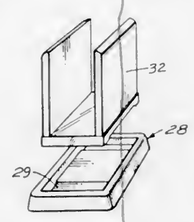
absorber, and in the relation between the first and the second mode it is a slipping clutch.

3,953,013
METHOD AND APPARATUS FOR CLAMPING A WORKPIECE IN A QUASI-LIQUID MEDIUM
John E. Griffith, Mahopac; David D. Grossman, Yorktown Heights, both of N.Y., and Peter M. Will, Norwalk, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 31, 1974, Ser. No. 537,805
Int. Cl.² B25B *11/00*; B23Q *3/00*
U.S. Cl. 269—7 **4 Claims**



3. A method for clamping a workpiece in a desired position comprising the steps of inserting said workpiece in an open topped vessel containing a particulate fluidizable material located therein, and including the step of fluidizing said particulate material by causing a low pressure gas stream to flow upwardly through said particulate material to fluidize same, adjusting said workpiece to a desired location, and applying a vacuum to said vessel whereby said particulate material is de-fluidized and caused to substantially solidify clamping said workpiece in the desired position.

3,953,014
HOLDING MEANS
Lester W. Mendell, Jr., 1432 Mariposa, Corona, Calif. 91720
Filed Feb. 24, 1975, Ser. No. 552,322
Int. Cl.² B22D *5/00*; B25B *5/14*
U.S. Cl. 269—43 **6 Claims**



1. Holding means for frictionally engaging a pair of relatively smooth-sided flat members and thereby confine them in any of a plurality of fixed positions in spaced apart paths of travel, the resulting frictional forces on said flat members from said holding means being yieldable to permit easy movement of said flat members between different ones of said fixed positions;

said holding means being also adapted to firmly hold said flat members in positions of downward extension into the cavity of a cooperating casting mold of such character that a web-like body interconnecting the flat members at the bottom can then be formed therein;

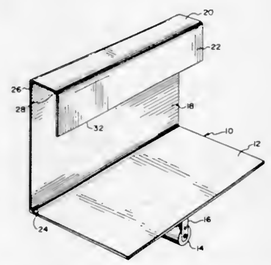
said holding means comprising generally box-shaped basket-like means adapted to receive said pair of relatively smooth-sided flat members, said basket-like means having a pair of opposite sides against which said flat members can fit flush when pushed outwardly towards same, said holding means comprising, additionally, resilient means associated with said basket-like means and adapted to bear outwardly against said flat members and hold them flush against said opposite sides, when the flat members are positioned between the resilient means and said opposite sides, and thereby create said frictional forces on said flat members;

said holding means being particularly adapted for use in the manufacture of an open-topped napkin holder of the type having planarly parallel sides and a flat, integral bottom, wherein said flat members are preformed sides for said napkin holder and said web-like body forms the bottom of the napkin holder;

said box-shaped basket-like means being a skeletal structure made of relatively thin steel rods and having at least three legs adapted to provide stable support on the top of said mold, said top comprising a rim around the cavity in the mold, so that a pair of napkin holder sides loaded in said holding means can be pushed downwardly into said cavity and then be held firmly between the resilient means and the opposite sides of said basket-like means until an integral bottom for the napkin holder is cast in said cavity, the fit between the downwardly extending napkin holder sides and the cavity being preferably snug enough to substantially prevent lateral movement of said holding means relative to said mold;

said resilient means being a rectangular sheet of plastic material firmly secured transversely across its center at the bottom of said basket-like means so that its half segments either side of the center curve upwardly to make resilient frictional contact with said opposite sides, the rectangular sheet having a resiliency such as to cause its curved halves to bear against said opposite sides with pressures sufficiently low that said napkin holder sides can be manually inserted between the half segments and opposite sides, yet high enough so that said half segments hold the napkin holder sides firmly in position, said resiliency also being such that said napkin holder sides can be manually shifted, either before or after the sides are interconnected with the molded napkin holder bottom.

3,953,015
CEILING HANGER
John D. Taylor, and Tommy R. Whitmer, both of Frederick, Okla., assignors to Goldblatt Tool Company, Kansas City, Kans.
Filed Oct. 11, 1974, Ser. No. 514,117
Int. Cl.² E04G *17/18*
U.S. Cl. 269—46 **6 Claims**



1. A tool to temporarily support an end of a ceiling panel from a joist for subsequent attachment thereto comprising:

a base plate having a vertical wall portion along one edge;

said vertical wall portion including separable overlapping planar wall members;

an inverted U-shaped flange portion along the top edge of one of said wall members;

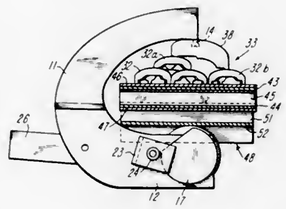
said inverted U-shaped flange portion being adapted to hang over the top edge of a ceiling joist with said base plate extending thereunder to receive and support an end edge of a ceiling panel;

at least a pair of vertically spaced holes in one of said planar wall members and at least one hole in the other wall member; and

fastening means are provided to engage through said holes while in registered positions to hold said planar wall members in at least two extended overlapping heights to accommodate joists of different widths;

the effective distance between the open bottom of said U-shaped flange and the top of said base plate at any one position being greater than the width of said joists plus the thickness of said ceiling panel so that after attachment of said ceiling panel to said joist, said tool can be raised to clear said joist and be removed therefrom.

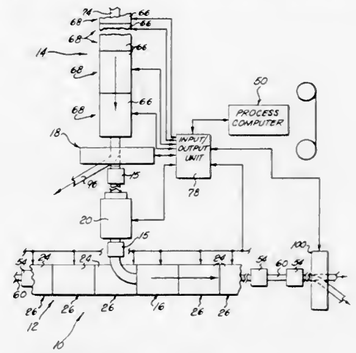
3,953,016
BRAZE FIXTURE
Harry C. Gersbacher, Dayton, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio
Filed Feb. 14, 1975, Ser. No. 549,879
Int. Cl.² B25B *1/24*
U.S. Cl. 269—236 **21 Claims**



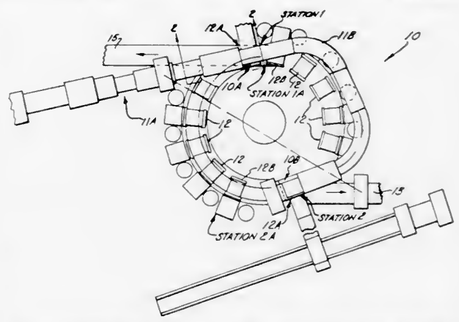
1. A braze fixture, including a plurality of like pressure applying members, each providing a triangular arrangement of work contacting downwardly projecting pads, said pressure applying members being arranged in a triangular grouping, a single means commonly suspending said plurality of pressure applying members at a location intermediately of their respective pads with individual freedom of relative tilting motion, said single means and said plurality of pressure applying members forming a pressure applying cluster, and means for supporting said cluster for application therethrough of direct or reactant pressures.

3,953,017
GATHERER SYSTEM
James C. Wise, Easton, Pa., assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed May 7, 1973, Ser. No. 357,607
Int. Cl.² B65H *39/02*
U.S. Cl. 270—54 **11 Claims**

8. A system for producing different magazines composed of different predetermined combinations of signatures for different subscribers in accordance with predetermined criteria from known subscriber information, said system comprising main gatherer means for feeding main combinations of signatures, said main gatherer means including a means for defining a plurality of main feed stations, main feed means at said main feed stations for feeding signatures, and main conveyer means for receiving signatures from said main feed means at said main feed stations and transporting the signatures to a receiving location, secondary gatherer means for feeding at least two different special combinations of signatures in accordance with known subscriber criteria, said secondary gatherer means including means for defining a plurality of secondary feed stations spaced from said main gatherer means, secondary conveyer means for transporting signatures, and a plurality of secondary feed means each of which is associated with one of said secondary feed stations for feeding signatures at said secondary feed stations to said secondary conveyer means, control means for rendering some of said secondary feed means ineffective to feed signatures to said secondary conveyer means and effecting operation of at least one of the other of said secondary feed means to feed signatures to said secondary conveyer means to provide a first special combination of signatures for one subscriber and for thereafter rendering at least said one of said secondary feed means ineffective to feed signatures to said secondary conveyer means and effecting operation of at least some of said secondary feed means to feed signatures to said secondary conveyer means to provide a second special combination of signatures which is different than said first special combination of signatures, and signature feed means for combining a special combination of signatures fed by said secondary gatherer means with a main combination of signatures fed by said main gatherer means.



3,953,018
COLLATING APPARATUS
Bernard J. Maopolski, Easton, Pa., assignor to Harris Corporation, Cleveland, Ohio
Filed June 3, 1974, Ser. No. 475,576
Int. Cl.² B65H *5/30*
U.S. Cl. 270—55 **4 Claims**



1. In a newspaper stuffer for inserting newspaper sections into a newspaper jacket,

said stuffer having pockets movable along a path and stationary bottom-feed hoppers spaced along the path of the pockets and having at least a first and second of said hoppers each adapted to hold a supply of said jackets and positioned in a generally side-by-side relationship,

said second hopper being downstream of said first hopper in the direction of movement of said pockets and said first and said second hoppers being in adjacent relationship along said path,

separate first and second feed means associated respectively with said first and second hoppers for withdrawing jackets

from the associated hopper and supplying the withdrawn jackets to said moving pockets, said first and second feed means including,

respective vacuum-actuated first grippers for engaging and withdrawing jackets from said respective hoppers, continuously rotating drums adjacent said respective hoppers, and second grippers carried by said continuously moving drums for receiving signatures from said respective vacuum-actuated first grippers and for supplying the jackets to said moving pockets,

control means including means for sensing failure of said first feed means to supply a jacket to a pocket and for actuating said second feed means to supply a jacket to the pockets missed by said first feed means, and said control means including,

means for controlling the action of said first gripper means of said second feed means while said second gripper means continuously moves with said drum comprising means for controlling the vacuum supplied to said vacuum actuated first gripper of said second feed means.

3,953,019

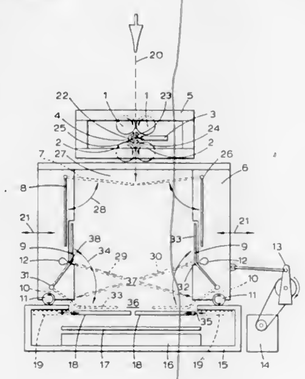
FILM FOLDING MACHINE

Ronald Patrick Burke, Waterford, Ireland, assignor to Fitzwilton Limited, Dublin, Ireland

Continuation-in-part of Ser. No. 306,575, Nov. 15, 1972, abandoned. This application Jan. 9, 1975, Ser. No. 539,776

Int. Cl.² B65H *45/00*

U.S. Cl. 270—61 F **4 Claims**



1. A folding device comprising a frame having an inlet for receiving film to be folded and an outlet for folded film, means for feeding the film from the inlet to the outlet along a path passing through a folding station within the frame adjacent to the outlet, opposed retaining fingers pivoted to the frame within and closely adjacent the inlet thereof, said fingers being movable between an upper near horizontal position in alignment with said path wherein movement of the film to be folded is restrained and a lower vertical position in which the fingers are spaced sufficiently to allow film to pass through the inlet freely into the frame, retaining means adjacent the outlet for holding back the film at the folding station until the completion of each set of folding operations on a length of film being folded, at least two opposed sets of blow means to project a pressurized gas onto the film at successive levels of the film to produce successive folds therein, the sets of blow means being disposed one on each side of the film path so that in use one set acts on one face of the film and the other set acts on the other face, and, corresponding to the two sets of blow means, two arrays of movable folding feet disposed also one on each side of the film path and movable between an inoperative position and a position in which, once a fold has been initiated in the film by the action of a set of blow means projecting pressurized gas onto one face of the film, the fold is completed by the array of feet on the opposite side of the film relative to the blow means producing the fold pressing down upon the opposite face of the film to that which is receiving the pressurized gas, the array completing the particular fold being immediately thereafter returned to its inoperative position, whereupon the other set of blow means acts upon the opposite face of the film and the initiation of the next fold by the gas pressure is completed by pressure upon the other face of the film by the other array of feet being moved from their inoperative position to a position in which they press down upon the other face of the film, the sequence being repeated a number of times governed by the length of film to be folded and the number of folds needed in that length.

3,953,020

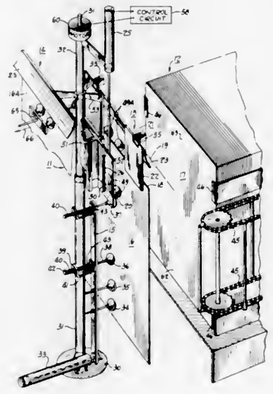
BAG ALIGNER MACHINE

Walter Ruf, Spring Valley, and Robert George Kelley, Central Valley, both of N.Y., assignors to St. Regis Paper Company, New York, N.Y.

Filed Jan. 27, 1975, Ser. No. 544,020

Int. Cl.² B65H *3/08, 5/10, 9/10*

U.S. Cl. 271—14 **18 Claims**



1. A bag aligner machine for use with a bag pickup station comprising in combination, a base,

an alignment station on said base and including a bag edge locator having a first and a second alignment member interconnected in generally a V configuration,

a bag holder movable relative to said base toward and away from the open V end of said alignment members,

means including resilient means and a first motor acting between said bag holder and said base to actuate said bag holder between a preliminary position and a bag edge locator position,

and control means connected to control said motor and bag holder to actuate the bag holder for support of a bag thereby, to control said first motor to move said bag holder from said preliminary position to said bag edge locator position whereat an edge of the bag is moved into the open V end between the first and second alignment members to abut the closed V end under the urging of said resilient means.

3,953,021

APPARATUS FOR ACCUMULATING AND SUPPLYING SHEETS

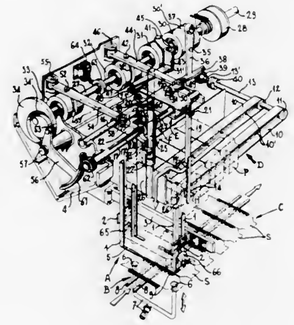
Enzo Seragnoli, Bologna, Italy, assignor to G. D Societa per Azioni, Bologna, Italy

Continuation of Ser. No. 476,305, June 4, 1974, abandoned. This application May 23, 1975, Ser. No. 580,302

Claims priority, application Italy, July 31, 1973, 3455/73

Int. Cl.² B65H *1/30*

U.S. Cl. 271—3.1 **5 Claims**



1. An apparatus for accumulating and supplying sheets, comprising;

a chute receptive of sheets to be dispensed therefrom and which normally lie transversely of the chute;

means for individually dispensing sheets from a base of the chute, including first conveyor means for removing them to a wrapping mechanism of a packeting machine in rhythmic succession;

an intermittently horizontally and vertically movable support device placeable in vertical alignment with the chute, above the same;

second conveyor means for conveying in an inching fashion, towards the support device, a plurality of piles of sheets, side by side;

centering and transfer means for handling whichever pile of sheets is, at any particular moment, closest to the support device to first move the pile in a first direction, lining it up with respect to the chute and then, in a direction at a right angle to the first, to transfer it to the support device;

power means for intermittently horizontally and vertically moving the support device and for intermittently operating the first and second conveyor means and the centering and transfer means; and

feeler means sensitive to a lever of a pile of sheets in the chute, for actuating the power means to enable the individual piles to be transferred in succession from the second conveyor means to the support device and from the latter to the inside of the chute when said level has been reached in the container.

3,953,022

SHEET COUNTER

Takeo Oshima, Himeji, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 328,076, Jan. 30, 1973, abandoned. This application Jan. 27, 1975, Ser. No. 544,583

Claims priority, application Japan, Jan. 31, 1972, 47-11215

Int. Cl.² B65H *3/10*

U.S. Cl. 271—95 **5 Claims**

1. An automatic sheet counting apparatus, which comprises:

sheet holding means comprising a support member for holding a stack of sheets, a holding member for securing said stack of sheets against said support member, and a first lever member to which said holding member is pivotally connected about a first pivot at one end thereof, said first lever member being itself pivotable about said first pivot from a sheet stack loading position through an intermediate position to a sheet stack counting position;

sheet counting means including at least one suction head means for separating a sheet from said sheet stack when the latter is in said sheet stack counting position;

first spring means for rotating said first lever member and said support member from said sheet stack loading position to said intermediate position;

second spring means for rotating said support member from said intermediate position to said sheet stack counting position adjacent said suction head;

drive means for rotating said sheet counting means in a forward or reverse direction;

vacuum pump means for creating a predetermined vacuum required for said suction head means in order to successively separate sheets held by said support means;

means for adjusting the position of said suction head relative to said sheet stack prior to the activation of said vacuum pump means, said adjusting means including a second lever member pivotable about a second pivot near one end thereof, a click member located at the distal end of said second lever member for locking engagement with a slot in said sheet counting means when said suction head is properly positioned relative to said sheet stack, said second lever member being pivotable about said second pivot by said first lever member when the latter is moved from said intermediate position to said sheet stack

loading position, and third spring means for biasing said second lever member out of said locking engagement when said first lever member is in said sheet stack counting position; and

electrical circuit means for automatically controlling the operation of said position adjusting means, said vacuum pump means, said drive means, and said sheet counting means, said electrical circuit means comprising a first normally closed switch which is opened by said first lever member only when in said sheet loading position, a second normally open switch which is closed by said first lever member only when in said sheet loading position, a third normally open switch which is closed by said second lever member only when the latter is out of said locking engagement, a fourth normally open switch which is closed by said first lever member while moving between said intermediate position and said sheet counting position, a fifth normally open switch which is closed periodically by the forward rotation of said sheet counting means, and a sixth normally open vacuum valve switch which is closed upon the establishment of said predetermined vacuum; the closure of said second and third switches causing said drive means to rotate in said reverse direction, the closure of said first and fourth switches activating said vacuum pump means, the closure of said sixth switch causing said drive means to rotate in said forward direction, the closure of said fifth switch activat-

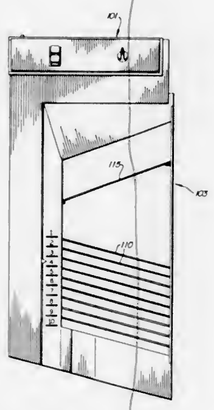
ing a counter for recording the number of sheets successively separated from said stack, the subsequent opening of said fourth and sixth switches causing said drive means and said vacuum pump means to cease operating.

3,953,023

BIN INDICATOR DEVICE

Thomas R. Cross, Rochester, and Clifford L. George, Macedon, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 9, 1974, Ser. No. 530,907
Int. Cl.² B65H *31/24*
U.S. Cl. 271—173 **5 Claims**



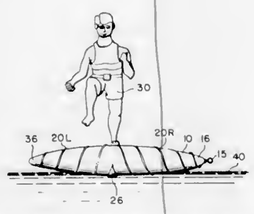
1. Sheet sorting apparatus comprising:
a plurality of bins for receiving copy sheets, each of said bins having marking indicia associated therewith,
transport means for advancing sheets along a path past the inlets of the bins,
carriage means including sheet deflector means adapted to be moved past the inlets of the bins,
drive means to advance the carriage means past the inlets of the sorting bins,
said carriage means including a bin indicator member positioned adjacent said sheet deflector means to become aligned with the marking indicia of each bin as said carriage means advances to indicate the last bin receiving a copy sheet.

3,953,024

WATER TUMBLER AND ROLLER FLOAT

Leonard M. G. Brubacher, West Montrose, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jan. 6, 1975, Ser. No. 539,007
Int. Cl.² B63B *35/72*
U.S. Cl. 272—1 E **3 Claims**



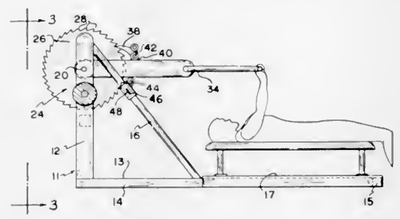
1. A hollow float which may be utilized in water to simulate the art of log-rolling by a user standing on the float, comprising
a float in the form of a semi-rigid skin enclosing a hollow interior which interior may be inflated with air or other gas to form a resilient body of a generally circular cross-section, with the length of the body being greater than the maximum diameter of the cross-section so as to form a cigar-like shape when inflated, with
projections integrally fitted to the skin, said projections shaped in the form of a helical thread so as to provide axial movement to the inflated float when the float is rotated in the water.

3,953,025

MUSCLE BUILDING EXERCISE DEVICE

Martin S. Mazman, 1251 N. Fancher Ave., Fresno, Calif. 93712

Continuation-in-part of Ser. No. 767,247, Oct. 14, 1968, abandoned. This application Mar. 25, 1971, Ser. No. 127,870
Int. Cl.² A63B *23/04*, *23/00*, *21/20*, *21/22*
U.S. Cl. 272—132 **13 Claims**



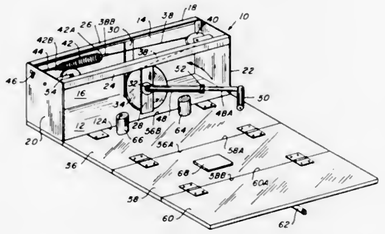
1. A muscle building exercise device comprising:
a frame having a pair of spaced parallel frame arms;
brake means connected to said frame for resisting the force exerted by a user, said brake means including action means for responding to force exerted by a user, said action means having a unitary axle defining a central axis and mounted between said frame arms and a brake member mounted on said axle and said brake member being movable with respect to said frame arms both rotatably about said central axis and axially therealong and said brake member having a pair of oppositely disposed face surfaces substantially normal to said central axis, and said brake means further including a pair of braking plates each connected to said frame, each of said braking plates having a brake member engaging surface and each engaging surface having an area substantially less than one-half the area of one of said brake member face surfaces and positioned juxtaposed a different one of said face surfaces for frictional engagement therewith at a spot thereon radially offset from said central axis, said braking plates having mutually aligned axes and being positioned in said frame to engage each of said face surfaces with their mutually aligned axes radially offset from said central axis;
user input means operatively associated with said frame and movable with respect thereto so as to transfer energy exerted by a user during an exercise program, said user input means having a lever arm with a proximal end connected to said axle and pivotally movable with respect to said axle and about said central axis and said lever arm having a distal end with user contact means thereon for receiving the force exerted by a user;
and connecting means for drivingly interconnecting said user input means and said brake means so as to transfer the force asserted by a user from said user input means to said brake means, said connecting means including rachet gear means integrated with said action means into a unitary structure and pivotally mounted pawl means connected to said user input means lever arm, said pawl means being disposed to engage said rachet gear means and rotatably drive said brake member upon movement of said user input means lever arm in a first direction and to disengage from and pass over said rachet gear means upon movement of said user input means lever arm in a second direction.

3,953,026

ARM WRESTLING EXERCISE MACHINE

William R. Stokely, 5548 E. 46 St., Tulsa, Okla. 74135

Filed May 22, 1975, Ser. No. 580,052
Int. Cl.² A63B *21/22*
U.S. Cl. 272—140 **7 Claims**



1. An apparatus for practicing arm wrestling, comprising:
an elongated frame having a bottom, a top, a front side, a rear side, a left end and a right end;
a shaft pivotally supported within the frame parallel and intermediate the frame ends and parallel and intermediate the top and bottom;
an arm affixed at one end to said shaft, the arm being pivotally secured to said shaft in the plane of said shaft and non-rotatable relative to said shaft in the plane perpendicular said shaft;
a sheave affixed to said shaft and rotated by rotation of said arm;
a cable having one end affixed to said sheave at the periphery whereby the cable is wound on said sheave by the movement of said arm;
an extension spring having one end attached to the other end of said cable, and the other end attached to said frame, and
a hand bar pivotally attached to said arm outer and, said hand bar being pivotal in the plane of said arm and non-pivotal in the plane perpendicular said arm, the said spring being stretched by the pivotation of said arm.

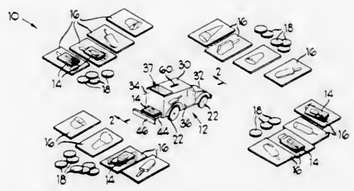
3,953,027

CARD MATCHING APPARATUS INCLUDING DISPENSER

Allison W. Katzman, Chicago, and Gordon A. Barlow, Skokie, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 12, 1975, Ser. No. 549,433
Int. Cl.² A63F *9/00*
U.S. Cl. 273—1 R **9 Claims**

1. A game apparatus comprising, in combination:
a first set of playing pieces distributable in given numbers to plural players of the game, with different indicia on at least some of said first set of playing pieces;
a second set of playing pieces being visually distinguishable from said first set of playing pieces, with indicia on at least some of said second set of playing pieces corresponding to the indicia on said first set of playing pieces whereby the players attempt to match one of the second set of playing pieces with one of the first set of playing pieces;
a dispensing device for holding a plurality of said second set of playing pieces and a manually actuatable member movable between a receiving and dispensing position for dispensing the playing pieces only one at a time; and



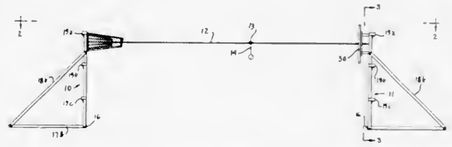
a plurality of payment playing pieces disposable into said dispensing device by the players of the game in payment for one of said second set of playing pieces.

3,953,028

TETHERED BALL BASEBALL BATTING PRACTICE DEVICE

Tim Gowins, 10034 Antrim, La Porte, Tex. 77571

Filed Apr. 5, 1974, Ser. No. 458,231
Int. Cl.² A63B *69/40*
U.S. Cl. 273—26 EA **6 Claims**



1. A baseball batting practice device comprising; a pair of spaced apart, substantially vertical support frames and an elongated high strength guide wire, horizontally extending and being supported at a desired height at each extremity by one of said support frames, said support frames being anchored to a suitable base; a slide-bushing captive to and slidable along said guide wire, and a tether line having one of its ends attached to said slide-bushing and a ball attached to its other end, said tether line and ball being movable along said guide wire with said slide-bushing, said guide wire having means to fixedly secure its extremities to said support frame, one of said support frames has a rebound board assembly and the other support frame has a wire tensioning assembly, one of said guide wire extremities being attached to said rebound board assembly and the other extremity being attached to said tensioning assembly; said tensioning assembly includes a vertically positioned substantially square frame having substantially equal length angle irons, each angle iron having first and second legs, the angle irons being connected together at their ends, two of said angle irons are vertically standing spaced apart and parallel and two of said angle irons are in a horizontal position spaced apart and parallel; the first leg of each angle iron projects outwardly of said frame, all first legs being positioned in a common vertical plane, the second leg of each angle iron being positioned substantially perpendicular to each first leg in said common vertical plane, said second leg of each said angle irons being provided with a plurality of spaced apart apertures and having a plurality of hooks inserted therein, each hook being for anchoring one end of a strand of resilient material thereto; a substantial distance from said vertical plane of said vertically positioned substantially square frame are two spaced apart, vertically positioned angle irons of lesser length than the angle irons of said square frame, said two angle irons being in a plane parallel to the plane of said square frame; extending from each corner of said square is an angle iron, one end of each last mentioned angle iron

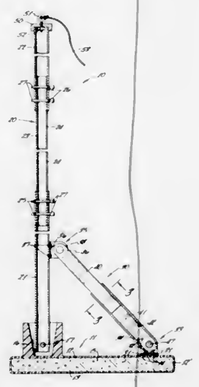
being attached to a corner of said square frame, and the other end of said last mentioned angle iron being attached to an end of one of said two angle irons to form a spring cage assembly; connecting said two angle irons of lesser length is a first plate comprising two plates of equal dimension and positioned above and below each other and coplanar in a substantially vertical plane, centrally located in said first plate is an aperture, a second plate; said second plate being substantially square, having a plurality of spaced apart apertures along its peripheral edge and being positioned in a substantially vertical plane intermediate said first plate and said square frame, the other end of each of said strands of resilient material being attached to said second plate at an aperture; an end of said guide wire inserted through said aperture in said first plate and being attached to said plate at the control point thereof; said first outwardly projecting legs of said angle iron of said square frame being means for anchoring said tensioning assembly to a vertical support frame.

3,953,029

BOTTOM LEVELING WATER BALL APPARATUS

Charles N. Boyd, 510 S. Broder, Anaheim, Calif. 92804

Filed Nov. 20, 1974, Ser. No. 525,570
Int. Cl.² A63B *71/02*
U.S. Cl. 273—95 A **6 Claims**



1. Apparatus for use in playing a game in a swimming pool or other body of water having a non-level bottom, comprising:

a base member adapted to be positioned on said bottom of said body of water, said base member having a cavity on the upper side thereof;

an elongate pole, one end of said pole extending into said cavity, said cavity being elongated laterally in one direction to permit movement of said one end of said pole in said one direction;

a pin extending across said cavity perpendicular to said one direction and through said one end of said pole for pivotably supporting said pole about an axis of rotation defined by said pin for permitting limited angular movement of said pole relative to said base member in said one direction;

adjustable means operatively connected between said pole and said base member for locking said pole in a desired angular position relative to said base member whereby said pole may be positioned vertically, regardless of the angle of said base member;

means for adjusting the length of said pole; a game device; and

means for connecting a game device to the other end of said pole.

3,953,030

THROW AND CATCH TOY

Bruce Muchnick, 9855 Bonner St., Philadelphia, Pa. 19115

Filed Jan. 14, 1975, Ser. No. 540,938
Int. Cl.² A63B *71/02*
U.S. Cl. 273—95 R **9 Claims**



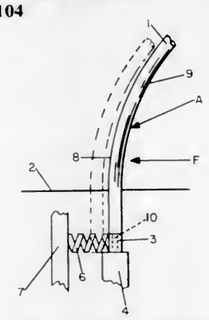
1. A throw and catch toy comprising in combination, hand covering means adapted to be worn on the hand of a user over the fingers and contiguous with the palm, said hand covering being sufficiently flexible to permit it to be flexed slightly closed by the user's fingers, if desired, and an object to be thrown at the hand covering, to be trapped thereby upon contact therewith, said hand covering means being in the form of an inflatable glove having a palm side providing a surface area thereon including one component of a two component fastening system, said two component fastening system comprising a first component including a plurality of loop elements projecting therefrom and a second component including a plurality of hook elements projecting therefrom, said first and second components being arranged to be releasably secured to each other upon contact, said object having a surface portion including the other component of said two component fastening system, whereupon when said object is thrown at the hand wearing the hand covering means and makes contact therewith the component on the hand covering means coacts with the component on the object to catch the object thereon without requiring the user to use his fingers to grasp the object to effect said catching but permitting some finger control in said catching, if desired.

3,953,031

YIELDABLE HORSESHOE STAKE

Vernon Kinser, Jenkins, Mo. 65677

Filed Feb. 10, 1975, Ser. No. 549,015
Int. Cl.² A63B *67/00*
U.S. Cl. 273—104 **5 Claims**



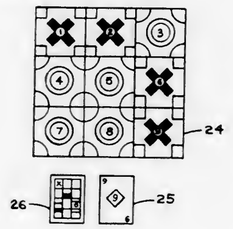
1. A target for missiles impelled thereagainst comprising a support base, a stake having a lower end portion received within said base and an upper, target-forming portion projecting above said base, swingable mounting means located within said base and comprising an arm having a free end engaged to the lower end portion of said stake within said support base and being in axially perpendicular relationship thereto, means hingedly engaging the stake-remote end of said arm, and resilient means engaging said stake rendering same yieldable in a direction substantially coincident with the path of travel of said missle and urging same into target position, said upper target forming portion of said stake being formed on a radius developing a concave-convex contour with the concave side presented in a direction toward the path of travel of missiles impelled against said target.

3,953,032

INDEPENDENTLY REVERSIBLE SEGMENTS AND RANDOM SELECTION MEANS THEREFOR

Sheldon John Moore, 1749 New Hampshire Ave., Los Angeles, Calif. 90029, and Larry S. Day, 1460 Temple St., Los Angeles, Calif. 90026

Filed Oct. 4, 1973, Ser. No. 403,541
Int. Cl.² A63F *3/00*
U.S. Cl. 273—135 R **5 Claims**



1. A game comprising:

a plurality of like, discrete, and independently reversible playing segments each having substantially planar obverse and reverse faces, said obverse and reverse faces of each of said segments bearing indicia means to at least define a sequential numbering of said segments, said segments being adapted to be placed on a planar supportive surface in a two dimensional polygonal array defining a playing surface;

said indicia means further including on each said obverse side identical first indicia and on each said reverse side identical second indicia distinct from said first indicia, and first and second indicia distinguishing said obverse and reverse sides;

a random selection means including a plurality of different selectible items, a plurality of said items bearing an indicium of number corresponding to said numerical indicia means of a particular said segment, a said item to be randomly selected to initiate reversal of its corresponding said segment.

3,953,033

GOLFER'S PUTTING STANCE ANALYZING DEVICE

Norman A. Kelly, 1514 Country Club Drive, Warsaw, Ind. 46580, and Norris R. Libert, 501 Center St., Jupiter, Fla. 33458

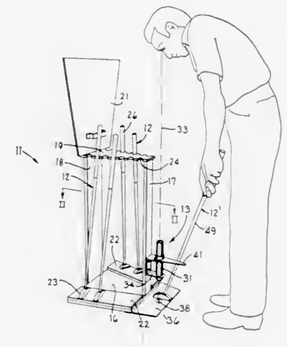
Filed Oct. 10, 1974, Ser. No. 513,840
Int. Cl.² A63B *69/36*
U.S. Cl. 273—183 E **6 Claims**

1. A device for determining the proper shaft angle for a putter, comprising:

stationary base means having a substantially horizontal plate adapted to be disposed on the floor, said plate having an alignment mark thereon;

vertical sighting means mounted on said base means and spaced upwardly from said plate, said sighting means being vertically aligned with said mark;

said vertical sighting means comprising an elongated hollow tube positioned vertically and defining a vertical line of sight which is substantially aligned with said mark, said tube having the lower end thereof spaced upwardly from said plate; and



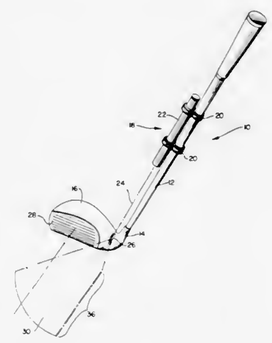
means coacting with said sighting means for determining the angle of a putter shaft relative to the vertical when the putter head is located adjacent said mark.

3,953,034

LASER BEAM GOLF SWING TRAINING DEVICE

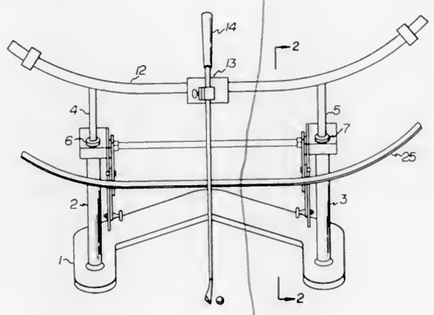
Rodney L. Nelson, Box N, Falls Creek, Pa. 15840

Filed Apr. 7, 1975, Ser. No. 565,946
Int. Cl.² A63B *69/36*
U.S. Cl. 273—186 C **7 Claims**



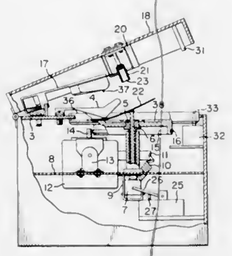
1. A golf swing training device for visually indicating to the golfer the preeise angular disposition of the golf club head with respect to the golf ball at least at impact, as contact between the two is made, comprising: a source of narrow, strong pencil beam of light projected downwardly substantially parallel to the axis of the golf club shaft, said source being rigidly disposed with respect to the golf club shaft and light dispersal means arranged for disposition adjacent the face of the golf club for converting said pencil beam of light into a dispersed fan of light projecting in substantially a vertical plane forwardly from the golf club face at substantially a 90° angle thereto, at least a portion of said dispersed fan of light being projected downwardly onto the ground just before, at the moment of impact of golf club and ball during a golf swing, and slightly afterwards, whereby a visually perceivable, narrow line of light appears on the ground in front of the golf ball to inform the golfer the precise angular disposition of golf club face and ball as the ball is struck.

3,953,035
GOLF CLUB SWING TRAINING DEVICE
John Beckisk, 228 W. Mitchell St., Milwaukee, Wis. 53204
Filed Dec. 2, 1974, Ser. No. 528,914
Int. Cl.² A63B *69/36*
U.S. Cl. 273—192 **7 Claims**



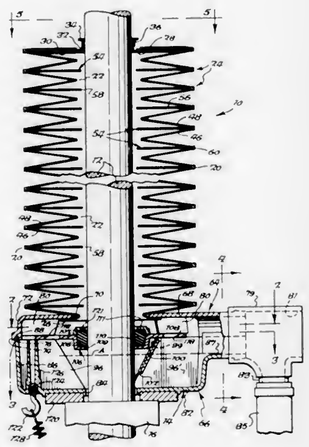
1. A golf pitch and putt swing training device comprising: a base frame; vertical standards fixed to said base frame; vertical rods in the standards movable vertically for height adjustment; pivot fittings at the top of said rods for inclination; a guide track linear in the center portion and curved upwards at the end portions in one plane only fixed on said pivot fittings; a guide mechanism engaged with said guide track; and a support track, similar in configuration to the guide track, located approximately parallel to and below the guide track, mounted on pivotable clevises supported by pivotable arms which are attached to said vertical standards.

3,953,036
METHOD OF AND APPARATUS FOR REPRODUCING RECORDED INFORMATION
Hiroshi Yamamoto, 14-11, Shimotakaido 4-chome, Suginami, Tokyo, Japan
Filed July 8, 1974, Ser. No. 486,455
Int. Cl.² G11B *25/04*
U.S. Cl. 274—9 R **8 Claims**



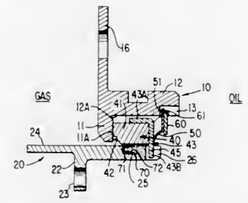
1. An apparatus for reproducing information recorded on a nonapertured rectangular thin sheet, said apparatus comprising:
- a cabinet;
- a lid pivotally connected to one edge of said cabinet;
- a turntable positioned at an upper portion of said cabinet and including means for grasping the four corners of a sheet;
- a motor including an output shaft and mounted for movement toward and away from said turntable;
- guide member means for slidably guiding a sheet onto said turntable;
- a rod member provided centrally of said turntable and normally biased upwardly therethrough;
- first and second switch means connected in series with each other and said motor thus forming circuit means for actuating said motor only when both said switch means are closed;
- said first switch means being provided on an edge of said lid and actuable only when said lid is completely lowered to a closed position thereof;
- said second switch means being provided below said rod member and actuated by downward movement of said rod member only if a sheet is positioned on said turntable;
- a cylindrical member rotatably connected to the underside of said lid at a position opposite said rod member and comprising means for pressing said sheet toward said turntable and for thus moving said rod member downwardly; and
- a pickup arm including a reproducer stylus.

3,953,037
POLISHED ROD PROTECTOR AND RECEIVER
Mason C. Winfield, Jr., Orchard Park, N.Y., assignor to Rodgard Manufacturing Co., Inc., Orchard Park, N.Y.
Division of Ser. No. 348,702, April 6, 1973, Pat. No. 3,886,804, which is a continuation-in-part of Ser. No. 249,261, May 1, 1972. This application Dec. 5, 1974, Ser. No. 529,751
Int. Cl.² F16J *15/52, 15/18*
U.S. Cl. 277—30 **9 Claims**



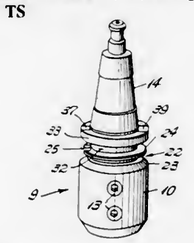
1. A liquid receiving container comprising, in combination with a reciprocable rod passing therethrough, a housing having a top wall, a bottom wall and a side wall, said top and bottom walls being provided with aligned openings for receiving said rod therethrough, a resiliently yieldable rod wiper element in wiping engagement with said rod, mounting means affixed to said wiper element, and means supporting said mounting means in said housing for lateral movement therewithin and restrained axial movvement relative to said rod thereby enabling said wiper element to accommodate lateral shifting and wobbling of said reciprocating rod.

3,953,038
FLUID SEAL FOR ROTATING SHAFTS
Lawrence P. Ludwig, Fairview Park, Ohio, assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.
Filed Feb. 19, 1975, Ser. No. 551,184
Int. Cl.² F16J *15/34*
U.S. Cl. 277—93 R **7 Claims**



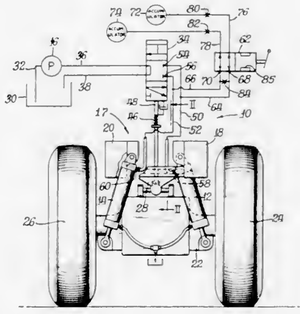
1. A liquid-gas seal for a rotating shaft comprising an outer annular stationary member including an inwardly projecting portion defining radial extending annular sealing surface; an inner annular rotating member which rotates with the rotating shaft; an annular sealing ring disposed between said stationary member and said rotating member and including key means for keying said sealing ring to said rotating member, said sealing ring further including a radial extending annular sealing surface which sealingly engages the sealing surface of said stationary member; and substantially stationary annular spring means, disposed between said stationary member and said rotating member in engagement with said sealing ring, for providing an axial force against said sealing ring so as to maintain sealing contact between said sealing surface of said stationary member and the sealing surface of said sealing ring.

3,953,039
TOOLHOLDER FOR MACHINE TOOLS
Robert Z. Hauge, Oradell; George J. Loos, Parsippany, both of N.J., and Matthew F. Marsicano, Forest Hills, N.Y., assignors to Textron Inc., Providence, R.I.
Division of Ser. No. 501,865, Aug. 30, 1974. This application Apr. 9, 1975, Ser. No. 566,394
Int. Cl.² B23B *5/22;* **B23Q** *1/00*
U.S. Cl. 279—1 TS **1 Claim**



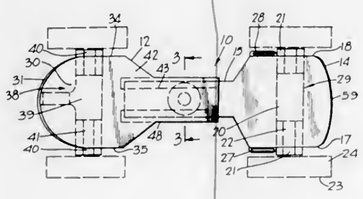
1. For use with a machine tool having a spindle provided with a driving key, a tool storage rack having a plurality of open tool-receiving sockets and transport means including a carriage having an open toolholderreceiving socket for transferring the toolholder between said storage rack and said spindle, each said socket having a tool locating key, the toolholder having a body portion having at one end means to receive and hold the shank of a working tool, at the other end a mounting portion shaped to fit a corresponding cavity in the nose of a spindle, and an intermediate portion of the body having two spaced flanges forming two axially spaced annular grooves between said body portion and said mounting portion, one of said grooves being positioned and shaped to receive toolholder-supporting means on said carriage and the other of said grooves being positioned and shaped to receive the edges of one of said plurality of tool-receiving sockets in said tool storage rack to support the toolholder therein, said flanges being axially spaced whereby one of said grooves may receive said toolholder-supporting means on said carriage at the same time that the other of said annular grooves receives said toolholder means on said storage rack while moving the toolholder onto or off the tool storage rack, the improvement comprising one of said flanges having radially extending diametrically opposite peripheral key slots, one of said key slots being shaped and positioned to receive said driving key on the spindle and the other of said slots being shaped and positioned to receive said holding key on said transport means to maintain the circular orientation of the toolholder while the latter is being transported between the spindle and the rack, and the other of said flanges having solely one radially extending peripheral key slot shaped and positioned to receive a key on said tool storage rack whereby the toolholder may be positioned on said storage rack in solely one circular oriented location and maintained in such location while supported on said rack.

3,953,040
LEVELING AND LOCKUP SYSTEM FOR WHEEL TRACTOR SUSPENSION SYSTEM
Dale H. Unruh, Peoria, Ill., and Jan B. Yates, Reynoldsburg, Ohio, assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Mar. 5, 1975, Ser. No. 555,655
Int. Cl.² B60G *11/26*
U.S. Cl. 280—6 H **11 Claims**



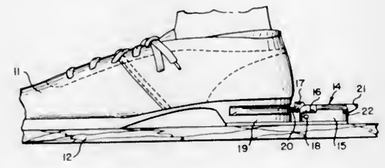
1. A suspension system for a vehicle having a vehicle frame and an axle, comprising:
- means interconnecting the vehicle frame and axle for providing that the axle is movable generally toward and away from the vehicle frame, and rotatable about an axis disposed generally longitudinally of the vehicle;
- sensing means for determining relative positioning of the axle generally toward and away from the vehicle frame;
- leveling means responsive to said sensing means for positioning said axle relative to the frame generally toward and away from the vehicle frame upon determination by the sensing means of positioning of the axle relative to the vehicle frame generally toward and away from said vehicle frame;
- ride cushioning means for cushioning movement of the axle generally toward the vehicle frame; and
- means selectively actuatable to deactivate said ride cushioning means, and actuatable to activate the ride cushioning means;

3,953,041
LARGE WHEEL ROLLER SKATE
Herman Buss, Carrollton, Tex., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Feb. 6, 1975, Ser. No. 547,719
Int. Cl.² A63C 17/02, 1/26
U.S. Cl. 280—11.26 3 Claims



1. A roller skate, which comprises:
a. a toe supporting section having a rectangularly shaped forward toe platform joined integrally to a forward first shank member of a rectangular bar shaped configuration, a bottom base of said first shank member having a threaded aperture therein;
b. a first axle assembly communicating with an underside of said forward toe platform;
c. a heel supporting section formed from a planar rear heel platform having a curved rear edge and a second shank member extending forwardly from said heel supporting section, said second shank member including an elongated rectangularly shaped plate, a pair of L-shaped flange members extending downwardly from each side of said plate, wherein the horizontal portions of said L-shaped flange members extend inwardly towards each other forming a gap between said horizontal portions, said plate and said L-shaped flange members defining a rectangularly shaped channel therein, and said first shank member being slidably contained within said rectangularly shaped channel;
d. a horizontally placed clamp plate having a central opening therethrough, said clamp plate engaging a bottom surface of said horizontal portions of said second shank member;
e. a wing screw extending upwardly through said central opening of said clamp plate to threadably engage said threaded aperture in said first shank member said first shank member and said clamp member frictionally engaging said horizontal portions of said second shank member as said wing screw threadably engages into said threaded aperture of said first shank member;
f. a heel guard portion extending upwardly from said curved rear edge of said heel supporting section;
g. a second axle assembly communicating with an underside of said planar rear heel platform;
h. a pair of large plastic wheels communicating with each said first and second axle assemblies, said axles extending through said wheels;
i. a pair of first strap bracket members joined to said toe platform;
j. a pair of second strap bracket members joined to said heel platform, said second strap members extending downwardly from a rear portion of straight side edges of said heel platform;
k. strap members extending through said first and second strap bracket members; and
l. a clamp member affixed onto an end of each said axle, each said clamp member being positioned outside of each said wheel.

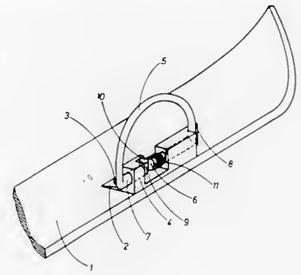
3,953,042
TOURING SKI BOOT HEEL BINDING
Ewald D. Pyzel, and Harold E. Codding, both of Reno, Nev., assignors to Ski Safe Inc., Carson City, Nev.
Filed Dec. 23, 1974, Ser. No. 536,971
Int. Cl.² A63C 9/08
U.S. Cl. 280—631 4 Claims



1. A touring ski boot heel binding adapted to be mounted on the upper surface of a touring ski and to releasably engage the heel of a touring ski boot which comprises:
a frame adapted to be secured to the upper surface of a touring ski;
a rotatable heel latch pivotally mounted on the frame, said heel latch being rotatable forwardly to its forwardmost position at which position it is adapted to engage the heel of a touring ski boot and being rotatable rearwardly to its rearwardmost position at which position it is out of engagement with the heel of said ski boot; and
latch engagement and disengagement means for maintaining the heel latch in engagement with the heel of the ski boot when the heel latch is at its forwardmost position and for maintaining the heel latch out of engagement with the heel of the ski boot when the heel latch is at its rearwardmost position, said latch engagement and disengagement means comprising an operating lever pivotally mounted on the frame rearwardly of the rotatable heel latch, a connecting link pivotally connected to the heel latch above the axis of rotation of the heel latch and also pivotally connected to the operating lever forwardly of the axis of rotation of the operating lever, and a spring loaded piston mounted on the frame rearwardly of the heel latch and also pivotally connected to the heel latch below the axis of rotation of the heel latch;
rotation of the operating lever rotating the heel latch to its forwardmost position and to its rearwardmost position, and said spring loaded piston urging the rotatable heel latch to its rearwardmost position.

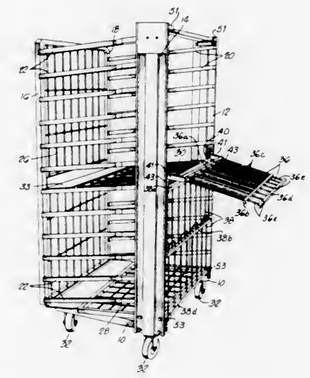
3,953,043
DEVICE FOR PREVENTING A CROSSING OF SKIS DURING SKIING
Hans Hinterholzer, Nr. 36, Saalbach, Austria
Filed Oct. 15, 1974, Ser. No. 515,062
Claims priority, application Austria, Oct. 19, 1973, 8900/73
Int. Cl.² A63C 11/00
U.S. Cl. 280—11.37 E 10 Claims

1. An anti-crossing device for a ski comprising, in combination, a base plate having stop means thereon, means for mounting said base plate on the upper surface of a ski, a locking member, means for mounting said locking member on said base plate for pivotal movement along a path, means for yieldingly urging said locking member pivotally in one direction against said stop means to position said locking member in a vertically extending, operative position to provide a barrier against the overcrossing of another ski adjacent thereto, said locking member being pivotally movable against said urging means in the opposite direction by an overcrossed ski to permit uncrossing of the skis and means for disengaging said locking member from said stop means to permit said locking member to be moved pivotally by said urging means in said one direction to position said locking member in a



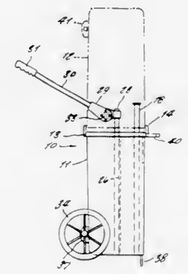
storage position in overlying relationship with the associated ski.

3,953,044
BULK MAIL TRANSPORTER
James D. Wilson, Newport Beach, Calif., assignor to Banner Metals Division of Intercole Automation, Inc., Compton, Calif.
Filed Mar. 28, 1975, Ser. No. 562,830
Int. Cl.² B62B 11/00
U.S. Cl. 280—33.99 H 4 Claims



1. A rack comprising: a lower U-shaped horizontal frame member having a rear member and side members which diverge outwardly from the rear member and defining an open front; a plurality of spaced and parallel upright posts mounted on said frame member at the front and rear thereof; a rectangular-shaped intermediate shelf having a forward edge and a rear edge; hinge means attached to the rear edge of the intermediate shelf and supported on the posts to permit the intermediate shelf to be upwardly turnable to an upright position to permit other like racks to be received in the open front of the rack; and upper and lower gate members individually pivotally mounted to the forward edge of the intermediate shelf and turnable from positions adjacent the intermediate shelf when the intermediate shelf is in its upright position to positions enclosing the open front of the rack when the shelf is turned down to a horizontal load supporting position in which the upper gate encloses the area above the intermediate shelf and the lower gate encloses the area below the intermediate shelf.

3,953,045
FERRETT BAG AND CART
Valentine G. Feret, Jr., 7095 Valleygreen, Washington, Mich. 48093
Filed Mar. 20, 1975, Ser. No. 560,502
Int. Cl.² B62B 1/12
U.S. Cl. 280—638 3 Claims

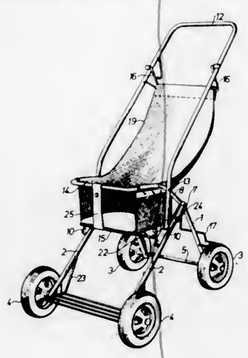


1. In a golf equipment carrier having a bag, said bag comprising a lower body and an upper body, said bodies being made of plastic material and each being hollow to enclose golf playing equipment, said upper body being removably placeable upon said lower body, a separator and lower track provided upon an upper edge of said lower body and an upper track being provided upon a lower edge of said upper body, said lower body being supported upon a pair of wheels for traveling across a ground, said lower body having a pair of forwardly extending brackets upon its front side, said brackets supporting an axle which at each end is inserted through the center of said wheels, and an underside of said lower body also being provided with a cart rest for maintaining said lower body in vertical, upstanding position while at rest, said lower body including a main post at its center and extending vertically upwardly to a top of said lower body, and an upper end of said main post having an adjustable handle assembly secured pivotally thereto, said handle assembly including a straight handle which at its outer end is fitted with a handle bar grip, said handle assembly being pivotable between a sideward extending position and a vertical, upright position for fitting under said upper body.

3,953,046
FOLDING SPORT STROLLER OR THE LIKE
Leif Johansson, Bredaryd, Sweden, assignor to Baby Bjorn AB, Solna, Sweden
Filed Jan. 27, 1975, Ser. No. 544,409
Claims priority, application Sweden, May 17, 1974, 7406620
Int. Cl.² B62B 11/00
U.S. Cl. 280—644 14 Claims

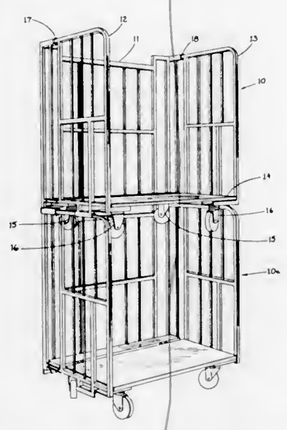
1. A stroller comprising:
a pair of pivotally mounted legs, wheel means rotatably mounted to respective support ends of the legs, one of said legs extending upward beyond the pivot axis of the legs, a blocking lever pivotally mounted to said extension and defining a locking portion, a locking device fixed relative to the other leg and which may engage the locking portion, the extension, the portion of the blocking lever between said extension and the locking portion, and the portion of the other leg between the locking device

and pivot axis of the other leg generally forming a triangle which maintains the legs in a fixed position relative to



each other with the locking device engaging the locking portion.

3,953,047
COLLAPSIBLE STACKING CART
Lawrence M. Morgan, Anoka, Minn., assignor to The Cornelius Company, St. Louis Park, Minn.
Filed Feb. 25, 1975, Ser. No. 552,987
Int. Cl.² B62B *11/00*
U.S. Cl. 280—639 **19 Claims**



1. A collapsible, vertically stackable merchandise cart comprising:

a. a rear frame of upright rectangular shape;

b. a pair of upright rectangular side frames hingedly attached one to each side of the rear frame and pivotable from normal positions generally perpendicular to the rear frame to alternate storage positions;

c. support means disposed below and secured to the rear frame and each side frame respectively;

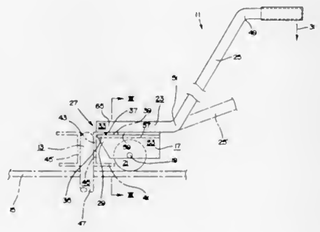
d. a horizontal axis hinge having a portion secured to one of the upright frames;

e. a bottom frame secured to another portion of the horizontal axis hinge and pivotable from a normally generally horizontal position for support of goods thereon to an upright storage position adjacent to the respective one upright frame;

f. latches mounted on side and bottom frames, which lock together and positively secure the side and bottom frames pivotably immovable in the normal positions, the cart being forkliftable by the bottom frame when latched and locked; and

g. means for stacking the cart vertically upon a like cart when both carts have side and bottom frames latched and secured in the normal position, the stacking means including vertically engagable and horizontally positioning abutments mounted on the top and on the bottom of the side and rear frames.

3,953,048
JOIST DOLLY
George D. Vincent, 3863 Guernsey, Memphis, Tenn. 38122, and Johnie W. Morris, 6281 Branderham Drive, Memphis, Tenn. 38134
Filed Dec. 9, 1974, Ser. No. 530,528
Int. Cl.² B62B *1/06*
U.S. Cl. 280—47.3 **11 Claims**

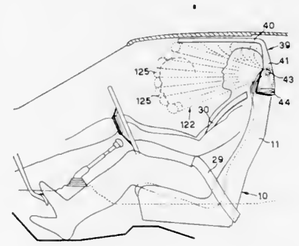


1. A leverage dolly for lifting one end of a long open web steel joist and for then conveying the joist to and fro along a steel structural beam member having a horizontally disposed web which normally restingly supports the joist, said dolly comprising a main body, transverse axle means carried by said main runningly a single wheel journaled upon said axle means for funningly and ridingly engaging the horizontal web of the structural beam member and for establishing fulcrum means to facilitate lifting one end of the joist, handle means fixedly attached to said main body to constitute a lever for cooperating with said fulcrum means to further facilitate lifting one end of the joist and having a portion thereof extending angularly upward and rearward from said main body, and means disposed adjacent the forward end of said main body for engaging and supporting the joist as said handle means is manually urged downwardly; said means for engaging and supporting the joist including upper and lower spaced apart jaw means defining an opening for receiving a planar flange portion of a joist, said upper and lower jaw means supportingly engaging the planar flange portion of the joist as the planes of said jaw means are tilted by manually urging said handle means downwardly.

3,953,049
INFLATABLE HEAD PROTECTOR
Filippo Surace, Milan, and Marco Garetti, Mariano Comense (Como), both of Italy, assignors to Alfa Romeo S.p.A., Milan, Italy
Filed Mar. 7, 1974, Ser. No. 449,211
Claims priority, application Italy, Mar. 8, 1973, 21333/73
Int. Cl.² B60R *21/08*
U.S. Cl. 280—730 **12 Claims**

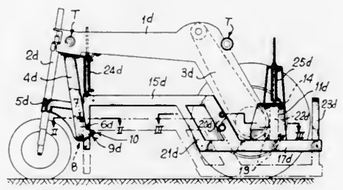
1. A device for the protection of the head on an occupant in a motor vehicle in the case of impact forces on the vehicle, said device comprising a protective strip having an extended operative position and a retracted inoperative position, said strip including a plurality of inflatable members, a casing retaining said strip folded on itself in said retracted position, said strip in said inoperative position extending along a substantially U-shaped line and having opposite ends with means

attaching said ends to a structure which is integral with the vehicle at two points situated on a horizontal axis extending transversely of the vehicle at a position behind and on opposite sides of the head of an occupant seated in said vehicle for unfurling said strip in its operative position to extend essentially along a surface generated by rotation of said U-shaped line around said axis, said inflatable members of the strip including lateral sectors which in operative inflated position are disposed in front of the head of the occupant to be con-



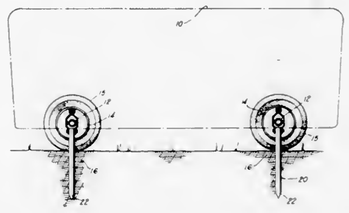
tacted thereby and produce tensile stresses in said sectors passing substantially through said axis, the line of action of the resultant of said tensile stresses substantially coinciding with the center of gravity of the occupant's head, and means responsive to a preselected deceleration magnitude of the vehicle for inflating said inflatable members to expel said strip from said folded inoperative position in said casing to said unfurled operative position, said inflatable members during inflation undergoing rapid transition to the inflated condition while the strip is restrained at said ends.

3,953,050
LONGITUDINAL MEMBER FOR THE CHASSIS OF A STRADDLE VEHICLE
Emile Bobard, Beaune, France, assignor to Bobard Jeune, Beaune, France
Filed Mar. 13, 1975, Ser. No. 558,077
Int. Cl.² B60R *11/00*
U.S. Cl. 280—760 **5 Claims**



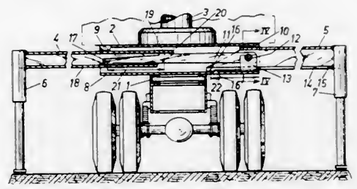
1. A device adapted to be mounted on each side frame of a straddle-chassis tractor having front and rear wheel-supporting legs having their upper portion braced by longitudinally extending means, comprising: support means fixedly attached to front and rear portions of each said side frame; guide means mounted to said support means; a longitudinally extending member bracing the lower portion of each side frame; and slide means on said member in sliding engagement with said guide means and cooperating therewith to allow said member to be raised and lowered relative to said side frame to thereby allow the attachment of implements to said tractor.

3,953,051
GROUND ANCHOR FOR LAND VEHICLES
Beulah B. Weathers, 605 6th Ave. East, Apartment A, Cordele, Ga. 31015
Filed Feb. 27, 1975, Ser. No. 553,481
Int. Cl.² B60S *9/02*
U.S. Cl. 280—763 **7 Claims**



1. A ground anchor for a vehicle comprising, in combination, a stake having a relatively blunt end adapted to be pounded and a relatively sharp end adapted to be driven into ground upon a pounding of said blunt end; axle clamping means adapted to be placed at least partially about a vehicle axle; and fastening means for fastening said axle clamping means to said stake whereby movement of the vehicle relative to supporting ground terrain may be restricted when the stake is driven into the ground and the clamping means is placed about the vehicle axle and fastened to the stake; said clamping means comprising a pair of substantially identically shaped plates with each plate having three mutually parallel planar sections unitarily joined together by two linking sections.

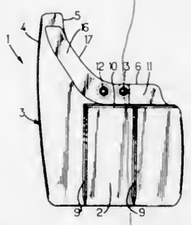
3,953,052
SUPPORT LEGS OF MOBILE CRANES
Jan Birger Palmcrantz, Harmanger, Sweden, assignor to Hiab-Foco Aktiebolag, Hudiksvall, Sweden
Filed Sept. 23, 1974, Ser. No. 508,058
Claims priority, application Sweden, Oct. 18, 1973, 7314177
Int. Cl.² B60S *9/12*
U.S. Cl. 280—763 **8 Claims**



1. An improvement in support legs intended for mobile cranes, said cranes including a vehicle chassis and a base supported by the vehicle chassis, said support legs comprising inner and outer jib sections arranged for telescopic displacement into each other and for movement into opposite ends of a crane base in a direction transverse to the vehicle chassis said inner and outer jib sections each having inner ends located within the base, said sections having an extended position in which said ends lie spaced within the base and a retracted position in which said sections are telescopically received within said base with said inner jib section telescopically received in said outer jib section, the improvement comprising a support arm, said inner jib section being displaceable into the base telescopically to receive said support arm, one end of said arm being supported adjacent to and by that side of said crane base where said support leg incorporating said outer jib section is positioned, the opposite end of said support arm abutting against the interior of the inner jib section, and

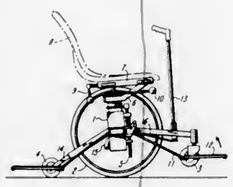
said support arm supporting at some point intermediate its two ends, that end of said inner jib section which is positioned inside said crane base.

3,953,053
MUD FLAPS FOR AUTOMOBILE FENDERS
Knut Arenhold, 5, Birkenweg, Kehl-am-Rhine, Germany
Continuation of Ser. No. 427,249, Dec. 21, 1973, abandoned.
This application May 2, 1975, Ser. No. 573,832
Claims priority, application France, Dec. 21, 1972, 72.47084; Germany, Oct. 19, 1973, 2352472
Int. Cl.² B62D *25/16*
U.S. Cl. 280—154.5 R **9 Claims**



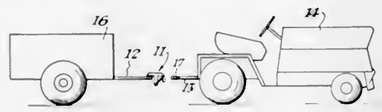
1. A mud flap for a fender of a vehicle, comprising:
a flange portion having an elongate outline generally conformable to an edge area of a vehicle's fender; a web portion integral with said flange portion; both of said portions having two surfaces generally parallel to one another;
a counter-flange secured to one of said portions and extending along an edge of one of said surfaces, defining an angle between the flange portion and the counter-flange, when not held to a fender, to match an inclination of the edge area of the fender from a vertical surface, for holding said portions to the fender and for keeping the web portion approximately vertical not-withstanding such inclination of the edge area; and
fastening means secured to one of said portions and to the counter-flange for enabling said portions and said counter-flange to be secured to the edge area of the fender.

3,953,054
HAND OPERATED WHEEL-CHAIR
Per Udden, Timra; Siegfrid Graf, Fagervik, and Bert Engman, Sorberge, all of Sweden, assignors to Permobilstiftelsen, Timra, Sweden
Filed Mar. 18, 1974, Ser. No. 452,147
Claims priority, application Sweden, Mar. 19, 1973, 7303826
Int. Cl.² A61G *5/00*
U.S. Cl. 280—242 WC **7 Claims**



1. A hand-operated wheel-chair comprising in combination:
a pair of main wheels which are rigidly connected with the frame of the chair and at least one of which serves as driving wheel,
a pair of castor wheels which are pivotally connected with the frame of the chair, the seat of the said chair being disposed substantially halfway between the main wheels to locate the vertical through the center of gravity of the chair, by small positional changes of the seat for a person to sit thereon, ahead of as well as behind a line extending between the support points of the main wheels, when the chair is standing on a flat and horizontal ground surface,
a pair of support wheels being substantially non-pivotally connected with the frame, whereby said castor wheels and support wheels are being positioned at a level above said ground surface to permit either the castor or the support wheels to be in contact with the ground surface when said vertical through the center of gravity is located on one or the other side of the line extending between the support points of the main wheels, the frame comprising
a transverse portion, extending between the main wheels and being provided with a seat support in the form of a central column, which includes therewith position adjusting means for the seat, the inner distance between the main wheels not exceeding the maximum width of the seat.

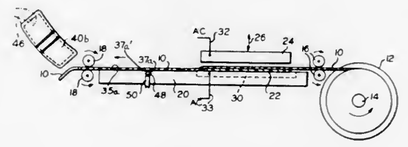
3,953,055
OFF-HIGHWAY TRAILER HITCH
Allan P. Stark, Irwin, Pa., assignor to Robert L. McCormick and S. Ray Simon Associates Co., both of N. Huntingdon, Pa., part interest to each
Filed June 30, 1975, Ser. No. 591,427
Int. Cl.² B60D *1/04*
U.S. Cl. 280—504 **7 Claims**



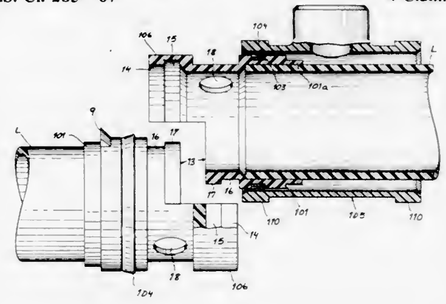
1. A hitch assembly for use in association with an object to be drawn by another object, said assembly comprising
a horizontal member adapted to be secured to said object to be drawn,
said horizontal member having first and second spaced apart downwardly projecting elements,
said first element having a cross-section and region suitable for engaging an opening in said other object and having a length less than said second element,
a latching element pivotally secured to said second element in an end region of said second element,
said latching element having an upwardly extending arm having a portion extending transverse to said horizontal member,
said latching element having a length such that said transverse portion is held by gravitational force against an end region of said first element.

3,953,056
BOOKBINDING WITH PLASTIC COVERS
Alvin V. Roberts, Scarsdale, N.Y., assignor to Bookwrights, Inc., New York, N.Y.
Continuation of Ser. No. 261,513, June 9, 1972, abandoned.
This application June 18, 1974, Ser. No. 480,488
Int. Cl.² B42D *1/00*
U.S. Cl. 281—29 **10 Claims**

1. The method of binding a book which comprises making successive book covers, each in one operation in a single station from a portion of a preformed sheet of homogeneous synthetic high polymer thermoplastic material of higher pick strength than paper, which method comprises supplying the synthetic high polymer as an elongated sheet of uniform thickness and in intermittent steps between confronting elements comprising a die and a base element having relative movement toward and from one another, the die having narrow rules projecting therefrom toward the base element, a first of said rules being a closed figure and being shaped to the outline of a cover that is to be severed from the elongated sheet, and other rules located within said figure and in position to form hinge lines for the cover, moving the first rule of the die into contact with the plastic sheet, continuing the movement of the first rule toward the base element and through a stroke that displaces the plastic for substantially the full thickness of the sheet around the outline of a cover, and also moving the other rules of the die into contact with the plastic to heat and displace the plastic of the sheet for a depth less than the depth of displacement of the first rule and for a depth dependent on the displacement of plastic by the first rule and at locations that provide hinge lines for the cover, intermittently moving the sheet material to advance it from under the die, and bringing a new portion of sheet material under the die, repeating the operation of the die through another cycle to make another cover after each movement of additional material into positions under the die, holding the successive covers in the sheet while advancing the covers and the plastic sheet together beyond the die and to a delivery station, separating each successive cover from the rest of the sheet along said outline of the cover at the delivery station, assembling and clamping leaves that make a book filler of a thickness substantially equal to the distance between the hinge lines of the cover, stabilizing the book filler by application of adhesive to the spine of the filler while the leaves are clamped in assembled relation, removing the clamps when the adhesive is set, trimming the stabilized filler to a height and width less than the height and width of the front and back cover panels so that the cover will overhang the edges of the leaves of the filler, then heating said adhesive for adhesively securing the high pick strength spine panel to the stabilized filler while the surface of the spine panel is at a temperature substantially lower than the deforming temperature and the spine panel remains in a solid, unfused state of the preformed plastic sheet from which the cover is made, and using an adhesive that is strong enough to bind the filler to the cover without end papers, said book covers being made from a sheet of material from the group of plastics that are heated by exposure to a high frequency electric field and that are of a composition that tears with a smooth tear along a tear line, exposing the sheet to a high frequency electric field by using said base element and the rules of the die as the electrodes of the high frequency field at said single station, and displaceing material in the sheet by pressure applied to the heated localized areas of the sheet between the electrodes of the high frequency electric field, reducing the thickness of the plastic along said localized areas to a thin section along which the cover can be torn from the sheet at the delivery station and similarly heating and displacing at said single station other material of the sheet along other localized areas where the front and back panels connect with the spine panel to form the hinge lines of the cover.



3,953,057
PIPE AND TUBE COUPLING
Aristovoulos George Petzetakis, deceased late of Moschaton-Piraeus, Greece, by Irene H. Diapouli; Nicolas G. Petzetakis; Menelaos G. Petzetakis, all of Athens, Greece
Division of Ser. No. 180,299, Sept. 14, 1971, Pat. No. 3,781,041. This application Oct. 9, 1973, Ser. No. 404,744.
The portion of the term of this patent subsequent to Dec. 25, 1990 has been disclaimed
Claims priority, application Greece, Oct. 31, 1970, 44019; Apr. 7, 1971, 45136; 45183; 45285
Int. Cl. F16l *17/02*
U.S. Cl. 285—67 **4 Claims**

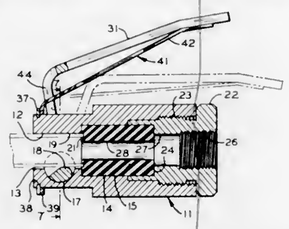


1. A coupling for pipe, tube or hose, comprising a pair of geometrically identical tubular coupling members, each of said coupling members having a circumferentially continuous cylindrical portion and a semicylinder-segmental portion with the semicylinder-segmental portions of the members being in axially overlapping relation and each reaching axially beyond the other semicylindrical-segmental portion, each semicylinder-segmental portion having at its extremity an inwardly extending arcuate shoulder receivable behind an arcuate shoulder formed at the junction between the cylindrical and semicylindrical-segmental portions of the other member, each of said segmental portions being further formed with a radially open groove adjacent its shoulder and form-fittingly receiving the shoulder of the other member at the junction between the cylindrical and semicylindrical-segmental portions thereof; each of said members being formed with a circumferentially continuous outwardly open groove on its cylindrical portion adjacent its segmental portion; a respective circumferentially continuous sealing ring received on said circumferentially continuous grooves; and a retaining sleeve axially shiftable over said member and spanning same for preventing transverse separation of said semicylindrical-segmental portions, said sealing rings sealingly engaging the interior of said sleeve, each of said coupling members having flanks lying in radial planes and abutting the flanks of the shoulder of the other member.

3,953,058
TUBE COUPLING
John W. Soblesky, Clyde, Ohio, assignor to Dale Products, Inc., Fremont, Ohio
Filed Dec. 20, 1974, Ser. No. 534,683
Int. Cl.² F16L *37/20*
U.S. Cl. 285—110 **18 Claims**

1. A coupling for a smooth walled, right circular, tube portion to restrict longitudinal motion of the tube portion in a first direction comprising a tube receiving portion having a reaction surface to restrict motion of the tube portion it is adapted to receive transverse of the longitudinal axis of said tube portion and having a longitudinal axis parallel to the longitudinal axis of said tube portion; a locking element rotatable around an axis of rotation in a plane intersecting the longitudinal axis of tube receiving portion; means biasing said element for rotation around said axis of rotation in a given direction whereby points on a surface of said element proxi-

mate said tube receiving portion and engageable with a tube portion received therein have a component of bias force in said first direction; means for rotating said element around said axis of rotation in a direction opposite said given direction; and a gripping surface on said locking element adapted to engage an arcuate region of the smooth walled tube portion



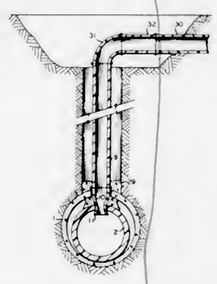
received in said tube receiving portion on the side of the tube portion opposite said reaction surface, said gripping surface defining successive arcs of circles of increasing radius from centers lying equidistant from the longitudinal axis of said tube receiving portion in a plane normal to said longitudinal axis of said tube receiving portion as said locking element is rotated in a direction opposite said given direction.

3,953,059

PIPE CONNECTION AND PROCESS TO MAKE SAME

James C. Carroll, Bartlesville, and Arthur H. McElroy, Tulsa, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 21, 1974, Ser. No. 516,365
Int. Cl.² F16L *41/00, 47/00*
U.S. Cl. 285—192 **15 Claims**



8. A pipe connection comprising

a first pipe having at least one end thereof consisting essentially of a polymer selected from the group consisting of polyethylene and copolymers of ethylene and a small quantity of another mono-1-olefin having from 3 to 8 carbon atoms per molecule, said polymer having a weight average molecular weight of about 200,000 to about 1,000,000 and said one end being cold swageable and having a mechanical memory,

connected to said one end of said pipe a second pipe of larger diameter than the first pipe having a hole formed in the wall of said second pipe through which said cold-swageable end of said first pipe is inserted, the diameter of said hole being smaller than the external diameter of said first pipe,

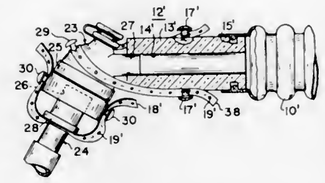
said one end of said first pipe being under a mechanical stress pressing towards the wall of said hole, said stress resulting from a coldswaging step wherein the end of said first pipe was cold-swaged to fit through said hole and from the recovery of said end of said first pipe from the coldswaged shape toward its original shape and into firm contact with the wall of said hole without employing temperature differences.

3,953,060

SLIP-PROOF COUPLING DEVICE

Bela Eross, Penn Hills Township, Allegheny County, Pa., assignor to Instrumentation Industries, Inc., Pittsburgh, Pa.

Filed Sept. 20, 1971, Ser. No. 181,705
Int. Cl.² F16L *27/08, 37/00*
U.S. Cl. 285—272 **1 Claim**



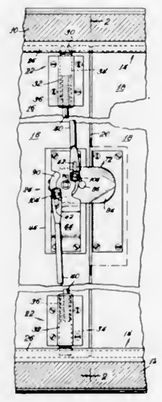
1. A coupling assembly for coupling sections of tubing, comprising a sleeve member to the opposite ends of which sections of tubing may be telescopically joined to form a connection, fastening members on opposite sides of said sleeve member, a swivel fitting provided between one of said sections of tubing and said sleeve member, a first elongated resilient strap the opposite ends of which are provided with a plurality of spaced engaging means removably securable to the fastening members on said sleeve member said resilient strap removably engaged intermediate said ends to one part of said swivel fitting, and a second resilient strap removably secured adjacent its opposite ends to fastening members on another part of said swivel fitting and engaged intermediate its said ends to said one section of tubing.

3,953,061

DOOR FASTENING MEANS

Randall C. Hansen, Lake Forest, and Kenneth J. Miller, Gurnee, both of Ill., assignors to A. L. Hansen Mfg. Co., Gurnee, Ill.

Filed Sept. 23, 1974, Ser. No. 508,432
Int. Cl.² E05C *5/00, 1/06*
U.S. Cl. 292—5 **7 Claims**



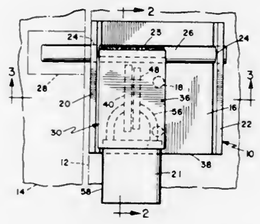
1. For use with a door frame having upper and lower elements, a door having a vertical edge hinged to the frame, keeper members secured to the upper and lower elements of the frame, spring biased latch bolts carried by the door and engageable with the keeper members, and toggle bars connected at their one ends to the latch bolts, the combination of a cam disc rotatably carried by the door and having an arcuate cutout in the edge portion thereof defining a pair of end shoulders, connecting means connecting the other ends of the toggle bars to said cam disc at diametrically opposed locations thereon, a lock actuator plate rotatably carried by the door coaxially of said cam disc, a post member secured to said lock actuator plate and movable within said cam disc cutout, and actuator means operatively connected to said actuator plate to rotate the same between a first unlocked position wherein the latch bolts are disengaged from the keeper members, a second intermediate position wherein said post member on said actuator plate upon rotation of said lock actuator plate engages an end shoulder of said cam disc to rotate the same thereby effecting movement of the toggle bars and the latch bolts into engagement with the keeper members and a third fully locked position wherein said actuator plate projects laterally above the door frame.

3,953,062

PADLOCK CLASP

John F. Maston, 1045 Naranca, El Cajon, Calif. 92021

Filed June 10, 1975, Ser. No. 585,477
Int. Cl.² E05C *5/02*
U.S. Cl. 292—57 **10 Claims**



1. A clasp for being connected to a door and lockable by a padlock, which clasp comprises:

a back plate member for being connected to the door adjacent the door frame,

a bolt slidably mounted in said back plate member and movable between door locked and door unlocked positions,

said bolt received in an opening in the door frame in the door locked position,

a front plate member connected to said bolt and overlying at least a part of the padlock in the door locked position,

a first padlock bale support member connected to said back plate member and extending outwardly toward said front plate member and having a hole to receive the bale,

a second bale support member connected to said front plate member and extending toward said back plate member and having a hole to receive the bale,

and said holes in said first and second bale support members aligned for the mutual reception of the bale when the padlock is locked.

3,953,063

COKE OVEN DOOR CLOSURE

Franz Steimann, Gelsenkirchen-Horst, Germany, assignor to Didier Engineering GmbH, Essen, Germany

Filed Dec. 9, 1974, Ser. No. 530,842
Claims priority, application Germany, Dec. 29, 1973, 2365191
Int. Cl.² E05C *21/02*
U.S. Cl. 292—144 **12 Claims**

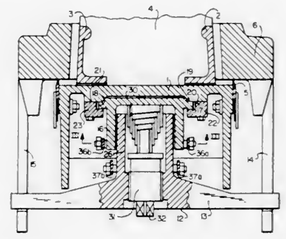
1. In oven doors, particularly coke oven doors, of the type including a door frame, a door body and locking hooks associated with the door frame for cooperation with a door closure device to lock the door body with respect to the door frame; the improvement wherein said door closure device comprises:

a spring bearing member on said door body;

a locking bar engageable with said locking hooks when said door body is in the locked position;

said locking bar having a locking bar support extending toward said spring bearing member;

a compression spring positioned between said spring bearing member and said locking bar support and urging said locking bar support and locking bar away from said spring bearing member;



a sliding carriage guide on said door body, said spring bearing member being mounted in said sliding carriage guide for longitudinal sliding movement therein along a direction parallel to the plane of said door body; and

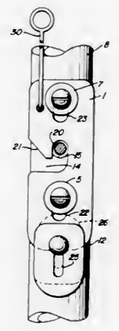
a lever system mounted on said door body and hingedly connected to said spring bearing member and said locking bar support.

3,953,064

GATE LATCH

Warren B. McHenry, 5316 Crittenden St., Hyattsville, Md. 20781

Filed Mar. 25, 1975, Ser. No. 561,841
Int. Cl.² E05C *1/06*
U.S. Cl. 292—184 **8 Claims**



1. A latch which comprises

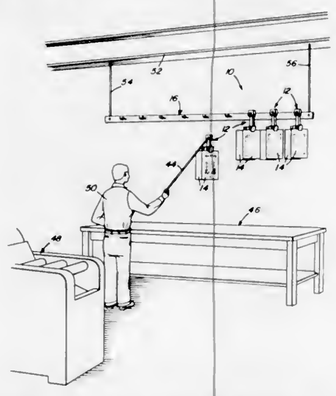
a. a sliding bolt normally maintained in closed position, said bolt having an inclined strike engaging surface;

b. a strike means adapted to engage said inclined surface and move said bolt to an open position and permit engagement of said strike means in a locking slot in said bolt;

c. a guide means adapted to guide said bolt to open/closed positions, said guide means including a plurality of elongated holes in said bolt and mounting bushing slidably passing therethrough; and

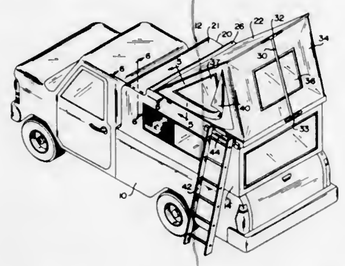
d. a bolt blocking means slidably and rotatably fixed to said bolt and being adapted to slide and rotate to selected blocking and non blocking positions.

3,953,065
OFFSET PLATE RACK AND HOLDERS
Edward J. Shannon, Jr., 3104 Jessica, Metolrie, La. 70003
Filed Sept. 25, 1974, Ser. No. 509,350
Int. Cl.² A47F *5/08*
U.S. Cl. 294—1 R **5 Claims**



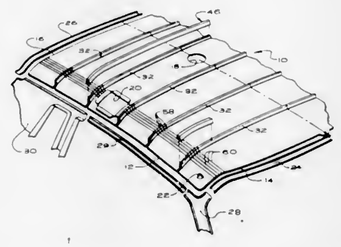
2. An offset plate rack and holder system, comprising, in combination:
a. a plate holder provided with gripping means for holding an offset plate; and
b. a rack provided with retaining means for supporting a plate holder, said plate holder including a body member provided with an enlarged head portion forming shoulders arranged for engaging the retaining means of the rack and suspending the body member on the rack, said gripping means including a pair of spring-biased clamps mounted on opposite sides of a portion of the body member spaced from the head portion, and a pointer for manipulating the plate holder, the head portion of said plate holder being provided with an aperture arranged for receiving an end of the manipulating pointer.

3,953,066
CAMPER SHELL
Philip O. Hamilton, 1624 Rouse Ave., Modesto, Calif. 95353
Filed Nov. 25, 1974, Ser. No. 526,657
Int. Cl.² B60P *3/34*
U.S. Cl. 296—23 R **6 Claims**



1. A camper shell adapted to be mounted on the bed of a pickup truck or similar vehicle, said camper shell comprising:
a shell structure adapted to be mounted to the bed of the vehicle, said shell structure including side portions extending upwardly from the side-defining portions of said bed to a vertical height approximately equal to the height of the cab of the vehicle, and a roof including a forward portion fixed to the side portions of the shell structure and a movable portion hingeably mounted to the trailing end of the forward portion along an axis normal to the direction of travel of the vehicle so that said movable portion can be raised at its trailing end to add to the interior space of the shell structure when the vehicle is parked and lowered to streamline the shell structure when the vehicle is moving;
flexible means connecting the sides and trailing edges of the movable portion of the roof to the side portions of the shell structure for enclosing the interior of the shell structure when the movable portion of the roof is raised;
a ceiling structure spanning the side portions of the shell structure adjacent the upper ends of said side portions;
a bunk mounted to the upper surface of the ceiling structure beneath the movable portion of the roof;
means for clamping the movable portion of the roof in the lowered position when the vehicle is moving; and
means for maintaining the movable portion of the roof in the raised position when the vehicle is parked.

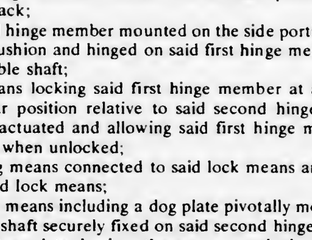
3,953,067
VEHICLE HEADLINER CONSTRUCTION
Richard A. Isola, 6748 Leslee Crest Drive, West Bloomfield, Mich. 48033
Filed Sept. 18, 1974, Ser. No. 507,369
Int. Cl.² B60J *7/10*
U.S. Cl. 296—137 A **212 Claims**



1. A vehicle headliner construction adapted to be mounted adjacent the underside of a vehicle roof and extend laterally between the longitudinal side edges of the roof and longitudinally between the front and rear edges of the roof,
said headliner comprising a sheet of a relatively rigid but foldable material having at least one reversely folded portion providing a seam appearing line on the side of the headliner confronting the interior of the vehicle.

3,953,068
SAFETY PASSENGER SEAT APPARATUS
Ferdinand Alexander Porsche, Doeffingen, and Werner Scholpp, Stuttgart-Weilimdorf, both of Germany, assignors to Porsche Design, Germany
Filed Feb. 15, 1974, Ser. No. 443,142
Claims priority, application Germany, Feb. 15, 1973, 2307366
Int. Cl.² A47C *1/08*
U.S. Cl. 297—216 **17 Claims**

1. A safety passenger seat apparatus for a vehicle of the type having relatively fixed support structure, said apparatus comprising:
a passenger seat having a seat rest portion moveable substantially linearly with respect to said support structure and a back rest portion pivotally moveable with respect to said seat rest portion,
a single energy transformer for absorbing energy connected to said support structure, and
connecting means operatively connecting said passenger seat to said energy transformer such that pivotal movement of said back rest portion with respect to said seat rest portion, movement of said seat rest portion with respect to said support structure or both upon collision of

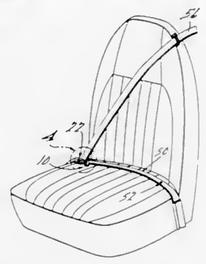


said vehicle causes energy absorption by said energy transformer.

3,953,069
VEHICLE SEAT BACK TILT CONTROL MECHANISM
Takeo Tamura, Tokyo, and Hideo Ishida, Kozai, both of Japan, assignors to Nissan Motor Company Limited, Yokohama and Fuji Kiko Company Limited, Tokyo, both of, Japan
Continuation of Ser. No. 409,148, Oct. 24, 1973, abandoned. This application Apr. 15, 1975, Ser. No. 568,202
Claims priority, application Japan, Oct. 25, 1972, 47-107428; Mar. 16, 1973, 48-31112
Int. Cl.² B60N *1/02*
U.S. Cl. 297—367 **15 Claims**

1. A tilt control mechanism for a vehicle seat having a seat cushion and a seat back tiltable about an axis, which comprises;
a first hinge member mounted on the side portion of said seat back;
a second hinge member mounted on the side portion of said seat cushion and hinged on said first hinge member by a rotatable shaft;
lock means locking said first hinge member at a selected angular position relative to said second hinge member when actuated and allowing said first hinge member to rotate when unlocked;
actuating means connected to said lock means and actuating said lock means;
said lock means including a dog plate pivotally mounted on a stub shaft securely fixed on said second hinge member, said dog plate having thereon a toothed portion, a toothed end portion of said first hinge member being engageable with the toothed portion of said dog plate;
memorizing means including
a generally circular memory plate coaxially disposed on said rotatable shaft and having on one peripheral portion thereof an arcuate gain for receiving said cam portion so as to cause said actuating plate to move said dog plate into engagement with said toothed end portion of said first hinge member thereby causing said first hinge member to be locked and having on another peripheral portion thereof a toothed portion, a dog member movably disposed on said first hinge member, said dog member being selectively engageable with the toothed portion of said circular memory plate;
memory change means allowing said memorizing means to change the memorized angular position thereof when actuated;
a release lever being rotatable about said axis and having means connectable with said actuating means, for releasing said actuating means when rotated; and
an actuating lever being rotatable about said axis for rotating said release lever and actuating said memory change means when it is manually rotated.

3,953,070
ADJUSTABLE TONGUE FOR SEAT BELT
Robert C. Fisher, 4210 N. Dixie, West Palm Beach, Fla. 33407
Filed Dec. 19, 1974, Ser. No. 534,224
Int. Cl.² A62B *35/00*
U.S. Cl. 297—389 **10 Claims**

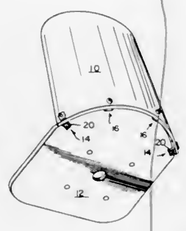


1. In a seat belt restraint system comprising a seat belt, means for anchoring one end of said seat belt on the floor of a motor vehicle, means for tensioning the other end of said seat belt, the improvement comprising an adjustable tongue freely slidable relative to said seat belt when said belt is in the fully retracted condition, said tongue comprising a frame having means thereon engageable with a seat belt buckle, a belt bar extending generally parallel to and in spaced relation to said frame, said belt passing between said frame and said belt bar, and means on said belt bar engageable with said frame to preclude movement of said belt bar in a direction generally normal to the direction of tension loads on said belt when said belt is in operative position about the occupant of a vehicle.

3,953,071
BACK MOUNTING STRUCTURE FOR A CHAIR
Kenneth H. Striebel, Peru, Ind., assignor to Kofabco, Inc., Peru, Ind.
Filed July 11, 1975, Ser. No. 595,051
Int. Cl.² A47C *7/02*
U.S. Cl. 297—454 **4 Claims**

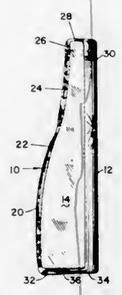
4. A chair comprising a generally horizontal chair seat portion and a chair back portion extending generally vertically upwardly from the chair seat portion along a generally curvilinear rearward edge thereof and attached thereto by a plurality of angle brackets, each said angle bracket having a generally horizontally extending leg and a generally vertically extending leg, some of said angle brackets being more centrally disposed along the adjoining edges of said seat and back and others of said brackets being more outwardly disposed along said adjoining edges, said horizontally extending legs of said more centrally disposed angle brackets being attached to the seat on the top surface thereof and said vertically extending legs thereof projecting downwardly from said horizontally

extending legs between said seat and said back, and said angle brackets more outwardly disposed being attached to the seat on the bottom thereof and said vertically extending legs



thereof projecting upwardly from said horizontally extending legs between said seat and said back thereby minimizing the tendency of said angle brackets to deform due to forces applied along said curvilinear joined edges.

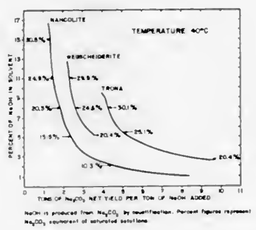
3,953,072
ORTHOPEDIC CUSHION
Salomon Esquivel, 713 Oakwood St., Montebello, Calif. 90640
Filed Oct. 19, 1973, Ser. No. 408,171
Int. Cl.² A47C 3/00
U.S. Cl. 297—460 **2 Claims**



1. An orthopedic cushion, comprising:
an enclosure having:
- a front wall of flexible fabric material to permit breathing passage of air therethrough;
- a substantially vertical back wall of flexible plastic material;

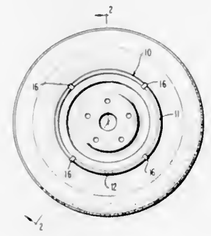
side walls connecting the side edges of the front and back walls, said side walls being relatively wide at the lower portion and tapering inwardly and upwardly and then curving upwardly to a substantially narrower part;
a top wall closing the upper end of the enclosure;
a substantially flat bottom wall comprising a rearwardly extending lower portion of the front wall and a forwardly extending lower end portion of the back wall, the free transverse edges of said portions being adjacent each other in defining an elongated opening in said bottom wall, said opening extending transversely of the cushion;
a unitary body of medium to firm density foam in the enclosure, the vertical section of said material conforming to the shape of the side walls, comprises a bulging part for supporting a portion of the spine for release of muscular tension, said cushion being transversely concavo-convex;
and means for closing said opening in one of the walls.

3,953,073
PROCESS FOR THE SOLUTION MINING OF SUBTERRANEAN SODIUM BICARBONATE BEARING ORE BODIES
Wolfram H. Kube, 4093 S. Rosemary Way, Denver, Colo. 80237
Filed May 17, 1974, Ser. No. 470,912
Int. Cl.² E21B 43/28
U.S. Cl. 299—5 **3 Claims**



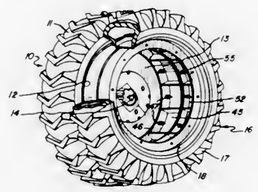
1. In a process for the solution mining of subterranean trona deposits wherein a portion of said deposit is dissolved in an aqueous solution containing a sufficient concentration of sodium hydroxide to prevent the sodium bicarbonate concentration in the brine from reaching a saturated condition when nahcolite alone is in the stable solid phase, the improvement which comprises limiting the maximum sodium hydroxide concentration to less than 3%.

3,953,074
AUTOMATIC AND SUBSTANTIALLY PERMANENT WHEEL BALANCING DEVICE
Woodrow Wilson Cox, Andrews, N.C., assignor to Herman E. Cox, Greenville, S.C.
Filed Aug. 4, 1975, Ser. No. 601,664
Int. Cl.² B60B 1/00
U.S. Cl. 301—5 BA **8 Claims**



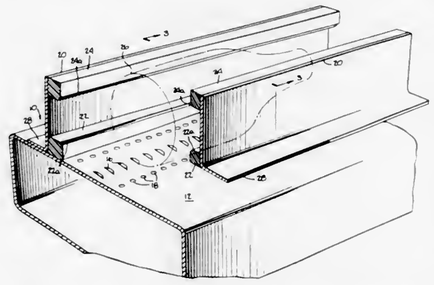
1. A wheel balancing device comprising an annular tube body adapted for attachment to one side of a wheel, a multiplicity of separately formed relatively short tube segments disposed bodily within the interior of said tube body and adapted to circulate freely circumferentially therein and collectively filling a major portion of the volume formed by the interior of the tube body, and a multiplicity of relatively small ball elements disposed within the interior of the tube body and adapted to circulate freely therein and also adapted to circulate freely through the interiors of said tube segments, whereby the tube segments and ball elements may be distributed by centrifugal force during rotation of a wheel to which the device is attached for balancing said wheel.

3,953,075
AUXILIARY WHEEL MOUNTING
Richard S. Bonomo, P.O. Box 453, Delavan, Ill. 61734
Continuation of Ser. No. 299,141, Oct. 19, 1972, abandoned.
This application Sept. 3, 1974, Ser. No. 502,535
Int. Cl.² B60B 11/00
U.S. Cl. 301—40 S **8 Claims**



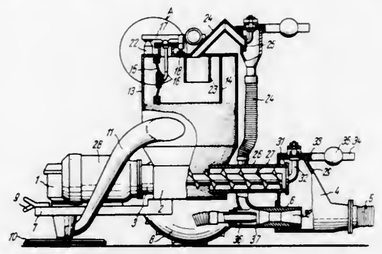
1. An auxiliary wheel and mounting for attachment to the regular wheel of a vehicle, in coaxial side-by-side relation to and for rotation with the regular wheel, the auxiliary wheel being on the outside and the regular wheel being on the inside with respect to the vehicle, the regular wheel having an axle, a wheel carrier supported from the axle, a wheel rim, means joining the wheel rim to the wheel carrier and a tire on the wheel rim, the regular wheel tire having a convex outer sidewall the outer extremity defining a plane spaced outwardly from the wheel rim and from the end of the axle, said auxiliary wheel and mounting comprising:
- an auxiliary wheel rim,
- an auxiliary tire on the auxiliary wheel rim, having a convex inner sidewall the inner extremity defining a plane spaced inwardly from the wheel rim,
- means secured to the auxiliary wheel rim having a mounting surface lying in the plane of the inner extremity of the inner sidewall of the auxiliary tire, and
- means on the regular wheel having a complementary surface lying substantially in the plane of the outer extremity of the outer sidewall of the regular tire on the regular wheel rim, to which complementary surface the mounting surface of the auxiliary wheel is secured.

3,953,076
BOTTLE CONVEYOR
Stanley E. Hurd, Sunnyvale, Calif., assignor to The Motch & Merryweather Machinery Company, Hayward, Calif.
Filed July 23, 1974, Ser. No. 491,025
Int. Cl.² B65G 51/02
U.S. Cl. 302—2 R **10 Claims**



1. An air conveyor for articles such as containers and the like having a generally symetrical continuous exterior wall surface with a predetermined dimension between laterally opposed wall portions of said articles comprising:
- a deck plate with a plurality of openings therein for issuing air jets to move articles along the conveyor, means for supplying pressurized air through the deck plate openings, said openings extending in a row along the conveyor surface, a pair of imperforate upstanding wall members extending longitudinally of the conveyor in confronting relation to each other and being located on opposite sides of the row of openings, said side wall members being spaced apart a distance greater than the predetermined lateral dimension of said articles, each of said side wall members having first guide surfaces being disposed along the upper inner marginal edge thereof to define cooperating guide surfaces spaced apart a distance less than the predetermined lateral dimension of said articles thereby to guide said articles by engaging spaced longitudinally extending portions of each article wall surface, whereby said articles cooperate with the first guide surfaces to trap and conserve conveying air between the articles and the deck surface, and a second pair of spaced guide members extending longitudinally of the conveying surface for supporting the articles above the deck plate surface, said second guide surfaces being generally parallel to each other and being spaced apart a distance less than the predetermined lateral dimension of said articles.

3,953,077
VACUUM-AND-PRESSURE PNEUMATIC CONVEYING INSTALLATION FOR PULVERIZED MATERIALS
Valery Anatolievich Kulyabko, ulitsa 50 let Oktyabrya, 5, kv. 97; Nikolai Andreevich Evstigneeve, ulitsa Chaikovskogo, 2, kv. 50; Fedor Romanovich Petrov, prospekt Lenina, 55, kv. 33, all of Volzhsky; Anatoly Petrovich Pleshivtsev, ulitsa Bakinskaya, 5, kv. 27, Volgograd; Vasily Ivanovich Somov, ulitsa Krasnopiterskaya, 11, kv. 3, Volgograd; Leonid Mikhailovich Cherkasov, ulitsa Karpovskaya, 39, Volgograd; Mikhail Ivanovich Jusov, ulitsa Bobruiskaya, 2, kv. 35, Volgograd; Alexandr Alexandrovich Sivkov, ulitsa Engelsa, 11, kv. 44, and Robert Nikolaevich Lazarev, ulitsa Sverdlova, 8, kv. 8, both of Volzhsky, all of U.S.S.R.
Filed May 14, 1975, Ser. No. 577,417
Int. Cl.² B65G 53/66, 53/28
U.S. Cl. 302—21 **7 Claims**



1. A vacuum-and-pressure pneumatic conveying installation for pulverized materials comprising: a settling chamber; a suction device communicating with said settling chamber; a material unloading mechanism built into the lower part of said settling chamber; an aerating chamber connected with said settling chamber by said material unloading mechanism which also delivers material into said aerating chamber; a transport pipeline connected to said aerating chamber; a jet blower whose suction space is connected with said settling chamber for building up vacuum therein required for drawing the material into said settling chamber and sucking dusty air from it while its delivery space is connected with said aerating chamber for building up pressure therein required for transporting the material from said aerating chamber; a hollow element which is open at the bottom, is secured to the upper part of the settling chamber and its lower edge is intended to limit the level of material in said settling chamber; at least one diaphragm located in the wall of said hollow element; a valve

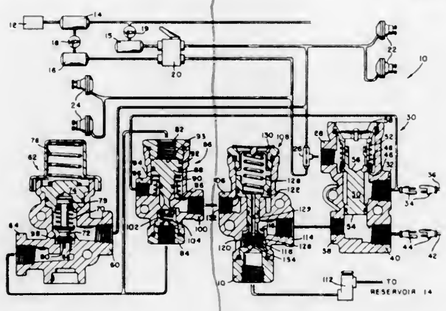
built into the upper part of said settling chamber, intended to control the supply of atmospheric air into said settling chamber when the latter becomes filled with material above the lower edge of said hollow element; and a rod connecting said diaphragm with said valve.

3,953,078
SYSTEM OF PNEUMATIC TRANSPORT OF DOMESTIC REFUSE AND THE LIKE
Ian Miller Edington Aitken, London, England, assignor to AB Centralsug, Solna, Sweden
Filed Aug. 15, 1973, Ser. No. 387,513
Claims priority, application Sweden, Aug. 15, 1972, 10587/72
Int. Cl.² B65G *53/06*
U.S. Cl. 302—27 **4 Claims**



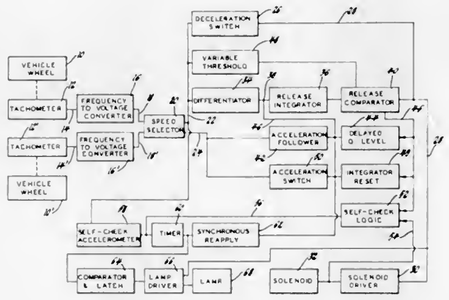
3. A system in accordance with claim 2 wherein the respective junctures of the collecting conduit and several chutes are widened to provide enlarged transition chambers.

3,953,079
FLUID PRESSURE BRAKING SYSTEM INCLUDING A PRESSURE DIFFERENTIAL RESPONSIVE VALVE DEVICE
Milan J. Sebo, and Roy E. Bartholomew, both of Elyria, Ohio, assignors to The Bendix Corporation, South Bend, Ind.
Filed Mar. 6, 1975, Ser. No. 556,042
Int. Cl.² B60T *13/00*
U.S. Cl. 303—7 **5 Claims**



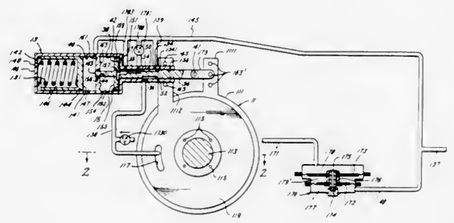
1. In a fluid pressure braking system for a vehicle having service brakes, a service braking system including a first portion for actuating some of said service brakes and a second portion communicated to said first portion for actuating the rest of said service brakes, operator-actuated valve means for controlling fluid pressure communication in said service braking system, regulating valve means having an inlet connected to said brake valve and an outlet, valve members located between said inlet and outlet for preventing communication therebetween until a predetermined pressure level is attained at said inlet and thereafter communicating said inlet and outlet, and valve means having a first inlet connected to the outlet of said regulating valve means, a second inlet connected to the connection between said first and second portions of the service brake actuating systems, pressure differential responsive valve members shiftable to an actuating position when the pressure level at said first and second inlets are in a predetermined relationship with one another, and means responsive to shifting of said pressure differential responsive means to said actuated position for closing communication between the first and second portions of said service actuating system.

3,953,080
ADAPTIVE ANTI-LOCK BRAKE CONTROL SYSTEM
Richard J. Bremer, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.
Continuation of Ser. No. 419,693, Nov. 28, 1973, abandoned. This application Mar. 24, 1975, Ser. No. 561,159
Int. Cl.² B60T *8/02*
U.S. Cl. 303—21 BE **4 Claims**



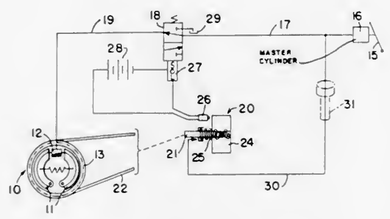
1. A control apparatus for an anti-lock brake system for a vehicle with braked wheels comprising
means providing a speed signal which represents wheel speed,
a control circuit for producing an on/off control signal,
release means activated by the control signal to effect brake release when the control signal is initiated and brake reapplication when the control signal is terminated,
the control circuit including first and second channels each for independently sensing incipient wheel lock and producing the control signal,
the first channel comprising a deceleration sensing means responsive to the speed signal for producing the control signal when the rate of change of wheel speed exceeds a predetermined deceleration threshold indicative of incipient wheel lock,
the second channel comprising means responsive to the speed signal for deriving a velocity error signal representing the difference between wheel speed and an estimated vehicle speed and means for producing the control signal when the velocity error signal exceeds one threshold indicative of incipient wheel lock and terminating the control signal when the velocity error signal drops below another threshold, and
means effective during brake release for requesting brake reapplication when the wheel rotates near synchronous speed for a predetermined time period comprising timer means connected to the second channel producing an output signal after a predetermined period, the output signal being effective to terminate the control signal and to request brake reapplication, and timer reset means for resetting the timer including accelerometer means responsive to the speed signal for supplying a reset signal to the timer means when the wheel acceleration exceeds preset limits and means responsive to the release means for supplying a reset signal to the timer means when the brakes are applied.

3,953,081
ANTILOCKING BRAKING SYSTEM
William Roy King, 1909 Sunshine Square, Longview, Tex. 75601
Filed Nov. 11, 1974, Ser. No. 522,477
Int. Cl.² B60T *8/093*
U.S. Cl. 303—21 CH **25 Claims**



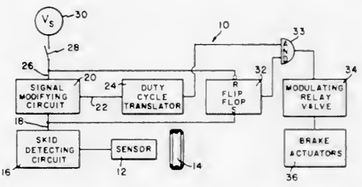
1. In a fluid braking system including an individual wheel braking system and source of pressurized braking fluid connected thereto, the improvement which comprises:
means for blocking fluid flow between the individual wheel braking system and the source of pressurized braking fluid, in response to excessive slipping of the individual wheel, and
means for continuous varying of the pressure in the individual wheel braking system while such fluid flow is blocked.

3,953,082
ANTISKID CONTROL SYSTEM
Donald L. Smith, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Feb. 25, 1974, Ser. No. 445,065
Int. Cl.² B60T *8/04*
U.S. Cl. 303—21 A **8 Claims**



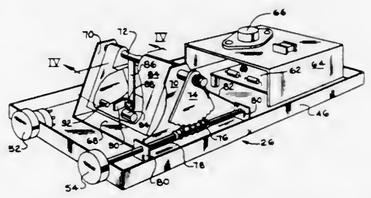
1. A wheel deceleration sensor for a vehicle wheel having a variable force, operator actuated brake, comprising:
a shaft rotatable with said wheel;
an inertial mass rotatable with said shaft and movable axially thereof in response to deceleration of the shaft in excess of the deceleration of the mass;
a spring restraining said mass from axial movement with respect to said shaft;
means responsive to the force with which the operator actuates the brake to vary the restraint on axial movement of the mass directly as a function of the braking force applied by the operator; and
means responsive to axial movement of the mass to indicate excessive wheel deceleration.

3,953,083
DUTY CYCLE TRANSLATOR FOR ADAPTIVE BRAKING CONTROL CIRCUIT
Bruce E. Latvala, and Marc A. Karon, both of Elyria, Ohio, assignors to The Bendix Corporation, South Bend, Ind.
Filed Dec. 9, 1974, Ser. No. 530,784
Int. Cl.² B60T *8/00*
U.S. Cl. 303—21 P **16 Claims**



1. In a vehicle having a wheel, a brake controlling said wheel, and fluid pressure reponsive means for actuating said brake, and adaptive braking system controlling communication to said fluid pressure responsive means comprising:
speed sensing means for generating a speed signal proportional to the rotational velocity of said vehicle wheel;
skid detecting means responsive to said speed signal for generating a skid detecting signal when an incipient skidding condition of said wheel is detected and terminating said skid detecting signal when the incipient skidding condition terminates;
means responsive to the output of said skid detecting means for generating a brake pressure control signal; and
modulator means responsive to said brake pressure control signal for controlling communication to said fluid pressure responsive means;
said brake pressure control signal generating means including means responsive to said skid detecting signal for generating a pressure command signal, means for generating a feedback signal without direct measurement of the fluid pressure level in said fluid pressure actuator, and means for comparing the feedback signal with the pressure command signal and generating said control signal when the feedback signal and the pressure command signal are in a predetermined relationship with one another, said feedback signal generating means being responsive to said control signal to generate said feedback signal.

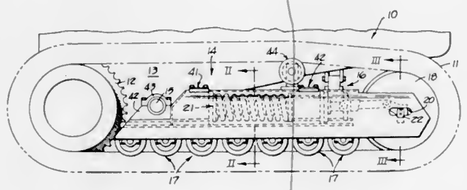
3,953,084
TOWED VEHICLE ELECTRIC BRAKE CONTROL
Rene E. Pittet, Jr., Marshall, and Philip J. Grant, Homer, both of Mich., assignors to Tekonsha Engineering Co., Tekonsha, Mich.
Division of Ser. No. 385,102, Aug. 2, 1973, Pat. No. 3,909,075. This application June 30, 1975, Ser. No. 591,435
Int. Cl.² B60T *8/16*
U.S. Cl. 303—24 R **3 Claims**



1. An inertial sensor for braking control apparatus as in towed vehicles comprising a shaft, a housing adjustably supporting said shaft on an axis transverse to the direction of movement of said towed vehicle, a laminated thin cantilevered

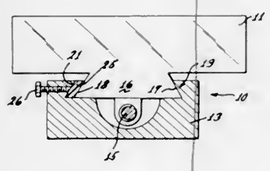
spring member affixed at its upper end to said shaft and being weighted at its lower end and said spring member carrying a light interrupting shield, a light source provided on one side of said housing, and a light sensing target on the other side of said housing, said source and said target being on a common axis interrupted by selected movement of said spring member.

3,953,085
TUBULAR GUARD FOR TRACK ROLLER FRAMES AND METHOD FOR MAKING THE SAME
Victor Randour, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Mar. 17, 1975, Ser. No. 558,978
Int. Cl.² B62D *55/10*
U.S. Cl. 305—16 **14 Claims**



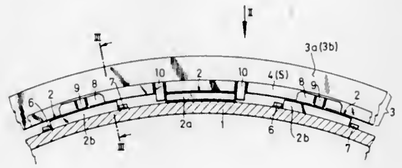
1. In a track-type vehicle of the type comprising a pair of metallic track roller frames mounted on either side thereof and a plurality of track rollers rotatably mounted on each of said frames, the improvement wherein each of said frames comprises a tubular guard including a pair of longitudinally disposed substantially identical members secured together at pairs of upper and lower edges thereof disposed medially of said guard and extending substantially the full length thereof.

3,953,086
GIB
Frank R. Chaffin, Thousand Oaks, Calif., assignor to W. S. Shamban & Co., Los Angeles, Calif.
Filed July 15, 1974, Ser. No. 488,516
Int. Cl.² F16C *17/00*
U.S. Cl. 308—3 A **20 Claims**



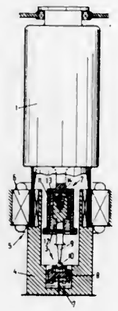
1. A gib for use in a machine tool comprising
a tapered body member including at least one planar surface with respect to which the opposite surface is tapered,
means on at least one of surfaces forming spaced surface portions projecting from said one surface and adapted to form spaced contact areas, and
at least said surface portions being of a material including a thermoplastic polymer having dispersed uniformly therein finely divided particles of a fluorocarbon resin.

3,953,087
BEARING RING MOUNTING FOR ROTARY DRUM
Jürgen Wurr, Ennigerloh; Kurt Henning, and Horst Bönisch, both of Neubeckum, all of Germany, assignors to Polysius AG, Neubeckum, Germany
Filed May 14, 1975, Ser. No. 577,183
Claims priority, application Germany, May 27, 1974, 7418334[U]
Int. Cl.² F16C *29/00*
U.S. Cl. 308—22 **6 Claims**



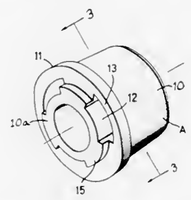
1. In a rotary drum having a bearing ring loosely mounted upon the drum periphery for circumferential movement relative to the drum; the improvement comprising a plurality of axially extending support plates mounted on said drum in underlying relationship to said bearing ring, and a pair of limiting rings mounted on said support plates at the axially opposite sides of said bearing ring to restrict axial movement of said bearing ring relative to said drum while accommodating circumferential movement of said bearing ring relative to said drum.

3,953,088
DEVICE COMPRISING AN AUTOMATICALLY ALIGNING BODY OF REVOLUTION
Arnoldus Paulus Cornelius Maria van der Beek, Beekbergen, Netherlands, assignor to Ultra Centrifuge Nederland N.V., The Hague, Netherlands
Filed Oct. 18, 1974, Ser. No. 516,084
Claims priority, application Netherlands, Oct. 26, 1973, 7314750
Int. Cl.² F16C *23/00*
U.S. Cl. 308—147 **21 Claims**



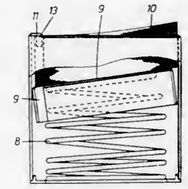
1. A device comprising a body of revolution supported by a pivot means in a damped pivot bearing, a housing rigidly connected with the body of revolution and disposed between said pivot means and said body of revolution, an adjusting body extending into said housing and connected at one end portion thereof to the pivot means, and elastic means for elastically connecting the adjusting body to the housing, said housing containing a highly viscous damping fluid.

3,953,089
PRESS FIT BEARING
Susumu Dainin, Higashiosaka, Japan, assignor to Maruzen Sewing Machine Co., Ltd., Moriguchi, Japan
Filed Dec. 11, 1974, Ser. No. 531,552
Claims priority, application Japan, Dec. 18, 1973, 48-146015
Int. Cl.² F16C *17/02, 27/02, 33/10, 33/66*
U.S. Cl. 308—237 R **4 Claims**



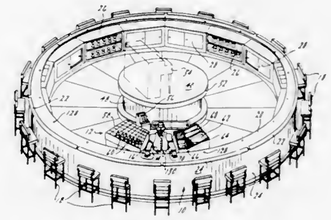
1. A shaft bearing comprising a cylindrical body adapted to be received in a bearing mounting, said body having an axial bore to receive a shaft and having a plurality of equi-angularly spaced passages extending longitudinally through said bore with solid body portions being disposed intermediate adjacent and between passages and each passage being diametrically opposite a substantially equi-angular solid body portion, each of said passages being disposed radially outwardly of said bore and intermediate said bore and the periphery of said body, each passage being arcuate in transverse cross section and located on a common annulus concentric with said bore, the thickness of a body portion disposed outwardly of a passage being less than the thickness of a body portion disposed inwardly of said passage, said outwardly disposed body portions being deformable radially inwardly in response to compressive forces acting on said cylindrical body when received in a bearing mounting.

3,953,090
MEMORANDUM SHEET DISPENSER
Hans Fuchs, Deweerthstrasse 98, 56 Wuppertal 1, Germany
Filed May 27, 1975, Ser. No. 580,740
Claims priority, application Germany, June 5, 1974, 2427203
Int. Cl.² B42F *17/00*
U.S. Cl. 312—183 **5 Claims**



1. A rectangular memorandum sheet dispenser adapted to house individual and separate rectangular memorandum sheets stacked in the dispenser, in which at least the upper part of the inserted stack of memorandum sheets can be opened up in the manner of a stitched memorandum book, so that many memorandum sheets are still held in the memorandum sheet dispenser and the sheets can be written upon, comprising:
an open top, rectangular box-shaped housing having a bottom, a front wall, two sides, and a rear wall;
a triangular shaped closing means at the rear and side walls spanning each rear corner to retain a stack of memorandum sheets at the rear corners and at the top of said stack to expose the major part of the sheet of the stack at the top;
a helical spring fitted under the stack to press said stack upwardly against said closing means at the top of said housing;
elongated guiding elements directly below and integral with said closing means and adjacent said side walls of said housing, said guiding elements extending downwardly in said housing a short distance to align the sheets in the stack which are recessed in a shape corresponding to the cross section of said guiding elements, whereby the upward movement of said stack follows the recess by the engagement of said guiding elements near the top of the stack; and,
said memorandum sheets of said stack each being provided with guiding recesses adjacent the rear edge thereof and at each side for engagement with said guiding means whereby one is able to pull out any desired memorandum sheet lying deeper in the stack without loosening or undoing any of the sheets lying above it.

3,953,091
MECHANIZED SERVICE BAR
George D. Shults, 1510-79th Ave. North, St. Petersburg, Fla. 33702
Filed Sept. 30, 1974, Ser. No. 510,763
Int. Cl.² A47B *77/08*
U.S. Cl. 312—223 **19 Claims**



1. A mechanized service bar comprising a service counter adapted to accommodate a plurality of patrons at spaced serving stations along one side thereof, a carriage mounted for guided movement along a path immediately adjacent to other side of said service counter, an operating station on said carriage disposed at a position adjacent to said serving stations and adapted to accommodate a carriage operator, reversible drive means operably associated with said carriage propelling said carriage along said path including means controlling the acceleration and deceleration of said carriage from and to a stationary position, actuating means on said carriage disposed at said operating station selectively actuatable by a carriage operator for controlling said reversible drive means and the direction and speed of travel of said carriage, and storage means on said carriage accessible from said operating station for storing a supply of dispensable items for dispensing by the carriage operator directly to the patrons at said serving stations along said service counter.

3,953,092
MINI-DESK
William J. Cronan, and Jerry N. Appling, both of Northport, Ala., assignors to Artistic Innovation Developers, Inc., Tuscaloosa, Ala.
Filed Feb. 3, 1975, Ser. No. 546,459
Int. Cl.² A47B *27/04*
U.S. Cl. 312—233 **3 Claims**

1. A portable desk comprising
a. A relatively rigid and essentially rectangular receptacle, having a depth relatively shallow when compared with

length and width, having means connected thereto for carrying;

b. A writing surface which also serves as a cover for the receptacle, having means for being selectively retained on said receptacle, wherein said selective retaining means comprises flanged tongues on opposite parallel receptacle sides, and flanged means having grooves on matching opposite parallel writing surface sides, allowing lateral movement; said movement restricted by projections on the underside of the writing surface laterally across the diaphragm and side walls of the receptacle, said writing surface being sufficiently resilient to allow the projections to clear the side walls of the receptacle upon application of pressure upwardly on the writing surface, allowing clearance of said projections over said walls;

c. Means attached to the writing surface for selectively retaining writing medium;

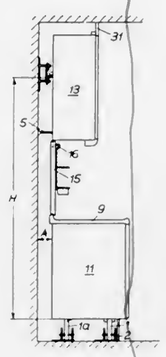
d. A plurality of compartments in sizes for separately containing standard writing media and files therefor, writing instruments and paraphernalia; diaphragms for said compartments also creating support for the writing surfaces in wider models of the invention.

3,953,093

KITCHEN UNITS CONSISTING OF PREFABRICATED ELEMENTS

Franz Hero, Stafa, Switzerland, assignor to Team Form AG, Stafa, Switzerland

Filed Nov. 12, 1974, Ser. No. 523,177
Claims priority, application Austria, Nov. 12, 1973, 9488/73
Int. Cl.² A47F *5/08*
U.S. Cl. 312—245 **7 Claims**



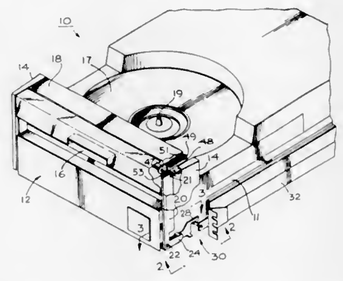
1. Kitchen units including prefabricated elements resting only on the floor, such as stoves, floor cabinets, etc., elements (13) secured to a wall, such as overhead cabinets, and elements (19) resting on the floor and secured to a wall, such as tal cabinets, characterized in that the elements (11) are instal. d on a horizontally aligned supporting bar (1) and a profi e bar (1a) in such a way that their rear side is disposed at a distance (A) from the wall, in that the elements (13) which are secured to the wall are suspended at the same distance (A) from the wall on a profile bar (3) which is anchored on the wall and arranged at a predetermined distance (H) from the supporting bar (1), and the elements (19) which both rest on the floor and are secured to the wall are secured to the supporting bar (1) and suspended on the bar (3), the profile bar (3) having a generally L-shaped cross-section, two oppositely directed grooves (3a, 3b) and a vertical flange (3d) on a horizontal arm (3c), a holder (20) which is connected to the elements (13, 19) engaging in said vertical flange.

3,953,094

CABINET CONFIGURATION FOR LOADING DISC DRIVE APPARATUS

Leon Henry Brown, Jr., Sylmar, Calif., assignor to Wangco Incorporated, Los Angeles, Calif.

Filed Nov. 30, 1973, Ser. No. 420,663
Int. Cl.² A47B *88/00, 96/00;* **E05B** *3/00;* **E05C** *3/16*
U.S. Cl. 312—303 **8 Claims**



1. In disc drive apparatus adapted for receiving a standard disc cartridge of the top loading type, the combination comprising:

a chassis portion of said apparatus having a disc cartridge space partially extending forward beyond the limit of an associated enclosure;

a front enclosure disposed to enclose said extended chassis portion, said front enclosure comprising a pivotable front panel member, a lid member coupled to the front panel member, the lid member extending in a horizontal plane over a portion of the space in which the disc cartridge may be mounted;

means mounting the front panel member to said chassis for pivoting about an axis along its lower forward edge to permit the front panel and lid members to pivot forwardly about said axis so as to clear the disc cartridge space; and

means for substantially preventing said lid member from moving above said horizontal plane as said front panel is pivoted forwardly,

means for releasably latching the front enclosure and the chassis in the closed position.

3,953,095

ELECTRIC CONNECTION DEVICE HAVING ROTATABLE CONTACTS

Hiroyasu Iino, Ohmiya; Akira Seko; Harutoshi Tsujimura, both of Yokohama; Takashi Oka, Tokyo; Naoki Ogawa, and Hiroshi Tsuda, both of Yokohama, all of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed May 20, 1975, Ser. No. 579,216
Claims priority, application Japan, May 27, 1974, 49-59809; May 28, 1974, 49-61520
Int. Cl.² H01R *39/00*
U.S. Cl. 339—6 R **8 Claims**

1. A device for providing electric connection between an element attached to a rotatable member and another element attached to a stationary member, comprising:

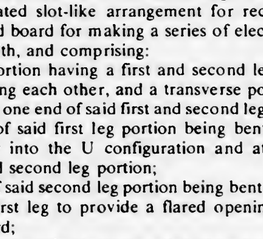
a cylindrical housing of an insulating material with vacant cylindrical center;

an annular base plate of an insulating material coaxially disposed in said housing in such an arrangement that said base plate is movable within said housing both in circumferential directions and in longitudinal axial directions;

first and second annular contact plates spaced from each other and placed fixedly and coaxially on a first face of said base plate;

first and second contact pins disposed in said housing in such an arrangement that said first and second contact pins are in contact with said first and second contact plates, respectively, and extend therefrom substantially perpendicularly to said contact plates; and

means for urging said contact pins to be always pushed against said contact plates, respectively, even when said base plate moves within said housing;



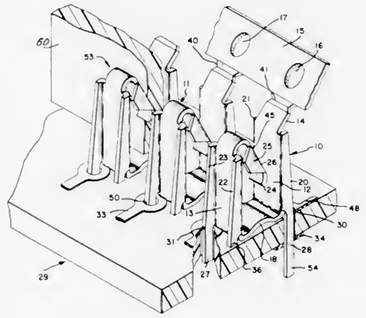
said housing being locally shaped and said base plate having at least one vertical arm extending outwardly of said housing such that one of said housing and said base plate can be fixed to said rotatable member and the other can be engaged with said stationary member such that the latter one is restrained from rotating together with said former one.

3,953,096

FREE STANDING MOTHER-DAUGHTER PRINTED CIRCUIT BOARD CONTACT ARRANGEMENT

Benjamin Charles Williams, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 429,452, Dec. 28, 1973, abandoned. This application Aug. 6, 1975, Ser. No. 602,344
Int. Cl.² H05K *1/07*
U.S. Cl. 339—17 L **3 Claims**



1. A free standing contact for mounting in a first board, and which, when used with similar contacts arranged along a line, forms an elongated slot-like arrangement for receiving the edge of a second board for making a series of electrical connections therewith, and comprising:

a U-shaped portion having a first and second leg portions with surfacing each other, and a transverse portion joining together one end of said first and second leg portions;

the free end of said first leg portion being bent over and downwardly into the U configuration and at an angle towards said second leg portion;

the free end of said second leg portion being bent outwardly from said first leg to provide a flared opening for said second board;

at least one section of at least one edge of each of said first and second leg portions being bent back in a direction away from the facing surface of the opposite leg portion to form the cross-sectional areas of said first and second leg portions to include generally L-shaped configurations;

a first pair of said bent-back edges diagonally positioned with respect to each other on said first and second legs, extending continuously beyond the said transverse portion to form post-like terminals for insertion into mating holes in said first board;

a second pair of said bent-back edges diagonally positioned with respect to each other on said first and second legs, terminating upon said first board;

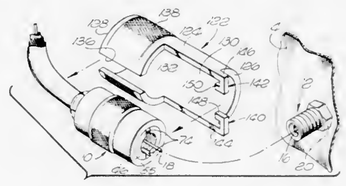
at least one edge of the bent over free end of said first leg portion being bent back and away from the facing surface of said opposite leg.

3,953,097

CONNECTOR AND TOOL THEREFOR

Gerald Graham, Kleinburg, Canada, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 7, 1975, Ser. No. 565,343
Int. Cl.² H01R *13/54*
U.S. Cl. 339—37 **1 Claim**



1. A connector for a fitting comprising:

a hollow shell;

a body rotatable inside said shell, said body having a forward end and a rear end;

means preventing said body from being removed from said shell;

means adjacent to said forward end of said body for releasably coupling said body to said fitting upon rotation of said body in one direction;

a pair of spaced recesses opening at said forward end of said body adapted to receive a tool therein for rotating said body;

one-way driving means in said shell engaging said body effecting rotation of said body in said one direction upon rotation of said shell in the same direction, said one-way driving means effecting no rotation of said body upon rotation of said shell in the opposite direction whereby said body cannot be uncoupled from said fitting by rotation of said shell;

said one-way driving means comprising a one-piece spring metal washer;

said body having a pair of flat outwardly facing surfaces thereon in front of and adjacent to said washer, said surfaces being parallel to each other and tangential to an imaginary circle coaxial with the axis of rotation of said body;

said shell having a pair of flat outwardly facing surfaces thereon behind and adjacent to said washer, said surfaces being parallel to each other and coplanar with the corresponding surfaces on said body in one rotative position of said body relative to said shell;

said washer having a pair of integral forwardly extending one-way resilient driving tangs one generally diametrically opposed to the other, said one tang engaging one of said surfaces on said body and said other tang engaging the other of said surfaces on said body upon rotation of said shell in said one direction;

said washer having a pair of integral rearwardly extending one-way resilient driving tangs one generally diametrically opposed to the other, said one tang engaging one of

said surfaces on said shell and said other tang engaging the other of said surfaces on said shell upon rotation of said shell in said one direction;

said surfaces on said body and said shell overriding said resilient tangs upon rotation of said shell in said opposite direction; and

said tangs being bent from said washer along imaginary parallel lines tangential to a second imaginary circle coaxial with said axis.

3,953,098

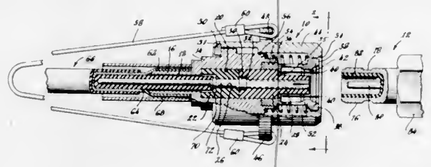
LOCKING ELECTRICAL CONNECTOR

Roger Peter Avery, Bethel, and William Max Erich Zerlin, Newtown, both of Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 257,639, May 30, 1972, abandoned. This application Feb. 1, 1974, Ser. No. 429,798

Int. Cl. H01r *13/54*

U.S. Cl. 339—45 R **1 Claim**



1. A locking electrical connector comprising a tubular electrically conductive body, a block of insulating material carried therein, at least one contact member carried in said block, a tubular outer contact member press fitted in one end of said body and abutting against said block to retain it in said body, fingers on the forward portion of said contact member, the extremities of said fingers being outwardly flexible to expand the diameter of the contact, an inwardly directed projection adjacent the outer end of each finger, adapted to coact with complementarily shaped surfaces on a mating connector, and a longitudinally movable sleeve mounted on said body, said sleeve being movable to a position where it surrounds the outer ends of said fingers, the inner diameter of said sleeve being sized to prevent expansion of the diameter of said contact when said sleeve is in said surrounding position.

3,953,099

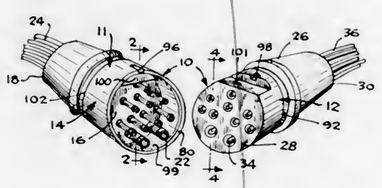
ONE-PIECE ENVIRONMENTAL REMOVABLE CONTACT CONNECTOR

William Dean Wilson, Naperville, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 423,035, Dec. 10, 1973, abandoned, which is a continuation of Ser. No. 275,751, July 27, 1972, abandoned. This application June 2, 1975, Ser. No. 583,233

Int. Cl.² H01R *13/52, 13/64*

U.S. Cl. 339—60 M **8 Claims**



1. A connector assembly comprising mating receptacle and plug members, each comprising

a one-piece molded housing of insulating material with front and rear faces,

a plurality of cavities longitudinally extending between said faces, each of said cavities including a bore in close juxtaposition with said front face and rearwardly contiguous therewith a restricted passage formed by at least one resilient riser, a plurality of rearwardly removable contacts respectively mounted in said bores, each of said contacts for connection to an insulated conductor and shaped to prevent removal by normal contact mating and unmating forces but permitting a larger force than said normal forces to cause rearward removal of said contact by radially expanding said riser, said riser normally retaining said conductor in a sealing relationship, said housing including front and rear abutment shoulders in said bore and said contact including shoulders, said housing shoulders releasably bearing against said contact shoulders, said housing of said receptacle member including a resilient sleeve integrally formed on said housing and frontwardly extending from said front face of said receptacle member, said sleeve including a forward end with an inwardly directed, elastically expandable lip extending circumferentially around said sleeve, and a polarizing shape inside said sleeve and rearwardly disposed from said lip, and said housing of said plug member including a forward end portion including said front face of said plug member and with a cylindrically-shaped outer perimeter for telescoping engagement within said sleeve, said perimeter including a circumferential sealing surface rearwardly spaced from said front face of said plug member for engagement with said sleeve when said receptacle and plug members are mated and a corresponding cutaway portion frontwardly disposed from said sealing surface to receive said polarizing shape.

3,953,100
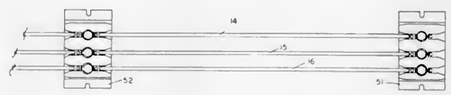
INFRARED LAMP HOLDER

Edward K. Feeney, Worthington, Ohio, assignor to Liebert Corporation, Columbus, Ohio

Filed Apr. 4, 1975, Ser. No. 565,202

Int. Cl.² H01R *13/00*

U.S. Cl. 339—112 R **10 Claims**



1. A lamp holder for an infrared heating unit wherein the lamp is of the type having a base at either end and an energization wire protruding from the base, comprising:

a structure having a plurality of cavities in alternate pairs on both sides of its lower end, the number of cavities equal to the number of lamps held thereby;

said cavities adapted for receiving the bases of said lamps,

a bore extending upwardly from each of said cavities to the uppermost region of said structure,

a conductive bar for each pair of said alternate cavities positioned on the uppermost region of said structure,

said conductive bars having bores therein aligned with said bores in said cavities, said bores in said cavities and said conductive bars adapted to receive said lamp wires, and

said conductive bars having means for receiving and retaining an energization wire.

3,953,101

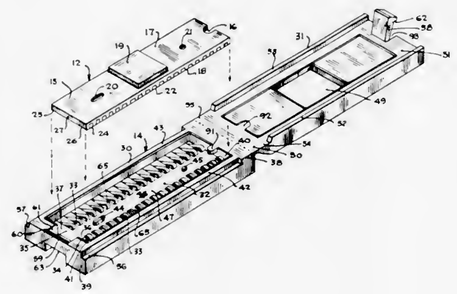
ELECTRICAL CONNECTOR ASSEMBLIES

Vincent James Palecek, Cicero, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 196,022, Nov. 5, 1971, abandoned. This application May 12, 1975, Ser. No. 576,510

Int. Cl.² H01R *13/50, 13/64*

U.S. Cl. 339—174 **11 Claims**



1. An electrical connector for receiving a flat integrated circuit package having a thin, fragile body with a rearwardly directed major surface and a plurality of thin conductive pads arranged longitudinally along opposite sides of said major surface, said connector comprising insulating base means including a cavity with a front face for receiving in juxtaposition said major surface in an electrically connecting position, the front face including opposite longitudinal side surfaces and a plurality of contact-receiving bores arranged in a row along each of said side surfaces and extending rearwardly into the base means,

a plurality of metallic contact means including mounting portions fixedly positioned in said bores of said base means, rearwardly disposed terminal portions for electrical connection to external conductors, free-ended, frontwardly-facing active portions disposed frontwardly a distance from said side surfaces over said bores and below said pads for pressure-developing engagement with said pads when said major surface is moved rearwardly into said cavity to said electrically connecting position, and further arranged for lateral movement to provide a wiping action on said pads, and elongated cantilever spring means extending along portions of said side surfaces and interconnecting said mounting and active portions for developing said pressure,

biasing means including means on said contact means and base means for resiliently restraining said active portions frontwardly from free, forward positioning with respect to said front face, restraining means on said base means and cooperating with said body for restraining said major surface and pads against lateral displacement during said lateral movement of said active portions against said pads, polarizing means disposed on the base means and arranged for receiving the package in a predetermined orientation, and holding means fastenable to the base means and engageable with said body for holding said pads rearwardly in pressure engagement against said active portions after rearward movement of said package into said cavity and into said electrically connecting position.

3,953,102

TERMINAL CLIP FOR MICROMODULE

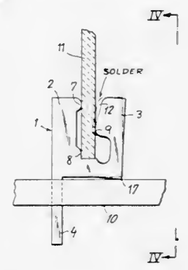
Gianfranco Rivetta, and Guido Castracani, both of Milan, Italy, assignors to Societa Italiana Telecommunicazioni Siemens S.p.A., Milan, Italy

Filed Sept. 16, 1974, Ser. No. 506,111

Claims priority, application Italy, Sept. 18, 1973, 29041

Int. Cl.² H01R *13/12*

U.S. Cl. 339—258 R **5 Claims**



1. A terminal clip to be soldered onto a flat body of dielectric material with a conductive coating on at least one surface, comprising a sheet-metal member forming a base, a first prong and a second prong integral with one another, said base and said first prong being relatively nondeformable, said second prong being resiliently deformable with reference to said base in the plane of said member and defining with said first prong an insertion slot for said body, said first prong being provided with a first projection at its free end and with a second projection at said base, said first and second projections facing said second prong to bear upon a surface of the inserted body, said second prong being provided with a third projection facing said first prong between said first and second projections to bear upon another surface of the inserted body, said first and second projections being tangent to an imaginary line spaced from said third projection, said base having an edge transverse to said imaginary line forming a seat for said body between said second projection and said second prong, said member further having a connecting tab extending outwardly from the region of said first prong.

3,953,103

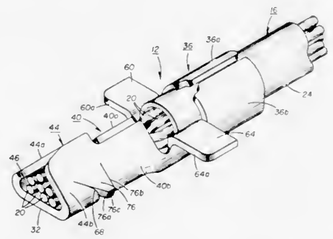
PLUG-IN TERMINAL

Joseph D. Mathis, Indianapolis, Ind., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 27, 1974, Ser. No. 544,528

Int. Cl.² H01R *11/08*

U.S. Cl. 339—276 T **8 Claims**



1. An electrical connector, which comprises:

an elongated ferrule base constructed of electrically conductive, ductile material;

a pair of first side walls projecting in the same direction from opposite sides of said ferrule base along the length thereof, said first side walls being of different heights and

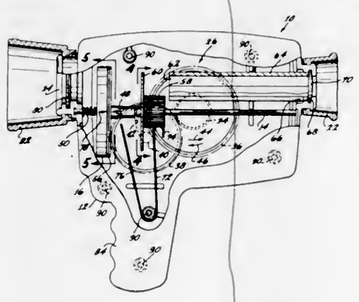
being of sufficient heights to be deformed toward each other to abut the end of the shorter side wall against the edge face of the longer side wall to define with the ferrule base a triangular configuration, and

a pair of second side walls projecting in said same direction from opposite sides of said ferrule base along the length thereof, said second side walls being of different heights and projecting further from said base than said first side walls, and being of sufficient heights to be deformed toward each other to abut the end of the shorter second side wall against the edge face of the longer second side wall to define with the ferrule base a triangular configuration having a cross-sectional area which is greater than that of the triangular configuration defined by the deformed first side walls.

3,953,104
CAMERA VIEWER TOY

Nicholas Joseph Roitz, Torrance, and Harold Eugene Steinberg, Culver City, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 25, 1974, Ser. No. 526,993
Int. Cl.² G02B *27/08*
U.S. Cl. 350—4 **8 Claims**



1. A camera viewer toy, comprising:

a housing having the general size and shape of a camera;

a color wheel rotatably mounted in said housing, said color wheel having an opening provided therein and a plurality of colorful designs surrounding said opening;

an eye piece mounted in said housing upstream of said color wheel and in alignment therewith;

An opening in said housing downstream of said color wheel, said housing opening being in alignment with the opening in said color wheel when said color wheel is held in a predetermined, rotated position, whereby a viewer using said eye piece may view objects outside of said housing; and

wheel-moving means connected to said color wheel for selectively rotating said color wheel to present a colorful display to said viewer and for fixing said color-wheel opening in alignment with said housing opening.

3,953,105
HOLOGRAPHIC SCANNER UTILIZING AUXILIARY REFLECTIVE SURFACE

Charles Ih, Darien, Conn., assignor to Epsco, Incorporated, Westwood, Mass.

Filed Oct. 16, 1974, Ser. No. 515,317
Int. Cl.² G02B *27/17*; G03H *1/04*
U.S. Cl. 350—7 **4 Claims**

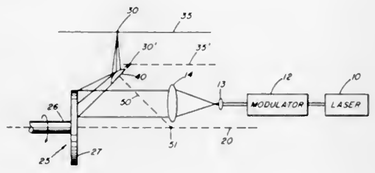
1. An optical scanning system, comprising:

an optical spinner having a surface rotatable about an axis that is substantially perpendicular to said surface at its point of intersection with said axis; a record medium curved about an axis parallel to said axis;

means for effecting rotation of said surface about said axis;

means for directing a source of coherent radiation toward said surface;

a zone-plate lens covering at least a portion of said surface, said lens being configured to receive said radiation and direct it at a skewed angle with respect to both said surface and said axis toward a first scanning focal point locus; and

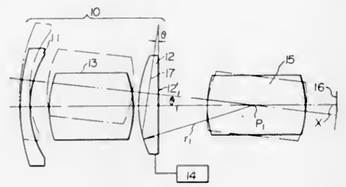


an auxiliary reflective means disposed in the path of said directed radiation, said reflective means being shaped to redirect said radiation toward a second scanning focal point locus on said record medium such that the central ray of said radiation is in a plane substantially perpendicular to said axis.

3,953,106
IMAGE STABILIZING OPTICAL SYSTEM

Hiroshi Furukawa, Tokyo, and Akira Tajima, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 405,631, Oct. 11, 1973, abandoned, which is a continuation of Ser. No. 209,619, Dec. 20, 1971, abandoned. This application June 18, 1974, Ser. No. 480,467
Claims priority, application Japan, Dec. 28, 1970, 45-128422
Int. Cl.² G02B *23/00*
U.S. Cl. 350—16 **4 Claims**

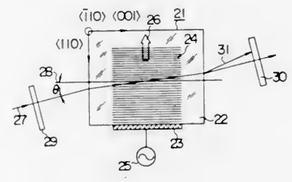


1. In an image stabilizing lens system for an optical instrument having means for stabilizing said lens system and having an imaging lens system therein comprising an afocal inverted Galileian telescopic system section arranged in front of said imaging lens system, the rearmost lens element of said inverted Galileian telescopic system being defined by a spherical front surface and a substantially plane rear surface, and pivoted at substantially the center of curvature of said rearmost lens element for being maintained by said stabilization means in fixed angular orientation with respect to an original line of sight in order to compensate for jiggle of the image at the focal plane despite accidental angular displacement of said instrument with respect to the original line of sight and wherein a relationship between the index of refraction, N, of a transparent material employed in said rearmost lens element and the angular magnification power, M, of said entire afocal inverted Galileian telescopic system is established so that M is substantially equal to $N - 1$.

3,953,107
ACOUSTO-OPTIC FILTER

Tsutomu Yano, Kawasaki; Yasumasa Nabeta, Tokyo; Koetsu Saito, Kawasaki, and Akinori Watanabe, Komae, all of Japan, assignors to Matsushita Electric Industrial Company, Ltd., Osaka, Japan

Filed July 1, 1974, Ser. No. 485,002
Claims priority, application Japan, July 3, 1973, 48-75583
Int. Cl.² G02F *1/18*, *1/32*
U.S. Cl. 350—149 **3 Claims**



1. An acousto-optic filter comprising:

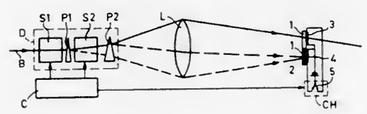
a medium in which light has two different phase velocities in a propagating direction, means for propagating an ultrasonic wave in said medium, and

means for injecting a light beam into said medium so as to cause far-off-axis anisotropic Bragg diffraction with said ultrasonic wave.

3,953,108
DIGITAL BEAM DEFLECTOR

Klaus Peter Schmidt, Quickborn, and Claus Wiech, Hamburg, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 24, 1974, Ser. No. 517,780
Claims priority, application Germany, Oct. 27, 1973, 2353950
Int. Cl.² G02F *1/31*
U.S. Cl. 350—150 **4 Claims**

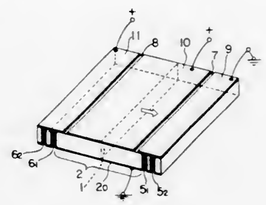


1. Digital beam deflector of the type comprising an electrical control circuit, a plurality of deflection stages each connected to said electrical control circuit and which each comprise an electrooptical polarization switch and a birefringent element, said beam deflector providing output signal radiation in a desired direction and disturbance radiation in undersirable directions, the improvement comprising a lens after the final deflection stage for spatially separating the signal radiation from the disturbance radiation and a radiation chopper after the lens comprising a plurality of signal variable radiation deflecting elements, each of said elements being connected to and being adjustable by an electronic signal from said control circuit which also controls the polarization switches in the deflection stages to selectively block the disturbance radiation separated by said lens.

3,953,109
DOMAIN SWITCHING ELEMENT

Akio Kumada, Kokubunji, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 7, 1974, Ser. No. 449,078
Claims priority, application Japan, Mar. 7, 1973, 48-26116
Int. Cl.² G02F *1/05*
U.S. Cl. 350—160 R **9 Claims**



1. A domain switching element comprising:

an irregular ferroelectric crystal plate having first and second surfaces opposite one another, said plate containing multi-domain nucleus regions disposed in spaced-apart portions thereof;

a first electrode layer disposed on a first portion of said first surface of said plate between said multi-domain nucleus regions therein;

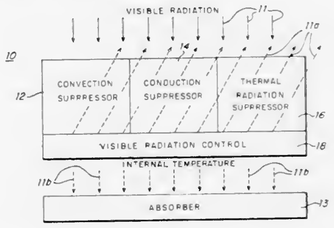
second and third electrode layers disposed on second and third portions of said first surface of said plate, respectively spaced apart from opposite edges of said first electrode layer, so as to overlie said multi-domain nucleus regions disposed in said spaced-apart portions of said plate, respectively; and

a fourth electrode layer disposed on a first portion of said second surface of said plate between said spaced-apart portions of said plate containing said multi-domain nucleus regions.

3,953,110
TRANSPARENT THERMAL INSULATING SYSTEM

Day Charoudi, 5A Newton Place, Somerville, Mass. 02143

Filed May 20, 1974, Ser. No. 471,767
Int. Cl.² B32B *7/00*; F24J *3/02*; G02F *1/19*
U.S. Cl. 350—161 **16 Claims**



1. A transparent thermal insulating system having controllable transmissivity to visible radiation comprising:

a first layer transparent to visible radiation;

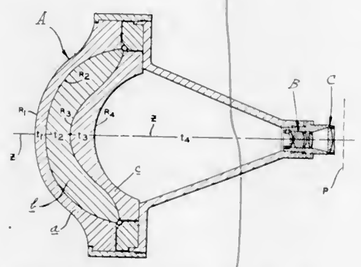
a second layer transparent to visible radiation and spaced from said first layer;

partition means for separating the space between said layers into compartments;

a thermal radiation suppressor device for suppressing thermal radiation transmission; and

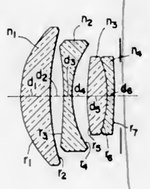
a variable transparency thermal control device for controlling transmission of visible radiation as a function of temperature.

3,953,111
NON-LINEAR LENS
Ralph W. Fisher, St. Charles; George Licis, Manchester, and Wayne W. Schurter, Bridgeton, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.
Filed Nov. 4, 1974, Ser. No. 520,487
Int. Cl.² B29D 13/18; G02B 13/08
U.S. Cl. 350—189 10 Claims



1. A non-linear lens comprising first lens means for distorting a scene in the field of view for the lens such that objects in the vicinity of the optical axis are given substantially greater prominence than objects in the peripheral region of the field of view, and second lens means for forming a real image of the scene as distorted by the first lens means, whereby objects in the vicinity of the optical axis will occupy a disproportionately large area of the real image and objects in peripheral regions of the scene will occupy a disproportionately small area of the real image.

3,953,112
BEHIND-STOP TYPE COMPACT PHOTOGRAPHIC LENS SYSTEM
Toshihiro Imai, Fuchu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed May 17, 1974, Ser. No. 471,058
Claims priority, application Japan, May 19, 1973, 48-55192
Int. Cl.² G02B 9/20
U.S. Cl. 350—227 3 Claims

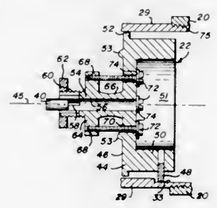


1. A behind-stop type compact photographic lens system comprising three lens components, a first lens component being a positive meniscus lens, a second lens component being a biconcave lens and a third lens component being a cemented positive doublet lens, and said behind-stop type photographic lens system satisfying the following conditions:

1. $0.7f < r_2 < 0.87f$
2. $f < -r_3 < 1.4f$
3. $0.6f < r_5 < 0.92f$
4. $0.29f < -r_6 < 0.38f$
5. $0.08f < d_2 + d_4 < 0.11f$
6. $1.65 < n_2 < 1.72$
7. $6 < \nu_3 - \nu_4 < 10$

wherein reference symbol f represents a focal length of the lens system as a whole, reference symbols r_2, r_3, r_5 and r_6 respectively represent radii of curvatures of the surface of the first lens component on the image side, the surface of the second lens component on the object side, the surface of the third lens component on the object side and the cemented surface of the third lens component, reference symbols d_2 and d_4 respectively represent airspaces between the first and second lens components and between the second and third lens components, reference symbol n_2 represents the refractive index of the second lens component, and reference symbols ν_3 and ν_4 respectively represent Abbe's numbers of the front and rear lens elements of the third lens component.

3,953,113
LASER MIRROR MOUNTING DEVICE
William A. Shull, Portola Valley, Calif., assignor to Liconix, Mountain View, Calif.
Filed Nov. 8, 1974, Ser. No. 522,093
Int. Cl.² G02B 5/08
U.S. Cl. 350—288 13 Claims



1. A removable laser mirror mounting device for insertion into a housing of a multi-wavelength laser which is adapted to allow for the exchange of mirror mounting device sets associated with each wavelength of operation of the laser without requiring that the laser be realigned after each exchange of the laser mirror mounting device sets, the housing of the multi-wavelength laser having an internal reference surface, said device comprising:

a main body forming an external reference surface for mating with the internal reference surface of the housing when said device is inserted into said housing;

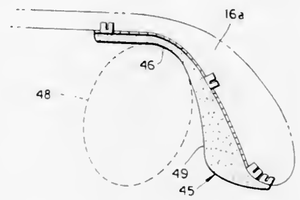
a mirror associated with one of the wavelengths of operation of said laser;

holding means connected to said main body for receiving and fixedly holding said mirror; and

adjusting means connected to said main body and to said holding means for adjusting the position of said holding means with respect to said external reference surface such that the reflective surface of said mirror may be positioned in a predetermined manner relative to said internal surface and said device may then be removed from and subsequently reinserted into said housing without requiring readjustment of said mirror.

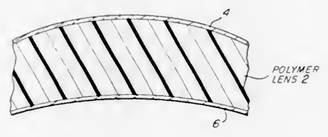
3,953,114
CUSHION RETAINING MEANS FOR EYEGLASSES
William T. Bidgood, 1032 W. Peachtree St., Atlanta, Ga. 30309
Filed Sept. 23, 1974, Ser. No. 508,415
Int. Cl.² G02C 5/16
U.S. Cl. 351—123 3 Claims

1. Retaining means for eyeglasses comprising a cushion member for attaching to the temple pieces of eyeglasses, said cushion member including a generally wedge-shaped cushion member having a thinner portion and a thicker portion, and attaching means fixed to said cushion member for removably fixing said cushion member to the lower edge of said temple piece, said attaching means being bendable to conform to the shape of said lower edge of said temple piece, said attaching means being so constructed and arranged to locate said cushion member so that said thinner portion is engageable with the top of the ear of a wearer and said thicker portion is immediately rearward of the ear, and a weight carried by the extending end of said temple piece rearward of said cushion member, said weight being just sufficient for holding said thicker portion down behind the ear to prevent forward movement of said temple piece, the arrangement being such that said cushion member is selectively movable along said lower edge to retain said thicker portion immediately rearward of the ear said attaching means comprising a channel, said channel including



a plurality of segments adjacent to one another and separated by a plurality of slits, at least one pair of clamp members carried by said channel and formed integrally with said segments and engageable with said temple piece, said channel being bendable selectively to provide a concave portion and a convex of said attaching means, said clamp members being located at said convex portion.

3,953,115
METHOD FOR PROVIDING AN ABRASION RESISTANT COATING FOR PLASTIC OPHTHALMIC LENSES AND THE RESULTING LENSES
Hollis E. French, North Chelmsford, and Jurgen M. Kruse, Lincoln, both of Mass., assignors to Itek Corporation, Lexington, Mass.
Continuation-in-part of Ser. No. 342,101, March 16, 1973, abandoned. This application July 5, 1973, Ser. No. 376,505
Int. Cl.² G02C 7/02; B32B 27/28
U.S. Cl. 351—166 25 Claims



1. A process for forming an abrasion resistant, adherent coating on a polymeric optical component, comprising:

a. forming a solution consisting essentially of a partially hydrolyzed vinyltri(lower alkoxy)silane in a water-miscible, volatile, organic solvent wherein said partially hydrolyzed vinyltri(lower alkoxy)silane is present from about 25 to about 75% by weight;

b. applying a thin, uniform coating of said solution to a clean surface of the optical component;

c. maintaining said coated component in an environment having a relative humidity greater than or equal to 70% and at a temperature of from about 25°C. to about 80°C.; and,

d. dehydrating said coated component at an elevated temperature below the temperature at which the component degrades until an adherent, abrasion resistant coating is formed.

19. A process for forming a thin, abrasion resistant, adherent, optically clear coating on a polymerized diethylene glycol bis(allyl carbonate) ophthalmic lens, comprising:

a. forming a solution consisting essentially of vinyltriethoxysilane in a water-miscible, volatile, organic solvent, said vinyl triethoxysilane being present in an amount of about 50% by weight;

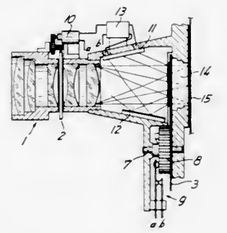
b. partially hydrolyzing said solution by contacting it with from about 7 to about 30 parts by weight of 0.1N hydrochloric acid per 100 parts of solution;

c. applying a coating of from about 3 to about 6 microns of said partially hydrolyzed solution to a clean surface of said lens;

d. maintaining said coated lens for at least about 24 minutes at a temperature between about 30°C. and 50°C. and a relative humidity above 90%; and,

e. dehydrating said coated lens at a temperature of from about 80°C. to about 100°C. and a relative humidity below about 10% to form an abrasion resistant, adherent, optically clear coating thereon, said dry coating having a thickness of from about 1.5 microns to about 3 microns.

3,953,116
EXPOSURE METER FOR PHOTOGRAPHIC CAMERAS
Johann Roth, Schwabhausen, and Robert Flandorfer, Munich, both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Dec. 3, 1974, Ser. No. 529,045
Claims priority, application Germany, Dec. 4, 1973, 2360356
Int. Cl.² G03B 7/08
U.S. Cl. 352—141 2 Claims

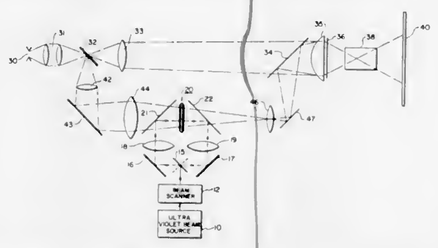


1. An exposure control mechanism for motion picture cameras including an objective lens, a diaphragm for regulating the light passing through said lens, an electronic control circuit including a photosensor and motor means coupled to said diaphragm, a picture frame, a shutter having a sector blade periodically covering said frame during operation of said shutter, light reflector means on said blade, said photosensor being located within said camera and positioned to receive light from said reflector means, whereby said control circuit initiates operation of said motor means in accordance with the intensity of light received from said reflector means during the time said frame is covered by said sector, and switching means coupled to said shutter disabling said motor means during the time period said frame is uncovered by said sector blade, said electronic control circuit utilizing a storage condenser receiving a charge voltage pulse from the sequential periodic illumination of said photosensor, said condenser being connected to a resistor forming therewith an RC network, the time constant of which is a multiple of the periodic frame sequence exposure time of said camera.

3,953,117
SINGLE IMAGE PLANE TWO COLOR PHOTOCHROMIC DISPLAY TECHNIQUE
Berry A. Cannon, Toms River, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed June 10, 1975, Ser. No. 585,650
Int. Cl.² G03B 21/26; G11B 7/02; G02B 5/23, 27/14
U.S. Cl. 353—11 7 Claims

1. A display system for projecting light from a broadband light source through an optically transparent information-bearing medium and onto a viewing screen comprising a thin

film substrate transparent to visible radiation, a first photochromic layer disposed on one side of said thin film, a second photochromic layer disposed on the opposite side of said film, said photochromic layers being normally transparent to visible light, said first and second photochromic layers changing to mutually distinct colors in response to ultraviolet radiation,



means for scanning a selected one of said two photochromic layers with ultraviolet radiation to write characters on said selected layer of the color corresponding to that layer,

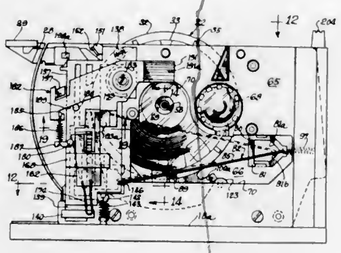
said layers and said film substrate being disposed in a path of said projected light whereby said characters appear on the viewing screen in conjunction with details of said information-bearing medium.

3,953,118

RESET MECHANISM FOR AN AUDIO-VISUAL DEVICE

Anatoli Brushenko, Elmhurst, Ill., assignor to GAF Corporation, New York, N.Y.

Filed June 5, 1974, Ser. No. 476,716
Int. Cl.² G03B *31/06*
U.S. Cl. 353—19 **10 Claims**



1. In an audio-visual device of the type adapted for use with a removable audio-visual unit including a transparency holder and an associated sound record disc having a plurality of grooves therein for recorded messages, wherein such holder mounts a plurality of discrete image transparencies arranged in a continuous pattern for successive visual display and wherein said record includes separate recorded messages corresponding to respective transparencies on said holder, the improvement comprising:

a. an advancing mechanism operable successively through a first cycle for intermittently moving said holder thereby to present said transparencies in seriatim for visual display;

b. a tone arm;

c. indexing mechanism operated in response to actuation of said advancing mechanism and engaging said tone arm for intermittently moving the latter to successive incremental positions corresponding to the starting grooves of respective messages on said record, said indexing mechanism including a reciprocally and slidably mounted member engaging said tone arm to effect positioning thereof; and

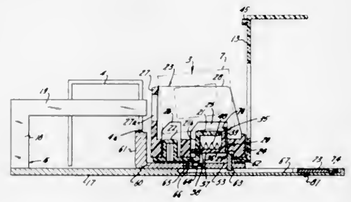
d. a reset mechanism independent of said audio-visual unit, said reset mechanism being connected with said indexing mechanism for automatically positioning said slidable member to locate said tone arm in a position corresponding to the beginning groove of a selected one of said messages in response to movement of said advancing mechanism through said first cycle for a number of times bearing a predetermined relationship to the number of transparencies on said holder.

3,953,119

SLIDE PROJECTOR AND INDEXING MECHANISM FOR ALTERNATE SLIDE TRAYS OF DIFFERENT CONFIGURATIONS

Jean-Paul Erchoff, Belsele, Belgium, assignor to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 376,181, July 3, 1973, abandoned. This application Sept. 19, 1974, Ser. No. 507,477
Int. Cl.² G03B *23/04, 23/06*
U.S. Cl. 353—116 **25 Claims**



1. In a slide projector of the type including a slide tray receiving groove formed by first and second side walls for holding a slide tray having a plurality of spaced apart slide receiving spaces, and a slide carrier slidably disposed for reciprocating movement transversely to the slide tray receiving groove for transferring a slide from a slide tray installed therein to the viewing position on the optical axis of the projector and returning the same to the slide tray, the improvement comprising means for alternately and selectively receiving within the slide tray receiving groove at least two slide trays having different shapes and racks of indexing projections of different configurations, a first one of said slide trays having its rack of indexing projections located closer to said first side wall of said groove than to the second side wall thereof, a second of said slide trays having its rack of indexing projections located closer to the second wall of said groove, said receivng means including tray guide means fixedly disposed within the slide tray receiving groove and having a contoured surface corresponding to and adapted to slidably engage, support and guide either of the alternate slide trays; and an indexing mechanism for incrementally advancing either of said alternate slide trays disposed within the slide tray receiving groove to sequentially present slides contained in either of said slide trays for viewing; said indexing mechanism including an indexing lever slidably and pivotally mounted on the projector adjacent said tray receiving groove, a first pawl carried on said lever at one end thereof adapted for incremental engagement with the indexing rack of the first slide tray, and a second pawl carried on said lever at the other end therof adapted for incremental engagement with the indexing rack of the second tray; an actuating member attached to the indexing lever for imparting the required movement to said indexing lever; and a camway formed in the slide carrier in operative engagement with said actuating member for longitudinally moving the indexing lever to disengage the first and second pawls from the indexing racks of the first and second slide trays respectively and pivotally moving said lever to align the pawls with the next projection of the respective indexing racks

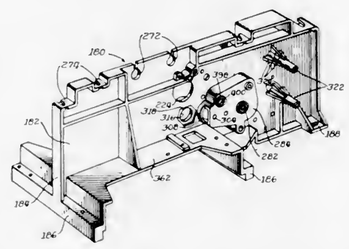
upon withdrawal of the slide carrier from the projector, and for longitudinally moving said indexing lever to engage the pawls with the next indexing projections on the slide trays and pivotally moving said lever through an arcuate extent corresponding to the distance between two adjacent projections on the racks of each tray to advance the selected slide tray to the next slide position upon insertion of the slide carrier into the projector.

3,953,120

MOLDED CHASSIS FOR A FILM STRIP PROJECTOR

Frank C. Badalich, Chicago, and George J. Pawl, Norridge, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Jan. 9, 1975, Ser. No. 539,833
Int. Cl.² G03B *21/10, 21/28*
U.S. Cl. 353—119 **14 Claims**



1. A chassis for mounting mechanical and electrical components to provide a film strip projector for sequentially projecting images frame by frame upon a screen, which chassis comprises a unitary molded structure including:

an upstanding generally planar web defining a mounting body having front and rear surfaces;

a strengthening flange substantially circumscribing said mounting body web;

mounting means formed integral with said web and flange for mounting a film strip storage compartment;

mounting means formed integral with said web and flange for mounting a light source compartment;

mounting means integrally formed on said mounting body web for mounting a pair of slotted film guide rails;

mounting means integrally formed on said mounting body web for mounting a drive motor;

journal means formed integrally with said mounting body web for journalling a film drive and framing means; and

a lens aperture formed in said mounting body web.

3,953,121

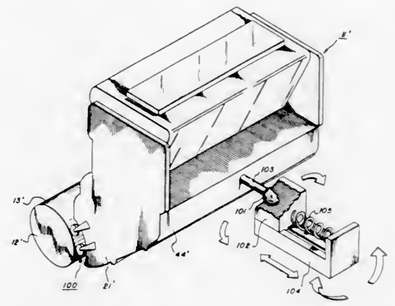
ARTICULATED DEVELOPMENT APPARATUS

Louis W. Reichart, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1974, Ser. No. 518,337
Int. Cl.² G03G *15/09*
U.S. Cl. 355—3 DD **17 Claims**

1. In a magnetic brush development apparatus for developing images on a moving imaging surface arranged for movement about an axis of rotation, said apparatus including at least one magnetic brush development member for applying developer to said surface where it moves about said axis, said member extending across said imaging surface from side-to-side of said member to define a gap therebetween extending from said imaging surface to said member, the improvement wherein, said apparatus further includes:

means for maintaining said gap substantially constant from side-to-side of said member, said maintaining means including means for compensating for runout of said imaging surface and for side-to-side phase variations in said runout, said compensating means including means for supporting said development member for movement toward and away from said imaging surface, said supporting means including means for supporting said member for side-to-side tilting movement with respect to said imaging surface.

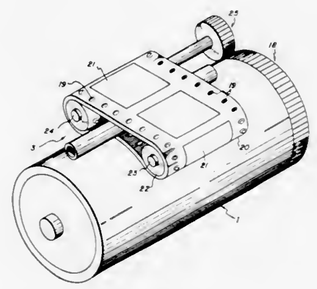


3,953,122

DOCUMENT ORIGINAL HANDLING SYSTEM

David Athelton Walker-Arnott, Bletchley, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 25, 1974, Ser. No. 526,560
Int. Cl.² G03G *15/00*
U.S. Cl. 355—12 **21 Claims**



1. In a reproducing machine including means for forming an image of information on an original and means for transporting said original past said imaging means the improvement wherein, said transport means comprises:

a strip member having a plurality of original receiving pockets and means for moving said member past said imaging means with said pockets arranged to present said originals to said imaging means for forming said image.

3,953,123

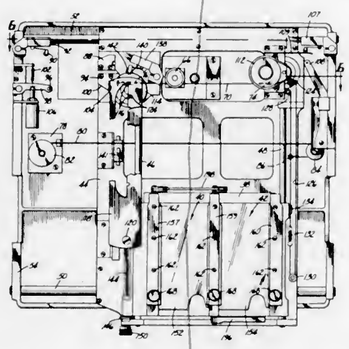
TRANSPORT APPARATUS FOR AN AUTOMATIC MICRO-IMAGE VIEWER PRINTER MACHINE

Alexander Jesensky, Barrington; Kenneth J. Fedesna, Des Plaines, and Thomas V. De Ryke, Libertyville, all of Ill., assignors to Addressograph Multigraph Corporation, Cleveland, Ohio

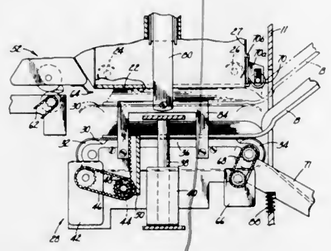
Filed Jan. 30, 1975, Ser. No. 545,392
Int. Cl.² G03B *13/28, 27/42, 27/44*
U.S. Cl. 355—45 **35 Claims**

20. Apparatus for displaying and reproducing micro-images disposed on film cards, comprising:

means for projecting said micro-images for display and reproduction;
a film card holder for receiving film cards; and
means for transporting said film card holder through said projecting means, said transporting means including a first electric motor, means mechanically coupling said first electric motor to said film card holder for transporting said film card holder in a first predetermined direction, a second electric motor and means mechanically coupling said second electric motor to said holder for transporting said holder in a second direction opposite said first predetermined direction, said second electric motor being operative to exert a preloading force on said holder in a direction opposite the force provided by said second motor.

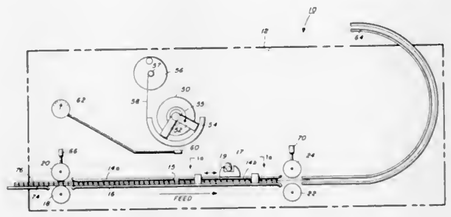


3,953,124
HANDLING OF ORIGINALS TO BE PHOTOCOPIED
James A. Kolibas, Broadview Heights, Ohio, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio
Filed June 17, 1974, Ser. No. 479,651
Int. Cl.² G03B *27/62*
U.S. Cl. 355—75 **9 Claims**



1. A photocopying machine comprising:
an optical system terminating in an original illumination station comprising a fixed transparent platen;
a back-up platen opposing said transparent platen;
document transport means for feeding documents one by one between said platens;
means mounting said transport means and back-up platen for movement bodily towards and away from said transparent platen and maintaining the same in parallelism therewith; and
means for jointly fixing said transport means and said back-up platen at any selected spacing from said transparent platen to accommodate three-dimensional originals of varying thicknesses between said transparent platen and said transport means and back-up platen.

3,953,125
CONTACT COPYING APPARATUS FOR REPRODUCING X-RAY FILMS AND THE LIKE
Warren J. Bost, 1901 S. Main St., Belle Glade, Fla. 33430
Filed Aug. 26, 1974, Ser. No. 500,543
Int. Cl.² G03B *27/78*
U.S. Cl. 355—83 **20 Claims**

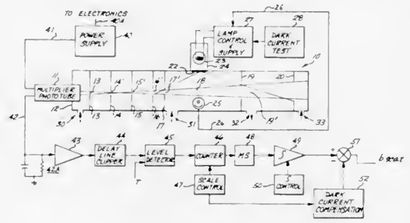


1. Contact copying apparatus comprising:
a first plate;
a second plate spaced from, and substantially parallel with said first plate, said second plate having a slot therein;
means for feeding through said plates and past said slot a first film of an unexposed, sensitized medium and a second, exposed film of said medium superposed with said first film;
means for controlling the rate of feed of said films between said plates;
a source of electromagnetic energy spaced from said slot;
means for varying the amount of electromagnetic energy passing through said slot; and
means for operating said feed rate controlling means independent of the operation of said electromagnetic energy varying means.

3,953,126
OPTICAL CONVOLUTION VELOCIMETER
Dong Guen Kim, Xenia, and Gary Arnold Dubro, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Nov. 8, 1974, Ser. No. 522,368
Int. Cl.² G01P *3/36*
U.S. Cl. 356—28 **1 Claim**

1. A fluid flow velocimeter comprising:
a. a flow channel having a first and a second wall for containing the said fluid flow and providing a direction of flow parallel to the said first and second wall;
b. a double-faced light reflective element positioned in the said first wall;
c. a light source;
d. a first and a second photodetector;
e. a lens positioned in the said second wall collimating the light from the said light source and passing the collimating light through the said fluid flow to the said double-faced light reflective element and for focusing the reflected light from one face of the double-faced light reflective element onto the said first photodetector and the reflected light from the other face of the reflective element on the said second photodetector;
f. means including a differential amplifier cooperating with the said first and second photodetectors for providing an output signal responsive to the difference in light intensity detected by the said first and second photodetectors; and
g. means for displaying the frequency of the said output signal.

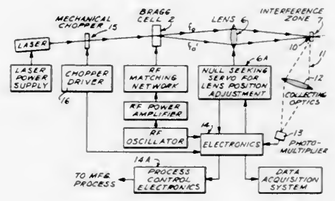
3,953,127
PHOTON-COUNTING INTEGRATING NEPHELOMETER
Norman C. Ahlquist; Alan P. Waggoner, and Robert J. Charlson, all of Seattle, Wash., assignors to Battelle Development Corporation, Columbus, Ohio
Continuation-in-part of Ser. No. 435,734, Jan. 23, 1974, abandoned, which is a continuation of Ser. No. 351,609, April 16, 1973, abandoned. This application Aug. 16, 1974, Ser. No. 498,278
Int. Cl.² G01N *21/00*
U.S. Cl. 356—103 **46 Claims**



1. An integrating nephelometer for monitoring the visual qualities of an aerosol by determining the extinction coefficient due to light scattering thereof, comprising:
a. a housing which includes a chamber, an inlet means for introducing the aerosol into said chamber and an outlet means for removing the aerosol from said chamber,
b. means within housing which defines a cone of observation of said aerosol in said chamber, said cone of observation having an axis,
c. a light source producing a continuous light output having a cosine emission characteristic,
d. means positioning said light source so that said light sorce output illuminates said cone of observation and so that the maximum of the cosine emission characteristic lies at right angles to the axis of said cone of observation,
e. a highly-sensitive, measurement photoelectric detector, and means positioning said measurement photoelectric detector with respect to said housing so that the portions of said light source output which are scattered by said aerosol and which pass through the vertex of said cone of observation are incident upon said measurement photoelectric detector, whereby said measurement photoelectric detector produces an output signal including a pulse for each photoelectron resulting from a detected photon and also including noise,
f. a photon-detecting apparatus including means for removing said noise from said output signal and for providing an output pulse for each of said photoelectrons resulting in a pulse in said output signal whose amplitude exceeds the expected level of said noise, and
g. measurement means coupled to said photon-detecting apparatus for converting the rate of occurrence of such output pulses into an output signal related in value to the desired extinction coefficient.

3,953,128
PROCESS AND APPARATUS FOR FILAMENT OR SLIT SIZE MONITORING
Sandor Holly, Falls Church, Va., assignor to Atlantic Research Corporation, Alexandria, Va.
Continuation-in-part of Ser. No. 451,332, March 25, 1974, abandoned. This application Jan. 6, 1975, Ser. No. 539,198
Int. Cl.² G01B *11/10*
U.S. Cl. 356—106 R **160 Claims**

47. A process for sensing without contact the width of an elongated element, comprising:
1. producing a pair of coherent electromagnetic radiation beams of substantially the same size and intensity, one of said beams having a different frequency from said other beam, the frequency difference being within the radio frequency range;
2. converging said beams to form a laterally-moving fringe pattern having a first fringe period within the zone of convergence;
3. positioning said element within the interference zone, the longitudinal axis of said element being substantially normal to the plane of the convergent beams, said element being substantially spatially stationary relative to said zone, whereby the moving fringe pattern continuously sweeps across said element transversely; and
4. determining the AC signal component of the resulting radiation as the fringe pattern sweeps across the element;

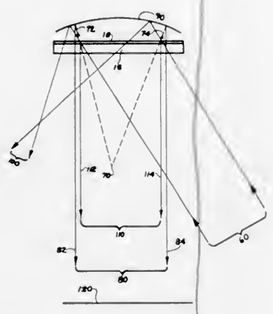


5. said process including the step of adjusting the value of the fringe period of said pattern relative to the element width to a fringe period having a size capable of producing a minimum AC signal, wherein said AC minimum signal obtained at said fringe period size indicates an element width equal to said fringe period times a constant or a whole integer multiple of said fringe period plus the fringe period times a constant, said constant being equal to the ratio of the width of said element and said fringe period;
6. said process being employed when, during said step of adjusting the fringe period size, the magnitude of the DC component of said resulting radiation varies in an amount from substantially zero to an amount which results in an element width-sensing within a predetermined magnitude of width-sensing error for the given element.

3,953,129
TESTING AND INSPECTING LENS BY HOLOGRAPHIC MEANS
Bernard P. Hildebrand, Richland, Wash., assignor to The Unites States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jan. 9, 1975, Ser. No. 539,885
Int. Cl.² G01B *9/02*
U.S. Cl. 356—109 **5 Claims**

1. In a process for holographically testing concave and convex surfaces wherein a hologram serves as both a master and an illuminating source for said surfaces to be tested, said process requiring no overpower optics, mirrors or beamsplitters, said process of making a hologram of a master surface comprising the steps of
illuminating said master surface with a first beam of coherent light diverging from a point near the focal plane of said master surface through a photographic plate, said photographic plate being further illuminated with a second coherent beam of arbitrary curvature,
forming a plurality of holograms on said photographic plate including a transmission hologram of said first beam by interference of said first and second beams, and a reflection hologram of a third beam comprising said first beam reflected from said master surface, by interference of said

second and third beams,



placing said photographic plate containing said reflection and transmission holograms before a concave or convex surface for holographically testing the surfaces thereof.

3,953,130

AUTOMATIC DIGITAL INDICATING LENS METER

Tadashi Iizuka, Machida, Japan, assignor to Kabushiki Kaisha Hoya Lens and Kabushiki Kaisha Sokkisha, both of Tokyo, Japan

Filed June 12, 1974, Ser. No. 478,883
Int. Cl.² G01B 9/00
U.S. Cl. 356—125 **6 Claims**

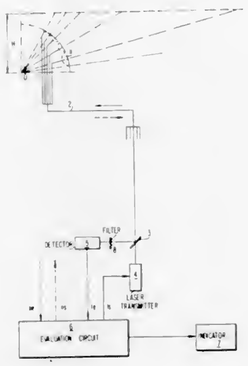
1. An automatic lens meter for digitally indicating the diopter of a lens, comprising:
- an optical system which includes means for projecting a beam of light along an optical axis, a target having at least one circular luminous point and adapted to be moved reciprocally along said axis within a predetermined range, a spaced pair of collimators positioned along said axis, and means for mounting said lens intermediate the collimators substantially on said optical axis;
- an image pickup system positioned on an extension of said optical axis, said pickup system including a vidicon camera having a photo-electric surface upon which an image from said circular luminous point is directed by said optical system whereby the vidicon camera converts the image into electrical signals in accordance with the area of said image on the photo-electric surface;
- a motor connected to said target; and
- circuit means for energizing said motor to reciprocate the target and for responding to the electrical signals to provide a digital indication of the diopter of said lens as a function of the minimum area of said image.

3,953,131

OPTO-ELECTRONIC ANTENNA SYSTEM FOR LASERS

Hans Ernst Britz, Ludwig Quidde Str. 23, 6000 Frankfurt am Main 56, Germany

Filed Mar. 4, 1974, Ser. No. 447,814
Claims priority, application Germany, Mar. 2, 1973, 2310515; Oct. 4, 1973, 2349807; Dec. 6, 1973, 2360781
Int. Cl.² G01B 11/26
U.S. Cl. 356—141 **10 Claims**



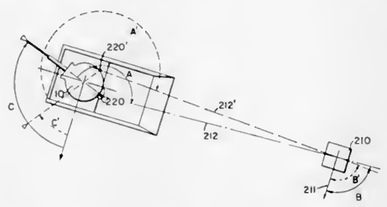
1. An opto-electronic antenna system for transmitting and/or receiving laser radiation comprising:
- a plurality of stationary antennas disposed on a prescribed geometrical surface, the optical axis of each antenna being disposed at a solid angle with respect to the optical axes of the other antennas and intercepting a single base point; and
- means for effecting cyclical scanning of said plurality of antennas,
- wherein said geometrical surface is that of a plurality of spherical sections having different diameters, which are subdivided along the same longitudinal and latitudinal lines, at the intersection of which said antennas are disposed.

3,953,132

SYSTEM FOR REGISTERING POSITION OF ELEMENT

Paul F. Michelsen, Kensington, Md., assignor to RMC Research Corporation, Bethesda, Md.

Division of Ser. No. 268,632, July 3, 1972, Pat. No. 3,798,795.
This application Mar. 22, 1974, Ser. No. 453,974
Int. Cl.² G01B 11/26
U.S. Cl. 356—152 **8 Claims**



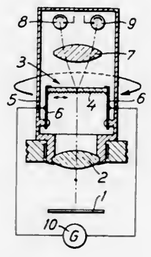
1. The method of measuring the angular position of an element movable about an axis relative to a supporting structure, comprising producing electrical pulses at substantially uniform intervals, rotating a member about said axis at uniform speed, transmitting a first beam of light from a fixed source to a photosensitive device through a fixed path interrupted by said rotating body, altering the amount of light entering said photosensitive device at one point in the rotation of said rotating body, transmitting a second beam of light from a source on said movable element through a variable path spaced at an angle from said first path according to the position of said element and interrupting said beam by said rotating body, altering the amount of light entering said photosensitive device at another point in the path of rotation which is spaced from said one point an angular distance equal to the angle of movement of the movable element, counting said electrical pulses, initiating the counting of the pulses by change in energization of said photosensitive device upon altering of the light at said one point, and discontinuing the counting of said pulses by altering the energization of said photosensitive device upon altering of the light at said another point, and registering the count of the pulses between the starting and stopping of said counting to provide a measure of the angular position of the movable element.

3,953,133

METHOD OF DETERMINING THE ANGULAR POSITION OF A WORKPIECE AND APPARATUS THEREFOR

Hans-Dieter Jacoby, Werdorf, Germany, assignor to Ernst Leitz G.m.b.H., Germany

Filed July 10, 1974, Ser. No. 487,304
Claims priority, application Germany, July 11, 1973, 2335227
Int. Cl.² G01B 11/26
U.S. Cl. 356—152 **10 Claims**



1. A method for determining relative to a reference direction the angular position of a workpiece having an optically detectable elongate feature, the method comprising the steps of:
- imaging said optically detectable feature by an optical imaging system onto a grating of an optical correlator system defined by at least said one grating having grating lines in an image plane of said optical imaging system as well as at least one photoelectric receiver means associated with said grating and scanning said grating to receive light from said grating;
- displacing said grating relative to the image of said optically detectable feature; and
- angularly displacing said optical correlator system about its optical axis relative to the image, generating electrical signals from said photoelectric receiver means and indicating maximum and minimum values of said signals at the position where said elongate feature extends substantially parallel to said grating lines.

3,953,134

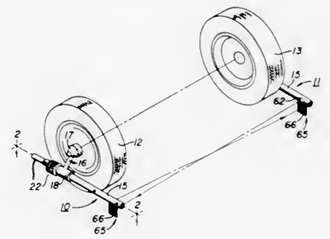
AUTOMOTIVE WHEEL ALIGNMENT INSTRUMENT

Arthur V. Appel, Lake Forest; Robert S. Hampton, Northbrook, and Leonard A. Morrison, Chicago, all of Ill., assignors to Ammco Tools, Inc., North Chicago, Ill.

Filed Sept. 23, 1974, Ser. No. 508,089
Int. Cl.² G01B 11/26
U.S. Cl. 356—155 **9 Claims**

1. An instrument for measuring the angular relationship between the front wheels and frame of an automotive vehicle, comprising

an elongated support member,
- means for mounting said support member to one of said wheels in substantial parallelism with the plane of rotation of the wheel and with the forward end of said support member extending forwardly of said wheel,
- a target screen,
- means mounting said target screen to the other of said wheels in substantial parallelism with the plane thereof and forwardly thereof,
- a lamp mounted to said support member near the rearward end thereof,



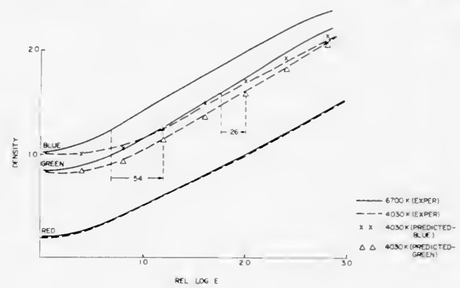
mirror means mounted to said support member near the forward end thereof for deflecting light from said lamp at substanially a right angle in a direction parallel to the axis of rotation of said one wheel onto said target screen,
- an optical system including a reticle mounted to said support member between said lamp and said mirror for focusing an image of said reticle through said mirror means onto said target screen, and
- said means for mounting providing the sole support for said support member and being fixedly secured to said support member.

3,953,135

CURVE ANALYSIS METHOD IN COLOR PHOTOGRAPHY

Marilyn Levy, Little Silver, and Milan Schwartz, Neptune, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 4, 1975, Ser. No. 555,323
Int. Cl.² G01J 3/46
U.S. Cl. 356—175 **3 Claims**



1. Method of approximating the characteristic curves of a color film exposed at a variety of color temperatures where the characteristic curve of a film exposed at one color temperature is known, said method including the steps of:
- a. exposing a film in a sensitometer to light varying in color temperature to obtain characteristic curves for the exposures at the varying temperatures;
- b. processing the film in a color developer;
- c. determining the transmission densities of the developed film to red, green and blue light at the varying tempera-

tures and plotting the results as curves relating the red, blue and green densities to relative log exposure;

d. analyzing these curves by placing one over the other so that the red curves are superimposed to obtain the change in blue and green exposure from one color temperature to another;

e. averaging the Δ log exposure determinations and plotting the results as a linear curve relating the Δ log exposure change of blue and green exposure over the temperature range of exposure to the Mired Value; and

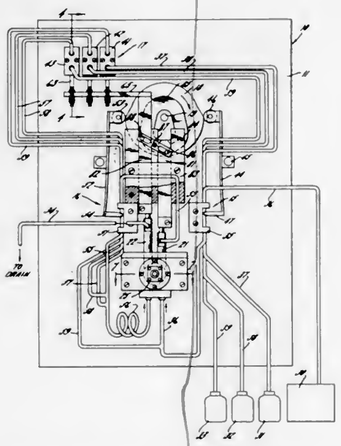
f. approximating the characteristic curve of a color film exposed to any color temperature in which the characteristic curve is unknown by determining from the linear curve the Δ log exposure change for the blue exposure and the green exposure from the color temperature of which the characteristic curve is known to the color temperature of which the characteristic curve is unknown and plotting the Δ log exposure changes on the characteristic curve of the known temperature to produce the predicted points for the unknown curves.

3,953,136

METHOD AND APPARATUS FOR AUTOMATICALLY ANALYZING FLUIDS

Clifford C. Hach, Ames, Iowa, assignor to Hach Chemical Company, Ames, Iowa

Filed Mar. 15, 1974, Ser. No. 451,472
Int. Cl.² G01J 3/50
U.S. Cl. 356—181 5 Claims



1. In an automatic colorimetric analyzer, the combination of, a housing, a pair of hollow transparent cylinders in said housing, a pair of pistons mounted for reciprocation in respective ones of said cylinders, said housing having light transmitting passages extending to and through said cylinders in regions periodically blocked by said pistons as they reciprocate, said pistons having central passages for transmitting fluid paths, and from said cylinders, said passages being at the top of said cylinders and thus defining air bubble escape path, means including said passages for conveying fluid in a stream from a sample source to first one cylinder and then the other cylinder, valves for selectively blocking said stream between said source and the first cylinder, between said cylinders, and downstream of said second cylinder, a light system including a single lamp and a single photocell for passing and sensing light beams through said cylinders, means for adding a reagent to said sample stream between said cylinders, and means for alternately reciprocating said pistons and operating said valves so as to pump said stream at a uniform measured incremental rate, wipe said cylinders clean, and permit alternate sensing of light beams passing through said cylinders.

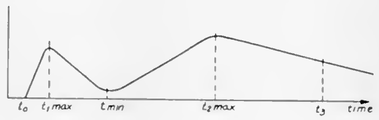
4. The method of automatically analyzing turbid water colorimetrically comprising the steps of directing two beams of light of the same intensity and wave lengths to respective ones of two transparent cells and toward a light sensor, introducing successive samples of the water under test to one of said cells, directing said samples successively from said one cell to the other cell, adding a test reagent to the sample while it is being directed from said one cell to said other cell, alternately blocking said light beam so as to cause said light sensor to read alternately said beams, comparing said sensor reading so as to detect any difference caused by a color change in the combined sample-reagent, and adding a solution to said water samples before they are introduced to said one cell, said solution having tne same effect on turbidity as could later be expected from said reagent.

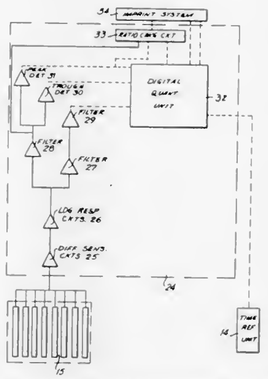
3,953,137

NUCLEAR-BURST STRENGTH DETECTING AND MEASURING DEVICE

Jacques Albert Louis Georges Balut, Arcueil; Pierre Eugene Gerard K. Lemaire, Paris, and Claude Michel Loisy, Antony, all of France, assignors to Etat Francais, Paris, France

Filed Apr. 5, 1971, Ser. No. 131,516
Int. Cl.² G01J 1/42
U.S. Cl. 356—222 12 Claims





1. A device for detecting and analyzing in time and form a lumino-thermal radiation signal received from a nuclear-type explosion or burst, said device comprising:

a. an array of photoelectric cells;

b. a polyhedral prism based on a horizontal plane and including a plurality of faces; said photoelectric cells being arranged at the faces of said polyhedral prism and providing electrical outputs dependent upon the received lumino-thermal flux values;

c. electronic means connected to employ said electrical outputs to produce first and second signal pulses respectively upon the successive occurrence of a first (t_{1max}) peak value and a second (t_{2max}) peak value of the received flux, and to produce an intermediate signal pulse at an instant (t_{min}) between the respective instants of occurrence of the said first and second peak values when the received flux value rises through a predetermined threshold value or passes through a minimum while remaining above said threshold value;

d. timing means connected with said electronic means; and

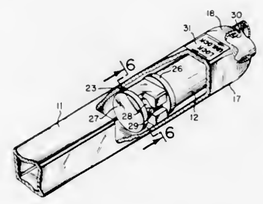
e. digital processing means connected to receive said signal pulses and to operate in dependence thereupon and in cooperation with said timing means for establishing the relative instants of occurrence of the respective signal pulses to provide an indication of the receipt of radiation that has flux values which vary with time in accordance with a preselected kind of waveform, which is a waveform produced by a nuclear explosion.

3,953,138

ONE-WAY TWIST LOCK FOR TELESCOPIC TUBES

Harrison William Hine, Pacific Palisades, and Veli A. Saarinen, Carson, both of Calif., assignors to Seaway Supply Company, Los Angeles, Calif.

Filed Jan. 6, 1975, Ser. No. 538,545
Int. Cl.² E04G 25/08
U.S. Cl. 403—75 10 Claims



1. A twist lock mechanism for telescopic tubes, comprising:

a. a first tube having a multi-sided cross section;

b. a second tube telescopically disposed within the first tube;

c. a split lock ring formed with a bore and slidably disposed within the first tube, the lock ring having a multisided external periphery sized to prevent rotation between the lock ring and first tube and a notch in one end intersecting both sides of said split;

d. a lock base fixed to one end of the second tube;

e. an eccentric pin extending from the lock base and disposed within the bore of the lock ring, the eccentric pin and lock ring being structured to wedge and accomplish locking when the tubes are relatively rotated in one direction; and,

f. turn limiting means for preventing the eccentric pin and lock ring from locking when the tubes are relatively rotated in the opposite direction.

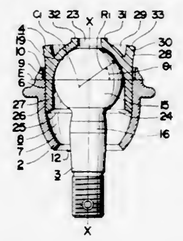
3,953,139

BALL JOINT

Yasuo Uchida, Hamamatsu, Japan, assignor to Ishikawa Tekko Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1974, Ser. No. 517,407
Claims priority, application Japan, Nov. 6, 1973, 48-125083
Int. Cl.² F16C 11/06
U.S. Cl. 403—140 1 Claim

1. A ball joint comprising a socket including a bore defined by a cylindrical inner wall surface and a converging hemispherical inner wall surface contiguous with said cylindrical inner wall surface and openings each formed at one end of said bore, a ball stud including a spherical head disposed in said bore of said socket and a stem contiguous with said spherical head and extending through one of said openings of said socket, a one piece bearing member arranged between said inner wall surface of said socket and said spherical head of said ball stud for rotatably enclosing said spherical head of said ball stud, said one piece bearing member being made of a relatively hard and resilient plastic material, and a closing member hermetically closing the other of said openings of said socket and fixed to said socket in pressing engagement with an end portion of said one piece bearing member, said one piece bearing member when viewed in longitudinal section being formed with a pair of bearing surface portions facing to each other, each of said bearing surface portions being of paraboloidal shape, said pair of bearing surface portions being disposed on opposite sides of an equator of said spherical head of said ball stud, said pair of bearing surface portions forming a pair of annular bearing zones for supporting said spherical head, each of said pair of bearing surface portions having a maximum diameter near the equator of the spherical head and being contiguous with each other to provide an annular pocket for storing a lubricant between said spherical head and



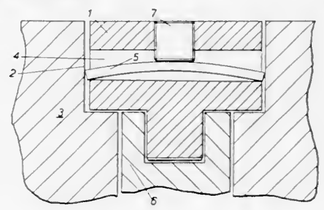
said bearing member, said one piece bearing member being formed at said end portion thereof with an annular recess which corresponds in axial position to the annular bearing zone of one of said pair of bearing surface portions, so that a closed annular space is formed between said closing member and said bearing member by virtue of the presence of said annular recess and the end portion of said bearing member inside of said annular recess is supported by said closing member, the outer surface of said one piece bearing member is on a substantially cylindrical skirt which is deformed to conform to the shape of the hemispherical inner wall surface of the socket so as to form the paraboloidal shape bearing surfaces when the bearing member is inserted into the bore of the socket.

3,953,140

FASTENER FOR LOCKING A ROTATABLE PART TO A SHAFT

Bertil Carlstrom, Stockholm, Sweden, assignor to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 263,990, June 19, 1972. This application Jan. 31, 1974, Ser. No. 438,205
Claims priority, application Sweden, June 18, 1971, 7921/71
Int. Cl.² F16D 1/06
U.S. Cl. 403—258 6 Claims



1. Fastening means for releasably locking a first rotatable part within the walls of a cylindrical opening in a device comprising:

a first rotatable part adapted to be positioned within the walls of a substantially smooth-walled cylindrical opening in a power transmitting device,

a cavity within the first rotatable part,

said cavity extending through the first rotatable part from a first opening to a second opening in the part to provide

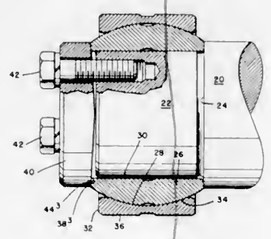
a passageway through the part along a diameter of the part,
resilient means in the form of a curved spring loosely positioned within said cavity and shaped to be removable through one of said openings,
a threaded opening in said first rotatable part which provides a third opening into said cavity,
a second rotatable part in threaded engagement within the threaded opening in said first rotatable part,
said second rotatable part terminating in an end surface integral therewith to engage the resilient means,
said second rotatable part responding to the application of a rotary force to rotate in said threaded opening and to press said surface against said resilient means,
said resilient means responding to pressure from said second rotatable part to straighten the curved spring in said cavity causing it to cooperatively engage the substantially smooth walls of the cylindrical opening in the device and thereby enable the first rotatable part to be locked to the device in an arbitrary axial position and an arbitrary turntable position relative to the walls of the opening,
said second rotatable part being easily turned to release said resilient means and unlock the first rotatable part from the device.

3,953,141

LOCK FOR THE INNER RACE OF SELF-ALIGNING BUSHING ON A SHAFT

Hans W. Koch, Levittown, Pa., assignor to Roller Bearing Company of America, West Trenton, N.J.

Filed Feb. 27, 1975, Ser. No. 553,800
Int. Cl.² F16D *1/06*
U.S. Cl. 403—259 **8 Claims**



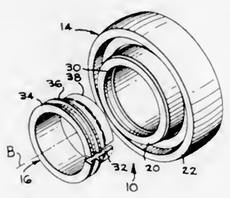
1. A self-aligning bushing setup comprising a shaft, an inner race having a position surrounding one end of the shaft, the inner race having a spherical type outer surface and having an inner and an outer end relative to the shaft as a whole longitudinally speaking, an outer race having a spherical type inner surface mating with the spherical type outer surface of the inner race to enable relative movement as between inner and outer race, an end plate across the outer end of the inner race and having an inner end surface mating with an outer end surface of that inner race, said respective mating end surfaces preventing relative rotation between the end plate and the inner race by at least part of the mating surfaces of the end plate and the inner race having an oblique angle with respect to the axis of the shaft and being assymetrical composed to any figure of rotation developed symmetrically about the axis of rotation of the shaft, means for positively affixing the end plate to the shaft, and means to prevent the inner race from moving axially out of the effective mating position with the end plate.

3,953,142

WEDGE MOUNTED MACHINE ELEMENT

Connor E. Price, and William J. Derner, both of Indianapolis, Ind., assignors to FMC Corporation, San Jose, Calif.

Division of Ser. No. 265,010, June 21, 1972, Pat. No. 3,806,215. This application Sept. 28, 1973, Ser. No. 401,755
Int. Cl.² F16B *2/14, 7/04*
U.S. Cl. 403—371 **4 Claims**



3. A mounting construction for clamping a machine member to a mounting surface, said machine member surrounding a central axis, said machine member having at least one axially extending tapered surface and having radially extending surfaces, an axially extending sleeve member having a central axis essentially coincident with the central axis of said machine member and having one end extending beyond said machine member when the sleeve and the machine member are in assembled relationship, said sleeve member having an axially extending tapered wedge surface extending therealong adjacent the opposite end of said sleeve member and in complementary relationship with the axially extending machine member tapered surface for wedging action therewith, said sleeve member having a longitudinal slit therethrough to render the sleeve member deformable to change the diameter thereof, a releasable locking projection on one of said members intermediate the ends thereof, a cavity on the other of said members of greater axial span than said projection, said sleeve member being resilient to permit assembly of said members and engagement of said projection in said cavity, said cavity normally confining said projection in said cavity in any relative angular position of said members with a limited linear axial lost motion therebetween when the sleeve member is relaxed to hold the sleeve member and the machine member in assembled relationship and to permit relative movement of said projection and said cavity parallel to the central axis of said sleeve member from a first unlocked position to a second locked position as the sleeve member is urged into wedging relationship with the machine member, said projection and said cavity having edges substantially perpendicular to said axes and said members disengageable on deformation of the sleeve member, and a radially extending external rib at said one end of said sleeve member.

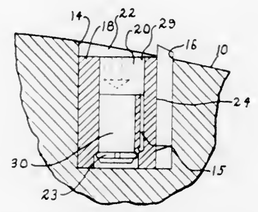
3,953,143

CLAMPING DEVICE

Ernest J. Friedline, Latrobe; Robert N. Mitchell, Ligonier, and Linn R. Andras, Latrobe, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Feb. 20, 1975, Ser. No. 551,362
Int. Cl.² F16D *1/06*
U.S. Cl. 403—374 **5 Claims**

1. A clamping device for clamping an element against one wall of a hole, such as a blind hole in a support body, said device comprising; a plug member having a slot formed therein such that portions of the outside walls of the plug member are expandable in outward direction, the plug member dimensioned so as to be loosely receivable with said element in said hole with the element engaging one wall of the hole and the plug member being disposed between the element and the side of the hole opposite said one wall; a central bore formed in said plug member, and means for expanding



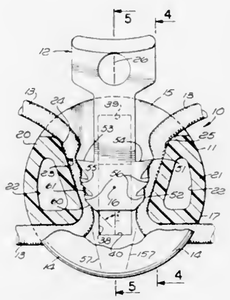
said plug member comprising an eccentric pin located and supported in said central bore.

3,953,144

CORD LOCK WITH BOTH SHARP AND DULL TEETH

Ogden W. Boden, 1580 Gaywood Drive, Altadena, Calif. 91001

Continuation-in-part of Ser. No. 439,422, Feb. 4, 1974, abandoned. This application Oct. 17, 1974, Ser. No. 515,465
Int. Cl. F16g *11/04*
U.S. Cl. 403—374 **10 Claims**



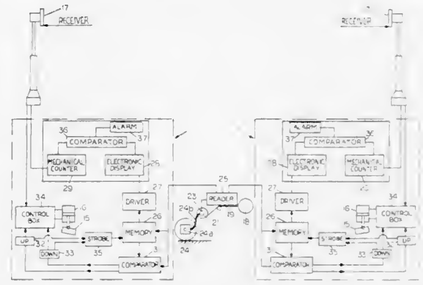
1. A cord locking device comprising:
a body containing a tapering passage through which two flexible cords are to extend and which is defined at opposite sides by two cam surfaces facing one another and converging toward one another as they advance in a predetermined direction; and
a slide element having a portion received within said passage and between said converging cam surfaces, and having two sets of teeth at opposite sides of said element facing in opposite directions toward said two cam surfaces respectively to define therewith two spaces along which said two cords extend and within which they are clamped between said teeth and said cam surfaces in a relation locking said cords against movement in said predetermined direction;
said element being movable along an axis in said predetermined direction relative to said body to grip the cords, and being movable in an opposite retracting direction along said axis to release the cords;
each of said sets of teeth including a first relatively sharp tooth having leading and trailing faces converging to a substantially sharp outer edge near a corresponding one of said cam surfaces, and including a relatively blunt tooth with leading and trailing faces and an outer crest surface which faces toward said corresponding cam surface but is less sharp than said edge of the first tooth; said sharp edge and said blunt outer surface of the teeth of one of said sets of teeth having outermost portions lying essentially in a first plane which converges toward said axis and is approximately parallel to the corresponding one of said cam surfaces; and
said sharp edge and said blunt outer surface of the teeth of the other set of teeth having outermost portions lying essentially in a second plane which converges toward said axis and toward said first plane and is approximately parallel to the other of said cam surfaces.

3,953,145

LASER BEAM CONTROL SYSTEM FOR EARTHWORKING OR SIMILAR MACHINES

Ted L. Teach, Springfield, Ohio, assignor to Laserplane Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 378,171, July 11, 1973, Pat. No. 3,873,226. This application Mar. 12, 1975, Ser. No. 557,572
Int. Cl. E01c *19/00*; **E02f** *3/76*
U.S. Cl. 404—84 **6 Claims**



2. Apparatus for controlling the working height of a portion of earthworking tool carried by a mobile vehicle and vertically adjustable relative thereto by power means comprising:
1. a flexible tape having two sets of indicia thereon equally spaced along the tape, one set of indicia corresponding to desired changes in elevation of said earthworking tool portion at predetermined points along the planned path of travel of the vehicle, the other set of indicia indicating the distance between said points;
2. a feeding mechanism for said tape mounted on said vehicle and constructed and arranged to intermittently move said tape past a reading station by a distance equal to the longitudinal spacing of said indicia;
3. means responsive to movement of said vehicle for actuating said feeding mechanism each time the vehicle reaches the next one of said points;
4. electronic means for reading said indicia at said tape reading station, and
5. means for controlling said power means in response to the reading of one set of indicia, thereby adjusting the working height of said earthworking tool portion as the vehicle moves to each said point.

3,953,146

APPARATUS FOR TREATING LINT IN AN AUTOMATIC WASHER

Brian David Sowards, Benton Harbor, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

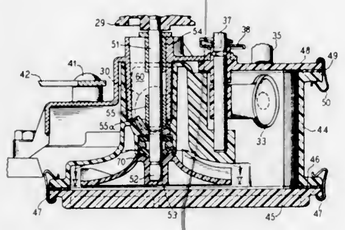
Filed Aug. 15, 1974, Ser. No. 497,770
Int. Cl.² F04D *29/70*
U.S. Cl. 415—121 B **6 Claims**

1. In a clothes washing machine, a pump for passing lint-bearing wash liquid to drain, said pump having a housing forming a pump chamber with an inlet portion about a bearing member, a centrifugal impeller in said chamber for directing said liquid from said inlet portion to an outlet portion of said pump chamber in said housing, a shaft rotatable in said bearing member and extending to said impeller for rotation there-

with through said inlet portion of said pump chamber, wherein:

said impeller has an annular, axially-extending collar about said shaft adjacent and projecting toward said bearing member; and

said housing has a tubular portion extending about said shaft and over said collar and carrying a plurality of circumferentially-spaced, axially-facing teeth members



closely spaced radially outwardly adjacent said collar, whereby wash liquid carrying lint to said impeller deposits a portion of said lint upon said collar and shaft and said lint deposits are centrifuged outwardly by said collar on the rotation thereof into contact with said teeth, and excess lint is shredded and ejected away from said collar and said bearing member and passed to said drain with said wash liquid.

3,953,147

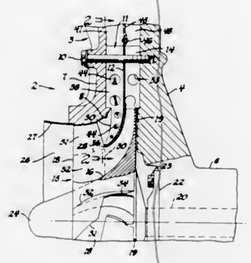
FLUID DYNAMIC MACHINE

Robert H. Aspinwall, Zionsville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed June 27, 1974, Ser. No. 483,877

Int. Cl.² F04D *7/14*

U.S. Cl. 415—143 **1 Claim**



1. A combined high pressure ratio axial-to-radial flow fan and higher pressure ratio centrifugal compressor comprising, in combination, a stator and a rotor rotatably mounted in the stator; the stator defining a single entrance eye to the fan and compressor, the rotor including a hub bearing radially-extending blades, the upstream portions of which define the inducer portion of the centrifugal compressor rotor over the inner part of the blade radius and define axial-flow rotor blades of the fan over the outer part of the blade radius, and the downstream portion of which define the impeller portion having a curved free edge of the centrifugal compressor rotor; the stator including an annular plate having an inlet segment following the curvature of the curved free edge of the impeller portion and defining the forward boundary of the flow passage through the impeller and the rear boundary of a discharge passage from the axial-flow rotor blades, the inner margin of the plate acting as a flow splitter between the fan and compressor; said annular plate having an outlet segment with fore and aft; surfaces extending in a straight line outwardly of the outlet end of the impeller portion; means defining side-by-side located first and second discharge passages on either side of said outlet segment at the outer radial periphery thereof; a diffuser structure including vanes defining diffusing passages from the fan disposed forwardly of the fore surface of said plate, each of said vanes including an inlet portion following the curvature of the inlet segment and a straight radial root segment secured to the fore surface of said plate for directing fan discharge air to said first discharge passage with a pressure ratio of 2 from the inlet of the fan to said first discharge passage, and a centrifugal compressor diffuser defining diffusing passages from the impeller disposed rearwardly of the said plate and communicating the impeller with said second discharge passage and including means for producing a pressure ratio in the range of 4–7 from the inlet of the impeller to said second discharge passage.

3,953,148

CONFIGURATION OF THE LAST MOVING BLADE ROW OF A MULTI-STAGE TURBINE

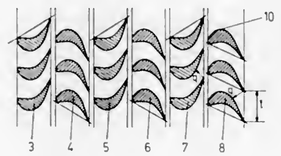
Claude Seippel, and Arnulf Teufelberger, both of Zurich, Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Apr. 26, 1974, Ser. No. 464,678

Claims priority, application Switzerland, Apr. 30, 1973, 6096/73

Int. Cl.² F01D *1/02*

U.S. Cl. 415—199 R **7 Claims**



1. In a turbine of axial construction through which an expanding gaseous working medium flows and which has more than two stages, each stage comprising one fixed blade row and one moving blade row, the improvement wherein the flow discharge cross-section area from only the last moving blade row is larger than the flow discharge cross-section of the penultimate moving blade row by an amount which is from 10 to 40% larger than the ratio of the increase in volume of the flow medium from the penultimate to the last moving blade row.

3,953,149

ENGINE COOLING FAN

John G. Henne, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

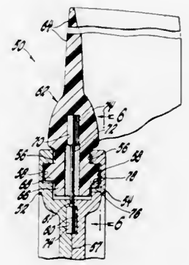
Filed June 17, 1974, Ser. No. 479,805

Int. Cl.² F04D *29/36*

U.S. Cl. 416—136 **2 Claims**

1. An automotive engine cooling fan assembly comprising a split-type hub having mating halves, a plurality of radially extending semicylindrical openings formed to a predetermined depth in the outer peripheral edge of each of said hub-halves adjacent the mating face thereof, a plurality of fan blade subassemblies, each including an asymmetrical fan blade having a round stem formed thereon and mounted in said oppositely disposed semicylindrical openings, radially aligned drive-configuration shaped openings formed along the axis of said round stems and in said mating faces of said hub-halves radially inwardly of said semicylindrical openings, a torsion bar having drive-configuration shaped ends mounted in said respective radially aligned drive-configuration shaped

openings, an arcuate slot formed in each of said hub-halves at an intermediate longitudinal location along each of said semicylindrical openings, collar means formed on each of said stems and positioned in said respective adjacent slots to retain said stems in said semicylindrical openings, and cooperating projecting and additional arcuate slot means formed on each



of said fan blades and one of said hub-halves for establishing maximum and minimum pitch positions by limiting the rotation of said blades about the axis of each of said stems under the action of aerodynamic forces on said asymmetrical fan blades at predetermined high fan speeds against the force of said torsion bar.

3,953,150

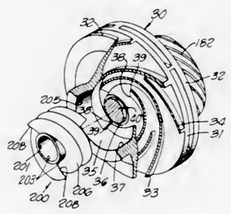
IMPELLER APPARATUS

Hasan F. Onal, Denver, Colo., assignor to Sundstrand Corporation, Rockford, Ill.

Continuation-in-part of Ser. No. 225,096, Feb. 10, 1972, Pat. No. 3,817,653, and a continuation-in-part of Ser. No. 382,374, July 25, 1973. This application June 13, 1974, Ser. No. 479,130

Int. Cl.² F04D *29/26*

U.S. Cl. 416—184 **9 Claims**



1. An impeller assembly for a centrifugal pump comprising

a hub;

a plurality of radially outwardly spiralling vanes fixed to said hub, a shroud fixed to said vanes and said vanes having a lead angle at the leading edge of each said vane of less than thirteen degrees (13°) and which increases from said shroud to said hub, curved partial vanes positioned between said spiral vanes, said partial vanes extending to positions at the outer edge of said hub and having leading edges positioned approximately 180° angularly behind the leading edge of a preceding spiral vane and at radial distances from the axial centerline of said hub greater than the radial distances from the axial centerline to the leading edges of said spiral vanes.

3,953,151

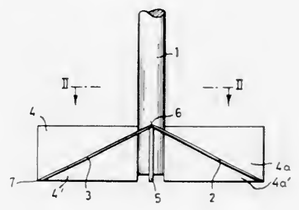
AGITATOR FLOTATION CELL FOR THE PREPARATION OF MINERALS AND COALS

Arnold Leo Aryus, Porz; Friedel Isenhardt, Forsbach, and Bruno Schmitz, Cologne-Holweide, all of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Jan. 28, 1975, Ser. No. 544,920

Int. Cl.² F04D *29/18*

U.S. Cl. 416—183 **5 Claims**



1. An agitator for use in an agitator floation unit for the preparation of minerals and coals having an agitation shaft with an air supply pipe opening at the lower end of the shaft, comprising:

a vertical shaft;

a disk at the lower end of the shaft having two planar semicircular plates meeting at a radial ridge intersecting the shaft at a right angle thereto with the planar portion of each of the plates depending downwardly and outwardly from the ridge;

first radial vanes fixed to the lower side of the ridge and extending in an axial direction at each side of the shaft;

and second radial vanes each substantially bisecting one of the semicircular plates and extending above the plates with each of said first and second vanes parallel to the shaft axis and extending axially substantially the height of the disk in an axial direction.

3,953,152

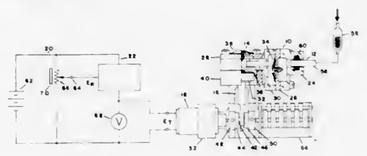
REGULATED FLUID PUMP

Anatole J. Sipin, 221 E. 78th St., New York, N.Y. 10021

Filed Aug. 2, 1973, Ser. No. 385,081

Int. Cl.² F04B *49/06*

U.S. Cl. 417—45 **30 Claims**



1. A regulated fluid pump including, a fluid-filled housing with an inlet and an outlet, mechanical means to propel the fluid between the inlet and the outlet at an average flow rate which has a substantially linear relation to the average speed of the fluid propelling means in a flow range between a minimum value and a maximum value of flow rate,

a DC motor with a constant magnetic field and a wound armature with electrical terminals and an axis, connected to drive the fluid propelling means and terminals and having a characteristic when so connected providing a substantially linear relation between the drive speed and the voltage applied to the armature terminals in a speed range between a minimum value and a maximum value of drive speed corresponding to the minimum and maximum flow rate,

a source of DC electrical power,

electrical regulating means connecting the DC source with the DC motor and regulating the voltage applied to the terminals of the motor armature of a selectable fixed value between a minimum value and maximum value of voltage corresponding to the minimum and maximum values of drive speed so as to maintain the speed of the fluid propelling means at a corresponding fixed value in the linear speed range of the DC motor and the average fluid flow rate at a corresponding fixed value in the linear flow range of the pump,

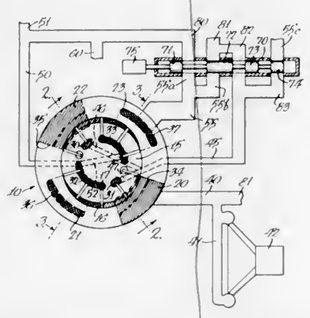
in which the substantially linear relation between the motor terminal voltage and the drive speed is provided by a fluid propelling means characterized by a mechanical resistance at the maximum drive speed that applies a load torque to the motor armature that is equal to or less than 10 percent of the stalled motor torque at the maximum voltage.

3,953,153

MULTIPLE DISPLACEMENT PUMP SYSTEM AND METHOD

Melvin F. Huber, and Lowell D. Hansen, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed May 17, 1974, Ser. No. 470,988
Int. Cl.² F04B *23/10, 49/00*
U.S. Cl. 417—204 **10 Claims**



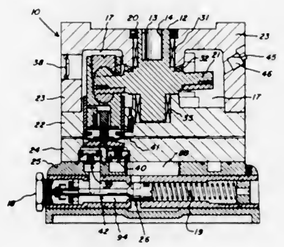
1. A multiple displacement pump system including, a vane pump having a casing and port plate means defining a chamber, a rotor in said chamber and carrying a plurality of vanes movable in a pumping path to define with said casing two sets of pumping chambers with a first set of pumping chambers between said vanes and a second set of pumping chambers radially inward of said vanes, said port plate means having ports providing a fluid inlet and a fluid outlet to one of said sets of pumping chambers and a separate fluid inlet and a separate fluid outlet to the other of said sets of pumping chambers in each revolution of the rotor, inlet means having a first conduit to the inlet port for said one set of pumping chambers and a second conduit to the inlet port for said other set of pumping chambers, outlet means having a first conduit for the outlet port from said one set of pumping chambers and a second conduit for the outlet port from said other set of pumping chambers, and circuit means including control valve means to selectively interconnect certain of said conduits for flow therefrom to a fluid utilization conduit, said control valve means having a first condition wherein both conduits of said outlet means communicate with the fluid utilization conduit, a second condition wherein both conduits of said outlet means communicate with the fluid utilization conduit and said first conduit of the outlet means also communicates with said second conduit of the inlet means, and a third condition wherein said second conduit of the outlet means communicates with the fluid utilization conduit and the first conduit of the outlet means communicates with the first conduit of the inlet means to recirculate the fluid pumped by said one set of pumping chambers through the pump.

3,953,154

PRESSURE CONTROL AND UNLOADER VALVE

William F. Wanner, 5805 View Lane, Minneapolis, Minn. 55436

Division of Ser. No. 203,562, Dec. 1, 1971, Pat. No. 3,775,030.
This application Nov. 15, 1973, Ser. No. 416,253
Int. Cl.² F04B *49/00*
U.S. Cl. 417—270 **12 Claims**



1. A pressure control and unloader valve for controlling the supply of liquid at a predetermined control pressure, said valve comprising:

a liquid pressure control chamber;

a discharge chamber;

a movable valve assembly disposed within a generally cylindrical bore between said pressure control and discharge chambers, wherein said valve assembly includes

a first valve means movable therewith allowing liquid to flow from said pressure control chamber to said discharge chamber when the liquid pressure in said pressure control chamber exceeds the liquid pressure in said discharge chamber but preventing the flow of liquid from said discharge chamber to said pressure control chamber,

a fluid reactive surface exposed to said discharge chamber and responsive to pressure in said discharge chamber, and

seal means for forming an effective seal between said pressure control and discharge chambers, said seal means being disposed about the periphery of said valve assembly and adapted for sliding engagement with said cylindrical bore during movement of said valve assembly within said bore; and

a second valve means in communication with said pressure control chamber for controlling the liquid pressure in said pressure control chamber at said control pressure, said second valve means having a closed position preventing the flow of liquid from said pressure control chamber through said second valve means and an open position allowing liquid to flow from said pressure control chamber through said second valve means, said second valve means being disposed such that said second valve means opens with the liquid pressure in said pressure control chamber and said valve assembly being operatively connected with said second valve means such that pressure in said discharge chamber acting against said fluid reactive surface urges said second valve means toward an open position, said second valve means further including bias means for biasing said second valve means toward a closed position, said bias means being operatively associated with said second valve means and with said fluid pressure control chamber such that the magnitude of said control pressure is determined by the magnitude of said bias means.

3,953,155

PUMP PLUNGER

George K. Roeder, P.O. Box 4335, Odessa, Tex. 79760

Filed Nov. 4, 1974, Ser. No. 520,634
Int. Cl.² F04B *21/04;* **F01B** *31/00*
U.S. Cl. 417—554 **5 Claims**



1. In a downhole submerged pump assembly having a connecting rod affixed to a plunger, said plunger being reciprocatingly received in sealed relationship within a working barrel, and means including a valve arranged to force fluid to flow uphole from the pump assembly when the rod reciprocates the plunger, the improvement comprising:

said plunger having a hollow mandrel, a resilient cylinder, said cylinder being concentrically arranged about said mandrel, seal means by which opposed marginal ends of said cylinder sealingly engage opposed spaced marginal lengths of said mandrel,

said plunger includes an upper and a lower sub, and an upper and a lower compression nut, said upper and lower compression nuts being spaced from one another by said resilient cylinder;

means forming beveled surfaces on each of said nuts and on each marginal end of said resilient cylinder such that each said nut wedgedly engages one opposed marginal end of said cylinder;

said upper and lower subs being spaced from one another by said nuts; means by which said upper sub and said upper nut abut one another and threadedly engage an upper marginal length of said mandrel; means by which said lower sub and said lower nut abut one another and threadedly engage a lower marginal length of said mandrel;

said cylinder having an inner, longitudinally extending, elongated midportion which is greater in diameter than the opposed marginal ends thereof to thereby form an annular chamber of limited length between said mandrel and said cylinder; means forming a port in a midportion of said mandrel for communicating said annulus with the interior of said mandrel;

means forming an outlet port in said upper sub through which fluid can flow from the interior of the mandrel; said connecting rod being affixed to said upper sub; said valve means including a traveling valve means affixed to said lower sub for enabling produced fluid to travel into said mandrel on the downstroke of the pump assembly;

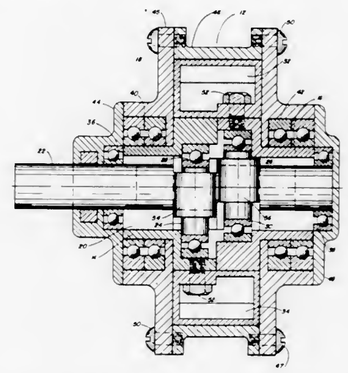
whereby fluid pressure effected within said mandrel is also effected within said annular chamber for causing the resilient cylinder to expand radially outward into sealing engagement with the interior of the barrel when the plunger lifts fluid on the upstroke.

3,953,156

ROTARY ENGINE

Thomas A. Smith, Rte. 2, Purvis, Miss. 39475

Filed Sept. 25, 1974, Ser. No. 509,157
Int. Cl.² F04C *1/00*
U.S. Cl. 418—35 **5 Claims**



1. A rotary engine having an annular cylinder, hollow shafts supported for independent rotation concentric with said cylinder, and at least two pistons adapted to rotate within said cylinder, each said piston fixed to a respective shaft, said engine comprising:

a. An eccentric drive shaft mounted in said engine and passing through said concentric hollow shafts, said eccentric shaft having oppositely disposed ends extending beyond the ends of said concentric shafts and supported for rotation around its eccentric axis by its ends outboard of the concentric shafts' ends, and defining diametrically parallel holes that are oppositely offset from said eccentric axis and intermediate the rotational supports of both eccentric and concentric shafts;

b. Transverse members, having oppositely disposed ends, slidably mounted, respectively, in said parallel holes; and

c. Bearing means eccentrically fixed to and between oppositely disposed ends of said transverse members and their respective concentric shafts to slidably engage said members and shafts for transmitting the rotation of pistons and concentric shafts to said eccentric drive shaft.

3,953,157

ROTARY-PISTON INTERNAL-COMBUSTION ENGINE WITH TWO OUTPUT SHAFTS

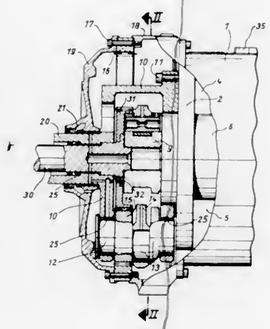
Huschang Sabet, Eduard-Pfeiffer Str. 67, D-7000 Stuttgart, Germany

Filed May 28, 1975, Ser. No. 581,704
Int. Cl.² F01C *1/00*
U.S. Cl. 418—36 **6 Claims**

1. In a rotary-piston, internal-combustion engine having a casing, two sets of pistons mounted for rotation about a common axis while in movable sealing engagement with said casing so as to define chambers therebetween, motion-transmitting means connecting the pistons of one set to the pistons of the other set for rotating the pistons of said other set at cyclically varying speed when the pistons of said one set rotate at uniform speed and for thereby cyclically expanding and contracting said chambers, and a first output shaft connected to said one set for simultaneous rotation, said motion-transmitting means including a crank drivingly connected to said output shaft and a connecting rod hingedly connecting said crank to said other set, the improvement which comprises:

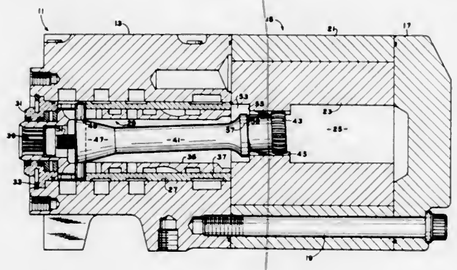
a. an epicyclic gear train including a first gear element fixedly fastened to said casing, a second gear element fastened to said crank and rotatably secured to said first

output shaft, and a third gear element, said second gear element simultaneously meshing with said first and third gear elements; and



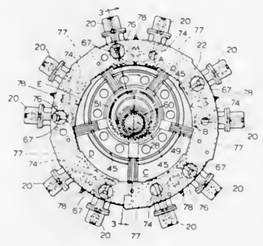
b. a second output shaft fastened to said third gear element for rotation therewith.

3,953,158
AXIAL RETENTION OF DRIVE SHAFT IN A FLUID PRESSURE DEVICE
Sohan Uppal, Hopkins, Minn., assignor to Eaton Corporation, Cleveland, Ohio
Filed Nov. 19, 1974, Ser. No. 525,255
Int. Cl.² F16C *1/02*
U.S. Cl. 418—61 B **6 Claims**



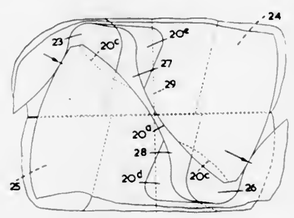
1. A fluid pressure device of the type including a housing, valve means disposed within said housing, an internally-toothed member fixed with respect to said housing, an externally-toothed member eccentrically disposed within said internally-toothed member for relative orbital and rotational movement and defining a longitudinal axis, said externally-toothed member defining a central bore, and first and second oppositely disposed end surfaces, a drive shaft disposed generally adjacent said first end surface and including a first shaft portion extending into said central bore, means connecting said first shaft portion and said externally-toothed member for common rotational and orbital movement, said externally-toothed member defining a first stop surface adjacent said first end surface and disposed generally perpendicular to said longitudinal axis and radially outward from said central bore, said first shaft portion including a shoulder portion extending radially outward therefrom, said first stop surface and said shoulder portion being in engagement during said rotational and orbital movement, to move at substantially the same speed, limiting axial movement of said drive shaft into said central bore.

3,953,159
INTERNAL COMBUSTION ENGINE
Lee Hunter, 13501 Ladue Road, Ladue, Mo.
Filed Jan. 20, 1975, Ser. No. 542,126
Int. Cl.² F02B *53/00;* **F04C** *17/02*
U.S. Cl. 418—61 R **4 Claims**



1. In an internal combustion engine the combination of frame means forming an annular combustion chamber, piston means in said chamber, sealing vanes carried by said piston means to engage with said chamber and form distinct combustion cells therein, a crankshaft extending axially through said chamber and rotatively mounted in said frame means, an eccentric fixed on said crankshaft and operatively engaged with said piston means, said piston means driving said crankshaft and moving relative to said chamber, and piston motion control means responsive to crankshaft rotation for holding the relative motion of said piston means to an orbital path in said chamber, said piston motion control means consisting of a first element on said piston, a second element on said crankshaft, and interengaged means operative between said first and second elements to nullify the tendency of said piston to rotate in the direction of crankshaft rotation and thereby generate the orbital motion of said piston means.

3,953,160
GEAR PUMPS AND MOTORS
Harry Simister Bottoms, Solihull, England, assignor to Lucas Aerospace Limited, Birmingham, England
Filed Mar. 12, 1974, Ser. No. 450,483
Claims priority, application United Kingdom, Mar. 15, 1973, 12545/73
Int. Cl.² F04C *1/04, 15/00*
U.S. Cl. 418—190 **3 Claims**

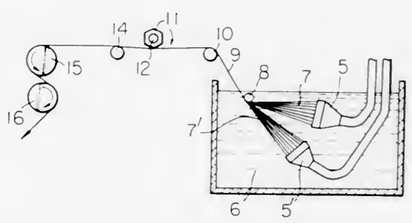


1. A gear pump or motor comprising a housing having therein an eight-shaped chamber with ports communicating with the chamber on opposite sides thereof, a pair of meshed pinion elements running in said eight-shaped chamber, and a shaft connected to one of the said pinion elements and projecting from the housing, each pinion element being supported in bearing blocks with non-planar surfaces forming relieved zones, each pinion element having a plurality of teeth each of which has a working flank, which engages the working flanks of teeth on the other pinion, and a non-working flank, each

axial end portion of the non-working flank of each tooth of each pinion having a respective relieved portion adjacent its root, which relieved portion extends to the respective axial end of the non-working flank, and a further relieved portion adjacent its tip, which relieved portion extends to the respective axial end of the non-working flank, each non-working flank having an unrelieved land extending across the entire width, from the root to the tip, of the non-working flank intermediate the ends thereof, and wherein the ports in the housing communicate with the inter-tooth spaces via the relieved zones in the bearing blocks and the relieved portions of the non-working flanks of the teeth at axial ends thereof.

3,953,161
APPARATUS FOR MANUFACTURING SYNTHETIC TOW FOR STRETCH-CUT SPINNING PROCESS
Noboru Oguchi; Takashi Hiramatsu; Ikuo Igami, all of Nagoya; Akira Aoki, Inazawa; Syogo Tanaka, Otake; Toshiro Seki, Otake, and Takao Inoue, Otake, all of Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan
Division of Ser. No. 277,990, Aug. 4, 1972, abandoned. This application Oct. 29, 1974, Ser. No. 518,973
Int. Cl.² D01D *5/16, 5/20*
U.S. Cl. 425—66 **1 Claim**

1. An apparatus for continuously producing a synthetic filament's tow from a plurality of synthetic filaments, comprising a pair of guide rollers for leading said filaments from spinnerets to a transfer roller for guiding said filaments to take-up means, a guide disposed at a position where coagulation of said filaments has not been completed, a deviation bar rotatably mounted on an axis transversal to said filaments and disposed just before or after a particular position on a passage defined by said pair of guide rollers where the coagulation of said filaments are completed, said deviation bar provided with a plurality of transversal radially projected polygonal edges in



connection with said transversal axis, whereby each of said edges deviates passage of said tow from a passage defined only by said guide rollers said passage being deviated according to rotational contact of said edges with said tow, said deviation bar provided with a plurality of blades extended radially from said transversal axis, and each of said edges of said deviation bar being arranged helically to said transversal axis.

3,953,162
DYEING PROCESS

Colin William Greenhalgh; David Francis Newton; Dennis Eckersley; Ian Cheetham; Duncan Adrian Sidney Phillips; Kenneth Dunkerley; Gerald Williams, and Vibhas Chokshi, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 21, 1974, Ser. No. 453,632
Claims priority, application United Kingdom, Apr. 25, 1973, 19580/73; Oct. 16, 1973, 48080/73
Int. Cl.² D06P *1/20, 1/38, 3/10*
U.S. Cl. 8—39 B 12 Claims

1. A process for dyeing nylon fibers by applying thereto a dyestuff of the anthraquinone series containing a dicarboxylic cyclic anhydride grouping or a dicarboxylic acid grouping such that cyclic anhydride formation can occur by loss of water therefrom, or a half-ester or half-amide of such a dicarboxylic acid grouping, any carboxylic acid group in the said dyestuff being present in free acid form or in the form of a salt with ammonia or a volatile amine, said dicarboxylic grouping not being on the anthraquinone nucleus and being either in ortho position on a benzene ring attached to said anthraquinone nucleus or in anhydride-forming position or positioned with one carboxyl group on a carbocyclic aromatic ring attached to said anthraquinone nucleus and the other in anhydride-forming position therewith on an alkyl side chain, and heating the nylon fiber until fixation of the dyestuff takes place.

3,953,163
IMPROVEMENTS IN OR RELATING TO ORGANIC COMPOUNDS

Max May, Bottmingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Mar. 3, 1975, Ser. No. 554,991
Claims priority, application Switzerland, Mar. 8, 1974, 3287/74
Int. Cl.² C14C *3/20*
U.S. Cl. 8—94.26 17 Claims

1. A tanning agent for leather, being the product of admixture of a zirconium or chromium salt and an aryl sulphone composition which composition is obtained by

a. sulphonation with sulphuric acid and at a temperature of from 80° to 150° C, a component (i) comprising at least one aromatic phenolic compound containing from 6 to 20 carbon atoms and having at least one hydroxyl group bound to a phenyl ring, and a component (ii) comprising at least one aromatic, non-phenolic compound containing from 6 to 20 carbon atoms, from 1 to 30% of component (i) and from 99 to 70% of component (ii), based on the total weight of components (i) and (ii), being employed, and removing water of sulphonation produced, and

b. condensing the resulting sulphonation product together with any unsulphonated components (i) and (ii), at a temperature of from 120° to 220°C, until the acid number of the mixture remains substantially constant.

3,953,164
EMBOSSING OF PILE FABRICS

Joseph Boba, Fort Lee, and Robert P. Conger, Park Ridge, both of N.J., assignors to Congoleum Industries, Inc., Kearny, N.J.

Filed Oct. 29, 1974, Ser. No. 518,245
Int. Cl.² B63H *9/04*
U.S. Cl. 8—115 14 Claims

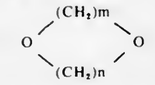
1. Process for providing an embossed effect on nylon pile fabric having a surface of nylon fibers which comprises

applying to defined areas of the pile surface of said fabric a chemical embossing composition for said fibers containing an embossing agent and a penetrant therefor,

said embossing agent including an acid having a dissociation constant no stronger than that of maleic acid and said composition having a hydrogen ion concentration equivalent to a pH of no more than 4;

said penetrant corresponding to a compound selected from:

(a) $R-Cl_2$

(b) 

(c) $R[O(\overset{X}{C}H)m]_a-OH$

(d) $R-[O(\overset{X}{C}H)n]_a-COOR^1$

wherein each of m, n, and a is an integer from 1 to 4, inclusive, X=H or CH_3 and each R and R^1 is a lower alkayl radical of 1 to 5 carbon atoms

allowing said embossing composition to remain in contact with said fibers for a period of time and at a temperature sufficient to reduce the height of said pile only in the area contacted by said embossing composition, without deterioration of said fibers, said reduction being sufficient to display a significant embossed effect in the overall fabric.

3,953,165
FLAMEPROOFING RESINS FOR ORGANIC TEXTILES FROM ADDUCT POLYMERS

Armand B. Pepperman, Jr., Metairie; Donald J. Daigle, New Orleans, and Sidney L. Vail, River Ridge, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 22, 1974, Ser. No. 499,803
Int. Cl.² D06M *13/28, 13/44*; C09K *3/28*
U.S. Cl. 8—116 P 4 Claims

1. A process for flameproofing organic textiles, comprising:

a. reacting a hydroxymethyl phosphonium compound with ammonia or an amine to form an insoluble adduct polymer;

b. mixing said polymer with a formaldehyde solution and a hydroxymethyl phosphonium compound at a mole ratio of formaldehyde to polymer phosphorus of from 1:4 to 4:1 and at a mole ratio of phosphonium compound to polymer phosphorus of from 1:10 to 2:1, thereby dissolving said polymer; and

c. reacting in contact with an organic textile said dissolved polymer and a nitrogenous compound containing at least two members of the group consisting of hydrogen atoms or methylol radicals attached to a trivalent atom.

3,953,166
FLAME RESISTANT ORGANIC TEXTILES THROUGH TREATMENT WITH PHENOLS AND ADDUCT POLYMERS

Armand B. Pepperman, Jr., Metairie; Donald J. Daigle, New Orleans, and Sidney L. Vail, River Ridge, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 22, 1974, Ser. No. 499,804
Int. Cl.² C08G *33/16*
U.S. Cl. 8—116 P 2 Claims

1. A process for flameproofing organic textiles comprising:

a. reacting a hydroxymethyl phosphorus compound with a nitrogenous compound to form an insoluble polymeric precipitate,

b. dissolving the precipitate from (a) in the presence of formaldehyde and an inorganic or organic acid with a mole ratio of 1:4 to 4:1 of formaldehyde to phosphorus contained in the precipitate and a 1:10 to 2:1 ratio of acid to phosphorus contained in the precipitate,

c. reacting the soluble polymer adduct from (b) with a phenolic type compound containing one or more hydrogens ortho or para to the phenolic hydroxyl group,

d. wetting a textile fabric with a solution of (c), and

e. drying the wetting fabric from (d) at a temperature from about 90°–170°C.

3,953,167
PROCESS FOR DYEING FIBERS OR FABRICS OF AROMATIC POLYAMIDES

Norihiro Minemura, and Setsuo Yamada, both of Takatsuki, Japan, assignors to Teijin Ltd., Osaka, Japan

Filed July 16, 1974, Ser. No. 488,918
Claims priority, application Japan, July 24, 1973, 48-82676
Int. Cl.² D06P *5/04*
U.S. Cl. 8—175 8 Claims

1. A process for dyeing aromatic polyamide fibers or fabrics, which comprises impregnating aromatic polyamide fibers or fabrics with (a) a cationic dye, (b) an aliphatic hydroxy compound having a boiling point of at least 180°C., (c) at least one swelling agent selected from the group consisting of o-phenylphenol, p-phenylphenol, benzophenone, β-naphthol and α-naphthol and (d) at least one of alkali metal salts or ammonium salts of inorganic or organic acids, the amount of said salt (d) being 1 to 10% by weight based on the sum total of the amounts of the dye (a), the hydroxy compound (b), the swelling agent (c) and the salt (d); and then heat-treating said fibers or fabrics with steam.

3,953,168
DYEING PROCESS

Sergio Fabbri, Basel, and Josef Frauenknecht, Therwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed July 15, 1974, Ser. No. 488,636
Claims priority, application Switzerland, July 20, 1973, 10645/73; Feb. 20, 1974, 2342/74
Int. Cl.² D06P *3/24*
U.S. Cl. 8—178 R 19 Claims

1. A process for dyeing or printing a voluminous textile substrate comprising natural or synthetic polyamide fibers, which process comprises applying to the substrate an aqueous dyeing or printing medium containing 0.05 to 100 g/l of a foaming agent selected from the group consisting of anionic, cationic, non-ionic and amphoteric foaming agents, forming a foam on said substrate, rolling up the substrate and rotating the rolled up substrate for a period of from 1 to 48 hours at a temperature of from 20° to 60°C. to effect fixation.

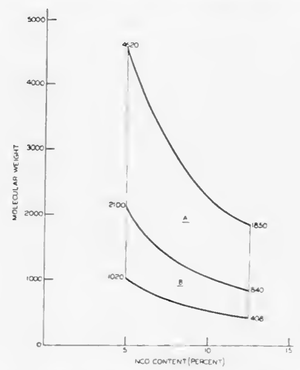
3,953,169
PAPERBOARD IMPREGNATED WITH POLYURETHANE RESIN

Selichi Igarashi, Suita; Kin-ichi Shirakawa, Ibaraki; Kazuo Kimura, Kobe, and Akira Ogino, Shinsenri-Higashi, all of Japan, assignors to Takeda Chemical Ind., Ltd., Japan

Continuation of Ser. No. 852,750, Aug. 25, 1969, abandoned. This application Sept. 5, 1974, Ser. No. 503,514
Claims priority, application Japan, Aug. 27, 1968, 43-61321
Int. Cl.² D06M *13/34*; D21H *1/40*
U.S. Cl. 8—192 5 Claims

1. A paperboard impregnated with 0.05 to 5.0 weight percent of a polyurethane resin relative to the weight of the paperboard, said polyurethane resin being impregnated as a solution in an organic solvent therefor, said polyurethane resin being a polyisocyanate wherein the correlation between the NCO content and molecular weight is defined by area A in the Figure, said polyisocyanate being obtained by:

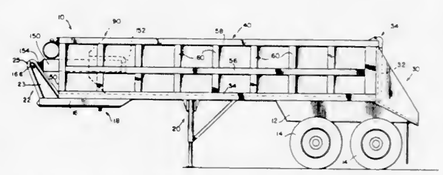
reacting tolylene diisocyanate with a polyether polyol produced by reacting an alkylene oxide with a diol having a low molecular weight, triol having a low molecular weight, tetraol or a mixture of any of the said polyether polyols with a polyalkylene glycol.



3,953,170
DUMP TRUCK WITH EJECTOR BLADE

James O. Webb, New Castle, Ind., assignor to Golay & Co., Inc., Cambridge City, Ind.

Continuation-in-part of Ser. No. 355,426, April 30, 1973, abandoned. This application Oct. 25, 1974, Ser. No. 518,080
Int. Cl.² B60P *3/00*
U.S. Cl. 214—82 3 Claims



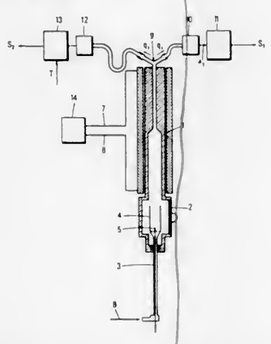
1. A vehicle for hauling material such as sand, gravel, asphalt mix, sludge, and the like comprising a mobile receptable provided by a bottom having longitudinally extending sides, a rear end, and a forward end, upwardly extending side walls attached, respectively, to said sides, and an end gate adjacent said rear end, said receptacle having an open top, a pusher blade in said receptacle to extend generally from side to side, means for mounting said blade for longitudinal movement between a first position adjacent said forward end and a second position adjacent said rear end, and motor means for longitudinally moving said blade to move such material out said end gate, said blade having a generally rectangular central body portion extending laterally and vertically and facing said rear end, said central body portion having a height not less than one-third the total height of said blade and not more than one-half the total height of said blade, a laterally extending rigid lower portion inclining downwardly and rearwardly from said central body portion to said bottom to exert forces upwardly on the material, a laterally extending rigid upper portion inclining upwardly and rearwardly from said central body portion to exert forces downwardly on the material, and vertically extending rigid side portions inclining outwardly and rearwardly from the opposite sides of said central body portion to said side walls to exert forces inwardly on the material, said side portions inclining outwardly and rearwardly at substantially the same angle, and said upper portion inclining upwardly and rearwardly at substantially the same angle as said lower portion inclines downwardly and rearwardly and

said upper portion and lower portion being substantially equal in height, so that, when the blade is moved rearwardly, the forces exerted on the material by the blade are centralized toward the center of the blade to reach equilibrium so that the material can move as a block with said blade toward said end gate.

3,953,171
METHOD AND APPARATUS FOR RAPIDLY EVALUATING THE HYDROCARBON PRODUCTION CAPACITY OF SEDIMENTS, USING SMALL SAMPLES THEREOF

Jean Espitalie, Le Vesinet, and Bernard Durand, Rueil-Malmaison, both of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, France

Filed Apr. 22, 1974, Ser. No. 463,185
Claims priority, application France, Apr. 27, 1973, 73.15348
Int. Cl.² G01N *31/12, 33/24*
U.S. Cl. 23—230 EP **31 Claims**



1. A process for rapidly evaluating the hydrocarbon production capacity of an organic material from a small sample thereof comprising:

a. pyrolyzing said sample in a non-oxidizing atmosphere so as to form hydrocarbon compounds and oxygen-containing compounds as products of the pyrolysis of said organic material;

b. producing a group of two signals S_1 and S_2, the value of signal S_1 being proportional to the quantity of at least one hydrocarbon compound other than the hydrocarbon compounds originally present in said organic material, said at least one hydrocarbon compound being produced by the pyrolysis of said organic material, the value of signal S_2 being proportional to the quantity of at least one of the oxygen-containing compounds produced by the pyrolysis of said organic material; and

c. evaluating from the values of said two signals the capacity of the sediment to constitute a good source for hydrocarbons.

3,953,172
METHOD AND APPARATUS FOR ASSAYING LIQUID MATERIALS

Stephen I. Shapiro, Scarsdale, N.Y., and Gerhard Ertingshausen, Cliffside Park, N.J., assignors to Union Carbide Corporation, New York, N.Y.

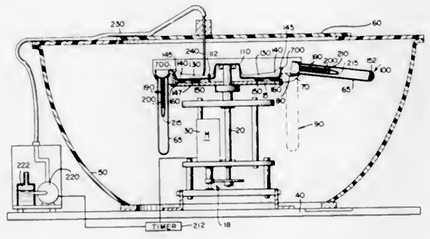
Filed May 10, 1974, Ser. No. 468,649
Int. Cl.² G01N *33/16, 31/08, 23/12*
U.S. Cl. 23—230 R **31 Claims**

1. A method for assaying a plurality of liquid samples which comprises

i. reacting at least two liquid materials in a plurality of cavities to provide a liquid containing at least one reaction product

ii. providing liquid phase separating means in communication with said cavities

iii. subjecting said cavities and said liquid phase separating means to centrifugal force sufficient to transfer the liquid



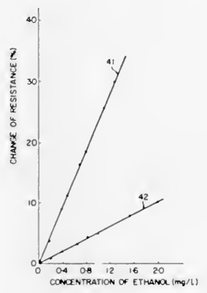
contents of said cavities to said communicating liquid phase separating means and provide separation of the liquid transferred thereto into at least two phases, and

iv. measuring at least one property of a separated phase.

3,953,173
GAS-SENSOR ELEMENT AND METHOD FOR DETECTING OXIDIZABLE GAS

Hidehito Obayashi; Tetsuo Gejyo, and Tetsuichi Kudo, all of Tokyo, Japan, assignors to Hitachi, Ltd., Japan

Filed July 5, 1973, Ser. No. 376,717
Claims priority, application Japan, July 8, 1972, 47-68309; Apr. 27, 1973, 48-47302
Int. Cl.² G01N *27/04;* **H01C** *13/00*
U.S. Cl. 23—232 E **38 Claims**

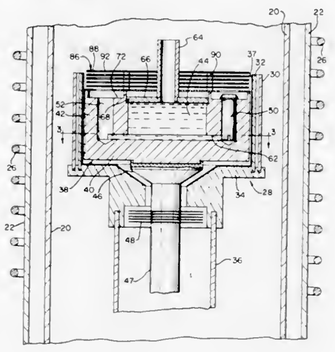


1. In a method for detecting the presence of a gaseous substance in a test gas comprising contacting the test gas with a sensor element whose resistance changes in the presence of said gaseous substance and measuring the resistance of said sensing element while said test gas is in contact therewith, the improvement wherein said gaseous substance is an oxidizable gas and further wherein said sensing element comprises a complex metal oxide having a perovskite-type crystal structure and represented by the general formula $A_{2-x}A'_xBO_{4-\delta}$, wherein A is at least one element selected from the group consisting of rare earth elements of the atomic numbers from 57 to 71, yttrium, and hafnium, A′ is at least one alkaline earth metal, B is at least one element selected from the group consisting of transition metals of the atomic numbers from 21 to 30, O is oxygen, x is in the range of $0 \leq x \leq 2$, and δ is a nonstoichiometric parameter.

3,953,174
APPARATUS FOR GROWING CRYSTALLINE BODIES FROM THE MELT

Harold E. LaBelle, Jr., Hanover, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.

Filed Mar. 17, 1975, Ser. No. 558,768
Int. Cl.² B01J *17/18*
U.S. Cl. 23—273 SP **6 Claims**

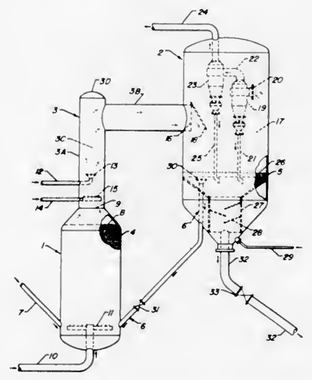


1. Apparatus for use in a system for growing crystalline bodies from the melt comprising: a crucible having a side wall and a bottom wall defining an interior space for containing a melt, said side wall having an upper end surface, a plurality of cavities in said side wall extending down from said upper end surface for receiving a like plurality of dies with capillaries, and at least one passageway in said side wall connecting the bottom ends of said cavities with said interior space so that melt can flow from said interior space into said cavities.

3,953,175
REGENERATION APPARATUS

Richard P. Pulak, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 28, 1973, Ser. No. 429,422
Int. Cl.² B01J *8/08, 8/18, 37/14*
U.S. Cl. 23—288 B **8 Claims**



1. An apparatus for oxidizing coke on spent catalyst which comprises in combination:

a. a spent-catalyst receiving chamber for containing a dense-phase fluidized bed of catalyst having a spent catalyst inlet means and a fresh-regeneration gas inlet means connected thereto to allow passage of spent catalyst and fresh regeneration gas respectively into said chamber and having a regenerated-catalyst/regeneration-gas outlet means connected thereto to allow passage of regenerated catalyst and regeneration gas from said chamber;

b. a transfer conduit positioned above said spent-catalyst receiving chamber and having a substantially vertical portion and a substantially horizontal portion in interconnection with said vertical portion, said vertical portion extending above said horizontal portion and having an inlet connected to the regenerated-catalyst/regeneration-gas outlet means and said horizontal portion extending into the side of a hereinafter described regenerated-catalyst receiving chamber and being provided with an outlet means into said chamber whereby regenerated catalyst and regeneration gas are carried from said spent-catalyst receiving chamber in admixture to said regenerated-catalyst receiving chamber, said portions of said transfer conduit being of sufficient internal volume to permit substantially complete CO oxidation and transfer of the heat of combustion to said catalyst therein, said transfer conduit having a combustible fluid inlet means to allow passage of combustible fluid into said conduit and having connected thereto a fresh regeneration gas inlet means to allow passage of fresh regeneration gas into said conduit;

c. a regenerated-catalyst receiving chamber for containing a dense-phase bed of regenerated catalyst, said chamber having a regenerated-catalyst outlet means and a spent-regeneration-gas outlet means connected thereto to allow passage of regenerated catalyst and spent regeneration gas from said chamber and said chamber being positioned adjacent to and at an elevation above said spent-catalyst receiving chamber sufficient to maintain at least a portion of said dense-phase bed of regenerated catalyst above said dense-phase fluidized bed of catalyst in said spent-catalyst receiving chamber; and,

d. a regenerated-catalyst recycle means to allow passage of regenerated catalyst directly from the regenerated-catalyst receiving chamber to the spent-catalyst receiving chamber.

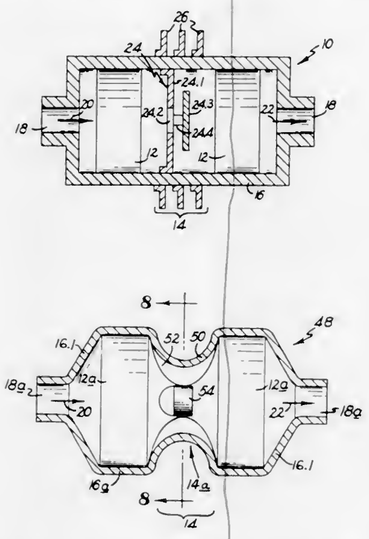
3,953,176
CATALYTIC CONVERTER

Teuvo J. Santala, Attleboro, and Ernest M. Jost, Plainville, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 22, 1973, Ser. No. 362,728
Int. Cl.² F01N *3/15*
U.S. Cl. 23—288 FC **8 Claims**

1. A device for catalytically converting automotive exhaust gas pollutants to harmless substances comprising a container having an inlet and an outlet at opposite ends of said container, a plurality of pairs of strips of metal catalyst material, each strip having a plurality of corrugations therein extending obliquely across the longitudinal axes of said strips, each pair of said corrugated strip materials being wrapped together in a jelly roll configuration to form a generally cylindrical catalyst unit, whereby said plurality of pairs of said strips form a plurality of said cylindrical catalyst units, said paired strip materials having the corrugations thereof obliquely disposed relative to each other so that said corrugations define obliquely intersecting passage portions which cooperate to define a multiplicity of passages of continuously varying cross-sectional area extending from end to end through each of said cylindrical catalyst units, said plurality of catalyst units being disposed in spaced sequential relation to each other within said container with the cylindrical axes of the cylindrical catalyst units extending in the direction between the inlet and outlet of said container for permitting automotive exhaust gasses to pass through said catalyst units in sequence to catalytically convert pollutants in the gasses to harmless substances, said catalyst units each having a selected cylinder length for limiting heat buildup in said gasses passing through said catalyst unit as a

result of exothermic catalytic reactions in said gasses, and heat dissipating means disposed within said container between said



catalyst units for reducing the temperature of said gasses passing between said catalyst units.

3,953,177
CERMET MATERIALS WITH METAL FREE SURFACE ZONES

Karl Sedlatschek, Reutte, and Friedrich Heitzinger, Lechaschau, both of Austria, assignors to Schwarzkopf Development Corporation, New York, N.Y.

Continuation of Ser. No. 218,583, Jan. 17, 1972, abandoned. This application Jan. 9, 1974, Ser. No. 431,976
Claims priority, application Austria, Jan. 20, 1971, 470/69
Int. Cl.² B22F 7/00
U.S. Cl. 29—182.2 **9 Claims**

1. A cermet material which consists essentially of a ceramic and a metal, said ceramic being selected from the group consisting of the oxides of aluminum, thorium, beryllium, titanium, zirconium, hafnium, magnesium, calcium, chromium, cerium, silicon and mixtures thereof, said cermet material having a surface zone that consists essentially of a ceramic skeleton in which said surface zone has been strengthened by the infiltration of a non-metallic component.

3,953,178
COATED METAL PRODUCT

Niels N. Engel, 720 Gonzales Road, Santa Fe, N. Mex. 87501

Division of Ser. No. 279,244, Aug. 9, 1972, Pat. No. 3,915,757. This application June 21, 1974, Ser. No. 481,486
Int. Cl.² B32B 15/04
U.S. Cl. 29—195 **6 Claims**

1. A coated metal product comprising, a steel martensitic substrate, a metal selected from the group consisting of: scandium, titanium, zirconium, hafnium, vanadium, columbium, tantalum, chromium, molybdenum, tungsten, lanthanum, cesium, praseodymium, neodymium, promethium, samarium europium, gadolinium, terbium, holmium, dysprosium, erbium, thulium, yttrium, ytterbium, lutetium, actinium, thorium, protactinium, uranium, neptunium, plutonium, americium, curium, berkelium, californium, einsteinium, fermium, mendelevium, nobelium, lawrencium, iron, cobalt, nickel and boron imbedded by ion bombardment into the surface area of said steel substrate, and a metal salt selected from the group consisting of a carbide, boride and nitride of said selected metal, bonded to the outer surface of said selected metal.

3,953,179
LUBRICATING COMPOSITIONS

Georges Jules Souillard, and Frederic Francois Van Quaethoven, both of Wezembeek, Oppem, Belgium, assignors to Labofina S.A., Brussels, Belgium

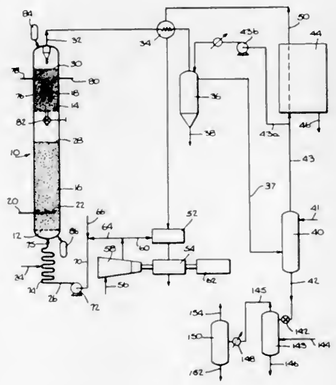
Filed Feb. 8, 1973, Ser. No. 330,757
Claims priority, application Belgium, Apr. 4, 1972, 115915
Int. Cl.² C10L 1/10
U.S. Cl. 44—58 **5 Claims**

1. A lubricating composition for 2-stroke internal combustion engines, comprising 90 to 97% by weight of a lubricant mixture comprising 15 to 80% by weight of a polymer selected from the group consisting of hydrogenated and non-hydrogenated polybutene, polyisobutylene and mixtures thereof, with a mean molecular weight ranging from 250 to 2000, and 0.5 to 10% by weight of a triglyceride of an unsaturated aliphatic carboxylic acid containing 18 carbon atoms, and the remainder being a lubricating oil selected from the group consisting of mineral oil and esters of a polybasic carboxylic acid and an aliphatic alcohol having from 8 to 20 carbon and mixtures thereof, and 3 to 10% by weight of conventional lubricating oil additives for 2-stroke engines.

3,953,180
PRODUCTION OF LOW BTU SULFUR-FREE GAS FROM RESIDUAL OIL

Franklin D. Hoffert, Mountainside, and Harold H. Stotler, Westfield, both of N.J., assignors to Hydrocarbon Research, Inc., Morristown, N.J.

Filed July 11, 1974, Ser. No. 487,718
Int. Cl.² C10G 13/30
U.S. Cl. 48—215 **12 Claims**



1. The method of producing a low BTU heating value combustible gas of substantially sulfur free character at relatively high pressure and temperature from a sulfur containing low grade oil of the class of crude and residual oil which comprises:

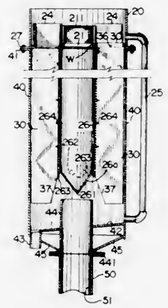
a. injecting said oil, steam, and air into a first bed of inert particulate matter under conditions to establish fluidization of the particulate matter and under a hydrogen partial pressure such that the oil is gasified and the bulk of the sulfur is converted to hydrogen sulfide with minimal amounts of carbonyl sulfide, the temperature in the bed being in the order of 1600°–2000°F., and the pressure being in the range of 200 to 400 psig;

b. passing the resulting gases and vapors upwardly through a second bed of inert particulate matter in indirect heat exchanger with a cooling material to reduce the bed temperature to a range of 500° to 1000° F. to accomplish a concentration of ultra fine solid contaminants;
c. removing said concentrated solid contaminants;
d. cooling and desulfurizing the effluent gases from the second bed; and
e. reheating said desulfurized gas, said reheated gas being product gas having a calorific value of under 350 BTU/SCF/(dry) and a sulfur content of less than 0.3 wt.%.

3,953,181
FILTER DEVICE

Chin Kuo Chung, No. 4, An Tung Road, and Hsing Shang Chen, No. 29, Kuang Fu St., Tung Ning Road, both of Chu Tung Hsin Chu Hsien, China /Taiwan

Filed June 24, 1974, Ser. No. 482,616
Int. Cl.² B01D 47/00
U.S. Cl. 55—228 **9 Claims**

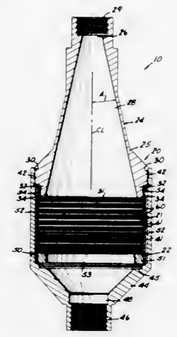


1. A filter device for removing pollutants from polluted gas, comprising: an upright, open-ended cylindrical body, a liquid distribution means on the top of said body closing the upper end thereof and having openings therethrough for flow of liquid into said body; a draining chamber at a bottom portion of said body; a cylinder inside said body coaxial therewith and spaced radially inwardly therefrom defining an annular space therebetween; a plurality of circumferentially spaced apart, longitudinally extending, radially corrugated plate members arranged between said body and cylinder in the annular space; the corrugations of adjacent plate members offset axially from one another such that the peaks of one corrugated member are spaced opposite the valleys of an adjacent corrugated member, thus forming a plurality of longitudinally extending, serpentine passageways open at their upper and lower ends for upward flow of polluted gas into and through the passageways; a vent through the liquid distribution means at the upper end of each of said serpentine passageways; means for supplying a treatment liquid to said liquid distribution means for gravity flow of the liquid through said openings and along said corrugated plate members and thus downwardly through said serpentine passageways to form a liquid film covering the outer surface of said plate members, so that the upward rising polluted gases flowing through the passageways are contacted by the treatment liquid and pollutants are removed from the gas by said treatment liquid and washed out through said draining chamber, whereby a clear, filtered gas flows out of the vents at the upper ends of the passageways.

3,953,182
COLLECTION MEDIUM FOR AIR SAMPLER

Thomas P. Roth, 5025 Hillsboro Road, Apt. 9E, Nashville, Tenn. 32715

Filed Sept. 3, 1974, Ser. No. 502,732
Int. Cl.² B01D 53/30
U.S. Cl. 55—270 **6 Claims**



1. A sampling device comprising a casing having an upstream inlet and a downstream outlet for separating particles entrained in a gaseous medium from the gaseous medium as the gaseous medium with the particles entrained therein passes through the sampling device from its upstream end to its downstream end, said sampling device comprising:

a plate holer having a centerline and disposed between said upstream inlet and downstream outlet;

a jet plate assembly having an upstream end and a downstream end through which a gaseous medium with particles entrained therein passes, said jet plate assembly including a plurality of jet plates carried by said plate holder so that said jet plates are serially aligned on said centerline parallel to each other, each of said jet plates oriented generally normal to said centerline, said jet plates including a first jet plate at the upstream end of said jet plate assembly and a plurality of second jet plates downstream of said first jet plate, each of said jet plates defining an upstream surface and a downstream surface thereon generally parallel to each other and normal to said centerline, each of said jet plates defining a plurality of jet impaction passages therethrough arranged along paths concentric about said centerline, each of said jet impaction passages oriented generally parallel to said centerline and opening onto said upstream surface and said downstream surface of each of said jet plates, said jet impaction passages in each of said jet plates located different distances from said centerline than said jet impaction passages in said jet plate adjacent to and immediately upstream of each of said jet plates so that said jet passages in each of said jet plates are staggered with respect to the adjacent downstream jet plate and the gaseous medium passing through said jet impaction passages of each of said jet plates is directed toward said upstream surface between said jet impaction passages of the adjacent downstream jet plate, each of said jet plates having an outer periphery outboard of said jet impaction passages therethrough;

a plurality of resilient collection substrates, each of said substrates having a first prescribed thickness, one of said substrates carried by and in juxtaposition with said upstream surface of each of said second jet plates, each of said collection substrates defining a plurality of arcuate slots therethrough arranged along slot paths concentric about said centerline, each of said slots overlying a plurality of said jet impaction passages opening onto said upstream surface of each of said second jet plates carrying said collection substrate, each of said slots having op-

posed ends and a plurality of slots lying along each concentric slot path, said substrate defining a land between the ends of adjacent slots lying along the same slot path, said lands in each of said slot paths radially aligned with one of said lands in each of the other of said slot paths of said substrate, said substrate further defining an arcuate collection surface between said arcuate slots facing the adjacent upstream jet plate so that the gaseous medium passing through said jet passages of said adjacent upstream jet plate impinges on said collection surface,

a plurality of annular sealing rings, one of said sealing rings mounted between each of said collection substrates and the adjacent upstream jet plate outboard of said jet passages and said slots concentrically about said centerline, each of said sealing rings having a first prescribed height;

clamping means operatively associated with said casing for forcing said jet plates toward each other to cause said sealing rings to form a seal about and between the outer periphery of said jet plates and position said jet plates parallel to each other, a space having a second prescribed height greater than said first prescribed thickness of said substrates defined between said collection surfaces of each of said substrates and the adjacent upstream jet plate, said jet plates spaced apart a first prescribed distance greater than said second prescribed height of said space; and

a plurality of locator-dividers, one of said locator-dividers positioned between each of said substrates and the adjacent upstream jet plate, and lying within said sealing rings, each of said locator-dividers including a plurality of crossbars, each of said cross bars radially extending from said centerline and having a third prescribed height greater than said second prescribed height of said space and less than said first prescribed distance between said plates, each of said cross bars engaging one of said substrates on said radially aligned lands between the ends of said slots so that said substrate is compressed thereby and the resiliency of said substrate causes said substrate to force said cross bars into sealing engagement with the downstream surface of the next upstream jet plate of said jet plates.

3,953,183
APPARATUS FOR SEPARATING MATERIAL PARTICLES FROM GASES
Ulrich Regehr, Susterfeld 65, 51-Aachen, Germany
Filed Sept. 25, 1973, Ser. No. 400,663
Claims priority, application Japan, Oct. 3, 1972, 47-99366
Int. Cl.² B01D *45/08*
U.S. Cl. 55—440 **11 Claims**



1. A separator of material particles from gases, comprising:

at least one gas duct with an upstream and a downstream orifice in the direction of flow;

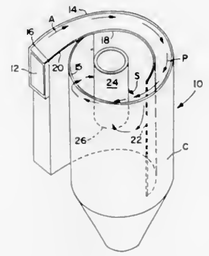
said gas duct including two surfaces in a parallel alignment of alternatively convexly and concavely shaped walls of continuous waves;

the wave of each surface comprising at least three circular arcs, a first convex arc, a second concave arc, and a third convex arc, said arcs developed of radiuses of curvatures different from each other and interconnected to curve in opposing directions from each other to form gas passages in said duct of different areas, when measured on the cross-sections perpendicular to said wave surfaces;

the convex surface of each arc provided with a warped blade forking above its apex in the direction of the first arc into a fourth arc developed on a radius of curvature smaller than that of the second arc and projecting into the gas duct to define there together with the convex apex a first separating chamber open towards the flow of the gas;

the concave surface of each second arc provided with a plurality of serrations beneath said second arc and projecting into said duct above said blade.

3,953,184
CYCLONE-TYPE DUST SEPARATOR
William F. Stockford, and Joseph M. Gamewell, both of P.O. Box 1430, Salisbury, N.C. 28144
Filed Sept. 18, 1974, Ser. No. 506,936
Int. Cl.² B01D *45/12*; **B04C** *5/04*
U.S. Cl. 55—458 **1 Claim**



1. A cyclonic dust separator of the type including a top wall, a conical shaped lower portion having a discharge opening at the lower end, an intermediate separation chamber joining the top wall and lower portion, and a discharge cylinder extending through said top wall and downwardly into said separation chamber, wherein the entering contaminated air stream is directed into a vortex and caused to turn at a turning point and exit through said discharge cylinder, said separation chamber comprising:

a. an outer wall extending for approximately one revolution in an arcuate path defined by a continuously decreasing radius to a trailing edge spaced from the initial portion of said outer wall;

b. an inner wall extending from said trailing edge inwardly into said chamber along an arcuate path spaced from said outer wall and defined by a continuously decreasing radius to a terminal edge defining a dust separation point;

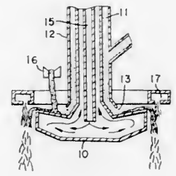
c. an inlet opening between said outer wall and said trailing edge for directing an air path horizontally into said separation chamber between said outer and inner walls;

d. said continuously decreasing radius of said inner wall decreasing at a rate slower than the corresponding radius decrease of said outer wall, to define a converging air path which increases the velocity of said air stream;

e. said terminal edge of said inner wall being positioned approximately one-half revolution beyond said trailing edge; and

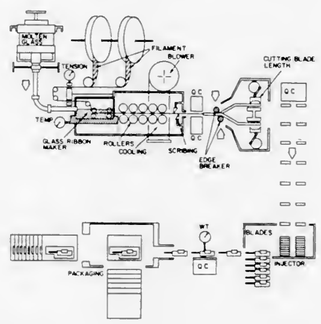
f. the inner wall being of substantially the same vertical dimension as said outer wall, the lower edge of said inner and outer walls extending to a level below the lower end of said discharge cylinder.

3,953,185
METHOD FOR MAKING VITREOUS FIBERS HAVING SMALL PROTRUSIONS
Susumu Aoki, Yokohama; Toshiaki Minaki, Yama; Kentaro Mori, Tokyo, and Kenichi Shibata, Nara, all of Japan, assignors to Nippon Asbestos Co., Ltd., Tokyo, Japan
Division of Ser. No. 427,113, Dec. 21, 1973. This application July 10, 1975, Ser. No. 594,867
Claims priority, application Japan, Dec. 25, 1972, 47-2204
Int. Cl.² C03B *37/04*
U.S. Cl. 65—8 **7 Claims**



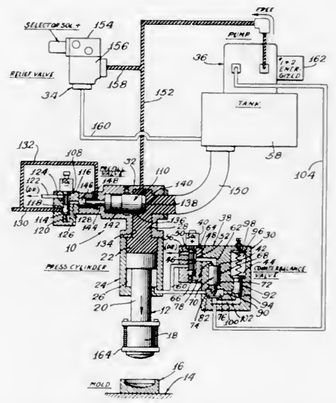
1. A process for making a length of inorganic vitreous fiber for use as a reinforcing element in the matrix of cementituous mixtures wherein said fiber is comprised of a body of a single vitreous fiber and at least one small protrusion formed integrally with said fiber body on the surface thereof comprising simultaneously but separately feeding molten inorganic material to form the body of the vitreous fiber and heat corrosion reistance mineral particles onto a high speed rotating rotor whereby the mineral particles are incorporated into the molten inorganic material and thereafter the incorporated molten inorganic material is released outwardly from the rotor due to the rotating centrifugal force, thereby fibrilating the molten material into a plurality of the vitreous fibers.

3,953,186
INDUSTRIAL PROCESS FOR THE PRODUCTION OF GLASS RAZOR BLADES
Robert E. Howey, 1217 Kukila St., Honolulu, Hawaii 96818
Filed Nov. 22, 1974, Ser. No. 526,375
Int. Cl.² C03B *21/00*
U.S. Cl. 65—51 **2 Claims**



1. I claim a process for the production of glass razor blades comprising the steps of imbedding mesh into a portion of a layer of molten glass being extruded to form a thin ribbon of glass and in a position within the said ribbon such that other portions of the glass ribbon are free from the mesh, scribing and stress fracturing the ribbon in said other portion of the ribbon, and further cutting the ribbon in dimensions suitable to form glass razor blades.

3,953,187
CONTROL SYSTEM FOR HYDRAULIC RAMS
Richard L. James, Anderson, Ind., assignor to Lynch Corporation, Anderson, Ind.
Continuation of Ser. No. 423,182, Dec. 10, 1973, abandoned. This application Mar. 19, 1975, Ser. No. 559,702
Int. Cl.² C03B *11/16*
U.S. Cl. 65—161 **9 Claims**



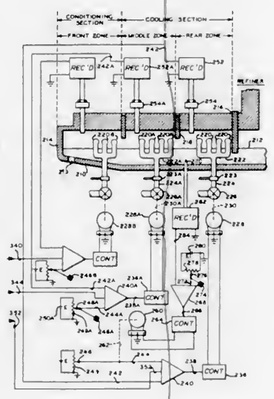
1. In a glass making machine having a mold and a ram movable into said mold for forming a glass product of the desired shape between said ram and said mold, an improved control system for operating said ram, said system comprising, in combination, an upright hydraulic cylinder, a hydraulic fluid supply positioned above said cylinder, a piston vertically and axially movable in said cylinder, said cylinder having upper and lower chambers defined on opposite sides of said piston, a feed line interconnecting said supply to said upper chamber of said cylinder, means for rigidly interconnecting said ram to said piston for simultaneous movement therebetween, first valve means for controlling the flow of hydraulic fluid to and from said upper chamber, second valve means for controlling the flow of hydraulic fluid to and from said lower chamber, means for operating both said first and second valve means, said operating means controlling said first valve means for directing pressurized fluid to said upper chamber and for also gravity feeding hydraulic fluid from said supply to said upper chamber for avoiding cavitation in said upper chamber when said ram is moving downwardly, said feed line being dimensionally sized to cooperate in maintaining said upper chamber substantially full of hydraulic fluid when said ram is moving downwardly, and means for controlling said second valve means for causing the flow of hydraulic fluid from said lower chamber for rapidly lowering said ram to said mold by said pressurized fluid in said upper chamber and by the substanatial free fall action of gravity acting on said ram, said piston, said connecting means and the hydraulic fluid in said upper chamber and without cavitation in said upper chamber, said hydraulic fluid filling said feed line without cavitation during said free fall action, said second valve means including means for venting said lower chamber to atmospheric pressure and said operating means also including means for controlling hydraulic fluid pressure and volume in both said upper and lower cylinder chambers for reducing the speed of said ram as said ram approaches said mold until a fixed pressing position and preselected pressing pressure are attained for forming glass between said mold and said ram, said controlling means including means for deactivating said venting means and causing said second valve means to create pressure in said lower chamber and also including means for operating first valve means for stopping the free flow of hydraulic fluid to said upper chamber while increasing the pressure level in said

upper chamber to desired pressing pressure by said first valve means stopping free flow of hydraulic fluid from said supply tank to said upper chamber.

3,953,188
CONTROL SYSTEM FOR MOLD COOLING IN GLASS FORMING MACHINE

Harry A. Fertik, Philadelphia, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed May 5, 1975, Ser. No. 574,224
Int. Cl.² C03B 25/04
U.S. Cl. 65—162 6 Claims



1. In a control system for maintaining a constant temperature for the parisons formed in a glass forming machine supplied from a temperature controlled glass feeder where the parisons are subjected to air cooling by the blowing of air from a duct onto the mold for the parisons and where the control system includes means for varying the pressure of the cooling air in the duct, means for producing a pressure indicative signal, control means operable in response to changes in the pressure indicative signal to control said pressure by controlling the operation of said pressure varying means, said control being responsive to changes in the temperature of the cooling air so as to cause said control means to vary the pressure in said duct to maintain a substantially constant temperature for said parisons as the temperature of said cooling air changes; the improvement comprising,

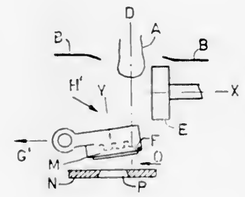
means for comparing said pressure indicative signal with a limit value for said pressure, and

means operable when said pressure indicative signal exceeds said limit for modifying the heat transfer equilibrium between the air cooling system and the parisons so as to maintain the parison temperature at its desired value.

3,953,189
APPARATUS FOR SHEARING AND TRANSFERRING A GLASS CHARGE

Herman Buurman, and Hendrik Romberg, Eindhoven, both of Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Division of Ser. No. 403,099, Oct. 3, 1973, Pat. No. 3,868,240. This application Aug. 23, 1974, Ser. No. 500,035
Claims priority, application Netherlands, Apr. 11, 1973, 7305030
Int. Cl.² C03B 5/30, 9/00
U.S. Cl. 65—207 7 Claims



1. Apparatus for producing formed hollow articles comprising:

means for producing a molten stream of glass;

a glass shear for severing a glass charge from said molten stream;

a blank shaping mechanism comprising two shaping cups, said shaping mechanism including first means for controlling said cups for intercepting and seizing said severed glass charge, said first means sequentially positioning said cups (1) on opposite sides of a plane extending through said stream and (2) on the same side of a said plane;

and means for blowing glass including a series of carriers, means for moving said carriers along a closed path, each of said carriers including a generally planar horizontal member being provided with an orifice, said carrier being movable in a second direction generally transverse to their direction of movement in said closed path, said second direction also being generally transverse to said plane during at least a part of said closed path, means for moving said carriers sequentially in said generally transverse direction between a receiving position and a blowing position, said means for blowing also including a blowing head and a blowing mold and means for periodically registering said blowing head and said blowing mold with each of said orifices of each of said carriers when said carrier is disposed in said blowing position, said first means periodically positioning one of said cups in registered relationship to one of said orifices in one of said carriers disposed in said receiving position.

3,953,190
PELLET PREHEATING AND VOLATILE RECYCLING STRUCTURE FOR GLASS MAKING FURNACE

Karl H. Lange, Allison Park, Pa., assignor to Pullman Incorporated, Chicago, Ill.

Continuation of Ser. No. 386,112, Aug. 6, 1973, abandoned. This application July 28, 1975, Ser. No. 599,440
Int. Cl.² C03B 5/16
U.S. Cl. 65—335 4 Claims

1. A pellet preheater adapted to receive the exiting combustion gases from a glass furnace for heating pellets to be introduced to the glass furnace comprising

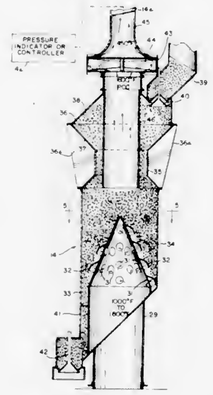
a tubular hot gas stack section adapted to being connected to receive the exiting combustion gases from the glass furnace,

a top portion of the hot gas stack section being apertured to allow the combustion gases to pass therethrough,

a cylindrical exhaust tube to carry gases out of the preheater, and

a pellet containing stack section receiving and holding the pellets while they are heated and coated by the condensate from the combustion gases, said pellet stack section surrounding the hot gas stack section and the exhaust tube and including a lower portion, above that a reduced portion and above that a top section,

the lower portion of the pellet stack section surrounding the top portion of the hot gas stack section and including a



discharge valve to allow discharge of the heated pellets from the preheater,

the top section of the pellet stack section surrounding the exhaust tube and including an intake valve to admit pellets to the preheater,

the reduced portion of the pellet stack section joining the top section and the lower portion of the pellet stack section and surrounding the exhaust tube, said reduced portion including an inwardly and downwardly sloping surface to heat the pellets by contact with the exhaust tube and the sloping surface of said reduced portion.

3,953,191
CUBED SOIL CONDITIONER WITH HIGH WATER ABSORPTIVITY AND RETENTIVITY

Benny M. Barton, Lubbock, Tex., assignor to HoBar, Inc., O'Donnell, Tex.

Filed July 25, 1974, Ser. No. 491,927
Int. Cl.² C05F 5/00
U.S. Cl. 71—23 9 Claims

1. A process which comprises admixing with soil an amount effective to condition the soil of highly-compressed, dusted, ground and steamed cotton-gin-waste pellets.

6. Pelletized soil conditioner, each pellet of which comprises an admixture of a) ground and steamed cotton gin waste with b) at least one member selected from the group consisting of fertilizer and soil adjuvant, the soil conditioner being water absorptive, water retentive and virtually free from weed seeds and pathogens detrimental to woody or herbaceous dicotyledonous plants.

3,953,192
NON-CAKING HYDROXY-ALUMINUM POLYMER-COATED AMMONIUM SALT COMPOSITIONS

Clive Hodgson, Forest Knolls; George R. Hawkes, Concord; Marion G. Reed, Hacienda Heights, and William G. Toland, San Rafael, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 323,571, Jan. 15, 1973, Pat. No. 3,852,055. This application July 10, 1974, Ser. No. 487,066
The portion of the term of this patent subsequent to Dec. 3, 1991, has been disclaimed.
Int. Cl.² C05C 1/00, 1/02
U.S. Cl. 71—59 14 Claims

1. A particulate ammonium salt composition coated with from about 0.01 to 5% by weight, based on weight total composition, of a hydroxy-aluminum polymer having a hydroxyl-to-aluminum mol ratio of about 1 to 2.9.

3,953,193
COATING POWDER MIXTURE

Irwin I. Bessen, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 353,764, April 23, 1973. This application Nov. 15, 1974, Ser. No. 524,327
Int. Cl.² B05D 1/08, 5/00
U.S. Cl. 75—.5 R 5 Claims



1. A powder mixture, particularly useful in a coating method for a surface based on an element selected from the group consisting of Fe, Co and Ni, the mixture consisting essentially of, by weight:

0.5 – 90% of a powder selected from the group consisting of Al; an alloy consisting essentially of, by weight, 50 – 70% Ti, 20 – 48% Al and 0.5 – 9% combined C; and alloys of Al and an element selected from the group consisting of Fe, Co and Ni;

0.5 – 4% Cr powder;

0.1 – 10% of a halide salt selected from the group consisting of NH_4F, NH_4Cl, NaF and KF;

with the balance Al_2O_3 powder.

3,953,194
PROCESS FOR RECLAIMING CEMENTED METAL CARBIDE

Albert G. Hartline, III, Albany, N.Y.; John A. Campbell, Auburn Heights, Mich., and Theodore T. Magel, Coraopolis, Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed June 20, 1975, Ser. No. 588,566
Int. Cl.² B22F 1/00, 1/04
U.S. Cl. 75—.5 BC 19 Claims

1. A process for reclaiming cemented metal carbide comprising

A. oxidizing said cemented metal carbide by subjecting it to oxygen at a temperature of at least 1100°F for a time sufficient to convert metal carbide to metal oxide,

B. subdividing the metal oxide to a powder,

C. reducing the metal oxide powder by subjecting it to a reducing gas at a temperature and for a time to reduce the oxygen content of the powder to a maximum of 0.5% by weight, and

D carburizing the reduced powder by subjecting it to available carbon at a temperature and for a time to convert said metal to metal carbide.

3,953,195

METHOD OF REFINING CARBON-UNSATURATED SYSTEM FERRO-CHROMIUM

Morio Harada, Takaoka; Saburo Kojima, Shinminato; Kazumi Ohta, Takaoka, and Hiroaki Shimomura, Shinminato, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 319,722, Dec. 29, 1972, abandoned. This application Sept. 9, 1974, Ser. No. 504,365

Int. Cl.² C21C *5/52*; **C22C** *33/04*

U.S. Cl. 75—12 **1 Claim**

1. In a process of manufacturing carbon unsaturated ferrochromium employing an electric furnace having an electrode and a bottom, wherein is contained a molten metal layer comprising Fe, Cr, C, a slag layer comprising CaO, MgO, SiO_2 and Al_2O_3, a Bodenfest layer, and a mixing layer, and wherein is charged raw materials comprising chromium ores, reducing agent, silica and lime; the improvement comprising the combination of steps of

A. controlling the composition of the charging raw material prior to charging of same into said furnace so that the chromium ore has 20 to 50% of particles sizes less than 10 mm whereby the chromium ore particles 10 mm and above are held in the Bodenfest layer and the chromium ore particles less than 10 mm are fused in the molten metal layer, thereby to enable increased silicon content in the slag layer and increased impedance between said electrode and said bottom;

B. adjusting the SiO_2 content in the charging material charged into said furnace to maintain the content of SiO_2 in the slag layer at between 35 to 45%, thereby to prevent the Bodenfest layer from becoming molten and thereby enable the Bodenfest layer to effectively decarburize and desiliconize, and thereby to enable the slag layer to effectively desulphurize; and

C. controlling the electric current applied to the furnace such that the impedance between said electrode and said bottom is more than 1.6×10^{-3} ohms, thereby to prevent said molten layer from rising and interfering with the action of said slag layer and said Bodenfest layer and thereby improve heating efficiency of the furnace.

3,953,196

PROCESS FOR THE DIRECT REDUCTION OF METAL OXIDES

Richard F. Obenchain, 3340 Comanche Road, Pittsburgh, Pa. 15234

Filed Apr. 5, 1974, Ser. No. 458,096

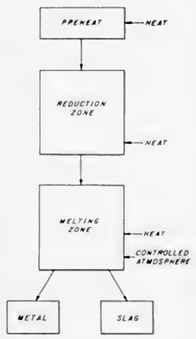
Int. Cl.² C21B *13/14*

U.S. Cl. 75—38 **12 Claims**

1. A process for the direct reduction of iron oxides comprising:

charging agglomerates of intimately mixed iron oxide, solid carbonaceous material and slag forming material into a shaft furnace, said agglomerates containing sufficient solid carbonaceous material to completely reduce said iron oxide, and raising the temperature of said agglomerates such that the iron oxide therein is reduced to metal by said carbonaceous material, which metal is encased within a slag protective shell formed by said slag forming material, but below the temperature at which said slag forming material liquifies to form integral reduced agglomerates of slag-encased metal;

further heating said integral reduced agglomerates under a controlled atmosphere, said atmosphere being controlled by varying the oxygen supplied to an oxygen-fuel flame, to the fusion temperature of the slag protective shell



whereby metal and slag disperse and can be separated; and

separating said metal and slag while controlling the cabon content of said metal below saturation by contact with said controlled atmosphere.

3,953,197

PRODUCTION OF CARBURIZED IRON

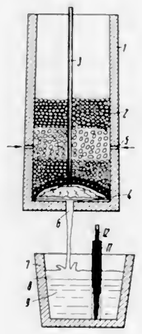
Hans Günther Geck, Hagen, and Jurgen Langhammer, Bremen-Platjenwerbe, both of Germany, assignors to Klockner-Werke AG, Duisburg, Germany

Filed May 23, 1974, Ser. No. 472,892

Claims priority, application Germany, May 25, 1973, 2326721

Int. Cl.² C21C *7/00*

U.S. Cl. 75—48 **4 Claims**



1. A process of producing carburized iron from particulate iron which forms a supernatant slag layer when melted which process comprises the following steps:

a. melting the particulate iron in a furnace;

b. transferring the molten iron from the melting furnace to a ladle,

c. bringing the molten iron in the ladle into contact with carbon that is fixedly located below the supernatant slag layer for a period of time sufficient to effect a preselected degree of carburization of the molten iron, and

d. thereafter withdrawing the thus carburized molten iron from the ladle.

3,953,198

METHOD FOR TREATING MOLTEN IRON USING A MAGNESIUM INFILTRATED METAL NETWORK

Jairaj Easwaran, Toledo, Ohio, and George S. Foerster, Hightstown, N.J., assignors to N L Industries, Inc., New York, N.Y.

Division of Ser. No. 454,951, March 26, 1974, Pat. No. 3,902,812, which is a continuation-in-part of Ser. No. 385,584, Aug. 3, 1973, abandoned. This application Dec. 23, 1974, Ser. No. 536,967

Int. Cl.² C21C *7/00*; **C22C** *33/08*

U.S. Cl. 75—58 **3 Claims**

1. A process for treating molten iron which comprises immersing a porous ferrous metal network impregnated with magnesium into said molten iron to reduce the sulfur content thereof, said metal network comprising compressed ferrous scrap metal pieces having individual sizes in which the length of the pieces is from ⅛ to 9 inches, the width is from 1/64 to 1 inch and the thickness is from 1 to 100 mils, said compressed network before being impregnated with said magnesium having a density of 1.2 to 4.0 g/cc, a porosity of 50% to 85% and a short transverse tensile strength of at least 2 psi, said network impregnated with from 18% to 55% magnesium based on the weight of the impregnated network, said impregnated magnesium being released from said network in a rapid and orderly manner by maintaining the structural strength of said metal network as the magnesium metal is released from said metal network.

3,953,199

PROCESS FOR REFINING PIG IRON

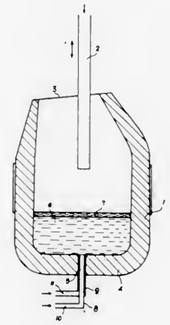
Eduard M. Michaelis, Seewalchen, Austria, assignor to Vereinigte Osterreichische Eisenund Stahlwerke, Vienna, Austria

Filed Feb. 11, 1974, Ser. No. 441,391

Claims priority, application Austria, Feb. 12, 1973, 1256/73

Int. Cl.² C21C *5/32*, *5/34*

U.S. Cl. 75—60 **4 Claims**



1. In a process for refining pig iron with technically pure oxygen within a converter wherein the oxygen is supplied to the bath simultaneously from above and from below the surface of the melt by impingement onto the bath surface by means of a lance and by means of at least one bottom nozzle below the surface of the bath, said nozzle providing an oxygen jet, said nozzle also providing hydrocarbons as a sheathing for said oxygen jet, the improvement comprising undertaking said refining by impinging oxygen onto the surface of the bath while adjusting the pressure of the oxygen supplied from below at the beginning of the refining process so that the pressure is adequate to prevent said pig iron from entering said nozzle; continuing said refining by impinging until the amount of carbon in the bath contents is between 0.2 and 0.05 percent by weight; and increasing the pressure of oxygen introduced from below when the amount of carbon in the bath content is between 0.2 and 0.05 percent by weight, thereby enhancing the turbulence and stirring action and the rate of refining action which decrease when the amount of carbon in the bath content falls to between 0.2 and 0.05 percent by weight.

3,953,200

NICKEL EXTRACTION PROCESS

Suk Joong Im, Southfield, Mich., and James D. Johnston, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Mar. 27, 1975, Ser. No. 562,420

Int. Cl.² C22B *23/04*

U.S. Cl. 75—103 **10 Claims**

1. A process for recovering an increased quantity of nickel values from a low-grade complex nickel ore said process comprising simultaneously grinding and leaching with an aqueous ammonia and ammonium salt solution of a comminuted low-grade nickel ore characterized by having a nickel content of not more than about 0.5 percent by weight and a sulfur to nickel ratio of one or less for a time sufficient to form a resultant aqueous solution of nickel values.

3,953,201

FERRITIC STAINLESS STEEL

John Randolph Wood, Valencia, and Roger N. Wright, Sarver, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Mar. 7, 1974, Ser. No. 449,177

Int. Cl.² C22C *38/22*, *38/28*

U.S. Cl. 75—126 C **18 Claims**

1. A ferritic stainless steel consisting essentially of, in weight percent, from 10.5 to 19% chromium, up to 0.03% carbon, up to 0.03% nitrogen, up to 0.20% manganese, up to 0.20% silicon, up to 0.30% nickel, up to 0.10% aluminum, up to 0.20% copper, at least one element from the group consisting of titanium and molybdenum in an amount of titanium of from 4 (%C + %N) to 0.75% and in an amount of molybdenum of from 0.50 to 2.50%, balance essentially iron; said titanium and molybdenum being present in respective amounts of less than 0.05 and 0.20% when said elements are residuals; said carbon, nitrogen, manganese, silicon, nickel, aluminum and copper, and titanium and molybdenum if residuals, being balanced in accordance with the following equation:

$$\%C + \%N + \%Mn + \%Si + \%Ni + \%Al + \%Cu + \%Ti, \text{ if residual} + \%Mo, \text{ if residual} \quad 0.75$$

3,953,202

PHOSPHORUS-BEARING MASTER COMPOSITION FOR ADDITION TO HYPER-EUTECTIC SILICON-ALUMINUM CASTING ALLOYS AND PROCESS THEREFOR

Robert T. C. Rasmussen, Pottstown, Pa., assignor to Kawecki Berylco Industries, Inc., Reading, Pa.

Filed Feb. 10, 1975, Ser. No. 548,278

Int. Cl.² C22C *21/00*

U.S. Cl. 75—148 **11 Claims**

6. A process for refining the primary silicon grains of hypereutectic silicon-aluminum alloys, said process comprising adding to said alloy in molten form, a grain-refining amount of a master composition comprising a compacted intimate mixture of particles of ferrophosphorus and particles of aluminum metal.

3,953,203
JEWELRY ALLOYS
Mitchell W. Haller, Jr., York, Pa., assignor to Dentsply Research & Development Corporation, Milford, Del.
Filed Jan. 24, 1975, Ser. No. 543,751
Int. Cl.² C22C *19/05*
U.S. Cl. 75—171 8 Claims

1. An alloy having utility for fabrication into jewelry consisting essentially by weight:

	Approximate Ranges
Tin	2 – 8%
Chromium	8 – 18%
Silicon	0 – 1%
Aluminum	0 – 3%
Niobium	0 – 10%
Nickel	Balance.

3,953,204
METHOD OF MAKING AN ANODE
Gehart P. Klein, Manchester, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Division of Ser. No. 196,328, Nov. 8, 1971, Pat. No. 3,809,552.
This application Nov. 29, 1973, Ser. No. 420,140
Int. Cl.² B22F *1/00*
U.S. Cl. 75—211 9 Claims

1. A method of making capacitor anodes comprising providing a mold having cavities therein which have been filled with a slurry of film-forming metal, moving headed or barbed ends of risers made of film-forming metal into the cavities, freezing slurry around ends of the risers while maintaining the ends in the cavities to form shaped masses, removing the shaped masses from the cavities, sintering the shaped masses at an elevated temperature to form rigid bodies, and forming a dielectric oxide over the rigid bodies.

3,953,205
PRODUCTION OF HOMOGENEOUS ALLOY ARTICLES FROM SUPERPLASTIC ALLOY PARTICLES
Arthur R. Cox, Jupiter, and Gary K. Lewis, Lake Park, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.
Filed June 6, 1973, Ser. No. 367,601
Int. Cl.² B22F *3/12*
U.S. Cl. 75—213 6 Claims

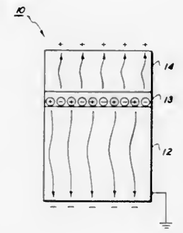
1. A process for reproducibly forming homogeneous articles from the constitutionally complex alloys which comprises:
providing the alloys in the form of clean, cold-worked particulate material, with the degree of cold work in the particles being sufficient to cause recrystallization and a condition of superplasticity when the alloy is heated above its recrystallization temperature, the individual particles being substantially homogeneous in composition, having an effective particle size exceeding about 0.003 inch, and providing a density of at least about 15 percent of the theoretical alloy density;
prior to extensive compaction, outgassing the particulate material in vacuum at high temperature, removing substantially all adsorbed and occluded gases therefrom;
prior to extensive compaction, heating the particulate material to a temperature sufficient to cause recrystallization and a condition of superplasticity;
compacting the degasified superplastic particulate material in vacuum at a temperature sufficient to provide interparticle bonding and further compacting the material to provide a unitary article of full theoretical density; and
with the time at temperature prior to full compaction being confined to a duration less than that required for the formation, by an internal diffusion mechanism, of surface species on the particulate resistant to interparticle metallurgical bonding.

3,953,206
INDUCTION IMAGING METHOD UTILIZING AN IMAGING MEMBER WITH AN INSULATING LAYER OVER A PHOTOCONDUCTIVE LAYER
John W. Weigl, West Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Apr. 30, 1974, Ser. No. 465,457
Int. Cl.² G03G *13/10*
U.S. Cl. 96—1 LY 29 Claims



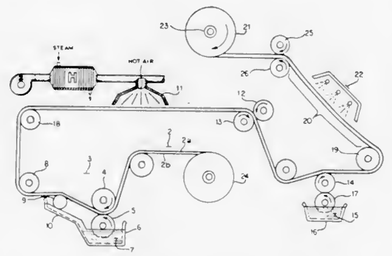
1. In an electrostatographic imaging method wherein an imaging member is sensitized by charging to the appropriate polarity, exposed to a light and shadow image pattern thereby forming a latent electrostatic image on the surface of the imaging member, and the latent image rendered visible by development with colored marking materials, the improvement comprising:
a. providing an imaging member comprising a conductive substrate, a photoconductive insulating layer and an insulating film overcoating the free surface of the photoconductive insulating layer, said insulating film being substantially incapable of supporting injection or transport of charge carriers of either polarity and substantially nonabsorbing of electromagnetic radiation within the wavelength of spectral response of the photoconductive insulating layer, the effective dielectric thickness of the insulating film relative to the photoconductive insulating layer being in the range of about 0.1:1 to about 10:1;
b. establishing an electric field between the surface of the insulating film and the conductive substrate by charging the surface of the insulating film to the appropriate polarity;
c. exposing the photoconductive insulating layer of the imaging member to a light and shadow pattern of activating electromagnetic radiation, whereupon the field in the exposed areas is collapsed across the photoconductive insulating layer and charge carriers become trapped at the interface of the insulating film and the photoconductive insulating layer in substantial correspondence to the photoactivated areas of the photoconductive insulating layer; and
d. contacting the developer laden surface of a conductive electrode with the sensitized surface of the insulating film of the imaging member, whereby mobile carriers at the interface of the photoconductive insulating layer and the conductive substrate are shunted from said interface into said electrode causing selective transfer of developer from the electrode to the surface of the insulating film; and
e. separating the developer laden electrode and the insulating film, whereby mobile charge carriers are shunted from said developer laden electrode back to the interface of the photoconductive insulating layer and the conductive substrate.

3,953,207
COMPOSITE LAYERED PHOTORECEPTOR
Anthony M. Horgan, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 25, 1974, Ser. No. 517,978
Int. Cl.² G03G *5/04*; G03C *1/76*
U.S. Cl. 96—1 PC 8 Claims



1. A method of imaging which comprises:
a. providing an imaging member comprising a first layer of electrically active charge transport material contained on a supporting substrate, a photoconductive layer overlying said active layer, and a second layer of electrically active charge transport material overlying said photoconductive layer, one of said electrically active layers exhibits the capability of facile hole injection and transport and the other electrically active layer exhibits the capability of facile electron injection and transport;
b. electrostatically charging said member; followed by
c. exposing said member to a pattern of activating radiation which results in the generation of electron hole pairs by the photoconductive layer, said holes being injected into and transported through said active layer capable of facile hole injection and transport and said electrons being injected into and transported through said active layer capable of facile electron injection and transport, resulting in the formation of a latent electrostatic image.

3,953,208
BOND-LIKE COPY PAPER BY COCKLING AFTER COATING OR IMAGING
Daniel E. Kane, San Jose, Calif., assignor to SCM Corporation, New York, N.Y.
Filed Jan. 22, 1973, Ser. No. 325,843
Int. Cl.² G03G *5/04*; B05D *5/02*
U.S. Cl. 96—1.5 7 Claims



1. In the process of manufacturing an electrographic layer by the steps of applying a solvent based photoconductive coating to one side of a web and drying the coated web, the improvement comprising the steps of:
a. choosing a flat bond paper for said web as a preliminary step, and
b. applying a macrotexture to said bond paper by cockling the surface thereof subsequent to said drying step through the additional steps of b1) moistening said coated web with an aqueous solution, and b2) drying the moistened web under a controlled light tension to achieve said cockling.

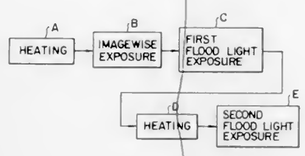
3,953,209
METHOD FOR PREPARING SUPPLEMENTAL FILTER FOR LIGHTHOUSE
Thomas Louis Chase, Lancaster, Pa.; Dino Duranti, and Renato Sassoli, both of Rome, Italy, assignors to RCA Corporation, New York, N.Y.
Filed Aug. 20, 1973, Ser. No. 389,727
Int. Cl.² G03C *5/00*
U.S. Cl. 96—38.3 2 Claims

1. A method for making a supplemental intensity-correction filter for use with a main intensity-correction filter in an exposure lighthouse for printing a viewing-screen structure for a cathode-ray tube, said lighthouse having an optical system including a lens assembly, said main intensity-correction filter, and means for projecting a light field from a small area light source through said lens assembly to a screen supporting surface, said method comprising:
a. photographically printing said screen structure on said screen supporting surface with said lighthouse comprising said main intensity-correction filter,
b. determining the differences in sizes between elements of said printed screen structure and corresponding elements of a desired screen structure including, for each of said elements,
ii. measuring the size thereof, and i.
ii. calculating the difference in size between said printed element and the corresponding element for said desired screen structure,
c. from said differences in size, determining the differences in brightness at points in said light field at said screen surface required to realize said desired screen structure,
d. producing on a surface of an optical element a supplemental intensity-correction filter whose transmission characteristic corresponds to said differences in brightness including
i. assigning discrete areas of said light field to increments of brightness differences,
ii. preparing a light-opaque stencil for each brightness increment
iii. coating said surface of said optical element with a layer of a photosensitive composition containing light-attenuating material therein,
iv. exposing said coating to a light field through said stencils to photographically print said supplemental intensity correction filter,
v. and then developing said coating.

3,953,210
DRY WORKING PHOTOGRAPHIC PROCESS RELATING TO N-VINYL COMPOUND SYSTEM
Katsue Hasegawa; Reiji Sano; Shirow Askawa, and Shunsuke Matsuda, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Company Limited, Osaka, Japan
Continuation-in-part of Ser. No. 319,605, Dec. 29, 1972, abandoned. This application July 23, 1974, Ser. No. 490,925
Claims priority, application Japan, Dec. 28, 1971, 47-114
Int. Cl.² G03C *5/32, 5/24, 1/52*
U.S. Cl. 96—45.2 7 Claims

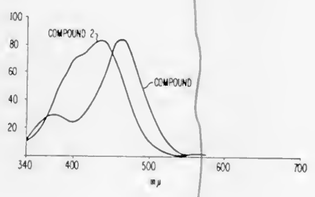
1. A dry working photographic process of producing a negative image on a photographic film coated with a photosensitive composition comprising N-vinylcarbazole, carbon tetrabromide, and 4-(p-dimethylaminostyryl)-quinoline, the composition being dispersed in gelatin in discrete fine particle form, said film being dried and cooled to room temperature subsequent to coating with said composition, the process comprising the steps of:

a. heating said film prior to an imagewise exposure at 60° to 120° C. for 1 to 60 seconds to sensitize said film and to prevent formation of fog in unexposed areas of said film during subsequent steps;
b. imagewisely exposing said film to radiation in the wavelength range of 2500 to 5000 A to produce latent images in the exposed areas;
c. exposing said film to a first flood light radiation in the wavelength range of 5000 to 7000 A with a total energy

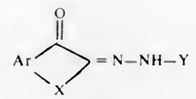


of 1 to 1000 millijoules/cm² with a light intensity of at least 1 mW/cm² to intensify said latent images;
d. heating said film at 60° to 120° C. to develop said latent image into a colored image; and
e. exposing said film to a second flood light radiation in the wavelength range of 3600 to 7000 A with an illumination intensity of 50 to 500 lux for at least 1 second to cause said N-vinylcarbazole in the unexposed areas to photopolymerize to give a colorless polymer.

3,953,211
DYE DEVELOPER FOR DIFFUSION TRANSFER ELEMENTS
Shinichi Imai; Shinsaku Fujita; Yukio Maekawa, and Seiki Sakanoue, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed Sept. 18, 1974, Ser. No. 507,160
Claims priority, application Japan, Sept. 18, 1973, 48-105236
Int. Cl.² G03C *1/76, 1/40, 1/10, 7/00*
U.S. Cl. 96—73 **10 Claims**



1. A color diffusion transfer photographic light-sensitive material which comprises a support having thereon at least one light-sensitive silver halide emulsion layer containing a silver halide combined with a dye developer, one of the light-sensitive silver halide emulsion layers being combined with a dye developer represented by the following General Formula (I);



(I)

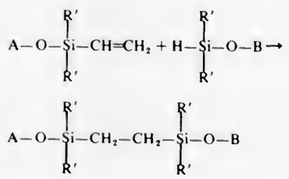
wherein Ar represents a phenylene group; X represents

$$-CO-,\quad -S-,\quad -O-,\quad -\underset{\displaystyle COR}{\overset{|}{N}}-$$

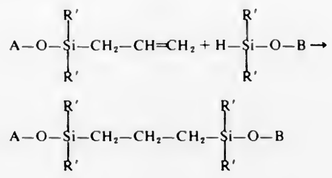
with R being an alkyl group having 1 to 3 carbon atoms, —NHCO— with the nitrogen atom being connected to the Ar group or —OCO— with the oxygen atom being connected to the Ar group; and Y represents an aromatic phenyl group with a hydroquinone attached thereto through an alkylene linkage.

3,953,212
PRE-SENSITIZED LITHOPRINTING PLATE REQUIRING NO FOUNTAIN SOLUTION
Shizuo Miyano; Asaji Kondo; Shinzo Kishimoto, and Kenichiro Yazawa, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed Nov. 2, 1973, Ser. No. 412,517
Claims priority, application Japan, Nov. 2, 1972, 47-110073
Int. Cl.² G03C *1/52, 1/68, 1/72*
U.S. Cl. 96—75 **10 Claims**

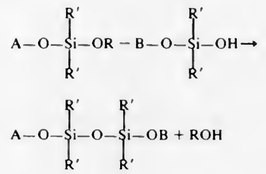
1. A pre-sensitized lithoprinting plate comprising a support having an oleophilic surface and having thereon a single coating layer consisting of a heterogeneous mixture of (1) a photosensitive material selected from an o-quinonediazide, an azide compound, a condensate of p-diazodiphenylamine with formaldehyde, a p-quinonediazide, polyvinyl cinnamate, polyvinyl cinnamilidene, poly(cinnamoyloxyethyl acrylate), poly(-cinnamoyloxyethyl methacrylate), copolymers of said acrylates and methacrylates, or an unsaturated polyester comprising the condensation product of p-phenylene diacrylic acid with a polyhydric alcohol containing a cyclohexyl group, and (2) a silicone rubber selected from (a) a single package cold-setting silicone rubber comprising dimethylpolysiloxane chains terminated by acetyl, oxime, alkyl or amino groups which have been heatcured into a de-alcohol-type silicone rubber, a de-acetic acid-type silicone rubber, a de-oxime-type silicone rubber or a deamino-type silicone rubber, or (b) a heat-cured two package cold-setting silicone rubber consisting of an addition-type silicone rubber or a condensation-type silicone rubber, said two package cold-setting addition-type silicone rubber being formed by the reaction sequence:



or from the reaction sequence:

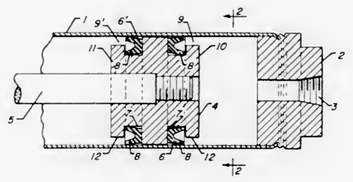


wherein R′ is a monovalent alkyl group, a monovalent aryl group, a cyanoaryl group, and is the same or different group and A and B are organosiloxane residue groups; and wherein aid two package cold-setting condensation-type silicone rubber is formed by the reaction sequence:



wherein R′ is a monovalent alkyl group, a monovalent aryl group, a cyanoaryl group, and is the same or different group, R is an alkyl group having 1 to 3 carbon atoms, and A and B are organosiloxane residue groups; the weight ratio of said photosensitive material to said silicone rubber is from 0.1 to 1.1, and wherein said coating has a thickness of about 1 to 10 microns.

3,953,213
PISTON CONSTRUCTION FOR FLUID POWER CYLINDERS
Ralph L. Gasper, Lansing, Ill., assignor to Bimba Manufacturing Company, Monee, Ill.
Filed Apr. 5, 1974, Ser. No. 458,083
Int. Cl.² F16J *9/08*
U.S. Cl. 92—184 **3 Claims**



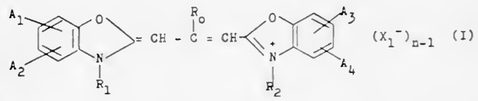
1. In a fluid power cylinder having a cylinder body portion, end closure members, fluid port means, a movable one-piece double-acting piston member and piston rod means, full depth peripheral annular grooves around said piston member that are spaced from the ends thereof to provide full diameter end portions and a center portion for said piston member, and laterally positioned U-form seal ring means in each groove with each seal ring means having an upper lip engaging said cylinder body portion and a lower lip engaging the bottom of the groove with the hollow of said U-form seal ring means facing an end portion and being entirely and directly open thereto, the improved construction to prevent low pressure fluid from being trapped in the hollow of the U-form seal means, which comprises, providing notch means in the outer periphery of each of the end portions of said piston member to a depth reaching a midportion of each groove and hollow of said U-form seal ring means and to form resulting lateral vent openings to the interior portion of each seal ring means being held within said grooves while leaving the remainder of the periphery of the ends of the piston member at a full diameter and the remainder of the grooves at full depth.

3,953,214
PHOTOPOLYMERIZABLE SCREEN PRINTING INKS AND USE THEREOF
Melvin A. Lipson, Fullerton, and Dale W. Knoth, Norwalk, both of Calif., assignors to Dynachem Corporation, Santa Fe Springs, Calif.
Filed May 24, 1974, Ser. No. 473,236
Int. Cl.² G03C *1/68, 5/00*
U.S. Cl. 96—115 P **7 Claims**

1. A photopolymerizable screen printing ink which comprises:
A. 25 to 50% by weight of a photopolymerizable monomeric material containing at least 20 weight percent hydroxyalkyl acrylate or methacrylate;
B. 20 to 60% by weight of a polyester binder having a molecular weight of from 500 to 50,000;
C. 5 to 10% by weight of a free radical generating addition polymerizing initiating system;
said photopolymerizable composition having a viscosity of from 5,000 to 200,000 centipoises, an acid number of from 0 to 120, and a thixotropic index of from 1.00 to 4.00.

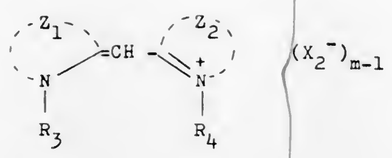
3,953,215
SILVER HALIDE PHOTOGRAPHIC EMULSIONS
Masanao Hinata; Haruo Takei; Akira Sato; Masao Takano, and Nobuaki Miyasaka, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed July 16, 1974, Ser. No. 489,013
Claims priority, application Japan, July 16, 1973, 48-80110
Int. Cl.² G03C *1/14*
U.S. Cl. 96—124 **11 Claims**

1. A silver halide photographic emulsion containing in a supersensitizing amount the combination of at least one sensitizing dye represented by the general formula (I)



(I)

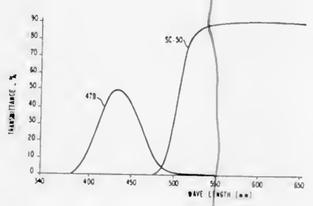
wherein, A_1, A_2, A_3 and A_4 each represents a member selected from the group consisting of a hydrogen atom, a lower alkyl group, an alkoxy group, a halogen atom, a hydroxyl group, an aryl group, a carboxyl group, an alkoxycarbonyl group, a cyano group, a trifluoromethyl group, an amino group, an acylamido group, an acyloxy group, an alkoxycarbonylamino group, and a carbalkoxy group; and A_1 and A_2 and A_3 and A_4 can combine to form a naphthoxazole nucleus; R_0 represents a hydrogen atom, a lower alkyl group or an aryl group; R_1 and R_2 each represents an alkyl group, provided that at least one of R_1 or R_2 represents a sulfoalkyl group; X_1 represents an anion; and n is equal to 1 or 2 with n being equal to 1 when the sensitizing dye forms an intramolecular salt, and at least one sensitizing dye represented by the general formula (II)



$(X_2^-)_{m-1}$ (II)

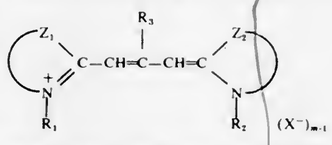
wherein Z_1 and Z_2 each represents the non-metallic atoms necessary to form a nucleus selected from the group consisting of a thiazole nucleus, a thiazoline nucleus, an oxazole nucleus, a selenazole nucleus, a 3,3-dialkylindolenine nucleus and an imidazole nucleus; R_3 and R_4 each represents an alkyl group; X_2 represents an anion; m is equal to 1 or 2 with m being equal to 1 when the sensitizing dye forms an intramolecular salt.

3,953,216
SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION
Masanao Hinata; Haruo Takei; Akira Sato, and Akira Ogawa, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed Aug. 16, 1974, Ser. No. 498,143
Claims priority, application Japan, Aug. 16, 1973, 48-91896
Int. Cl.² G03C *1/14*
U.S. Cl. 96—126 **7 Claims**



1. A silver halide photographic emulsion having high green sensitivity containing in supersensitizing amounts the combination of

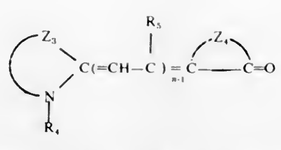
1. at least one sensitizing dye represented by the formula (I)



(I)

wherein Z_1 and Z_2 are the atomic groups necessary for forming a benzoxazole ring or a naphthoxazole ring, in which a benzene nucleus of the ring may be substituted; R_1 and R_2 are aliphatic groups and at least one of R_1 and R_2 is a carboxyalkyl group or a sulfoalkyl group; R_3 is a hydrogen atom or an alkyl group; X is an acid anion; and m is 1 or 2 and m is 1 when the dye forms an intramolecular betaine like salt, and

2. at least one sensitizing dye represented by the formula (II)



(II)

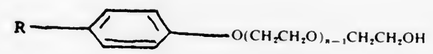
wherein Z_3 is an atomic group necessary for forming a 5-membered or 6-membered heterocyclic ring selected from the group consisting of a pyridine ring, a quinoline ring, an oxazoline ring, an oxazole ring, a thiazoline ring, a thiazole ring, a selenazole ring, a benzoxazole ring, a benzothiazole ring, a benzoselenazole ring, a benzimidazole ring, a dialkylindolenine ring, a α-naphthoxazole ring, a β-naphthoxazole ring, a β,β-naphthoxazole ring, a α-naphthothiazole ring, a β-naphthothiazole ring, a β,β-naphthothiazole ring, a α-naphthoselenazole ring, a tetrazole ring and a pyrroline ring, which may be substituted with one or more of a halogen atom, an alkyl group, an alkoxy group, an alkoxycarbonyl group, and an aryl group as described for Z_1 and Z_2 in addition to R_4; Z_4 is an atomic group necessary for forming a 2-pyrazoline-5-one ring nucleus which may be substituted with a member selected from the group consisting of an alkyl group, an alkoxy group, an alkoxycarbonyl group, an aryl group, an alkoxyalkyl group, an N-(N,N-dialkylaminoalkyl)carbamoylalkyl group, an N-(N,N,N-trialkylammoniumalkyl)carbamoylalkyl group, an N,N,N-trialkylammoniumalkyl group, a hydroxyalkyl group, a carboxyalkyl group, a sulfoalkyl group, and an amino group; R_4 is an aliphatic group; R_5 is a hydrogen atom, an alkyl group, or an aryl group; and n is 1 or 2.

3,953,217
LIQUID POLISH
John Goracke, P.O. Box 103, Yuma, Ariz. 85364
Filed Dec. 9, 1974, Ser. No. 530,752
Int. Cl.² C09G *1/02, 1/06*
U.S. Cl. 106—8 **2 Claims**

1. A liquid polish comprising, by volume, 1 to 16% isoamyl acetate, ¼ to 4% calcium oxide, ¼ to 6% tung oil, ¼ to 8% sodium bicarbonate, ¼ to 8% boric acid, and the balance of turpentine.

3,953,218
PIGMENT DISPERSION
Edward T. Pollard, Norwalk, Ohio, assignor to PMS Consolidated, Somerset, N.J.
Continuation-in-part of Ser. No. 129,968, March 31, 1971, Pat. No. 3,728,143, and a continuation-in-part of Ser. No. 310,022, Nov. 28, 1972, Pat. No. 3,844,810, which is a division of Ser. No. 129,968, March 31, 1971, Pat. No. 3,728,143. This application Apr. 16, 1973, Ser. No. 351,641. The portion of the term of this patent subsequent to Apr. 17, 1990, has been disclaimed.
Int. Cl.² C09D *11/00*
U.S. Cl. 106—19 **23 Claims**

1. The process of preparing coated pigment particles in a liquid form, for compounding with a thermoplastic, a thermoset and combinations thereof which comprises: (a) preparing a liquid heated admixture of a molten fatty acid amide, pigment particles and a non-solvent diluent, said pigment not being soluble in said thermoplastic, said thermoset and combinations thereof, said fatty acid amide being solid at room temperature, said non-solvent diluent being selected from the group consisting of (i) a non-solvent liquid fatty acid ester which is selected from the group consisting of ethyl formate, ethyl caprylate, ethyl propionate, ethyl butyrate, propyl acetate, butyl acetate, butyl formate and methyl butyrate, (ii) a liquid wetting-agent which is selected from the group consisting of a liquid sodium salt of an alcohol sulfate, a liquid amine salt of an alcohol sulfate, a liquid alcohol phosphate, a liquid aliphatic sulfonate, a liquid alkylaryl sulfonate, a liquid alcohol/ethylene oxide adduct, a liquid alkyl betaine - C type, a liquid alkyl betaine - N type, and a compound having the formula:



wherein R is alkyl and n is the number of moles of ethylene oxide, (iii) a non-solvent liquid vegetable oil which is selected from the group consisting of castor oil, olive oil, peanut oil, rape oil, corn oil, soybean oil, linseed oil, tung oil, and oiticica oil, (iv) a non-solvent liquid animal oil which is selected from the group consisting of lard oil, neat's foot oil, whale oil and fish oil, (v) a non-solvent liquid glycol which is selected from the group consisting of ethylene glycol, propylene glycol and 1,3-butylene glycol, (vi) glycerol, (vii) a mineral oil and (viii) combinations thereof, the amine radical or radicals in the fatty acid amide containing 0 to 36 carbon atoms, the fatty acid radical or radicals in the fatty acid amide containing 1 to 36 carbon atoms, and said fatty acid amide can be substituted by hydroxyl groups, and (b) cooling the admixture to room temperature.

3,953,219
POWDERY COMPOSITION FOR HEAT RETENTION OF FEEDER HEAD
Masaru Takashima, Wakabaya, Japan, assignor to Aikoh Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 269,091, July 5, 1972, abandoned. This application Sept. 20, 1974, Ser. No. 507,717
Claims priority, application Japan, July 10, 1971, 46-50717
Int. Cl.² B28B *7/36*
U.S. Cl. 106—38.27 **12 Claims**

1. In a powdery composition for heat retention of feeder head which comprises from about 5 to about 25% by weight of a carbonized plant material and from about 75 to about 95% by weight of a mixture including at least one refractory material, at least one easily oxidizable metal, at least one metal oxide and at least one inorganic material effective for heat retention of feeder head; the improvement comprising each of the ingredients in said mixture having a particle size distribution, by the Tyler Standard Sieve System, of less than 50% by weight of 48 to 200 mesh particles, with the remainder being coarser than 48 mesh particles plus finer than 200 mesh particles which are present in a ratio of coarser to finer particles of approximately 1:1.

3,953,220
REFRACTORY CELSIAN GLASS-CERAMICS
David M. Miller, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed July 26, 1974, Ser. No. 492,053
Int. Cl.² C03C *3/22;* **C03B** *32/00*
U.S. Cl. 106—39.8 **3 Claims**

1. A method for making a glass-ceramic article exhibiting a coefficient of thermal expansion over the range of R.T. to 900°C. of about 35–50 × 10^{-7}/°C., a use temperature under load up to about 1250°C., and a density of about 3.1–3.5 g/cc, said article consisting predominantly of celsian solid solution crystals and rutile crystals homogeneously dispersed within a glassy matrix with said crystals constituting at least 75% by volume of the article, which comprises:

a. melting a batch for a glass consisting essentially, by weight on the oxide basis, of about 20–35% BaO, 20–35% Al_2O_3, 20–40% SiO_2, 5–15% PbO and/or P_2O_5, the total PbO + P_2O_5 not exceeding about 20%, and 7–12% TiO_2 as a nucleating agent;

b. simultaneously cooling the melt to at least within the transformation range thereof such that said melt is transformed into an amorphous solid and shaping a glass body therefrom;

c. heating said glass body above the transformation range thereof to a temperature between about 1050°–1300°C. for a period of time sufficient to effect the desired nucleation and crystallization of celsian solid solution crystals and rutile crystals; and then

d. cooling the crystallized article to room temperature.

3. A glass-ceramic article made by the process of claim 1.

3,953,221
FULLY DENSE CERAMIC ARTICLE AND PROCESS EMPLOYING MAGNESIUM OXIDE AS A SINTERING AID
Frederick F. Lange, Murrysville, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 22, 1975, Ser. No. 570,543
Int. Cl.² C04B *35/58*
U.S. Cl. 106—62 **4 Claims**

1. A process for producing a fully dense ceramic article which comprises the steps of

a. mixing Si_3N_4, Al_2O_3 and MgO powders to form a composite powder composition wherein the composition comprises about 50 to about 80 weight percent of Si_3N_4, about 15 to about 50 weight percent of Al_2O_3, and about 0.25 to about 5 weight percent of MgO based on the total weight of the composition;

b. forming the composite powder composition into a desired shape; and

c. heating the shaped composite powder composition in an non-oxidizing atmosphere under ambient pressure at a sintering temperature from about 1400°C to about 1750°C.

3,953,222
ADDITION OF ACIDULATED POZZOLAN TO CONCRETE AND CONCRETE PRODUCTS
John W. Bainton, Nassau, Bahamas, assignor to Tekology Corporation, Palisades Park, N.J.
Filed Apr. 10, 1974, Ser. No. 459,587
Int. Cl.² C04B *7/02*
U.S. Cl. 106—97 **16 Claims**

1. The method of making cementitious structures including the steps of treating pozzolanic material particles of the type comprising a lattice work of silicon dioxide molecules having interspersed between them metallic oxides, the treating employing a mineral acid in sufficient quantity to convert said metallic oxides into soluble salts of the mineral acid, separating most of the salts and any excess acids from the treated pozzolanic material, mixing the treated material with a settable concrete mix including aggregate and water, and molding said mix and allowing it to set to form said structure.

3,953,223
SILICEOUS PIGMENT COMPOSITION
Thomas J. Doran, Jr., Norton, and Henry C. Stevens, Akron, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 205,295, Dec. 6, 1971, Pat. No. 3,821,133. This application Apr. 5, 1974, Ser. No. 458,280
Int. Cl.² C09C *1/28*
U.S. Cl. 106—308 N **5 Claims**

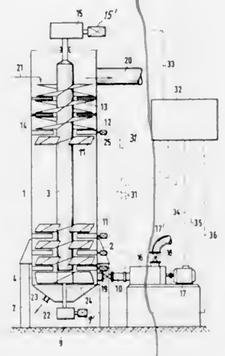
1. A composition useful for reinforcing rubber, which comprises reinforcing siliceous pigment having adsorbed on its surface (a) a compound selected from polymers of ethylenimine, propylenimine, 1,2-butylenimine, 2,3-butylenimine, 2-methyl propylenimine, alkyloxyalkylenimine, unsaturated polyalkylene amines and cycloalkylenimines, said polymers having a plurality of reactive amino groups, at least one of which reactive amino groups is a primary amino group, and (b) a methylene-donor compound selected from hexamethylenetetramine, hexamethoxymethyl melamine and parafor-

maldehyde, each of said adsorbed compounds being present on the siliceous pigment in an amount of between about 0.1 and about 15 parts per 100 of rubber reinforced by said pigment.

3,953,224
EXTRACTION TOWER FOR SUGAR BEETS COSSETTES OR CRUSHED SUGAR CANE

Walter Dietzel, and Siegfried Matusch, both of Braunschweig, Germany, assignors to Braunschweigische Maschinenbauanstalt, Braunschweig, Germany

Filed Mar. 7, 1975, Ser. No. 556,301
Claims priority, application Germany, Mar. 16, 1974, 2412738
Int. Cl.² C13D *1/12*
U.S. Cl. 127—5 11 Claims



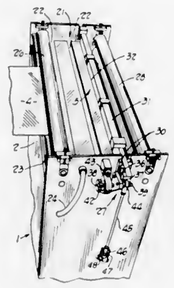
1. An extraction tower for conveying material through a leaching path in counter-current fashion relative to a leaching liquid flow, comprising a tower housing, a plurality of material conveying means including rotatable screw means and tiltably supported baffle means operatively arranged inside said tower for conveying said material through the tower housing, sensor means operatively secured to any of said conveying means to sense loads to which the respective conveying means are subjected in operation inside said tower, control means responsive to said sensor means, drive means individually connected to said material conveying means, and means connecting at least certain of said drive means to said control means for individually regulating said drive means in response to respective load signals received from corresponding ones of said sensor means.

3,953,225
BASIC UNIT PROCESSOR FOR OFFSET PLATES AND METHOD OF PROCESSING THEM

John C. Hovekamp, Mansfield, Ohio, assignor to Buckler Industries, Inc., Mansfield, Ohio

Filed Aug. 8, 1973, Ser. No. 386,510
Int. Cl.² B08B *7/00*; G03D *3/08*
U.S. Cl. 134—9 13 Claims

1. A process for contacting a plate or sheet with a process liquid comprising feeding said plate into a first pair of coupled drive rolls adapted to receive said plate therebetween and to urge said plate therethrough, rectilinearly, reciprocatingly, rubbing a surface of said plate with a resilient rubbing means, feeding said plate into a second pair of coupled drive rolls adapted to receive said plate therebetween and to urge said plate therethrough, operating said first and second pair of coupled drive rolls and said rubbing means with a singular

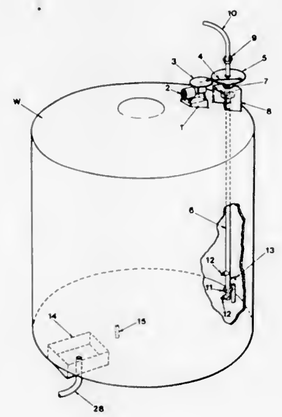


drive means, and recirculatably supplying said process liquid to said surface of said plate.

3,953,226
TANK CLEANING APPARATUS

Joseph Maurice Emond, Longeuil, and James Dawson Haigh, St. Lambert, both of Canada, assignors to The Molson Companies Limited, Rexdale, Canada

Filed Oct. 16, 1974, Ser. No. 515,418
Claims priority, application Canada, July 24, 1974, 205547
Int. Cl.² B08B *3/02*, *9/12*
U.S. Cl. 134—104 5 Claims

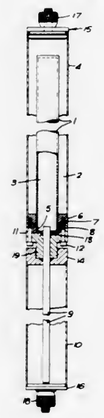


1. Apparatus for scouring a hot wort tank from sludge, including a hot water pipe vertically mounted adjacent a side wall within said tank and depending from the top thereof and having its upper end projecting from said tank; jet means located on, and adjacent to, the lower end of said pipe; and means located on the outside of said tank for automatically oscillating said pipe about the vertical axis whereby, when desired, hot water issuing from said jets will scour the sludge into a sump located in the bottom of said tank, said oscillating means including a motor and a drive from the latter to a circular plate disposed about and fast with the upper end of said pipe, said drive including link means for oscillating said plate.

3,953,227
ELECTROCHEMICAL CELLS HAVING A LIQUID ALKALI METAL ELECTRODE AND SOLID ELECTROLYTE

Ivor Wynn Jones; Lyndon James Miles, both of Chester, and Graham Robinson, Tarvin, all of England, assignors to The Electricity Council, London, England

Continuation of Ser. No. 477,937, June 10, 1974, abandoned, which is a continuation-in-part of Ser. No. 430,363, Jan. 2, 1974. This application Sept. 20, 1974, Ser. No. 508,006
Claims priority, application United Kingdom, Jan. 3, 1973, 396/73
Int. Cl.² H01M *10/00*
U.S. Cl. 136—6 FS 11 Claims



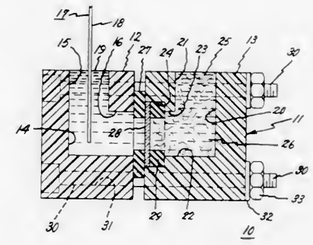
1. A rechargeable electrochemical cell comprising a tubular housing, an upright solid electrolyte tube within said tubular housing, a liquid alkali metal adjacent one face of the electrolyte tube, and a cathodic reactant adjacent the other face of the electrolyte tube, said electrolyte tube being closed at one end and the cathodic reactant-containing reservoir being provided in said housing above the top of the electrolyte tube, a rerservoir for the liquid alkali metal below the electrolyte tube, and gas pressure means for raising the alkali metal from the alkali metal reservoir to lie in contact with the whole of said one face of the electrolyte tube.

3,953,228
SEALED LITHIUM-REDUCIBLE SULFUR OXYHALIDE CELL

Walter L. Roth, Schenectady, and Gregory C. Farrington, Elnora, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 12, 1975, Ser. No. 557,583
Int. Cl.² H01M *10/00*
U.S. Cl. 136—6 FS 5 Claims

1. A sealed lithium-reducible sulfur oxyhalide cell comprises a casing, an anode positioned within the casing, the anode selected from the class consisting of lithium, lithium as an amalgam and lithium in an nonaqueous electrolyte, a cathode positioned within the casing, the cathode selected from the class consisting of a reducible sulfur oxyhalide, and a reducible sulfur oxyhalide with an ionic conductivity enhancing material, and a solid lithium-sodium aluminate electrolyte positioned within the casing between the anode and cathode and in contact with both the anode and cathode, the solid lithium-sodium aluminate electrolyte having an appropriate

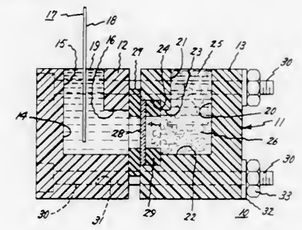


composition of $LiNaO \cdot 9Al_2O_3$ of which 1.3 to 85.0% of the total alkali ion content is lithium.

3,953,229
SEALED LITHIUM-REDUCIBLE PHOSPHOROUS OXYHALIDE CELL

Walter L. Roth, Schenectady, and Gregory C. Farrington, Elnora, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 12, 1975, Ser. No. 557,584
Int. Cl.² H01M *10/00*
U.S. Cl. 136—6 FS 4 Claims



1. A sealed lithium-reducible phosphorous oxyhalide cell comprises a casing, an anode positioned within the casing, the anode selected from the class consisting of lithium, lithium as an amalgam and lithium in a non-aqueous electrolyte, a cathode positioned within the casing, the cathode selected from the class consisting of a reducible phosphorous oxyhalide, and a reducible phosphorous oxyhalide with an ionic conductivity enhancing material, and a solid lithium-sodium aluminate electrolyte positioned within the casing between the anode and cathode and in contact with both the anode and cathode, the solid lithium-sodium aluminate electrolyte having an approximate composition of $LiNaO \cdot 9Al_2O_3$ of which 1.3 to 85.0% of the total alkali ion content is lithium.

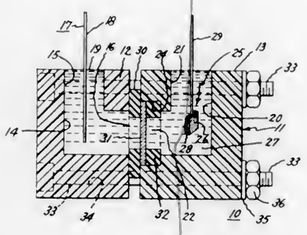
3,953,230
SEALED LITHIUM-PHOSPHOROUS CELL

Gregory C. Farrington, Elnora, and Walter L. Roth, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 25, 1975, Ser. No. 571,500
Int. Cl.² H01M *10/00*
U.S. Cl. 136—6 LN 3 Claims

1. A sealed lithium-phosphorous cell comprises a casing, an anode positioned within the casing, the anode selected from the class consisting of lithium, lithium as an amalgam and lithium in a nonaqueous electrolyte, a cathode positioned within the casing, the cathode comprising phosphorous in a nonaqueous solvent with an ionic conductivity enhancing material, and a solid lithium-sodium aluminate electrolyte

positioned within the casing between the anode and cathode and in contact with both the anode and cathode, the solid lithium-sodium aluminate electrolyte having an approximate composition of $LiNaO{\cdot}9Al_2O_3$ of which 1.3 to 85.0% of the total alkali ion content is lithium.



3,953,231

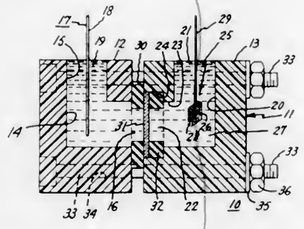
SEALED LITHIUM-SOLID SULFUR CELL

Gregory C. Farrington, Elnora, and Walter L. Roth, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 25, 1975, Ser. No. 571,556

Int. Cl.² H01M *10/00*

U.S. Cl. 136—6 LN **4 Claims**



1. A sealed lithium-solid sulfur cell comprises a casing, an anode positioned within the casing, the anode selected from the class consisting of lithium, lithium as an amalgam and lithium in a non-aqueous electrolyte, a cathode positioned within the casing, the cathode comprising solid sulfur in a nonaqueous solvent with an ionic conductivity enhancing material, and a solid lithium-sodium aluminate electrolyte positioned within the casing between the anode and cathode and in contact with both the anode and cathode, the solid lithium-sodium aluminate electrolyte having an approximate composition of $LiNaO.\ 9Al_2O_3$ of which 1.3 to 85.0 percent of the total alkali ion content is lithium.

3,953,232

SEALED LITHIUM-REDUCIBLE METAL SALT CELL

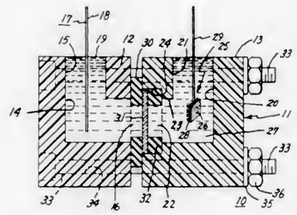
Walter L. Roth, Schenectady, and Gregory C. Farrington, Elnora, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 28, 1975, Ser. No. 572,278

Int. Cl.² H01M *10/00*

U.S. Cl. 136—6 LN **3 Claims**

1. A sealed lithium-reducible metal salt cell comprises a casing, an anode positioned within the casing, the anode selected from the class consisting of lithium, lithium as an amalgam and lithium in a nonaqueous electrolyte, a cathode positioned within the casing, the cathode comprising a reducible metal salt, selected from the class consisting of a transition metal fluoride, chloride, iodide, sulfide or oxide in a nonaqueous solvent with an ionic conductivity enhancing material, and a solid lithium-sodium aluminate electrolyte positioned within the casing between the anode and cathode and in contact with both the anode and cathode, the solid lithium-sodium alumi-



nate electrolyte having an approximate composition of $LiNaO{\cdot}9AL_2O_3$ of which 1.3 to 85.0% of the total alkali ion content is lithium.

3,953,233

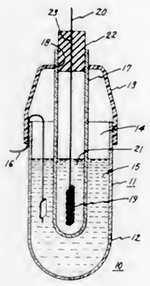
SEALED LITHIUM-SULFUR MONOCHLORIDE CELL

Walter L. Roth, Schenectady, and Gregory C. Farrington, Elnora, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 19, 1975, Ser. No. 559,990

Int. Cl.² H01M *10/00*

U.S. Cl. 136—6 FS **3 Claims**



1. A sealed lithium-sulfur monochloride cell comprises a casing, an anode positioned within the casing, the anode selected from the class consisting of lithium, lithium as an amalgam and lithium in a non-aqueous electrolyte, a cathode positioned within the casing, the cathode comprising sulfur monochloride with an ionic conductivity enhancing material, and a solid lithium-sodium aluminate electrolyte positioned within the casing between the anode and cathode and in contact with both the anode and cathode, the solid lithium-sodium aluminate electrolyte having an approximate composition of $LiNaO{\cdot}9Al_2O_3$ of which 1.3 to 85.0% of the total alkali ion content is lithium.

3,953,234

ELECTRODEPOSITION AND ELECTRODISSOLUTION OF ALKALI METALS IN NONAQUEOUS SOLUTION

Arthur Kentaro Hoffmann, New Canaan, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 427,973, Jan. 25, 1965, abandoned, which is a continuation-in-part of Ser. No. 403,659, Oct. 13, 1964, abandoned. This application Sept. 21, 1967, Ser. No. 669,373

Int. Cl.² H01M *6/18*; **C25C** *1/02*

U.S. Cl. 136—6 LN **28 Claims**

1. An anhydrous liquid electrolyte solution in an electrochemical cell which solution comprises an electrolyte salt

dissolved in a mixed liquid solvent which consists essentially of sulfur dioxide and at least one organic compound having no acidic hydrogen atoms and containing an element having at least one unshared electron pair, said electrolyte solution having specific conductivity of at least $10^{-3}ohm^{-1}cm^{-1}$ at 22°C. and substantially higher than the specific conductivity of solutions having the same components but absent either the sulfur dioxide or the secondary solvent components.

3,953,235

NONAQUEOUS CELL HAVING AN ELECTROLYTE CONTAINING CROTONITRILE

George E. Blomgren, Lakewood, Ohio, and Gerald H. Newman, Westfield, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,716

Int. Cl.² H01M *4/36*

U.S. Cl. 136—20 **10 Claims**

1. A nonaqueous cell comprising a highly active metal anode selected from the group consisting of lithium, sodium, potassium, calcium, magnesium and their alloys, a solid cathode and a nonaqueous electrolyte comprising crotonitrile, at least one cosolvent selected from the group consisting of propylene carbonate, ethylene carbonate, γ-butyrolactone, nitrobenzene, methyl acetate, sulfolane, 3-methyl sulfolane, methyl formate, dimethyl sulfoxide, propylene glycol sulfite and diethyl sulfite, and an ionizable solute.

3,953,236

LEAD STORAGE BATTERY

Takashi Ito, Toyonaka, and Koichiro Ohtomo, Takatsuki, both of Japan, assignors to Kanebo Kabushiki Kaisha, Tokyo and Ko Kondo, both of, Japan

Filed Aug. 30, 1974, Ser. No. 502,222

Claims priority, application Japan, Sept. 5, 1973, 48-99950

Int. Cl.² H01M *4/36*

U.S. Cl. 136—26 **1 Claim**

1. A paste-type lead storage battery comprising unit cells each being constructed in laminated form including a positive plate coated on both surfaces thereof with an active material, a fibrous structure placed on each side of said positive plate, and a negative plate placed on each said fibrous structure, the improvement comprising a separator interposed between said fibrous structure and said negative plate on both sides of said positive plate, said separator consisting of a paper-like sheet having continuous micro-porous openings throughout the entire area thereof and containing at least 70% by weight of phenol resin fibers, each having a diameter of 5 microns or less, produced by melt-spinning and curing a novolak resin, said phenol resin fibers having at at least 60% by mole of the phenolic hydroxyl groups of said resin being capped to esterify or etherify said phenolic hydroxyl groups.

3,953,237

ELECTRIC ENERGY SOURCES SUCH AS FUEL CELLS AND BATTERIES

Sheldon L. Epstein, Wilmette, Ill., and Bernard W. Wessling, Winthrop, Mass., assignors to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 160,170, July 6, 1971, abandoned, which is a division of Ser. No. 160,169, July 6, 1971, Pat. No. 3,826,686. This application Nov. 4, 1974, Ser. No. 520,287

Int. Cl.² H01M *4/00*

U.S. Cl. 136—86 R **11 Claims**

1. An electrical energy source comprising:

manifolds for fluids;

an electrolyte; and

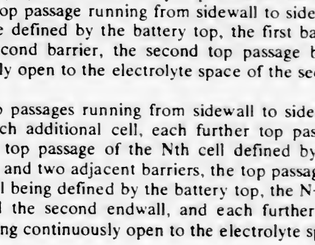
electrodes interfacing between the electrolyte and the interior space of the manifolds, one electrode comprising:

a permeable, electrically conductive metallic layer in contact with the electrolyte, and a plurality of metal fiber wicks, each wick characterized by:

a. being substantially separated from each other wick such that the space therebetween will not support any substantial volume of electrolyte,

b. being secured to the conductive layer,

c. extending from the conductive layer in parallel arrangement, and



d. comprising a plurality of substantially solid textile metal fibers closely spaced but defining a parallel of spaced void compartments separating the metal fibers in such a manner that the void spaces can support electrolyte between the fibers in these void spaces and wherein the fibers extend into the adjacent interior space of the contiguous manifold.

3,953,238

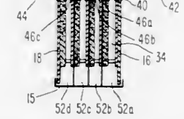
MULTICELL SEAWATER BATTERY

Harold Nickolas Honer, Raleigh, N.C., assignor to ESB Incorporated, Philadelphia, Pa.

Filed Sept. 16, 1974, Ser. No. 506,314

Int. Cl.² H01M *6/30*

U.S. Cl. 136—90 **8 Claims**



1. In a Multicell Seawater Battery of N cells each cell including a first electrode, a second electrode and an electrolyte space therebetween, the battery having a top, a bottom, a first sidewall and a second sidewall, a first endwall adjacent to the first cell and a second endwall adjacent the Nth cell, N−1 non conductive barriers, a barrier located between each adjacent pair of cells of the battery, the electrodes of the cells, the endwalls and the barriers being parallel one to another, the improvements comprising:

a. a first top passage running from sidewall to sidewall, the first top passage defined by the battery top, the first endwall and the first barrier, the first top passage being continuously open to the electrolyte space of the first cell;

b. a second top passage running from sidewall to sidewall, the passage defined by the battery top, the first barrier and the second barrier, the second top passage being continuously open to the electrolyte space of the second cell;

c. further top passages running from sidewall to sidewall, one for each additional cell, each further top passage except the top passage of the Nth cell defined by the battery top and two adjacent barriers, the top passage of the Nth cell being defined by the battery top, the N−1th barrier and the second endwall, and each further top passage being continuously open to the electrolyte space of its cell;

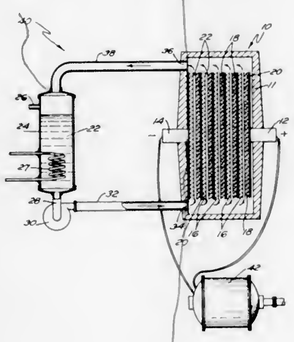
d. a first bottom passage running from sidewall to sidewall, the first bottom passage defined by the battery bottom, the first endwall and the first barrier, the first bottom passage being continuously open to the electrolyte space of the first cell;
e. a second bottom passage running from sidewall to sidewall the second bottom passage defined by the battery bottom, the first barrier and the second barrier, the second bottom barrier, the second bottom passage being continuously open to the electrolyte space of the second cell;
f. further bottom passages running from sidewall to sidewall one for each additional cell, each further bottom passage except the bottom passage for the Nth cell defined by the battery bottom and two adjacent barriers, the bottoom passage of the Nth cell being defined by the battery bottom, the N-1th barrier and the second endwall, and each further bottom passage being continuously open to the electrolyte space of its cell;
g. a first top port formed in the first endwall of the battery located near to the first sidewall of the battery the first top port providing access between the first top passage and the space external to the battery;
h. a second top port formed in the barrier between the first cell and the second cell, the second top port providing access between the second top passage and the first top passage, the second top port being located near to the second sidewall of the battery;
i. further top ports one formed in each further barrier including the barrier between the N-1th cell and the Nth cell the further ports being located consecutively near to the first sidewall of the battery and the second sidewall thereof, each further top port providing access between adjacent top passages, the series of N ports and N passages forming a conduit the path of the conduit being of zig-zag form comprising a series of straight portions connected by reverse bends, the straight portions running from the first side of the battery to the second side thereof; and,
j. a means for providing access between the space external to the battery and the several bottom passages of the battery.

3,953,239

Al-AgO PRIMARY BATTERY

George E. Anderson, Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 27, 1975, Ser. No. 544,591
Int. Cl.² H01M 45/02
U.S. Cl. 136—100 R 3 Claims



1. A primary battery system comprising:

a loop comprising a reservoir including a heat exchanger, a pump and a battery connected serially by means of piping; and

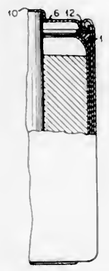
a motor electrically connected to said battery, said battery including a battery housing having inlet and outlet ports for receiving said piping, a plurality of aluminum anode plates enclosed in said housing, a plurality of silver oxide cathode plates enclosed in said housing with each of said cathode plates paired with a respective anode plate, a plurality of intercell connectors respectively disposed between and touching successive pairs of said cathode and anode plates, and an electrolyte disposed between and touching each of said pairs of said cathode and anode plates, said electrolyte comprises an aqueous solution of 10 to 50 per cent concentrate selected from the group of potassium hydroxide, sodium hydroxide and lithium hydroxide, said electrolyte is pre-heated to a temperature between 120° and 180° F.

3,953,240

SEALING ELEMENT FOR ELECTRIC PRIMARY CELLS HAVING STEEL CASINGS

Hermann Füllenbach; Friedrich Christof, and Alois Fränzl, all of Ellwangen, Jagst, Germany, assignors to Varta Batterie AG, Kelkheim, Taunus, Germany

Filed July 9, 1973, Ser. No. 377,709
Claims priority, application Germany, July 29, 1972, 2237398
Int. Cl.² H01M 1/02
U.S. Cl. 136—107 3 Claims



1. An electric primary cell comprising a steel casing, a cup electrode having an inwardly flanged upper rim disposed in said steel casing, a cardboard sleeve in said steel casing between the latter and said cup electrode, said steel casing having an inwardly flanged upper edge, a cover disc having an outer edge extending beneath the inwardly flanged upper edge of said steel casing, and a sealant of resilient plastic material between said inwardly flanged upper rim of said cup electrode and said outer edge of said cover disc, said sealant being undetachably connected by dispensing on the underside surface of said outer edge of said cover disc.

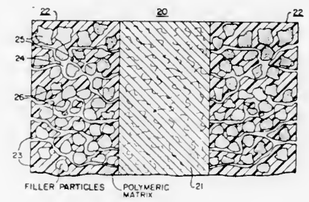
3,953,241

HEAT RESISTANT SUBSTRATES AND BATTERY SEPARATORS MADE THEREFROM

Alois Langer, Pittsburgh; Luciano C. Scala, Murrysville, and Charles R. Ruffing, Edgewood, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 19,009, March 12, 1970, Pat. No. 3,749,604. This application Mar. 26, 1973, Ser. No. 345,157
Int. Cl.² H01M 2/14
U.S. Cl. 136—145 7 Claims

1. A flexible porous substrate comprising a caustic resistant porous flexible support, at least one side of which is in contact with and attached to a membrane consisting essentially of a caustic resistant solid polymeric matrix containing a network of a plurality of interconnected pores having diameters between about 5 to 75 microns, and interdispersed caustic resistant inorganic filler particles having a particle size diameter of between about 74 to 700 microns, wherein the weight ratio of



filler:polymer in the polymeric matrix ranges from 1:1 to 5:1 so that there are a large number of filler particle contact points in the polymeric matrix.

3,953,242

NOVEL PRODUCTS

Arnold Hoffman, Brookline, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 50,354, June 26, 1970. This application Oct. 26, 1973, Ser. No. 409,857
Int. Cl.² H01M 6/04
U.S. Cl. 136—155 9 Claims

1. A galvanic cell comprising a metallic anode and a slurry cathode wherein the sole electrolyte consists of a quaternary ammonium halide.

3,953,243

METHOD FOR SETTING THE LIFETIME OF CHARGE CARRIERS IN SEMICONDUCTOR BODIES

Adolf Goetzberger, Merzhausen; Max Schulz, Gundelfingen, and Alois Sonntag, Mulheim, all of Germany, assignors to LICENTIA-Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed Aug. 12, 1974, Ser. No. 497,143
Claims priority, application Germany, Aug. 16, 1973, 2341311
Int. Cl.² H01L 21/263
U.S. Cl. 148—1.5 10 Claims

1. Method for setting the lifetime of charge carriers in semiconductor bodies for semiconductor devices by the diffusion of recombination centers, comprising: applying the recombination center forming material to the surface and into the surface layer of the semiconductor body in a quantity which corresponds to the desired final concentration of said material in the semiconductor body by means of ion implantation; and heating the semiconductor body to a temperature sufficient to cause diffusion of the implanted ions into the remainder of the semiconductor body until an approximately stationary value for the charge carrier lifetime has developed in the entire volume of the semiconductor body.

3,953,244

METHOD OF FABRICATING STABLE WROUGHT LEAD-CALCIUM-TIN ALLOYS BY MEANS OF COLD WORKING

Raymond D. Prengaman, Arlington, Tex., assignor to St. Joe Minerals Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 472,113, May 22, 1974, abandoned, which is a continuation-in-part of Ser. Nos. 394,096, Sept. 4, 1973, abandoned, and Ser. No. 369,452, June 13, 1973, abandoned, said Ser. No. 394,096, is a continuation of Ser. No. 328,333, Jan. 31, 1973, abandoned, said Ser. No. 369,452, is a division of Ser. No. 328,333, , which is a continuation-in-part of Ser. No. 72,825, Sept. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 4,240, Jan. 20, 1970, abandoned. This application May 30, 1975, Ser. No. 582,119
Int. Cl.² B23K 19/00
U.S. Cl. 148—2 35 Claims

1. A process for the preparation of stable wrought alloys of lead which comprises casting an alloy consisting essentially of from about 0.02% to about 0.1% by weight of calcium, tin in an amount such that the tin to calcium weight ratio or relative tin content is from about 7:1 to 10:1 and the absolute tin content is from about 0.3% to about 1.0% by weight, and the balance substantially lead; and cold working the casting at a time period of within about 24 hours after the casting thereof.

25. Cold worked lead-calcium-tin alloys produced by the process defined by claim 1 having a stable ultimate tensile strength at room temperature of at least about 6,000 psi., a stable stress-to-rupture life at room temperature of at least 25 hours at a stress level of 3,000 psi., and a stable, fine grained, worked, non-recrystallized microstructure at room temperature.

3,953,245

PROCESS FOR THE PRODUCTION OF DRAWING STEEL

Paul L. Jackson, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 793,884, Jan. 24, 1969, abandoned. This application Sept. 16, 1971, Ser. No. 181,210
Int. Cl.² C21C 7/06
U.S. Cl. 148—3 2 Claims

1. A process for obtaining an improved yield of drawing quality non-rimmed carbon steel which is non-strain aging and which has a carbon content not substantially in excess of 0.07% comprising subjecting a ferrous melt effectively free of copper and tin impurities to the action of an oxidizing ambient until the carbon content of the melt has been reduced to not over 0.07% and the silicon content to not over 0.02%, said melt having a nitrogen content of at least 0.002%, isolating the ferrous melt so treated from the oxidizing ambient, establishing a manganese content in the melt to neutralize the adverse effects of any residual sulfur, adding sufficient silicon to yield a dissolved silicon content of at least 0.07% to the melt to act in synergism with the manganese content of the melt to establish an oxygen content of the melt of from about 0.01% to 0.03%, and subjecting an ingot solified from said melt to a subcritical anneal followed by slow cooling at a rate programmed to avoid carbon strain aging, the resulting ingot being characterized by an aging index no greater than 5%.

3,953,246

GOLD DIFFUSION PROCESS AND SHAPED METAL ARTICLES THEREBY

Robert Wilson, Dundee, and James Ramsay, Carnoustie, both of Scotland, assignors to Timex Corporation, Waterbury, Conn.

Filed Nov. 14, 1974, Ser. No. 521,610
Int. Cl.² C22F 1/08
U.S. Cl. 148—11.5 R 17 Claims

10. A process of producing a shaped copper alloy body which comprises the step of shaping a heated hardenable copper alloy in the unhardened condition to the desired con-

figuration, heating said heat hardenable copper alloy to a temperature of from about 700°C to 900°C for about 2 to about 30 minutes and thereafter quenching said shaped metallic body thereby hardening said body and forming a fine-grained eutecoid or duplex phase and an alpha-crystalline phase structure, then coating at least a portion of the thus formed hardened shaped body with a metal selected from the group consisting of gold and gold alloys and being capable of forming a heat diffusion coating on said shaped metallic copper alloy body when subjected to diffusion causing heat treatment, thereafter heating said coated body to a temperature of from 400°C to about 900°C for a period of from less than one minute to 30 minutes thereby diffusing said gold coating into said shaped copper alloy body.

3,953,247

METHOD FOR HEAT TREATMENT OF MATERIAL TO BE WORKED ON, ESPECIALLY OF ALUMINIUM OR MAGNESIUM ALLOYS

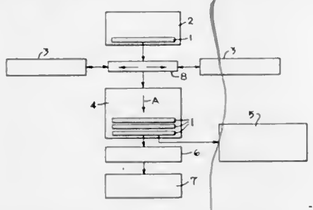
Friedrich Wilhelm Elhaus, Wuppertal, Germany, and Bernhard Hilge, Adliswil, Switzerland, assignors to Prolizenz AG and Friedrich Wilhelm Elhaus, Chur, both of, Switzerland

Filed Nov. 20, 1973, Ser. No. 417,509

Claims priority, application Germany, Nov. 21, 1972, 2256978; Oct. 3, 1973, 2349765

Int. Cl.² C22F 1/04, 1/06

U.S. Cl. 148—13 **12 Claims**



1. In a method for heat treating metal pieces comprising aluminum or magnesium alloys in the form of ingots, rods, tubes, strips or billets, the heat treatment being of the type wherein the metal piece is subjected to a preheat cycle in a preheat apparatus followed by a heat treatment cycle in a heat treatment apparatus separate from and independent of said preheat apparatus, and subsequent cooling,

the steps comprising:

preheating said metal piece in said preheat apparatus during the preheat cycle, by direct flame impingement, whereby a rapid preheating of the metal piece may be accomplished; and thereafter

transferring it to said heat treatment apparatus, and subsequently

maintaining said preheated metal piece at a desired heat treatment temperature in said heat treatment apparatus, during the heat treatment cycle,

the speed of the metal piece, if any, through each apparatus being independently adjustable, and adjusting the speed through each apparatus.

3,953,248

METHOD AND APPARATUS FOR RECLAIMING HEAT TREATING SALT

Lester Coch, Northport, N.Y., assignor to Waldes Kohinoor, Inc., Long Island City, N.Y.

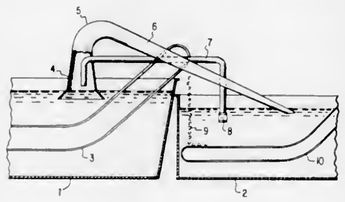
Filed Jan. 14, 1975, Ser. No. 540,867

Claims priority, application Germany, Jan. 7, 1975, 2500322

Int. Cl.² C21D 1/48

U.S. Cl. 148—15 **5 Claims**

1. In a process for reclaiming heat treating salt from the rinsing zone of a heat treating unit wherein metal parts are treated in a hot molten treating bath consisting essentially of molten, substantially anhydrous, water soluble heat treating salt in a treating zone and then rinsed in an aqueous liquid bath in a rinsing zone, the improvement which comprises transferring the aqueous liquid after contamination by entrained salt from the rinsing zone to an enclosed distillation zone within the treating zone which distillation zone has an open lower end extending into said hot molten salt bath below the surface thereof in said treating zone, maintaining said



molten salt bath at a temperature higher than the boiling point of said aqueous liquid whereby water contained in said aqueous liquid transferred to said distillation zone is evaporated at or above the surface of said salt bath therein and the salt contained in said aqueous liquid remains behind in said distillation zone and is commingled with said molten salt bath therein, and conducting the evaporated water fraction from said distillation zone to said rinsing zone for replenishing the aqueous bath therein.

3,953,249

COPPER BASE ALLOY

Michael J. Pryor; Jacob Crane, both of Woodbridge; Sam Friedman, and Eugene Shapiro, both of Hamden, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed July 11, 1974, Ser. No. 487,433

Int. Cl.² C22C 9/06

U.S. Cl. 148—32.5 **7 Claims**

1. A wrought copper base alloy in the cold rolled, aged and cold rolled condition consisting essentially of nickel from 7 to 14%, tin from 1.5 to 3.3%, wherein the minimum nickel plus tin content must be 9.5%, a material selected from the group consisting of iron from 0.1 to 3%, cobalt from 0.1 to 3% and mixtures thereof, wherein the minimum iron plus cobalt content must be 1.5%, balance essentially copper, wherein the microstructure of the alloy is characterized by the presence of a fine dispersed magnetic phase containing said material selected from the groups consisting of iron, cobalt and mixtures thereof, said alloy having a fine grain size below 0.025 mm.

3,953,250

METHOD FOR PRODUCING WIRE WITH A SMALL CROSS-SECTIONAL AREA

David I. Golland, Cary; Bernhard T. Junker, Raleigh; Gary E. O'Connor, Raleigh, and Charles J. Runkle, Raleigh, all of N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 30, 1974, Ser. No. 519,364

Int. Cl.² B21C 37/04; C22C 29/00

U.S. Cl. 148—36 **20 Claims**

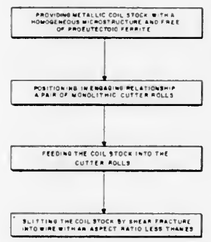
1. A method for producing wire with a small cross-sectional area and good mechanical properties by slitting steel strip wherein said slitting is characterized by an extended knife life, comprising the steps of:

a. providing blackplate coil stock with a homogeneous microstructure, an essentially uniform cross-section and substantially free of proeutectoid ferrite;

b. positioning in engaging relationship a pair of monolithic cutting rolls;

c. feeding said stock into the nip formed by said cutting rolls; and

d. slitting said stock by shear fracture into wire having an aspect ratio of less than about 25 to 1.



15. A steel wire for reinforcing rubber articles, comprising: a cross-section having an aspect ratio less than 25 to 1, an essentially homogeneous microstructure substantially free of proeutectoid ferrite, a pair of slit edges and a small cross-sectional area.

3,953,251

METHOD FOR THE PRODUCTION OF CARBONYL IRON CONTAINING MAGNETIC DEVICES WITH SELECTED TEMPERATURE VARIATION

Alexander Duane Butherus, Murray Hill, and Milton Everett Terry, Mountainside, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 25, 1974, Ser. No. 454,152

Int. Cl.² H01F 1/02

U.S. Cl. 148—105 **8 Claims**

1. Method for the production of a ferromagnetic body exhibiting a predetermined temperature coefficient of magnetic permeability of value X, comprising:

a. compressing a quantity of a first particulate matter including at least 50 percent by weight of carbonyl iron powder, from 0.05 to 25 percent by weight of an insulator and from 1 to 25 percent by weight of an organic binder, to produce a first test body:

b. compressing a quantity of a second particulate matter including at least 50 percent by weight of carbonyl iron powder, from 0.05 to 25 percent by weight of an insulator and from 1 to 25 percent by weight of an organic binder, to produce a second test body;

c. measuring the value, Y, of the temperature coefficient of magnetic permeability of the first test body;

d. measuring the value, Z, of the temperature coefficient of magnetic permeability of the second test body, which said values, Y and Z, bracket the value, X;

e. mixing a first fractional portion by weight, A, of the first particulate matter with a second fractional portion, $(1-A)$, of the second particulate matter, wherein A is selected in accordance with the formula:

$$A = 0.7\,[(X-Y)/(Z-Y)] + 0.15;$$

where A is from 0.15 to 0.85; and

f. compressing a quantity of the mixed powder to produce the ferromagnetic body of temperature coefficient of magnetic permeability, X.

3,953,252

METHOD OF MANUFACTURING METAL ARTICLES HAVING MAGNETIC AND NON-MAGNETIC AREAS

Felix Lvovich Levin, Novo-Khoroshevskoe shosse, 26 korpus 3, kv. 29; Sergei Alexandrovich Golovanenko, 9 Parkovaya ulitsa, 57, korpus 3-a, kv. 12, and Vladimir Alexandrovich Dmitriev, ulitsa Plekhanova, 3, korpus 5, kv. 73, all of Moscow, U.S.S.R.

Continuation of Ser. No. 365,177, May 30, 1973, abandoned. This application Oct. 17, 1974, Ser. No. 515,663

Int. Cl.² H01F 1/00

U.S. Cl. 148—121 **12 Claims**

1. A method of manufacturing an integral steel article having magnetic and non-magnetic areas comprising the steps of: selecting a steel article comprising, by weight, not more than 0.1% carbon, 7–12% manganese, 11–30% chromium and the balance being iron; heating areas of the steel article intended to form a non-magnetic structure to a temperature of from 450°–1000° C; soaking the areas; and cooling the areas to form a non-magnetic structure in the areas; heating areas of the steel article intended to form a magnetic structure to a temperature of from 1000° C to the melting point of the steel; soaking the areas to form a magnetic structure in the areas; and cooling the areas having the magnetic structure at a rate to prevent the formation of the non-magnetic structure.

3,953,253

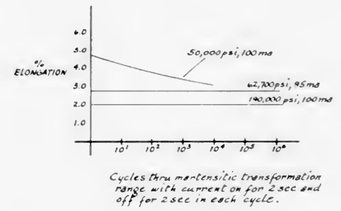
ANNEALING OF NITI MARTENSITIC MEMORY ALLOYS AND PRODUCT PRODUCED THEREBY

Joel P. Clark, Plainville, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 21, 1973, Ser. No. 427,164

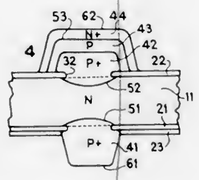
Int. Cl.² C22F 1/10

U.S. Cl. 148—131 **6 Claims**



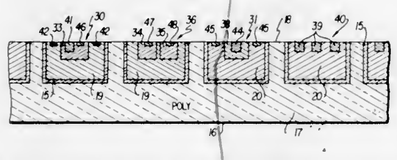
1. A process for increasing the tensile strength of a selected martensitic alloy of titanium and nickel and improving the alloy's cyclic creep resistance by stabilizing it against progressive elongation when cycled through successive martensitic transformations, said alloy having a martensitic transformation temperature range and a first diffusional phase transformation temperature constituting the first temperature above said martensitic transformation range at which there is a negative slope in the electrical resistivity versus temperature curve for said alloy, said first diffusional phase transformation temperature being in the range from about 300° to 500°C., the process comprising maintaining said alloy under a tensile stress of between about 30,000 and 100,000 psi while heating the alloy at a temperature above said first diffusional phase transformation temperature to anneal said alloy for substantially increasing the tensile strength thereof.

3,953,254
METHOD OF PRODUCING TEMPERATURE COMPENSATED REFERENCE DIODES UTILIZING SELECTIVE EPITAXIAL GROWTH
Henri Valdman, Paris, France, assignor to Thomson-CSF, Paris, France
Continuation of Ser. No. 413,384, Nov. 6, 1973, abandoned. This application Mar. 25, 1975, Ser. No. 561,800
Claims priority, application France, Nov. 7, 1972, 72.39350
Int. Cl.² H01L *21/20, 23/56, 29/90*
U.S. Cl. 148—175 **3 Claims**



1. A method of manufacturing a thermally compensated reference diode, comprising the following steps:
— the formation upon one face of a monocrystalline semiconductor substrate, of a relief button of monocrystalline semiconductor material, by selectively growing an epitaxial region of the opposite conductivity type to that of the substrate;
— the formation, upon that surface of the semiconductor substrate which is opposite to that of the first button, of a second relief button of monocrystalline semiconductor material, by selectively growing an epitaxial region of the opposite conductivity type to that of the substate;
— the formation on the second button of a monocrystalline semiconductor film having the same conductivity type as the substate by epitaxial growth.

3,953,255
FABRICATION OF MATCHED COMPLEMENTARY TRANSISTORS IN INTEGRATED CIRCUITS
Clyde Combs, Jr., Satellite Beach, Fla., assignor to Harris Corporation, Cleveland, Ohio
Filed Dec. 6, 1971, Ser. No. 204,821
Int. Cl.² H01L *21/22*
U.S. Cl. 148—187 **16 Claims**



1. A process for providing matched complementary transistors in an integrated circuit, which comprises:
partially diffusing a first impurity of one conductivity-determining type into a first collector region of opposite conductivity type extending to a major planar surface of a body of single crystal material to form a first base region extending to said surface within said first collector region, said first impurity having a relatively slow diffusion coefficient in said single crystal material,
partially diffusing a second impurity of said opposite conductivity-determing type having a relatively faster diffusion coefficient in said crystal material into a second collector region of said one conductivity type extending to said surface and spaced apart from said first collector region along said surface of said body to form a second base region extending to said surface within said second collector region, while simultaneously increasing the depth of penetration of said first impurity in said first collector region,
partially diffusing another portion of said second impurity into said first region to form a first emitter region extending to said surface within said first base region, while simultaneously increasing the depth of penetration of said first and second impurities in the first and second collector regions, respectively, and
diffusing a third impurity of said one conductivitydetermining type having a still faster diffusion coefficient in said single crystal material into said second base region to form a second emitter region extending to said surface within said second base region, while simultaneously increasing the depth of penetration of said first and second impurities in the first and second collector regions and in the first base region, respectively,
said diffusing steps being performed at temperatures and for times sufficient to produce substantially equal final base-collector junction depths from said surface, and substantially equal base-emitter junction depths from said surface, within said first and second collector regions.

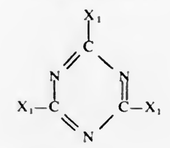
3,953,256
PROPELLANTS AND PYROTECHNIC COMPOSITIONS CONTAINING ALUMINUM-COATED AMMONIUM PERCHLORATE
William W. Schwarz, and William D. Stephens, both of Huntsville, Ala., assignors to Thiokol Corporation, Newtown, Pa.
Filed Aug. 22, 1973, Ser. No. 390,455
Int. Cl.² C06B *45/34*
U.S. Cl. 149—5 **2 Claims**

1. In a pyrotechnic composition comprising aluminum metal, ammonium perchlorate and a binder, the improvement which comprises replacing at least 5% of said ammonium perchlorate with aluminum-coated ammonium perchlorate.

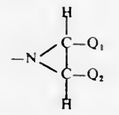
3,953,257
METHOD FOR PREPARING SMALL PARTICLE SIZE COATED AMMONIUM PERCHLORATE
Orval E. Ayers; Hiram W. H. Dykes, and Bernard J. Alley, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sept. 7, 1973, Ser. No. 394,889
Int. Cl.² C06B *45/34*
U.S. Cl. 149—7 **6 Claims**

1. A method for preparing ultrafine particle size ammonium perchlorate that has weight median diameters ranging from about 0.25 to about 5.0 micrometers and that is coated with an aziridine compound, said method comprising:
i. charging a predetermined amount of unground ammonium perchlorate into a vibro-energy grinding mill;
ii. adding to said mill a predetermined amount of a trichlorotrifluoroethane solution of a high purity aziridine compound selected from the aziridine compounds represented by the following structures:

STRUCTURE I

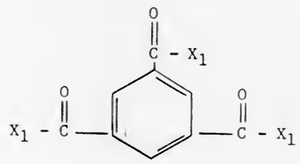


wherein X_1 is an aziridine group:



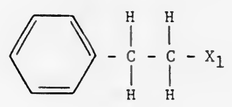
and Q_1 and Q_2 are either hydrogen or alkyl groups of one to four carbon atoms,

STRUCTURE II



wherein X_1 is as described for Structure I, and

STRUCTURE III

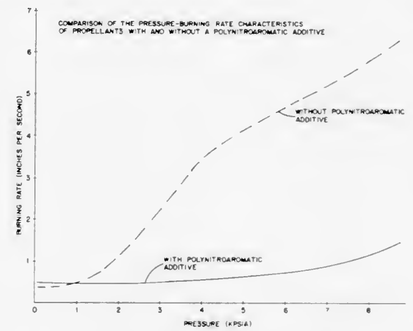


wherein X1 is as described for Structure I;
iii. operating said mill for a predetermined period of time ranging from about one hour to about 72 hours to form an ammonium perchlorate slurry;
iv. discharging said ammonium perchlorate slurry from said mill; and,
v. drying said discharged ammonium perchlorate slurry at a temperature ranging from about 120°F to 160°F for a period of time of up to about 3 days to yield an ammonium perchlorate product with a uniform coating of said aziridine compound.

3,953,258
POLYNITROAMINE OXIDIZER CONTAINING PROPELLANT
David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed July 6, 1970, Ser. No. 56,016
Int. Cl.² C06B *45/10*
U.S. Cl. 149—19.3 **4 Claims**

1. A propellant composition comprising the oxidizer bis(-trinitroethyl)nitroamine; a binder comprised of ethyl acrylate-acrylic acid copolymer in combination with 1,2,3-tris[1,2-bis(difluoramino)epoxy] propane; and dicyclo diepoxy carboxylate curing agent.

3,953,259
PRESSURE EXPONENT SUPPRESSANTS
David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sept. 1, 1970, Ser. No. 78,332
Int. Cl.² C06B *45/10, 45/8, 25/34, 25/4*
U.S. Cl. 149—19.5 **10 Claims**



1. A propellant composition comprising; a binder present in an amount of about 4 to about 20 weight percent, an oxidizer present in an amount of about 50 to about 80 weight percent, a pressure exponent suppressant selected from the group consisting of hexanitrostilbene, triaminotrinitrobenzene, picric acid and the ammonium salt of picric acid and a curing agent, said pressure exponent suppressant being present in an amount of about 1 to about 20 weight percent of the propellant composition.

3,953,260
GOSSYPOL, AN ABUNDANT, LOW-COST IRON DEACTIVATOR, POT-LIFE EXTENDER, AND PROCESSING AID FOR HTPB PROPELLANTS
John D. Braun; M. Frank Pickett, both of Ridgecrest, Calif.; Howard W. Gerrish, Jr., Twin Falls, Idaho, and Hans B. Jonassen, New Orleans, La., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 23, 1975, Ser. No. 580,385
Int. Cl.² C06B *45/10*
U.S. Cl. 149—19.92 **7 Claims**

1. In a method for mixing propellants comprising the steps of mixing solid particles with a hydroxy terminated polymeric binder, adding an isocyanate curative, working the resulting mixture into a suitable container and allowing it to cure, the improvement residing in adding gossypol to the mix to increase its pot life.

3,953,261
LIQUID MONOPROPELLANT COMPOSITIONS INCLUDING HYDRAZINE AND METHOXYLAMINE HYDROCHLORIDE
William A. Duncan, Huntsville; John F. Phillips, Florence; James A. Murfree, Jr., and Walter W. Wharton, both of Huntsville, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed June 18, 1969, Ser. No. 834,618
Int. Cl.² C06D *5/10*
U.S. Cl. 149—36 **4 Claims**

1. A liquid monopropellant composition of matter adapted for a liquid type gas generator that has a thermal bed to produce gas, said liquid monopropellant composition comprising a solution of hydrazine and methoxylamine hydrochloride,

said methoxylamine hydrochloride being present in an amount of about 10 to about 35 weight percent.

3,953,262

MONOPROPELLANT COMPOSITION COMPRISING HYDRAZINE AND METHOXYLAMINE NITRATE

William A. Duncan; James A. Murfree, Jr.; Pasquale Martignoni; Walter W. Wharton, all of Huntsville, and John F. Phillips, Florence, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 20, 1969, Ser. No. 886,597
Int. Cl.² C06B *25/34, 43/00, 47/08*
U.S. Cl. 149—36 **6 Claims**

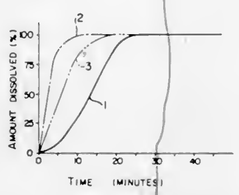
1. A liquid monopropellant composition of matter adapted for a liquid type gas generator that has a thermal initiator bed to produce gas when said liquid monopropellant is brought into contact with said bed, said liquid monopropellant composition comprising a solution of hydrazine and methoxylamine nitrate, said methoxylamine nitrate being present in an amount of from about 0.5 to about 40 weight per cent of said solution.

3,953,263

PROCESS FOR PREVENTING THE FORMATION OF NITROGEN MONOXIDE IN TREATMENT OF METALS WITH NITRIC ACID OR MIXED ACID

Misao Ishikawa, Chosei; Rokuro Tsuji, Chiba, and Norihisa Yoshimori, Mobara, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 26, 1973, Ser. No. 418,907
Int. Cl.² C23F *1/00, 1/02*
U.S. Cl. 156—7 **5 Claims**



1. In a process for dissolving a molybdenum core from a coil heater by dipping said coil heater in a resolving solution containing nitric acid and water as main components, said coil heater being prepared by winding tungsten wire around said molybdenum core, applying an alumina insulator onto the tungsten wire and sintering the applied alumina insulator, the improvement comprising adding sufficient ammonium peroxodisulfate to said resolving solution so that the formation of nitrogen monoxide during dissolution of the molybdenum core is prevented.

3,953,264

INTEGRATED HEATER ELEMENT ARRAY AND FABRICATION METHOD

Leon L. Wu, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 29, 1974, Ser. No. 501,567
Int. Cl.² H01L *21/22, 21/306*
U.S. Cl. 156—7 **11 Claims**

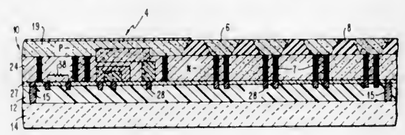
1. A method for fabricating a matrix of heating mesas in a semiconductor substrate, the area of the surface of the mesas opposite said substrate being larger than the area contiguious to said substrate, comprising the steps of:

forming a matrix of trenches in a first major surface of said substrate, the bottom of said trenches having an area which is smaller than the area at the upper surface of the substrate;

filling said trenches with a material which is soluble in a solvent in which said substrate is substantially insoluble;

forming an epitaxial layer on said first major surface;

forming semiconductor circuit elements associated with said heating mesas in said epitaxial layer,



removing a portion of the major surface of said substrate opposite said first major surface so as to expose said soluble material at the bottoms of said trenches; and

etching said soluble material from said trenches;

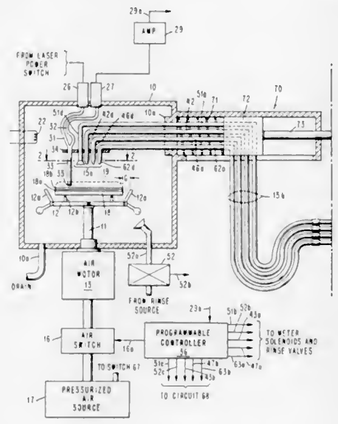
whereby the semiconductor substrate regions defining said trenches are in the desired shape.

3,953,265

MENISCUS-CONTAINED METHOD OF HANDLING FLUIDS IN THE MANUFACTURE OF SEMICONDUCTOR WAFERS

Roderic Kermit Hood, Williston, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 28, 1975, Ser. No. 572,570
Int. Cl.² H01L *21/308*
U.S. Cl. 156—8 **8 Claims**



8. A method of greatly reducing the amount of corrosive operating fluids used in the course of manufacturing integrated circuits at each of plural stages in the manufacture of an integrated circuit in which at each stage an oxide or metal layer is deposited with a photoresist layer being applied thereover and a shape-determining image thereon, comprising the steps of

supporting said wafer in a processing chamber in a horizontal position on a platform which can be rapidly rotated with said wafer, the photoresist layer being on the top side of said wafer,

firstly metering a predetermined volume of photoresist developing solution onto the upper surface of said wafer to form a meniscus-contained fluid body over the entire upper surface of said wafer while said wafer and platform are in a stationary state,

firstly statically maintaining said platform and wafer which the meniscus-contained body of developer fluid until the end of a development period,

firstly rotating said supporting platform with said wafer to remove the body of the developing fluid, and

firstly spraying said wafer with a washing solution,

secondly metering a predetermined volume of an etchant solution onto the upper surface of said wafer to flow over the entire upper surface of said wafer to all edges of said wafer to form a meniscus-contained body of etchant solution while said wafer and platform are in a stationary state,

secondly rotating said wafer immediately upon the completion of etching to rapidly terminate the etching operation, and

secondly spraying said wafer with a washing solution,

thirdly metering a predtermined volume of photoresist stripping solution onto the upper surface of said wafer to flow over the entire upper surface to all edges of said wafer to form a meniscus-contained body of stripping solution while said wafer and platform are in a stationary state,

thirdly statically maintaining said meniscus-contained body of stripping fluid until the stripping process is completed,

thirdly rotating said wafer upon the completion of said stripping step to remove the stripping solution from said wafer,

thirdly spraying said wafer with a wash solution, and

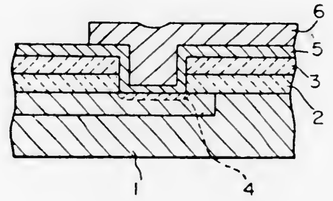
thirdly spinning said wafer to dry it.

3,953,266

PROCESS FOR FABRICATING A SEMICONDUCTOR DEVICE

Toshio Takai, 6,269, Ayase Fukaya, Koza, Kanagawa, Japan

Continuation of Ser. No. 874,317, Nov. 5, 1969, abandoned. This application Mar. 15, 1973, Ser. No. 341,757
Claims priority, application Japan, Nov. 28, 1968, 43-87122
Int. Cl.² H05K *3/06, 3/16*
U.S. Cl. 156—11 **8 Claims**



1. A process for producing a semiconductor composite comprising the steps of:

a. providing a semiconductor substrate having on a surface portion thereof a layer of platinum formed on a layer of a titanium;

b. masking said platinum layer with a mask layer of chromium;

c. masking a portion of said chromium mask layer with a layer of photoresist patterned in accordance with a predetermined pattern;

d. selectively etching away only the non-masked portion of said chromium mask layer so that the masked portion of said chromium mask layer remains on said platinum layer;

e. then, selectively etching away only the portion of said platinum layer not masked by the chromium mask layer remaining on the platinum layer, so that the mask portion of said platinum layer remains on said titanium layer;

f. completely removing said photoresist mask layer subsequent to the aforesaid step (d);

g. completely removing said chromium mask layer remaining on said platinum layer subsequent to the removal of the photoresist layer;

h. forming a layer of gold on said portion of said platinum layer remaining on said titanium layer by gold-electroplating;

i. forming a gold beam lead on said gold layer by gold-electroplating, and then

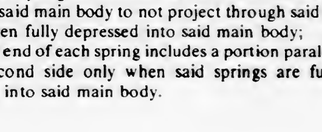
j. selectively etching away said titanium layer in accordance with the pattern of said gold layer on said platinum layer.

3,953,267

SAFETY LOCK BOLT

Wilford Flynn, R.R. 6, Bedford, Ind. 47421

Continuation-in-part of Ser. No. 380,812, July 19, 1973, abandoned. This application Mar. 12, 1975, Ser. No. 557,473
Int. Cl.² F16B *39/24*
U.S. Cl. 151—13 **14 Claims**



5. The lock bolt comprising:

a bolt with a headed end and an opposite end and including a shank with external threads, such shank having a longitudinal axis with a slot interrupting said threads and extending in the direction of said axis to said opposite end;

a first washer having a main body with thickness and extending continuously around said longitudinal axis with said main body including an inner circumferential edge and an outer circumferential edge, said washer having a hole through which said shank extends with said first washer including a first lug extending inwardly from said inner circumferential edge into said hole and into said slot preventing axial movement between said shank and said washer, said washer further including a plurality of leaf springs mounted thereon, said leaf springs being positioned completely between said outer circumferential edge and said inner circumferential edge, each of said springs having a proximal end integrally attached to said first washer and a free distal end with said spring projecting toward said opposite end of said shank, said main body having a first side with said springs projecting through said first side when extended and not depressed into said main body, said main body having a second side opposite said first side, each of said springs sized relative to said main body to be contained completely in said main body between said first side and said second side and to not project through said first side and said second side when completely depressed within said main body;

a nut threadedly mounted on said shank having a surface with multiple recesses formed thereon facing said first washer and receiving said springs in said recesses;

each spring has a center portion between said distal end and said proximal end positioned closer to said proximal end than said distal end preventing said distal end from first contacting said nut, said springs are yieldable and will depress as said nut is tightened and will snap into said recesses locking said nut to said first washer, said center portion contacting said nut when said nut is loosened depressing said springs and avoiding contact and interference between said distal end of each spring and said nut, each of said springs extend from said proximal ends to said distal ends around said longitudinal axis in the same direction;

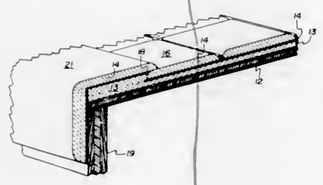
each of said springs includes a thickness less than said thickness of said main body to not project through said second side when fully depressed into said main body;

said distal end of each spring includes a portion parallel with said second side only when said springs are fully depressed into said main body.

3,953,268
METHOD OF INSTALLING TILE AND TILE TRIM ON A CABINET SURFACE

Elmer D. Dillon, 8775 Troy St., Spring Valley, Calif. 92077

Filed Jan. 2, 1974, Ser. No. 429,761
Int. Cl.² B32B *1/04*, *3/02*; E04F *13/00*; E04C *2/08*
U.S. Cl. 156—71 1 Claim

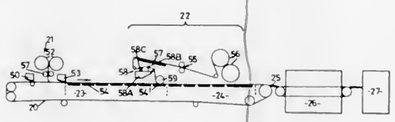


1. The method of installing tile and tile trim on a cabinet surface comprising the steps of:
applying a filler coating on a cabinet surface;
applying an adhesive coating on said filler coating;
applying tile strips untrimmed as to length to the adhesive coating;
adding filler in any space between the terminating edge of the tile strips and a corner of the cabinet; and
cementing a strip of corner trim to the front corner of said cabinet, said corner trim having first and second inside surfaces angled for cooperation with and overlapping the corner of said cabinet, with one of said first and second surfaces being cemented to the top surface of the tile the strip adjacent to said corner strip, and overlapping the end of said tile strip.

3,953,269
METHOD OF MAKING COMPOSITE FABRIC

David Stewart Queen, Sanquhar; Peter William Bell, Beith; Thomas Hutcheson Dick, Dundee, and John Black Edgar, Giffnock, all of United Kingdom, assignors to Sidlaw Industries Limited, London, England

Filed Feb. 5, 1974, Ser. No. 439,931
Claims priority, application United Kingdom, Feb. 13, 1973, 6997/73
Int. Cl.² B32B *3/26*
U.S. Cl. 156—79 1 Claim

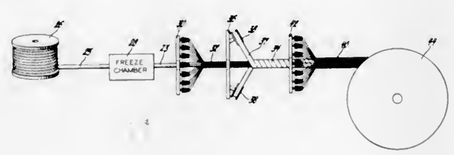


1. A method of manufacturing a composite fabric comprising the steps of forming a substrate material by applying a layer of fibrous material to a layer of deaerated thermoplastic material in liquid form and maintaining the viscosity of the thermoplastic material at a level to permit the fibrous material to sink into the layer of thermoplastic material, thermally threating the substrate material to achieve firm gellation of the thermoplastic material, coating one surface of a web of relatively lightweight material with a layer of a foamable plastic material in a liquid state, and applying said coated surface of the lightweight material to a surface of the gelled substrate material when in a heated state for a period sufficient to effect gellation of the foamable plastic material to bond the lightweight material to the substrate material and form the composite fabric.

3,953,270
MANUFACTURE OF REINFORCED ELASTOMERIC HOSE

Gary P. Ford, Trotwood, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1974, Ser. No. 520,984
Int. Cl.² B24B *3/00*
U.S. Cl. 156—80 3 Claims



1. Method of making reinforced elastomeric high pressure hose comprising the steps of:
extruding a layer of an uncured elastomer over a flexible mandrel coextensively therewith,
freezing at least a portion of said layer,
tightly applying a textile reinforcing layer over said portion while it is frozen to prevent further extrusion of said layer, said textile layer being applied with sufficient pressure to cause further extrusion of said layer in its unfrozen condition, and
sequentially applying additional elastomeric and reinforcing textile layers, curing the uncured elastomeric layers and removing said mandrel.

3,953,271
PROCESS FOR THE PRODUCTION OF ARTIFICIAL LEATHER HAVING A CREPE PATTERN

Yujiro Matsuda, and Kazuchika Nakamura, both of Kyoto, Japan, assignors to Kawashima Orimono Co., Ltd., Kyoto, Japan

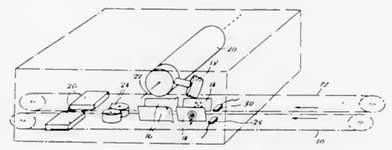
Filed Dec. 17, 1973, Ser. No. 425,127
Claims priority, application Japan, Dec. 20, 1972, 47-127969
Int. Cl.² B29C *27/00*; B32B *31/00*
U.S. Cl. 156—85 2 Claims

1. A process for the production of artificial leather having a crepe pattern comprising:
preparing a woven fabric base cloth material which is composed of highly heat shrinkable yarn and less heat shrinkable yarn,
said highly heat shrinkable yarn being interwoven with said less heat shrinkable yarn in a predetermined woven pattern,
said highly heat shrinkable yarn having a heat shrinkage rate of at least 10 percent at a temperature within the range at 80° to 230°C. and the difference in the heat shrinkage rate between said highly heat shrinkble yarn and said less heat shrinkable yarn being at least 5 percent within the aforesaid temperature range,
forming a synthetic resin film layer having a thickness within the range of 10 to 150 microns directly on and integral with the surface of said woven fabric base cloth material to obtain an artificial leather material having a smooth synthetic resin surface, and
subjecting said artificial leather material to a heat treatment to thereby form a predetermined crepe pattern on said synthetic resin film layer due to the heat shrinkage difference between said highly heat shrinkable yarn and said less heat shrinkable yarn of said woven fabric base cloth material,
said crepe pattern corresponding identically to said predetermined woven pattern in said base cloth material.

3,953,272
PROCESS FOR END SEALING A BAG AND APPARATUS THEREFOR

Geoffrey Terence Webber, Bristol, England, assignor to Whitehall Machinery Limited, Bristol, England

Filed May 15, 1974, Ser. No. 470,293
Claims priority, application United Kingdom, May 16, 1973, 23438/73
Int. Cl.² B32B *31/20*
U.S. Cl. 156—152 7 Claims

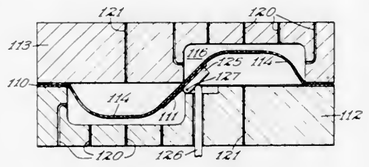


6. A continuous method for heat sealing the mouths of sacks comprising the steps of:
transporting each sack along a path with opposite sides at the mouth of each sack drawn together in superimposed relationship, the mouth having a leading fold, sides and a trailing fold;
drawing the sides of the sack apart at the mouth by suction means located on either side of the path;
moving a nozzle into and then out of the open mouth of the sack in passing, and directing heated gas from the nozzle into the leading fold of the sack mouth as the nozzle enters, onto the sides of the sack mouth while the nozzle remains stationary therein, and then into the trailing fold of the sack mouth as the nozzle is removed therefrom; and
pressing the thus heated surfaces together to effect the heat-seal.

3,953,273
PROCESS FOR FORMING VISUAL DISPLAY PACKAGES

Rudolph A. Faller, Edina, Minn., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Division of Ser. No. 451,019, March 14, 1974, Pat. No. 3,920,371. This application Oct. 15, 1974, Ser. No. 514,498
Int. Cl.² B29C *17/04*
U.S. Cl. 156—224 7 Claims



1. The method of forming a visual display container from a foldable packaging card blank having two window openings formed therein, said window openings disposed on either side of a rotatable platform section formed in said card blank and positioned within said card blank adjacent to a transverse fold line, said platform section being adapted to become an exterior portion of said container, and having a plastic film spanning said window openings and said platform section, which comprises the steps of:
locating at least one of said card blanks on a first platen having formed therein an opening of size and shape conforming to a first of said window openings in said card blank, and located adjacent thereto on one side of said card blank;
moving a second platen into registry with said first platen and the other side of said card blank, said second platen having formed therein an opening of size and shape similar to the second of said window openings in said card blank, and located adjacent thereto;
forming a recess pocket in said plastic film extending through each of said window openings in said card blank into said respective openings in said first and second platens and into conforming shape with a pocket-forming region located adjacent to said openings in said first platen and said second platen; and
rotating said rotatable platform section in said card blank into position on the exterior of the recessed pocket formed in said film through said first window opening in said card blank.

3,953,274
MAGNETICALLY ACTUABLE ELEMENT AND METHOD OF MAKING

Donald Winrow, Weston, and Charles Norman Smith, Mississauga, both of Canada, assignors to Ferranti-Packard Limited, Toronto, Canada

Filed Dec. 23, 1974, Ser. No. 536,925
Int. Cl.² B32B *31/00*; B65C *9/25*
U.S. Cl. 156—252 7 Claims



1. In the method of constructing a plurality of laminar magnet-bearing elements, the steps of:
providing a middle tape approximately the desired thickness, in one dimension, of said element,
creating a plurality of magnet apertures in said tape, longitudinally spaced, along said tape,
each of said apertures being located more than a predetermined distance from at least one edge of said tape,
creating cut-outs in said tape within said predetermined distance from said at least one edge in a predetermined orientation and spacing from said magnet apertures,
after the creation of such apertures and cut-outs, causing first outer tape to adhere to one side of said middle tape, covering said apertures on said one side but leaving exposed at least a portion of said cut-outs,
thereafter placing magnets in said apertures, each in an orientation to have its magnetic axis in a predetermined orientation relative to the longitudinal extension direction of said tapes, said megnets being selected to have an axis of magnetization with a component in the plane of the tape and a thickness approximately that of the middle tape,
thereafter, causing second outer tape to adhere to the other side of said middle tape, overlying said magnets and magnet aperture and leaving exposed on said other side, at least a portion of said cut-outs.

3,953,275
METHOD AND APPARATUS FOR LIQUID ADHESIVE APPLICATION

David L. Henderson, O'Fallon, and Joseph R. Hickman, Webster Groves, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

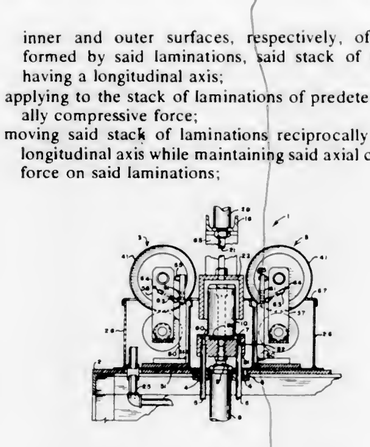
Filed Jan. 30, 1975, Ser. No. 545,399
Int. Cl.² B05C *1/00*; B32B *31/00*
U.S. Cl. 156—278 16 Claims

15. A process for producing a stator core, comprising:
measuring a stack of individual laminations forming said core, said laminations each having inwardly radially extending teeth and yoke sections radially outboard of said teeth, edges of said teeth and said yoke sections defining

inner and outer surfaces, respectively, of the stack formed by said laminations, said stack of laminations having a longitudinal axis;
applying to the stack of laminations of predetermined axially compressive force;
moving said stack of laminations reciprocally along said longitudinal axis while maintaining said axial compressive force on said laminations;

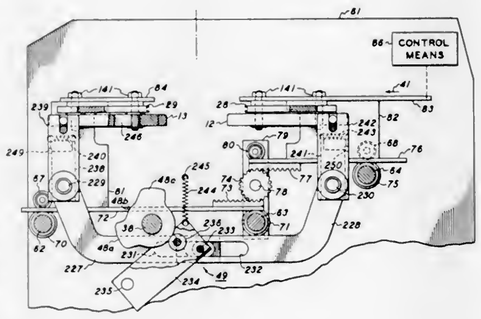
applying a liquid adhesive to the outer surface of the lamination stack from at least one, porous roller applicator;
rotating said porous roller applicator as said stack of laminations moves along said longitudinal axis, said roller applicator being adapted to abut the outer surface of said lamination stack during movement of the stack;
squaring said stack and clamping the square stack under a predetermined axial pressure; and
curing said adhesive.

3,953,276
ETCHING APPARATUS WITH PLURAL NOZZLE ARRANGEMENTS
Edward J. Glorioso, Downers Grove, and Martin L. Lerner, River Forest, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.
Continuation of Ser. No. 301,033, Oct. 26, 1972, abandoned. This application Apr. 19, 1974, Ser. No. 462,277
Int. Cl.² C23F *1/02*
U.S. Cl. 156—345 **9 Claims**



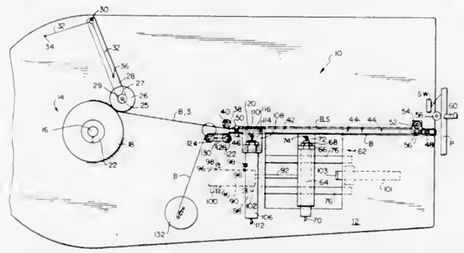
1. An apparatus for re-etching the apertures of different size shadow masks to be used in color cathode-ray tubes having faceplate panel sections of corresponding different sizes, which apparatus comprises:
a source of etchant material for attacking such shadow masks;
a plurality of etchant supply means;
a corresponding plurality of sets of etchant supply arms, each arm in a set of arms having an effective spray length for spraying masks of one particular size;
means for connecting each of said supply means individually to a set of etchant supply arms; and
selector means for connecting, at any given instant, only one of said supply means to said source of etchant material so that only the set of etchant supply arms whose effective spray length matches the size of the mask to be etched receives etchant.

3,953,277
BOOKBINDER HAVING RESETTABLE STRIP GUIDES
Richard J. Kuhns, Barrington, Ill., assignor to Xerox Corporation, Stamford, Conn.
Filed May 30, 1974, Ser. No. 474,839
Int. Cl.² B42C *13/00, 19/00*
U.S. Cl. 156—360 **8 Claims**



1. Apparatus for applying a piece of adhesive strip to a stack of sheets having a thickness within one of several thickness ranges, the width of the adhesive strip to be applied being dependent on the thickness range to which the thickness of the stack of sheets corresponds, comprising:
a. a pair of strip guides;
b. means, responsive to the thickness of the stack of sheets, for moving the strip guides to initial positions, said means including linkage means;
c. bipartite clamping means;
d. means, coupled to the linkage means, for moving the clamping means into engagement with the stack of sheets and for stressing play out of said linkage means, thereby moving the strip guides into one of a set of several sets of positions, each set corresponding to one of the thickness ranges, said one of a set of positions being suitable for supporting an adhesive strip having a width which is suitable for binding the engaged stack of sheets;
e. an arrangement of platens;
f. means for rotating the clamping means, thereby moving an edge of the clamped stack of sheets into abutment with one side of the adhesive strip and for moving the other side of the adhesive strip into abutment with at least one of the platens; and
g. means for biasing the platens against the other side of the strip to fix the strip to the stack of sheets, thereby forming a book.

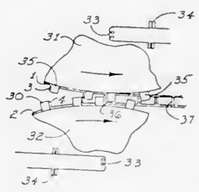
3,953,278
STICKER APPLICATOR
Gary L. Smith, Hickory, and Walter T. Cockrell, Newton, both of N.C., assignors to J. P. Stevens & Co., Inc., New York, N.Y.
Filed Nov. 4, 1974, Ser. No. 520,719
Int. Cl.² B32B *31/00;* **B65N** *5/28*
U.S. Cl. 156—361 **7 Claims**



1. An applicator for applying a sticker or other material having an adhesive on at least one surface releasably mounted to a continuous backing strip to an object comprising:
support means;
guide means mounted to said support means for directing said strip from a source of supply along a first path past said object, said guide means causing said sticker to separate from said strip and travel a second path by abruptly changing the first path of said strip at said object, said object moving along a third path and said sticker in said second path intersects said object in said third path;
a take-up means mounted to said support means for reeling said backing strip after said stickers have been detached;
a stationary clamp means mounted to said support means between said abrupt change in said first path and said take-up means;
a mobile clamp means slidably mounted to said support means between said abrupt change in said first path and said take-up means for intermittently engaging said backing strip and drawing said backing strip past said abrupt change by reciprocal movement relative to said support means; and
control means connected to said stationary and mobile clamp means for closing and advancing said mobile clamp means during the advance segment of said reciprocal movement and for closing said stationary clamp means during the return segment of said reciprocal movement to prevent said take-up means from drawing said backing strip.

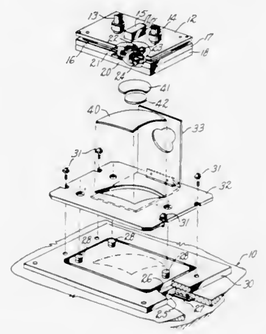
3,953,279
APPARATUS FOR ASSEMBLING SPACED SHEETS TO FORM A PANEL STRUCTURE
William A. Wootten, 425 Via Corta, Malaga Cove Plaza, P.O. Box 98, Palos Verdes Estates, Calif. 90274
Division of Ser. No. 170,120, Aug. 9, 1971, Pat. No. 3,846,218. This application Nov. 4, 1974, Ser. No. 521,005
Int. Cl.² B32B *31/00*
U.S. Cl. 156—513 **13 Claims**

1. An apparatus for joining a pair of sheets comprising perforating means for cutting patterns of plural partial perforations in said sheets respectively, each partial perforation defining a tab area located substantially in the plane of said sheet and adapted to be bent out of the plane of said sheet about the unperforated portion of each partial perforation acting as a hinge line; means for applying an adhesive material to at least one of said sheets; means for transporting said partially perforated sheets in spaced relation to one another with the pattern of partial perforations in each sheet being in opposed relation to the pattern of partial perforations in the other of said sheets; and means for bending the tab areas defined by the partial perforations in said sheets through an angle of substantially 90° to the plane of each sheet in a direction extending toward the other of said sheets to cause corresponding pairs of said tabs extending from said two sheets



respectively to come into overlapping, planar engagement with one another in the region between said spaced sheets and to be bonded to one another by said adhesive material.

3,953,280
TEAR SEAL APPARATUS
Thomas G. Brophy, Gloucester; Douglas H. Crowell, West Gloucester, and John G. Hollick, Beverly, all of Mass., assignors to USM Corporation, Boston, Mass.
Filed Apr. 30, 1974, Ser. No. 465,608
Int. Cl.² B30B *15/02, 15/34*
U.S. Cl. 156—515 **4 Claims**

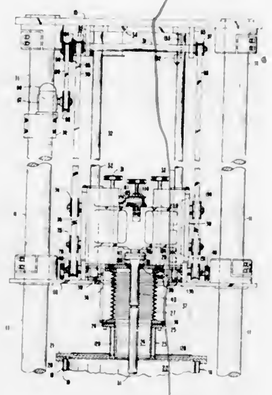


1. In apparatus for applying an applique of thermoplastic material to a workpiece wherein the applique is formed from a piece of material, heat sealed about its periphery and prebonded or tacked over its entire surface through the application of heat and pressure to provide an applique affixed to the workpiece for subsequent embossing, the combination of work table means and press means in opposed relation for applying pressure therebetween, workpiece positioning means disposed on said work table means for receiving and locating a workpiece of specific contour, applique positioning means overlying said workpiece positioning means for receiving and locating a piece of applique material of specific contour in contact with the workpiece, die means disposed on said press means for forming an applique and sealing said applique about its periphery only under predetermined conditions of temperature and pressure, said die means being located and aligned with said applique piece and having a resilient and compressible insert extending outwardly therefrom and beyond its cutting edge to permit initial contact with said applique material, means for applying pressure between said work table means and said press means and means for applying heat to said die means, said resilient and compressible insert extending beyond said cutting edge of said die to compress said applique on said workpiece and drive out any air pockets therebetween prior to full compression therewith.

3,953,281
METHOD AND SYSTEM FOR GROWING MONOCRYSTALLINE INGOTS

Anthony A. Pantusco, Newburgh, N.Y.; Warren J. Pinckney, New Fairfield, Conn.; George R. Santillo, Jr., Wappinger Falls, and Gerard J. Scharff, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 27, 1974, Ser. No. 483,511
Int. Cl.² B01J 17/18
U.S. Cl. 156—618 18 Claims



1. A system for growing a single crystal ingot from a molten material including:
a furnace chamber;
support means within said furnace chamber for the molten material;
pull shaft means extending into said furnace chamber to support a monocrystalline seed for disposition within the molten material to have the ingot grow thereon;
said pull shaft means includes:
a first shaft connected to said first lifting means and in sealing contact with said seal, said first shaft being formed of a material capable of having precise tolerances;
a second shaft supporting the seed said second shaft having a higher thermal conductivity than said first shaft and being formed of a material capable of withstanding their temperatures in said furnace chamber without warping;
and means to connect said first and second shafts to each other;
said furnace chamber having heating means producing an optimum heating zone within said furnace chamber;
first lifting means to linearly lift said pull shaft means as the ingot grows from the molten material, said first lifting means includes a pair of raising and lowering means disposed on diametrically opposite sides of the longitudinal axis of said pull shaft means and exerting a resultant lifting force only along the longitudinal axis of said pull shaft means; second lifting means to linearly lift said support means as the level of the molten material falls to maintain the level of the molten material within the optimum heating zone of said heating means in said furnace chamber, said second lifting means exerting a resultant lifting force only along the longitudinal axis of said pull shaft means;
first rotating means to rotate said pull shaft means;
second rotating means to rotate said support means;
a seal between a portion of said first shaft of said pull shaft means at the entry of said pull shaft means into said furnace chamber and said furnace chamber to seal said pull shaft means at its entry into said furnace chamber during rotation of said pull shaft means;
and means to prevent relative linear motion between said seal and said pull shaft means when said first lifting means lifts said pull shaft means.

3,953,282
PROCESS FOR MANUFACTURING PAPER-LIKE SYNTHETIC SHEET

Yoshijiro Tabara; Hiroshi Akiyama; Masayuki Igawa; Tadashi Maekawa, and Tokuo Shinomiya, all of Otake, Japan, assignors to Mitsubishi Rayon Company Limited, Japan

Division of Ser. No. 864,457, Oct. 7, 1969, Pat. No. 3,904,804.
This application May 6, 1974, Ser. No. 467,591
Claims priority, application Japan, Oct. 14, 1968, 43-74209; Oct. 14, 1968, 43-74210; July 31, 1969, 44-60502; Aug. 2, 1969, 44-61322; Aug. 4, 1969, 44-61518
Int. Cl.² D21H 5/20, 5/26
U.S. Cl. 162—102 11 Claims

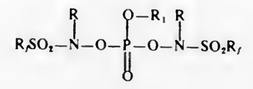
1. A process for manufacturing a paper-like synthetic sheet, comprising
a. separating at a temperature of not higher than 60° C, a polyolefin micro-flake aggregate compound of numerous polyolefine microflakes interconnected with each other in random directions and consisting essentially of at least one polyolefin and 0.01 to 15%, based on the weight of said polyolefin, of at least one surface active compound mixed into said polyolefin, each microflake having a substantially flat, irregular shape and an average thickness of 5 to 20 μ, a maximum length of 20 mm and a specific surface area of at least 0.1 m^2/g, into discrete swollen microflakes in an organic liquid capable of swelling or partially dissolving said polyolefin at a temperature of 60° C or lower,
b. at the same time, homogeneously suspending said discrete microflakes into said organic liquid,
c. forming said suspended micro-flakes into paper-like sheet form, and
d. evaporating said organic liquid from said paper-like sheet formed in said (c) step.

3,953,283
PAPERBOARD HAVING IMPROVED OIL RESISTANCE

James H. Wing; James N. Stone, both of Augusta, and Franklin B. Thomas, III, Martinez, all of Ga., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Oct. 5, 1972, Ser. No. 295,382
Int. Cl.² D21H 3/02, 3/28
U.S. Cl. 162—158 2 Claims

1. A process for preparing paperboard from cellulosic pulp having improved oil resistance which comprises
adjusting the pH of a suspension of cellulosic pulp between 5.8 and 7.3,
adding to the suspension an additive mixture of (1) 0.10 to 6.0 percent by weight of a cationically active material selected from the group consisting of cationically active starches and gums and hydrogen bonding starches and gums (2) 0.10 to 10.0 percent by weight of a water soluble salt of a saturated fatty acid having 12 to 20 carbon atoms and (3) about 0.07 to 0.50 percent by weight of a water soluble bis-perfluorosulfonamino alkyl phosphate based on the solids content of the suspension, the bis-perfluorosulfonamino alkyl phosphate having the general formula

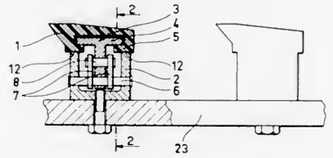


wherein R_f is a perfluoroalkyl group having 4 to 12 carbon atoms, R is selected from the group consisting of hydrogen and an alkyl group having 1 to 6 carbon atoms and R_1 is an alkyl group having 1 to 6 carbon atoms,
precipitating the water soluble fatty acid salt throughout the pulp surface,
forming the pulp containing the additive mixture into a fibrous web and then drying the fibrous web to form the oil resistant paperboard.

3,953,284
DEWATERING BLADE LOCKING ASSEMBLY

Osmo Rainer Evälahti, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Finland

Filed Aug. 8, 1974, Ser. No. 495,772
Claims priority, application Finland, Aug. 15, 1973, 2563/73
Int. Cl.² D21F 1/48
U.S. Cl. 162—352 4 Claims



1. A dewatering device for paper machines comprising a rigid frame and an endless wire on said frame, said device including a dewatering blade in contact with the wire in a substantially transversal direction thereto, a supporting member attached to the frame below the wire, said dewatering blade in longitudinal slidable attachment on top of said supporting member, said supporting member having means for supporting the dewatering blade, locking means, and means for vertically adjusting the supporting and locking means in relation to each other for pressing the lower portion of the blade between the supporting member and locking means, the locking means being a rail with a substantially T-shaped cross section, the lower side of the dewatering blade having two flanges pointing towards each other in the longitudinal direction of the blade and fitted to extend under the arms of the rail of T-shaped cross section so that the flanges rest on the supporting means, the supporting means being a U-shaped rail inside which the locking member has been fitted, and the means for vertically adjusting the supporting member and locking means in relation to each other are lever arms, the upper ends thereof being connected to said locking means, the lower ends thereof being connected to said U-shaped rail.

3,953,285
NICKEL-CHROMIUM-SILICON BRAZING FILLER METAL

Angelo J. Martini, and Bruce R. Gourley, both of Pittsburgh, Pa., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 25, 1973, Ser. No. 354,267
Int. Cl.² G21C 3/02
U.S. Cl. 176—66 2 Claims

1. A corrosion resistant joint between AM-350 stainless steel fuel rod grid components which exhibits no chromium depleted phase comprising a brazement formed by brazing said components with a nickel-base brazing filler metal having a melting temperature within the range of 2075°F. to 2150°F. consisting essentially of, in weight percent, 23% to 35% chromium, 9% to 12% silicon, a maximum of 0.15% carbon, a maximum of 1.00% other elements and the balance nickel.

3,953,286
CERAMIC NUCLEAR FUEL PELLETS

Ronald Henry Watson; Gregg Glenn Butler, both of Kirkham; Thomas John Heal, Lytham, St. Annes, and James Edgar Littlechild, Lytham, all of England, assignors to British Nuclear Fuels Limited, Warrington, England

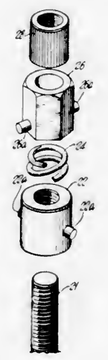
Filed Jan. 11, 1974, Ser. No. 432,535
Claims priority, application United Kingdom, Jan. 12, 1973, 1665/73; May 18, 1973, 23795/73; May 18, 1973, 23796/73
Int. Cl.² G21C 3/62
U.S. Cl. 176—66 8 Claims

1. A sintered nuclear fuel pellet composed of metal oxide selected from the group consisting of uranium dioxide, plutonium dioxide and uranium dioxide and plutonium dioxide together, the pellet having voidage in the form of randomly distributed closed pores produced by inclusion of a fugitive pore former in the pellet prior to sintering, the mean pore size being substantially above that normally observed after sintering in the absence of a pore former the mean pore size being substantially above that normally observed after sintering, all the pores being near to their equilibrium state at the designated fuel density and each point in the fuel pellet being at most only a few grain diameters from a pore.

3,953,287
ASSEMBLY MECHANISM FOR NUCLEAR FUEL BUNDLES

John W. Long, and Barney S. Flora, both of Richland, Wash., assignors to Exxon Nuclear Company, Inc., Bellevue, Wash.

Filed Aug. 6, 1973, Ser. No. 386,201
Int. Cl.² G21C 3/32
U.S. Cl. 176—78 9 Claims



1. In a nuclear power reactor fuel bundle having a plurality of tie rods for securing a pair of spring-biased fuel rod mount-

ing end plates in assembled position, one end of said tie rods being fixed to one of said end plates and the other end of said rods being mounted for easy disassembly from the second of said end plates, a tie rod locking assembly which comprises:

a. a first opening extending through the second of said end plates and having at least one radially outward disposed guide slot extending for the length thereof through said second end plate;

b. tie rod guide means fixed in position at said other end of each of said tie rods for operable engagement with said guide slot and adapted to pass through said first opening;

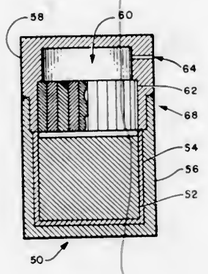
c. a second opening recessed into the outer face of said second end plate opposite said fuel rods, said second recessed opening being radially disposed of said first opening and angularly displaced from said guide slot;

d. locking sleeve means mounted on said other end of each of said tie rods outwardly of said tie rod guide means and moveable about the axis of said tie rod, said locking sleeve provided with projection means adapted to be received within said second recessed opening for preventing the outward movement of said second end plate as urged by said springs.

3,953,288
GAS VENTING

Edwin F. Johnson, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Mar. 24, 1970, Ser. No. 24,895
Int. Cl.² G21H 5/00; G21C 3/10
U.S. Cl. 176—79 **4 Claims**



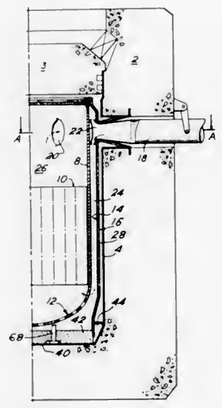
1. Means for use in venting gas from a container having radioactive-material therein comprising a plurality of nonporous lamina of gas impervious material with juxtaposed and coentensive surfaces in intimate and unsintered direct diffusion interbonded contact with each other up to substantially 50% of said surfaces having intermediate the lamina a zone with a network of randomly oriented minute gas passages therethrough, said diffusion bonded lamina disposed in edgewise disposition intermediate the interior and exterior of said container for release of gas from the interior.

3,953,289
DEVICE FOR SUPPORTING A NUCLEAR REACTOR CORE

Didier Costes, Paris, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 18, 1974, Ser. No. 434,696
Claims priority, application France, Jan. 23, 1973, 73.02249
Int. Cl.² G21C 15/12
U.S. Cl. 176—87 **8 Claims**

1. A device for supporting a reactor core structure of a nuclear reactor, wherein said device is constituted by a cylindrical shell having a plurality of flat surfaces in which the normals to the centers of said surfaces are approximately concurrent and wherein each flat surface is rigidly connected



at the center thereof to a reactor vessel and at the periphery thereof to the reactor core structure.

3,953,290
POLYPEPTIDES AS VITRO ACTIVE CELL GROWTH ENHANCING FACTORS AND METHODS OF USE

Knut Öivind Uthne, Sodertalje, and Gustaf Bertil Åberg, Bromma, both of Sweden, assignors to AB Kabi, Stockholm, Sweden

Filed Apr. 30, 1973, Ser. No. 355,745
Int. Cl.² C12B 3/12, 3/14
U.S. Cl. 195—1.8 **12 Claims**

1. In vitro active cell growth factors derivable from animal blood plasma or serum, or the Cohn et al. precipitate IV or solution IV–6 + 7, and characterized in that they

i. stimulate deoxyribonucleic acid synthesis in the cells,

ii. are polypeptide in chemical structure,

iii. have a molecular weight range of from 4,000 to 6,000 and

iv. an isoclectric range of from pH 4.3 to 5.3,

v. are soluble in and otherwise inert to about 72% aqueous ethanol containing by volume about 0.047% of concentrated hydrochloric acid,

vi. remain soluble in that aqueous ethanol after it is adjusted with 4M sodium hydroxide to pH 8.4,

vii. are precipitated from the resulting pH 8.4 aqueous ethanol solution by admixing that ethanol solution of pH 8.4 with 3.5 times its volume of a mixture of 5 parts of acetone with 3 parts of ethanol, and

viii. are soluble in about twice their weight of 20% formic acid.

3,953,291
PROCESS FOR PREPARING 6-AMINOPENICILLANIC ACID

Ichiro Chibata, Suita; Tetsuya Tosa, Kyoto, and Tadashi Sato, Takatsuki, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Mar. 13, 1974, Ser. No. 450,655
Claims priority, application Japan, Mar. 24, 1973, 48-33769
Int. Cl.² C12D 9/00
U.S. Cl. 196—36 P **14 Claims**

1. A process for preparing 6-aminopenicillanic acid which comprises the steps of polymerizing at least one acryloly monomer selected from the group consisting of acryloylamide, N,N'-lower alkylene-bis-acryloylamide, bis

acryloylamidomethyl ether, and N,N'-diacryloylethyleneurea, in an aqueous suspension of a penicillin amidase-producing microorganism in the presence of a polymerization initiator and a polymerization accelerator to produce an immobilized penicillin amidase-producing microorganism, and subjecting the immobilized penicillin amidase-producing microorganism to enzymatic reaction with penicillin.

3,953,292
ENZYMES BOUND TO HEAT-ACTIVATED ATTAPULGITE CLAY

Robert A. Burns, Long Valley, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Menlo Park, Edison, N.J.

Continuation-in-part of Ser. No. 438,563, Feb. 1, 1974, abandoned. This application Jan. 27, 1975, Ser. No. 544,359
Int. Cl.² C07G 7/02
U.S. Cl. 195—63 **12 Claims**

1. An insolubilized enzymatically active composite in the form of mechanically stable particles comprising sized granules essentially all of which are larger than 50 microns and smaller than 1000 microns of heat-activated attapulgite clay having a volatile matter content below 18% by weight, a surface area in the range of about 100 to 150 m²/g. as determined by the nitrogen absorption method of Brunauer, Emmett and Teller and a porosity in the range of about 0.5 to 0.6 ml./g. wherein the pore distribution is such that the major contribution to the total pore volume is derived from pores with radii larger than 500 Angstrom units, an organosilane coated on the surface of said granules, a crosslinking agent covalently bound to said organosilane and an enzyme covalently bound to said crosslinking agent.

3,953,293
PROCESS FOR THE PREPARATION OF XYLOSTASIN

Satoshi Horii, Osaka; Ikuo Nogami, Kyoto; Toru Hasegawa, Kawani, and Masahiko Yoneda, Uozakinaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 362,504, May 21, 1973, abandoned. This application July 31, 1974, Ser. No. 493,619
Claims priority, application Japan, May 31, 1972, 47-54581
Int. Cl.² C12D 9/20
U.S. Cl. 195—96 **5 Claims**

1. A process for producing O-β-D-xylofuranosyl-(1⟶5)-O-[α-2,6-diamino-2,6-dideoxy-D-glucopyranosyl-(1⟶4)]2-deoxystreptamine of a pharmaceutically acceptable acid salt thereof, which comprises cultivating a microorganism belonging to the genus Bacillus, which is capable of producing the antibiotic, in a culture medium containing assimilable carbon sources, digestible nitrogen sources and other nutrient sources necessary for the growth of the microorganism until the antibiotic is accumulated in the culture broth, and recovering the antibiotic from the culture broth.

3,953,294
TRANSAMINASE ASSAY

Alexander A. Monte, and Ching Chiang, both of Glendora, Calif., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Division of Ser. No. 200,552, Nov. 19, 1971, Pat. No. 3,816,262, which is a continuation-in-part of Ser. No. 190,883, Oct. 20, 1971, abandoned. This application May 6, 1974, Ser. No. 467,320
Int. Cl.² G01N 31/14; C07G 7/02
U.S. Cl. 195—103.5 R **24 Claims**

1. A reagent formulation for use in assaying a biological specimen for glutamic oxaloacetic transaminase comprising a granular, water-soluble, substantially anhydrous, storage-stable mixture containing L-aspartic acid, malate dehydrogenase, reduced nicotinamide adenine dinucleotide disodium salt, bovine serum albumin, a carbohydrate polymer, tris-(hydroxymethyl)-aminomethane, succinic acid, gum arabic, and a nitrogen-containing polyoxyalkylene nonionic surfactant obtained by the sequential reaction of ethylenediamine with propylene oxide and ethylene oxide in the presence of a catalyst, said surfactant containing polyoxypropylene chains having an average molecular weight of between about 750 and about 6,750 and polyoxyethylene chains constituting between about 10 and about 80 weight percent of said surfactant.

3,953,295
REAGENT FORMULATIONS FOR GLUCOSE ASSAY

Alexander A. Monte, and Ching Chiang, both of Glendora, Calif., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Division of Ser. No. 200,552, Nov. 19, 1971, Pat. No. 3,816,262, which is a continuation-in-part of Ser. No. 190,883, Oct. 20, 1971, abandoned. This application May 6, 1974, Ser. No. 467,423
Int. Cl.² G01N 31/14
U.S. Cl. 195—103.5 R **14 Claims**

1. An enzyme reagent formulation for use in assaying a biological specimen for glucose comprising a granular, water-soluble, substantially anhydrous, storage-stable mixture containing glucose oxidase, peroxidase, gum arabic, mannitol, bovine serum albumin and a nitrogen-containing polyoxyalkylene nonionic surfactant obtained by the sequential reaction of ethylenediamine with propylene oxide and ethylene oxide in the presence of a catalyst, said surfactant containing polyoxypropylene chains having an average molecular weight of between about 750 and about 6,750 and polyoxyethylene chains constituting between about 10 and about 80 weight percent of said surfactant.

3,953,296
ENZYME RECOVERY BY ULTRAFILTRATION IN ENZYMATIC ANALYSIS

Helmut Trutnovsky, Graz-Andritz, and Benno Paletta, Graz, both of Austria, assignors to The Kreidl Chemico Physical Kommanditgesellschaft, Schann

Filed July 24, 1974, Ser. No. 491,484
Claims priority, application Austria, July 26, 1973, 6600/73; Feb. 11, 1974, 1074/74
Int. Cl.² C12K 1/04, 1/10
U.S. Cl. 195—103.5 R **7 Claims**

1. In a method for determining the concentration of low-molecular biological substances by reaction with an enzyme including the steps of contacting a low molecular biological sample with an enzyme, thereby producing low molecular reaction products, quantitatively measuring the concentration of the low molecular reactions products and discarding the unreacted sample and the low molecular reaction products after measuring, the improvement of recovering a substantial portion of the enzyme comprising separating the low-molecular reaction products and unreacted sample from the enzyme by a first ultra-filtration into a filtrate containing substantially all of the low molecular reaction products and unreacted sample and a concentrate containing the enzyme and a trace quantity of the low molecular reaction products and unreacted sample, diluting the concentrate and subjecting the concentrate to at least one additional ultra-filtration, recovering the enzyme therefrom substantially devoid of low molecular reaction products and unreacted sample, and reusing the thus separated enzyme in the continuous concentration determination.

3,953,297
DETERMINATION OF AMYLASE

E. Melvin Gindler, Rockford, Ill., assignor to Pierce Chemical Company, Rockford, Ill.

Division of Ser. No. 335,736, Feb. 26, 1973, Pat. No. 3,869,348. This application Nov. 15, 1974, Ser. No. 524,246
Int. Cl.² G01N 31/14
U.S. Cl. 195—103.5 R **10 Claims**

1. In a colorimetric process for the determination of amylase activity comprising adding a reagent solution containing

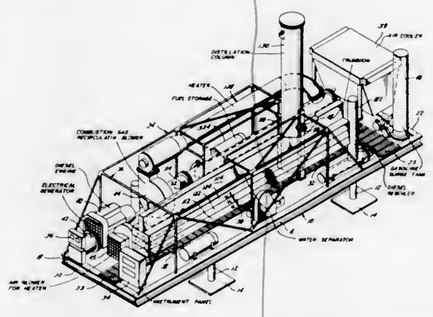
an aromatic nitro compound reducible by lower sugars to an amylase hydrolyzed starch substrate and measuring the change in color or intensity; the improvement wherein the reagent solution comprises, in addition to the nitro compound, an iminodiacetic acid derivative chelating compound having substantially no reducing properties and at least about 0.03 mol./100 ml. of a higher alkali metal cation.

3,953,298

MOBILE REFINERY

Jim Smith Hogan, Houston, Tex., assignor to Val Verde Corporation, Houston, Tex.

Filed May 6, 1974, Ser. No. 467,081
Int. Cl.² B01D *1/00*
U.S. Cl. 196—133 **9 Claims**



1. A portable crude oil distillation unit suitable for transporting on highways as a single unit comprising
a crude oil heater,
a fractionating tower connected to receive heated crude oil from said heater and to separate the crude oil into liquid and gaseous fractions,
a power unit connected to provide power for said distillation unit,
heat exchanger units connected to receive products from said fractionating tower, and
an air cooler connected to receive said products for further cooling,
all of which, together with supporting equipment, is mounted on a single skid, said skid comprising
a plurality of elongate and cross beams forming a base frame and supporting bed,
reinforcing structure connected to each of said elongate beams and extending upwardly therefrom intermediate elements of the distillation unit, thereby forming with said beams a plurality of unitary parallel trusses, and
structural members intermediate elements of the distillation unit extending between and connecting the trusses and the beams together, said elongate beams having insufficient strength to bear the weight of the aforesaid heater, tower, power unit, heat exchanger units, air cooler and supporting equipment, and said trusses including said beams having sufficient strength to bear such weight.

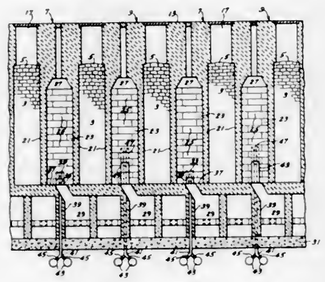
3,953,299

COKE OVEN HAVING A LOW BURNER HEATING WALL AND A HIGH BURNER HEATING WALL

John J. Strepelis, Bethlehem, Pa., and Wayne C. Gensler, Hillside, N.J., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Aug. 14, 1974, Ser. No. 497,440
Int. Cl.² C10B *5/02, 21/12, 21/18*
U.S. Cl. 202—139 **5 Claims**

1. In combination, a coke oven battery having a plurality of horizontal coking chambers and between each said coking chamber a heating wall containing a plurality of vertical heating flues; said heating walls and heating flues comprising
a. a low burner heating wall having plural hairpin flues therein on one side of each of said coking chambers each said flue having a burner means, said burner means consisting of a low burner in which the height of said low burner relative to the height of the flue is in the ratio of about 1:22 to 1:8; and



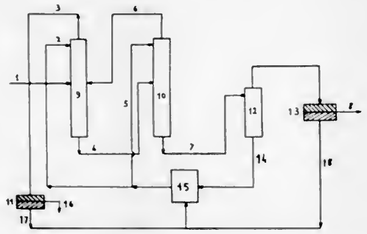
b. a high burner heating wall having plural hairpin flues therein on the other side of each of said coking chambers each said flue having a burner means, said burner means consisting of a high burner in which the height of said high burner relative to the height of the flue is in the ratio of about 1:5 to 1:3; and
c. means for operably connecting said low and high burners for heating to a fuel and air source; whereby improved vertical temperature distribution in the material within each said coking chamber is obtained.

3,953,300

PROCESS FOR SEPARATING A HIGH PURITY VINYL AROMATIC HYDROCARBON FROM HYDROCARBON MIXTURES CONTAINING THE SAME

Alessandro Ginnasi, San Donato Milanese; Alessandro Vetere, Milan, and Pierantonio Martera, San Donato Milanese, all of Italy, assignors to Snam Progetti, S.p.A., San Donato Milanese, Italy

Continuation of Ser. No. 417,377, Nov. 19, 1973, abandoned.
This application July 11, 1975, Ser. No. 595,291
Claims priority, application Italy, Nov. 29, 1972, 32208/72
Int. Cl.² B01D *3/40;* **C07C** *15/10*
U.S. Cl. 203—53 **1 Claim**



1. Process for separating styrene from a hydrocarbon mixture containing styrene, xylenes including o-xylene, saturated and olefinic hydrocarbons and ethyl benzene by means of extractive distillation with N-formyl morpholine as extraction solvent in admixture with an amount of water in the range of from 5% to 20% by weight, comprising the following steps:
1. feeding said hydrocarbon mixture to the intermediate zone, and feeding said solvent-water mixture in proximity to the top, of a first extractive distillation column;

2. withdrawing from the top of said first extractive distillation column a hydrocarbon stream constituted essentially of most of said xylenes, saturated and olefinic hydrocarbons, ethyl benzene and water;
3. discharging from the bottom of said first extractive distillation column a stream constituted essentially of styrene, o-xylene and extraction solvent;
4. feeding the stream from step (3) to a second extractive distillation column and feeding the solvent-water to said second extractive distillation column in proximity to its top;
5. withdrawing from the top of said second extractive distillation column a stream constituted of water, styrene and o-xylene and recycling the same to the first extractive distillation column in proximity to the primary feed;
6. discharging from the bottom of the second extractive distillation column a stream constituted essentially of styrene, solvent and water; and
7. feeding the stream from step (6) to a stripper and withdrawing styrene and water as overhead product, and, as bottom product, solvent for recycle to said extractive distillation columns; and
8. separating the water from the styrene in the overhead product of step (7) by decantation and recovering said styrene.

3,953,301

RECOVERY OF HEXANE FROM RECYCLE STREAMS FROM ETHYLENE POLYMERIZATION REACTORS

Tomas Mendez, Orange, and Guy Van Cleve, Jr., Port Arthur, both of Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Sept. 5, 1974, Ser. No. 503,525
Int. Cl.² B01D *3/00, 3/10*
U.S. Cl. 203—75 **4 Claims**

1. A method for continuously recovering hexane from the mixed recycle stream from a plurality of ethylene polymerization reactors, said recycle stream always containing hexane and periodically containing at least one chemical from the group consisting of vinyl acetate, alkyl acrylate esters, and other organic chemicals, which have an atmospheric boiling point higher than 72°C. and which do not form a ternary azeotrope with hexane and vinyl acetate and which do not form a binary azeotrope with vinyl acetate, which method consists essentially of:
1. Feeding to a first distillation column, a distillable mixture containing hexane and at least 45 wt% vinyl acetate, said distillable mixture being formed by combining,
a. A recycle stream from a plurality of ethylene polymerization reactors, which recycle stream contains hexane,
b. The total overhead fraction from step 7, and
c. At least a portion of the overhead fraction of step 12; said portion being used to maintain said at least 45 wt% vinyl acetate in the distillable mixture
2. operating said first distillation column at atmospheric pressure;
3. recovering from said first distillation column an overhead fraction containing substantially 57% by weight of hexane and 43% by weight of vinyl acetate;
4. recovering from said first distillation column a bottoms fraction free of hexane and containing only vinyl acetate and compounds other than hexane and vinyl acetate included in the recycle stream fed to step (1);
5. feeding the overhead fraction from step (3) to a second distillation column;
6. operating said second distillation column at a pressure of at least 4 atmospheres;
7. recovering from said second distillation column an overhead fraction containing in excess of 43% by weight of vinyl acetate and the balance hexane;
8. recovering from said second distillation column a bottoms fraction consisting entirely of hexane;
9. recycling the entire overhead fraction from step (7) to step (1);
10. feeding the bottoms fraction from step (4) to a third distillation column;
11. operating said third distillation column at substantially atmospheric pressure;
12. recovering from said third distillation column an overhead fraction consisting solely of vinyl acetate;
13. recovering from said third distillation column a bottoms fraction consisting solely of the chemicals other than hexane and vinyl acetate included in the recycle stream fed to step (1); and
14. recycling at least a portion of the overhead fraction from step (12) to step (1) to maintain the concentration of vinyl acetate in step (1) at a level of at least 45% by weight of the material fed to the first distillation column.

3,953,302

PREVENTION OF DENDRITIC PLATING OF LITHIUM

Bhaskara M. L. Rao, Billerica, and Carl R. Schlaikjer, Arlington, both of Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Aug. 16, 1973, Ser. No. 388,870
Int. Cl.² C25D *3/56, 3/42*
U.S. Cl. 204—14 N **8 Claims**

1. A method for non-dendritic plating of lithium at lithium deposition voltages by utilizing non-aqueous electrolytes containing lithium salts aprotic organic solvents and addition agents having metallic elements capable of coplating with lithium to form lithium rich intermetallics or alloys wherein the concentration of said additive agents does not exceed the amount which will render the lithium more noble by one and a half volts from the normal lithium EMF activity.

3,953,303

PROCESS FOR THE MANUFACTURE OF MESH SCREEN FOR X-RAY PHOTOGRAPHY SENSITIZATION

Hatohiko Kamada, and Koichi Tashiro, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 188,494, Aug. 12, 1971, abandoned. This application Feb. 6, 1974, Ser. No. 440,091
Claims priority, application Japan, Oct. 12, 1970, 45-89559
Int. Cl.² C25D *5/02;* **G03F** *5/00*
U.S. Cl. 204—15 **5 Claims**

1. In a process of making a medical X-ray photograph by applying fluorescent sensitization screens having more than 80 lines per inch of a heavy metal having an atomic weight of more than 63 and a width of 10 microns or less, said screen having a thickness of 20 to 50 microns, to both surfaces of photographic sensitive material coated with an emulsion on both surfaces of the support therefore and directing X-rays thereto through an object, the improvement in which said screen is produced by the process comprising
a. forming a layer of a heavy metal on the surface of a support,

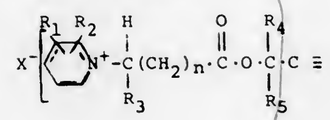
b. applying a layer of a light sensitive polymer consisting mainly of vinyl cinnamate over said layer of a heavy metal,
c. exposing said layer of a light sensitive polymer through a positive original having a mesh or strip screen of more than 80 lines per inch thereon,
d. removing the unexposed portions of said layer of a light sensitive polymer whereby the portions of said layer of a heavy metal corresponding to the unexposed portions of said layer of a light sensitive polymer is exposed,
e. electroplating a layer of a heavy metal over said portions of said heavy metal layer, and then fluorescent sensitizing said screen without removing said exposed layer of light sensitive polymer.

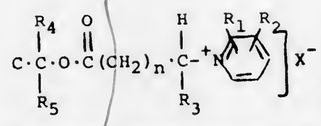
3,953,304
ELECTROPLATING BATHS FOR NICKEL AND BRIGHTENER-LEVELER COMPOSITIONS THEREFOR

John L. Allan, Glen Rock; Kollengode V. Srinivasan, Saddle Brook; Philip D. Readio, Sparta, all of N.J., and Judit Cestero, New York, N.Y., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed June 23, 1975, Ser. No. 589,114
Int. Cl.² C25D *3/16*; **C07D** *213/55*
U.S. Cl. 204—49 **19 Claims**

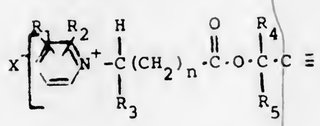
1. A plating bath for the electroplating of nickel comprising an aqueous acidic solution of at least one nickel salt and from about 0.01 to about 1.0 grams per liter of a quaternary compound having the general formula

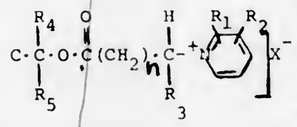




wherein R_1 and R_2 are hydrogen, halogen or a hydroxy, carboxy, carboxyester, sulphoxy, alkyl, amino or amido group;
R_3 is hydrogen or an alkyl group;
R_4 and R_5 are hydrogen or an alkyl group;
X is a halogen and
n is an integer from 0 to 2.

14. A quaternary compound having the general formula





wherein R_1 and R_2 are hydrogen, halogen or a hydroxy, carboxy, carboxyester, sulphoxy, alkyl, amino or amido group;
R_3 is hydrogen or an alkyl group;
R_4 and R_5 are hydrogen or an alkyl group;
X is a halogen and
n is an integer from 0 to 2.

3,953,305
CATALYST REGENERATION

John F. Connolly, Wheaton, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Jan. 17, 1975, Ser. No. 541,801
Int. Cl.² C25B *1/00, 3/02*
U.S. Cl. 204—97 **11 Claims**

1. The process of producing glycols which comprises (1) oxidizing an olefinic compound to a glycol in an aqueous acidic medium comprising a source of catalytically active osmium tetroxide, (2) chemically regenerating osmium tetroxide by oxidizing hexavalent osmium with hexavalent chromium and (3) electrochemically regenerating hexavalent chromium from lower valent chromium.

3,953,306
METAL RECOVERY FROM WASTE TREATMENT SLUDGES

Leslie E. Lancy, Ellwood City, Pa., assignor to Dart Environment and Services Company, Los Angeles, Calif.

Filed Oct. 3, 1973, Ser. No. 403,147
Int. Cl.² C01F *7/74*; **C25C** *1/12, 1/14, 1/06*
U.S. Cl. 204—106 **17 Claims**

1. In a process for the recovery of metal values from waste metal streams wherein a precipitant is added to said waste metal stream to form a dilute aqueous slurry of metal compound solids selected from metal hydroxide or metal carbonate, the slurry is concentrated by removing a portion of the aqueous phase and the metal compound solids are dissolved in an acid, the improvement which comprises:
washing the concentrated slurry in at least one step to remove soluble compounds;
maintaining a sufficient amount of water at all times during each of the concentration and washing steps to provide a supernatant aqueous phase above the upper surface of the solids when settled; and
maintaining the pH during the dissolution of said metal compound solids in the acid in the range from about 1 to about 5.5.

16. A process according to claim **1** wherein the acid employed in the dissolution is a depleted metal salt solution containing free acid and is withdrawn from an electrolytic process employing at least one insoluble anode, at least one metal plating cathode and said metal salt solution, which becomes depleted in metal salt and more concentrated in free acid during the course of the electrolytic process, and wherein after dissolution the resulting metal salt repleted solution is returned to the electrolytic process.

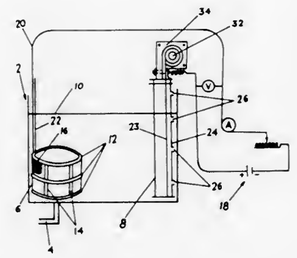
17. A process according to claim **16** wherein the metal salt is selected from salts of nickel, copper, cadmium, tin or zinc.

3,953,307
VAT DYE REDUCTION PROCESS FOR USE IN A DYEING PLANT FOR TEXTILE PROCESSING

Shashikant Dattatraya Supanekar, and Erach Hormasji Daruwalla, both of Bombay, India, assignors to Bombay Textile Research Association, India

Filed July 31, 1974, Ser. No. 493,432
Claims priority, application France, Apr. 4, 1974, 74.11634
Int. Cl.² B01K *1/00*; **C23B** *1/22*
U.S. Cl. 204—134 **6 Claims**

1. A process for compensating for reduction in the reducing effect caused by atmospheric oxygen or dissolved oxygen in an aqueous reducing solution of sodium hydrosulphite employed in the vat dye reduction process wherein vat dye is reduced and fixed on textile materials by the reducing action of the aqueous alkaline reducing solution, which process comprises continuously or intermittently forming sulphoxylic acid as a powerful reducing species with relatively high redox potential in said aqueous reducing solution to maintain the reducing strength of said solution, by continuously or intermittently carrying out electrolysis directly through said solution employing a relatively large negative electrode submerged in said solution and a relatively small positive electrode submerged or on the surface of said solution, said negative and positive



electrodes being operatively connected to a direct current source.

3,953,308
PROCESS AND APPARATUS FOR DESULFURIZING OF LIQUID METALS

Christian Gatellier, Metz, and Michel Olette, Lessy, both of France, assignors to Institut de Recherches de la Siderurgie Francaise (IRSID), Saint-Germain-En-Laye, France

Filed Mar. 18, 1975, Ser. No. 559,597
Claims priority, application France, Mar. 27, 1974, 74.10589
Int. Cl.² C25F *1/00*
U.S. Cl. 204—140 **20 Claims**

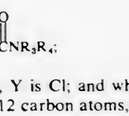
1. A process of desulfurization of liquid metal comprising the steps of introducing the liquid metal into a metallurgical vessel; spreading over part of the free surface of the liquid metal a layer of solid electrolyte in pulverulent form and providing cationic conductivity by means of a cation adapted to react with the sulfur content in the liquid metal; contacting the electrolyte layer with a first electrically conductive electrode; contacting the liquid metal with a second electrically conductive electrode; and connecting said electrodes to an electric circuit to pass a direct current through the electrolyte, the electrode contacting the metal being connected as cathode in the circuit.

3,953,309
POLYMERIZATION COMPOSITIONS AND PROCESSES HAVING POLYMERIC BINDING AGENTS

Michael N. Gilano, Fullerton, Calif.; Richard E. Beaupre, West Barrington, R.I., and Melvin A. Lipson, Fullerton, Calif., assignors to Dynachem Corporation, Santa Fe Springs, Calif.

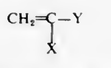
Division of Ser. No. 315,153, Dec. 14, 1972, Pat. No. 3,887,450, which is a continuation of Ser. No. 112,797, Feb. 4, 1971, abandoned. This application Dec. 3, 1974, Ser. No. 529,062
Int. Cl.² C08F *8/00*; **G03C** *1/68*
U.S. Cl. 204—159.16 **38 Claims**

1. A process for making a photoresist which comprises: preparing a photopolymerizable layer comprising:
A. from 10 to 60 parts by weight of an addition polymerizable material consisting essentially of and being solely one or more non-gaseous compounds, containing at least two terminal ethylenic groups, having a boiling point above 100° C. and being selected from the group consisting of an unsaturated ester of a polyol, an unsaturated amide, and a vinyl ester;
B. from 0.001 to 10 parts by weight of a photoinitiated free-radical generating addition polymerizing initiating system;
C. from 0.001 to 5 parts by weight of a thermaladdition polymerization inhibitor; and
D. from 40 to 90 parts by weight of a preformed macromolecular polymeric binding agent which is a polymer of:
a first monomeric material which contains one or more non-acidic vinyl compounds selected from the group having the general formula:

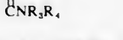


wherein R is hydrogen, an alkyl group having from 1 to 6 carbon atoms or a halo group; and
a second monomeric material which consists essentially of one or more alpha,beta-unsaturated carboxyl-containing monomers having from 3 to 15 carbon atoms;
wherein the ratio of the first monomeric material to the second monomeric material is sufficient to render the binding agent soluble in a dilute aqueous solution containing from 0.01 to 10% of a water-soluble base; exposing a portion of said photopolymerizable layer to actinic light; and washing said layer with a dilute aqueous alkaline solution to dissolve the unexposed portion of the photopolymerizable layer.

7. A process for making a photoresist which comprises: preparing a photopolymerizable layer comprising:
A. from 10 to 60 parts by weight of an addition polymerizable material consisting essentially of and being solely one or more non-gaseous compounds, containing at least two terminal ethylenic groups, having a boiling point above 100° C. and being selected from the group consisting of an unsaturated ester of a polyol, an unsaturated amide, and a vinyl ester;
B. from 0.001 to 10 parts by weight of a photoinitiated free-radical generating addition polymerizing initiating system;
C. from 0.001 to 5 parts by weight of a thermaladdition polymerization inhibitor; and
D. from 40 to 90 parts by weight of a preformed macromolecular polymeric binding agent which is a polymer of:
a first monomeric material which contains one or more non-acidic vinyl compounds selected from the group having the general formula:



wherein, when X is hydrogen, Y is $OOCR_1$, OR_1, OCR_1, $COOR_1$, CN, $CH{=}CH_2$,



or Cl; when X is methyl, Y is $COOR_1$, CN, $CH{=}CH_2$, or

and when X is chlorine, Y is Cl; and wherein R_1 is an alkyl group having from 1 to 12 carbon atoms, a phenyl group or a

benzyl group and R_3 and R_4 are hydrogen, an alkyl group having from 1 to 12 carbon atoms or a benzyl group; and

a second monomeric material which consists essentially of one or more alpha,beta-unsaturated carboxyl-containing monomers having from 3 to 15 carbon atoms; wherein the ratio of the first monomeric material to the second monomeric material is sufficient to render the binding agent soluble in a dilute aqueous solution containing from 0.01 to 10% of a water-soluble base; exposing a portion of said photopolymerizable layer to actinic light; and washing said layer with a dilute aqueous alkaline solution to dissolve the unexposed portion of the photopolymerizable layer.

3,953,310

ELECTROCOATING PROCESS FOR PRODUCING INSULATED WIRE

Yukio Hiraoka, Osaka; Sadao Nakao, and Yoshinobu Noda, both of Itami, all of Japan, assignors to Dainichi-Nippon Cables, Ltd., Amagasaki, Japan

Division of Ser. No. 394,611, Sept. 5, 1973, Pat. No. 3,906,139. This application Feb. 20, 1975, Ser. No. 551,447

Claims priority, application Japan, Sept. 5, 1972, 47-103340[U]

Int. Cl.² C25D *13/06, 13/16*

U.S. Cl. 204—181 **6 Claims**



1. A method for producing an insulating wire comprising a conductor having thereon an overcoating of a baked insulating layer of a polyacryl resin and a baked layer of a polyester resin overcoated on said polyacryl resin layer, comprising the steps of

a. electrophoretically depositing said polyacryl resin layer on said conductor;

b. subjecting said deposited polyacryl resin layer on said conductor in an organic solvent bath to a DC voltage of from about 30 to 500 volts applied between said conductor and a cathode in said organic solvent bath;

c. drying said polyacryl resin layer on said conductor;

d. dipcoating said polyester resin layer over said polyacryl resin layer on said conductor; and

e. baking said polyester resin layer and said polyacryl resin layer at a temperature of from about 200 to 500°C, said polyacryl resin comprising a copolymer of (a) at least one compound represented by the formula (I):



(I)

b. at least one compound represented by the formula (II)



(II)

and

c. at least one unsaturated organic acid, said acid having from 3 to about 30 carbon atoms and at least one double bond which is reactable with the double bond of said compound of the formula (I) or (II), wherein R_1 represents a hydrogen atom or an alkyl group having 1 to about 30 carbon atoms, R_2 represents a cyano group, an aldehyde group or a carboxyalkyl ester group having from 2 to about 30 carbon atoms, and R_3 and R_4 each represents a hydrogen atom, an organic group having 1 to about 30 carbon atoms selected from the group consisting of an alkyl group, an amide group, an N-alkylamide group, an alkylol group, a glycidyl-ether group and a glycidylester group, except that both R_3 and R_4 are not simultaneously a hydrogen atom or an alkyl group and said polyester resin comprising a copolymer of (d) at least one compound selected from the group consisting of terephthalic acid and a derivative thereof, and (e) a mixture of polyols comprising at least one diol and at least one of a triol, a tetraol, or a mixture of a triol and a tetraol, and said polyol mixture containing about 40 to about 97% equivalents of said diol.

3,953,311

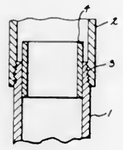
CATHODIC PROTECTION SYSTEM

Loerwood C. Wasson, Milwaukee, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 298,286, Oct. 17, 1972, abandoned. This application Apr. 25, 1974, Ser. No. 463,897

Int. Cl.² C23F *13/00*

U.S. Cl. 204—197 **5 Claims**



1. A cathodically protected internal joint of a water conducting system in a water heater, which comprises a first tubular conduit secured to the water heater, a second tubular conduit threaded onto the outboard end of the first tubular conduit to form a joint therebetween and provide for flow of water through the joint area, one conduit tending to be anodic with respect to the other conduit, and a ring of material more anodic than the said conduits secured internally of said first conduit in intimate contact therewith but having a portion of the outer cylindrical surface of the ring exposed so as to release electrons outwardly to provide cathodic protection at the joint area for said conduits exposed to the water flow therethrough.

3,953,312

APPARATUS FOR PEELING ELECTRODEPOSITED METAL OFF CATHODE BASE PLATE

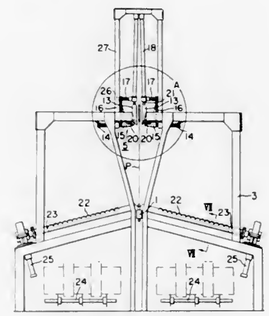
Takahiro Kikkawa, and Toshinori Hirata, both of Oaza-Higashi, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 302,843, Nov. 1, 1972, abandoned. This application July 10, 1974, Ser. No. 487,204

Claims priority, application Japan, Apr. 19, 1972, 47-38728

Int. Cl.² C25D *17/00, 1/00, 1/04*

U.S. Cl. 204—198 **3 Claims**



1. An apparatus for peeling off electrodeposited metal plates from cathode base plates, comprising:

conveyor means for moving upright workpieces comprised of cathode base plates having electrodeposited metal plates adhering thereon through two work stations in series;

impact means located at the first work station for applying repeated impacts to the electrodeposited metal plates adjacent the upper edges thereof to form voids between the cathode base plate and the electrodeposited metal plates;

stripping means at the second work station for peeling off the electrodeposited metal plates from the cathode base plate, said stripping means comprising a stationary framework defining an upright passage through which the upright workpieces move, said framework having an overhead portion located above said passage, a pair of fluid pressure motors comprising a pair of cylinders supported on said overhead framework and pivotally mounted thereon so that their lower ends are laterally movable toward and away from said passage, said cylinders extending downwardly from said framework so that their lower ends are located close to the upper end of said passage on opposite sides thereof, pistons projecting from the lower ends of said cylinders and having wedges thereon positioned for engagement with the opposite surfaces of the cathode base plate and being movable downwardly along the cathode base plate in response to supply of fluid pressure to said cylinders in order to strip off the electrodeposited metal plates, said cylinders each having a guide rod projecting laterally therefrom in a direction away from said passage, a pair of clamp bodies respectively associated with said cylinders, each clamp body having an upwardly extending arm slidably mounted on said guide rod of its associated cylinder and a coil spring encircling said guide rod and bearing at one end against said arm and urging said arm and said clamp body outwardly on said guide rod, said clamp bodies being substantially U-shaped and having clamp plates on the free ends of the legs thereof disposed for engaging the upper portions of the cathode base plate above the upper edges of the electrodeposited metal plates for clamping said workpiece in a fixed upright position, said wedges respectively being disposed between said legs of said clamp bodies, each clamp body having mounted thereon at positions outside of and adjacent the clamp plates thereof a pair of nozzles arranged to direct low pressure fluid against the cathode base plate at an angle of from +45° to −45° relative to an imaginary line perpendicular to the vertical plane of the cathode base plate and against the upper edges of the electrodeposited metal plates to separate the upper edges of the electrodeposited metal plates from the cathode base plate;

motor means for moving said clamp bodies laterally of said passage into and out of clamping engagement with the upper portion of the cathode base plate and thereby moving said wedges likewise into resilient contact with said upper portion of the cathode base plate under the compression forces of said springs; and

means for receiving the electrodeposited metal plates peeled off by said wedges.

3,953,313

ELECTROLYTIC CELL AND ELECTRODE THEREFOR

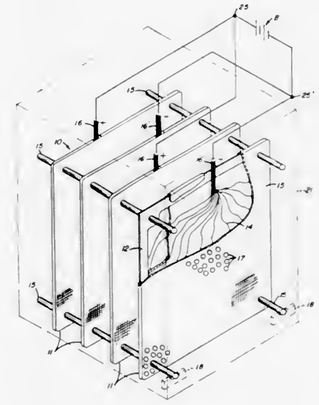
Gerald I. P. Levenson, Middlesex, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 370,500, June 15, 1973, abandoned. This application Mar. 6, 1975, Ser. No. 555,765

Claims priority, application United Kingdom, June 30, 1972, 30782/72

Int. Cl.² B01K *1/00;* **C25B** *9/02*

U.S. Cl. 204—267 **10 Claims**



1. An electrode for an electrolytic cell comprising:

a frame of rigid plastic material having a hollow interior;

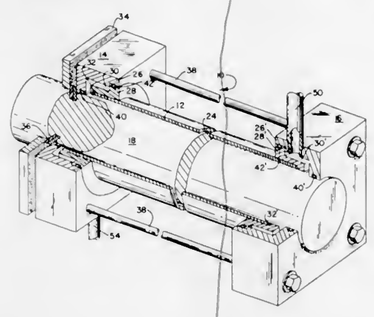
a sheet of porous support material on each side of said frame enclosing said hollow interior, said sheet of porous support material being flexible and being secured to said frame;

a plurality of fibers of electrically conductive material within said hollow interior, captured by said porous support material;

said electrode also comprising means connecting together said porous support material on opposite sides of said frame and acting to hold said fibers in place; and

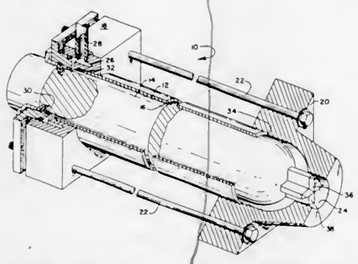
an electrical connector extending from said hollow interior to the outside of said frame, said connector being formed from said fibers.

3,953,314
ELECTROLYTIC CELL CONSTRUCTION
Albert Edward Spaller, Jr., Johnson City, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 23, 1974, Ser. No. 536,045
Int. Cl.² C25C 7/00, 7/02
U.S. Cl. 204—272 5 Claims



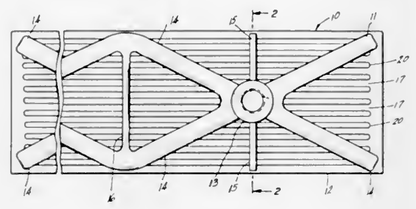
1. An electrolytic cell adapted for the oxidation of an aromatic compound during passage through said cell comprising a hollow, cylindrical cathode and a cylindrical anode smaller in diameter than the inside diameter of said cathode positioned therein so as to form an annular passage between said anode and cathode, said anode being at least co-extensive with said cathode, insulating end manifolds circumferentially engaging each end of said cathode and extending beyond said ends, said end manifolds having annular cavities circumferentially communicating with said annular passage, said anode being maintained in axial alignment with said cathode by the end manifolds, means forming liquid tight seals between said anode and said end members, and one of said end members having a feed inlet and the other having a discharge outlet communicating with said cavities.

3,953,315
ELECTROLYTIC CELL CONSTRUCTION
Albert Edward Spaller, Jr., Johnson City, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 23, 1974, Ser. No. 536,046
Int. Cl.² C25B 11/02, 9/00, 9/02
U.S. Cl. 204—272 2 Claims



1. In an electrolytic call wherein an aromatic compound is oxidized as it is caused to flow through the cell, said cell havig a hollow, cylindrical cathode and a smaller cylindrical anode positioned inside of and substantially coaxial with said cathode defining an annular passage for flow of said aromatic compound between the electrodes, and a pair of openings in said cathode for feed and discharge of said aromatic compound, the improvement which comprises a member fabricated from electrical insulating material axially aligned with and firmly affixed to the end of said anode and extending into firm engagement with an opening in the end of said cell axially aligned with said cathode to maintain said electrodes in alignment during operation of said cell.

3,953,316
METAL ANODE ASSEMBLY
Joseph E. Baker, Clearwater, Fla., assignor to Olin Corporation, New Haven, Conn.
Filed Nov. 5, 1973, Ser. No. 412,936
Int. Cl.² C25B 9/02, 11/02, 11/10
U.S. Cl. 204—288 6 Claims



1. In a metal anode assembly for electrolysis of flowing brine in an electrolytic mercury cell, wherein said metal anode assembly is comprised of
a. a distributor,
b. at least one anode support receiver positioned in the top of said distributor,
c. an anodic surface in electric contact with and positioned below said distributor,
d. said anodic surface is activated by applying a coating of an oxide of at least one platinum group metal, the improvement which comprises
1. employing as said distributor a spider-like distributor having a plurality of support ribs,
2. employing as said metal anode assembly an integral titanium casting comprised of
a. said distributor,
b. said anodic surface,
c. said anode support receiver,
3. said anodic surface having a first set of two opposite sides longer than the remaining set of two opposite sides,
4. said anodic surface being formed of a series of spaced-apart bars parallel to said first set of opposite sides and
5. said metal anode assembly being adapted for positioning in said cell with said spaced-apart bars parallel to the direction of flow of said brine.

3,953,317
COMPOSITION AND METHOD FOR SEPARATING BITUMINOUS CONSTITUENTS FROM BITUMINUM-BEARING SANDS
Elman B. Myers, deceased, late of Wayne, N.J., and by Marian M. Myers, administratrix, 550 Berdan Ave., Wayne, N.J. 07470
Filed Feb. 21, 1974, Ser. No. 444,566
Int. Cl.² C10G 1/04
U.S. Cl. 208—11 LE 10 Claims

1. A method for the separation of the bitumen fraction from bitumen-bearing sands comprising:
a. adding the composition resulting from the mixing of an aqueous solution of tannic acid with an ammonium hydroxide solution to bitumen-bearing sands in quantities and concentrations and under condition of intimate contact just sufficient to result in a desired separation of the bitumen fraction from said sands.

3,953,318
METHOD OF REDUCING SLUDGE ACCUMULATION FROM TAR SANDS HOT WATER PROCESS
Robert A. Baillie, and James Van Dyck Fear, both of West Chester, Pa., assignors to Great Canadian Oil Sands Limited, Toronto, Canada
Filed Oct. 17, 1974, Ser. No. 515,776
Int. Cl.² C10G 1/04
U.S. Cl. 208—11 LE 2 Claims

1. An improved method for transferring effluent discharge recovered from hot water extraction of bitumen from tar sands to a retention pond comprising:
a. withdrawing pond sludge from said retention pond;
b. admixing said pond sludge with said effluent discharge; and
c. transferring said mixture to the retention pond.

3,953,319
PREPARATION OF REFRIGERATION OILS
Ralph P. Chesluk, Nederland; Howard J. Platte, Houston, and Edward C. Brink, Jr., Port Arthur, all of Tex., assignors to Texaco Inc., New York, N.Y.
Filed Sept. 9, 1974, Ser. No. 504,617
Int. Cl.² C10G 23/00
U.S. Cl. 208—25 10 Claims

1. A process for the production of refrigeration oils which comprises contacting a crude petroleum lubricating oil with a hydrogenation catalyst in the presence of added hydrogen at a temperature between about 500 and 650°F. and a pressure between about 200 and 500 psig, treating the hydrofinished oil with concentrated sulfuric acid in an amount between about 15 and 60 pounds of acid per barrel of oil, removing waxy components from the acid-treated oil by complexing same with urea and separating the complex from the oil and percolating the dewaxed oil through a bed of clay.

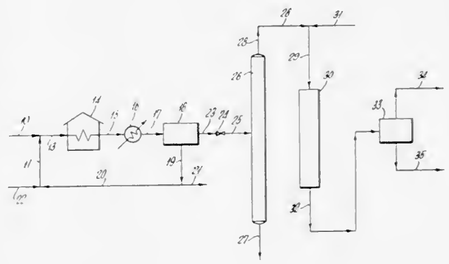
3,953,320
CRACKING-ISOMERIZATION PROCESS
Reese A. Peck, Fishkill; Li C. Mih, Wappingers Falls, and John T. Brandenburg, Hopewell Junction, all of N.Y., assignors to Texaco Inc., New York, N.Y.
Filed May 16, 1974, Ser. No. 470,687
Int. Cl.² C10G 13/02; B01J 29/22
U.S. Cl. 208—111 9 Claims

1. A process for improving the octane number of a hydrocarbon liquid fraction boiling below about 425°F. by a cracking-isomerization procedure which comprises contacting said fraction at a temperature between about 550° and 750°F. and a pressure between about 40 and 500 psig in the presence of added hydrogen with a catalyst comprising a noble metal on a support comprising at least 50% by weight acid-leached mordenite having a silica-alumina mol ratio of between about 40 and 80:1.

3,953,321
METHOD OF HYDRODESULFURIZING HEAVY PETROLEUM FRACTION IN THE INITIAL STAGE OF THE ON-STREAM PERIOD
Charles A. Ganster; Mary E. Callaghan, both of Port Arthur; Lee K. Gilmer; Gerald V. Nelson, both of Nederland, and Kenneth D. Miller, Port Neches, all of Tex., assignors to Texaco Inc., New York, N.Y.
Filed Dec. 27, 1974, Ser. No. 537,033
Int. Cl.² C10G 23/02
U.S. Cl. 208—216 13 Claims

1. A process for the catalytic hydrodesulfurization of a heavy petroleum fraction having an initial boiling point of at least about 500°–650°F. which comprises contacting a hydrodesulfurization catalyst comprising a Group VI metal or compound thereof and an iron group metal or compound thereof supported on an inert refractory inorganic oxide selected from the group consisting of silica, alumina, magnesia, zirconia and mixtures thereof with hydrogen and with said heavy petroleum fraction at a temperature between about 750° and 850°F. for a period of at least about 12 hours, then reducing the tempeature of the reaction zone to between about 600° and 750°F. to institute the desulfurization on-stream period.

3,953,322
NON-CATALYTIC PROCESS FOR TREATING NAPHTHA CONTAINING OLEFINICALLY UNSATURATED COMPONENTS
John T. Nolan, Jr., Wappingers Falls, and Raymond F. Wilson, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.
Filed July 8, 1974, Ser. No. 486,532
Int. Cl.² C10G 31/08
U.S. Cl. 208—255 13 Claims



1. The process for treating a pyrolysis naphtha containing olefinically unsaturated components which comprises:
heating said pyrolysis naphtha in a non-catalytic reaction in the presence of water in amount of 20–200 parts by weight of water per 100 parts by weight of said naphtha, under pressure thereby polymerizing said olefinically unsaturated components, and forming a treated naphtha; and
recovering said treated naphtha.

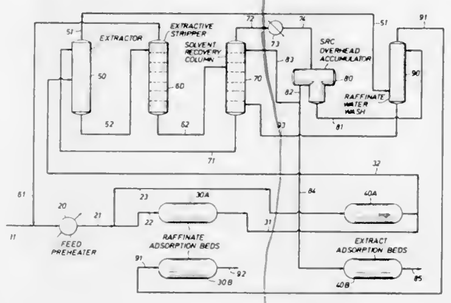
3,953,323
PROCESS FOR REDUCTION OF OLEFINIC UNSATURATION OF PYROLYSIS NAPHTHA (DRIPOLENE)
John T. Nolan, Jr., Wappingers Falls, and Raymond F. Wilson, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.
Filed Dec. 23, 1974, Ser. No. 535,315
Int. Cl.² C10G 23/02; C07C 5/02
U.S. Cl. 208—255 12 Claims

1. A process for treating pyrolysis naphtha for reduction of olefinic unsaturation, which process comprises:
treating pyrolysis naphtha with water in a ratio of from about 3:1 to about 0.5:1 at a temperature in the range of about 500°–700°F, at a superatmospheric pressure sufficient to maintain a substantial portion of the water in liquid phase, for a residence time of from about 12 minutes to about 10 hours in a reaction zone, and withdrawing a naphtha phase of reduced olefinic unsaturation from said reaction zone.

3,953,324
REMOVAL OF SOLVENT

Carl H. Deal, Houston, Tex., and Stephen H. Garnett, Tivon, Israel, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 4, 1974, Ser. No. 529,430
Int. Cl.² C10G *21/22, 21/28*
U.S. Cl. 208—321 **6 Claims**



1. A process for reducing the amount of sulfolane-type solvent present in the extract product stream obtained by contacting a liquid mixture containing compounds having differing polarities with a sulfolane-type solvent in an extraction zone and in which said sulfolane-type solvent is recovered, such process comprising:

a. contacting said extract product stream with a silica gel adsorbent at temperature T_1 wherein the sulfolane-type solvent entrained or otherwise present in said extract product stream is adsorbed onto the silica gel adsorbent thereby producing an extract product stream containing reduced amounts of sulfolane-type solvent; and

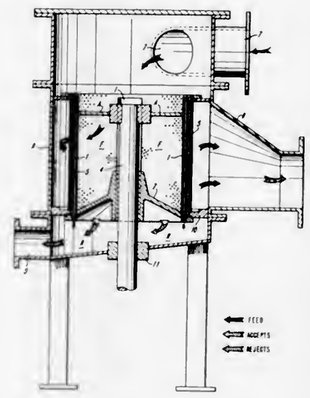
b. contacting the silica gel adsorbent and the sulfolane-type solvent adsorbed thereon with the liquid mixture feed to the extraction zone at temperature T_2 wherein temperature T_2 is greater than temperature T_1, thereby regenerating the silica gel adsorbent by displacing the sulfolane-type solvent adsorbed onto the silica gel adsorbent with the liquid mixture feed.

3,953,325
PULP SCREEN WITH ROTATING CLEANING FOIL

Douglas G. Nelson, 300 Glenvista Court, Centerville, Ohio 45459

Filed Sept. 27, 1972, Ser. No. 292,746
Int. Cl.² B07B *1/04*
U.S. Cl. 209—273 **14 Claims**

14. In a particulate separating device having a housing with feedstock inlet and discharge chambers, a substantially cylindrical particulate screening member interposed between said inlet and discharge chambers to divide the discharge chamber into an acceptable particle discharge chamber remote from the inlet and a rejects particle discharge chamber on the inlet side of said screening member, a negatively pressurized hollow pulse foil member having a leading surface and a trailing surface mounted adjacent to the inlet surface of said screening member, said hollow foil member having an opening in said trailing surface adjacent the screening member for receiving reject particles from the inlet side of said screening member, means for rotating said hollow foil member across the adjacent surface of said screening member to separate reject particles from said surface, said hollow foil member being in communication with the reject particle discharge chamber, and a selective seal disposed between said inlet chamber and said rejects particle discharge chamber to restrict feedstock

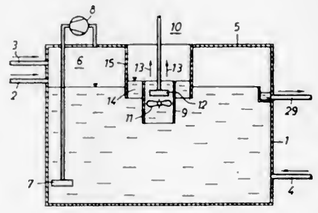


flow for particulate separation in the inlet chamber while permitting feedstock and reject particle discharge therefrom.

3,953,326
OXYGEN AERATION SYSTEM FOR CONTAMINATED LIQUIDS

Hans Reimann, Beethovenstrasse 21, 8023 Pullach, Germany

Filed July 24, 1974, Ser. No. 491,374
Claims priority, application Germany, July 26, 1973, 2338000; July 26, 1973, 2337999
Int. Cl.² C02C *1/06*
U.S. Cl. 210—7 **10 Claims**



1. In a process for the purification of an organically contaminated liquid in an aeration tank in the presence of activated sludge, wherein a gas having a higher concentration of oxygen than air is introduced into an aeration tank containing a mixture of liquid and activated sludge, said tank having a zone containing at least the major part of the liquid, said zone further including above said liquid an atmosphere more enriched with oxygen than air, said atmosphere being substantially enclosed from the surroundings wherein said mixture of liquid and activated sludge are passed to a secondary settling tank to form a clarified liquid and an activated sludge fraction and wherein at least a portion of said fraction of activated sludge obtained from the secondary settling tank is recycled as return sludge into the aeration tank,

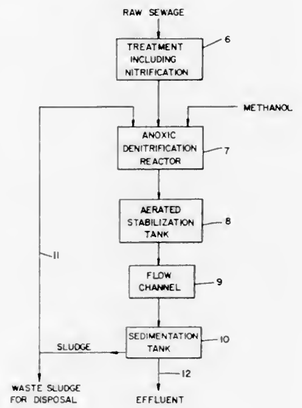
the improvement which comprises:

subjecting at least a portion of at least one stream to a stripping step with air to strip out CO_2 from said stream to prevent a buildup of CO_2 generated in said aeration tank to over a desired maximum which would otherwise lower the efficiency of the purification process, and to maintain an essentially constant pH, said stream being at least one of: (a) the mixture of liquid and activated sludge before said mixture is settled into said clarified liquid and said activated sludge fraction and (b) said activated sludge fraction, said stripping step being conducted in a second zone separate from said zone including said at least the major part of the liquid and the substantially enclosed atmosphere more enriched with oxygen than air.

3,953,327
SEWAGE TREATMENT PROCESS

Denny S. Parker, Berkeley, Calif., assignor to Central Contra Costa Sanitary District, Walnut Creek, Calif.

Continuation of Ser. No. 354,804, April 26, 1973, abandoned. This application Aug. 29, 1974, Ser. No. 501,753
Int. Cl.² C02C *5/10*
U.S. Cl. 210—7 **9 Claims**



1. A process for treating sewage containing nitrogen compounds consisting essentially of the steps of first converting nitrogen compounds to the nitrate form by subjecting the sewage to nitrification, then subjecting the nitrified sewage to substantially anoxic denitrification in the presence of methanol, then stabilizing the denitrified sewage from the denitrification step by thoroughly aerating the sewage under conditions of agitation, then flowing said sewage from the stabilization step, then clarifying the flowing sewage to produce sludge and an effluent, recycling said sludge directly to said denitrification step to subject said sludge also to substantially anoxic denitrification, and withdrawing said effluent from the process.

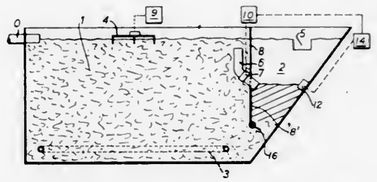
3,953,328
SEPARATION OF SLUDGE

Wilhelm Aldag, 42 Ubierstrasse, D-532 Bad Godesberg-Bonn, Germany

Continuation of Ser. No. 276,033, July 28, 1972, abandoned. This application Sept. 4, 1974, Ser. No. 503,188
Claims priority, application Germany, Sept. 7, 1971, 2144605
Int. Cl.² C02C *1/08*
U.S. Cl. 210—7 **12 Claims**

1. A method for the separation of sludge, suspended material and the like from liquid to be purified, comprising the steps of causing the liquid to flow through an aeration chamber into a clarifying chamber; establishing a rising stream of liquid in the clarifying chamber in such a manner as to have a speed of flow which decreases as the liquid rises; permitting suspended microbiological and other material in the rising stream to undergo concentration in an intermediate zone of the clarifying chamber in which the tendency of the said material to sink owing to gravity is substantially the same as its tendency to be carried upwards in the stream; drawing off the concentrated material at the said intermediate zone by suction means and at least in part feeding it back to and introducing it to the upper zone of the aeration chamber; varying the disposition of the suction means to the level where the intermediate zone of concentration occurs; and carrying off the liquid of the rising stream from the clarifying chamber through an outlet at a level above the said zone.

3. An apparatus for use in separation of sludge, suspended material and the like from liquid to be purified, comprising: an aeration chamber provided with means for aerating liquid therein; a clarifying chamber in fluid communication with the aeration chamber for receiving the liquid therefrom in a rising stream and said clarifying chamber being so shaped that the

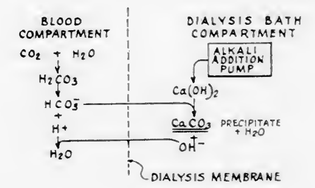


speed of flow of said stream decreases as the liquid rises; an outlet for clarified liquid disposed at an upper level of the clarifying chamber; at least one pump with an outlet disposed in the aeration chamber and with a suction pipe arranged with its inlet in the clarifying chamber at an intermediate level below the said outlet level and above the fluid communication between the two chamber, the level of the said suction pipe inlet being such that suspended microbiological and other material in the rising stream, which material concentrates at an intermediate zone where its tendency to sink owing to gravity is substantially the same as its tendency to be carried upwards in the stream, is drawn off from the clarifying chamber by the pump for at least partial return into an upper level of the aeration chamber; and means connected to said suction pipe providing that it may be displaceable to a desired intermediate level whereat said intermediate zone of concentrated material occurs.

3,953,329
METHOD FOR DIALYZING CARBON DIOXIDE FROM BLOOD PLASMA

Stuart J. Updike, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 191,720, Oct. 22, 1972, Pat. No. 3,846,236. This application Oct. 5, 1972, Ser. No. 295,264
Int. Cl.² B01D *13/00*; C12B *1/00*
U.S. Cl. 210—22 R **10 Claims**



1. The method of removing carbon dioxide from whole blood by dialysis comprising the steps of bypassing the blood from the blood stream circulated through the human system, passing the bypassed blood into contact with one side of a hemodialysis membrane which allows for the dialysis while the

other side is wet by contact with an aqueous electrolyte containing an alkaline material in solution in an amount sufficient to make free hydroxyl ions available for transport through the membrane whereby carbon dioxide, which is formed in the blood and combines with water in accordance with the equation $H_2O + CO_2 \quad H_2CO_3 \quad HCO_3^- + H^+$ is removed from the blood stream by transport of bicarbonate ion through the membrane to the aqueous electrolyte while hydroxyl ions transport from the electrolyte through the membrane to neutralize hydrogen ions which remain in the blood, and in which the alkaline material is present in the electrolyte in an amount to maintain the normal level of blood pH in which the alkaline material is selected from the group consisting of an alkali metal hydroxide and an alkaline earth metal hydroxide.

3,953,330

WATER-SOLUBLE CATIONIC POLYMERIC MATERIALS AND THEIR USE

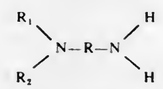
Richard G. Tonkyn, Cornwells Heights; Norman Vorchheimer, Buckingham, both of Pa.; William J. Fowler, Jr., Berlin, N.J., and Richard A. Heberle, Holland, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 283,889, Aug. 25, 1972, abandoned. This application Oct. 6, 1975, Ser. No. 619,767

Int. Cl.² C02B *1/20*

U.S. Cl. 210—52 **14 Claims**

1. A process for flocculating aqueous suspensions of finely divided solids which comprises treating the suspension with an effective amount of a water-soluble cationic polymer to cause flocculation of said solids, said water soluble cationic polymer being obtained by the polymerization of an epihalohydrin with an alkylene polyamine having the formula



wherein R is a lower alkylene having from 2 to about 6 carbon atoms, and R_1 and R_2 are each a lower alkyl of from 1 to about 6 carbon atoms, the mole ratio of epihalohydrin to polyamine being from about 0.60:1 to about 2.7:1, said polymerization comprising reacting with the alkylene polyamine from about 50 to 90 percent of the amount of epihalohydrin to be polymerized, allowing the reaction to continue until the reaction medium attains a substantially uniform viscosity, and reacting the remaining portion of the epihalohydrin incrementally to obtain the cationic polymer, the temperature of polymerization being from about 60 to about 120° C.

3,953,331

STABILIZATION OF WASTE MATERIAL

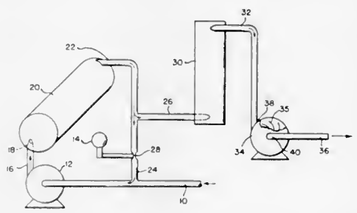
Earl H. Bradley, Seekonk, Mass., assignor to General Signal Corporation, Rochester, N.Y.

Continuation of Ser. No. 242,989, April 11, 1972, abandoned. This application Dec. 14, 1973, Ser. No. 424,990

Int. Cl.² C02B *1/34*; **E03B** *11/00*

U.S. Cl. 210—63 R **9 Claims**

1. A system for purifying water material comprising first and second reaction tanks each of which is internally unobstructed, means for delivering waste material to be purified to said first tank, said delivery means including a first pump means and a conduit for delivering pressurized fluid to said first tank, means for introducing a chemical oxidizing agent into the conduit ahead of said first pump means whereby a mixture of waste material and chemical oxidizing agent is pumped into said first reaction tank, first discharge conduit means from said first tank, said first discharge conduit means being directly connected to said delivery means and also to said second tank for recirculating a portion of said mixture though said first tank and for delivering the remaining portion of said mixture to said second tank, and means for maintaining pressure in said first and second tanks whereby a relatively rapid chemical oxidation reaction can occur during substantially the entire circulation of said mixture through said tanks, said means for maintaining pressure comprising second discharge conduit means connected to an outlet port of said second tank and further comprising impeller means in said second discharge conduit means for permitting said pressurized fluid to flow from said first pump means, through said first tank, said first discharge conduit means, said second tank, said outlet port, and said impeller means while simultaneously maintaining pressure in said first and second tanks, said impeller means comprising a rotatable impeller tending to oppose the flow of said fluid from said second tank while said first pump means delivers said pressurized fluid to said first tank.



8. A method of stabilizing waste material comprising the steps of mixing a chemical oxidizing agent with waste material to be stabilized and subjecting said mixture to rapid circulation under pressure in a first zone whereby a chemical oxidation reaction occurs, recirculating a portion of between 75% and 85% of said mixture from said first zone back through said first zone and subjecting the remaining portion of said mixture from said first zone to further rapid circulation under pressure in a second zone wherein said oxidation process continues, maintaining the mixture in said first and second zones under pressure, directing said pressurized mixture from said second zone into a conduit, and permitting flow through said first and second zones, said conduit and a rotatable impeller while simultaneously maintaining pressure in said zones by engaging said rotatable impeller in said conduit in a manner tending to oppose the flow of said mixture from said second zone to said conduit.

3,953,332

PURIFICATION OF WASTE WATER CONTAINING ORGANIC AND INORGANIC IMPURITIES

Sebastian Speth, Oberhausen; Georg Kuppenbender, Willich, and Willi Jansen, Oberhausen, all of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Germany

Filed June 27, 1974, Ser. No. 483,739

Claims priority, application Germany, July 3, 1973, 2333668

Int. Cl.² B01D *35/18*

U.S. Cl. 210—71 **7 Claims**

1. In a process for the separation of the components of a three phase system wherein:

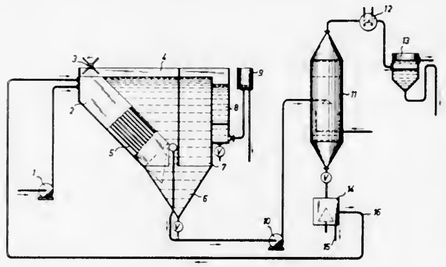
A. One of the components is water;

B. Another of the components is a water-insoluble organic liquid of lighter specific weight than said water, which liquid is in the form of a swimming sludge phase and comprises an aldehyde, an alcohol, a glycol, an ester or an addition or condensation product thereof; and

C. The third component is a solid which tends to flocculate when a heated mass containing the same is cooled,

by a process wherein a mixture containing such components A, B and C at elevated temperature is fed into the introduction zone of a tilted gravity separator and from there flows into a separation zone having a plurality of downwardly inclined tilted plates wherein said water-insoluble organic liquid ascends said tilted plates and is removed and said water and said solids are separated from one another,

the improvement for decreasing the amount of petroleum ether soluble constituents in said water which comprises maintaining the temperature of the mass in the separation zone sufficient to prevent flocculation of said solids by



introducing into said introduction zone additional water of increased temperature and in such quantity that the amount of heat is sufficient to equalize the temperature decrease of the waste water occurring during the residence time in the tilted plate separator, and thereafter precipitating the solids and separating the solids from the water.

3,953,333

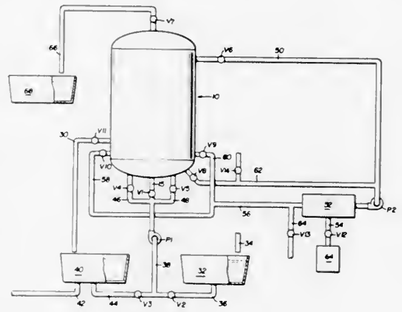
METHOD AND APPARATUS FOR REJUVENATING A BED OF GRANULAR FILTER MEDIUM

Gene Hirs, Birmingham, Mich., assignor to Hydromation Filter Company, Livonia, Mich.

Filed Apr. 21, 1975, Ser. No. 570,138

Int. Cl.² B01D *41/02*

U.S. Cl. 210—74 **16 Claims**



1. In a method of filtering particulate and lint-like contaminants from a dirty liquid by passing the dirty liquid through a bed of granular filter medium contained within a housing wherein the contaminants are accumulated and at least a portion of the particulate contaminants form an agglomeration with the filter granules, the improvement of renewing the bed of filter medium after the accumulation of an appreciable amount of contaminants therein, by the steps of: expanding and violently agitating the filter bed, thereby breaking up the agglomeration into filter granules and particulate contaminants; reforming the filter bed with the lint-like contaminants predominantly in the upper portion of the reformed bed, the larger of the broken-up particulate contaminants in the lowermost portion of the bed, and the remainder of the particulate contaminants interspersed throughout the bed; introducing diluting liquid into the bed at a position between the upper and lower surfaces of the bed; simultaneously (a) flowing a portion of the diluting liquid upwardly through only that portion of the bed which is above the point of diluting liquid introduction at an appreciable velocity to expand and to upwardly backwash interspersed particulates and lint-like contaminants therefrom; and (b) separately withdrawing from the housing at a point below the point of liquid introduction a slurry of granular filter material and interspersed particulates in admixture with the remainder of the diluting liquid, flowing the slurry in a continuous flow path which includes a cleaning element where at least a portion of the interspersed particulates are removed from the liquid mixture flow, and returning the withdrawn filter material back to the filter bed in the diluting liquid flow; terminating the diluting liquid flow after the filter bed has been sufficiently cleaned; and reforming the bed for further filtration flow of dirty liquid.

14. In a filtration apparatus having a bed of granular filter medium which is maintained in a filter housing during filtration flow, the improvement of a system for rejuvenating the filter bed after it has accumulated particulate and lint contaminants as a result of dirty liquid flow therethrough, said accumulated particulate contaminants becoming at least partially agglomerated due to the accumulation in the bed; said system including:

a closed recirculation flow path loop exterior to the housing, said flow path including an outlet at an upper portion of the housing, a return inlet at a lower portion of a housing, and a conduit interconnecting the outlet and return inlet;

liquid supply means for injecting diluent liquid into the bottom of the bed of granular filter medium at an appreciable velocity sufficient (a) to expand the bed, (b) to form a flowable slurry mixture of filter granules and contaminants, and (c) to flow the slurry out of the upper portion of the filter housing and into the closed recirculation flow path for agitating the mixture and breaking up at least a portion of the agglomerated particulates;

pump means in the recirculation flow conduit for returning the slurry to the filter housing through the recirculation inlet so that the bed may be reformed, the lint contaminants being interspersed in the upper portion of the reformed bed and the particulates interspersed throughout the filter bed;

a second closed flow path exterior to the housing forming a loop which includes (a) an outlet at the bottom of the housing, (b) a return inlet positioned above the bottom of the housing, (c) a flow conduit interconnecting the outlet and inlet, and (d) a cleaning element in the flow conduit;

means for injecting liquid into the conduit of the second flow path for flow through the return inlet at an appreciable velocity (a) to expand and substantially suspend that portion of the filter bed above the return inlet, (b) to flush particulate and lint contaminants from the expanded portion of the filter bed, (c) to flow filter granules and interspersed contaminants in a liquid mixture into the outlet of the second closed path, (d) to remove contaminants in a liquid flow at the cleaning element, and (e) to return the withdrawn granules to the filter housing from the second flow path after passing through the cleaning element.

3,953,334

FLUID FRACTIONATING APPARATUS

Robert Brun, Billene, and Michel Pages, St.-Martin-d'Ardeche, both of France, assignors to Rhone-Poulenc, S.A., Paris, France

Filed June 26, 1974, Ser. No. 483,361

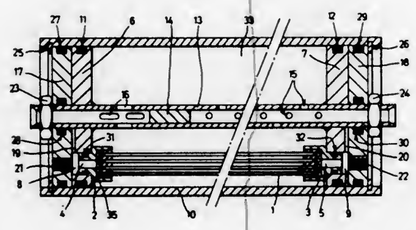
Claims priority, application France, June 27, 1973, 73.23481

Int. Cl.² B01D *31/00*

U.S. Cl. 210—321 R **13 Claims**

1. Fluid fractionating apparatus comprising in combination:

a. a jacket;
b. two side plates forming with said jacket a closed chamber;
c. an axial support pipe extending through said chamber by which said side plates are connected;
d. at least one aperture formed in each side plate;
e. a cap located at least partly in each said aperture so as to be detachable by movement towards the other side plate and defining a cavity communicating with the interior of the chamber and an orifice communicating the cavity with the exterior of the chamber, via the aperture in which the cap is at least partly located;
f. a plurality of flexible cords extending substantially axially in said chamber and each consisting of a textile sheath forming at least one channel, and a membrane covering



the textile sheath and being joined thereto at each of its ends in a leakproof manner, the flexible cords having an external diameter between 1 and 10 mm, the flexible cords being grouped against one another at least at their ends to form at least one bundle of substantially parallel flexible cords, one end of all the flexible cords of a bundle being located in a fluidtight manner in the cavity of one cap, while the other end of all the flexible cords of a bundle are located in a fluidtight manner in the cavity of another cap;
g. a stopper provided between the ends of the pipe, and blocking the flow of fluid directly through the pipe; and
h. a plurality of orifices in said pipe on each side of said stopper spaced along said pipe for feeding fluid to and from the chamber.

3,953,335
MAGNESIA STABILIZED ADDITIVES FOR NON-CLAY WELLBORE FLUIDS

Jack M. Jackson, P.O. Box 35221, Houston, Tex. 77035

Continuation-in-part of Ser. No. 101,123, Dec. 23, 1970, abandoned. This application Dec. 1, 1972, Ser. No. 311,274
The portion of the term of this patent subsequent to Dec. 3, 1991, has been disclaimed.
Int. Cl.² C09K *7/00*
U.S. Cl. 252—8.5 A **5 Claims**

1. An additive composition for non-clay brine wellbore fluids having improved viscosity stability and reduced water loss consisting essentially of water soluble non-ionic hydroxyethyl cellulose and a hydroxyethyl cellulose stabilizing amount of magnesia.

3,953,336
DRILLING FLUID

Armand E. Daigle, Maryland Heights, Mo., assignor to Amoco Production Company, Tulsa, Okla.

Filed Sept. 7, 1973, Ser. No. 395,329
Int. Cl.² C09K *7/02*
U.S. Cl. 252—8.5 A **9 Claims**

1. A drilling fluid composition consisting essentially of a member selected from the group sea water and an aqueous sodium chloride solution, from about 10 to 20 lb/bbl of KCl, and an effective amount of a polymeric mixture to increase the viscosity of said composition, said mixture consisting essentially of hydroxyethylcellulose, and a heteropolysaccharide, produced by the bacterium *Xanthomonus campestris* NRRL B-1459, said mixture ranging in composition from about 80 percent hydroxyethylcellulose and 20 percent heteropolysaccharide to 20 percent hydroxyethylcellulose and 80 percent heteropolysaccharide, the molecular weight of said heteropolysaccharide being such that a 1 weight percent solution thereof in water at about 75°F has a viscosity of about 500 to about 3,000 cps when measured in a Brookfield viscosimeter using a No. 3 spindle rotating at 30 rpm.

3,953,337
METHOD OF DRILLING WELLS EMPLOYING WATER BASE DRILLING FLUIDS

Clarence O. Walker, Richmond; Thad O. Walker, Houston, and Jack H. Douglass, Bellaire, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 16, 1973, Ser. No. 416,701
Int. Cl.² C09K *7/02*
U.S. Cl. 252—8.5 A **2 Claims**

1. In a method of drilling wells wherein a drilling fluid is passed through the well into contact with the earth formation during the drilling operation, the improvement which comprises contacting said earth formation with a low pH fresh water drilling fluid consisting essentially of clay solids dispersed therein by a clay-dispersing agent and sufficient alkali metal hydroxide to provide a pH of from about 9 to about 9.5 thereto, and wherein when said drilling fluid comes in contact with a sufficient amount of salt in said formation whereby its rheological properties are substantially impaired there is added to said drilling fluid a polyethylene glycol having an average molecular weight of from about 200 to about 500 in an amount of from about 0.5 to about 10 pounds per barrel of drilling fluid to restore the rheological properties of said drilling fluid.

3,953,338
FOAM WELL CLEANOUT USING OLIGOMERIC SULFONIC ACIDS

Alan E. Straus, El Cerrito; William A. Sweeney, Larkspur; Ralph House, El Sobrante, and Samuel H. Sharman, Kensington, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 276,265, July 28, 1972, abandoned, which is a division of Ser. No. 858,097, Sept. 15, 1969, Pat. No. 3,721,707. This application Sept. 25, 1974, Ser. No. 509,177
Int. Cl.² C09K *7/02;* **E21B** *43/22*
U.S. Cl. 252—8.5 C **6 Claims**

1. In the method of circulating a gas-in-liquid foam in a well the improvement which comprises generating said foam from a gas and a foamable aqueous solution containing as foaming agent the oligomer obtained by the process which comprises heating in the liquid phase a feed comprising at least one compound having a carbon atom content of at least 5 but less than 50 selected from the group of the formula

a) $RCH(CH_2)_xCHRSO_3$,
b) $RCH(OH)(CH_2)_xCHRSO_3H$, and
c) $RCH{=}CH(CH_2)_yCHRSO_3H$

wherein x is the number 0 and integers 1–3 and y is a whole number in the range 0–n wherein n is a number which is 4 less than the number of carbon atoms in the longest straight chain of the compound containing the $-SO_3H$ group as a substituent, and wherein the several R groups are the same or different and are hydrogen or alkyl hydrocarbon radicals; said heating being at a temperature above about 110°C and below the carbonization temperature of the feed, in the substantial absence of water, and for a period at least sufficient for a

significant conversion of the feed to the corresponding oligomeric disulfonic acids and circulating said foam in said well.

3,953,339
CONING OIL

James E. Obetz, Bernardsville, and Albert R. Tarini, Dover, both of N.J., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Sept. 14, 1973, Ser. No. 397,299
Int. Cl.² C10M *1/24;* **D06M** *13/20*
U.S. Cl. 252—8.9 **11 Claims**

1. In a process of processing yarn wherein a coning oil is applied to said yarn prior to processing, the step of applying to said yarn prior to processing a coning oil composition containing a mineral oil and at least one emulsifier selected from the group consisting of oil soluble anionic surfactants and oil soluble nonionic surfactants, the improvement comprising the presence of an aluminum soap of a saturated fatty acid having from about 8 to about 22 carbon atoms in an amount effective to reduce slinging of the oil during yarn processing wherein the composition is prepared by dispersing the soap in the mineral oil, heating to 110°C to clear, cooling to about 80°C, then introducing the emulsifier and agitating to obtain a compatible coning oil composition.

3,953,340
DISSOLVING SILICEOUS MATERIALS WITH SELF-ACIDIFYING LIQUID

Charles C. Templeton; Evan H. Street, Jr, and Edwin A. Richardson, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 411,139, Oct. 30, 1973, Pat. No. 3,828,854, and a continuation-in-part of Ser. No. 351,739, April 16, 1973, abandoned. This application May 3, 1974, Ser. No. 466,591
Int. Cl.² E21B *43/27*
U.S. Cl. 252—8.55 C **6 Claims**

1. A self-acidifying liquid system which comprises a solution of at least one aqueous liquid, at least one water-soluble ammonium salt of hydrofluoric acid, and at least one relatively slowly reactive acid-yielding material that converts the solution of the fluoride salt to a water solution of hydrofluoric acid, with said solutes being present in proportions adapted to subsequently provide an aqueous solution having a hydrofluoric acid concentration of from about 0.2–5% by weight, a pH of at least about 2 and a capability of dissolving bentonite and with said acid-yielding material being a member of the group consisting of esters of aliphatic $C_{1\text{-}5}$ alcohols and fatty $C_{1\text{-}5}$ acids, hydrolyzable hydrocarbon chlorides, hydrolyzable acyl chlorides, and hydrolyzable acid anhydrides.

3,953,341
STABILIZATION OF POLYMER SOLUTIONS

Fred David Martin, McMurray, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed May 8, 1974, Ser. No. 468,034
Int. Cl.² E21B *43/20, 43/22*
U.S. Cl. 252—8.55 D **3 Claims**

1. A process for the secondary or tertiary recovery of petroleum from subterranean formations penetrated by an injection well and a producing well which comprises introducing into said reservoir through said injection well a substantially oxygen free viscosity improving displacing medium to displace said petroleum from said subterranean formation, said displacing medium comprising water and a methylolated high molecular weight water-soluble copolymer of acrylamide and 2-acrylamido methylpropane sulfonic acid having a molecular weight of at least 200,000 wherein from about 0.1 to about 10 moles of formaldehyde is reacted for each mole of acrylamide in said polymer in order to increase the solution viscosity of the displacing medium.

3,953,342
PETROLEUM RECOVERY PROCESS

Fred David Martin, and Lawrence James Guilbault, both of McMurray, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed May 8, 1974, Ser. No. 468,036
Int. Cl.² E21B *43/20, 43/22*
U.S. Cl. 252—8.55 D **3 Claims**

1. A process for the secondary or tertiary recovery of petroleum from subterranean formations penetrated by an injection well and a producing well which comprises introducing into said reservoir through said injection well a substantially oxygen free displacing medium comprising water, a high molecular weight water-soluble polymer selected from the group consisting of partially hydrolyzed polyacrylamide and copolymers of acrylamide and 2-acrylamido methylpropane sulfonic acid and from about 0.1 to about 10 moles of glyoxal per mole of amide constituent of said polymer in order to increase the solution viscosity of said displacing medium.

3,953,343
BEARING MATERIAL

Harold E. Sliney, Parma, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 10, 1974, Ser. No. 513,611
Int. Cl.² C10M *5/00, 7/00*
U.S. Cl. 252—12 **12 Claims**

1. A self-lubricating, oxidation-resistant composition of matter comprising:
a. a metal component capable of providing strength and elasticity to a temperature up to and in excess of about 930°C.;
b. a fluoride salt component capable of providing lubrication; and
c. a glass component capable of inhibiting oxidation of said metal component.

3,953,344
SURFACE TREATMENT COMPOSITION FOR METAL WORKING

Uraji Narushima, Yokohama, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan

Filed July 25, 1974, Ser. No. 491,943
Claims priority, application Japan, Aug. 9, 1973, 48-89550
Int. Cl.² C10M *1/48, 3/42, 5/04, 7/08*
U.S. Cl. 252—32.7 E **10 Claims**

1. A surface treatment composition for metal working, which comprises 10 to 50 parts by weight of a water-soluble thermoplastic synthetic resin having an average degree of polymerization of 300 to 1,700, 40 to 180 parts by weight of an aqueous dispersion of an alkaline earth metal soap and 0.5 to 12 parts by weight of at least one volatile corrosion inhibitor.

3. The surface treatment composition according to claim 1, wherein the water-soluble thermoplastic synthetic resin is a member selected from the group consisting of a polyvinyl alcohol having a saponification degree of 75 % or more, an ammonium salt of a phosphatic esterified polyvinyl alcohol having an esterification degree of 25 to 75 %, a carboxy-polyvinyl alcohol having a carboxylation degree of the hydroxy group in the polyvinyl alcohol of 1 to 20 %, sodium polyacrylate, ammonium polyacrylate and calcium polyacrylate.

3,953,345
METHOD FOR THE PRODUCTION OF ACTIVATED CARBON SPHERES CONTAINING NITROGEN

Hatsuo Saito; Zenya Shiiki, and Masaaki Nakao, all of Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo and Toyo Boseki Kabushiki Kaisha, Osaka, both of, Japan

Filed May 28, 1974, Ser. No. 473,708
Claims priority, application Japan, May 29, 1973, 48-59294
Int. Cl.² C01B *31/10, 31/02*
U.S. Cl. 252—423 **17 Claims**

1. A method for the production of activated carbon spheres comprising:

mixing 100 parts by weight of pitch having a softening point of not less than 70°C, an H/C ratio of not more than 1, and a nitrobenzene-insoluble content of not more than 40%, with 10–50 parts by weight of an aromatic hydrocarbon solvent compatible with the pitch and 2–50% by weight, based on the total weight of the pitch and aromatic solvent, of a nitrogen compound containing at least 10% by weight nitrogen and miscible with said pitch;

melting the mixture;

shaping the melted mixture into the form of spheres;

contacting the spheres with an organic solvent which is compatible with the aromatic solvent but which lacks affinity for the pitch to extract the aromatic solvent from the spheres, thereby forming micro-pores in the spheres;

contacting the microporous spheres with an aqueous or gaseous oxidizing agent to render them infusible; and

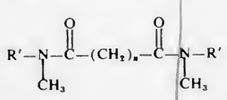
activating the infusibilized pitch spheres with an activating gas, to form activated carbon spheres containing 2–60% by weight nitrogen.

3,953,346
TERTIARY DIAMIDE LUBRICANTS

Robert M. Thompson, Wilmington, Del., assignor to Sun Ventures, Inc., St. Davids, Pa.

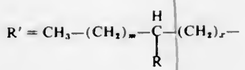
Continuation-in-part of Ser. No. 293,981, Oct. 2, 1972, abandoned. This application Oct. 17, 1974, Ser. No. 515,775
Int. Cl.² C10M *1/32, 3/26, 5/20, 7/30*
U.S. Cl. 252—51.5 A **12 Claims**

1. A lubricant composition comprising a major amount of at least one tertiary diamide having the formula:



wherein

n = 4–12



wherein

R = H, alkyl radical having C_1–C_5

m = 2–8

x = 1–5

and a minor amount of lubrication additive.

3,953,347
NOVEL SULFUR-CONTAINING COMPOSITIONS

Emile Najib Habiby, Willowick, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 178,803, Sept. 8, 1971, abandoned. This application Apr. 3, 1972, Ser. No. 240,795
Int. Cl.² C10M *1/38, 3/32;* **C09B** *49/00, 59/00*
U.S. Cl. 252—48.6 **7 Claims**

1. A sulfurized composition of matter prepared by reacting, at about 100°–250°C., sulfur with a mixture comprising (A) 100 parts by weight of at least one fatty acid ester of a polyhydric alcohol, (B) about 2–50 parts by weight of at least one fatty acid, and (C) about 25–400 parts by weight of at least one aliphatic α-olefin containing about 8–36 carbon atoms.

3,953,348
OIL-SOLUBLE REACTION PRODUCTS OF INTERMEDIATE (A) FROM A HIGH MOLECULAR WEIGHT OLEFIN POLYMER, ACETONITRILE, AND CHLORINE WITH (B) A PIPERAZINE, AND LUBRICANT COMPOSITIONS CONTAINING THE SAME

Richard J. Lee, Downers Grove, Ill., assignor to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 426,722, Dec. 13, 1973, abandoned. This application Mar. 3, 1975, Ser. No. 554,598
Int. Cl.² C10M *1/32*
U.S. Cl. 252—51 **7 Claims**

1. The oil-soluble product prepared by the process comprising, preparing intermediate A by reacting from about 0.3 moles to about 2.5 moles of a high molecular weight olefin polymer having an average molecular weight of at least about 600, with from about 0.5 moles to about 7.5 moles of acetonitrile and from about 0.4 moles to about 2.0 moles of chlorine or bromine in the presence of a catalytic amount of iodine in the absence of light at a temperature of from about 60° to about 160°F. and thereafter reacting intermediate A with piperazine or with (b) an N-aminoalkyl-substituted piperazine at a temperature of from about 200° to about 350°F. for about 1–6 hours, said amine being used in an amount to provide sufficient amine groups to replace the halogen atoms in said intermediate (A).

5. A lubricant composition comprising a major amount of a normally liquid oleaginous lubricant, and from about 0.1 to about 10% of the oil-soluble product defined in claim 1.

3,953,349
OIL-SOLUBLE REACTION PRODUCTS OF (A) A HIGH MOLECULAR WEIGHT OLEFIN POLYMER, ACETONITRILE, AND CHLORINE WITH (B) AN AMINE, AND LUBRICANT COMPOSITIONS CONTAINING THE SAME

Richard J. Lee, Downers Grove, Ill., assignor to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 426,722, Dec. 13, 1973, abandoned. This application Mar. 3, 1975, Ser. No. 554,597
Int. Cl.² C10M *1/32*
U.S. Cl. 252—51 **13 Claims**

1. The oil-soluble product prepared by the process comprising, preparing intermediate A by reacting from about 0.3 moles to about 2.5 moles of a high molecular weight olefin polymer having an average molecular weight of at least about 600, with from about 0.5 moles to about 7.5 moles of acetonitrile and from about 0.4 moles to about 2.0 moles of chlorine or bromine in the presence of catalytic amount of iodine in the absence of light oil at a temperature of from about 60° to about 160°F. and thereafter reacting intermediate A with a primary or secondary aliphatic hydrocarbyl amine at a temperature of from about 200° to about 350°F. for about 1–6 hours, said amine being used in an amount to provide sufficient amine groups to replace the said halogen atoms in said intermediate A.

9. A lubricant composition comprising a major amount of a normally liquid oleaginous lubricant, and from about 0.1 to about 10% of the oil-soluble product defined in claim 1.

3,953,350
FOAMING BLEACHING COMPOSITION

Takashi Fujino, Yokohama; Masaaki Nishimura, Funabashi, and Makoto Yamanaka, Koganei, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1974, Ser. No. 516,605
Claims priority, application Japan, Oct. 25, 1973, 48-120245
Int. Cl.² C11D *3/39, 7/54*
U.S. Cl. 252—94 **9 Claims**

1. Sodium percarbonate which has been heated at a temperature of from 75° to 135°C, for a heating time in the range of from (1) 2 to 6 hours at 75°C, to (2) 5 to 30 minutes at 135°C.

3. A bleaching composition consisting essentially of

1. from 30 to 90 weight percent of the sodium percarbonate of claim 1,
2. from 3 to 10 weight percent of water-soluble clothes-washing surfactant, and
3. from 6 to 30 weight percent of water-soluble inorganic builder and filler salts.

3,953,351
LIQUID LAUNDRY DETERGENT

Arnold Arie Keller, Maartensdijk, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Mar. 8, 1974, Ser. No. 449,411
Claims priority, application United Kingdom, Mar. 15, 1973, 12512/73
Int. Cl.² C11D *9/22*
U.S. Cl. 252—132 **3 Claims**

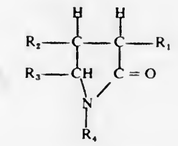
1. A liquid laundry detergent comprising 5–80% by weight of a liquid nonionic surface-active agent having a melting-/pour point of up to 25°C, 95–20% by weight of a fatty acid having a melting/pour point of up to 25°C, selected from the group consisting of saturated C_8-C_{22} fatty acids, unsaturated C_8-C_{22} fatty acids, and mixtures thereof, said fatty acid being neutralised to a degree of 0–40% to produce a water-soluble soap, and 0–20% by weight of water, said detergent having a pH within the range of 4 to 8.

3,953,352
ACIDIC CLEANING COMPOSITION

Hiroshi Mizutani, Yachiyo; Miwako Abe, Ichikawa, and Yumio Nakasone, Funabashi, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

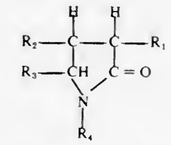
Filed May 31, 1974, Ser. No. 475,636
Claims priority, application Japan, June 4, 1973, 48-62821
Int. Cl.² C11D *3/28;* **C23G** *1/02*
U.S. Cl. 252—142 **6 Claims**

1. A liquid acidic cleaning composition for removing adherent soils and stains from hard surfaces and fabrics consisting essentially of (*a*) from 0.1 to 20 weight percent of at least one pyrrolidone-carboxylic acid compound having the formula:



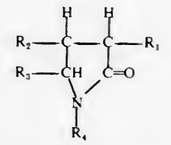
wherein R_1, R_2 and R_3, which can be the same or different, are hydrogen, —COOH, $-CH_3$, $-C_2H_5$ or —OH with the proviso that at least one of R_1, R_2 and R_3 is —COOH, and R_4 is hydrogen, $-CH_3$, or $-C_2H_5$, (*b*) up to 10 weight percent of anionic, cationic, nonionic, or ampholytic water-soluble surfactants effective to promote penetration of the cleaning composition for dispersing and emulsifying disloged soil, (*c*) up to 10 weight percent of mono-or di-ethylene glycol mono alkyl (C_1 to C_4) ethers, (*d*) up to 10 weight percent of hydrotropic agent selected from the group consisting of ethanol, propanol, ethylene glycol, propylene glycol, alkyl (C_1 to C_3) benzene sulfonates, urea and mixtures thereof, sufficient to dissolve (*a*), and (*e*) the balance is water.

5. A liquid cleaning composition for removing adherent soil and stains from hard surfaces and fabrics, consisting essentially of a. from 5 to 15 weight percent of hydrochloric acid, b. from 0.1 to 20 weight percent of at least one pyrrolidone carboxylic acid compound having the formula:



wherein R_1, R_2, and R_3, which can be the same or different, are hydrogen, —COOH, $-CH_3$, $-C_2H_5$ or —OH with the proviso that at least one of R_1, R_2 and R_3 is —COOH, and R_4 is hydrogen, $-CH_3$, or C_2H_5, c. up to 10 weight percent of hydrotropic agent selected from the group consisting of ethanol, propanol, ethylene glycol, propylene glycol, alkyl (C_1 to C_3) benzene sulfonates, urea and mixtures thereof, sufficient to dissolve (b), and d. the balance is water.

6. A solid acid cleaning composition for removing adherent soils and stains from hard surfaces and fabrics, consisting essentially of a. from 0.1 to 50 weight percent of at least one carboxylic acid compound having the formula:



wherein R_1, R_2 and R_3, which can be the same or different are hydrogen, —COOH, $-CH_3$, $-C_2H_5$ or —OH with the proviso that least one of R_1, R_2 and R_3 is —COOH, and R_4 is hydrogen, $-CH_3$ or C_2H_5, and b. the balance is at least one substance selected from the group consisting of sodium chloride, sodium sulfate, sodium bisulfate and potassium bisulfate.

3,953,353
LAUNDERING PRE-SPOTTER AND METHOD OF PRODUCTION

John H. Barrett, Jr., La Mirada, and Brian P. Flynn, Long Beach, both of Calif., assignors to Purex Corporation, Lakewood, Calif.

Filed Nov. 8, 1974, Ser. No. 521,969
Int. Cl.² C11D *17/00*
U.S. Cl. 252—174 **17 Claims**

1. For rub-on application to stains and soil deposits on fabrics preparatory to laundering, the solid product consisting essentially of water soluble nonionic detergent and stable laundry enzyme uniformly dispersed therein, said product being characterized as having ASTM Penetrometer hardness between about 4.5 mm and 10.5 mm measured using a standard needle with 50 gram load.

3,953,354
ENCAPSULATED CALCIUM HYPOCHLORITE GRANULES

John P. Faust, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 150,782, June 7, 1971, abandoned. This application June 27, 1973, Ser. No. 374,153
Int. Cl.² C01B *11/06*; **C11D** *3/395*
U.S. Cl. 252—187 H **17 Claims**

1. A granular calcium hypochlorite composition in which each granule is comprised of a core of calcium hypochlorite containing at least about 65 percent by weight of calcium hypochlorite and less than about 5 percent by weight of water, said core being encapsulated by a coating comprised of a mixture of calcium hypochlorite dihydrate and a water soluble salt selected from the group consisting of alkali metal chlorides, alkali metal nitrates, alkaline earth metal chlorides, alkaline earth metal nitrates, and mixtures thereof, said water soluble salt being nonreactive with and stable to said calcium hypochlorite, said coating comprising from about 5 to about 60 percent by weight of said granule, the proportion of said water soluble salt in said coating ranging from about 0.1 to about 15 percent by weight of said granule, and the proportion of said calcium hypochlorite dihydrate in said coating ranging from about 4 to about 50 percent by weight of said granule.

3,953,355
PREPARATION OF URANIUM NITRIDE

Ralph A. Potter, Lynchburg, Va., and Victor J. Tennery, Upper Arlington, Ohio, assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed May 29, 1974, Ser. No. 474,284
Int. Cl.² C01G *43/00*, *56/00*; **C01F** *15/00*
U.S. Cl. 252—301.1 R **4 Claims**

1. A process for producing a nitride from an actinide metal selected from the group consisting of thorium, uranium, (uranium, plutonium), plutonium, americium, and neptunium comprising the steps of:
heating said metal within a reaction chamber containing a non-reactive atmosphere to a temperature within the range of 450° to 550° C.;
admitting hydrogen to said reaction chamber;
cooling said metal to a temperature at which partial hydriding of said metal occurs;
admitting nitrogen to said reaction chamber so as to flush out said hydrogen;
heating said reaction chamber through a temperature range in which dehydriding and nitriding occur;
maintaining the temperature within said last-mentioned temperature range until nitrogen is substantially no longer consumed;
cooling said reaction chamber to said hydriding temperature;
reheating said reaction chamber to said temperature range in which dehydriding and nitriding occur; and
repeating the above steps until substantially all of said metal is converted to a nitride.

3,953,356
METHOD OF PRODUCING GASEOUS MIXTURE RICH IN HYDROGEN

Tadayoshi Tomita, Kanagawa, Japan, assignor to Toyo Engineering Corporation, Tokyo, Japan

Continuation of Ser. No. 244,549, April 17, 1972, abandoned. This application Apr. 22, 1974, Ser. No. 462,929
Claims priority, application Japan, Apr. 19, 1971, 24480/71
Int. Cl.² C01B *2/02*, *2/16*
U.S. Cl. 252—373 **2 Claims**

1. In a process for producing gaseous mixtures rich in hydrogen from a feedstock of normally liquid hydrocarbons, in which said feedstock is catalytically partially oxidized by an oxidizer selected from the group consisting of oxygen, oxygen-rich air and air in the presence of steam wherein the molar ratio of steam to carbon in said feedstock is 0.5 to 10.0 at a temperature of from higher than 850° to 1000°C, at a pressure in the range of one to 300 atmospheres, at a space velocity of from 500 to 4000/hr, in the presence of a catalyst, the improvement wherein said catalyst is a sintered catalyst consisting of:
from more than 20 percent by weight to 60 percent by weight of calcium oxide,
less than 1.0 percent by weight of silicon dioxide,
less than 3.0 percent by weight of other inorganic contaminants of oxides of metals higher than Group V of the Periodic Table, and
the balance is aluminum oxide.

3,953,357
VERMICULITE PRODUCTS PRODUCED BY EXFOLIATION PULVERIZATION AND CALCINATION

Ian Preston, Johannesburg, South Africa, and John Charles Davidtz, Hopewell, N.J., assignors to Mandoval Vermiculite (Proprietary) Limited, Johannesburg, South Africa

Continuation-in-part of Ser. No. 271,932, July 14, 1972, abandoned. This application Mar. 14, 1974, Ser. No. 451,125
Claims priority, application South Africa, July 15, 1971, 71/4705
Int. Cl.² B01J *21/16*; **B01D** *39/06*; **B28D** *1/32*; **C04B** *31/26*
U.S. Cl. 252—378 R **8 Claims**

1. A method for preparing an improved vermiculite product, which is especially suitable as a filter aid, which comprises
subjecting crude vermiculite to a temperature sufficient to cause exfoliation;
pulverizing the exfoliated vermiculite to a particle size of less than about 200 microns;
heating the pulverized exfoliated vermiculite particles to a temperature and for a time sufficient so that the temperature of the particles themselves is at least 600°C to cause at least partial calcination; and
recovering the partially calcined vermiculite.

3,953,358
MELTS OF POLYHYDRIC ALCOHOLS AS STABILIZERS FOR VINYL CHLORIDE POLYMERS

Carl-Axel E. Sjögreen, Perstorp, Sweden, assignor to Perstorp AB, Perstorp, Sweden

Filed Oct. 16, 1973, Ser. No. 406,936
Claims priority, application Sweden, Nov. 13, 1972, 14680/72
Int. Cl.² C09K *15/06*; **C08L** *91/00*; **C08K** *9/00*, *5/05*
U.S. Cl. 252—407 **3 Claims**

1. A vinyl chloride polymer containing as a stabilizer the solid product obtained by melting together trimethylol propane and pentaerythritol.

3,953,359
DETERMINATION OF PHOSPHORUS

E. Melvin Gindler, Rockford, Ill., assignor to Pierce Chemical Company, Rockford, Ill.

Filed Apr. 23, 1974, Ser. No. 463,405
Int. Cl.² G01N *31/22*, *33/16*
U.S. Cl. 252—408 **17 Claims**

1. In an aqueous solution useful for the spectrophotometric determination of inorganic phosphorus containing a reducing agent effective to reduce a phosphomolybdate complex to yield its characteristic blue color, the improvement wherein the solution also contains a water soluble long chain hydrocarbon amine ethyleneoxide adduct or quaternized derivative thereof which is cationic in acid solution and contains lipophilic and hydrophilic nonionic groups, said adduct or quaternized derivative thereof being present in an amount sufficient to prevent protein precipitation when said solution also contains protein, molybdic acid and a phosphomolybdate complex.

3,953,360
PREPARATION OF SELECTIVE ADSORBING PARTICLES

Masataka Morishita; Mitsuru Fukushima, and Yoshihito Inaba, all of Shizuoka, Japan, assignors to Toyo Jozo Company, Ltd., Japan

Filed Mar. 19, 1974, Ser. No. 452,530
Claims priority, application Japan, Mar. 19, 1973, 48-32048
Int. Cl.² B01J *31/06*
U.S. Cl. 252—428 **7 Claims**

1. A selective adsorbing particle, having an outer diameter from 100 to 5000 microns, consisting of activated charcoal powders and a polymer matrix, said polymer matrix being made of a polymer selected from the group consisting of ethyl cellulose, cellulose acetate, cellulose acetate phthalate, nitro cellulose, hydroxypropylmethyl cellulose phthalate, polyvinyl chloride, polyvinyl formal, polyvinyl butyral, vinyl chloride-vinyl acetate copolymer, vinyl acetate-vinyl propionate copolymer, polyacrylonitrile, polymethacrylonitrile, polydimethylamino ethyl methacrylate, polystyrene, and a mixture thereof, and having a structure that consists of an outer permeable barrier layer of from about 0.5 to 5 microns in thickness having a plurality of micropores from 10 to 50 angstroms in diameter and of a macroporous polymer gel matrix continuous to said barrier layer, said activated charcoal powders being dispersed inner side of said polymer gel matrix in an amount from 20 to 80% by weight based on the dry weight of said particle, and said particle having a void volume equal to at least 25% of the total volume thereof.

3,953,361
METHOD OF MANUFACTURING GRANULAR SOLID CATALYST

Hiroshi Isa; Toshiyuki Ukigai, both of Yachiyo; Anry Tominaga, Tokyo; Ryozo Taniyasu, Narashino, and Masuzo Nagayama, Tokyo, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1974, Ser. No. 527,644
Claims priority, application Japan, Dec. 14, 1973, 48-138784
Int. Cl.² B01J *31/02*
U.S. Cl. 252—429 R **12 Claims**

1. A process for preparing a granular solid catalyst, which comprises: reacting at a temperature of more than 60° C, a reaction mixture consisting essentially of
a. an α-olefin or internal olefin having 3 or more carbon atoms, or mixtures thereof,
b. an aluminum halide, and
c. a ketone selected from the group consisting of methyl ethyl ketone, diethyl ketone, diisobutyl ketone, dioctyl ketone, acetyl acetone, cyclohexanone and pyruvic acid esters
wherein the reaction mixture contains from 1.0 to 1.20 moles of said ketone (c) and more than one mole of said olefin (a), per one mole of said aluminum halide (b),
until there precipitates a granular solid catalyst having a particle size in the range of about 0.1 to 2.0 mm.

3,953,362
MOLYBDENUM SALT CATALYSTS AND METHODS OF PREPARING THEM

Ellwood L. Lines, Westville; John A. Herbst, Madison, and Robert J. Fairbrother, Wallingford, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 30, 1975, Ser. No. 573,293
Int. Cl.² B01J *31/12*
U.S. Cl. 252—431 N **32 Claims**

1. A method of preparing a molybdenum salt catalyst, comprising:
reacting at elevated refluxing temperatures an oxygen-containing molybdenum compound selected from the group consisting of molybdenum dioxide, molybdenum sesquioxide, molybdenum trioxide and the ammonium salt of molybdic acid, and mixtures thereof with about 0.1 to about 4 moles of hydrogen peroxide per mole of molybdenum and about 0.1 to about 4 moles of an amine per mole of molybdenum, the amine being (a) a compound of the formula $R_1R_2R_3N$ wherein R_1, R_2, and R_3 are each independently selected from hydrogen, unsubstituted alkyls having about 1 to about 10 carbon atoms, and unsubstituted aryls having about 6 to about 10 carbon atoms, with the proviso that at least one of R_1, R_2, and R_3 is not hydrogen, or (b) an N-oxide of a tertiary amine compound of the above formula.

3,953,363
CATALYST FOR PURIFYING EXHAUST GASES

Shin Yamauchi, Ikeda; Koshi Horie, Suita; Tetsuji Ono, Amagasaki, and Takashi Ohara, Nishinomiya, all of Japan, assignors to Nippen Shokubai Kogaku Kogyo Co. Ltd., Osaka, Japan

Filed Feb. 11, 1974, Ser. No. 441,627
Claims priority, application Japan, Feb. 14, 1973, 48-17415
Int. Cl.² B01J *23/46*, *23/72*, *23/74*
U.S. Cl. 252—443 **9 Claims**

1. A catalyst for removing nitrogen oxides, carbon monoxide and hydrocarbons from an exhaust gas consisting essentially of, as active components, nickel, copper and at least two noble metals selected from iridium, rhodium and ruthenium, supported on a carrier,
the atomic weight ratio of copper to nickel being 0.2 to 5 to 1;
the atomic weight ratio of the sum of copper and nickel to the sum of the noble metals being 10 to 100,000 to 1; and
the total weight of copper and nickel being 10 to 200 grams per liter of the catalyst, said catalyst being prepared by the steps comprising
a. adding a carrier to a mixed aqueous solution of water-soluble salts of copper and nickel;
b. drying the product of step (a);
c. calcining the dried mixture of step (b);
d. immersing the calcined product of step (c) in an aqueous solution of a salt or an acid of at least two metals selected from the group consisting of iridium, rhodium and ruthenium;
e. drying the product of step (d); and
f. reducing the dried product of step (e) in a reducing atmosphere at a temperature of 300° to 600°C.
to thereby obtain the catalytic product.

3,953,364
THERMACTIVATION OF CATALYSTS COMPRISING CATALYTIC METALS-FREE CRYSTALLINE ZEOLITIC MOLECULAR SIEVE PARTICLES DISPERSED IN A GEL MATRIX

Joseph Jaffe, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 757,503, Sept. 4, 1968, abandoned. This application July 29, 1970, Ser. No. 64,099
Int. Cl.² B01J *29/06*; **C10G** *13/02*
U.S. Cl. 252—455 Z **4 Claims**

1. A catalyst composite comprising:
A. A gel matrix comprising:
a. at least 15 weight percent silica,
b. alumina, in an amount providing an alumina-to-silica weight ratio of 15/85 to 80/20,
c. nickel or cobalt, or the combination thereof, in the form of metal, oxide, sulfide, or any combination thereof, in an amount of 1 to 10 weight percent of said matrix, calculated as metal,
d. molybdenum or tungsten, or the combination thereof, in the form of metal, oxide, sulfide, or any combination thereof, in an amount of 5 to 25 weight percent of said matrix, calculated as metal;

B. A crystalline zeolitic molecular sieve substantially in the ammonia or hydrogen form, substantially free of any catalytic loading metal or metals, said sieve further being in particulate form and being dispersed through said matrix;

said catalyst composite being further characterized by an average pore diameter below 100 Angstroms and a surface area above 200 square meters per gram;

said catalyst composite being further characterized by hydrocracking activities and stabilities developed therein by heating said catalyst composite in an oxygen-containing gas stream at temperatures in the range 1200°F. to 1600°F. for 0.25 to 48 hours.

3,953,365

CATALYST FOR DEHYDROCYCLIZATION OF PARAFFINS

Masayoshi Oishi, Wilmington, Del., assignor to Sun Ventures, Inc., St. Davids, Pa.

Continuation-in-part of Ser. No. 356,002, April 30, 1973, abandoned, which is a division of Ser. No. 250,991, May 8, 1972, Pat. No. 3,775,502. This application Aug. 22, 1974, Ser. No. 499,695

Int. Cl.² B01J *29/06*

U.S. Cl. 252—455 Z **3 Claims**

1. A catalyst consisting essentially of sodium zeolite X or sodium zeolite Y which zeolite contains from 0.10 to 1.2 weight percent platinum having a dispersion of at least 50% and less than 0.10 weight percent chlorine and is substantially free of acid zeolite sites.

3,953,366

CATALYST FOR THE PRODUCTION OF AROMATIC COMPOUNDS

Roger A. Morrison, West Deptford Township, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 300,546, Oct. 25, 1972, Pat. No. 3,855,115. This application Sept. 9, 1974, Ser. No. 504,573

Int. Cl.² B01J *29/06*

U.S. Cl. 252—455 Z **2 Claims**

1. A catalyst comprising a ZSM-5 synthetic aluminosilicate zeolite molecular sieve having incorporated therewith 0.1 to 5 weight percent zinc and having exchanged thereinto rhenium in a proportion of about 0.05 to 5 with respect to said zinc.

3,953,367

METHOD OF PRODUCING A RANEY COPPER CATALYST AND THE CATALYST SO MADE

Karl H. Hoffmann, Brookfield; Donald R. Anderson, Oswego, and Darrell L. Werges, Park Forest, all of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed June 28, 1974, Ser. No. 484,177

Int. Cl.² B01J *21/04, 23/72*

U.S. Cl. 252—463 **29 Claims**

1. In an improved process for preparing a Raney copper catalyst comprising from about 2 to 45 weight percent aluminum and the balance up to 100 weight percent being copper, the improvement which comprises contacting particles of a metal alloy comprised of copper and aluminum with an aqueous solution which has dissolved therein on a 100 weight percent total by-product free solution basis from greater than 0 to about 25 weight percent alkali metal hydroxide and at least one soluble polyhydroxylated material selected from the group consisting of monosaccharide, disaccharide and polysaccharide said polyhydroxylated material having a solubility in water of at least about 5 weight percent, and having a molecular weight of less than about 1,000, said contacting being conducted at a temperature below about 80° C.

3,953,368

POLYMETALLIC CLUSTER COMPOSITIONS USEFUL AS HYDROCARBON CONVERSION CATALYSTS

John H. Sinfelt, Berkeley Heights, N.J., assignor to Exxon Research and Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 194,461, Nov. 1, 1971, Pat. No. 3,850,747, which is a continuation-in-part of Ser. No. 883,601, Dec. 9, 1969, abandoned. This application July 30, 1974, Ser. No. 493,105

Int. Cl.² B01J *21/04, 23/42, 23/46*

U.S. Cl. 252—466 PT **19 Claims**

1. A catalyst composition comprising:

polymetallic clusters of iridium and at least one additional metal selected from the group consisting of ruthenium, rhodium, palladium, osmium, platinum, copper, silver, gold and mixtures thereof, dispersed on a refractory support,

the iridium being present in the overall catalyst composition in an amount greater than 0.1 wt. %, each additional metal being present in an amount of 0.1 to 1.0 wt. %,

the metal dispersion, defined as the percentage of metal atoms in the clusters which are present on the surface, being greater than about 20%,

the average atomic ratio of iridium to each additional metal in the overall catalyst varying from about 1 : 10 to 10 : 1,

the metallic atoms within a cluster being separated by distances of about 2.5 to 4.0A, and

the degree of coverage of the surface of the refractory support by the polymetallic clusters being less than about 10%.

3,953,369

METHOD FOR THE PRODUCTION OF A PLATINUM CATALYST USED FOR PURIFICATION OF EXHAUST AND WASTE GASES

Takashi Ohara, Nishinomiya; Tetsuji Ono, Amagasaki; Shoichi Ichihara, Toyonaka, and Koichi Saito, Suita, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Apr. 2, 1974, Ser. No. 457,209

Claims priority, application Japan, Apr. 6, 1973, 48-38643

The portion of the term of this patent subsequent to July 29, 1992, has been disclaimed.

Int. Cl.² B01J *23/40, 23/42*

U.S. Cl. 252—472 **17 Claims**

1. A method for the production of a platinum catalyst used for purification of exhaust and waste gases comprising depositing platinum on to a porous inorganic refractory support by impregnating said support with an aqueous medium consisting of dinitrodiamine platinum in the presence of at least one poly (oxyethylene) type nonionic surface active agent of an average molecular weight of at least 500, selected from the group consisting of poly(oxyethylene) glycols, poly(oxyethylene) alkyl ethers, poly(oxyethylene) alkylaryl ethers, poly(oxyethylene)-alkyl esters, poly(oxyethylene) alkylamines, poly(oxyethylene)-alkylamides, fatty acid esters of poly(oxyethylene)sorbitanes and poly(oxyethylene)-poly(oxypropylene) block copolymers, drying the resulting impregnated support and subjecting it to calcination or reduction.

3,953,370

METHOD OF ACTIVATING ZINC FERRITE OXIDATIVE DEHYDROGENATION CATALYSTS

Edward J. Miklas, Conroe, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Oct. 16, 1974, Ser. No. 515,235

Int. Cl.² B01J *23/80;* **C07C** *5/48*

U.S. Cl. 252—473 **2 Claims**

1. A process for activating zinc ferrite oxidative dehydrogenation catalyst comprising

depositing a particulate mass comprising zinc ferrite in a fixed bed, and

intimately contacting said zinc ferrite with a continuous stream consisting of steam having a temperature in the range of 700° to 1300°F. for a period of time to activate said zinc ferrite.

3,953,371

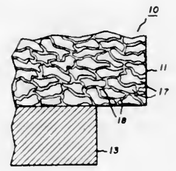
CONTROLLED GRAIN SIZE METAL OXIDE VARISTOR AND PROCESS FOR MAKING

John E. May, Skaneateles, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Nov. 12, 1973, Ser. No. 414,714

Int. Cl.² H01B *1/08*

U.S. Cl. 252—512 **12 Claims**



1. A varistor comprising a sintered body portion consisting essentially of layered granular material of a controlled grain size, said granular material consisting essentially of zinc oxide, said body portion comprising grain growth inhibitor means in an intergranular phase bounding the grains.

7. A process for manufacturing a metal oxide varistor comprising the steps of:

providing a granular metal oxide powder consisting primarily of zinc oxide with a small amount of at least one preselected additive dispersed substantially evenly therethrough;

combining said metal oxide powder with a grain growth inhibitor to form a final mix with peripheral regions containing a relatively high concentration of said grain growth inhibitor surrounding and separating interior regions which contain low concentrations of said grain growth inhibitor; and,

pressing and sintering a varistor pellet with a portion of said final mix, said substep of sintering stimulating substantial grain growth in each of said interior regions.

3,953,372

PREPARATION OF EXTRINSIC SEMICONDUCTORS FOR ELECTRIC HEATING

Janina Gurzynska, Koszalin, and Korneliusz Wesolowski, Warsaw, both of Poland, assignors to Huta Szkla im.Pablinskiego Przedsiebiorstwo Panstwowe, Wolomin, Poland

Filed June 13, 1973, Ser. No. 369,610

Claims priority, application Poland, June 17, 1972, 156060

Int. Cl.² H01B *1/06*

U.S. Cl. 252—518 **3 Claims**

1. The method of preparing a composition, for use as a transparent resistive coating on an insulating substrate, in which the coating can withstand a power loading of 20 watts per square centimeter, said method comprising:

combining a major coating component, comprised of stannic chloride, antimony trichloride and ammonium fluoride;

combining a minor thermoelectric buffer component, comprised of cupreous oxide, boric acid and cadmium chloride;

separately melting each of the resulting components;

intimately mixing the two melts;

freezing the resulting composition;

crushing the resulting frozen composition;

remelting the crushed composition;

refreezing the remelted composition; and

recrushing the thus processed composition.

3,953,373

VOLTAGE-DEPENDENT RESISTOR

Mikio Matsuura; Osamu Makino; Nobuji Nishi, all of Hirakata, and Michio Matsuoka, Ibaragi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed July 18, 1974, Ser. No. 489,827

Claims priority, application Japan, July 20, 1973, 48-81711; Sept. 4, 1973, 48-100047; Sept. 4, 1973, 48-100048; Sept. 4, 1973, 48-100050

Int. Cl.² H01B *1/08*

U.S. Cl. 252—518 **6 Claims**

1. A voltage-dependent resistor of the bulk type comprising a sintered body consisting essentially of 0.1 to 5.0 mole percent of bismuth oxide (Bi_2O_3) and 0.01 to 5.0 mole percent of germanium oxide (GeO_2), the remainder being zinc oxide and electrodes applied to opposite surfaces of said sintered body.

3,953,374

ONE-PASS ELECTROCONDUCTIVE COATING COLOR FORMULATION

Robert H. Windhager, Pittsburgh, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Feb. 19, 1974, Ser. No. 443,272

Int. Cl.² H01B *1/06, 1/00*

U.S. Cl. 252—518 **12 Claims**

1. A method for enhancing the solvent holdout properties of electroconductive coating color formulations containing from 15 to 50% by weight of a water soluble electroconductive polymer, from 30 to 70% by weight of a water soluble, non-conductive film-forming polymeric binder, and from 10 to 60% by weight of a pigment which comprises adding to such formulations from 0.5 to 10% by weight of mono- and bis-(1H,1H,2H,2H-perfluoroalkyl)-phosphate esters of the formula:

$$(C_mF_{2m+1}C_nH_{2n}O)_yPO(OM)_{3-y}$$

wherein m is an integer between 4 and 10, n is an integer between 1 and 11, y is 1 or 2 and M is a water solubilizing cation selected from the group consisting of an alkali metal, ammonium or substituted ammonium.

3,953,375

NON-LINEAR VOLTAGE TITANIUM OXIDE RESISTANCE ELEMENT

Takahiro Nagano, and Michio Oue, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 11, 1974, Ser. No. 441,318

Claims priority, application Japan, Feb. 9, 1973, 48-15496

Int. Cl.² H01B *1/06;* **H01C** *1/06*

U.S. Cl. 252—520 **15 Claims**

1. A non-linear voltage resistant element comprising a sintered body of a powdered metal oxide mixture, said mixture consisting essentially of 0.05 to 10 molar % of bismuth trioxide, 0.05 to 3 molar % of niobium pentaoxide, and the remainder being titanium oxide, said body being sintered at a sintering temperature no higher than the melting point of titanium oxide and no lower than a temperature at which a melt of metal oxides is produced in an oxidizing or non-oxidizing atmosphere.

13. A titanium oxide base non-linear voltage resistance element comprising a formed and sintered body of metallic oxide powder, said metallic oxide powder consisting of bismuth trioxide powder of 0.05 to 10 molar %, niobium pentaoxide powder of 0.05 to 3 molar %, and titanium oxide powder in quantity of the remainder of said metallic oxide powder, and said body being sintered at 1000° to 1400°C. in a non-oxidizing atmosphere wherein the stoichiometric bond-

ing ratio of oxygen atoms to titanium atoms in titanium oxide contained in the sintered body is less than 2.

3,953,376
METHOD FOR PREPARING EMISSIVE COATING FOR ELECTRODES

Edmund R. Kern, Hampton, N.H., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed July 10, 1974, Ser. No. 487,409
Int. Cl.² H01B 1/06
U.S. Cl. 252—521 **2 Claims**

1. A method for preparing electron emissive coating for electrical gas discharge devices comprising the following steps:

combining barium carbonate with tantalum pentoxide in the ratio of $5BaCO_3$ to $1Ta_2O_5$;

milling the mixture in a suspension of methyl alcohol for obtaining a homogeneous suspension therein;

drying the suspension and heating for one hour at 800°C and for 2 hours at 1200°C;

cooling and grinding to a powder form; and

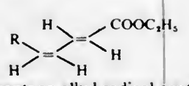
adding 5 to 25% calcium carbonate and suspending in a solution of nitrocellulose and amyl acetate in order to provide a coating suspension.

3,953,377
ETHYL-2-TRANS-4-CIS UNDECADIENOATE, ETHYL-2-TRANS-4-CIS DODECADIENOATE AND ETHYL-2-DECADIENOATE PERFUME COMPOSITIONS

Ferdinand Naf, Geneva, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

Division of Ser. No. 210,620, Dec. 21, 1971, Pat. No. 3,928,402. This application Aug. 27, 1974, Ser. No. 501,194
Claims priority, application Switzerland, Dec. 22, 1970, 19018/70; Apr. 29, 1971, 6354/71
Int. Cl.² C11B 9/00
U.S. Cl. 252—522 **4 Claims**

1. A process for modifying, improving or enhancing the olfactory properties of perfume compositions which comprises adding thereto an effective fragrance amount of at least one compound of formula



wherein R represents an alkyl radical containing 1 or from 4-7 carbon atoms.

3,953,378
MINERAL CARRIER FOR VOLATILE SUBSTANCES AND PROCESS FOR PREPARING SAME

Bruno T. Lasser, Givrins, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

Filed Nov. 18, 1974, Ser. No. 525,021
Claims priority, application Switzerland, Nov. 21, 1973, 16439/73; Apr. 5, 1974, 4847/74
Int. Cl.² A61K 7/46
U.S. Cl. 252—522 **12 Claims**

1. A process for preparing a gypsum carrier destined to have incorporated therein a perfume or mixture of perfumes comprising hydrating plaster with an effective amount to cause hydration of a dilute aqueous solution of a glycol selected from polyethylene glycol, polypropylene glycol, polyethylene glycol monoethyl ether, polyethylene glycol lauryl ether, polyethylene glycol nonylphenyl ether and mixtures thereof.

5. A process for preparing a perfumed gypsum article comprising mixing plaster with an effective amount to cause hydration of a dilute aqueous solution of a glycol selected from polyethylene glycol, polypropylene glycol, polyethylene glycol monoethyl ether, polyethylene glycol lauryl ether, polethylene glycol nonylphenyl ether and mixtures thereof and incorporating into the mixture a perfume or mixture of perfumes.

3,953,379
MANUFACTURE OF IMPROVED AQUEOUS ALKALI METAL SILICATE-ALKALI METAL HYDROXYALKYL IMINODIACETATE COMPOSITIONS

Francis R. Cala, Somerville, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 26, 1973, Ser. No. 410,222
Int. Cl.² C11D 3/08
U.S. Cl. 252—527 **16 Claims**

1. A method for the manufacture of composition of aqueous alkali metal silicate-imino salts selected from the group consisting of alkali hydroxy C_2–C_4 alkyl iminodiacetates and propionates which comprise admixing said imino salt at an elevated pH above the normal pH of said salt in water with a solution of the alkali metal silicate and producing therefrom an aqueous composition containing the said imino salt and the alkali metal silicate wherein the gellation and/or precipitation which would normally be obtained from admixing of the said components with the pH of the said imino salt unelevated is prevented or decreased, wherein the ratio to alkali metal oxide, M_2O to SiO_2 in said alkali metal silicate is from 1:1.6 to 1:3.

3,953,380
LIQUID DETERGENT

Bjorn Sundby, Piscataway, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 84,945, Oct. 28, 1970, abandoned. This application Mar. 30, 1973, Ser. No. 346,681
Int. Cl.² C11D 1/72
U.S. Cl. 252—543 **8 Claims**

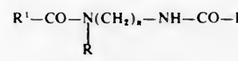
1. A clear, concentrated liquid detergent composition suitable for laundry use containing no more than 7% by weight of anionic detergent and being free from inorganic and organic builder salts except in sequestering amounts of up to 3% by weight which consists essentially of by weight from 40 to 75% of a nonionic detergent having the formula $RO(C_2H_4O)_nH$, wherein R is a straight chain alkyl of 10 to 18 carbon atoms and n is from 5 to 14, said n being about 0.5 to 1 times the number of carbon atoms in R, (B) 0.5 to 5% of a normally partially water-insoluble fluorescent brightener, (C) 5 to 35% of water, and (D) 5 to 35% of ethanol or isopropanol, with the proportions of (A), (B), (C) and (D) being such that the alkanol-ethylene oxide condensation product solubilizes the fluorescent brightener in the water-alcohol solvent system.

3,953,381
COMPOSITION CONTAINING DIAMIDE AND HALOCARBON FOR TREATMENT OF SURFACES

Jean-Pierre Remond, Massy-Villaine; Jean-Claude Vitat, Antony, and Jean-Robert Thebault, Paris, all of France, assignors to Rhone-Progil, Courbevoie, France

Filed Nov. 7, 1973, Ser. No. 413,607
Claims priority, application France, Nov. 9, 1972, 72.39677; May 8, 1973, 73.16473
Int. Cl.² C11D 3/32, 7/32, 7/30
U.S. Cl. 252—544 **9 Claims**

1. A homogeneous liquid composition, comprising (a) 90 to 99.95% by weight of a solvent of which at least 50% by weight is trichloro-1,1,2-trifluoro-1,2,2-ethane, and (b) 0.05 to 10% by weight of one or more diamides having the formula (I):



in which

R is a saturated or unsaturated aliphatic hydrocarbon group having from 1 to 25 carbon atoms,

R^1 is an aliphatic hydrocarbon group having from 10 to 30 carbon atoms and at least one ethylenic double bond, and

n is a whole number from 1 to 9.

3,953,382
DETERGENT COMPOSITIONS

Roger E. Nelson, Verona, and Allan H. Gilbert, Oradell, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed May 30, 1973, Ser. No. 365,342
Int. Cl.² C11D 1/825
U.S. Cl. 252—548 **9 Claims**

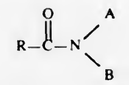
1. A detergent composition comprising a ternary combination of:

i. a water-soluble polyetheneoxy organic nonionic detergent compound of a condensate of ethylene oxide and a primary or secondary alkanol having about 8 to about 16 carbon atoms, the proportion of combined ethylene oxide being from about 52% to about 80% by weight, and mixtures thereof;

ii. a substantially water-insoluble polyalkyleneoxy nonionic compound of a condensate of ethylene oxide and a primary or secondary alkanol having about 8 to about 16 carbon atoms, the proportion of combined ethylene oxide being from about 10% to about 51% by weight, and mixtures thereof; and

iii. an organic compound selected from the group consisting of

a. N-alkanol alkaneamides having the formula



wherein R is an alkyl group having about 8 to about 18 carbon atoms, A is an alkanol group having 1–3 carbon atoms, and B is a member selected from the group of hydrogen and an alkanol group having 1–3 carbon atoms,

b. tertiary amine oxides having the formula $R^1R^2R^3N \rightarrow O$ wherein R^1 is an alkyl group having about 8 to about 18 carbon atoms, and R^2 and R^3 are independently methyl, ethyl, or hydroxyethyl groups, and

c. alkyl sulfoxides having the formula $R^4R^5S \rightarrow O$ wherein

1. R^4 is alkyl having about 10 to about 18 carbon atoms,

2. R^5 is an alkyl radical having 1 to 2 carbon atoms, or a hydroxyethyl radical,

and mixtures thereof;

wherein the proportion of said water-soluble polyetheneoxy organic nonionic detergent compound (i) is about 15% to about 70% by weight of said ternary combination, the proportion of said substantially water-insoluble polyetheneoxy nonionic compound (ii) is about 2% to about 8% by weight, and the proportion of said organic compound (iii) is about 2% to 80% by weight and the weight ratio of (ii) to (iii) is about 15:1 to about 1:15, said percentages being by weight of said ternary combination.

3,953,383
CATALYTIC PROCESS FOR COPOLYMERIZING EPOXY COMPOUNDS WITH CARBON DIOXIDE

Shohei Inoue, Tokyo; Masaki Kanbe, Fujisawa; Tadamichi Takada, Yokohama; Nobuyuki Miyazaki, and Masanori Yokokawa, both of Fujisawa, all of Japan, assignors to Nippon Oil Seal Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 380,222, July 18, 1973, Pat. No. 3,900,424. This application Nov. 12, 1974, Ser. No. 523,160
Claims priority, application Japan, July 21, 1972, 47-73616; July 24, 1972, 47-73443
Int. Cl.² C08G 63/62
U.S. Cl. 260—2 BP **7 Claims**

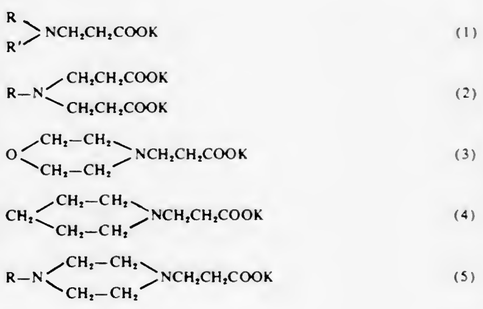
1. A process for producing a copolymer of an epoxy compound with carbon dioxide, comprising copolymerizing an epoxy compound with carbon dioxide in the presence of a catalyst composition comprising the reaction product of (a) an organo-metallic compound having the general formula R'_nM, wherein n is 2 or 3, at least one R′ is selected from the group consisting of an alkyl group, an alicyclic group and halogen, hydroxy and alkoxy derivatives thereof, and hydrogen, the remaining R′ groups are selected from the group consisting of alkyl groups, alicyclic groups, alkaryl groups, aralkyl groups, aryl groups and halogen, hydroxy and alkoxy derivatives thereof, and M is a metal element selected from the group consisting of those metal elements in Groups II and III of the Periodic Table, (b) at least one co-catalyst component selected from the group consisting of sulfur and compounds containing one or more active hydrogen atoms in a molar ratio to the organo-metallic compound within the range of from about 0.1 to about 5.0, and (c) carbon dioxide gas under a pressure at room temperature of from about 5 to about 50 kg/cm² and in a molar ratio to the organo-metallic compound of at least 1, said reaction product having been obtained by reacting together said reactants at a temperature between room temperature and about 300°C for a time of from about 0.1 to about 100 hours, the copolymerization being carried out at a temperature within the range of from about 0°C to about 150°C.

3,953,384
PROCESS FOR PREPARING POLYURETHANE FOAMS

Makoto Funatsu; Shinichiro Yasuda, and Toshimitu Hiraizumi, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1974, Ser. No. 517,933
Claims priority, application Japan, Oct. 30, 1973, 48-122007
Int. Cl.² C08G 18/18, 18/20
U.S. Cl. 260—2.5 AC **3 Claims**

1. In a process for preparing polyurethane foam by reacting a polyol having at least two active hydrogen atoms, with a polyisocyanate, the improvement which comprises carrying out the reaction in the presence of a catalytic amount of a compound selected from the group consisting of compounds having the formulas



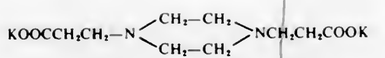
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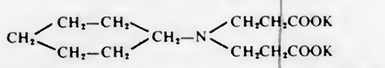
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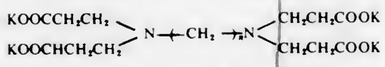
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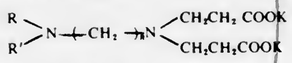
(6)



(7)



(8)



(9)

wherein R and R′ are alkyl having 1 to 18 carbon atoms, an *n* is an integer from 2 to 6, and mixtures thereof, as a catalyst.

3,953,385

NOVEL PRODUCTS AND PROCESS

Robert D. Dworkin, Old Bridge, and Adam J. Ejk, Piscataway, both of N.J., assignors to M&T Chemicals Inc., Greenwich, Conn.

Division of Ser. No. 409,414, Oct. 25, 1973, abandoned. This application Dec. 5, 1974, Ser. No. 529,798

Int. Cl.² C08J *9/06*

U.S. Cl. 260—2.5 P **2 Claims**

1. A composition for preparing rigid cellular vinyl chloride polymers, said composition comprising

a. 100 parts by weight of a vinyl chloride homopolymer or a copolymer of vinyl chloride with a copolymerizible ethylenically unsaturated monomer,

b. between 0.1 and 10 parts of a blowing agent, and

c. between 0.1 and 10 parts of a combined blowing agent activator and heat stabilizer which in turn comprises a diorganotin mercaptide compound of the formula $R_2^1Sn(SR^2)_2$ wherein R^1 and R^2 are hydrocarbyl groups.

3,953,386

AQUEOUS EMULSIONS CONTAINING HOMOGENEOUS PARTICLES OF CELLULOSIC ESTER/ACRYLIC POLYMERS

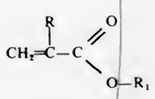
Charles Vincent Murphy, and David William Zunker, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed July 2, 1974, Ser. No. 485,271

Int. Cl.² C08L *1/18, 1/10*

U.S. Cl. 260—17 A **7 Claims**

1. An aqueous polymer emulsion comprising an aqueous continuous phase and dispersed therein particles having an average diameter of up to 5 microns, said particles being substantially a homogeneous blend of a water insoluble cellulosic ester and a polymer derived from at least one monomer of the formula:



where R is hydrogen or methyl radical, and R_1 is an alkyl radical of 1 to 20 carbon atoms; cycloalkyl wherein the alkyl is 5 or 6 carbon atoms; $-CH_2CH_2OCH_2CH_3$; $-C_6H_5$ or $-CH_2C_6H_5$, said cellulosic ester being soluble in said monomer in the amount of at least about 10 percent by weight.

3,953,387

STABILIZED THERMOPLASTIC POLYURETHANES

Larry G. Wolgemuth, Cherry Hill, and Benjamin C. Wilbur, Williamstown, both of N.J., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 6, 1974, Ser. No. 521,213

Int. Cl.² C08K *5/13*

U.S. Cl. 260—18 TN **7 Claims**

1. A thermally stabilized organotin-containing polyurethane composition containing as the stabilizer about 0.001 to 5%, based on the weight of polyurethane in the composition, of a mixture containing a carboxylic acid component consisting of at least one carboxylic acid selected from the group consisting of lauric acid, palmitic acid, and stearic acid; and a sterically hindered phenol component containing at least one tertiary alkyl group in a position ortho to the ring hydroxyl group, the ratio of total carboxylic acid to sterically hindered phenol compound varying from about 1:19 to 19:1.

3,953,388

THERMALLY STABLE POLYCARBONATE

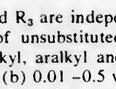
Frank Nunzio Liberti, Mount Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 320,255, Jan. 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 103,824, Jan. 4, 1971, Pat. No. 3,729,440. This application Jan. 8, 1975, Ser. No. 539,293

Int. Cl.² C08J *3/20*

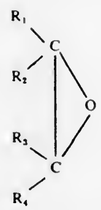
U.S. Cl. 260—18 EP **4 Claims**

1. A thermally stable aromatic polycarbonate composition stabilized with (a) 0.005 to 1.0 weight percent of a phosphinite of the following formula:



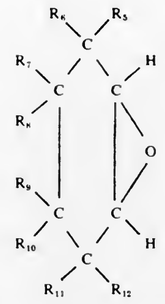
wherein R_1, R_2, and R_3 are independently selected from the group consisting of unsubstituted and halogen-substituted alkyl, aryl, cycloalkyl, aralkyl and alkaryl radicals of 1–25 carbon atoms, and (b) 0.01 –0.5 weight percent of an epoxy compound selected from the group consisting of:

I. Derivatives of epoxy ethane represented by the following formula:



wherein R_1, R_2, R_3 and R_4 are independently selected from the group consisting of hydrogen, an alkyl radical or 1–24 carbon atoms, an aryl radical of 6–24 carbon atoms, $-CH_2OR'$, $-CH_2OCOR'$, $-CH_2OCOR''COOCH_2X$, $CH_2OR''OCH_2X$ wherein R′ is selected from the group consisting of an alkyl radical of 1–24 carbon atoms or an aryl radical of 6 to 24 carbon atoms and wherein R″ is an alkylene radical of 1–24 carbon atoms and X is an oxirane ring.

II. Derivatives of epoxy cyclohexane represented by the following formula:



wherein R_5 through R_{12} are independently selected from the group consisting of hydrogen, alkyl radicals of 1–24 carbon atoms, $-COOR_{13}$, $-OCOR_{13}$, $-COOR_{14}X$, $-OCOR_{14}-COOX$ wherein R_{13} is an alkyl radical of 1–24 carbon atoms and R_{14} therein is an alkylene radical of 1–24 carbon atoms and X is an oxirane ring.

3,953,389

PREPARATION OF POWDERED RUBBERS

Gilbert John Holliday, Shrewsbury, and John Norris, Clanfield, near Portsmouth, both of England, assignors to BP Chemicals International Limited, London and G. J. Holliday (Plastics) Limited, both of, England

Continuation of Ser. No. 435,738, Jan. 23, 1974, abandoned. This application May 28, 1975, Ser. No. 581,494

Int. Cl.² C08C *3/00, 4/00;* **C08K** *11/00, 11/72*

U.S. Cl. 260—23.7 M **9 Claims**

1. A process for the preparation of a free-flowing powdered rubber which comprises reducing a rubber to a fine powder by air attrition in which coarse ground rubbery material is conveyed through a comminution zone by a current of air, adding an aqueous dispersion of an anti-tack agent to the fine powdered rubbery material and suspending the rubbery material in a powdered form in a stream of a gas, removing at least part of the water, and subsequently treating the powdered rubbery material with a dusting powder.

3,953,390

PROCESS FOR PREPARING A COMPOSITION FOR THE SURFACE OF ROADS, AIRPORT RUNWAYS AND LIKE SURFACES AND THE PRODUCTS OBTAINED

Marcel Ceintrey, Marly-le-Roi, France, assignor to Societe Chimique, Routiere et d'Entreprise Generale (S.C.R.E.G.), Paris, France

Filed May 6, 1974, Ser. No. 467,568

Claims priority, application France, May 10, 1973, 73.16935

Int. Cl.² C08L *91/00*

U.S. Cl. 260—28.5 AS **5 Claims**

1. In a process for preparing a composition for the surface of roads, airport runways, canals, dams and like surfaces, by mixing in a mixer mineral granulates with 4 to 12% by weight, with respect to the weight of the granulates, of a binder consisting essentially of 93 to 96% by weight of a first component selected from fluxed coal pitch and fluxed coal tar and 4 to 7% by weight of a second component selected from a polymer of vinyl chloride and a copolymer of vinyl chloride, the improvement consisting of (*a*) mixing first in 5–20 sec. said second component in the form of a powder having a particle size of less than 100 microns with the granulates previously heated to a temperature between 120° and 160°C, (*b*) thereafter introducing said first component in the mixer in contact with the mixture thus obtained, and (*c*) further mixing the composition, the total mixing time of steps (*a*) and (*c*) being of from 40 sec. to 90 sec.

3,953,391

CATIONIC ACRYLIC ELECTRODEPOSITABLE COMPOSITIONS

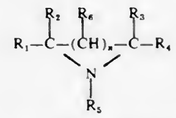
Rostyslaw Dowbenko, and Wen-Hsuan Chang, both of Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 47,860, June 19, 1976, Pat. No. 3,679,564. This application Mar. 9, 1972, Ser. No. 233,319

Int. Cl.² C08L *33/14*

U.S. Cl. 260—29.6 TA **5 Claims**

1. An aqueous electrodeposition bath comprising an aqueous dispersion of a coating composition comprising an acid solubilized interpolymer prepared by reacting at least a portion of the carboxyl groups of an interpolymer, prepared from an ethylenically-unsaturated carboxylic acid and at least one other ethylenically-unsaturated monomer, with an imine of the formula:



where R_1, R_2, R_3, R_4 and R_5 are each hydrogen, alkyl, aryl, alkaryl or aralkyl, R_6 is hydrogen or a lower alkyl radical, usually not having more than 6 carbon atoms, and *n* is 0 or 1.

3,953,392

STYRENE RESIN COMPOSITION

Masaru Higuchi; Hajime Ohnishi, and Hiroshi Yagihara, all of Seitama, Japan, assignors to Daicel Ltd., Osaka, Japan

Division of Ser. No. 376,318, July 5, 1973, Pat. No. 3,883,464, and a continuation-in-part of Ser. No. 212,787, Dec. 27, 1971, Pat. No. 3,817,900. This application Jan. 27, 1975, Ser. No. 544,055

Claims priority, application Japan, Dec. 30, 1970, 45-122245; Nov. 17, 1971, 46-92284

The portion of the term of this patent subsequent to May 13, 1992, has been disclaimed.

Int. Cl.² C08K *5/13, 5/15*

U.S. Cl. 260—30.4 A **8 Claims**

1. A thermoplastic synthetic resin moldable composition, consisting essentially of

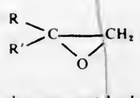
A. a synthetic resin consisting of (1) 3 to 50 percent by weight of rubber component,

and the balance of said resin is (2) a copolymer grafted onto said rubber component, said copolymer consisting of

a. from 50 to 90 percent by weight, based on said copolymer; of at least one first monomer component selected from the group consisting of styrene, α-methyl styrene and nucleus substituted styrenes, and the balance of said copolymer is

b. at least one second monomer component selected from the group consisting of acrylonitrile and the methyl, ethyl and butyl esters of acrylic acid and methacrylic acid, said resin having blended therein,

B. from 0.01 to 3.0 percent by weight, based on the weight of said resin, of one or a mixture of lubricants of the formula



wherein R and R′ each represent hydrogen or straight chain alkyl and the sum of the carbon atoms in R and R′ is 14 to 42.

3,953,393

LOW TEMPERATURE PROCESS FOR THE PREPARATION OF GRAFT COPOLYMER DISPERSIONS

Gerhard G. Ramlow, Ludwigshafen, Germany; Louis C. Pizzini, Trenton, and John T. Patton, Jr., Wyandotte, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 7, 1974, Ser. No. 431,081
Int. Cl.² C08K *5/06, 5/10;* **C08L** *51/08, 67/06*
U.S. Cl. 260—31.8 R **8 Claims**

1. In a process for the preparation of graft copolymer dispersions which comprises the in situ polymerization of from 1% to 30% by weight based on the weight of polyol mixture of a vinyl monomer or mixture of said monomers in a co-reactive unsaturation-containing polyol mixture containing from 0.1 mole to 3.0 moles of unsaturation per mole of polyol mixture in the presence of from 0.05% to 5% by weight based on the weight of said vinyl monomer of a free radical catalyst, the improvement which comprises carrying out the polymerization at a temperature below 100°C. and in the presence of from 0.1% to 2% by weight based on the weight of vinyl monomer of an alkyl mercaptan chain transferring agent.

3,953,394

POLYESTER ALLOYS AND MOLDING COMPOSITIONS CONTAINING THE SAME

Daniel W. Fox, and Allen D. Wambach, both of Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 15, 1971, Ser. No. 199,037
Int. Cl.² C08L *67/02*
U.S. Cl. 260—40 R **40 Claims**

1. A thermoplastic, stable blended composition that is rigid at a temperature of 75°–90°F comprising
   a. from about 1 to about 99 parts by weight of a poly-(ethylene terephthalate) resin and
   b. from about 99 to about 1 part by weight of a poly(1,4-butylene terephthalate) resin or a copolyester thereof with a minor amount of an aliphatic or aromatic dicarboxylic acid or an aliphatic polyol.

3,953,395

NOVEL COMPOSITIONS SUITABLE FOR MOLDING

Eugene Richard Farone, Mentor, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 423,337, Dec. 10, 1973, abandoned. This application Aug. 28, 1974, Ser. No. 501,126
Int. Cl.² C08L *67/06*
U.S. Cl. 260—40 R **30 Claims**

1. A composition of matter which has a Brookfield viscosity at 93°C. lower than about 10,000 cp. and which is
   substantially non-volatile;
   solid and substantially storage stable within a lower temperature range which includes ambient and normal storage temperatures;
   liquid, homogeneous, substantially non-reactive and capable of wetting or saturating a filler or reinforcing medium and thereafter remaining liquid within an intermediate temperature range which includes temperatures between about 50° and 150°C.;
   readily and reversibly convertible from the solid to the liquid state by varying the temperature between said lower and intermediate ranges;
   capable of being chemically converted to an infusible state within a higher temperature range, but liquid until so converted;
   said composition comprising
   A. at least one component which is capable of chemical conversion to an infusible state by reaction with at least one other reagent; and
   B. a component or combination of components capable of reaction with component A to cause said chemical conversion;
   the weight ratio of component A to component B being between about 0.8:1 and 2:1;
   with the proviso that when component A is an unsaturated polyester, component B is not an N-3-oxohydrocarbon-substituted acrylamide

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3,953,396

FLAME RETARDANT POLYCARBONATE COMPOSITION

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 28, 1973, Ser. No. 429,128
Int. Cl.² C08K *5/42;* **C08L** *69/00*
U.S. Cl. 260—45.8 A **8 Claims**

1. A flame retardant aromatic carbonate polymer composition comprising in admixture an aromatic carbonate polymer and a minor amount of a metal salt of substituted and unsubstituted sulfonic acids of monomeric aromatic ethers, and mixtures thereof, wherein said metal salts thereof are selected from the group consisting of alkali metals and alkali earth metals, and mixtures of these metal salts, and said substituent on the metal salt of the substituted sulfonic acids of aromatic ethers is selected from the group consisting of electron withdrawing radicals and mixtures of electron withdrawing radicals.

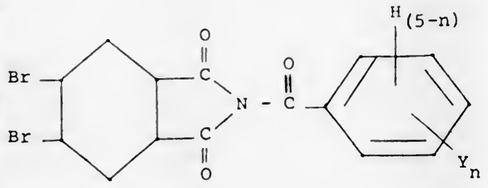
3,953,397

N-(HALOBENZOYL)-3,4-DIBROMOHEXAHYDROPHTHALIMIDES

Sidney B. Richter, Chicago, and Glendon D. Kyker, Glen Ellyn, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Apr. 14, 1975, Ser. No. 567,467
Int. Cl.² C07D *209/48;* **C08R** *3/20, 5/34*
U.S. Cl. 260—45.75 B **11 Claims**

1. A compound of the formula



wherein Y is chlorine or bromine and n is an integer from 2 to 5.

6. A fire retardant polymeric composition comprising a combustible polymer and a fire retarding amount of a compound of claim 1.

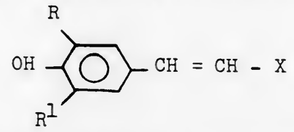
3,953,398

AGE RESISTANT POLYMERIC COMPOSITIONS

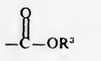
Richard H. Kline, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 56,635, July 20, 1970, Pat. No. 3,714,122. This application Oct. 26, 1972, Ser. No. 300,959
Int. Cl.² C08J *3/20*
U.S. Cl. 260—45.85 B **5 Claims**

1. An age resistant polymeric composition comprising a polymer susceptible to oxygen degradation having incorporated therin a stabilizing amount of at least one phenolic compound having the following structural formula:



wherein R and R^1 are tertiary alkyl groups having 4 to 8 carbon atoms and wherein X is



wherein R^3 is selected from the group consisting of hydrogen and alkyl groups having from 1 to 4carbon atoms.

3,953,399

FLAME RETARDANT POLYCARBONATE COMPOSITION

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 28, 1973, Ser. No. 429,127
Int. Cl.² C08K *5/42;* **C08L** *69/00*
U.S. Cl. 260—45.85 H **6 Claims**

1. A flame retardant aromatic carbonate polymer composition comprising in admixture an aromatic carbonate polymer and a minor amount of a metal salt of monomeric substituted and unsubstituted sulfonic acids of aromatic carboxylic acids and esters, and mixtures thereof, wherein said metal salts thereof are selected from the group consisting of alkali metals and alkali earth metals, and mixtures of these salts and said substituent on the metal salt of the substituted sulfonic acids of aromatic carboxylic acids and esters is selected from the group consisting of an electron withdrawing radical and mixtures of electron withdrawing radicals.

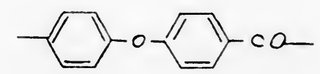
3,953,400

POLYKETONES AND METHODS THEREFOR

Klaus J. Dahl, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 218,465, Jan. 17, 1972, abandoned, which is a continuation-in-part of Ser. No. 115,824, Feb. 16, 1971, abandoned. This application Mar. 15, 1974, Ser. No. 451,521
Int. Cl.² C08G *65/38, 65/40*
U.S. Cl. 260—47 R **27 Claims**

1. A crystalline melt-processable polymer consisting essentially of repeating units of formula



having a mean inherent viscosity within the range from about 0.8 to about 1.65 and elongation of at least about 50%.

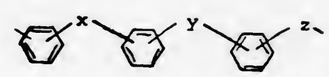
3,953,401

PROCESS FOR SEPARATING AROMATIC POLYMERS FROM SOLUTION

Rudolf Gabler, Vitikon, and Josef Studinka, Zurich, both of Switzerland, assignors to Inventa AG fur Forschung und Patentverwertung, Zurich, Switzerland

Filed Jan. 22, 1974, Ser. No. 435,555
Claims priority, application Switzerland, Jan. 26, 1973, 1114/73
Int. Cl.² C08G *65/40, 69/46, 75/24*
U.S. Cl. 260—49 **8 Claims**

1. A process for isolating a high molecular weight aromatic polymer in the form of a fine, uniform powder, said polymer being easily freed of residual salts and solvent, which comprises
   a. dissolving in an aprotic solvent a polymer having the repeating structure (I):



(I)

in which the linking bonds on any particular benzene ring are positioned meta or para to each other, in which x, y and z, each being the same or different, consist of the radicals —O—, —S—, $—SO_2—$ —CO—, —CONH—, —N=N—, $—C(CH_3)_2—$, $—(CH_2)_n—$ where n is 1 or 2, or a direct bond between the benzene rings; and
   b. spraying the polymer solution onto the surface of a moving precipitation medium having the formula ROH in which R is a hydrogen or an alkyl group having 1 to 4 carbon atoms, thereby precipitating said polymer in a fine, uniform powder.

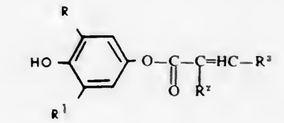
3,953,402

AGE RESISTANT POLYMERS OF DITERTIARY ALKYL-4-HYDROXYARYL ACRYLATE AND DIENES

Richard H. Kline, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 20, 1970, Ser. No. 56,633
Int. Cl.² C08D *1/24, 1/09, 3/06;* **C08F** *15/02*
U.S. Cl. 260—62 **24 Claims**

1. A process of preparing an age resistant polymeric composition comprising polymerizing in an emulsion free radical polymerization system, a monomer system containing at least one phenolic monomer having the following structural formula:



wherein R and R^1 are tertiary alkyl radicals having from 4 to 8 carbon atoms, R^2 is selected from the group consisting of hydrogen; alkyl radicals having from 1 to 4 carbon atoms, carboxymethyl radical and carbalkoxymethyl radicals and wherein R^3 is selected from the group consisting of hydrogen;

alkyl radicals having from 1 to 4 carbon atoms, phenyl and substituted phenyl radicals having located in the para position at least one radical selected from the group consisting of alkyl radicals having 1 to 4 carbon atoms and alkoxy radicals having 1 to 2 carbon atoms, carboxyl radical and carbalkoxy radicals, and wherein the monomer system contains at least 40 parts by weight of diene monomer per 100 parts by weight of total monomer in the monomer system.

3,953,403

POWDER COATING COMPOSITION

Kanji Fujiyoshi; Yutaka Mizumura, and Junji Sono, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed June 25, 1973, Ser. No. 373,218

Claims priority, application Japan, June 28, 1972, 47-65317; June 29, 1972, 47-65687

Int. Cl.² C08G *63/12*

U.S. Cl. 260—75 T **6 Claims**

1. A powdered composition comprising

1 a terephthalic acid-based unsaturated polyester which is prepared by reacting

a terephthalic acid or its lower alkyl ester,

b an α-olefinic dicarboxylic acid or its anhydride,

c an organic acid having at least three carboxyl groups in the molecule or its anhydride, and

d an aliphatic or alicyclic glycol; and

2 an organic peroxide and a polyanhydride having at least two acid anhydride groups.

3,953,404

SOLID STATE POLYMERIZATION OF POLY(1,4-BUTYLENE TEREPHTHALATE)

Willem F. H. Borman, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Feb. 7, 1974, Ser. No. 440,443

Int. Cl.² C08G *63/26*

U.S. Cl. 260—75 M **11 Claims**

1. A method for the solid-state polymerization of a high melt viscosity branched copolyester of poly(1,4-butylene terephthalate) that includes from 0.01 to 3 mole percent, based on the terephthalate units, of units of a branching component which contains at least three ester-forming groups, said polyester having an intrinsic viscosity of greater than about 1.05 deciliters per gram, measured as a solution in a 60:40 mixture of phenol and tetrachloroethane at 30°C., said process comprising:

a. transforming a corresponding polyester having an intrinsic viscosity of from about 0.1 to about 1.0 deciliters per gram as measures as a solution in a 60:40 mixture of phenol and tetrachloroethane at 30°C. into pellets; and

b. heating the particles of solid polyester at a temperature of about 150°C. and below the melting point of said polyester in the presence of a mixture of an inert gas and a minor amount of 1,4-butanediol, which is formed by passing said inert gas through a heated zone containing said 1,4-butanediol, until the desired degree of increase in intrinsic viscosity is obtained.

3,953,405

METHOD FOR PREPARING LOW PILLING EFFECT POLYESTER FIBER PRODUCTS

Roland Feinauer; Karl-Heinz Magosch, and Jorn Ruter, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft

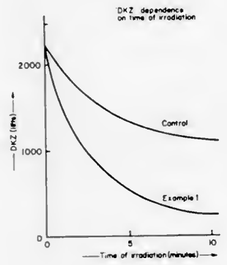
Filed Aug. 5, 1974, Ser. No. 495,074

Claims priority, application Germany, Sept. 11, 1973, 2345653

Int. Cl.² C08G *63/12*

U.S. Cl. 260—75 T **14 Claims**

1. An improvement in the process of melt spinning ethylene terephthalate polyester to produce textile fibers having substantially decreased pilling in fabrics containing the fibers comprising melt polymerizing ethylene terephthalate in the presence of a condensation catalyst to a final temperature of about 250°C to 300°C and a final pressure of less than 10 mm of mercury to form an anhydrous melt, the improvement comprising:



conducting said melt polymerizing in the presence of about 0.05 to 5.0 mole percent, with respect to the acid component, of a substituted cyclobutanedicarboxylic acid;

melt spinning said anhydrous melt; and

exposing said melt spun fibers to irradiation with high energy light.

3,953,406

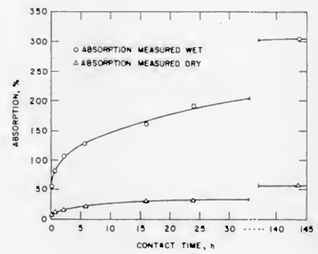
WATER-INSOLUBLE, SWELLABLE POLYURETHANES

Harold E. Marsh, Jr., La Canada, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Jan. 26, 1973, Ser. No. 326,768

Int. Cl.² C08G *18/48;* **A61K** *31/785*

U.S. Cl. 260—77.5 AM **11 Claims**



1. A lightly cross-linked, water-insoluble, swellable, polyurethane, network polymer comprising a cross-linked network of polymer segments consisting essentially of from 1 to 90% by weight of hydroxyl-terminated hydrophilic polyether chain segments, the remainder being hydroxyl-terminated oleophilic hydrocarbon polymer chain segments, a trihydroxy, organic cross-linking agent in an amount less than one cross-link for every 4,000 chain atoms of the network polymer and a substantially stoichiometric amount of diisocyanate curing agent, said segments containing no less than 25 backbone chain atoms and said polymer being in the form of particles having a diameter of no more than 1 mm, a swellability of no less than 2, an absorptivity on a dry basis of polar organic compounds of at least 10 percent, and a cross-link density of no more than one cross-link for every 4,000 backbone chain atoms.

3,953,407

PROCESS FOR PREPARING PAPER SIZE RESIN

Hideo Hayashi; Hisatake Sato, and Shiro Saito, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed July 9, 1974, Ser. No. 486,746

Claims priority, application Japan, July 16, 1973, 48-79297

Int. Cl.² C08F *8/46, 240/00*

U.S. Cl. 526—22 **9 Claims**

1. A process for preparing a resin suitable for preparation of sizes, which comprises polymerizing a cracked oil fraction which is obtained by the thermal cracking of petroleums, has a boiling point of 20° to 220°C., and contains diolefins, thereby to form a hydrocarbon resin, reacting the resulting hydrocarbon resin with 0.08 to 0.3 mol of **100** unsaturated dicarboxylic acid or its anhydride per 100g of the hydrocarbon resin, and heating the acid-modified resin in the presence of water or the alkali metal hydroxide at a temperature of 130° to 350°C whereby the acid-modified resin is decarboxylated until the saponification value of the heat treated acid-modified resin is 60°–140°.

3,953,408

ADDITION POLYMERIZABLE POLYMERIC COMPOUNDS

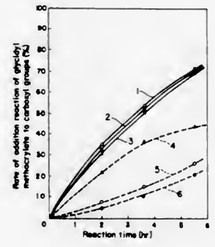
Keizo Hosoi, Tokyo; Hiroshi Sagami, Shiki, and Isao Imai, Niiza, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 208,690, Dec. 16, 1971, Pat. No. 3,796,578. This application Oct. 18, 1973, Ser. No. 407,704

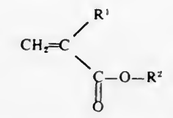
Claims priority, application Japan, Dec. 26, 1970, 45-128473; Mar. 6, 1971, 46-11702; Mar. 6, 1971, 46-11703; Mar. 17, 1971, 46-14385

Int. Cl.² C08F *212/08, 220/06*

U.S. Cl. 260—836 **8 Claims**



1. In addition polymerizable polymeric compound obtained by esterification reaction of a copolymer having pendent carboxyl groups with about 0.10 to 0.8 equivalent, based upon the carboxyl groups of said copolymer, of an ethylenically unsaturated compound having one oxirane ring, said copolymer being obtained by copolymerizing (1) about 10 to 95 percent by weight of at least one member selected from the group consisting of styrene and the methyl-substituted styrene derivatives, (2) about 5 to 70 percent by weight of at least one ethylenically unsaturated compound selected from the group consisting of a monocarboxylic acid, a dicarboxylic acid, a dicarboxylic acid anhydride and a monoalkyl ester of a dicarboxylic acid wherein the alkyl group contains from 1 to 4 carbon atoms, (3) up to about 30 percent weight of at least one member selected from the group consisting of acrylonitrile and methacrylonitrile, (4) up to about 85 percent by weight of at least one compound of the formula



wherein R^1 represents a hydrogen atom or methyl group; and R^2 represents an alkyl group having 1 to 12 carbon atoms, and (5) up to about 50 percent by weight, based upon the total weight of said compound (3) and/or (4), of at least one vinyl ester of a saturated aliphatic nono-carboxylic acid having 2 to 10 carbon atoms.

3,953,409

PROCESS FOR PRODUCING CONJUGATED DIOLEFINIC POLYMERS

Koei Komatsu; Shigeyuki Nishiyama, both of Yokohama; Nobuyuki Sakabe, Kawasaki, and Akira Kogure, Tokyo, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed May 21, 1970, Ser. No. 39,569

Claims priority, application Japan, May 31, 1969, 44-41718; June 30, 1969, 44-50954; Aug. 25, 1969, 44-66464

Int. Cl.² C08F *236/16, 236/18*

U.S. Cl. 526—82 **19 Claims**

1. A process for producing a conjugated diolefinic polymer by polymerizing at least one conjugated diolefin monomer or copolymerizing at least one conjugated diolefin monomer with at least one vinyl aromatic hydrocarbon monomer in a hydrocarbon or halogenated hydrocarbon solvent in the presence of an alfin catalyst and a molecular weight regulator, the molecular weight regulator being a polyhalogenated unsaturated hydrocarbon selected from the group consisting of vinylidene chloride, vinylidene bromide, vinylidene iodide, vinylidene fluoride, 1,2-dichloroethylene, 1,2-dibromoethylene, 1,2-diiodoethylene, trichloroethylene, tribromoethylene, triiodoethylene, tetrachloroethylene, tetrabromoethylene, tetraiodoethylene, tetrafluoroethylene, 1-chloro-2-fluoroethylene, 1-chloro-2-bromoethylene, 1-chloro-1-fluoroethylene, 1,1-dichloro-1-propene, 1,1-dibromo-1-propene, 1,1-dichloro-1-butene and 1,1-dichloro-1-pentene.

3,953,410

PROCESS FOR PRODUCING AMORPHOUS OLEFIN INTERPOLYMER

Daizaburo Imai, and Keisaku Yamamoto, both of Ichihara, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 12, 1974, Ser. No. 460,549

Claims priority, application Japan, Apr. 16, 1973, 48-43478; Apr. 16, 1973, 48-43480

Int. Cl.² C08F *210/00, 212/00*

U.S. Cl. 526—284 **31 Claims**

1. A process for producing a substantially amorphous rubbery interpolymer, which comprises interpolymerizing ethylene, an α-olefin, and a nonconjugated diolefin having a norbornene ring by use of a catalyst comprising a combination of (1) an alkylaluminum sesquichalide represented by the general formula $AlR_{3-n}X_n$ (where R is an alkyl group having 1 to 8 carbon atoms, X is a halogen atom, and n is a number larger than 1 but smaller than 2), (2) an ester compound having an aromatic group or/and an olefinically unsaturated group, and (3) at least one compound selected from transition metal compounds.

3,953,411

AGE RESISTANT POLYMERS OF 4-(ARYLAMINO)ARYL ESTERS OF α,β UNSATURATED CARBOXYLIC ACIDS

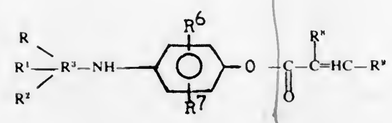
Richard H. Kline, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 15, 1971, Ser. No. 153,449

Int. Cl.² C08F *1/13, 15/02;* **C08D** *3/04, 3/06*

U.S. Cl. 526—312 **26 Claims**

1. A process of preparing an age resistant polymeric composition comprising polymerizing in an emulsion free radical polymerization system, a monomer system containing at least one monomeric age resister having the following structural formula:



(I)

wherein R^3 is an aryl radical, R and R^1 are selected from the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms and alkoxy radicals having from 1 to 4 carbon atoms, R^2 is selected from the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms, alkoxy radicals having from 1 to 4 carbon atoms and a radical having the following structural formula:



wherein R^4 is selected from the group consisting of alkyl radicals having from 1 to 12 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms, aryl radicals having from 6 to 12 carbon atoms and aralkyl radicals having from 7 to 13 carbon atoms, R^5 is selected from the group consisting of hydrogen and alkyl radicals having from 1 to 12 carbon atoms and wherein R^6 and R^7 are selected from the group consisting of hydrogen and alkyl radicals having from 1 to 4 carbon atoms, wherein R^8 is selected from the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms, carboxymethyl radical and carbalkoxymethyl radicals and R^9 is selected from the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms, phenyl and substituted phenyl, carboxyl radical and carbalkoxy radicals and wherein the monomer system contains at least 40 parts by weight of diene monomer per 100 parts by weight of total monomer in the monomer system.

3,953,412

SINTERED MICRO-POWDER OF TETRAFLUOROETHYLENE POLYMERS

Takumi Saito, No. 2016 Komagoe, and Shigeki Hayashi, No. 5-34 Mukaida-cho, both of, Shimizu, Shizuoka, Japan

Division of Ser. No. 384,504, Aug. 1, 1973. This application Nov. 20, 1974, Ser. No. 525,669

Claims priority, application Japan, Aug. 9, 1972, 47-79104

Int. Cl.² C08F *6/14, 6/24*

U.S. Cl. 526—247 **22 Claims**

1. Sintered micro-powder of tetrafluoroethylene polymer wherein the polymer is the homopolymer of tetrafluoroethylene, made by emulsion polymerization of tetrafluoroethylene, a non-melt fabricable copolymer of tetrafluoroethylene with a copolymerizable ethylenically unsaturated monomer or a melt-fabricable copolymer of tetrafluoroethylene and hexafluoropropylene or a perfluorovinyl ether, said sintered micropowder characterized in that the average particle size is between 1.9μ and 100μ, sphere factor is less than 1.2, specific gravity is less than 2.20, and weight loss on heating is less than 0.5%.

3,953,413

SUPPORTED CHROMIUM-CONTAINING CATALYST AND PROCESS OF POLYMERIZING 1-OLEFINS

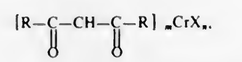
Yu-Tang Hwang, and Howard L. Grimmett, both of Clinton, Iowa, assignors to Chemplex Company, Rolling Meadows, Ill.

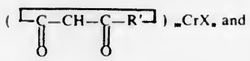
Filed June 13, 1974, Ser. No. 478,879

Int. Cl.² C08F *4/02, 10/02*

U.S. Cl. 526—350 **36 Claims**

1. A catalyst prepared by dispersing on a finely divided, difficultly reducible, inorganic support of the class consisting of silica, alumina, thoria, zirconia, titania, magnesia and mixtures and composites thereof a chromium chelate of a beta-dicarbonyl compound essentially of the formula of the class consisting of





and



wherein each R is individually selected from hydrogen, alkyl, alkenyl, aryl, cycloalkyl and cycloalkenyl radicals and combinations of these radicals with each R containing 0–20 carbon atoms and a corresponding valence-satisfying number of hydrogen atoms, R′ is selected from alkylene, alkenylene, arylene, cycloalkylene and cycloalkenylene radicals and combinations of these bivalent radicals with R′ containing 1–20 carbon atoms and a corresponding valence-satisfying number of hydrogen atoms, *m* is a whole number from 1 to 3, *n* is a whole number from 0 to 2 with *m* plus *n* being a whole number of 2 to 3 and X is a negative group, relative to chromium and activating the resulting mixture by heating to and at an elevated temperature of from about 850°–2000°F. in a non-oxidizing atmosphere.

3,953,414

CATALYSTS FOR THE POLYMERIZATION OF OLEFINS TO SPHERICALLY SHAPED POLYMERS

Paolo Galli, Ferrara; Giovanni Di Drusco, Milan, and Saverio De Bartolo, Ferrara, all of Italy, assignors to Montecatini Edison S.p.A.,, Milan, Italy

Continuation of Ser. No. 396,538, Sept. 12, 1974, abandoned. This application Nov. 15, 1974, Ser. No. 524,258

Claims priority, application Italy, Sept. 13, 1972, 29126/72

Int. Cl.² C08F *210/00, 212/00*

U.S. Cl. 526—348 **13 Claims**

1. Catalysts for the polymerization of olefins obtained by mixing:

a. a catalyst-forming component which is an organometallic compound of metals of Group II and III of the Mendelyeev Periodic System, with

b. a supported catalyst-forming component which is the product consisting of a carrier comprising an anhydrous Mg dihalide and of a halogenated Ti-compound chemically fixed on the carrier or dispersed on the same, said product being in the form of spherically shaped particles of a diameter comprised between 1 and 350 micron, which are characterized by values of the resistance to crumbling under the action of supersonic vibrations expressed in Watt.h/l, of the mean radius of the pores and of the surface area, which satisfy one of the following relationships:

1. resistance to supersonic vibrations comprised between 5 and 40 Watt.h/l, mean radius comprised between 30 and 70 A and surface area comprised between 3 and 70 sq.mt/g;
2. resistance to supersonic vibrations of 1–20 Watt.h/l, mean radius of the pores comprised between 70 and 150 A and surface area greater than 70 sq.mt/g.

13. Polyolefins in the form of spherically shaped non-extruded particles having a diameter comprised between 0.5 and 3 mm. containing a Ti compound in a quantity, expressed as metal Ti, of less than 30 ppm, and further characterized in that said particles do not crumble when subjected to 240 oscillations per minute for 20 minutes in a metal cylinder containing porcelain balls having a diameter of 25 mm and fitted with a metal plug fixed horizontally on a sledge having a travel of 50 mm and do not compact when subjected to the same conditions after compression thereof under a pressure of 394 kg 1 sq. cm.

3,953,415

PROCESS FOR THE PREPARATION OF BIOLOGICALLY ACTIVE POLYPEPTIDES CONTAINING ASPARTYL GROUP

Lajos Kisfaludy; Miklos Low; Istvan Schon; Tamas Szirtes; Maria Sz. Sarkozi; Sandor Bajusz; Andrae Turan; Rosa Beks; Attila Juhasz; Laszlo Graf; Kalman Medzihradszky, and Laszlo Szporny, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt, Budapest, Hungary

Filed May 14, 1973, Ser. No. 360,198

Claims priority, application Hungary, May 15, 1972, 7776

Int. Cl.² C07C *103/52;* **C07G** *7/00*

U.S. Cl. 260—112.5 R **1 Claim**

1. A process for the preparation of a peptide having the formula (I)

Ser-Tyr-Ser-Met-Glu-His-Phe-Arg-Trp-Gly-Lys-Pro-Val-Gly-Lys-Lys-Arg-Arg-Pro-Val-Lys-Val-Tyr-Pro-Asn-Gly-Ala-Glu-Asp-Glu-Q

wherein Q is selected from the group which consists of:

a. Ser-OH,
b. Ser-Ala-OH,
c. Ser-Ala-Glu-OH,
d. Ser-Ala-Glu-Ala-OH,
e. Ser-Ala-Glu-Ala-Phe-OH,
f. Ser-Ala-Glu-Ala-Phe-Pro-OH,
g. Ser-Ala-Glu-Ala-Phe-Pro-Leu-OH,
h. Ser-Ala-Glu-Ala-Phe-Pro-Leu-Glu-OH, or
i. Ser-Ala-Glu-Ala-Phe-Pro-Leu-Glu-Phe-OH,

which comprises the step of:

A. reacting a first peptide of the formula
BOC-Ser-Tyr-Ser-Met-Glu(OtBu)-His-Phe-Arg-Trp-Gly-Lys(BOC)-Pro-Val-Gly-OH

with a second polypeptide of the formula
Lys(BOC)-Lys(BOC)-Arg-Arg-Pro-Val-Lys(BOC)-Val-Tyr(tBu)-Pro-Asn-Gly-Ala-Glu(OtBu)-Asp(OtBu)-Glu(OtBu)-Q

in equimolar amount with the first polypetide and in the presence of excess pentafluorophenol and dicyclohexyl carbodimide at a temperature of about 0°C.

3,953,416

SYNTHETIC DECAPEPTIDE HAVING THE ACTIVITY OF THE LUTEINIZING HORMONE RELEASING HORMONE AND METHOD FOR MANUFACTURING THE SAME

Karl Folkers, 6406 Mesa Drive, Austin, Tex.; Bruce L. Currie, 8304 Kromer, Austin, Tex. 78758; Jaw-Kang Chang, 151 Calderon Ave., Mountain View, Calif. 94041; Hans Sievertsson, Lomvagen 77, 191 56 Sollentuna, and Conny Bogentoft, Satunavagen 19 A, 19500 Marsta, both of Sweden

Continuation-in-part of Ser. No. 210,122, Dec. 20, 1971, abandoned, which is a continuation of Ser. No. 158,996, July 1, 1971, abandoned. This application Jan. 14, 1974, Ser. No. 432,903

Int. Cl.² C07C *103/52;* **C07G** *7/00*

U.S. Cl. 260—112.5 LH **4 Claims**

1. A method for prepared the decapeptide, L-pyroglutamyl-L-histidyl-L-tryptophanyl-L-seryl-L-tyrosyl-glycyl-L-leucyl-L-arginyl-L-prolyl-glycinamide, by coupling by the DCI method the hexapeptide, L-pyroglutamyl-L-histidyl-L-tryptophanyl-L-seryl-L-tyrosyl-glycine; produced by saponification of the hexapeptide ethyl ester, said hexapeptide ethyl ester produced by coupling the tripeptide, L-pyroglutamyl-L-histidyl-L-tryptophan, produced by coupling L-pyroglutamyl-L-histidine with L-tryptophan benzyl ester by the DCI method and then hydrogenolysis of the benzyl ester, with the tripeptide ethyl ester, L-seryl-L-tyrosyl-glycine ethyl ester by the DCI method, said tripeptide ethyl ester produced by conversion of N-carbobenzyloxy-L-seryl-L-tyrosine hydrazide to the corresponding azide which is added to glycine ethyl ester to give N-carbobenzyloxy-L-seryl-L-tyrosyl-glycine ethyl ester and then hydrogenolysis; with the tetrapeptide, L-leucyl-L-arginyl-L-prolyl-glycinamide, produced by treatment of the blocked tetrapeptide, N-carbobenzyloxy-L-leucyl-N^G-para-toluenesulfonyl-L-arginyl-L-prolyl-glycinamide, with hydrogen fluoride; said blocked tetrapeptide produced by coupling N-hydroxysuccinimido-N -carbobenzyloxy-L-leucinate with the tripeptide, N^G-para-toluenesulfonyl-L-arginyl-L-prolyl-glycinamide, said tripeptide produced by cleavage of the tert-butyloxycarbonyl group from the blocked tripeptide, N -tert-butyloxycarbonyl-N^G-para-toluensulfonyl-L-arginyl-L-prolylglycinamide, said blocked tripeptide produced by coupling N -tert-butyloxycarbonyl-N^G-para-toluenesulfonyl-L-arginine with L-prolyl-glycinamide by the DCI method.

3,953,417

SYNTHETICALLY MODIFIED TRYPSIN INHIBITORS AND PROCESS FOR PREPARING THEM

Wolfgang König, Langenhain, Taunus; Oswald Zwisler, Marburg-Marbach, and Gerhard Guthorlein, Cappel, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sept. 4, 1974, Ser. No. 503,066

Claims priority, application Germany, Sept. 6, 1973, 2344886

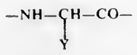
Int. Cl.² C07C *103/52;* **C08H** *1/00*

U.S. Cl. 260—112.5 R **2 Claims**

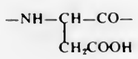
1. Modified trypsin-callicrein inhibitor wherein the five carboxyl groups present in the unmodified material are amidated by peptide groups of the formula

$$-R(R)_xW,$$

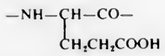
wherein R′ is



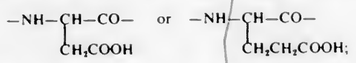
or prolyl; Y is hydrogen, alkyl having 1 to 5 carbon atoms, or alkyl having 1 to 5 carbon atoms substituted by a carboxyl, hydroxyl, or carbonamide group; X is an integer from 0 to 10 such that, if X = 0, then R is



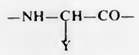
or



and, if X is an integer from 1 to 10, then at least one R is



and W is —OH, —NH_2, —NHC_2H_5, —OCH_3, or —OC_2H_5 when —$R(R)_x$— contains at least two



wherein Y contains carboxy, but is otherwise —OH.

3,953,418

NOVEL HUMAN PROINSULIN C-PEPTIDE DERIVATIVES

Noboru Yanaihara, Shizuoka, and Osamu Ikeda, Tokyo, both of Japan, assignors to Daiichi Radioisotope Laboratories, Ltd., Tokyo, Japan

Filed July 15, 1974, Ser. No. 488,855

Claims priority, application Japan, July 14, 1973, 48-79469

Int. Cl.² C07C *103/52*; **A61K** *37/26*

U.S. Cl. 260—112.7 **6 Claims**

1. A peptide having the amino acid sequence of Arg-Arg-Glu-Ala-Glu-Asp-Leu-Gln-Val-Gly-Gln-Val-Glu-Leu-Gly-Gly-Gly-Pro-Gly-Ala-Gly-Ser-Leu-Gln-Pro-Leu-Ala-Leu-Glu-Gly-Ser-Leu-Gln-Lys-Arg and the N -formyl-Lys-derivative thereof.

3,953,419

SALTS OF STILBENE-AZO AND STILBENE-AZOXY DYES AND PROCESS FOR THEIR PREPARATION

Reinhard Pedrazzi, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

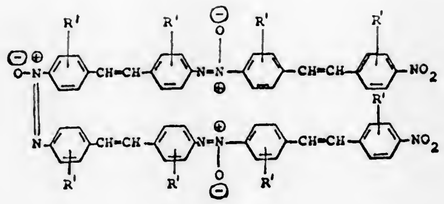
Continuation-in-part of Ser. Nos. 338,339, March 5, 1973, abandoned, and Ser. No. 338,321, March 5, 1973, abandoned. This application Aug. 6, 1973, Ser. No. 385,756

Claims priority, application Switzerland, Aug. 8, 1972, 11699/72; Mar. 17, 1972, 4042/72; Mar. 9, 1972, 3477/72

Int. Cl.² C09B *27/02*

U.S. Cl. 260—143 **19 Claims**

1. A salt of the formula



or a mixture thereof,

wherein each R′ is independently —$SO_3^{\ominus}M^{\oplus}$ or —$SO_3^{\ominus}N^{\oplus}(R)_4$,

wherein each $M^{\oplus}$ is independently hydrogen, lithium, sodium, potassium or ammonium, and

each R is independently alkyl of 1 to 6 carbon atoms or alkyl of 1 to 6 carbon atoms monosubstituted by hydroxy, cyano, chloro, bromo or phenyl,

with the proviso that at least one R′ per molecule is —$SO_3^{\ominus}N^{\oplus}(R)_4$.

3,953,420

AZO PIGMENTS DERIVED FROM 2-HYDROXY-3-CARBOXYNAPHTHALENE CONTAINING A SUBSTITUTED OR UNSUBSTITUTED PHTHALIMIDE

Peter Dimroth, Lugwigshafen; Frank Dost, Mannhein, and Rolf Urtel, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, (Rhine), Germany

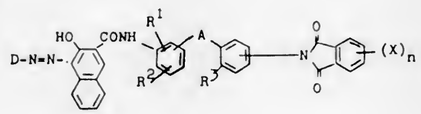
Filed Jan. 26, 1973, Ser. No. 326,680

Claims priority, application Germany, Jan. 29, 1972, 2204253; Aug. 19, 1972, 2240927

Int. Cl.² C09B *29/36*; **D06P** *1/08*, *5/08*

U.S. Cl. 260—152 **3 Claims**

1. An azo pigment of the formula



I

wherein:

A is —NHCO— or —CONH—;

D is anthraquinonyl or chlorine-substituted anthraquinonyl with the azo group in the 1- or 2-position; N-phenylphthalimide with the azo group in the 3- or 4-position of the phenyl ring; or phenyl substituted by chlorine, bromine, methyl, methoxy, nitro, cyano, methylsulfonyl or carbomethoxy;

R^1 is hydrogen, chlorine, bromine, methyl, ethyl, methoxy, ethoxy, methylsulfonyl, ethylsulfonyl or cyano;

R^2 is hydrogen, chlorine, bromine, methyl, ethyl, methoxy or ethoxy;

R^3 is hydrogen, chlorine, methyl, ethyl, methoxy or ethoxy;

X is chlorine or bromine; and

n is one of the integers 0, 1, 2, 3 and 4.

3,953,421

PAPER COATING COMPOSITIONS AND ORGANIC PIGMENTS USED THEREIN

Gregor Berstein, Newton, Mass., assignor to Cabot Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 324,338, Jan. 17, 1973, which is a continuation-in-part of Ser. No. 168,467, Aug. 2, 1971, abandoned, which is a continuation-in-part of Ser. No. 59,731, July 3, 1970, abandoned. This application Oct. 11, 1974, Ser. No. 514,090

Int. Cl.² C08L *3/02*, *61/20*

U.S. Cl. 260—17.3 **13 Claims**

1. In a conventional coating color composition suitable for coating paper, paperboard and the like comprising a suitable polymeric binder dissolved or dispersed in an aqueous slurry of finely divided pigment solids, the principal proportion of which by weight are inorganic pigments of less than 2 microns in mean particle size, the improvement which comprises said pigment solids, in an amount of from about 2 to about 25% by weight based upon the total weight of pigment solids employed in the coating color composition, being an essentially water-insoluble, infusible, non-porous, cross-linked urea-formaldehyde pigment in a highly dispersed particulate form having a molar ratio of urea to formaldehyde ranging from about 1:1.3 to about 1:1.8, a BET specific surface area of from about 40 to about 75 square meters per gram, and a mean agglomerate size of from about 2 to about 3.5 microns.

3,953,422

DEOXYGLUCOSE DERIVATIVES

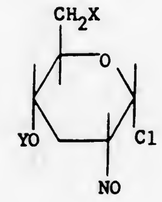
Francis R. Pfeiffer, Cinnaminson, N.J., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Aug. 17, 1973, Ser. No. 389,091

Int. Cl.² C07G *3/00*

U.S. Cl. 260—210 R **31 Claims**

1. A compound of the formula

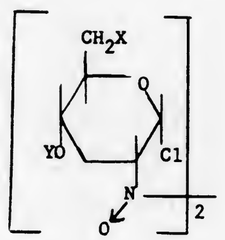


where

X is OY, NHY, or N_3; and

Y is hydrogen or a hydroxy protecting group or amino protecting group,

or a dimer of said compound, said dimer having the formula



3,953,423

PREPARATION OF A NEW FLAVANONE DERIVATIVE

Andreas Hadhanyi, Eschweiler-Bergrath, Germany, assignor to H. Trommsdorff, Aachen, Germany

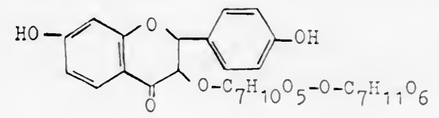
Filed Dec. 5, 1973, Ser. No. 422,055

Claims priority, application Germany, Dec. 8, 1972, 2260214

Int. Cl.² C07G *3/00*; **C07H** *17/04*; **C08B** *37/00*

U.S. Cl. 260—210 F **5 Claims**

1. A flavanone dimeric methylated hexuronic acid derivative of the formula



2. A method for preparing a flavanone derivative, comprising dispersing in water an extract of roots of glycyrrhiza glabra mixing the dispersion with ethyl urethane and thereby dissolving undesired red dyestuff, rendering the pH moderately acidic thereby to precipitate glycyrrhizinic acid contaminated with yellow dyestuff, separating and discarding the supernatant solution with the red dyestuff, dissolving the precipitate by means of dilute methanolic or ethanolic hydrochloric acid to cleave the sugar moiety from the glycyrrhetinic acid moiety, subjecting the sugar moiety to methylation or ethylation, and separating the precipitated glycyrrhetinic acid portion from the methylation or ethylation product which latter product contains the flavanone derivative.

3,953,424

AZETITIN-2-ORES AND PROCESS FOR PREPARING SAME

Derek Harold Richard Barton, and Peter George Sammes, both of London, England, assignors to Glaxo Laboratories Limited, Greenford, England

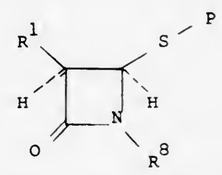
Filed Sept. 12, 1972, Ser. No. 288,353

Claims priority, application United Kingdom, Sept. 21, 1971, 44034/71

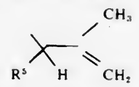
Int. Cl.² C07D *205/08*

U.S. Cl. 260—239 A **6 Claims**

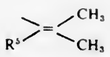
1. A process for the production of azetidin-2-ones having the formula:



wherein P is a saturated or unsaturated, substituted or unsubstituted aliphatic group having at least 2 carbon atoms, R^1 is an amino or blocked amino group, and R^8 represents a hydrogen atom or a group of the formula

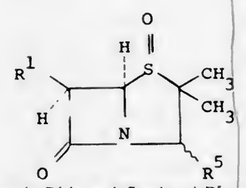


or



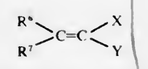
where R^5 represents a hydrogen atom, a protected hydroxyl or amino group, a carboxyl or blocked carboxyl group or a C_{1-20}

alkyl group; which comprises cleaving at a temperature of 50°–140°C a compound of the formula



(II)

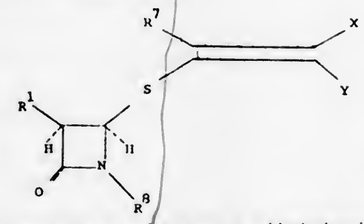
wherein R^1 is as defined and R^5 represents a hydrogen atom, a hydroxyl or amino group, a protected hydroxy or amino group, a carboxyl or blocked carboxyl group or an alkyl group having 1–20 carbon atoms, in the presence of the compound of the formula:



(III)

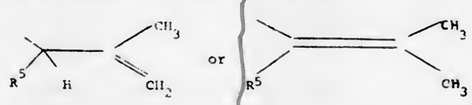
wherein X and Y, which may be the same or different, each represents a hydrogen atom, a halogen atom, or a blocked OH or SH group; and R^6 and R^7 which may be the same or different, each represents a hydrogen atom, C_{1-20} alkyl, monocyclic aryl alkyl having 1–6 carbon atoms in the alkyl portion or such groups which may be substituted by mesyloxy, tosyloxy, or ethoxycarbonyl groups or halogen, or R^7 and Y together constitute a carbon-carbon bond.

6. A compound of the formula V



V

wherein R^1 represents an amino group or a blocked amino group; X and Y which may be the same or different, each represents a hydrogen atom, a halogen atom, or a blocked OH or SH group; and R^7 represents a hydrogen atom, C_{1-20} alkyl, monocyclic aryl alkyl having 1–6 carbon atoms in the alkyl portion or such groups which may be substituted by mesyloxy, tosyloxy or ethoxycarbonyl groups or halogen; and R^8 represents a hydrogen atom or a group of the formula



where R^5 represents a hydrogen atom, a protected hydroxyl or amino group, a carboxyl or blocked carboxyl group or a C_{1-20} alkyl group.

3,953,425

AZEPINE INDANYL AND TETRALIN BUTYROPHENONES

Daniel Lednicer, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Sept. 6, 1974, Ser. No. 503,645

Int. Cl.² C07D *223/32, 223/14*

U.S. Cl. 260—239 B **2 Claims**

1. 4′-fluoro-4-[2,3,6,7-tetrahydrospiro[4H-azepine-4,2′-indan]-1(5H)-yl]butyrophenone, hydrochloride.

2. 4′-fluoro-4[2,3,3′,4′,6,7-hexahydrospiro[4H-azepine-4,2′-(1′H)naphthalene]-1-(5H)-yl]butyrophenone, hydrochloride.

3,953,426

CHEMICAL PROCESS AND CHEMICAL COMPOSITIONS

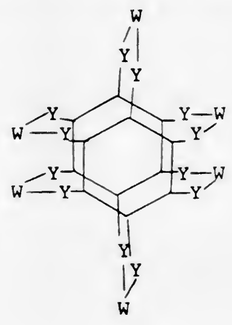
Earl Dan Flickinger, El Dorado, and Charles Merlyn Buess, Wichita, both of Kans., assignors to Skelly Oil Company, Tulsa, Okla.

Division of Ser. No. 359,126, May 10, 1973, Pat. No. 3,860,610, which is a continuation of Ser. No. 68,047, Aug. 28, 1970, abandoned, which is a division of Ser. No. 706,663, Feb. 19, 1968, Pat. No. 3,577,431, which is a continuation-in-part of Ser. No. 554,651, June 2, 1966, abandoned. This application Nov. 6, 1974, Ser. No. 521,256

Int. Cl.² C07D *223/14*

U.S. Cl. 260—239 B **2 Claims**

1. A new composition of matter having two ring nuclei composed of six carbon atoms essentially superimposed in fixed parallel planes with respect to each other and having the formula:



wherein

Y = (CH_2),

W = NR, $NR_2^+X^-$ (R = H or alkyl of 1–4 carbon atoms),

X = chlorine, bromine or iodine, and the Y—W—Y linkages may vary from 3 to 6.

3,953,427

PROCESS FOR THE PREPARATION OF SUBSTITUTED S-ALKYL THIO-CARBAMATES

Gyorgy Matolcsy, and Barna Bordas, both of Budapest, Hungary, assignors to Eszakmagyarorszagi Vegyimuvek, Sajobabony, Hungary

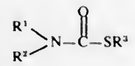
Filed Dec. 18, 1974, Ser. No. 534,096

Claims priority, application Hungary, Jan. 2, 1974, NO 178

Int. Cl.² C07D *223/02*; **C07C** *155/02*

U.S. Cl. 260—239 BF **3 Claims**

1. A process for the preparation of a substituted S-alkyl thiocarbamate having the formula,



wherein

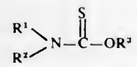
R^1 stands for C_{1-4} alkyl,

R^2 stands for C_{1-4} alkyl or cyclohexyl, or

R^1 and R^2 may form together C_{4-6} polymethylene, and

R^3 stands for C_{2-3} alkyl,

in which a substituted O-alkyl thiocarbamate of the formula,



wherein R^1, R^2 and R^3 each have the same meanings as defined above, is subjected to isomerization by heating it at a temperature of 130° to 180°C, in the presence of dimethyl sulfate or diethyl sulfate.

3,953,428

AMPICILLIN DERIVATIVES SUBSTITUTED BY HETEROCYCLIC ACYL GROUP

Masuo Murakami, Tokyo; Ichiro Isaka; Akio Koda, both of Hoya; Norio Kawahara; Teruya Ashiwagi, both of Ageo; Yukiyasu Murakami, Urawa; Kuniichiro Yano, Tokorozawa; Kohzi Nakano, Shiraoka, and Isao Souzo, Urawa, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed May 1, 1973, Ser. No. 356,120

Claims priority, application Japan, 1972, 47-45118; 1972, 47-83424; 1972, 47-85102; 1972, 47-85103; 1972, 47-125952; 1973, 48-19917; 1973, 48-38132

Int. Cl.² C07D *499/44*

U.S. Cl. 260—239.1 **8 Claims**

1. D-α-(4-quinolone-3-carbonylamino--)-benzylpenicillin sodium.

3,953,429

ANAESTHETIC STEROIDS OF THE ANDROSTANCE AND PREGNANE SERIES

Martin Christopher Cook, Chalfont St. Peter; Robin Lawrence, London; Gordon Hanley Phillipps, Wembley; Anne Christine Hunter, Ruislip; Christopher Earle Newall, London; Leslie Stephenson, London, and Niall Galbraith Weir, London, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

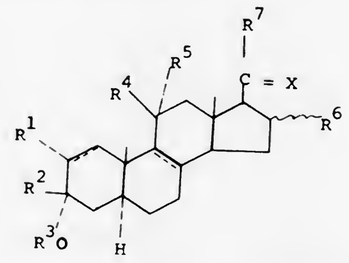
Continuation of Ser. No. 208,959, Dec. 16, 1971, abandoned. This application Feb. 19, 1974, Ser. No. 443,451

Claims priority, application United Kingdom, Dec. 17, 1970, 60064/70

Int. Cl.² C07J *5/00*

U.S. Cl. 260—239.55 R **14 Claims**

1. A compound of the formula



wherein R^1 is hydrogen or alkyl of 1–3 carbon atoms; R^2 is a hydrogen atom, methyl or ethyl; R^3 is a hydrogen or atom or tri (chloro or fluoro) acetyl; R^4 is a hydrogen atom, or epoxy linked to the 9 C atom; R^5 is a hydrogen atom; or R^4 and R^5 together represent an oxo group; R^6 is a hydrogen or halogen atom or methyl; R^7 is methyl or alkoxy of 1–6 carbon atoms; and X is an oxygen atom; the dotted lines at the 1(2) and 8(9) positions each indicating a single or double bond provided that there are not two double bonds at both of these positions in the same compound and provided that at least one of R^1, R^2 and R^6 is other than hydrogen when R^4 and R^5 are an oxo group or are both hydrogen and the 1(2) and 8(9) bonds are saturated and that R^1 is hydrogen when there is a 1(2) double bond.

3,953,430

SUBSTITUTED BENZODIAZEPIN-10-ONES AND METHOD OF USE

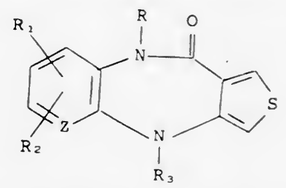
Sidney Robert Safir, River Edge, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 24, 1975, Ser. No. 552,023

Int. Cl.² C07D *513/04, 513/14*

U.S. Cl. 260—239.3 T **17 Claims**

1. A compound selected from those of the formula:



wherein Z is selected from the group CH and N; R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halogen, nitro, trifluoromethyl, methylthio, methylsulfonyl and hydroxy; R_3 is selected from the group consisting of hydrogen, lower alkyl and phenylloweralkyl and R is selected from the group comprising hydrogen, diloweralkylaminoloweralkyl, piperidyllow-eralkyl, morpholinoloweralkyl, pyrrolidinoloweralkyl and piperazinylloweralkyl and acid addition salts thereof, with the proviso that when Z is N, then R_1 and R_2 are hydrogen.

3,953,431

DERIVATIVES OF DIGOXIGENIN

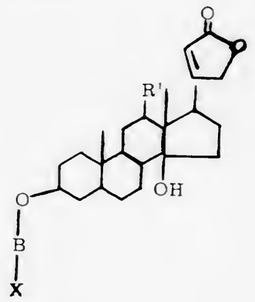
Herman Rutner, Hackensack, N.J.; Raul Rapun, Suffern, and Nathan Lewin, New York, both of N.Y., assignors to Becton, Dickinson & Company, Rutherford, N.J.

Division of Ser. No. 146,545, May 24, 1971, Pat. No. 3,855,208. This application Sept. 28, 1973, Ser. No. 401,816

Int. Cl.² C07J *19/00*

U.S. Cl. 260—239.57 **9 Claims**

1. A composition of matter comprising a compound having the following structural formula:



wherein

R′ is selected from the group consisting of —OH and $OCOCH_3$;

B is selected from the group consisting of succinyl, maleyl, fumaryl and o-phthaloyl; and

X is selected from the group consisting of —OH and OM wherein M is an alkali metal.

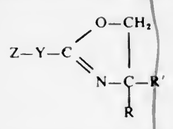
3,953,432

TRANQUILIZERS

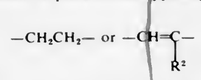
Herbert L. Wehrmeister, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Filed Dec. 4, 1972, Ser. No. 312,242
Int. Cl.² C07D *263/14, 265/08*
U.S. Cl. 260—240 E **8 Claims**

1. A compound represented by the formula



wherein Z is meta or para-methoxyphenyl; Y is $-CH_2-$,



with the proviso that the CR^2 moiety is bonded to the oxazoline ring, where R^2 is hydrogen, methyl or 4-methoxypheny; R and R′ are methyl except that when Y is $-CH_2-$, R and R′ are methyl or R is hydrogen and R′ is ethyl.

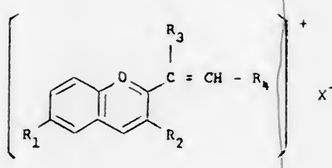
3,953,433

SENSITIZER FOR USE IN ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shoji Maruyama, Sagamihara; Tomio Kubota; Katue Kojima, both of Tokyo; Hiroshi Tamura, Kawasaki, and Masahide Harada, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

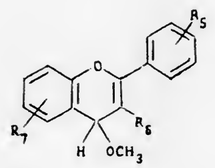
Continuation-in-part of Ser. No. 259,558, June 5, 1972, abandoned. This application Jan. 3, 1974, Ser. No. 430,587
Claims priority, application Japan, June 22, 1971, 46-45063
Int. Cl.² C07D *311/04*; **G03G** *5/06*
U.S. Cl. 260—240 D **24 Claims**

1. A sensitizer for an electrophotographic light-sensitive material including an organic photoconductor, which is a reaction product comprising 1 part by weight of a benzopyrylium salt having the following general formula (I):



(I)

wherein R_1 is a halogen atom, or a methyl, ethyl, alkoxyl, nitro or cyano group; R_2 is a hydrogen atom, or a methyl, ethyl, phenyl or alkoxyphenyl group; R_3 is a hydrogen atom or an alkyl group of C_1 to C_4; R_4 is a phenyl group, or a phenyl group substituted by a halo, methyl, ethyl, carboxyl, alkoxyl, nitro or cyano substituent; and X^- is Cl^-, Br^-, I^-, CAO_4^-, IO_4^- or BF_4^-, and from 0.5 to 2 parts by weight of a benzopyran having the following general formula (II′):



(II′)

wherein R_5 is a hydrogen or halogen atom, or a methyl, methoxyl, nitro or amino group; R_6 is same as R_2 of the general formula (I); R_7 is a hydrogen or halogen atom, or a methyl, ethyl, alkoxyl, nitro or cyano group.

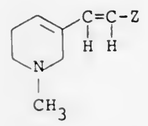
3,953,434

DIENES USEFUL IN THE PREPARATION OF 1,2,3,4,4A,5,6,7-OCTAHYDRO-7-ARYL-ISOQUINOLINES

Frederick Peter Hauck, Somerville, N.J., and Joseph E. Sundeen, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 295,385, Oct. 5, 1972, Pat. No. 3,901,897. This application Apr. 11, 1975, Ser. No. 567,347
Int. Cl.² C07D *211/70*
U.S. Cl. 260—240 D **9 Claims**

1. A compound of the formula:



wherein Z is phenyl or methoxyphenyl; and pharmaceutically acceptable salts thereof.

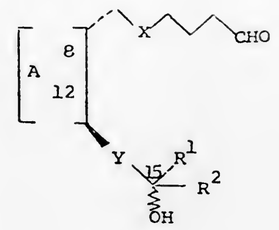
3,953,435

ALDEHYDE DERIVATIVES OF PROSTAGLANDINS

Masaki Hayashi; Seiji Kori, both of Takatsuki, and Hirofumi Endo, Osaka, all of Japan, assignors to Ono Pharmaceutical Company, Osaka, Japan

Filed Dec. 30, 1974, Ser. No. 537,522
Claims priority, application United Kingdom, Jan. 10, 1974, 1278/74; Oct. 9, 1974, 43777/74; Oct. 22, 1974, 45684/74
Int. Cl.² C07C *177/00*
U.S. Cl. 260—240 R **26 Claims**

1. A compound of the formula:

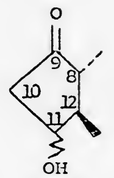


wherein A represents a grouping of the formula:



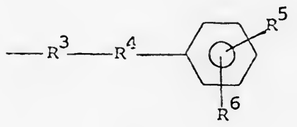
VIIA

or



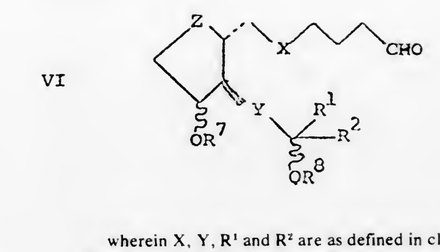
VIIB

X represents ethylene or cis-vinylene, Y represents ethylene or trans-vinylene, R^1 represents a hydrogen atom or a straight- or branched-chain alkyl group containing from 1 to 4 carbon atoms, R^2 represents a straight- or branched-chain alkyl group containing from 1 to 10 carbon atoms or a straight- or branched-chain alkyl group containing from 1 to 4 carbon atoms substituted by a phenyl group or a cycloalkyl group containing from 5 to 7 carbon atoms or R^2 represents a grouping of the formula:



wherein R^3 represents a straight- or branched-chain alkylene group containing from 1 to 4 carbon atoms, R^4 represents an oxygen or sulphur atom or a sulphinyl group, and R^5 and R^6 each represent a hydrogen or halogen atom, a trifluoromethyl group or an alkyl group containing from 1 to 3 carbon atoms, and cyclodextrin clathrates of such aldehydes and acetal derivatives thereof with an alcohol or diol.

19. A compound of the formulae:



VI IX

wherein X, Y, R^1 and R^2 are as defined in claim 1, Z represents



or C=O, R^7 represents a 2-tetrahydropyranyl group unsubstituted or substituted by at least one alkyl group, or a 2-tetrahydrofuranyl or 1-ethoxyethyl group, and R^8 represents a hydrogen atom or a 2-tetrahydropyranyl group unsubstituted or substituted by at least one alkyl group, or a 2-tetrahydrofuranyl or 1-ethoxyethyl group.

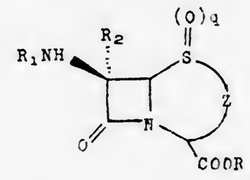
3,953,436

3,4-DICARBOXYCEPHALOSPORINS AND DERIVATIVES

Douglas O. Spry, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 19, 1974, Ser. No. 462,459
Int. Cl.² C07D *501/18, 501/24, 501/60*
U.S. Cl. 260—243 C **31 Claims**

1. The compound of the formula



wherein Z is a group of the formula



VIII, or



wherein X is a. azido, chloro, bromo, or C_2-C_5 alkylcarbonyldioxy; or

b. a group of the formula $-OR_3$ wherein R_3 is hydrogen, C_1-C_6 alkyl, C_2-C_6 haloalkyl, 2,2,2-trihaloethyl, methoxybenzyl, nitrobenzyl, benzyl, diphenylmethyl, C_2-C_5 alkanoyloxymethyl, phenyl or a pharmaceutically acceptable non-toxic cation; or

c. a group of the formula $-SR_4$ wherein R_4 is C_1-C_6 alkyl, phenyl, benzyl, 1-methyl-1,2,3,4-tetrazol-5-yl or 1,3,4-thiadiazol-2-yl; or

d. a group of the formula



wherein R_5 is hydrogen, C_1-C_6 alkyl, benzyl, phenyl, or tolyl and Q is hydrogen, C_1-C_6 alkyl, benzyl, C_1-C_7alkoxy, hydroxy, amino, anilino, guanyl, or C_1-C_3 acylamino with the limitation that when Q is guanyl or C_1-C_3 acylamino, R_5 is hydrogen; or wherein R_5, Q, and the nitrogen atom taken together form a 5 or 6 membered ring; and

wherein R is hydrogen or a carboxylic acid protecting ester forming group; and when R is hydrogen, the pharmaceutically acceptable non-toxic salts of the acids represented thereby; and

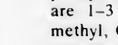
wherein R_1 is hydrogen or an acyl group of the formula



wherein R′ is a. C_1-C_7 alkyl, C_3-C_7 alkenyl, cyanomethyl, halomethyl, 4-protected amino-4-protected carboxylbutyl; or

b. the group -R″ wherein R″ is 1,4-cyclohexyldienyl, phenyl, or substituted phenyl wherein the substituents are 1–3 halogens, hydroxy, nitro, cyano, trifluoromethyl, C_1-C_4 alkyl, C_1-C_4 alkoxy, hydroxymethyl, or protected aminomethyl; or

c. an arylalkyl group of the formula



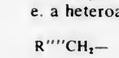
wherein R″ is as defined above,
Y is O or S, and
m is 0 or 1; or

d. a substituted arylalkyl group of the formula



wherein R‴ is R″ as defined above, 2-thienyl, or 3-thienyl; W is hydroxy or protected hydroxy, carboxy or protected carboxy, amino, protected amino; or

e. a heteroarylmethyl group of the formula



wherein R⁗is 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-thiazolyl, 5-tetrazolyl or 1-tetrazolyl; and

wherein R_2 is hydrogen or methoxy; and

q is 1 or 0 with the limitation that when *q* is 1,

Z is



and R_2 is hydrogen.

3,953,437

PROCESS OF PREPARING CEPHALOSPORANIC ACID ESTER DERIVATIVES

Masuo Murakami; Kozo Takahashi, both of Tokyo, and Teruaki Ozasa, Urawa, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

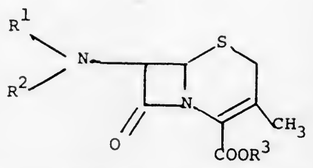
Filed Mar. 8, 1974, Ser. No. 449,374

Claims priority, application Japan, Mar. 14, 1973, 48-29703

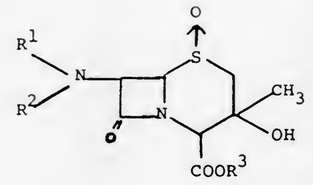
Int. Cl.² C07D *501/04*

U.S. Cl. 260—243 C **4 Claims**

1. A process of preparing a Δ^3-cephalosporanic acid ester of the formula



wherein R^1 and R^2 which may be the same or different, each represent a member selected from the group consisting of a straight or branched chain alkyl group of 1 to 4 carbon atoms, a cyclohexyl group, a benzyl group, a phenethyl group, a furylethyl group a pyridylmethyl group, a trifluoromethyl group, a methoxymethyl group, a phenoxyethyl group, a benzylthioethyl group, a phenyl group, a naphthyl group, a quinolyl group, a tolyl group, a nitrophenyl group, an acetyl group, a phenylacetyl group, a cyclohexylacetyl group, a benzoyl group, an alpha-phenoxyacetyl group, an acetamido group, a dimethoxy phosphinyl group and a trimethyl silyl group and R^1 and R^2 taken together forming a member selected from the group consisting of a salicylidene group and a benzylidene group, a phthaloyl group, a 1,1-dimethyl-3-phenyl-2-nitroso-4-oxo-2-azatetramethylene group and succinyl group, and R^3 represents a member selected from the group consisting of a 2,2,2-trichloroethyl group, a triphenylmethyl group, a bis(p-methoxyphenyl) methyl group, a benzhydryl group, a phenacyl group, a p-bromophenacyl group, a 3,5-di-tert.-butyl-4-hydroxybenzyl group, a phthalimidomethyl group, a benzyl group, a nitrobenzyl group, and a p-toluenesulfonylethyl group, comprising the steps of adding to a mixture of cephalosporanic acid sulfoxide ester of the formula:



in which R^1, R^2 and R^3 are as defined above in an inert solvent under cooling an excessive amount of a compound of the formula

PX_3

in which X is halogen and a more than equimolar amount with respect to PX_3 of a tertiary base, and recovering said Δ^3-cephalosporanic acid ester.

3,953,438

PROCESS FOR THE PREPARATION OF LACTAMS

Joseph A. Smith, Richmond, Va., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Feb. 7, 1975, Ser. No. 548,064

Int. Cl.² C07D *201/04*

U.S. Cl. 260—239.3 A **9 Claims**

1. A process for the production of monocyclic lactams having 5 to 12 ring carbon atoms and one ring nitrogen atom by the catalytic rearrangement of a cycloalkanone oxime having 5 to 12 carbon atoms in the ring in the presence of oleum, comprising:

(a) continuously feeding a first portion of said cycloalkanone oxime consisting of 65 to 85 parts by weight of said cycloalkanone oxime having a water content of up to 6 weight percent to a first catalytic rearrangement zone containing a circulating reaction mass having a sulfuric acid to lactam weight ratio of 1.37 to 1.80, said lactam being the lactam corresponding to the cycloalkanone oxime being employed, a free SO_3 content of 2.4 to 14.0 weight percent, and a temperature of 50° to 105° C., said reaction mass being circulated at a rate at least 20 times the rate of feeding said cycloalkanone oxime to said first catalytic rearrangement zone;

(b) continuously feeding oleum to said first catalytic reaction zone in amount sufficient to maintain a sulfuric acid to lactam weight ratio of 1.37 to 1.80 in said zone, said oleum containing SO_3 in amount sufficient to react with all of the water in said cycloalkanone oxime and maintain the free SO_3 content of the circulating reaction mass at 2.4 to 14.0 weight percent;

(c) continuously feeding a portion of the circulating reaction mass from the first catalytic rearrangement zone substantially equivalent to the feed of cycloalkanone oxime to said zone, to a second catalytic rearrangment zone containing a circulating reaction mass having a sulfuric acid to lactam weight ratio of at least 1.14, a free SO_3 content of at least 0.82 weight percent, and a temperature of 70° to 100° C., said reaction mass in said second catalytic rearrangement zone being circulated at a rate of at least 20 times the rate of feeding to said second catalytic rearrangement zone said portion of the circulating reaction mass from said first catalytic rearrangement zone;

(d) continuously feeding a second portion of said cycloalkanone oxime consisting of 15 to 35 parts by weight of said cycloalkanone oxime having a water content of up to 6 weight percent to said second catalytic rearrangement zone;

(e) continuously withdrawing a portion of the circulating reaction mass from the second catalytic rearrangement zone substantially equivalent to the feed to said zone; and

(f) recovering lactam from the portion of the circulating reaction mass withdrawn from the second catalytic rearrangement zone.

3,953,439

SUBSTITUTED PHENYLGLYCYLCEPHALOSPORINS

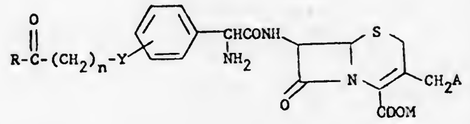
John Gerald Gleason, Cornwells Heights, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Aug. 1, 1973, Ser. No. 384,771

Int. Cl.² C07D *501/20*

U.S. Cl. 260—243 C **20 Claims**

1. A compound of the formula:



in which:

Y is O, NH or S;

n is one to five;

R is NH_2 or OR′, where R′ is hydrogen or lower alkyl of from one to four carbon atoms;

M is hydrogen or an alkali metal or ammonium cation;

A is SHet; and

Het is a five or six membered heterocyclic group containing carbon and one to four atoms selected from the group consisting of N, O and S, each such group being unsubstituted or substituted with from one to two groups selected from lower alkyl, alkoxyalkyl, each alkoxy or alkyl having from one to four carbon atoms, hydroxy, trifluoromethyl and SR′, where R′ is hydrogen or alkyl of from one to four carbon atoms.

3,953,440

DEACETOXYCEPHALOSPORINS VIA PENICILLIN SULFOXIDE REARRANGEMENT

Lowell D. Hatfield, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 13, 1974, Ser. No. 532,536

Int. Cl.² C07D *501/10*

U.S. Cl. 260—243 C **6 Claims**

1. In the process for preparing a 7-acylamido-3-methyl-3-cephem-4-carboxylic acid ester by heating a 6-acylamidopenicillanic acid ester sulfoxide in an inert solvent in the presence of an acidic catalyst, the improvement which comprises heating the penicillin sulfoxide in 1,1,2-trichloroethane in the presence of an amine salt of dichloromethanephosphonic acid wherein the amine salt is formed with an amine selected from the group consisting of pyridine, quinoline, isoquinoline and the methyl substituted derivatives thereof.

3,953,441

PREPARATION OF 2-BENZOYLALKYLBENZOMORPHAN

Toshio Atsumi; Kenji Kobayashi; Yoshiaki Takebayashi, all of Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

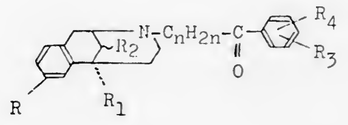
Filed June 7, 1971, Ser. No. 150,841

Claims priority, application Japan, June 10, 1970, 45-50665; June 10, 1970, 45-50666; June 30, 1970, 45-57649

Int. Cl.² C07D *221/26*

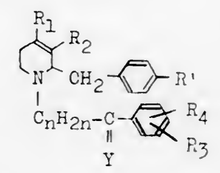
U.S. Cl. 260—293.54 **9 Claims**

1. A process for preparing 2-substituted 6,7-benzomorphan derivatives, and salts thereof, represented by the general formula,



[I]

wherein R is a hydrogen atom, a hydroxyl group, a C_1–C_3 alkoxy group or an alkanoyloxy group; R_1 is a hydrogen atom, a C_1–C_3 alkyl group, a phenyl group, a halophenyl group, a C_1–C_3 alkylphenyl group, a C_1–C_3 alkoxyphenyl group, a hydroxyphenyl group, a trifluoromethylphenyl group, a nitrophenyl group, an aminophenyl group, a C_1–C_3 alkylthiophenyl group or an alkanoyloxyphenyl group; R_2 is a hydrogen atom or a C_1–C_3 alkyl group; R_3 is a hydrogen atom, a halogen atom, a C_1–C_3 alkyl group, a C_1–C_3 alkoxy group, a C_1–C_3 alkylthio group, a nitro group, a trifluoromethyl group, an amino group or a hydroxyl group; R_4 is a hydrogen atom, a C_1–C_3 alkoxy group, a halogen atom or a C_1–C_3 alkyl group; and *n* is an integer of 2 to 4, which process comprises cyclizing a 1-substituted 1,2,5,6-tetrahydropyridine derivative or a salt thereof, represented by the general formula,



[II]

wherein R_1, R_2, R_3, R_4 and *n* are as defined above; Y is an oxygen atom or an ethylenedioxy group; and R′ is a hydrogen atom or a C_1–C_3 alkoxy group.

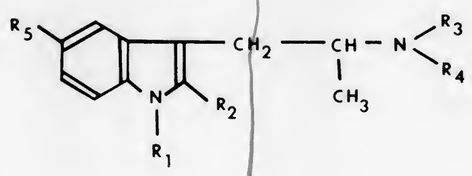
3,953,442

3-(AMINOPROPYL)INDOLES

Henri Demarne, Herault, France, assignor to Clin Midy, Paris, France

Filed Feb. 16, 1973, Ser. No. 333,343
Claims priority, application France, Feb. 16, 1972, 72.05196
Int. Cl.² C07D *209/14*
U.S. Cl. 260—247.5 FP **8 Claims**

1. A 3-(aminopropyl)indole having the general formula



in which R_1 is selected from the group consisting of phenyl, halophenyl, nitrophenyl, aminophenyl, lower alkoxyphenyl and pyridyl, R_2 is selected from the group consisting of hydrogen and methyl, $-NR_3R_4$ is pyrrolidino, piperidino or morpholino and R_5 is selected from the group consisting of hydrogen, fluorine, chlorine and methoxy, together with salts of said amines with pharmacologically acceptable mineral and organic acids.

3,953,443

METHOD FOR PRODUCING CYANURIC ACID

Yoichi Ohata, and Masayuki Aihara, both of Toyama, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Oct. 3, 1974, Ser. No. 511,918
Claims priority, application Japan, Oct. 5, 1973, 48-111477
Int. Cl.² C07D *251/32*
U.S. Cl. 260—248 A **4 Claims**

1. A method of producing cyanuric acid by heating urea in bulk comprising supplying urea continuously under agitation into a reaction vessel, the heat transfer surface of which is maintained at a temperature higher then 340°C, said vessel being equipped with an agitator and heated indirectly by a heat transfer medium, maintaining the reaction mixture permanently at a temperature higher than 220°C in any local point, and carrying out the reaction with a mean residence time of over 2.5 hours with heating and agitating, wherein said heat transfer medium does not come into direct contact with said reaction mixture.

3,953,444

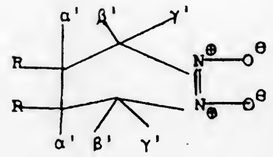
CYCLIC AND POLYCYCLIC DIAZADIOXIDES AS QUENCHERS AND RADICAL INHIBITORS

Prithipal Singh, Sunnyvale, and Edwin F. Ullman, Atherton, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 196,724, Nov. 8, 1971, abandoned. This application May 9, 1973, Ser. No. 358,758
Int. Cl.² C07D *237/26*
U.S. Cl. 260—250 AC **3 Claims**

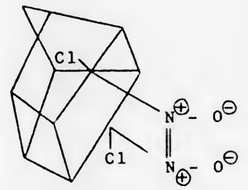
1. Compound of the formula:

(1)



wherein:
the two α's and the β's are taken together to form a saturated unsubstituted aliphatic tetravalent group of from 2 to 12 carbon atoms;
the two γ's are the same or different and are saturated aliphatic hydrocarbon of from 1 to 6 carbon atoms, halogen of atomic number 9 to 35 or hydrogen; and
the two R's are the same or different and are hydrogen, saturated aliphatic hydrocarbon of from 1 to 6 carbon atoms or halogen of atomic number 9 to 35.

3. Hexacyclo[8,2,1,$0^{2,9}$,$0^{3,8}$,$0^{7,11}$,$0^{4,12}$]-dodeca-4,7-dichloro-5-en-5,6-diaza-5,6-dioxide, of the formula:



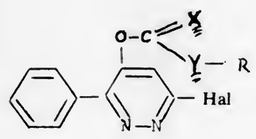
3,953,445

3-PHENYL-6-HALO-PYRIDAZINYL THIO-AND DITHIO-CARBONATES

Rupert Schonbeck, Leonding near Linz; Engelbert Kloimstein, Eferding; Alfred Diskus; Engelbert Auer, both of Linz, and Hubert Mayr, Leonding near Linz, all of Austria, assignors to Chemie Linz Aktiengesellschaft, Linz, Austria

Filed June 17, 1974, Ser. No. 480,309
Claims priority, application Germany, June 20, 1973, 2331398
The portion of the term of this patent subsequent to Jan. 13, 1993, has been disclaimed.
Int. Cl.² C07D *237/14*, *237/16*
U.S. Cl. 260—250 A **20 Claims**

1. A Phenylpyridazine having the formula:



in which Hal is selected from the group consisting of chlorine or bromine, R is selected from the group consisting of straight chain alkyl and branched alkyl, both having up to 12 carbon atoms and phenyl, and X and Y are selected from the group consisting of oxygen and sulphur, whereby one of X and Y always is sulphur.

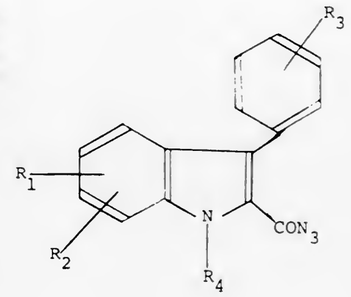
3,953,446

PROCESS FOR PREPARING QUINAZOLINES

Kikuo Ishizumi, Toyonaka; Kazuo Mori, Kobe; Michihiro Yamamoto, Nishinomiya; Masao Koshiba, Amagasaki; Shigeho Inaba, Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 5, 1974, Ser. No. 494,885
Claims priority, application Japan, Aug. 20, 1973, 48-93678
Int. Cl.² C07D *239/82*, *405/04*, *405/06*, *409/06*
U.S. Cl. 260—251 QB **2 Claims**

1. A process for preparing a quinazolinone of the formula,



(III)

wherein R_1, R_2, R_3 and R_4 are as defined above, with an oxidizing agent selected from the group consisting of ozone, hydrogen peroxide, performic acid, peracetic acid, perbenzoic acid, chromic acid, halogen and hypohalite of sodium, potassium or calcium in the presence of a solvent.

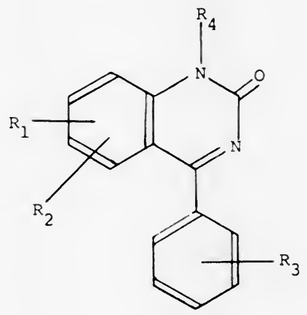
3,953,447

ESTERIFIED 2-AMINO PYRIMIDINE DERIVATIVES

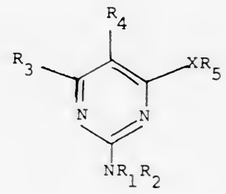
Brian Kenneth Snell, and Ranajit Ghosh, both of Bracknell, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 623,810, March 17, 1967, abandoned. This application Jan. 27, 1971, Ser. No. 110,275
Claims priority, application United Kingdom, Mar. 31, 1966, 14270/66
Int. Cl.² C07D *239/14*
U.S. Cl. 260—256.4 C **6 Claims**

1. A pyrimidine derivative selected from the group consisting of compounds having the formula:



(I)

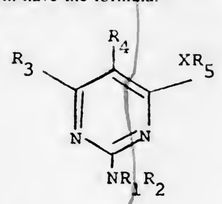


wherein R_1, R_2 and R_3 are independently a hydrogen atom, a halogen atom, a C_1–C_4 alkylsulfonyl group, a C_1–C_4 alkyl group provided that for R_1 and R_2 said alkyl group is a straight chain C_1–C_4 alkyl group, a C_1–C_4 alkoxy group or a C_1–C_4 alkylthio group; and R_4 is a hydrogen atom, a C_1–C_4 alkyl group, benzyl, a C_1–C_4 alkoxy-C_1–C_4 alkyl group, a polyhalo C_1–C_4 alkyl group, a cyclo C_3–C_6 alkyl group, a cyclo C_3–C_6 alkyl -C_1–C_4 alkyl group, a tetrahydrofurfuryl group, a furylmethyl group or a thienylmethyl group, which comprises the set of reacting an indole-2-carbonylazide of the formula,

and the hydrochloride salts thereof, wherein R_1 and R_2 are hydrogen, lower alkyl or halophenyl or together with the adjacent N-atom form a piperidino, morpholino or piperazino ring; R_3 and R_4 are hydrogen, halogen, a lower alkyl, lower alkenyl, phenyl or benzyl radical or nitro; X represents an atom of oxygen or sulphur; and R_5 is a carbonyl or sulphonyl

group bearing directly, or through an oxygen or sulphur atom, a lower alkyl, lower alkenyl or phenyl radical or a phenyl radical substituted with lower alkyl, halogen or nitro; furyl or piperidino.

6. A pyrimidine derivative selected from compounds which in free base form have the formula:



wherein R_1 and R_2 are hydrogen, lower alkyl or halophenyl or together with the adjacent N-atom form a piperidino, morpholino or piperazino ring; R_3 and R_4 are hydrogen, halogen, a lower alkyl, lower alkenyl, phenyl or benzyl radical or nitro; X represents an atom of oxygen or sulphur; and R_5 is a carbonyl or sulphonyl group bearing directly, or through an oxygen or sulphur atom, a lower alkyl, lower alkenyl or phenyl radical or nitro; furyl or piperidino and the rest of the ring being composed of carbon and hydrogen.

3,953,448

PIPERAZINO-ANILIDO COMPOUNDS

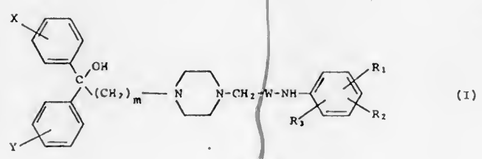
Ctirad Podesva, Montreal; William T. Scott, Ville de Lery, and David W. Henson, LaSalle, all of Canada, assignors to Delmar Chemicals Limited, Ville LaSalle, Canada

Filed Dec. 7, 1972, Ser. No. 311,702

Int. Cl.² C07D *295/10, 295/12*

U.S. Cl. 260—268 BZ **12 Claims**

1. A 1,4-disubstituted piperazine compound having the formula:



wherein X or Y is a halogen and the other is hydrogen or halogen, R_1, R_2 and R_3 are hydrogen, halogen, alkyl having 1 to 3 carbon atoms or alkoxy having 1 to 3 carbon atoms, W is carbonyl or methylene, and *m* is 1, 2 or 3; or a non-toxic acid addition salt thereof.

3,953,449

2-(4-M-CF_3 OR -SCF_3 PHENYLPIPERAZINO)-ETHYL BENZOATES

Don Pierre Rene Lucien Giudicelli, Fontenay-sous-Bois; Henry Najer; Bogdan Iliesco-Branceni, both of Paris; Philippe Michel Jacques Manoury, L'Hay-les-Roses, and Andre Pierre Fernand Dumas, Bagneux, all of France, assignors to Synthelabo, Paris, France

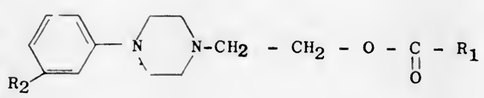
Filed May 6, 1974, Ser. No. 467,595

Claims priority, application France, May 9, 1973, 73.16634; Jan. 29, 1974, 74.02793

Int. Cl.² C07D *295/08*

U.S. Cl. 260—268 PH **8 Claims**

1. A compound of the formula



R_1 is phenyl, 2-methoxy-5-chloro phenyl, 3,4,5-trimethoxy-phenol, 2-hydroxyphenyl, 2-acetoxyphenyl, 2- or 4-amino-phenyl, 2-(m-trifluoromethyl-phenylamino)-phenyl or 2-(m-trifluoromethylthio-phenylamino)-phenyl; and

R_2 is CF_3 or SCF_3 or an acid addition salt thereof with a pharmaceutically acceptable organic or inorganic acid.

3,953,450

ALUMINUM DERIVATIVES OF N-OXYPYRIDYL THIOL AND PROCESS FOR THEIR PREPARATION

Claude Bouillon, Eaubonne, and Georges Rosenbaum, Asnieres, both of France, assignors to L'Oreal, Paris, France

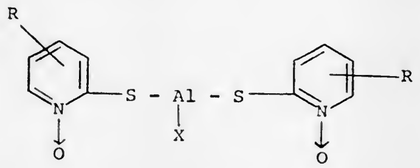
Filed Oct. 2, 1972, Ser. No. 294,072

Claims priority, application Luxemburg, May 12, 1972, 65350

Int. Cl.² C07D *213/89*

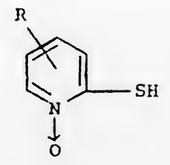
U.S. Cl. 260—270 K **9 Claims**

1. A compound of the formula



wherein X is selected from the group consisting of chlorine and bromine and R represents a member selected from the group consisting of chlorine, methyl and methoxy.

8. A process for preparing a compound of claim 1 comprising reacting in an anhydrous solvent selected from the group consisting of methanol, ethanol, isopropanol, tertio-butyl alcohol, benzene, toluene, chloroform and dichlorethane. a 2-pyridine thiol N-oxide of the formula



wherein R represents a member selected from the group consisting of hydrogen, chlorine, methyl and methoxy, with aluminum isopropylate and reacting the resulting reaction product with an acid selected from the group consisting of gaseous hydrochloric acid and gaseous hydrobromic acid.

3,953,451

COMPOUNDS OF THE NAPHTHALIMIDE SERIES

Renate Elisabeth Hell, Frankenthal, and Horst Scheuermann, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

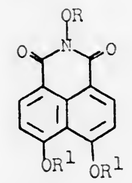
Division of Ser. No. 373,114, June 25, 1973, abandoned. This application Nov. 18, 1974, Ser. No. 524,783

Claims priority, application Germany, June 28, 1972, 2231609

Int. Cl.² C07D *217/24*

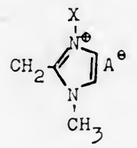
U.S. Cl. 260—281 NH **4 Claims**

1. A compound of the formula



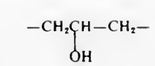
in which

R is -alkylene-T or

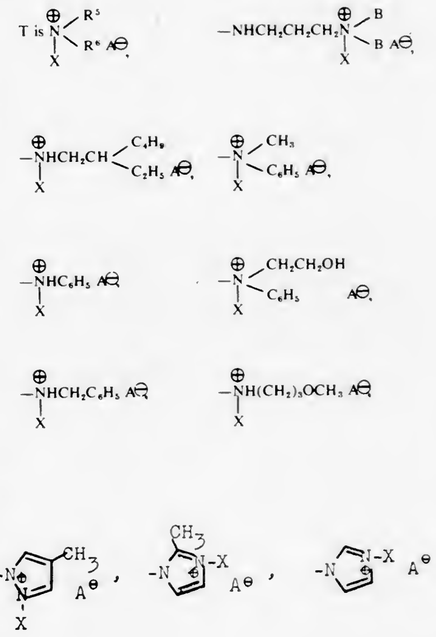


alkylene is $-CH_2CH_2-$, $-CH_2CH_2CH_2-$, $-CH_2CHCH_3$,

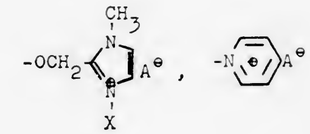
or

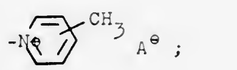


and



or





R^5 is alkyl of 1 to 4 carbon atoms or β-hydroxyethyl,

R^6 is hydrogen, alkyl of 1 to 4 carbon atoms or β-hydroxyethyl,

R^5 and R^6 together with the nitrogen are pyrrolidino or piperidino,

X is methyl, ethyl, propyl or benzyl,

R^1 is C_1- to C_4-alkyl,

B is C_1- to C_4-alkyl or C_2H_4OH and

A^- is chloride, bromide, iodide, sulfate, methosulfate, ethosulfate, benzene-sulfonate or toluenesulfonate.

3,953,452
PERINONE DYESTUFFS

Winfried Kruckenberg, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

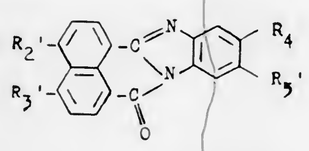
Continuation-in-part of Ser. No. 291,548, Sept. 25, 1972, abandoned, which is a continuation of Ser. No. 15,291, Feb. 27, 1970, abandoned. This application Jan. 3, 1974, Ser. No. 430,382

Claims priority, application Germany, Mar. 1, 1969, 1910586

Int. Cl.² C07D *487/02*

U.S. Cl. 260—282 **6 Claims**

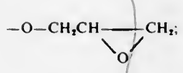
1. Perinone dyestuff having the formula



in which

one of R_2' and R_3' is hydrogen and the other —CN or —$CO_2C_pH_{2p+1}$;

one of R_4' and R_5' is hydrogen and the other C_1—C_4-alkoxy or



and

P is a whole number from 1 to 4.

3,953,453
TRIFLUOROMETHYL SUBSTITUTED ANALOGS OF QUININE AND QUINIDINE

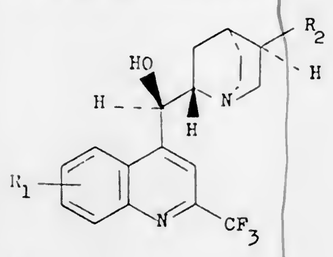
Guenter Grethe, North Caldwell, and Milan Radoje Uskokovic, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 422,645, Dec. 7, 1973, abandoned. This application Nov. 11, 1974, Ser. No. 522,677

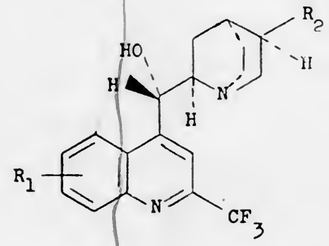
Int. Cl.² C07D *453/04*

U.S. Cl. 260—284 **21 Claims**

1. A compound of the formula



and



its enantiomer or racemate,

wherein R_1 is halogen or trifluoromethyl; and R_2 is ethyl or vinyl, or an addition salt thereof with a pharmaceutically acceptable acid.

3,953,454
N-(D-6-METHYL-8-ISOERGOLINE-I-YL)-N',N'-DIETHYLUREA

Viktor Zikán; Miroslav Semonský; Karel Řezábek; Miroslav Sěda, and Marie Aušková, all of Prague, Czechoslovakia, assignors to SPOFA, United Pharmeceutical Works, Prague, Czechoslovakia

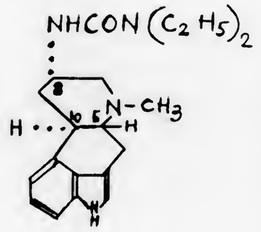
Filed Aug. 7, 1972, Ser. No. 278,367

Claims priority, application Czechoslovakia, Aug. 5, 1971, 5689-71; Aug. 5, 1971, 5709-71

Int. Cl.² C07D *457/06*

U.S. Cl. 260—285.5 **3 Claims**

1. N-(D-6-methyl-8-isoergoline-I-yl)-N,', N'-diethyl-urea of the formula



and its hydrogen maleate and tartrate salts

3,953,455
DERIVATIVES OF 6(5H)-PHENANTHRIDINONE AND A METHOD FOR PREPARATION

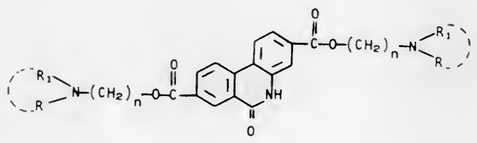
Donald R. Meyer, and Arthur D. Sill, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Division of Ser. No. 317,146, Dec. 21, 1972, Pat. No. 3,859,312. This application Sept. 13, 1974, Ser. No. 505,662

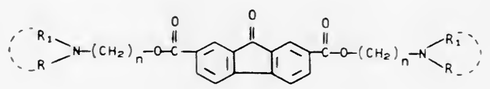
Int. Cl.² C07D *215/32*

U.S. Cl. 260—286 A **4 Claims**

4. A method for preparing a compound having the formula:



wherein *n* is an integer of from 2 to 6, R and R_1 are each selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, alkenyl having from 3 to 6 carbon atoms in which the unsaturation is in a position other than in the 1-position of the alkenyl group, and when R and R_1 are taken together with the nitrogen atom to which they are attached, represent pyrrolidinyl, piperidino and morpholino, which comprises the step of reacting a bis(aminoalkyl) 9-oxo-fluorene-2,7-dicarboxylate having the formula:



wherein the symbols *n*, R and R_1 have the values previously described, or a salt thereof, with hydrazoic acid; and isolating the resulting product therefrom.

3,953,456
CARBOSTYRIL DERIVATIVES AND PROCESS FOR PREPARING THE SAME

Kazuyuki Nakagawa, Tokushima; Shiro Yoshizaki, Komatsushima; Nanami Murakami, and Hideo Mori, both of Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

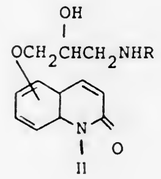
Filed Dec. 14, 1973, Ser. No. 424,965

Claims priority, application Japan, Dec. 14, 1972, 47-125857

Int. Cl.² C07D *215/22*

U.S. Cl. 260—288 R **6 Claims**

1. A 5- or 8- (2-Hydroxy-3-alkylamino)propoxycarbostyril compound represented by the formula (I):



(I)

wherein R represents a straight or branched alkyl group having 1 to 4 carbon atoms, and the pharmaceutically acceptable acid addition salts thereof.

3,953,457
AGENT FOR THE CONTROL OF PLANT-PATHOGENIC ORGANISMS

Barry A. Dreikorn, and Kenneth E. Kramer, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 275,984, July 28, 1972, Pat. No. 3,839,569, which is a continuation-in-part of Ser. No. 172,317, Aug. 16, 1971, abandoned. This application Feb. 15, 1974, Ser. No. 443,074

Int. Cl.² C07D *471/04*

U.S. Cl. 260—288 CF **5 Claims**

1. A compound selected from the group consisting of 4,5-dihydro-s-triazolo(4,3-a)quinoline, 4,5-dihydro-1-methyl-s-triazolo(4,3-a)quinoline, 9-chloro-4,5-dihydro-s-triazolo(4,3-a)quinoline, and 4,5-dihydro-9-methyl-s-triazolo(4,3-a)quinoline.

3,953,458
1-SUBSTITUTED AMINO-2-ALKYL-5-HYDROXY-7,8-CYCLOPENTANO[H]-1,2,3,4-TETRAHYDROISOQUINOLINES

Ian William Mathison; William Ebenezer Solomons, both of Memphis, Tenn., and Raymond Henry Jones, Northport, N.Y., assignors to Marion Laboratories, Inc., Kansas City, Mo.

Filed Mar. 28, 1974, Ser. No. 455,561

Int. Cl.² C07D *217/02*

U.S. Cl. 260—288 CF **13 Claims**

12. A compound of the formula

wherein R is a phenyl-lower alkyl amino, substituted phenyl-lower alkyl amino, phenyl-lower alkyl imino, substituted phenyl-lower alkyl imino, diphenyl-lower alkyl amino or substituted diphenyl-lower alkyl amino in which groups the lower alkyl has 1 to 8 carbon atoms and the substituted phenyl group have 1 to 3 lower alkyl, lower alkoxy, bromo, chloro, fluoro, nitro, hydroxy, methylenedioxy and trifluoromethyl groups with said lower alkyl and lower alkoxy groups having 1 to 8 carbon atoms, R_1 is hydrogen or a lower alkyl having 1 to 8 carbon atoms and R_2 is a lower alkyl group having 1 to 8 carbon atoms, and non-toxic acid addition salts and non-toxic quaternary ammonium salts thereof.

3,953,459
PROCESS FOR THE PREPARATION OF 2,2,6,6-TETRAMETHYL-4-OXOPIPERIDINE

Ivan Orban, Basel; Hanns Lind, Liestal; Heimo Brunetti, Reinach, and Jean Rody, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 21, 1974, Ser. No. 481,921

Claims priority, application Switzerland, June 25, 1973, 9240/73; Apr. 19, 1974, 5438/74; May 22, 1973, 7017/73

Int. Cl.² C07D *211/74*

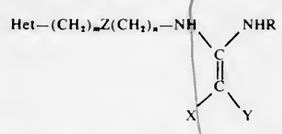
U.S. Cl. 260—293.89 **37 Claims**

1. Process for the preparation of 2,2,6,6-tetramethyl-4-oxopiperidine from 2,2,4,4,6-pentamethyl-2,3,4,5-tetrahydropyrimidine (acetonine), wherein the acetonine is treated with 0.2 to 12 mol-%, relative to the acetonine starting material, of an acid catalyst, whereby the operation is performed

(a) without water or with less than the equimolar amount of water, relative to the acetonine, and in the presence of acetone and/or diacetone alcohol; or (b) with at least the equimolar amount of water, relative to the acetonine.

3,953,460
ETHYLENE DERIVATIVES
Graham John Durant, Welwyn Garden City; John Colin Emmett, Codicote; Charon Robin Ganellin, Welwyn Garden City, and Hunter Douglas Prain, Hitchin, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England
Filed May 9, 1974, Ser. No. 468,617
Claims priority, application United Kingdom, May 17, 1973, 23568/73
Int. Cl.² C07D 213/28
U.S. Cl. 260—294.8 G 7 Claims

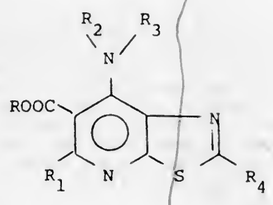
1. A compound of the formula



wherein X and Y, which may be the same or different, are hydrogen, nitro, cyano or SO_2Ar but are not both hydrogen; R is hydrogen, lower alkyl or $Het(CH_2)_mZ(CH_2)_n$; Z is sulphur *m* is 0, 1 or 2 and *n* is 2 or 3, provided that the sum of *m* and *n* is 3 or 4; Het is a pyridine ring which ring is optionally substituted by lower alkyl, hydroxyl, halogen or amino; and Ar is an aryl group such as phenyl optionally substituted by halogen, methyl or amino or a pharmaceutically acceptable acid addition salt thereof.

3,953,461
AMINO DERIVATIVES OF THIAZOLO[5,4-B]PYRIDINE-6-CARBOXYLIC ACIDS AND ESTERS
Theodor Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed Mar. 5, 1975, Ser. No. 555,512
Int. Cl.² C07D 213/55
U.S. Cl. 260—294.8 C 9 Claims

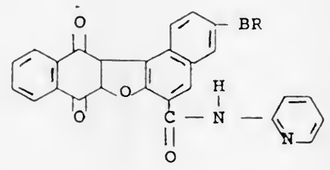
1. A compound of the formula



wherein R, R_1 and R_4 each is hydrogen or lower alkyl, and R_2 and R_3 each is hydrogen, lower alkyl, phenyl or di(lower alkyl)amino-lower alkyl, and physiologically acceptable salts thereof.

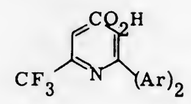
3,953,462
IMAGING PROCESS
Robert J. Gruber, Pittsford, and Nicholas J. Germano, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Oct. 29, 1973, Ser. No. 411,596
Int. Cl.² C07D 405/04
U.S. Cl. 260—295 A 1 Claim

1. 3-bromo-N-2''-pyridyl-8,13-dioxodinaphtho-(2,1-b; 2',3'-d)-furan-6-carboxamide which is represented by the formula



3,953,463
2-ARYL-6-TRIFLUOROMETHYL-4-PYRIDYL-CARBINOLAMINE ANTIMALARIALS
Arthur B. Ash, Detroit; Maurice P. La Montagne, Sterling Heights, and Anica Markovac, Lathrup Village, all of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Division of Ser. No. 448,468, March 6, 1974, Pat. No. 3,886,167. This application Sept. 16, 1974, Ser. No. 506,421
Int. Cl.² C07D 213/26
U.S. Cl. 260—295 R 4 Claims

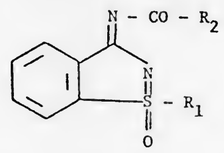
1. The compound of the formula



wherein $(Ar)_2$ is a phenyl ring substituted with a trifluoromethyl, chloro, bromo, fluoro or methoxy substituent in the phenyl ring.

3,953,464
CYCLIC SULPHOIMIDES
Peter Stoss, Wildtal; Gerhard Satzinger, Denzlingen, and Manfred Herrmann, St. Peter, all of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Aug. 9, 1974, Ser. No. 495,985
Claims priority, application Germany, Aug. 11, 1973, 2340784; Mar. 11, 1974, 2411612
Int. Cl.² C07D 275/04
U.S. Cl. 260—302 F 22 Claims

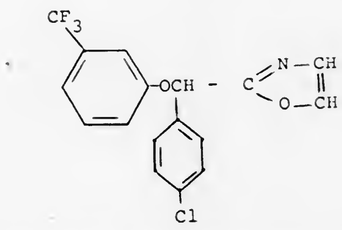
1. Cyclic sulphoximide of the formula:



wherein R_1 is methyl or phenyl and R_2 is alkyl or alkoxy containing up to 4 carbon atoms, cyclohexoxy, methoxyethoxy, phenoxy, phenyl, benzyl, phenoxymethyl which may be substituted by chlorine atom, hydroxy group or methoxy, or acetoxyphenyl.

3,953,465
2-[α-(3-TRIFLUOROMETHYLPHENOXYL)-4-CHLOROBENZYL]OXAZOLE AND METHODS FOR PREPARING THE SAME
William A. Bolhofer, Frederick, Pa., assignor to Merck & Co., Inc., Rahway, N.J.
Division of Ser. No. 243,480, April 11, 1972, Pat. No. 3,816,446. This application Oct. 26, 1973, Ser. No. 410,130
Int. Cl.² C07D 263/32
U.S. Cl. 260—307 R 1 Claim

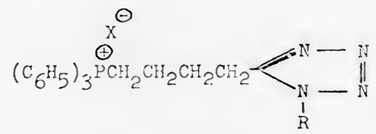
1. A compound of the formula:



and non-toxic, pharmaceutically acceptable salts thereof.

3,953,466
4(TETRAZOL-5-YL)-BUTYLTRIPHENYLPHOSPHONIUM HALIDE COMPOUNDS
Hans-Jurgen E. Hess, Old Lyme; Leonard J. Czuba, New London, and Thomas K. Schaaf, Old Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.
Division of Ser. No. 335,586, Feb. 26, 1973, Pat. No. 3,883,513, which is a continuation-in-part of Ser. No. 177,102, Sept. 1, 1971, abandoned. This application July 25, 1974, Ser. No. 491,784
Int. Cl.² C07D 257/04
U.S. Cl. 260—308 D 5 Claims

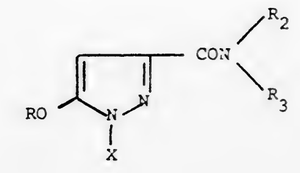
1. A compound of the structure:



wherein R is hydrogen or alkyl having from 1 to 3 carbon atoms; and
X is chlorine, bromine, or iodine.

3,953,467
PYRAZOLE DERIVATIVES AND PROCESS FOR PREPARING THE SAME
Hajime Fujimura, Kyoto; Mikio Hori, Gifu; Osamu Ootani, Minokamo; Sachio Ohno, Aichi; Tadashi Kitamikado; Kiyoshi Kato, both of Nagoya, and Mitsuaki Nagasaka, Aichi, all of Japan, assignors to Maruko Seiyaku Co., Ltd., Nagoya, Japan
Filed Apr. 17, 1974, Ser. No. 461,764
Claims priority, application Japan, Apr. 17, 1973, 48-43827
Int. Cl.² C07D 231/22; A61K 31/415
U.S. Cl. 260—310 R 14 Claims

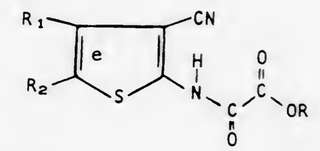
1. Pyrazole compounds represented by the formula



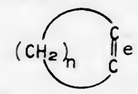
wherein R represents an alkyl group of 1 to 4 carbon atoms, X represents a mono- or di-substituted phenyl group wherein the substituents may be the same or different and each represents an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, a trifluoromethyl group, a nitro group, an amino group or a halogen atom; or a substituted or unsubstituted benzyl group wherein the substituent is a halogen atom, R_2 represents a hydrogen atom or an alkyl group of 1 to 4 carbon atoms and R_3 represents a hydrogen atom, a hydroxyalkyl group of 1 to 4 carbon atoms, an alkyl group of 1 to 4 carbon atoms or a substituted aminoalkyl group of 1 to 4 carbon atoms.

3,953,468
3-CYANO THIOPHEN-2-YL OXAMIC ACID AND DERIVATIVES
William J. Wechter, and John B. Wright, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Filed Mar. 15, 1974, Ser. No. 451,509
Int. Cl.² C07D 333/24
U.S. Cl. 260—332.2 R 8 Claims

1. A compound of the formula

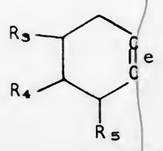


wherein R is selected from the group consisting of hydrogen, alkyl from one to ten carbon atoms, inclusive, phenyl, benzyl, and a pharmaceutically acceptable metal or amine cation; R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, alkyl of one to six carbon atoms, inclusive, phenyl, and R_1 and R_2, when joined with the carbon atoms to which they are attached, *e* denoting the common double bond of the thiophene ring and the ring formed when R_1 and R_2 are joined together with the carbon atom to which they are attached, form the following groups:

a. 

where *n* is an integer from three to ten, inclusive;

b.



where R_3, R_4, and R_5 are the same or different and are selected from the group consisting of hydrogen and alkyl from one to four carbon atoms, inclusive; with the proviso that R_3, R_4, and R_5 are each not hydrogen at the same time.

3,953,469

BENZOXOZEPINE CARBOXAMIDES AND DERIVATIVES THEREOF

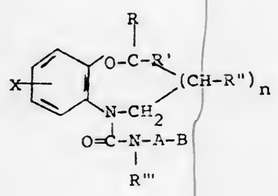
John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation of Ser. No. 723,892, April 24, 1968, abandoned, which is a division of Ser. No. 435,677, Feb. 26, 1965, Pat. No. 3,395,150. This application Aug. 31, 1971, Ser. No. 176,750

Int. Cl.² C07D *265/36*, *273/00*, *413/12*, *413/14*

U.S. Cl. 260—333 10 Claims

1. A compound selected from the group consisting of bases of the formula:



and pharmaceutically acceptable acid-addition salts thereof, wherein X is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, lower alkyl mercapto, nitro, di(lower alkyl)amino, halo and trifluoromethyl; R, R′, R″ and R‴, are each selected from the group consisting of hydrogen, lower alkyl, cyclopropyl, X-substituted phenyl, furyl, thienyl and pyridyl; *n* is selected from the group consisting of zero, one and two; A is lower alkylene and B is basic nitrogen-containing radical of less than 12 carbon atoms selected from the group consisting of amino; (lower alkyl)amino; (hydroxy-lower alkyl)amino; di(hydroxy-lower alkyl)amino di(lower alkyl)amino; phenyl (lower alkyl)amino; N-(lower alkyl)phenyl-(lower alkyl)amino; piperidino; (lower alkyl)piperidino; di(lower alkyl)piperidino; (lower alkoxy)piperidino 4-(N-lower alkyl)-piperidyl; homopiperidino; pyrrolidino; (lower alkyl)pyrrolidino; di(lower alkyl)pyrrolidino; (lower alkoxy)-pyrrolidino; morpholino; (lower alkyl)morpholino; di(lower alkyl)morpholino; (lower alkoxy)morpholino; thiamorpholino; (lower alkyl)thiamorpholino; di(lower alkyl)-thiamorpholino; (lower alkoxy)thiamorpholino; piperazino; homopiperazino; (lower alkyl)piperazino; di(lower alkyl)-piperazino; (lower alkoxy)piperazino; hydroxy-lower alkyl-piperazino; lower alkanoyloxy-lower alkyl-piperazino; X-substituted phenylpiperazino; X-substituted phenyl(lower alkyl)-piperazino; X-substituted cinnamyl (lower alkyl)piperazino and N⁴-pyridyl piperazino and pharmaceutically acceptable salts thereof.

3,953,470

SUBSTITUTED PROSTAGLANDIN DERIVATIVES

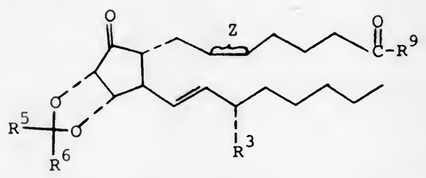
Pierre Crabbe, and Angel Guzman, both of Mexico City, Mexico, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 204,681, Dec. 3, 1971, Pat. No. 3,846,475. This application July 11, 1974, Ser. No. 487,504

Int. Cl.² C07F *317/44*

U.S. Cl. 260—340.5 14 Claims

1. A compound of the formula:



wherein R^9 is selected from the group consisting of hydroxy or a hydrocarbon carboxylic acyloxy group having from two through 12 carbon atoms or a grouping selected from those consisting of methoxy, ethoxy, propoxy, 2-propoxy, cyclopropoxy, butoxy, 2-butoxy, t-butoxy, cyclobutoxy, pentoxy, 3-pentoxy, cyclopentoxy, hexoxy, cyclohexoxy, methoxy-methoxy, 2-methoxy-ethoxy, 2-ethoxy-ethoxy, 2-aminoethoxy, 2-chloroethoxy, 3-fluorobutoxy, 2-acetoxyethoxy, 3-nitropropoxy, 3-aminocyclobutoxy, 4-hexylcyclohexoxy, 2-phenoxyethoxy, phenoxy, tolyloxy, chlorophenoxy, m,m′-dimethylphenoxy, p-nitrophenoxy, β-chloropropoxy, p-aminophenoxy, tetrahydrofuran-2′-yloxy and tetrahydropyran-2′-yloxy; Z represents a saturated carbon-carbon linkage or a cis carbon=carbon double bond; R^5 and R^6 are independently selected from the group of hydrogen, lower alkyl and aryl groups having a total of up to 16 carbon atoms and containing one aromatic ring having up to 10 carbon atoms optionally substituted with one or more pharmaceutically acceptable functional groups selected from the group of hydroxy, lower alkyl hydrolyzable ester, lower alkyl or halo, or R^5 and R^6 together with the carbon atom to which they are joined from a cycloalkyl group having 5 or 6 ring carbon atoms; R^9 is hydroxy; or the group



is a carboalkoxy group having from two to 12 carbon atoms; and pharmaceutically acceptable addition salts thereof.

3,953,471

KETALS OF 4-ACETYL-3,3,5,5-TETRAMETHYLCYCLOHEXANONE

Bernard Pierre Corbier, and Paul Jose Teisseire, both of Grasse, France, assignors to Societe Anonyme Roure Bertrand Dupont, Paris, France

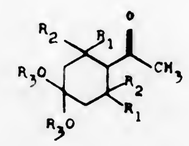
Division of Ser. No. 110,652, Jan. 28, 1971, Pat. No. 3,875,241, which is a continuation-in-part of Ser. No. 585,259, Oct. 10, 1966, Pat. No. 3,578,715. This application Feb. 3, 1975, Ser. No. 546,532

Claims priority, application Switzerland, Oct. 14, 1965, 14216/65

Int. Cl.² C07C *49/26*; C07D *317/12*

U.S. Cl. 260—340.9 4 Claims

1. Compounds having the formula



wherein R_1 and R_2 represent lower alkyl and the symbols R_3 each represent lower alkyl or, taken together, a lower alkylene group.

3,953,472

METHOD FOR SEPARATING LACTONES FROM A MIXTURE CONTAINING LACTONES

Yutaka Fujita; Toru Sawaki; Tadahisa Sasano, all of Iwakuni, and Masao Sada, Kobe, all of Japan, assignors to Teijin Limited and Sumitomo Chemical Company, Limited, both of Osaka, Japan

Filed Mar. 15, 1974, Ser. No. 451,564

Claims priority, application Japan, Mar. 17, 1973, 48-30510

Int. Cl.² C07D *307/12*

U.S. Cl. 260—343 12 Claims

1. A method for separating lactones from a mixture comprising (a) at least one member selected from the group consisting of saturated aliphatic hydroxy acids wherein the OH group and the COOH group are bonded through 3 or 4 carbon atoms, lactones derived therefrom, lower polymers of said hydroxy acids and/or said lactones and esters of said hydroxy acids and/or said lactones, and (b) at least one member selected from the group consisting of saturated aliphatic hydroxy acids wherein the OH group and the COOH group are bonded through 5 carbon atoms, lactones derived therefrom, lower polymers of said hydroxy acids and/or said lactones and esters of said hydroxy acids and/or said lactones, which comprises

treating said mixture in the presence of one or more saturated monovalent or bivalent aliphatic or alicyclic alcohols

under a pressure of from 0.1 to 500 mm Hg absolute

at a temperature of from 180° to 340°C to remove the lactones derived from the saturated aliphatic hydroxy acids wherein the OH group and the COOH group are bonded through 3 or 4 carbon atoms by distillation.

3,953,473

TRICYCLIC LACTONE GLYCOL SULFONATES

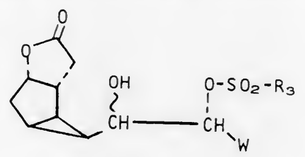
Verlan H. Van Rheenen, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 374,348, June 28, 1973, abandoned. This application May 8, 1975, Ser. No. 575,527

Int. Cl.² C07D *307/93*

U.S. Cl. 260—343.3 R 10 Claims

1. An optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof;

wherein R_3 is alkyl of one to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one or two halo, or alkyl of one to 4 carbon atoms, inclusive; and

wherein W is 1-pentyl, 1-pent-cis-2-enyl, or 1-pent-2-ynyl.

3,953,474

ANTIBIOTIC A2041 DERIVATIVES

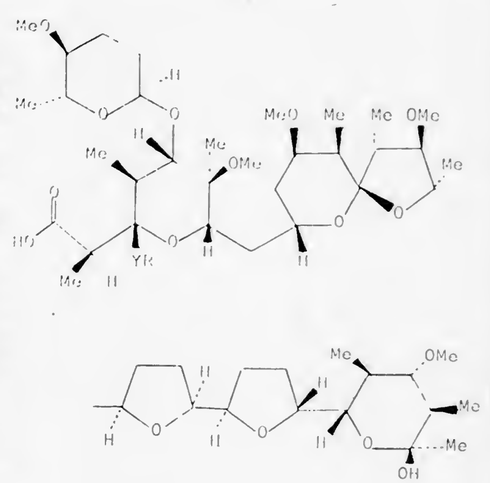
Robert L. Hamill, New Ross, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 524,178, Nov. 15, 1974, Pat. No. 3,907,832. This application Apr. 3, 1975, Ser. No. 564,934

Int. Cl.² C07D *309/22*

U.S. Cl. 260—345.7 3 Claims

1. The A2041 derivative of the formula:



wherein:

Y represents O; and

R represents

C_1–C_4-alkoxy C_2–C_5-alkyl,

C_1–C_4-alkoxycarbonyl-C_2–C_5-alkyl,

amino-C_2–C_5-alkyl,

mercapto-C_2–C_5-alkyl,

C_2–C_5 hydroxyalkyl, 2,3-dehydroxypropyl

C_2–C_5 haloalkyl, or

$(R')_m$-phenyl$(CH_2)_n$-,

wherein R′ represents C_1–C_4-alkyl, C_1–C_4-alkoxy, or hydroxy;

m represents 0–2; and

n represents 0–3;

or a physiologically acceptable cationic salt thereof.

3,953,475

POLYBUTENE COMPOSITION CONTAINING HALO-CARBONYL ADDITIVES

Imre Puskas, Glen Ellyn, and John A. Cengel, Wheaton, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed May 10, 1973, Ser. No. 358,958

Int. Cl.² C07D *307/60*

U.S. Cl. 260—346.8 R 4 Claims

1. A method of preparing polybutenylsuccinic anhydride which comprises reacting at a temperature in the range of 150°–300°C in the proportions of from 1.0 to 1.5 moles maleic anhydride per mole of 300–3000 M_n polybutene in the composition comprising said polybutene and based on the weight thereof as additive from 5 to 200 ppm of an alpha-bromo dialkyl ketone having in addition to the keto-carbonyl carbon

atom up to a total of twenty carbon atoms, alpha-dibromo-substituted alkyl diketone wherein its two keto-carbonyl carbon atoms are in a chain of from 4 to 22 carbon atoms and each bromo- substituent is on a chain carbon atom adjacent to a keto-carbonyl carbon atom, or alpha-bromo aceto-phenone or napthone, or C_1–C_{10} dialkyl acetal of alpha-bromo acetaldehyde which additive has a normal boiling point in the range of from 40°C up to 225°C.

3,953,476

3-AMINO-5-SULFONYLBENZOIC ACIDS

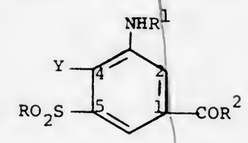
Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 212,745, Dec. 27, 1971, abandoned, which is a division of Ser. No. 33,051, April 29, 1970, Pat. No. 3,780,027. This application May 1, 1974, Ser. No. 465,949

Int. Cl.² C07D *307/52*

U.S. Cl. 260—347.2 **6 Claims**

1. An aminobenzoic acid having the structure:



wherein Y is selected from the group consisting of (1) halo, (2) trifluoromethyl and (3) C_{1-3} alkyl; R is selected from the group consisting of (1) lower alkyl; (2) halo-lower alkyl, (3) phenyl-C_{1-3} alkyl, (4) (monosubstituted-phenyl)-C_{1-3} alkyl wherein the substituent is selected from lower alkyl, lower alkoxy and halo; R_1 is selected from the group consisting of (1) phenyl-C_{1-3} alkyl, (2) (monosubstitutedphenyl)-C_{1-3} alkyl wherein the substituent is selected from halo, C_{1-3} alkyl and C_{1-3} alkoxy, (3) naphthyl-C_{1-3} alkyl, (4) furyl-C_{1-3} alkyl, (5) carboxyfuryl-C_{1-3} alkyl, (6) thienyl-C_{1-3} alkyl, (7) halo-C_{1-3} alkyl, (8) hydroxy-C_{1-3} alkyl, (9) di-C_{1-3} alkylamino-C_{1-3} alkyl, and (10) C_{3-6} cycloalkyl-C_{1-3} alkyl and R_2 is selected from the group consisting of (1) hydroxy and its pharmaceutically acceptable salts, and (2) OR^3 wherein R^3 is C_{1-5} alkyl and di-C_{1-3} alkylamino-C_{1-3} alkyl.

3,953,477

N-TETRAHYDROFURFURYL-3,5-DIMETHYLBENZAMIDE

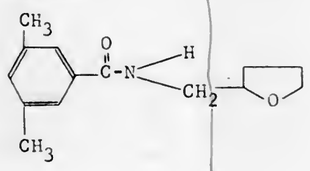
Don R. Baker, Orinda; Francis H. Walker, Mill Valley, and Peter E. Letchworth, Cupertino, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 417,306, Nov. 19, 1973, abandoned. This application Dec. 24, 1974, Ser. No. 536,064

Int. Cl.² C07D *307/14*

U.S. Cl. 260—347.3 **1 Claim**

1. The compound



3,953,478

TETRAHYDROFURANYL BROMOACETATES BIOCIDES

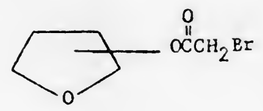
Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 2, 1975, Ser. No. 564,517

Int. Cl.² C07D *307/24*

U.S. Cl. 260—347.4 **4 Claims**

1. A compound having the formula



3,953,479

DIGLYCIDYL ESTERS OF C_{21}-CYCLOALIPHATIC DICARBOXYLIC ACID

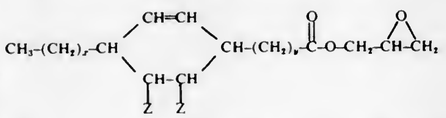
Carlton G. Force, Mount Pleasant, and Benjamin F. Ward, Isle of Palms, both of S.C., assignors to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 393,959, Sept. 4, 1973, abandoned. This application Feb. 3, 1975, Ser. No. 546,505

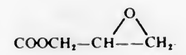
Int. Cl.² C07D *303/44*

U.S. Cl. 260—348 A **1 Claim**

1. A compound having the structural formula



wherein x and y are integers from 3 to 9, x and y together equal 12, and Z is a member of the group consisting essentially of



and hydrogen with one Z of each moiety.

3,953,480

EPOXIDATION OF OLEFINS BY HYDROGEN PEROXIDE

Serge Delavarenne, Francheville-le-Haut; Francis Weiss, Rethondes, and Jean-Pierre Schirmann, Brignais, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Sept. 30, 1974, Ser. No. 510,461

Claims priority, application France, Oct. 2, 1973, 73.35113

Int. Cl.² C07D *301/12*

U.S. Cl. 260—348.5 L **10 Claims**

1. A method for preparing an oxirane compound which comprises reacting an olefin with hydrogen peroxide in a solvent selected from a lower alkanol, a nitrile, an amide, and an ether, in the presence of a catalyst system including:

a. molybdenum hexacarbonyl or tungsten hexacarbonyl, or a mixture thereof; and

b. an organolead compound of tetravalent lead having from one to three of its four valences bonded to an organic group which is a straight-chained C_1–C_{12} alkyl radical, a C_3–C_{12} branched or cyclic alkyl radical, a C_3–C_{11} straight-chained alkylene radical, or a C_6–C_{12} aryl radical, and having the remainder of its four valences bonded to at least one anionic group which is a hydroxyl group or a group which is convertible to a hydroxyl or hydroperoxyl group in the presence of aqueous hydrogen peroxide, said convertible group being a halogen or an anion of a mineral or organic acid, or a C_1–C_{12} alkoxy or phenoxy group or an oxide anion formed by the loss of a proton from an organolead hydroxide, wherein said organic groups can be identical to or different from each other and wherein said anionic groups can be identical to or different from each other.

3,953,481

DIACYLIUM COMPLEXES OF TETRAHALOTEREPHTHALIC ACID

James O. Knobloch, Naperville, Ill., and Fausto Ramirez, Goshen, Va., assignors to Standard Oil Company, Chicago, Ill.

Filed June 10, 1974, Ser. No. 477,668

Int. Cl.² C07C *161/00*

U.S. Cl. 260—350 R **7 Claims**

1. A diacylium sulfate complex of a tetrahaloterephthalic acid.

4. The method of producing the diacylium sulfate complex of claim 1, which comprises dispersing a tetrahaloterephthalic acid in substantially pure sulfur trioxide wherein at least two moles of sulfur trioxide are present per mole of tetrahaloterephthalic acid.

3,953,482

PROCESS FOR PRODUCING QUINONES

Junichiro Sugano; Yasuhisa Kuriyama; Yukio Ishiuchi, and Yoshitugu Minamikawa, all of Yokkaichi, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Aug. 9, 1973, Ser. No. 387,229

Claims priority, application Japan, Aug. 16, 1972, 47-81472

Int. Cl.² C07C *49/66, 49/68*

U.S. Cl. 260—396 R **13 Claims**

1. A process for producing anthraquinones or alkyl-substituted naphthoquinones, which comprises reacting in the liquid phase at a temperature of from 0° to 100°C an anthracene or an alkylnaphthalene with hydrogen peroxide in the presence of 5–35 moles of hydrogen chloride per mole of the anthracene or alkylnaphthalene, the total amount of water in said reaction mixture before reaction being not more than 25% by weight based on the total weight of the reaction mixture;

wherein said anthracene is anthracene or an anthracene substituted by 1 to 8 alkyl groups each of which contains not more than 10 carbon atoms at positions other than the 9- and 10-positions of said anthracene; and

wherein said alkylnaphthalene is an alkylnaphthalene substituted by an alkyl group which contains not more than 10 carbon atoms only at the 2-position, or an alkylnaphthalene substituted by alkyl groups, each of which contains not more than 10 carbon atoms, in the 2-position and in at least one of the 3-, 5-, 6-, 7- or 8-positions.

3,953,483

17-NOR-6-METHYL-STEROIDS

Kentaro Hiraga, Nagaokakyo; Kouichi Yoshioka, Ukyoku; Giichi Goto, Toyonaka; Ryo Nakayama, Kawanishi, and Michio Masuoka, Miki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

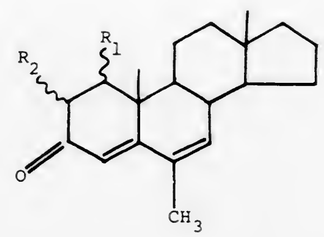
Filed June 13, 1974, Ser. No. 479,676

Claims priority, application Japan, June 16, 1973, 48-68107

Int. Cl.² C07J *1/00*

U.S. Cl. 260—397.3 **4 Claims**

1. A compound of the formula



wherein each of R_1 and R_2 represents hydrogen or methyl or R_1 and R_2 may be combined to form the methylene group.

3,953,484

METHOD OF SEPARATING FATTY ACID FRACTIONS

Leonard L. Sutker, 912 Fernhill, Glenside, Pa. 19038

Filed Aug. 14, 1974, Ser. No. 496,870

Int. Cl.² C11C *1/08*

U.S. Cl. 260—419 **12 Claims**

1. A method of separating mixed fatty acids into fractions having a relatively greater proportion of high melting point constituents and a relatively greater proportion of low melting point constituents comprising the steps of providing a mixture of fatty acids to be separated into fractions, vigorously whipping the said mixture and continuing the whipping for a period adequate to produce a liquified, pumpable, gas-entrained slurry, then filtering said slurry under the influence of pressure different from ambient pressure to produce a filtrate having a relatively greater proportion of low melting constituents and a solid fraction having a relatively greater proportion of high melting constituents.

5. The method of claim 1 in which said mixture of fatty acids is a mixture of tallow fatty acids and the filtrate is red oil and the solid fraction is commercial grade stearic acid.

7. The method of claim 1 in which said whipping takes place in the presence of air to incorporate air into the mixture whereby the slurry produced is an aerated slurry.

3,953,485

CONTINUOUS PROCESS FOR THE SEPARATION OF MIXTURES OF FATTY SUBSTANCES OF DIFFERENT MELTING POINTS

Werner Stein, Erkrath-Unterbäck, and Helmüt Hartmann, Langenfeld, both of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

Division of Ser. No. 300,895, Oct. 26, 1972, Pat. No. 3,870,735. This application Nov. 7, 1974, Ser. No. 521,915

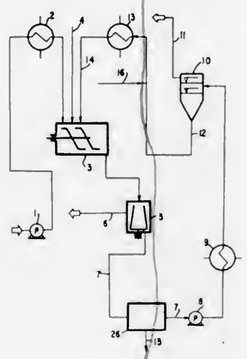
Claims priority, application Germany, Nov. 11, 1971, 2155988

Int. Cl.² C09F *5/10;* **C11B** *3/00*

U.S. Cl. 260—428 **9 Claims**

1. A continuous process for the separation of mixtures of fatty acid esters into fatty acid ester mixtures of different melting points by the steps of continuously dispersing said mixture of fatty acid esters consisting of an oily phase and a solid phase in a recycling aqueous wetting agent solution at a temperature whereby a dispersion of liquid and solid fatty acid ester particles is obtained, continuously separating said dispersion into two phases of different specific gravities, a lighter phase consisting substantially of liquid fatty acid ester fractions and a heavier phase consisting substantially of solid fatty acid ester particles dispersed in said aqueous wetting agent solution, continuously withdrawing said liquid fatty acid ester fractions, continuously separating said solid fatty acid ester particles from 10% to 70% by weight of said aqueous wetting agent solution, continuously withdrawing said separated aqueous wetting agent solution, continuously melting said solid

fatty acid ester particles with the remaining aqueous phase and adhering wetting agent, in an aqueous phase, continuously separating said melted fatty acid ester particles containing little wetting agent from an aqueous phase enriched with wetting agent, continuously withdrawing said melted fatty acid ester particles, continuously recycling said aqueous phase enriched with wetting agent to said dispersing step and continuously replacing said withdrawn part of said recycling aqueous wetting agent solution with a fresh aqueous solution whereby the concentration of said recycling aqueous wetting agent solution is maintained substantially constant at said dispersing step.



9. The process of claim 1 wherein said mixture of fatty acid esters is a mixture of triglycerides.

3,953,486

MANUFACTURE OF LEAD STYPHNATE

Kenneth John Holloway, Sandringham; John Michael Jenkins, Chingford, and George William Charles Taylor, Waltham Abbey, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Feb. 6, 1973, Ser. No. 330,083

Claims priority, application United Kingdom, June 9, 1972, 27052/72

Int. Cl. C07f *7/24*

U.S. Cl. 260—435 A **14 Claims**

1. A process for the preparation of α normal lead styphnate comprising reacting at an elevated temperature an aqueous solution containing lead nitrate with a solution containing magnesium styphnate in the presence of a mineral acid present in the range about 1 to about 15 grams of mineral acid to 1 liter of the solution containing the magnesium styphnate.

3,953,487

PROCESS FOR PREPARING HYDROPHOBIC SILICON DIOXIDE

Günther Kratel, Durach-Bochen; Günter Stohr, Kempten; Georg Vogt, Kempten, St. Mang, and Hans Kaiser, Lauben, Allgau, all of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Germany

Filed Aug. 23, 1974, Ser. No. 500,203

Claims priority, application Germany, Sept. 3, 1973, 2344388

Int. Cl.² C07F *7/04, 7/08, 7/10, 7/18*

U.S. Cl. 260—448.2 E **5 Claims**

1. A process for preparing hydrophobic SiO_2 which comprises the steps of:

a. reacting solid SiO_2 of finest particle size with an organosilicon compound having the general formula

$$(R_3Si)_nZ$$

wherein R represents the same or different monovalent hydrocarbon radicals, Z represents a member of the group consisting of halogen, hydrogen and a radical of the formula —OH, —OR′, —NR′X, —ONR′$_2$, —SR′, —OOCR′, —O—, —N(X)—, and —S—, wherein R′ is alkyl with 1 to 4 carbon atoms, X is hydrogen or the same radicals as R, and *a* is an integer from 1 to 2, while subjecting the reaction mixture to a mechanical impact treatment which will at the same time result in a comminution of the SiO_2 particles as well as of aggregates of the same, whereby the SiO_2 contains organosilicon groups bonded to it after the reaction;

b. while incorporating into the reaction mixture, in addition to the water adsorbed to the SiO_2, an amount of from 0.3% to 3% by weight of water, calculated on the weight of the SiO_2.

3,953,488

METHOD FOR PREPARING ALIPHATIC AND CYCLOALIPHATIC ISOTHIOCYANATES

Peter H. Scott, Sudbury, Mass., and Ehrenfried H. Kober, Aschau near Kraiburg, Germany, assignors to Olin Corporation, New Haven, Conn.

Filed Aug. 2, 1971, Ser. No. 168,439

Int. Cl.² C07C *161/04*

U.S. Cl. 260—454 **10 Claims**

1. A method for preparing aliphatic isothiocyanates comprising reacting:

a. a nitroalkane or nitrocycloalkane containing from 1 to 22 carbon atoms with

b. a sulfur-containing carbon compound selected from the group consisting of:

1. carbonyl sulfide,

2. carbon disulfide, and

3. mixtures of carbonyl sulfide and carbon disulfide

in the presence of

c. a carbonyl of a metal selected from the group consisting of iron, nickel, cobalt, vanadium, niobium, tantalum, chromium, molybdenum and tungsten, said reaction being carried out at a temperature of from about 20° to about 250°C. and employing from about 1 to about 100 moles of said sulfur containing carbon compound per mole of nitro group in said nitroalkane or nitrocycloalkane and from about 0.0001 to about 1 mole of said carbonyl of a metal per mole of nitro group in said nitroalkane or said nitrocycloalkane.

3,953,489

ALKYL 2-NITRO-5-(2,4-DICHLOROPHENOXY)-THIOBENZOATES

Saburo Tamura, Tokyo; Tetsuo Takematsu, Utsunomiya, and Hisae Haruta, Ibaraki, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

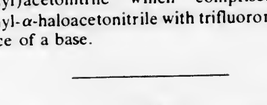
Filed Jan. 17, 1975, Ser. No. 542,052

Claims priority, application Japan, Apr. 10, 1974, 49-41129; June 10, 1974, 49-66276

Int. Cl.² C07C *153/07*

U.S. Cl. 260—455 R **5 Claims**

1. A compound of the formula:



wherein R is lower alkyl.

3,953,490

PREPARATION OF (3-TRIFLUOROMETHYLPHENOXY)(4-CHLOROPHENYL)ACETONITRILE

Richard F. Shuman, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 271,444, July 13, 1972, abandoned. This application Nov. 12, 1974, Ser. No. 523,102

Int. Cl.² C07C *121/66*

U.S. Cl. 260—465 F **3 Claims**

1. A process for preparing (3-trifluoromethylphenoxy)(4-chlorophenyl)acetonitrile which comprises treating 4-chlorophenyl-α-haloacetonitrile with trifluoromethylphenol in the presence of a base.

3,953,491

PHENYL ESTERS OF 4-BENZOYLOXYBENZOIC ACID

Ralf Steinstrasser, and Georg Weber, both of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschraenkter Haftung, Darmstadt, Germany

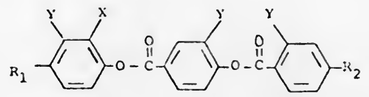
Division of Ser. No. 386,979, Aug. 9, 1973. This application Dec. 18, 1974, Ser. No. 533,823

Claims priority, application Germany, Aug. 19, 1972, 2240864

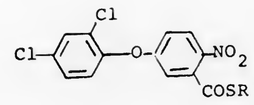
Int. Cl.² C07C *69/90, 121/64, 121/75*

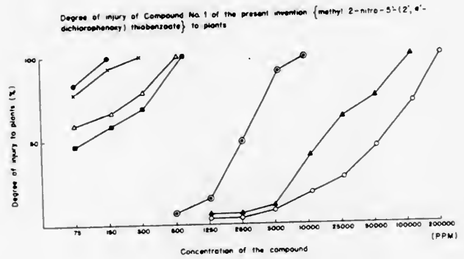
U.S. Cl. 260—465 D **8 Claims**

1. A nematic compound of the formula:



wherein R_1 and R_2 are each alkyl, alkoxyalkyl, alkoxy or alkoxyalkoxy of up to 10 carbon atoms; X is CN or NO_2; and Y is H or X.





3,953,492

ANTHELMINTIC SUBSTITUTED SULFONAMIDE DERIVATIVES

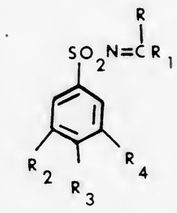
Helmut H. Mrozik, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 27, 1975, Ser. No. 562,712

Int. Cl.² C07C *143/80;* **C07D** *211/54, 295/08*

U.S. Cl. 260—465 E **21 Claims**

1. A compound having the formula:



wherein R is hydrogen or loweralkyl; R_1 is amino or mono or disubstituted amino wherein the substituents are independently selected from loweralkyl, carboxymethylene and phenyl; or loweralkoxy provided that when one of the amino substituents is methyl the other substituent must be other than methyl; R_2 is halo, nitro or perfluoroloweralkyl; R_3 is hydrogen or amino; and R_4 is R_2 or cyano.

3,953,493

SUBSTITUTED SULFONAMIDE DERIVATIVES AS ANTHELMINTIC AGENTS

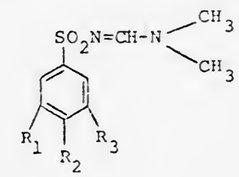
William J. A. Vanden Heuvel, Princeton, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 27, 1975, Ser. No. 562,713

Int. Cl.² C07C *143/80*

U.S. Cl. 260—465 E **6 Claims**

1. A compound having the formula:



wherein

R_1 is halo, nitro or trifluoromethyl;

R_2 is hydrogen or amino; and

R_3 is cyano or R_1.

3,953,494

REACTIONS INVOLVING CARBON TETRAHALIDES AND α-METHYL KETONES OR KETONES HAVING α,α′-HYDROGENS

Cal Yale Meyers, and Walter Sidney Matthews, III, both of Carbondale, Ill., assignors to Southern Illinois University Foundation, Carbondale, Ill.

Filed Dec. 14, 1970, Ser. No. 98,078

Int. Cl.² C07C *51/28, 67/42*

U.S. Cl. 260—468 R **24 Claims**

1. A process for preparing carboxylic acids and esters from α-methyl ketones or ketones having α and α′ hydrogens which comprises the steps of:

reacting a substrate selected from the group consisting of α-methyl ketones and ketones having α and α′ hydrogens with a carbon tetrahalide represented by the formula

$CBr_mCl_nF_p$ where m and n are integers between 0 and 4 inclusive, p is an integer between 0 and 2 inclusive and m+n+p=4, in the presence of a strong base selected from the group consisting of an alkali metal hydroxide, an alkali metal alkoxide, and aluminum alkoxide to form a halogenated intermediate and a dihalocarbene;

reacting said halogenated intermediate with the base; and

separating the carboxylic acid or ester product from the reaction mixture.

3,953,495

16-METHYLENE PGE_2

Masaki Hayashi; Seiji Kori, both of Takatsuki, and Hajimu Miyake, Suita, all of Japan, assignors to Ono Pharmaceutical Company, Osaka, Japan

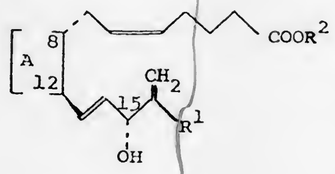
Filed Aug. 29, 1974, Ser. No. 501,548

Claims priority, application United Kingdom, Aug. 31, 1973, 41124/73

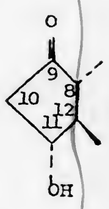
Int. Cl.² C07C *61/38, 64/74*

U.S. Cl. 260—468 D **4 Claims**

1. A compound of the formula:



wherein A represents a grouping of the formula:



R^1 represents a hydrogen atom or a straight- or branched-chain aliphatic hydrocarbon group containing from 1 to 6 carbon atoms, and R^2 represents a hydrogen atom or a straight- or branched-chain alkyl group containing from 1 to 12 carbon atoms and cyclodextrin clathrates thereof and, when R^2 represents a hydrogen atom, non-toxic salts thereof.

3,953,496

BIS(BENZAMIDO)-BENZOIC ACID DERIVATIVES

Takashi Mori, Tama; Sakae Takaku, Ageo; Yoshiyuki Osugi, Kodaira; Takashi Matsuno, Tokyo, and Shogo Tomizawa, Tama, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

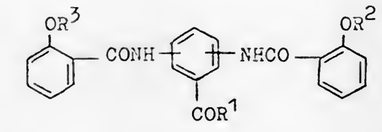
Filed Mar. 13, 1974, Ser. No. 451,003

Claims priority, application Japan, Mar. 27, 1973, 48-34152; Feb. 20, 1974, 49-19407

Int. Cl.² C07C *103/78*

U.S. Cl. 260—471 R **28 Claims**

1. A bis(benzamido)-benzoic acid derivative represented by the formula



wherein R^1 is a hydroxyl radical, a lower alkoxy radical or an amino radical and R^2 and R^3 are same or different and each represents a hydrogen atom, a lower alkanoyl radical or a lower alkyl radical.

3,953,497

2,4,6-TRIIODO-5-METHOXYACETAMIDO-N-METHYLISOPHTHALAMIC ACID AND SALTS, ACYL HALIDES AND ESTERS THEREOF

Philip E. Wiegert, St. Louis, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed July 29, 1974, Ser. No. 492,568

Int. Cl.² C07C *103/76*

U.S. Cl. 260—471 R **7 Claims**

1. A compound selected from the group consisting of 2,4,6-triiodo-5-methoxyacetamido-N-methylisophthalamic acid, the ammonium salt thereof, salts thereof with pharmaceutically acceptable cations, lower alkyl esters thereof, and the acyl halide thereof.

3,953,498

DIESTERS AND DIACIDS OF PHENANTHRENE

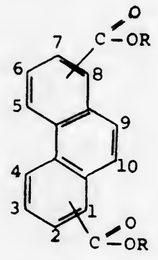
Robert J. Hartle, Gibsonia, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 89,124, Nov. 12, 1970, abandoned, which is a continuation-in-part of Ser. No. 635,997, May 4, 1967, abandoned. This application Nov. 13, 1974, Ser. No. 523,355

Int. Cl.² C07C *63/46, 69/76*

U.S. Cl. 260—475 FR **9 Claims**

1. A phenanthrene diester selected from the group consisting of 1,8-, 2,7-, 3,6- and 2,5-phenanthrene diesters, said diester having the formula:



wherein R has from one to 12 carbon atoms and is selected from the group consisting of alkyl, alkoxyalkyl, cycloalkyl and aralkyl.

7. A phenanthrenedicarboxylic acid selected from the group consisting of 1,8-, 2,7-, 3,6- and 2,5-phenanthrenedicarboxylic acids.

3,953,499

8,12-DIALKYL-PGE, AND PGF_1

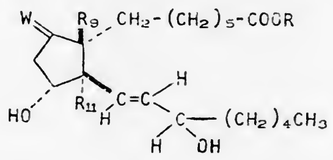
John E. Pike, and William P. Schneider, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 313,368, Dec. 8, 1972, Pat. No. 3,888,919, which is a division of Ser. No. 123,370, March 11, 1971, abandoned, which is a continuation-in-part of Ser. No. 648,992, June 26, 1967, abandoned. This application June 14, 1974, Ser. No. 479,238

Int. Cl.² C07C *61/36, 69/79*

U.S. Cl. 260—514 D **7 Claims**

1. An optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof, wherein R is hydrogen or alkyl of 1 to 4 carbon atoms, inclusive, wherein W is



or 0═, and wherein R_9 and R_{11} are both alkyl of one to 4 carbon atoms, inclusive.

3,953,500

BENZALICYCLIC CARBOXYLIC ACID DERIVATIVE

Shunsaku Noguchi, Osaka; Tetsuya Aono, Kyoto; Yoshiaki Araki, Osaka, and Kiyohisa Kawai, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

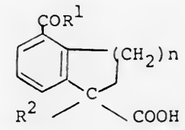
Filed Aug. 12, 1974, Ser. No. 496,855

Claims priority, application Japan, Aug. 11, 1973, 48-90274; Sept. 1, 1973, 48-98371; Sept. 13, 1973, 48-103602; Sept. 13, 1973, 48-103603; Sept. 13, 1973, 48-103604; Sept. 13, 1973, 48-103606; Oct. 31, 1973, 48-122490; May 7, 1974, 49-51034; May 24, 1974, 49-59017; May 3, 1974, 49-62300

Int. Cl.² C07C *65/20*

U.S. Cl. 260—517 **20 Claims**

1. A compound of general formula



wherein R^1 is a naphthyl or phenyl group which is unsubstituted or substituted by a lower alkyl having 1 to 4 carbon atoms, a lower alkoxy having 1 to 4 carbon atoms, a halogen, a mono- or di-alkylamino having 1 to 3 carbon atoms, acetylamino, propionylamino, acetyloxy or propionyloxy; R^2 is hydrogen or a lower alkyl group having 1 to 4 carbon atoms and n is 1 or 2; or an alkyl ester whose alkyl moiety has 1 to 6 carbon atoms, phenyl ester, benzyl ester, or pharmaceutically acceptable salt thereof at the carboxyl function thereof.

3,953,501

TRIIODOISOPHTHALIC ACID MONOAMINO ACID AMIDES

Erich Klieger; Wolfgang Beich, and Eberhard Schroder, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

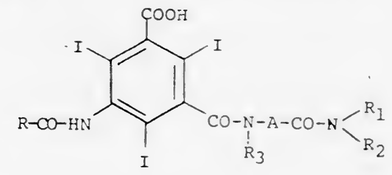
Filed Feb. 9, 1973, Ser. No. 331,110

Claims priority, application Germany, Feb. 16, 1972, 2207950

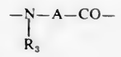
Int. Cl.² C07C *101/68*

U.S. Cl. 260—518 A **11 Claims**

1. A triiodoisophthalic acid monoamino acid amide of the formula



wherein



is divalent amino lower alkanoyl derived from a naturally occurring amino acid;

R is alkyl, hydroxyalkyl or alkoxyalkyl of 1–6 carbon atoms;

R_1 and R_2 are each hydrogen, alkyl of 1–6 carbon atoms or hydroxyalkyl of 2–6 carbon atoms

and the physiologically acceptable salts thereof.

3,953,502

RECOVERY OF SILVER AND TEREPHTHALIC ACID COMPONENTS FROM LIGHT SENSITIVE FILM MATERIAL

W. Martin Fassell, Newport Beach, and Donald W. Bridges, Irvine, both of Calif., assignors to Barber-Colman Company, Rockford, Ill.

Filed May 1, 1974, Ser. No. 466,015

Int. Cl.³ C07C *51/42;* **C01G** *5/00*

U.S. Cl. 260—525 **16 Claims**

1. A process for the treatment of a polyester formed of terephthalic acid for the recovery of terephthalic acid and silver when present therewith as a light sensitive compound comprising subjecting the polyester to at least partial wet oxidation at elevated pressure and a temperature of at least 325°F in an aqueous alkaline medium having a pH of at least 9 and into which an oxygen containing gas is introduced in an amount to provide at least partial oxidation of the organics present whereby any silver component present remains in the solid phase and the terephthalic acid component is contained in the liquid phase in a dissolved state, separating any solid phase from the liquid phase, acidifying the liquid phase to precipitate the terephthalic acid component, and then separating the terephthalic acid component from the remainder.

3,953,503

METHOD OF MANUFACTURING TRIGLYCINE SERIES FERROELECTRIC CRYSTALS

Yoshio Furuhata, Kodaira; Yasuo Kato, and Zenmon Abe, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 800,637, Feb. 19, 1969, abandoned. This application Feb. 2, 1973, Ser. No. 329,193
Claims priority, application Japan, Feb. 21, 1968, 43-10530; Feb. 21, 1968, 43-10531
Int. Cl.² C07C *101/06*
U.S. Cl. 260—534 S 14 Claims

1. A method of manufacturing a tri-glycine series ferroelectric crystal comprising the steps of:

cutting out a cuboid elongated in [100] direction having surfaces of (001) and (010) and two surfaces which are opposite to each other and which are perpendicular to said surfaces of (001) and (010), from a (001) region of a b-plate crystal of a tri-glycine series ferroelectric material selected from the group consisting of tri-glycine sulfate, tri-glycine selenate, tri-glycine fluoberyllate, deuterated tri-glycine sulfate, and deuterated tri-glycine selenate, said cuboid being of a single domain;

fitting each of said two surfaces of said cuboid in a groove provided to a breeder frame, said cuboid being utilized as a seed crystal;

bonding glass plates to the upper and lower ends of a structure consisting of said breeder frame and said cuboid seed crystal so that said seed crystal is capable of growing freely only on said (001) surfaces;

submerging said seed crystal mounted on said breeder frame together with said glass plates in a breeding mother liquid at a temperature in a range of from 25° to 90° C. for tri-glycine sulfate, in a range from 25° to 90° C. for tri-glycine selenate, in a range from 25° to 90° C. for tri-glycine fluoberyllate, in a range from 25° to 90° C. for deuterated tri-glycine sulfate and in a range from 25° to 80° C. for deuterated tri-glycine selenate;

subjecting said cut out seed crystal to a DC electric field before submerging said seed crystal in said breeding mother liquid when the starting temperature of growth is higher than the Curie temperature of the crystal to be grown; and

cooling at a rate not higher than 0.5° C./ day said breeding mother liquid together with said structure and said glass plates so that said seed crystals grows in directions perpendicular to said (001) surfaces.

3,953,504

RACEMIZATION OF OPTICALLY ACTIVE TARTARIC ACID

Minoru Saotome, Koriyama; Yoshikazu Yamamoto, Ikeda; Nobuo Watani, Kyoto, and Ryuichi Kayama, Koriyama, all of Japan, assignors to Nippon Peroxide Co., Ltd., Tokyo and Showa Chemical Co., Ltd., both of, Japan

Filed Mar. 18, 1975, Ser. No. 559,416
Int. Cl.² C07C *59/14*
U.S. Cl. 260—536 7 Claims

1. A process for the racemization of optically active tartaric acid or a salt thereof, which comprises:

mixing meso-tartaric acid or a salt thereof with a solution of an optically active enantiomer of tartaric acid or a salt thereof in a molar ratio of 0.2 ~ 0.5, and thereafter heating the mixture.

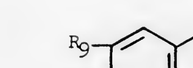
3,953,505

CARBAMIDE-FORMALDEHYDE CONDENSATION PRODUCTS, THEIR MANUFACTURE AND USE

Luzius Schibler, Riehen, and Jurg Merz, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,670
Claims priority, application Switzerland, Mar. 28, 1972, 4632/72; Dec. 22, 1972, 18728/72
Int. Cl.² C07C *127/15*
U.S. Cl. 260—553 R 6 Claims

1. An urea-formaldehyde condensation product having the formula



wherein

R represents alkyl, alkenyl, with 6 to 22 carbon atoms in the alkyl or alkenyl moiety,

A represents hydrogen or alkyl with 1 to 4 carbon atoms,

Y represents hydrogen, — CH_2O — Q, wherein Q is hydrogen or alkyl with 1 to 4 carbon atoms, or — CH_2 — X′, and

X and X′, independently of the other, represent a monoalkylene or polyalkylene glycol radical, bonded via an oxygen atom, and having an average molecular weight of at most 2,000 and 2 to 4 carbon atoms per alkylene unit.

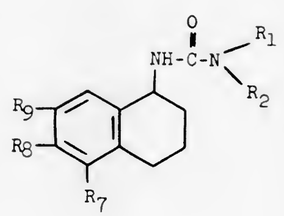
3,953,506

UREIDOTETRALIN COMPOUNDS

Larry Dean Spicer, Princeton; Joseph Michael Pensack, Trenton; Robert Daniel Wilbur, Titusville, all of N.J., and Gary Michael Demkovich, deceased, late of Cranbury, N.J. (by Ruth Ellen Demkovich, executrix), assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 7, 1974, Ser. No. 440,625
Int. Cl.² C07C *127/19*, *157/09*
U.S. Cl. 260—553 A 6 Claims

1. A compound of the formula:



wherein R_1 is selected from the group consisting of alkyl C_1–C_4, alkoxy C_1–C_4, benzyl and benzyloxy; R_2 is selected from the group consisting of hydrogen and alkyl C_1–C_4; R_7 and R_8 are each individually selected from the group consisting of hydrogen, alkyl C_1–C_4 and alkoxy C_1–C_4; and R_9 is selected from the group consisting of hydrogen and alkyl C_1–C_4, with the proviso that at least one of R_7, R_8, and R_9 is hydrogen.

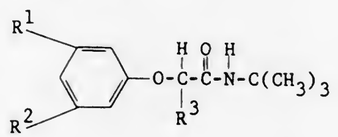
3,953,507

N-T-BUTYL-α-(3,5-SUBSTITUTED PHENOXY) ALKYL AMIDES AND THEIR USE AS HERBICIDES

Don R. Baker, Orinda, and Francis H. Walker, Mill Valley, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 393,390, Aug. 31, 1973, abandoned, which is a continuation of Ser. No. 282,507, Aug. 21, 1972, abandoned, which is a continuation of Ser. No. 156,974, June 25, 1971, abandoned. This application Oct. 29, 1974, Ser. No. 518,921
Int. Cl.² C07C *103/76*
U.S. Cl. 260—559 B 3 Claims

1. A compound of the formula



in which R^1 and R^2 are both methyl or both chlorine and R^3 is ethyl.

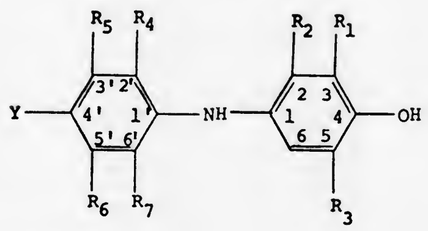
3,953,508

DIPHENYLAMINES FOR DYEING KERATINOUS FIBERS

Gregoire Kalopissis, Paris; Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to L'Oreal, Paris, France

Continuation-in-part of Ser. No. 301,715, Oct. 30, 1972, abandoned, which is a division of Ser. No. 61,833, Aug. 6, 1970, Pat. No. 3,792,090. This application Jan. 14, 1974, Ser. No. 432,982
Claims priority, application Luxemburg, Aug. 11, 1969, 59265
Int. Cl.² C07C *103/34*
U.S. Cl. 260—562 A 6 Claims

1. Diphenylamine having the formula:



wherein

Y represents a member selected from the group consisting of hydroxy and amino;

R_1 and R_3, each independently, represent a member selected from the group consisting of hydrogen, halogen, lower alkyl, and —NHCOR wherein R is lower alkyl;

R_2 represents a member selected from the group consisting of hydrogen, halogen, lower alkyl, —NHCOR wherein R is lower alkyl and —NHR_8 wherein R_8 represents a member selected from the group consisting of hydrogen, lower alkyl and carbamyl lower alkyl, with the proviso that when R_2 is —NHR_8, R_3 is not hydrogen;

R_4, R_5, R_6 and R_7 each independently represent a member selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy, with the proviso (1) that when Y is hydroxy, R_2 is not hydrogen, lower alkyl or alkoxy, (2) that when Y is amino at least two of R_1, R_2 and R_3 are other than hydrogen and R_2 is not hydrogen when R_4, R_5, R_6 and R_7 are all hydrogen and (3) that R_1 or R_3 is NHCOR wherein R has the meaning given above or R_8 is carbamyl lower alkyl.

3,953,509

HYDROGENATION OF NITROBENZENE TO p-AMINOPHENOL

Nicholas P. Greco, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 296,260, Oct. 10, 1972, abandoned. This application Mar. 4, 1974, Ser. No. 447,848
Int. Cl.² C07C *85/10*
U.S. Cl. 260—580 6 Claims

1. In a method for the preparation of p-aminophenol by reducing nitrobenzene with hydrogen at elevated temperatures in an acid solution and in the presence of a catalyst, the improvement comprising a catalyst selected from the group consisting of powdered molybdenum sulfide-on-carbon and powdered platinum sulfide-on-carbon.

3,953,510

METHOD FOR THE PREPARATION OF ALKOXYANILINES

Curtis P. Smith, Cheshire, Conn., and Peter H. Scott, Sudbury, Mass., assignors to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 248,898, May 1, 1972, abandoned, which is a continuation-in-part of Ser. No. 8,060, Feb. 2, 1970, abandoned. This application June 27, 1974, Ser. No. 483,605
Int. Cl.² C07C *85/10*
U.S. Cl. 260—580 13 Claims

1. A method for preparing an o- or p- alkoxyaniline or substituted o- or p- alkoxyaniline which comprises reacting at a temperature of from about 20° to about 250°C. a mixture of

a. a nitrobenzene selected from the group consisting of nitrobenzene and substituted nitrobenzene having as an additional substituent on the benzene ring at least one of the following: alkyl of 1 to 4 carbon atoms, halogen and nitro, with the proviso that at least one of the para or ortho positions to the nitro group is unsubstituted;

b. an alcohol selected from the group consisting of unsubstituted, branched and unbranched, hydroxyalkyl and hydroxyalkenyl alcohols of 1 to 8 carbon atoms and polyoxyalkylene glycol ether alcohols of the formula:

$$R(OR_1)_xOH$$

wherein R is an alkyl of 1 to 4 carbon atoms, R_1 is an ethylene or propylene group and x is 1 to 20;

c. a deoxygenating agent selected from the group consisting of phosphorus, sulfur, phosphorus trihalides, sulfur halides in which sulfur has a valence lower than 6, aryl and diaryl phosphorus halides and aryl and diaryl sulfur halides, wherein the aryl group contains 6 to 10 carbon atoms, and triaryl phosphines wherein the aryl group contains 6 to 10 carbon atoms; and

d. anhydrous hydrogen fluoride,

said mixture containing a molar ratio of from about 1:1 to about 50:1 of said alcohol to said selected nitrobenzene, a molar ratio of from about 0.3:1 to about 5:1 of said deoxygenating agent to said selected nitrobenzene and a molar ratio of about 1:1 to about 50:1 of said hydrogen fluoride to said selected nitrobenzene and then separating said resulting o- or p- alkoxyaniline or o- or p- substituted alkoxyaniline from the reaction mixture.

3,953,511

PREPARATION OF 2-METHYL-1,5-DIAMINOPENTANE

Kenneth J. Frech, Tallmadge, and Lawson G. Wideman, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 4, 1974, Ser. No. 520,517
Int. Cl.² C07C *85/11, 87/14*
U.S. Cl. 260—583 K 2 Claims

1. The method for the preparation of 2-methyl-1,5-diaminopentane which comprises hydrogenating α-methylene glutaronitrile in a multi-stage hydrogenation employing as the hydrogenation catalyst in both hydrogenation stages T-1 Raney nickel or modified T-1 Raney nickel wherein the first stage hydrogenation is conducted at a temperature ranging from about 20°C to about 50°C and at a hydrogen pressure of at least about 14 kg/cm² and wherein the second stage hydrogenation is conducted at temperatures ranging from about 120°C to about 140°C and a hydrogen pressure of at least about 42 kg/cm².

3,953,512

PROCESS FOR MANUFACTURING 2-AMINOBUTANOL

Czeslaw Belzecki; Witold Tomasik, and Jerzy Trojnar, all of Warsaw, Poland, assignors to Polska Akademia Nauk Instytut Chemii Organicznej, Warsaw, Poland

Filed Mar. 18, 1974, Ser. No. 452,372
Claims priority, application Poland, Mar. 20, 1973, 161371
Int. Cl.² C07C *91/02, 93/02, 93/10, 95/02*
U.S. Cl. 260—584 R 5 Claims

1. A process for the preparation of 2-aminobutanol comprising reacting 1,2-epoxybutane or butylene halogenhydrines with ammonia to form a mixture of isomeric aminobutanols, converting said mixture into 2-ethylaziridine by means of esterification with sulphuric acid, followed by reaction with alkali hydroxide; reacting 2-ethylaziridine with an aromatic carboxylic acid or with an anhydride of an orthobicarboxylic aromatic acid to produce an amide or a polyamide of 2-aminobutanol, and hydrolyzing with a mineral acid.

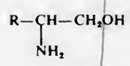
3,953,513

PROCESS FOR PREPARING α-AMINOALCOHOLS

Ernesto Oppici, Milan, Italy, assignor to Gruppo Lepetit S.p.A., Milan, Italy

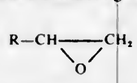
Filed Nov. 8, 1974, Ser. No. 521,997
Claims priority, application United Kingdom, Nov. 29, 1973, 55347/73
Int. Cl.² C07C *89/02*
U.S. Cl. 260—585 C 6 Claims

1. A process for preparing an α-aminoalcohol of formula



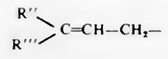
I

wherein R represents hydrogen or alkyl of from 1 to 5 carbon atoms which comprises contacting a compound of formula

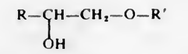


II

wherein R has the same meaning as above, with an alcohol of formula R'-OH wherein R' stands for benzyl or represents the group

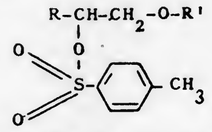


in which R'' and R''' are independently selected from hydrogen and alkyl of from 1 to 4 carbon atoms in an organic solvent, in the presence of a basic catalyst, at from about 140° to about 170°C treating, the obtained product of formula



III

wherein R and R' have the above meanings, with at least an equimolecular amount of p-toluenesulfonyl halide, at from about −5° to about 20°C in the presence of a tertiary organic nitrogen containing base and reacting in a closed system the resulting compound of formula



IV

wherein R and R' are as above defined, with an excess of gaseous ammonia, in the presence of an inert organic solvent, at from about 95° to about 120°C and recovering the resulting compound of Formula I as acid addition salt.

3,953,514

PROCESS FOR PREPARING CYCLOPENTENONE DERIVATIVES

Toshiharu Yamazaki; Mamoru Nakai, and Yoshiaki Kuroki, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Aug. 12, 1974, Ser. No. 496,755
Claims priority, application Japan, Aug. 31, 1973, 48-97349
Int. Cl.² C07C *45/00, 45/18*
U.S. Cl. 260—586 C 10 Claims

1. A process for preparing a cyclopentanone derivative which comprises heating, in the gaseous state, a primary aliphatic acid containing from 5 to 13 carbon atoms and having a substituent selected from the group consisting of a halogen atom and a hydroxy, an alkoxy and an acyloxy radical in an γ-, δ- or ε-position or an intramolecular ester thereof in the presence of a solid acidic catalyst at a temperature of from 200°C. to 500°C., said catalyst being selected from the group consisting of silica-alumina, silica-magnesia, silica-boria, alumina-boria, silica-titania, sodium phosphate, calcium phosphate, magnesium phosphate, boron phosphate, zirconium phosphate, titanium phosphate, solid phosphoric acid, nickel sulfate, zinc sulfate, calcium sulfate, manganese sulfate, copper sulfate, cobalt sulfate, cadmium sulfate, strontium sulfate, magnesium sulfate, ferric sulfate, barium sulfate, potassium hydrogen sulfate, potassium sulfate, aluminum sulfate and chromium oxide, unsupported or supported on silica gel. alumina or diatomaceous earth.

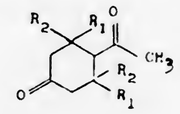
3,953,515

4-ACETYL-3,3,5,5 TETRAALKYLCYCLOHEXANONES

Bernard Pierre Corbier, and Paul Jose Teisseire, both of Grasse, France, assignors to Societe Anonyme Roure Bertrand Dupont, Paris, France

Division of Ser. No. 110,652, Jan. 28, 1971, Pat. No. 3,875,241, which is a continuation-in-part of Ser. No. 585,269, Oct. 10, 1966, Pat. No. 3,578,715. This application Feb. 3, 1975, Ser. No. 546,531
Claims priority, application Switzerland, Oct. 14, 1965, 14216/65
Int. Cl.² C07C *49/61*
U.S. Cl. 260—586 R 3 Claims

1. Compounds having the formula



II

wherein R_1 and R_2 represent lower alkyl.

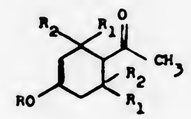
3,953,516

MONO-ENOL ETHERS OF 4-ACETYL-3,3,5,5-TETRAMETHYLCYCLOHEXANONE

Bernard Pierre Corbier, and Paul Jose Teisseire, both of Grasse, France, assignors to Societe Anonyme Roure Bertrand Dupont, Paris, France

Division of Ser. No. 110,652, Jan. 28, 1971, Pat. No. 3,875,241, which is a continuation-in-part of Ser. No. 585,259, Oct. 10, 1966, Pat. No. 3,578,715. This application Feb. 3, 1975, Ser. No. 546,533
Claims priority, application Switzerland, Oct. 14, 1965, 14216/65
Int. Cl.² C07C *46/26*
U.S. Cl. 260—586 R 8 Claims

1. Compounds having the formula



III

wherein R represents a lower alkyl group and R_1 and R_2 represent lower alkyl.

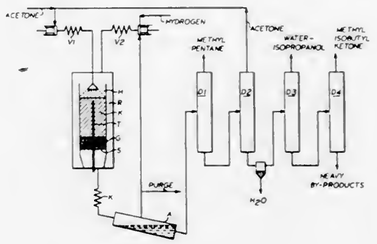
3,953,517

PROCESS FOR PREPARING METHYL ISOBUTYL KETONE AND CATALYST

Karl Schmitt; Josef Disteldorf; Werner Flakus, all of Herne, and Werner Hubel, Wanne-Eickel, all of Germany, assignors to Veba-Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Germany

Continuation-in-part of Ser. No. 756,997, Sept. 3, 1968, abandoned. This application July 10, 1973, Ser. No. 377,979
Claims priority, application Germany, Sept. 8, 1967, 1643044
Int. Cl.² C07C *49/04*
U.S. Cl. 260—593 R 5 Claims

1. In a process for preparing methyl isobutyl ketone from acetone and hydrogen the improvement which comprises contacting hydrogen and acetone in the presence of a catalyst at a temperature of from about 50°-200°C and a pressure between 60 and 100 atmospheres, said catalyst being a cation



exchange resin having 0.001 to 0.08 weight percent noble metal in monoatomic form distributed therein.

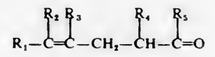
3,953,518

PROCESS FOR PREPARING γ, δ-UNSATURATED CARBONYL COMPOUNDS

Pius Anton Wehrli, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

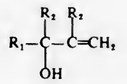
Continuation-in-part of Ser. No. 376,500, July 5, 1973, abandoned. This application Dec. 23, 1974, Ser. No. 535,591
Int. Cl.² C07C *45/00*
U.S. Cl. 260—593 R 4 Claims

1. In a process for obtaining γ,δ-unsaturated carbonyl compounds of the formula:



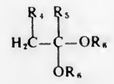
wherein R_1 is selected from the group consisting of (a) a saturated hydrocarbon group, (b) an unsaturated hydrocarbon group, (c) an aralkyl group, (d) an aryl group, and (e) an oxygen-containing derivative of (a), (b), and (c) wherein the oxygen is in the form of free hydroxy, esterified hydroxy, wherein the esterifying group is an acyloxy group in which the acyl moiety is from an acid selected from the group consisting of lower alkanoic acids and benzoic acid, and etherified hydroxy selected from the group consisting of lower alkoxy and phenyloxy, and wherein the oxygen atom is attached to an aliphatic carbon atom on said group; R_2 is a lower aliphatic hydrocarbon; R_3, R_4 and R_5 are selected from the group consisting of hydrogen and a lower aliphatic hydrocarbon and wherein R_1 taken together with R_2 can form a carbocyclic ring, and R_4 taken together with R_5 can form a carbocyclic ring;

comprising the steps of reacting a tertiary allyl alcohol of the formula:



wherein R_1, R_2 and R_3 are as above;

with an acetal or ketal of the formula:



wherein R_4 and R_5 are as above and R_6 is alkyl; in the presence of a strong acid having a pK value of 0.4 to 3, the improvement which comprises forming a catalyst system by adding to said strong acid a weak acid having a pK value of from 4.5 to 10 and selected from the group consisting of lower alkanoic acids, dinitrobenzoic acids and dinitrophenol; forming a reaction mixture consisting essentially of said acetal or ketal and said acid catalyst system, said acid catalyst system being present in an amount of from 0.1% to 10% by weight based upon the weight of the reaction mixture with the acid catalyst containing from 2 to 15% by weight of the strong acid and from 85 to 98% by weight of the weak acid, to provide 3 to 100 moles of said acetal per mole of said tertiary allyl alcohol; incrementally adding said tertiary allyl alcohol to said reaction mixture by

a. reacting the first increment of the tertiary allyl alcohol with the reaction mixture at a temperature of from 50°C. to 200°C. and a pressure of from 10 to 50 atmospheres to form said carbonyl compound and a primary alcohol of the formula

R_6—OH

wherein R_6 is as above

said alcohol forming an azeotrope with said acetal or ketal;

b. distilling off said azeotrope from said reaction mixture; and

c. adding subsequent increments of said tertiary alcohol to said reaction mixture, with each of said subsequent increments being added after said reaction of the previous increment with said reaction mixture and said distillation of said azeotrope formed has been carried out.

3,953,519

PROCESS FOR THE PREPARATION OF A THIOBIS-2,6-DISUBSTITUTED PHENOL FROM SULFUR AND A PHENOL

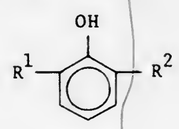
Allan S. Hay, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed July 1, 1974, Ser. No. 484,995

Int. Cl.² C07C *148/02*

U.S. Cl. 260—609 D **21 Claims**

1. A process for the preparation of thiobisphenol which comprises the reaction of a member of the class consisting of sulfur, an alkali metal sulfide, an alkaline earth metal sulfide, or an ammonium sulfide with a phenol of the formula



wherein independently each R^1 and R^2 is a monovalent substituent selected from the group consisting of C_{1-30} hydrocarbon and C_{1-30} hydrocarbonoxy radicals, said reaction being carried out in the presence of (1) a base, (2) a member of the class consisting of an activated olefin or an epoxy compound, wherein the mole ratio of said phenol to said olefin or epoxy compound is within the range of from about 1:0.1 to about 1:10, and in the absence of (3) a solvent having a dielectric constant greater than about 20.

3,953,520

CHEMICAL COMPOUNDS AND PROCESSES

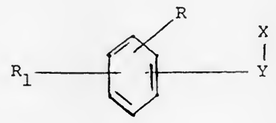
Robert F. Czaja, Scotch Plains; Seemon H. Pines, Murray Hill, and Newton L. Abramson, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 426,865, Dec. 20, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,486

Int. Cl.² C07C *149/34*

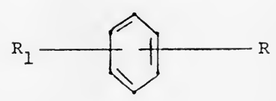
U.S. Cl. 260—609 E **7 Claims**

1. A process for preparing a compound of the formula:



wherein Y is $-CH_2$ or $-CH-CH_3$; X is halogen and R and R_1 are each hydrogen, C_{1-5} alkyl, C_{1-5} alkylthio, C_{1-5} alkoxy, hydroxy or halo, at least one of said R or R_1 being C_{1-5} alkylthio, which comprises the steps of:

a. reacting at about 0°C to 40°C a benzene compound of the formula:



where R and R_1 are as defined above, with an alkane compound selected from the group consisting of di-C_{1-5} alkoxymethane, di-C_{1-5} alkoxyethane, di-C_{7-10} aralkoxymethane and di-C_{7-10} aralkoxyethane and a halogen containing Lewis acid to form a complex; and

b. cleaving said complex to form the desired product.

3,953,521

PROCESS FOR THE CONTINUOUS PRODUCTION OF DIHYDROPEROXIDES

Hideaki Suda, Takaishi; Iwao Dohgane, Nishinomiya; Takashi Chinuki, Toyonaka; Kenji Tanimoto; Hirokazu Hosaka, both of Minoo; Yukimichi Nakao, Kobe; Yuji Ueda, Izumi-otsu; Seiya Imada, Sakai; Hideki Yanagihara, Toyonaka, and Kunihiko Tanaka, Ibaragi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 388,477, Aug. 15, 1973, abandoned. This application June 27, 1975, Ser. No. 590,930

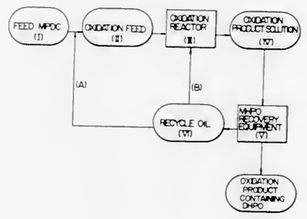
Claims priority, application Japan, Aug. 23, 1972, 47-84733

Int. Cl.² C07C *179/06*

U.S. Cl. 260—610 B **4 Claims**

1. A process for continuously producing meta- and paradiisopropylbenzene dihydroperoxides by oxidation of the mta- and paradiisopropylbenzenes in liquid phase through contact with oxygen or a gas containing oxygen, which comprises effecting the oxidation while keeping the concentration of meta- and paradiisopropylbenzene monohydroperoxides of the oxidation product solution in a range of 20 to 40% by weight, the oxidation being carried out at a temperature of 80°

to 130°C for 1 to 30 hours and at a pressure from atmospheric to 10 atmospheres maintained by feeding compressed air and



in the presence of an alkali as a catalyst for adjusting the pH from 5 to 12.

3,953,522

PROCESS FOR THE PREPARATION OF N-ALKYL-SUBSTITUTED HYDROXYPOLYALKOXYMETHYLCYCLOHEXANES

Herman S. Bloch, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 277,835, Aug. 3, 1972, Pat. No. 3,859,324. This application Nov. 4, 1974, Ser. No. 520,694

Int. Cl.² C07C *41/02*

U.S. Cl. 260—611 B **7 Claims**

1. A process for the preparation of a biodegradable detergent which comprises the steps of:

a. condensing butadiene with allyl alcohol in a Diels-Alder reaction at a temperature in the range of from about 50° to about 190° C. and a pressure in the range of from atmospheric to about 100 atmospheres to form hydroxymethylcyclohexene;

b. selectively hydrogenating said hydroxymethylcyclohexene to form hydroxymethylcyclohexane;

c. ring alkylating said hydroxymethylcyclohexane with a 1-alkene in the presence of an organic peroxy free-radical generating compound and hydrogen chloride at a temperature at least as high as the decomposition temperature of said free-radical generating compound;

d. alkoxylating the resultant n-alkyl-substituted hydroxymethylcyclohexane with an alkoxylating agent selected from the group consisting of ethylene oxide and propylene oxide at a temperature in the range of from 20° to about 125° C. and a pressure of from about 50 to about 1000 pounds per square inch; and

e. recovering the resultant n-alkyl-substituted hydroxypolyalkoxymethylcyclohexane.

3,953,523

PROCESS FOR THE PREPARATION OF N-ALKYL-SUBSTITUTED HYDROXYPOLYALKOXYMETHYLCYCLOHEXENES

Herman S. Bloch, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 277,835, Aug. 3, 1972, Pat. No. 3,859,324. This application Nov. 4, 1974, Ser. No. 520,696

Int. Cl.² C07C *41/02*

U.S. Cl. 260—611 B **7 Claims**

1. A process for the preparation of a biodegradable detergent which comprises the steps of:

a. condensing butadiene with allyl alcohol in a Diels-Alder reaction at a temperature in the range of from about 50° to about 190° C. and a pressure in the range of atmospheric to about 100 atmospheres to form hydroxymethylcyclohexene;

b. ring alkylating said hydroxymethylcyclohexene with a 1-alkene in the presence of an organic peroxy free-radical generating compound and hydrogen chloride at a temperature at least as high as the decomposition temperature of said free-radical generating compound;

c. alkoxylating the resultant n-alkyl-substituted hydroxymethylcyclohexene with an alkoxylating agent selected from the group consisting of ethylene oxide and propylene oxide at a temperature in the range of from about 20° to about 125° C. and a pressure in the range of from about 50 to about 1000 pounds per square inch to form an n-alkyl-substituted hydroxypolyalkoxymethylcyclohexene; and

d. recovering said n-alkyl-substituted hydroxypolyalkoxymethylcyclohexene.

3,953,524

CATALYTIC HYDROGENATION OF ALPHA,BETA-UNSATURATED ALDEHYDES TO ALPHA,BETA-UNSATURATED ALCOHOLS

Kurt Steiner, Starrkirch, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

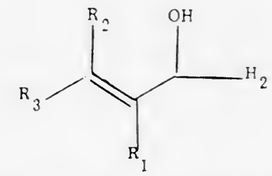
Filed Mar. 11, 1974, Ser. No. 450,134

Claims priority, application Switzerland, Mar. 21, 1973, 4098/73

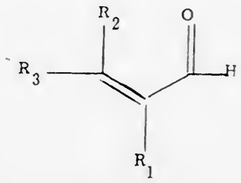
Int. Cl.² C07C *29/14*

U.S. Cl. 260—617 A **15 Claims**

1. A process for preparing an alpha, beta-unsaturated alcohol of the formula:



wherein R_1 and R_2 are hydrogen or lower alkyl; and R_3 is hydrocarbyl, cyclohydrocarbyl or aryl; or R_1 and R_3 taken together or R_2 and R_3 taken together form a cyclohydrocarbyl or aryl group; said hydrocarbyl being unsubstituted or substituted with a lower alkyl, lower alkoxy, lower alkanoyloxy c. cyclohydrocarbyl substituents and said aryl and cyclohydrocarbyl being unsubstituted or substituted in one or more positions with lower alkyl, lower alkoxy or lower alkanoyloxy substituents; comprising hydrogenating with hydrogen gas an alpha, beta-unsaturated aldehyde of the formula:



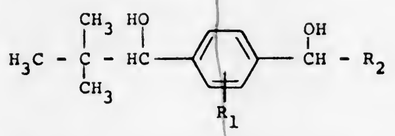
wherein R_1, R_2 and R_3 are as above; said hydrogenation being carried out in an inert organic polar solvent medium in the presence of a catalyst suspended in said medium, said catalyst being elemental platinum with its surface coated with elemental cobalt where the catalyst contains from 1 to 100 moles of elemental platinum per mole of cobalt, said hydrogenation being carried out at pressures of from about 0 to 1,000 psig and temperatures of from about 15° C. to 60° C.

3,953,525
α-SUBSTITUTED-4-(2,2-DIMETHYL-1-HYDROXYPROPYL)BENZYL ALCOHOLS AND ESTERS

Paul L. Anderson, Dover, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Nov. 19, 1974, Ser. No. 525,177
Int. Cl.² C07C *31/18*
U.S. Cl. 260—618 R **3 Claims**

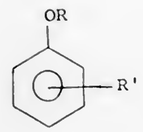
1. A compound of the formula



where

R_1 is hydrogen or halo having an atomic weight of 19 80, and

R_2 is lower alkyl.



in which each of R and R′, which may be the same or different, represents a hydrogen atom or an alkyl radical containing 1 to 4 carbon atoms, at a temperature from 20° to 150°C., with a reagent consisting of hydrogen peroxide in the presence of phosphorus pentoxide, the molar ratio of hydrogen peroxide to the aromatic compound being not more than 0.3:1 and the ratio of the number of molecules of hydrogen peroxide to the number of gram atoms of phosphorus in the phosphorus pentoxide being from 0.5:1 to 10:1.

3,953,526
SYNTHESIS OF HYDROQUINONE

Rudolph Rosenthal, Broomall, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sept. 22, 1972, Ser. No. 291,418
Int. Cl.² C07C *37/00, 37/06*
U.S. Cl. 260—621 H **13 Claims**

1. A method for the production of hydroquinone from cyclohexene which comprises

a. contacting cyclohexene with C_2 to C_6 aliphatic monocarboxylic acid selected from the group consisting of acetic acid, propionic acid, butyric acid, pentanoic acid, and hexanoic acid and a secondary or tertiary organic hydroperoxide having the formula ROOH wherein R may be alkyl, cycloalkyl or aralkyl in the presence of a copper compound as the catalyst in the liquid phase at a temperature in the range of from about 25° C. to 120° C. to produce a 3,6-diacyloxycyclohexene wherein at least 2 moles of said acid and 2 moles of said hydroperoxide are employed per mole of cyclohexene,

b. hydrolyzing the 3,6-diacyloxycyclohexene to 3,6-dihydroxycyclohexene and

c. catalytically dehydrogenating the 3,6 dihydroxycyclohexene to hydroquinone.

3,953,527
HYDROXYLATION OR AROMATIC COMPOUNDS

Pierre Bost; Michel Constantini, both of Lyon; Michel Jouffret, Francheville-le-Bas, and Guy Lartigau, Lyon, all of France, assignors to Rhone-Poulenc, S.A., Paris, France

Filed May 1, 1973, Ser. No. 356,121
Claims priority, application France, May 3, 1972, 72.15697
Int. Cl.² C07C *39/08, 39/06, 43/20*
U.S. Cl. 260—621 G **3 Claims**

1. A process for the preparation of hydroxylated aromatic compound, which consists of hydroxylating a compound of the general formula:

3,953,528
PROCESS FOR SUBLIMATION PURIFICATION OF CRUDE HYDROQUINONE WITH STIRRED AND FLUIDIZED BED

Kazutoshi Inada, Minami-ashigara; Masatoshi Sugiyama; Yasuo Nishigaki, both of Odawara, and Sugihiko Tada, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Sept. 14, 1973, Ser. No. 397,472
Claims priority, application Japan, Sept. 14, 1972, 47-92503
Int. Cl.² C07C *37/22, 37/38*
U.S. Cl. 260—621 A **15 Claims**

1. A process for purifying hydroquinone comprising introducing crude hydroquinone prepared using the aniline process containing impurities into a stirred and fluidized bed, passing a dried carrier gas which contains no more than about 0.5% by weight moisture and which is inert to the hydroquinone through said bed, and holding the temperature in said bed at about 110° to 170°C and the pressure at from 680 to 880 mmHg, which temperature is below the melting point of hydroquinone, whereby the crude hydroquinone is sublimed, and thereafter introducing a gaseous mixture of said carrier gas and sublimed vapor into a condenser at a temperature of about 25° to 90°C whereby the hydroquinone only is solidified from said gaseous mixture.

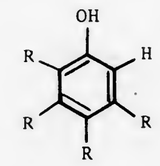
8. A process for purifying hydroquinone comprising introducing crude hydroquinone containing impurities into a stirred and fluidized bed, said crude hydroquinone having been prepared by the acid catalyzed decomposition of p-diisopropylbenzenedihydroperoxide obtained from the air oxidation of p-diisopropylbenzene, passing a dried carrier gas which contains no more than about 0.5% by weight moisture and which is inert to the hydroquinone through said bed, and holding the temperature in said bed at about 110° to 170°C and the pressure at from 680 to 880 mmHg, which temperature is below the melting point of hydroquinone, whereby the crude hydroquinone is sublimed, and thereafter introducing a gaseous mixture of said carrier gas and sublimed vapor into a condenser at a temperature of about 25° to 90°C whereby the hydroquinone only is solidified from said gaseous mixture.

3,953,529
PROCESS FOR ORTHO-ALKYLATION OF PHENOL COMPOUNDS

Eiichi Yonemitsu, Kashiwa; Shizuo Togo, Tokyo; Kenichiro Hashimoto, Tokyo; Muneo Ito, Tokyo; Chiharu Nishizawa, Tokyo, and Noboru Hara, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Co. Inc., Tokyo, Japan

Filed June 4, 1974, Ser. No. 476,268
Claims priority, application Japan, June 12, 1973, 48-66025; Aug. 16, 1973, 48-01894
Int. Cl.² C07C *39/06, 39/12*
U.S. Cl. 260—621 R **8 Claims**

1. A process for alkylating the orthoposition of a phenol compound of the formula



wherein R's may be the same or different, and each represents a monovalent substituent such as a hydrogen atom, an alkyl group of 1 to 6 carbon atoms, or a phenyl group, which comprises bringing a phenol compound containing at least one hydrogen atom at its ortho-position and a lower saturated aliphatic alcohol containing 1 to 4 carbon atoms into contact with a catalyst in the gaseous phase at a pressure of atmospheric to 40 Kg/cm².G and at a temperature of 300° to 450°C, said catalyst being selected from the group consisting of

a. a mixture of iron oxide and silica in which the atomic ratio of Fe to Si is 100 : 0.03 – 200, and

b. a mixture of iron oxide, silica and chromium oxide in which the atomic ratio of Fe to Si to Cr is 100 : 0.1 – 5 : 0.1 – 5.

3,953,530
PROCESS FOR MAKING o- AND p-CHLOROPHENOLS

Lothar G. Dulog, Sint Martens Latem, and Sylvain A. R. Dewaele, Evergem, both of Belgium, assignors to S. A. Texaco Belgium N.V., Brussels, Belgium

Filed Jan. 10, 1972, Ser. No. 216,768
Int. Cl.² C07C *39/28*
U.S. Cl. 260—623 R **4 Claims**

1. A process for making ortho- and para- chlorophenols which comprises reacting alpha-cumylchloride with aqueous hydrogen peroxide at a temperature ranging from about 40 to about 100°C. and distilling the resulting reaction mass to recover said ortho and para chlorophenols.

3,953,531
ALKYLHYDROQUINONE AND PROCESS FOR PRODUCING THE SAME

Reiichi Ohi, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 19, 1974, Ser. No. 534,393
Claims priority, application Japan, Dec. 19, 1973, 48-143287
Int. Cl.² C07C *39/08*
U.S. Cl. 260—625 **1 Claim**

1. 2,5-bis-(1′,1′-Dimethylbutyl)hydroquinone.

3,953,532
4,8-TRIDECADIEN-1-OL,4 CIS,8 CIS,TRANS

Richard J. Anderson, and Clive A. Henrick, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 463,938, April 25, 1974, Pat. No. 3,919,329. This application Apr. 14, 1975, Ser. No. 567,907
Int. Cl.² C07C *33/02*
U.S. Cl. 260—632 R **1 Claim**

1. A compound of the formula:

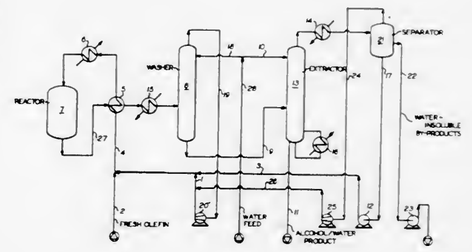
CH_3-$(CH_2)_3$-CH=CH-$(CH_2)_2$-CH=CH-$(CH_2)_2$-CH_2OH

having cis isomerism at position C-4 and a mixture of cis and trans isomerism at position C-8.

3,953,533
PROCESS FOR THE HYDRATION OF OLEFINS TO ALCOHOLS

August Sommer, Herne, and Martin Urban, Gelsenkirchen-Buer, both of Germany, assignors to Veba-Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Germany

Filed Jan. 11, 1974, Ser. No. 432,727
Claims priority, application Germany, Jan. 11, 1973, 2301208
Int. Cl.² C07C *29/04*
U.S. Cl. 260—641 **4 Claims**



1. Process for the hydration of ethylene in the presence of phosphoric acid-containing supported catalysts to ethanol which comprises:

a. carrying out the hydration in the vapor phase under conditions wherein the molar ratio of water to ethylene is in the range of about 0.1 to 0.3 : 1, the reaction temperature is in the range of about 190°–230°C, and the reaction pressure is in the range of about 60 to 80 atmopheres gauge, thereby forming a reaction product mixture containing unreacted ethylene steam volatile by-products and ethanol;

b. separating unreacted gaseous ethylene from the reaction product mixture from (a);

c. feeding the reaction product mixture from (b) to a washing extraction zone where said by-products are separated from said ethanol using 50 to 150 kg of steam per 100 liters of pure ethanol to vaporize said by-products which are removed overhead, said ethanol, free of said by-products, being withdrawn from the sump of said washing zone; and

d. thereafter condensing the steam and volatilized by-products withdrawn overhead from the washing zone in step (c) and recycling same to hydration step (a) thereby supplying the water required for the hydration and increasing the concentration of the by-products which prevents the further formation of by-products in the hydration.

3,953,534
CYCLOALIPHATIC COMPOUNDS AS ODOUR- AND TASTE-MODIFYING AGENTS

Erling Sundt, Pinchat-Geneva, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

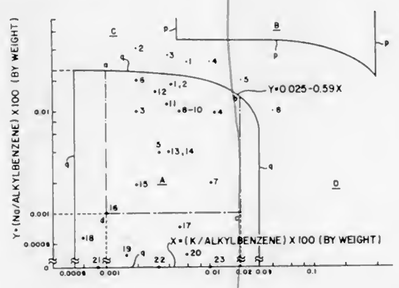
Division of Ser. No. 292,723, Sept. 27, 1972, abandoned. This application Dec. 2, 1974, Ser. No. 528,669
Claims priority, application Switzerland, Oct. 11, 1971, 14784/71; May 19, 1972, 7456/72
Int. Cl.² C07C *13/48*
U.S. Cl. 260—666 PY **4 Claims**

1. 4-Methyl-tricyclo[6.2.1.0^{2,7}]undec-4-ene.

3,953,535
PROCESS FOR THE PREPARATION OF ALKENYLBENZENES

Takeo Shima; Takanori Urasaki, both of Iwakuni, and Iwao Omae, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 495,762, Aug. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 422,648, Dec. 7, 1973, abandoned. This application Dec. 9, 1974, Ser. No. 530,583
Int. Cl.² C07C *3/52*
U.S. Cl. 260—668 B **7 Claims**



1. A process for preparing alkenylbenzenes, which comprises reacting an alkylbenzene with 1,3-butadiene at an elevated temperature in the presence of an alkali metal catalyst in the substantial absence of oxygen and moisture, characterized in that said catalyst is composed of

1. 0.0005 to 0.03% by weight, based on the alkylbenzene, of metallic potassium, and
2. metallic sodium in an amount expressed in percent by weight, based on the alkylbenzene, determined by the following relationship (i)

$$-0.59x + 0.025 \geqq Na \qquad (i)$$

wherein x is the amount expressed in percent by weight of the metallic potassium used.

3,953,536
CATALYST TREATMENT

Alistair Chalmers Ramsay Brown; Norman Andrew Dykes; John Kenneth January, and Ivan James Samuel Lake, all of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 346,859, April 2, 1973, Pat. No. 3,898,182. This application May 19, 1975, Ser. No. 578,812
Claims priority, application United Kingdom, Apr. 24, 1972, 18824/72
Int. Cl.² C07C *5/24, 15/08*
U.S. Cl. 260—668 A **9 Claims**

1. A process which comprises isomerising a mixture of xylenes containing less than an equilibrium concentration of paraxylene at a temperature in the range 200° to 600°C, at a pressure in the range 0.5 to 50 atmospheres by contacting the mixture with a silica catalyst prepared by a process which comprises exposing a silicia catalyst, which is normally susceptible to damage during exposure to an aqueous liquid, to steam at less than its saturated vapour pressure and then contacting the catalyst with the aqueous liquid and drying the catalyst after exposure to the aqueous liquid.

3,953,537
DISPROPORTIONATING C_2–C_6 PARAFFINS OVER ZEOLITES

Frank J. Chloupek, South Holland, Ill.; Robert A. Sanford, Prospect, Ky.; Laszlo Pollak, Chicago, Ill., and Ronald A. Kmecak, Ashland, Ky., assignors to Atlantic Richfield Company, Philadelphia, Pa.

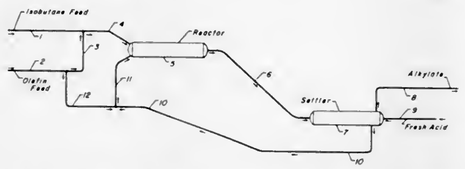
Filed Jan. 22, 1969, Ser. No. 793,173
Int. Cl.² C07C *3/62, 5/52;* **B01J** *29/12*
U.S. Cl. 260—676 R **21 Claims**

1. A process for disproportionating a paraffinic hydrocarbon containing up to about 6 carbon atoms to produce compounds containing one more and one less carbon fragment per molecule than said paraffinic hydrocarbon which comprises contacting said paraffinic hydrocarbon at conditions sufficient for disproportionation of said hydrocarbon and insufficient to cause substantial cracking of the hydrocarbon said contacting occurring at a temperature in the range of about 400° to 1,000°F., with a crystalline aluminosilicate having a pore size of about 10 to 14 Angstrom units and a silica to alumina mole ratio greater than about 3 to 1 to about 11 to 1, said catalyst containing less than about 0.5 equivalent of alkali metal per gram atom of aluminum and at least about 0.4 equivalent per gram atom of aluminum in the aluminosilicate of hydrogen or metal ion, said metal ion being selected from the group consisting of silver, copper, mercury, polyvalent metals, and mixtures thereof, and recovering said paraffin hydrocarbons containing one more and one less carbon fragment.

3,953,538
ALKYLATION PROCESS STARTUP PROCEDURE

William G. Boney, Rolling Meadows, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 340,126, March 12, 1973, abandoned. This application Sept. 9, 1974, Ser. No. 504,409
Int. Cl.² C07C *3/54*
U.S. Cl. 260—683.48 **2 Claims**



2. A hydrofluoric acid-catalyzed alkylation process which comprises the steps of:

a. admixing a first olefinic hydrocarbon stream comprising mono-olefins having from 2 to about 6 carbon atoms per molecule with an alkylatable hydrocarbon stream comprising isoparaffins having from 4 to 7 carbon atoms per molecule and effecting the formation of a reactant mixture which is substantially free of hydrofluoric acid;
b. passing the reactant mixture into a reaction zone which contains a quantity of liquid phase hydrofluoric acid catalyst comprising less than 5 wt.% water and which is maintained under alkylation conditions, effecting the reaction of the mono-olefins with the isoparaffins and the production of high-octane gasoline blending components;
c. effecting the formation of a second olefinic hydrocarbon stream by diverting a portion of the first olefinic hydrocarbon stream, and passing the second olefinic hydrocarbon stream into a polymerization zone maintained under conditions including a temperature of from 0°F. to about 200°F. and a pressure of from about 20 psig. to about 500 psig. and in which there are substantially no isoparaffins present;
d. contacting the second olefinic hydrocarbon stream with liquid hydrofluoric acid and effecting a polymerization of essentially all of the second olefinic hydrocarbon stream and the formation of a polymeric diluent;
e. admixing the polymeric diluent with the hydrofluoric acid catalyst contained with in the reaction zone and effecting a reduction in the weight percentage of hydrofluoric acid in the hydrofluoric acid catalyst contained in the reaction zone; and,
f. continuing the polymerization of the hydrocarbon stream in step (d) until the average acid strength in the hydrofluoric acid retained in the alkylation zone is reduced to about 86 to 90 weight percent.

3,953,539
AROMATIC POLYESTER RESIN COMPOSITION HAVING INHIBITED COLORATION AND METHOD FOR INHIBITING COLORATION

Shoji Kawase; Takeo Shima; Hiroo Inata, and Shizuka Kurisu, all of Iwakuni, Japan, assignors to Teijin Ltd., Osaka, Japan

Filed Mar. 25, 1974, Ser. No. 454,605
Claims priority, application Japan, Mar. 28, 1973, 48-34648; Aug. 27, 1973, 48-95118
Int. Cl.² C08L *67/00*
U.S. Cl. 260—860 **7 Claims**

1. An aromatic polyester resin composition with inhibited coloration, said composition comprising

1. 100 parts by weight of an aromatic polyester resin derived from a glycol component at least 70 mol % of which consists of tetramethylene glycol and an acid component at least 70 mol % of which consists of an aromatic dicarboxylic acid which are polymerized with a titanium compound catalyst,
2. a 0.01 to 3 parts by weight per 100 parts by weight of the aromatic polyester resin of at least one phosphorus compound which is liquid or solid at room temperature selected from the group consisting of phosphorus compounds of the following formula



or

wherein each of R^1, R^2 and R^3, and each of R^4, R^5 and R^6 represent a hydrogen atom, an alkyl group containing 1 to 20 carbon atoms, an aryl group containing 6 to 20 carbon atoms, an aralkyl group containing 7 to 20 carbon atoms, or —OR group in which R is a hydrogen atom, an alkyl group containing 1 to 20 carbon atoms, an aryl group containing 6 to 20 carbon atoms, an aralkyl group containing 7 to 20 carbon atoms; R^1, R^2 and R^3, or R^4, R^5 and R^6 may be different from each other, or at least two of R^1, R^2 and R^3 or R^4, R^5 and R^6 may be the same, or at least two of R^1, R^2 and R^3, or R^4, R^5 and R^6 may form a ring,

and metal salts of these phosphorus compounds.

3,953,540
ACRYLONITRILE-CHLORINATED POLYETHYLENE-STYRENE RESINOUS MOLDING COMPOSITIONS CONTAINING ANTIMONY TRIOXIDE

Shoichiro Takezoe, Chigasaki; Masao Ogawa, Tokyo, and Junichi Nakamura, Yokohama, all of Japan, assignors to Showa Deuko Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1974, Ser. No. 473,582
Claims priority, application Japan, Aug. 24, 1973, 48-94280
Int. Cl.² C08L *23/00*
U.S. Cl. 260—878 R **10 Claims**

1. A flame retardant, antistatic, high impact strength resinous molding composition consisting essentially of

A. from 8 to 20 parts by weight of antimony trioxide, and
B. 100 parts by weight of an acrylonitrile-chlorinated polyethylene-styrene ternary resin containing from 25 to 35% by weight of a chlorinated polyethylene having a degree of chlorination of from 30 to 45% by weight obtained by copolymerizing a chlorinated polyethylene, obtained by chlorinating a polyethylene having an average molecular weight of about 50,000, with a mixture of acrylonitrile and styrene to form a graft resin, the ratio of acrylonitrile to styrene being in the range of from 1:99 to 50:50.

3,953,541
PROCESS FOR PREPARATION OF POLYOLEFIN GRAFT COPOLYMERS

Saburo Fuji, Ohtake, Japan, assignor to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed July 17, 1974, Ser. No. 489,249
Claims priority, application Japan, July 20, 1973, 48-81899
Int. Cl.² C08L *23/26;* **C08F** *255/02, 255/08*
U.S. Cl. 260—878 R **17 Claims**

1. A process for preparing a polyolefin graft copolymer, which comprises subjecting a copolymer selected from the group consisting of copolymers of ethylene with diolefins and copolymers of C_3 to C_8 α-olefins with diolefins and containing 2 to 40 double bond per 1000 monomeric units therein and a monomer radical graft-copolymerizable onto said copolymer to a suspension graft copolymerization in the presence of a radical initiator in an inert organic solvent capable of dissolving said radical-polymerizable monomer but incapable of dissolving said graft copolymer and of reacting therewith, at a temperature at which said copolymer is not melted.

3,953,542
PROCESS FOR GRAFTING ETHYLENE ONTO DIENE POLYMERS

Adel Farhan Halasa, Bath, and Richard Gutierrez, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Oct. 17, 1974, Ser. No. 515,803
Int. Cl.² C08F *279/02, 257/02*
U.S. Cl. 260—878 R **21 Claims**

1. A process for the grafting of ethylene onto a polymer consisting essentially of 40–100 percent by weight of a conjugated diene and 0–60 percent by weight of an aromatic mono-

mer having no more than 20 carbon atoms selected from the class consisting of vinyl and isopropenyl aryl compounds and derivatives thereof in which the derivative group is an alkyl, aralkyl, cycloalkyl or chlorine attached directly to the aromatic nucleus thereof comprising the steps of maintaining an intimate mixture of ethylene and said polymer at a temperature of −35° to 50° C. in intimate contact with a catalyst composition consisting essentially of:

a. a metal halide compound having the formula $TiBr_nCl_{4-n}$ or VBr_mCl_{5-m} wherein n has a value of 0–4 and m has a value of 0–5;

b. an aluminum hydrocarbon compound having the formula AlR_3 wherein R is a hydrocarbon group having 1–8 carbon atoms selected from the class consisting of alkyl, aryl and cycloalkyl groups; and

c. a carbonyl-containing or thiocarbonyl-containing compound selected from the class consisting of aldehydes, ketones and carboxylic acids, esters, amides and carbamates and the corresponding thiocompounds;

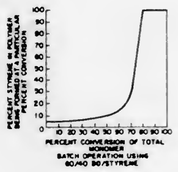
the concentration of said metal halide compound being 1–10 millimoles per 100 grams of said monomer composition, said AlR_3 compound being present in said catalyst composition in a proportion of 0.9–3 moles per mole of said metal halide compound and said carbonyl or thio-carbonyl compound being present in a proportion of 0.5–4 moles per mole of metal halide compound, said grafting reaction being conducted for a period of at least 30 minutes.

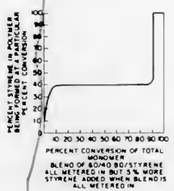
3,953,543

POLYMERIZATION PROCESS AND POLYMER PRODUCED THEREBY

Shingo Futamura, Seville, and Thomas Chester Bouton, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Dec. 26, 1973, Ser. No. 428,269
Int. Cl.² C08G 297/04
U.S. Cl. 260—880 B **21 Claims**





1. A process for preparing butadiene styrene copolymers of improved green strength and low running temperature comprising the steps (a) of polymerizing a mixture of 40–85 percent by weight of butadiene and 15–60 percent by weight of styrene in a hydrocarbon solvent, while the said mixture is fed into the polymerization system containing a lithium-hydrocarbon initiator, at a rate slow enough to effect random copolymerization of at least 10 percent styrene in the resulting polymer backbone, effecting said copolymerization at a temperature in the range of 90°–175° C. to produce a high degree of branching in said copolymer, and (b) effecting the final 10–50 percent of the polymerization with a monomer portion containing a higher proportion of styrene than is incorporated into the polymer backbone, and effecting the formation of block homopolystyrene at the terminals of the branches in said polymer by maintaining 50–100 percent styrene in the monomer portion during the conversion of the final ten percent of monomer to polymer.

3,953,544

LOW TEMPERATURE CURING ADHESIVES

Robert J. Jones, Hermosa Beach; Howard E. Green, Los Angeles, and Robert W. Vaughan, Manhattan Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed May 10, 1974, Ser. No. 468,705
Int. Cl.² C08F 120/02, 226/00; C07C 69/00, 69/52
U.S. Cl. 526—304 **6 Claims**

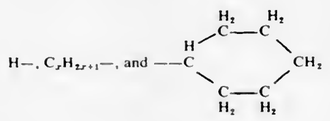
1. An adhesive consisting essentially of a solid polymeric material produced by curing at ambient temperatures:

A. from 10% to 100% by weight of a monomer or monomers having the structure:



$$(R''CH{=}CR'\overset{O}{\overset{\|}{C}}NH)_xR_1R(O\overset{O}{\overset{\|}{C}}R'C{=}CHR'')_m$$

wherein R'' is selected from the group consisting of



$$H-,\ C_zH_{2z+1}-,\ \text{and}\ -\!-\!\text{C}_6\text{H}_6-$$

where x is an integer from 1 to 6; R' is selected from the group consisting of hydrogen and $-C_yH_{2y}-$, where Y is an integer from 1 to 3; R is selected from the group consisting of alkane radical having 3 to 5 carbon atoms; R_1 is selected from the group consisting of —H, $-C_zH_{2z+1}$, and



where z is an integer from 1 to 3; m is an integer from 1 to 3; n is an integer from 1 to 2; and $n + m$ is from 3 to 5;

B. from 0% to 5% by weight of a free radical peroxide catalyst; and

C. from 0% to 15% by weight of an organic accelerator.

3,953,545

POLYMERS CONTAINING SILVER AND COPPER

Arthur Stoy, No. 7, Farni ul., Prague 6, Czechoslovakia

Division of Ser. No. 114,088, Feb. 9, 1971, Pat. No. 3,734,897, which is a continuation of Ser. No. 729,897, May 17, 1968, abandoned. This application Mar. 15, 1973, Ser. No. 341,385
Claims priority, application Czechoslovakia, May 25, 1967, 3821-67
Int. Cl.² C08F 13/00; C12G 1/00; G03C 1/86
U.S. Cl. 260—898 **4 Claims**

1. A method for preparing a water-swellable polymeric composition having bound thereto a monovalent metal cation selected from the group of copper and silver which comprises contacting two different kinds of polymers, one polymer carrying nitrile radicals derived from ethylenically unsaturated nitrile monomers and the other of said polymers carrying sulfo radicals derived from ethylenically unsaturated sulfo monomers, with an aqueous solution of a salt of said metal cation for a period of time sufficient to form a complex between the metal ions and said polymeric composition, said solution containing said metal ions in an amount which is at least substantially equivalent to the sulfo groups present.

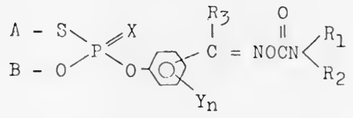
3,953,546

THIO(DITHIO)PHOSPHORATES

Masachika Hirano, Toyonaka; Kunio Mukai, Nishinomiya, and Hisami Takeda, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed July 11, 1974, Ser. No. 487,670
Claims priority, application Japan, July 31, 1973, 48-86569; Apr. 5, 1974, 49-39319
Int. Cl.² A01N 9/36; C07F 9/18
U.S. Cl. 260—938 **8 Claims**

1. Thio (dithio)-phosphorate of the formula,



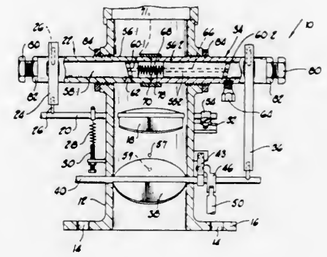
wherein A represents an alkyl having up to 6 carbon atoms; B represents lower alkyl having up to 4 carbon atoms; Y represents halogen, methoxy or ethoxy; X represents oxygen; R_1 represents alkyl having up to 6 carbon atoms, phenyl, phenyl substituted by halogen or phenyl substituted by lower alkyl having up to 4 carbon atoms; R_2 represents hydrogen or alkyl having up to 6 carbon atoms; R_3 represents hydrogen or alkyl having up to 6 carbon atoms; and n represents 0, 1 or 2.

3,953,547

CARBURETOR

Marthinus Johannes Schoeman, No. 13, 14th Ave., Edenvale, Transvaal, South Africa

Filed Oct. 3, 1973, Ser. No. 403,276
Claims priority, application South Africa, Jan. 8, 1973, 73/0138; Feb. 19, 1973, 73/1163; Apr. 27, 1973, 73/2891
Int. Cl.² F02M 7/22, 7/16
U.S. Cl. 261—18 A **4 Claims**



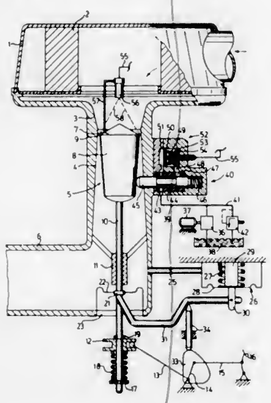
1. A carburetor for an internal combustion engine which includes a duct connectable to a combustible charge inlet of the engine; a vane mounted to be displaceable by airflow through the duct; a butterfly valve within the duct and connectable to a throttle linkage of the engine; a regulating valve extending transversely into the duct and having an outlet directly into the duct, the regulating valve including a first regulating member having a helical groove rotatably displaceable into and out of progressive alignment with the outlet; and at least one control valve, the control valve and the regulating valve being connected in series for controlling and regulating fuel flow from a fuel source and into the duct via the outlet, the regulating valve being controllably operable by the vane dependent on the rate of airflow through the duct and the control valve being linked to the butterfly valve to operate in conjunction with the degree of opening of the butterfly valve, and in which the control valve is in the form of a housing having an inlet connected to the fuel source with a second regulating member in sealing engagement with the inner walls of the housing, the second regulating member having a groove

formed in its periphery to form a restricted passage between the housing inlet and the outlet, and the second regulating member being controllably displaceable to vary the supply of fuel from the housing inlet through the restricted passage to the outlet.

3,953,548
FUEL INJECTION SYSTEM

Heinrich Knapp, Leonberg-Silberberg, and Gunther Jaggle, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 27, 1974, Ser. No. 500,926
Claims priority, application Germany, Sept. 13, 1973, 2346099
Int. Cl.² F02M 7/22
U.S. Cl. 261—50 A **11 Claims**



1. In a fuel injection system for mixture compressing, externally ignited internal combustion engines employing continuous fuel injection into the induction tube of the engine, the induction tube including in series and immediately adjacent, a converging region and a diverging region, the diverging region containing an axially slidable throttle element composed in part of two coaxial conical parts with adjoining bases and different apex angles, the slidable throttle element and the diverging region of the induction tube being positioned to form a minimum annular flow cross section and, downstream thereof, to form a shallow-angled diffuser, and wherein the fuel is injected into the minimum flow cross section, wherein that conical part of the throttle element which converges in the upstream direction has a larger apex angle than the other conical part and wherein the pressures acting on the throttle element are equalized, the improvement comprising:

a. a fuel metering valve assembly means located in the fuel injection system for metering fuel in dependence on the size of said minimum flow cross section and in substantially linear dependence on air flow quantity, including

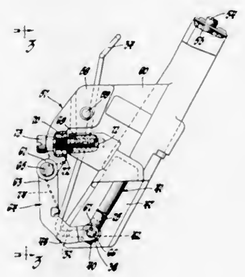
a control slide which touches that conical part of said throttle element which converges in the direction of air flow and is slidable in its axial direction depending on the position of said throttle element.

3,953,549
FUEL METERING ROD POSITIONING MEANS

John W. Moulds, Penfield, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 9, 1974, Ser. No. 530,829
Int. Cl.² F02M 7/22
U.S. Cl. 261—50 A **1 Claim**

1. Engine fuel metering means comprising, in combination: a housing defining a fuel supply passage and a metering orifice opening therefrom; a metering rod having an upper end longitudinally movable in the metering orifice and a lower end longitudinally and laterally movable in the fuel supply passage; a positioning link pivotally attached for movement with the lower end of the metering rod; an adjusting lever pivotally mounted on the housing; an adjusting link pivotally connected between the adjusting lever and the lower end of the metering rod, whereby movement of the adjusting lever causes the

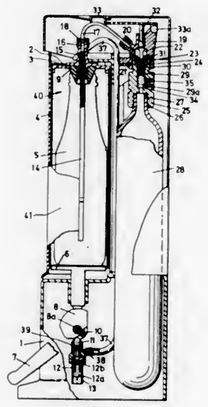


lower end of the metering rod to move through a path constrained by the positioning link to include longitudinal movement; an adjusting screw connecting the adjusting lever and the housing for changing the relative position thereof and thus varying the longitudinal position of the metering rod in the orifice, the positioning link being effecting to move the lower end of the metering rod through a path constrained by the adjusting link to further vary the longitudinal position of the metering rod in the orifice.

3,953,550
APPARATUS FOR AERATING LIQUIDS

Guy Hugh Gilbey, Empingham, England, assignor to Sodastream Limited, Peterborough, England

Filed Dec. 18, 1974, Ser. No. 533,871
Claims priority, application United Kingdom, Apr. 24, 1974, 17834/74
Int. Cl.² C02D 1/00
U.S. Cl. 261—64 R **7 Claims**



1. Apparatus for aerating liquids comprising:

a. a main body part including a holder for a gas cylinder equipped with a valve;

b. actuating means on said body part for actuating said valve and for thereby releasing gas from said cylinder;

c. an aerating head secured to said body for movement between an inserting position in which a vessel can be inserted in said head and an aerating position, an inserted vessel being adjacent said body in said aerating position and remote from said body in said inserting position of the aerating head;

d. connector means on said aerating head and said holder for connecting the valve of a cylinder held by said holder with a vessel inserted in said aerating head for flow of released gas into said vessel;

e. a vessel support movably mounted on said body;

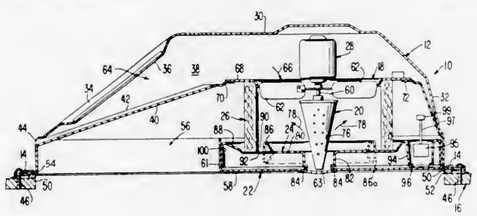
f. cam means on said body part for moving said vessel support toward said inserted vessel in said aerating position and for thereby securing said vessel to said aerating head, and for moving said vessel support away from the inserted vessel and for thereby releasing said vessel from said aerating head; and

g. safety valve means mounted on said body part and communicating with said connector, said cam means including opening means for opening said safety valve means and for thereby releasing gas from an inserted vessel in response to incipient movement of said vessel support away from said vessel and prior to said releasing of the vessel from said aerating head.

3,953,551
AIR COOLING APPARATUS

Arthur G. Dorall, Skyridge, Star Rte. No. 3, Pioneer, Calif. 95666

Filed Jan. 22, 1973, Ser. No. 325,297
Int. Cl.² B01F 3/04
U.S. Cl. 261—91 **3 Claims**

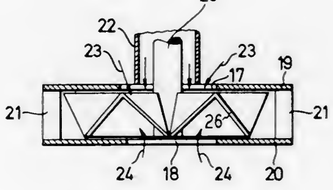


1. An evaporative air cooler comprising: a housing having an inclined end wall provided with an air inlet and an air outlet therethrough, and a panel in the housing and provided with an inclined surface spaced below and aligned with said air inlet and above and aligned with said air outlet, there being an exit opening between the lower margins of the end wall and said panel and spaced above said air outlet, said inclined surface sloping downwardly and away from the central interior of the housing to permit moisture entering the air opening to strike said inclined surface and to flow downwardly along the same toward and through said exit opening; a rotatable fan mounted in the housing near the upper end of the panel and disposed for creating a flow of air along a path through the housing from the air inlet to the air outlet; a motor within the housing above and coupled with the fan for rotating the same; an open top, relatively shallow water tank disposed in said housing adjacent to said air outlet and spaced below the fan; a baffle covering the open top of the tank, said baffle having an upper surface, a pair of spaced openings through said upper surface, and a pair of radially spaced, continuous projections defining an annular depression in surrounding, spaced relationship of one of the openings, the other opening being outboard of the outer projection, said baffle having a first flange integral therewith and extending downwardly therefrom in alignment with said one opening and into said tank, whereby the first flange forms with the bottom of the tank a first water-receiving cup, and a second flange integral with the baffle and extending downwardly therefrom in alignment with said other opening and into said tank, whereby the second flange forms with the bottom of the tank a second water-receiving cup, each flange having a lower margin provided with a recess therein which cooperates with the bottom of the tank to define a metering hole near the lower extremity of the corresponding cup; a conical, perforate pumping device having an upper enlarged end coupled with the motor and a lower apex end extending through said one opening and into the tank, said device being operable for pumping water upwardly from the tank and through the perforations of the device when the motor is actuated and as the fan directs a flow of air from said air inlet to said air outlet, whereby the air will be cooled by evaporation upon contact with the water elevated by said device; a valve above the baffle and having a float in the other opening, said valve adapted to be coupled to a source of water; and a filter extending upwardly from said baffle to a region adjacent to the top of said panel, said filter having a lower margin in the depression, the baffle having at least one drain hole therethrough in said depression.

3,953,552
AGITATION FLOTATION CELL FOR THE PREPARATION OF MINERALS AND COALS

Werner Strauss, Bochum, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Jan. 28, 1975, Ser. No. 544,698
Claims priority, application Germany, Jan. 29, 1974, 2404032
Int. Cl.² B03D 1/18
U.S. Cl. 261—93 **6 Claims**



1. An agitator for use in an agitator flotation unit for the preparation of minerals and coals having an agitation shaft with an air supply pipe opening at the lower end of the shaft, comprising:

a vertical shaft;

an air induction agitator unit at the lower end of the shaft having a plurality of axially extending vanes projecting radially outwardly from the shaft and being circumferentially spaced apart a distance less than 180°;

agitator paddles with a paddle between each of the vanes being at an angle to the vanes at an inclined angle relative to the plane of rotation of the shaft with the axial height of the paddles being no greater than the axial height of the vanes.

3,953,553
SEWAGE TREATMENT AERATION SYSTEMS

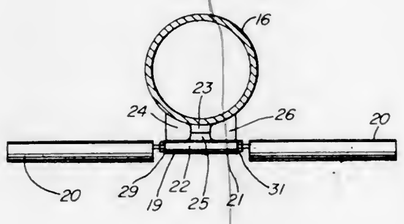
Paul M. Thayer, Milwaukee, Wis., assignor to Water Pollution Control Corporation, Milwaukee, Wis.

Continuation of Ser. No. 364,585, May 29, 1973, abandoned. This application Feb. 28, 1975, Ser. No. 554,343
Int. Cl.² B01F 3/04
U.S. Cl. 261—122 **9 Claims**

1. A prefabricated header-connector assembly adapted for inclusion in a sewage aeration tank by the attachment of a low pressure air supply and diffusers to a plurality of interconnected header-connector assemblies in which said assembly

maintains said attached diffusers in proper alignment in a common plane, said assembly comprises;

a header formed of weldable material capable of having nipples drawn therefrom, a plurality of outwardly projecting nipples drawn from said header at spaced locations on said header,



a plurality of connectors each secured to said header at different ones of said spaced locations, each of said connectors oriented in a transverse direction to the direction of said header, said connectors having coupling means for coupling to diffusers,

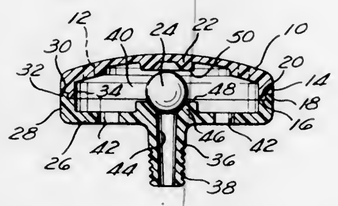
each of said connectors having nipples drawn therefrom with the open end of said connector nipples welded to different ones of said header nipples.

3,953,554

DIFFUSER FOR AERATION SYSTEMS

Edward T. Loughridge, Mansfield, Ohio, assignor to Ashland Vault Incorporated, Ashland, Ohio

Filed July 11, 1973, Ser. No. 378,279
Int. Cl. B01F *3/04*
U.S. Cl. 261—124 **7 Claims**



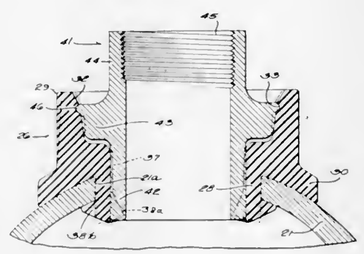
1. A diffuser for submerged gas treatment of a liquid system comprising a body assembly formed of a material which is non-porous and providing vertically spaced horizontally extending top and bottom wall portions cooperating at least in part to define an internal cavity, said bottom portion being formed with a centrally located inlet passage and an upwardly facing valve seat around said passage, said top wall portion being imperforate above said valve seat and providing a plurality of perforations in a pattern laterally around said valve seat, said bottom wall portion having a plurality of cut out openings laterally around said valve seat each having a greater open area than any individual perforation, and normally seated valve means positioned against said valve seat and closing said inlet passage, said valve means being movable under the influence of gas under pressure supplied through said inlet passage to an open unseated position, said body assembly providing means to confine the movement of said valve between said seated and unseated positions.

3,953,555

DIFFUSER CONNECTOR FOR AERATION HEADER

Paul R. Gley, Hillsdale, N.J., assignor to Envirex Inc., Waukesha, Wis.

Filed May 6, 1974, Ser. No. 467,035
Int. Cl.² F16L *19/00;* **B01D** *47/02;* **B05B** *15/00*
U.S. Cl. 261—124 **4 Claims**



2. The combination of a gas diffuser and a connector, said combination comprising:

a. a generally cylindrical base made of an elastic material, said base comprising:

i. a tube the outer surface of which is cylindrical and the inner surface of which defines a bore which has a constriction at a first end thereof,

ii. a saddle which joins the tube at the end thereof opposite to said first end, the inner surface of which defines a bore which is a continuation of the bore in the tube, and the outer surface of which extends radially outwardly from the outer surface of the tube, and

iii. a collar which joins the saddle at the end thereof opposite to the tube and the inner surface of which defines a stepped bore which is a continuation of the bore in the saddle, the stepped bore defining, from the end opposite to the tube towards the tube, a chamfered lead-in section, an annular locking means, an intermediate section, and a shoulder leading to the bore defined by the shoulder and the tube;

b. a generally cylindrical insert made of a rigid material, said insert comprising:

i. a hollow straight stem the outer surface of which is slightly larger in diameter than the inner diameter of the bore defined by the saddle and the tube of said base and the inner surface of which defines a bore for the passage of air and

ii. a hollow enlarged band which joins the stem at a first end thereof, the inner surface of which defines a bore which is a continuation of the bore in the stem, and the outer surface of which has, from the end opposite to the stem towards the stem, an annular locking means adapted to engage the annular locking means on the collar of said base and an intermediate section which is slightly larger in diameter than the inner diameter of the intermediate section of the stepped bore in the collar of said base, the axial distance from the annular locking means on the band on said insert to the end of the stem opposite to the band being sufficient so that, when the annular locking means on the band is engaged with the annular locking means on the collar, the end of the stem opposite to the band is forced axially against the constriction in the tube, causing the first end of the tube to expand to form an external flange; and

c. a gas diffuser connected to said hollow enlarged band.

3,953,556

METHOD OF PREPARING URANIUM NITRIDE OR URANIUM CARBONITRIDE BODIES

Harley A. Wilhelm, Ames, Iowa, and James K. McClusky, Valparaiso, Ind., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Continuation-in-part of Ser. No. 323,185, Jan. 12, 1973, abandoned. This application May 17, 1974, Ser. No. 470,897
Int. Cl.² G21C *21/00*
U.S. Cl. 264—0.5 **6 Claims**

1. A method of preparing sintered uranium nitride or uranium carbonitride bodies having controlled final carbon-to-uranium ratio in a single furnace comprising:

a. mixing U_3O_8 with a predetermined amount of carbon to prepare a charge, the weight ratio of carbon to U_3O_8 in the charge being determined by the formula $C = 0.1027 + 0.0428X$, where X = atom ratio of carbon with respect to uranium in the final uranium nitride or uranium carbonitride body;

b. compacting the charge into a green body;

c. heating the green body to about 1000°C. until the U_3O_8 in the body is reduced to UO_2;

d. heating the body under reduced pressure to about 1350°C. until the uranium dioxide is converted to UOC or to UOC plus UC;

e. heating the body under a flowing atmosphere of nitrogen to about 1750°C. whereby the UOC is nitrided to uranium nitride; and

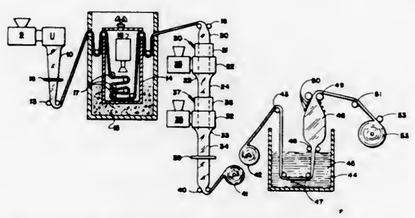
f. heating the body to about 1900°C. under reduced pressure whereby excess nitrogen is removed and the body is sintered, thereby forming a sintered uranium nitride or uranium carbonitride body having a controlled final carbon-to-uranium ratio.

3,953,557

POLYMER FILM WITH NARROW MOLECULAR WEIGHT DISTRIBUTION AND SARAN AND LAMINATES THEREOF

Harri J. Brax; Joseph F. Porinchak, both of Spartanburg, and Alan S. Weinberg, Greenville, all of S.C., assignors to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 129,501, March 30, 1971, Pat. No. 3,741,253. This application Mar. 22, 1973, Ser. No. 344,005
Int. Cl.² B29D *9/08*
U.S. Cl. 264—22 **6 Claims**



1. A method for producing a laminate comprising:

A. melt extruding a copolymer of ethylene and vinyl acetate through an annular die to form a first tubulr film, said copolymer having 5 to 20% vinyl acetate and with the number average molecular weight of said copolymer having a coefficient of variation not exceeding 13,

B. irradiating said first film to cross link said copolymer,

C. inflating said first tubular film without causing significant transverse orientation to provide a substantially circular tubing,

D. blending 5 to 40 weight percent of suspension polymerized copolymer of vinylidene chloride and vinyl chloride and 60 to 95 weight percent of emulsion polymerized copolymer of vinylidene chloride and vinyl chloride to form a first blend, the vinyl chloride content of said copolymers being in the range of 5 to 40 percent,

E. blending 2 to 10 weight percent of epoxy resin with said first blend to form a second blend,

F. melt extruding said second blend through a second annular die to form a second tubular film on said irradiated first ply to form a two ply tubular film, said second film providing oxygen barrier properties so that the laminate has an oxygen transmission rate of no more than 70 cc/sq m/24 hrs/1 atm. at 73°F., and

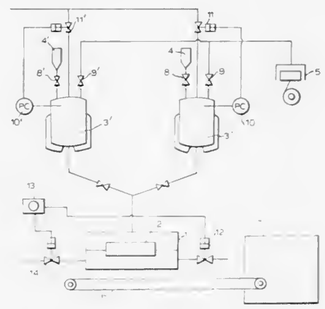
G. melt extruding a third tubular film of a copolymer of ethylene and vinyl acetate through an annular die onto said two ply tubular film and forming a three ply tubular film.

3,953,558

METHOD OF MOULDING FOAMED SYNTHETIC RESIN PELLETS OF POLYOLEFINE

Itaru Hatano, Motoyamanaka; Minoru Hara, Kobe; Tsuneo Kitamura, Ashiya; Akira Ando, and Yasuyuki Suganuma, both of Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1973, Ser. No. 425,870
Claims priority, application Japan, Dec. 19, 1972, 47-128011
Int. Cl.² B29D *27/00*
U.S. Cl. 264—22 **18 Claims**



1. A method of moulding foamed synthetic resin pellets of polyolefines, comprising the steps of

A. preparing preliminarily foamed synthetic resin pellets of cross-linked polyolefines to more than 65 percent by volume of closed cells;

B. heating the pellets to temperatures up to the melting points of the polyolefin resins and impregnating said pellets with a gas under pressure so that said inorganic gas is contained within said pellets at a pressure of more than 1.18 atmospheres pressure;

C. placing said gas impregnated foamed pellets into a mould having capabilities of enclosing said pellets and allowing escape of gas therefrom; and

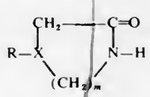
D. heating said pellets to cause expansion of said gas to thereby expand said pellets and cause tight adherence to each other and thereby form articles in the shape of said mould.

3,953,559
REVERSE COATING PROCESS USING A LACTAM RELEASE AGENT

Karl-Arnold Weber; Kuno Wagner, and Siegfried Klipfel, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 3, 1974, Ser. No. 466,755
Claims priority, application Germany, May 19, 1973, 2325577
Int. Cl.² B29D *7/02;* **B29C** *1/04*
U.S. Cl. 264—39 **9 Claims**

9. In a process for reverse coating a substrate with a polyurethane which comprises covering the surface of a release support with liquid release agent, an aqueous solution of a release agent or an aqueous paste of the release agent, heat treating the release agent from about 5 seconds to 10 minutes at 30° to 150°to form a dry tack-free coating, applying a polyurethane coating over the release agent and then removing the coating from the release support, the improvement wherein the release agent is soluble in water, swells in water or forms a paste with water, crystallizes when dried without forming a film, is free from tackiness at temperatures up to 40°C and which is a lactam of the formula



wherein
X represents either a CH group in which case
R represents hydrogen and
m is an integer of between 0 and 9, or
X represents a nitrogen atom, in which case
R represents an aliphatic group, an araliphatic group or a pyridine group which may be substituted by lower alkyl groups, and
m represents the integer 3
or the addition compound of said lactam with a reactant selected from the group consisting of water, an oxime, an amine, alcohol and thioalcohol.

3,953,560
METHOD OF INJECTION MOLDING STRUCTURAL FOAM FOLDING SLAT STRUCTURES

André Klein, Durban, South Africa, assignor to Polycrate (Proprietary) Limited, Pinetown, South Africa

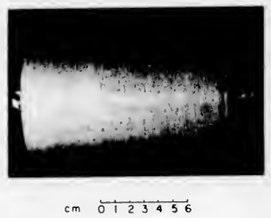
Filed Aug. 28, 1974, Ser. No. 501,228
Claims priority, application South Africa, Sept. 5, 1973, 73/6098
Int. Cl.² B29D *27/00;* **B29F** *1/00*
U.S. Cl. 264—50 **3 Claims**

1. A method of forming a structure comprising longitudinally juxtaposed slats separated by hinge formations to be capable of being folded or rolled, including the steps of introducing a molten synthetic resinous mass containing a foaming agent into a mould, permitting the foaming agent to cause foaming of the mass, and compressing the whole area of the mass with a monolithic ribbed mould plunger in a single step to a predetermined distance above the floor of the mould before the mass solidifies.

3,953,561
FIRING PROCESS FOR ALUMINA YARN

Hyunkook Shin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 301,504, Oct. 27, 1972, abandoned, which is a continuation-in-part of Ser. No. 155,737, June 23, 1971, abandoned. This application Feb. 19, 1975, Ser. No. 551,003
Int. Cl.² F27B *9/14*
U.S. Cl. 264—57 **4 Claims**



1. In a process for producing continuous polycrystalline alumina yarns by extruding through a spinneret having a plurality of orifices to form a continuous multiple filament yarn of continuous filaments a mixture comprising solid particles in an aqueous phase, said solid particles
a. being smaller than 5μ, with at least 98% of the particles by weight being smaller than 3μ as measured for equivalent spherical diameter,
b. having no dimension less than about 0.005μ measured by electron micrograph,
c. being at least 80% by weight alumina, said aqueous phase having dissolved therein at least one basic aluminum salt precursor of alumina; the ingredients being present in such proportions that the solid particles provide between about 35 to 75% by weight of the total available oxides in the mixture; and the amount of alumina available from the solid particles and the precursor of alumina is at least 80% of the total available oxide content of the mixture, the improvement comprising:
1. winding the yarn of freshly extruded multiple filaments, which contain about 30% to about 60% volatiles, onto a collapsible, refractory bobbin to form a shrinkable, continuous filament yarn package,
2. heating the yarn package to between about 300°C. and 1400°C. for a time to reduce the volatiles content of the yarn to about 11% or less, and
3. unwinding the yarn from the yarn package and advancing it through a zone of intense heat, thereby heating the yarn to an apparent temperature of between about 1000°C. and about 1800°C.

3,953,562
PROCESS FOR THE ELIMINATION OF DIMENSIONAL CHANGES IN CERAMIC GREEN SHEETS

Gerald F. Hait, Wappingers Falls, and Robert W. Nufer, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 15, 1974, Ser. No. 488,861
Int. Cl.² C04B *35/64*
U.S. Cl. 264—63 **15 Claims**

1. A process for stabilizing a cast, substantially completely dried ceramic green sheet comprising a particulate ceramic and a thermoplastic polymeric binder which comprises contacting said cast ceramic green sheet with a solvent for said thermoplastic polymeric binder for a period of time sufficient to plasticize and soften but not dissolve said the.moplastic polymeric binder, and then again drying the cast ceramic green sheet prior to sintering such ceramic green sheet.

3,953,563
METHOD FOR PRODUCING HIGH ALUMINA REFRACTORY MATERIAL

Per Gudmar Kihlstedt, Bromma, and Knut Sven Eric Forssberg, Stockholm, both of Sweden, assignors to Advanced Mineral Research, Djursholm, Sweden

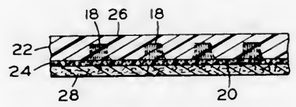
Continuation-in-part of Ser. No. 130,037, March 31, 1971, abandoned. This application Apr. 24, 1973, Ser. No. 353,972
Claims priority, application Sweden, Apr. 1, 1970, 4505/70
Int. Cl.² C04B *35/64*
U.S. Cl. 264—66 **7 Claims**

1. A method in the manufacture of high refractory bricks containing more than 50% by weight of non-activated alumina, the method comprising forming a damp mixture of an alumina rich material containing at least 50% by weight non-activated alumina and a binding agent amounting to 5–50% by weight of the total mixture in dry state and comprising finely divided particles of activated alumina, pressing said moist mixture into brick shapes, drying said shapes to prevent crack formation during steam hardening, and steam hardening the shapes at a temperature of about 160°–230°C and a pressure of 5–70 atm for a period of from 1–24 hours until essentially all of the activated alumina has been converted into boehmite.

3,953,564
PROCESS FOR FORMING DECORATIVE SURFACE COVERINGS

Elvin M. Weidman, Willow Street, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed June 28, 1974, Ser. No. 483,971
Int. Cl.² D01F *1/06*
U.S. Cl. 264—78 **7 Claims**



1. A process for producing a thermoplastic resinous decorative surface covering, comprising:
a. depositing a layer of unfused thermoplastic granules of a resinous dryblend onto a releasable substrate,
b. heating said layer to cause partial melting of at least surface portions of the granules at their points of contact,
c. cooling and thereby bonding adjacent granules to form a cohesive, porous layer having an upper and a lower surface,
d. applying in a design to the upper surface of said layer, an amount of a first colored settable resinous ink having a viscosity sufficient to at least partially penetrate said porous layer,
e. applying at least one additional settable resinous ink to the upper surface of said porous layer to cover at least portions of the design formed by the first applied ink, and also at least portions of the upper surface of the porous layer not covered by the first applied ink, said additional ink having a different color than that of said first ink, said inks being applied to penetrate into said porous layer in sufficient amounts so that the ink design is visible from the lower surface thereof after final fusion of all resinous material in said layer,
f. heating said layer for final fusion of all resinous material in the ink-containing porous layer to form a non-porous sheet,
g. cooling said fused sheet, and
h. removing said substrate whereby there is formed a surface covering having a clearly defined in-register, multicolored, decorative design visible from said lower surface of said sheet, which in use becomes the upper surface of said covering.

3,953,565
PROCESS FOR PRODUCING FLAME-RETARDANT SHAPED ARTICLES OF THERMOPLASTIC SYNTHETIC RESINS

Yukio Mizutani; Kazuo Shikata; Shunichi Nakamura, all of Tokuyama, and Michio Yoshimizu, Yamaguchi, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Japan

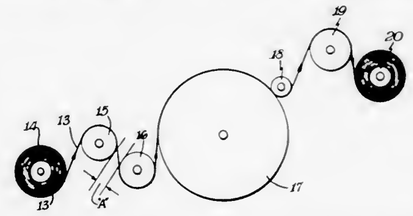
Filed Oct. 18, 1974, Ser. No. 515,930
Claims priority, application Japan, Oct. 29, 1973, 48-120680; Oct. 31, 1973, 48-121748
Int. Cl.² C08J *3/20*
U.S. Cl. 264—210 F **45 Claims**

1. A process for producing flame-retardant shaped articles of thermoplastic synthetic resins which comprises: (1) dispersing homogeneously in 100 parts by weight of a thermoplastic synthetic resin 100 – 500 parts by weight of an inorganic metal compound of particle size 0.01 – 500 microns and 0.01 – 500 parts by weight of a surfactant, said inorganic metal compound being one capable of forming a hydrate by reacting with a member of the group consisting of water and an aqueous acid solution; (2) forming the resulting composition into a desired shaped article; and (3) contacting the so obtained shaped article with a liquid selected from the group consisting of water and an aqueous acid solution, thereby converting the inorganic metal compound contained in the shaped article to a hydrate.

3,953,566
PROCESS FOR PRODUCING POROUS PRODUCTS

Robert W. Gore, Newark, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Continuation of Ser. No. 39,753, May 21, 1970, abandoned. This application July 3, 1973, Ser. No. 376,188
Int. Cl.² B29D *7/24*
U.S. Cl. 264—288 **24 Claims**



1. A process for the production of a porous article of manufacture of a polymer of tetrafluoroethylene which process comprises expanding a shaped article consisting essentially of highly crystalline poly(tetrafluoroethylene) made by a paste-forming extrusion technique, after removal of lubricant, by stretching said unsintered shaped article at a rate exceeding about 10% per second and maintaining said shaped article at a temperature between about 35°C. and the crystalline melt point of said tetrafluoroethylene polymer during said stretching.

3,953,567
^{82}Sr-^{82}Rb RADIOISOTOPE GENERATOR

Patrick M. Grant; Bruce R. Erdal, and Harold A. O'Brien, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Sept. 27, 1974, Ser. No. 509,991
Int. Cl.² C22B *26/10*
U.S. Cl. 423—2 **2 Claims**

1. An improved method of generating ^{82}Rb with a separation factor of at least 10^5 in respect to radioactive ^{82}Sr and having yields of about 80 percent comprising:
a. preparing an ion exchange column resin consisting of a 100–200 mesh resin which is composed of a styrenedivi-

nylbenzene copolymer with attached iminodiacetate exchange groups,

b. charging the said ion exchange column with a basic solution containing ^{82}Sr, and

c. eluting the ^{82}Rb from the said column using a 0.1 molar ammonium hydroxide-ammonium chloride buffered solution.

3,953,568

METHOD OF SIMULTANEOUS CONCENTRATION AND DILUTION OF ISOTOPES

Maomi Seko, 6-5, 2-chome, Ookayama, Meguro, Tokyo, and Hidetake Kakihana, 2-24, 3-chome, Zaimokuza, Kamakura, Kanagawa, both of Japan

Filed July 17, 1972, Ser. No. 272,250

Claims priority, application Japan, July 22, 1971, 46-54210; Sept. 28, 1971, 46-75072; June 13, 1972, 47-58221; June 12, 1972, 47-57636

Int. Cl. C01g *43/00, 53/00, 57/00*

U.S. Cl. 423—7 **18 Claims**

1. Method of simultaneously obtaining separate enriched fractions of heavier and lighter isotopes from isotopic mixtures thereof, which comprises establishing a liquid body containing a mixture in which the isotopes are in the form of coordination complexes of a metal with a ligand, said complexes being present in a plurality of different valent states, alternately passing through a highly cross-linked porous ion exchange resin said body and then an eluant but not a regenerant, thereby forming a plurality of spaced apart isotope-containing bands each about 2 to 1000 cm in width, and as each isotope-containing band leaves the resin collecting it in at least three fractions, the intermediate fraction having approximately the isotope composition of the starting liquid body, and one of the first and last fractions being selectively enriched in the heavier isotope and the other being selectively enriched in the lighter isotope.

3,953,569

CONCENTRATION OF URANIUM 235 IN MIXTURES WITH URANIUM 238 USING ION EXCHANGE RESINS

Maomi Seko, 6-5, 2-chome, Ookayama, Meguro, Tokyo, and Hidetake Kakihana, 2-24, 3-chome, Zaimokuza, Kamakura, Kanagawa, both of Japan

Filed July 17, 1972, Ser. No. 272,251

Claims priority, application Japan, July 22, 1971, 46-54210; Sept. 28, 1971, 46-75072; June 12, 1972, 47-57636; June 13, 1972, 47-58221

The portion of the term of this patent subsequent to Apr. 27, 1993, has been disclaimed.

Int. Cl. B01D *59/30*

U.S. Cl. 423—7 **16 Claims**

1. Method of simultaneously obtaining separate enriched fractions of ^{235}U and ^{238}U from isotopic mixtures thereof, which comprises establishing a liquid body containing a mixture in which the uranium is in the form of U(IV) coordination complexes with a ligand, said complexes being present in a plurality of different valent states, alternately passing through a highly cross-linked porous ion exchange resin said body and then an eluant but not a regenerant, thereby forming a plurality of spaced apart isotope-containing bands each about 2 to 1000 cm in width, and as each isotope-containing band leaves the resin collecting it in at least three fractions, the intermediate fraction having approximately the isotope composition of the starting liquid body, and one of the first and last fractions being selectively enriched in ^{235}U and the other being selectively enriched in ^{238}U.

3,953,570

PROCESS FOR THE TREATMENT OF CARBURIZING SALT WASTES

Wolfgang Müller, Mannheim-Rheinau, and Lothar Witzke, Bruhl, both of Germany, assignors to Th. Goldschmidt AG, Germany

Filed Dec. 30, 1974, Ser. No. 537,448

Claims priority, application Germany, Jan. 4, 1974, 2400318

Int. Cl. C01F *1/00*

U.S. Cl. 423—155 **2 Claims**

1. A process for the treatment of the reaction mass produced by igniting a dry mixture of barium-containing nitrite-/nitrate-bearing carburizing salt wastes and cyanide-/cyanate-bearing wastes at temperatures above about 150°C,

comprising suspending the reaction mass in water to obtain a suspension containing sodium chloride, alkali carbonate, and alkali nitrite/nitrate as dissolved constituents, and barium carbonate as an undissolved constituent, neutralizizng the alkaline suspension obtained with concentrated nitric acid to a pH value of 6, the feed velocity of the acid and conditions of agitation being so selected that the pH value of the suspension will at no time fall below pH 6, separating the flocculated barium carbonate, concentrating the clear solution obtained to a water content of 10 – % by weight to precipitate sodium chloride, separating the sodium chloride, and evaporating the residual solution to dryness.

3,953,571

PROCESS FOR THE TREATMENT OF CARBURIZING SALT WASTES

Wolfgang Müller, Mannheim-Rheinau, and Lothar Witzke, Bruhl, both of Germany, assignors to TH. Goldschmidt AG, Germany

Division of Ser. No. 537,449, Dec. 30, 1974. This application Mar. 28, 1975, Ser. No. 563,275

Claims priority, application Germany, Jan. 4, 1974, 2400319

Int. Cl. C01F *1/00*

U.S. Cl. 423—155 **2 Claims**

1. A process for the treatment of the reaction mass produced by igniting a dry mixture of barium-containing nitrite-/nitrate-bearing carburizing salt wastes and cyanide-/cyanate-bearing wastes at temperatures above about 150°C,

comprising suspending the reaction mass in water to obtain a suspension containing sodium chloride, alkali carbonate, and alkali-nitrite/nitrate as dissolved constituents, and barium carbonate as an undissolved constituent, freeing the alkaline suspension from barium carbonate by filtration, reacting the filtrate with calcium nitrate to precipitate calcium carbonate, separating the calcium carbonate, concentrating the clear solution obtained to a water content of 10 - 20% by weight to precipitate sodium chloride, separating the sodium chloride, and evaporating the residual solution to dryness.

3,953,572

REMOVAL OF BORON FROM $MgCl_2$ BRINES

R. Keith Darlington, Salt Lake City; John Wallace Gwynn, Bountiful, both of Utah, and Stephen H. Hall, Sr., Sun Prairie, Wis., assignors to N L Industries, Inc., New York, N.Y.

Filed Feb. 21, 1975, Ser. No. 551,748

Int. Cl. C01F *5/30*

U.S. Cl. 423—158 **1 Claim**

1. A method for removing boron from a naturally occurring magnesium chloride brine, wherein said brine is a holding pond brine comprising essentially from 7.0 to 7.6% Mg as $MgCl_2$ and from 400–550 ppm boron, which comprises intimately contacting same with a solid extractant added to said brine to form a slurry, said solid extractant consisting of finely divided, screened oolitic sand which has been calcined between 800° – 950°C for about 24 hours and the amount of said calcined oolitic sand added to the brine being in the range of from 5 to 25% on a brine weight basis and the mixture maintained at temperatures up to about 100°C and for a period of time from 30 to 60 minutes until the boron is substantially entirely absorbed by said extractant and then maintaining the slurry in a quiescent state to effect gravity separation of the extractant from the purified supernatant brine thus produced.

3,953,573

REMOVAL OF BORON FROM $MgCl_2$ BRINES

Edward O. Kazimir, Pennington, and Donald J. Weintritt, Robbinsville, both of N.J., assignors to N L Industries, Inc., New York, N.Y.

Filed Feb. 21, 1975, Ser. No. 551,749

Int. Cl. C01F *5/30;* **C01D** *3/06*

U.S. Cl. 423—161 **6 Claims**

1. Method for removing boron from naturally occurring magnesium chloride brines by solid-liquid extraction comprising: mixing said brine with a solid extractant comprising lignite in particle size range from −40 to +325 mesh at ambient temperature and at a pH in range from about 2 to about 6 for a period of time such that the boron in said brine is absorbed by said extractant and then separating the essentially boron-free brine from said extractant.

3,953,574

PROCESS FOR PURIFYING MOLTEN MAGNESIUM CHLORIDE

Robert D. Toomey, Salt Lake City, Utah, assignor to N L Industries, Inc., New York, N.Y.

Filed Nov. 25, 1974, Ser. No. 526,838

Int. Cl. C01F *5/32, 5/30;* **C25C** *3/04*

U.S. Cl. 423—178 **5 Claims**

1. Method for chlorinating a spray-dried magnesium chloride salt containing metal oxides, hydroxyl groups and other oxidic contaminants to remove oxygen from said salt comprising: heating the salt in a melt cell to form a molten salt and chlorinating said molten salt in said cell in the presence of finely divided carbon and iron, said chlorination being effected by bubbling chlorine through said molten salt to form, initially, a ferrous iron chloride complex which is rapidly oxidized by additional chlorine to form a ferric iron chloride complex in said molten salt, and maintaining the amount of said ferric iron chloride complex in said molten salt at a level substantially equivalent to at least 0.5% iron, as Fe, on salt weight basis, until said molten salt is substantially free of oxygen content.

3,953,575

IRON OXIDE SORBENTS FOR REGENERATIVE SORPTION OF NO_x

Dimitri Gidaspow, and Linus Leung, both of Chicago, Ill., assignors to American Gas Association, Arlington, Va.

Filed Nov. 21, 1973, Ser. No. 417,829

Int. Cl. B01D *53/00*

U.S. Cl. 423—212 **3 Claims**

1. A process for the removal of oxides of nitrogen present in small amounts in a gas stream selected from a flue gas stream or an internal combustion engine exhaust stream containing at least 1% oxygen which comprises:

i. contacting, in a sorption step the gas stream with a ferric oxide sorbent supported on a porous alumina support under conditions sufficient to sorb oxides of nitrogen on said sorbent including a temperature of about 0°C to about 350°C,

ii. terminating said sorption step;

iii. thermally regenerating said sorbent at a temperature of about 400°C to about 500°C with an inert gas stream to remove the sorbed oxides of nitrogen and to produce a gas stream containing the sorbed oxides of nitrogen; and

iv. repeating the sorption step.

3,953,576

MAXIMIZING CONVERSION OF NITROGEN OXIDES IN THE TREATMENT OF COMBUSTION EXHAUST GASES

Garbis H. Meguerian, Olympia Fields, Ill., and Yasuo Kaneko, Takatsuki, Japan, assignors to Standard Oil Company, Chicago, Ill. and Mitsubishi Motors Corporation, Japan

Filed Feb. 13, 1974, Ser. No. 442,246

Int. Cl. B01D *53/00*

U.S. Cl. 423—213.7 **4 Claims**

4. In a process for the purification of exhaust gas from the combustion of hydrocarbon materials wherein said exhaust gas is contacted with a nitrogen-oxide-reduction catalyst in a first zone under reducing conditions to reduce nitrogen oxides and to form a nitrogen-oxide-reduced gas and subsequently said nitrogen-oxide-reduced gas is contacted with an oxidation catalyst in a final zone to oxidize carbon monoxide and hydrocarbons, the improvement which comprises introducing a first stream of secondary air providing about 3 volume percent to about 8 volume percent air, based upon the volume of primary air being employed in said combustion, into said nitrogen-oxide-reduced gas to form a first air-gas mixture, said first stream being present in an amount sufficient to enable the ammonia in said nitrogen-oxide-reduced gas to be decreased to a minimum level but insufficient to produce appreciable amounts of nitrogen oxides from ammonia or to enable the hydrocarbons and carbon monoxide in said nitrogen-oxide-reduced gas to be appreciably oxidized, contacting in an intermediate zone said first air-gas mixture with a catalyst for decreasing ammonia to form a gas containing decreased amounts of ammonia, introducing a second stream of secondary air into said gas containing decreased amounts of ammonia to form a second air-gas mixture, and subsequently passing said second air-gas mixture into said final zone, said catalyst for decreasing ammonia comprising nickel and rhodium on a monolithic ceramic support and said second stream of secondary air being sufficient, when added to the oxygen remaining in said gas containing decreased amounts of ammonia, to provide substantially complete oxidation of the carbon monoxide and hydrocarbons in said gas containing decreased amounts of ammonia.

3,953,577

PROCESS FOR PURIFYING GASES CONTAINING HCN

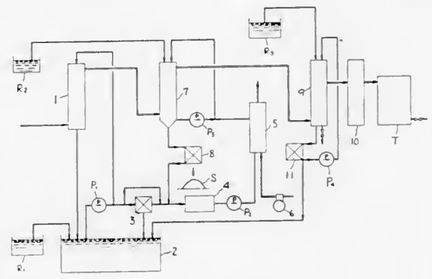
Isami Ooka, Neyagawa; Noboru Tomihisa, Nishinomiya; Yoshio Nogami, Suita, and Katuo Katagiri, Takarazuka, all of Japan, assignors to Osaka Gas Company, Limited, Osaka, Japan

Filed Dec. 27, 1972, Ser. No. 318,749

Claims priority, application Japan, Dec. 30, 1971, 46-1739

Int. Cl. C01C *3/04, 1/247*

U.S. Cl. 423—236 **14 Claims**



1. In purifying gas containing hydrogen cyanide, hydrogen sulfide and ammonia by subjecting the gas to processes of removing hydrogen cyanide, hydrogen sulfide and ammonia, the improvement characterized in that said process of removing hydrogen cyanide comprises a combination of steps:

1. washing the gas with a suspension of solid sulfur in the presence of a sufficient amount of ammonia to fix hydrogen cyanide as ammonium thiocyanate and ammonium thiosulfate and separating the same from the gas,
2. blowing air into said suspension containing the thiocyanate and the thiosulfate with heating at a temperature of 180° to 230° C to oxidize the thiosulfate and part of the thiocyanate into sulfuric acid and ammonium sulfate, the amount of said air being at least equivalent of the components to be oxidized,
3. contacting said suspension obtained from said step (2) and containing unreacted thiocyanate with an inorganic acid added thereto to decompose it into an ammonium salt of the inorganic acid, and
4. recovering the ammonium salt resulting from said steps (2) and (3).

3,953,578

METHOD FOR PURIFICATION OF INDUSTRIAL FLUE GASES

Pierre Thirion, Poisat, France, assignor to Oxysynthese, Paris, France

Filed Jan. 24, 1973, Ser. No. 326,289
Claims priority, application France, Feb. 4, 1972, 72.03728
Int. Cl.² C01B *17/00*
U.S. Cl. 423—242 **13 Claims**

1. A method of purification of industrial flue gases and gaseous combustion effluents before their injection to the atmosphere said gaseous effluents containing as impurities especially sulfur dioxide and also oxides of nitrogen, sulphuric acid aerosols and soot, said method comprising essentially the steps of:

saturating said gaseous effluent with water vapor;

extracting the dust from said gaseous effluent;

purifying said gaseous effluent by establishing intimate contact between said gaseous effluent and an aqueous solution of hydrogen peroxide at a temperature of 55°–65°C. to produce sulfuric acid; and

concentrating said sulfuric acid by effecting direct contact between said gaseous effluent in the hot state at 135°–150°C and said liquid sulphuric acid.

3,953,579

METHODS OF MAKING REACTIVE METAL SILICIDE

Robert B. Herchenroeder, Kokomo, Ind., assignor to Cabot Corporation, Kokomo, Ind.

Filed July 2, 1974, Ser. No. 485,117
Int. Cl.² C01F *17/00*
U.S. Cl. 423—263 **12 Claims**

10. A method of making rare earth metal silicides comprising the steps of reacting rare earth metal oxides with at least a stoichiometric amount of metal silicide in which the metal has a stronger affinity for oxygen than silicon has in an electroslag refining furnace having a cooled metal crucible using a non consumable electrode having an end immersed in a molten slag over said mixture and separating the resulting oxide slag and alloy.

3,953,580

BORIC ACID PROCESS

Richard Paul Allen, Kingston-upon-Thames, and Cyril Alfred Morgan, East Molesey, both of England, assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Nov. 21, 1974, Ser. No. 525,836
Claims priority, application United Kingdom, Nov. 22, 1973, 54144/73
Int. Cl.² C01B *35/10*
U.S. Cl. 423—283 **7 Claims**

1. In the process for the continuous production of boric acid which comprises the reaction of borate-containing ore with sulfuric acid in aqueous medium, separation of the resultant boric acid from the mother liquor by crystallization and recycling of the mother liquor to the process as solvent for subsequent quantities of borate ore, the improvement which comprises passing said recycling mother liquor through a porous permselective cellulose acetate membrane which has been annealed at low temperatures and having a low boron rejection level thereby removing impurities from the liquor, and recycling the permeate to said process.

3,953,581

PURIFICATION OF WET-PROCESSED PHOSPHORIC ACID USING ANHYDROUS SOLVENTS

Klaus Peter Ehlers, Hurth-Knapsack; Wolfgang Scheibitz, Leverkusen, and Gero Heymer, Erftstadt Liblar, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 24, 1974, Ser. No. 463,531
Claims priority, application Germany, Apr. 30, 1973, 2321751
Int. Cl.² C01B *25/16*
U.S. Cl. 423—321 S **15 Claims**

1. In a process for the purification of contaminated wet-processed phosphoric acid, wherein the wet-processed phosphoric acid is mixed in a mixing zone with at least one organic solvent in which water is partially soluble and which dissolves phosphoric acid, the organic phosphoric acid solution obtained is separated from a remaining residue, the dissolved phosphoric acid is recovered from the said organic phosphoric acid solution and the organic solvent freed from phosphoric acid is recycled, the improvement which comprises mixing in the mixing zone aqueous wet-processed phosphoric acid having free phosphoric acid and free water therein with the organic solvent, said organic solvent having a region completely miscible of the three components water, phosphoric acid and organic solvent which lies between the phosphoric acid - organic solvent axis and the binodal curve in a ternary diagram of said three components, said organic solvent being anhydrous and used in a quantity of at least that necessary to dissolve (a) the free phosphoric acid and (b) the free water, with the resultant formation of a single liquid phase and recovering the free phosphoric acid from the said organic phosphoric acid solution by extraction with water in an extraction zone; removing the water from the organic solvent and recycling the resulting anhydrous organic solvent to the mixing zone.

3,953,582

PROCESS FOR THE SEPARATION OF SODIUM AZIDE

Peter John Astrauskas, Montreal; Guy Michel Blondin, Beloeil; Roland Picard, and Carl Fredrik Rigg, both of McMasterville, all of Canada, assignors to Canadian Industries, Ltd., Montreal, Canada

Filed Mar. 21, 1975, Ser. No. 560,732
Claims priority, application Canada, Apr. 24, 1974, 198458
Int. Cl.² C01B *21/08*
U.S. Cl. 423—410 **5 Claims**

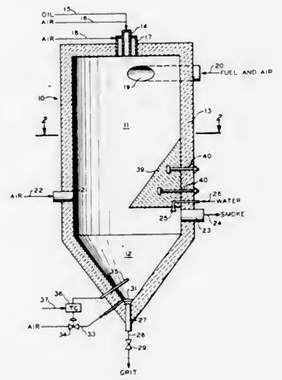
1. An improved process for the separation of basic alkali metal azide particles suspended in an alkali metal azide/liquid ammonia solution comprising the steps of bringing said suspension of basic alkali metal azide particles into contact with a non-reactive, immiscible mineral oil of density greater than the density of said solution, permitting said mineral oil and said solution to separate to form an interface whereby said suspended basic alkali metal azide particles traverse said interface and enter into suspension in the said mineral oil, separating said liquid ammonia/azide solution and said basic azide-containing mineral oil, and recovering from said mineral oil the said basic alkali metal azide particles.

3,953,583

GRIT REMOVAL FROM CARBON BLACK

Eulas W. Henderson, Oregon, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 28, 1974, Ser. No. 473,729
Int. Cl.² C09C *1/50*
U.S. Cl. 423—450 **3 Claims**



1. In the production of carbon black in a generally vertically extending reactor in which a feed oil is introduced into the top of the reactor and flows downwardly, and combustion gases are introduced into an upper region of the reactor to supply heat to the oil to decompose the oil to form carbon black; the method of removing grit from the carbon black which comprises introducing a stream of air into a lower region of the reactor in an upwardly extending direction to entrain carbon black while permitting the grit to pass downwardly, removing the downwardly passing grit through a first opening in the bottom of the reactor, and removing combustion gases and carbon black through a second opening in the reactor spaced upwardly from said first opening.

3,953,584

PROCESS FOR THE PREPARATION OF BASIC ALUMINUM CHLORIDES

Max Danner, and Martin Krieg, both of Gersthofen, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Feb. 21, 1974, Ser. No. 444,539
Claims priority, application Germany, Feb. 27, 1973, 2309610
Int. Cl.² C01F *7/56*
U.S. Cl. 423—462 **5 Claims**

1. A process for the preparation of aqueous solutions of basic aluminum chlorides of the formula $Al_2(OH)_nCl_z$, where $0<n<4$ and $6>z>2$, $n + z$ being always 6, by reaction of hydrochloric acid with an aluminum hydroxide, which comprises preparing in a first step at a temperature of from 80° to 120° C an $AlCl_3 \cdot 6\ H_2O$ suspension having a concentration in the range of from 278 to 385 milligrams of chloride per gram suspension, from 36 - 55 weight % hydrochloric acid and the equimolar amount of an aluminum hydroxide or hydrated aluminum oxide of such a kind which is soluble in hydrochloric acid only at a temperature above 80° C until a sample of the reaction mixture upon dilution with water gives a clear solution, subsequently reacting this $AlCl_3 \cdot 6\ H_2O$ suspension in a second step at a temperature of from 100° to 150° C with an excess of the same aluminum hydroxide or hydrated aluminum oxide until the required stoichiometric composition is formed, whereupon the reaction mixture is stirred with the 1 - 5-fold volume of cold water in order to precipitate the excess of aluminum hydroxide and separating the non-converted aluminum hydroxide.

3,953,585

MANUFACTURE OF OXYGEN DIFLUORIDE

Bernard Sukornick, Elizabeth, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 27, 1960, Ser. No. 78,766
Int. Cl.² C01B *9/08*
U.S. Cl. 423—489 **10 Claims**

1. The process for making oxygen difluoride which comprises subjecting alkali metal hyponitrite containing 2–5 oxygen atoms, at temperature not substantially above 40° C., to the action of elemental fluorine in quantity and for a time sufficient to effect reaction of the fluorine with a substantial amount of hyponitrite to form a substantial quantity of oxygen difluoride, and recovering oxygen difluoride.

3,953,586

PROCESS FOR PURIFYING GASES CONTAINING H_2S

Waichi Tanimura, No. 836, Okazu-cho, Tozuka, Yokohama, Kanagawa, Japan

Filed Dec. 5, 1973, Ser. No. 421,928
Claims priority, application Japan, Dec. 15, 1972, 47-125153
Int. Cl.² C01B *17/04*
U.S. Cl. 423—575 **3 Claims**

1. A process for preparing sulfur by continuously removing sulfur compounds from a fuel gas stream containing H_2S or H_2S and a small quantity of SO_2, which comprises (1) bringing into contact a fuel gas stream containing H_2S with a stream of organic solvent that dissolves H_2S and SO_2 well, so as to remove the H_2S and SO_2, if present, from said gas stream (2) mixing most or all of the solvent stream discharged from step (1) and a stream of organic solvent containing SO_2, the amount of SO_2 contained in said solvent being stoichiometrically less than that of H_2S in the mixed solvent, under reaction conditions so selected as to produce elemental sulfur and a stream of organic solvent containing dissolved unreacted H_2S, and retaining the mixed streams for a time sufficient to insure that substantially no unreacted SO_2 remains within the stream of organic solvent; (3) separating the solvent stream containing dissolved H_2S of step (2) from the elemental sulfur; (4) separating the organic solvent stream containing dissolved H_2S from step (3) into a stream of gas containing H_2S and a stream of organic solvent free of H_2S and returning a part of said organic solvent stream free of H_2S to step (1); (5) oxidizing the gas stream containing H_2S from step (4) under oxidizing conditions so as to produce SO_2; and (6) contacting the gas stream containing SO_2 from the step (5) with a part of the organic solvent free of H_2S from step (4) to produce a stream of purified gas free of SO_2 and a stream of organic solvent containing dissolved SO_2 which solvent stream is returned to step (2).

3,953,587

ZEOLITE CATALYST FOR DILUTE ACID GAS TREATMENT VIA CLAUS REACTION

Hanju Lee, and Chang Whan Chi, both of Columbia, Md., assignors to W. R. Grace & Co., Columbia, Md.

Filed Nov. 27, 1974, Ser. No. 527,620
Int. Cl.² C01B *17/04*
U.S. Cl. 423—576 **10 Claims**

1. A method of decreasing contaminant sulfurous gases consisting of sulfur oxides and hydrogen sulfide from process effluent gas streams containing less than about 5 volume percent of said sulfurous gases comprising contacting said gas stream with a zone containing a sodium exchanged hydrogen zeolite adsorbent-catalyst at a temperature of about 400°F to 700°F whereby said sulfurous gases are converted to elemental sulfur; continuing contact of said gas stream until said zeolite is substantially loaded with said contaminant sulfurous

substances; interrupting the flow of said gas stream; heating said zeolite adsorbent to a temperature of about 800°F to 1000°F to volatilize and remove sulfur from said zeolite, thereby regenerating said zeolite; and repeating the step of contacting said gas stream with said zeolite thereby providing for cyclic operation of the process.

3,953,588

PROCESS FOR THE PRODUCTION OF ALLERGEN-CONTAINING EXTRACTS

Otto Nieschulz, Hamburg; Günther Rüdiger, Reinbek, and Jürgen Maas, Kroeppelshagen, all of Germany, assignors to Merck Patent Gesellschaft mit beschraenkter Haftung, Darmstadt, Germany

Filed Dec. 5, 1973, Ser. No. 421,791

Claims priority, application Germany, Dec. 11, 1972, 2260455; Oct. 20, 1973, 2352724

Int. Cl.² A61K *39/00, 39/36*

U.S. Cl. 424—12 **6 Claims**

1. In a process for preparing an allergen extract which includes extracting an allergen-containing material with a hydrophilic aqueous or aqueous alcoholic allergen solvent and recovering water-soluble allergens from said material, the improvement which comprises, prior to said extracting step:

pre-extracting an allergen-containing material having a plurality of allergens, a portion of which is more lipophilic in character than the remainder, with a lipophilic solvent consisting essentially of an aqueous solution of a neutral, water-soluble cyclic ether having a boiling point below 105° C. which is at least one member selected from the group consisting of tetrahydrofuran, tetrahydropyran and dioxane to extract said lipophilic portion.

3,953,589

METHOD FOR PROTECTING HUMAN SKIN FROM ULTRAVIOLET RADIATION

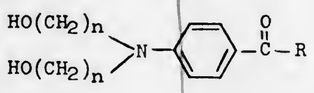
Paul L. Warner, Jr., Clarence, N.Y., assignor to Westwood Pharmaceuticals, Inc., Buffalo, N.Y.

Continuation of Ser. No. 351,398, April 16, 1973, abandoned. This application Sept. 27, 1974, Ser. No. 509,997

Int. Cl.² A61K *7/44*

U.S. Cl. 424—60 **7 Claims**

1. A method for protecting human skin from the erythemic effect of ultraviolet radiation which comprises applying to the skin a compound having the formula



wherein *n* is an integer of from 1 to 3 and R is an alkyl group having from 2 to 16 carbon atoms, said compound being applied in an amount sufficient to screen out substantially all of the radiation having a wave length between about 297nm and 320nm.

3,953,590

COMPOSITION AND METHOD FOR INHIBITING PERSPIRATION WITH S-SUBSTITUTED BENZOTHIOHYDROXIMIC ACID AND SALTS THEREOF

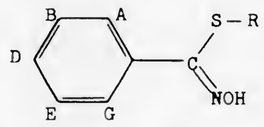
Miriam Lois Douglass, Bound Brook, and Salvatore Joseph DeSalva, Somerset, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 107,476, Jan. 18, 1971, abandoned. This application Mar. 29, 1973, Ser. No. 346,068

Int. Cl.² A61K *7/32*

U.S. Cl. 424—65 **12 Claims**

1. A method for inhibiting perspiration which comprises applying to the active sites from which perspiration is excreted one microgram to 0.1 gram of a perspiration-inhibiting S-substituted benzothiohydroximic acid of the formula:



or a hydrohalic acid salt thereof, wherein R is selected from the group consisting of phenyl, C_1–C_9 alkyl, C_1–C_9 hydroxyalkyl, C_1–C_9 aminoalkyl, C_1–C_9 alkenyl, oxopyridyl, and substituted derivatives thereof, wherein the substituents on R are limited to three in number and are selected from the group consisting of C_1–C_7 alkyl, C_1–C_7 alkoxy, C_1–C_7 hydroxyalkyl, C_1–C_7 aliphatic carboxylic, C_1–C_7 amino-alkyl, halogen, nitro, hydroxy, amino and carboxyl and A, B, D, E and G are individually selected from the group consisting of hydrogen, C_1–C_7 alkyl, C_1–C_7 alkoxy, C_1–C_7 aliphatic carboxylic, C_1–C_7 hydroxyalkyl, C_1–C_7 aminoalkyl, halogen, nitro, hydroxy, amino, and carboxyl, with the requirement that at least two of A, B, D, E and G are hydrogen.

3,953,591

FATTY ACID, POLYSILOXANE AND WATER-SOLUBLE POLYMER CONTAINING SKIN CONDITIONING EMULSION

William Earl Snyder, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 29, 1974, Ser. No. 464,884

Int. Cl.² A61K *7/78*

U.S. Cl. 424—80 **9 Claims**

1. A skin conditioning emulsion composition comprising:

A. a fatty acid or a mixture of fatty acids having an average carbon chain length of 10 to 31 carbon atoms wherein from about 20% to about 80% of the acid groups are neutralized;

B. a polysiloxane fluid having the formula — $[R_2SiO]$ — wherein R is C_1–C_4 alkyl or phenyl and wherein said polysiloxane has a viscosity at 25°C. of from about 5 to about 2,000 centistokes;

C. a water-soluble polymer having a molecular weight of about 500 to about 5,000,000 selected from the group consisting of quaternary ammonium substituted cellulose ether derivatives, hydroxyethyl cellulose, hydroxypropyl cellulose, a polymer of acrylic acid crosslinked with from 0.75% to 2.00% of a crosslinking agent selected from the group consisting of polyallyl sucrose and polyallyl pentaerythritol, methyl cellulose, sodium carboxymethyl cellulose, polyvinyl pyrrolidone, polyvinyl alcohol and polyvinyl methyl ether maleic anhydride; and

D. water.

3,953,592

LIVE INFLUENZA VIRUS VACCINES AND PREPARATION THEREOF

Julien Peetermans, Rixensart, Belgium, assignor to Recherche et Industrie Therapeutiques (R.I.T.), Belgium

Filed Sept. 27, 1973, Ser. No. 401,335

Int. Cl.² A61K *39/12*

U.S. Cl. 424—89 **8 Claims**

1. An attenuated influenza virus vaccine effective on intranasal administration comprising an effective amount of a serum inhibitor-resistant strain of influenza A virus obtained by passaging in the allantoic cavity of embryonated eggs a recombinant strain obtained from H_3N_2 influenza and A/PR_8 influenza, which strain is sensitive to serum inhibitors, said passaging being made in the presence of serum until a serum inhibitor resistant strain is obtained, and a carrier therefor.

3,953,593

ANTIBACTERIAL COMPOSITIONS

Martin Cole, and Robert Sutherland, both of Dorking, England, assignors to Beecham Group Limited, Great Britain

Filed Sept. 13, 1974, Ser. No. 505,741

Claims priority, application United Kingdom, Sept. 28, 1973, 45504/73

Int. Cl.² A61K *35/00*

U.S. Cl. 424—114 **7 Claims**

1. An antibacterial pharmaceutical composition which comprises an antibacterially effective amount of a mixture of 2-isopropoxynaphth-1-yl pencillin, or a physiologically acceptable salt thereof, and cephaloridine, or a physiologically acceptable salt thereof, in a ratio of 2:1 to 1:2 in combination with a pharmaceutically acceptable vehicle.

3,953,594

PROCESS FOR PREPARING BLEOMYCIN GROUP ANTIBIOTICS

Hamao Umezawa, Tokyo; Tomohisa Takita, Asaka; Yasuhiko Muraoka, Tokyo, and Akio Fujii, Yono, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

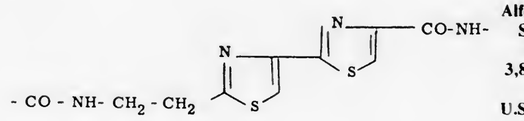
Continuation-in-part of Ser. No. 280,043, Aug. 11, 1972, abandoned. This application Aug. 7, 1973, Ser. No. 386,329

Claims priority, application Japan, Aug. 13, 1971, 46-61063

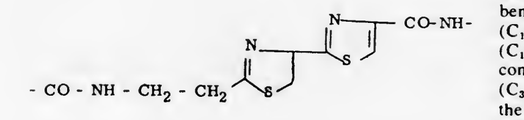
Int. Cl.² H61K *35/00*

U.S. Cl. 424—117 **1 Claim**

1. A process for preparing stable bleomycin group antibiotics having the partial structure



which comprises oxidizing the corresponding phleomycin group antibiotic having the partial structure



with potassium ferricyanide or manganese dioxide at 0° to 50°C, for 20–240 hours at pH 6.5 – 9, employing 1 –50 moles of oxidizing agent per mole of phleomycin group antibiotic, said phleomycin group antibiotic being selected from the group consisting of phleomycin D_1, E, G, a mixture thereof, 3-S, S-dimethylmercaptopropylamino-phleomycin, 3-morpholinopropylamino-phleomycin, 3-N, N-dimethylaminopropylamino-phleomycin and YA-56 and separating the stable bleomycin group antibiotic.

3,953,595

SUBSTITUTED BENZOIC ACID HYPOLIPEMIC AGENTS

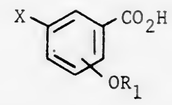
Gerald Fagan Holland, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 304,528, Nov. 7, 1974, which is a division of Ser. No. 155,209, June 21, 1971. This application May 3, 1974, Ser. No. 466,774

Int. Cl.² A61K *31/19*

U.S. Cl. 424—230 **2 Claims**

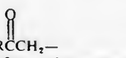
1. A method for reducing blood lipid levels which comprises administering to a hyperlipemic mammal a hypolipemic effective amount of a compound selected from the group consisting of



and the pharmaceutically acceptable salts thereof wherein

X is selected from the group consisting of fluorine, chlorine, bromine, methyl, methoxy and trifluoromethyl and

R_1 is acylmethyl of the formula



wherein R is selected from the group consisting of alkyl having from 1 to 4 carbon atoms and phenyl.

3,953,596

8-OXA-3-AZABICYCLO(3.2.1)OCTANE ANALGESIC COMPOSITIONS AND METHOD OF ALLEVIATING PAIN IN ANIMALS

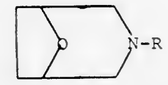
Alfred D. Miller, Wilmington, Del., assignor to ICI United States Inc., Wilmington, Del.

Division of Ser. No. 370,011, June 14, 1973, Pat. No. 3,856,783. This application July 12, 1974, Ser. No. 487,924

Int. Cl.² A61K *31/535*

U.S. Cl. 424—248 **14 Claims**

1. An analgesic composition comprising a pharmaceutical carrier and an analgesically effective amount of a compound represented by the formula



wherein R is a radical selected from the group consisting of benzyl; phenyl; aminoalkyl (C_1 to C_6); dimethylaminoalkyl (C_1 to C_6); phenylacetyl; quinoxaloyl; mono-, di-, or tri-alkoxy (C_1 to C_4) substituted benzoyl; phenylalkyl where the alkyl constituent thereof contains from 1 to 4 carbon atoms; alkenyl (C_3); mono-, di-, or tri-halogen substituted phenylalkyl where the alkyl group contains from 1 to 4 carbon atoms and the halogen is substituted on the phenyl ring; guanadinoalkyl (C_1 to C_4); mono-, di-, or tri-halogen substituted benzoyl; di- or tri-alkyl (C_1 to C_4) substituted benzoyl; mono-, di-, or tri-halogen substituted phenylalkanoyl wherein the alkanoyl group contains from 2 to 4 carbon atoms and the halogen is on the phenyl ring; hexahydrobenzoyl; phenylalkenoyl wherein the alkenoyl group is a lower alkenoyl containing from 3 to 5 carbon atoms; phenylalkanoyl wherein the alkanoyl group contains from 2 to 4 carbon atoms; o- and p-alkyl (C_1 to C_4) substituted phenylalkanoyl where the alkanoyl group contains 2 to 4 carbon atoms and the alkyl group is substituted on the phenyl ring; alkyl (C_1 to C_4) substituted naphthylalkanoyl wherein the alkanoyl group contains 2 to 4 carbon atoms and the alkyl group or groups are attached to the naphthyl ring;

alkanoyl (C_4 to C_{18}); haloalkyl (C_1 to C_4) mono-, di-, or tri-substituted benzoyl wherein the haloalkyl group contains from 1 to 5 halogen atoms; mono-, di-, or tri-alkoxy (C_1 to C_4) substituted phenylalkyl wherein the alkyl group contains 1 to 4 carbon atoms and the alkoxy is substituted on the phenyl ring; thienylalkyl wherein the alkyl group contains from 1 to 4 carbon atoms; anilinocarbonyl; adamantanecarbonyl; phenylsulfonyl; mono- or di-carboxyl substituted benzoyl; mono- or di-hydroxyl substituted benzoyl; nicotinoyl; mono- or di- alkanoyloxy (C_2 to C_4) substituted benzoyl; thenoyl; phenylglyoxylyl; cycloalkyl (C_4 to C_8); N-(alkylene α,ω-dicarbonyl)-8-oxa-3-azabicyclo(3.2.1)octane; N-(alkylene-8-oxa-3-azabicyclo(3.2.1)octane; and N-(terephthaloyl)-8-oxa-3-azabicyclo(3.2.1) octane; or the pharmacologically acceptable acid addition salts thereof.

3,953,597

USE OF 6-AMINO-9-(SUBSTITUTED BENZYL)PURINES AND THEIR CORRESPONDING N¹-OXIDES AS COCCIDIOSTATS

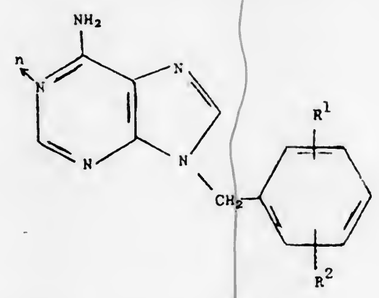
Emil P. Lira, Des Plaines; Walter M. Barker, Mundelein, and Robert C. McCrae, Lake Zurich, all of Ill., assignors to International Minerals & Chemical Corporation, Libertyville, Ill.

Division of Ser. No. 219,848, Feb. 4, 1972, Pat. No. 3,846,426, which is a continuation-in-part of Ser. No. 120,781, March 3, 1971, abandoned. This application Aug. 9, 1974, Ser. No. 496,027

Int. Cl.² A61K *31/52*

U.S. Cl. 424—253 **43 Claims**

1. A medicated feed composition for treating coccidiosis comprising a poultry feed ration containing an effective minor amount of a compound of the structural formula:



wherein n is 0 or 1, and R^1 and R^2

a. individually are of the group consisting of hydrogen, halogen, nitro and trihalomethyl, provided that at least one of R^1 and R^2 is other than hydrogen, not more than one of R^1 and R^2 is of the group consisting of nitro and trihalomethyl, and R^1 and R^2 are located in the 2 and 6 positions on the carbocyclic portion of the compound, or

b. are both methyl and are located in the 3 and 4 positions on the carbocyclic portion of the compound.

3,953,598

COMPOUNDS, COMPOSITIONS AND METHODS OF USE

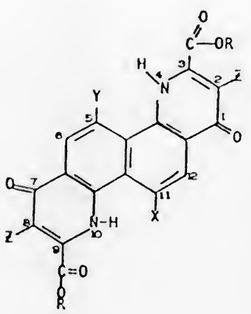
Charles M. Hall, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 287,425, Sept. 8, 1972, Pat. No. 3,838,132. This application Sept. 23, 1974, Ser. No. 508,788

Int. Cl.² A61K *31/47*

U.S. Cl. 424—258 **9 Claims**

1. A pharmaceutical composition, useful for the prophylaxis of asthma or rhinitis symptoms, which comprises an anti-asthma or anti-rhinitis effective amount of a compound of the formula



wherein

R is selected from the group consisting of hydrogen, alkyl from one to three carbon atoms, inclusive; phenyl, and a pharmaceutically acceptable metal or amine cation;

Z is selected from the group consisting of hydrogen, alkyl from one to three carbon atoms, inclusive; and phenyl;

X and Y are the same or different monosubstituents and when X and Y are different monosubstituents, one monosubstituent is hydrogen and the other monosubstituent is selected from the group consisting of alkyl from one to three carbon atoms, inclusive; alkoxy from one to three carbon atoms, inclusive; phenyl; halogen; hydroxy; nitro; trifluoromethyl; cyano; amino; carboxyamide; and



where Q is selected from the group consisting of hydrogen, alkyl from one to three carbon atoms, inclusive; phenyl, and a pharmaceutically acceptable metal or amine cation with the proviso that where R is hydrogen or a pharmaceutically acceptable metal or amine cation; then Q is the same as R; and

when X and Y are the same monosubstituent, they are selected from the group consisting of hydrogen, chlorine, bromine, and methoxy

in association with a pharmaceutical carrier.

3,953,599

COMPOSITIONS FOR TOPICAL APPLICATION TO ANIMAL TISSUE AND METHOD OF ENHANCING PENETRATION THEREOF

Francis S. Kilmer MacMillan, and Warren I. Lyness, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 489,649, July 18, 1974, Pat. No. 3,903,256, which is a division of Ser. No. 224,356, Feb. 7, 1972, Pat. No. 3,839,566, which is a division of Ser. No. 48,655, May 17, 1970, Pat. No. 3,678,156, which is a division of Ser. No. 595,427, Nov. 18, 1966, Pat. No. 3,527,864, which is a continuation-in-part of Ser. No. 344,195, Feb. 12, 1964, abandoned. This application Jan. 17, 1975, Ser. No. 541,901

Int. Cl.² A61K *7/32*

U.S. Cl. 424—265 **3 Claims**

1. A composition for application to animal tissue comprising a safe and effective amount of a anticholinergic scopol-

amine ester compound and from about 0.1% to about 10.0% of an aliphatic sulfoxide selected from the group consisting of octyl methyl sulfoxide, nonyl methyl sulfoxide, decyl methyl sulfoxide, undecyl methyl sulfoxide, dodecyl methyl sulfoxide, 2-hydroxydecyl methyl sulfoxide, 2-hydroxyundecyl methyl sulfoxide, and 2-hydroxydodecyl methyl sulfoxide.

3,953,600

CITRONELLYL BENZIMIDAZOLES

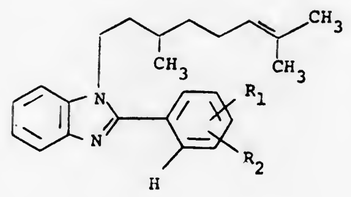
William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 534,684, Dec. 20, 1974, abandoned. This application Aug. 21, 1975, Ser. No. 606,364

Int. Cl.² C07D *235/18*

U.S. Cl. 424—273 **13 Claims**

1. A compound of the formula



where

R_1 and R_2 each independently represent hydrogen, halo having an atomic weight of about 19 to 36, lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, trifluoromethyl, or

R_1 and R_2 on adjacent carbon atoms together represent methylenedioxy,

provided that when R_1 and R_2 are both trifluoromethyl or t-butyl or when one of R_1 and R_2 is trifluoromethyl and the other is t-butyl they are on other than adjacent carbon atoms; or a pharmaceutically acceptable acid addition salt thereof.

3,953,601

DIBENZOTHIOPHENE DERIVATIVES AS SERUM LIPID LOWERING AGENTS

Ulf Goran Bondesson, Huddinge; Salo Schmul Gronowitz, Lund; Nils Erik Stjernstrom, Sodertalje, and Tage Rolf Gunnar Svensson, Lund, all of Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

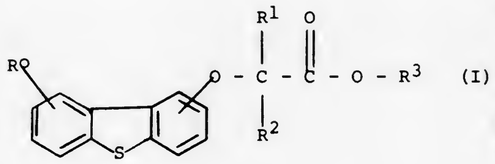
Filed Feb. 28, 1974, Ser. No. 446,621

Claims priority, application Sweden, Mar. 16, 1973, 7303673

Int. Cl.² A61K *31/38*

U.S. Cl. 424—275 **10 Claims**

1. A method for the treatment of excessive serum lipid concentrations in mammals comprising administering orally to a mammal in need thereof a therapeutically effective amount of a dibenzothiophene derivative having the formula



(I)

in which formula R^0 is selected from the group consisting of H, F, Cl, Br and OCH_3; R^1 and R^2 are the same or different and are selected from the group consisting of H and alkyl having 1–3 carbon atoms; R^3 is selected from the group consisting of H and alkyl having 1–3 carbon atoms; R^0 and the side chain containing the radicals R^1, R^2 and R^3 being on the same or different benzene ring.

3,953,602

PHARMACEUTICALLY USEFUL OXYGEN CONTAINING HETEROCYCLIC DERIVATIVES

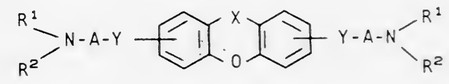
Irving Shemano, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed June 15, 1973, Ser. No. 370,423

Int. Cl.² A61K *31/35, 31/34*

U.S. Cl. 424—283 **9 Claims**

1. A method of treating conditions of delayed hypersensitivity which comprises administering to a patient in need thereof a compound selected from the formula



wherein X is selected from a bond, $-CH_2-$, or carbonyl; each Y is selected from a vinylene group,



carbonyl, oxygen, divalent sulfur, or carbonyloxy, with the proviso that when Y is a vinylene group or



X is other than carbonyl; A is selected from a straight or branched alkylene chain of from 1 to 6 carbon atoms with the proviso that when Y is a vinylene group A contains from 1 to 5 carbon atoms, and with the proviso that when Y is a carbonyloxy, A contains from 2 to 6 carbon atoms; each of R^1 and R^2 is selected from hydrogen, straight or branched lower alkyl of from 1 to 4 carbon atoms, or alkenyl of from 3 to 6 carbon atoms having the vinyl unsaturation in other than the 1-position; and pharmaceutically acceptable acid addition salt thereof, in an amount effective to suppress delayed hypersensitivity.

3,953,603

HEXAHYDRO-DIBENZO[B,D,]PYRAN-9-ONES AS PSYCHOTROPIC, PARTICULARLY ANTI-DEPRESSANT DRUGS

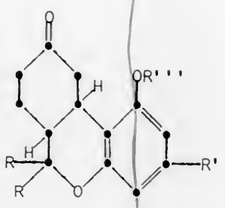
Robert A. Archer, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 413,009, Nov. 5, 1973. This application May 1, 1975, Ser. No. 573,500

Int. Cl.² A61K *31/35*

U.S. Cl. 424—283 **7 Claims**

1. A process for treating mammals suffering from depression which comprises administering to a mammal in need of such treatment a dose of a compound represented by the formula



wherein R′ is either C_7–C_{10} normal alkyl or is the group



wherein R″ is C_2–C_7 alkyl and R^r is H or methyl, wherein both R groups are identical and are H or methyl and wherein R‴ is H or C_1–C_4 alkanoyl, in an amount effective to treat depression.

3,953,604
1-(2-SUBSTITUTED-CHROMONYLOXY)-2-HYDROXY-3-(SUBSTITUTED PHENOXY)PROPANES

Brian Thomas Warren, Ickenham, and John William Spicer, London, both of England, assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 320,600, Jan. 2, 1973, Pat. No. 3,899,513. This application Dec. 3, 1973, Ser. No. 421,497
Int. Cl.² A61K *31/35*
U.S. Cl. 424—283 **2 Claims**

1. In a method of prophylactically treating allergic asthma in a mammal in need thereof by inhalational administration of a compound effective in said treatment, the improvement comprising:

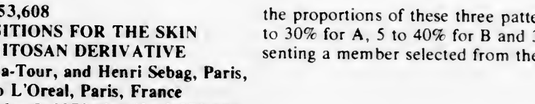
prophylactically administering a compound selected from the group consisting of 1-(2-carboxychromon-5-yloxy)-2-(hydroxy)-3-(p-cyanophenoxy)-propane or a nontoxic, pharmacologically acceptable salt thereof to the mammal in an amount effective to treat said asthma.

3,953,605
ANTIMICROBIAL QUATERNARY AMMONIUM COMPOUNDS COMPOSITIONS

Robert Andrew Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 242,750, April 10, 1972, Pat. No. 3,882,166. This application Feb. 20, 1975, Ser. No. 551,372
Int. Cl.² A01N *9/24*
U.S. Cl. 424—311 **5 Claims**

1. An antimicrobial composition comprising about 0.1–10% by weight of an antimicrobial agent having the structural formula:



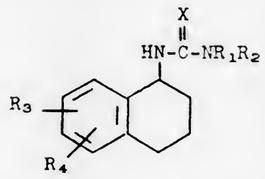
wherein R is a long chain alkyl group of 12–18 carbon atoms; R^1 and R^2 are methyl or ethyl groups; *n* is an integer from 1 to 6; Ar is a substituted aryl radical selected from the group consisting of phenyl and naphthyl, said substituted moiety being selected from the group consisting of tri-halo-and mono-nitro-radicals; and X is an anion selected from the class consisting of halides, sulfates and methosulfates, and a pharmaceutical carrier therefor.

3,953,606
COMPOSITIONS AND METHOD OF USING UREIDOTETRALIN COMPOUNDS OR DERIVATIVES THEREOF

Larry Dean Spicer, Princeton; Joseph Michael Pensack, Trenton; Robert Daniel Wilbur, Titusville, all of N.J., and Gary Michael Demkovich, deceased, late of Cranbury, N.J. (by Ruth Ellen Demkovich, administratrix), assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 7, 1974, Ser. No. 440,626
Int. Cl.² A61K *31/17*
U.S. Cl. 424—322 **14 Claims**

1. A method for enhancing the growth rate of ruminant livestock, poultry or fur bearing animals comprising, administering orally or parenterally to said animals a growth-enhancing amount of a racemic mixture or an optically active isomer of a compound of the formula:



wherein X is a member selected from the group consisting of sulfur and oxygen; R_1 is a member selected from the group consisting of hydrogen and alkyl C_1–C_4; R_2 is a member selected from the group consisting of hydrogen, alkyl C_1–C_4, alkoxy C_1–C_4, benzyl and benzyloxy; R_3 is a member selected from the group consisting of hydrogen, alkyl C_1–C_4 and alkoxy C_1–C_4; and R_4 is a member selected from the group consisting of hydrogen and alkyl C_1–C_4.

3,953,607
METHOD OF CONTROLLING INSECTS USING 7-ETHYXO-1-(p-ETHYLPHENOXY)-3,7-DIMETHYL-2-OCTENE

Morton Beroza, Silver Spring; Rafael Sarmiento, Laurel, and Terrence P. McGovern, Bowie, all of Md., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 343,328, March 21, 1973, Pat. No. 3,873,724. This application Nov. 26, 1974, Ser. No. 527,319
Int. Cl.² A01N *9/24*
U.S. Cl. 424—341 **4 Claims**

1. A method of preventing the normal maturation of insects selected from the group consisting of the yellow mealworm, *Tenebrio molitor* (L.) and the confused flour beetle, *Tribolium confusum* Jacquelin duVal comprising contacting said insects at an early pupal stage with an effective maturation inhibiting amount of 7-ethoxy-1-(p-ethylphenoxy)-3,7-dimethyl-2-octene.

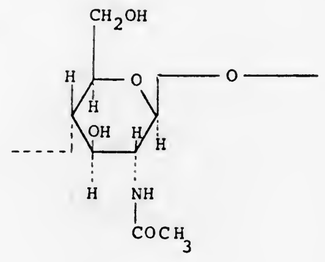
3,953,608
COSMETIC COMPOSITIONS FOR THE SKIN CONTAINING A CHITOSAN DERIVATIVE

Guy Vanlerberghe, Montjay-la-Tour, and Henri Sebag, Paris, both of France, assignors to L'Oreal, Paris, France

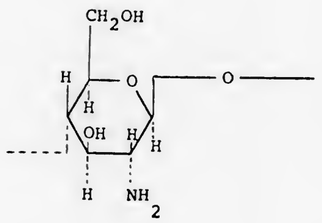
Division of Ser. No. 251,263, May 8, 1972, Pat. No. 3,879,376. This application Sept. 11, 1974, Ser. No. 504,953
Claims priority, application Luxemburg, May 10, 1971, 63142
Int. Cl.² A61K *7/48*
U.S. Cl. 424—361 **8 Claims**

1. A cosmetic composition for the skin comprising in an aqueous carrier a chitosan derivative consisting of randomly distributed patterns of the formulae:

(A)

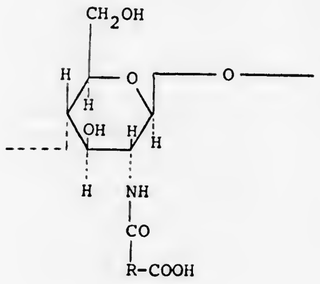


(B)

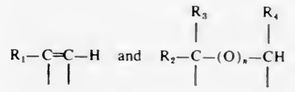


and

(C)



the proportions of these three patterns being, respectively, 5 to 30% for A, 5 to 40% for B and 30 to 90% for C, R representing a member selected from the group consisting of



wherein R_1 represents a member selected from the group consisting of hydrogen and methyl, *n* is equal to (a) O, in which case R_2, R_3 and R_4, each independently, represent a member selected from the group consisting of hydrogen; methyl; hydroxy; acetoxy; amino; monoalkylamino or dialkylamino, wherein the alkyl moiety of each has 1 to 12 carbon atoms and wherein each is optionally interrupted by one or more nitrogen atoms or substituted by one or more amino, hydroxyl, mercapto, carboxyl, alkylthio wherein the alkyl moiety has 1 to 8 carbon atoms and sulfonic groups; alkylthio wherein the alkyl moiety has 1 to 4 carbon atoms and carries an amino residue; and a residue of glutathion, at least one of R_2, R_3 and R_4 being hydrogen and radicals R_2 and R_3 being able to form together a methylene radical, and (b) 1, in which case R_2, R_3 and R_4 each represent hydrogen; and the salts formed by this derivative with a base selected from the group consisting of sodium hydroxide, potassium hydroxide, ammonia, lime, magnesia and alkanolamine and an acid selected from the group consisting of hydrochloric, phosphoric, acetic, lactic, tartaric and citric, said chitosan derivative being present in amounts of 0.1 – 20 percent by weight of said composition.

3,953,609
METHOD FOR THE GROWTH RESTRICTION OF UNDESIRABLE DIGESTIVE SYSTEM BACTERIA IN ANIMALS AND THE ESTABLISHMENT OF LACTOBACILLUS LACTIS NRRL B-5628

Stewart M. Farr, Sarasota, Fla., assignor to Microlife Technics, Inc., Sarasota, Fla.

Filed Feb. 6, 1974, Ser. No. 440,250
Int. Cl.² A23K *1/00*
U.S. Cl. 426—2 **8 Claims**

1. The method for changing the digestive system bacteria in animals which comprises:

orally feeding a live bacterial composition of *Lactobacillus lactis* NRRL B-5628 mixed with a growth medium to said animals in an amount of at least 1×10^{10} cells per day per kg body weight of the animal and for a length of time sufficient to substantially reduce the number of such other digestive system bacteria and to achieve population dominance of NRRL B-5628 in the digestive system.

3,953,610
HIGH TEMPERATURE DIRECT ACIDIFICATION OF MILK
Lawrence L. Little, Creve Coeur, Mo., assignor to Battelle Development Corporation, Columbus, Ohio
Filed Jan. 31, 1975, Ser. No. 546,028
Int. Cl.² A23C *19/02*
U.S. Cl. 426—39 **6 Claims**

1. A process of lowering the pH of milk by direct acid additions to milk at a temperature of from 60° to 90°F, comprising: adding said acid as a spray from above the milk surface at a location in said milk where a minor portion of said milk is mixing at a high velocity in contact with a major portion of said milk, wherein the velocity of the milk at said location is in excess of about 4 feet per second, and wherein said acid is added at a rate of from about 0.4 to 4.69 H^+ equivalents per minute to yield a final pH in the range of from about 4.5 to 5.5.

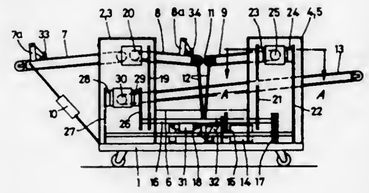
3,953,611
SHAPED TEXTURED PROTEIN FOOD PRODUCT
Rudolph William Youngquist, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sept. 16, 1974, Ser. No. 506,078
Int. Cl.² A23G *3/00*; A23L *1/36*
U.S. Cl. 426—93 **12 Claims**

1. A process for forming textured shaped protein food products comprising
   a. coating particulate textured protein material with a binder consisting of from about 10 to 70%, by weight, of 7S soybean protein isolate, and from about 30 to 90%, by weight, water;
   b. shaping the coated particulate material into a unitary shaped product; and
   c. heating the shaped product to heat-set the binder.

3,953,612
PROCESS FOR PREPARING A FIBROUS PROTEIN PRODUCT AND THE PRODUCT THEREOF
Myron Julius Coplan, Natick; Robert Bernard Davis, and Daniel Kenneth Schiffer, both of Framingham, all of Mass., assignors to Miles Laboratories, Inc., Elkhart, Ind.
Filed Jan. 6, 1975, Ser. No. 538,820
Int. Cl.² A23J *3/00*
U.S. Cl. 426—104 **14 Claims**

1. A process for the production of a semi-unitary protein product consisting essentially of a bundle of intermittently fused protein fibers which comprises mixing a finely-divided oilseed protein material with water to form a mixture containing from about 25 to about 60 percent by weight of the protein material, heating the mixture to a temperature from about 100° C. to about 180° C. to form an essentially homogeneous, extrudable plastic mass and then extruding this mass under suitable pressure conditions through a spinneret directly into an essentially inert gaseous medium whereby there is intermittent fusing of the extruded protein fibers to yield the desired semi-unitary protein product, wherein such spinneret has a plurality of orifices each having a cross-sectional dimension from about 0.001 to about 0.01 in., said orifices being spaced apart from each other a distance not greater than one orifice cross-sectional dimension.

3,953,613
METHOD OF AND APPARATUS FOR THE TRANSVERSE FOLDING OF DOUGH BAND SECTIONS
Eugen Morgenthaler, Kirchberg, and Ruedi Seewer, Burgdorf, both of Switzerland, assignors to Seewer AG, Burgdorf, Switzerland
Filed Oct. 24, 1974, Ser. No. 517,595
Claims priority, application Germany, Aug. 17, 1974, 2439496
Int. Cl.² A21C *11/00*
U.S. Cl. 426—502 **9 Claims**



1. A method of operating conveyor tables to transversely fold a dough band section comprising the steps of providing a receiving conveyor table, a first reversing conveyor table and a second reversing conveyor table, said first reversing conveyor table being positioned subsequently of said receiving conveyor table and forming a gap therebetween, said second reversing conveyor table positioned beneath said receiving and first reversing conveyor tables, advancing a predetermined portion of a dough band section over said receiving and first reversing conveyor tables, reversing said first conveyor table to form a loop of the dough band section in the gap between said receiving and first reversing conveyor tables, advancing said second reversing conveyor table for a predetermined distance so that a first part of the dough band section running off said first reversing conveyor table comes to bear upon a second part of the dough band section which bears upon said second reversing conveyor table, and reversing said second reversing conveyor table so that a third part of the dough band section running off the receiving conveyor table comes to bear upon the first and second parts of the dough band section.

3. A machine for the transverse folding of a dough band section, comprising a plurality of conveyor tables each having a conveyor band, said conveyor tables comprising a receiving conveyor table, a first reversing conveyor table arranged subsequently of said receiving conveyor table and positioned to form a gap between said receiving conveyor table and said first reversing conveyor table, and a second reversing conveyor table arranged beneath said receiving and first reversing conveying tables such that said gap is disposed above an intermediate portion of said second reversing conveyor table, means for driving each of said conveyor tables in a forward direction of motion to advance the conveyor bands thereof, means for reversing the direction of motion of said first and second reversing conveyor tables to drive the conveyor bands thereof in a rearward direction, automatically operating control means for controlling the direction of motion of said first and second reversing conveyor tables, said control means including means for sensing the position of the dough band section as it is advanced over said receiving conveyor table and said first reversing conveyor table, means operatively coupled between said sensing means and the reversing means of said first reversing conveyor table for actuating reversal thereof after a first predetermined portion of the dough band section has advanced over said first reversing conveyor table, the reversal of the direction of motion of said first reversing conveyor table causing the dough band section to be formed into a loop in said gap and bear against the conveyor band of said second reversing conveyor table, and means operatively coupled between said sensing means and the reversing means of said second reversing conveyor table for actuating reversal thereof after a second predetermined portion of the dough band section has advanced over said second reversing conveyor table.

3,953,614
4,7-DIHYDRO-2-(3-PENTYL)-1,3-DIOXEPIN AS A FLAVORANT
Robert F. Tavares, Cedar Grove, N.J.; Jack Agran, Brooklyn, N.Y.; William M. Easter, Hasbrouck Heights, and Leslie Blau, Dumont, both of N.J., assignors to Givaudan Corporation, Clifton, N.J.
Division of Ser. No. 342,122, March 16, 1973, Pat. No. 3,822,291. This application May 15, 1974, Ser. No. 470,245
Int. Cl.² A23L *1/226*
U.S. Cl. 426—536 **2 Claims**

1. A method for flavoring a food which comprises adding thereto an amount of 4,7-dihydro-2-(3-pentyl)-1,3-dioxepin sufficient to impart to the food a vegetative, earthy flavor.

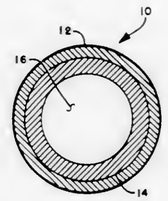
3,953,615
HYDRATION DRYING OF COFFEE, TEA, OR JUICE CONCENTRATE BY MEANS OF ANHYDROUS DEXTROSE
Ashis S. Gupta, Marietta, and Clifford A. Shillinglaw, Dunwoody, both of Ga., assignors to The Coca-Cola Co., Atlanta, Ga.
Continuation of Ser. No. 168,727, Aug. 3, 1971, abandoned. This application Dec. 17, 1973, Ser. No. 425,468
Int. Cl.² A23F *1/12, 3/00*; A23L *2/08*
U.S. Cl. 426—594 **3 Claims**

1. A hydration drying process for preparing a dried, free-flowing juice powder without the necessity of a high temperature heating operation from a juice concentrate selected from the group consisting of orange juice, grape juice and tea, which comprises admixing a juice concentrate with at least 11 grams of ahydrous dextrose for each gram of moisture present in said juice concentrate in an agitating device until the anhydrous dextrose is substantially hydrated and a free-flowing non-hygroscopic juice powder having a rapid rate of dispersibility and dissolution upon reconstitution in water is produced, said anhydrous dextrose being admixed in a powdered or pulverized state to reduce the drying time required to produce a dried, free-flowing product, and wherein the rate of hydration of the dextrose molecules is expedited by heating the mixture at low temperatures of about 35° centigrade to 85° centigrade, and further wherein said juice powder has a total moisture content of about 5%, most of which is bound moisture in the hydrated dextrose molecules, and further wherein only a negligible amount of free moisture is available in the powder for wetting or subsequent chemical reaction with other particles during the drying process.

3,953,616
ORGANIC ACID DERIVATIVES
Paul D. Thomas, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.
Division of Ser. No. 805,020, March 6, 1969, which is a continuation of Ser. No. 446,429, April 7, 1965, abandoned, and Ser. No. 661,221, Aug. 17, 1967, abandoned, which is a continuation-in-part of Ser. No. 391,080, Aug. 21, 1964, Pat. No. 3,343,964, which is a continuation-in-part of Ser. No. 306,277, Sept. 3, 1963, abandoned. This application July 25, 1973, Ser. No. 382,394
Int. Cl.² A23K *1/00*
U.S. Cl. 426—637 **5 Claims**

1. An improved potato composition adapted for reconstitution with water comprising dehyrated potato in comminuted form together with from about 0.1% to about 2% by weight, based on dried potato weight, of a substance selected from the group consisting of the sodium, potassium, calcium and magnesium salts of monoalkyl acid fumarates and maleates containing from 14 to 18 carbon atoms in the alkyl group.

3,953,617
METHOD OF PRODUCING ENCAPSULATED THERMONUCLEAR FUEL PARTICLES
Warren H. Smith, Dayton; William L. Taylor, Cincinnati, and Harold L. Turner, Dayton, all of Ohio, assignors to The United States of America as represented by the United States Energy Research & Development Administration, Washington, D.C.
Filed Jan. 28, 1974, Ser. No. 438,499
Int. Cl.² G21C *3/06*
U.S. Cl. 427—6 **4 Claims**

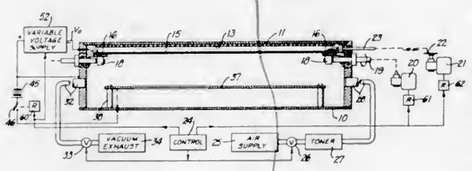


1. A method of producing a fuel particle comprising forming hollow spheroids of a material with mass number above 50, thereafter immersing said hollow spheroids in a gaseous atmosphere selected from the group consisting of deuterium, tritium, and mixtures thereof, subsequently heating said spheroids to from about 370° Kelvin to about 770° Kelvin for a period of time of about 1 to 48 hours and at pressures of from about 2 pounds per square inch to about the ultimate tensile strength of said material spheroids, said heating and said pressure effecting diffusion of said gas into said spheroids, and thereafter cooling said hollow spheroids having said gas diffused therein to from about 77° Kelvin to about 4° Kelvin.

3,953,618
ELECTROSTATIC IMAGE DEVELOPING PROCESS
Eric P. Muntz, Pasadena, and Murray S. Welkowsky, Los Angeles, both of Calif., assignors to Xonics, Inc., Van Nuys, Calif.
Division of Ser. No. 356,502, May 2, 1973, Pat. No. 3,861,354. This application Sept. 20, 1974, Ser. No. 507,677
Int. Cl.² G03G *13/00*
U.S. Cl. 427—21 **3 Claims**

1. A process for developing an electrostatic image on a receptor sheet, including the steps of:
   producing a cloud of positive and negative charged toner powder particles;

attracting said toner particles of one polarity to a first electrode remote from the receptor sheet and said toner particles of the opposite polarity to a second apertured electrode positioned adjacent the side of the receptor sheet bearing the electrostatic image and between the receptor sheet and the first electrode by applying an electric potential across the first and second electrodes;



attracting the toner particles of said opposite polarity through the second apertured electrode to deposit the toner particles onto the electrostatic image on the receptor sheet at localities having a charge potential with respect to the potential of the second electrode;

varying the potential of the second electrode as a function of time during the deposition of the toner particles; and

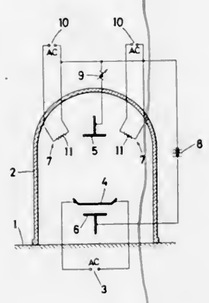
varying the distance between the second electrode and the receptor sheet as a function of time during the deposition of the toner particles.

3,953,619

METHOD FOR IONIZATION ELECTROSTATIC PLATING

Kiyoshi Matsubara, Higashi-Murayama, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Oct. 3, 1973, Ser. No. 403,060
Claims priority, application Japan, Oct. 3, 1972, 47-99291
Int. Cl.² B05D *3/06*
U.S. Cl. 427—39 **5 Claims**



1. In an ionization electrostatic plating method wherein glow discharge is generated in a closed atmosphere of a rare gas containing therein a coating material and an article subjected to plating and said coating material is vaporized so that the vaporized coating material is ionized and accelerated to be deposited on the article subjected to plating, the improvement therein comprising having a cathode disposed adjacent but separate from said article subjected to plating, effecting the acceleration of the ionized vapor of coating material by means of said cathode and controlling the ionization current flowing to said article subjected to plating to a level such that it will heat the article to a temperature necessary for plating and will not cause the article to function as a principal cathode.

3,953,620

PRODUCING INTEGRATED OPTICAL CIRCUITS

Edwin Arthur Chandross, Berkeley Heights; Coralie Anne Pryde, Morristown; Walter John Tomlinson, III, Holmdel, and Heinz Paul Weber, Middletown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 6, 1974, Ser. No. 530,506
Int. Cl.² B05D *3/06*
U.S. Cl. 427—53 **3 Claims**

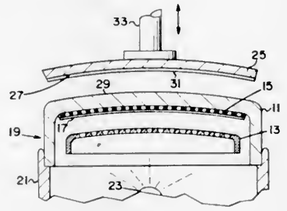
1. In the method for the fabrication of an optical waveguide device comprising the steps of doping a liquid solution of transparent polymer in a solvent with a photosensitive monomer of higher index of refraction than that of said polymer, said monomer being capable of subsequent molecular structural changes which tend to lock said monomer in said polymer upon exposure to electromagnetic radiation of a selected wavelength, depositing a film of the doped liquid solution on a substrate support, evaporating the solvent from the solution, selectively exposing the film to said beam of radiation to lock said monomer in selected portions of said film and heating said film to reduce the unexposed monomer, the improvement which comprises utilizing a polynuclear aromatic thiol dopant.

3,953,621

PROCESS OF FORMING CATHODE RAY TUBE SCREENS

Robert L. Donofrio, Elbridge, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Mar. 21, 1974, Ser. No. 453,437
Int. Cl.² B05D *3/06*; **H01J** *31/20*
U.S. Cl. 427—54 **8 Claims**



1. An improvement in the exposure process of forming a patterned cathodoluminescent screen of discrete phosphor elements on the viewing area of the face panel of a cathode ray tube in overlay relationship to an opaquely defined windowed webbing priorly disposed thereon, in accordance with an apertured mask spatially positioned within the panel, whereof exposure energy beamed through the mask impinges and polymerizes selected areas of a phosphor related energy-sensitive coating applied over the webbing, said improvement being in the screen exposure process for disposing said phosphor elements comprising:

positioning said coated panel, with said mask oriented therein, on a screen exposure apparatus accommodating a source of exposure radiant energy;

placing a reflective medium relative to the exterior surface of said panel, said medium being of a shaping compatible with the exterior contour of said panel; and

beaming said exposure energy through said aperture mask to initiate primary ray polymerization of discrete coating areas superimposed on defined window-areas of said webbing, a portion of said primary radiation upon traversing said coating and said panel therebeneath impinges said reflective medium to produce reflected secondary radiation which retraverses the panel effecting augmented secondary ray polymerization of substantially the obverse region of the interfacially related coating in the window areas.

3,953,622

METHOD OF FORMING A NON-GLOSSY FILM

Marco Wismer, Gibsonia, and Earl E. Parker, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 135,815, April 20, 1971, abandoned. This application Apr. 3, 1974, Ser. No. 457,336
Int. Cl.² B44D *1/44*; **C03H** *19/00*; **C08K** *1/82*
U.S. Cl. 427—54 **8 Claims**

1. A method comprising:

a. applying to a substrate a first coating composition comprising an ethylenically unsaturated polyester, an ethylenically unsaturated monomer and from about 0.1 to about 10 percent by weight based upon the interpolymerizable materials present, of a peroxide catalyst to form a coating thereon having an outer surface;

b. treating said coating with enough ultraviolet light to gel said coating to a state wherein said outer surface is at least hard enough so that it does not intermix with a wet second coating composition applied thereto;

c. applying as a coating to said outer surface of said gelled coating a catalyst-free second coating composition comprising an ethylenically unsaturated polyester and an ethylenically unsaturated monomer and at least about 5 percent by weight ultraviolet light absorbing pigment to form a composite coating; and

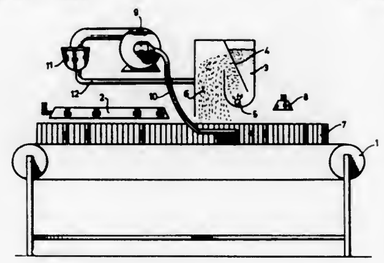
d. treating said composite coating with ultraviolet light to obtain a durable cured composite coating having resistance to solvent attack and a lower gloss than a coating of said catalyst-free second coating composition when cured in like manner but in the absence of said gelled first composition.

3,953,623

PROCESS OF SELECTIVELY COATING EARTHENWARE ARTICLES

Johannes Cornelis Das, 5, Geerstraat, Bergeyk, Netherlands

Continuation-in-part of Ser. No. 206,704, Dec. 10, 1971, abandoned. This application May 28, 1974, Ser. No. 473,692
Int. Cl.² B05D *3/02*, *1/40*, *3/12*
U.S. Cl. 427—189 **5 Claims**



1. A process for coating a desired portion of the surface of earthenware articles having a porous surface comprising the steps of:

a. Positioning earthenware articles to be coated with a particulate coating material with the surface to be coated facing upwardly;

b. Heating only the portion of the upwardly facing surface which is to be coated to a temperature above the melting temperature of the coating material without substantial heating of the earthenware articles below the surface layer;

c. Applying particles of the coating material to said heated surface layer thereby forming a continous layer of coating thereon;

d. Heating the surface layer of the coating to a temperature between the melting point of the coating material and a temperature equal to or below the temperature to which the surface of the article has been heated in step (B) in order to produce a smooth layer of coating material;

e. Cooling the article after the particulate coating material has at least partially adhered to the surface layer of the article to form the desired coating thereon, the unheated portion of the surface of the article remaining substantially free of said coating material.

3,953,624

METHOD OF ELECTROLESSLY DEPOSITING NICKEL-PHOSPHORUS ALLOYS

Anthony Francis Arnold, Ringoes, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 6, 1974, Ser. No. 467,136
Int. Cl.² C23C *3/02*
U.S. Cl. 427—256 **4 Claims**

4. A method of electrolessly depositing a non-homogeneous layer of nickel-phosphorus alloys on a catalytic surface, comprising:

treating said surface with an aqueous bath comprising a nickel salt of a non-oxidizing, non-chelating acid, hypophosphite ion in an amount of 2 to 3.2 moles per mole of nickel salt, lactic acid or an alkali metal lactate in an amount of 0.1 to 1.0 mole per mole of nickel salt not exceeding a total concentration of 0.055 moles/liter, an aliphatic carboxylic acid, an alkali metal hydroxide or ammonium hydroxide and a hydroxyacetic acid or an alkali metal salt thereof, wherein the initial nickel content of the bath is about 0.02 to 0.04 moles per liter, the remaining ingredients, other than nickel, are present in such proportions as to provide an initially high plating rate at a relatively high initial acid pH of about 4.5 to 7, the carboxylic acid is present in an amount to maintain the initially high pH until most of the nickel is depleted at which time the pH abruptly drops to a lower value which is determined by the ratio of hypophosphite to lactate and hydroxyacetate ions, and the nickel salt is sufficient to maintain a phosphorus deposition rate that drops more slowly than the nickel deposition rate, whereby the phosphorus content of the deposit rises as deposition proceeds after the abrupt drop in pH,

continuing the deposition process until the pH drops to a level of about 3.75 ± 0.10 and the nickel content of the bath is about 10% of the initial concentration, and

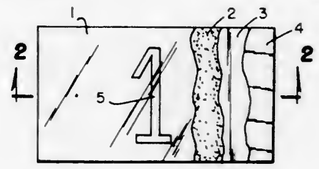
terminating the treatment without replenishing any of the bath ingredients.

3,953,625

PROCESS FOR MAKING INDICIA BEARING ANODIZED ARTICLE

Harold J. Quaintance, Fairview Park, and Eugene Wainer, Shaker Hts., both of Ohio, assignors to Horizons Incorporated, Cleveland, Ohio

Division of Ser. No. 205,493, Dec. 7, 1971, Pat. No. 3,765,994. This application July 13, 1973, Ser. No. 378,849
Int. Cl.² B05D *1/00*
U.S. Cl. 427—258 **13 Claims**



1. In a process for producing an indicia bearing laminated article which comprises:

providing an anodized member consisting of an aluminum metal base composed of anodizable metal selected from the group consisting of aluminum and aluminum base

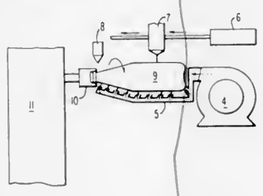
alloys and an anodized oxide layer on said metal base, said oxide layer consisting of a non-porous thin oxide band adjacent to the metal base and a porous layer of oxide integral with said non-porous layer and producing an image in said porous layer, which image can only be viewed by reflected light; the improvements which comprise:

applying a clear protective organic material to the surface of said porous layer to bury the image in said pores and to protect the image in said pores and to render said layer self-supporting and chemically removing the metal base from said article whereby the image in said layer can be viewed by diffused light and can be projected by direct illumination.

3,953,626
COATING METHOD

Motoaki Suzuki, and Hitoshi Muroi, both of Tokyo, Japan, assignors to Toyo Ink Manufacturing Company, Ltd., Tokyo, Japan

Filed Dec. 26, 1973, Ser. No. 428,572
Claims priority, application Japan, Dec. 23, 1972, 47-128841; Oct. 19, 1973, 48-116865
Int. Cl.² B05D *3/04*
U.S. Cl. 427—346 **1 Claim**



1. A method for coating bottles, which comprises rotating a bottle about its longitudinal axis while maintaining said axis horizontal, extruding a high viscosity paint in filament-like form from a nozzle positioned about said bottle and at the same time moving said nozzle along the length of said bottle from a position above the neck of said bottle to a position above said bottle but beyond the bottle bottom thereby to form a coating on the surface of the body surface of said bottle, blowing a gas against the filament of paint when said nozzle has moved to said position beyond the bottle bottom to cause the filament to flow towards said bottle bottom and adhere to the bottom surface of said bottle to form a coated surface on said bottom surface, and then smoothening the coated surfaces of the body and bottom surfaces of the bottle by blowing a gas against the surface of said paint coating.

3,953,627
FLAME-RETARDANT WOOD CONTAINING 1,1,2,4-TETRABROMOBUTENE-2 AND PROCESS FOR ITS PRODUCTION

Roy G. Turnbo, Deer Park; David G. Walker, Baytown, both of Tex., and Marvin Rosen, Warren, N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Apr. 15, 1974, Ser. No. 461,264
Int. Cl.² C09K *3/28*
U.S. Cl. 427—427 **20 Claims**

1. A flame-retardant composition that comprises wood and a flame-retarding amount of 1,1,2,4-tetrabromobutene-2.

14. The process of claim **11** wherein a solution of 1,1,2,4-tetrabromobutene-2 in an inert organic solvent is applied to the wood.

3,953,628
PROCESS FOR MAKING PITCH IMPREGNATED ARTICLES

Charles R. Gannon, Ashland, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 22, 1973, Ser. No. 390,670
Int. Cl.² B05D *1/18*
U.S. Cl. 427—442 **5 Claims**

1. In a process for manufacturing an impregnated fiber pipe wherein;

a. a porous tubular body is formed;

b. the tubular body is immersed in a liquid mixture of (1) a particulated metallic pigment previously milled in the presence of stearic acid, and (2) molten pitch selected from the group consiting of coal tar pitch, oxidized petroleum pitch, unoxidized petroleum pitch and mixtures thereof at a temperature of about 270°F to about 375°F., and

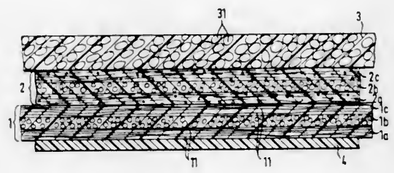
c. said liquid mixture is forced into interstices in said tubular form; the improvement comprising:

d. prior to immersing said tubular body in said mixture dispersing between about 4 and about 30 parts by weight of additional stearic acid per 100 parts of metallic pigment in said mixture.

3,953,629
SYNTHETIC CONCRETE LAMINATE

Ludwig Wesch, Heidelberg, Germany, assignor to Manufacture de Machines du Haut-Rhin-Manurhin S.A., Mulhouse, France

Filed June 5, 1972, Ser. No. 259,686
Claims priority, application Germany, June 11, 1971, 2129143
Int. Cl.² F16L *9/10*
U.S. Cl. 428—36 **14 Claims**



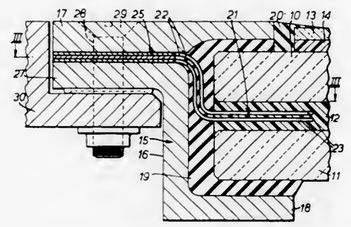
1. A synthetic concrete laminate comprising essentially an outer synthetic concrete layer bonded to an intermediate barrier layer comprised of a synthetic resin, said barrier layer being in turn bonded to a carrier layer comprised of a synthetic resin with reinforcing fibers embedded therein,

said barrier layer being formed of a laminate of plural layer portions comprising a first outer barrier layer portion which is bonded to said concrete layer, an intermediate barrier layer portion and a second outer barrier layer portion which is bonded to said carrier layer, said intermediate layer portion being comprised of filler material and a synthetic resin, said first and second outer barrier layer portions bonded respectively to said concrete layer and to said carrier layer being characterized by the property of having a greater percent of elongation in tension and lower modulus of elasticity than either of said concrete and said carrier layers.

3,953,630
LAMINATED TRANSPARENT ASSEMBLIES

William Gary Roberts, West Hagley, and Robert Burns, Leigh, both of England, assignors to Triplex Safety Glass Company Limited, London, England

Filed Mar. 8, 1973, Ser. No. 339,036
Claims priority, application United Kingdom, Mar. 13, 1972, 11621/72
Int. Cl.² B60J *1/00*
U.S. Cl. 428—38 **18 Claims**

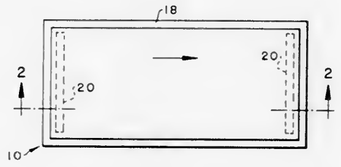


1. In a laminated transparent assembly suitable for use as a windscreen in a high speed vehicle such as an aircraft, the assembly comprising a load bearing sheet of toughened glass having a second sheet of glass laminated thereto by means of an impact resistant interlayer of plastics material and an insert which is partially embedded in and extends around the periphery of the interlayer, the improvement comprising utilizing an insert of high tensile strength fibrous material having an inner flexible portion of the insert embedded in the outer marginal portion of the interlayer, an intermediate flexible portion of the insert adjacent to and extending outwardly from the edges of the interlayer to ensure flexibility in the attachment of the assembly to the structure of the vehicle and outer marginal portion of the insert which is reinforced to provide for said attachment of the assembly to the structure of the vehicle.

3,953,631
DUST COLLECTION MATS

David Edward Gordon, LaGrange, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Sept. 4, 1974, Ser. No. 503,069
Int. Cl.² D03D *27/00*
U.S. Cl. 428—95 **1 Claim**

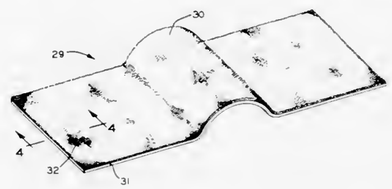


1. A dust control mat comprising: a sheet of textile material, a plurality of tufts of yarn connected thereto, a latex material coated to said sheet material holding said yarn tufts in said sheet material, a calendered rubber sheet laminated to said latex material and a woven reinforcing strip located between said latex material and said calendered rubber sheet with the elongated dimension being substantially perpendicular to the grain direction of said calendered rubber material, said reinforcing strip being shorter than the calendered rubber sheet and said sheet material in the length of the mat perpendicular to the grain direction of the calendered rubber sheet and being located adjacent one edge of said calendered rubber sheet.

3,953,632
RESIN IMPREGNATED MATS AND METHOD OF MAKING THE SAME

Leonard W. Robinson, Trenton, Mich., assignor to Woodall Industries Inc., Detroit, Mich.

Filed Apr. 29, 1974, Ser. No. 465,419
Int. Cl.² D03D *27/00*; **D04H** *11/00*; **D05C** *17/00*
U.S. Cl. 428—95 **16 Claims**

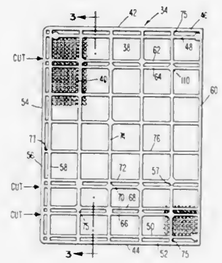


1. As a new article of manufacture, a compressed mat of randomly oriented plastic fibers, impregnated with a heat cured resin system including a thermosetting resin selected from the group consisting of melamine-formaldehyde, hexamethoxymethylmelamine and urea-formaldehyde resins, and a thermoplastic copolymer that is the product of the polymerization of a plurality of monomers at least one of which is a vinyl compound with an acid generating catalyst; pressure shaped to conform to a desired contour.

3,953,633
PLASTIC ELECTROPLATING BARREL WITH RIBBED PERFORATE MODULAR PANELS

Walter F. Noonan, Wallingford, Pa., assignor to Westlake Plastics Company, Lenni, Pa.

Filed June 20, 1974, Ser. No. 481,220
Int. Cl.² C25D *17/20*; **B32B** *27/32, 17/04, 3/10*
U.S. Cl. 428—131 **7 Claims**

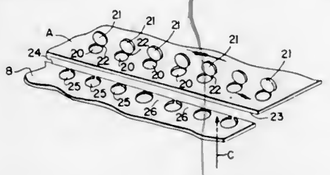


1. For use in forming the perforate panels of a plastic polyhedral electroplating barrel, a substantially rectangular plastic module having a relatively substantially flat thin perforate plate and a gridwork of rectangularly intersecting ribs extending vertically therefrom, there being closely spaced double ribs along both longitudinal edges of the module and along at least one lateral edge thereof, the remaining intersecting ribs being single and relatively widely spaced apart, said modules being adapted to abut each other at corresponding lateral edges to form the complete perforate panel, said reinforced longitudinal edges of each module adapted to be received and retained in longitudinal rail grooves and said reinforced lateral edges of end modules adapted to be received and retained in end head grooves.

3,953,634
SEAM STRUCTURE

William A. Wootten, 425 Via Corta, Malaga Cove Plaza, Palos Verdes Estates, Calif. 90274

Filed Aug. 22, 1973, Ser. No. 390,680
Int. Cl.² B31F 5/02; B32B 3/10
U.S. Cl. 428—133 6 Claims



1. A seam structure comprising a first panel having a plurality of spaced, rounded partial perforations therein bounded by the material of said first panel and defining a plurality of flat first tabs each of which is displaced away from one side of said first panel about a hinge line comprising the uncut portion of its associated partial perforation, a second panel positioned on the other side of said first panel and having a row of round perforations along a boundary edge thereof and opening into said boundary edge respectively and defining a plurality of spaced flat second tabs between said round perforations respectively, each of said second tabs having a comparatively narrow neck with arcuate sides flaring outwardly into a wider tip portion having an outer free end, the minimum width of each of said arcuatesided necks being substantially equal in dimension to the diameter of each of the partial perforations in said first panel, the necks of said second tabs extending from said second panel from a position on the other side of said first panel through said rounded partial perforations respectively to a position adjacent said one side of said first panel, the outwardly flaring neck and tip portions of each of said flat second tabs being disposed in closely adjacent surface facing relationship to one of said flat first tabs in a plane generally parallel to the plane defined by the edge of the associated partial perforation and at a position adjacent said one side of said first panel, the wider tip portion of each of said second tabs being shaped and dimensioned to extend beyond the boundary edge of the partial perforation through which the neck of said second tab extends so as to overlie said one side of said first panel, the free ends of said second tabs comprising portions of said boundary edge of said second panel and being disposed closely adjacent to the hinge lines of said first tabs respectively on said one side of said first panel, and the facing surfaces of said flat first and second tabs being attached to one another by a layer of adhesive therebetween to hold said tabs in generally parallel planar relationship to one another.

3,953,635
HOT STAMP TAPE

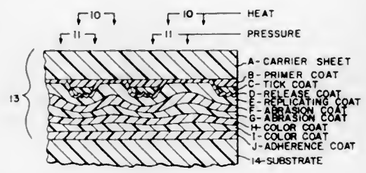
Richard E. Dunning, Munster, Ind., assignor to Avery Products Corporation, San Marino, Calif.

Continuation of Ser. No. 338,238, March 5, 1973, abandoned, which is a continuation of Ser. No. 233,463, March 10, 1972, abandoned, which is a division of Ser. No. 188,423, Oct. 12, 1971, Pat. No. 3,666,516. This application July 12, 1974, Ser. No. 487,925
The portion of the term of this patent subsequent to May 30, 1989, has been disclaimed.
Int. Cl.² B44C 1/16, 1/20; D41M 3/12
U.S. Cl. 428—151 33 Claims

1. A hot transfer sheet comprising a carrier layer, and a transfer layer which is stably associated with the carrier layer at ambient temperatures, but which is dissociable therefrom under heat transfer conditions;
said carrier layer being formed from a flexible, foldable material;
said carrier layer having a plurality of discrete spaced apart portions of thermoset resin coated on the surface thereof, attached thereto, and non-transferable therefrom under normal heat transfer conditions;
said surface of said carrier layer having portions which are not coated with said thermoset resin;
said spaced apart thermoset resin portions having surfaces remote from the surface of said carrier layer which have a specular reflectance which is different from the specular reflectance of the portions of the surface of the carrier which are not coated with said thermoset resin;
said transfer layer comprising a thermoplastic synthetic resinous material overlaying the surface of the carrier layer and said remote surfaces of said thermoset resin portions coated thereon;
said overlaying transfer layer being of sufficient thickness to replicate said portions of the surface of the carrier layer uncoated with said thermoset resin portions as well as the surfaces of said thermoset resin portions remote from the surface of said carrier layer;
said transfer layer replicating the surfaces of the thermoset resin portions without said thermoset resin portions transferring from the carrier layer;
said overlaying transfer layer being capable of adhering to a substrate of choice under conditions of heat transfer.

14. A hot transfer sheet according to claim 1 in which the spaced apart portions of thermoset resin include an amino aldehyde resin, and a synthetic resinous material which includes a copolymer of vinyl chloride, vinyl acetate, and a monomer copolymerizable therewith.

15. A hot transfer sheet according to claim 14 in which the monomer is maleic acid.



33. A laminate for providing on a substrate a decorative finish having a surface characterized by discrete spaced apart portions which vary in specular reflectance from other portions of the surface comprising:
a heat-resistant, flexible, foldable carrier sheet having a surface having a predetermined specular reflectance;
a plurality of discrete spaced apart portions of thermoset resin having a fine particulate filler embedded therein and coated on a portion of the surface of the carrier sheet, attached thereto, and non-transferable therefrom when heat and pressure are applied to the carrier sheet;
said spaced apart thrermoset resin portions having been coated onto the carrier in a fluid condition and shrunk during drying to a thickness in the range of about 5 to about 20 microns to form irregularly shaped surfaces remote from the surface of the carrier sheet, which remote surfaces have a specular reflectance lower than that of the portions of the surface of the carrier which are not coated by the thermoset resin portions; and
a transferable replicating layer in overlaying contact with the carrier sheet and said spaced apart thermoset resin portions, the replicating layer comprising a coating of sufficient thickness of a synthetic resinous material to replicate the specular reflectance of the remote surfaces of the spaced apart thermoset resin portions and the specular reflectance of the portions of the carrier sheet not coated by said spaced apart portions;
the replicating layer replicating the reflectance of the remote surfaces of the thermoset resin portions without said thermoset resin portions transferring from the carrier sheet;

said replicating layer being releasable from contact with the carrier sheet and said spaced apart thermoset resin portions to provide a decorative replicating layer having a surface having a plurality of discrete spaced apart portions which vary in specular reflectance from the remaining portion of the surface;
whereby a laminate comprising the carrier sheet and the replicating layer can be applied to a substrate and heated to adhere the replicating layer to the substrate, with the carrier sheet being released from the replicating layer to provide said replicating layer as a surface finish attached to the substrate.

3,953,636
METHOD OF IMPROVING IMPACT RESISTANCE OF CERAMIC BODIES, AND IMPROVED BODIES

Henry P. Kirchner, Borough of State College, Pa., assignor to Ceramic Finishing Company, State College, Pa.

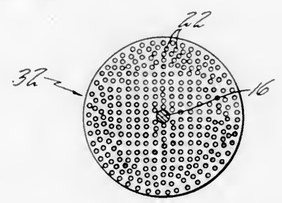
Filed Apr. 24, 1974, Ser. No. 463,837
Int. Cl.² B32B 17/00
U.S. Cl. 428—155 6 Claims

1. A polycrystalline ceramic body having improved impact resistance, said body having adhered thereto a layer of low elastic modulus polycrystalline ceramic material having microcracks therein.

3,953,637
SLENDER ROD FOR FISHING RODS AND METHOD OF MAKING THE SAME

Donald F. Phillips, West Granby, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 31, 1974, Ser. No. 519,883
Int. Cl.² A01K 87/00; B32B 15/02, 27/02, 15/14
U.S. Cl. 428—156 2 Claims



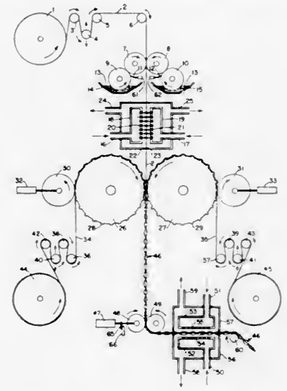
1. A solid tapered rod of circular cross section for use as a fishing rod comprising:
a metal wire core extending the length of the rod;
a plurality of parallel, continuous boron filaments being uniformly disposed about said wire to define a tapered intermediate rod of circular cross section, said boron filaments being less in number at one end of the wire than at the other end to provide taper to said rod; and
a plurality of high modulus, high strength, low density continuous filaments having an elastic modulus appreciably lower than said boron filaments uniformly disposed as an outer layer about said plurality of boron filaments and in parallel relationship thereto, said wire, said boron filaments and said high modulus, high strength, low density filaments being embedded in and bonded to a cured resin matrix.

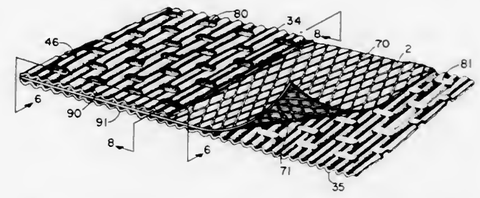
3,953,638
MULTI-PLY ABSORBENT WIPING PRODUCT HAVING RELATIVELY INEXTENSIBLE CENTER PLY BONDED TO HIGHLY EXTENSIBLE OUTER PLIES

Clifford B. Kemp, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 26, 1973, Ser. No. 419,022
Int. Cl.² B31F 1/12; B32B 5/00
U.S. Cl. 428—154 26 Claims

1. A method for producing a multi-layered absorbent paper wiping product, comprising the steps of:
a. imprinting a continuous pattern of water-resistant, reinforcing resin on at least one side of a relatively inextensible central ply of tissue paper having less than about 10 percent total stretch, said pattern covering between about 15 and about 55 percent of the total surface area thereof;
b. reducing the total moisture content of said resin-reinforced central ply to not more than about 10 percent; and



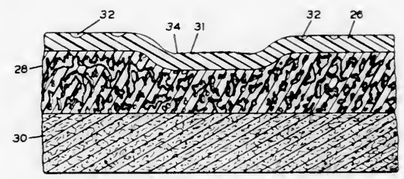


c. intermittently bonding an outermost ply of highly extensible tissue paper having between about 15 percent and about 50 percent crepe to each side of said central ply at points of embossment formed in each of said outermost plies, said points of embossment constituting between about 7 percent and about 50 percent of the total surface area of each of said outermost plies.

3,953,639
MECHANICALLY EMBOSSED RESILIENT LAMINAR FLOOR MATERIAL

Walter J. Lewicki, Jr., Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 442,770, Feb. 15, 1974, Pat. No. 3,887,678. This application Nov. 18, 1974, Ser. No. 524,523
Int. Cl.² B32B 3/26
U.S. Cl. 428—160 2 Claims



1. A floor covering material which is composed of a three-layer structure, the lower layer being a backing material, the intermediate full foamed layer being a flexible foamed thermoplastic or thermoset material, and the upper layer being a wear layer; the wear layer having an embossed pattern placed

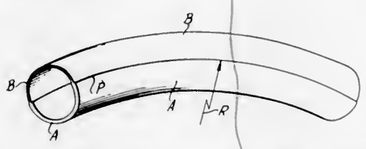
on the surface thereof, said embossed pattern being both surface texturing and deep embossing, said wear layer being greater than approximately 1/6 to 1/4 the thickness of the foam layer and being deeply embossed in depth approximately the thickness of the wear layer, the fully foamed intermediate layer in the region of the deep embossing having a substantially undamaged, but compressed, fully foamed, cell structure which is capable, upon reheating of the sheet material, of exerting sufficient stress upon the relieved wear layer to restore the wear layer to its unembossed state.

3,953,640

SELF-SHAPING WOVEN INFLATABLE BELT AND METHOD OF PRODUCTION

Juichiro Takada, Tokyo, Japan, assignor to Takata Kojyo Co., Ltd., Tokyo, Japan

Filed May 6, 1974, Ser. No. 467,346
Claims priority, application Japan, May 9, 1973, 48-53688
Int. Cl.² B32B *3/20*; **D03D** *3/02*
U.S. Cl. 428—188 **7 Claims**



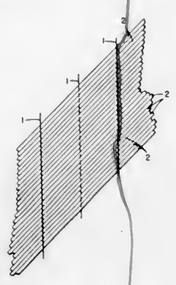
1. A self shaping inflatable tubular device comprising an elongated tube defining hollow woven band, including circumferentially spaced longitudinally extending warps and longitudinally spaced continuously circumferentially extending wefts interweaving said warps, first warps along a first side of said tube being shorter than second warps along an opposite second side of said tube, whereby said tube is curved along its length in the inflated condition thereof, and said tube upon deflation, is collapsible to a substantially flat condition, said hollow woven band having a resin coating to render the walls thereof impervious.

3,953,641

PLY OF PARALLEL FILAMENTS

Paul Marquis, Tassin-La-Demi-Lune, France, assignor to Societe Civile D'Etudes et de Recherches pour L'Obtention de Fibres Minerales (S.E.R.O.F.I.M.), Paris, France

Filed Apr. 19, 1973, Ser. No. 352,624
Claims priority, application France, Apr. 19, 1972, 72.14536
Int. Cl.² B32B *7/14* **D02G** *3/00*
U.S. Cl. 428—195 **11 Claims**



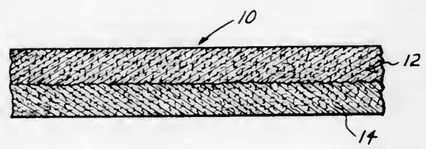
1. A ply of parallel continuous carbon filaments arranged one against the other substantially free from any space between them along their whole length, having a weight per unit of surface of not more than 450 grams per square meter and a thickness of not more than 1 millimeter, said filaments being bound together by fused synthetic yarns disposed transversely with respect to the direction of the filaments on at least one face of the ply without passing through the ply from one face to the other, said ply containing at least 85% fibers having a modulus of elasticity in tension of at least 12000 hectobars.

3,953,642

PRESSURE SENSITIVE RECORDING SHEET

Dennis L. Forbess, and John E. Hanby, both of Vancouver, Wash., assignors to Crown Zellerbach Corporation, Camas, Wash.

Filed Jan. 9, 1974, Ser. No. 432,066
Int. Cl.² B32B *27/32*; **D21F** *11/00*
U.S. Cl. 428—204 **9 Claims**



1. A pressure sensitive recording sheet adapted for imaging under the pressure of a typewriter key or other writing instrument comprising at least a pair of fiber plies disposed with one in front of and normally masking the other, said one fiber ply being composed of polyolefin fibers having a surface area exceeding 1 m^2 per gm with the relatively large surface area of the fibers in said one ply resulting in light-scattering interfaces rendering said one ply opaque, said polyolefin fibers also being sufficiently flexible to compact under the pressure of a writing instrument with destruction of these light-scattering interfaces, said one ply becoming relatively transparent when subjected to the localized pressure of a writing instrument in the region where pressure is applied by reason of compaction of said fibers in said region, said other of said fiber plies being composed of wood fibers, and a colored medium distributed in said other ply normally obscured by the opacity of said one ply but made distinct by instrument pressure by reason of the relative transparency of said region produced by fiber compaction.

3,953,643

METHOD FOR COATING AND PRODUCT

Mo-Fung Cheung, Warren, and Ray A. Dickie, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 20, 1974, Ser. No. 534,926
Int. Cl.² B05D *1/38, 7/14, 7/24*
U.S. Cl. 428—220 **12 Claims**

1. In a method for coating a substrate with diverse layers of coating material which comprises applying a heat-curable first coating material to said substrate, applying a second coating material over said first coating material, after a time in excess of one minute, and heating said substrate, the improvement wherein:

I. said first coating material is applied to said substrate as a dispersion of solids in an aqueous solution of a water-soluble amine and consists essentially of about 6 to about 60 parts by weight particulate pigment and about 40 to about 94 parts by weight of thermosetting paint binder which consists essentially of

A. 100 parts by weight acrylic paint binder resins consisting essentially of

1. about 5 to about 95 parts by weight of a solution polymer which is a carboxy-functional acrylic copolymer that

a. is at least partially neutralized with said aqueous solution of water-soluble amine,

b. is soluble in said aqueous solution,

c. has average molecular weight (M_n) in the range of about 3,000 to about 20,000 and

d. has Tg in the range of -15°C. to 50°C., and

2. about 5 to about 95 parts by weight of an emulsion polymer having functionality selected from carboxy functionality and hydroxy functionality and is an acrylic copolymer that

a. is essentially insoluble in said aqueous solution,

b. has average molecular weight (M_n) in the range of about 3,000 to about 20,000 and

c. has Tg in the range of −15°C. to 50°C., and

B. about 15 to about 35 parts by weight of an amino resin crosslinking agent for said solution polymer and said emulsion polymer,

II. said first coating material is applied to said substrate to an average thickness in the range of about 0.4 to about 1.2 mils, and

III. said second coating material is applied to said substrate as a dispersion of solids in an aqueous solution of a water-soluble amine and consists essentially of thermosetting paint binder which consists essentially of

A. 100 parts by weight acrylic paint binder resins consisting essentially of

1. about 5 to about 50 parts by weight of a solution polymer which is a carboxy-functional acrylic copolymer that

a. is at least partially neutralized with said aqueous solution of watersoluble amine,

b. is soluble in said aqueous solution,

c. has average molecular weight (M_n) in the range of about 3,000 to about 20,000 and

d. has Tg in the range of -15°C. to 50°C., and

2. about 50 to about 95 parts by weight of an emulsion polymer having functionality selected from carboxy functionality and hydroxy functionality and is an acrylic copolymer that

a. is essentially insoluble in said aqueous solution,

b. has average molecular weight (M_n) in the range of about 3,000 to about 20,000 and

c. has Tg in the range of −15°C. to 50°C., and

B. about 15 to about 35 parts by weight of an amino resin crosslinking agent for said solution polymer and said emulsion polymer,

IV. said second coating material is applied to said substrate over said first coating material to an average thickness in the range of about 0.4 to about 1.8 mils, and

V. said second coating material is heated by maintaining said substrate at a temperature in the range of about 250°F. to about 350°F. for a time in the range of about 15 to about 30 minutes.

3,953,644

POWA—METHOD FOR COATING AND PRODUCT

Melville J. Camelon, Utica, and Arend W. D. Vos, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 20, 1974, Ser. No. 534,927
Int. Cl.² B05D *1/38, 7/14, 7/24*
U.S. Cl. 428—220 **8 Claims**

1. In a method for coating a substrate with diverse layers of coating material which comprises applying a heat-curable first coating material to said substrate, heating said substrate to at least partially cure said first coating material, applying a second coating material over said first coating material, and heating said substrate for a second time, the improvement wherein:

I. said first coating material is applied to said substrate as a dispersion of solids in an aqueous solution of a water-soluble amine and consists essentially of about 6 to about 60 parts by weight particulate pigment and about 40 to about 94 parts by weight of thermosetting paint binder which consists essentially of

A. 100 parts by weight acrylic paint binder resins consisting essentially of

1. about 5 to about 95 parts by weight of a solution polymer which is a carboxy-functional acrylic copolymer that

a. is at least partially neutralized with said aqueous solution of water-soluble amine,

b. is soluble in said aqueous solution,

c. has average molecular weight (M_n) in the range of about 3,000 to about 20,000 and

d. has Tg in the range of -15°C. to 50°C., and

2. about 5 to about 95 parts by weight of an emulsion polymer having functionality selected from carboxy functionality and hydroxy functionality and is an acrylic copolymer. that

a. is essentially insoluble in said aqueous solution,

b. has average molecular weight (M_n) in the range of about 3,000 to about 20,000 and

c. has Tg in the range of −15°C. to 50°C., and

B. about 15 to about 35 parts by weight of an amino resin crosslinking agent for said solution polymer and said emulsion polymer,

II. said first coating material is applied to said substrate to an average thickness in the range of about 0.4 to about 1.2 mils,

III. said first coating material is heated after application to said substrate and prior to application of said second coating material to said substrate by maintaining said substrate at a temperature in the range of about 200°F. to about 350°F. for a time in the range of about 5 to about 15 minutes, and

IV. said second coating material is a particulate thermosettable mixture consisting essentially of an epoxy-functional acrylic copolymer of monoethylenically unsaturated compounds at least one of which is epoxy-functional and a cross-linking agent reactable with the epoxy functionality of said copolymer and selected from the group consisting of dicarboxylic acids and anhydrides of dicarboxylic acids, said crosslinking agent being present in an amount that provides about 0.8 to about 1.1 carboxyl groups or about 0.4 to about 1 anhydride group per epoxy group in said epoxy-functional acrylic copolymer and converts to a continuous, transparent coating upon maintaining said substrate at a temperature in the range of about 300°F. to about 350°F. for a time in the range of about 15 to about 30 minutes,

V. said second coatingg material is applied to said substrate as particulate solids to an average thickness in the range of about 0.8 to about 1.7 mils, and

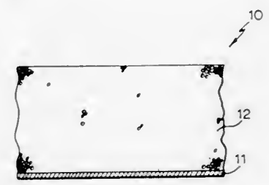
VI. said second coating material is heated by maintaining said substrate at a temperature in the range of 300°F. to about 350°F. for a time in the range of about 15 to about 30 minutes.

3,953,645

PHENOLIC POLYMER, RELATED PRODUCTS AND PROCESSES THEREOF

Ernest K. Moss, St. Petersburg, Fla., assignor to The Celotex Corporation, Tampa, Fla.

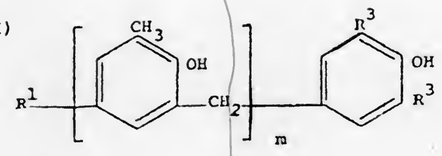
Division of Ser. No. 354,636, April 26, 1973, Pat. No. 3,876,620. This application Sept. 26, 1974, Ser. No. 509,565
Int. Cl.² B32B *3/26*
U.S. Cl. 428—310 **18 Claims**



18. A laminated structural panel having at least one facing sheet and having a cellular material adhering thereto wherein the cellular material comprised the reaction product of:

A. a methylol group containing phenolic polymer of Formula III:

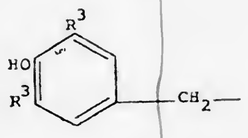
(III)



wherein:

a. R^1 is $HOCH_2$—, hydrogen or a radical of Formula IV:

(IV)



b. the R^3's are independently selected from the group consisting of $HOCH_2$—, hydrogen or a radical of Formula IV,

c. *m* is an integer from 3 to 6 inclusive,

d. the phenolic polymer has a molecular weight between 300 and 1500, and

B. phenol,

wherein the weight ratio of B:A is 1:20 to 1:5,

C. a foaming catalyst,

D. a blowing agent,

E. a surfactant.

3,953,646

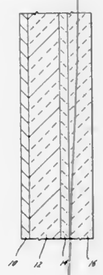
TWO-COMPONENT CERAMIC COATING FOR SILICA INSULATION

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Alexander Pechman, Mountain View, Calif., and Robert M. Beasley, Sunnyvale, Calif.

Filed June 24, 1974, Ser. No. 482,104

Int. Cl.[2] C04B *35/14, 43/00*

U.S. Cl. 428—332 **13 Claims**



1. An insulating structure for withstanding repeated exposure to cyclical temperature changes of from about −250°F. to about 2,500°F., said structure comprising a substrate having thereon a moisture-impervious ceramic laminate coating which comprises:

a. a barrier layer consisting essentially of fused silica, said barrier layer adhered to said substrate; and

b. an emissivity-glaze layer consisting essentially of a high silica glass, a borosilicate glass having a composition of from about 70 to about 87 wt.% SiO_2, from about 10 to about 20 wt.% B_2O_3, from about 2 to about 5 wt.% Na_2O and from about 1 to about 5 wt.% Al_2O_3, and an emissivity agent selected from the group of silicon carbide, nickel oxide, chrome oxide, cobalt oxide, nickel-chrome spinel, silicon nitride, calcined mixed oxides of iron, chrome and cobalt, and mixtures thereof with the weight ratio of high silica glass to borosilicate glass being from about 3:1 to about 19:1 and the weight ratio of high silica glass plus borosilicate glass to emissivity agent being from about 50:1 to about 4:1.

7. A method of rendering impervious to moisture a substrate which comprises sequentially applying to said substrate and firing at a temperature of from about 1,700°F. to about 2,500°F.

a. a barrier coating consisting essentially of a fused silica slip having from about 80 to about 90 wt.% solids and

b. an emissivity-glaze coating consisting essentially of a high silica glass, a borosilicate glass having a composition of from about 70 to about 87 wt.% SiO_2, from about 10 to about 20 wt.% B_2O_3, from about 2 to about 5 wt.% Na_2O, and from about 1 to about 5 wt.% Al_2O_3 and an emissivity agent selected from the group of silicon carbide, nickel oxide, chrome oxide, cobalt oxide, nickel-chrome spinel, silicon nitride, calcined mixed oxides of iron, chrome and cobalt and mixtures thereof, and an effective amount of a suspension agent in an aqueous slurry containing from about 10 to about 90 wt.% solids, with the weight ratio of high silica glass to borosilicate glass being from about 3:1 to about 19:1 and with the weight ratio of high silica glass plus borosilicate glass to emissivity agent being from about 50:1 to about 4:1.

3,953,647

GRAPHITE FIBER REINFORCED METAL MATRIX COMPOSITE

John J. Brennan, Portland, and Norman S. Bornstein, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 5, 1973, Ser. No. 404,084

Int. Cl. B32b *5/16*

U.S. Cl. 428—378 **5 Claims**

1. A refractory fiber reinforced composite article comprising a plurality of fibers selected from the group consisting of graphite fibers, amorphous carbon fibers and pyrolytic graphite fibers bonded together in an aluminide intermetallic matrix selected from the group consisting of nickel aluminide, cobalt aluminide and solutions and mixtures thereof, said fibers comprising approximately, by volume, 10-60% of said composite article.

3,953,648

GLASS FIBER REINFORCED ELASTOMERS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

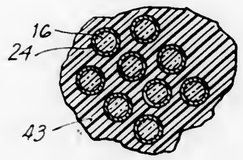
Division of Ser. No. 244,589, April 17, 1972, Pat. No. 3,869,306, which is a continuation of Ser. No. 398,305, Sept. 22, 1964, abandoned. This application Aug. 22, 1974, Ser. No. 499,755

The portion of the term of this patent subsequent to Mar. 4, 1992, has been disclaimed.

Int. Cl.[2] B32B *17/02, 17/04*

U.S. Cl. 428—378 **3 Claims**

1. A glass fiber bundle formed of a plurality of glass fibers, each of the glass fibers having a thin size coating on the individual surfaces thereof consisting essentially of an anchoring agent in the form of an organo silicon compound having an organic group attached directly to the silicon atom which contains an amino group and an impregnant in the bundle to separate the glass fibers each from the other, said impregnant



consisting essentially of a combination of a resorcinol-formaldehyde resin and a rubber.

3,953,649

SELF-BONDING MAGNET WIRE AND PROCESS OF MANUFACTURING SAME

Kazuo Suzuki; Yoshiaki Hayashi, and Seiichi Nagamine, all of Otu, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 388,328, Aug. 12, 1973, abandoned. This application Oct. 17, 1974, Ser. No. 515,506

Claims priority, application Japan, Aug. 14, 1973, 48-81565

Int. Cl.[2] H01B *3/30*; **C08G** *69/00*

U.S. Cl. 428—383 **8 Claims**

1. A self bonding magnet wire comprising a conductor with a coating thereon, said coating comprising

A. 65 to 95 parts by weight of a first copolyamide comprising 10 to 50 weight ω-laurolactam, 20 to 35 weight percent ϵ-caprolactam, 15 to 25 weight percent hexamethylene diammonium adipate and 5 to 35 weight percent hexamethylene diammonium sebacate;

B. 35 to 5 parts by weight of a second copolyamide comprising 70 to 90 weight percent ω-laurolactam, and the remainder ϵ-caprolactam; and

C. 5 to 25 parts by weight polyhydroxypolyetherester resin.

3,953,650

STRAND MATERIAL COVERED WITH CLEAR FLAME RETARDANT COMPOSITION

Earl Salvator Sauer, Perry Hall, and William Charles Vesperman, Baltimore, both of Md., assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 258,964, June 2, 1972, Pat. No. 3,868,341. This application Sept. 30, 1974, Ser. No. 510,665

Int. Cl.[2] H01B *3/44, 3/40*

U.S. Cl. 428—389 **10 Claims**

1. An electrical conductor provided with an extrudable coating of a clear flame retardant composition, the composition consisting essentially of a polymeric material consisting essentially of at least 80 per cent, by weight, of polyvinyl chloride; 10 to 55 parts, by weight, per 100 parts, by weight, of the polymeric material of a phthalate plasticizer selected from the group consisting of di(N-octyl-n-decyl) phthalate, di (N-hexyl-n-decyl) phthalate, a di-isodecyl phthalate, di-iso-octyl phthalate, a di-iso-nonyl phthalate, a di-tri-decyl phthalate and a tridecyl phthalate; 3 to 50 parts, by weight, per 100 parts, by weight, of the polymeric material of a phosphate plasticizer selected from the group consisting of triaryl phosphate and cresyl diphenyl phosphate; 2 to 5 parts, by weight, per 100 parts, by weight, of the polymeric material of a metallic stabilizer selected from the group consisting of a metallic stabilizer which includes a phosphite chelator, a barium stearate, a cadmium stearate, a barium-ethylhexoate, a barium-cadmium-laurate and a barium-cadmium myristate; 0.25 to 1.0 parts, by weight, per 100 parts, by weight, of the polymeric material of a lubricant selected from the group consisting of metallic stearate and stearic acid; 0.25 to 1.0 part, by weight, per 100 parts, by weight, of the polymeric material of an ultraviolet absorber selected from the group consisting of substituted benzophenones and substituted acryonitriles; 1 to 4 parts, by weight, per 100 parts, by weight, of the polymeric material of an epoxy resin; and 1 to 8 parts, by weight, per 100 parts, by weight, of the polymeric material of an epoxy plasticizer.

3,953,651

ACRYLIC SYNTHETIC FIBER HAVING ANIMAL HAIR-LIKE HAND

Masao Sone; Kojiro Arai, and Katsuaki Nomura, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

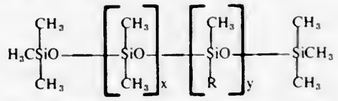
Filed Nov. 13, 1973, Ser. No. 415,398

Claims priority, application Japan, Nov. 14, 1972, 47-114135

Int. Cl.[2] B32B *27/02*; **B23B** *27/30*

U.S. Cl. 428—391 **2 Claims**

1. An acrylic synthetic fiber in which the interfiber entanglement coefficient is from 10 to 40 and the interfiber entangling force after hot water-treatment is not more than 50 mg., said fiber having a silicone resin of the formula



wherein R is $R'NH_2$, $R'NHR''$ or $R'NR''_2$, R' is $+CH_2\rightarrow_n$, *n* is 1 to 3, R'' is C_mH_{2m+1}, *m* is 1 to 3, *x* and *y* are positive integers and the molecular weight of the silicone resin is not more than 100,000

deposited on the fiber surface in an amount of 0.1 to 3.0 % based on the dry weight of the fiber.

3,953,652

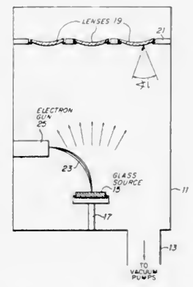
PROCESS FOR COATING GLASS ONTO POLYMERIC SUBSTRATES

Richard Robert Addiss, Jr., Bedford, and Nedo Peter Albertinetti, Canton, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Continuation-in-part of Ser. No. 348,431, April 5, 1973, abandoned. This application Sept. 3, 1974, Ser. No. 502,578

Int. Cl.[2] B32B *17/06*

U.S. Cl. 428—412 **11 Claims**



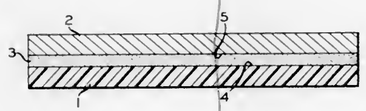
1. A process for applying a glass coating to a polymeric substrate in vacuum evaporation and deposition apparatus, comprising:

a. placing a source of glass in said apparatus, said glass containing below about 0.01 percent water and having a thermal coefficient of expansion below about 45 × 10^{-7}/°C;

b. positioning said substrate at a finite distance from said source and in such a location that vaporized glass species strike the surface of said substrate to be coated at an angle of less than about 40° measured from the normal;

c. reducing the background pressure in said equipment to at least a value which provides vaporized glass species with a mean-free path not substantially shorter than said finite distance;
d. heating said substrate to an elevated temperature of between about 50° and 100°C; and,
e. vaporizing glass from said source at a rate consistent with maintaining the background pressure below the value established in step (c) until a glass coating has been deposited on said substrate to the desired thickness.

3,953,653
METHOD TO TREAT A POLY(ARYLENE SULFIDE) SURFACE
Richard C. Doss, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Apr. 30, 1975, Ser. No. 573,183
Int. Cl.² B32B *27/06*; **C09J** *5/02*
U.S. Cl. 428—419 **20 Claims**



7. A method of bonding a first solid surface comprising poly(arylene sulfide) to a second solid surface comprising
1. contacting said first solid surface with an agent selected from the group consisting of
a. halogenated hydrocarbons and hydroxy-substituted halogenated hydrocarbons having the formula

$X_m—R'—Y$

wherein R′ is an $m+1$ valent saturated or olefinically unsaturated hydrocarbon radical having 1 to about 10 carbon atoms, each X is independently selected from the group consisting of hydrogen, fluorine, chlorine, bromine, and iodine, Y is selected from the group consisting of hydroxy, hydrogen, fluorine, chlorine, bromine and iodine, m is an integer and wherein at least one halogen is present per molecule,
b. organic acids having 1 to about 20 carbon atoms per molecule and having the formula

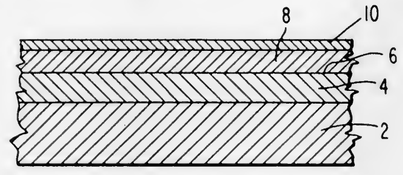
RCOOH

wherein R is selected from the group consisting of hydrogen and alkyl, cycloalkyl and aryl radicals being unsubstituted or substituted by one or more radicals selected from the group consisting of alkyl, cycloalkyl and aryl radicals,
c. hypohalogenites having the formula

MOHal

wherein M is alkali metal and Hal is a halogen atom
with the further provision that when the poly(arylene sulfide) surface consists of unfilled poly(arylene sulfide), the agent is selected from the group of agents defined above under (a) and (b) and when the poly(arylene sulfide) surface is a fiberglass-filled poly(arylene sulfide) surface, the agent is selected from the group of agents defined above under (c), and thereafter
2. adhesive-bonding said first solid surface and said second solid surface.

3,953,654
TEMPERATURE-STABLE NON-MAGNETIC ALLOY
Nathan Feldstein, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.
Division of Ser. No. 387,601, Aug. 13, 1973, abandoned. This application Dec. 10, 1974, Ser. No. 531,396
Int. Cl.² G11C *11/02*
U.S. Cl. 428—471 **1 Claim**



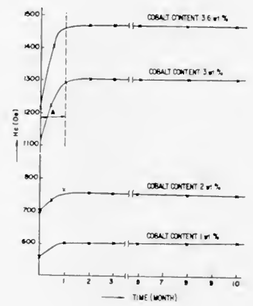
1. A magnetic memory storage device comprising:
a relatively thick rough substrate of a non-magnetic material that is heat resistant to a temperature of at least about 290° C.,
a relatively thick film of a non-magnetic alloy composed of about 0.1 to about 0.7 wt. % boron, about 6 to about 16 wt. % phosphorus, and the balance nickel, on said substrate, said film having a highly polished surface,
a relatively thin film of a cobalt-phosphorous alloy magnetic material on said alloy film, and
a thin film of a cobalt oxide protective material on said film of magnetic material.

3,953,655
POLYMERS WITH IMPROVED PROPERTIES AND PROCESS THEREFOR
Robert A. Steinkamp, and Thomas J. Grail, both of Baytown, Tex., assignors to Exxon Research and Engineering Company, Linden, N.J.
Division of Ser. No. 240,494, April 3, 1972, Pat. No. 3,862,265, which is a continuation-in-part of Ser. No. 132,838, April 9, 1971, abandoned. This application July 10, 1974, Ser. No. 487,069
Int. Cl.² B32B *27/06, 27/34, 27/36*; **C08F** *255/02*
U.S. Cl. 428—474 **9 Claims**

1. A laminate comprising a layer of a grafted polymeric composition, prepared from a base polymer, comprising from 0.02 to 20 weight percent of grafted acrylic acid or glycidyl acrylate monomer and having a melt flow rate of from 3 to 1000 and at least 50% higher than said base polymer and a die swell of at least 0.05 unit less than that of said base polymer firmly self-bonded to a layer of nylon.

3,953,656
MAGNETIC RECORDING MEDIUM AND PREPARATION THEREOF
Yasumichi Tokuoka; Shinji Umeki, and Yuichi Kubota, all of Tokyo, Japan, assignors to TDK Electronic Company, Tokyo, Japan
Filed Feb. 28, 1974, Ser. No. 446,740
Claims priority, application Japan, Mar. 20, 1973, 48-31487
Int. Cl.² H01F *10/02*
U.S. Cl. 428—539 **1 Claim**

1. A magnetic recording tape, which comprises:
a magnetic recording layer containing magnetic iron oxide having a cobalt content of 0.5 – 10 weight % and a ratio of Fe^{+2}/Fe^{+3} of 0.1 – 0.35, which is magnetized to a residual magnetization of at least 85% of the saturated magnetization, and characterized by a width of the half peak height of the differential curve of the residual magnetization curve which is less than 60% of the width of the half peak height of the differential curve of a non-treated conventional iron-cobalt magnetic oxide magnetic recording layer, and further characterized by a slope of at least about 325 of the line in a graph obtained from a plot



of the coercivity in oersteds (Hc) of said magnetic recording layer versus % cobalt content.

3,953,657
METHOD FOR COATING PARTICULATE SOLIDS WITH POLYMERS
Tadashi Yamaguchi; Takayuki Ono, both of Sendai; Hiroshi Hoshi, Narashino; Michio Hirakawa, and Isao Watanabe, both of Ichikawa, all of Japan, assignors to Mitsui Toatsu Kagaku Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 28, 1974, Ser. No. 437,393
Claims priority, application Japan, Jan. 29, 1973, 48-11116; Feb. 5, 1973, 48-14520
Int. Cl.² B32B *17/02, 19/00*
U.S. Cl. 428—406 **6 Claims**

1. A method for coating the surface of particulate solids with a polymer, characterized in that a solid selected grom the group consisting of glass particles, abrasive particles and sand particles are brought into contact in an aqueous or alcoholic medium with a vinyl monomer in the presence of a polymerization initiator consisting essentially of bisulfite ions to form a polymer on the surface of said particulates.

3,953,658
COPPER COATINGS ON SHAPED PLASTIC SUPPORTS
Wilhelm Brandt, Wertach, and Irmgard Bindrum, Wiesbaden-Biebrich, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany
Filed Dec. 5, 1972, Ser. No. 312,269
Claims priority, application Germany, Dec. 8, 1971, 2160822
Int. Cl.² B05D *5/12*
U.S. Cl. 428—458 **4 Claims**

1. A process for metallizing the surface of a shaped plastic support selected from the group consisting of polyesters, polyolefins, polyimides and acrylonitrile-butadiene-styrene copolymers comprising
producing on said surface a conductive layer of a surface resistance in the range of about 1 to less than 10^{12} ohms by sensitization with a noble metal salt, activation with a reducing agent to produce noble metal nuclei and subsequent deposition of copper by contacting the said surface with an electroless copper bath at a temperature and for a period sufficient to produce a copper layer having a surface resistance in the stated range,
and vapor-depositing copper in a high vacuum on said conductive surface to form a coating on the shaped plastic support.
4. A shaped plastic support having a copper coating thereon produced according to the process of claim 1.

3,953,659
THERMAL PAPER COATING
James K. Truitt, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed July 15, 1974, Ser. No. 488,340
Int. Cl.² B41M *5/18*
U.S. Cl. 428—511 **6 Claims**

1. A heat-sensitive print sheet comprising a thin flexible sheet material and including a visibly heat sensitive layer comprising:
a. a heat sensitive color producing formulation including a normally solid iron salt of a fatty acid and a diphenolic compound;
b. a binder comprising cellulose acetate;
c. acetone as a solvent for the binder; and
d. water as a non-solvent blush material for the binder, wherein said acetone is present in the range of about 1000 through about 1500 parts, and the water is present in the range of about 100 to about 300 parts, per 100 parts cellulose acetate.
4. A process for the production of a heat-sensitive print sheet comprising:
a. forming a first mixture including a normally solid iron salt of a fatty acid, in acetone;
b. forming a second mixture including a diphenolic compound, in acetone, wherein a cellulose acetate binder is dissolved in at least one of said first and second mixtures;
c. forming a third mixture including acetone and water, wherein said acetone is present in the range from about 1000 to about 1500 parts, and the water is present in the range from about 100 to about 300 parts, per 100 parts of cellulose acetate;
d. mixing said first, second and third mixtures to form a fourth mixture;
e. coating said fourth mixture onto a flexible sheet material which is insoluble in acetone; and
f. drying the coated flexible sheet material.

3,953,660
SURFACE PROTECTIVE FILM FOR PLASTICIZED POLYVINYL CHLORIDE SUBSTRATES
Tadashige Ishida, Tokyo, Japan, assignor to Tamapoly Co., Ltd., Tokyo, Japan
Filed Mar. 29, 1974, Ser. No. 456,184
Int. Cl.² B32B *27/08, 27/30*
U.S. Cl. 428—518 **10 Claims**

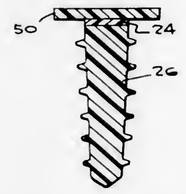
1. An adhesive surface protective film for polyvinyl chloride substrate containing a plasticizer, comprising, an adhesive layer of 10–100μ in thickness,
said adhesive layer containing 100 parts by weight of a vinyl polymer selected from the group consisting of ethylene-vinylacetate copolymer, ethylene-ethylacrylate copolymer, ethylene-propylene copolymer, ethylene-vinylalcohol copolymer, vinylalcohol homopolymer and polyvinylbutyral; and from 1 to 100 parts by weight of chlorine containing olefin polymer selected from the group consisting of chloroprene, polyvinyl-chloride, polyepichlorohydrin, vinylchloride-vinylacetate copolymer, vinylchloride-vinylether copolymer, vinylchloride-vinylidene chloride copolymer, the graft polymer of vinylchloride and ethylene-vinylacetate copolymer and a mixture thereof, chlorinated polyethylene, chlorinated polypropylene, and chlorinated polyvinylchloride,
said olefin polymer having a solubility parameter of between 0.8 and 11.0, and
said adhesive layer is applied to a substrate of polyvinylchloride of 10 to 100μ in thickness.

3,953,661
EXTRUSION APPARATUS, PROCESS AND ARTICLE
Willard Q. Gulley, Concord, Tenn., assignor to Vinylex Corporation, Knoxville, Tenn.
Filed Jan. 3, 1974, Ser. No. 430,487
Int. Cl.² B32B *7/00, 3/30*
U.S. Cl. 428—542 8 Claims

1. A unitary extruded article having a stable, separable stripping portion for producing controlled fracturing in concrete masses comprising:

an extruded body having top and bottom portions formed from a thermoplastic resin and an intermediate portion forming a separable tear section between said top and bottom portions, and

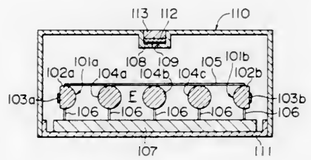
said intermediate portion being of a width substantially equal to that of the contiguous bottom and top portions and being formed of a thermoplastic resin having admixed therewith at least 150 parts per 100 parts of said thermoplastic resin of a tear strength reducing agent selected from the group consisting of a plasticizer for said thermoplastic resin and a filler whereby to permit the stripping of said top portion from said article, and



said bottom portion having an elongated body and a plurality of projecting ribs on each side thereof, and extending longitudinally the length of said strip.

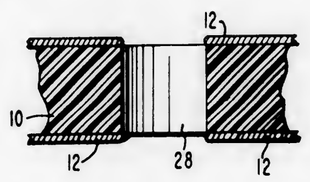
ELECTRICAL

3,953,662
SEALED CONTAINER HOUSING A MECHANICAL FILTER
Toshio Nagashima; Ichiro Imaguchi, and Shigeo Igarashi, all of Tokyo, Japan, assignors to Kokusai Electric Co., Ltd., Tokyo, Japan
Division of Ser. No. 472,987, May 24, 1974. This application Dec. 30, 1974, Ser. No. 537,313
Claims priority, application Japan, June 11, 1973, 48-65589; June 11, 1973, 48-65590; June 11, 1973, 48-65591; June 15, 1973, 48-70837[U]
Int. Cl.² H05K *5/06*
U.S. Cl. 174—17.05 3 Claims



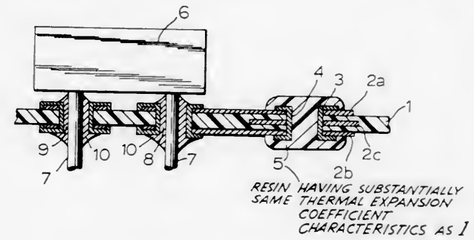
1. A container housing a mechanical filter, comprising a metal casing having top, bottom and end walls accommodating a mechanical filter therein; a recess formed in one of the walls of said metal casing and provided with an aperture therethrough; adhesive means disposed on the surface of said recess in such a manner as to cover said aperture, said adhesive means being adapted to permit the air within said casing to be withdrawn from said casing through said aperture and through a clearance between said adhesive means and the surface of said recess so that said casing may be evacuated, said adhesive means being also adapted to be urged into air-tight contact with the surface of said recess to hermetically seal said aperture due to the difference in pressure between the outside and the inside of said casing after the latter has been evacuated; and hermetic sealing means provided on said adhesive means within said recess after said casing has been evacuated.

3,953,663
VACUUM-HEAT TREATED PRINTED CIRCUIT BOARDS
William G. Kelhm, Jr., Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Division of Ser. Nos. 794,686, Jan. 28, 1969, Pat. No. 3,708,876, and Ser. No. 2,019, Jan. 12, 1970, Pat. No. 3,755,890, which is a continuation-in-part of Ser. No. 794,686,. This application Jan. 2, 1973, Ser. No. 320,307
Int. Cl.² H05K *1/02, 3/22*
U.S. Cl. 174—68.5 5 Claims



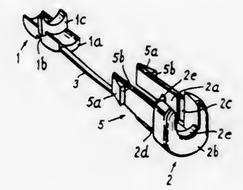
1. A high vacuum baked circuit board formed of a thermoset plastic composition and bearing electric conductive elements on at least one surface thereof, said board being substantially free of all material therein vaporizable at temperatures up to approximately 450°F.

3,953,664
PRINTED CIRCUIT BOARD
Eiichi Tsunashima, Hirakata, Japan, assignor to Matsushita Electric, Wireless Research Laboratory, Osaka, Japan
Filed Oct. 25, 1974, Ser. No. 518,219
Claims priority, application Japan, Oct. 26, 1973, 48-120878; Oct. 29, 1973, 48-121918
Int. Cl.² H05K *1/18*
U.S. Cl. 174—68.5 3 Claims



1. In a printed circuit board, the combination of an electrically insulating board which is made of a base containing synthetic resin and having at least two conductors, one conductor being on one surface of said circuit board and the other conductor being on the opposite surface of said circuit board, said board having a plurality of holes therethrough, a conductive layer extending through one hole and covering at least part of the surface of said conductors connecting said conductors on both the surfaces of said circuit board through said one hole, and a filler composed of electrically insulating resin which fills said one hole and covers the surface of said conductive layer for preventing breakage of the conductive path through the hole containing the filler, the filler of insulating resin having a thermal coefficient of expansion characteristics which are substantially the same thermal coefficient of expansion characteristics as the material of the insulating board, another of said holes being soldered, the two holes forming redundant electrical connection paths between said conductors on both surfaces of said board, whereby undesirable thermal shock owing to the soldering is avoided in the hole filled with said resin.

3,953,665
BUSHINGS, GROMMETS OR LIKE DEVICES
John Holt Nicholson, Ferndown, England, assignor to Plastic Seals Limited, England
Filed Oct. 15, 1974, Ser. No. 514,800
Claims priority, application United Kingdom, Oct. 15, 1973, 48030/73
Int. Cl.² F16L *5/00;* H01B *17/26*
U.S. Cl. 174—153 G 8 Claims



1. A bushing comprising a body portion which at least partially defines an elongate member-receiving passage extending generally longitudinally through the bushing, the body

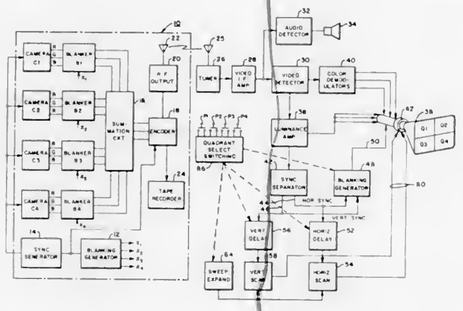
portion being provided with first locking means, operable to releasably lock the body portion in an operative position within an aperture in a plate-like member when the bushing is inserted generally longitudinally into the aperture, in which position the bushing is operable to locate an elongate member, when received in and extending through said passage, with respect to the plate-like member, the leading end of the body portion, in the generally longitudinal direction of insertion of the body portion into the aperture in the plate-like member, including at least two blade-like members extending along opposite sides of, and partially defining, said passage, said blade-like members being provided with second locking means, operable when the body portion is not locked by the first locking means and the body portion is displaced generally longitudinally from its operative position, to retain said blade-like members of the body portion within and partially obstructing the aperture whilst allowing displacement of the body portion within the aperture to a position in which an elongate element may be assembled to or disassembled from the bushing.

3,953,666

TELEVISION SYSTEM FOR SIMULTANEOUSLY TRANSMITTING AND RECEIVING A PLURALITY OF INDEPENDENT PICTURES ON A SINGLE CARRIER SIGNAL

James W. H. Justice, Murrysville, and George F. Newell, Pittsburgh, both of Pa., assignor to Westinghouse Electric, Corp., Pittsburgh, Pa.

Filed May 25, 1973, Ser. No. 364,161
Int. Cl. H04n *7/00*
U.S. Cl. 178—5.6 **4 Claims**



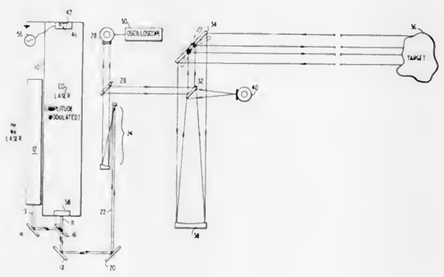
1. An apparatus for receiving a plurality of separate pictures or scenes on a single television carrier signal such that a different scene appears in each quadrant of a single television receiving tube, the combination of means for detecting frames of video signals wherein each frame includes four different scenes in the four quadrants of a single television receiving tube, means coupled to said detecting means for blanking out all but that portion of the video signal which when displayed on the face of the receiving tube comprises one of said four quadrants, a sync separator for separating vertical and horizontal sync signals from said video signal, means for delaying both the vertical and horizontal sync signals, means for recombining the delayed vertical and horizontal sync pulses with the blanked video signal, means for recombining a radio-frequency carrier signal with the recombined video signal and blanking pulses, and means for applying the thus-modulated signal to the terminals of a television receiver.

3,953,667

PASSIVE AND/OR ACTIVE IMAGING SYSTEM

Allen C. Layton; Werner G. Zinn, Jr., both of Orlando; Antonio J. Mendez, Winter Park; Robert E. Howle, Orlando, and Thomas E. Bayston, Maitland, all of Fla., assignors to Martin Marietta Corporation, Orlando, Fla.

Filed June 28, 1974, Ser. No. 484,028
Int. Cl.² H04N *7/02*
U.S. Cl. 178—6 **13 Claims**



7. In the method of sensing and displaying the infrared radiation image of a scene, the improvement comprising the steps of:

a. illuminating the scene with a coded infrared laser beam;

b. simultaneously sensing the infrared radiation and reflected laser energy images of the scene with a common detector and producing a composite signal including both infrared and coded laser image signals;

c. separating the coded laser signals from the infrared image signals; and

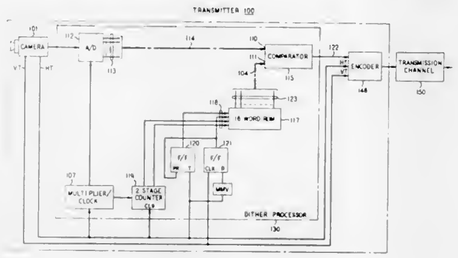
d. selectively applying the separated signals to a display device, so that either or both images are visibly displayed.

3,953,668

METHOD AND ARRANGEMENT FOR ELIMINATING FLICKER IN INTERLACED ORDERED DITHER IMAGES

Charles Norris Judice, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 27, 1975, Ser. No. 580,910
Int. Cl.² H04N *7/12*
U.S. Cl. 178—6 **21 Claims**



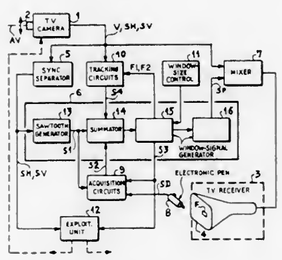
18. In a method for presenting a dithered image in a plurality of interlaced scan lines, said image comprising a plurality of rows of dithered image cells each of which has one of two predetermined intensities, the improvement comprising the step of controlling the the intensity presented along each of said scan lines in accordance with the intensities of the cells in a selected two adjacent ones of said rows.

3,953,669

VIDEO TRACKING SYSTEM

Georges Saccomani, and Leonidas Symaniec, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Aug. 30, 1974, Ser. No. 502,205
Claims priority, application France, Aug. 31, 1973, 73.31521
Int. Cl.² H04N *7/18*
U.S. Cl. 178—6.8 **10 Claims**



1. A video tracking system comprising:

a television camera adapted to be trained upon an area of observation containing a target to be tracked;

a television receiver provided with a monitoring screen and connected to said camera for receiving therefrom an input signal to display on said screen a picture of said area of observation including an image of said target, said input signal including synchronizing pulses for controlling a periodic deflection of an electron beam in said receiver in two mutually orthogonal sweep directions;

window-generating means connected to said receiver for delineating on said screen a rectangular window with sides extending in said sweep directions, said window-generating means including a source of scanning voltage controlled by said synchronizing pulses and gating means for passing selected portions of said scanning voltage to said receiver;

manually operable acquisition means adapted to control said source for modifying said scanning voltage to align said window with a desired target image on said screen; and

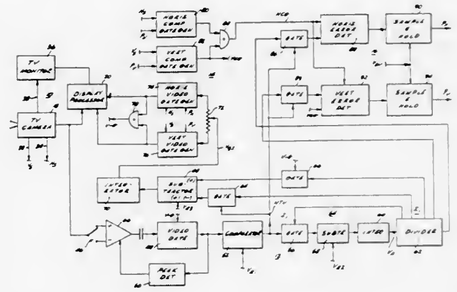
tracking means connected between said camera and said source for keeping the energy center of said target image substantially coincident with the geometrical center of said window upon substantial alignment thereof by said acquisition means, said tracking means including a first pair of measuring circuits responsive to a first pair of timing pulses from said gating means for detecting the energy content of said input signal in respective halves of a beam sweep in one of said directions across said window, a second pair of measuring circuits responsive to a second pair of timing pulses from said gating means for detecting the energy content of said input signal in respective halves of a beam sweep in the other of said directions across said window, first comparison means connected to said first pair of measuring circuits for generating a first error signal proportional to a difference in said energy content on a beam sweep in said one of said directions, second comparison means connected to said second pair of measuring circuits for generating a second error signal proportional to a difference in said energy content on a beam sweep in said other of said directions, and circuitry for applying said error signals to said source for further modifying said scanning voltage.

3,953,670

ADAPTIVE VIDEO CENTROID TRACKER

Paul R. Prince, Manhattan Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 28, 1970, Ser. No. 102,247
Int. Cl.² H04N *7/00*; **G01J** *1/20*
U.S. Cl. 178—6.8 **14 Claims**



1. A system for determining the relative angular position of an object, said system comprising:

transducer means for sequentially producing first signals representative of the relative intensity of increments of area of the received image of said object and a surrounding scene;

means for adaptive gating said first signals as a function of the image area, to form second signals;

means for processing said second signals to form third signals the time duration of which is representative of the time duration of associated increments of area of said image and the amplitude of which is an inverse function of the image area; and

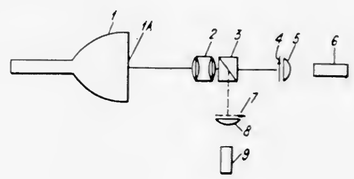
error detector means for processing said third signals to provide output signals representative of the relative angular position of the centroid of said image.

3,953,671

FEED-BACK CIRCUIT FOR CONTROLLING THE DISTANCE BETWEEN VERTICALLY DISPLACED SCANNING RASTERS PRODUCED BY A CATHODE RAY TUBE

John David Millward, Hitchin, England, assignor to The Rank Organisation Ltd., London, England

Filed Sept. 27, 1974, Ser. No. 509,961
Claims priority, application United Kingdom, Sept. 27, 1973, 45273/73
Int. Cl.² H04N *5/36*
U.S. Cl. 178—7.2 **5 Claims**



1. A flying spot film scanning system comprising a cathode ray tube for producing a pair of vertically displaced scanning rasters corresponding to odd and even television fields, an optical system for focussing an image of the rasters in the plane of a film to be scanned, means for diverting a proportion of the light travelling between the cathode ray tube and the film into a secondary light path to form a secondary image of the rasters, means for measuring the vertical position of each

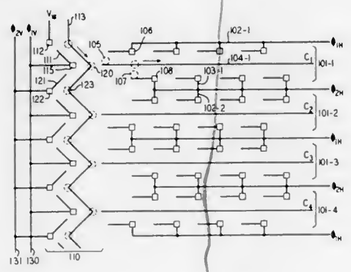
secondary raster image, means for comparing the measured vertical positions of the secondary raster images to provide a control signal dependent upon the vertical distance between the secondary raster images, and a feed-back circuit coupled to the vertical deflection circuit of the cathode ray tube to adjust the vertical distance between the rasters in accordance with the control signal.

3,953,672

GRAY SCALE FOR PLANAR GAS DISCHARGE DISPLAY DEVICES

William Herbert Ninke, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 4, 1974, Ser. No. 520,612
Int. Cl.² H04N 5/44
U.S. Cl. 178—7.3 D 10 Claims



1. A graphical display system comprising
at least one plasma discharge shift register having LM ordered stable discharge locations, consecutive sets of L of said locations defining individual resolution elements,
means for initiating a glow discharge at a first discharge location in each of said shift registers,
means for propagating a glow discharge through successive locations in said shift registers, said means for propagating comprising means for time modulating said propagation so that a discharge is maintained at one or more discharge locations in a resolution element for a controlled period relative to that at which a glow is maintained at the remaining locations in that resolution element.

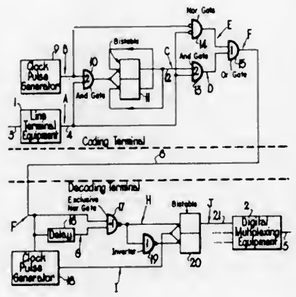
3,953,673

DIGITAL DATA SIGNALLING SYSTEMS AND APPARATUS THEREFOR

Richard Munro Dorward, Coventry, England, assignor to The General Electric Company Limited, London, England

Filed Oct. 16, 1974, Ser. No. 515,430
Claims priority, application United Kingdom, Oct. 16, 1973, 48145/73
Int. Cl.² H03K 13/24; H04L 25/00
U.S. Cl. 178—68 14 Claims

9. Coding apparatus comprising:
A. an input path to carry an input signal of binary form constituting signals of a first predetermined value and signals of a second predetermined value,
B. an output path to carry an output signal of binary form, and
C. coding means connected between the input path and the output path to derive from each input signal binary digit a pair of coded signal binary digits which are fed to the output path,
I. each pair of coded signal binary digits
i. for the first input signal binary digit of said first predetermined value being two coded signals digits of different predetermined binary values, and
ii. for the input signal binary digit of said second predetermined value being alternately two pairs of coded signal digits of which the first pair of coded signal digits constitutes two digits of the same predetermined binary value and the second pair of coded



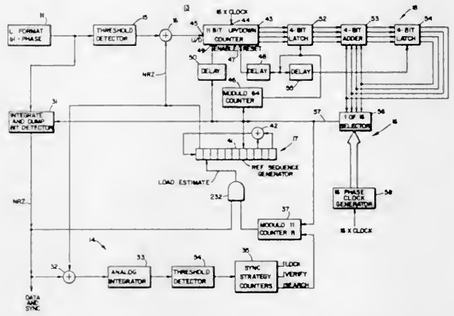
signal digits constitutes two digits of the other predetermined binary value.

3,953,674

TELEMETRY SYNCHRONIZER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Carroll T. Pardoe, Woodbine, Md.

Filed Apr. 4, 1975, Ser. No. 565,290
Int. Cl.² H04L 7/00
U.S. Cl. 178—69.5 18 Claims



1. Apparatus for phase locking an L format biphase input signal having a pseudorandom sequence comprising a source of said input signal, a feedback shift register for deriving a non-return to zero output signal having the same sequence as the input signal, means for comparing said input and output signals to derive a binary error signal having first and second levels respectively indicative of the input and output signals having the same and different binary levels, filter means responsive to the error signal for deriving a control signal, a clock source coupled to a clock input of the shift register, and means for controlling the occurrence time of transitions derived from the clock source coupled to the clock input in response to the control signal.

3,953,675

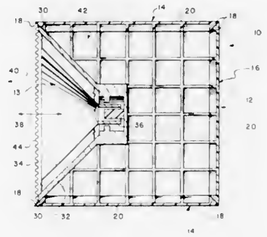
AUDIO SPEAKER SYSTEM

Burton A. Babb, Dallas, Tex., assignor to Babbco, Ltd., Dallas, Tex.

Filed May 8, 1972, Ser. No. 250,899
Int. Cl.² H04R 1/02; G10K 11/00
U.S. Cl. 179—1 E 10 Claims

1. A loud speaker system comprising:

a loud speaker having a moving member for generating acoustic energy;
enclosure means forming, together with the moving member, a substantially air-tight enclosure having a predetermined volume, the enclosure means including at least one edge supported panel comprised of a skin means and stiffening means for stiffening the panel; and



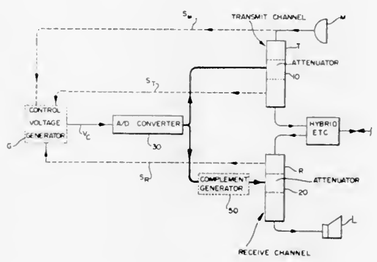
said stiffening means providing sufficient stiffness to said skin means to substantially reduce the transmission of longer wave length acoustic energy and providing edge supported sub-panels having a sufficiently small mass per unit area to transmit shorter wave length acoustic energy.

3,953,676

DIGITAL CONTROL OF A LOUDSPEAKING TELEPHONE SYSTEM

Russel William Brown, Ottawa, Canada, assignor to Northern Electric Company, Limited, Montreal, Canada

Filed Dec. 12, 1974, Ser. No. 531,823
Int. Cl.² H04M 9/08
U.S. Cl. 179—1 HF 13 Claims



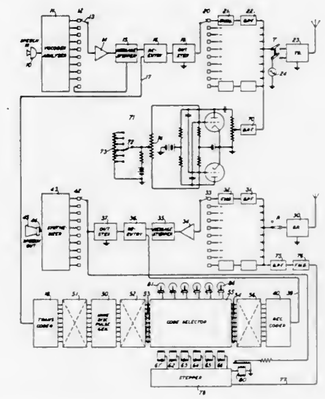
6. In a loudspeaking telephone system having a transmit and a receive channel and means for generating a control voltage in response to signal levels in said transmit and receive channels, the improvement comprising analog-to-digital converter means responsive to said control voltage for coding the same into a digital representation; means responsive to the analog-to-digital converter means for generating the complement representation of said digital representation; and two variable attenuators, one adapted to respond to said digital representation and the other adapted to respond to the complement representation, a predetermined one of the two attenuators being in the receive channel and the other in the transmit channel.

3,953,677

KEY SIGNALING SYSTEM WITH MULTIPLE PULSE GENERATORS

Danforth K. Gannett, Mountain Lakes, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 10, 1945, Ser. No. 592,964
Int. Cl.² H04K 1/02
U.S. Cl. 179—1.5 R 12 Claims



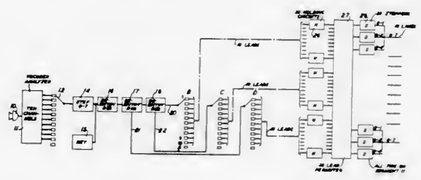
1. In a secret signaling system, means at a station for providing a plurality of different keys for use one at a time for enciphering signals to be sent from said station, means at said station when transmitting for sending a concomitant indication identifying the particular key that is in use in transmitting, means at a station when receiving secret signals and key indications from another station for providing a plurality of different keys which are duplicates of those provided at the distant sending station, means responsive to the received key indication for automatically selecting the appropriate key for deciphering the received secret signals, and means for deciphering said received secret signals by means of said selected key.

3,953,678

SPEECH COMPONENT KEY SIGNALING SYSTEM WITH CODE COMBINATIONS

Danforth K. Gannett, Mountain Lakes, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 10, 1945, Ser. No. 592,965
Int. Cl.² H04L 9/02
U.S. Cl. 179—1.5 R 9 Claims



1. In secret telephony, means to analyze input speech waves into low frequency speech-defining currents simultaneously existent in a plurality of separate circuit paths, means to add secret key currents to each speech-defining current to produce summation currents, means for periodically measuring the magnitude of each summation current, means to indicate the magnitudes of said currents by code combinations of pulses of equal number having fixed amplitudes, means to impress each pulse of the code combinations existing at any

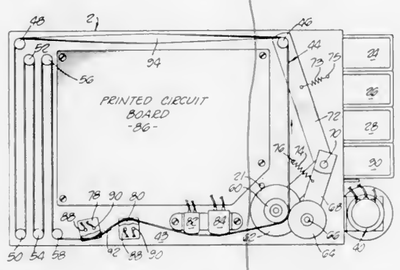
one time upon a different individual line, and means to continually alter the order of the lines upon which said pulses are impressed.

3,953,679

TELEPHONE ANSWERING DEVICE UTILIZING MOBIUS LOOP ACTIVATING SWITCH

Neal Buglewicz, Rolling Hills, Calif., assignor to Phone-Mate, Torrance, Calif.

Filed Feb. 11, 1974, Ser. No. 441,505
Int. Cl.² H04M *1/64;* **G11B** *15/06*
U.S. Cl. 179—6 R **9 Claims**



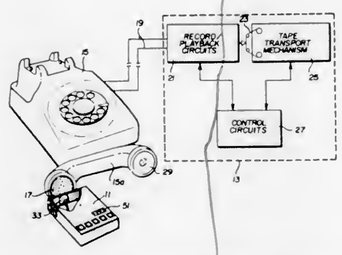
1. A telephone answering device comprising:
a. A first recording tape for recording an incoming message;
b. a play back head and a record-erase head associated with said first recording tape;
c. a second recording tape for recording and playing back a pre-recorded message, said second recording tape comprising a closed loop said closed loop having a twist therein so as to form a Mobius loop, said pre-recorded message recorded on one surface of said loop;
d. a play back head and a record-erase head associated with said second recording tape;
e. a tone generating switch, said tone generating switch activated by a switching means associated with said second recording tape on one revolution of said second recording tape; and
f. a power shut off switch, said power shut off switch activated by said switching means associated with said second recording tape on a second revolution of said second recording tape.

3,953,680

REMOTE CONTROL TRANSCRIBING DEVICE

Joseph J. Zimmermann, Elm Grove, Wis., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 4, 1974, Ser. No. 529,328
Int. Cl.² G11B *5/86;* **H04M** *11/10*
U.S. Cl. 179—6 E **7 Claims**



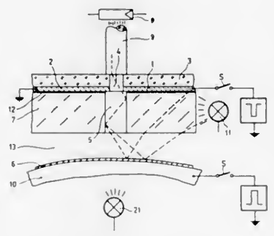
1. Remote control transcribing apparatus for controlling a remotely located tape recorder apparatus and retrieving message information therefrom wherein said tape recorder apparatus is operable in a high speed rewind mode and said transcribing apparatus includes tape transport means for transporting a magnetic recording tape in a forward direction and a reverse direction past a record/playback head, said transcribing apparatus comprising:
means for generating a tone of predetermined frequency and selectively applying said tone to said remote tape recorder to switch said remote tape recorder into said high speed rewind mode to play back said message information in reverse;
means for coupling said reverse message information to said record/playback head,
said record/playback head magnetically recording said reverse message information on said tape at high speed in said forward direction;
means for switching said tape transport means to transport said tape in said reverse direction at low speed; and
means coupled to said record/playback head for playing back said reverse message information as said tape is transported in said reverse direction.

3,953,681

COMBINED RECORDING AND SCANNING DEVICE FOR FACSIMILE TRANSMISSION

Jürgen Schramm, Norderstedt, and Gerhard Krekow, Schenefeld, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 2, 1974, Ser. No. 485,205
Claims priority, application Germany, July 4, 1973, 2333952
Int. Cl.² H04N *1/24*
U.S. Cl. 178—6.6 A **7 Claims**



1. Combined recording and scanning device for facsimile transmission using optical scanning and contactless electrostatic recording by an indirect charge carrier source, comprising an electrode system in the form of co-planar strip-shaped conductors (1, 2) having facing ends defining a gap (4), an insulating sheet (7) which is arranged beneath and parallel to the plane of the said conductors and is formed with a bore (5) which extends at right angles to said plane at the location of the gap (4), and a back electrode (10) which is disposed beneath the sheet and spaced therefrom by a distance (13), the device further including an electrooptical scanning element (8) adapted to intercept light incident on the gap (4) through the bore.

3,953,682

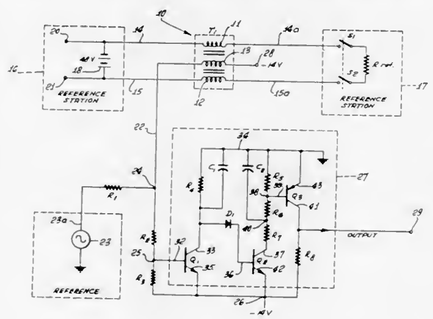
LOOP CURRENT DETECTOR

Douglas Lee Daniels, Irvine, and Garrold W. Ochs, Orange, both of Calif., assignors to The Anaconda Company, New York, N.Y.

Filed Nov. 11, 1974, Ser. No. 522,859
Int. Cl.² H04M *3/00*
U.S. Cl. 179—18 FA **6 Claims**

1. In a loop current detector,

a. a saturable reactor having first, second and third windings, the first and second windings connected in a loop circuit to pass DC current,
b. resistance connected with the third winding to form therewith a voltage divider, and an oscillator having an AC output connected with the divider, characterized in that the AC voltage drop across the third winding is relatively high when no DC current flows through said loop circuit, and said drop is relatively low when DC current flows through said circuit, and
c. switching means having first and second modes of operation with associated outputs, and connected with said voltage divider to be responsive to said oscillator output when said AC voltage drop is relatively high to be switched into said first mode of operation with one associated output, and to be non-responsive to said oscillator output when said AC voltage drop is relatively low to be switched into said second mode of operation with a second associated output, said switching means including semiconductor devices one of which is connected with said divider at a point between said resistance and said third winding, there also being a source of DC voltage connected with said divider and said switching means to establish said one output at a corresponding voltage level,
d. one portion of said loop circuit connected with certain ends of the first and second windings and another portion of the loop circuit connected with other ends of the first and second windings, the loop circuit including switch means in said one portion of the loop to open and close said circuit, and a DC source in said other portion of the loop.



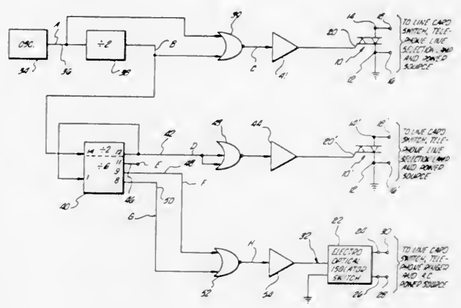
3,953,683

INTERRUPTER FOR TELEPHONE SYSTEMS

Bruce C. Gabrielson, Huntington Beach, Calif., assignor to San/Bar Corporation, Santa Ana, Calif.

Filed Oct. 29, 1974, Ser. No. 518,583
Int. Cl.² H04M *3/02*
U.S. Cl. 179—84 A **12 Claims**

1. In an interrupter for alternately enabling and blocking the flow of current in the circuits between a plurality of pairs of terminals to control the visual and audible indicators in key telephone sets, the combination which comprises:
switching means individually connected between each pair of terminals, each switching means including a control circuit and being arranged to permit the flow of current in the circuit between the respective pair of terminals in response to the application of a first control signal to the control circuit thereof and to block the flow of current in the respective circuit between the terminals in the absence of the first control signal;
oscillator means for generating an a.c. reference signal having a preselected frequency; and
control means coupled between the oscillator means and each of the switching means for applying a control signal to each switching means at a predetermined frequency and for a predetermined time period for controlling the frequency and time period when the circuit between each respective pair of terminals is enabled.

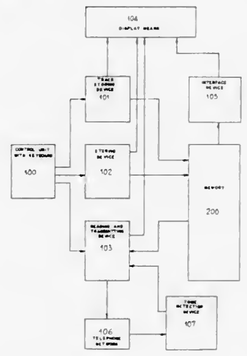


3,953,684

STATIC MEMORY PULSE TRANSMITTER

Patrick Jossier, Paris, France, assignor to Peritel, Peripheriques de Telephone (S.A.R.L.), Boulogne, France

Filed Nov. 19, 1974, Ser. No. 525,109
Claims priority, application France, Nov. 26, 1973, 73.42024
Int. Cl.² H04M *1/26*
U.S. Cl. 179—90 K **8 Claims**



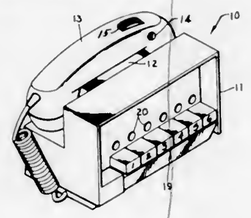
1. A static memory pulse transmitter for storing coded call numbers and transmitting said coded call numbers on a telephone line comprising
a static memory having a plurality of memory cells divided into a plurality of tracks, each track including a set of memory cells;
means for addressing a preselected track of said memory;
a keyboard for inserting numbers and controlling the operation of said means;
a first counter operatively associated with a track in which a call number is to be stored, said first counter being incremented in response to each actuation of a digit on said keyboard;
a second counter operatively associated with a track from which a call number is to be read, said second counter being incremented at a rate not greater than the conventional rate of dial pulses on a telephone line; and
comparison means for determining that the rate of incrementing said second counter is not greater than the rate of incrementing said first counter.

3,953,685

MULTIPLE-CHANNEL DICTATE STATION APPARATUS WITH AUTOMATIC RELEASE OF SELECTED CHANNEL

Fred C. Bolick, Jr., Atlanta, Ga., assignor to Lanier Electronic Laboratories, Inc., Atlanta, Ga.

Filed Nov. 6, 1974, Ser. No. 521,208
Int. Cl.² G11B 15/06; H04M 11/10
U.S. Cl. 179—100.1 DR 11 Claims



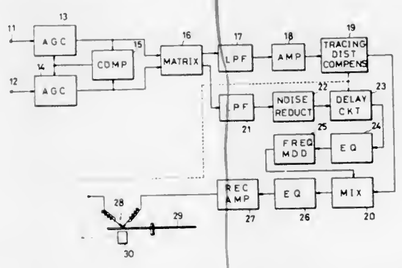
1. Multiple line control apparatus for selective interconnection with any one of plural available circuits, comprising:
a circuit utilization means which is selectively operable;
a plural number of separately selectively actuatable switch means each of which is operative to connect a corresponding input circuit to said circuit utilization means;
disconnect means operatively associated with each of said switch means to disconnect any previously-actuated one of said switch means in response to actuation of another one of the switch means, so that selection of a particular said circuit causes any previously-selected circuit to be relinquished;
means operative to maintain said selected switch means in said actuated state during selected operation of said utilization means; and
means responsive to termination of said operation of said utilization means to release said maintaining means from actuation maintaining operation independently of said operation of said disconnect means.

3,953,686

MULTICHANNEL RECORD DISC RECORDING SYSTEM

Kohei Sasamura, Sagamihara, and Yukinobu Ishigaki, Yamato, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 22, 1974, Ser. No. 462,648
Claims priority, application Japan, Apr. 27, 1973, 48-48809
Int. Cl.² G11B 3/00, 3/74
U.S. Cl. 179—100.4 ST 11 Claims



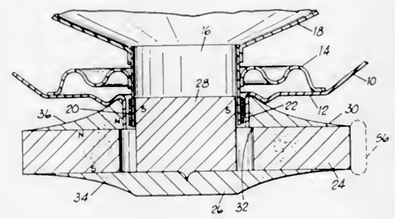
1. A multichannel record disc recording system comprising:
a plurality of automatic gain control means for respectively controlling the gains of signals of a plurality of channels to produce respective output signals;
operational means responsive to the output signals of said automatic gain control means to produce, as output, a sum signal and a difference signal;
means for producing control signals responsive to the phases and levels of the output signals of said automatic gain control means;
means for applying said control signals to said automatic gain control means; and
means for angle modulating the output difference signals of said operational means and multiplexing the output difference signal on the output sum signal of the same operational means thereby to record the multiplexed difference and sum signals on a record disc.

3,953,687

MAGNETIC STRUCTURE FOR MOVING VOICE COIL LOUDSPEAKER

Gordon S. Carbonneau, Grand Rapids, Mich., assignor to Carbonneau Industries, Inc., Grand Rapids, Mich.

Continuation of Ser. No. 412,554, Nov. 5, 1973, abandoned.
This application Nov. 29, 1974, Ser. No. 528,467
Int. Cl.² H04R 9/02
U.S. Cl. 179—115.5 R 3 Claims



1. A magnet assembly for a permanent magnet dynamic transducer having a coil axially reciprocable in a narrow annular gap between a central straight cylindrical pole piece of magnetically conductive material and a surrounding first end plate of magnetically conductive material, the magnetic circuit of said gap being completed by a flat annular permanent magnet surrounding said pole piece in radially spaced relation thereto and being in lapped relation to said first end plate, and a second end plate of magnetically conductive material lapped against the opposite end of said magnet and extending radially inwardly of the interior surface of the magnet into magnetically conductive contact with the opposite end of said pole piece from said gap,
said end plates being characterized by axially exterior ends that taper from thin peripherial edges in lapped relation adjacent to the peripherial edges of the ends of said magnet with the plates increasing in axial thickness in concavely curved surfaces radially inwardly to annular portions of maximum thickness located radially inwardly of the radially inner surface of said annular magnet,
the tapers on said end plates being such as to produce cross sectional areas in each plate taken radially and axially of the tapers which are less than 50 percent of similar cross sectional areas of untapered plates having the same maximum axial and radial dimensions.

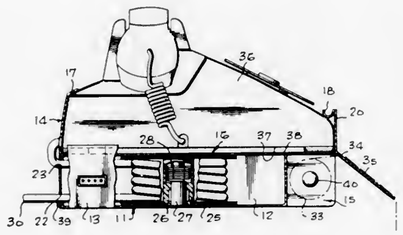
3,953,688

CORD REEL AND WRITING PAD ATTACHMENT FOR TELEPHONES

Dominica R. Rocha, 8862 Cadallic Ave., Los Angeles, Calif. 90064

Filed Dec. 9, 1974, Ser. No. 530,510
Int. Cl.² H04M 1/21
U.S. Cl. 179—147 5 Claims

1. A telephone accessory combination for coiling a length of telephone cord and for providing a note paper and writing implement holder comprising:
a housing having an upper edge defining the entrance into an internal cavity;
a reel rotatably carried on said housing within said cavity;
spring means normally biasing said reel to coil said cord therearound;
a writing panel carried on said housing;
a supply of paper rotatably carried on said housing and within said cavity and having a length of paper extending across said writing panel;



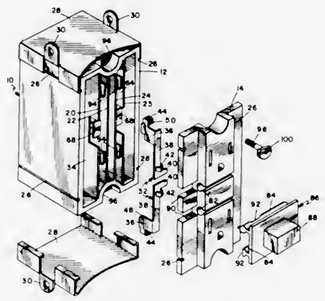
snap-lock fastener means detachably connecting said housing about its upper edge to a conventional telephone housing;
an end piece defining one end of said housing;
slots formed in said end piece for movably passing portions of said telephone cord; and
said fastener means including inwardly projecting elements carried on said end piece and said writing panel opposing each other in resilient relationship so as to snap-lock about the opposite ends of said telephone housing.

3,953,689

CONVERTIBLE SWITCH AND OUTLET ASSEMBLY

Louis Marrero, 13004 Via Del Valedor, Poway, Calif. 92129

Filed Oct. 16, 1974, Ser. No. 515,298
Int. Cl.² H01R 13/70
U.S. Cl. 200—51 R 6 Claims



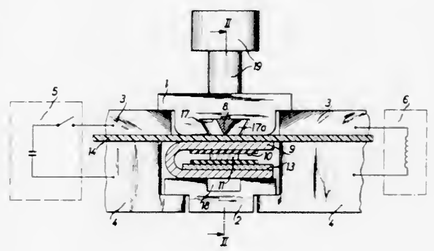
1. A switch assembly comprising:
a wiring box;
a stationary contact mounted in said wiring box and having terminal means for attaching a power wire;
a pair of contacts movably mounted in said wiring box, each having terminal means for connection with a wire and being selectively movable to a position in contact with said stationary contact and to a position spaced from said stationary contact;
each of said movable contacts having a projection mounted thereto, both of which projections extend in substantially the same direction;
said wiring box defining a pair of open-ended parallel channels adjacent respective ones of said projections;
a sliding toggle plate accessible from outside said wiring box and having a pair of parallel ribs mounted thereon, said ribs being engaged in respective ones of said channels;
each of said ribs having a relieved portion and bearing individually on a separate one of said projections, whereby by reciprocating said toggle plate said ribs alternately depress and release said projections such that said movable contacts alternately move between said contacting position and said spaced position;
said ribs being removably engaged in said channels whereby said toggle plate is removable from said wiring box to permit replacement with a different toggle plate or a pair of toggle plates each having a separate rib such that different switch configurations are achieveable with a single wiring box.

3,953,690

HIGH-CURRENT HIGH VOLTAGE SWITCH WITH INCISOR ELECTRODE

Heinrich Korr, Aachen, Germany; Douwe Maas, Hilversum, Netherlands, and Gerhard Telemann, Julich, Germany, assignors to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Germany

Filed Mar. 13, 1975, Ser. No. 558,070
Claims priority, application Germany, Mar. 14, 1974, 2412261
Int. Cl.² H01H 39/00
U.S. Cl. 200—61.08 5 Claims

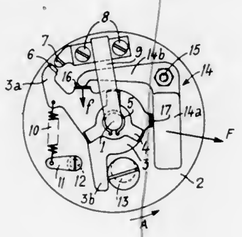


1. In a rapid-action, high-voltage, high-current switch which comprises a switching electrode formed with a longitudinally extending groove having a mouth narrower than its base, a counterelectrode spaced from said switching electrode, a U-section sheet-aluminum body disposed between said electrodes with said first shank in contact with said counterelectrode and a second shank juxtaposed with said switching electrode, an insulating foil interposed between said second shank and said switching electrode, and means between said shanks for explosively driving said second shank into said groove to effect electrical connection between said body and said switching electrode by piercing of said insulating foil, the improvement which comprises a longitudinally extending continuous prismatic bar converging in the direction of said body to an edge adapted to penetrate said foil, said bar being disposed in said groove, said groove extending beyond said body and said bar having a length equal to the width of said second shank along said groove.

3,953,691
INERTIA SWITCH FOR DETECTING IMPENDING LOCKING OF A ROTARY MEMBER, SUCH AS A VEHICLE WHEEL

Albert Grosseau, Chaville, France, assignor to Societe Anonyme: Automobiles Citroen, Paris, France

Filed July 22, 1974, Ser. No. 490,667
Claims priority, application France, July 23, 1973, 73.26921
Int. Cl.² H01H *35/10*; **B60T** *8/00*
U.S. Cl. 200—61.46 **8 Claims**



1. An inertia switch having a variable operating threshold for detecting impending locking of a rotary member, such as a vehicle wheel, comprising:

a shaft connected for rotation by said rotary member;

a flywheel idly mounted on said shaft;

a stop member carried by said flywheel;

a flywheel drive element, mounted on said shaft for rotation therewith, cooperable in the direction of rotation with said stop member to drive said flywheel in said direction of rotation;

two electrical contacts of which one is mounted on said drive element whilst the other is mounted on said flywheel, said contacts normally being spaced apart when the drive element is engaged with said stop member on the flywheel;

resilient return means coupled between said flywheel and said drive element, the effect of which tends to maintain the said stop member in contact with said drive element, and additional return means which include a weighted lever pivotally mounted by one of its ends on said flywheel and about an axis parallel to and spaced from the shaft of the device, said lever comprising means cooperating with said drive element by which at least a part of the centrifugal force to which the lever is subjected in rotation is transmitted to said drive element to increase the force of contact of said drive element on said stop member carried by said flywheel.

3,953,692
PRESSURE RESPONSIVE SWITCH FOR CONVERTING PRESSURE VARIATIONS TO ELECTRICAL VARIATIONS

Matsuo Amano; Seiko Suzuki; Sigeyuki Kobori, all of Hatachi, and Ichiro Kimura, Mito, all of Japan, assignors to Hitachi, Ltd., Japan

Filed July 9, 1974, Ser. No. 486,744
Claims priority, application Japan, July 13, 1973, 48-78427
Int. Cl.² H01H *35/34*
U.S. Cl. 200—83 P **23 Claims**

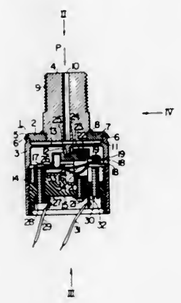
1. In a pressure system of the type including first means for varying pressure of a fluid and second means for activating said first means, a pressure responsive switch means for controlling said second means, the improvement wherein said pressure responsive switch means comprises:

a hollow casing;

a switch body threadedly supported within said hollow casing;

snap spring means including a spring member having a first end secured to said switch body and a second movable end, a movable contact secured to said second movable end, and means for effecting snap action of said spring member such that said movable contact is selectively moved between first and second positions;

an ON contact and an OFF contact disposed respectively at said first and second positions such that said movable contact is selectively moved to be in contact with said ON contact and said OFF contact respectively;



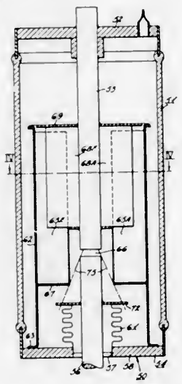
pressure responsive means for transmitting a predetermined applied pressure to a predetermined portion of said spring member to actuate said means for effecting snap action; and

means for adjusting said predetermined applied pressure be variation of the positional relationship between said hollow casing and said switch body threadedly supported therein.

3,953,693
VACUUM SWITCH WITH INTEGRATED CAPACITOR SHIELD

Herbert M. Pflanz, Westwood, Mass., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sept. 9, 1974, Ser. No. 504,335
Int. Cl.² H01H *33/66*
U.S. Cl. 200—144 B **3 Claims**



1. In a vacuum switch having an integral capacitor;

an insulating cylindrical envelope having its opposite ends hermetically sealed by metallic end caps;

a stationary contact rod extending through the first of said metallic end caps into said envelope, said stationary contact rod being supported by said end cap in vacuum sealed relationship;

a movable contact rod extending through the second of said metallic end caps, said movable contact rod being operably supported by the second of said end caps in vacuum sealed relationship for axial movement into and out of electrical engagement with said stationary contact rod;

a bellows secured in vacuum tight relationship around said movable contact rod and to said second metallic end cap to provide for limited axial movement of said movable contact rod and ensuring the integrity of the envelope;

a first group of plates carried by said stationary contact rod, each plate of said first group of plates being operable to serve as an element of a capacitor;

a second group of plates fixed with respect to said first group of plates and carried by said second metallic end cap but not in electrical contact with said movable contact rod and extending between said plates of said first group of plates, said plates of said second group of plates serving as another element of a capacitor,

said plates of said first and second group of plates being electrically interrelated to provide impedance in parallel with said contact rods for voltage distribution in the switch;

a tubular shield surrounding said contact rods in concentric relationship, said tubular shield being secured to said second end closure;

a circular lower deflector plate having an axial opening disposed in said tubular shield and around said movable contact in concentric relationship, said circular lower deflector plate being disposed in abutting and secured engagement with the lower ends of the plates of said second group of plates;

a bellows plate mounted about and secured in vacuum tight relationship to said movable contact rod said bellows plate being disposed adjacent to the inner end of said bellows and being of a diameter which is greater than the diameter of said bellows to thereby serve as an umbrella to deflect arc particles from striking said bellows, said bellows plate diameter being sufficient so that a line-of-sight path, which is tangent to the contact edge of said movable contact rod when in open position and also tangent to the lower inner edge of said plates of said second group of plates, intersects the surface of said bellows plate inwardly of the edge thereof;

said circular lower deflector plates serving to accumulate arc particles to prevent a buildup of arc particles on the second end cap and said tubular shield prevents arc particles which escape the circular lower deflection plate from reaching said insulating envelope and said circular lower deflector plate also reinforces the plates of said second group of plates to maintain them in operative position.

3,953,694
MAGNETIC-BLAST ARC EXTINGUISHING DEVICE HAVING PERMANENT MAGNETS

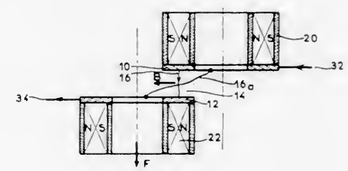
Georges Bernard, Saint-Egreve, and Pierre Montanier, Grenoble, both of France, assignors to Merlin Gerin, Grenoble, France

Filed Aug. 12, 1974, Ser. No. 496,710
Claims priority, application France, Aug. 30, 1973, 73.31481
Int. Cl.² H01H *33/18, 9/44*
U.S. Cl. 200—147 A **4 Claims**

1. An arc extinguishing device comprising:

a pair of electrode means separable to draw an arc therebetween and having current-transfer branches engaging each other in the closed position of said electrode means to define a generally X-shaped contact zone, said branches forming in the open position of said electrode means two pairs of diverging arcing contacts for the roots of said arc; and

a pair of permanent magnet means disposed on either side, respectively, of the interval separating said electrode means in the separated position thereof to produce in said interval additive magnetic fields directed substantially transversely of the initial direction of said arc to magnetically blast said arc causing said roots to travel rapidly

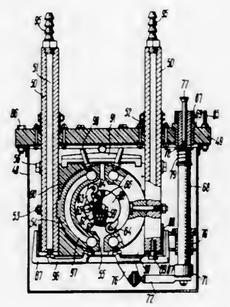


along one of said pairs of diverging arcing contacts thereby lengthening said arc.

3,953,695
HEAVY CURRENT SWITCH

Osip Borisovich Bron, Michurinskaya ulitsa 1, kv. 35; Valentin Danilovich Molchanov, Piskarvesky prospekt, 19, kv. 66, both of Leningrad; Lev Notovich Shifrin, ulitsa Zelenodolskaya 17, korpus 3, kv. 31, Moscow, and Adolf Rudolfovich Freivald, prospekt Veteranov 25, kv. 62, Leningrad, all of U.S.S.R.

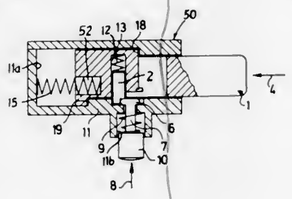
Filed July 26, 1973, Ser. No. 383,304
Int. Cl.² H01H *33/68, 9/52*
U.S. Cl. 200—150 C **2 Claims**



1. A heavy current switch comprising two stationary contact systems made in the form of half-cylinders facing each other and having water-cooling channels, said systems forming two inter-contact gaps; a base supporting said contact systems; a shaft coupled with said base; a movable contact system secured on said shaft in the cylindrical space defined by said stationary contact systems and carrying two groups of insulated contact rollers arranged at the opposite sides of said movable contact system and closing or breaking the inter-contact gaps between the stationary contact systems.

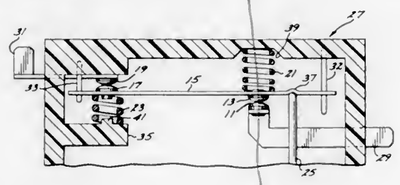
2. A heavy current switch as claimed in claim 1, wherein the space between the stationary contact systems and the movable contact system is filled with oil.

3,953,696
ACTUATOR CONSTRUCTION HAVING RELEASABLE LOCK IN ACTUATED AND DEACTUATED POSITIONS
Christian Reimann, Rottweil; Hugo Weber, Gosheim, and Ewald Ueth, Rietheim, all of Germany, assignors to J. & J. Marquardt, Germany
Filed July 12, 1974, Ser. No. 488,049
Claims priority, application Germany, July 14, 1973, 2335972
Int. Cl.² H01H *9/06*
U.S. Cl. 200—157 **4 Claims**



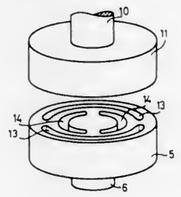
1. An actuator, comprising a housing having a housing bore with an opening, said housing having a stop surface along the bore, a push button actuator in the bore projecting through the opening and having a cavity, a lock bolt movable in the cavity and engaged in the deactivated position against said stop surface, lock bolt biasing means biasing said lock bolt into engagement with said stop surface, said housing having a recess, a release member movable in the housing recess and engageable with the locking bolt, said release member having a release button which projects out of the housing, said locking bolt being displaceable against said lock bolt biasing means out of engagement with the stop surface by said release member, said push button being displaceable along the housing bore to move to an actuated position when said locking bolt is disengaged from the stop surface, said actuator button including an extension, said extension being in a position in which it passes said release member when said actuating button is moved to an activated position, said release member being engageable behind said extension to block the return movement of said push button actuator.

3,953,697
DUAL FULCRUM SWITCH
Allen L. Teichert, Placentia, Calif., assignor to Robershaw Controls Company, Richmond, Va.
Filed Nov. 28, 1973, Ser. No. 419,806
Int. Cl. H01h *1/20*
U.S. Cl. 200—243 **6 Claims**



1. Dual fulcrum switch apparatus comprising:
a housing;
first and second fulcrum contacts mounted from said housing in substantially opposed relationship and spaced apart transversely out of alignment with one another;
an elongated electrically conductive lever blade interposed between said fulcrum contacts and including third and fourth contacts on the opposite extremities thereof and disposed on the opposite sides of said blade for engagement with said respective first and second fulcrum contacts;
biasing means engaged with said blade and urging said third and fourth contacts in opposite directions into engagement with said respective first and second fulcrum contacts; and
a switch actuator engaging said lever blade and operable upon actuation thereof to rotate said blade in one direction about said second fulcrum contact to break said first fulcrum and third contacts and further operable when said first fulcrum and third contacts are welded together to rotate said lever arm in said one direction about said third fulcrum contact to break said second fulcrum and fourth contacts.

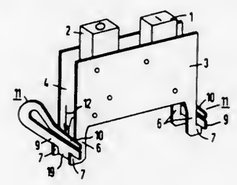
3,953,698
CONTACT SYSTEM FOR A VACUUM SWITCH
Hans Luttgert, Berlin, and Werner Kohler, Bentfeld, Holstein, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Sept. 26, 1974, Ser. No. 509,725
Claims priority, application Germany, Sept. 28, 1973, 2349569
Int. Cl.² H01H *1/06*
U.S. Cl. 200—279 **5 Claims**



1. A contact system for a vacuum switch comprising contact members movable relative to each other for electrically opening and closing the vacuum switch, each of the contact members including a carrier and a contact piece mounted on said carrier, and opening means formed in at least one of the contact pieces for guiding the arc drawn when the contact pieces are separated from each other, said opening means being a plurality of arc-like openings formed in said one contact piece, said arc-like openings being grouped into at least two sets, the first set of arc-like openings being arranged in a row along a first circular arc so that each two mutually adjacent ones of said arc-like openings conjointly define a space therebetween, and the second set of arc-like openings being arranged in a row along a second circular arc substantially concentric to said first circular arc, said second set of arc-like openings being arranged so that each two mutually adjacent ones of the same conjointly define a space therebetween, said arc-like openings of said first and second sets being situated along said circular arcs so as to cause each one of said arc-like openings to be adjacent and extend beyond a corresponding one of said spaces in the adjacent circular arc.

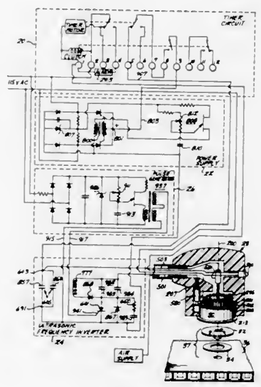
3,953,699
FASTENING ARRANGEMENT FOR THE SWITCHING MECHANISM CAGE OF AN ELECTRIC SWITCHING APPARATUS
Karl-Heinz Scheibel; Nikolaus Miheilowitsch, and Heinz Goerndt, all of Amberg, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Sept. 12, 1974, Ser. No. 505,385
Claims priority, application Germany, Sept. 13, 1973, 2346210
Int. Cl.² H02B *1/03*
U.S. Cl. 200—295 **8 Claims**
1. In an electric switch comprising a base fabricated of electrical insulation material and a switching mechanism cage including at least two side plates fastened to said base, the improvement comprising outwardly extending projection

members, disposed at opposite ends of at least one edge of each of said side plates, and each including a hook portion at the end thereof extending outwardly from the lateral edges of said plates, said base including recesses extending there-



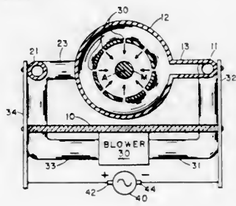
through receiving said projection members and said hook portions projecting from said base, and further comprising spring means, disposed between said base and said hook portions of said projection members, fastening said plates to said base.

3,953,700
INDUCTION HEATER APPARATUS AND SYSTEM
Melvin R. Sindt, Stanwood, Wash., assignor to The Boeing Company, Seattle, Wash.
Division of Ser. No. 331,724, Feb. 12, 1973, Pat. No. 3,845,268. This application Mar. 4, 1974, Ser. No. 448,111
Int. Cl.² H05B *5/08*
U.S. Cl. 219—10.79 **1 Claim**



1. A primary coupling coil having a high transformer ratio with respect to the conductor secondary for providing high peak currents in the conductor displaced a predetermined distance from the primary and embedded in a hot melt type structure in which the primary coil is disposed within a housing, said coil having first and second major faces and said coil comprising a plurality of turns of an insulated conductor having a rectangular cross-sectional area wound about a central axis having interleaved between selected turns after the first complete turn a plurality of spaced apart metallic heat conducting fins extending from a first of the two major faces of said primary coil into an air chamber within said housing, the second of said two major faces of said primary coil faced with a sheet of insulating material having electrical insulating quality, said housing including said air chamber and an air communicating channel having coupled thereto a source of air pressure for causing an air flow to be directed through said air communicating channel and against said plurality of spaced apart metallic heat conducting fins extending into said air chamber, and wherein said plurality of spaced apart metallic heat conducting fins are arranged concentrically about the central axis of the air flow path.

3,953,701
RADIO FREQUENCY HEATING AND VENTILATING ELECTRODE SYSTEM
Joshua G. D. Manwaring, Needham, Mass., assignor to Radio Frequency Co., Inc., Medfield, Mass.
Filed Mar. 24, 1975, Ser. No. 561,498
Int. Cl.² H05B *9/04*
U.S. Cl. 219—10.81 **4 Claims**



1. A radio frequency heating and ventilating electrode system for use with a radio frequency generator having outputs of different polarity for treating an extended length of rod-like electrically non-conducting material, comprising
a plurality of electrically conductive hollow loop electrode elements each having a plurality of inwardly directed apertures therethrough, said loop elements being generally coaxial with and parallel to one another and spaced from one another in superposed relationship in a direction perpendicular to the plane of said loop electrode elements along a common axis
said loop electrode elements forming two series of loop electrode elements arranged alternately with one another along said common axis
loop electrode element mounting means for each of said two series of loop electrode elements, including hollow, electrically conductive support members electrically connected to each of said loop electrode elements providing fluid communication thereinto, and
fluid supply means connected to said support members for providing fluid flow thereto,
said conductive support members being connected to different polarity outputs of said radio freqency generator to provide said different polarity outputs on said two series of ring electrode elements
for heating and ventilating rod-like, electrically non-conducting material positioned along said common axis within said loop electrode elements.

3,953,702
SOLID STATE MICROWAVE OVEN POWER SOURCE
Samuel H. Bickel, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 13, 1974, Ser. No. 497,152
Int. Cl.² H05B *9/06*
U.S. Cl. 219—10.55 R **6 Claims**
1. A solid state microwave power source comprising:
a. a microwave power producing means;
b. an equal phase microwave power divider coupled to the microwave power producing means for dividing equally the microwave power and matching the impedance of the microwave power producing means to the impedances of a plurality of solid state microwave amplifiers, said equal phase microwave power divider having a plurality of output ports;
c. a plurality of solid state microwave amplifiers coupled to the output ports of the equal phase microwave power divider for amplifying the microwave power; and

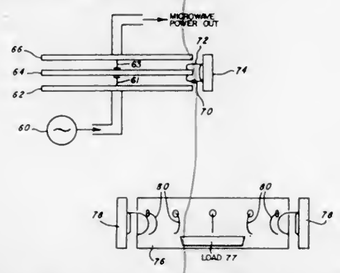
d. an equal phase power combiner connected to the plurality of solid state microwave amplifiers for combining the amplified microwave power output into a source of amplified microwave power, whereby a low microwave power source may be amplified into a substantially higher microwave power source.

3. A solid state microwave power source comprising:

a. a source of microwave energy;

b. a pair of spaced disc shaped conductor plates forming a first disc shaped waveguide;

c. an antenna centrally disposed within the first disc shaped waveguide, said antenna coupled to the source of microwave energy for transmitting the microwave energy through the waveguide;



d. a first plurality of antennas positioned adjacent the circumference of the first disc shaped waveguide for receiving microwave energy arriving with equal phase at the circumference of the first disc shaped waveguide;

e. a plurality of solid state microwave power amplifiers coupled to the first plurality of antennas for amplifying the microwave energy;

f. a third disc shaped conductor coacting with one of the pair of spaced disc shaped conductors to form a second disc shaped waveguide; and

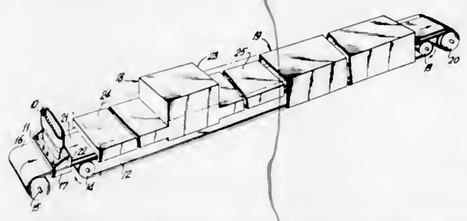
g. a second plurality of antennas coupled to the plurality of solid state amplifiers, said second plurality of antennas positioned in the second disc shaped waveguide adjacent its circumference for transmitting the amplified microwave power energy to the center of the second disc shaped waveguide.

3,953,703

METHOD FOR DRYING CERAMIC TAPE

Steven Hurwitt, Park Ridge, N.J., assignor to Materials Research Corporation, Orangeburg, N.Y.

Filed Oct. 3, 1974, Ser. No. 511,673
Int. Cl.² H05B *9/06*
U.S. Cl. 219—10.55 M **3 Claims**



1. In a process for manufacturing ceramic products of the type that includes mixing finely ground ceramic material with a volatile solvent and a binder to form a slip, distributing the slip in a layer onto a continuously moving surface, conveying the ceramic layer on the moving surface through a drying chamber, circulating a flow of heated air through the drying chamber for evaporating the solvent to produce a dry ceramic tape, the improved method of drying the slip layer comprising the sequential steps of:

subjecting the layer of slip to ultra high frequency electromagnetic energy substantially evenly distributed along the length of the moving tape in a region adjacent to the entrance of the drying chamber, the intensity of the electromagnetic energy being on the order of 1 watt per square inch and the length of distribution of the electromagnetic energy being less than the length of the drying chamber but being sufficient to heat the slip uniformly to the evaporation temperature of the solvent without boiling the solvent, and

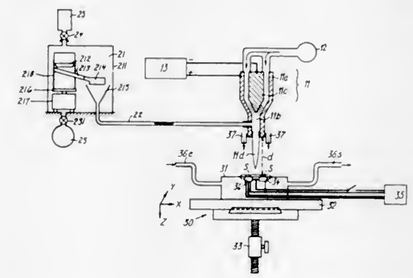
completing the evaporation of the solvent from the slip only by the circulation of heated air as the slip is conveyed through the drying chamber.

3,953,704

COATING APPARATUS

Jean Bejat, 4, rue Antoine Petit, 92260 Fontenay-aux-Roses, France; Michel Braguier, 11, rue de la Planche, 75007 Paris; Roger Tueta, 40, rue Cavendish, 75019 Paris; Raoul Vistosi, 54, rue de Meaux, 93140 Bondy; Maurice Verna, 14, rue du Docteur le Thiere, 27000 Evreux; Gerard F. Aubin, 8, rue Corneille, 27000 Evreux, and Christian Naturel, 9, rue Pierre de Coubertin, 27000 Evreux, all of France

Filed Apr. 5, 1974, Ser. No. 458,126
Claims priority, application France, Apr. 5, 1973, 73.12323
Int. Cl.² C23B *13/12*
U.S. Cl. 219—76 **2 Claims**



1. Apparatus for depositing a fluidized metal layer on a ceramic substrate, comprising:

a plasma torch having a cathode, anode and an arc therebetween at its outlet and a source of plasmagenic gas at its inlet selected from the group consisting of helium, argon, hydrogen, nitrogen, and mixtures enabling an outlet speed of plasmagenic gas of at least 100 m/s;

a source of powdered metal;

an adjustable delivery distributor fed from a plasmagenic gas source enabling a fine metallic powder from said powder metal source containing hardly any agglomerates to be injected into the plasmagenic gas by said plasmagenic gas acting as a fluidizing carried gas;

said distributor fitted with a sieve, spout, vibrating means, and delivery duct;

an adjustable substrate holder means, whose distance from the anode at the outlet of the torch is adjustable;

means to move the substrate holder means in a first direction;

means to move the substrate holder means in a second direction transverse to the first direction;

mounting means for the substrate holder means;

the substrate holder means being mounted for movement in said two mutually transverse directions to that the substrate is swept by the plasma flame of the torch;

resistance heating means in thermal contact with said substrate holding means for controlling the temperature of the substrate;

means adjacent the anode of said plasma torch for blowing air onto the substrate; and,

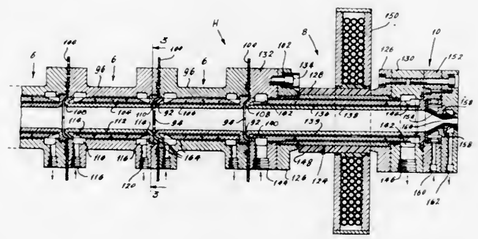
circulating liquid cooling means in said substrate holder means for cooling the substrate.

3,953,705

CONTROLLED ARC GAS HEATER

James H. Painter, Winfield, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Sept. 3, 1974, Ser. No. 502,620
Int. Cl.² B23K *5/00*
U.S. Cl. 219—121 P **9 Claims**



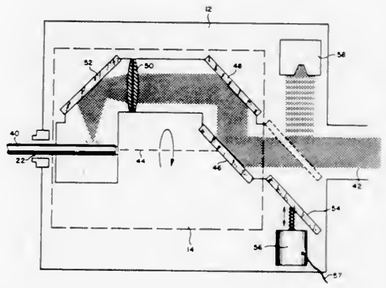
1. An arc gas heater comprising: an injector unit having an enlarged chamber of circular cross section therein and means for injecting primary gas into the chamber at the periphery thereof; a tubular rear electrode attached to the injector unit and projecting rearwardly therefrom with the hollow interior of the electrode opening into the chamber, the diameter of the electrode being substantially less than the diameter of the chamber; a dielectric element located between the rear electrode and the injector unit to electrically isolate the rear electrode for the injector unit; a plurality of interelectrode segments arranged one after the other and projecting forwardly from the injector unit, the interelectrode segments having hollow interiors which define a constrictor passage which communicate with the chamber and axially aligns with the tubular rear electrode, the diameter of the constrictor passage being substantially less than the diameter of the chamber in the injector unit and also substantially less than the length of each interelectrode segment, the diameter of the constrictor passage further being substantially constant throughout its length so that gas will flow through the constrictor passage at a relatively high and substantially constant pressure; a front electrode attached to the forwardmost interelectrode segment and having a hollow interior which aligns with the constrictor passage, the hollow interior of the front electrode being substantially the same diameter as the constrictor passage so as to form a continuation of the constrictor passage; a nozzle located at the forward end of the tubular front electrode and having a throat which is axially aligned with the constrictor passage, the throat having a diameter which is substantially less than that of the constrictor passage so that the gas may accelerate to the sonic velocity within the throat; dielectric discs located between adjacent interelectrode segments and between the rearmost segment and the injector unit and the forwardmost segment and the front electrode so that the interelectrode segments are electrically isolated from one another as well as from the injector unit and the front electrode, means for introducing secondary gas into the constrictor passage from the periphery thereof generally in the regions where adjacent interelectrode segments are contiguous, whereby a potential placed across the two electrodes will cause an arc to extend through the constrictor passage with the termini of the arc being at the electrodes and the arc will transfer energy to the high pressure gas in the constrictor passage, imparting high enthalpy to that gas before it is accelerated to the sonic velocity in the throat.

3,953,706

LASER BENT BEAM CONTROLLED DWELL WIRE STRIPPER

Charles W. Harris; Allen C. Layton, and Robert E. Howle, all of Orlando, Fla., assignors to Martin Marietta Corporation, Orlando, Fla.

Continuation of Ser. No. 456,418, March 29, 1974, abandoned. This application Dec. 4, 1974, Ser. No. 529,553
Int. Cl.² B73K *27/00*
U.S. Cl. 219—121 L **22 Claims**



1. A device for enabling the selective stripping of a portion of the insulation from an electrical lead on a rapid basis without damage to the conductor portion of the lead, comprising a rotatable optical unit having an aperture at each end, a first of said apertures being configured to receive a variety of sizes and types of electrical leads whose ends are to be stripped of insulation for a selected length, and the second of said apertures being arranged to receive output energy from an adjacently located laser operating at a wavelength and power level such as will cause the ablation of insulation, each of said apertures being disposed essentially on the axis of rotation of said optical unit, and optical components disposed in said optical unit at locations between said apertures for appropriately re-directing the laser energy entering through said second aperture, said optical components being responsible for directing and focusing a laser beam upon a nonrotating lead inserted through said first aperture, such laser beam, because of the rotation of said optical unit, providing a circumferential cut in the insulation of the electrical lead at a location selected by the user, thus to enable the removal of such selected portion of the insulation from the conductor of the lead.

3,953,707

METHOD FOR PREHEATING AIRCOOLED, AIRCRAFT ENGINES

Peter G. Tanis, 1226 Highway 169 S., Fort Dodge, Iowa 50501

Filed Sept. 14, 1973, Ser. No. 397,372
Int. Cl.² H05B *1/00;* **F02N** *17/02;* **F01M** *5/02*
U.S. Cl. 219—205 **5 Claims**

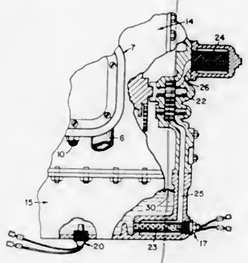
1. The method of preheating an aircooled, aircraft engine prior to starting the engine, said engine having

a cylinder head casting, a spark plug in the casting of the cylinder head and a blind hole formed entirely in the metal of said casting immediately adjacent the spark plug, which comprises

inserting in said blind hole an electric heating device of construction, size and shape such that the device is substantially entirely confined in the metal wall of the casting,

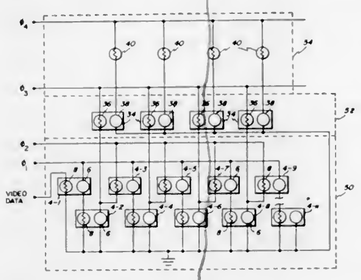
applying an electric current to said heating device to generate heat therein whereby substantially all the heat is transferred to the casting to heat the casting immediately adjacent the spark plug, and

maintaining the current for sufficient time to generate enough heat in the casting to prevent frosting of the spark



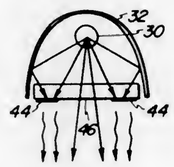
plug and to prevent condensation and to improve vaporization of fuel when starting the engine.

3,953,708
THERMAL PRINTER USING AMORPHOUS SEMICONDUCTOR DEVICES
David D. Thornburg, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Apr. 25, 1975, Ser. No. 572,486
Int. Cl.² H05B *1/00*
U.S. Cl. 219—216 **9 Claims**



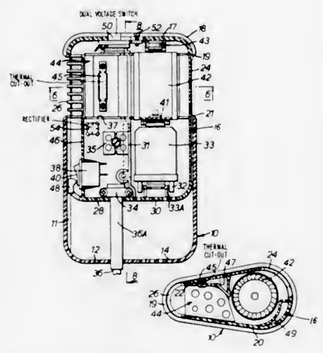
1. A thermal printer for marking a heat-sensitive material comprising:
a shift register having a plurality of stages,
a line buffer having a plurality of stages,
a plurality of heat generating print heads in heat transfer relationship with the heat-sensitive material,
each of said stages of both said shift register and said line buffer being comprised of a heat responsive amorphous semiconductor threshold switch and an adjacent heating element, said threshold switches each being comprised of a body of amorphous semiconductor material with opposed surfaces of said body of amorphous semiconductor material bounded by first and second electrodes with said body extending slightly beyond one of said electrodes such that each of said threshold switches has a voltage-current characteristic with a generally high resistance region to a threshold voltage and an abrupt transition to a low resistance region with said threshold voltage decreasing as the ambient temperature of said threshold switch increases,
first means for coupling said stages of said shift register together, for coupling each of said stages of said line buffer to a different stage of said shift register, and for coupling each of said print heads to a different one of said stages of said line buffer, and
second means for supply phased waveforms to said shift register, said line buffer and said print heads such that a video bit string supplied to the first stage of said shift register can be stored in said shift register, then transferred in parallel to said line buffer, and then transferred in parallel to said print heads to heat selected print heads in accordance with said video bit string to thereby cause marking of said heat-sensitive material in accordance with said video bit string.

3,953,709
TWO SOURCE RADIANT FUSER FOR XEROGRAPHIC REPRODUCING APPARATUS
John F. Elter, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Feb. 25, 1974, Ser. No. 446,039
Int. Cl.² H05B *1/00*
U.S. Cl. 219—216 **6 Claims**



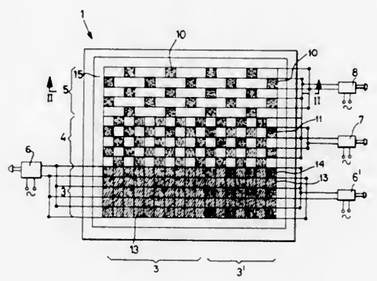
1. Radiant fuser for fixing toner images to copy substrates, said fuser comprising:
a first radiant source of energy for fushing high density images without scorching said copy substrates; and
a second source of radiant energy for fusing low density images without fusing background toner particles, said second source of radiant energy comprising a low mass member capable of rapid temperature increases and operating at a temperature of about 800°C.

3,953,710
COMPACT PORTABLE HAIR DRYER
Hugh Edric Trendhard Dyer, Wimborne, England, assignor to Firth Cleveland Limited, London, England
Filed July 10, 1974, Ser. No. 487,136
Claims priority, application United Kingdom, July 17, 1973, 33946/73
Int. Cl.² H05B *1/00*; **A45D** *20/12*; **F04B** *35/04*
U.S. Cl. 219—370 **3 Claims**



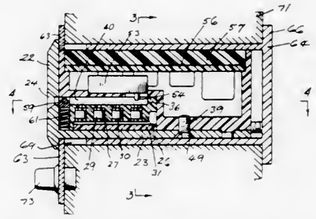
1. A hair dryer comprising
a main casing part,
a further casing part telescopically, rectilinearly slidable between a retracted end position and an extended end position in said main casing part, and having an ambient air inlet opening grid structure, and an outlet opening grid structure, the air inlet and outlet grid structures of the further casing part being fully covered by the main casing part in the retracted end position, and fully exposed in the extended end position,
a fan mounted in the further casing part arranged to draw in air through the said inlet opening grid structure and discharge air through the outlet opening grid structure,
an electric heater element mounted in the further casing part between the fan and the outlet opening grid structure,
a thermal cut-out device in said further casing part between the fan and the outlet opening grid structure, and connected in circuit with the heater element,
an electric motor mounted within the further casing part,
a coupling operatively connecting the motor and the fan for rotation of the fan,
a switch mounted in the further casing part and electrically-connected both to the heater element, the thermal cut-out device, the motor and a mains cable,
means mounted on the main casing part for actuating the switch in response to relative movement between said casing parts to energize the electric motor and the electric heater element as the casing parts are slid relative to one another to the extended end position and to de-energize the electric motor and electric heater element as the casing parts are slid relative to one another to the retracted end position, and
means for clamping the mains cable in the further casing part for movement therewith.

3,953,711
COOKING UNITS
Walter Eck, Munich, and Walter Heywang, Neukeferloh, Munich, both of Germany, assignors to E.G.O. Elektro-Geraete Blanc und Fischer, Oberderdingen, Germany
Filed Nov. 4, 1974, Ser. No. 520,959
Claims priority, application Germany, Nov. 6, 1973, 2355412
Int. Cl.² H05B *3/68*
U.S. Cl. 219—464 **8 Claims**



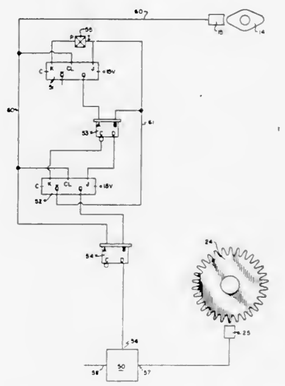
1. An electrical cooking unit for a stove comprising a substantially flat and heat transmissive cover on which cooking can take place; heating resistors in the form of PTC resistor elements being distributed over and mounted on the underside of the cover to provide a plurality of cooking zones of different energy density; and electrical circuit means, connected to the PTC resistor elements, for applying a voltage thereto; the PTC resistor elements being made of a material having a resistance which increases as a step function with increasing temperature, the step increases occurring at a particular temperature called the step temperature.

3,953,712
MAGNETIC IDENTIFICATION APPARATUS
Stephen Horvath, St. Ives, Australia, assignor to Engineering Design & Development Pty. Ltd., Sydney, Australia
Filed Apr. 26, 1974, Ser. No. 464,412
Claims priority, application Australia, Nov. 9, 1973, 53225/73
Int. Cl.² G06K *7/08*; **G11B** *15/42*
U.S. Cl. 235—61.11 D **19 Claims**



4. Magnetic identification apparatus comprising:
a magnetically coded instrument including a plurality of discrete magnets embedded in a non-magnetic material, the position of said magnets determining the magnetic code of said instrument; and
a reader to which to apply said magnetically coded instrument comprising:
a body defining a guideway for said instrument, and
a plurality of sensor means, for sensing said discrete magnets, mounted on said body adjacent said guideway in such a position that each of said sensor means may register with an associated one of said plurality of discrete magnets when said magnetically coded instrument is applied to said reader, each of said plurality of sensor means comprising a helically wound sensor coil positioned transverse to said guideway, said sensor coils providing an output signal when one of said discrete magnets is moved past said sensor coil.

3,953,713
REEL DIAMETER DISCRIMINATOR
John De Ligt, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.
Filed Nov. 4, 1974, Ser. No. 520,496
Int. Cl.² H03K *21/36*
U.S. Cl. 235—92 DN **9 Claims**



1. A reeled material diameter monitoring apparatus comprising:
An axis for rotatively supporting a reel of flexible material;

Means to rotate said reel about said axis;
Means to generate a first electrical pulse signal, each pulse being responsive to the passage of a predetermined number of arcuate degrees of said reel rotatively passing a reference point;
Means to generate a second electrical pulse signal, each pulse being responsive to the passage of a predetermined linear magnitude of said reeled material past a reference point;
Counting means having count reset means connected to said first signal generating means to digitally accumulate the number of first signal pulses received between a reset interim;
First and second flip-flop signal conductors, each having a clock terminal, first and second directional bias terminals and first and second output terminals;
First and second AND signal gate conductors, each having first and second bias terminals and first and second output terminals;
A NOT signal gate conductor having signal input and output terminals;
Means to conduct said second signal to said first and second clock terminals and the first bias control of said first AND gate conductor;
Means to connect said first directional bias terminal of said first flip-flop conductor to the output terminal of said NOT gate conductor;
Means to connect said first directional bias terminal of said second flip-flop conductor to the first output terminal of said second AND gate conductor;
Means to connect said second directional bias terminal of said first flip-flop conductor to the first bias terminal of said second AND gate conductor, to the first output terminal of said second flip-flop conductor, and to the input terminal of said NOT gate conductor;
Means to connect the second output terminal of said first flip-flop conductor to the second bias terminal of said second AND gate conductor;
Means to connect said second bias terminal of said second flip-flop conductor to the second output terminal of said second AND gate conductor;
Means to connect said second output terminal of said second flip-flop conductor to the second bias terminal of said first AND gate conductor;
Means to connect said second output terminal of said first AND gate conductor to a reset terminal of said first signal counting means; and
Means to emit an electrical signal upon the accumulation of a predetermined magnitude of said first pulses, said predetermined magnitude of first pulses being proportional to a predetermined diameter of said reel.

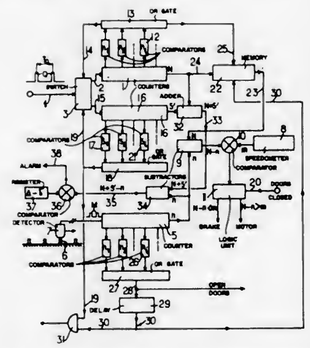
3,953,714
METHOD OF AND MEANS FOR CONTROLLING THE MOVEMENT OF SELF-PROPELLED BODIES TRAVELING IN A FIXED ORDER ALONG A TRACK

Robert Gabillard, Lille, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Courbevoie, France

Continuation of Ser. No. 291,406, Sept. 22, 1972, abandoned. This application Dec. 5, 1974, Ser. No. 529,941
Int. Cl.² G06F *15/48*
U.S. Cl. 235—150.2 **26 Claims**

1. In a system for controlling the movement of a plurality of self-propelled bodies, provided with propulsion means and braking means, following one another in a predetermined order on a track serving a number of stations, said system including a fixed post for the periodic emission of a timing signal and markings spacedly disposed at fixed reference points along said track, the improvement wherein each of said bodies comprises:

receiving means for detecting said timing signal and converting same into a series of isochronous pulses;
first counting means connected to said receiving means for registering a count N of said isochronous pulses;
sensing means responsive to said markings for generating a marker pulse upon movement of the body past any of said referencepoints;
second counting means connected to said sensing means for registering a count n of said marker pulses;

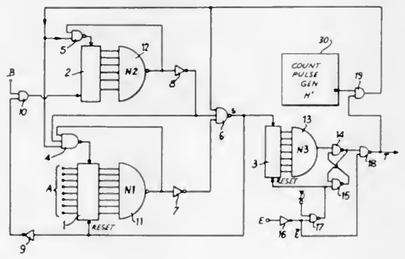


calculating means connected to said first and second counting means for determining the difference N−n of the counts thereof; and
decision means connected to said calculating means for actuating said propulsion means upon said difference N−n at least equaling a certain reference value and for actuating said brake means upon said difference N−n falling short of said reference value.

3,953,715
CONTROL APPARATUS AND PROCESS FOR COMBUSTION ENGINES

Louis Monpetit, L'Etang-la-Ville, France, assignor to Societe des Procedes Modernes d'Injection Sopromi, Clichy, France

Filed Aug. 1, 1974, Ser. No. 493,921
Claims priority, application France, Aug. 3, 1973, 73.28442
Int. Cl.² F02D *5/00*; **G05B** *15/02*
U.S. Cl. 235—150.21 **5 Claims**



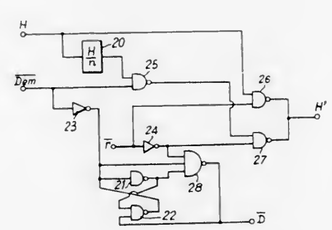
1. Apparatus for producing a regulating function signal of a given duration for controlling the fuel supply system of a combustion engine in response to a coded word defining the duration of said signal comprising:
means for producing counting signals,
first counter means receiving said counting signals and having a predetermined count set therein by said coded word, said first counter means defining a first predetermined period when said predetermined count is reached,
second counter means for receiving a predetermined number of said counting signals to produce a second predetermined period,

third counter means, and first means responsive to the sum of said first and said second predetermined periods as determined by said first and second counter means for providing a said counting signal to said third counter means upon each termination of said first and second predetermined periods established by said first and second counter means, said third counter means counting a predetermined number of said counting signals representative of a predetermined number of said first and second periods to establish said given duration for said control signal.

3,953,716
CONTROL APPARATUS AND PROCESS FOR COMBUSTION ENGINES

Louis Monpetit, L'Etang-la-Ville, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Aug. 27, 1974, Ser. No. 500,907
Claims priority, application France, Aug. 28, 1973, 73.31027
Int. Cl.² F02D *5/00, 37/02*; **G05B** *15/02*
U.S. Cl. 235—150.21 **7 Claims**

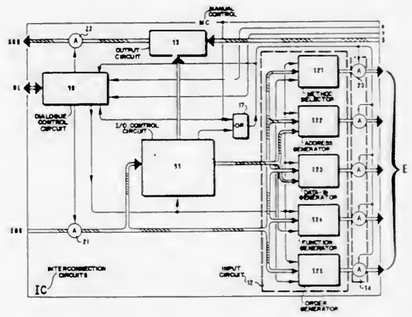


1. In apparatus of the type for producing a regulating function control signal of a given duration for controlling the fuel supply system of a combustion engine in response to a coded word defining the duration of said signal in which the apparatus includes:
means for producing counting signals,
first presettable counter means receiving said counting signals and having a first predetermined count set therein by said coded word, said first counter means defining a first predetermined period when said predetermined count is reached,
second counter means, first means for providing a said counting signal to said second counter means upon each termination of said first predetermined period established by said first counter means counting said first predetermined count, said second counter means counting a second predetermined number of said counting signals representative of a predetermined number of said first periods, and means responsive to the counting signals counted by said second counter means for producing said given duration for said regulating function control signal,
the improvement comprising means responsive to an operating parameter of the engine whose fuel supply is being controlled for controlling the frequency of production of said counting signals.

3,953,717
TEST AND DIAGNOSIS DEVICE

Marcel René Rottier, Rosny, Bois, and Jacques Michel Jean Bienvenu, Paris, both of France, assignors to Compagnie Honeywell Bull (Societe Anonyme), Paris, France

Filed Aug. 30, 1974, Ser. No. 502,118
Claims priority, application France, Sept. 10, 1973, 73.32504
Int. Cl.² G06F *11/00*
U.S. Cl. 235—153 AK **10 Claims**



1. In a test and diagnosis device for a first data processing unit including a plurality of operative elements, said device comprising:
first means external to the first unit for manual control and display of data usable for testing and diagnosing manually the first unit in the event of trouble;
a second data processing unit;
a first channel group for bidirectional transmission of control signals for exchange of information between said data processing units;
a second channel group for transmission of information from said second unit;
a third channel group for transmission of information from said first unit to said second unit; and
a plurality of interconnection circuits contained in the first unit and connected to said operative elements thereof;
maintenance circuits comprised in said interconnection circuits and operative for connecting said first unit to said second unit for transmitting signals from one unit to the other under the control of said second unit, said signals comprising a succession of input-output microdialogues, said maintenance circuits comprising:
a first circuit for controlling the input-output microdialogue between said first unit and said second unit, said first circuit connected to said first channel group and to said operative elements within said first unit,
a second circuit for controlling the input-output microdialogues between said units, said second circuit validated by said first circuit and connected to said second channel group,
a third circuit validated by said first circuit and controlled by said second circuit, said third circuit connected to said second channel group and to said operative elements of said first unit,
a fourth circuit validated by said first circuit and controlled by said second circuit and connected to said operative elements of said first unit and to said third channel group
said first circuit responsive to a signal of abnormal operational condition sent by at leat one element of said first unit to said first circuit for enabling an exchange of signals between said second unit and said first circuit through said first channel group for validating input microdialogues and output microdialogues, each of said input microdialogues comprising

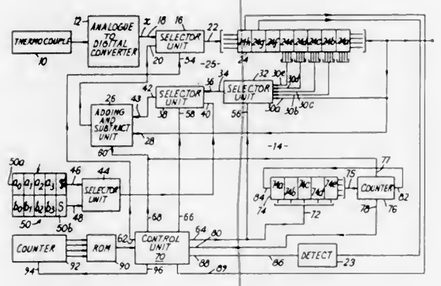
transmission of signals through said second channel group to said second circuit followed by a transmission of signals through said second channel group to said third circuit under the control of said second circuit,

each of said output microdialogues comprising a transmission of signals through said second channel group to said second circuit followed by a transmission of signals through said third channel group by said fourth circuit under the control of said second circuits, whereby said first unit may be tested and diagnosed automatically.

3,953,718
DIGITAL CALCULATING APPARATUS

Robert John Cooke, Farnborough, England, assignor to The Solartron Electronic Group Ltd., Farnborough, England

Filed July 19, 1974, Ser. No. 490,175
Claims priority, application United Kingdom, July 31, 1973, 36325/73
Int. Cl.² G06F *7/48, 7/52*
U.S. Cl. 235—156 **9 Claims**



1. Digital calculating apparatus comprising:

a store;

means for entering a first number in the store;

a combining circuit connected between an input and an output of the store to form a recirculation loop therewith, the combining circuit including means for carrying out a combining operation on the first number in the store when the number is recirculated through the combining circuit, with successive combining operations serving to change the value of the first number in the store in a predetermined progression selected from the group comprising linear progression and exponential progression as said number is successively recirculated through the combining circuit;

control means for successively recirculating the first number in the store through the combining circuit for a plurality of successive groups of N combining operations, where N is an integer greater than 0, to cause the first number in the store to converge upon a predetermined final value;

counter means coupled to the output of the control means for counting and storing the number of N combining operations in each of said groups; and

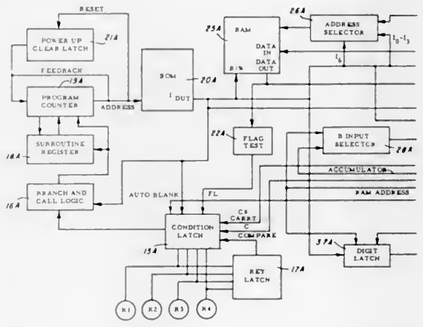
means for subsequently entering a second number in said store;

the control means being responsive to the counter means to successively recirculate the second number in the store through the combining circuit for a plurality of groups of M combining operations, where M is an integer not greater than N, the number of M combining operations in each of said further groups being the same as the number of N combining operations in the corresponding ones of the first-mentioned groups.

3,953,719
LATCHED DECODER FOR DIGIT OUTPUTS TO AN ELECTRONIC DIGITAL CALCULATOR DISPLAY

George L. Brantingham, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 26, 1974, Ser. No. 527,508
Int. Cl.² G06F *15/02, 3/14*
U.S. Cl. 235—156 **11 Claims**



1. In an electronic calculator system having an addressable data storage means, an arithmetic unit for performing operations on data and control circuitry for providing commands which define the operation of the system, an output circuit comprising:

a. a first multi-function register means coupled to the output of said arithmetic unit for providing first coded output signals in a first coded format and addresses of said data storage means;

b. a second multi-function register means for providing second coded output signals in a second coded format and data;

c. output means having first and second sets of terminals;

d. first decoder means coupled to said output means for decoding said first coded output signals from said first coded format to a third coded format for output to said first set of terminals;

e. second decoder means coupled to said output means for decoding said second coded output signals from said second coded format to a fourth coded format for output to said second set of terminals;

f. a first set of latches coupling said first register means to said first decoder means for latching said first coded output signals in said first coded format; and

g. a second set of latches coupling said second register means to said second decoder means for latching said second coded output signals in said second coded format; wherein

h. said first and second register means are adapted to provide addresses and data, respectively, while output signals are simultaneously provided by said latches through said decoders to said first and second sets of terminals.

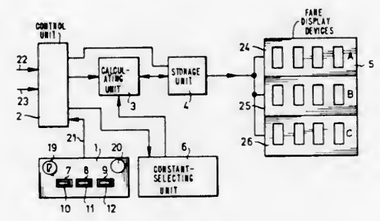
3,953,720
ELECTRONIC TAXIMETER FOR TAXIS TAKING A PLURALITY OF PASSENGERS ON OVERLAPPING TRIPS

Heinz Kelch, Buchenberg, Germany, assignor to Kienzle Apparate GmbH, Villingen, Germany

Filed June 25, 1974, Ser. No. 483,065
Claims priority, application Germany, June 26, 1973, 2332361
Int. Cl.² G06F *13/00, 13/04*
U.S. Cl. 235—168 **12 Claims**

1. In a single taxi, an electronic taximeter comprising, in combination, fare computing means for separately computing the fares of a plurality of passengers whose respective trips

overlap, said fare computing means including coordinating means activatable for initiating computation of the fare associated with a respective passenger when such passenger enters the taxi and activatable for terminating the computation of the

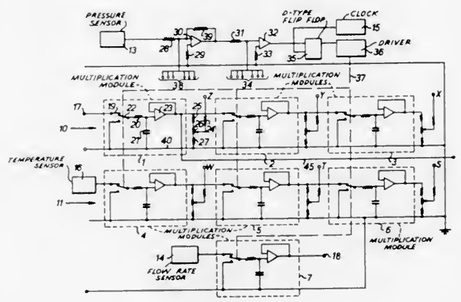


respective fare when the respective passenger leaves the taxi; and fare display means connected to said fare computing means for displaying the computed fares associated with the respective passengers.

3,953,721
ANALOGUE COMPUTER FOR SOLVING POLYNOMIAL EQUATIONS

James Stewart Johnston, Bognor Regis, and Dennis George Cope, Pagham, both of England, assignors to Rosemount Engineering Company Limited, Bognor Regis, England

Filed Feb. 12, 1975, Ser. No. 549,139
Claims priority, application United Kingdom, Feb. 19, 1974, 7519/74
Int. Cl.² G06G *7/32, 7/57*
U.S. Cl. 235—180 **20 Claims**

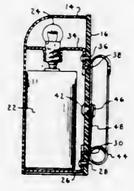


1. An analogue computer for solving polynominal equations of the type described comprising a high gain comparator means operative to provide a common multiplier signal dependent on the difference between a composite signal and a reference level; at least two multiplication modules, each module being responsive to said common multiplier signal to provide a respective analogue output signal which is representative of the product of the magnitude of a respective analogue input signal to the respective module and the factor represented by said common multiplier signal; and means for combining the analogue output signals of at least two said modules to provide said composite signal as a negative feedback input signal to the comparator means, the gain of the comparator means being such that the computer is operative to maintain said composite signal substantially equal to said reference level.

3,953,722
FLASHLIGHT SUPPORT MEANS

Gerald A. Stick, New Buffalo, Mich., assignor to Danny R. Stick, New Buffalo, Mich., a part interest

Filed Feb. 14, 1974, Ser. No. 442,443
Int. Cl.² F21V *33/00*
U.S. Cl. 240—6.4 W **7 Claims**



1. A switch circuit for a flashlight comprising:

a casing member for housing a light bulb and a battery;

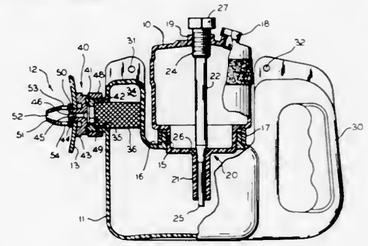
spaced terminals on the exterior of said casing member; and

a garment piercing pin pivotally mounted on said casing member between said spaced terminals, said pin being rotatable relative to said casing member to contact said spaced terminals.

3,953,723
PLASTIC CARBIDE LAMP

Frank S. Flider, Chicago, Ill., assignor to Justrite Manufacturing Company, Chicago, Ill.

Continuation of Ser. No. 121,412, March 5, 1971. This application Sept. 8, 1972, Ser. No. 287,512
Int. Cl.² F21V *23/00*
U.S. Cl. 240—11.1 **6 Claims**



1. A carbide lamp assembly,

said assembly comprising a plastic container for retaining carbide therein,

a plastic water shell for storing water therein,

said plastic container having a generally closed smooth wall tank member,

a centrally located platform member on said tank member,

an integral upstanding internally threaded collar vertically disposed on said platform member,

said water shell having an exernally threaded section integral thereto mating with the internally threaded upstanding collar,

a centrally located hollow tube downwardly dependent from said externally threaded section,

said hollow tube terminating at its upper end in a tapered seat,

water flow control means resting in said tapered seat and extending through the top of said water shell for external control of the water flow,

a gas collecting dome section positioned near the periphery of said tank member spaced away from and rising above the level of the rest of the tank member, and

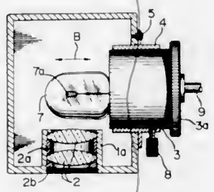
burner means connected directly to said dome section whereby gas collects therein and tubing is not required to bring gas to said burner means,
a vertical handle is integrally mounted on one of said tank member,
an upstanding horizontal fin is integrally formed on the top of said dome and said handle,
said handle and upstanding fin being separated from the interior of said tank member, and
means for securing a bale to said upstanding fin and said handle.

3,953,724

APPARATUS FOR ADJUSTING THE LIGHT SOURCE POSITION OF A LIGHT SOURCE ASSEMBLY

Teruo Ouchi, Hachioji, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Mar. 3, 1975, Ser. No. 554,403
Claims priority, application Japan, Apr. 4, 1974, 49-38530[U]
Int. Cl.² F21V *19/02*
U.S. Cl. 240—44.2 **4 Claims**



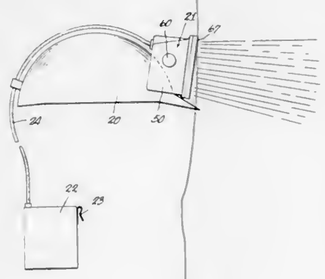
1. An apparatus for adjusting the light source position of a light source assembly, comprising a lamp socket for mounting a lamp at an eccentric position thereon, a sleeve secured to a lamp housing for mounting the lamp socket so as to be slidable along and rotatable about the axis thereof, and means for clamping the lamp socket to the sleeve, said lamp socket being moved along the axis or angularly moved about the axis relative to the sleeve so as to bring the lamp to a given position relative to a condenser lens disposed within the lamp housing before the lamp socket is clamped to the sleeve.

3,953,725

ILLUMINATING APPARATUS

Albert E. Ketler, Indiana; Ronald P. Campbell, Latrobe, and George Shacreaw, Blairsville, all of Pa., assignors to Ocean Energy, Inc., Blairsville, Pa.

Filed Apr. 22, 1974, Ser. No. 462,886
Int. Cl.² H05B *33/02*
U.S. Cl. 240—51.11 R **6 Claims**



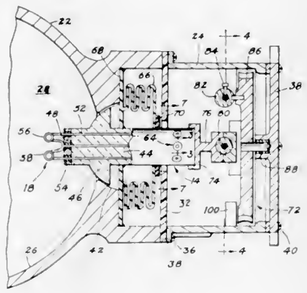
1. Illuminating apparatus, comprising:
an oblong housing having opposed end walls,
an elongated fluorescent tube lamp within said housing and extending along the longer portion thereof, said opposed end walls of said housing having axially aligned openings therein,
a tubular insulator bushing secured within each said opening and having end portions extending beyond inner and outer side surfaces of respective opposed end walls, opposite end portions of said lamp being disposed within respective bushings,
said housing having end portions adjacent said opposed end walls and an intermediate portion, said end portions being enlarged relative to said portion intermediate said end portions thereby to form pockets,
a circuit board within said housing and attached to a wall of said intermediate housing portion, opposite ends of said circuit board extending toward said pockets, and,
electrical devices carried by said circuit board on at least one end thereof and disposed within the adjacent housing pocket.

3,953,726

INFINITELY ADJUSTABLE LEVEL LIGHT

Frank M. Scarritt, Sr., 1338 Park St. North, St. Petersburg, Fla. 33710

Filed Dec. 6, 1974, Ser. No. 530,345
Int. Cl.² B60Q *1/06*; **F21M** *3/18*; **F21V** *7/00*, *19/02*
U.S. Cl. 240—61 **15 Claims**



1. A sealed beam lamp unit comprising a housing having a reflector surface and enclosing an inert atmosphere therein; a filament exposed to said inert atmosphere in said housing; adjustable support means for said filament, means sealingly connecting said support means to said housing for effecting an air tight unit; said support means comprising a member carrying said filament and movable with respect to said housing to selected positions to orient said filament for emitting illumination at predetermined reflected beam angles; and actuating means operatively connected to said movable support member for displacement to said selected positions.

3,953,727

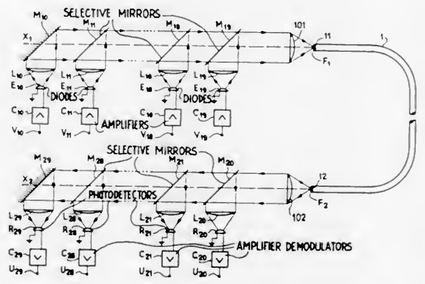
SYSTEM FOR TRANSMITTING INDEPENDENT COMMUNICATION CHANNELS THROUGH A LIGHT-WAVE MEDIUM

Luigi d'Auria; Claude Puech, and Jean-Claude Reymond, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 17, 1975, Ser. No. 542,022
Claims priority, application France, Jan. 18, 1974, 74.01800
Int. Cl.² H04B *9/00*
U.S. Cl. 250—199 **9 Claims**

1. A system for transmitting independent communication channels through a light-wave medium, said system comprising, staggered on at least one transmission direction:

a plurality of *n* diodes, *n* being an integer at least equal to 2, said diodes producing light radiations of different wavelengths;
a plurality of *n* channel inputs;
a plurality of *n* amplifiers, supplied by said channel inputs;
a plurality of *n* lenses collimating light emitted by said diodes on one axis via a plurality of *n* parallel mirrors, *n* − 1 of which are selective;
one lens focussing said collimated light on the entry of said light-wave medium;



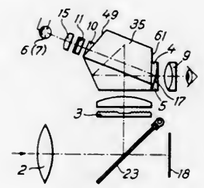
a plurality of photodetectors;
a lens collimating the light transmitted by said medium in one axis;
a plurality of *n* parallel mirrors, *n* − 1 of which are selective;
a plurality of *n* lenses focussing the light reflected by said mirrors on said plurality of photodetectors;
a plurality of *n* amplifier detectors supplied by said photodetectors;
a plurality of *n* channel outputs supplied by said amplifier detectors.

3,953,728

APPARATUS FOR DETERMINING THE RELATIVE POSITION OF THE PLANE OF MAXIMUM AMPLITUDE OF THE LOCAL FREQUENCY COMPONENT

Ludwig Leitz; Werner Holle, and Knut Heitmann, all of Wetzlar, Germany, assignors to Ernst Leitz G.m.b.H., Wetzlar, Germany

Filed Oct. 24, 1974, Ser. No. 517,846
Claims priority, application Germany, Nov. 14, 1973, 2356757
Int. Cl.² G01J *1/20*
U.S. Cl. 250—201 **12 Claims**



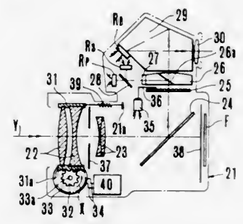
1. In an apparatus, an imaging system, at least one optically effective grating and a photoelectric receiver system being employed for determining the relative position of the plane of maximum amplitude of a spatial frequency component in the image of an object, said imaging system having an entrace pupil, said entrance pupil having regions which are traversed by light fluxes emanating from said object, and forming an image of said object in a plurality of intermediate image planes, said grating displaying a given spatial frequency component and being mounted in at least the vicinity of one of said intermediate image planes for receiving said image and for modulating said light fluxes, said photoelectric receiver system consisting of at least two photoelectric detectors responsive to light fluxes passing said grating and generating therefrom electrical push-pull signals used in governing controlling means, the improvement comprising:
mounted in a first one of said intermediate image planes a focussing screen (3) divided into at least two areas (*3a*;*3b*); one of said areas chosen for subjectively observing and focussing said object, the other having a given size and being applied to transmit for further processing light fluxes selected from one of said regions of said entrance pupil;
located in a second one of said intermediate image planes said grating (11) jointly modulating said light fluxes traversing said selected region and having properties for splitting said light fluxes thus causing the production of at least two components being separately transferred in defined directions to said photoelectric receiver system (6,7), and
optical means (35) arranged between said focussing screen and said grating for folding the beam path.

3,953,729

AUTOMATIC FOCUS ADJUSTMENT OF A CAMERA

Kazuya Hosoe; Hiroshi Aizawa, both of Machida; Seiichi Matsumoto, Yokohama, and Hideo Yokota, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

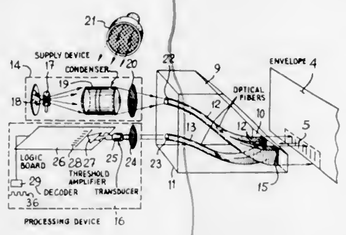
Filed Oct. 21, 1974, Ser. No. 516,572
Claims priority, application Japan, Oct. 26, 1973, 48-120556
Int. Cl.² G03B *3/10*
U.S. Cl. 250—201 **22 Claims**



1. A system for automatic focus adjustment of a photographic camera comprising:
a. an objective lens assembly for focussing an image of an object in a predetermined position said objective lens assembly including at least one lens member movable along the optical axis of the objective lens for focussing said image in said predetermined position;
b. an optical system for image sharpness detection capable of focussing an image of the same object as above, said optical system including as a component at least said movable member of the objective lens assembly; and
c. image sharpness detecting means for detecting an optimum sharpness of the image formed by said image sharpness detection optical system comprising:
1. first and second photoelectric transducing means of different electrical response characteristics from each other with respect to the change in sharpness of the image; and
2. circuit means electrically connected to said first and second transducing means for producing an output signal proportional to the difference between the electrical responses of said first and second cell means,
wherein the focus adjustment of said objective lens assembly to selected objects in various distances is automatically effected, and wherein said first photoelectric transducing means has non-linear electrical response characteristics such that its output is increased with increase in sharpness of the image, and said second photoelectric transducing means has non-lin-

ear electrical response characteristics such that its output is decreased with increase in sharpness of the image.

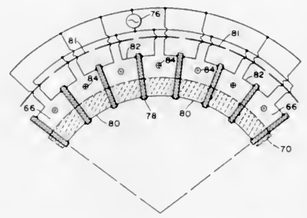
3,953,730
OPTICAL READING HEAD
Guy Henry; Paul Roman, and Claude Tetevuide, all of Paris, France, assignors to Thomson-CSF Visualisation et Traitement des Informations (T-VT), Paris, France
Filed June 24, 1974, Ser. No. 482,741
Claims priority, application France, July 3, 1973, 73.24391
Int. Cl.² G02B *5/16*
U.S. Cl. 250—227 **2 Claims**



1. A device for the reading of photoluminescent code markings spacedly disposed on a carrier moving along a predetermined guidepath, comprising:
a source of radiation for exciting said code markings;
a light-guiding structure including a first and a second set of optical fibers, said structure forming a ridge adjacent said guidepath with a pair of lands separated by an indentation, said first set of fibers being split into two outer bundles each terminating at one of said lands for illuminating said code markings with said radiation, said second set of fibers forming an inner bundle of rectangular cross-section flanked by said outer bundles along the major sides of said cross-section, the fibers of said inner bundle having ends directly exposed to incident light and terminating at said indentation for picking up secondary light rays from said code markings only upon movement thereof past said indentation while being shielded by said outer bundles from code markings offset from said indentation;
photoelectric transducer means positioned to receive said secondary rays from said second set of fibers for converting same into electrical signals; and
decoding means for said signals connected to said transducer means.

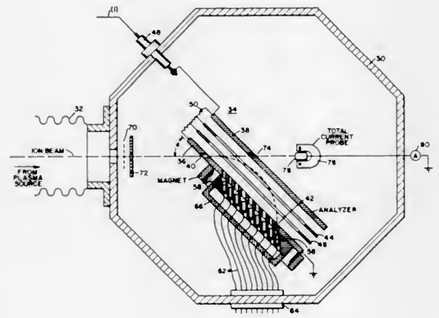
3,953,731
ISOTOPE SEPARATION UTILIZING ZEEMAN COMPENSATED MAGNETIC EXTRACTION
Harold K. Forsen, Bellevue, Wash., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.
Filed Dec. 27, 1973, Ser. No. 428,660
Int. Cl.² H01J *39/34*
U.S. Cl. 250—290 **25 Claims**

1. In a system for isotope separation wherein means are provided to produce isotopically selective ionization in a particle flow of plural isotope types by pulsed photoexcitation of a selected absorption line to provide an environment having ions of at least one isotope type, apparatus for changing the flow direction of the selectively ionized particles to permit separate collection thereof comprising:
means for applying a magnetic field to the flow of particles to provide a change in the flow direction of the ionized particles therein;
the applied magnetic field having a strength sufficient to reduce isotopic selectivity of ionization through Zeeman broadening of the selected absorption line; and
means for periodically time varying the applied magnetic field to be relatively low during pulse photoexcitation and



relatively higher thereafter thereby to diminish the reduction in selectivity of ionization.

3,953,732
DYNAMIC MASS SPECTROMETER
Moshe Oron, and Yehuda Paiss, both of Rehovot, Israel, assignors to The University of Rochester, Rochester, N.Y.
Filed Sept. 28, 1973, Ser. No. 401,883
Int. Cl.² H01J *39/34*
U.S. Cl. 250—287 **26 Claims**

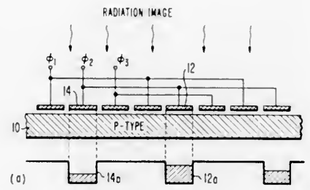


1. The method of mass spectrometry which comprises the steps of projecting a beam of particles which can have a wide range of kinetic energy into an analyzing region, establishing a field in said region in a direction transverse to the direction of said beam which field deflects said particles independently of their initial kinetic energy as they enter said region along paths of length which are dependent upon the mass and charge of said particles, and collecting said deflected particles at points spaced along said region from the place of entry of said beam into said region.

3,953,733
METHOD OF OPERATING IMAGERS
Peter Alan Levine, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed May 21, 1975, Ser. No. 579,690
Int. Cl.² H01J *31/49*
U.S. Cl. 250—330 **27 Claims**

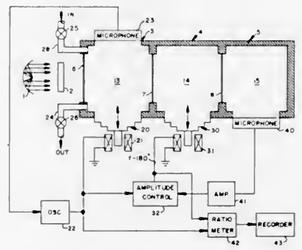
1. A method of operating an image sensing array which includes a substrate and electrodes insulated from the substrate to which a voltage may be applied during an integration time for causing radiation induced charge carriers to be collected in the regions of the substrate adjacent to the electrodes comprising the step of:

applying a voltage to said electrodes which increases with time for increasing in corresponding fashion the depth of



the depletion regions for charge accumulation produced in the substrate.

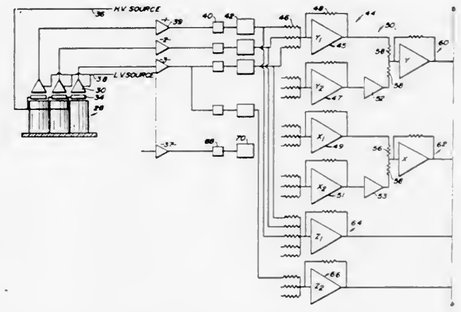
3,953,734
NULLING DEVICE FOR DETECTION OF TRACE GASES BY NDIR ABSORPTION
John Dimeff, San Jose, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Nov. 22, 1974, Ser. No. 526,438
Int. Cl.² G01N *21/26*
U.S. Cl. 250—343 **12 Claims**



1. A non-dispersive gas analyzing apparatus for measuring the density of a desired gas comprising:
a chamber for containing a gas to be analyzed, said chamber having a radiant energy transmissive entrance window and a radiant energy transmissive exit window opposite said entrance window;
means for impinging a modulated radiant energy beam on said entrance window, said beam being modulated at frequency f;
means for modulating the radiant energy inside said chamber that has entered via said entrance window, the modulation having a frequency f and being 180 degrees out of phase with said modulated radiant energy beam; and
means responsive to said impinging means and said modulating means for providing an output representative of the density of the desired gas contained in said chamber.

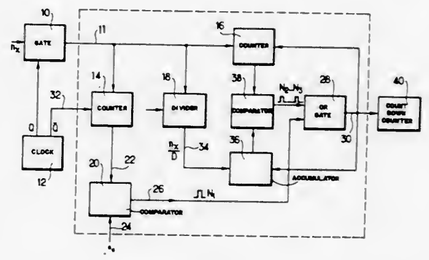
3,953,735
RADIATION SENSING DEVICE
Karl J. Stout, Lyndhurst, Ohio, assignor to Ohio Nuclear, Inc., Solon, Ohio
Continuation of Ser. No. 370,163, June 14, 1973, which is a continuation-in-part of Ser. No. 269,046, July 5, 1972, abandoned. This application Oct. 15, 1974, Ser. No. 514,331
Int. Cl.² G01T *1/20*
U.S. Cl. 250—363 S **20 Claims**

1. A radiation sensing device for producing positional information that is an accurate indication of the location of radiation comprising:
means for forming a visible response from radiation;
means for converting the visible response from radiation to electrical impulses including at least three photomultiplier tubes positioned substantially adjacent to and on one side of the means for forming in order that the photomultiplier tubes receive radiation, view common radiation and give electrical impulses as a result thereof, the proximity of the photomultiplier tubes to the means for forming a visible response causing distortion of the relation of the electrical impulses to the location of the radiation;



means for operating on the electrical impulses operatively connected to the means for converting to create a signal which gives an accurate indication of the relative location of the radiation, the means for operating including a non-linear circuit which gives an output which is not directly proportional to an input signal in order to correct for the distortion, the means for operating including a biasing device for adjusting the gain about a predetermined threshold value, the gain being less above the threshold value than below it.

3,953,736
METHOD OF AND APPARATUS FOR MEASURING THE THICKNESS OF OBJECTS
Helmut Kubisiak, Leverkusen, and Dietrich Sorgenicht, Opladen, both of Germany, assignors to Exatest Messtechnik, Opladen, Germany
Filed Oct. 17, 1974, Ser. No. 515,471
Claims priority, application Germany, Oct. 19, 1973, 2352522
Int. Cl.² G01J *1/00*
U.S. Cl. 250—358 R **15 Claims**



1. A method of determining the value of a variable, the variation of which has an effect which varies according to an exponential function, the amplitude of this effect being known, comprising the steps of:

presetting a counter to a predetermined count corresponding to a predetermined extreme value of said variable;
generating a sequence of pulses the number of which is representative of the known amplitude of this effect;
counting the pulses in said sequence and generating a pulse each time the number of pulses in said sequence corresponds to a predetermined standard value unit of said variable and
modifying the count of said preset counter by a predetermined count at each pulse so generated, whereby at the end of said sequence the counter displays a count which corresponds to the value of said variable.

3,953,737

METHOD AND APPARATUS FOR MONITORING RADIOACTIVE PARTICLES CARRIED BY A FLOWING LIQUID

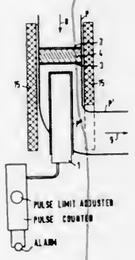
Karl-Heinz Neeb, Erlangen; Heinz Stöckert, Nurnberg, and Armin Fuchs, Erlangen, all of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed Oct. 10, 1974, Ser. No. 513,754

Claims priority, application Germany, Oct. 18, 1973, 2352376

Int. Cl.² G01N *23/12*

U.S. Cl. 250—432 R **4 Claims**



1. Method for monitoring radioactive nuclides carried by a flowing liquid, by immersing in the flowing liquid a radiation detector producing pulses in response to radiation; wherein the improvement comprises filtering and collecting the radioactive nuclides from said flowing liquid continuously upstream from said detector to form an increasing collection of the radioactive nuclides at a position within effective range of said detector so that said detector produces pulses at an increasing rate dependent on the radioactivity of said collection, said pulses being fed to a pulse counter having an alarm activated by a pulse count of adjustable count limit, and said limit being adjusted upward as said collection increases with time.

3,953,738

ARRANGEMENT FOR THE LIGHT-PROJECTION OF INDICIA ONTO AN X-RAY FILM

Robert Hüttner, and Gerhard Kütterer, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

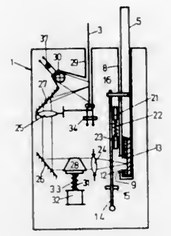
Filed Mar. 6, 1975, Ser. No. 556,114

Claims priority, application Germany, Mar. 16, 1974, 2412802

Int. Cl.² H05G *1/28*

U.S. Cl. 250—475 **6 Claims**

1. In an arrangement for the light-projection of indicia from a data carrier onto an X-ray film, including an X-ray film cassette having a light-sealed closable window, said X-ray film being positioned in said film cassette; an installation adapted to have said film cassette and said data carrier inserted therein; means in said installation for opening said window of the inserted film cassette; a light source for illuminating said inserted data carrier; optical means for projecting the illuminated indicia on said data carrier through the open window of said film cassette onto the X-ray film located in said film cassette; and switch means for initiating said illumination, the improvement comprising: a dove prism in said installation;



and actuator means for selectively interposing said dove prism in the optical path of said optical projecting means for effecting the non-reversed projection of the data onto said X-ray film for posterior anterior and for anterior posterior exposures.

3,953,739

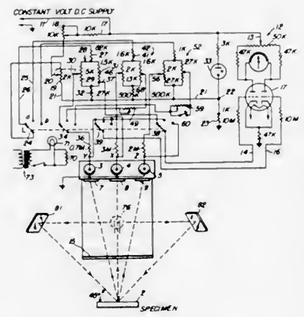
METHOD AND APPARATUS FOR THE CONTINUOUS MONITORING AND CONTROL OF CELL SIZE IN A FOAM STRUCTURE

Edward A. Colombo, Fairport, and James Tarng Tsai, Canandaigua, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sept. 30, 1974, Ser. No. 510,666

Int. Cl.² H01J *39/12*

U.S. Cl. 250—571 **2 Claims**



1. A method for determining the average individual cell size of a plastic foam sheet which comprises illuminating the surface of said foam, receiving and collecting at least a portion of the light which is diffused from said foam with a detector photocell, electrically measuring the amount of light energy received by said photocell whereby said light energy measurement is directly converted to said cell size.

3,953,740

REMOTE POWER SUPPLY UNITS FOR VEHICLES

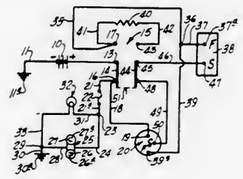
Charles J. Seiter, Jr., Dallas, Tex., assignor to Cliff Granberry Corporation, Dallas, Tex.

Filed Sept. 30, 1971, Ser. No. 185,239

Int. Cl.² H02J *1/00*

U.S. Cl. 307—10 R **6 Claims**

1. A remote power supply unit for vehicles for connection in the regular alternator electrical system of such vehicle to supply electrical power to a remote outlet for the operation of electric power tools, said unit being adapted for attachment to a vehicle having an electrical circuit including a battery, an alternator having an output terminal, and a voltage regulator with a switch controlled ignition, lights and accessory circuit connecting the voltage regulator, battery and the alternator in the usual manner, said remote power supply unit comprising:
a remote outlet load connection; single double throw switch means comprising the sole electrical circuit switching means in said power supply unit and having a pair of movable switching blade means engageable with a first pair of contact means at a first throw position and movable simultaneously to be engageable with a second pair of contact means at its second throw position; one of said switching blade means when in a first throw position electrically connecting the output terminal of the alternator with the remote outlet load connection and with the battery; the other movable switching blade means when in said first throw position connecting the stator connec-



tion of the voltage regulator to the stator connection of the alternator; said one movable switching blade means when moved to said second throw position disconnecting the output terminal of the alternator from said battery; and leaving only said remote outlet load connection connected to the power output of the alternator; said remote outlet load connection being connected with said power output of said alternator at all times; said other movable switching blade means when moved simultaneously with said one switching blade means to said second throw position disconnecting the stator connection of the voltage regulator of the electrical circuit of the vehicle from the stator connection of the alternator and connecting said stator connection of said voltage regulator with the battery for operation of the electrical circuit of the vehicle for operation of the vehicle to supply power to the alternator for driving the same to supply electrical energy to the remote outlet receptacle.

3,953,741

STEPWISE CONTROL FOR TWO-STEP CONTROL WITH SWITCHING STAGES

Urs Winkelmann, Jona, Switzerland, assignor to Stata-Control System SCS AG, Stata, Switzerland

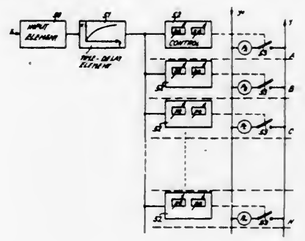
Continuation of Ser. No. 315,308, Dec. 15, 1972, abandoned. This application Dec. 19, 1974, Ser. No. 534,289

Claims priority, application Switzerland, Dec. 17, 1971, 18468/71

Int. Cl.² H02J *1/00, 3/00*

U.S. Cl. 307—87 **8 Claims**

1. A stepped control system for two-point control, comprising:
input means delivering an input signal characteristic for a control magnitude;
a plurality of two-point switching devices connected with said input means, each switching device including: on-off switch means having connections for a load; excitation means cooperating with said on-off switch means, said excitation means being responsive to said input signal for switching on and switching off the switch means at a first and a second level of said input signal; and control means determining the first and the second input signal level by fixing a switching-on and a switching-off response threshold for said excitation means, the difference between the switching-on and the switching-off threshold defining a switching hysteresis-width of the switching device;
said switching devices have hystersis-widths which differ from one another and have switching-on and switching-off thresholds which respectively increase and decrease for the different switching devices according to the sequence of their increasing hysteresis-widths; and
a plurality of loads connected separatively to said on-off switch means of said plurality of switching devices, each load having a predetermined strength, whereby with the first switching device having the smallest hysteresis-width



there is connected a first load of a certain smallest strength, with the second switching device having the next greater hysteresis-width there is connected a second load of the same strength as the first load, and with each further switching device having a greater hysteresis-width there is connected a further load the strength of which is not greater than the sum of strengths of loads connected with the switching devices preceding said further switching device.

3,953,742

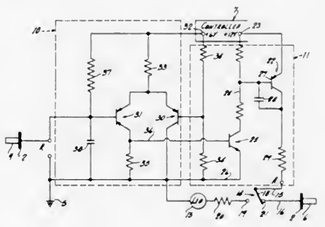
CATHODIC PROTECTION MONITORING APPARATUS FOR MARINE PROPULSION DEVICE

Edward P. Anderson, Fond du Lac, and Mark Harris, Brownsville, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed July 17, 1974, Ser. No. 489,147

Int. Cl.² H01B *7/28*

U.S. Cl. 307—95 **16 Claims**

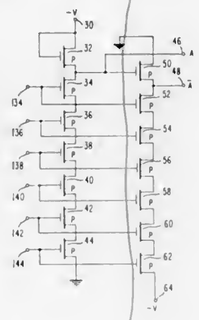


1. In a cathodic protective apparatus for a submergible metal unit subject to corrosion including a current supply means for providing a cathodic protection current, a powered submergible anode means and a submergible reference electrode means connected in a cathodic protection circuit to maintain the potential of the metal unit at a selected level, an indicating means, test means coupled to said cathodic protection circuit and including current control means connected to operably open the circuit to one of the anode means and reference electrode means and producing a change in the cathodic protection current from said supply means related to the proper cathodic protection functioning, said control means further connecting said indicating means to said current supply means to monitor said change in the cathodic protection current.

3,953,743
LOGIC CIRCUIT

Richard James Hollingsworth, Hopewell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 27, 1975, Ser. No. 553,637
Int. Cl.² H03K *19/08, 19/22, 19/36, 19/40*
U.S. Cl. 307—205 **4 Claims**



1. The combination of an N input logic circuit and an inverter comprising:

a first terminal for an operating voltage at a level representing one binary value and a second terminal for an operating voltage at a level representing the other binary value;

load means; 'N MOS transistors of one conductivity type each having a conduction path and a gate electrode, said conduction paths connected in series with said load element to form a first series circuit, said first series circuit including at one end said load element and connected at that end to said first terminal and said first series circuit connected at its other end to said second terminal;

N+1 MOS transistors of the same conductivity type as the MOS transistors of the first series circuit, each of the N+1 transistors having a conduction path and a gate electrode, the conduction paths of the N+1 transistors connected in series to form a second series circuit, said second series circuit connected at the one end having the first of said transistors to said second terminal and at the other end having the N+1th of said transistors to said first terminal;

a first output terminal at the connection between the first transistor conduction path and the following transistor conduction path of the first series circuit, said first output terminal connected to the gate electrode of said first transistor of the second series circuit;

a second output terminal at the connection between the first transistor conduction path and the following transistor conduction path of the second series circuit; and

N input terminals, connected to the gate electrodes of the N transistors of the first series circuit, respectively, and to the gate electrodes of the N transistors, respectively, other than the first transistor, of the second series circuit.

3,953,744
CIRCUIT FOR CONVERTING AN ASYNCHRONOUS SIGNAL WITH A LONG TRANSITION TIME TO A SYNCHRONIZED SIGNAL

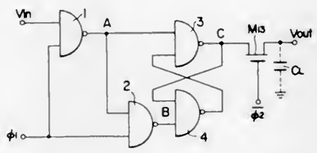
Hiroto Kawagoe, Kodaira, Japan, assignor to Hitachi, Ltd., Japan

Filed Jan. 14, 1974, Ser. No. 432,835
Claims priority, application Japan, Jan. 12, 1973, 48-5978
Int. Cl.² H03K *19/08, 5/13*
U.S. Cl. 307—208 **4 Claims**

1. A synchronizer circuit comprising:

a first gate having a first input terminal for receiving a first clock pulse and a second input terminal for directly receiving an asynchronous input signal, the interval of time during which said asynchronous input signal travels between two prescribed levels being longer than the period of said first clock pulse;

a second gate having a first input terminal for receiving said first clock pulse and a second input terminal for receiving an output of said first gate, said first and second gates being enabled in a first repeated interval by said first clock pulse;



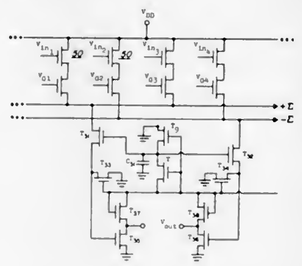
a flip-flop circuit having a first input terminal for receiving an output of said first gate and a second input terminal for receiving an output of said second gate; and

means for reading out an output of said flip-flop circuit in a second repeated interval by a second clock pulse shifted in phase relative to said first clock pulse of opposite polarity and.

3,953,745
CHARGE TRANSFER DEVICE SIGNAL PROCESSING SYSTEM

Walter H. Bailey, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 320,382, Jan. 2, 1973, Pat. No. 3,877,056.
This application Dec. 19, 1974, Ser. No. 534,262
Int. Cl.² H03K *25/00;* **G11C** *19/28*
U.S. Cl. 307—221 C **10 Claims**



1. A programmable matched filter comprising:

a. delay line means having a plurality of stages each defining at least one signal storage node;

b. for each said stage, detector means connected with a said storage node of said stage for non-destructively sampling signals stored at said stage and producing a corresponding detected signal at an output of said detector means;

c. a negative signal summation bus and a positive signal summation bus for simultaneously receiving selected ones of said detected signals;

d. switching means connected to said output of each of said detector means for selectively connecting said output to either said negative summation bus or to said positive summation bus responsive to a logic signal applied to said switching means;

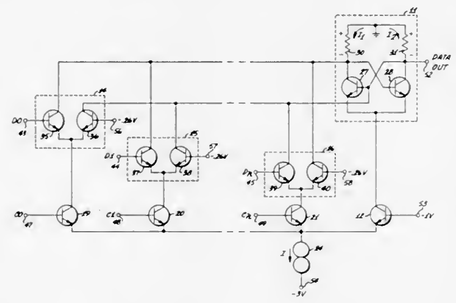
e. selectively controllable logic means connected to said switching means for simultaneously applying said logic signals to said switching means in a code corresponding to a selectable matched filter function; and

f. output means connected to said summation buses for algebraically summing said detected signals selectively connected to said negative and positive buses.

3,953,746
SELECTOR LATCH GATE

Darrell L. Fett, Scottsdale, Ariz., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed July 29, 1974, Ser. No. 484,373
Int. Cl.² H03K *17/60, 3/286;* **G11C** *15/04*
U.S. Cl. 307—247 R **2 Claims**



1. A current steering selector latch gate for use with a source of data signals, a source of gating signals and a current source, said gate comprising:

latching circuit means having a current in terminal, a current out terminal, a data out terminal, and a complementary data out terminal;

n upper level current steering switches, where *n* is an integer greater than one, each switch having first and second current in terminals, a data input terminal, a reference voltage terminal, and a current out terminal;

a lower level current steering switch having a reference voltage terminal, *n* gate input terminals, *n* + 1 current in terminals, and a current out terminal;

the first current in terminal of each of the upper level current steering switches connected to a data out terminal of the latching circuit, the second current in terminal of each of the upper level current steering switches connected to the other data out terminal of the latching circuit;

the current out terminals of the upper level current steering switches connected respectively to *n* current in terminals of the lower level current steering switch, the current out terminal of the latching circuit connected to the *n* + 1 current in terminal of the lower level current steering switch;

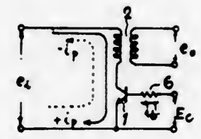
the current out terminal of the lower level current steering switch and the current in terminal of the latching circuit adapted to be connected to the current source so that electrical current can flow through the current steering selector latch gate; and

the reference voltage terminals of the upper and lower level current steering switches adapted to be connected to a source of reference voltages, each data input terminal of the upper current steering switches adapted to be connected to the source of data signals and each gate input terminal of the lower level current steering switch adapted to be connected to a source of gating signals.

3,953,747
AC WAVE SWITCHING CIRCUIT USING AT LEAST ONE SWITCHING TRANSISTOR

Kouichi Sekiguchi, Asaka, Japan, assignor to Iwasaki Tsushinki Kabushiki Kaisha, Japan

Filed Feb. 6, 1974, Ser. No. 439,984
Claims priority, application Japan, Feb. 10, 1973, 48-16118; July 18, 1973, 48-80315
Int. Cl.² H03K *17/00*
U.S. Cl. 307—253 **20 Claims**



1. An AC wave switching circuit, comprising:

a circuit loop for receiving an AC signal to be switched;

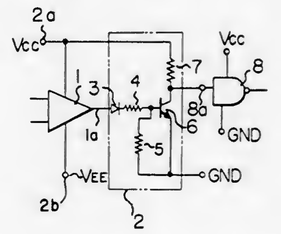
a switching transistor having the collector-emitter path thereof inserted in series in said circuit loop; and

control voltage source means for providing a DC current greater than a peak value of the AC signal current and connected across the base-emitter path of the switching transistor, so that the switching of the AC signal is performed by controlling the voltage of the control voltage source means without flowing any DC current in the collector-emitter path of the transistor.

3,953,748
INTERFACE CIRCUIT

Akio Sugiura, Nagoya; Atsutoshi Okamoto, Toyohashi, and Motoyoshi Suzuki, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 338,609, March 6, 1973, Pat. No. 3,860,830. This application Nov. 6, 1974, Ser. No. 521,447
Claims priority, application Japan, Mar. 10, 1972, 47-25093
The portion of the term of this patent subsequent to Jan. 14, 1992, has been disclaimed.
Int. Cl.² H03K *17/60*
U.S. Cl. 307—253 **1 Claim**



1. An interface circuit comprising in combination:

a first dc voltage supply means for supplying a dc voltage;

a second dc voltage supply means of low current and voltage capacity operative to invert the voltage from said first dc voltage supply means into a dc voltage having the opposite polarity and lower level than that of the voltage from said first dc voltage supply means;

a linear integrated circuit energized by the voltages from said fist and second voltage supply means and having an output terminal to develop an output signal, the voltage of opposite polarity from said second dc voltage supply means being applied to cancel the threshold voltage of the linear integrated circuit;

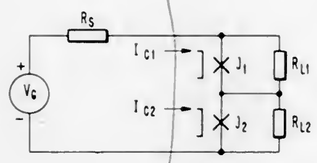
a digital integrated circuit having an input terminal; and
a switching circuit for connecting said linear integrated circuit to said digital integrated circuit, comprising a dc current blocking means connected to the output terminal of said linear integrated circuit, a transistor having a base connected to said dc current blocking means and a collector connected to the input terminal of said digital integrated circuit and being connected through a load resistance to said first dc voltage supply means, said blocking means serving to block a dc current of the same polarity as the opposite polarity voltage of said second dc voltage source from flowing out of the linear integrated circuit from said second dc voltage source toward the switching circuit and serving to block a dc current of the same polarity as the voltage of said first dc voltage supply from flowing into the output terminal of the linear integrated circuit from the switching circuit, thereby interfacing the linear integrated circuit and the digital integrated circuit with a minimized consumption of the power from the second dc voltage supply means.

3,953,749

BINARY CIRCUITRY INCLUDING SWITCHING ELEMENTS UTILIZING SUPERCONDUCTIVE TUNNELING EFFECTS

Werner Baechtold, Somers, N.Y., and Pierre L. Gueret, Richterswil, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 2, 1974, Ser. No. 528,963
Claims priority, application Switzerland, Dec. 13, 1973, 17501/73
Int. Cl.² H03K *3/38*
U.S. Cl. 307—277 **27 Claims**



1. A switching and storage circuit comprising:
a pair of series connected self-resetting Josephson elements each having zero and finite voltage states,
a load impedance shunting each of said pair of Josephson elements,
a common connection disposed between said load impedances and said Josephson elements, and
voltage means connected to said pair of Josephson elements for applying a maximum constant voltage of the order of the gap voltage of one of said elements thereto which sets one of said Josephson elements into said finite voltage state, and
control means coupled to said pair of Josephson elements for switching said one element from said finite voltage state to the zero voltage state and the other of said pair of elements from the zero voltage state to the finite voltage state.

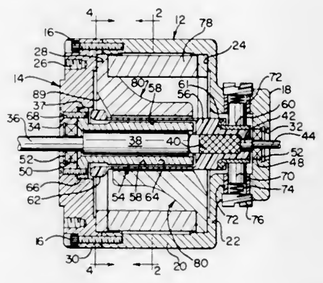
3,953,750

ELECTRIC MOTOR

James R. Hendershot, Jr., Amherst, N.H., assignor to Vibrac Corporation, Chelmsford, Mass.

Filed Dec. 20, 1974, Ser. No. 535,033
Int. Cl.² H02K *1/18*
U.S. Cl. 310—154 **13 Claims**

1. An electric motor, comprising:
a rotatable output shaft;
a hollow armature concentrically mounted on said shaft so that at least a portion of said armature is radially spaced from said shaft;
means for electrically energizing said armature;
a stationary, magnetically-conductive core member extending into the space provided between said armature and said shaft;
magnet means for producing a magnetic field, said magnet means being mounted outside of and spaced radially from said armature;



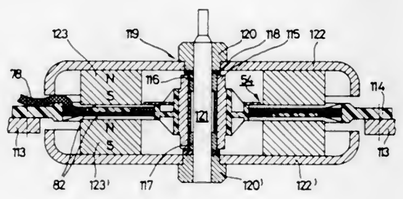
a hollow casing containing said armature, said core member and said magnet means; and
at least two pole pieces of magnetically conductive material disposed within said casing and engaging opposite ends of said magnet means, each of said pole pieces having a pole section which extends axially in the space between said armature and said magnet means and is radially spaced from said armature and said magnet means.

3,953,751

MOTOR AND MOUNTING THEREOF

Alfred Merkle, St. Georgen; Fritz Schmieder, Hornberg, and Werner Heinzmann, St. Georgen, all of Germany, assignors to Papst Motoren KG, St. Georgen im Schwarzwald, Germany

Division of Ser. No. 285,520, Aug. 31, 1972, Pat. No. 3,845,339. This application Oct. 11, 1974, Ser. No. 514,282
Claims priority, application Germany, Sept. 1, 1971, 2143752
Int. Cl.² H02K *5/04*
U.S. Cl. 310—91 **12 Claims**



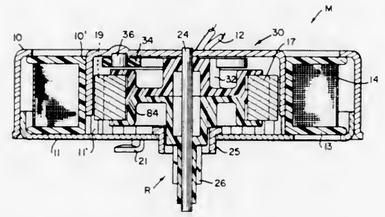
1. In combination, a support structure for a motor; a motor comprising a stator and a rotor, said stator comprising a generally plate-shaped winding arrangement comprised of a generally plate-shaped winding support arrangement connected to and supported by said support structure for said motor, and said winding arrangement further including a plurality of windings supported on said generally plate-shaped winding support arrangement, said stator further comprising a central support portion supported by said plate-shaped winding support arrangement, and said rotor comprising a rotor shaft supported on said central support portion and extending transversely to said generally plate-shaped winding arrangement, said rotor further comprising permanent magnet means and a magnetic return structure mounted on said rotor shaft for rotation therewith.

3,953,752

PERMANENT MAGNET ROTOR FOR A SYNCHRONOUS MOTOR AND METHOD OF MAKING SAME

Albert C. Bannon, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Mar. 16, 1973, Ser. No. 342,072
Int. Cl.² H02K *21/12*
U.S. Cl. 310—156 **8 Claims**



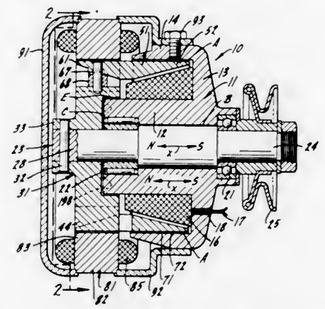
1. A rotor comprising:
a. a hub including at least two sections bonded together near their outer peripheries only, and
b. a permanent magnet carried about said perpheries of said two sections.

3,953,753

THREE PHASE ALTERNATORS

Edward L. Barrett, 506 Malden Ave., LaGrange Park, Ill. 60525

Filed Jan. 20, 1975, Ser. No. 542,114
Int. Cl.² H02K *19/20*
U.S. Cl. 310—168 **17 Claims**



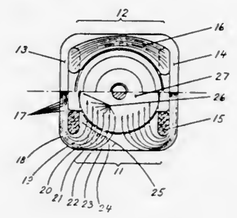
1. A three-phase dynamoelectric machine, of the kind comprising a rotor having two sets of oppositely polarized magnetic rotor poles interleaved with each other in an annular array, and a stator core of high-permeability magnetic material having a plurality of stator teeth separated from each other by a corresponding plurality of stator slots, the stator teeth forming an annular array concentric with the rotor poles and displaced therefrom by an air gap, the machine further including an electrical stator winding comprising:
first, second and third winding sections, each winding section including a given number of electrically conductive coils mounted in the stator slots, each coil encompassing just two stator teeth and separated from the next adjacent coil in the same winding section by at least one stator tooth not encompassed by a coil of that winding section, each winding section being angularly displaced around the stator core relative to each of the other two winding sections.

3,953,754

STATOR FOR ELECTRIC MACHINES

Stig Lennart Hallerback, Vastra Frolunda, Sweden, assignor to SKF Industrial Trading and Development Co., B.V., Jutphaas, Netherlands

Filed Dec. 3, 1973, Ser. No. 420,877
Claims priority, application Sweden, Dec. 18, 1972, 16772/72
Int. Cl.² H02K *1/12*
U.S. Cl. 310—259 **7 Claims**



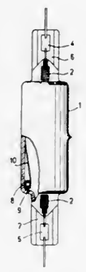
1. A stator for electric motors including a rotor and consisting of at least a pair of stacks each comprised of a plurality of laminations forming a yoke component in the axial plane of the motor and having pole portions extending from opposite sides of the yoke component arranged with their sides in the direction of the rotor axis, windings surrounding the yoke components, means defining an open air gap between the yoke components and the rotor, the terminal portions of the laminations running in the axial direction being bent inwardly towards a stator bore and the outer edges thereof maintained in spaced-apart relation at positions predetermined with regard to the magnetic flux lines and being permanently fixed in this position solely by means of a moulded compound, said edge portions facing the stator bore and being disposed on the periphery of a circular cylinder defining the stator bore, each lamination stack consisting of undivided laminations comprising a north and a south pole, each main pole consisting of the lamination edges of two adjacent lamination stacks.

3,953,755

HIGH PRESSURE GAS DISCHARGE LAMP INCLUDING A HYDROGEN GETTER

Gijsbert Kuus, and Piet Wiedijk, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 1, 1974, Ser. No. 519,948
Claims priority, application Netherlands, Nov. 15, 1973, 7315641
Int. Cl.² F04B *37/02*; **H01J** *61/26*
U.S. Cl. 313—174 **13 Claims**



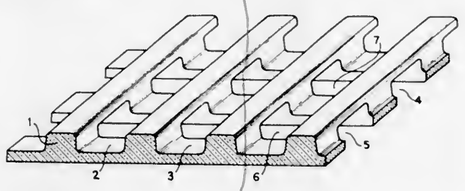
1. A high-pressure gas discharge lamp including a sealed, translucent discharge vessel containing an aggressive gas filling and being provided with electrodes between which the

discharge takes place during operation, and a hydrogen getter located within the discharge vessel and consisting of a getter material surrounded by a hydrogen-permeable wall, characterized in that the getter material comprises at least a material of the group yttrium, lanthanum, the lanthanides and alloys of the said elements and that the hydrogen-permeable wall comprises at least one of the elements chromium, molybdenum, tungsten, tantalum, nickel and iron.

3,953,756
MATRIX FOR GAS DISCHARGE DISPLAY PANELS

Henri Monfroy, and Jean Philippe Reboul, both of Paris, France, assignors to Thomson-CFS, Paris, France

Filed Feb. 6, 1975, Ser. No. 547,603
Claims priority, application France, Feb. 12, 1974, 74.04656
Int. Cl.² H01J *61/30*
U.S. Cl. 313—220 **5 Claims**

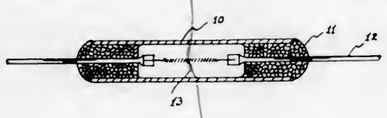


1. A matrix for a gas discharge display panel, comprising an insulating plate each of whose two large faces contains an array of mutually parallel grooves, the grooves of one of said two groove arrays being right-angles to those of the other of said two groove arrays and the depth of the grooves in each of the said two groove arrays being such that the matrix is perforated from one of its two large faces to the other at the zones where the grooves of the two arrays intersect.

3,953,757
SOLDER SEALED LIGHT BULB

Robert Johan Ney, 484 Braves Trail Lane, Media, Pa. 19063

Filed Feb. 26, 1975, Ser. No. 553,233
Int. Cl.² H01K *1/38*
U.S. Cl. 313—222 **2 Claims**



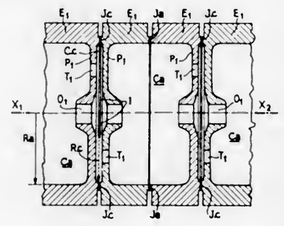
1. An incandescent light bulb comprising an envelope of insulating material, a filament contained within said envelope, said filament having its conductive extremities extending beyond said envelope, said filament extremities are sealed to said envelope by a solder glass or metal solder with flow temperatures substantially below that of said envelope.

3,953,758
MULTIPERIODIC LINEAR ACCELERATING STRUCTURE

Duc Tien Tran, Paris, France, assignor to C.G.R.-Mev., Paris, France

Filed Jan. 14, 1975, Ser. No. 540,942
Claims priority, application France, Jan. 15, 1974, 74.01284
Int. Cl.² H01J *23/20*
U.S. Cl. 313—360 **9 Claims**

1. A multiperiodic linear accelerating structure for accelerating a beam of charged particles along an axis X_1X_2 by means of the action of an electromagnetic energy injected within said structure, said structure, comprising a succession of accelerating resonant cavities of a cylindrical shape and having said axis X_1X_2 as revolution axis, and coupling means for coupling two consecutive accelerating cavities, said coupling means comprising at least coupling cavities C_c, of cylindrical shape having the axis X_1X_2 as axis of revolution, each coupling cavity C_c, being disposed between two accelerating cavities C_a, the

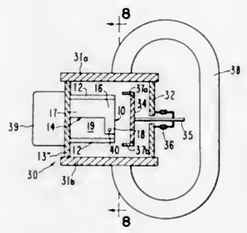


radius R_c of said coupling cavities being substantially equal to the radius R_a of the accelerating cavities and the width of the coupling cavities, measured in a direction parallel to the axis X_1X_2, being greater in the axial region, where the electrical component of the electromagnetic field produced by said electromagnetic energy is preponderant, than in the peripheral region.

3,953,759
INTERDIGITAL SLOW WAVE CIRCUIT FOR ELECTRON TUBES

George K. Farney, Boxford; Andrew S. Wilczek, Beverly, and Roger A. LaPlante, Ipswich, all of Mass., assignors to Varian Associates, Palo Alto, Calif.

Filed Mar. 20, 1975, Ser. No. 560,665
Int. Cl.² H01J *25/34*
U.S. Cl. 315—3.5 **9 Claims**

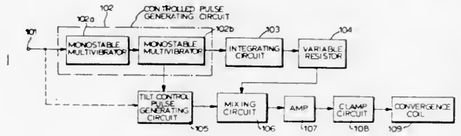


1. An electron tube comprising: vacuum envelope means, cathode means for producing a stream of electrons, guiding means for directing said stream of electrons over an elongated path, slow wave circuit means adjacent at least part of said path in energy exchanging relation with said stream, means for coupling high frequency energy output from said circuit means, said circuit means comprising; an array of conductive fingers spaced periodically in the direction of mean flow of said stream, said fingers having interaction faces adjacent said stream, first and second conductive straps at opposite ends of said fingers extending in said direction of flow, successive fingers being conductively joined alternatingly to said first and said second straps respectively to form first and second interdigital sets, a conductive wall extending in the direction of said stream and disposed from said interaction faces opposite said stream, a portion of the length of each finger extending as a vane to join said wall, said portion extending to one end of said finger and substantially short of the other end, said one end being a corresponding end of each finger in said first set and the opposite end of each finger in said second set.

3,953,760
DYNAMIC ELECTRON BEAM CONVERGENCE APPARATUS

Toshiro Matsuura, Moriguchi, and Minoru Takeda, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 10, 1974, Ser. No. 459,856
Int. Cl.² H01J *29/51*
U.S. Cl. 315—13 C **19 Claims**



11. A dynamic convergence apparatus for a color television reproducing system to which a deflection drive pulse is provided as a pulse separate from the color component signals or is a synchronizing pulse for the system, said apparatus comprising:

input circuit means to which said deflection drive pulse is supplied;

controlled pulse generating means coupled to said input circuit means for responding to the output thereof for generating a controlled pulse the position of the leading edge of which is adjusted to correspond to that of said deflection drive pulse and the pulse width of which is no longer than a flyback period of the color television reproducing system;

sawtooth voltage generating means coupled to said controlled pulse generating means for responding to said controlled pulse for generating a sawtooth voltage;

first control circuit means coupled to said controlled pulse generating means for generating a tilt control pulse which is synchronized with said deflection drive pulse and the polarity and amplitude of which are controllable;

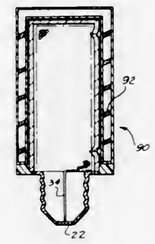
second control circuit means coupled to said sawtooth voltage generating means for controlling the amplitude of said sawtooth voltage; and

circuit means coupled to said first and second control circuit means for responding both to said tilt control pulse and said amplitude controlled sawtooth voltage for generating a parabola current which flows through a convergence coil.

3,953,761
FLUORESCENT LIGHT BULB FOR USE IN CONVENTIONAL INCANDESCENT BULB FIXTURE

Thomas Lo Giudice, 520 E. 72 St., New York, N.Y. 10021

Filed Apr. 3, 1974, Ser. No. 457,656
Int. Cl.² H01J *61/00*
U.S. Cl. 315—71 **6 Claims**

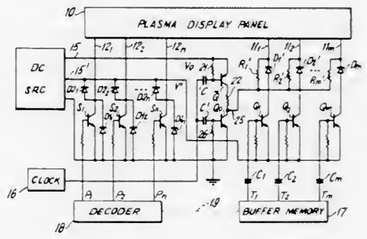


1. A fluorescent light bulb adapted for use in an incandescent lamp fixture comprising, a central ballast, a socket plug electrically connected to said ballast and adapted to be received in the socket of an incandescent lamp fixture, and a fluorescent tube containing a gas discharge vapor and having an interior surface coated with a fluorescent material, said tube comprising means defining a relatively flat toroid which is generally complementary to the periphery of said ballast and surrounding said central ballast and being electrically connected to said ballast thereby to form a compact fluorescent light bulb assembly.

3,953,762
CIRCUIT FOR SUPPLYING A SPECIFIED ONE OF PLURAL EXTERNAL ELECTRODES OF A GAS DISCHARGE DISPLAY PANEL WITH UNIDIRECTIONAL FIRING VOLTAGE PULSES AND FOR SUPPLYING OTHERS WITH PULSES OF A REDUCED VOLTAGE

Tsunekiyo Iwakawa, and Akira Yano, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sept. 25, 1974, Ser. No. 509,047
Claims priority, application Japan, Oct. 3, 1973, 48-111307
Int. Cl.² H05B *37/00*
U.S. Cl. 315—169 TV **12 Claims**



6. In combination in driving circuit apparatus for plasma display including first and second selection electrode pluralities, first and second potential source means, the potential of said first source exceeding that of said second source, plural first switching transistors having their collector-emitter conduction paths connected in parallel between said first and second potential sources and adapted for connection to different ones of the first display electrodes, a first transistor for connecting said first potential source to the first electrodes and to said first plural switching transistors, a second transistor for grounding the first electrodes, and plural second switching transistors for selectively grounding a different one of the second electrodes.

3,953,763
PULSED XENON ARC LAMP OPERATING CIRCUIT

Phillip R. Herrick, Fort Wayne, Ind., assignor to General Electric Company, Indianapolis, Ind.

Filed Apr. 23, 1975, Ser. No. 570,689
Int. Cl.² H05B *41/34, 41/29*
U.S. Cl. 315—262 **29 Claims**

8. A circuit for repetitive pulsed operation of an arc discharge lamp, comprising:

first and second input terminals for connection to a DC electrical energy source;

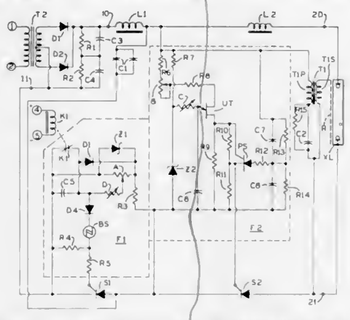
first and second input terminals for connection to the lamp;

first and second semiconductor switches connected serially between the second input terminal and the second output terminal, each switch having a conducting and a non-conducting state, the swithces arranged for alternate conduction;

first and second inductors connected serially between the first input terminal and the first output terminal, the first inductor aiding in the turn-off of the first switch and the second inductor aiding in the turn-off of the second switch;

high voltage (HV) generation means connected in circuit for providing HV pulses for ionizing the lamp;

a capacitor connected in circuit to be charged from the DC energy source through the first inductor upon turn-on of



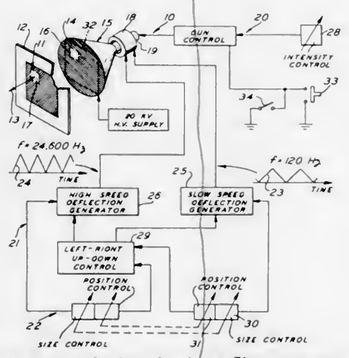
the first switch, and upon turn-on of the second switch to become discharged through the second inductor to provide an operating current pulse for the lamp and further, upon conduction of the second switch to energize the HV generation means.

3,953,764

METHOD AND MEANS FOR SELECTIVELY POSITIONING A LIGHT SOURCE FOR ILLUMINATING FILM TRANSPARENCIES

Edward Miller, Levittown, and Anthony P. Latella, Huntingdon Valley, both of Pa., assignors to Delta-X Corporation, Levittown, Pa.

Filed Sept. 29, 1971, Ser. No. 184,850
Int. Cl.[2] H01J *29/70*
U.S. Cl. 315—386 **5 Claims**



1. A light source for illuminating a film transparency from one side to permit an observer to view the image on the transparency from the other side, said source comprising:

a cathode-ray tube having a target screen facing said one side of said transparency and an electron gun for producing a beam of electrons that impinge upon an elemental area of said screen illuminating said screen;

a first deflection means for deflecting the beam of said cathode-ray tube along a first predetermined direction at a first predetermined frequency;

a second deflection means for deflecting the beam of said cathode-ray tube along a second predetermined direction substantially perpendicular to said first predetermined direction at a second predetermined frequency, said second predetermined frequency being substantially greater than said first predetermined frequency, said first and second deflection generators both being operative to cause said beam to scan said screen defining an illuminated raster for illuminating at least a portion of said film transparency, said beam being on continuously during the generation of the raster;

control means, said control means supplying control signals to said first and second deflection means to control the position of said raster on said screen; and

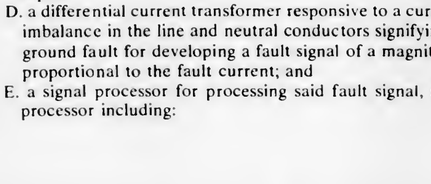
means for supplying signals to said first and second deflection means to control the size of said raster on said screen thereby enabling the illumination of a predetermined portion of said film transparency.

3,953,765

VERTICAL DEFLECTION CIRCUIT

Takeshi Arai, Higashiosaka, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Nov. 12, 1973, Ser. No. 414,792
Claims priority, application Japan, Nov. 11, 1972, 47-113372; Nov. 11, 1972, 47-113373
Int. Cl.[2] H01J *29/70, 29/72*
U.S. Cl. 315—389 **6 Claims**



1. A transformerless output vertical deflection circuit, comprising a vertical oscillator circuit for generating a vertical pulse train in response to vertical synchronizing pulses applied thereto, a sawtooth signal generator for generating a series of sawtooth signals, each cycle of said sawtooth signal including a pulse component, a vertical output circuit coupled to said sawtooth generator for amplifying said sawtooth signal including said pulse component and loading a vertical deflection coil, and stabilizing means connected between said vertical oscillator and said sawtooth signal generator for varying the width of the pulse component which is to be fed to said vertical output circuit in response to the average level of DC output voltage fed from the vertical output circuit.

3,953,766

GROUND FAULT CIRCUIT INTERRUPTER AND ELECTRONIC MODULE THEREFOR

Edward Keith Howell, Simsbury, Conn.; Donald Leland Watrous, Liverpool, and Robert George Hodgins, Canastota, both of N.Y., assignors to General Electric Company, New York, N.Y.

Filed Sept. 16, 1974, Ser. No. 506,272
Int. Cl.[2] H02H *3/26*
U.S. Cl. 317—18 D **24 Claims**

1. A ground fault circuit interrupting device for interrupting an AC power distribution circuit including line and neutral conductors in response to a ground fault on either conductor; said device comprising, in combination:

A. contacts for interrupting at least one side of the distribution circuit;

B. a solenoid energizable from the distribution circuit to initiate circuit interruption by said contacts;

C. a normally non-conductive switch connected in the solenoid energization circuit, said switch having a control input;

D. a differential current transformer responsive to a current imbalance in the line and neutral conductors signifying a ground fault for developing a fault signal of a magnitude proportional to the fault current; and

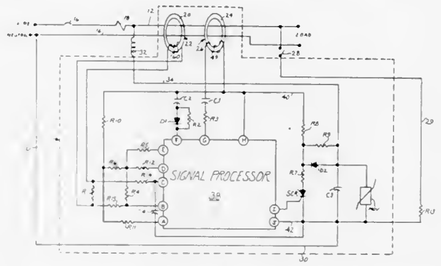
E. a signal processor for processing said fault signal, said processor including:

1. an amplifier for amplifying said fault signal,

2. a trip signal bus,

3. an integrating capacitor connected to said trip signal bus,

4. a plurality of threshold circuits connected in parallel to said trip signal bus and individually responsive to the amplified fault signal developed by said amplifier for establishing respectively increasing charging rates for



said integrating capacitor depending on the amplified fault signal amplitude, and

5. means connected to said trip signal bus and responsive to the voltage thereon developed by the charge accumulating on said integrating capacitor for generating a trigger signal input to render said switch conductive when said trip signal bus voltage reaches a predetermined level,

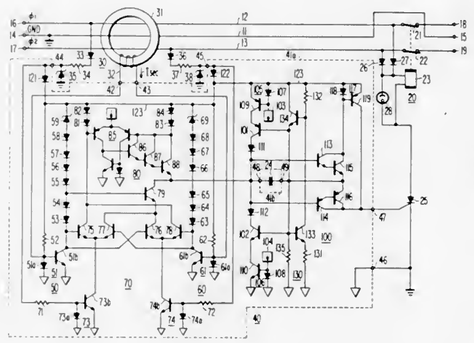
a. whereby to actuate said solenoid and initiate circuit interruption by said contacts.

3,953,767

GROUND FAULT DETECTION APPARATUS

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 15, 1974, Ser. No. 461,268
Int. Cl.[2] H02H *3/28*
U.S. Cl. 317—18 D **8 Claims**



4. Ground-fault detection apparatus for determining the presence of a resistive ground-fault on one of a plurality of a-c power line conductors, said apparatus comprising:

a differential transformer having a plurality of primary windings and a secondary winding, each of said primary windings receiving a current flowing through a respective one of the plurality of a-c power line conductors so that in the absence of a ground-fault in any of said power line conductors no a-c signal current will be induced in said secondary winding and during the occurrence of such ground fault an a-c signal current will be induced in said secondary winding;

means responsive to the potential between a first pair of said a-c power line conductors for providing a first set of control pulses corresponding in timing with peaks of one polarity of that potential;

means responsive to the potential between a second pair of said a-c power line conductors for providing a second set of control pulses corresponding in timing with peaks of one polarity of that potential;

a first controlled-gain amplifier having an input circuit connected to said secondary winding, having an output circuit, and being connected to respond to the presence of control pulses in said first set to provide at its output circuit an amplified signal related to the a-c signal current received at its input circuit and to provide substantially no amplified signal during the intervals between those control pulses;

a second controlled-gain amplifier having an input circuit connected to said secondary winding, having an output circuit, and being connected to respond to the presence of control pulses in said second set to provide at its output circuit an amplified signal related to the a-c signal current received at its input circuit and to provide substantially no amplified signal during the intervals between those control pulses;

combining means for providing a combined signal responsive to the sum of the amplified signals respectively supplied thereto from the respective output circuits of said first and said second controlled-gain amplifiers; and

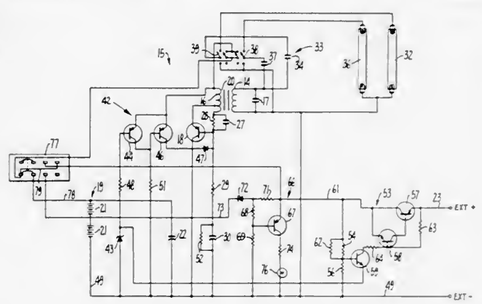
means for determining whether or not the combined signal supplied thereto from said combining means has a direct component of an amplitude and duration indicative of the presence of a resistive ground fault.

3,953,768

PORTABLE FLUORESCENT LAMP AND INVERTER THEREFOR

Ronald D. Meredith, 25 Heather Place, Hillsborough, Calif. 94010 and John T. Shoberg, 1265 Fallen Leaf Drive, Milpitas, Calif. 93035

Division of Ser. No. 101,040, Dec. 23, 1970, abandoned. This application May 22, 1973, Ser. No. 362,669
Int. Cl. H02h *3/24*
U.S. Cl. 317—31 **7 Claims**



1. A portable fluorescent light, comprising a source of direct current,

a high frequency inverter for converting said direct current to alternating current,

a fluorescent lamp supplied with high frequency alternating current from said inverter,

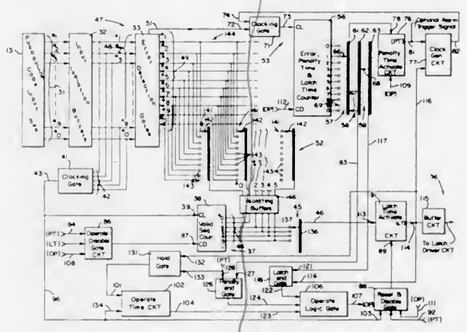
a ballast means connected to said fluorescent lamp and adapted to limit current flow thereto, and

a voltage sensing circuit connected to said source of direct current and said inverter and operative to terminate current to said inverter at a preselected voltage level of said source of direct current indicative of a condition of said source of direct current at which further discharge would be damaging to said source of direct current.

3,953,769
ELECTRONIC SECURITY CONTROL SYSTEM

Riley M. Sopko, Glendale, Calif., assignor to Sargent & Greenleaf, Inc., Rochester, N.Y.

Filed July 29, 1974, Ser. No. 492,422
Int. Cl.² E05B *49/00*
U.S. Cl. 317—134 **22 Claims**



1. In a security control system having an electrically operated lock means and code input means for selectively and sequentially energizing a plurality of input lines in accordance with a predetermined combination code, the combination therewith comprising:

valid sequence counter means having a plurality of output states and an input connected and responsive to the plurality of input lines for causing said counter means to successively assume each of its counting states in response thereto;

error detection means connected between said input lines and the output states of said valid sequence counter means for detecting the erroneous energization of one of said input lines not in conformance with the predetermined code and for disabling the control system in response thereto;

error processing circuit means coupled to the output of said error detection means including means for accumulating a preselected number of error indicating signals from said error detection means, said error processing circuit means being coupled to said valid sequence counter means for disabling said valid sequence counter means in response to said accumulation of said preselected number of error indicating signals; and

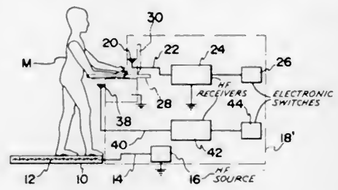
output means for selectively connecting one of the output states of said valid sequence counter means to and for operating said electrically operated lock means, whereby said valid sequence counter means must be successfully advanced to the above-mentioned selected output state without prior disablement of the control system in order to successfully operate the electrically operated lock means.

3,953,770
SAFETY EQUIPMENT FOR MACHINERY USED IN PROCESSING PLATES, ETC.

Jinnosuke Hayashi, No. 22-5, 2-chome, Nakai, Shinjuku, Tokyo, Japan

Filed Jan. 2, 1975, Ser. No. 538,119
Claims priority, application Japan, July 11, 1974, 49-78714; Oct. 3, 1974, 49-118791[U]; Nov. 27, 1974, 49-142737[U]
Int. Cl.² H01H *47/12*
U.S. Cl. 317—146 **4 Claims**

1. A safety device for machinery, particularly machinery for processing plates and the like, comprising an insulating mat having an embedded electrically conductive grid and being adapted to carry an operator who is in working position adjacent to the machine; safety means for stopping the machine in the event part of the operator's body approaches a dangerous area of the machine, comprising a first source of high-frequency electrical energy connected to said grid so that a high-frequency field is formed about the body of the operator on said mat, a first antenna on said machine and positioned to sense said field when part of the operator's body approaches said dangerous area and to generate a first signal, and first

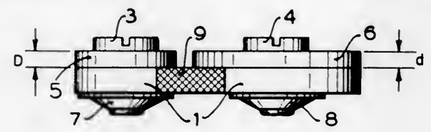


means for stopping said machine in response to generation of said first signal: and fail-safe means comprising a second antenna on said machine and operative to sense an absence of said field about the operator's body and in response to generate a second signal, and second means for stopping said machine in response to generation of said second signal.

3,953,771
MULTIPLE TRIMMER CAPACITOR, PARTICULARLY FOR ADJUSTMENT OF CRYSTAL OSCILLATORS

Manfred Bremstahler, Ruckersdorf, Germany, assignor to Firma Stettner & Co., Lauf, Pegnitz, Germany

Filed Oct. 9, 1974, Ser. No. 513,229
Claims priority, application Germany, May 21, 1974, 2424559
Int. Cl.² H01G *5/06*
U.S. Cl. 317—248 **15 Claims**



1. Multiple trimmer capacitor, particularly for adjustment of crystal oscillators, comprising

a stator support disk of ceramic material (1) formed with at least two parallel apertures therethrough located side-by-side;

a metallization layer (2,2') on the top side of said disk, shaped to form a common stator electrode;

at least two disk rotors (5, 6) of ceramic, dielectric material, each having an electrically conductive shaft (3, 4) passing through the respective aperture of the stator located in engagement with, and on the metallization layer of the disk;

a rotor electrode (14), each located on each respective disk rotor, the rotor electrode being spaced from the stator electrode;

electrically conductive spring means (7, 8) rotatably securing the shaft, and hence the disk rotors to the support disk (1);

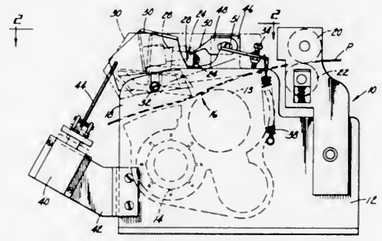
and a conductive coating (9, 9*a*, 9*b*) at the bottom side of said support disk (1) forming an electrical connection to the spring means and hence to the shafts to provide at least one terminal for the rotors, each individual rotor electrode and the common stator electrode forming a trimmer capacitor unit;

wherein one rotor disk has a larger diameter than the other to provide rotors of different capacitative characteristics with respect to the common stator electrode (2) to provide different maximum and minimum capacitances and to provide one capacitor unit for fine, and the other capacitor unit for coarse adjustment on the common support disk (1).

3,953,772
CLEANING OF CORONA ELECTRODES

Robert E. Zimmer, Niles, Ill., assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Mar. 25, 1974, Ser. No. 454,232
Int. Cl.² H01T *19/00*
U.S. Cl. 317—262 A **5 Claims**



1. A copying machine including means for applying electroscopic toner powder to the surfaces of members having electrostatic images thereon, comprising:

a corona electrode element in the form of a fine gauge, tightly stretched wire for generating a bias in the vicinity of the toner powder application site;

means for energizing said electrode to generate a corona discharge for the aforesaid purpose;

means for stimulating the wire electrode element into a state of controlled vibration of sufficient amplitude to free it of toner powder accumulated on the wire surface without subjecting the fine gauge wire to mechanical effects dangerous to its mechanical integrity, said stimulating means comprising a plectrum element mounted on the machine and coacting with the wire to pluck the same to initiate vibration;

a movable support on said frame for one of said corona electrode element and said plectrum element, so arranged as to provide movement of the one element through a path wherein it conflicts with the other; and

means to mechanically actuate said movable support.

3,953,773
ANTI-LOCK BRAKE CONTROL CIRCUIT

Yukitsugu Fukumori, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

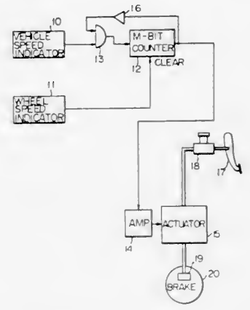
Filed Dec. 11, 1974, Ser. No. 531,729
Claims priority, application Japan, Dec. 27, 1973, 49-1291
Int. Cl.² B60T *8/08*
U.S. Cl. 318—52 **14 Claims**

1. An anti-lock brake control circuit for a vehicle having a plurality of braked wheels comprising:

first means for sensing speed of the vehicle relative to ground and producing first pulses at a first variable rate indicating the vehicle speed;

second means for sensing speed of the wheels and producing second pulses at a second variable rate lower than said first rate indicating the wheel speed;

third means connected to said first means for counting the number of said first pulses and producing a brake release signal for releasing the brake applied to said wheels when the count therein reaches a predetermined number and further coupled to said second means such that said count is cleared by one of said second pulses; and

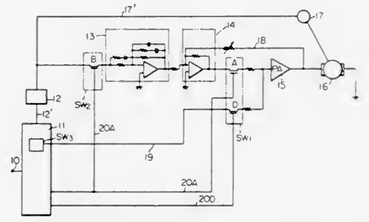


fourth means for maintaining said brake release signal until said second pulse clears said count.

3,953,774
CONTROL METHOD OF A DC MOTOR

Tadasu Sato, Tachikawa, and Chuichi Yoshitake, Tokyo, both of Japan, assignors to Fujitsu Ltd., Japan

Filed Nov. 30, 1973, Ser. No. 420,648
Int. Cl.² G05B *11/18*
U.S. Cl. 318—594 **5 Claims**



1. A control method of a DC motor or the like including:

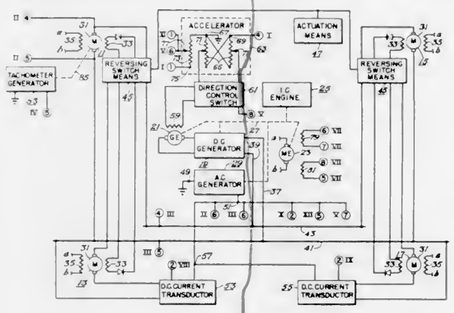
providing an analogue signal and a scale pulse both of whose periods change in proportion to the rotating speed of a rotor of said motor, wherein the amplitude of the analogue signal is proportional to a deviation between a destination position at which an object to be moved by said motor during every predetermined feeding interval is to be stopped and a position where the object is actually located, and the amplitude of the analogue signal has one polarity when the object is located in front of the destination position and another polarity when the object is located beyond the destination position, while a predetermined number of the scale pulses are included within said predetermined feeding interval;

providing a program curve which contains said intervals with which said object is supplied close to the destination position, and also contains time intervals and as a result of the comparison of the period of the scale pulse and said time intervals the object is moved to the desired position at a predetermined acceleration rate, running speed and deceleration rate;

moving said object by means of said motor which is driven by a power amplifier under control of pulse-width modulated pulses until said object comes close to the destination position, wherein the pulse-width modulated pulses are produced according to the deviation which is detected by comparing said time interval and the period of said scale pulse, and;

moving the object by means of said motor which is driven by said power amplifier under control of said analogue signal when the object comes closer to the destination position, wherein said power amplifier includes a negative feed-back loop so that the power amplifier may act as a linear power amplifier.

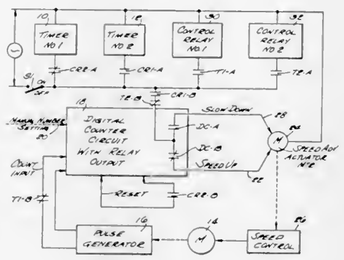
3,953,775
PROPULSION CONTROL SYSTEM FOR ELECTRICALLY POWERED VEHICLES
Aaron D. Friend, and Hilmer C. Lindahl, both of Longview, Tex., assignors to R. G. LeTourneau, Inc., Longview, Tex.
Continuation of Ser. No. 139,451, May 3, 1971. This application Mar. 23, 1973, Ser. No. 344,080
Int. Cl.² B60L *11/02*
U.S. Cl. 318—147 **4 Claims**



1. In a propulsion control system for an electrically powered vehicle wherein a plurality of direct current wheel drive motors having shunt fields are utilized and means are provided to accomplish automatic variations in motor field excitation responsive to first signals which are a function of selected vehicle operating conditions, and wherein power is supplied to said motors from a direct current generator having a shunt field and means are provided to accomplish automatic variations in generator field excitation responsive to second signals which are a function of selected vehicle operating conditions, and wherein said direct current generator is driven by an internal combustion engine which also drives an AC generator; the improvement wherein said first signals comprise one or more "increase" functions and one or more "diminish" functions and means are provided to effect priority for the diminish functions, and said second signals comprise a signal responsive to a condition requiring quick reduction or reversal of generator field excitation which may include a signal responsive to engine under speed.

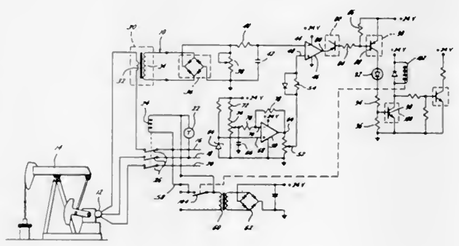
3,953,776
DIGITAL MOTOR SPEED CONTROL CIRCUIT
Robert F. Wolf, Waukesha, Wis., assignor to Waukesha Foundry Company, Inc., Waukesha, Wis.
Continuation-in-part of Ser. No. 425,013, Dec. 14, 1973. This application Dec. 16, 1974, Ser. No. 527,573
Int. Cl.² H02P *5/06*
U.S. Cl. 318—312 **13 Claims**

1. A speed control circuit comprising a rotatable shaft, a pulse generator coupled to the shaft for generating electrical pulses at a frequency that is proportional to the rotary speed of the shaft, pulse counter means having at least one presettable number associated therewith and having means for indicating the relative magnitude of the count attained by said counter and each said presettable number, means for gating the output of said pulse generator into said counter means during a first fixed time interval which is long compared to the rotational period of said shaft, and means for varying the speed of said shaft in a predetermined direction during a second fixed time interval which follows said first time interval if the count attained by said counter in the preceeding first



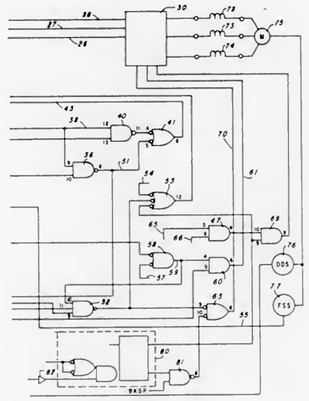
time interval has a predetermined magnitude relative to said presettable number, and means for restarting said first time interval following the end of said second time interval.

3,953,777
CONTROL CIRCUIT FOR SHUTTING OFF THE ELECTRICAL POWER TO A LIQUID WELL PUMP
Fount E. McKee, Houston, Tex., assignor to Delta-X Corporation, Houston, Tex.
Filed Feb. 12, 1973, Ser. No. 331,804
Int. Cl.² H02P *1/04*
U.S. Cl. 318—474 **5 Claims**



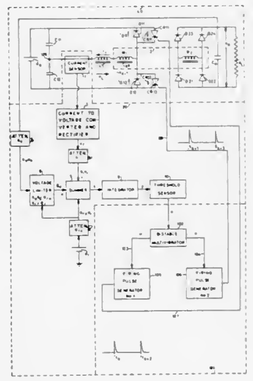
1. A circuit for shutting off the electrical power to the drive motor of a liquid well pump comprising,
means for sensing the instantaneous current to the motor,
an RC circuit connected to and receiving the output from the sensing means, the RC circuit having a time constant greater than the time required for the pump to complete one full pumping cycle and the impedance of the charging path and the impedance of the discharging path of the condenser in the RC circuit being substantially the same whereby the RC circuit senses the average current drawn by the motor,
a comparator connected to the RC circuit,
a reference voltage connected to the comparator, said reference voltage is obtained from an amplifier connected to the electrical power, and in which the output of the amplifier varies inversely to variations of voltage of the electrical power, and
switching means connected to the output of the comparator and to the electrical power to the motor, said switching means actuated by the comparator when the average current to the motor decreases to a predetermined amount for shutting off power to the motor.

3,953,778
MOTION CONTROL SYSTEM FOR AN INDUCTIVELY CONTROLLED MULTI-PHASE MOTOR
William Edward Bray, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Apr. 1, 1974, Ser. No. 456,496
Int. Cl.² G05B *19/40*
U.S. Cl. 318—685 **28 Claims**



1. An electro-mechanical motion control system having at least one inductively controlled multi-phase motor with at least one coil corresponding to each phase, for providing desired mechanical motion, comprising:
a. drive circuit means, for providing current of a desired waveform and amplitude to the multi-phase motor;
b. position sensing means for providing an electrical signal indicative of the angular position of the multi-phase motor;
c. selecting means for selecting at least one phase of the multiphase motor and electrically connecting the corresponding motor coil to the drive circuit means to cause the motor to rotate either in the forward or reverse direction;
d. dynamic braking means connected to receive and responsive to the indicia signal and connected to the selecting means to cause the selecting means to select at least one phase that lags the previously selected phase and to electrically connect the corresponding motor coil to the drive circuit means for a prescribed period of time, thereby providing the motor with the required retrotorque;
e. reference voltage means for providing a reference voltage;
f. input voltage means connected to receive and responsive to the indicia signal for providing a reference voltage; and
g. comparison means operatively connected to the reference voltage means and the input voltage means, and having an output connected to the dynamic braking means and connected to the selecting means and to the drive circuit means, for comparing the reference voltage to the input voltage and providing a first output signal of a first predetermined value when the voltages are of a first prescribed range of differences and for providing a second predetermined value when the voltages are of a second range of differences, the first output signal causing the drive circuit means and the dynamic means to operate.

3,953,779
ELECTRONIC CONTROL SYSTEM FOR EFFICIENT TRANSFER OF POWER THROUGH RESONANT CIRCUITS
Francisc Carol Schwarz, 18339 Timber Lane, Fairview Park, Ohio 44126
Filed May 30, 1974, Ser. No. 474,788
Int. Cl.² H02M *3/315*
U.S. Cl. 321—2 **16 Claims**



1. A controllable converter device for providing electrical current to a load, comprising in combination:
a power source;
first and second switch means;
capacitor means;
a first series resonant circuit comprising said first switch means connected in series with the load and said capacitor means;
a second series resonant circuit comprising said second switch means connected in series with the load and said capacitor means;
means connecting said first and second resonant circuits across said power source;
control means enabling alternate conduction of said first and second switch means to provide alternate direction load current from said power source to the load during alternate charging of said capacitor means;
said alternate charging of said capacitor means providing alternate potentials which oppose said alternate conduction of said first and second switch means thereby alternately terminating conduction of said first and second switch means;
and means connected to said first and second series resonant circuit for enabling discharge of said capacitor means between said alternate direction load currents to limit the voltage of said capacitor means.

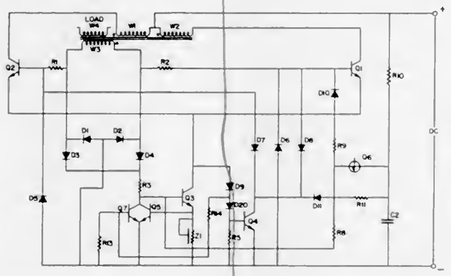
3,953,780
INVERTER HAVING FORCED TURN-OFF
Thomas E. Anderson, Normal, Ill., and John P. Walden, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Oct. 21, 1974, Ser. No. 516,772
Int. Cl.² H02M *7/00*
U.S. Cl. 321—18 **20 Claims**

1. An electrical inverter circuit for converting a d.c. electrical input into an a.c. electrical output, said inverter circuit comprising:
a transformer structure having secondary winding means for supplying said electrical output and a primary winding

means, said winding means being magnetically coupled to each other through magnetic circuit means,

active element switch means electrically connected to said primary winding means and electrically connectable to said d.c. electrical input for alternately switching said d.c. electrical input to said primary winding means for producing corresponding varying magnetic fields in said magnetic circuit means and thereby producing said a.c. electrical output in said secondary winding means, and

electrical control means electrically connected to said active element switch means for monitoring the magnitude



of electrical current flowing in said primary winding means and controlling said alternate switching operation in response to the detection of current in said primary winding in excess of a predetermined level,

said electrical control means including a further controllable active element means in circuit with said active element switch means such that the primary winding current also flows therethrough and synchronous control means for synchronously controlling said further active element means so as to increase the electrical impedance thereof during at least a portion of each switching transition of said active element switch means.

3,953,781

CONTROLLABLE AND QUENCHABLE RECTIFIER CIRCUIT FOR HIGH DIRECT CURRENT VALUES

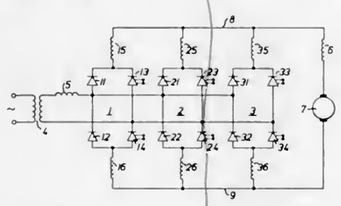
Johannes Forster, and Karl-Heinz Bezold, both of Berlin, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Dec. 11, 1974, Ser. No. 531,799

Claims priority, application Germany, Dec. 12, 1973, 2362375

Int. Cl.² H02M *7/00*

U.S. Cl. 321—27 R **6 Claims**



1. In a rectifier circuit for alternating current including a rectifying bridge circuit having a plurality of controllable rectifier elements, a separate quenching means for each of said controllable rectifier elements for reducing feedback to the main, first means for connecting the input of said bridge circuit to an alternating current main, a pair of bus bars for connection to a load, and second means for connecting each of the output terminals of said bridge circuit to a respective one of said pair of bus bars, the improvement wherein: said rectifier circuit includes a plurality of said rectifying bridge circuits with each of the controllable rectifier elements of each of said bridge circuits having a separate quenching means associated therewith; said first means connects the inputs of all of said bridge circuits in parallel to the alternating current main in a rigid and low impedance manner, said second means includes a separate impedance connected between each of said output terminals and the associated one of said bus bars; and further comprising means for controlling said quenching means to quench the associated controllable rectifier elements of the respective bridge circuits in a stepped sequence, whereby the rectifier circuit may be utilized for high d.c. current values.

3,953,782

VOLTAGE CONVERTER SYSTEM WITH ON-OFF CONTROL

William A. Means, Rockford, Ill., assignor to Applied Motors, Inc., Rockford, Ill.

Filed Feb. 26, 1975, Ser. No. 553,314

Int. Cl.² B60R *18/00*

U.S. Cl. 321—28 **6 Claims**

1. A voltage converter system having:

a input terminals adapted for connection to a battery, output terminals adapted for connection to an electrical load device rated for operation from an ac. voltage, and a ground terminal adapted for connection to the grounding terminal of the load device;

b a motor-alternator set including:

b1 a dc. motor having input leads connected to said input terminals and rated for energization from the voltage of said battery, and

b2 an alternator having output leads connected to said output terminals and rated to produce an ac. voltage corresponding substantially to the rated operating voltage of said output device;

c a normally open switch connected in a first series path which includes said input terminals, said ground terminal, and one of said output terminals, said switch being rendered conductive when manually actuated and being operable when conductive to cause current to flow through said first series path from said battery when the latter is connected to said input terminals;

d a switching means connected in a second series path with said input leads and said input terminals; and

e means in said first series path and responsive to current flow resulting from manual actuation of said switch to render said switching means conductive when said switch is first manually actuated and to render said switching means non-conductive when said switch is next manually actuated, said switching means being operable when conductive to cause current to flow through said second series path from said battery when the latter is connected to said input terminals, whereby successive manual actuations of said switch cause said motor to be successively energized and de-energized.

3,953,783

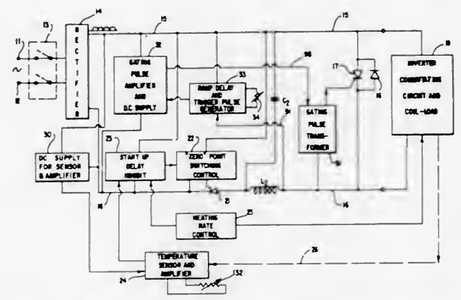
LOW CAST CHOPPER INVERTER POWER SUPPLY AND GATING CIRCUIT THEREFOR

Philip H. Peters, Jr., Greenwich, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.

Division of Ser. No. 261,227, June 9, 1972, which is a division of Ser. No. 131,648, April 6, 1971, Pat. No. 3,710,062. This application Mar. 26, 1974, Ser. No. 454,787

Int. Cl.² H02M *7/515*

U.S. Cl. 321—43 **69 Claims**



1. An improved power supply and control circuit comprising inverter circuit means having only a single bidirectional conducting gate controlled power thyristor coupled to and supplying load with periodic energization currents, rectifier means for supplying a rectified semi-filtered unidirectional high voltage excitation potential for said inverter circuit means and gating circuit means for periodically gating on said inverter circuit means, said gating circuit means including means for deriving a low voltage unidirectional self excitation potential from the high voltage rectified unfiltered undirectional excitation potential supplied from said rectifier means, timing circuit charging means supplied by said low voltage excitation potential, voltage responsive switching means connected to and controlled by said timing circuit charging means, said voltage responsive switching means being rendered conductive upon the voltage of said timing circuit charging means attaining a preset value, a semiconductor switching device having a relatively flat current vs voltage conducting characteristic and having its load terminals connected to the output from the rectifier means, the control gate of said constant current semiconductor switching device being connected to and supplied by the voltage responsive switching means and gating signal output circuit means connected in series circuit relationship with the constant current high voltage switching device and adapted for connection to the control gate of the gate controlled power thyristor comprising a part of the invertor circuit means.

3,953,784

THYRISTOR CIRCUIT FOR CONVERSION OF DIRECT CURRENT TO ALTERNATING CURRENT

Heinrich Kummeke, Zorneding near Munich, Germany, assignor to Wacker Werke KG, Munich, Germany

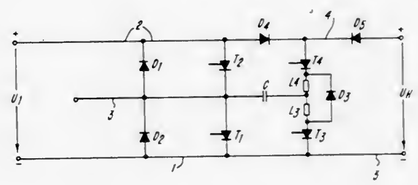
Filed Feb. 26, 1975, Ser. No. 553,257

Claims priority, application Germany, Feb. 27, 1974, 2409418; Jan. 17, 1975, 2501767

Int. Cl.² H02M *7/505*

U.S. Cl. 321—45 C **11 Claims**

1. In a thyristor load inverter circuit; a first DC-supply conductor at a fixed potential, a second supply conductor at a potential relative to the potential of the first supply conductor and variable between a predetermined minimum value near the potential of the first DC-supply conductor and a predetermined maximum value, an AC-output conductor, a first main thyristor connected between said AC-output conductor and said first supply conductor and poled toward the latter, a second main thyristor connected between said AC-output conductor and said second supply conductor and poled toward the former, a first auxiliary conductor connected to a source of auxiliary positive voltage having a value always essentially higher than the potential of the first DC-supply conductor, a second auxiliary conductor negative relative to said first auxiliary conductor and having a potential corresponding essentially to that of the first DC-supply conductor, a commutation branch having one end connected to said first auxiliary conductor and the other end connected to said second auxiliary conductor and comprising in series from said



first to said second auxiliary conductors a first and second auxiliary thyristor, the auxiliary thyristors being poled toward said second auxiliary conductor, a capacitor connected between the juncture of said inductors and said AC-output conductor, means for supplying igniting control pulses alternately to said first and second main thyristors, and means for supplying igniting control pulses to said auxiliary thyristors in timed relation to the supply of igniting control pulses to said main thyristors to effect extinguishing of each main thyristor prior to ignition of the other thereof.

3,953,785

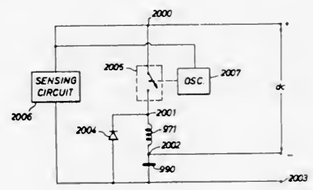
POWER SUPPLY

William Sherman Bell, Jr., Houston, Tex., assignor to Telxon Corporation, Houston, Tex.

Filed Nov. 29, 1974, Ser. No. 528,439

Int. Cl.² H02M *7/44*

U.S. Cl. 321—43 **2 Claims**



1. A power supply comprising:

a. first, second, third and output contact points;

b. a d-c voltage source connected between the first and third points;

c. an inductance connected between the second and third points;

d. a capacitor connected between the third and output points;

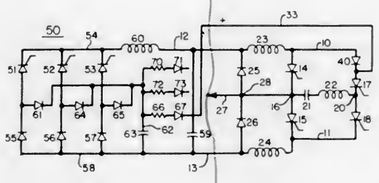
e. a diode connected between the second and output points, for providing a current conduction path through the inductance and the capacitor;

f. a switch connected between the first and second points,

g. an oscillator for periodically closing said switch, said oscillator having a predetermined period and duty cycle; and

h. a sensing circuit connected between the first and output points, for inhibiting the oscillator when the voltage at the output point exceeds a predetermined value.

3,953,786
EXTERNAL CHARGING CIRCUIT FOR STATIC SWITCH
Hsiao J. Ma, Des Plaines, and George H. Studtmann, Mount Prospect, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Mar. 29, 1971, Ser. No. 128,752
Int. Cl.² H02M *7/515*
U.S. Cl. 321—45 C **3 Claims**

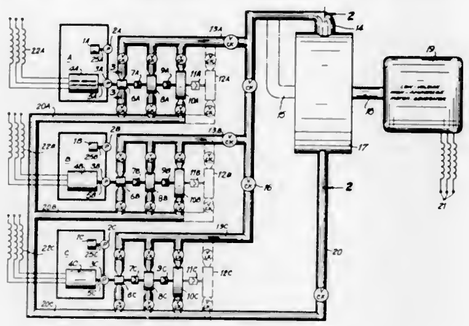


1. In a switching circuit including a pair of reference conductors for receiving a main energizing voltage from a pair of d-c input conductors, a pair of main semiconductor switches connected in series between the reference conductors with no other component between the main semiconductor switches, a pair of auxiliary semiconductor switches coupled in series between the reference conductors, a first pair of diodes coupled in series between the d-c input conductors and connected in a sense opposite the connection of the main and auxiliary semiconductor switches, with the common connection between the diodes being coupled to the common connection between the main semiconductor switches, and a series circuit including an inductor and a commutating capacitor coupled between the common connection between the main semiconductor switches and the common connection between the auxiliary semiconductor switches, the improvement which comprises

a pair of auxiliary conductors connected to receive energy over a path which is independent of the main energizing voltage and to complete a charging circuit with the commutating capacitor, which charging circuit includes a main semiconductor switch connected to one of said reference conductors and the auxiliary semiconductor switch which is connected to the other of said reference conductors, a first isolating diode, coupled between one of the d-c input conductors and the charging circuit, and a second isolating diode, coupled between the other d-c input conductor and the charging circuit, so that the commutating capacitor can be charged to the commutating voltage level when it exceeds the level of the main energizing voltage present on the d-c input conductors.

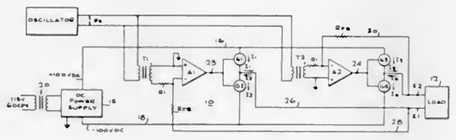
3,953,787
DRIVE SYSTEM
Edward Helbling, 393 E. 5th St., Brooklyn, N.Y. 11230
Continuation-in-part of Ser. No. 448,929, March 7, 1974, abandoned. This application Oct. 24, 1974, Ser. No. 517,840
Int. Cl.² H02P *9/00*
U.S. Cl. 322—13 **4 Claims**

1. A drive system, comprising drive means including a motor adapted to be driven from a source of high-voltage energy; driven means including a generator adapted to produce lower-voltage electric energy; intermediate means powered by said drive means and operative for driving said driven means, including at least one closed hydraulic circuit including a circuit loop, a plurality of hydraulic pumps of successively greater capacity which are driven by said motor, and a fluid driven rotor coupled to said generator driving the same and receiving the combined fluid output of said hydraulic pumps; and an auxiliary hydraulic loop, a first auxiliary hydraulic pump in said auxiliary loop and coupled with a drive shaft of said motor, and an auxiliary motor and a second auxiliary



pump for driving said first auxiliary pump as a motor, so as to aid in starting-up of said first mentioned motor.

3,953,788
AC POWER SOURCE WITHOUT A STEP-UP OUTPUT TRANSFORMER
Fausto V. Taddeo, and Raymond W. Pauly, both of San Gabriel, Calif., assignors to Pacific Electronic Enterprises, Inc., Rosemead, Calif.
Filed Apr. 14, 1975, Ser. No. 568,017
Int. Cl.² G05F *1/44*
U.S. Cl. 323—25 **14 Claims**



1. An alternating current (AC) power source for supplying AC power to a load at a selected voltage rating up to a selected current rating, the power source comprising:

first and second output terminals across which said load is to be connected;

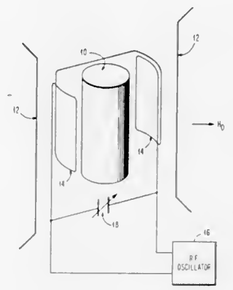
first means including first voltage means and first current-amplifying means connected between said first voltage means and said first output terminal for providing at said first output terminal AC power at a voltage which is half said selected voltage rating up to said selected current rating, said first means including first feedback means for providing directly a feedback signal from said first output terminal to said first voltage means;

second means including second voltage means and second current amplifying means connected between said second voltage means and said second output terminal for providing at said second output terminal AC power at a voltage which is half said selected voltage rating, and which is 180° out of phase with respect to the voltage at said first output terminal, and up to said selected current rating, said second means including second feedback means for providing directly a feedback signal from said second output terminal to said second voltage means;

each of said first and second current amplifying means including a plurality of parallel connected common base driven current amplifying transistors; and

protective means included in at least one of said current amplifying means for protecting the parallel connected transistors from a short failure in one of said parallel connected transistors.

3,953,789
METHOD OF POLARIZING NUCLEI
Wiebren Sjoerd Veeman, Grave, Netherlands, and Costantino Sheldon Yannoni, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 20, 1974, Ser. No. 525,326
Int. Cl.² G01R *33/08*
U.S. Cl. 324—.5 AC **8 Claims**

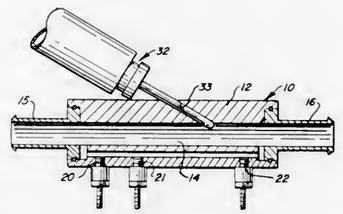


1. A method for polarizing first nuclei having a long relaxation time in a solid in a high DC magnetic field where said solid contains first nuclei having long relaxation times and second nuclei having short relaxation times comprising the steps of

applying a DC magnetic field having a strength above 1000 gauss to said solid, and

sweeping said solid with a radio frequency field sufficient to excite a significant number of said second nuclei for a time which is at least as long as the time required to polarize said first nuclei.

3,953,790
CONDUCTIVITY MONITORING SYSTEM
Wendell V. Ebling, Libertyville, Ill., and Herbert Goldsmith, Rockville, Md., assignors to Baxter Laboratories, Inc., Deerfield, Ill.
Continuation-in-part of Ser. No. 519,729, Oct. 31, 1974, abandoned. This application Feb. 5, 1975, Ser. No. 547,320
Int. Cl.² G01R *31/32*
U.S. Cl. 324—30 B **15 Claims**



1. A conductivity monitoring system for continuously monitoring the conductivity of a fluid flowing into and through a housing comprising:

a. indicator means

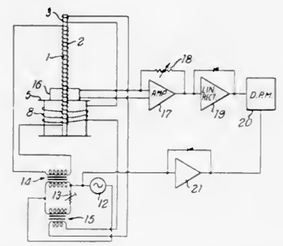
b. at least a common, a first and a second electrode disposed within said housing in contact with said fluid, said common electrode being positioned closer to said first electrode than to said second electrode, whereby the electrical conductivity between said common electrode and said first electrode will be different than the electrical conductivity between said common electrode and said second electrode;

c. means connected to said electrodes to approximate a constant current source for energizing said electrodes to provide substantially the same current flow through them.

d. means for detecting the difference in the conductivity between said common and first electrodes and between said common and second electrodes and providing a difference voltage output signal representing the value of the conductivity of said fluid; and

e. means for coupling said signal to said indicator means to operate said indicator means.

3,953,791
APPARATUS FOR AND METHOD FOR TESTING THE NUMBER OF TURNS ON A COIL
Ronald Frederick Spurr, Sevenoaks; Colin Alan Boardman, Shirley, and John D. Yewen, Croydon, all of England, assignors to H. Tinsley & Co. Ltd., London, England
Filed June 14, 1974, Ser. No. 479,567
Claims priority, application United Kingdom, June 19, 1973, 29011/73
Int. Cl.² G01R *33/00*
U.S. Cl. 324—34 R **20 Claims**



1. Apparatus for testing the number of turns on a coil comprising a rod capable of being magnetically energized, an energizing coil wound on the rod and connected to magnetically energize the rod to generate flux, at least two compensating coil means coaxially spaced axially along the rod and adapted to be energized to modify the flux in the sense to provide between the compensating coil means and about the rod a space in which the flux is substantially uniform, and support means about the rod for supporting within said space a coil to be tested.

3,953,792
PARTICULATE AND AEROSOL DETECTOR
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Jimmie J. Wortman, Chapel Hill, N.C.; Robert P. Donovan, Durham, N.C.; Arthur D. Brooks, Morrisville, N.C.; Larry K. Monteith, Raleigh, N.C.; William H. Kinard, Williamsburg, and Robert L. O'Neil, Yorktown, both of Va.
Filed Apr. 26, 1974, Ser. No. 464,722
Int. Cl.² G01R *27/26*
U.S. Cl. 324—61 R **8 Claims**

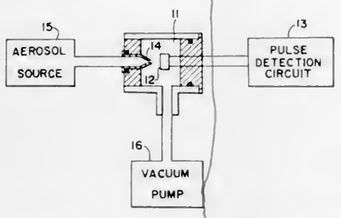
1. A device for measuring aerosol particles suspended in a gas comprising:

a capacitor including a first conducting layer, a dielectric layer less than 2,000 angstroms thick grown on said first conducting layer, and a second conducting layer less than 1,000 angstroms thick evaporated onto said dielectric layer;

a circuit means connected to said two conducting layers of said capacitor for charging said capacitor;

an accelerator means for accelerating said gas to a velocity such that each of said aerosol particles will penetrate both said second conducting and said dielectric layers of said capacitor, said accelerator means being positioned such

that said accelerated gas is directed onto said second conducting layer whereby each aerosol particle will short said two conducting layers of said capacitor thereby causing the capacitor to discharge until the conducting path is vaporized causing the capacitor to recharge to its initial level; and



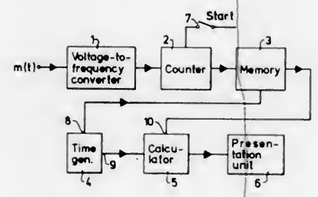
detection means connected to said circuit means for counting the number of discharges of said capacitor whereby the density of said aerosol particles in said gas is determined.

3,953,793

OPTIMAL DETERMINATION OF SIGNALS AFFECTED BY INTERFERENCE OR DISTURBANCE

Bruno Yngve Nilsson, Boliden, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed Sept. 4, 1974, Ser. No. 503,179
Claims priority, application Sweden, Sept. 5, 1973, 7312088
Int. Cl.² G01R *19/00*
U.S. Cl. 324—76 A **2 Claims**



1. A method of determinine a true signal in the presence of an interfering signal, said true and interfering signals combining to form a measuring signal, comprising the steps of:
continuously integrating said measuring signal to provide a plurality of integrated values,
generating a plurality of time signals measured from the beginning of said continuous integration,
dividing the integrated values corresponding to each of said plurality of time signals by the corresponding time signal to obtain a plurality of quotient signals, and
presenting said quotient signals, said quotient signals fluctuating in value near the beginning of said integration and becomming substantially constant as said integration continues and the influence of said interfering signal is reduced.

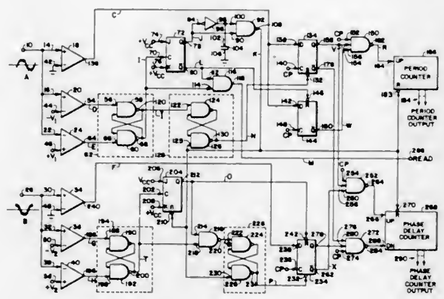
3,953,794

DIGITAL PHASE DETECTOR

Phillip M. Moore, Phoenix, Ariz., assignor to Motorola Inc., Chicago, Ill.

Filed Mar. 27, 1975, Ser. No. 562,694
Int. Cl.² G01R *25/00*
U.S. Cl. 324—83 D **7 Claims**

1. An apparatus for providing an indication of a phase angle relationship of a first and a second noisy signal; the first and second signals having the same period, each signal having a spectrum consisting only of odd harmonics of a sine wave having the same period, and each signal having a finite slope at each zero crossing time; comprising:
means for amplifying and limiting the first and second noisy signals to provide first and second bilevel signals, respectively, said bilevel signals being noisy in the time vicinity of the zero crossing times;
means for providing clock pulses of a predetermined repetition rate;



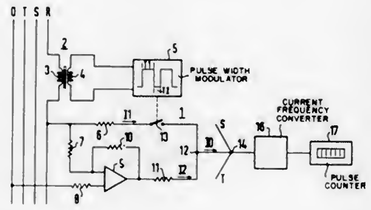
first and second counter means; and
logic means for enabling said first counter means to count and store a first number of clock pulses proportional to the period time of said first noisy signal, for enabling said second counter means to count and store a second number of clock pulses proportional to the phase delay time between said first and said second noise signals and for providing an output signal indicative of the completion of said counts.

3,953,795

TRANSFORMERLESS KILOWATTHOUR METER FOR AN ELECTRICAL POWER LINE

Julius Brunner, Ruckersdorf; Manfred Schwendtner, Schwarzenbruck, and Günter Steinmuller, Nurnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 26, 1974, Ser. No. 509,681
Claims priority, application Germany, Sept. 27, 1973, 2348667
Int. Cl.² G01R *7/00, 11/32*
U.S. Cl. 324—142 **12 Claims**



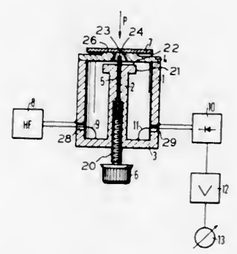
1. An apparatus for measuring kilowatthours in an electrical power line, comprising:
a pulse width-frequency modulator, coupled to said line and controlled by the load current thereof;
transformerless first means, coupled to said line, for generating a first current which is proportional to the load voltage of said line;
transformerless second means, including inverting amplifying means, coupled in parallel relationship to said transformerless first means, for generating a second current which is opposite in polarity to said first current and is proportional to one half the instantaneous value of said first current; and
switching means, controlled by said modulator, and coupled in series relationship to said transformerless first means, for adding said first current to said second current in one of two switching conditions, the average value of the sum of said first and second currents being proportional to the product of the load current and the load voltage of said power line.

3,953,796

METHOD AND APPARATUS FOR MEASURING ELECTRICAL CONDUCTIVITY

Wolfgang Keller, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 30, 1974, Ser. No. 474,612
Claims priority, application Germany, June 5, 1973, 2328590; June 5, 1973, 2328589
Int. Cl.² G01R *31/26, 27/02*
U.S. Cl. 324—158 R **8 Claims**



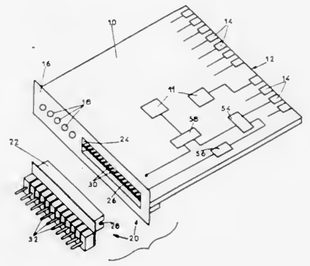
1. An arrangement for measuring of the local variation of the electrical conductivity of a semiconductor planar member such as a silicon disc without destroying it comprising, a resonant circuit, a high frequency generator connected to excite said resonant circuit, a portion of the area of the semiconductor member which is to be measured capacitively coupled to said resonant circuit so as to attenuate the energy in the resonant circuit as a function of its resistivity, a voltage measuring device coupled to said resonant circuit to measure the resonance voltage of the resonant circuit which serves as measurement of the conductivity of the coupled portion of the area of the semiconductor, and wherein said resonant circuit consists of a tank circuit of high quality in the form of a coaxial resonator with an inner conductor and closed off outer conductor and whereby said inner conductor has one end electrically connected to a first cover of said outer conductor and its other end capacitively coupled to a second cover of said outer conductor, an opening formed in said second cover having a smaller size than said semiconductor member, said semiconductor member mounted on said second cover over said opening and coupled to said resonant circuit through said opening formed in said second cover and said semiconductor member pressure supported over said opening, and a coaxial probe mounted in said inner conductor of said resonant circuit with one end which extends from said other end of said inner conductor to capacitively couple said other end of the inner conductor and said one end of said probe to said semiconductor member and said probe is shiftable axially of said inner conductor and relative to said opening in said second cover, whereby the capacitive coupling of said resonant circuit with the coupled area of said semiconductor member can be adjusted.

3,953,797

ELECTRONIC EQUIPMENT ASSEMBLY COMPRISING PLUG-IN MODULES AND TEST BARS

Yves Bally Berard, La Tronche; Paul Claudin, and Claude Leymarie, both of Grenoble, all of France, assignors to Merlin Gerin, Grenoble, France

Filed Nov. 13, 1973, Ser. No. 415,408
Claims priority, application France, Nov. 20, 1972, 72.41212
Int. Cl.² G01R *31/02, 31/26*
U.S. Cl. 324—158 F **5 Claims**



1. An assembly comprising
a plug-in electronic equipment module having a first edge portion carrying a plurality of normal-service contacts for engagement in plug-in relation with a plurality of registering mating contacts supported by a connector panel, and a second edge portion carrying a first plurality of aligned test contacts, and
a test fixture comprising a test bar having a second plurality of aligned test contacts, said second plurality of test contacts mating with and being in registration with said first plurality of test contacts; a plurality of switches each having a bridging contact, one of said switches being associated with each of said second plurality of test contacts; a plurality of sets of conductive tabs, one of said sets of tabs being associated with each of said second plurality of test contacts and having a first group electrically connected to the corresponding test contact and a second group for connection to an external voltage source, the bridging contact on the associated switch being movable to electrically connect selected tabs of said first and second groups, said test fixture permitting the testing of the operation of said module in its plug-in position.

3,953,798

METHOD AND DEVICE FOR RADIO TRANSMISSION OF BINARY DATA SIGNALS

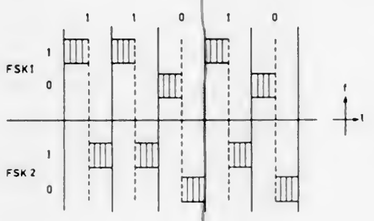
Jan Roland Sjostrand, and Lars Henning Zetterberg, both of Jarfalla, Sweden, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 7, 1974, Ser. No. 521,928
Claims priority, application Sweden, Nov. 9, 1973, 7315253
Int. Cl.² H02B *1/00*
U.S. Cl. 325—30 **5 Claims**

1. A method of transmitting and receiving binary data signals using different signal frequencies to represent the 1 and 0 bits of said binary data signals, comprising the steps of
transmitting each bit of said binary data signal periodically during bit intervals,
transmitting a first of said different signal frequencies to represent a binary 1 during a first portion of a bit interval,
transmitting a second of said different signal frequencies redundantly representing said binary 1 during a second portion of said bit interval,

transmitting a third of said different signal frequencies representing a binary 0 during a first portion of a subsequent bit interval,

transmitting a fourth of said different signal frequencies redundantly representing said binary 0 during a second portion of said subsequent bit interval,



activating a receiver to response only to said first and third signal frequencies during the first portion of each bit interval, and

activating said receiver to respond only to said second and fourth signal frequencies during the second portion of each bit interval.

3,953,799

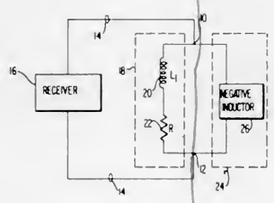
BROADBAND VLF LOOP ANTENNA SYSTEM

Thomas K. Albee, Western Springs, Ill., assignor to The Bunker Ramo Corporation, Oak Brook, Ill.

Continuation-in-part of Ser. No. 769,861, Oct. 23, 1968, abandoned. This application Apr. 9, 1971, Ser. No. 132,895

Int. Cl.² H04B *1/18*

U.S. Cl. 325—376 **4 Claims**



1. A broadband antenna system capable of operation over an operating band of a plurality of octaves in the low frequency bands ranging from approximately three kilohertz to three hundred kilohertz without requiring tuning to resonance for individual frequencies within the band, said antenna system comprising:

an antenna adapted for antenna operation in said low frequency bands, said antenna having an inherent inductance L_1 providing an inductive reactance X_L which varies with frequency f over said operating band in accordance with the equation $X_L = 2\pi fL_1$, and

a negative inductive reactance circuit electrically coupled in parallel with said antenna and having a negative inductance $-L_2$ chosen to provide a negative inductive reactance $X_L = 2\pi f(-L_2)$ over said operating band which is substantially equal to the inductive reactance X_L provided by said inherent inductance.

3,953,800

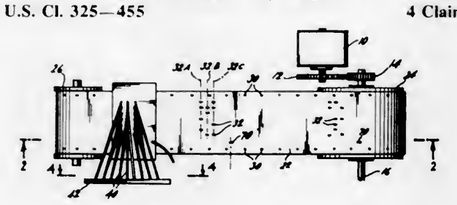
TUNING INDICATOR FOR A RADIO FREQUENCY RECEIVER

Tadao Nakamura, Flushing, N.Y.; Barry C. Detwiler, New Milford, N.J., and John A. Marchetti, Staten Island, N.Y., assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 26, 1973, Ser. No. 409,940

Int. Cl.² H04B *1/06;* **H03J** *1/04*

U.S. Cl. 325—455 **4 Claims**



1. The combination with a receiver tunable to one of a plurality of radio frequency carrier signals transmitted from broadcast stations of a tuning indicator for producing a digital display indicative of the frequency of the carrier signal transmitted from a selected broadcast station, said tuning indicator including a display panel, a first light source, a fiber optic bundle including a plurality of optic fibers, said plurality of optic fibers having their proximal ends positioned at a reading position to receive light from said first light source and their distal ends terminating on said display panel in segments of a numerical display, a station frequency encoder having a plurality of sets of station indicia, each set of station indicia representative of the carrier frequency of one of said broadcast stations, said station frequency encoder further including a plurality of alignment indicia, at least one of said plurality of alignment indicia cooperatively positioned and associated with each set station indicia, means mounting said station frequency encoder for movement relative to the reading position, and means for indicating the alignment of a set of station indicia at the reading position including a second light source, a first optic fiber coupled between said second light source and the reading position and arranged for alignment with the alignment index associated with said one set of indicia, a light sensitive device, a second optic fiber having its proximal end positioned at the reading position for alignment with said alignment index and its distal end coupled to said light sensitive device, said light sensitive device being responsive to light transmitted from said second light source through said first optic fiber, said alignment index, and said second optic fiber to said light sensitive device when said one set of station indicia is aligned at the reading position for producing a first control signal and means responsive to said first control signal for actuating said first light source, light being transmitted from said first light source, through said station indicia and said optic fibers aligned with said indicia to illuminate segments of said numerical display to produce a display indicative of the frequency of the carrier signal received by said radio frequency receiver.

3,953,801

RECEIVER DIGITAL CONTROL SYSTEM

Robert R. Podowski, Elmhurst, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed June 3, 1974, Ser. No. 475,739

Int. Cl.² H04B *1/26*

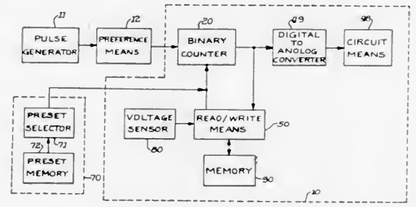
U.S. Cl. 325—464 **10 Claims**

1. A broadcast receiver including a voltage adjustable characteristic comprising:

common control means including binary counting means, converting means for translating the data output of said counting means to a corresponding voltage, and circuit means responsive to said voltage for adjusting said voltage adjustable characteristic;

preference means enabling operator control of said couonting means;

preset means for resetting said counting means to a prescribed data configuration to produce a control voltage of



a predetermined value corresponding to a predetermined adjustment of said adjustable characteristic; and

means for re-establishing the last existing data configuration of said counting means upon subsequent reactivation of said receiver.

3,953,802

ADJACENT CHANNEL REJECTOR

George F. Morris, Pittsford; David L. Babcock, West Henrietta, and Eugene A. Peterson, Penfield, all of N.Y., assignors to Edmac Associates Inc., East Rochester, N.Y.

Filed June 6, 1974, Ser. No. 477,014

Int. Cl.² H04B *1/10*

U.S. Cl. 325—474 **1 Claim**



1. An adjacent channel rejector for use in a communication system such as a TACAN system, which has a predetermined bandwidth in a channel of interest, for determining if a received signal is either a desired signal or an undesired signal; the desired signal being one which has a center frequency in the determined channel bandwidth, and the undesired signal being one which has a center frequency outside the predetermined channel bandwidth but which introduces significant energy into the predetermined channel bandwidth, comprising:

a. high gain amplifier means responsive to the desired signal to provide a corresponding amplified output signal and to the undesired signal for being driven into saturation;

b. a wide band filter connected to said high gain amplifier means and having a bandpass selected to be greater than the predetermined channel bandwidth and for producing a wide band filter output signal in response to either the desired signal or the undesired signal;

c. a narrow band filter connected to said high gain amplifier means and having a bandpass within the predetermined channel bandwidth, said narrow band filter being responsive to either (1) the undesired signal to produce a narrow band filter output signal which is substantially lower in level than the wide band filter output signal, or (2) the desired signal to produce a narrow band filter output signal which is substantially equal in level to the wide band filter output signal;

d. comparison means responsive to the energy levels of the output signals of said wide band and said narrow band filters for comparing the said energy levels of the said filter output signals to produce a first signal, when the wide and narrow band filter output signals are substantially equal to thereby indicate that the desired signal is in the channel, and a second signal, when the narrow band filter output signal is substantially lower in level than the wide band output signal to thereby indicate that the undesired signal is in the channel; and

e. inhibit means coupled to receive said received signal and responsive to said second signal for blocking said received signal and responsive to said first signal for passing said received signal.

3,953,803

MEASURING SYSTEM

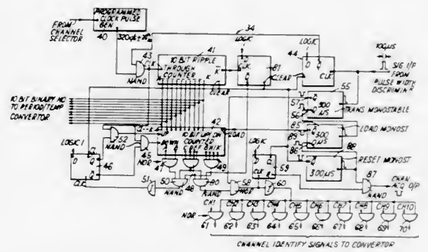
John Henry Gallant, Upminster, and Michael Robert Thomas Johnson, South Ockendon, both of England, assignors to May & Baker Limited, Dagenham, England

Filed Dec. 28, 1973, Ser. No. 429,692

Claims priority, application United Kingdom, Jan. 2, 1973, 00218/73

Int. Cl.² H03K *5/18, 5/20, 9/08*

U.S. Cl. 328—112 **9 Claims**



1. A measuring system comprising a signal processor including a first counter for storing a next following signal representative of the instantaneous value of a parameter being measured, a second counter for storing the previous signal representative of the instantaneous value of said parameter, which serves as a reference signal, comparison means for comparing said reference signal with said next following signal, means for passing to an output the signal held in said first counter whenever it is within a predetermined limit of said reference signal, means for up-dating said second counter by entering said next following signal held in said first counter into said second counter, which signal acts as the next reference signal, and clock pulse generator means for supplying clock pulses to both said counters in response to an input signal to said signal processor.

3,953,804

SWITCHING ARRANGEMENT FOR THE PRODUCTION OF SEQUENTIAL CURRENT PULSES

Hans Dethlefsen; Alfred Hauenstein, and Karl-Heinz Vogl, all of Munich, Germany, assignors to Siemens Atkiengesellschaft, Berlin & Munich, Germany

Filed Nov. 14, 1974, Ser. No. 523,725

Claims priority, application Germany, Nov. 14, 1973, 2356875

Int. Cl.² G01R *29/02;* **H03K** *5/00*

U.S. Cl. 328—130 **3 Claims**

1. In a switching arrangement for a production of sequential current pulses comprising a starting pulse switch, the improvement of

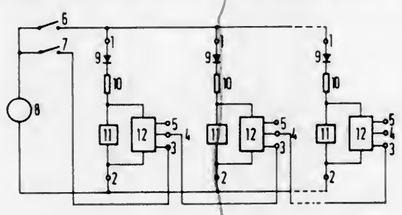
a plurality of pulse units connected by means of a joint feed line, and in series, producing at each time interval one

pulse of a series of pulses and each pulse unit comprising an energy storage capacitance device, a first and second driver, an oscillator, a frequency divider having two outputs for two signals of different delay time, a load, and a pair of switches wherein a first switch is self-holding; wherein

said energy storage capacitance device in each of said pulse units is

connected to said joint feed lme for purposes of being charged simultaneously;

connected respectively to said oscillator, said frequency divider, and said second driver by means of said first



switch, wherein said first switch is activated respectively by a starting pulse operated on by said first driver upon closing said starting pulse switch in case of said first pulse unit, and by an output signal of the frequency divider having a shorter delay time (t_1) of a preceeding serially connected pulse unit for all subsequent pulse units to function as a supply voltage source; and

further connected across said load by means of a second switch which is activated by an output signal having a longer delay time (t_2) of said frequency divider and operated on by said second driver to act as an energy source for the current pulse.

3,953,805

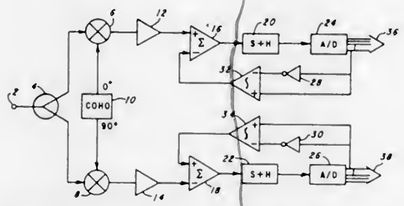
DC COMPONENT SUPPRESSION IN ZERO CF IF SYSTEMS

James Benedict Couvillon, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 7, 1974, Ser. No. 521,721

Int. Cl.² H04B *1/12*

U.S. Cl. 328—162 **5 Claims**



1. A signal processing system comprising:

a. a receiver means for receiving an AC signal having an average zero value,

b. an analog to digital converter coupled to the receiver means for receiving as an input the AC signal of the receiver means for providing digital representations including positive and negative sign bit outputs of the received signal,

c. error detection means coupled to said analog to digital converter for providing an error signal proportional to the difference between the number of positive and negative sign bit outputs, and

d. summing means coupled to the error detection means for adding the error signal to the analog to digital converter AC signal input whereby the difference between the numbers of positive and negative sign bit outputs is reduced substantially to zero.

3,953,806

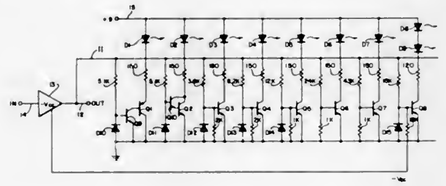
DISPLAYING AMPLIFIER OUTPUT AMPLITUDE

Joseph L. Veranth, Marlboro, Mass., assignor to Bose Corporation, Framingham, Mass.

Filed Jan. 12, 1973, Ser. No. 322,923

Int. Cl.² H03F *17/00*

U.S. Cl. 330—2 **5 Claims**



1. Apparatus for indicating the instantaneous amplitude range in which an output signal amplitude resides comprising,

a plurality of light emitting diodes,

a corresponding plurality of transistors in series with respective ones of said light emitting diodes,

an input line for receiving a signal whose level is to be monitored,

means for coupling the base of each transistor to said input line to progressively render conductive more of said transistors with increasing signal level amplitude on said input line,

a power amplifier having its output connected to said input line and having a source of d-c potential of magnitude greater than the maximum amplitude on its output terminal except when clipping occurs,

and means for biasing one of said transistor bases with said d-c potential so that the associated light emitting diode conducts only when the potential on the power amplifier output exceeds a predetermined fraction of said d-c potential.

3,953,807

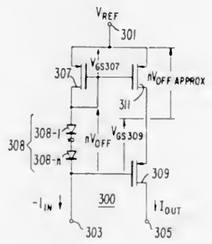
CURRENT AMPLIFIER

Otto Heinrich Schade, Jr., N. Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 387,171, Aug. 9, 1973, abandoned. This application Apr. 28, 1975, Ser. No. 572,007

Int. Cl.² H03F *3/16*

U.S. Cl. 330—35 **41 Claims**



26. A current amplifier comprising:

an input, an output and a common terminal;

first, second and third field effect transistors, each having a gate, a source and a drain electrode;

means for coupling the source electrodes of said first and said second transistors to said common terminal;

means for coupling said second transistor drain electrode to said third transistor source electrode;

means for coupling said third transistor gate and drain electrodes to said input terminal and to said output terminal, respectively;

means for establishing a potential difference between said input terminal and each of the gate electrodes of said first and said second transistors, said potential difference of a value to maintain the source-to-drain potential of said second transistor smaller than its source-to-gate potential; and

means for coupling said first transistor drain electrode to said input terminal.

3,953,808

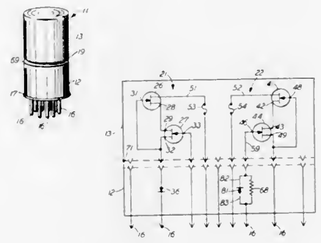
SOLID STATE AMPLIFIER

Charles W. Clark, Pleasant Hill, Mo.; Edwin G. Morton, Lynnfield, Mass., and Robert L. Voss, Lee's Summit, Mo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J. and Western Electric Co., Inc., New York, N.Y.

Filed Apr. 28, 1975, Ser. No. 572,577

Int. Cl.² H03F *3/16*

U.S. Cl. 330—35 **12 Claims**



1. A solid state amplifier, which comprises:

a junction field-effect transistor having a gate contact adjacent a semiconductive gate domain of a first type conductivity; and

an impedance coupled to the gate contact, the impedance including a charge storage device and a resistive impedance, the charge storage device having at least a semiconductive domain of the first type conductivity, a semiconductive domain of the second type conductivity and a junction there between, the domain of the second type conductivity being coupled to the gate terminal and the resistive impedance being coupled across the junction of the charge storage device.

3,953,809

INJECTION LASER MODULATOR

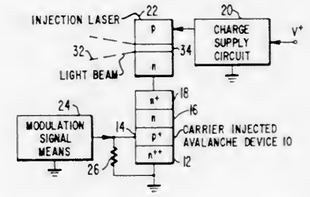
Hirohisa Kawamoto, Kendall Park, N.J., and David Joseph Miller, Philadelphia, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 18, 1974, Ser. No. 524,757

Int. Cl.² H01S *3/096*

U.S. Cl. 331—94.5 H **6 Claims**

1. In combination, a carrier injected avalanche device, an injection laser connected in series with said avalanche device for generating a pulse of coherent light from said injection laser only when both a direct-current voltage of given magnitude across said avalanche device is applied thereto through said injection laser with said injection laser poled to be forwardly conducting and at least a given amount of carriers are injected into said avalanche device, a charge supply circuit coupled across said serially-connected avalanche device and injection laser for supplying said direct-current voltage across said avalanche device until avalanching in said avalanche



device has taken place, and modulation signal means for injecting said carriers into said avalanche device.

3,953,810

DEVICE FOR MODULATING A BEAM OF RADIATION

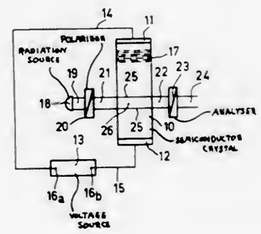
Robert Veilex, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 279,972, Aug. 11, 1972, abandoned, which is a continuation of Ser. No. 48,834, June 10, 1970, abandoned, which is a continuation of Ser. No. 617,544, Feb. 21, 1976, abandoned. This application May 9, 1974, Ser. No. 468,277

Claims priority, application France, Feb. 25, 1966, 66.51123

Int. Cl.² H01S *3/10*

U.S. Cl. 332—7.51 **13 Claims**



1. A device for modulating a beam of polarized electromagnetic radiation, comprising a junction free semiconductor crystal positioned in said beam and having contacts, said crystal comprising a semiconductor body having current-voltage characteristic curve including a region of negative differential resistance, means for applying constant value electric field across the crystal between the contacts, and means for analyzing the polarization of the beam of radiation emerging from the crystal, wherein in the crystal said applied electric field produces an entire high resistance zone travelling through the crystal from one contact to the other, said zone having a resistivity and a potential gradient which are higher than the values in the remaining part of the crystal, said zone having for the radiation concerned different polarization shifting properties than the polarization shifting properties of the remaining part of the crystal.

3,953,811

CURRENT-LIMITING ELECTRIC SWITCH EXEMPT FROM BUMPS IN THE OPENING STAGE

Angelo Mostosi, Bergamo, Italy, assignor to Sace S.p.A. Construzioni Elettromeccaniche, Bergamo, Italy

Filed Oct. 15, 1974, Ser. No. 514,487

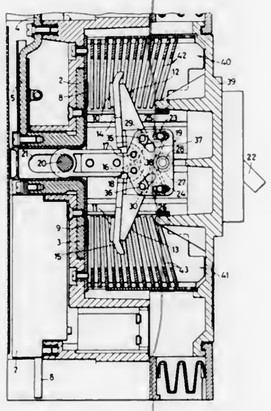
Claims priority, application Italy, Apr. 12, 1974, 21420/74

Int. Cl.² H01H *77/10*

U.S. Cl. 335—16 **1 Claim**

1. A current-limiting electric switch, which comprises at least one couple of electric contacts cooperating with one another and carried by their respective supporting members

and electrically connected to a feeding terminal and a load terminal through an electric current path, of which, when the contacts are closed, said support form two parallel legs along which currents of opposite sign flow, so that a current rise above a preselected limiting value produces in said legs repulsive electrodynamic forces which are such as to overcome the bias of the retaining resilient means and to cause the supporting members to be mutually spread apart to separate the contacts, one at least of said supporting members being formed by a swingable arm on which said resilient retaining means act in such a way as to counteract said repulsive electrodynamic forces during the initial portion of the rotation for opening the contacts of said swingable arm and to assist, conversely, said electro-dynamic forces during the final portion of said contact-opening rotation, characterized in that said resilient retaining means act upon said swingable arm with the intermediary of a pin which is slidably housed in a



guide and connected to said arm by means of a connecting rod, the bias exerted by said resilient means upon said pin being such as to push the pin towards an end position of maximum closeness to the axis of rotation of the swingable arm, said connecting rod and said swingable arm being pivoted to one another at a pivotal point selected in such a way that an opening rotation of the swingable arm compels said pivotal point to be shifted from one side to the other of the line of conjunction between the axis of the pin and the axis of rotation of the swingable arm thus simultaneously causing a to-and-fro movement of the pin along said guide and towards said end position, said pin being so arranged that at the end of the contact-opening rotation of the swingable arm an abutting engagement is obtained between said pin and said swingable arm, said guide being extended in such a direction that said abutting engagement tends to bring said pin away from said end position again.

3,953,812

ELECTRIC CIRCUIT BREAKER

Eldon Bertel Heft, West Hartford, and Joseph Francis Johnson, Plainville, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Oct. 9, 1974, Ser. No. 513,397

Int. Cl.² H01H *73/48*

U.S. Cl. 335—23 **26 Claims**

1. An electric circuit breaker comprising, in combination:

A. an insulative case;

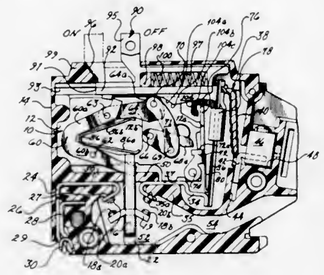
B. a frame positionally mounted in said case;

c. a trip mechanism mounted by said frame;

D. an operating mechanism mounted by said frame;

E. at least one fixed contact and one movable contact;

F. a contact carrier for said movable contact mounted by said case for reciprocal movement between open and closed contact positions, said carrier operatively connected to said operating mechanism for movement to said open and closed contact positions;



G. an operating handle mounted by said case and acting on said operating mechanism to effectuate said open and closed contact positions; and

H. an operating spring acting on said carrier to separate said contacts and on said operating mechanism to automatically reset said operating mechanism immediately following a trip function.

3,953,813

ELECTROMAGNETIC SWITCH MATRIX DEVICE

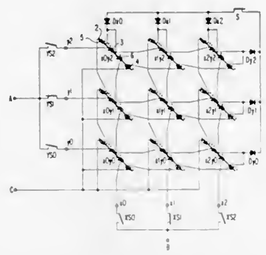
Norio Yano, Fussa; Seiei Okoshi, Kawasaki; Sadayuki Mitsuhashi, and Norio Suzuki, both of Tokyo, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation and Nippon Electric Company, Limited, both of Tokyo, Japan

Filed June 19, 1974, Ser. No. 480,809

Claims priority, application Japan, June 20, 1973, 48-68655

Int. Cl.² H01H *67/14*

U.S. Cl. 335—112 **14 Claims**



1. An electromagnetic switch matrix device comprising a plurality of row signal lines; a plurality of column signal lines intersecting substantially at right angles to said row single lines; a plurality of electromagnetic switching elements disposed at the respective cross-points between said row and column signal lines so as to bridge the corresponding row and column signal lines when their contact points are electromagnetically closed; first, second, third and fourth winding means wound around said electromagnetic switching elements so as to generate control magnetic fields for controlling the operations of the respective switching elements; a plurality of row control lines corresponding to said respective row signal lines, each of which includes said first winding means for generating the control magnetic fields in common to all the cross-points aligned on the corresponding row as well as said second winding means for generating the control magnetic fields in common to all the cross-points aligned on the corresponding row;

a plurality of column control lines corresponding to said respective column signal lines, each of which includes said third winding means for generating the control magnetic fields in common to all the cross-points aligned on the corresponding column as well as said fourth winding means for generating the control magnetic fields in common to all the cross-points aligned on the corresponding column; and means for selectively short-circuiting said second winding means and said third winding means at least in a selected row control line and in a selected column control line, respectively; the polarity of said first, second, third, and fourth winding means being such that when a predetermined polarity of current pulse is passed through said row and column control lines, said second and third winding means may generate control magnetic fields in the opposite direction to that generated by said first winding means, while said fourth winding means may generate a control magnetic field in the same direction as that generated by said first winding means.

3,953,814

POLARIZED ELECTRO-MAGNETIC RELAY

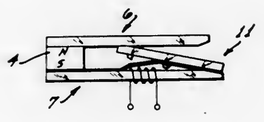
Egbert Kuipers, Heiligenhaus, Germany, assignor to Hartmann & Braun Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sept. 18, 1975, Ser. No. 614,658

Claims priority, application Germany, Sept. 21, 1974, 2445196

Int. Cl.² H01F *7/08*

U.S. Cl. 335—230 **2 Claims**



1. Polarized electro-magnetic relay having an E-shaped yoke member with a center and two outer legs and transverse bar, further having an U-shaped yoke member with two legs and a transverse bar, said transverse bars of said members being interconnected and spaced by a permanent magnet, so that said outer legs are respectively aligned with said legs of the U-shaped members, there being a coil on the center leg, the center leg being longer than the outer legs, the relay further having an armature of U-shaped configuration and having two legs and a transverse bar, the armature being disposed so that its transverse bar faces said center leg and the two legs are in an alignment space respectively between the two legs of the U-shaped yoke member and said outer legs the armature actuating relay contacts, the improvement comprising:

a pair of long, flat springs, each having a first end fastened to the E-shaped yoke member at the transverse bar thereof, and having a second end fastened to the transverse bar of the armature at a location from which one of the legs thereof extend, said springs each having a crimped portion having flexibility in the direction of extension of the respective spring.

3,953,815

CAST-RESIN INSULATED INSTRUMENT TRANSFORMER, IN PARTICULAR POTENTIAL TRANSFORMER

Friedrich Raupach, Wildensorger Strasse 9, D-8600 Bamberg, Germany

Filed Nov. 7, 1974, Ser. No. 521,713

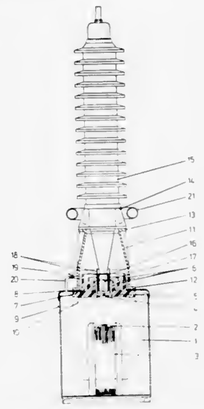
Claims priority, application Germany, Nov. 15, 1973, 2356988

Int. Cl.² H01F *27/02*

U.S. Cl. 336—90 **7 Claims**

1. In a compact cast-resin insulated instrument transformer having a cast-resin body and a high-voltage connector extending out of the body, the improvement comprising:

a generally planar cast-resin bushing insulator connected directly to said body and coaxially encircling said high-voltage connector, said insulator having a plurality of coaxially arranged sheds extending upwardly therefrom to increase creepage distance, said sheds respectively increasing in height in a direction radially outwardly from said high-voltage connector, a pair of coaxial guide sleeves disposed radially inwardly of said sheds, and a cast-resin flange section surrounding the periphery of said bushing insulator;



a high-voltage bushing having a conductor extending therethrough, and one end thereof dimensioned to be insertable within said guide sleeves for aligning the same on said bushing insulator immediately adjacent to said high-voltage connector;

means for connecting the conductor of said high-voltage bushing to said high-voltage connector; and

an intermediate flange defining a fluid-tight enclosure to be filled with a fluid insulating medium, one end of said intermediate flange being connected to said cast-resin body and enclosing said sheds, the other end of said intermediate flange being connected to said high-voltage bushing thereby enclosing said connection between said shield and said high-voltage connector within said fluid insulating medium of said intermediate flange enclosure.

3,953,816

POSITION DETECTING SYSTEM

Jacques Michel Hennequin, St Maurice, France, assignor to Compagnie (Societe) Anonyme, Paris, France

Filed Oct. 1, 1973, Ser. No. 402,548

Claims priority, application France, Oct. 10, 1972, 72.35824

Int. Cl.² H01F *21/04*

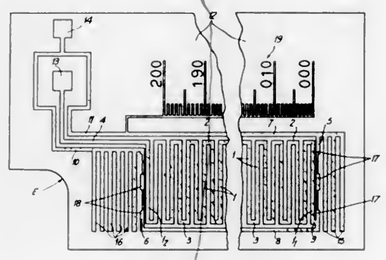
U.S. Cl. 336—119 **6 Claims**

1. A position detecting system comprising, in combination:

pick-up means mounted for movement back and forth along a given path; and

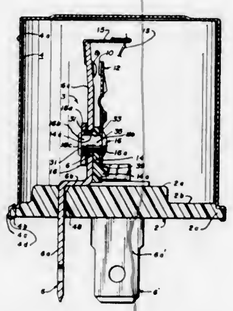
sending means located in spaced relation to and extending along the direction of said path for producing alternate nodes and antinodes in said pick-up means at spaced increments of movement of the latter along said path, said sending means comprising a conductor arranged in a Greek key pattern essentially symmetrical with respect to said path and presenting equidistantly spaced and parallel legs including opposite end legs, all of which legs are of equal widths, and a return-path conductor connected to one of said end legs adjacent the end thereof and at a point asymmetrical with respect to said path, said return-

path conductor branching from said point of connection with one branch extending therefrom parallel to said one leg, said one branch being spaced from said one end leg by an amount less than the equidistant spacing between



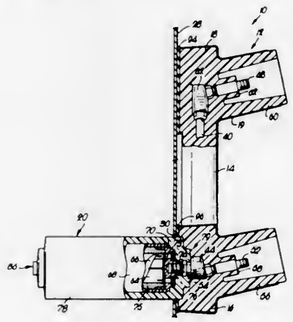
legs and being of a width less than the equal widths of said legs, the spacing between said one branch and said one end leg and the width of said one branch being coordinated to produce a clearly recognizable signal at said pick-up means when same is positioned thereover.

3,953,817
FLASHER DEVICE
James P. Covert, Schaumburg, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.
Filed Aug. 5, 1974, Ser. No. 494,874
Int. Cl.² H01H *61/06, 61/01*
U.S. Cl. 337—136 **9 Claims**



1. A flasher device comprising: a support base; a pair of terminals anchored to said support base, one of the terminals having an inner extension with a stationary contact carried thereby and in direct electrical and physical contact therewith; a conductive heat responsive means having a movable contact in direct electrical and physical contact therewith and to be positioned in confronting relation to said stationary contact; an insulating member positioned between the heat responsive means and the terminal extension, and an insulated rivet clamping said heat responsive means and insulating member to said terminal extension, so the heat responsive means is insulated from said terminal extension, said other terminal being welded directly to said heat responsive means; and heating means electrically connected across the heat responsive means and the terminal extension to receive current until shunted by said contacts and positioned to heat at least portions of the heat responsive means to a temperature where it moves into a position where said movable contact carried thereby engages said stationary contact to short circuit the heating means until the heating means cools.

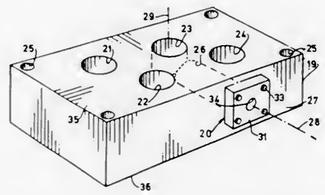
3,953,818
EXTERNALLY BUSSED, ENCAPSULATED CURRENT LIMITING FUSE FOR PAD MOUNTED TRANSFORMERS
Vance B. Martin, Charlotte, N.C.; George D. Allen, Centralia, Mo.; Harold D. Haubein, Centralia, Mo.; Melvin B. Goe, Jr., Centralia, Mo., and Kenneth A. Toeniskoetter, Washington, Mo., assignors to A. B. Chance Company, Centralia, Mo.
Filed Mar. 28, 1975, Ser. No. 563,161
Int. Cl.² H01H *85/22*
U.S. Cl. 337—191 **19 Claims**



1. In combination with a transformer, external bus and current interrupting protection apparatus comprising:
a bus assembly including spaced first and second connecting means respectively adapted to be electrically connected with corresponding first source-current-carrying means and second load-current-carrying means,
there being insulated conductor means electrically interconnecting said first and second connecting means;
current interrupting means secured to said bus assembly;
means electrically connecting said first connecting means with said current interrupting means such that the latter receives source current from said first currentcarrying means;
means mounting said bus assembly proximal to the external face of a tank wall of said transformer to define an external electrical feed loop through the externally mounted bus assembly; and
means electrically connecting the load side of said current interrupting means with a winding of said transformer.

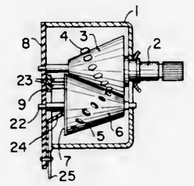
3,953,819
FLOW SENSORS
Donald Keerie, Ewhurst; John Anthony Gordon Hammond, Guildford, and Peter Michael Hamey, Emsworth, all of England, assignors to Sperry Rand Limited, London, England
Filed Oct. 7, 1974, Ser. No. 512,491
Claims priority, application United Kingdom, Oct. 10, 1973, 47212/73
Int. Cl.² H01C *13/00*
U.S. Cl. 338—36 **14 Claims**

1. A flow sensor for producing an electrical signal dependent upon the rate of fluid flow comprising a block having a flow passage therein through which the fluid flows, said block having an access opening whose axis extends transversely to said flow passage, said opening intersecting said passage, and a sensor cartridge fitted in said access opening, said sensor cartridge comprising a housing, a flap pivoted to said housing about an axis transverse to the axis of said flow passage, spring means in said housing biasing said flap to a position in which said flap obturates said flow passage, said flap being progressively displaced from said obturating position against said spring means by fluid flow through the passage as the rate of fluid flow increases, and mechanical/electrical transducer means in said housing for converting the angular displacement



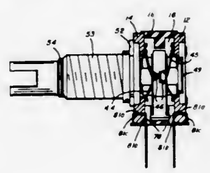
of said flap into an electrical signal corresponding to the flow rate.

3,953,820
VARIABLE RESISTOR
Matsuo Nishioka, Hirakata; Yasuo Takeyoshi, Kadoma, and Shunzo Oka, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Company, Ltd., Osaka, Japan
Filed Aug. 29, 1974, Ser. No. 501,432
Int. Cl.² H01C *10/04*
U.S. Cl. 338—89 **1 Claim**



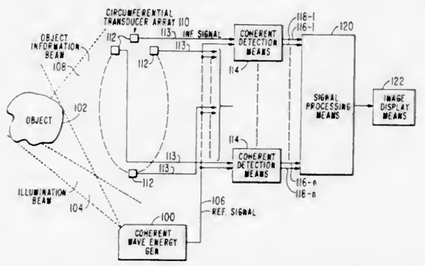
1. A variable resistor device comprising:
a casing;
a first conical non-conductive member rotatably mounted within said casing, said first conical member having a plurality of helically arranged peripheral protuberances on the surface thereof;
operating shaft means for rotating said first conical member;
a second conical non-conductive member rotatably mounted within said casing, said second conical member being oriented invertedly with respect to and in rolling contact with said first conical member and having a plurality of helically arranged peripheral recesses meshing with said plurality of peripheral protuberances, said second conical member being driven by said first conical member;
a conductive contactor extending from the base of said second conical member;
a dielectric base plate secured to said casing;
a variable resistor and an electrical contact element secured to said base plate, said contact element being in frictional contact with said contactor; and
brush means electrically connecting said contactor with said variable resistor, said contact element being displaced at a varying rate as said operating shaft is rotated at a constant rate thereby providing a non-linear resistance characteristic.

3,953,821
VARIABLE RESISTANCE CONTROL
William L. Kelver, Cassopolis, Mich.; Ronald L. Stuckey, Monroe, and Arthur L. Rozema, Elkhart, both of Ind., assignors to CTS Corporation, Elkhart, Ind.
Filed Dec. 9, 1974, Ser. No. 530,749
Int. Cl.² H01C *5/02*
U.S. Cl. 338—174 **9 Claims**



1. In a variable resistance control, the combination of a first ceramic substrate and a second ceramic substrate, one of the substrates being provided with an aperture, an electrically nonconductive skirt spacing the first substrate from the second substrate and defining a cavity therebetween, said substrates having first and second surfaces and being provided with a plurality of openings, an arcuate resistance film supported on each of said first surfaces, an arcuate collector supported on each of the first surfaces, a plurality of terminals received in the openings and electrically connected to each of the collectors and to each of the ends of the resistance films, an electrically nonconductive driver disposed between said first substrate and said second substrate, a shaft engaging the driver for rotation thereof, a first contactor constrained to rotate with the driver and wipably engaging the resistance film and the collector supported on said first substrate, a second contactor constrained to rotate with the driver and wipably engaging the resistance film and the collector supported on said second substrate, said driver being journaled in the aperture, a fastener securing the first substrate and the second substrate and the skirt together, said skirt comprising an arcuate section, a first post, a second post spaced apart from the first post and a bridge section interconnecting the posts, the openings being disposed in a line with the posts, the periphery of the bridge section substantially coinciding with a portion of the periphery of the substrates.

3,953,822
WAVE-ENERGY IMAGING TECHNIQUE
David Herman Raphael Vilkomerson, South Brunswick Township, Middlesex County, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Oct. 15, 1973, Ser. No. 406,218
Int. Cl.² G01S *7/04, 7/56*
U.S. Cl. 340—1 R **15 Claims**



1. A wave-energy imaging system comprising a circumferential array of *n* wave-energy transducers spaced at predetermined points about the circumference of a circle defining an

aperture of many wavelengths in diameter, means for illuminating an object to be imaged with *m* different characteristic coherent components of wave energy and at the same time generating an individual reference signal component for each of said *m* components of said coherent wave energy, said illuminated object deriving an individual object-information coherent component of said wave energy for each of said *m* different characteristic components, said aperture being within the path of all said object-information coherent components of said wave energy so that a separate object-information component signal is derived by each of said *n* transducers for each of said *m* individual object-information coherent components of said wave energy, *n* coherent detection means each of which is respectively coupled to a corresponding one of said *n* transducers, each of said *m* components of said reference signal being applied to all *n* of said coherent detection means, whereby each of said *n* coherent detection means derives output signals manifesting real and imaginary coefficients of a complex number for each of said *m* object-information component signals applied to that coherent detection means from the transducer corresponding thereto, said coefficients defining the relative phase and amplitude of each of said *m* object information coherent components of wave energy for each of said *n* transducers, and signal processing means responsive to the output signals from said coherent detection means for deriving with a given resolution the relative intensity at image points whose wavefronts fall on said entire aperture.

3,953,823

VELOCITY MEASUREMENT APPARATUS USING PULSED ULTRASONIC WAVES

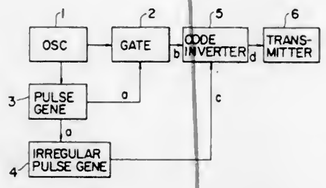
Kageyoshi Katakura, Tokyo, Japan, assignor to Hitachi Medical Corporation, Japan

Filed Mar. 31, 1975, Ser. No. 563,396

Claims priority, application Japan, Mar. 29, 1974, 49-35745

Int. Cl.² G01S *9/68*

U.S. Cl. 340—1 R **17 Claims**



1. Velocity measurement apparatus comprising:

transmitting means for projecting a pulsed ultrasonic wave toward at least one target, said transmitting means including generating means for generating a pulse modulated signal having an irregularly changing polarity, and transmitting transducer means for converting the output of the generating means into a pulsed ultrasonic wave and for projecting the pulsed ultrasonic wave toward the target to be measured; and

at least one receiving means for receiving echoes reflected from the target, said receiving means including receiving transducer means for converting the received echoes into an electrical signal, first means for deriving a signal of the echo components which are delayed by the transmission time between the target to be measured and the transmitting and receiving transducer means, second means for generating a reference pulse modulated signal in synchronization with the output of said generating means, third means for inverting the polarity of one of the output of the first means and of the second means in correspondence with the irregularity in the polarity of the signal provided by said generating means, phase comparator means for comparing the output of said third means with one of the output of said first and said second means, and frequency analyzer means for determining the Doppler shift in response to the output of said phase comparator means.

3,953,824

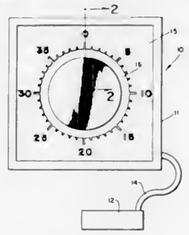
DEPTH SOUNDER WITH INDICIA LIGHTING MEANS

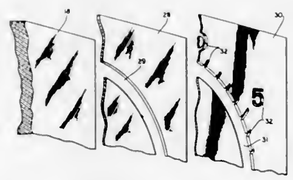
Leonard Y. Dean, IV, 320 Azalea Drive, Eufaula, Ala. 35901

Filed Oct. 21, 1974, Ser. No. 516,169

Int. Cl.² G01S *9/68, 7/56*

U.S. Cl. 340—3 C **5 Claims**





1. A depth sounder having a dial face, a plurality of indicia on said dial face, a flasher rearwardly of said dial face, said flasher being constructed and arranged to sweep past said plurality of indicia, and means for causing said flasher to flash, a viewing area defined by said dial face through which said flasher can be observed, said viewing area being adjacent to said plurality of indicia, said plurality of indicia comprising light diffusing means, the arrangement being such that when said flasher is caused to flash said light diffusing means will receive light from said flasher to cause illumination of at least some of said plurality of indicia.

3,953,825

ELECTRONICALLY FOCUSED IMAGING SYSTEM AND METHOD

Gordon S. Kino, Stanford; Calvin F. Quate, Los Altos Hills, and James F. Havlice, Los Altos, Calif., assignors to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed July 12, 1974, Ser. No. 487,979

Int. Cl.² G01V *1/00;* **H04B** *13/00;* **H04R** *15/00*

U.S. Cl. 340—5 MP **22 Claims**

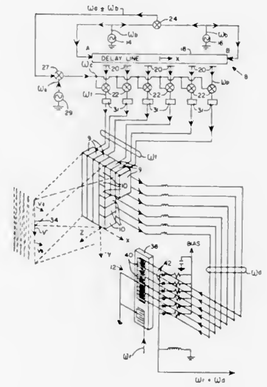
1. An acoustic imaging apparatus for transmitting focused acoustic waves at an object of interest for scanning the focused waves incident on the object of interest, comprising:

a linear array of acoustic wave transmitting transducers;

means for generating chirp signals that focus the acoustic waves transmitted by the array;

means connected to the chirp signal generating means for sequencing said chirp signals and for generating focusing pulses, said array being connected thereto for receiving said pulses and for generating from the focusing pulses acoustic waves focused into a focal line;

a linear array of receiving transducers proximate to the array of transmitting transducers for receiving the acoustic waves from the transmitting transducers; and



scanning means in a receiver assembly connected to the array of receiving transducers for scanning the focal line with the array of receiving transducers.

3,953,826

SUPER LONG SEISMIC SOURCE

Dennis R. Brundrit, Calgary, Canada, and Jacobus C. van Wijnen, The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.

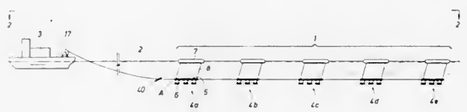
Continuation of Ser. No. 446,193, Feb. 25, 1974, abandoned.

This application May 15, 1975, Ser. No. 577,575

Claims priority, application Canada, Mar. 8, 1973, 165556

Int. Cl.² G01V *1/02, 1/13*

U.S. Cl. 340—7 PC **12 Claims**



1. An elongated seismic source for use in marine seismic explorations wherein a vessel is used to tow the source over areas being surveyed, said source comprising;

a plurality of individual seismic sources, said sources being concentrated in several distinct arrays, each array having at least one source;

a plurality of support means, the seismic sources of each array being coupled to an individual one of said support means;

a plurality of flotation means, at least one flotation means being attached to each support means; and

a plurality of cables, each of said cables being attached to the support means of an individual array to tow said array and pass signals and power between the vessel and said particular array, said plurality of cables being disposed to tow all of said arrays of the elongated source in a substantially in-line arrangement.

3,953,827

METHOD OF DETERMINING THE ANGULAR POSITION OF A TOWED MARINE SEISMIC CABLE AND APPARATUS FOR CARRYING OUT SAID METHOD

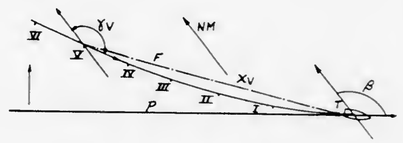
Robert Le Moal, Louveciennes; Jacques Cholet, L'Etang-La-Ville, and Daniel Saussier, Elisabethville-Epone, all of France, assignors to Entreprise de Recherches et d'Activites Petrolieres (E.R.A.P.), Paris, France

Filed Feb. 19, 1974, Ser. No. 443,251

Claims priority, application France, Feb. 21, 1973, 73.06123

Int. Cl.² G01V *1/00*

U.S. Cl. 340—7 R **11 Claims**



1. A system for determining the position in space of a plurality of seismic echo receivers distributed along the length of a towed cable comprising, a plurality of measuring device receptacles secured to said cable among the receivers, and spaced from each other; each receptacle having zero floatability and stabilized along its horizontal axis, each receptacle containing angle measuring means for measuring the angle between the tangent to the cable at the location of said device and a fixed and known direction, means for controlling the occurance of an output from said measuring means, and means for coding and transmitting the value of the measurement, in the form of electronic pulses, to a utilization station via connector and conductor means;

each receptacle containing distance measuring means for measuring the distance separating said device from a generator of seismic waves, and means for coding and transmitting the values of the distance measurement, in the form of electronic pulses, to a utilization station via connector and conductor means; and

each receptacle containing means for measuring the depth of immersion of said device, and means for coding and transmitting the values of the depth measurement in the form of electronic pulses to a utilization station via connector and conductor means.

3,953,828

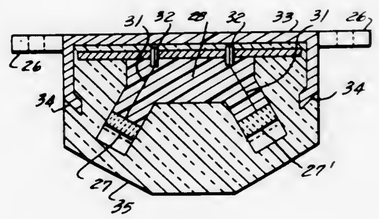
HIGH POWER-WIDE FREQUENCY BAND ELECTROACOUSTIC TRANSDUCER

Rufus Lee Cook, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 8, 1968, Ser. No. 775,994

Int. Cl.² G01V *1/00;* **H04B** *13/00;* **H04R** *15/00*

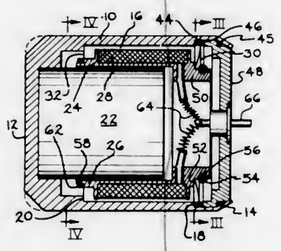
U.S. Cl. 340—9 **10 Claims**



1. An electroacoustic transducer assembly comprising:

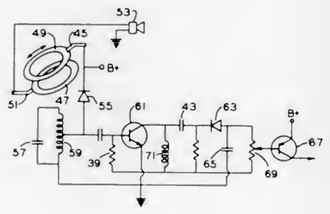
a plurality of piezoelectric elements for converting electrical energy to acoustic energy and vice versa;
electrical conductor means joined to said piezoelectric elements for transmitting electrical energy to and from said piezoelectric elements;
a shaped mounting means surrounding said electrical conductor means and secured to said plurality of piezoelectric elements, forming each of said piezoelectric elements into a predetermined nonplanar configuration, spacing said piezoelectric elements to form a predetermined nonplanar spatial configuration, and made of a pressure release material, so as to effectively combine the radiation patterns of the individual elements to form a single composite radiation pattern having predetermined characteristics;
a mounting plate secured to said shaped mounting means and lengthwise coextensive therewith, for providing torsional rigidity thereto;
insulator means in said mounting plate and surrounding said electrical conductor means for providing a conducting path for said conductor means through said mounting plate without electrical interaction therebetween;
electrical circuit means electrically connected to said conductor means for obtaining an optimum transfer of electrical energy between said piezoelectric elements and predetermined utilizing electrical devices; and
housing means enclosing said plurality of piezoelectric elements together with all the aforerecited means for providing a unitary transducer assembly of compact dimensions.

3,953,829
PARTIALLY FILLED FLUID DAMPED GEOPHONE
Charles F. Boyle, Jackson, Mich., assignor to Sparton Corporation, Jackson, Mich.
Filed Feb. 18, 1975, Ser. No. 550,830
Int. Cl.² G01V *1/18*
U.S. Cl. 340—17 R **3 Claims**



1. A fluid damped geophone for sensing vibrations along a substantially horizontally oriented primary axis comprising, in combination, a casing having a primary axis and defining a chamber, a permanent magnet fixed within said casing, an annular coil circumscribing said magnet and movably mounted within said casing upon a pair of diaphragm springs for axial movement in the direction of said primary axis, said diaphragm springs each comprising an outer rim mounted upon said casing, an inner rim mounted to said coil, and a plurality of involute spring elements interconnecting said outer and inner rims extending about said primary axis, electrical conductors connected to said coil, and a damping fluid within said casing partially filling the unoccupied void within said chamber when said primary axis is substantially horizontally disposed whereby the length of said spring elements immersed in said fluid varies to suppress cross axis resonant vibrations within said springs.

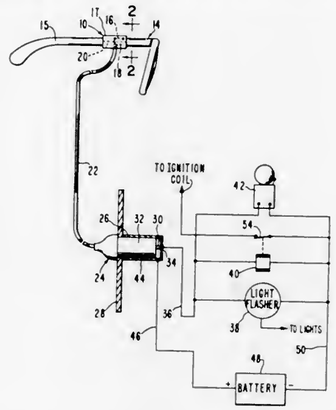
3,953,830
STEERING MECHANISM INACTIVITY WARNING DEVICE
Don W. Williams, Elida, Ohio, assignor to Floren R. Klopfenstein, Fort Wayne, Ind.
Filed Feb. 27, 1974, Ser. No. 446,319
Int. Cl.² B60Q *1/00*; **H01H** *9/00*
U.S. Cl. 340—52 R **17 Claims**



1. A safety device for providing an alarm indicative of inadequate steering activity by a vehicle operator comprising:
mechanical to electrical transducer means for providing a broad-band electrical signal in response to steering activity by the operator for all operable positions of the steering mechanism, the transducer converting mechanical movement directly to electrical energy;
amplifier means for amplifying at least part of the frequency spectrum of the transducer provided signal;
a capacitor;
means coupling the capacitor to the amplifier means for employing the amplified at least part of the signal to maintain a charge on the capacitor in a preferred charge range;
an energizable audio alarm; and
means responsive to the charge on the capacitor falling outside the preferred charge range for energizing the audio alarm including a transistor with the base thereof coupled to the capacitor whereby the conductivity of the transistor is determined at least in part by the charge on the capacitor.

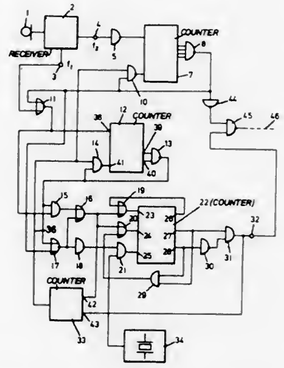
3,953,831
ALARM SYSTEM FOR USE WITH CIGARETTE LIGHTER RECEPTACLE OF VEHICLE
Richard J. Estrada, 758 Arkansa, San Francisco, Calif. 94197
Filed July 9, 1973, Ser. No. 377,365
Int. Cl.² B60Q *1/52*; **B60K** *28/00*
U.S. Cl. 340—53 **3 Claims**

1. An alarm system for a vehicle having a battery and a dashboard provided with a cigarette lighter receptacle, the combination with said battery and said receptacle of: a pair of eyeglasses having a temple; a switch having means for removably mounting the same on the temple and adapted to be actuated in response to a predetermined head movement when the eyeglasses are worn; cable means coupled to said switch and including a plug removably receivable in said receptacle for placing the switch in electrically coupled relationship to the receptacle, a number of alarm devices; and means connecting each alarm device in a respective electrical circuit with the receptacle and the battery common to each



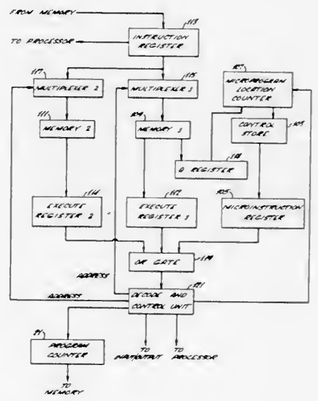
circuit, whereby actuation of each device will occur when the switch is actuated and when the plug is in the receptacle.

3,953,832
REMOTE CONTROL OF BROADCAST RECEIVERS
Wulf-Christian Streckenbach, Hemmingen, Germany, assignor to Licentia Patent Verwaltungs-G.m.b.H., Frankfurt am Main, Germany
Filed Apr. 1, 1975, Ser. No. 564,218
Claims priority, application Germany, Apr. 5, 1974, 2416601
Int. Cl.² H04B *7/00*
U.S. Cl. 340—171 R **10 Claims**



1. In a circuit arrangement for evaluating received remote control alternating signals by counting the number of periods thereof, the improvement comprising: an oscillator producing oscillations which are utilized for the signal evaluation, the frequency of the oscillations produced by said oscillator being higher than the frequency of the received alternating signals; a counter; and means connecting said oscillator and the received alternating signals to said counter, said connecting means being controlled by the received alternating signals in a manner such that when the received signals are present at a sufficient amplitude said counter emits a pulse during each received signal period and when the received signals have insufficient amplitude due to interference, said counter frequency-divides the oscillator oscillations down to the frequency of the received signals, whereby interruptions in the received signals have no influence on the operation of subsequent circuit portions of said arrangement.

3,953,833
MICROPROGRAMMABLE COMPUTER HAVING A DUAL FUNCTION SECONDARY STORAGE ELEMENT
Allen L. Shapiro, Irvine, Calif., assignor to Technology Marketing Incorporated, Santa Ana, Calif.
Filed Aug. 21, 1974, Ser. No. 499,322
Int. Cl.² G06F *9/06, 9/16, 13/00*
U.S. Cl. 340—172.5 **26 Claims**



1. A microprogram computer having a control element for executing a series of control steps in response to a machine language instruction word stored in a memory, said control element comprising:
a control storage element connected to access data from said memory and storing microinstructions defining plural sequences of steps for decoding portions of said machine language words to produce first output data partially defining control steps for said computer;
a secondary storage element, connected to access data from said memory and responsive to said machine language words for decoding a different portion of said machine language words to produce second output data partially defining control steps for said computer, and for selecting one of said plural sequences of said control storage element in response to said machine language words;
means for merging said first and second output data of said control storage element and said secondary storage element to produce third output data defining said series of control steps for said computer; and
a control unit connected to said merging means and producing output timing and controlling data to said computer for execution in accordance with said third output data.

3,953,834
PROGRAMMABLE LOGIC CONTROLLER WITH PUSH DOWN STACK
Bobby G. Burkett, Richardson, and Raymond W. Henry, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 7, 1974, Ser. No. 431,538
Int. Cl.² G06F *15/20, 9/06, 13/00*
U.S. Cl. 340—172.5 **5 Claims**

1. A programmable logic controller implemented in semiconductor integrated circuit units for generating signals to control one or more binary output devices as locigal functions

of the states of one or more binary input devices, said controller being comprised of:

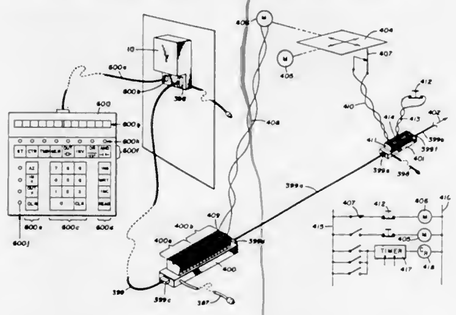
a. means for controlling the sequence of operations of said controller;

b. memory means for storing multi-bit instructions corresponding to said logical functions;

c. boolean processor means coupled to said memory means, said processor means being responsive to said instructions and having first and second data input means and an output, said processor means for logically combining single bits of data simultaneously applied to said first and second inputs according to selected ones of said instructions to generate a single bit logical result;

d. first storage means having a plurality of single bit storage locations for storing the states of said one or more binary input devices;

e. a single bit accumulator register having a first input coupled to the output of said processor means for receiving said single bit logical results, a second input coupled to said first storage means for receiving the states of said one or more binary input devices and an output coupled to the first data input means of said processor means;



f. means coupled to said memory means and responsive to said instructions stored therein for selecting the states of one or more of said binary input devices to be transferred to said processor means;

g. means coupling said first storage means to the second input means of said processor means for transferring the selected states to said processor means; and

h. a reversible serial storage means having an input coupled to said accumulator register for receiving and storing the single bit logical results transferred to said accumulator register by said processor means in a predetermined order when said results are partial results of said logical functions and an output coupled to the second input means of said processor means for transferring the partial results stored therein to said processor means in the reverse order from said predetermined order whereby said partial results are logically combined by said processor means to generate final single bit solutions for controlling said output devices according to the states of said input devices.

3,953,835

METHOD AND APPARATUS FOR ADAPTING A DATA PROCESSING PORT TO RECEIVE AND TRANSMIT DIFFERENT FREQUENCY SIGNALS

Allen B. J. Cuccio, and John P. Stafford, both of Oklahoma City, Okla., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Jan. 18, 1974, Ser. No. 435,136

Int. Cl.² G06F *3/04*; **G05B** *1/08*; **G04F** *3/08*; **G05B** *19/28*

U.S. Cl. 340—172.5 **5 Claims**

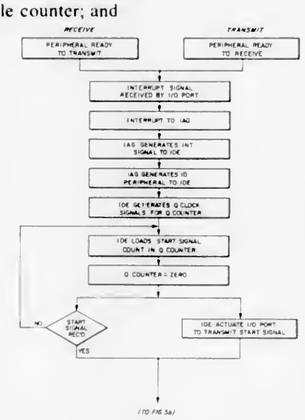
1. Apparatus for adapting a data processor to communicate in real time with peripheral devices respectively using different frequency signals in a receive or a transmit mode comprising:

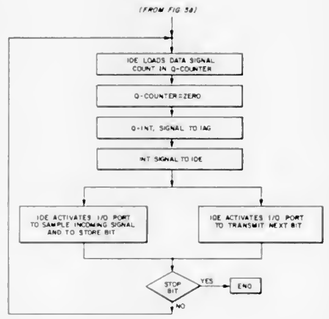
an input/output port unit for receiving an external interrupt signal from one of said peripheral devices requesting communication, for receiving data signals from said one peripheral device, and for storing data signals for transmission to the one peripheral device;

an interrupt address generator connected to said input/output port unit for generating an identification signal of said one peripheral device and an interrupt signal in response to the receipt by said input/output port unit of the external interrupt signal;

an addressable data store;

a loadable counter; and





an instruction decode and execution unit connected to receive identification and internal interrupt signals and responsive thereto to access said data store to retrieve a number stored in an address location according to the identification signal and the mode of communication, and to transfer said retrieved number into said counter and activate said counter;

said counter being coupled for actuation of said interrupt address generator upon attaining a specified count to generate subsequent internal interrupt signals;

said instruction decode and execution unit being coupled to actuate said input/output port unit to receive the data signals on a receive communication in response to the subsequent internal interrupt signals or to transmit the stored data signals in response to all internal interrupt signals.

3,953,836

ACOUSTIC STORAGE DEVICE FOR HIGH-FREQUENCY ELECTRICAL SIGNALS

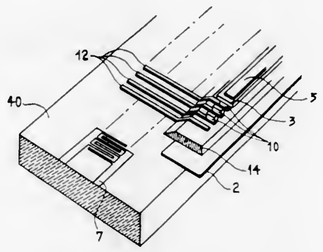
Gerard Kantorowicz, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 13, 1974, Ser. No. 532,597

Claims priority, application France, Dec. 18, 1973, 73.45234

Int. Cl.² G11C *21/02*, *11/22*

U.S. Cl. 340—173 MS **5 Claims**



1. An electro-acoustic storage device for high-frequency signals, constituted by a network of units each made up of a capacitor and a semi-conductor diode in series with one another, said diode being composed of an insulated electrode applied to one of the faces of a semi-conductive substrate and arranged between two electrodes the first of which is applied directly upon that face of said substrate opposite to the one on which said insulated electrode is applied, and the second of which is applied on a layer of an electrical insulating material facing said insulated electrode as well as the corresponding substrate face, said insulated electrode and said second electrode constituting the electrodes of said capacitor, characterised in that it comprises, furthermore, a piezo-electric substance and an input transducer applied upon one of the faces of said substance, to the terminals of which transducer there are applied the signals; in that said insulated electrodes of said network of diodes are distributed in the direction of propagation of the surface acoustic waves generated by said transducer on the face of said piezo-electric substance; and in that it comprises means for coupling that face of said piezo-electric substance at which said acoustic waves propagate, with said insulated electrodes of said diodes of the network, as well as means for alternately applying between said electrodes of each capacitor, a voltage pulse to charge said capacitor up and a voltage pulse of opposite direction in order to cause it to discharge by avalanche effect across said diode, said discharge producing at the terminals of a transducer applied upon the same face of the piezo-electric substance as before, read-out of the signal stored in each of the diodes at the time of charging of the capacitor.

3,953,837

DUAL SERIAL-PARALLEL-SERIAL ANALOG MEMORY

Tom F. Cheek, Jr., Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 27, 1974, Ser. No. 527,670

Int. Cl.² G11C *11/40*

U.S. Cl. 340—173 R **14 Claims**

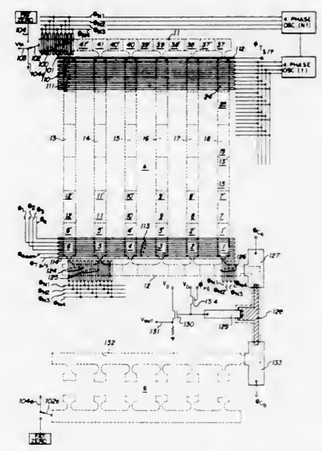
1. Charge transfer device signal processing apparatus for handling time sampled analog input signals, comprising:

first and second charge transfer device shift registers each including:

a. a serial input channel and a serial output channel connected to said input channel by a plurality of parallel channels wherein all said channels are formed in a semiconductor body,

b. separate arrays of multi electrode sets of phase electrodes insulated from and overlying said input, parallel and output channels,

c. an output transfer electrode common to all of the parallel channels of that shift register;



means for inputting time samples of said input signals alternately to the input channels of each of said first and second shift registers; and

said serial output channels of the first and second shift registers including means operable to multiplex outputs from said output channels.

3,953,838

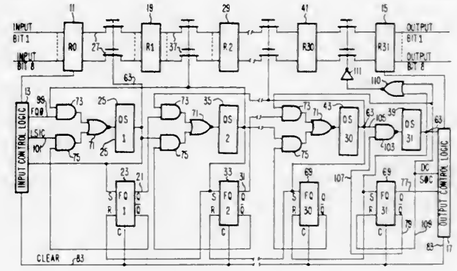
FIFO BUFFER REGISTER MEMORY UTILIZING A ONE-SHOT DATA-TRANSFER SYSTEM

Robert Charles Gilberg, Escondido, and Frank Chung-Yai Young, Santa Clara, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 30, 1974, Ser. No. 537,680

Int. Cl.² G11C *19/00*, *11/24*; **H03K** *25/02*

U.S. Cl. 340—173 R **13 Claims**



1. A FIFO register memory for temporarily storing data words comprising:

input means including a multi-bit input register for reading data words into the memory;

output means including a multi-bit output register for reading data words out of the memory;

a plurality of multi-bit registers interposing said input register and said output register;

gating means interconnecting said plurality of registers for permitting the transfer of a data word in parallel register-by-register from said input register through said plurality of registers to said output register; and

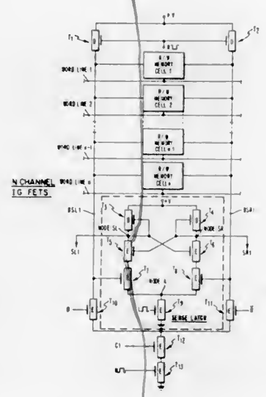
control means including a plurality of one-shot devices cooperating with said gating means for automatically and asynchronously controlling the transfer of a data word from said input register to said output register.

3,953,839

BIT CIRCUITRY FOR ENHANCE-DEPLETE RAM

Richard T. Dennison, Hopewell Junction, and David B. Eardley, Stanfordville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 10, 1975, Ser. No. 566,896
Int. Cl.² G11C *13/00, 11/40*
U.S. Cl. 340—173 R **12 Claims**



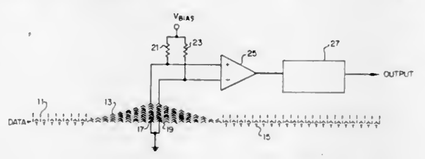
6. A bistable latch circuit having first and second stable states of conductivity, said latch circuit comprising:
first and second depletion mode field effect transistors each having a drain, source and gate electrode;
third, fourth, fifth and sixth enhancement mode field effect transistors each having a drain, source and gate electrode;
first means for impressing a first potential V_1 on said drain of said first field effect transistor, and said drain of said second field effect transistor;
second means for impressing a second potential V_2 on said source of said fifth field effect transistor, and said source of said sixth field effect transistor;
means directly connecting the source of said third field effect transistor to the drain of said fifth field effect transistor;
means directly connecting the source of said fourth field effect transistor to the drain of said sixth field effect transistor;
first connection means, connecting in common the gate of said first field effect transistor, the source of said first field effect transistor, the gate of said fourth field effect transistor, and the drain of said third field effect transistor;
second connection means, connecting in common the gate of said second field effect transistor, the source of said second field effect transistor, the gate of said third field effect transistor, and the drain of said fourth field effect transistor;
output circuit means connected to said first connection means and to said second connection means, said output circuit means providing a first electrical manifestation when said latch circuit is in said first stable state of conductivity and a second electrical manifestation when said latch circuit is in said second stable state of conductivity;
input circuit means connected to the gate of said fifth field effect transistor and to the gate of said sixth field effect transistor, said input circuit means impressing complementary first electrical potentials, or complementary second electrical potentials, on said gates of said fifth and sixth field effect transistors, whereby said latch circuit assumes said first stable state of conductivity in response to said complementary first electrical potentials and said second stable state of conductivity in response to said complementary second electrical potentials, respectively, being impressed on said gates of said fifth and sixth field effect transistors.

3,953,840

MAGNETO RESISTIVE BUBBLE DETECTION DEVICE

Leonard S. Cutler, Los Altos Hills, and Richard A. Baugh, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 13, 1974, Ser. No. 469,169
Int. Cl.² G11C *11/14*
U.S. Cl. 340—174 EB **9 Claims**



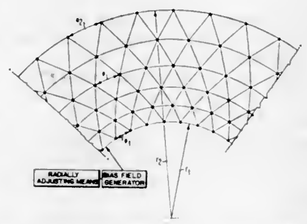
1. A device for detecting magnetic bubbles propagating in a stream on a magnetic wafer in response to an applied rotating magnetic field, said device comprising:
first expander means including a first plurality of magnetic elements for elongating the shape of magnetic bubbles to be detected and guiding the magnetic bubbles along a detection channel;
first and second detection means for producing a doublet electrical signal having different portions separated in time in response to an elongated magnetic bubble to be detected, said first and second detection means including a pair of adjacent elements of said first plurality of magnetic elements; and
first signal processing means electrically interconnected with said first and second detection means for comparing two voltage levels on said different portions of said doublet electrical signal and generating a data output signal whenever the difference between the two voltage levels exceeds a predetermined level.

3,953,841

CLOSED LOOP BUBBLE LATTICE SYSTEM AND METHOD FOR STABILIZING

Otto Voegeli, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1974, Ser. No. 537,166
Int. Cl.² G11C *11/14*
U.S. Cl. 340—174 TF **13 Claims**



1. A bubble domain lattice system adapted to provide a closed loop propagation arrangement comprising

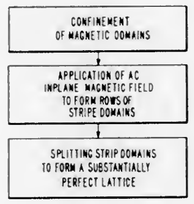
a first portion of said lattice system being curved wherein the lattice parameter increases with the radius, and
a radially varying bias field associated with said first portion wherein the strength of said field at any position occupied by a bubble domain provides an equilibrium lattice constant at said position which is substantially the same as the lattice parameter at said position.

3,953,842

BUBBLE LATTICE INITIALIZATION

Hung Liang Hu; William Albert Reynolds, Jr., and Laurence Lee Rosier, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 25, 1974, Ser. No. 517,990
Int. Cl.² G11C *11/14*
U.S. Cl. 340—174 TF **14 Claims**



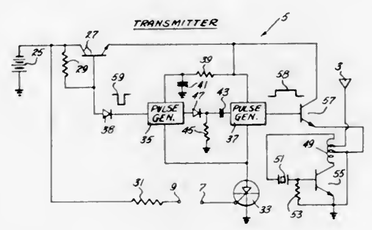
1. A method of providing an initial lattice of magnetic bubble domains in a film of magnetic material capable of supporting bubble domains comprising the steps of
providing said film with a confinement means adapted to contain magnetic domains within a first region of said film,
applying an AC in-plane magnetic first field to said first region, said first field being of sufficient strength to form a plurality of rows of substantially perfect parallel stripe domains, and
generating bubble domains from said stripe domains to form a substantially perfect lattice containing bubble domains.

3,953,843

SWIMMING POOL ALARM

Jorge G. Codina, Hartsdale, N.Y., assignor to General Scanning Devices, Inc., Greenwich, Conn.

Filed May 9, 1974, Ser. No. 468,237
Int. Cl.² G08B *21/00*
U.S. Cl. 340—224 **11 Claims**



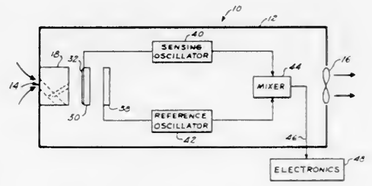
1. A condition detection and alarm system comprising:
a. means for detecting a condition;
b. means connected to said detecting means for transmitting a signal of short duration in response to the detection of an occurrence of the condition, said transmitting means becoming automatically deenergized after the short transmission, said detecting and transmitting means including:
1. a transmitting means,
2. a switch being closed upon the detection of the condition,
3. means for generating a first pulse for activating a radio frequency transmitter upon closing of said switch,
4. means responsive to said first pulse generating means for generating a second pulse after said transmitter is activated,
5. means connected to said second pulse generating means for stopping the flow of current to said transmitting means;
c. means for receiving said signal and activating an alarm, said alarm continuing to be activated even after de-energisation of said transmitting means.

3,953,844

INCIPIENT FIRE DETECTOR

Laurence Gibson Barr, Mission Viejo; Raymond Lu-po Chuan, Altadena, and James Fredrick Harkee, Glendora, all of Calif., assignors to Celesco Industries Inc., Costa Mesa, Calif.

Filed Apr. 11, 1973, Ser. No. 350,091
Int. Cl.² G08B *17/10*
U.S. Cl. 340—237 S **24 Claims**



1. An incipient fire detector comprising:
a. a collector for selectively collecting particulates from a fluid flowing past said collector, said collector having:
1. an outer surface, said outer surface being closed at the portion facing the direction of planned flow of said fluid, and
2. an opening formed in the outer surface portion facing opposite to the direction of planned flow,
3. said collector being sized to collect into said opening particulates having a size less than five microns and reject substantially all particulates having a size above five microns;
b. means for sensing the particulates collected by said collector;
c. means for directing said collected particulates from said collector opening to said sensing means; and
d. means responsive to the output of said sensing means for processing an increase in the mass of particulates sensed by said sensing means as an indication of an incipient fire condition.

3,953,845

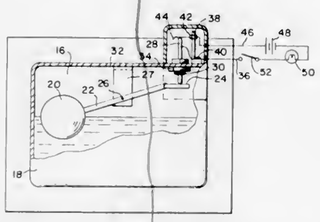
OIL LEVEL INDICATOR

Leonard Kress, Deer Park, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Feb. 4, 1975, Ser. No. 547,007
Int. Cl.² G08B *5/36*
U.S. Cl. 340—244 B **1 Claim**

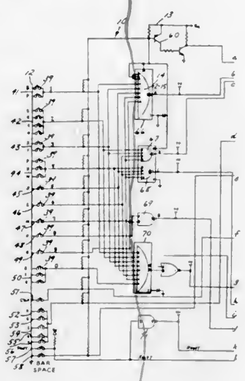
1. An indicating apparatus for warning of an oil level below a predetermined level in an automobile crankcase which comprises: a chamber in fluid communication with the engine crankcase; an elongated arm pivotly mounted in said chamber at a point intermediate the length of said arm; a float carried at one end of said arm; a generally planar tongue formed on the other end of said arm making an angle with the longitudinal axis of the arm; a generally vertical electrically conductive

rod carried for sliding vertical movement in said chamber, said rod being unconnected to said arm but having a lower end resting on said tongue for following the movement thereof; a post disposed proximate and parallel to said rod; a contact



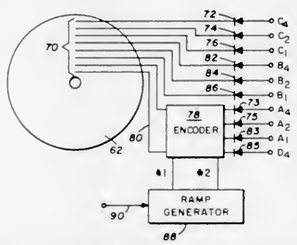
carried projecting from said post for engagement with an upper end of said rod; said contact being selectively adjustably positionable along said post; said contact and rod lying in a series circuit including a warning lamp.

3,953,846
ENCODING DEVICE
Thomas C. Ekeland, 45 John St., New York, N.Y. 10038
Continuation-in-part of Ser. No. 413,055, Nov. 5, 1973, abandoned. This application Apr. 10, 1975, Ser. No. 566,756
Int. Cl.² G08B *5/36*
U.S. Cl. 340—337 **2 Claims**



1. An encoding device for translating an input in the form of known alphabetic components of a name into an alphanumeric code in which the word is divided into phonic sounds, and assigned a decimal number in accordance with a preestablished pattern classifying the phonic sounds by the manner in which they are vocally pronounced comprising: a keyboard element including keys corresponding to the alphabet, comma and space bar; numerical signal generating means connected to said keyboard element, and generating numerical values ranging from zero to nine; the keys of said keyboard designating consonants being connected in sets to said signal generating means in accordance with said pattern; logic signal generating means for generating spacing, grouping, length of word and length of code function, the keys designating vowels, comma and space bar being connected to said signal generating means, and means for processing and displaying the outputs of said numerical and signal generating means; whereby using a predetermined maximum number of display digits, actuation of said comma and space bar keys determines the completion of insertion of first, middle and surname components and causes accounting of the same to employ available code positions to reflect each known component of an inserted name in the resultant code.

3,953,847
POSITION ENCODER
James R. Younkin, Fayetteville, and John M. Nixon, Springdale, both of Ark., assignors to Edo-Aire Mitchell Industries, Inc., Mineral Wells, Tex.
Filed Mar. 25, 1974, Ser. No. 454,306
Int. Cl.² H03K *13/18*
U.S. Cl. 340—347 AD **21 Claims**

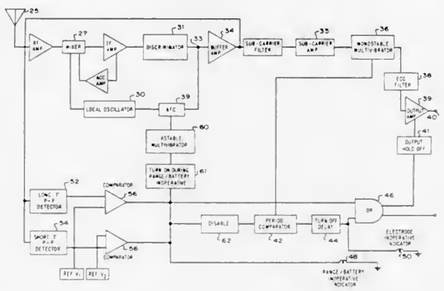


1. A position encoder, comprising in combination:
code support means positionable in accordance with physical input information;
a first group of a plurality of code formations carried by said support means, the code formations changing at selected intervals of movement of the support means and providing switching signals;
at least one additional group of a plurality of code formations also carried by said support means, the code formations of the at least one additional group changing at selected intervals of movement of the support means;
means responsive to the code formation of the at least one additional group of code formations to provide a first series of code bit patterns varying in accordance with the input information;
means for generating a control voltage that varies in accordance with the physical input information; and
encoder logic receiving the control voltage at one input and responsive to the switching signals of the first group to provide a second series of code bit patterns varying in accordance with the input information to uniquely identify a physical input in association with the first series of code bit patterns.

3,953,848
ELECTROCARDIOGRAPH TELEMETRY SYSTEM INCLUDING METHOD AND MEANS FOR INDICATING INOPERATIVE CONDITIONS
Richard F. Dillman, Lexington; James L. Larsen, Bedford, and Alfred M. Nardizzi, Dedham, all of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Division of Ser. No. 373,552, June 25, 1973, Pat. No. 3,829,782, which is a division of Ser. No. 207,859, Dec. 14, 1971, Pat. No. 3,768,017. This application Apr. 12, 1974, Ser. No. 460,629
Int. Cl.² G08B *29/00*; **A61B** *5/04*
U.S. Cl. 340—409 **2 Claims**

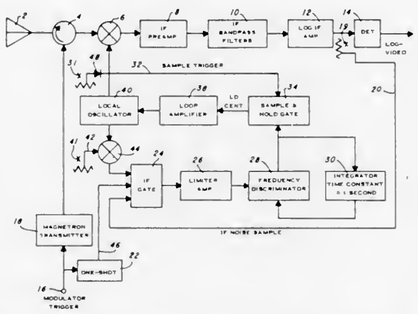
1. In an electrocardiac telemetry system having a receiver and a transmitter which transmits to the receiver a carrier signal that is modulated by a subcarrier that is modulated by electrocardiac signals applied to the transmitter from electrodes that are attached to a patient, apparatus for producing an indication that an electrode is detached from the patient comprises:
circuit means in the transmitter coupled to the electrodes for producing a control signal in response to the open circuit condition of an electrode detached from a patient;

a signal-controlled source of subcarrier signal in the transmitter having first and second subcarrier operating frequencies;
means coupled to said source tor applying electrocardiac signals thereto to modulate the operating frequency thereof about the first subcarrier frequency in response to applied electrocardiac signal;
means coupling said circuit means to said source for altering the operating frequency thereof to the second subcarrier



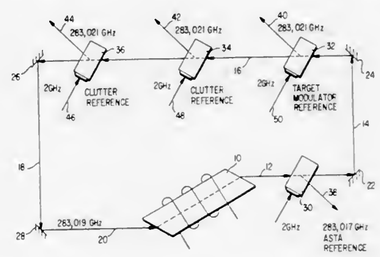
frequency in response to control signal applied thereto from said circuit means;
carrier signal generating means coupled to said source for transmitting a carrier signal modulated by said subcarrier signal;
receiver means including a detector responsive to transmitted carrier signal modulated at said second subcarrier frequency received by the receiver means for producing an output that is indicative of electrode detachment from a patient.

3,953,849
AUTOMATICALLY CENTERED PULSED RADAR RECEIVER
James B. Couvillon, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 6, 1974, Ser. No. 495,163
Int. Cl.² G01S *9/02*
U.S. Cl. 343—7 A **6 Claims**



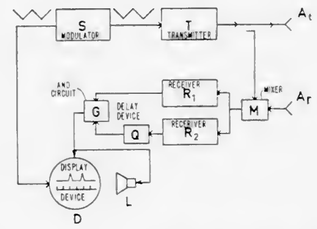
2. A pulsed non-coherent radar system comprising:
transmitter means for transmitting RF pulses towards a target,
receiver means for receiving RF pulses reflected from a target and for generating an IF signal in response thereto,
an electronically tunable frequency reference,
a frequency discriminator coupled to the transmitter, the receiver, and the frequency reference for tuning the frequency reference to the frequency of the receiver thermal noise output and for maintaining the receiver IF at said noise frequency.

3,953,850
RADAR TEST FACILITY COMMUNICATION SYSTEM
Charles M. Redman, Las Cruces, N. Mex., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Oct. 8, 1974, Ser. No. 513,019
Int. Cl.² G01S *7/04*
U.S. Cl. 343—17.7 **18 Claims**



1. In a radar test facility, a system for communicating between a radar target generator which produces electrical signals that simulate dynamic and static targets for insertion into radars under test and an angle simulation test array which comprises a plurality of infrared to microwave, transponders, which system comprises:
means for generating IR radiation in a predefined closed path; and
means disposed in said path for gating said IR radiation towards said test array.

3,953,851
DEVICE FOR A RADIO STATION COMPRISING A JAMMER
Eskil Weidstam, Banergatan 55, Stockholm, Sweden
Continuation-in-part of Ser. No. 690,709, Dec. 8, 1967, abandoned. This application Mar. 17, 1970, Ser. No. 24,912
Int. Cl.² G01S *7/38*; **H04K** *3/00*
U.S. Cl. 343—18 E **2 Claims**



1. An arrangement at a radio station including a frequency modulated transmitter unit for jamming, a receiver unit for the reception of externally generated signals and a mixer preceding the receiver unit, the one input of the mixer being connected to a receiver antenna circuit and the second input to the output circuit of the transmitter unit, the carrier of which is frequency modulated according to an arbitrary function of time, said receiver unit is tuned to receive a frequency including side bands which lies within one range of beat frequencies produced by the mixer, varying in dependence of the transmitter unit modulation wave, an indicating device indicating the presence of output signals of the receiver unit in dependence of carrier frequencies received which lie within essentially the

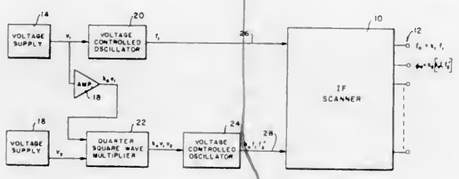
range of frequencies transmitted by the transmitter unit, said receiver unit including two receivers tuned to different frequencies the inputs of the receivers are fed by the mixer in parallel the output of the one receiver is connected to the one input of an AND circuit the output of which is connected to the display device or electroacoustic device, and the output of the second receiver is connected to second input of the AND circuit via a time delay circuit which provides a time delay equal to the time interval between two successive output pulses delivered in turn by the two receivers in dependence of one received signal, the AND circuit being such that it passes coinciding pulses.

3,953,852

WIDE BANDWIDTH PHASE SCANNING WITH SIMPLE CONTROLS

Wallace E. Anderson, Beltsville; Albert D. Krall, Rockville; Albert M. Syeles, and Oscar J. Van Sant, both of Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 13, 1973, Ser. No. 379,859
Int. Cl.² H01Q *3/26*
U.S. Cl. 343—100 SA **2 Claims**



1. A device for generating signals for an IF scanner used to electronically steer a phased array antenna comprising:
first signal generating means for generating a signal having a first parameter;
second signal generating means for generating a second signal having a second parameter;
multiplier means connected to said first and said second signal generating means for producing a signal having a third parameter which is some multiple of said first and said second parameters;
first control means connected to said first signal generating means for generating a first signal having a frequency proportional to said first parameter;
second control means connected to said multiplier means for generating a signal having a frequency proportional to said third parameter.

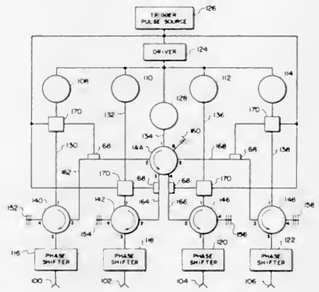
3,953,853

PASSIVE MICROWAVE POWER DISTRIBUTION SYSTEMS

John L. Carter, Ocean, and Joseph McGowan, Spring Lake Heights, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 25, 1974, Ser. No. 482,946
Int. Cl.² H01Q *3/26*
U.S. Cl. 343—100 SA **5 Claims**

4. A microwave power distribution system comprising:
four four-port circulators
a dummy load connected to the fourth port of each of the four circulators,
means connected to the third port of each of the four four-port circulators for delivering microwave power to respective microwave loads,
a standby circulator means having two four-port circulators coupled together to provide six ports,
a dummy load connected to the sixth port of the standby circulator means,
four waveguide means, each including waveguide switch means, coupling the second port of each four-port circulator to the second through fifth ports respectively of the standby circulator means,
four input waveguide means coupled to the first port of each of the four circulators respectively,
an input waveguide means coupled to the first port of the standby circulator means,



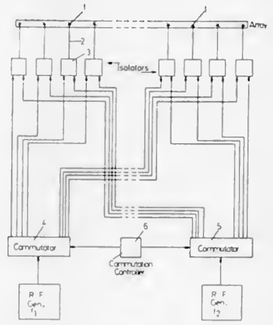
a two input, one output logic means and a power monitoring means for each of the four waveguide means, one of the two inputs being for connection to a trigger pulse source for initiating power into the four input waveguide means, and the other of the two inputs being coupled to the monitoring means and the one output being coupled to the waveguide switch means that is in circuit with the respective four-port circulator.

3,953,854

DOPPLER RADIO NAVIGATION BEACON SYSTEM WITH MEANS FOR REDUCING MULTIPATH SIGNAL EFFECTS

Francis G. Overbury, Cuffley, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed June 17, 1974, Ser. No. 479,770
Claims priority, application United Kingdom, June 21, 1973, 29502/73
Int. Cl.² G01S *1/40*
U.S. Cl. 343—106 D **5 Claims**



1. In a radio navigation beacon of the Doppler type including a linear array having a plurality of substantially uniformly spaced, separately excitable, radiating elements, the combination comprising:
radio frequency generators for producing unmodulated, substantially frequency constant f_1 and f_2 excitation signals differing from each other by a predetermined fixed amount;

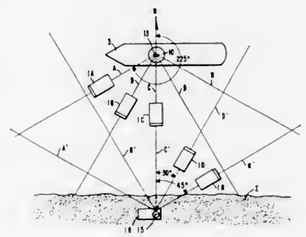
a first commutator for applying said f_1 unmodulated signal to a contigous fraction of said array elements successively in a first directional sense;
a second commutator for applying said unmodulated f_2 signal to said contiguous fraction of said array elements successively in a second directional sense; and
programming means for controlling said first and second commutators to provide substantially synchronous commutation such that each of said commutators completes a cycle of commutation including the same number of elements of said array in substantially the same time.

3,953,855

NAVIGATIONAL GUIDANCE METHOD FOR A PLURALITY OF VESSELS

Brian E. Hollands, Vienna, Va., assignor to International Engineers Incorporated, Vienna, Va.

Filed Aug. 5, 1974, Ser. No. 494,983
Int. Cl.² G01S *1/44*
U.S. Cl. 343—106 R **3 Claims**



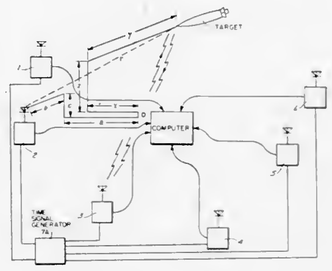
1. A collision avoidance method for simultaneously guiding a plurality of water craft through water along different preassigned lanes between a water-borne location and a second location such as a beachhead comprising the steps of:
positioning a first VHF omnidirectional-range transmitter at the water-borne location;
positioning a second VHF omnidirectional-range transmitter at the second location, said first and second transmitters operating at first and second different frequencies, respectively, the signals generated by each of said transmitters defining a plurality of radials diverging therefrom and directed toward the other transmitter;
providing first and second directional VHF omnidirectional-range receivers on each of said plurality of water craft tuned respectively to said first and second frequencies of said first and second transmitters; and
simultaneously guiding each of said plurality of water craft through the water along a unique one of said preassigned lanes, a different one of said lanes being preassigned for each water craft, each of said preassigned lanes consisting of the continuous path defined by a unique pair of intersecting radials from amongst said plurality of radials, one radial of each of said pair of radials emanating from said first transmitter, the other radial of each of said pair of radials emanating from said second transmitter, whereby collision between two water craft is prevented.

3,953,856

METHOD AND APPARATUS FOR MAPPING AND SIMILAR APPLICATIONS

Calvin Miles Hammack, P.O. Box 302, Saratoga, Calif. 95070

Continuation-in-part of Ser. Nos. 296,321, Oct. 10, 1972, and Ser. No. 288,429, Sept. 19, 1972, Pat. No. 3,866,229, and Ser. No. 74,180, Sept. 21, 1970, Pat. No. 3,795,911, said Ser. No. 296,321, is a continuation-in-part of Ser. No. 86,770, Feb. 2, 1961, Pat. No. 3,706,096, said Ser. No. 288,429, is a continuation-in-part of Ser. No. 817,765, April 21, 1969, Pat. No. 3,691,560, which is a continuation-in-part of Ser. No. 420,623, Dec. 23, 1964, Pat. No. 3,445,847, said Ser. No. 74,180, is a continuation-in-part of Ser. No. 278,191, May 6, 1963, abandoned, and Ser. No. 86,770,. This application Mar. 4, 1974, Ser. No. 448,071
Int. Cl.² G01S *3/02*
U.S. Cl. 343—112 D **49 Claims**



1. A method of determining the unknown position of each of a plurality of points in space relative to the others of said plurality of points comprising the following elements:
Element 1. Establishing a wave station at each of said plurality of points in space;
Element 2. Providing a moving means for travel in continuously unknown motion relative to said unknown positions moving along a continuously unknown path with a continuously unknown velocity;
Element 3. Transmitting waves in the spaces between said wave stations and said means for travel;
Element 4. Using doppler measuring means generating the physical representations of quantities linearly dependent upon the variations of the simultaneously existing unknown and unmeasured distances between said wave stations and said means for travel;
Element 5. Feeding said physical representations into computing means;
Element 6. Using only said physical representations generated in Element 4 computing in said computing means the otherwise unknown position of each of said plurality of points in space relative to the others of said plurality of points in space.

3,953,857

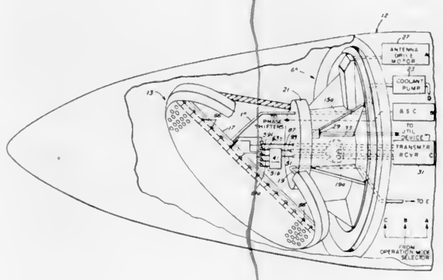
AIRBORNE MULTI-MODE RADIATING AND RECEIVING SYSTEM

Frederic A. Jenks, Wayland, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 7, 1972, Ser. No. 232,366
Int. Cl. H01q *1/28; 3/26*
U.S. Cl. 343—705 **8 Claims**

1. In directional antenna apparatus for use in a streamlined radome on an aircraft, such radome being ogival in shape, the improvement comprising the combination of:
a. a plurality of antenna elements, such elements being disposed in a planar array within a substantially elliptical outline corresponding to a diagonal section of the radome;

b. phase shifting means, operative on radio frequency energy passing to and from each one of the antenna elements, for collimating such energy into a beam and for deflecting such beam; and,



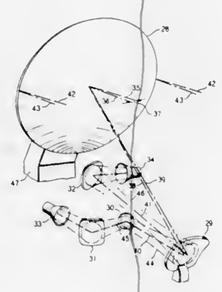
c. means for rotatably mounting the plurality of antenna elements and the phase shifting means within the radome.

3,953,858

MULTIPLE BEAM MICROWAVE APPARATUS

Edward Allen Ohm, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 30, 1975, Ser. No. 582,103
Int. Cl.² H01Q 19/14
U.S. Cl. 343—779 **13 Claims**



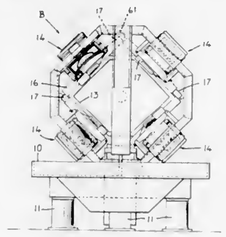
1. A multiple beam microwave antenna comprising
an essentially paraboloidal main reflector having an aperture;
a convex subreflector located outside said aperture so that a first and second microwave beam centered upon said main reflector overlap between said main reflector and said subreflector and are reflected to and are parted at a focus outside said aperture, said first and second beams respectively having a confocal parameter length;
first and second feed horn means; and
a deflector placed in said first beam within its confocal parameter length so as to deflect said first beam to said first feed horn means; said second feed horn means being positioned so as to receive said second beam.

3,953,859

METHOD AND APPARATUS FOR RECORDING LATENT PHOTOGRAPHIC IMAGES

John W. Locke, Toronto, Canada, assignor to The Governing Council of the University of Toronto, Downsview, Canada

Filed Oct. 25, 1974, Ser. No. 517,959
Int. Cl.² G01D 9/42
U.S. Cl. 346—1 **11 Claims**



1. A method of recording latent photographic images on film by scanning the film in a raster pattern with a spot produced by focusing onto the film a beam of radiation which is modulated in accordance with the retrieval of pictorial data defining an image to be recorded, the data comprising a plurality of elemental data each defining a required spot intensity at a respective elemental image area and a plurality of sets of corrective data defining geometric distortions of the image to be recorded, which method comprises:
advancing the film longitudinally while traversing the spot across the film cyclically to define successive lines of said raster pattern,
producing for each line of the raster pattern a succession of discrete position signals in synchronism with the traverse of the spot across the film, each position signal defining a respective nominal position element of the respective raster line, deriving from said succession of position signals a succession of discrete clock signals each defining a respective elemental image area, retrieving said elemental data successively in response to the derivation of said clock signals,
varying the rate of derivation of said clock signals in relation to the production of said position signals in accordance with a first set of said corrective data,
varying the rate of film advance in accordance with a second set of said corrective data,
varying the direction of film advance in relation to a nominal longitudinal direction in accordance with a third set of said corrective data, and
modulating the beam in accordance with the retrieved data so as to set the spot intensity at the required level for each successive elemental image area as corrected by said corrective data.

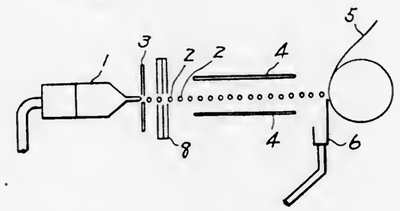
3,953,860

CHARGE AMPLITUDE DETECTION FOR INK JET SYSTEM PRINTER

Isao Fujimoto, Kunitachi; Takeshi Kasubuchi, and Masahiko Aiba, both of Nara, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo and Sharp Kabushiki Kaisha, Osaka, both of, Japan

Filed Mar. 12, 1974, Ser. No. 450,414
Claims priority, application Japan, Mar. 12, 1973, 48-28686
Int. Cl.² G01D 15/18
U.S. Cl. 346—75 **2 Claims**

1. A charge amplitude detector unit for an ink jet system printer comprising two electrically insulating plates each having first and second major surfaces and provided with openings extending through said surfaces in corresponding positions, said openings being aligned for the passage of ink drops therethrough, a detecting electrode disposed between the first major surfaces of the two insulating plates, and having a corresponding opening defined therethrough in registry with said openings in said plates, said opening being dimensioned such that the amplitude of charges on ink drops passing through said openings induces charge amplitude detection signals in



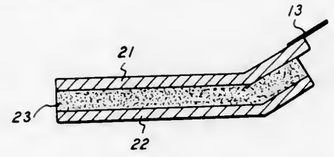
said detecting electrode by electrostatic induction occurring upon the passing of said ink drop through said openings, shielding electrodes on said second major surfaces surrounding said openings, and a pair of signal wires connected to the detecting electrode and one of the two shielding electrodes, respectively, for transmitting said electrostatically induced charged amplitude detection signals from said detection unit.

3,953,861

RECORDING STYLUS

Barry John Kipling, Hitchin, England, assignor to Rank Xerox, Ltd., London, England

Filed Apr. 30, 1975, Ser. No. 572,978
Claims priority, application United Kingdom, May 29, 1974, 23746/74
Int. Cl.² G01D 15/00, 11/10
U.S. Cl. 346—139 C **5 Claims**



1. A recording stylus comprising the combination of
a first metal blade having a stem portion and an angulated end portion,
a stylus point secured to and extending beyond the end portion of said first blade,
a second metal blade having a stem portion and an angulated end portion aligned with the stem portion and the end portion, respectively, of said first blade,
a resilient member disposed between and adhesively bonded to said first and second blades, said resilient member at least partially extending along both the stem portion and the end portion of each of said blades to conteract any tendency of said stylus to oscillate.

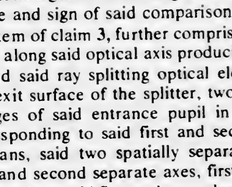
3,953,862

PRINTING HEAD DEVICE FOR AN INK JET PRINTER

Jan Roger Amberntsson; Roger Ingemar Andersson, both of Angered, and Stig Bertil Sultan, Floda, all of Sweden, assignors to Facit Aktiebolag, Atvidaberg, Sweden

Filed Dec. 26, 1974, Ser. No. 536,606
Claims priority, application Sweden, Dec. 28, 1973, 7317524
Int. Cl.² G01D 15/16
U.S. Cl. 346—140 R **5 Claims**

1. In a printing head device for an ink jet printer the improvement comprising: a liquid reservoir for said ink supply associated with said printing head and movable therewith and provided with an air inlet opening, and a filter in said opening



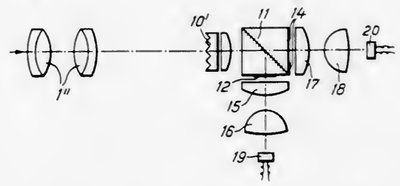
being constituted of a material that permits the passage of air but prevents the flow of liquid therethrough.

3,953,863

METHOD AND APPARATUS FOR FOCUSING AN OBJECTIVE

Karl Lang, Atzbach, Germany, assignor to Ernst Leitz G.m.b.H.

Filed Nov. 27, 1973, Ser. No. 419,282
Claims priority, application Germany, Dec. 11, 1972, 2260474
Int. Cl.² G03B 3/10
U.S. Cl. 354—25 **6 Claims**



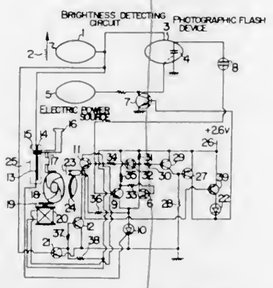
3. A system comprising an objective with an optical axis and an entrance pupil, said objective being adjustable for focusing an object image in a plane along said optical axis, ray splitting optical elements mounted in said image plane selecting light fluxes from different parts of said entrance pupil, first and second photoelectric receiver means receiving said light fluxes from said different part of said entrance pupil and generating output signals depending on the amount of light received, means for comparing said output signals and generating a comparison signal and means responsive to said comparison signal for focusing said objective according to magnitude and sign of said comparison signal.

4. The system of claim 3, further comprising a beam splitter (11) located along said optical axis producing together with a field lens and said ray splitting optical elements on respectively each exit surface of the splitter, two spatially separate double images of said entrance pupil in spatially separate planes corresponding to said first and second photoelectric receiver means, said two spatially separate double images having first and second separate axes, first and second stops 12, 14 located along said first and second separate axes at said double images, said stops being matched to the geometrical form of said image splitting elements and having apertures corresponding respectively to the paraxial part of said entrance pupil and to the complementary part of said entrance pupil, and one objective and one condensing lens each located along said first and second separate double image axes for collimating the light fluxes passing said apertures onto said receiver means.

3,953,864
CAMERA DEVICE HAVING A PHOTOGRAPHIC FLASH DEVICE COMBINED THEREWITH

Hiroshi Iwata, Osaka, and Satoru Misaki, Toyonaka, both of Japan, assignors to West Electric Company, Ltd., Osaka, Japan

Filed Oct. 23, 1973, Ser. No. 408,530
Claims priority, application Japan, Oct. 23, 1972, 47-106502; Mar. 20, 1973, 48-32332
Int. Cl.² G03B *7/16*
U.S. Cl. 354—27 **6 Claims**

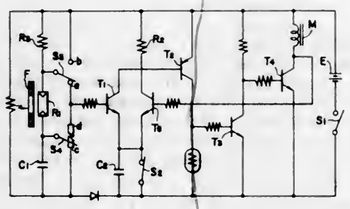


6. A camera device having a photographic flash device combined therewith including automatic switching circuitry for automatically switching between daylight photography and electronic flash photography depending on film speed and the brightness of an object, said automatic switching circuitry comprising a first circuit which includes a photoconductive element for detecting the brightness of an object and determining shutter speed for daylight photography and a first transistor, and a second circuit which includes a variable resistor interlocked with a focus adjusting ring of said camera device and a second transistor, said first and second transistors being non-conductive and conductive, respectively, when the brightness of the object is lower than a predetermined value while said first and second transistors are made conductive and non-conductive, respectively, when the brightness of the object is higher than said predetermined value, thereby daylight photography and electronic flash photography being automatically switched depending on film speed and the brightness of said object.

3,953,865
ELECTRIC SHUTTER

Kunio Matsumoto, Ageo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Nov. 12, 1974, Ser. No. 523,120
Claims priority, application Japan, Nov. 15, 1973, 48-128585; May 4, 1974, 49-50041
Int. Cl.² G03B *7/14*
U.S. Cl. 354—29 **6 Claims**

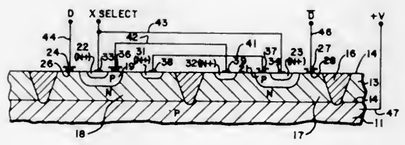


1. An electric shutter comprising a diaphragmaperture controlling cam plate, a mechanical delay means engaged with said diaphragm-aperture controlling cam plate to delay the movement of said cam plate, an armature lever engageable with said mechanical delay means, an armature rotatably supported by said armature lever, an electromagnet facing said armature and arranged so as to be able to attract said armature, an exposure control circuit connected to said electromagnet and having therein a first RC delay circuit for controlling the diaphragm aperture and a second RC delay circuit for controlling the exposure time, diaphragm blades operatively connected to said diaphragm aperture controlling cam plate, and change-over switches contained in said exposure control circuit and changed over to actuate said second RC delay circuit when said shutter is opened, said first RC delay circuit being operated when said diaphragm-aperture controlling cam plate starts its movement, and then said electro-magnet being energized by said exposure control circuit to stop said movement of said diaphragm-aperture controlling cam plate at the time when the voltage across terminals of a capacitor comprising a portion of said first RC delay circuit becomes equal to the voltage across both terminals of a resistor comprising a portion of said second RC delay circuit; and said electro-magnet being de-energized by said exposure control circuit to close said shutter at the time when the voltage across terminals of the capacitor of said first delay circuit becomes equal to the voltage across terminals of said capacitor of said second delay circuit.

3,953,866
CROSS COUPLED SEMICONDUCTOR MEMORY CELL

Lewis K. Russell, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed May 10, 1974, Ser. No. 468,938
Int. Cl.² H01L *27/02, 27/04;* **H03K** *5/00, 3/26*
U.S. Cl. 357—44 **8 Claims**

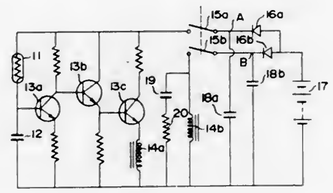


1. In a semiconductor memory cell, a one conductivity semiconductor body having a major surface, an opposite conductivity layer formed on said major surface, said layer having a planar surface, means extending from said planar surface through said layer to contact said body for isolating portions of said layer into first and second device regions, said first and second device regions each including a one conductivity region formed in said device region and extending to said planar surface, including an opposite conductivity region formed within said one conductivity region and extending to said surface, and including a first rectifying metal-to-semiconductor contact carried by said device region at said planar surface, lead means having means for ohmic interconnection of each said opposite conductivity region formed in said one conductivity region, means for interconnection of said first device region and said one conductivity region formed in said second device region and means for interconnection of said second device region and said one conductivity region formed in said first device region and additional lead means for coupling said first metal-to-semiconductor contacts, said semiconductor body and said interconnected opposite conductivity regions to external circuitry.

3,953,867
ELECTROMAGNETIC OPERATING CIRCUIT FOR CAMERAS

Toshihiro Kondo, Chofu, Japan, assignor to Toshihiro Kondo, Tokyo, Japan and Fuji Photo Film Co., Ltd., Japan

Filed Mar. 13, 1975, Ser. No. 557,987
Claims priority, application Japan, Mar. 16, 1974, 49-30261
Int. Cl.² G03B *7/08, 9/62, 9/64*
U.S. Cl. 354—51 **8 Claims**

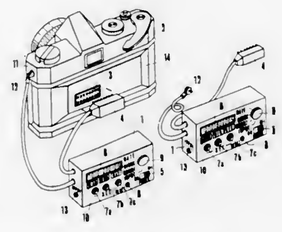


1. An electromagnetic operating circuit for a camera comprising in combination;
- a direct current power source,
- a plurality of capacitors connected in parallel with said power source to be charged thereby,
- a plurality of electromagnetic coils,
- each of said coils being connected with at least one of said capacitors to be energized by the discharge current of the capacitor connected therewith,
- at least one delay circuit connected with at least one of said coils for delaying the energization of the coil,
- a plurality of normally opened switching means one of which is connected between each said coil and said capacitors connected therewith,
- a manual operating means provided in the camera to be manually operated to energize said coils,
- said switching means being closed to energize said coils upon operation of said manual operating means, and
- at least one diode connected between said capacitors for preventing current dicharged from one capacitor from flowing into the coil connected with another capacitor when said switching means is closed.

3,953,868
DEVICE FOR RECORDING CAMERA DATA

Tomoaki Kawamura, Kawasaki; Syohei Ohtaki; Soichi Nakamoto, both of Machida, and Kiyoshi Takahashi, Kunitachi,, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1974, Ser. No. 513,395
Claims priority, application Japan, Oct. 15, 1973, 48-115490; Dec. 20, 1973, 48-143067
Int. Cl.² G03B *17/24*
U.S. Cl. 354—109 **6 Claims**



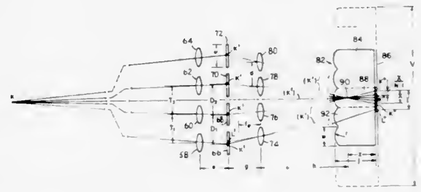
1. A camera data recording device comprising:
- a camera body containing film therein;
- a data control device provided separately from said camera body, said control device including data selecting means and data setting means;
- solid-state illuminating means being provided at the back of said film within the camera; and
- a connecting element for connecting the control device to the illuminating means in said camera body,

said illuminating means being controlled by control signals from the data setting means for recording the digital data on the film within the camera.

3,953,869
STEREOSCOPIC PHOTOGRAPHY APPARATUS

Allen Kwok Wah Lo, Atlanta, and Jerry Curtis Nims, Dunwoody, both of Ga., assignors to Dimensional Development Corporation, Atlanta, Ga.

Filed Sept. 24, 1974, Ser. No. 508,823
Int. Cl.² G03B *35/08*
U.S. Cl. 354—115 **21 Claims**



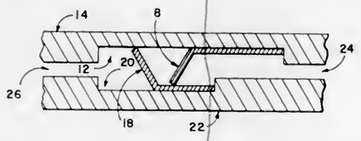
1. A system for producing stereoscopic pictures, comprising:
- a camera for recording a plurality N of two-dimensional views of an object field, said camera including a corresponding plurality N of lenses aligned in a straight path with their optical axes substantially equidistantly spaced apart and substantially in parallel and film support means for positioning unexposed film in image-recording relation to said N lenses;
- means in said camera for adjusting the spacing between the optical axes of adjacent lenses as a function of the distance from said lenses to a selected element of the object field to maintain the image of said selected object field element formed by each lens at substantially the same predetermined location on the associated two-dimensional view;
- means for projecting respective ones of the two-dimensional views from a corresponding plurality N of predetermined projecting lens locations, with the projected image from each two-dimensional view of said selected object field element in substantial registry with a predetermined reference point, said projecting lens locations being aligned in a straight path and substantially equidistantly spaced apart by a distance which is related by a substantially constant factor to the distance between said image locations on adjacent two-dimensional views;
- a lenticular screen of lenticule width w positioned opposite said projection locations with a lenticule thereof in substantial alignment with said reference point; and
- a photosensitive surface positioned at the rear face of said lenticular screen.

3,953,870

LIGHT TRAP

David Owen Stolper, 105 Winchester St., Apt. 3, Brookline, Mass. 02146

Filed Mar. 25, 1975, Ser. No. 561,883
Int. Cl.² G03B *17/26*
U.S. Cl. 354—277 **4 Claims**



1. In a photographic film pack adapter for cameras comprising a frame and exposure-controlling slide slideably mounted between two longitudinal edges thereof, a light trap for preventing light from entering said frame through a transverse edge thereof, said light trap comprising in combination:

a first plate mounted in said frame along said transverse edge, said plate having a recessed portion disposed along its length;

a second plate mounted in said frame parallel to said first plate spaced apart from said first plate a distance sufficient to receive said exposure-controlling slide, said second plate having a recessed portion disposed along its length;

a first flat spring member disposed in said first plate recess arranged to bias said slide against said second plate;

a second flat spring member disposed in said second plate recess arranged to bias said slide against said first plate; and

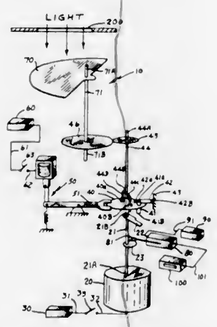
said first spring further arranged to contact said second plate recessed portion upon removal of said slide, and said second spring further arranged to contact said first plate recessed portion upon removal of said slide.

3,953,871

PRECISION LIGHT EXPOSURE TIMING AND SHUTTER MECHANISM FOR A WIDE RANGE OF EXPOSURE DURATIONS

David C. Borchard, Rochester; Robert E. Chan, Scottsville, and Neil F. Ratzel, Rochester, all of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 20, 1974, Ser. No. 535,066
Int. Cl.² G03B *9/08*
U.S. Cl. 354—252 **4 Claims**



1. A precision light exposure timing and shutter mechanism suitable for a wide range of exposure durations, adapted for use with a stationary aperture of known size, comprising:

a. a synchronous motor having an output shaft with a first end and a second end, wherein said first end is connected to said synchronous motor and said second end is connected to a drive arm, and wherein said output shaft has an appropriately configurated and dimensioned cam mounted thereon at a suitable location between said first and said second ends;

b. a source of voltage of well-regulated frequency in electrical connection with said synchronous motor, and with a switch interposed between said source of voltage and said synchronous motor;

c. a two-faced, moveable, and rotatable clutch plate positioned essentially perpendicular to, and in spaced-apart relationship to, said motor output shaft, wherein said clutch plate has a pin with a first end and a second end, with said pin positioned so that said first end protrudes through and out of one face of said clutch plate and said second end protrudes through and out of the other face of said clutch plate, said second end being selectively engageable with said drive arm, and also wherein said clutch plate has at least two openings therethrough;

d. a stop arm having a first end and a second end, with said first end attached to an abutment, and with said second end selectively abutable with said first end of said clutch plate pin;

e. a solenoid having a moveable arm which is engaged with said clutch plate;

f. a voltage source in electrical connection with said solenoid, and with a switch interposed between said voltage source and said solenoid;

g. a clutch plate shaft having a first end and a second end, with said first end connected to a driver gear of a preselected diameter, and with said second end having a terminus with a plurality of ends equal in number to, and engaged with, the said openings in said clutch plate;

h. a driven gear abutting with, and driveable by, said driver gear, wherein said driven gear has a diameter equal to twice the preselected diameter of said driver gear;

i. a shutter of the disc-type having an open sector and positioned essentially above said driven gear, which said open sector being of a size larger than the stationary aperture;

j. a shutter shaft having a first end and a second end, with said first end connected to said shutter, and with said second end connected to said driven gear;

k. an electrical pulse switch having a rotatable cam follower in engagement with said motor shaft cam;

l. a voltage source in electrical connection with said electrical pulse switch;

m. and, an electromagnetic counter in electrical connection with said electrical pulse switch.

3,953,872

NOVEL PHOTOGRAPHIC FILM ASSEMBLIES

Stanley M. Bloom, Waban; James W. Foley, Andover, and Nicholas S. Hadzekyriakides, Arlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 399,321, Sept. 21, 1973, Pat. No. 3,877,045. This application Aug. 16, 1974, Ser. No. 498,057
Int. Cl.² G03B *17/26*
U.S. Cl. 354—275 **17 Claims**

1. In a photographic film pack which comprises, in combination:

a. a photographic film cassette including a withdrawal orifice positioned in a wall of the cassette through which a supply of photographic film is adapted to be selectively withdrawn;

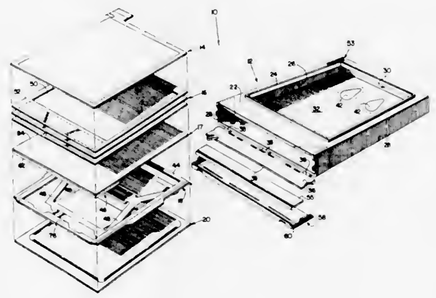
b. a supply of photographic film positioned in the cassette for selective withdrawal from the cassette through the orifice;

c. a battery positioned in the cassette and including, in combination:

i. an anode;

ii. a cathode superposed substantially coextensive the anode;

iii. a battery separator positioned intermediate and extending at least coextensive the facing surfaces of the anode and the cathode; and



iv. an electrolyte disposed in contact with the facing surfaces of the anode and the cathode and including an ammonium salt; the improvement comprising gas collector means positioned in the cassette for capture of volatile effluvia exiting from the battery and wherein said collector consists essentially of an absorbent carbon.

3,953,873

AUTOMATIC CAMERA FOR DUAL PRINTING PLATES

John H. Tholen, St. Paul, and John C. Winters, Birchwood Village, both of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Nov. 13, 1974, Ser. No. 523,420
Int. Cl.² G03D *17/00*
U.S. Cl. 354—315 **8 Claims**

7. A printing plate developing machine comprising support means for supporting a sheet of light-sensitive plate material in exposing position, means for transporting the plate material to said support means and for moving said plate material off said support means, a first guide means for receiving plate material moved off said support means and directing it to a chemical processor for chemically developing plate material and a second guide means for receiving plate material off said support means and directing the plate material to an electrographic processor for developing the plate material with a toner powder, diverting means for directing said plate material to one of said first guide means or said second guide means as the same is being moved off said support means, first holding means for supporting a first supply of plate material, second holding means for supporting a second supply of a different plate material, drive means for drawing plate material from said first supply or from said second supply, cutting means for cutting a length of drawn plate material, and means for placing said material onto said support means in said exposing position to cover a substantial area thereof.

3,953,874

ORGANIC ELECTRONIC RECTIFYING DEVICES

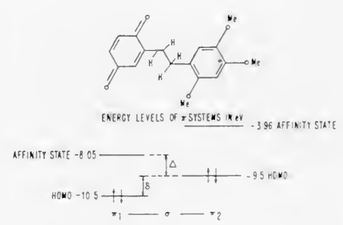
Arieh Aviram, Yorktown Heights; Marvin Joseph Freiser, Scarborough; Philip Edward Seiden, Briarcliff Manor, and William Robert Young, Millwood, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 12, 1974, Ser. No. 450,541
Int. Cl.² H01L *29/28*
U.S. Cl. 357—8 **5 Claims**

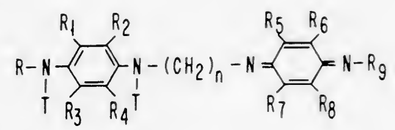
1. An organic electronic device comprising:

a substrate;

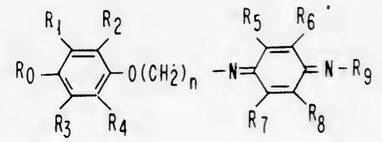
a first conductive metal layer on said substrate adapted to have an electrical contact made thereto;



a layer of a compound on said first metal layer selected from the group consisting of:



, and



wherein any or all or the pairs, R_1 and R_2, R_3 and R_4, R_5 and R_6, and R_7 and R_8 are substituents on the phenyl rings and where T is selected from the group consisting of H, CH_3 and C_2H_5.

3,953,875

CAPACITOR STRUCTURE AND CIRCUIT FACILITATING INCREASED FREQUENCY STABILITY OF INTEGRATED CIRCUITS

David L. Cave, Mesa, and Walter R. Davis, Tempe, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.

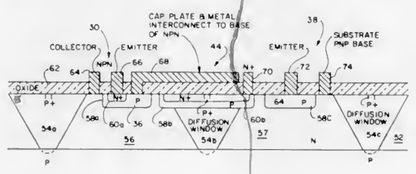
Filed Jan. 2, 1974, Ser. No. 430,267
Int. Cl.² H01L *27/02*
U.S. Cl. 357—51 **4 Claims**

1. In a monolithic integrated circuit structure having a plurality of diffused heavily doped isolation regions of a first

conductivity type to isolate epitaxial islands of a second conductivity type, a monolithic capacitor structure, the improvement comprising:

a first region of a second conductivity type, said first region being diffused into at least one of the plurality of isolation regions and forming a PN junction therewith, the outwardly facing surface of said first region being substantially equal in surface area to the surface area of the other of the plurality of isolation regions and being a portion of the surface of the monolithic integrated circuit;

a layer of dielectric material, said dielectric material being grown over a main portion of said outwardly facing surface of said first region;



a first layer of metallization, said first layer of metallization being contiguous with the outwardly facing surface of said layer of dielectric material for forming a first plate of the capacitor; and

said first region being a second plate of the capacitor such that the monolithic capacitor structure thus formed in the isolation region of the monolithic circuit structure requires minimum useful area of the monolithic integrated circuit to be utilized in construction thereof, the plurality of isolation regions being otherwise required to provide isolation in the operation of the monolithic integrated circuit.

3,953,876

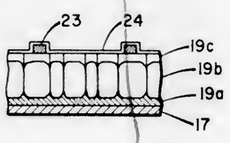
SILICON SOLAR CELL ARRAY

Erhard Sirtl, Munich, Germany, and Cedric G. Currin, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 367,913, June 7, 1973, Pat. No. 3,900,943. This application July 11, 1974, Ser. No. 487,698

Int. Cl.² H01L *29/04, 27/14, 31/00*

U.S. Cl. 357—60 **2 Claims**



1. A silicon solar cell array comprising

a sheet of silicon consisting of monocrystalline columnar grains having substantially vertical grain boundaries between said crystallites,

each of said crystallites having a p-type conductivity volume, an n-type conductivity volume and a p-n junction at the juncture of said p-type and n-type volumes,

said p-n junctions intersecting said vertical grain boundaries and crossing said crystallites in planes substantially parallel to the longitudinal axes of said sheet;

a p^+ conductivity type layer of silicon in ohmic contact with the p-type volumes of said crystallites,

an n^+ conductivity type layer of silicon in ohmic contact with the n-type volumes of said crystallites, and

electrical leads connected to said p^+ conductivity type layer and said n^+ conductivity type layer.

3,953,877

SEMICONDUCTORS COVERED BY A POLYMERIC HEAT RESISTANT RELIEF STRUCTURE

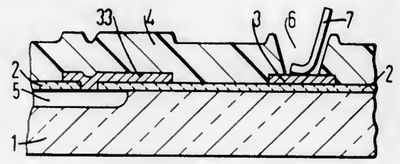
Reiner Sigusch, Munich, and Dietrich Widmann, Unterhaching, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 21, 1974, Ser. No. 471,952

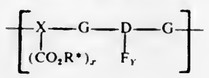
Claims priority, application Germany, May 23, 1973, 2326314

Int. Cl.² H01L *23/28*

U.S. Cl. 357—72 **7 Claims**



1. A semiconductor component having a polymeric heat-resistant relief structure thereon, comprising a semiconductor substrate, an insulating layer at least partially covering said substrate, a conductor component layer at least partially covering said insulating layer, a layer of a polymer covering said substrate and said conductor component, said polymer being derived from a soluble pre-polymer, said prepolymer having repeating units of the formula:



wherein, X and D each comprise a carbocyclic and/or heterocyclic nucleus;

G is selected from the group consisting of amide urea or urethane linkages;

R* is an organic radical containing a photo- or radiation induced di- or polymerizable olefinic double bond; and is a component of ester group CO_2R^*, said group bound to said nucleus in ortho or peri position to G;

F is a group capable of reacting with the carbonyl group of CO_2R^* to form a cyclic structure upon heating of the prepolymer to liberate R*OH; and wherein F is arranged in ortho- or peri- position to G;

x is **1** or **2**; and

y is **0** or **2**;

said pre-polymer having been cross-linked through exposure or irradiation of the photo- or radiation-reactive groups, said layer having at least one contact opening therein formed by dissolving the non-exposed or non-irradiated portions of said pre-polymer, with a solvent and a conductive element contacting said conductive layer in said opening.

3,953,878

CONSTANT TEMPERATURE CONTROL FOR TRANSFERRED ELECTRON DEVICES

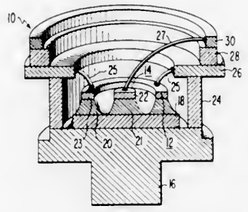
Daniel David Mawhinney, Livingston, and Thomas Edward Walsh, Kearny, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 417,388, Nov. 19, 1973, abandoned. This application Mar. 12, 1975, Ser. No. 557,532

Int. Cl.² H01L *23/02*

U.S. Cl. 357—81 **7 Claims**

1. A constant temperature device comprising two transferred electron bulk semiconductor devices, said transferred electron devices each comprising a body of semiconductor material having a high mobility state which is low in energy and a low mobility state which is high in energy and which is capable of transferring electrons from said high mobility state to said low mobility state under the influence of an electric field above a threshold voltage and contacts at the opposite ends of the body, said transferred electron devices having thermally connected semiconductor material, means biasing one of said two transferred electron devices above the threshhold voltage of said one transferred electron device whereby



said one transferred electron device exhibits a negative resistance and means biasing the other transferred electron device of said two transferred electron devices below said threshold voltage of said other transferred electron device whereby said other transferred electron device exhibits a positive resistance.

3,953,879

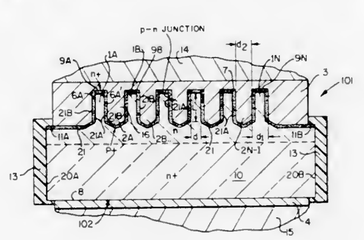
CURRENT-LIMITING FIELD EFFECT DEVICE

Jorge O'Connor-d'Arlach, Cochabamba, Bolivia, and Clifton G. Fonstad, Jr., Cambridge, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed July 12, 1974, Ser. No. 488,610

Int. Cl.² H01L *29/80, 29/06, 29/04*

U.S. Cl. 357—22 **39 Claims**



1. A two-terminal, current-limiting device for use in an electric circuit, that comprises: a crystalline-material semiconductor wafer having at one major surface thereof a plurality of N channels of length L, width Z and thickness d, wherein the ratio NZ/L is at least one hundred and wherein $L/d \geq 3$, said device further comprising a gate region formed in the side walls of each channel and a source terminal and a drain terminal, the gate region of each channel being internally shorted to one of the terminals of the device.

3,953,880

SEMICONDUCTOR PHOTOELECTRON EMISSION DEVICE

Katsuo Hara; Minoru Hagino, and Tokuzo Sukegawa, all of Hamamatsu, Japan, assignors to Hamamatsu Terebi Kabushiki Kaisha, Hamamatsu, Japan

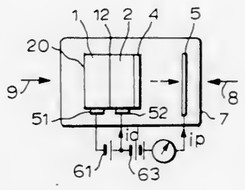
Filed Mar. 27, 1974, Ser. No. 455,231

Claims priority, application Japan, June 28, 1973, 48-72294

Int. Cl.² H01L *27/14, 31/00, 29/161*

U.S. Cl. 357—30 **4 Claims**

1. A semiconductor photoelectron emission device, comprising a p-type semiconductor wherein electrons are excited by incident light from the valence zone to the conduction zone, and having a first region of an direct transition type semiconductor of GaSb and a second region of indirect type semiconductor of $Al(x)Ga(1-x)Sb$, wherein x is less than one and positive, with a heterojunction therebetween, said first and second regions having substantially the same crystal structures at said heterojunction and having small differences in lattice constants, said second region having a broader effective forbidden band than that of said first region, with the exposed surface of said second region having been activated by negative electron affinity and biasing means for impressing a biasing voltage between said first region and said surface to cause electrons to drift to said surface to be emitted from said surface to a vacuum.



3,953,881

COLOR PICTURE INFORMATION RECORDING AND REPRODUCING SYSTEM

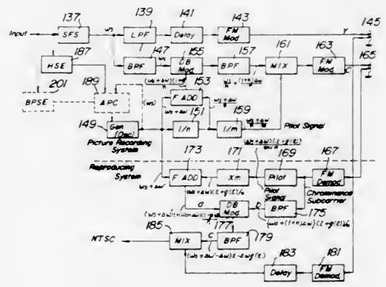
Akio Yanagimachi, Kawasaki, and Osamu Yamada, Kodaira, both of Japan, assignors to Nippon Hose Kyokai and Hitachi, Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 419,254, Nov. 27, 1973, abandoned. This application Mar. 25, 1975, Ser. No. 561,708

Claims priority, application Japan, Dec. 1, 1972, 47-119830

Int. Cl.² H04N *5/76, 9/00*

U.S. Cl. 358—4 **8 Claims**



1. A color picture information recording and reproducing system for color picture signals including a chrominance subcarrier in any one frame or field transmitted together with a synchronizing signal having a frequency which is in a certain relation with that of said chrominance subcarrier, the system comprising:

a single frame selector means for selectively recording color picture signals in any one frame or field period,

a signal generator means for generating reference signals,

a control means for controlling said signal generator means to frequency-lock the output of said signal generator means with the synchronizing signal included in the color picture signals,

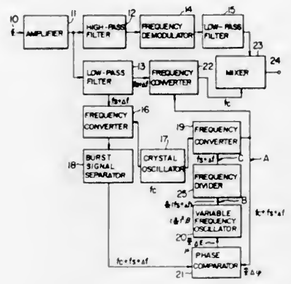
a first frequency divider means for dividing the frequency of the output of said signal generator means,

a second frequency divider means for dividing the frequency of the output of the first frequency divider means to form a pilot signal,

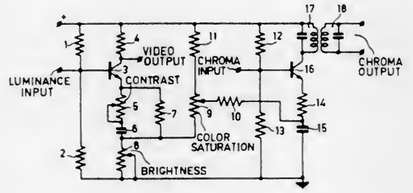
a first frequency adder means for combining the frequency of the output of said signal generator means with the frequency of the output of said first frequency divider means,
a first modulator means for modulating the chrominance subcarrier of the color picture signals selected by the single frame selector means and supplied through a first band pass filter means with the output signal of said first frequency adder means,
a first signal mixer means for mixing the output of the first modulator means applied through a second band pass filter means and the pilot signal,
means for connecting the output of the first signal mixer means to a first recording means through a second FM modulator means,
a first FM demodulator means for demodulating the color picture signals picked up from said first recording means,
a signal extractor means for extracting the pilot signal from the output of said first FM demodulator means,
a frequency multiplier means for multiplying the frequency of the output of said pilot signal extractor means,
a second frequency adder means for combining the frequency of the output of said frequency multiplier means with the frequency of the output of said signal generator means,
a third band pass filter means for extracting the chrominance subcarrier from the output of said first FM demodulator means,
a third modulator means for modulating the chrominance subcarrier of the output of the third band pass filter means with the output of said second frequency adder means,
a fourth band pass filter means coupled to the output of said third modulator means for extracting the chrominance subcarrier having the same frequency as an original chrominance subcarrier included in incoming color picture signals,
a lowpass filter means for extracting the luminance signal component of the color picture signals selected by the single frame selector means,
a second recording means for recording the luminance signal component supplied through a fourth FM modulator means,
a second FM demodulator means for demodulating the luminance signal component picked up from said second recording means, and
a second mixer means for mixing the output of said fourth band pass filter means with the output of said second FM demodulator means whereby the outputs of said second mixer means are used as desired color picture signals.

3,953,882
SYSTEM FOR RECORDING AND REPRODUCING A COLOR TELEVISION SIGNAL
Ichiro Arimura, Kyoto; Hiroshi Taniguchi, Hirakata, and Kunio Sekimoto, Daito, all of Japan, assignors to Matsushita Electric Industrial Company, Ltd., Osaka, Japan
Filed Aug. 29, 1974, Ser. No. 501,431
Claims priority, application Japan, Sept. 7, 1973, 48-101337
Int. Cl.² H04N *9/02*
U.S. Cl. 358—8 **11 Claims**

1. A system for recording and reproducing a color television signal comprising means for obtaining a burst signal from a reproduced frequency converted chrominance signal; a variable frequency oscillator to produce a first continuous signal, said burst signal controlling the frequency and phase of said first continuous signal; means for dividing the frequency of said first continuous signal by n/m where m and n are integers and $m<n$, to produce a second continuous signal; a stable fixed frequency oscillator for producing a third steady continuous signal; means for heterodyning said second continuous signal and said third steady continuous signal to produce a fourth continuous signal having a frequency equal to the sum of the frequencies of said second and third signals; and means for heterodyning said reproduced frequency converted chrominance signal with said fourth continuous signal to thereby recover the original chrominance signal free from a time axis variation component.



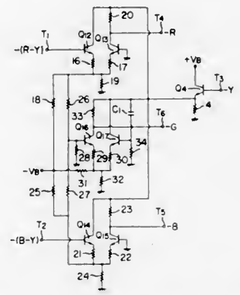
3,953,883
COMBINED BRIGHTNESS CONTRAST AND COLOR SATURATION CONTROL CIRCUIT
Gunter Paul Grewe, Don Mills, Canada, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 10, 1974, Ser. No. 531,331
Claims priority, application Canada, Feb. 11, 1974, 192182
Int. Cl.² H04N *9/537*
U.S. Cl. 358—27 **4 Claims**



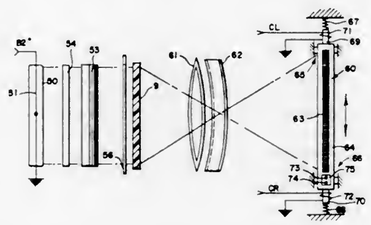
1. A circuit for controlling substantially independently the gain of luminance and chroma amplifiers and simultaneously the gain of the luminance and chroma amplifiers and the average brightness of a color television picture reproducing apparatus, said circuit comprising a luminance amplifier means for directly coupling to and supplying direct current for a color television picture reproduction tube, said luminance amplifier having a common AC and DC feedback path means to control the gain of the luminance amplifier, an average brightness luminance and chrominance control means coupled to said path for controlling the supply of direct current voltage to the luminance amplifier, a chroma amplifier, and means to select a portion of the voltage supplied to the luminance amplifier to determine the operational bias of the chroma amplifier.

3,953,884
VIDEO AMPLIFIER FOR DERIVING COLOR SIGNALS
Mitsuo Isobe, 5-103, Fujitacho, Moriguchi, Osaka, and Toshihiko Yoshino, 7-404, Miyokenzaka 5-chome, Katano, Osaka, both of Japan
Filed Oct. 15, 1974, Ser. No. 514,371
Int. Cl.² H04N *9/52*
U.S. Cl. 358—30 **7 Claims**

1. A video amplifier for deriving a primary color signal from a luminance signal and a color difference signal, comprising a source of a DC voltage having said luminance signal impressed thereon, means providing a color difference signal, first and second transistors connected to form a differential amplifier, means continually connecting the collector of one of said transistors to said source, a resistor continually connecting the collector of the other of said transistors to said source, means applying said color difference signal to the base of said first transistor, and an output terminal connected to the collector of the other transistor, whereby said primary color signal is produced at said output terminal.



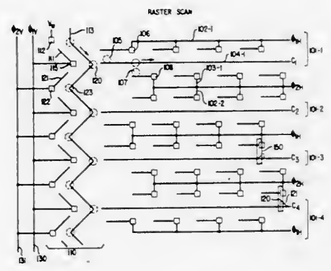
3,953,885
ELECTRONIC SOUND MOTION PICTURE PROJECTOR AND TELEVISION RECEIVER
Conrad H. Biber, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Sept. 3, 1974, Ser. No. 502,449
Int. Cl.² H04N *9/11*
U.S. Cl. 358—54 **23 Claims**



1. Apparatus for producing a video signal from a strip of color transparency film of the type comprising a repetitive series of parallel filter stripes of different colors, said apparatus comprising, means for moving the strip along a predetermined path in a direction parallel to said stripes, a linear photoresponsive array of signal generating means, one signal generating means for each of a set of said stripes, means mounting said array adjacent said path and perpendicular to said stripes, means for illuminating said array through said strip, means for detecting the order of registration of light through said stripes of different colors falling on the particular signal generating means of said array, and means for adjusting the position of said array relative to the strip to align filter stripes of a predetermined color with predetermined elements of said array.

3. In combination with a color television receiver of the type employing a one-gun sequential phosphor stripe receiving tube, said television receiver having a beam deflection system for establishing the position of an electron beam on the face of the tube and a video output amplifier for controlling the intensity of an electron beam produced by said gun, and means for marking the position of a beam on the tube relative to phosphor stripes of different colors on the screen; switching means having first and second states, means controlled by said switching means in its first state and responsive to broadcast television signals for applying signals to said deflection system and to said output amplifier for producing a conventional television display, and projection signal generating means for applying signals from a strip of motion picture film of the type comprising a repetitive series of parallel filter stripes of different colors to said amplifier and said deflection system in said second position of said switch, said projection signal generating means comprising means for moving a strip of film along a predetermined path in a direction parallel to the filter stripes on the film, a linear photoresponsive array of signal generating means, means mounting said array along said path normal to the direction of movement of said stripes, means responsive to the position of the photoresponsive signal generating means of said array relative to the filter stripes of the film for maintaining the photoresponsive signal generating means of the array and the filter stripes in registration, and means synchronized with said deflection system for strobing said video signals to said amplifier in correspondence with the position of said beam relative to corresponding filter stripes on said screen.

3,953,886
PLANAR RASTER SCAN DISPLAY WITH GAS DISCHARGE SHIFT REGISTERS
Peter Dinh-Tuan Ngo, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 4, 1974, Ser. No. 520,614
Int. Cl.² H04N *5/44*
U.S. Cl. 358—56 **21 Claims**

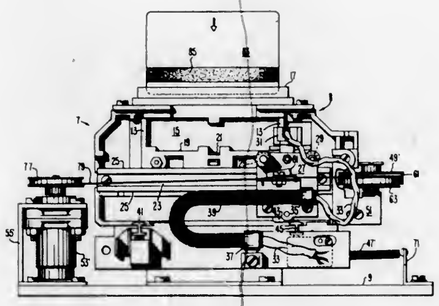


1. A two-dimensional graphical display system comprising
a first set of S plasma discharge shift registers where $S \geq 1$, each of said shift registers in said first set including a plurality of ordered stable discharge locations,
a second set of LS ordered plasma discharge shift registers, $L \geq 2$, each of said shift registers in said second set including N ordered stable discharge locations, and each being coupled to a given one of said stable discharge locations in one of said shift registers in said first set in such manner that a glow discharge occurring at said given stable discharge locations in said first set may be nondestructively transferred to the first of said N stable discharge locations,
means for sequentially propagating a glow discharge along each of said first set of plasma discharge shift registers, and
means for propagating a transferred glow discharge along each of said second set of shift registers,
whereby S scanning glow discharges are propagated over said second set of shift registers.

3,953,887
SPRING DRIVEN VELOCITY CONTROLLED MAGNETIC STRIPE READER

Lawrence P. Kobylarz, Howell, and Ronald H. Mack, Plymouth, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 15, 1974, Ser. No. 524,082
Int. Cl.² G11B 25/04; G06K 7/08
U.S. Cl. 360—2 12 Claims

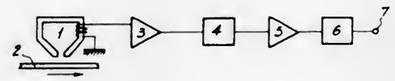


1. A device for reading information recorded on the magnetic stripe of a credit card, said device comprising:
a. frame structure including a receiving slot for stationarily positioning a said credit card,
b. a carrier translatably supported by said frame structure and movable as between the extremities of the magnetic stripe positioned on a said credit card,
c. a transducing read head fixed to said carrier and electrically coupled to extraneous reading and interpreting means,
d. means for activating said carrier and said read head in a first direction,
e. an expansion spring connected at one end to said frame structure,
f. a first flexible cable coupled at at least one end to said carrier,
g. a second flexible cable coupled at one end to the other end of said expansion spring, and
h. rotatable means supportably and angularly interposed between said expansion spring and said carrier and having a concentric circumference and an adjacent spiraling circumference of varying radii ranging from a maximum radius substantially equal to the radius defining said concentric circumference to a minimum radius of predetermined lesser dimension, the other end of said second flexible cable being connected to said maximum radius of said spiraling circumference and said first flexible cable being coupled to said concentric circumference, whereby said rotatable means is rendered effective to counteract the normal variations in the pulling force applied by said expansion spring in the translation of said carrier and said read head in a second direction from a first position representing a read-start extremity of said magnetic stripe to a second position representing a read completed extremity of said stripe to thereby provide a uniform and constant velocity of travel of said read head between said first and said second positions.

3,953,888
DEVICE FOR READING A BINARY-CODED MAGNETIC RECORDING

Jacques Droux, Paris; Michel Audebert, Bourg-la-Reine, and Gérard Millair, Noisy-le-Sec, all of France, assignors to Compagnie Honeywell Bull (Societe Anonyme), Paris, France

Filed Sept. 18, 1974, Ser. No. 507,136
Claims priority, application France, Sept. 19, 1973, 73.33582
Int. Cl.² G11B 5/09
U.S. Cl. 360—46 16 Claims

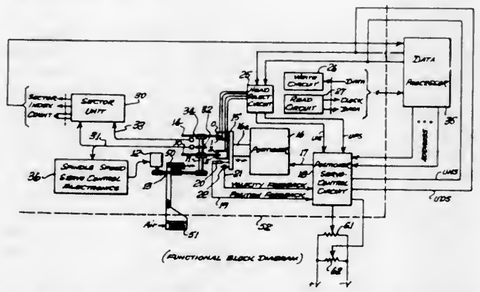


1. A device for reading a magnetic record consisting of successive flux reversals separated from one another by first and second differing time intervals representative of respective states of a binary code, comprising reading head means for generating an analog voltage signal in response to said magnetic record, said analog voltage signal including a fundamental component corresponding with the time intervals and harmonics resulting from frequency-dependent distortions caused by the reading head means transducing the flux reversals into the analog voltage signal, and circuit means for amplifying, processing and digitizing said voltage signal to reproduce said binary code, wherein said circuit means includes a frequency-selective correction means to substantially compensate for the frequency-dependent distortions caused by said reading head means, said correction means including combined amplifier and filter means operative for restoring the proper relationship between the fundamental and at least the lower-order harmonic frequencies in said analog voltage signal which correspond to said first and second time-intervals in said magnetic record.

3,953,889
ELECTRONIC HEAD ADJUST SYSTEM FOR REMOVABLE MAGNETIC DISCS

James L. Scieszinski, Simi Valley; Ericsen M. Dunstan, Calabasas, and Sidney T. Schell, Chatsworth, all of Calif., assignors to Pertec Corporation, Chatsworth, Calif.

Filed Oct. 24, 1974, Ser. No. 517,543
Int. Cl.² G11B 5/54, 5/58
U.S. Cl. 360—77 4 Claims



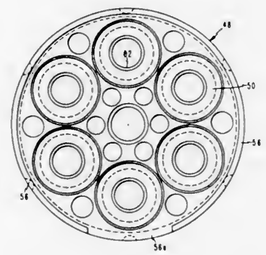
1. In an enclosed disc file having a drive unit for discs with concentric addressable data tracks, at least one of said discs being removable, a servomechanism for positioning said transducers to a preselected track in response to address signals and a corrective position error signal, and mechanical means for adjusting the position of each transducer associated with said removable disc over a reference track on a master disc at a preselected track address said enclosed disc file having an

enclosure which may be opened for mechanically adjusting the position of each transducer, the improvement comprising:
a separate offset signal source for each of said transducers associated with said removable disc,
summing means for adding a signal to said corrective position error signal,
means for selectively coupling a signal from one of said offset signal sources to said summing means for addition to said corrective position error signal, and
means for individually adjusting each offset signal source for fine position adjustment of an associated transducer while said associated transducer is being positioned to said reference track on said master disc by said servomechanism with said enclosure closed, said adjusting means for each of said offset signal sources being positioned for adjustment from outside said enclosure.

3,953,890
INFORMATION RETRIEVAL MACHINE WHICH USES A CASSETTE FOR HOLDING TAPE CARTRIDGES

Donald John Wanek, and Gordon Wilbur Westphal, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 24, 1975, Ser. No. 561,453
Int. Cl.² G11B 5/52, 15/66, 23/04
U.S. Cl. 360—85 10 Claims

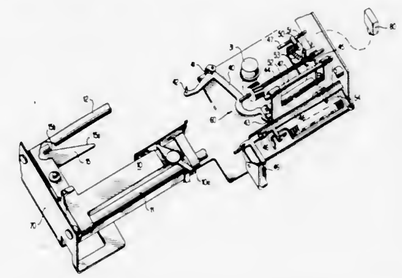


1. A machine for operating on magnetic tape and including
a cassette in the form of a carousel for holding a plurality of tape cartridges, each of said cartridges including a spool on which a length of tape is wound and said cassette being formed with a series of cavities each of which receives one of said cartridges to hole its spool with its axis substantially parallel with the major axis of said cassette,
means for rotatively mounting said cassette so that it may rotate about its major axis,
a plunger and a cartridge spool receiving shaft coaxially mounted with respect to each other and with respect to the spool of a cartridge in one of said cavities depending upon the rotative position of said cassette,
means on the end of said plunger for moving into said last named cavity and for mechanically engaging with the spool of the cartridge in this cavity,
means for reciprocably driving said plunger so that said plunger moves said cartridge onto said shaft and subsequently moves said cartridge back off of said shaft into the cavity for the cartridge after processing of the tape of the cartridge,
means defining a path for said tape when it leaves a cartridge on said shaft,
a takeup spool at the end of said path for winding up the tape as it moves along said path from its cartridge on said shaft,
a magnetic head in said path for transferring information with respect to said tape as it moves along said path,
means for driving said cartridge spool receiving shaft first in a reverse direction tending to wind up the tape onto the spool of the cartridge on said shaft, and
means for subsequently driving the tape of the cartridge on said shaft in the opposite or forward direction to unwind the tape and move it along said path, said last named driving means including a tape contacting roller carried by a swing lever and means for driving said roller and means for moving said lever toward the tape of the cartridge on said shaft, said lever being provided with a relatively sharp tape peeling end for peeling the end of the tape of the cartridge on said shaft off of the remainder of the tape as wound on the spool of this cartridge.

3,953,891
SOUNDHEAD RESTORE MECHANISM FOR USE IN A DISC MACHINE

Terry Lee Wilmoth, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 17, 1975, Ser. No. 559,343
Int. Cl.² G11B 17/04, 25/04, 5/012
U.S. Cl. 360—105 2 Claims



1. In a disc dictation machine having a loader carrier for effecting a disc change cycle by ejecting a first disc from a record/playback station into an unload station and transferring a second disc from a load station into the record/playback station, apparatus for positioning a magnetic soundhead at a predetermined start phasing position comprising:
a soundhead;
a soundhead transport slidably mounted for translation in a plane parallel to the surface of a disc in the record/-playback station;
means resiliently attaching said soundhead to said soundhead transport;
a lead screw;
pawl means attached to said soundhead transport and resiliently engaging said lead screw for imparting translatory motion to said soundhead transport;
spring biased bail means contacting said pawl means;
a cam surface integral with said bail means for receiving force from said loader carrier to rotate said bail means into contact with said pawl means thereby disengaging said pawl means from said lead screw;
a bellcrank pivotally mounted and having a first end attached to said soundhead transport;
a pin attached to the second end of said bellcrank; and
cam means attached to said loader carrier for engaging said pin during a disc change cycle and rotating said bellcrank to translate said soundhead transport and restore said soundhead to a predetermined position.

DESIGN PATENTS

GRANTED APRIL 27, 1976

ERRATA

For CLASS	See PATENT NO.
019-076	239,700
025-025	239,701
025-002	239,702
016-078	239,735
026-001 R	239,736

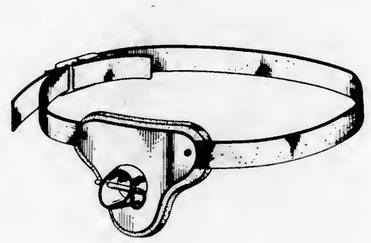
DESIGNS

APRIL 27, 1976

239,667
SWIM SUIT
Eleanor Bouchard, Miller Hill Road, Dover, Mass. 02030
Filed Apr. 24, 1974, Ser. No. 463,466
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—25



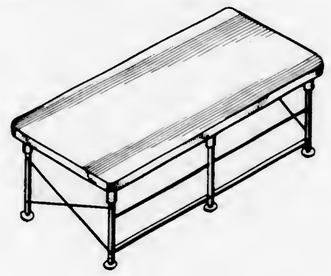
239,668
SPORTS FISHING BELT
Anthony M. Vanus, 105 Brown Drive, Claremont, Calif. 91711
Filed Nov. 4, 1974, Ser. No. 520,367
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—381



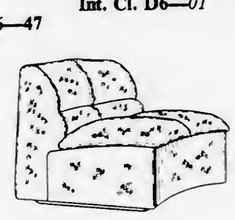
239,669
FOOT SOCK
Raymond Jacobs, New York, N.Y., assignor to Kalso Systemet, Inc., New York, N.Y.
Filed Aug. 16, 1974, Ser. No. 498,087
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—330



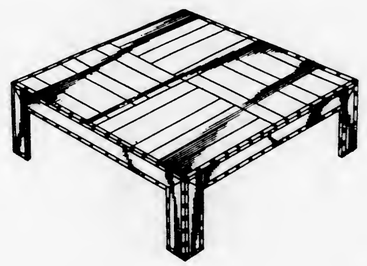
239,670
PORTABLE MASSAGE TABLE
Pedro A. Varea, 116 38th St., Union City, N.J. 07087
Filed Nov. 12, 1973, Ser. No. 414,861
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



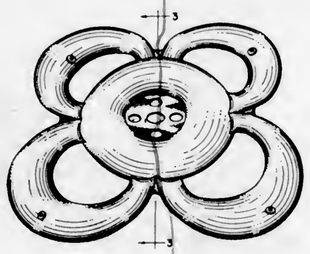
239,671
UPHOLSTERED SEAT
Giovanni Offredi, Milan, Italy, assignor to Fratelli Saporiti, Besnate, Varese, Italy
Filed Mar. 18, 1974, Ser. No. 452,416
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—47



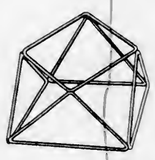
239,672
COCKTAIL TABLE OR THE LIKE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Apr. 23, 1974, Ser. No. 463,291
Term of patent 7 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



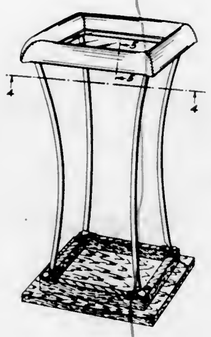
239,673
FLOATABLE TRAY FOR BEVERAGE GLASSES
Wilhelmine Ziegler, 8 Sprottauer-Strasse, 85 Nuremberg, Germany
Filed Aug. 5, 1974, Ser. No. 495,689
Claims priority, application Germany Feb. 4, 1974
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—146



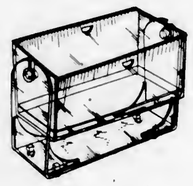
239,674
MODULAR PEDESTAL UNIT
John S. Carter, The Forge, N. Lane, Foxton, Market Harborough, Leicestershire, England
Filed Aug. 27, 1974, Ser. No. 500,848
Claims priority, application Great Britain Feb. 27, 1974
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—85



239,675
COUNTER HEIGHT BAR TABLE OR THE LIKE
Gaye P. Noe, P.O. Box 2062, Jacksonville, Fla. 32203
Filed Sept. 30, 1974, Ser. No. 510,424
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—27



239,676
BASSINET
Julianne L. McGinley, 430 E. 63rd St., New York, N.Y. 10021
Filed Oct. 2, 1974, Ser. No. 511,316
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—15



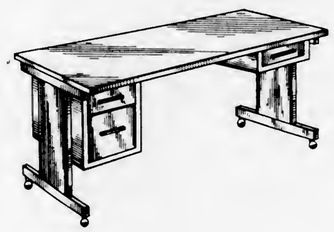
239,677
FLORAL DISPLAY CART
Jack L. Shaw, 4365 Greenberry Lane, Annandale, Va. 22003
Filed Oct. 11, 1974, Ser. No. 514,187
Term of patent 14 years
Int. Cl. D6—*04*; D12—*02*
U.S. Cl. D6—182



239,678
STAND FOR SUPPORTING A ROCK SPECIMEN
Jack E. Blake, 514 Gulf Bldg., Midland, Tex. 79701
Filed Oct. 11, 1974, Ser. No. 514,188
Term of patent 7 years
Int. Cl. D6—*99*
U.S. Cl. D6—85



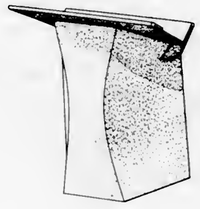
239,679
DESK
Robert J. Szucs, Midlothian, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Oct. 31, 1974, Ser. No. 519,476
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



239,680
DESK
Robert J. Szucs, Midlothian, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Oct. 31, 1974, Ser. No. 519,479
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



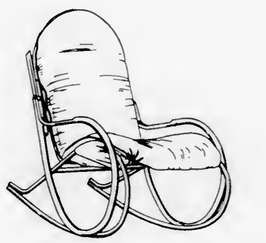
239,681
COLLAPSIBLE MUSIC STAND
Donald R. Smith, Brookville, Ind., assignor to Manual Arts Furniture Company, Cincinnati, Ohio
Filed Nov. 15, 1974, Ser. No. 524,152
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—18



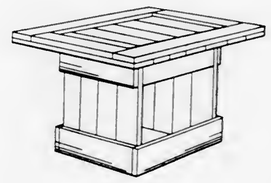
239,682
TISSUE BOX HOLDER
William H. Farmer, Box 248, Kingston, Okla. 73439
Filed Dec. 2, 1974, Ser. No. 528,912
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—85



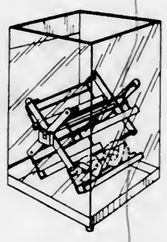
239,683
CHAIR
Paul Tuttle, Santa Barbara, Calif., assignor to Intercollection Development S.A., Kirchberg, Switzerland
Filed Jan. 2, 1975, Ser. No. 538,166
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—49



239,684
TABLE OR THE LIKE
Stephen H. Robertson, 4108 Deep Hollow Drive, Apt. 277, and Randall L. Ward, 4102 Deep Hollow Drive, Apt. 284, both of Raleigh, N.C. 27612
Filed Feb. 18, 1975, Ser. No. 550,779
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



239,685
DISPLAY UNIT
Jeffrey E. Peterson, Hinsdale, Ill., assignor to International Pretzel Corporation, Oakbrook, Ill.
Filed June 12, 1975, Ser. No. 586,285
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—175



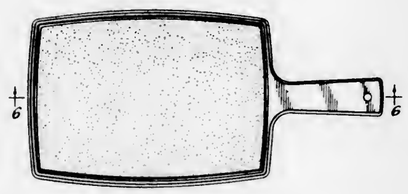
239,686
BOWL
Karl Gösta Bertil Andersson, Halmstad, Sweden, assignor to Duni Bila AB, Halmstad, Sweden
Filed Feb. 4, 1974, Ser. No. 439,121
Claims priority, application Sweden Aug. 6, 1973
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—1



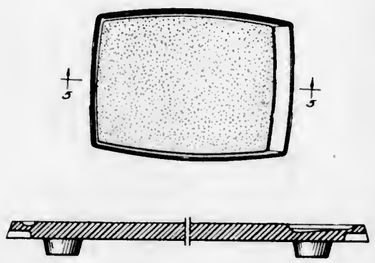
239,687
COFFEE POT
Carl-Arne Breger, Lilla Molleberga, 21290 Malmo, Sweden
Filed Mar. 20, 1974, Ser. No. 453,153
Claims priority, application Sweden Sept. 21, 1973
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—65



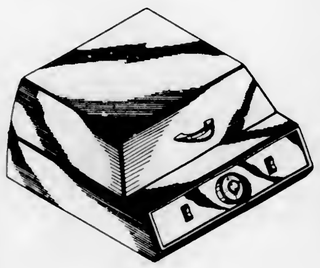
239,688
CUTTING BOARD
Donald W. Doman, Janesville, and Gerald A. Rau, Baraboo, Wis., assignors to Flambeau Products Corporation
Filed Apr. 1, 1974, Ser. No. 456,951
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—46



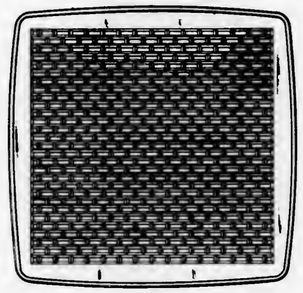
239,689
CUTTING BOARD
Donald W. Doman, Janesville, and Gerald A. Rau, Baraboo, Wis., assignors to Flambeau Products Corporation
Filed Apr. 1, 1974, Ser. No. 456,953
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—46



239,690
MICROWAVE OVEN
Beverly D. Kumpfer, Salt Lake City, Utah, assignor to Utah State University Foundation, Logan, Utah
Filed Dec. 13, 1974, Ser. No. 532,561
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128

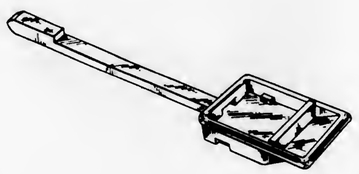


239,691
CONTAINER GRID OR THE LIKE
Harold P. Ashton, Providence, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Jan. 8, 1975, Ser. No. 539,362
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—130

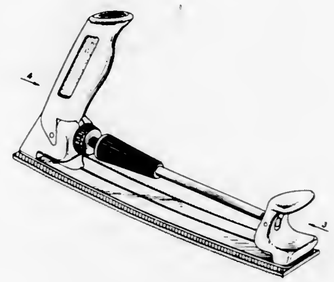


239,692
CONTAINER GRID OR THE LIKE
Harold P. Ashton, Providence, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Jan. 8, 1975, Ser. No. 539,363
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—130

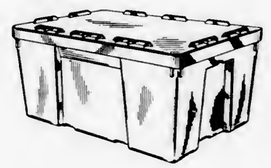
239,693
LATCHING ASSEMBLY FOR VEHICLE SEAT FOOD TRAY
Harry Mendell Smith, Colorado Springs, Colo., assignor to AMI Industries, Inc., Colorado Springs, Colo.
Filed Aug. 14, 1973, Ser. No. 388,221
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—109



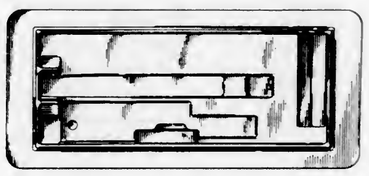
239,694
FILE OR RASP ALSO CAPABLE FOR USE AS A PLANE
Brian Ward, Retford, and David Scarrow, Dinnington, near Sheffield, England, assignors to Aven Tools Limited, Maltby, Rotherham, England
Filed Mar. 14, 1974, Ser. No. 451,267
Claims priority, application Great Britain Sept. 17, 1973
Term of patent 14 years
Int. Cl. D8—*03, 05*
U.S. Cl. D8—90



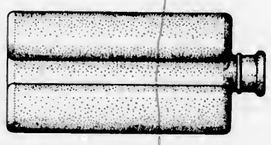
239,695
CONTAINER
Edward J. Fier, Jr., Mundelein, Ill., assignor to Norwesco, Inc., St. Paul, Minn.
Filed Nov. 12, 1973, Ser. No. 415,239
Term of patent 3½ years
The term of this patent subsequent to Dec. 16, 1989, has been disclaimed
Int. Cl. D9—*07*
U.S. Cl. D9—237



239,696
TRAY FOR RELEASABLY ENGAGING A RAZOR AND A BLADE DISPENSER
Martin Glaberson, Stratford, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Mar. 29, 1974, Ser. No. 456,086
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—186



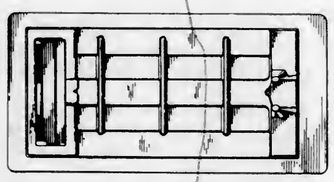
239,697
BOTTLE
Kenneth W. Hunt, Hialeah, Fla., assignor to Hunt-Wilde Corporation
Filed Nov. 27, 1974, Ser. No. 527,622
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—37



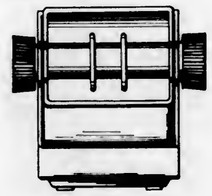
239,698
BOTTLE
George D. Utley, Bedford, N.Y., assignor to Relpak Corp., Long Island City, N.Y.
Filed Jan. 15, 1975, Ser. No. 541,325
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—167

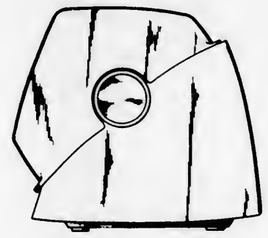


239,699
TRAY FOR RELEASABLY ENGAGING A RAZOR AND A BLADE CARTRIDGE DISPENSER
Martin Glaberson, Stratford, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Mar. 18, 1974, Ser. No. 452,173
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—186



239,700
ROTARY CARD FILE
Joseph P. Maruca, Coventry, R.I., and Robert A. Chieda, Westport, Conn., assignors to Textron Inc., Providence, R.I.
Filed Aug. 28, 1973, Ser. No. 392,357
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76

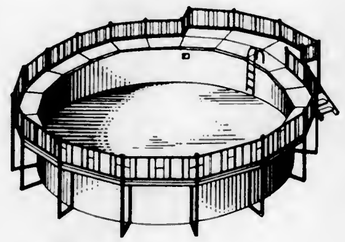




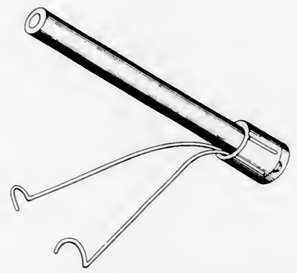
239,701
CAR WASH BUILDING
James W. Baker, Santa Monica, Calif., assignor to Daniel C. Hanna, Portland, Oreg.
Filed Oct. 15, 1973, Ser. No. 406,628
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—25



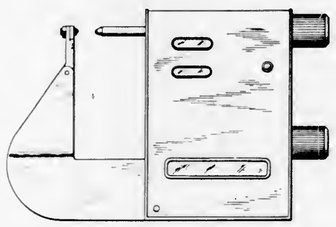
239,702
ABOVE GROUND SWIMMING POOL OR SIMILAR ARTICLE
Finley M. Bukaitz, Clifton, N.J., and George Neuser, Spring Valley, N.Y., assignors to Delta Industries, Inc., Carlstadt, N.J.
Filed Mar. 4, 1974, Ser. No. 447,549
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—2



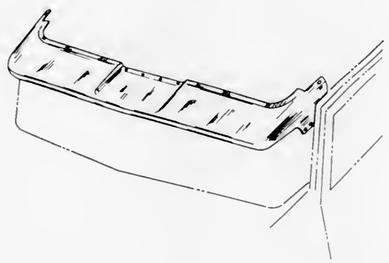
239,703
COMBINED HIGHWAY FLARE AND STAND THEREFOR
J. D. Moncrief, 3139 Woodmark Court, Sacramento, Calif. 95821
Filed June 17, 1974, Ser. No. 479,989
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—114



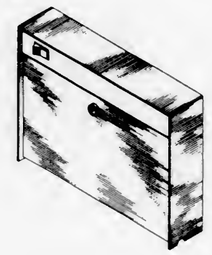
239,704
MICROMETER
Paul A. Morgan, Chicago, Ill., assignor to Century Wheels Research Corp., Lake Bluff, Ill.
Filed Sept. 27, 1974, Ser. No. 509,815
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—73



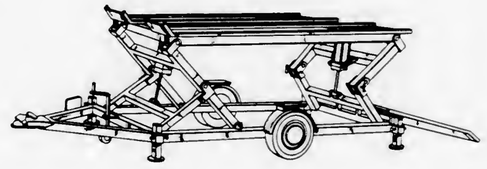
239,705
WINDSHIELD VISOR FOR TRUCKS
Allan W. Lund, 2641 118th Ave. NW., Minneapolis, Minn. 55433
Filed Dec. 5, 1974, Ser. No. 529,916
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—191



239,706
ALARM SYSTEM CABINET
David G. Barleen, Lafayette, Roger L. Ridings, Walnut Creek, and Theodore O. Pollard, Mountain View, Calif., assignors to Emergency Products Corporation, Parsippany, N.J.
Filed Dec. 23, 1974, Ser. No. 535,512
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



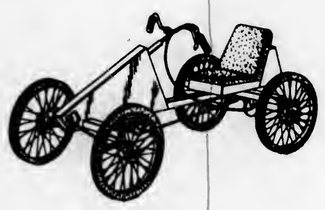
239,707
VEHICLE HOISTING TRAILER
Samuel Grimaldo, 776 W. Sandoval, Thousand Oaks, Calif. 91360
Filed Jan. 6, 1975, Ser. No. 538,552
Term of patent 14 years
Int. Cl. D12—*05, 10*
U.S. Cl. D12—56



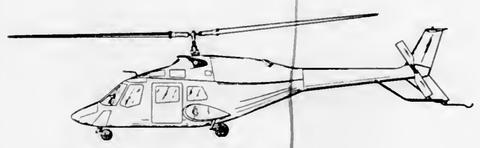
239,708
BICYCLE
Kazutaka Horino, Hamamatsu, and Takao Sato, Morimachi, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha
Filed Feb. 20, 1975, Ser. No. 551,303
Claims priority, application Japan Aug. 24, 1974
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—111



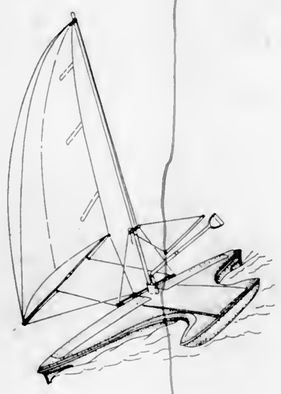
239,709
PEDAL CAR
Richard J. Scalone, 515 Cleveland Ave., Largo, Fla. 33540
Filed Feb. 27, 1975, Ser. No. 553,739
Term of patent 7 years
Int. Cl. D12—*11*
U.S. Cl. D12—107



239,710
LIGHT TWIN HELICOPTER
James R. Garrison, Arlington, Tex., assignor to Textron, Inc., Providence, R.I.
Filed Mar. 31, 1975, Ser. No. 563,506
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—73



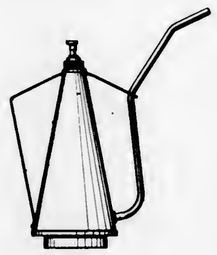
239,711
SPORT BOAT
Richard Lynn Rineman, Brighton, Mich., assignor to Harold J. Rineman and S. Albert Young
Filed June 5, 1975, Ser. No. 584,123
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—64



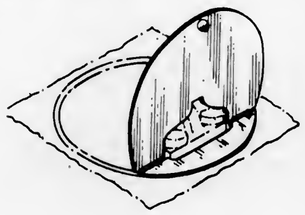
239,712
FISHING LURE
William D. Storm, Norman, Okla., assignor to Storm Plastics, Inc., Norman, Okla.
Filed July 16, 1975, Ser. No. 596,107
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28



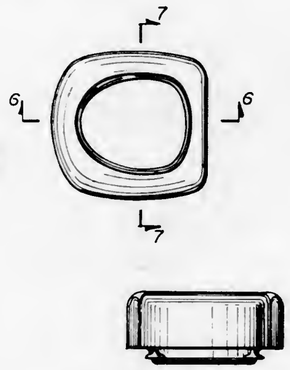
239,713
COMBINATION MISTER AND WATERING CAN
Jack Solomon, Island Park, N.Y., assignor to Pearl-Wick Corporation, Long Island City, N.Y.
Filed July 25, 1974, Ser. No. 491,936
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—11



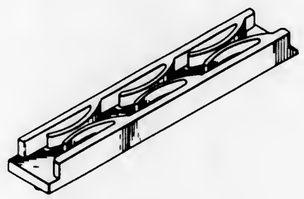
239,714
COVER SPLASH GUARD FOR SINKS
David A. Pommiss, 7991 Sunrise Lakes Drive N., Fort Lauderdale, Fla. 33313
Filed Nov. 7, 1974, Ser. No. 521,588
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



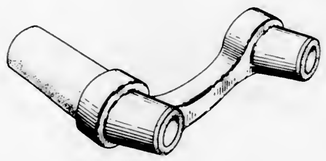
239,715
TOILET SEAT FOR INVALIDS
Milton Finlof, 3722 Martin Drive, San Mateo, Calif. 94403
Filed May 19, 1975, Ser. No. 578,540
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71



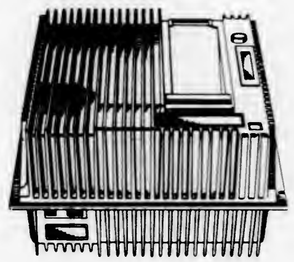
239,716
PRINTED CIRCUIT CARD GUIDE
Adam Tems, Philadelphia, Pa., assignor to Milross Controls, Inc., Southampton, Pa.
Filed Sept. 5, 1974, Ser. No. 503,247
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 R



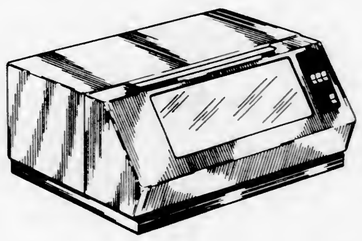
239,717
COMBINED BUS AND CURRENT LIMITING FUSE FOR TRANSFORMERS
George D. Allen, Harold D. Haubein, and Melvin B. Goe, Jr., Centralia, and Kenneth A. Toeniskoetter, Washington, Mo., assignors to A. B. Chance Company, Centralia, Mo.
Filed Mar. 26, 1975, Ser. No. 562,140
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 D



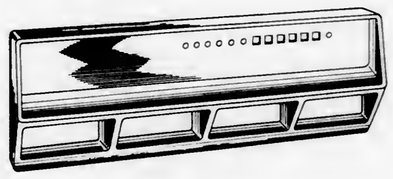
239,718
PROGRAMMABLE PRINTER
Howard A. Powers, Medfield, Mass., assignor to Modicon Corporation, Andover, Mass.
Filed Feb. 19, 1974, Ser. No. 443,200
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



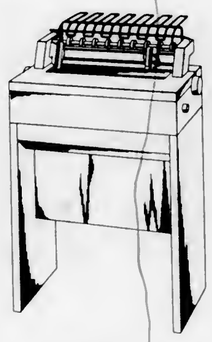
239,719
DATA PRINTER
Michael H. Tooke, Calabasas, Calif., assignor to Printronix
Filed Aug. 19, 1974, Ser. No. 498,434
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



239,720
FACEPLATE FOR A DATA SET HOUSING OR SIMILAR ARTICLE
James R. Stewart, San Jose, Calif., assignor to GTE Lenkurt Incorporated, San Carlos, Calif.
Filed Oct. 7, 1974, Ser. No. 512,568
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 R



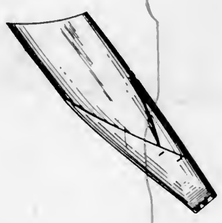
239,721
PRINTER STATION
Myron F. Davis, Jr., Boca Raton, Fla., and Charles A. Pycha, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 10, 1975, Ser. No. 540,308
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



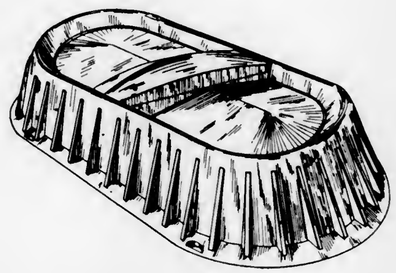
239,722
MICROPHONE
Arthur W. Schmidt, Chicago, Ill., assignor to Shure Brothers Incorporated
Filed May 23, 1974, Ser. No. 472,628
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 J



239,723
ASH COLLECTOR
William F. Martin, 350 Stonycroft Road, Ridgewood, N.J. 07450
Filed Jan. 16, 1974, Ser. No. 433,721
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—8



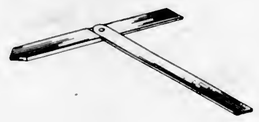
239,724
STOCK-WATERING TROUGH
James H. Kuzara, 307 W. Works; Norman L. Feck, 555 Wyoming Ave.; and Vincent P. Johnston, 1216 Leopard St., all of Sheridan, Wyo. 82801
Filed Apr. 4, 1974, Ser. No. 457,762
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—16



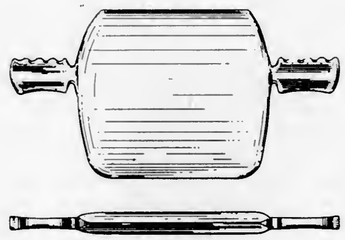
239,725
COMBINED GOLF CLUB HANDLE AND SHAFT
Lawrence E. Kindred, 1749 Crofton Parkway, Crofton, Md. 21113
Filed Nov. 5, 1974, Ser. No. 521,071
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GS



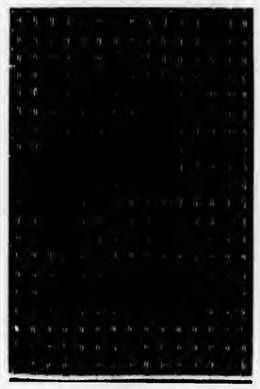
239,726
GOLF AID DEVICE
Victoria Wintering, 445 Bridge Road, Yacht and Country Club, Stuart, Fla. 33494
Filed Feb. 21, 1974, Ser. No. 444,517
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB



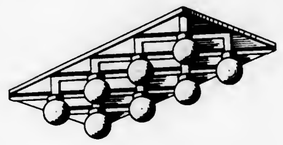
239,727
SURF DIVER FOIL
Allen H. Sturmer, 3730 Inverrary Road, Apt. 2R, Lauderhill, Fla. 33313
Filed Apr. 30, 1975, Ser. No. 573,063
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—41



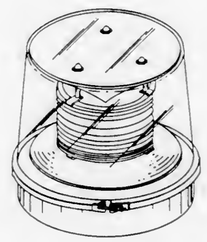
239,728
CURTAIN FABRIC
Peter Eric Schroeder, Oberwil, near Brenngarten, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed Sept. 11, 1974, Ser. No. 504,995
Claims priority, application Germany Mar. 13, 1974
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



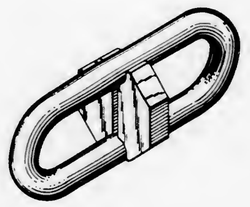
239,729
LIGHTING FIXTURE
Martin Alabardo, 5 Isolde Court, Pine Brook, N.J. 07058
Filed Nov. 14, 1974, Ser. No. 523,812
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23 R



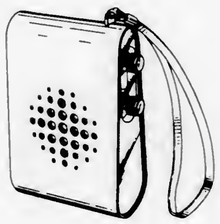
239,730
OMNIDIRECTIONAL LAMP
Edward Wilfrid Thomas, Chamblee, Ga., assignor to Unitron International Systems, Inc., Atlanta, Ga.
Filed July 29, 1974, Ser. No. 492,437
Term of patent 14 years
Int. Cl. D10—*06;* D26—*02*
U.S. Cl. D48—24 R



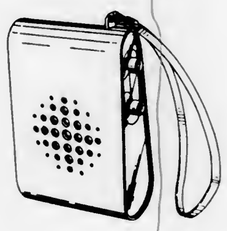
239,731
CHAIN LINK FOR POULTRY FEED CONVEYOR
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Continuation-in-part of design application Ser. No. 314,856, Dec. 13, 1972. This application Jan. 15, 1975, Ser. No. 541,203
Term of patent 14 years
Int. Cl. D8—*99;* D12—*05*
U.S. Cl. D55—1 C



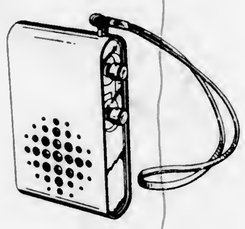
239,732
RADIO
Hoi Tong Vong, 179–180 Connaught Road W., Cheung Ka Industrial Bldg., Block A, Hong Kong
Filed June 14, 1974, Ser. No. 479,300
Claims priority, application Great Britain Feb. 19, 1974
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



239,733
RADIO
Hoi Tong Vong, 179–180 Connaught Road W., Cheung Ka Industrial Bldg., Block A, Hong Kong
Filed June 19, 1974, Ser. No. 480,697
Claims priority, application Great Britain Dec. 21, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



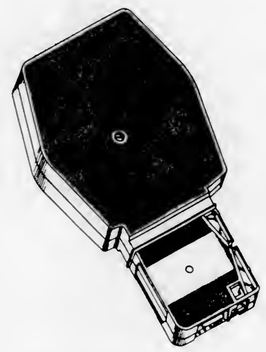
239,734
RADIO
Hoi Tong Vong, 179–180 Connaught Road W., Cheung Ka Industrial Bldg., Block A, Hong Kong
Filed June 19, 1974, Ser. No. 480,699
Claims priority, application Great Britain Dec. 21, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



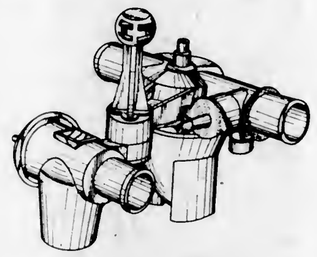
239,735
SPECTACLE FRONT
Jack Bloch, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.
Filed Dec. 13, 1974, Ser. No. 532,347
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—78



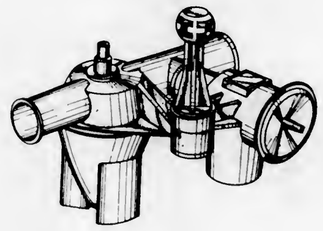
239,736
LOADED FILM CARTRIDGE
Harvey H. Dudley, Penfield, Robert I. Gresens, Rochester, David E. Hansen, Fairport, Stephen H. Miller, Irondequoit, and Robert C. Sutliff, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 30, 1973, Ser. No. 411,125
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D26—1 R



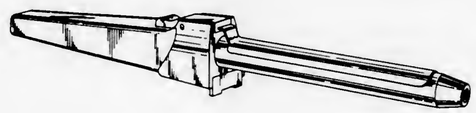
239,737
MANIFOLD NEBULIZER UNIT
Joel F. Giurtino, Arvada, Colo., assignor to Sandoz, Inc., East Hanover, N.J.
Filed Jan. 18, 1974, Ser. No. 437,321
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 N



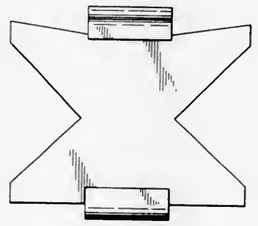
239,738
MANIFOLD NEBULIZER UNIT
Joel F. Giurtino, Arvada, Colo., assignor to Sandoz, Inc., East Hanover, N.J.
Filed Jan. 28, 1974, Ser. No. 437,322
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 N



239,739
ELECTRIC HAIR CURLING IRON
Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co.
Filed Nov. 8, 1974, Ser. No. 521,947
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 E



239,740
POCKET LOCK FOR A BILLFOLD
Woodrow Winston, 515 Walden Ave., Buffalo, N.Y. 14211
Filed Aug. 19, 1974, Ser. No. 498,544
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—2 R

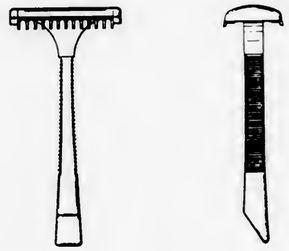




239,741
HANDBAG FOR CARRYING BINGO ACCESSORIES
Maxine T. Mommsen, Chicago, Ill. (9020 Capitol Drive, Des Plaines, Ill. 60016)
Filed May 1, 1974, Ser. No. 465,857
Term of patent 7 years
Int. Cl. D3—*02*
U.S. Cl. D87—3 F



239,742
SAFETY RAZOR
Arnold E. Rees, Blyth, England, assignor to Wilkinson Sword Limited
Filed May 20, 1974, Ser. No. 471,206
Claims priority, application Great Britain Nov. 23, 1973
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



CONSECUTIVE ORDER LISTING OF APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM

DOCUMENT NUMBER	CLASS/ SUBCLASS	PUBLISHED DATE	DOCUMENT NUMBER	CLASS/ SUBCLASS	PUBLISHED DATE
B 48,560	426/281	Mar. 30, 1976	B 364,797	210/23H	Feb. 17, 1976
B 54,859	260/23H	Feb. 17, 1976	B 367,092	260/471C	Apr. 13, 1976
B 59,512	360/125	Mar. 16, 1976	B 367,305	96/54	Mar. 2, 1976
B 66,272	423/242	Feb. 24, 1976	B 367,621	176/36R	Feb. 3, 1976
B 71,613	250/328	Mar. 16, 1976	B 369,221	260/927N	Feb. 24, 1976
B 73,017	358/28	Mar. 9, 1976	B 369,373	260/346.8R	Mar. 23, 1976
B 78,315	328/129	Feb. 10, 1976	B 369,379	423/27	Mar. 30, 1976
B 79,099	324/13	Jan. 13, 1976	B 370,309	252/364	Jan. 20, 1976
B 97,259	172/719	Mar. 9, 1976	B 371,095	260/239.1	Mar. 23, 1976
B 105,006	148/175	Mar. 23, 1976	B 371,635	427/93	Mar. 23, 1976
B 111,130	423/406	Mar. 16, 1976	B 371,912	206/451	Mar. 2, 1976
B 141,968	71/28	Mar. 30, 1976	B 372,016	260/239.1	Mar. 9, 1976
B 150,142	162/198	Jan. 27, 1976	B 372,232	8/115.5	Mar. 16, 1976
B 159,570	260/465.3	Mar. 23, 1976	B 372,722	423/15	Mar. 9, 1976
B 160,045	313/452	Jan. 13, 1976	B 373,344	214/18N	Feb. 3, 1976
B 160,099	427/343	Jan. 13, 1976	B 373,354	429/315	Jan. 27, 1976
B 163,463	425/222	Jan. 27, 1976	B 374,553	250/345	Mar. 30, 1976
B 167,470	204/181	Mar. 2, 1976	B 374,588	424/257	Jan. 27, 1976
B 181,208	424/45	Mar. 9, 1976	B 376,749	252/62.1L	Mar. 30, 1976
B 200,759	96/1.4	Feb. 3, 1976	B 378,513	136/202	Jan. 27, 1976
B 208,916	260/601R	Jan. 13, 1976	B 378,760	428/224	Mar. 9, 1976
B 214,925	264/140	Mar. 9, 1976	B 379,177	423/58	Jan. 27, 1976
B 223,678	220/66	Mar. 9, 1976	B 380,137	252/12.2	Mar. 23, 1976
B 231,416	204/192	Mar. 30, 1976	B 381,006	330/110	Apr. 6, 1976
B 236,266	260/75R	Mar. 23, 1976	B 381,709	427/70	Jan. 13, 1976
B 236,342	260/45.85R	Feb. 10, 1976	B 381,985	350/96WG	Feb. 3, 1976
B 248,240	343/7A	Jan. 13, 1976	B 382,120	260/239D	Mar. 23, 1976
B 257,143	260/42.15	Mar. 16, 1976	B 383,697	260/147	Feb. 17, 1976
B 270,274	340/8L	Feb. 17, 1976	B 384,225	350/150	Mar. 16, 1976
B 270,351	340/347SY	Mar. 30, 1976	B 384,330	176/20R	Jan. 27, 1976
B 271,743	260/80.78	Mar. 16, 1976	B 384,654	331/94.5M	Feb. 24, 1976
B 276,026	260/326.5B	Feb. 3, 1976	B 385,024	260/306.7C	Feb. 10, 1976
B 279,415	102/38	Mar. 16, 1976	B 385,483	260/471R	Feb. 17, 1976
B 279,969	313/477	Jan. 13, 1976	B 385,631	75/.5BA	Jan. 27, 1976
B 281,162	357/15	Mar. 23, 1976	B 386,257	260/557R	Feb. 3, 1976
B 283,941	360/15	Feb. 3, 1976	B 386,673	260/942	Feb. 3, 1976
B 288,757	156/461	Mar. 30, 1976	B 386,828	260/516	Feb. 3, 1976
B 301,143	260/534R	Jan. 27, 1976	B 387,337	D9/255	Mar. 16, 1976
B 302,160	260/346.2M	Feb. 3, 1976	B 388,521	260/471R	Jan. 13, 1976
B 306,668	260/77.5CR	Feb. 3, 1976	B 388,675	260/873	Mar. 30, 1976
B 307,698	424/267	Feb. 3, 1976	B 389,155	8/178R	Mar. 30, 1976
B 308,659	264/36	Jan. 27, 1976	B 389,304	8/115.7	Jan. 27, 1976
B 311,450	99/485	Mar. 9, 1976	B 389,605	426/561	Mar. 23, 1976
B 311,779	106/309	Feb. 10, 1976	B 390,031	260/515A	Jan. 13, 1976
B 313,280	285/110	Apr. 6, 1976	B 390,408	260/448.2H	Feb. 3, 1976
B 326,211	260/220B	Mar. 23, 1976	B 390,979	252/455R	Mar. 23, 1976
B 328,065	202/185A	Mar. 30, 1976	B 391,473	260/553R	Mar. 2, 1976
B 328,077	260/112R	Apr. 13, 1976	B 391,797	308/9	Mar. 9, 1976
B 328,116	165/4	Mar. 9, 1976	B 391,828	260/563R	Apr. 6, 1976
B 330,719	210/512R	Mar. 16, 1976	B 391,844	340/172.5	Mar. 16, 1976
B 330,736	260/648F	Feb. 3, 1976	B 392,798	260/346.3	Mar. 30, 1976
B 332,442	260/248.5	Mar. 30, 1976	B 394,248	260/647	Jan. 27, 1976
B 333,110	428/132	Mar. 16, 1976	B 394,350	331/94.5P	Jan. 13, 1976
B 333,247	260/117	Mar. 16, 1976	B 394,742	426/8	Apr. 13, 1976
B 333,838	426/594	Mar. 23, 1976	B 395,554	101/115	Mar. 9, 1976
B 335,783	264/11	Mar. 30, 1976	B 395,975	195/68	Mar. 2, 1976
B 336,754	423/462	Mar. 16, 1976	B 396,164	176/68	Feb. 3, 1976
B 337,023	215/347	Mar. 30, 1976	B 396,377	D8/50	Apr. 6, 1976
B 337,823	424/243	Mar. 23, 1976	B 396,916	164/282	Mar. 2, 1976
B 339,194	333/73W	Feb. 3, 1976	B 397,674	259/191	Mar. 16, 1976
B 339,446	156/159	Feb. 24, 1976	B 398,084	260/326R	Feb. 3, 1976
B 340,170	317/18D	Mar. 30, 1976	B 398,220	431/264	Feb. 3, 1976
B 344,669	260/249.6	Mar. 16, 1976	B 398,488	248/49	Feb. 24, 1976
B 344,967	8/174	Feb. 3, 1976	B 399,098	424/246	Feb. 24, 1976
B 347,661	360/35	Mar. 16, 1976	B 399,632	136/205	Mar. 9, 1976
B 348,433	260/244R	Feb. 3, 1976	B 399,908	178/58R	Jan. 13, 1976
B 349,370	260/239A	Jan. 27, 1976	B 400,871	60/445	Feb. 17, 1976
B 351,455	260/493	Feb. 24, 1976	B 401,042	D6/177	Mar. 16, 1976
B 354,222	204/162R	Mar. 23, 1976	B 401,221	210/114	Apr. 6, 1976
B 354,959	8/74	Feb. 17, 1976	B 402,162	260/288R	Mar. 2, 1976
B 356,187	86/1R	Jan. 20, 1976	B 402,328	101/19	Apr. 6, 1976
B 356,470	210/84	Mar. 23, 1976	B 402,553	423/249	Feb. 17, 1976
B 357,526	260/545R	Mar. 23, 1976	B 402,657	260/288CF	Apr. 6, 1976
B 358,260	260/29.7PT	Mar. 30, 1976	B 402,929	428/289	Feb. 3, 1976
B 358,427	179/1SB	Feb. 3, 1976	B 403,076	260/465E	Apr. 20, 1976
B 359,768	260/347.3	Mar. 30, 1976	B 403,243	260/293.79	Mar. 30, 1976
B 359,901	96/36.1	Jan. 13, 1976	B 403,326	260/239BC	Mar. 23, 1976
B 361,954	203/1	Apr. 6, 1976	B 403,477	360/80	Feb. 3, 1976
B 363,565	280/150SB	Mar. 30, 1976	B 403,507	219/273	Feb. 10, 1976

DOCUMENT NUMBER	CLASS/ SUBCLASS	PUBLISHED DATE	DOCUMENT NUMBER	CLASS/ SUBCLASS	PUBLISHED DATE
B 403,766	252/543	Feb. 10, 1976	B 432,265	106/213	Mar. 23, 1976
B 403,883	428/469	Mar. 23, 1976	B 432,594	137/627.5	Mar. 30, 1976
B 405,726	102/32	Jan. 13, 1976	B 432,969	180/44F	Mar. 2, 1976
B 405,899	123/119A	Mar. 23, 1976	B 432,991	100/162B	Mar. 2, 1976
B 406,546	D6/114	Mar. 16, 1976	B 433,094	180/49	Jan. 27, 1976
B 407,014	260/309.2	Mar. 16, 1976	B 433,707	252/544	Mar. 23, 1976
B 407,205	8/1E	Mar. 16, 1976	B 433,892	204/192	Apr. 6, 1976
B 407,737	424/267	Feb. 3, 1976	B 433,930	210/500M	Mar. 23, 1976
B 407,812	44/62	Mar. 23, 1976	B 434,206	404/77	Feb. 3, 1976
B 408,123	260/293.84	Apr. 13, 1976	B 434,441	D12/85	Mar. 16, 1976
B 409,310	260/615A	Mar. 23, 1976	B 435,481	271/180	Mar. 9, 1976
B 409,848	427/372	Jan. 27, 1976	B 435,570	280/11.35R	Mar. 16, 1976
B 410,074	260/483	Feb. 24, 1976	B 435,617	260/256.4C	Mar. 16, 1976
B 410,694	91/40	Mar. 23, 1976	B 436,724	187/1R	Feb. 24, 1976
B 411,471	75/156.5	Feb. 17, 1976	B 437,209	260/78.5R	Feb. 3, 1976
B 411,624	260/156	Mar. 16, 1976	B 437,559	254/188	Feb. 3, 1976
B 411,765	425/521	Feb. 24, 1976	B 437,596	208/15	Jan. 27, 1976
B 412,023	318/574	Apr. 6, 1976	B 437,894	96/33	Mar. 2, 1976
B 412,068	102/69	Jan. 13, 1976	B 437,986	178/6	Apr. 20, 1976
B 412,124	431/1	Mar. 23, 1976	B 438,048	424/70	Mar. 23, 1976
B 412,830	260/448.2N	Mar. 30, 1976	B 438,484	260/586C	Feb. 17, 1976
B 413,379	260/562B	Mar. 9, 1976	B 438,882	66/116	Feb. 24, 1976
B 414,028	423/448	Feb. 17, 1976	B 438,916	208/253	Jan. 13, 1976
B 414,266	260/29.2TN	Feb. 10, 1976	B 439,542	330/33	Jan. 27, 1976
B 414,481	156/73.6	Jan. 20, 1976	B 439,778	426/548	Feb. 3, 1976
B 414,971	D7/154	Feb. 10, 1976	B 440,548	260/325PH	Mar. 16, 1976
B 415,021	73/432R	Mar. 2, 1976	B 440,632	260/831	Apr. 13, 1976
B 415,122	260/42.15	Feb. 10, 1976	B 440,633	260/47EP	Feb. 10, 1976
B 415,590	428/378	Mar. 23, 1976	B 440,858	260/346.2M	Feb. 3, 1976
B 416,257	260/591	Mar. 16, 1976	B 441,543	203/73	Mar. 23, 1976
B 416,589	101/129	Jan. 27, 1976	B 441,605	260/37EP	Feb. 3, 1976
B 417,014	260/88.2C	Jan. 13, 1976	B 441,723	252/33.6	Mar. 16, 1976
B 417,164	264/49	Mar. 2, 1976	B 441,789	426/332	Mar. 30, 1976
B 417,349	102/39	Mar. 9, 1976	B 442,163	D6/40	Mar. 16, 1976
B 417,498	96/66.3	Mar. 23, 1976	B 442,295	331/94.5G	Mar. 16, 1976
B 418,489	195/29	Jan. 13, 1976	B 442,431	260/514J	Mar. 23, 1976
B 419,173	244/140	Mar. 9, 1976	B 442,810	260/243C	Feb. 24, 1976
B 419,364	15/53A	Mar. 30, 1976	B 442,866	43/129	Feb. 24, 1976
B 419,582	260/143	Mar. 2, 1976	B 442,953	260/408	Mar. 23, 1976
B 420,176	96/35.1	Mar. 16, 1976	B 442,970	178/7.3D	Feb. 3, 1976
B 420,321	242/25A	Mar. 30, 1976	B 443,163	102/42R	Feb. 3, 1976
B 420,472	317/101A	Feb. 24, 1976	B 443,446	D86/10	Apr. 6, 1976
B 421,373	260/566R	Mar. 23, 1976	B 443,563	260/82.1	Feb. 24, 1976
B 421,608	427/54	Mar. 23, 1976	B 443,647	296/35R	Feb. 17, 1976
B 421,975	29/180SS	Mar. 2, 1976	B 443,712	340/174DC	Jan. 27, 1976
B 422,063	260/2.5AM	Feb. 3, 1976	B 444,078	260/47EQ	Mar. 23, 1976
B 422,156	315/379	Mar. 23, 1976	B 444,294	260/167	Mar. 30, 1976
B 423,365	260/37EP	Feb. 17, 1976	B 444,437	307/205	Mar. 9, 1976
B 423,404	204/159.22	Mar. 2, 1976	B 445,166	260/294.8G	Mar. 2, 1976
B 423,441	244/169	Feb. 17, 1976	B 445,459	60/226A	Feb. 3, 1976
B 423,867	8/142	Feb. 3, 1976	B 445,493	260/290R	Mar. 2, 1976
B 423,883	96/1R	Jan. 27, 1976	B 445,690	152/213R	Feb. 3, 1976
B 424,354	D7/15	Feb. 10, 1976	B 446,107	260/326.12R	Mar. 9, 1976
B 424,410	8/21A	Mar. 30, 1976	B 446,956	204/129.43	Apr. 13, 1976
B 424,989	198/179	Feb. 3, 1976	B 447,000	260/293.56	Feb. 3, 1976
B 425,193	92/163	Mar. 23, 1976	B 447,440	123/25R	Feb. 17, 1976
B 425,285	71/67	Apr. 13, 1976	B 449,837	260/578	Mar. 2, 1976
B 425,462	241/81	Mar. 9, 1976	B 449,892	360/137	Mar. 23, 1976
B 425,588	123/32ST	Jan. 13, 1976	B 449,988	210/199	Mar. 30, 1976
B 426,157	260/535P	Mar. 23, 1976	B 449,989	210/168	Mar. 30, 1976
B 426,227	219/69M	Mar. 2, 1976	B 450,196	428/341	Feb. 10, 1976
B 426,266	260/314.5	Mar. 2, 1976	B 450,413	346/75	Mar. 23, 1976
B 426,274	260/674SA	Jan. 20, 1976	B 450,521	356/201	Feb. 17, 1976
B 426,424	424/9	Feb. 3, 1976	B 450,693	260/397.4	Mar. 9, 1976
B 426,639	424/258	Feb. 3, 1976	B 450,701	260/345.9	Mar. 16, 1976
B 426,802	260/293.57	Feb. 17, 1976	B 450,708	260/345.9	Mar. 9, 1976
B 426,819	277/184	Feb. 17, 1976	B 450,870	424/251	Mar. 16, 1976
B 427,883	360/27	Jan. 20, 1976	B 450,967	252/454	Jan. 13, 1976
B 427,946	260/325R	Mar. 23, 1976	B 451,248	219/201	Mar. 2, 1976
B 428,103	260/683.15D	Feb. 10, 1976	B 451,308	260/78S	Feb. 17, 1976
B 428,271	340/172.5	Mar. 23, 1976	B 451,396	318/481	Apr. 13, 1976
B 428,386	423/249	Mar. 23, 1976	B 451,438	424/1	Mar. 2, 1976
B 428,408	340/146.1AB	Mar. 2, 1976	B 451,534	250/402	Jan. 13, 1976
B 428,877	200/83SA	Jan. 27, 1976	B 452,034	296/137A	Mar. 23, 1976
B 429,018	340/174TF	Feb. 10, 1976	B 452,138	340/172.5	Mar. 23, 1976
B 429,027	260/296R	Mar. 23, 1976	B 452,293	156/167	Mar. 30, 1976
B 429,157	229/62.5	Jan. 27, 1976	B 452,501	210/24	Mar. 16, 1976
B 429,434	251/58	Feb. 17, 1976	B 452,672	404/71	Jan. 13, 1976
B 430,157	260/668D	Feb. 17, 1976	B 452,879	195/103.5R	Mar. 16, 1976
B 430,172	137/798	Jan. 13, 1976	B 452,883	106/27	Jan. 27, 1976
B 430,213	195/68	Mar. 30, 1976	B 452,915	318/467	Mar. 30, 1976
B 430,276	323/1	Jan. 20, 1976	B 452,938	75/101BE	Feb. 17, 1976
B 430,287	D83/1N	Feb. 10, 1976	B 452,944	198/25	Mar. 30, 1976
B 430,326	277/34.6	Mar. 23, 1976	B 453,031	156/3	Mar. 16, 1976
B 430,334	8/10.2	Jan. 27, 1976	B 453,067	340/173LM	Mar. 23, 1976
B 431,072	162/133	Jan. 20, 1976	B 453,238	214/1C	Mar. 2, 1976
B 431,334	425/237	Mar. 16, 1976	B 453,432	360/60	Mar. 16, 1976
B 431,713	260/378	Feb. 10, 1976	B 453,533	200/84C	Feb. 17, 1976
B 431,785	23/273SP	Feb. 24, 1976	B 453,616	333/30R	Jan. 27, 1976
B 431,797	426/594	Mar. 30, 1976	B 453,759	264/225	Jan. 27, 1976
B 432,049	179/90K	Mar. 23, 1976	B 453,960	96/75	Apr. 13, 1976
B 432,140	340/172.5	Mar. 23, 1976	B 454,283	240/41.35R	Feb. 3, 1976

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B 454,833	137/220	Mar. 30, 1976	B 470,853	89/142	Mar. 23, 1976
B 455,425	340/174TF	Feb. 3, 1976	B 470,899	200/309	Mar. 2, 1976
B 455,481	260/429.9	Feb. 24, 1976	B 470,900	260/239B	Mar. 2, 1976
B 455,486	260/984	Mar. 16, 1976	B 470,945	260/33.6AQ	Apr. 13, 1976
B 455,686	260/29.2EP	Mar. 2, 1976	B 471,116	260/544C	Feb. 17, 1976
B 455,759	96/45	Feb. 24, 1976	B 471,221	423/315	Jan. 13, 1976
B 455,806	264/150	Mar. 23, 1976	B 471,405	252/182	Feb. 10, 1976
B 456,069	428/447	Mar. 9, 1976	B 471,494	260/308R	Mar. 16, 1976
B 456,148	156/71	Jan. 13, 1976	B 471,579	260/2.5R	Jan. 13, 1976
B 456,153	40/159	Mar. 9, 1976	B 471,617	260/112.5R	Feb. 10, 1976
B 456,384	260/88.2B	Apr. 6, 1976	B 471,681	33/252	Apr. 13, 1976
B 456,579	260/884	Feb. 10, 1976	B 471,706	280/124F	Mar. 16, 1976
B 456,869	260/326.13R	Mar. 9, 1976	B 471,735	415/14	Feb. 3, 1976
B 456,900	260/465.9	Feb. 3, 1976	B 471,836	260/307H	Feb. 24, 1976
B 456,905	55/70	Mar. 23, 1976	B 472,241	260/604HF	Feb. 17, 1976
B 457,547	427/145	Feb. 17, 1976	B 472,256	260/472	Jan. 13, 1976
B 457,850	252/429R	Feb. 10, 1976	B 472,276	340/174TF	Mar. 9, 1976
B 457,862	424/311	Jan. 27, 1976	B 472,284	179/81R	Jan. 13, 1976
B 457,886	428/434	Jan. 13, 1976	B 472,591	114/.5A	Apr. 6, 1976
B 457,931	260/247.1R	Mar. 16, 1976	B 472,760	260/570.6	Apr. 13, 1976
B 458,010	324/83D	Mar. 16, 1976	B 473,039	260/243C	Feb. 10, 1976
B 458,060	8/17	Jan. 13, 1976	B 473,040	260/243C	Feb. 10, 1976
B 458,500	310/90	Feb. 24, 1976	B 473,813	141/294	Mar. 9, 1976
B 458,617	260/295.5B	Feb. 3, 1976	B 473,972	228/190	Jan. 13, 1976
B 458,819	252/545	Apr. 13, 1976	B 474,573	260/609E	Jan. 20, 1976
B 458,964	360/102	Mar. 2, 1976	B 474,645	260/77.5AN	Mar. 2, 1976
B 459,190	150/8	Mar. 30, 1976	B 474,747	428/515	Feb. 24, 1976
B 459,381	148/36	Mar. 9, 1976	B 475,236	318/139	Feb. 3, 1976
B 459,408	424/273	Mar. 23, 1976	B 475,385	156/435	Mar. 9, 1976
B 459,597	52/207	Feb. 17, 1976	B 475,681	179/1CN	Jan. 20, 1976
B 459,811	323/17	Jan. 20, 1976	B 475,801	318/98	Mar. 30, 1976
B 459,821	428/537	Mar. 30, 1976	B 476,267	260/157	Apr. 6, 1976
B 460,388	8/14	Jan. 27, 1976	B 476,372	260/340.9	Feb. 24, 1976
B 460,441	260/2.5AC	Jan. 13, 1976	B 476,542	208/323	Mar. 30, 1976
B 460,846	260/665R	Feb. 24, 1976	B 476,568	84/1.01	Mar. 16, 1976
B 461,184	260/876R	Feb. 17, 1976	B 476,577	179/1SM	Jan. 20, 1976
B 461,250	150/3	Mar. 16, 1976	B 476,681	340/174TF	Jan. 13, 1976
B 461,257	229/17R	Jan. 13, 1976	B 476,776	204/159.16	Mar. 23, 1976
B 461,336	340/172.5	Feb. 3, 1976	B 476,837	427/39	Jan. 20, 1976
B 461,352	8/161	Jan. 13, 1976	B 476,967	318/593	Mar. 9, 1976
B 461,685	260/283CN	Mar. 30, 1976	B 477,252	260/296R	Jan. 13, 1976
B 461,752	340/172.5	Apr. 20, 1976	B 477,481	260/326.9	Feb. 3, 1976
B 461,874	360/17	Jan. 27, 1976	B 477,584	D19/49	Apr. 6, 1976
B 462,030	179/2DP	Mar. 23, 1976	B 477,597	290/17	Feb. 17, 1976
B 462,386	156/143	Jan. 13, 1976	B 477,892	235/61.11E	Mar. 30, 1976
B 462,424	204/9	Feb. 24, 1976	B 478,234	325/38A	Mar. 30, 1976
B 462,828	241/46.11	Mar. 9, 1976	B 478,739	162/290	Feb. 17, 1976
B 462,893	96/35.1	Feb. 24, 1976	B 478,759	426/656	Mar. 16, 1976
B 463,322	315/169TV	Jan. 20, 1976	B 479,175	260/33.6R	Feb. 17, 1976
B 463,388	219/233	Feb. 10, 1976	B 479,242	252/500	Feb. 17, 1976
B 463,473	73/302	Mar. 23, 1976	B 479,502	219/121EM	Mar. 16, 1976
B 463,591	428/523	Mar. 30, 1976	B 479,556	260/45.8R	Mar. 23, 1976
B 463,671	296/35R	Jan. 13, 1976	B 479,681	D6/94	Mar. 16, 1976
B 464,027	60/667	Mar. 16, 1976	B 479,969	252/105	Mar. 9, 1976
B 464,290	73/302	Feb. 3, 1976	B 480,114	260/567.6M	Mar. 2, 1976
B 464,491	132/7	Mar. 30, 1976	B 480,251	123/139AW	Mar. 23, 1976
B 464,587	260/429.7	Feb. 3, 1976	B 480,287	106/58	Mar. 30, 1976
B 464,593	424/62	Mar. 9, 1976	B 480,292	357/55	Mar. 16, 1976
B 465,195	60/592	Jan. 27, 1976	B 480,350	73/190R	Feb. 10, 1976
B 465,202	260/598	Feb. 24, 1976	B 480,384	251/28	Mar. 23, 1976
B 465,376	428/418	Apr. 13, 1976	B 480,452	260/327C	Feb. 10, 1976
B 465,393	324/62	Jan. 27, 1976	B 480,473	123/148E	Mar. 2, 1976
B 465,688	260/873	Jan. 27, 1976	B 480,591	156/220	Mar. 30, 1976
B 465,955	260/37R	Feb. 3, 1976	B 480,604	214/152	Jan. 13, 1976
B 466,304	203/59	Mar. 23, 1976	B 480,625	260/251A	Feb. 24, 1976
B 466,318	322/25	Mar. 9, 1976	B 480,662	260/643R	Mar. 2, 1976
B 466,390	200/339	Feb. 24, 1976	B 480,702	261/98	Jan. 27, 1976
B 466,419	106/1	Mar. 23, 1976	B 480,740	200/16C	Mar. 2, 1976
B 466,444	307/137	Jan. 20, 1976	B 480,749	357/22	Mar. 9, 1976
B 466,906	123/191S	Mar. 16, 1976	B 480,987	426/656	Mar. 30, 1976
B 466,929	424/263	Jan. 27, 1976	B 481,048	355/16	Mar. 16, 1976
B 467,250	208/78	Feb. 3, 1976	B 481,190	96/50PT	Mar. 30, 1976
B 467,328	260/527R	Mar. 9, 1976	B 481,600	101/93.14	Jan. 27, 1976
B 467,412	116/124.4	Jan. 13, 1976	B 481,737	428/73	Jan. 13, 1976
B 467,486	123/32SP	Mar. 16, 1976	B 481,778	423/573G	Mar. 30, 1976
B 467,971	315/399	Jan. 13, 1976	B 481,930	357/72	Feb. 24, 1976
B 468,052	260/247.7T	Feb. 10, 1976	B 481,989	426/281	Mar. 23, 1976
B 468,100	178/7.1	Mar. 9, 1976	B 482,058	424/122	Mar. 2, 1976
B 468,330	428/175	Mar. 16, 1976	B 482,660	424/115	Feb. 10, 1976
B 468,350	260/593R	Jan. 13, 1976	B 482,709	260/240G	Feb. 24, 1976
B 468,421	162/274	Mar. 30, 1976	B 482,907	340/172.5	Jan. 20, 1976
B 468,603	252/25	Mar. 23, 1976	B 483,247	360/104	Apr. 13, 1976
B 469,036	350/7	Mar. 16, 1976	B 483,256	75/165	Feb. 10, 1976
B 469,228	116/124L	Feb. 17, 1976	B 483,268	324/158R	Mar. 9, 1976
B 469,468	260/878R	Mar. 16, 1976	B 483,606	260/2.5AR	Jan. 27, 1976
B 469,947	350/173	Jan. 20, 1976	B 483,615	315/371	Jan. 27, 1976
B 470,170	74/527	Jan. 13, 1976	B 483,746	260/479C	Mar. 23, 1976
B 470,305	360/137	Apr. 6, 1976	B 483,762	260/2.5AW	Feb. 10, 1976
B 470,348	260/621K	Jan. 13, 1976	B 483,865	260/23XA	Jan. 13, 1976
B 470,576	260/63UY	Feb. 24, 1976	B 484,029	343/7.7	Feb. 10, 1976
B 470,601	210/321A	Mar. 9, 1976	B 484,067	260/240A	Feb. 17, 1976
B 470,798	357/65	Jan. 20, 1976	B 484,068	260/397.4	Mar. 2, 1976

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B 484,121	235/152	Mar. 16, 1976
B 484,269	260/326.5FN	Feb. 10, 1976
B 484,332	144/32R	Mar. 2, 1976
B 484,365	360/1	Jan. 27, 1976
B 484,419	260/456NS	Mar. 9, 1976
B 484,437	260/927N	Mar. 30, 1976
B 484,482	360/98	Mar. 23, 1976
B 484,769	114/230	Mar. 16, 1976
B 485,051	260/346.4	Feb. 17, 1976
B 485,060	260/30.4R	Feb. 17, 1976
B 485,169	264/315	Mar. 16, 1976
B 485,188	260/40P	Mar. 16, 1976
B 485,401	423/238	Jan. 27, 1976
B 485,575	340/172.5	Feb. 24, 1976
B 485,926	250/310	Mar. 23, 1976
B 485,972	260/112.5R	Mar. 23, 1976
B 486,280	260/307D	Feb. 3, 1976
B 486,614	259/4	Feb. 17, 1976
B 486,678	260/326R	Mar. 2, 1976
B 486,828	260/2.5AW	Mar. 2, 1976
B 487,062	D26/5C	Feb. 10, 1976
B 487,078	57/77.4	Mar. 30, 1976
B 487,133	424/230	Jan. 27, 1976
B 487,260	222/136	Jan. 27, 1976
B 487,411	360/78	Feb. 24, 1976
B 487,423	260/239D	Mar. 2, 1976
B 487,427	242/107.4A	Mar. 2, 1976
B 487,467	260/33.4R	Apr. 13, 1976
B 487,529	260/45.75H	Mar. 30, 1976
B 488,111	260/308A	Jan. 13, 1976
B 488,395	343/100LE	Jan. 27, 1976
B 488,634	317/9R	Jan. 20, 1976
B 488,756	164/57	Mar. 16, 1976
B 488,836	165/162	Mar. 30, 1976
B 489,290	72/56	Feb. 17, 1976
B 489,328	354/298	Jan. 20, 1976
B 489,331	260/28P	Feb. 17, 1976
B 489,485	D34/15AJ	Apr. 13, 1976
B 489,526	338/166	Feb. 3, 1976
B 489,550	114/67A	Mar. 16, 1976
B 489,685	254/190R	Feb. 24, 1976
B 490,067	206/455	Jan. 27, 1976
B 490,547	73/422GC	Feb. 24, 1976
B 490,551	D12/146	Apr. 6, 1976
B 490,589	251/319	Feb. 3, 1976
B 490,623	137/608	Mar. 2, 1976
B 490,647	180/103	Feb. 24, 1976
B 490,806	55/105	Feb. 3, 1976
B 490,812	260/326.5B	Mar. 30, 1976
B 490,946	260/268BF	Feb. 17, 1976
B 490,995	424/177	Feb. 3, 1976
B 491,032	260/343.2R	Feb. 10, 1976
B 491,052	260/472	Mar. 2, 1976
B 491,111	360/60	Feb. 17, 1976
B 491,455	423/393	Feb. 3, 1976
B 491,501	32/10A	Jan. 13, 1976
B 491,618	281/25R	Mar. 16, 1976
B 491,650	235/151	Mar. 9, 1976
B 491,673	162/5	Feb. 17, 1976
B 491,711	260/240R	Mar. 23, 1976
B 491,774	60/39.63	Mar. 30, 1976
B 491,776	47/1.7	Mar. 16, 1976
B 491,883	260/250BC	Feb. 3, 1976
B 491,906	D9/71	Feb. 10, 1976
B 492,039	260/287C	Feb. 24, 1976
B 492,093	356/110	Mar. 23, 1976
B 492,120	166/224	Feb. 24, 1976
B 492,301	29/580	Jan. 13, 1976
B 492,373	242/36	Mar. 30, 1976
B 492,688	307/255	Jan. 20, 1976
B 492,716	210/189	Mar. 2, 1976
B 492,774	354/23D	Mar. 9, 1976
B 492,902	174/52R	Feb. 24, 1976
B 492,946	235/151.34	Jan. 27, 1976
B 493,254	D34/15AJ	Apr. 13, 1976
B 493,370	333/81A	Mar. 16, 1976
B 493,463	195/31R	Mar. 23, 1976
B 493,474	210/500M	Mar. 23, 1976
B 493,501	355/17	Feb. 3, 1976
B 493,537	260/47UP	Mar. 23, 1976
B 493,686	426/281	Mar. 23, 1976
B 493,950	426/73	Mar. 2, 1976
B 493,955	424/245	Mar. 9, 1976
B 493,981	40/28C	Mar. 9, 1976
B 494,138	260/514D	Mar. 23, 1976
B 494,167	56/13.4	Mar. 23, 1976
B 494,234	101/401.3	Feb. 10, 1976
B 494,339	260/294.9	Mar. 16, 1976
B 494,383	200/38FA	Feb. 3, 1976
B 494,439	260/29.6HN	Apr. 13, 1976
B 494,440	260/29.6N	Feb. 17, 1976
B 494,450	260/29.6TA	Feb. 17, 1976
B 494,669	260/513R	Feb. 3, 1976
B 494,691	343/840	Mar. 16, 1976
B 494,806	248/73	Feb. 3, 1976
B 494,944	260/674SA	Feb. 17, 1976
B 495,124	57/140BY	Mar. 9, 1976
B 495,185	340/173FF	Mar. 9, 1976
B 495,331	324/15	Mar. 16, 1976
B 495,402	198/38	Feb. 17, 1976
B 495,408	260/890	Feb. 3, 1976
B 495,489	424/362	Feb. 3, 1976
B 495,550	260/343.3R	Feb. 3, 1976
B 495,554	260/343.3R	Feb. 3, 1976
B 495,759	321/61	Feb. 13, 1976
B 495,781	260/448R	Mar. 23, 1976
B 495,903	8/84	Feb. 17, 1976
B 496,430	260/940	Feb. 10, 1976
B 496,431	424/274	Jan. 13, 1976
B 496,487	357/16	Jan. 20, 1976
B 496,500	179/15AL	Feb. 3, 1976
B 496,502	343/100LE	Jan. 20, 1976
B 496,792	44/2	Feb. 17, 1976
B 496,964	360/92	Apr. 20, 1976
B 496,999	101/93.13	Jan. 27, 1976
B 497,021	74/481	Jan. 13, 1976
B 497,194	260/2.5AC	Feb. 3, 1976
B 497,292	28/1.6	Feb. 3, 1976
B 497,293	179/15BA	Mar. 30, 1976
B 497,473	8/14	Feb. 3, 1976
B 497,490	260/78UA	Mar. 23, 1976
B 497,571	8/169	Mar. 23, 1976
B 497,584	156/66	Feb. 24, 1976
B 497,702	343/8	Mar. 2, 1976
B 497,780	260/33.8UA	Feb. 24, 1976
B 497,853	222/43	Feb. 17, 1976
B 497,896	D26/14A	Apr. 6, 1976
B 497,960	307/27	Jan. 20, 1976
B 498,205	204/159.18	Feb. 10, 1976
B 498,208	428/411	Apr. 13, 1976
B 498,288	260/250P	Mar. 23, 1976
B 498,500	340/347CC	Jan. 20, 1976
B 498,775	178/66R	Mar. 2, 1976
B 498,820	33/174S	Mar. 9, 1976
B 498,951	123/122AC	Mar. 2, 1976
B 499,171	180/5R	Jan. 27, 1976
B 499,209	299/31	Feb. 24, 1976
B 499,227	164/26	Jan. 27, 1976
B 499,324	423/244	Mar. 16, 1976
B 499,352	198/202	Jan. 27, 1976
B 499,370	208/93	Mar. 30, 1976
B 499,718	340/174TF	Jan. 27, 1976
B 499,786	74/424.8VA	Mar. 16, 1976
B 500,171	355/11	Mar. 30, 1976
B 500,176	360/81	Feb. 3, 1976
B 500,408	D26/5C	Mar. 16, 1976
B 500,945	74/765	Feb. 24, 1976
B 500,959	260/45.8NZ	Apr. 13, 1976
B 500,981	250/291	Jan. 27, 1976
B 501,122	197/17	Feb. 17, 1976
B 501,128	260/621H	Feb. 24, 1976
B 501,181	323/22T	Feb. 10, 1976
B 501,253	360/85	Feb. 3, 1976
B 501,317	208/210	Jan. 13, 1976
B 501,379	428/412	Mar. 30, 1976
B 501,415	427/207	Jan. 13, 1976
B 501,482	310/9.6	Jan. 13, 1976
B 501,503	315/241P	Mar. 2, 1976
B 501,540	260/28.5AS	Jan. 13, 1976
B 501,975	74/18.2	Mar. 2, 1976
B 501,993	408/124	Jan. 13, 1976
B 502,151	55/417	Mar. 23, 1976
B 502,161	354,174	Mar. 2, 1976
B 502,289	358/41	Jan. 13, 1976
B 502,381	D10/69	Mar. 16, 1976
B 502,540	60/304	Jan. 13, 1976
B 502,571	D9/193	Apr. 6, 1976
B 502,589	260/2.5AR	Jan. 27, 1976
B 502,652	236/13	Feb. 24, 1976
B 502,667	15/147A	Feb. 24, 1976
B 502,773	106/57	Jan. 13, 1976
B 502,973	318/257	Jan. 27, 1976
B 502,993	260/929	Feb. 17, 1976
B 503,029	96/78	Jan. 27, 1976
B 503,345	260/256.4Q	Feb. 24, 1976
B 503,371	307/251	Mar. 30, 1976
B 503,436	29/237	Feb. 24, 1976
B 503,456	114/230	Mar. 23, 1976
B 503,521	198/129	Mar. 16, 1976
B 503,579	260/140R	Feb. 10, 1976
B 503,618	250/231SE	Mar. 9, 1976
B 503,742	260/580	Feb. 17, 1976
B 503,776	106/316	Mar. 23, 1976
B 503,780	340/172.5	Mar. 16, 1976

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B 503,817	260/112.5R	Jan. 13, 1976
B 504,056	313/330	Feb. 24, 1976
B 504,061	29/415	Mar. 16, 1976
B 504,156	235/151.12	Mar. 23, 1976
B 504,404	317/36TD	Feb. 24, 1976
B 504,405	317/36TD	Apr. 13, 1976
B 504,439	61/49	Mar. 16, 1976
B 504,503	357/23	Mar. 9, 1976
B 504,582	260/543F	Mar. 30, 1976
B 504,778	226/21	Feb. 24, 1976
B 504,877	260/340.5	Feb. 24, 1976
B 504,899	179/1.5FS	Mar. 9, 1976
B 505,126	136/86R	Feb. 10, 1976
B 505,221	260/80.73	Mar. 30, 1976
B 505,582	318/119	Mar. 23, 1976
B 505,689	60/690	Mar. 2, 1976
B 505,813	160/229R	Jan. 13, 1976
B 506,144	264/51	Feb. 10, 1976
B 506,148	260/239.3A	Feb. 3, 1976
B 506,167	242/129.8	Feb. 10, 1976
B 506,169	84/275	Jan. 13, 1976
B 506,286	200/61.41	Jan. 20, 1976
B 506,461	317/259	Jan. 20, 1976
B 506,566	305/27	Jan. 20, 1976
B 506,624	226/1	Mar. 9, 1976
B 506,648	260/45.8N	Feb. 3, 1976
B 506,744	73/24	Jan. 13, 1976
B 506,760	29/591	Apr. 13, 1976
B 506,839	340/172.5	Mar. 23, 1976
B 506,840	307/251	Mar. 23, 1976
B 506,916	331/94.5L	Feb. 3, 1976
B 506,926	226/68	Feb. 17, 1976
B 507,087	332/9R	Feb. 17, 1976
B 507,131	354/156	Mar. 2, 1976
B 507,166	162/258	Apr. 13, 1976
B 507,396	250/577	Feb. 10, 1976
B 507,456	260/28R	Mar. 9, 1976
B 507,476	8/62	Feb. 10, 1976
B 507,647	340/347AD	Jan. 27, 1976
B 507,661	308/207R	Mar. 2, 1976
B 508,118	208/59	Feb. 17, 1976
B 508,119	208/208R	Feb. 17, 1976
B 508,369	264/51	Jan. 13, 1976
B 508,639	317/100	Mar. 23, 1976
B 508,817	178/7.5R	Feb. 3, 1976
B 508,878	53/77	Feb. 3, 1976
B 508,940	137/255	Feb. 17, 1976
B 508,961	357/36	Feb. 3, 1976
B 509,043	64/27L	Feb. 24, 1976
B 509,165	335/7	Mar. 2, 1976
B 509,185	321/7	Feb. 3, 1976
B 509,238	60/706	Feb. 24, 1976
B 509,474	355/8	Feb. 17, 1976
B 509,586	74/479	Feb. 3, 1976
B 509,606	317/120	Feb. 3, 1976
B 509,640	252/432	Feb. 17, 1976
B 509,772	174/68.5	Mar. 16, 1976
B 509,819	136/138	Apr. 13, 1976
B 510,026	73/362AR	Apr. 13, 1976
B 510,184	D12/143	Apr. 6, 1976
B 510,278	403/341	Mar. 30, 1976
B 510,281	221/75	Mar. 9, 1976
B 510,346	D7/131	Feb. 10, 1976
B 510,458	260/880B	Feb. 10, 1976
B 510,521	244/3.27	Mar. 2, 1976
B 510,588	298/35M	Jan. 27, 1976
B 510,677	136/89	Feb. 24, 1976
B 510,682	23/277R	Mar. 30, 1976
B 510,836	424/219	Mar. 23, 1976
B 510,850	424/317	Feb. 3, 1976
B 510,855	29/127	Jan. 27, 1976
B 510,957	424/326	Mar. 30, 1976
B 510,998	260/17R	Feb. 10, 1976
B 511,002	204/195P	Mar. 2, 1976
B 511,099	37/142A	Feb. 3, 1976
B 511,156	166/311	Jan. 27, 1976
B 511,346	244/169	Jan. 27, 1976
B 511,407	254/186R	Feb. 10, 1976
B 511,454	35/36	Feb. 24, 1976
B 511,665	136/26	Mar. 2, 1976
B 511,885	164/60	Jan. 27, 1976
B 511,886	318/231	Feb. 3, 1976
B 511,907	180/108	Mar. 30, 1976
B 511,909	73/61.1R	Feb. 17, 1976
B 512,324	110/8R	Feb. 17, 1976
B 512,373	260/937	Feb. 10, 1976
B 512,547	415/213R	Jan. 13, 1976
B 512,745	126/271	Jan. 13, 1976
B 512,779	260/326E	Apr. 13, 1976
B 512,818	136/6LF	Apr. 6, 1976
B 512,849	307/296	Feb. 3, 1976
B 512,964	346/75	Feb. 10, 1976
B 513,014	260/566A	Feb. 10, 1976
B 513,027	219/553	Feb. 17, 1976
B 513,134	150/52R	Mar. 23, 1976
B 513,280	202/227	Jan. 20, 1976
B 513,346	416/157B	Mar. 9, 1976
B 513,368	307/205	Feb. 3, 1976
B 513,706	313/60	Jan. 13, 1976
B 513,756	179/1A	Feb. 3, 1976
B 513,781	260/561R	Feb. 24, 1976
B 513,789	403/107	Feb. 3, 1976
B 513,791	73/154	Mar. 30, 1976
B 514,259	260/248AS	Mar. 23, 1976
B 514,687	137/596.12	Jan. 27, 1976
B 514,839	195/1.8	Mar. 2, 1976
B 515,135	354/46	Feb. 17, 1976
B 515,216	277/81P	Feb. 17, 1976
B 515,303	222/325	Jan. 20, 1976
B 515,368	156/446	Apr. 6, 1976
B 515,452	335/253	Feb. 10, 1976
B 515,455	313/366	Jan. 27, 1976
B 515,642	260/295.5A	Feb. 24, 1976
B 515,908	250/210	Jan. 20, 1976
B 516,002	315/388	Jan. 13, 1976
B 516,032	220/288	Jan. 27, 1976
B 516,047	260/243C	Feb. 10, 1976
B 516,060	357/23	Feb. 17, 1976
B 516,069	360/49	Mar. 16, 1976
B 516,296	260/243C	Feb. 3, 1976
B 516,537	72/391	Feb. 17, 1976
B 516,564	315/408	Feb. 17, 1976
B 516,609	270/62	Feb. 24, 1976
B 516,625	208/33	Mar. 30, 1976
B 516,804	424/321	Mar. 23, 1976
B 516,825	58/21.13	Feb. 3, 1976
B 517,273	D23/142	Mar. 16, 1976
B 517,504	356/103	Mar. 9, 1976
B 517,668	23/288S	Apr. 6, 1976
B 517,762	313/94	Mar. 16, 1976
B 517,858	65/49	Feb. 17, 1976
B 517,956	D23/71	Apr. 6, 1976
B 517,957	D23/71	Apr. 6, 1976
B 518,076	260/453PH	Mar. 30, 1976
B 518,226	148/1.5	Feb. 10, 1976
B 518,326	260/606.5P	Mar. 23, 1976
B 518,656	260/438.1	Feb. 17, 1976
B 518,859	313/99	Feb. 3, 1976
B 518,999	74/546	Feb. 3, 1976
B 519,095	260/42.18	Feb. 24, 1976
B 519,355	260/17.2	Apr. 13, 1976
B 519,377	427/389	Jan. 27, 1976
B 519,446	260/637R	Feb. 24, 1976
B 519,485	260/859R	Feb. 10, 1976
B 519,486	260/873	Feb. 17, 1976
B 519,487	260/17R	Feb. 17, 1976
B 519,599	17/23	Feb. 17, 1976
B 519,623	277/27	Apr. 6, 1976
B 519,680	29/183.5	Mar. 30, 1976
B 519,932	307/293	Feb. 3, 1976
B 519,979	178/7.1	Feb. 3, 1976
B 520,063	235/151.1	Mar. 2, 1976
B 520,075	235/151.1	Feb. 24, 1976
B 520,076	235/151.1	Mar. 2, 1976
B 520,082	235/151.1	Mar. 23, 1976
B 520,115	357/52	Mar. 23, 1976
B 520,227	178/6	Mar. 30, 1976
B 520,256	260/239D	Jan. 13, 1976
B 520,277	128/260	Feb. 17, 1976
B 520,341	280/150AB	Mar. 16, 1976
B 520,384	196/14.52	Jan. 27, 1976
B 520,514	260/112.5R	Mar. 9, 1976
B 520,534	239/652	Feb. 17, 1976
B 520,543	350/310	Jan. 27, 1976
B 520,546	252/156	Mar. 2, 1976
B 520,613	315/169TV	Mar. 16, 1976
B 520,658	260/33.6AQ	Mar. 9, 1976
B 520,878	260/37PC	Apr. 6, 1976
B 520,884	313/330	Mar. 16, 1976
B 520,924	235/181	Jan. 27, 1976
B 520,928	29/428	Jan. 13, 1976
B 520,952	248/205R	Mar. 16, 1976
B 520,995	8/94.24	Mar. 23, 1976
B 521,025	260/309.6	Mar. 23, 1976
B 521,044	310/259	Feb. 24, 1976
B 521,045	310/254	Feb. 24, 1976
B 521,046	310/254	Feb. 24, 1976
B 521,125	260/75N	Feb. 10, 1976
B 521,126	260/75N	Feb. 10, 1976
B 521,127	260/75N	Feb. 17, 1976
B 521,128	260/75N	Feb. 10, 1976
B 521,324	260/348.5L	Jan. 27, 1976
B 521,480	222/67	Jan. 13, 1976
B 521,600	242/43R	Jan. 27, 1976

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B 521,612	423/471	Mar. 9, 1976
B 521,620	73/147	Jan. 27, 1976
B 521,643	260/340.9	Mar. 2, 1976
B 521,711	424/270	Feb. 10, 1976
B 521,793	144/34R	Feb. 24, 1976
B 521,984	423/283	Feb. 17, 1976
B 521,985	260/449M	Mar. 23, 1976
B 521,986	408/146	Feb. 3, 1976
B 522,009	62/306	Feb. 17, 1976
B 522,038	164/330	Feb. 3, 1976
B 522,080	192/46	Mar. 16, 1976
B 522,227	66/190	Mar. 30, 1976
B 522,309	73/67.5H	Feb. 3, 1976
B 522,354	52/484	Jan. 20, 1976
B 522,446	260/80M	Mar. 30, 1976
B 522,537	152/379S	Mar. 30, 1976
B 522,567	260/309.2	Feb. 17, 1976
B 522,568	D12/147	Apr. 6, 1976
B 522,577	250/227	Jan. 27, 1976
B 522,629	260/29.2EP	Mar. 16, 1976
B 523,080	73/557	Feb. 17, 1976
B 523,129	256/65	Apr. 13, 1976
B 523,226	307/252B	Mar. 23, 1976
B 523,696	313/404	Jan. 13, 1976
B 523,885	15/229A	Feb. 17, 1976
B 523,952	336/65	Mar. 23, 1976
B 524,026	96/35	Feb. 10, 1976
B 524,121	128/260	Feb. 3, 1976
B 524,179	424/122	Jan. 13, 1976
B 524,464	136/148	Feb. 10, 1976
B 524,806	210/23H	Mar. 2, 1976
B 524,849	260/598	Mar. 23, 1976
B 525,133	307/262	Mar. 23, 1976
B 525,204	210/22R	Mar. 16, 1976
B 525,809	74/482	Feb. 24, 1976
B 525,961	75/135	Jan. 13, 1976
B 526,027	260/683.48	Feb. 17, 1976
B 526,096	260/243C	Feb. 3, 1976
B 526,106	340/347AD	Jan. 27, 1976
B 526,190	250/364	Feb. 17, 1976
B 526,279	180/79.2R	Apr. 13, 1976
B 526,289	310/168	Feb. 24, 1976
B 526,388	274/37	Feb. 3, 1976
B 526,445	60/422	Jan. 20, 1976
B 526,447	204/163R	Feb. 24, 1976
B 526,510	260/294.8D	Jan. 20, 1976
B 526,654	335/186	Mar. 23, 1976
B 526,942	260/449R	Mar. 30, 1976
B 526,997	260/29.2EP	Jan. 13, 1976
B 527,040	195/80R	Mar. 23, 1976
B 527,054	350/160LC	Feb. 17, 1976
B 527,171	139/122R	Mar. 9, 1976
B 527,187	317/124	Feb. 17, 1976
B 527,333	248/309R	Mar. 23, 1976
B 527,669	331/94.5T	Jan. 13, 1976
B 527,693	331/116R	Feb. 3, 1976
B 527,788	D12/60	Feb. 10, 1976
B 527,972	148/23	Mar. 9, 1976
B 527,999	21/2.7R	Feb. 3, 1976
B 528,297	252/301.2W	Mar. 16, 1976
B 528,303	260/18TN	Feb. 10, 1976
B 528,401	73/437	Feb. 3, 1976
B 528,756	137/625.46	Feb. 3, 1976
B 528,761	338/202	Feb. 10, 1976
B 528,962	260/46.5UA	Feb. 24, 1976
B 528,966	260/46.5UA	Feb. 24, 1976
B 529,156	220/23.83	Jan. 13, 1976
B 529,194	165/32	Mar. 23, 1976
B 529,214	101/1	Apr. 20, 1976
B 529,659	114/144R	Feb. 24, 1976
B 529,836	166/303	Feb. 3, 1976
B 529,925	340/171R	Mar. 30, 1976
B 529,974	260/568	Feb. 17, 1976
B 530,174	260/93.5A	Feb. 24, 1976
B 530,255	195/1.8	Mar. 2, 1976
B 530,263	138/177	Mar. 30, 1976
B 530,285	307/300	Apr. 6, 1976
B 530,303	252/106	Mar. 23, 1976
B 530,318	260/285.5	Jan. 13, 1976
B 530,437	260/67.6R	Apr. 13, 1976
B 530,569	356/239	Mar. 16, 1976
B 530,580	260/17.4ST	Mar. 2, 1976
B 530,605	137/614.11	Feb. 3, 1976
B 530,709	73/40.5R	Apr. 6, 1976
B 530,813	330/15	Feb. 17, 1976
B 530,873	96/35.1	Feb. 17, 1976
B 530,925	260/465.9	Feb. 24, 1976
B 531,096	260/256.5R	Feb. 10, 1976
B 531,267	192/4A	Feb. 24, 1976
B 531,425	200/11TC	Feb. 3, 1976
B 531,566	317/120	Mar. 16, 1976
B 531,686	330/17	Mar. 23, 1976
B 531,753	37/57	Mar. 2, 1976
B 531,929	313/273	Jan. 20, 1976
B 532,005	260/308D	Feb. 24, 1976
B 532,140	260/473S	Mar. 2, 1976
B 532,319	73/37.7	Feb. 3, 1976
B 532,326	328/167	Mar. 23, 1976
B 532,424	D83/1C	Feb. 10, 1976
B 532,476	24/75	Feb. 3, 1976
B 532,477	260/309.7	Apr. 13, 1976
B 532,679	114/235B	Apr. 6, 1976
B 532,901	210/130	Jan. 13, 1976
B 532,969	65/3A	Jan. 13, 1976
B 532,976	222/512	Mar. 23, 1976
B 533,056	188/73.6	Jan. 13, 1976
B 533,259	128/419PG	Feb. 24, 1976
B 533,454	340/172.5	Mar. 2, 1976
B 533,580	354/70	Feb. 3, 1976
B 533,652	260/565	Mar. 23, 1976
B 533,734	321/2	Jan. 27, 1976
B 533,968	180/79.2R	Jan. 27, 1976
B 534,016	235/154	Feb. 3, 1976
B 534,313	431/175	Jan. 27, 1976
B 534,314	204/224M	Feb. 10, 1976
B 534,333	251/129	Feb. 17, 1976
B 534,334	D26/5C	Mar. 16, 1976
B 534,443	313/42	Jan. 27, 1976
B 534,574	128/2.06R	Feb. 24, 1976
B 534,591	260/948	Feb. 17, 1976
B 534,680	260/346.2R	Apr. 20, 1976
B 534,767	324/51	Feb. 3, 1976
B 534,915	317/18D	Mar. 23, 1976
B 534,991	333/72	Jan. 27, 1976
B 535,076	71/113	Jan. 20, 1976
B 535,209	357/59	Mar. 16, 1976
B 535,256	333/10	Mar. 23, 1976
B 535,268	235/151.1	Mar. 30, 1976
B 535,386	60/425	Jan. 13, 1976
B 535,391	197/18	Jan. 27, 1976
B 535,411	188/71.1	Feb. 24, 1976
B 535,437	260/310R	Feb. 24, 1976
B 535,448	242/56R	Mar. 16, 1976
B 535,466	128/419P	Jan. 27, 1976
B 535,813	252/301.4S	Jan. 27, 1976
B 535,928	244/134R	Jan. 13, 1976
B 535,944	426/276	Jan. 13, 1976
B 536,009	235/156	Jan. 27, 1976
B 536,082	250/303	Mar. 16, 1976
B 536,322	260/326HL	Mar. 23, 1976
B 536,403	214/90R	Mar. 23, 1976
B 536,511	432/49	Mar. 9, 1976
B 536,675	260/343.3	Jan. 20, 1976
B 536,923	206/1.5	Mar. 30, 1976
B 536,935	260/239D	Jan. 13, 1976
B 537,053	260/290HL	Mar. 23, 1976
B 537,058	8/173	Mar. 23, 1976
B 537,085	427/186	Feb. 17, 1976
B 537,102	260/2.5AC	Jan. 13, 1976
B 537,709	173/104	Jan. 13, 1976
B 537,711	260/248NS	Jan. 13, 1976
B 537,722	350/96WG	Feb. 3, 1976
B 537,903	126/350A	Jan. 20, 1976
B 537,990	229/2.5	Jan. 13, 1976
B 538,472	60/645	Feb. 3, 1976
B 538,491	75/84.1R	Feb. 17, 1976
B 538,686	331/51	Jan. 13, 1976
B 538,753	260/239.1	Feb. 10, 1976
B 539,374	260/268TR	Mar. 9, 1976
B 539,746	310/4R	Feb. 17, 1976
B 540,078	307/232	Jan. 13, 1976
B 540,218	324/60C	Feb. 10, 1976
B 540,632	403/318	Jan. 13, 1976
B 540,703	227/83	Apr. 13, 1976
B 540,767	235/151.11	Mar. 16, 1976
B 540,872	307/88.3	Jan. 20, 1976
B 540,888	33/143F	Mar. 30, 1976
B 541,015	215/216	Jan. 27, 1976
B 541,376	48/73	Feb. 17, 1976
B 541,415	179/170D	Feb. 3, 1976
B 541,464	60/349	Feb. 17, 1976
B 541,496	340/172.5	Jan. 27, 1976
B 541,501	239/533	Apr. 13, 1976
B 541,517	335/210	Jan. 13, 1976
B 541,710	251/1B	Feb. 24, 1976
B 542,135	204/15	Feb. 10, 1976
B 542,158	260/309.2	Jan. 13, 1976
B 542,226	424/118	Feb. 24, 1976
B 542,258	204/252	Mar. 23, 1976
B 543,078	165/13	Feb. 17, 1976
B 543,941	55/352	Jan. 13, 1976
B 544,034	277/27	Feb. 17, 1976
B 544,476	252/408R	Feb. 24, 1976
B 544,899	260/501.12	Feb. 17, 1976

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B 544,961	325/468	Jan. 13, 1976
B 545,050	179/7.1R	Jan. 20, 1976
B 545,265	D26/1B	Apr. 13, 1976
B 545,299	260/295.5A	Feb. 24, 1976
B 545,344	346/35	Mar. 30, 1976
B 545,464	260/293.54	Feb. 10, 1976
B 545,630	144/241	Jan. 27, 1976
B 545,777	65/239	Jan. 27, 1976
B 545,856	303/71	Mar. 30, 1976
B 545,935	83/425	Jan. 27, 1976
B 545,945	340/173R	Jan. 27, 1976
B 546,097	35/17	Mar. 23, 1976
B 546,149	260/79.5P	Mar. 2, 1976
B 546,295	260/348.6	Jan. 20, 1976
B 546,426	178/6	Jan. 27, 1976
B 546,631	72/43	Feb. 3, 1976
B 546,665	340/198	Jan. 20, 1976
B 546,677	164/4	Apr. 6, 1976
B 546,911	29/96	Jan. 13, 1976
B 546,922	114/16.6	Mar. 16, 1976
B 547,016	259/8	Mar. 23, 1976
B 547,208	260/239.1	Feb. 24, 1976
B 547,547	424/274	Feb. 24, 1976
B 547,994	343/786	Jan. 20, 1976
B 548,028	47/57.6	Feb. 3, 1976
B 548,058	252/301.1W	Feb. 17, 1976
B 548,155	249/135	Jan. 13, 1976
B 548,302	307/251	Feb. 17, 1976
B 548,440	350/320	Feb. 3, 1976
B 548,462	D57/1F	Feb. 10, 1976
B 548,688	425/521	Mar. 9, 1976
B 548,719	192/3.57	Feb. 17, 1976
B 548,978	93/58.3	Mar. 9, 1976
B 549,198	423/390	Jan. 13, 1976
B 549,244	56/14.5	Jan. 27, 1976
B 549,394	416/61	Jan. 27, 1976
B 549,931	331/94.5C	Jan. 20, 1976
B 549,964	292/254	Feb. 24, 1976
B 550,693	328/155	Jan. 20, 1976
B 550,744	204/158HA	Feb. 17, 1976
B 550,810	280/124F	Mar. 23, 1976
B 551,133	60/299	Mar. 2, 1976
B 551,463	260/448.2N	Feb. 17, 1976
B 551,527	180/53R	Jan. 13, 1976
B 551,809	60/431	Feb. 24, 1976
B 551,952	28/77	Mar. 2, 1976
B 552,006	415/214	Feb. 3, 1976
B 552,489	260/75N	Feb. 10, 1976
B 552,498	260/330.5	Jan. 13, 1976
B 552,508	260/293.52	Mar. 16, 1976
B 552,629	162/198	Mar. 23, 1976
B 552,709	427/123	Mar. 23, 1976
B 552,932	293/71P	Feb. 3, 1976
B 553,421	252/514	Mar. 23, 1976
B 553,460	330/207P	Feb. 3, 1976
B 553,584	260/632R	Feb. 17, 1976
B 553,629	15/302	Feb. 24, 1976
B 554,039	23/230B	Feb. 24, 1976
B 554,164	148/187	Mar. 9, 1976
B 554,283	61/.5	Jan. 27, 1976
B 554,291	260/210AB	Mar. 9, 1976
B 554,380	260/2.5B	Mar. 9, 1976
B 554,594	179/1G	Jan. 20, 1976
B 554,655	428/428	Feb. 24, 1976
B 554,848	260/307H	Feb. 24, 1976
B 554,939	358/8	Feb. 10, 1976
B 555,146	73/290R	Apr. 20, 1976
B 555,437	264/161	Feb. 3, 1976
B 555,456	425/339	Mar. 30, 1976
B 555,772	214/58	Jan. 13, 1976
B 556,057	259/191	Jan. 13, 1976
B 556,496	60/660	Mar. 16, 1976
B 556,897	84/1.16	Feb. 3, 1976
B 557,153	73/29	Feb. 3, 1976
B 557,274	179/111E	Mar. 23, 1976
B 557,299	99/355	Feb. 3, 1976
B 557,621	401/219	Feb. 3, 1976
B 557,721	65/11W	Mar. 23, 1976
B 557,856	260/2.5AJ	Feb. 10, 1976
B 558,220	325/40	Jan. 27, 1976
B 558,251	123/182	Jan. 13, 1976
B 558,813	236/15A	Feb. 3, 1976
B 558,818	74/243C	Jan. 13, 1976
B 558,819	37/8	Feb. 3, 1976
B 558,973	56/15.9	Feb. 10, 1976
B 559,111	354/288	Feb. 24, 1976
B 559,142	252/12	Mar. 2, 1976
B 559,394	252/299	Apr. 20, 1976
B 559,441	260/33.6UA	Mar. 23, 1976
B 559,631	178/70R	Mar. 16, 1976
B 559,697	222/56	Mar. 23, 1976
B 559,700	260/75N	
B 559,701	260/75N	Mar. 23, 1976
B 559,737	235/152	Jan. 20, 1976
B 559,954	222/306	Feb. 3, 1976
B 560,261	346/139C	Mar. 16, 1976
B 560,488	235/175	Mar. 16, 1976
B 560,717	426/535	Feb. 10, 1976
B 560,765	250/227	Feb. 3, 1976
B 561,062	D19/62	Feb. 10, 1976
B 561,165	100/35	Mar. 30, 1976
B 561,166	100/48	Mar. 30, 1976
B 561,365	260/239.5	Apr. 13, 1976
B 561,387	260/45.7SW	Feb. 10, 1976
B 561,405	148/174	Mar. 30, 1976
B 561,712	415/115	Feb. 17, 1976
B 561,732	29/578	Feb. 3, 1976
B 561,764	178/88	Jan. 27, 1976
B 561,770	178/7.3DC	Mar. 16, 1976
B 561,784	310/41	Jan. 27, 1976
B 562,413	308/36.3	Mar. 16, 1976
B 562,462	261/39A	Jan. 13, 1976
B 562,519	166/273	Mar. 30, 1976
B 562,601	222/181	Mar. 16, 1976
B 562,698	188/218XL	Jan. 13, 1976
B 562,813	425/384	Feb. 3, 1976
B 563,070	260/268TR	Mar. 9, 1976
B 563,165	23/273V	Mar. 9, 1976
B 563,244	343/815	Jan. 27, 1976
B 563,301	118/637	Feb. 17, 1976
B 563,412	415/136	Feb. 24, 1976
B 563,419	235/153AK	Mar. 23, 1976
B 563,722	156/3	Jan. 13, 1976
B 563,780	123/[illegible]5B	Feb. 3, 1976
B 563,932	72/238	Mar. 23, 1976
B 564,252	260/465.7	Mar. 2, 1976
B564,255	106/288	Mar. 30, 1976
B 564,314	62/353	Jan. 20, 1976
B 564,902	260/900	Mar. 23, 1976
B 565,180	23/288F	Jan. 27, 1976
B 565,275	73/199	Apr. 6, 1976
B 565,717	329/2	Apr. 13, 1976
B 565,754	16/129	Mar. 30, 1976
B 566,464	424/273	Feb. 3, 1976
B 566,556	339/5M	Mar. 23, 1976
B 566,572	250/564	Mar. 16, 1976
B 566,585	195/65	Mar. 2, 1976
B 567,058	173/170	Jan. 13, 1976
B 567,076	260/29.6F	Mar. 23, 1976
B 567,158	416/145	Mar. 23, 1976
B 567,207	110/8P	Apr. 13, 1976
B 567,435	188/165	Feb. 3, 1976
B 567,854	74/242.1A	Feb. 3, 1976
B 567,892	239/265.39	Mar. 16, 1976
B 568,226	340/167B	Feb. 24, 1976
B 568,405	260/307G	Mar. 30, 1976
B 568,770	333/31A	Feb. 10, 1976
B 569,125	252/404	Feb. 24, 1976
B 569,293	250/397	Mar. 30, 1976
B 569,501	19/155	Mar. 9, 1976
B 569,519	166/272	Feb. 3, 1976
B 569,646	198/129	Jan. 13, 1976
B 569,859	73/116	Mar. 9, 1976
B 570,172	123/8.45	Feb. 3, 1976
B 570,382	239/288.3	Apr. 13, 1976
B 570,615	417/274	Mar. 23, 1976
B 570,721	260/33.8UA	Mar. 23, 1976
B 570,862	83/61	Feb. 24, 1976
B 570,925	55/71	Mar. 23, 1976
B 571,219	331/117R	Feb. 24, 1976
B 571,638	260/287D	Mar. 9, 1976
B 571,659	313/231.4	Apr. 13, 1976
B 572,642	280/236	Feb. 10, 1976
B 572,726	426/239	Feb. 24, 1976
B 573,033	328/168	Mar. 23, 1976
B 573,114	260/29.7T	Apr. 6, 1976
B 573,991	260/465H	Mar. 30, 1976
B 573,994	73/9	Mar. 23, 1976
B 574,128	136/86R	Feb. 17, 1976
B 574,616	250/445T	Mar. 2, 1976
B 574,996	260/330.5	Feb. 17, 1976
B 575,583	303/21BE	Mar. 16, 1976
B 575,757	72/88	Jan. 27, 1976
B 575,761	166/250	Apr. 13, 1976
B 575,776	166/250	Apr. 20, 1976
B 575,851	260/876B	Feb. 10, 1976
B 576,385	11/1AD	Mar. 30, 1976
B 576,859	51/358	Feb. 24, 1976
B 576,903	424/203	Feb. 3, 1976
B 578,447	220/337	Jan. 20, 1976
B 579,104	200/5R	Jan. 27, 1976
B 579,116	15/256.53	Feb. 3, 1976
B 579,153	264/37	Mar. 30, 1976
B 579,806	360/130	Feb. 3, 1976

DOCUMENT NUMBER	CLASS/ SUBCLASS	PUBLISHED DATE	DOCUMENT NUMBER	CLASS/ SUBCLASS	PUBLISHED DATE
B 580,379	193/35A	Apr. 6, 1976	B 589,966	260/876R	Feb. 17, 1976
B 580,826	260/876R	Feb. 17, 1976	B 590,158	140/92.1	Feb. 10, 1976
B 580,921	239/424	Jan. 13, 1976	B 590,159	140/92.1	Feb. 3, 1976
B 581,564	106/47R	Mar. 23, 1976	B 590,502	260/40R	Mar. 23, 1976
B 581,843	30/133	Mar. 16, 1976	B 591,141	260/157	Mar. 23, 1976
B 583,051	280/150.5	Feb. 3, 1976	B 591,615	52/225	Mar. 30, 1976
B 583,089	323/17	Jan. 27, 1976	B 592,143	310/155	Jan. 27, 1976
B 583,712	426/3	Feb. 10, 1976	B 592,146	195/65	Mar. 2, 1976
B 584,520	60/424	Jan. 27, 1976	B 592,658	260/31.8N	Mar. 23, 1976
B 584,997	156/608	Mar. 9, 1976	B 593,781	48/192	Mar. 16, 1976
B 585,247	200/67D	Feb. 3, 1976	B 594,871	16/128R	Mar. 16, 1976
B 585,731	252/518	Feb. 3, 1976	B 596,692	260/32.6R	Feb. 17, 1976
B 586,215	239/424	Jan. 20, 1976	B 597,410	297/304	Mar. 30, 1976
B 586,380	131/514.4	Mar. 2, 1976	B 632,416	260/88.2F	Mar. 9, 1976
B 586,387	131/144	Feb. 3, 1976	B 657,438	260/33.6AQ	Jan. 20, 1976
B 586,663	350/103	Feb. 3, 1976	B 747,785	260/465.5R	Feb. 10, 1976
B 587,118	178/7.1	Mar. 2, 1976	B 750,679	106/58	Mar. 23, 1976
B 587,786	424/281	Feb. 17, 1976	B 843,038	204/195S	Feb. 3, 1976
B 587,936	235/153AM	Mar. 23, 1976	B 845,044	260/610A	Mar. 30, 1976
B 589,179	204/186	Mar. 23, 1976	B 848,336	424/129	Mar. 30, 1976
B 589,687	16/125	Mar. 23, 1976			

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF APRIL, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See—*
Evalahti, Osmo Rainer, 3,953,284.

A. B. Chance Company: *See—*
Martin, Vance B.; Allen, George D.; Haubein, Harold D.; Goe, Melvin B., Jr.; and Toeniskoetter, Kenneth A., 3,953,818.

A. L. Hansen Mfg. Co.: *See—*
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A. O. Smith Corporation: *See—*
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A & W Deep-Well Drilling, Inc.: *See—*
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AB Bofors: *See—*
Eriksson, Nils Borje; and Tidemalm, Gustav Hilmer, 3,952,632.

AB Cale Industri: *See—*
Andersson, Carl-Axel; and Farkas, Bela, 3,952,850.

AB Centralsug: *See—*
Aitken, Ian Miller Edington, 3,953,078.

AB Kabi: *See—*
Uthne, Knut Oivind; and Aberg, Gustaf Bertil, 3,953,290.

ABC Packaging Machine Corporation: *See—*
Reichert, Donald G., 3,952,636.

Abe, Kiyomi: *See—*
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Abe, Miwako: *See—*
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Abe, Zenmon: *See—*
Furuhata, Yoshio; Kato, Yasuo; and Abe, Zenmon, 3,953,503.

Aberg, Gustaf Bertil: *See—*
Uthne, Knut Oivind; and Aberg, Gustaf Bertil, 3,953,290.

Abramson, Newton L.: *See—*
Czaja, Robert F.; Pines, Seemon H.; and Abramson, Newton L., 3,953,520.

Achelpohl, Fritz, to Windmoller & Holscher. Machine for sliding valved sacks onto the filling nipple of a filling machine. 3,952,479, Cl. 53-187.000.

Acker, Arnold E. Flag holder. 3,952,981, Cl. 248-291.000.

Adams, James D. Small component sawing assembly. 3,952,620, Cl. 83-422.000.

Adams, Sally Lee: *See—*
Persinski, Leonard J.; Martin, Fred David; and Adams, Sally Lee, 3,952,805.

Adcock, Gerald L., to A & W Deep-Well Drilling, Inc. Fatigue resistant anvil bit for percussion rock drill. 3,952,819, Cl. 175-293.000.

Addison, Frank F.; and Montgomery, James B. Canopy. 3,952,758, Cl. 135-5.0AT.

Addiss, Richard Robert, Jr.; and Albertinetti, Nedo Peter, to Itek Corporation. Process for coating glass onto polymeric substrates. 3,953,652, Cl. 428-412.000.

Addressograph Multigraph Corporation: *See—*
Jesensky, Alexander; Fedesna, Kenneth J.; and De Ryke, Thomas V., 3,953,123.
Kolibas, James A., 3,953,124.
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Advanced Mineral Research: *See—*
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Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
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Monpetit, Louis, 3,953,716.

Agency of Industrial Science & Technology: *See—*
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Aggregates Equipment, Inc.: *See—*
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Aglitsky, Vladimir Efimovich: *See—*
Kovanov, Pavel Vasilievich; Alexandrov, Adolf Moritsovich; Tsimbler, Jury Abramovich; and Aglitsky, Vladimir Efimovich, 3,952,667.

Agran, Jack: *See—*
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Ahlquist, Norman C.; Waggoner, Alan P.; and Charlson, Robert J., to Battelle Development Corporation. Photon-counting integrating nephelometer. 3,953,127, Cl. 356-103.000.

Ahmed, Adel Abdel Aziz, to RCA Corporation. Ground fault detection apparatus. 3,953,767, Cl. 317-18.00D.

Aiba, Masahiko: *See—*
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Aihara, Masayuki: *See—*
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AIRCO, Inc.: *See—*
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Aitken, Ian Miller Edington, to AB Centralsug. System of pneumatic transport of domestic refuse and the like. 3,953,078, Cl. 302-27.000.

Aizawa, Hiroshi: *See—*
Hosoe, Kazuya; Aizawa, Hiroshi; Matsumoto, Seiichi; and Yokota, Hideo, 3,953,729.

Akamatsu, Toshiaki; Yasugi, Masahiko; and Bito, Mitsuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Master gear for checking tooth contact. 3,952,418, Cl. 33-174.00L.

Akeel, A. Hadi K.: *See—*
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Akiyama, Hiroshi: *See—*
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Aktiebolaget Electrolux: *See—*
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Aktiebolaget IRO: *See—*
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Akzona Incorporated: *See—*
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Albertsen, Anders, to Lawrence Peska Associates, Inc., a part interest. Container loading device. 3,952,481, Cl. 53-392.000.

Alco Standard Corporation: *See—*
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Aldag, Wilhelm. Separation of sludge. 3,953,328, Cl. 210-7.000.

Aldinger, Karl E., to Kimberly-Clark Corporation. Tape attachment system for disposable diapers. 3,952,744, Cl. 128-287.000.

Alexander, Donald E.: *See—*
Allison, William L.; and Alexander, Donald E., 3,952,409.

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Alfa Romeo S.p.A.: *See—*
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Allan, John L.; Srinivasan, Kollengode V.; Readio, Philip D.; and Cestero, Judit, to Dart Industries Inc. Electroplating baths for nickel and brightener-leveler compositions therefor. 3,953,304, Cl. 204-49.000.

Allegheny Ludlum Industries, Inc.: *See—*
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Wood, John Randolph; and Wright, Roger N., 3,953,201.

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Allied Chemical Corporation: *See—*
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Sukornick, Bernard, 3,953,585.

Allis-Chalmers Corporation: *See—*
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Pflanz, Herbert M., 3,953,693.
Turner, Robert M.; and Langland, Herbert Z., 3,952,511.

Allison, William L.; and Alexander, Donald E., to Carrier Corporation. Method of manufacture of electric heating assembly. 3,952,409, Cl. 29-611.000.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
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Aluterv Aluminiumipari Tervezo Vallalat: *See—*
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Amano, Matsuo; Suzuki, Seiko; Kobori, Sigeyuki; and Kimura, Ichiro, to Hitachi, Ltd. Pressure responsive switch for converting pressure variations to electrical variations. 3,953,692, Cl. 200-83.00P.

Ambac Industries, Inc.: *See—*
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Amberntsson, Jan Roger; Andersson, Roger Ingemar; and Sultan, Stig Bertil, to Facit Aktiebolag. Printing head device for an ink jet printer. 3,953,862, Cl. 346-140.00R.

Amburgey, Ossie. Safety barrier. 3,952,453, Cl. 49-34.000.

American Can Company: *See—*
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American Chain & Cable Company, Inc.: *See—*
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American Challenger Corporation: *See—*
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American Cyanamid Company: *See*—
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Spicer, Larry Dean; Pensack, Joseph Michael; Wilbur, Robert Daniel; and Demkovich, Gary Michael, deceased, 3,953,606.

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Appel, Arthur V.; Hampton, Robert S.; and Morrison, Leonard A., 3,953,134.

Amoco Production Company: *See*—
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Amos, James J. Method of producing ball joints. 3,952,390, Cl. 29-149.50B.

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Anaconda Company, The: *See*—
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Anderson, Edward P.; and Harris, Mark, to Brunswick Corporation. Cathodic protection monitoring apparatus for marine propulsion device. 3,953,742, Cl. 307-95.000.

Anderson, George E., to United States of America, Navy. Al-AgO primary battery. 3,953,239, Cl. 136-100.00R.

Anderson, John Forrest, to Longyear Company. Basket type core retainer. 3,952,817, Cl. 175-240.000.

Anderson, Paul L., to Sandoz, Inc. α-Substituted-4-(2,2-dimethyl-1-hydroxypropyl)benzyl alcohols and esters. 3,953,525, Cl. 260-618.00R.

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Anderson, Thomas E.; and Walden, John P., to General Electric Company. Inverter having forced turn-off. 3,953,780, Cl. 321-18.000.

Anderson, Wallace E.; Krall, Albert D.; Syeles, Albert M.; and Van Sant, Oscar J., to United States of America, Navy. Wide bandwidth phase scanning with simple controls. 3,953,852, Cl. 343-100.0SA.

Andersson, Carl-Axel; and Farkas, Bela, to AB Cale Industri. Automatic ticket machine. 3,952,850, Cl. 194-1.00N.

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Aoki, Tadashi; and Komiya, Yasuo, to Kabushiki Kaisha Saginomiya Seisakusho. Reversing valve means for use with a reversible refrigerating cycle system. 3,952,537, Cl. 62-324.000.

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Arai, Takeshi, to Sanyo Electric Co., Ltd. Vertical deflection circuit. 3,953,765, Cl. 315-389.000.

Araki, Yoshiaki: *See*—
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Arden, Frederic R., to Malden Mills, Inc. Packages for pile fabrics. 3,952,964, Cl. 242-77.100.

Arenhold, Knut. Mud flaps for automobile fenders. 3,953,053, Cl. 280-154.50R.

Arimura, Ichiro; Taniguchi, Hiroshi; and Sekimoto, Kunio, to Matsushita Electric Industrial Company, Ltd. System for recording and reproducing a color television signal. 3,953,882, Cl. 358-8.000.

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Armstrong Cork Company: *See*—
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Asquith, Anthony, to Girling Limited. Brake adjusters. 3,952,845, Cl. 188-196.00D.

Astrauskas, Peter John; Blondin, Guy Michel; Picard, Roland; and Rigg, Carl Fredrik, to Canadian Industries, Ltd. Process for the separation of sodium azide. 3,953,582, Cl. 423-410.000.

Atkinson, Wallace E., to Long Manufacturing Co., Inc. Exposed shackle padlock. 3,952,559, Cl. 70-25.000.

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Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Preparation of 2-benzoylalkylbenzomorphan. 3,953,441, Cl. 260-293.540.

Aubin, Gerard F.: *See*—
Bejat, Jean; Braguier, Michel; Tueta, Roger; Vistosi, Raoul; Verna, Maurice; Aubin, Gerard F.; and Naturel, Christian, 3,953,704.

Audebert, Michel: *See*—
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Auer, Engelbert: *See*—
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Aupoix, Marcel; and Trezeguet, Jean-Pierre, to Les Cables de Lyon. Method for the manufacture of waveguide. 3,952,407, Cl. 29-600.000.

Auskova, Marie: *See*—
Zikan, Viktor; Semonsky, Miroslav; Rezabek, Karel; Seda, Miroslav; and Auskova, Marie, 3,953,454.

Automatic Machine & Engineering Co. Limited: *See*—
Varley, Bernard Scott, 3,952,616.

Automobiles Peugeot: *See*—
Mailliet, Jean, 3,952,375.

Avery Products Corporation: *See*—
Dunning, Richard E., 3,953,635.

Avery, Roger Peter; and Zerlin, William Max Erich, to Bunker Ramo Corporation. Locking electrical connector. 3,953,098, Cl. 339-45.00R.

Avesta Jernverks Aktiebolag: *See*—
Sandberg, Sven Olof; and Smith, Sven Robert Erson, 3,952,558.

Aviram, Arieh; Freiser, Marvin Joseph; Seiden, Philip Edward; and Young, William Robert, to International Business Machines Corporation. Organic electronic rectifying devices. 3,953,874, Cl. 357-8.000.

Ayers, Orval E.; Dykes, Hiram W. H.; and Alley, Bernard J., to United States of America, Army. Method for preparing small particle size coated ammonium perchlorate. 3,953,257, Cl. 149-7.000.

Ayres, Waldemar A. Fractional-fill capillary pipette and method. 3,952,599, Cl. 73-425.40P.

Babb, Burton A., to Babbco, Ltd. Audio speaker system. 3,953,675, Cl. 179-1.00E.

Babb, Henry Edgar: *See*—
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Babbco, Ltd.: *See*—
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Babcock, David L.: *See*—
Morris, George F.; Babcock, David L.; and Peterson, Eugene A., 3,953,802.

Babiarz, Chester Thomas, to Hartford Special Machinery Company, The. Apparatus for feeding headed work blanks. 3,952,884, Cl. 214-8.50E.

Bahunovic, Momir; and Bulboaca, Mihai A., to Barry-Wehmiller Company. Flow control system and rotary flow control valve. 3,952,925, Cl. 222-485.000.

Baby Bjorn AB: *See*—
Johansson, Leif, 3,953,046.

Badalich, Frank C.; and Pawl, George J., to Bell & Howell Company. Molded chassis for a film strip projector. 3,953,120, Cl. 353-119.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See*—
Dimroth, Peter; Dost, Frank; and Urtel, Rolf, 3,953,420.

Baechtold, Werner; and Gueret, Pierre L., to International Business Machines Corporation. Binary circuitry including switching elements utilizing superconductive tunneling effects. 3,953,749, Cl. 307-277.000.

Bailey, Walter H., to Texas Instruments Incorporated. Charge transfer device signal processing system. 3,953,745, Cl. 307-221.00C.

Baillie, Robert A.; and Fear, James Van Dyck, to Great Canadian Oil Sands Limited. Method of reducing sludge accumulation from tar sands hot water process. 3,953,318, Cl. 208-11.0LE.

Bainton, John W., to Tekology Corporation. Addition of acidulated pozzolan to concrete and concrete products. 3,953,222, Cl. 106-97.000.

Bajusz, Sandor: *See*—
Kisfaludy, Lajos; Low, Miklos; Schon, Istvan; Szirtes, Tamas; Sarkozi, Maria Sz.; Bajusz, Sandor; Turan, Andrae; Beks, Rosa; Juhasz, Attila; Graf, Laszlo; Medzihradszky, Kalman; and Szporny, Laszlo, 3,953,415.

Baker, Don R.; Walker, Francis H.; and Letchworth, Peter E., to Stauffer Chemical Company. N-tetrahydrofurfuryl-3,5-dimethylbenzamide. 3,953,477, Cl. 260-347.300.

Baker, Don R., to Stauffer Chemical Company. Tetrahydrofuranyl bromoacetates biocides. 3,953,478, Cl. 260-347.400.

Baker, Don R.; and Walker, Francis H., to Stauffer Chemical Company. N-t-butyl-α-(3,5-substituted phenoxy) alkyl amides and their use as herbicides. 3,953,507, Cl. 260-559.00B.

Baker, Joseph E., to Olin Corporation. Metal anode assembly. 3,953,316, Cl. 204-288.000.

Baker, Richard William, to Bend Research Inc. Controlled release delivery system by an osmotic bursting mechanism. 3,952,741, Cl. 128-260.000.

Bako, Lazlo, to Presto Lock Company. Combination lock in a luggage case handle stud. 3,952,561, Cl. 70-70.000.

Baldocchi, Archie. Belt attachment device for holster or the like. 3,952,930, Cl. 224-2.00C.

Bally Berard, Yves; Claudin, Paul; and Leymarie, Claude, to Merlin Gerin. Electronic equipment assembly comprising plug-in modules and test bars. 3,953,797, Cl. 324-158.00F.

Balut, Jacques Albert Louis Georges; Lemaire, Pierre Eugene Gerard K.; and Loisy, Claude Michel, to Etat Francais. Nuclear-burst strength detecting and measuring device. 3,953,137, Cl. 356-222.000.

Banner Metals Division of Intercole Automation, Inc.: *See*—
Wilson, James D., 3,953,044.

Bannister Hatcher, Constance L. Adjustable reading material stand. 3,952,989, Cl. 248-453.000.

Bannon, Albert C., to P. R. Mallory & Co. Inc. Permanent magnet rotor for a synchronous motor and method of making same. 3,953,752, Cl. 310-156.000.

Barbe, Guy, to Etudes et Fabrications Aeronautiques. Buckle for retarded automatic unlocking of safety belts and harnesses of parachuting equipments and of vehicles. 3,952,381, Cl. 24-230.00A.

Barber-Colman Company: *See*—
Fassell, W. Martin; and Bridges, Donald W., 3,953,502.

Bardebes, David Paul. Inflatable buoyancy aids. 3,952,355, Cl. 9-316.000.

Barile, Mario; Canavesi, Francesco; and Franchini, Pier Vincenzo, to Fiat Societa per Azioni. Energy dissipator for motor vehicle safety belts. 3,952,967, Cl. 242-107.40R.

Barker, Dean Marshall; and Sickman, Mark Harold, to White Farm Equipment Company. Articulated vehicle. 3,952,826, Cl. 180-136.000.

Barker, Walter M.: *See*—
Lira, Emil P.; Barker, Walter M.; and McCrae, Robert C., 3,953,597.

Barlow, Gordon A.: *See*—
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Barnett, Barry Roger Michael; and Ferguson, Edward Harry Frederick, to TRW Inc. Beading clip. 3,952,476, Cl. 52-760.000.

Barr, Laurence Gibson; Chuan, Raymond Lu-po; and Harkee, James Fredrick, to Celesco Industries Inc. Incipient fire detector. 3,953,844, Cl. 340-237.00S.

Barrett, Edward L. Three phase alternators. 3,953,753, Cl. 310-168.000.

Barrett, John H., Jr.; and Flynn, Brian P., to Purex Corporation. Laundering pre-spotter and method of production. 3,953,353, Cl. 252-174.000.

Barry-Wehmiller Company: *See*—
Babunovic, Momir; and Bulboaca, Mihai A., 3,952,925.

Bartholomew, Roy E.: *See*—
Sebo, Milan J.; and Bartholomew, Roy E., 3,953,079.

Barton, Benny M., to HoBar, Inc. Cubed soil conditioner with high water absorptivity and retentivity. 3,953,191, Cl. 71-23.000.

Barton, Derek Harold Richard; and Sammes, Peter George, to Glaxo Laboratories Limited. Azetitin-2-ores and process for preparing same. 3,953,424, Cl. 260-239.00A.

BASF-Aktiengesellschaft: *See*—
Hell, Renate Elisabeth; and Scheuermann, Horst, 3,953,451.

BASF Wyandotte Corporation: *See*—
Ramlow, Gerhard G.; Pizzini, Louis C.; and Patton, John T., Jr., 3,953,393.

Bashinsky, Kazimir Dominikovich; Golod, Leonid Davidovich; Granovsky, Boris Ruvimovich; Dunaevsky, Leonid Markovich; Kasyanov, Grigory Ivanovich; and Kudinov, Gennady Alexandrovich. Blast furnace evaporative cooler. 3,953,008, Cl. 266-193.000.

Battelle Development Corporation: *See*—
Ahlquist, Norman C.; Waggoner, Alan P.; and Charlson, Robert J., 3,953,127.
Little, Lawrence L., 3,953,610.

Baudler, James P. Device for converting linear motion to rotary motion. 3,952,604, Cl. 74-57.000.

Bauer, Artur: *See*—
Schabert, Hans-Peter; Weber, Robert; and Bauer, Artur, 3,952,885.

Baugh, Benton F., to Vetco Offshore Industries, Inc. Sequence control valve. 3,952,763, Cl. 137-119.000.

Baugh, Richard A.: *See*—
Cutler, Leonard S.; and Baugh, Richard A., 3,953,840.

Bauman, Robert Andrew, to Colgate-Palmolive Company. Antimicrobial quaternary ammonium compounds compositions. 3,953,605, Cl. 424-311.000.

Baur, Edmund; Holdt, Bernd-Dieter; Ratering, Hans Werner; Thesing, Georg; and Turk, Erich, to Henkel & Cie G.m.b.H. Automatic toilet cleaning device. 3,952,339, Cl. 4-228.000.

Baxter Laboratories, Inc.: *See*—
Ebling, Wendell V.; and Goldsmith, Herbert, 3,953,790.

Bay Electric Company: *See*—
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Bayer Aktiengesellschaft: *See*—
Kruckenberg, Winfried, 3,953,452.
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Bayer, John W., to Owens-Illinois, Inc. Preparation of crystalline hot melt composition. 3,952,898, Cl. 215-12.00R.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
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Bayston, Thomas E.: *See*—
Layton, Allen C.; Zinn, Werner G., Jr.; Mendez, Antonio J.; Howle, Robert E.; and Bayston, Thomas E., 3,953,667.

BBC Brown Boveri & Company Limited: *See*—
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Beasley, Robert M.: *See*—
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Beaupre, Richard E.: *See*—
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Beazley, Barry Albert: *See*—
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Beckisk, John. Golf club swing training device. 3,953,035, Cl. 273-192.000.

Beckwith, Sterling: *See*—
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Becton, Dickinson & Company: *See*—
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Beecham Group Limited: *See*—
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Beich, Wolfgang: *See*—
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Bejat, Jean; Braguier, Michel; Tueta, Roger; Vistosi, Raoul; Verna, Maurice; Aubin, Gerard F.; and Naturel, Christian. Coating apparatus. 3,953,704, Cl. 219-76.000.

Beks, Rosa: *See*—
Kisfaludy, Lajos; Low, Miklos; Schon, Istvan; Szirtes, Tamas; Sarkozi, Maria Sz.; Bajusz, Sandor; Turan, Andrae; Beks, Rosa; Juhasz, Attila; Graf, Laszlo; Medzihradszky, Kalman; and Szporny, Laszlo, 3,953,415.

Bell & Howell Company: *See*—
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Bell, Peter William: *See—*
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Bell Telephone Laboratories, Incorporated: *See—*
Butherus, Alexander Duane; and Terry, Milton Everett, 3,953,251.
Chandross, Edwin Arthur, Pryde, Coralie Anne; Tomlinson, Walter John, III; and Weber, Heinz Paul, 3,953,620
Clark, Charles W.; Morton, Edwin G., and Voss, Robert L., 3,953,808.
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Ngo, Peter Dinh-Tuan, 3,953,886.
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Ohm, Edward Allen, 3,953,858.

Bell, William Sherman, Jr., to Telvon Corporation. Power supply. 3,953,785, Cl. 321-43.000.

Beltran, Adrian M.: *See—*
Schilling, William F.; Beltran, Adrian M.; and Wasielewski, Gerald E., 3,952,939.

Belzecki, Czeslaw, Tomasik, Witold, and Trojnar, Jerzy, to Polska Akademia Nauk Instytut Chemii Organicznej Process for manufacturing 2-aminobutanol. 3,953,512, Cl. 260-584.00R.

Bend Research Inc.: *See—*
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Bendix Corporation, The: *See—*
Han, Chung Ping, 3,952,846.
Latvala, Bruce E.; and Karon, Marc A., 3,953,083.
Sebo, Milan J.; and Bartholomew, Roy E., 3,953,079.
Van Sicklen, Howard E., Jr., 3,952,715.

Benjamin, Gary L., to R. L. Kuss & Co., Inc. Water mattress construction. 3,952,348, Cl. 5-370.0W1

Benjamin, Robert P.; and Peter, Harley D., to E-Systems, Inc. Digital solid state compass. 3,952,420, Cl. 33-361.000

Bennett, Milton C., to J. I. Case Company. Apparatus for counting particle contamination in a liquid. 3,952,580, Cl. 73-61.400

Benson, Clarence Eugene, to Carlton Company. Saw chain sharpening system. 3,952,615, Cl. 76-25.00A

Benson, Gustav Eric Valdemar. Dispenser for dispensing a liquid or pasty product from a container. 3,952,924, Cl. 222-181.000.

Bergman, Carl, to Bridgeport Chemical Corporation. Dispenser for multi-component products. 3,952,920, Cl. 222-137.000

Berkowitz, Irving L., to Kason Hardware Corporation. Ventilator. 3,952,542, Cl. 62-409.000

Bernard, Georges; and Montanier, Pierre, to Merlin Gerin. Magnetic-blast arc extinguishing device having permanent magnets. 3,953,694, Cl. 200-147.00A

Bernard, Jean-Paul; Brussieux, Pierre Jules Henry; Jumelle, Louis Francois; and Simonin, Jean Lucien, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Composite material with acoustic absorption properties. 3,952,831, Cl. 181-33.00G.

Bernhardt, Werner, to U.S. Philips Corporation. Pushbutton system, in particular for a pushbutton operated car radio receiver. 3,952,603, Cl. 74-10.330.

Beroza, Morton; Sarmiento, Rafael; and McGovern, Terrence P., to United States of America, Agriculture. Method of controlling insects using 7-ethoxy-1-(p-ethylphenoxy)-3,7-dimethyl-2-octene. 3,953,607, Cl. 424-341.000

Berriman, Lester P.: *See—*
Eversole, James F.; and Berriman, Lester P., 3,952,776.

Berstein, Gregor, to Cabot Corporation. Paper coating compositions and organic pigments used therein. 3,953,421, Cl. 260-17.300.

Bessen, Irwin I., to General Electric Company. Coating powder mixture. 3,953,193, Cl. 75-.50R

Bestehorn, Peter, to Messerschmitt-Bolkow-Blohm GmbH. Angle measuring device. 3,952,417, Cl. 33-75.00R

Bethel, Everett L.: *See—*
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Bethlehem Steel Corporation: *See—*
Strepelis, John J.; and Gensler, Wayne C., 3,953,299.

Betz Laboratories, Inc.: *See—*
Tonkyn, Richard G.; Vorchheimer, Norman, Fowler, William J., Jr.; and Heberle, Richard A., 3,953,330.

Bevco Precision Manufacturing Company: *See—*
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Bevington, Kenneth A., to Bevco Precision Manufacturing Company. Chair adjustment construction. 3,952,987, Cl. 248-408.000.

Beyer, Arnold D.; Crockett, Charles R.; and Mitchell, Patrick G., to Kaiser Aluminum & Chemical Corporation. Can treating system. 3,952,698, Cl. 118-314.000.

Beyers, Marvin Edward, to Caterpillar Tractor Co. Hydraulic steering system for articulated vehicles. 3,952,825, Cl. 180-139.000.

Bezold, Karl-Heinz: *See—*
Forster, Johannes; and Bezold, Karl-Heinz, 3,953,781.

Biber, Conrad H., to Polaroid Corporation. Electronic sound motion picture projector and television receiver. 3,953,885, Cl. 358-54.000.

BICC Limited: *See—*
Walker, Wilfred Arthur; and Littler, Joseph, 3,952,848.

Bickel, Samuel H., to Texas Instruments Incorporated. Solid state microwave oven power source. 3,953,702, Cl. 219-10.55R.

Biddulph, Richard Hampton, to United States Borax & Chemical Corporation. Furnace temperature control system. 3,952,945, Cl. 236-15.00B.

Bidgood, William T. Cushion retaining means for eyeglasses. 3,953,114, Cl. 351-123.000.

Bienvenu, Jacques Michel Jean: *See—*
Rottier, Marcel Rene; and Bienvenu, Jacques Michel Jean, 3,953,717.

Bimba Manufacturing Company: *See—*
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Bindrum, Irmgard: *See—*
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Bio-Medical Sciences, Inc.: *See—*
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Birman, Paul W., Jr.: *See—*
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Bito, Mitsuyuki: *See—*
Akamatsu, Toshiaki, Yasugi, Masahiko; and Bito, Mitsuyuki, 3,952,418.

Blau, Leslie: *See—*
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Blichenberg, Hans-Jurgen: *See—*
Muller, Dietrich, Blichenberg, Hans-Jurgen; Schmidt, Dieter; Focke, Heinz; and Liedtke, Kurt, 3,952,868.

Blinow, Igor, to Polaroid Corporation. Flat torque rate drive system. 3,952,835, Cl. 185-11.000.

Bloch, Herman S., to Universal Oil Products Company. Process for the preparation of n-alkyl-substituted hydroxypolyalkoxymethylcyclohexanes. 3,953,522, Cl. 260-611.00B.

Bloch, Herman S., to Universal Oil Products Company. Process for the preparation of n-alkyl-substituted hydroxypolyalkoxymethylcyclohexenes. 3,953,523, Cl. 260-611.00B.

Blodgett, Francis E.: *See—*
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Blomgren, George E.; and Newman, Gerald H., to Union Carbide Corporation. Nonaqueous cell having an electrolyte containing crotonitrile. 3,953,235, Cl. 136-20.000.

Blondin, Guy Michel: *See—*
Astrauskas, Peter John; Blondin, Guy Michel; Picard, Roland; and Rigg, Carl Fredrik, 3,953,582.

Bloom, Stanley M.; Foley, James W.; and Hadzekyriakides, Nicholas S., to Polaroid Corporation. Novel photographic film assemblies. 3,953,872, Cl. 354-275.000.

Blum Gesellschaft m.b.H.: *See—*
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Boardman, Colin Alan: *See—*
Spurr, Ronald Frederick; Boardman, Colin Alan; and Yewen, John D., 3,953,791

Boba, Joseph; and Conger, Robert P., to Congoleum Industries, Inc. Embossing of pile fabrics. 3,953,164, Cl. 8-115.000.

Bobard, Emile, to Bobard Jeune. Longitudinal member for the chassis of a straddle vehicle. 3,953,050, Cl. 280-760.000.

Bobard Jeune: *See—*
Bobard, Emile, 3,953,050.

Boccarossa, Jack; and Post, John S., to United States of America, Army. Small arms silencer. 3,952,629, Cl. 89-14.00D.

Bochan, John, to General Electric Company. Wobble washing machine. 3,952,557, Cl. 68-23.300

Boden, Ogden W. Cord lock with both sharp and dull teeth. 3,953,144, Cl. 403-374.000.

Bodine, Albert G. Sonic technique for augmenting the flow of oil from oil bearing formations. 3,952,800, Cl. 166-249.000.

Boehmig, Robert L. Joint for transferring bending moments. 3,952,472, Cl. 52-648.000.

Boeing Company, The: *See—*
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Lang, John M., 3,952,974
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Bogentoft, Conny: *See—*
Folkers, Karl; Currie, Bruce L.; Chang, Jaw-Kang; Sievertsson, Hans; and Bogentoft, Conny, 3,953,416.

Bokros, Jack C.; and Horsley, Jere B., Jr., to General Atomic Company. Biocompatible carbon prosthetic devices. 3,952,334, Cl. 3-1.000.

Bolhofer, William A., to Merck & Co., Inc. 2-[α-(3-Trifluoromethylphenoxyl)-4-chlorobenzyl]oxazole and methods for preparing the same. 3,953,465, Cl. 260-307.00R.

Bolick, Fred C., Jr., to Lanier Electronic Laboratories, Inc. Multiple-channel dictate station apparatus with automatic release of selected channel. 3,953,685, Cl. 179-100.1DR.

Bolsden Aktiebolag: *See—*
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Bolza-Schunemann, Hans Bernhard, to Koenig & Bauer Aktiengesellschaft. Sheet feeding apparatus for printing machines. 3,952,651, Cl. 101-242.000.

Bombay Textile Research Association: *See—*
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Bonarski, Henry. Canister reburn exhaust systems. 3,952,507, Cl. 60-278.000.

Bond, John A.: *See—*
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Bondesson, Ulf Goran; Gronowitz, Salo Schmul; Stjernstrom, Nils Erik; and Svensson, Tage Rolf Gunnar, to Aktiebolaget Astra. Dibenzothiophene derivatives as serum lipid lowering agents. 3,953,601, Cl. 424-275.000.

Boney, William G., to Universal Oil Products Company. Alkylation process startup procedure. 3,953,538, Cl. 260-683.480.

Bonisch, Horst: *See—*
Wurr, Jurgen; Henning, Kurt; and Bonisch, Horst, 3,953,087.

Bonkoske, Gerry L., to Teletype Corporation. Spot-coating apparatus. 3,952,697, Cl. 118-263.000.

Bonomo, Richard S. Auxiliary wheel mounting. 3,953,075, Cl. 301-40.00S.

Bookwrights, Inc.: *See—*
Roberts, Alvin V., 3,953,056.

Booth, Ralph: *See—*
Brownhill, Edward Joseph; Heaton, Roy; and Booth, Ralph, 3,952,849.

Bopp, Warren G., to Eaton Corporation. Control for fluid coupling. 3,952,508, Cl. 60-330.000.

Borchard, David C.; Chan, Robert E.; and Ratzel, Neil F., to United States of America, Air Force. Precision light exposure timing and shutter mechanism for a wide range of exposure durations. 3,953,871, Cl. 354-252.000.

Bordas, Barna: *See—*
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Borg-Warner Corporation: *See—*
Fenton, Robert A., and Donovan, Daniel L., 3,952,719.
Ma, Hsiao J.; and Studtmann, George H., 3,953,786.

Borman, Willem F. H., to General Electric Company. Solid state polymerization of poly(1,4-butylene terephthalate). 3,953,404, Cl. 260-75.00M.

Bornfleth, Ulrich: *See—*
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Bornstein, Norman S.: *See—*
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Borshtein, Mikhail Vladimirovich: *See—*
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Bose Corporation: *See—*
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Bost, Pierre; Constantini, Michel; Jouffret, Michel; and Lartigau, Guy, to Rhone-Poulenc, S.A. Hydroxylation or aromatic compounds. 3,953,527, Cl. 260-621.00G.

Bost, Warren J. Contact copying apparatus for reproducing X-ray films and the like. 3,953,125, Cl. 355-83.000.

Boswell, George T., to United States of America, Army. Apparatus for manufacturing detonators and resistors. 3,952,628, Cl. 86-1.00R.

Botnick, Irlin H. Non-freeze wall hydrant with vacuum breaker. 3,952,770, Cl. 137-360.000.

Bottoms, Harry Simister, to Lucas Aerospace Limited. Gear pumps and motors. 3,953,160, Cl. 418-190.000.

Bouillon, Claude; and Rosenbaum, Georges, to L'Oreal. Aluminum derivatives of N-oxypyridyl thiol and process for their preparation. 3,953,450, Cl. 260-270.00K.

Bouton, Thomas Chester: *See—*
Futamura, Shingo; and Bouton, Thomas Chester, 3,953,543.

Bowater Packaging Limited: *See—*
Rollins, Paul Ferdinand; and Chamberlain, Christopher John, 3,952,634.

Boyd, Charles N. Bottom leveling water ball apparatus. 3,953,029, Cl. 273-95.00A.

Boyle, Charles F., to Sparton Corporation. Partially filled fluid damped geophone. 3,953,829, Cl. 340-17.00R.

Bozek, John S.; and Peyser, Harry A., to Continental Can Company, Inc. Non-detachable and reclosable easy opening container closure structure. 3,952,911, Cl. 220-269.000.

Bozzo, Richard J.: *See—*
Wolfelsperger, Robert; and Bozzo, Richard J., 3,952,643.

BP Chemicals International Limited: *See—*
Holliday, Gilbert John; and Norris, John, 3,953,389.

Bradley, Earl H., to General Signal Corporation. Stabilization of waste material. 3,953,331, Cl. 210-63.00R.

Braguier, Michel: *See—*
Bejat, Jean; Braguier, Michel; Tueta, Roger; Vistosi, Raoul; Verna, Maurice; Aubin, Gerard F.; and Naturel, Christian, 3,953,704.

Brandenburg, John T.: *See—*
Peck, Reese A.; Mih, Li C.; and Brandenburg, John T., 3,953,320.

Brandt, Wilhelm; and Bindrum, Irmgard, to Hoechst Aktiengesellschaft. Copper coatings on shaped plastic supports. 3,953,658, Cl. 428-458.000.

Brantingham, George L., to Texas Instruments Incorporated. Latched decoder for digit outputs to an electronic digital calculator display. 3,953,719, Cl. 235-156.000.

Braukmann, Bernhard W. Thermostatic valve. 3,952,946, Cl. 236-34.000.

Braun Aktiengesellschaft: *See—*
Roth, Johann; and Flandorfer, Robert, 3,953,116.

Braun, John D.; Pickett, M. Frank; Gerrish, Howard W., Jr.; and Jonassen, Hans B., to United States of America, Navy. Gossypol, an abundant, low-cost iron deactivator, pot-life extender, and processing aid for HTPB propellants. 3,953,260, Cl. 149-19.920.

Braunschweigische Maschinenbauanstalt: *See—*
Dietzel, Walter; and Matusch, Siegfried, 3,953,224.

Brax, Harri J.; Porinchak, Joseph F.; and Weinberg, Alan S., to W. R. Grace & Co. Polymer film with narrow molecular weight distribution and saran and laminates thereof. 3,953,557, Cl. 264-22.000.

Bray, William Edward, to Texas Instruments Incorporated. Motion control system for an inductively controlled multi-phase motor. 3,953,778, Cl. 318-685.000.

Bremer, Richard J., to General Motors Corporation. Adaptive anti-lock brake control system. 3,953,080, Cl. 303-21.0BE.

Bremstahler, Manfred, to Stettner & Co., Firma. Multiple trimmer capacitor, particularly for adjustment of crystal oscillators. 3,953,771, Cl. 317-248.000.

Brennan, John J.; and Bornstein, Norman S., to United Technologies Corporation. Graphite fiber reinforced metal matrix composite. 3,953,647, Cl. 428-378.000.

Bretl, Robert: *See—*
Manske, Warren C.; Bretl, Robert; and Dupont, Donald, 3,952,591.

Bridgeport Chemical Corporation: *See—*
Bergman, Carl, 3,952,920.

Bridges, Donald W.: *See—*
Fassell, W. Martin; and Bridges, Donald W., 3,953,502.

Bridgestone Tire Company Limited: *See—*
Okado, Yosuke; Fujikawa, Hiroshi; and Takusagawa, Takashi, 3,952,787.

Bridon Engineering Limited: *See—*
Hart, John Charles Humphreys, 3,952,996.

Brignola, Dominic J.: *See—*
Pickerell, Fred T.; and Brignola, Dominic J., 3,952,897.

Brink, Edward C., Jr.: *See—*
Chesluk, Ralph P.; Platte, Howard J.; and Brink, Edward C., Jr., 3,953,319.

Britax (London) Limited: *See—*
Burleigh, David William, 3,952,966.

British Industrial Plastics Limited: *See—*
Ogden, Dennis H.; and Inverarity, George, 3,952,907.

British Nuclear Fuels Limited: *See—*
Watson, Ronald Henry; Butler, Gregg Glenn; Heal, Thomas John; and Littlechild, James Edgar, 3,953,286.

Britz, Hans Ernst. Opto-electronic antenna system for lasers. 3,953,131, Cl. 356-141.000.

Brockman, Furn O. Lawn rake. 3,952,490, Cl. 56-400.140.

Bron, Osip Borisovich; Molchanov, Valentin Danilovich; Shifrin, Lev Notovich; and Freivald, Adolf Rudolfovich. Heavy current switch. 3,953,695, Cl. 200-150.00C.

Brooks, Arthur D.: *See—*
United States of America, National Aeronautics and Space Administration; Wortman, Jimmie J.; Donovan, Robert P.; Brooks, Arthur D.; Monteith, Larry K.; Kinard, William H.; and O'Neil, Robert L., 3,953,792.

Brophy, Thomas G.; Crowell, Douglas H.; and Hollick, John G., to USM Corporation. Tear seal apparatus. 3,953,280, Cl. 156-515.000.

Brower, Bernard C.: *See—*
LaPine, Robert L.; and Brower, Bernard C., 3,952,371.

Brown, Alistair Chalmers Ramsay; Dykes, Norman Andrew; January, John Kenneth; and Lake, Ivan James Samuel, to Imperial Chemical Industries Limited. Catalyst treatment. 3,953,536, Cl. 260-668.00A.

Brown Boveri-Sulzer Turbomaschinen Aktiengesellschaft: *See—*
Uhlig, Klaus, 3,952,777.

Brown International Corporation: *See—*
Holbrook, Franklin K.; and James, Donald R., 3,952,647.

Brown, Leon Henry, Jr., to Wangco Incorporated. Cabinet configuration for loading disc drive apparatus. 3,953,094, Cl. 312-303.000.

Brown, Newton D.: *See—*
United States of America, National Aeronautics and Space Administration; Brown, Newton D.; Jeppesen, Gordon L.; and Costakos, Nicholas C., 3,952,976.

Brown, Patrick R.; and Buehler, Max A., to Weelpal, A. G. Rail trackway fitted with braking devices. 3,952,839, Cl. 188-62.000.

Brown, Russel William, to Northern Electric Company, Limited. Digital control of a loudspeaking telephone system. 3,953,676, Cl. 179-1.0HF.

Brownhill, Edward Joseph; Heaton, Roy; and Booth, Ralph, to Renold Limited. Sprag clutches. 3,952,849, Cl. 192-41.00A.

Browning Engineering Corporation: *See—*
Browning, James A., 3,952,723.

Browning, James A., to Browning Engineering Corporation. Windmills. 3,952,723, Cl. 126-247.000.

Brownlie, Alan; and Daly, Lewis J., to American Challenger Corporation. Marine drive. 3,952,687, Cl. 115-41.00R.

Broxholm, Thomas M.: *See—*
Elmore, Lester C.; and Broxholm, Thomas M., 3,952,832.

Broyles, Howard F. Electrically fired superimposed projectile. 3,952,658, Cl. 102-40.000.

Brozkova, Marie: *See—*
Junek, Jan; Ripka, Josef; Vobornik, Vaclav; Hortlik, Frantisek; Jaros, Frantisek; Elias, Jiri; Brynda, Vaclav; Mares, Karel; Kotrba, Zdenek; Lihtarova, Ludmila; Brozkova, Marie; and Rehackova, Bozena, 3,952,494.

Brubacher, Leonard M. G., to Raymond Lee Organization, Inc., The, a part interest. Water tumbler and roller float. 3,953,024, Cl. 272-1.00E.

Brulfert, Andre. Hot-fluid generator using catalytic combustion. 3,952,707, Cl. 122-367.00R.

Brun, Robert; and Pages, Michel, to Rhone-Poulenc, S.A. Fluid fractionating apparatus. 3,953,334, Cl. 210-321.00R.

Brundrit, Dennis R.; and van Wijnen, Jacobus C., to Shell Oil Company. Super long seismic source. 3,953,826, Cl. 340-7.0PC.

Brunetti, Heimo: *See—*
Orban, Ivan; Lind, Hanns; Brunetti, Heimo; and Rody, Jean, 3,953,459.

Brunner, Julius; Schwendtner, Manfred; and Steinmuller, Gunter, to Siemens Aktiengesellschaft. Transformerless kilowatthour meter for an electrical power line. 3,953,795, Cl. 324-142.000.

Brunswick Corporation: *See—*
Anderson, Edward P.; and Harris, Mark, 3,953,742.
Epstein, Sheldon L.; and Wessling, Bernard W., 3,953,237.
Meyer, James A., 3,952,718.

Brushenko, Anatoli, to GAF Corporation. Reset mechanism for an audio-visual device. 3,953,118, Cl. 353-19.000.

Brussieux, Pierre Jules Henry: *See—*
Bernard, Jean-Paul; Brussieux, Pierre Jules Henry; Jumelle, Louis Francois; and Simonin, Jean Lucien, 3,952,831.

Bryant, Elmer E. Reciprocating mower shoe attachment. 3,952,486, Cl. 56-303.000.

Brynda, Vaclav: *See—*
Junek, Jan; Ripka, Josef; Vobornik, Vaclav; Hortlik, Frantisek; Jaros, Frantisek; Elias, Jiri; Brynda, Vaclav; Mares, Karel; Kotrba, Zdenek; Lihtarova, Ludmila; Brozkova, Marie; and Rehackova, Bozena, 3,952,494.

Buckler Industries, Inc.: *See—*
Hovekamp, John C., 3,953,225.

Buehler, Max A.: *See—*
Brown, Patrick R.; and Buehler, Max A., 3,952,839

Buess, Charles Merlyn: *See—*
Flickinger, Earl Dan; and Buess, Charles Merlyn, 3,953,426.

Bugaut, Andree: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,953,508.

Buglewicz, Neal, to Phone-Mate. Telephone answering device utilizing Mobius loop activating switch. 3,953,679, Cl. 179-6.00R.

Bulboaca, Mihai A.: *See—*
Babunovic, Momir; and Bulboaca, Mihai A., 3,952,925.

Bullat, David M.: *See—*
Stull, Bertram O.; and Bullat, David M., 3,952,505.

Buller, J. Stanley, to Hughes Aircraft Company. Quick cooling cryostat with valve utilizing Simon cooling and Joule Thompson expansion. 3,952,543, Cl. 62-514.0JT.

Bunker Ramo Corporation, The: *See—*
Albee, Thomas K., 3,953,799.
Avery, Roger Peter; and Zerlin, William Max Erich, 3,953,098.
Nijman, John Peter; and Patterson, Terence Neil, 3,952,392.
Palecek, Vincent James, 3,953,101.
Wilson, William Dean, 3,953,099.

Bunri Kogyo Kabushiki Kaisha: *See—*
Nazuka, Iwao, 3,952,857.

Burke, Ronald Patrick, to Fitzwilton Limited. Film folding machine. 3,953,019, Cl. 270-61.00F.

Burkett, Bobby G.; and Henry, Raymond W., to Texas Instruments Incorporated. Programmable logic controller with push down stack. 3,953,834, Cl. 340-172.500.

Burleigh, David William, to Britax (London) Limited. Seat belt storage reel with electrically operated locking device. 3,952,966, Cl. 242-107.40R.

Burley, Harvey A., to General Motors Corporation. Rotor mounted spark plug for rotary engine. 3,952,708, Cl. 123-8.090.

Burns, Robert: *See—*
Roberts, William Gary; and Burns, Robert, 3,953,630.

Burns, Robert A., to Engelhard Minerals & Chemicals Corporation. Enzymes bound to heat-activated attapulgite clay. 3,953,292, Cl. 195-63.000.

Burris, Clarence C.: *See—*
Kurkowski, Leonard S.; and Burris, Clarence C., 3,952,612.

Burroughs Corporation: *See—*
Gilberg, Robert Charles; and Young, Frank Chung-Yai, 3,953,838.
Kelhm, William G., Jr., 3,953,663.
Kobylarz, Lawrence P.; and Mack, Ronald H., 3,953,887.

Burton, Robert S., III, to Occidental Petroleum Corporation. Method for igniting oil shale retort. 3,952,801, Cl. 166-256.000.

Buss, Herman, to Lawrence Peska Associates, Inc., a part interest. Large wheel roller skate. 3,953,041, Cl. 280-11.260.

Butherus, Alexander Duane; and Terry, Milton Everett, to Bell Telephone Laboratories, Incorporated. Method for the production of carbonyl iron containing magnetic devices with selected temperature variation. 3,953,251, Cl. 148-105.000.

Butler, Gregg Glenn: *See—*
Watson, Ronald Henry; Butler, Gregg Glenn; Heal, Thomas John; and Littlechild, James Edgar, 3,953,286.

Buurman, Herman; and Romberg, Hendrik, to U. S. Philips Corporation. Apparatus for shearing and transferring a glass charge. 3,953,189, Cl. 65-207.000.

Byrd, Carlisle O., Jr., to J T Thorpe Company. Furnace lining apparatus. 3,952,470, Cl. 52-509.000.

C.G.R.-Mev.: *See—*
Tran, Duc Tien, 3,953,758.

C.J.I. Industries, Inc.: *See—*
Rozner, Allan, 3,952,552.

Cabot Corporation: *See—*
Berstein, Gregor, 3,953,421.
Herchenroeder, Robert B., 3,953,579.

Cain, James F. Method and device for clearing a stopped up drain. 3,952,341, Cl. 4-255.000.

Cala, Francis R., to Colgate-Palmolive Company. Manufacture of improved aqueous alkali metal silicate-alkali metal hydroxyalkyl iminodiacetate compositions. 3,953,379, Cl. 252-527.000.

Caldwell, Edward N., to Robertshaw Controls Company. Multiple low pressure selector relay and method of making the same. 3,952,760, Cl. 137-82.000.

Calgon Corporation: *See—*
Martin, Fred David, 3,953,341.
Martin, Fred David; and Guilbault, Lawrence James, 3,953,342.
Persinski, Leonard J.; Martin, Fred David; and Adams, Sally Lee, 3,952,805.
Windhager, Robert H., 3,953,374.

California Institute of Technology: *See—*
Marsh, Harold E., Jr., 3,953,406.

Callaghan, Mary E.: *See—*
Ganster, Charles A.; Callaghan, Mary E.; Gilmer, Lee K.; Nelson, Gerald V.; and Miller, Kenneth D., 3,953,321.

Cambridge Thermionic Corporation: *See—*
Lyman, Frank; and Lyman, Joseph, 3,952,602.

Camelon, Melville J.; and Vos, Arend W. D., to Ford Motor Company. Powa—method for coating and product. 3,953,644, Cl. 428-220.000.

Campagnuolo, Carl J.: *See—*
Vrataric, Frank, Jr.; Forrest, James E., Jr.; Campagnuolo, Carl J.; and Blodgett, Francis E., 3,952,661.

Campbell, John A.: *See—*
Hartline, Albert G., III; Campbell, John A.; and Magel, Theodore T., 3,953,194.

Campbell, Ronald P.: *See—*
Ketler, Albert E.; Campbell, Ronald P.; and Shacreaw, George, 3,953,725.

Campbell, Roy; and Price, Anthony George, to Girling Limited. Spreading disc brake and cam actuator therefor. 3,952,843, Cl. 188-71.400.

Campbell, Willis R., to Sperry Rand Corporation. Large round bale handling apparatus. 3,952,895, Cl. 214-506.000.

Canadian Industries, Ltd.: *See—*
Astrauskas, Peter John; Blondin, Guy Michel; Picard, Roland; and Rigg, Carl Fredrik, 3,953,582.

Canadian Patents and Development Limited: *See—*
Hayes, William F.; Tanney, John W.; and Tucker, Helen G., 3,952,577.

Canavesi, Francesco: *See—*
Barile, Mario; Canavesi, Francesco; and Franchini, Pier Vincenzo, 3,952,967.

Candor, James T.; and Tassone, Joseph V. Method of making a package construction for baseball type playing components. 3,952,477, Cl. 53-3.000.

Cannon, Berry A., to United States of America, Army. Single image plane two color photochromic display technique. 3,953,117, Cl. 353-11.000.

Canon Kabushiki Kaisha: *See—*
Furukawa, Hiroshi; and Tajima, Akira, 3,953,106.
Hosoe, Kazuya; Aizawa, Hiroshi; Matsumoto, Seiichi; and Yokota, Hideo, 3,953,729.
Kawamura, Tomoaki; Ohtaki, Syohei; Nakamoto, Soichi; and Takahashi, Kiyoshi, 3,953,868.

Canron, Inc.: *See—*
Stewart, John Kenneth; and von Beckmann, Helmuth, 3,952,665.

Carbonneau, Gordon S., to Carbonneau Industries, Inc. Magnetic structure for moving voice coil loudspeaker. 3,953,687, Cl. 179-115.50R.

Carbonneau Industries, Inc.: *See—*
Carbonneau, Gordon S., 3,953,687.

Carlson, Maurice F. Collapsible elevating board for bed mattresses. 3,952,346, Cl. 5-327.00B.

Carlstrom, Bertil, to ITT Industries, Inc. Fastener for locking a rotatable part to a shaft. 3,953,140, Cl. 403-258.000.

Carlton Company: *See—*
Benson, Clarence Eugene, 3,952,615.

Carpenter Technology Corporation: *See—*
Graham, Joe D.; Mead, Kenneth W.; and Babb, Henry Edgar, 3,952,582.

Carre, Francois. Rock crusher. 3,952,811, Cl. 172-45.000.

Carrier Corporation: *See—*
Allison, William L.; and Alexander, Donald E., 3,952,409.
Clark, William E., 3,952,795.

Carroll, James C.; and McElroy, Arthur H., to Phillips Petroleum Company. Pipe connection and process to make same. 3,953,059, Cl. 285-192.000.

Carson, John Reese. Meter box and cover. 3,952,908, Cl. 220-18.000.

Carter, John L.; and McGowan, Joseph, to United States of America, Army. Passive microwave power distribution systems. 3,953,853, Cl. 343-100.0SA.

Cartridge Actuated Devices, Inc.: *See—*
Sawyer, Robert H., 3,952,399.

Case Western Reserve University: *See—*
Mergler, Harry W.; Wright, Daniel K.; Kicher, Thomas P.; Savage, Michael; and Kosc, Wieslaw, 3,952,572.

Castracani, Guido: *See—*
Rivetta, Gianfranco; and Castracani, Guido, 3,953,102.

Caterpillar Tractor Co.: *See—*
Beyers, Marvin Edward, 3,952,825.
Habiger, Cyril W., 3,952,514.
Habiger, Cyril W.; McMillan, William D.; Persson, David L.; and Ferre, Glenn E., deceased, 3,952,515.
Heinold, Lloyd K.; Helton, Eugene L.; and Larson, Donald J., 3,952,433.
Koeslin, Werner H., 3,952,545.
Peterson, Wayne A., 3,952,510.
Randour, Victor, 3,953,085.
Schulz, Gunter W., 3,952,606.
Smith, Donald L., 3,953,082.
Unruh, Dale H.; and Yates, Jan B., 3,953,040.

Cattaneo, Guiseppe. Device for preventing horses' hooves sliding on ice or snow. 3,952,807, Cl. 168-28.000.

Cave, David L.; and Davis, Walter R., to Motorola, Inc. Capacitor structure and circuit facilitating increased frequency stability of integrated circuits. 3,953,875, Cl. 357-51.000.

Ceintrey, Marcel, to Societe Chimique, Routiere et d'Entreprise Generale (S.C.R.E.G.). Process for preparing a composition for the surface of roads, airport runways and like surfaces and the products obtained. 3,953,390, Cl. 260-28.5AS.

Celesco Industries Inc.: *See—*
Barr, Laurence Gibson; Chuan, Raymond Lu-po; and Harkee, James Fredrick, 3,953,844.

Celotex Corporation, The: *See—*
Moss, Ernest K., 3,953,645.

Cengel, John A.: *See—*
Puskas, Imre; and Cengel, John A., 3,953,475.

Central Contra Costa Sanitary District: *See—*
Parker, Denny S., 3,953,327.

Ceramic Finishing Company: *See—*
Kirchner, Henry P., 3,953,636.

Cestero, Judit: *See—*
Allan, John L.; Srinivasan, Kollengode V.; Readio, Philip D.; and Cestero, Judit, 3,953,304.

Chaffin, Frank R., to W. S. Shamban & Co. Gib. 3,953,086, Cl. 308-3.00A.

Chamberlain, Christopher John: *See—*
Rollins, Paul Ferdinand; and Chamberlain, Christopher John, 3,952,634.

Chambos, James. Potato cutting machine. 3,952,621, Cl. 83-733.000.

Chan, Robert E.: *See—*
Borchard, David C.; Chan, Robert E.; and Ratzel, Neil F., 3,953,871.

Chandross, Edwin Arthur; Pryde, Coralie Anne; Tomlinson, Walter John, III; and Weber, Heinz Paul, to Bell Telephone Laboratories, Incorporated. Producing integrated optical circuits. 3,953,620, Cl. 427-53.000.

Chang, Jaw-Kang: *See—*
Folkers, Karl; Currie, Bruce L.; Chang, Jaw-Kang; Sievertsson, Hans; and Bogentoft, Conny, 3,953,416.

Chang, Wen-Hsuan: *See—*
Dowbenko, Rostyslaw; and Chang, Wen-Hsuan, 3,953,391.

Charlson, Robert J.: *See—*
Ahlquist, Norman C.; Waggoner, Alan P.; and Charlson, Robert J., 3,953,127.

Charoudi, Day. Transparent thermal insulating system. 3,953,110, Cl. 350-161.000.

Chase, Thomas Louis; Duranti, Dino; and Sassoli, Renato, to RCA Corporation. Method for preparing supplemental filter for lighthouse. 3,953,209, Cl. 96-38.300.

Cheek, Tom F., Jr., to Texas Instruments Incorporated. Dual serial-parallel-serial analog memory. 3,953,837, Cl. 340-173.00R.

Cheetham, Ian: *See—*
Greenhalgh, Colin William; Newton, David Francis; Eckersley, Dennis; Cheetham, Ian; Phillips, Duncan Adrian Sidney; Dunkerley, Kenneth; Williams, Gerald; and Chokshi, Vibhas, 3,953,162.

Chemetron Corporation: *See—*
Wilson, Thomas L.; Loring, Charles M., Jr.; and Smith, Peter H., 3,952,421.

Chemie Linz Aktiengesellschaft: *See—*
Schonbeck, Rupert; Kloimstein, Engelbert; Diskus, Alfred; Auer, Engelbert; and Mayr, Hubert, 3,953,445.

Chemische Werke Huls Aktiengesellschaft: *See—*
Feinauer, Roland; Magosch, Karl-Heinz; and Ruter, Jorn, 3,953,405.

Chemplex Company: *See—*
Hwang, Yu-Tang; and Grimmett, Howard L., 3,953,413.

Chen, Hsing Shang: *See—*
Chung, Chin Kuo; and Chen, Hsing Shang, 3,953,181.

Chepurnoi, Nikolai Prokhorovich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tupitsyn, Konstantin Konstantinovich; Tupitsyn, Sergei Konstantinovich; Nazarov, Nikolai Grigorievich; Plavskikh, Vladimir Dmitrievich; Tkach, Khaim Berkovich; Cherednikov, Evgeny Nikolaevich; Galbinshtein, Alexandr Nisovich; Borshtein, Mikhail Vladimirovich; Karavaev, Andron Trofimovich; Menzorov, Valery Anatolievich; and Makarov, Alexei Mikhailovich. Percussive device for driving holes in soil. 3,952,813, Cl. 173-91.000.

Cherednikov, Evgeny Nikolaevich: *See—*
Chepurnoi, Nikolai Prokhorovich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tupitsyn, Konstantin Konstantinovich; Tupitsyn, Sergei Konstantinovich; Nazarov, Nikolai Grigorievich; Plavskikh, Vladimir Dmitrievich; Tkach, Khaim Berkovich; Cherednikov, Evgeny Nikolaevich; Galbinshtein, Alexandr Nisovich; Borshtein, Mikhail Vladimirovich; Karavaev, Andron Trofimovich; Menzorov, Valery Anatolievich; and Makarov, Alexei Mikhailovich, 3,952,813.

Cherkasov, Leonid Mikhailovich: *See—*
Kulyabko, Valery Anatolievich; Evstigneeve, Nikolai Andreevich; Petrov, Fedor Romanovich; Pleshivtsev, Anatoly Petrovich; Somov, Vasily Ivanovich; Cherkasov, Leonid Mikhailovich; Jusov, Mikhail Ivanovich; Sivkov, Alexandr Alexandrovich; and Lazarev, Robert Nikolaevich, 3,953,077.

Chesluk, Ralph P.; Platte, Howard J.; and Brink, Edward C., Jr., to Texaco Inc. Preparation of refrigeration oils. 3,953,319, Cl. 208-25.000.

Cheung, Mo-Fung; and Dickie, Ray A., to Ford Motor Company. Method for coating and product. 3,953,643, Cl. 428-220.000.

Chevron Research Company: *See—*
Hodgson, Clive; Hawkes, George R.; Reed, Marion G.; and Toland, William G., 3,953,192.
Jaffe, Joseph; and Kittrell, James R., 3,953,364.
Straus, Alan E.; Sweeney, William A.; House, Ralph; and Sharman, Samuel H., 3,953,338.

Chi, Chang Whan: *See—*
Lee, Hanju; and Chi, Chang Whan, 3,953,587.

Chiang, Ching: *See—*
Monte, Alexander A.; and Chiang, Ching, 3,953,294.
Monte, Alexander A.; and Chiang, Ching, 3,953,295.

Chibata, Ichiro; Tosa, Tetsuya; and Sato, Tadashi, to Tanabe Seiyaku Co., Ltd. Process for preparing 6-aminopenicillanic acid. 3,953,291, Cl. 196-36.00P.

Chinuki, Takashi: *See—*
Suda, Hideaki; Dohgane, Iwao; Chinuki, Takashi; Tanimoto, Kenji; Hosaka, Hirokazu; Nakao, Yukimichi; Ueda, Yuji; Imada, Seiya; Yanagihara, Hideki; and Tanaka, Kunihiko, 3,953,521.

Chivas Products Limited: *See—*
Moore, Ronald D.; and Bethel, Everett L., 3,952,383.

Chloupek, Frank J.; Sanford, Robert A.; Pollak, Laszlo; and Kmecak, Ronald A., to Atlantic Richfield Company. Disproportionating C_3–C_6 paraffins over zeolites. 3,953,537, Cl. 260-676.00R.

Chokshi, Vibhas: *See—*
Greenhalgh, Colin William; Newton, David Francis; Eckersley, Dennis; Cheetham, Ian; Phillips, Duncan Adrian Sidney; Dunkerley, Kenneth; Williams, Gerald; and Chokshi, Vibhas, 3,953,162.

Cholet, Jacques: *See—*
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Christof, Friedrich: *See—*
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Chuan, Raymond Lu-po: *See—*
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Chugai Seiyaku Kabushiki Kaisha: *See—*
Mori, Takashi; Takaku, Sakae; Osugi, Yoshiyuki; Matsuno, Takashi; and Tomizawa, Shogo, 3,953,496.

Chung, Chin Kuo; and Chen, Hsing Shang. Filter device. 3,953,181, Cl. 55-228.000.

Ciba-Geigy Corporation: *See—*
Orban, Ivan; Lind, Hanns; Brunetti, Heimo; and Rody, Jean, 3,953,459.
Schibler, Luzius; and Merz, Jurg, 3,953,505.

Cibulka, Anthony B., to AIRCO, Inc. Fail safe system for a patient triggered respirator. 3,952,739, Cl. 128-145.800.

Cilia, Philip F.: *See—*
Faust, Clifford C.; and Cilia, Philip F., 3,952,536.

Citizen Watch Co., Ltd.: *See—*
Saito, Mituo; and Takahashi, Kotaro, 3,952,498.

CKD Praha, oborovy podnik: *See—*
Voboril, Bohuslav; Reichel, Pavel; and Kafunek, Pavel, 3,952,797.

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Clark, Charles W.; Morton, Edwin G.; and Voss, Robert L., to Bell Telephone Laboratories, Incorporated; and Western Electric Co., Inc. Solid state amplifier. 3,953,808, Cl. 330-35.000.

Clark, Joel P., to Texas Instruments Incorporated. Annealing of NiTi martensitic memory alloys and product produced thereby. 3,953,253, Cl. 148-131.000.

Clark, William E., to Carrier Corporation. Air conditioning system. 3,952,795, Cl. 165-30.000.

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Clements, Herbert Arthur, to S.S.S. Patents Limited. Method of manufacture of toothed clutches. 3,952,460, Cl. 51-323.000.

Clements, William, to Graco Inc. Safety tip guard. 3,952,955, Cl. 239-288.500.

Cliff Granberry Corporation: *See—*
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Coca-Cola Co., The: *See—*
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Cole, Martin; and Sutherland, Robert, to Beecham Group Limited. Antibacterial compositions. 3,953,593, Cl. 424-114.000.
Coleman, Martin W., to Allis-Chalmers Corporation. Hydraulic system combining open center and closed center hydraulic circuits. 3,952,509, Cl. 60-422.000.
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Colombo, Edward A.; and Tsai, James Tarng, to Mobil Oil Corporation. Method and apparatus for the continuous monitoring and control of cell size in a foam structure. 3,953,739, Cl. 250-571.000.
Combs, Clyde, Jr., to Harris Corporation. Fabrication of matched complementary transistors in integrated circuits. 3,953,255, Cl. 148-187.000.
Comerford, John M.; and Kapur, Chandra, to Personal Products Company. Biodegradable barrier film and absorbent pad utilizing same. 3,952,347, Cl. 5-335.000.
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Cook, Martin Christopher; Lawrence, Robin; Phillipps, Gordon Hanley; Hunter, Anne Christine; Newall, Christopher Earle; Stephenson, Leslie; and Weir, Niall Galbraith, to Glaxo Laboratories Limited. Anaesthetic steroids of the androstance and pregnane series. 3,953,429, Cl. 260-239.55R.
Cook, Roger J., to Numatics, Incorporated. Tube assembly tool. 3,952,619, Cl. 81-420.000.
Cook, Rufus Lee, to United States of America, Navy. High power-wide frequency band electroacoustic transducer. 3,953,828, Cl. 340-9.000.
Cooke, Carl W., to CWC Industries. Safety closure cap. 3,952,899, Cl. 215-217.000.
Cooke, Robert John, to Solartron Electronic Group Ltd., The. Digital calculating apparatus. 3,953,718, Cl. 235-156.000.
Cooper, Keith Alan: *See—*
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Corbier, Bernard Pierre; and Teisseire, Paul Jose, to Societe Anonyme Roure Bertrand Dupont. Ketals of 4-acetyl-3,3,5,5-tetramethylcyclohexanone. 3,953,471, Cl. 260-340.900.
Corbier, Bernard Pierre; and Teisseire, Paul Jose, to Societe Anonyme Roure Bertrand Dupont. 4-Acetyl-3,3,5,5 tetraalkylcyclohexanones. 3,953,515, Cl. 260-586.00R.
Corbier, Bernard Pierre; and Teisseire, Paul Jose, to Societe Anonyme Roure Bertrand Dupont. Mono-enol ethers of 4-acetyl-3,3,5,5-tetramethylcyclohexanone. 3,953,516, Cl. 260-586.00R.
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Couvillon, James Benedict, to Texas Instruments Incorporated. DC component suppression in zero CF IF systems. 3,953,805, Cl. 328-162.000.
Covert, James P., to Littelfuse, Inc. Flasher device. 3,953,817, Cl. 337-136.000.
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Cox, Woodrow Wilson, to Cox, Herman E. Automatic and substantially permanent wheel balancing device. 3,953,074, Cl. 301-5.0BA.
Crabbe, Pierre; and Guzman, Angel, to Syntex (U.S.A.) Inc. Substituted prostaglandin derivatives. 3,953,470, Cl. 260-340.500.
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. 3-Amino-5-sulfonylbenzoic acids. 3,953,476, Cl. 260-347.200.
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Craven, Charles G. Motor driven golf bag cart. 3,952,821, Cl. 180-19.00R.
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Cross, Thomas R.; and George, Clifford L., to Xerox Corporation. Bin indicator device. 3,953,023, Cl. 271-173.000.
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Cumming, Edward P., to Robertshaw Controls Company. Control unit having adjustable differential and method of making the same. 3,952,611, Cl. 74-522.000.
Currie, Bruce L.: *See—*
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Currie, Richard W., to Currie Machinery Company. Discharge conveyor for transferring palletized cartons onto a truck, cart and the like. 3,952,888, Cl. 214-41.00R.

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Cuschera, Casper. Toilet drain. 3,952,340, Cl. 4-252.00R.
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Cycowicz, Izchak; and Wong, John, to Mohasco Corporation. Pull-out folding sofa beds. 3,952,344, Cl. 5-186.00R.
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Daniels, Douglas Lee; and Ochs, Garrold W., to Anaconda Company, The. Loop current detector. 3,953,682, Cl. 179-18.0FA.
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Darlington, R. Keith; Gwynn, John Wallace; and Hall, Stephen H., Sr., to N L Industries, Inc. Removal of boron from $MgCl_2$ brines. 3,953,572, Cl. 423-158.000.
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Davis, Harry J.; and Ingersol, Philip F., to United States of America, Army. Fuze safing and arming device utilizing propellant ionization. 3,952,660, Cl. 102-70.20R.
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Dikoff, Joseph K. Check printer having ribbon cartridge. 3,952,649, Cl. 101-100.000.
Dillman, Richard F.; Larsen, James L.; and Nardizzi, Alfred M., to Hewlett-Packard Company. Electrocardiograph telemetry system including method and means for indicating inoperative conditions. 3,953,848, Cl. 340-409.000.
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Docx, Albert George. Method of assembling a resistance furnace. 3,952,408, Cl. 29-611.000.

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Dorall, Arthur G. Air cooling apparatus. 3,953,551, Cl. 261-91.000.

Doran, Thomas J., Jr.; and Stevens, Henry C., to PPG Industries, Inc. Siliceous pigment composition. 3,953,223, Cl. 106-308.00N.

Dorward, Richard Munro, to General Electric Company Limited, The. Digital data signalling systems and apparatus therefor. 3,953,673, Cl. 178-68.000.

Doss, Richard C., to Phillips Petroleum Company. Method to treat a poly(arylene sulfide) surface. 3,953,653, Cl. 428-419.000.

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Dow Corning Corporation: *See—*
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Droux, Jacques; Audebert, Michel; and Millair, Gerard, to Compagnie Honeywell Bull (Societe Anonyme). Device for reading a binary-coded magnetic recording. 3,953,888, Cl. 360-46.000.

Drutchas, Gilbert H., to TRW Inc. Acceleration control system. 3,952,827, Cl. 180-82.00R.

Drzewiecki, Tadeusz M.; and Manion, Francis M., to United States of America, Army. Laminar jet fluid property sensor. 3,952,576, Cl. 73-54.000.

Dubro, Gary Arnold: *See—*
Kim, Dong Guen; and Dubro, Gary Arnold, 3,953,126.

Dudzinski, Stanley J., to Pittsburgh Corning Corporation. Method and apparatus for capping cellular glass blocks for the load bearing insulation of liquefied gas storage tanks. 3,952,469, Cl. 52-249.000.

Dulog, Lothar G.; and Dewaele, Sylvain A. R., to S. A. Texaco Belgium N.V. Process for making o- and p-chlorophenols. 3,953,530, Cl. 260-623.00R.

Dumas, Andre Pierre Fernand: *See—*
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Duncan, Robert C., to Procter & Gamble Company, The. Disposable diaper having readily flushable absorbent media and improved pad intergrity in use. 3,952,745, Cl. 128-287.000.

Duncan, William A.; Phillips, John F.; Murfree, James A., Jr.; and Wharton, Walter W., to United States of America, Army. Liquid monopropellant compositions including hydrazine and methoxylamine hydrochloride. 3,953,261, Cl. 149-36.000.

Duncan, William A.; Murfree, James A., Jr.; Martignoni, Pasquale; Wharton, Walter W.; and Phillips, John F., to United States of America, Army. Monopropellant composition comprising hydrazine and methoxylamine nitrate. 3,953,262, Cl. 149-36.000.

Dunkerley, Kenneth: *See—*
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Dunstan, Ericsen M.: *See—*
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Dupre, Herman K. Method of making snow. 3,952,949, Cl. 239-2.00S.

Durand, Bernard: *See—*
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Durant, Graham John; Emmett, John Colin; Ganellin, Charon Robin; and Prain, Hunter Douglas, to Smith Kline & French Laboratories Limited. Ethylene derivatives. 3,953,460, Cl. 260-294.80G.

Duranti, Dino: *See—*
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Durr, Heinz; and Gafgen, Klaus. Method and apparatus for treating a workpiece at a treating station. 3,952,699, Cl. 118-315.000.

Dworkin, Robert D.; and Ejk, Adam J., to M&T Chemicals Inc. Novel products and process. 3,953,385, Cl. 260-2.50P.

Dyer, Hugh Edric Trendhard, to Firth Cleveland Limited. Compact portable hair dryer. 3,953,710, Cl. 219-370.000.

Dykes, Hiram W. H.: *See—*
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Dysart, Theodore Rivers, to Dresser Industries, Inc. Land erosion protection on a rock cutter. 3,952,815, Cl. 175-374.000.

E.G.O. Elektro-Geraete Blanc und Fischer: *See—*
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E. R. Squibb & Sons, Inc.: *See—*
Denzel, Theodor; and Hoehn, Hans, 3,953,461.
Hauck, Frederick Peter; and Sundeen, Joseph E., 3,953,434.
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Easwaran, Jairaj; and Foerster, George S., to N L Industries, Inc. Method for treating molten iron using a magnesium infiltrated metal network. 3,953,198, Cl. 75-58.000.

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Paskert, Joseph H., 3,952,475.
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Ebling, Wendell V.; and Goldsmith, Herbert, to Baxter Laboratories, Inc. Conductivity monitoring system. 3,953,790, Cl. 324-30.00B.

Eby, Ralph H., to John S. Greeno Company. Reaction arm for rotary sprinkler. 3,952,953, Cl. 239-230.000.

Eck, Walter; and Heywang, Walter, to E.G.O. Elektro-Geraete Blanc und Fischer. Cooking units. 3,953,711, Cl. 219-464.000.

Eckersley, Dennis: *See—*
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Edgar, John Black: *See—*
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Edouard Dubied et Cie (Societe Anonyme): *See—*
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Edwards, Clarence K.; and Edwards, Lawrence D. Protruding ladder steps for model railway boxcars. 3,952,450, Cl. 46-218.000.

Edwards, Lawrence D.: *See—*
Edwards, Clarence K.; and Edwards, Lawrence D., 3,952,450.

Ehlers, Klaus Peter; Scheibitz, Wolfgang; and Heymer, Gero, to Hoechst Aktiengesellschaft. Purification of wet-processed phosphoric acid using anhydrous solvents. 3,953,581, Cl. 423-321.00S.

Ejk, Adam J.: *See—*
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Elektroschmelzwerk Kempten GmbH: *See—*
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Elhaus, Friedrich Wilhelm; and Hilge, Bernhard, to Prolizenz AG; and Elhaus, Friedrich Wilhelm. Method for heat treatment of material to be worked on, especially of aluminium or magnesium alloys. 3,953,247, Cl. 148-13.000.

Eli Lilly and Company: *See—*
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Dreikorn, Barry A.; and Kramer, Kenneth E., 3,953,457.
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Ellis Industries, Inc.: *See—*
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Ellis, J. Scott, to Ellis Industries, Inc. Line connecting apparatus 3,952,376, Cl. 24-115.00A.

Ells, Edward G., to Liquidometer Corporation. Liquid level gauge. 3,952,593, Cl. 73-304.00C.

Elmore, Lester C.; and Broxholm, Thomas M., to Pulsepower Systems, Inc. Pulsed high pressure liquid propellant combustion powered seismic sources. 3,952,832, Cl. 181-116.000.

Elter, John F., to Xerox Corporation. Two source radiant fuser for xerographic reproducing apparatus. 3,953,709, Cl. 219-216.000.

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Emond, Joseph Maurice; and Haigh, James Dawson, to Molson Companies Limited, The. Tank cleaning apparatus. 3,953,226, Cl. 134-104.000.

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Endo, Kunio: *See—*
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Engel, Niels N. Coated metal product. 3,953,178, Cl. 29-195.000.

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Engineering Design & Development Pty. Ltd.: *See—*
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England, Herbert C., Jr.; and Voigt, William C., Jr. Motionless mixing device. 3,953,002, Cl. 259-4.0AB.

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Environment/One Corporation: *See—*
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Epsco, Incorporated. *See—*
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Epstein, Sheldon L.; and Wessling, Bernard W., to Brunswick Corporation. Electric energy sources such as fuel cells and batteries. 3,953,237, Cl. 136-86.00R.

Erath, Robert L.; Speidel, Mathias A.; and Kennelly, Edward J., to Grumman Aerospace Corporation. Variable buoyancy device. 3,952,349, Cl. 9-8.00R.

Erchoff, Jean-Paul, to GAF Corporation. Slide projector and indexing mechanism for alternate slide trays of different configurations. 3,953,119, Cl. 353-116.000.

Erdal, Bruce R.: *See—*
Grant, Patrick M.; Erdal, Bruce R.; and O'Brien, Harold A., 3,953,567.

Erfeling, Arthur, to Lohmann Apparatebau GmbH. Battery-like arrangement of cages for rearing and transporting poultry. 3,952,703, Cl. 119-17.000.

Erickson, Arlen J., to CX Corporation. Machine loadable multi-pocket, multi-section article carrier stock. 3,952,871, Cl. 206-455.000.

Erickson, Clifford E., to General Electric Company. Hinge structure. 3,952,369, Cl. 16-171.000.

Eriksson, Nils Borje; and Tidemalm, Gustav Hilmer, to AB Bofors. Device used as a power transmission component for elevation of a gun barrel. 3,952,632, Cl. 92-117.00R.

Erkenbrack, Kenneth B., to New Products, Inc. Curved pin and inserter. 3,952,935, Cl. 227-120.000.

Ernst Leitz G.m.b.H.: *See—*
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Eross, Bela, to Instrumentation Industries, Inc. Slip-proof coupling device. 3,953,060, Cl. 285-272.000.

Ertingshausen, Gerhard: *See—*
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ESB Incorporated: *See—*
Honer, Harold Nickolas, 3,953,238.

Espitalie, Jean; and Durand, Bernard, to Institut Francais du Petrole, des Carburants et Lubrifiants. Method and apparatus for rapidly evaluating the hydrocarbon production capacity of sediments, using small samples thereof. 3,953,171, Cl. 23-230.0EP.

Esquivel, Salomon. Orthopedic cushion. 3,953,072, Cl. 297-460.000.

Estrada, Richard J. Alarm system for use with cigarette lighter receptacle of vehicle. 3,953,831, Cl. 340-53.000.

Estradier, Francoise: *See—*
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Eudy, Charles Nelson; and Eudy, Charles Ellis. Anchor davit. 3,952,683, Cl. 114-210.000.

Evalahti, Osmo Rainer, to A. Ahlstrom Osakeyhtio. Dewatering blade locking assembly. 3,953,284, Cl. 162-352.000.

Evans Products Company: *See—*
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Evans, Robert E. Automatic blanket wash-up system. 3,952,654, Cl. 101-425.000.

Eversole, James F.; and Berriman, Lester P., to Dresser Industries, Inc. Fluid flow device. 3,952,776, Cl. 138-39.000.

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Falcon, Pedro F. Hand line reel. 3,952,965, Cl. 242-96.000.

Eby, Ralph H., to John S. Greeno Company. Reaction arm for rotary sprinkler. 3,952,953, Cl. 239-230.000.

Eck, Walter; and Heywang, Walter, to E.G.O. Elektro-Geraete Blanc und Fischer. Cooking units. 3,953,711, Cl. 219-464.000.

Eckersley, Dennis: *See—*
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Edmac Associates Inc.: *See—*
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Edo-Aire Mitchell Industries, Inc.: *See—*
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Edouard Dubied et Cie (Societe Anonyme): *See—*
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Edwards, Clarence K.; and Edwards, Lawrence D. Protruding ladder steps for model railway boxcars. 3,952,450, Cl. 46-218.000.

Edwards, Lawrence D.: *See—*
Edwards, Clarence K.; and Edwards, Lawrence D., 3,952,450.

Ehlers, Klaus Peter; Scheibitz, Wolfgang; and Heymer, Gero, to Hoechst Aktiengesellschaft. Purification of wet-processed phosphoric acid using anhydrous solvents. 3,953,581, Cl. 423-321.00S.

Ejk, Adam J.: *See—*
Dworkin, Robert D.; and Ejk, Adam J., 3,953,385.

Ekeland, Thomas C. Encoding device. 3,953,846, Cl. 340-337.000.

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Elhaus, Friedrich Wilhelm; and Hilge, Bernhard, to Prolizenz AG; and Elhaus, Friedrich Wilhelm. Method for heat treatment of material to be worked on, especially of aluminium or magnesium alloys. 3,953,247, Cl. 148-13.000.

Eli Lilly and Company: *See—*
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Ellis Industries, Inc.: *See—*
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Ellis, J. Scott, to Ellis Industries, Inc. Line connecting apparatus 3,952,376, Cl. 24-115.00A.

Ells, Edward G., to Liquidometer Corporation. Liquid level gauge. 3,952,593, Cl. 73-304.00C.

Elmore, Lester C.; and Broxholm, Thomas M., to Pulsepower Systems, Inc. Pulsed high pressure liquid propellant combustion powered seismic sources. 3,952,832, Cl. 181-116.000.

Elter, John F., to Xerox Corporation. Two source radiant fuser for xerographic reproducing apparatus. 3,953,709, Cl. 219-216.000.

Emerson Electric Co.: *See—*
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Emond, Joseph Maurice; and Haigh, James Dawson, to Molson Companies Limited, The. Tank cleaning apparatus. 3,953,226, Cl. 134-104.000.

Endo, Hirofumi: *See—*
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Engel, Niels N. Coated metal product. 3,953,178, Cl. 29-195.000.

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England, Herbert C., Jr.; and Voigt, William C., Jr. Motionless mixing device. 3,953,002, Cl. 259-4.0AB.

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Environment/One Corporation: *See—*
Peters, Philip H., Jr., 3,953,783.

Epsco, Incorporated: *See—*
Ih, Charles, 3,953,105.

Epstein, Sheldon L.; and Wessling, Bernard W., to Brunswick Corporation. Electric energy sources such as fuel cells and batteries. 3,953,237, Cl. 136-86.00R.

Erath, Robert L.; Speidel, Mathias A.; and Kennelly, Edward J., to Grumman Aerospace Corporation. Variable buoyancy device. 3,952,349, Cl. 9-8.00R.

Erchoff, Jean-Paul, to GAF Corporation. Slide projector and indexing mechanism for alternate slide trays of different configurations. 3,953,119, Cl. 353-116.000.

Erdal, Bruce R.: *See—*
Grant, Patrick M.; Erdal, Bruce R.; and O'Brien, Harold A., 3,953,567.

Erfeling, Arthur, to Lohmann Apparatebau GmbH. Battery-like arrangement of cages for rearing and transporting poultry. 3,952,703, Cl. 119-17.000.

Erickson, Arlen J., to CX Corporation. Machine loadable multipocket, multi-section article carrier stock. 3,952,871, Cl. 206-455.000.

Erickson, Clifford E., to General Electric Company. Hinge structure. 3,952,369, Cl. 16-171.000.

Eriksson, Nils Borje; and Tidemalm, Gustav Hilmer, to AB Bofors. Device used as a power transmission component for elevation of a gun barrel. 3,952,632, Cl. 92-117.00R.

Erkenbrack, Kenneth B., to New Products, Inc. Curved pin and inserter. 3,952,935, Cl. 227-120.000.

Ernst Leitz G.m.b.H.: *See—*
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Eross, Bela, to Instrumentation Industries, Inc. Slip-proof coupling device. 3,953,060, Cl. 285-272.000.

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ESB Incorporated: *See—*
Honer, Harold Nickolas, 3,953,238.

Espitalie, Jean; and Durand, Bernard, to Institut Francais du Petrole, des Carburants et Lubrifiants. Method and apparatus for rapidly evaluating the hydrocarbon production capacity of sediments, using small samples thereof. 3,953,171, Cl. 23-230.0EP.

Esquivel, Salomon. Orthopedic cushion. 3,953,072, Cl. 297-460.000.

Estrada, Richard J. Alarm system for use with cigarette lighter receptacle of vehicle. 3,953,831, Cl. 340-53.000.

Estradier, Francoise: *See—*
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Eudy, Charles Nelson; and Eudy, Charles Ellis. Anchor davit. 3,952,683, Cl. 114-210.000.

Evalahti, Osmo Rainer, to A. Ahlstrom Osakeyhtio. Dewatering blade locking assembly. 3,953,284, Cl. 162-352.000.

Evans Products Company: *See—*
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Evans, Robert E. Automatic blanket wash-up system. 3,952,654, Cl. 101-425.000.

Eversole, James F.; and Berriman, Lester P., to Dresser Industries, Inc. Fluid flow device. 3,952,776, Cl. 138-39.000.

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Eby, Ralph H., to John S. Greeno Company. Reaction arm for rotary sprinkler. 3,952,953, Cl. 239-230.000.

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Elmore, Lester C.; and Broxholm, Thomas M., to Pulsepower Systems, Inc. Pulsed high pressure liquid propellant combustion powered seismic sources. 3,952,832, Cl. 181-116.000.

Elter, John F., to Xerox Corporation. Two source radiant fuser for xerographic reproducing apparatus. 3,953,709, Cl. 219-216.000.

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Erchoff, Jean-Paul, to GAF Corporation. Slide projector and indexing mechanism for alternate slide trays of different configurations. 3,953,119, Cl. 353-116.000.

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Erickson, Arlen J., to CX Corporation. Machine loadable multi-pocket, multi-section article carrier stock. 3,952,871, Cl. 206-455.000.

Erickson, Clifford E., to General Electric Company. Hinge structure. 3,952,369, Cl. 16-171.000.

Eriksson, Nils Borje; and Tidemalm, Gustav Hilmer, to AB Bofors. Device used as a power transmission component for elevation of a gun barrel. 3,952,632, Cl. 92-117.00R.

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Esquivel, Salomon. Orthopedic cushion. 3,953,072, Cl. 297-460.000.

Estrada, Richard J. Alarm system for use with cigarette lighter receptacle of vehicle. 3,953,831, Cl. 340-53.000.

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Feldstein, Nathan, to RCA Corporation. Temperature-stable nonmagnetic alloy. 3,953,654, Cl. 428-471.000.
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Felter, John V.; Bond, John A.; and Rudine, Kenneth M. Fans for use with turbine ventilators, and methods and apparatus for supporting the same. 3,952,638, Cl. 98-43.00R.
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Gladish, Herbert E. Vehicular transportation system. 3,952,666, Cl. 104-23.0FS.
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Cook, Martin Christopher; Lawrence, Robin; Phillipps, Gordon Hanley; Hunter, Anne Christine; Newall, Christopher Earle; Stephenson, Leslie; and Weir, Niall Galbraith, 3,953,429.
Gleason, John Gerald, to SmithKline Corporation. Substituted phenylglycylcephalosporins. 3,953,439, Cl. 260-243.00C.
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Gledhill, William; and Sherman, Philip Leland, to Gledhill Road Machinery Company. Vehicular carried plow coupling. 3,952,431, Cl. 37-41.000.
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Gley, Paul R., to Envirex Inc. Diffuser connector for aeration header. 3,953,555, Cl. 261-124.000.
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Glory Kogyo Kabushiki Kaisha: *See—*
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Godbout, Joseph Charles: *See—*
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Great Canadian Oil Sands Limited: *See—*
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Grewe, Gunter Paul, to U.S. Philips Corporation. Combined brightness contrast and color saturation control circuit. 3,953,883, Cl. 358-27.000.
Griauzde, Felix: *See—*
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Griffith, John E.; Grossman, David D.; and Will, Peter M., to International Business Machines Corporation. Method and apparatus for clamping a workpiece in a quasi-liquid medium. 3,953,013, Cl. 269-7.000.
Griggs, Edwards A. Temperature change sensing device. 3,952,692, Cl. 116-102.000.
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Grossman, David D.: *See—*
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Gruber, Robert J.; and Germano, Nicholas J., to Xeerox Corporation. Imaging process. 3,953,462, Cl. 260-295.00A.

Grumman Aerospace Corporation: *See—*
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Guibeaud, Georges. Machine for automatically gathering fruits and in particular enabling vintaging. 3,952,487, Cl. 56-328.00R.

Guilbault, Lawrence James: *See—*
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Gulley, Willard Q., to Vinylex Corporation. Extrusion apparatus, process and article. 3,953,661, Cl. 428-542.000.

Gupta, Ashis S.; and Shillinglaw, Clifford A., to Coca-Cola Co., The. Hydration drying of coffee, tea, or juice concentrate by means of anhydrous dextrose. 3,953,615, Cl. 426-594.000.

Gurkov, Konstantin Stepanovich: *See—*
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Gurzynska, Janina; and Wesolowski, Korneliusz, to Huta Szkla im.Pablinskiego Przedsiebiorstwo Panstwowe. Preparation of extrinsic semiconductors for electric heating. 3,953,372, Cl. 252-[illegible].000.

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Gybowski, Frank. Toy having loosely mounted cylinders and slidable striker. 3,952,446, Cl. 46-1.00R.

H. Tinsley & Co. Ltd.: *See—*
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Habiger, Cyril W.; McMillan, William D.; Persson, David L.; and Ferre, Glenn E., deceased (by Ferre, Marjorie E., legal representative and executrix), to Caterpillar Tractor Co. Speed and load responsive underspeed actuator for hydrostatic transmissions. 3,952,515, Cl. 60-447.000.

Hach Chemical Company: *See—*
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Hach, Clifford C., to Hach Chemical Company. Method and apparatus for automatically analyzing fluids. 3,953,136, Cl. 356-181.000.

Hackell, Walter Edward. Bubble forming device. 3,952,447, Cl. 46-6.000.

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Halasa, Adel Farhan; and Gutierrez, Richard, to Firestone Tire & Rubber Company, The. Process for grafting ethylene onto diene polymers. 3,953,542, Cl. 260-878.00R.

Hall, Charles M., to Upjohn Company, The. Compounds, compositions and methods of use. 3,953,598, Cl. 424-258.000.

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Hall, Stephen H., Sr.: *See—*
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Hamamatsu Terebi Kabushiki Kaisha: *See—*
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Hamill, Robert L., to Eli Lilly and Company. Antibiotic A2041 derivatives. 3,953,474, Cl. 260-345.700.

Hamilton, Philip O. Camper shell. 3,953,066, Cl. 296-23.00R.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Label printing and applying apparatus. 3,952,652, Cl. 101-316.000.

Hammack, Calvin Miles. Method and apparatus for mapping and similar applications. 3,953,856, Cl. 343-112.00D.

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Hansen, Randall C.; and Miller, Kenneth J., to A. L. Hansen Mfg. Co. Door fastening means. 3,953,061, Cl. 292-5.000.

Hansen, Siegfried, to Hughes Aircraft Company. Isolator. 3,952,979, Cl. 248-20.000.

Hanson, Richard Eric; and Nolan, Thomas Edward, Jr., to RCA Corporation. Determining engine compression from starter motor current. 3,952,586, Cl. 73-117.200.

Hanson, Robert S.; and Pugh, Cecil C., to General Motors Corporation. Water tray for clear ice maker. 3,952,539, Cl. 62-351.000.

Hansow, Carol S. Water deflector for bathing facilities. 3,952,337, Cl. 4-148.000.

Hara, Katsuo; Hagino, Minoru; and Sukegawa, Tokuzo, to Hamamatsu Terebi Kabushiki Kaisha. Semiconductor photoelectron emission device. 3,953,880, Cl. 357-30.000.

Hara, Minoru: *See—*
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Harada, Morio; Kojima, Saburo; Ohta, Kazumi; and Shimomura, Hiroaki, to Nippon Kokan Kabushiki Kaisha. Method of refining carbon-unsaturated system ferro-chromium. 3,953,195, Cl. 75-12.000.

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Hart, James E. Multipurpose furniture. 3,952,342, Cl. 5-2.00R.

Hart, John Charles Humphreys, to Bridon Engineering Limited. Valves. 3,952,996, Cl. 251-324.000.

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Hartle, Robert J., to Gulf Research & Development Company. Diesters and diacids of phenanthrene. 3,953,498, Cl. 260-475.0FR.

Hartline, Albert G., III; Campbell, John A.; and Magel, Theodore T., to Allegheny Ludlum Industries, Inc. Process for reclaiming cemented metal carbide. 3,953,194, Cl. 75-.5BC.

Hartman, William Herman; Pas, Frank Bruno; and Godar, Joseph Lambert, to American Can Company. Curled container bodies, method of securing closures thereto and containers formed thereby. 3,952,677, Cl. 113-120.00Y.

Hartmann & Braun Aktiengesellschaft: *See—*
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Hasegawa, Katsue; Sano, Reiji; Askawa, Shirow; and Matsuda, Shunsuke, to Matsushita Electric Industrial Company Limited. Dry working photographic process relating to N-vinyl compound system. 3,953,210, Cl. 96-45.200.

Hasegawa, Kazuhiko; Shima, Yoshio; and Noda, Shigeo, to Toyoda Koki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Machine tool apparatus. 3,952,388, Cl. 29-33.00P.

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Hatano, Itaru; Hara, Minoru; Kitamura, Tsuneo; Ando, Akira; and Suganuma, Yasuyuki, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Method of moulding foamed synthetic resin pellets of polyolefine. 3,953,558, Cl. 264-22.000.

Hatfield, Lowell D., to Eli Lilly and Company. Deacetoxycephalosporins via penicillin sulfoxide rearrangement. 3,953,440, Cl. 260-243.00C.

Haubein, Harold D.: *See—*
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Hauck, Frederick Peter; and Sundeen, Joseph E., to E. R. Squibb & Sons, Inc. Dienes useful in the preparation of 1,2,3,4,4a,5,6,7-octahydro-7-aryl-isoquinolines. 3,953,434, Cl. 260-240.00D.

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Hauge, Robert Z.; Loos, George J.; and Marsicano, Matthew F., to Textron Inc. Toolholder for machine tools. 3,953,039, Cl. 279-1.0TS.

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Hayashi, Shigeki: *See—*
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Hayes, William F.; Tanney, John W.; and Tucker, Helen G., to Canadian Patents and Development Limited. Apparatus for measuring the flow rate and/or viscous characteristics of fluids. 3,952,577, Cl. 73-55.000.

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Haytayan, Harry M. Process for pneumatically impelling a hammer to drive a nail into a substrate. 3,952,398, Cl. 29-432.000.

Hayward, John Albert David. Hydraulic linkages. 3,952,896, Cl. 214-771.000.

Hazne, Edis. Arrangement for stabilizing an aircraft during loading and unloading operations. 3,952,886, Cl. 214-38.0BA.

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Heft, Eldon Bertel; and Johnson, Joseph Francis, to General Electric Company. Electric circuit breaker. 3,953,812, Cl. 335-23.000.

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Hell, Renate Elisabeth; and Scheuermann, Horst, to BASF Aktiengesellschaft. Compounds of the naphthalimide series. 3,953,451, Cl. 260-281.0NH.

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Henderson, Eulas W., to Phillips Petroleum Company. Grit removal from carbon black. 3,953,583, Cl. 423-450.000.

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Hennig, Gerhard R.; and Hennig, Klaus G., to Hennig, Gerhard R. Medical device. 3,952,726, Cl. 128-1.00R.

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Hinata, Masanao; Takei, Haruo; Sato, Akira; and Ogawa, Akira, to Fuji Photo Film Co., Ltd. Spectrally sensitized silver halide photographic emulsion. 3,953,216, Cl. 96-126.000.
Hinderks, Mitja Victor. Vehicle gas extractor. 3,952,823, Cl. 180-64.00A.
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Hinterholzer, Hans. Device for preventing a crossing of skis during skiing. 3,953,043, Cl. 280-11.37E.
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Iijima, Tetsuya, to Nissan Motor Company Limited. Automatic power transmission hydraulic control throttle valve. 3,952,614, Cl. 74-865.000.
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Iinuma, Kazuhiro; and Itamura, Einoshin, to Tokyo Shibaura Electric Co., Ltd. Method of manufacturing an ultrasonic probe. 3,952,387, Cl. 29-25.350.
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Imada, Seiya: *See—*
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Imai, Toshihiro, to Olympus Optical Co., Ltd. Behind-stop type compact photographic lens system. 3,953,112, Cl. 350-227.000.
Imperial Chemical Industries Limited: *See—*
Brown, Alistair Chalmers Ramsay; Dykes, Norman Andrew; January, John Kenneth; and Lake, Ivan James Samuel, 3,953,536.
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Inada, Kazutoshi; Sugiyama, Masatoshi; Nishigaki, Yasuo; and Tada, Sugihiko, to Fuji Photo Film Co., Ltd. Process for sublimation purification of crude hydroquinone with stirred and fluidized bed. 3,953,528, Cl. 260-621.00A.

Inata, Hiroo: *See—*
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Ingham, Michael J., to Richard Marine Limited. Steering assembly for a marine craft. 3,952,682, Cl. 114-162.000.

Innocenti, Emil G., to Raymond Lee Organization, Inc., The. Model airplane track. 3,952,451, Cl. 46-249.000.

Inoue, Shohei; Kanbe, Masaki; Takada, Tadamichi; Miyazaki, Nobuyuki; and Yokokawa, Masanori, to Nippon Oil Seal Industry Co., Ltd. Catalytic process for copolymerizing epoxy compounds with carbon dioxide. 3,953,383, Cl. 260-2.0BP.

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Isaka, Ichiro: *See—*
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Ishikawa, Misao; Tsuji, Rokuro; and Yoshimori, Norihisa, to Hitachi, Ltd. Process for preventing the formation of nitrogen monoxide in treatment of metals with nitric acid or mixed acid. 3,953,263, Cl. 156-7.000.

Ishikawa Tekko Kabushiki Kaisha: *See—*
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Isobe, Mitsuo; and Yoshino, Toshihiko. Video amplifier for deriving color signals. 3,953,884, Cl. 358-30.000.

Isola, Richard A. Vehicle headliner construction. 3,953,067, Cl. 296-137.00A.

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Ito, Takashi; and Ohtomo, Koichiro, to Kanebo Kabushiki Kaisha; and Ko Kondo. Lead storage battery. 3,953,236, Cl. 136-26.000.

Ito, Yasuo; and Suzuki, Yoshitake, to Nippon Steel Corporation. Method of continuous casting using linear magnetic field for core agitation. 3,952,791, Cl. 164-49.000.

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Iwakawa, Tsunekiyo; and Yano, Akira, to Nippon Electric Co., Ltd. Circuit for supplying a specified one of plural external electrodes of a gas discharge display panel with unidirectional firing voltage pulses and for supplying others with pulses of a reduced voltage. 3,953,762, Cl. 315-169.0TV.

Iwasaki Tsushinki Kabushiki Kaisha: *See—*
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Iwata, Hiroshi; and Misaki, Satoru, to West Electric Company, Ltd. Camera device having a photographic flash device combined therewith. 3,953,864, Cl. 354-27.000.

J. I. Case Company: *See—*
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J. & J. Marquardt: *See—*
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J. P. Stevens & Co., Inc.: *See—*
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Jackson, Jack M. Magnesia stabilized additives for non-clay wellbore fluids. 3,953,335, Cl. 252-8.50A.

Jackson, Paul L., to Ford Motor Company. Process for the production of drawing steel. 3,953,245, Cl. 148-3.000.

Jacobs, James W., to General Motors Corporation. Ice cream maker for refrigerator. 3,952,534, Cl. 62-136.000.

Jacobs, John E., to United States of America, Health, Education and Welfare. Scanning ultrasonic spectrograph for fluid analysis. 3,952,578, Cl. 73-64.100.

Jacobson, Dean L.; and Hamerdinger, Randolph W., to Xerox Corporation. Internally heated heat pipe roller. 3,952,798, Cl. 165-105.000.

Jacobson, Peter E., to Sperry Rand Corporation. Bearing and lubricant film test method and apparatus. 3,952,566, Cl. 73-10.000.

Jacoby, Hans-Dieter, to Ernst Leitz G.m.b.H. Method of determining the angular position of a workpiece and apparatus therefor. 3,953,133, Cl. 356-152.000.

Jaffe, Joseph; and Kittrell, James R., to Chevron Research Company. Thermactivation of catalysts comprising catalytic metals-free crystalline zeolitic molecular sieve particles dispersed in a gel matrix. 3,953,364, Cl. 252-455.00Z.

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James, Richard L., to Lynch Corporation. Control system for hydraulic rams. 3,953,187, Cl. 65-161.000.

James, Varnell L., to Boeing Company, The. Engine mounting assembly. 3,952,973, Cl. 244-54.000.

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Japan Synthetic Rubber Co., Ltd.: *See—*
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Jauch, Heinz: *See—*
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Jenks, Frederic A. Airborne multi-mode radiating and receiving system. 3,953,857, Cl. 343-705.000.

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Jesensky, Alexander; Fedesna, Kenneth J.; and De Ryke, Thomas V., to Addressograph Multigraph Corporation. Transport apparatus for an automatic micro-image viewer printer machine. 3,953,123, Cl. 355-45.000.

Jesse, Edwin L., to Evans Products Company. Universal frame member. 3,952,473, Cl. 52-656.000.

JH Industries, Inc.: *See—*
Johnson, Dwight N., 3,952,766.

Johansson, Leif, to Baby Bjorn AB. Folding sport stroller or the like. 3,953,046, Cl. 280-644.000.

John S. Greeno Company: *See—*
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Johnson, Donald L.: *See—*
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Johnson, Dwight N., to JH Industries, Inc. Backflow preventer. 3,952,766, Cl. 137-218.000.

Johnson, Edwin F., to United States of America, Energy Research and Development Administration. Gas venting. 3,953,288, Cl. 176-79.000.

Johnson & Johnson: *See—*
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Johnson, Joseph Francis: *See—*
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Johnston, James D.: *See—*
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Johnston, James Stewart; and Cope, Dennis George, to Rosemount Engineering Company Limited. Analogue computer for solving polynomial equations. 3,953,721, Cl. 235-180.000.

Johnston, William C.; and Beckwith, Sterling, to Kysor Industrial Corporation. Multiple valve refrigeration system. 3,952,533, Cl. 62-115.000.

Joly, Jean; and Sangalli, Silvio, to Rhone-Poulenc-Textile. Apparatus for interlacing strands of a textile yarn. 3,952,386, Cl. 28-1.400.

Jonassen, Hans B.: *See—*
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Jones, Ivor Wynn; Miles, Lyndon James; and Robinson, Graham, to Electricity Council, The. Electrochemical cells having a liquid alkali metal electrode and solid electrolyte. 3,953,227, Cl. 136-6.0FS.

Jones, James Byron: *See—*
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Jones & Laughlin Steel Corporation: *See—*
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Jones, Raymond Henry: *See—*
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Jones, Robert J.; Green, Howard E.; and Vaughan, Robert W., to TRW Inc. Low temperature curing adhesives. 3,953,544, Cl. 526-304.000.

Jones, Wilfred. Anaesthetic inflation valves. 3,952,762, Cl. 137-102.000.

Joseph Lucas (Industries) Limited: *See—*
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Jossier, Patrick, to Peritel, Peripheriques de Telephone (S.A.R.L.). Static memory pulse transmitter. 3,953,684, Cl. 179-90.00K.

Jost, Ernest M.: *See—*
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Joubert, Pierre-Rene, to Raymond Lee Organization, Inc., The, a part interest. Vehicle registration and velocity display device. 3,952,689, Cl. 116-57.000.

Jouffret, Michel: *See—*
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Jousson, Pierre-Jean: *See—*
Moret, Michel Antoine; Jousson, Pierre-Jean; and Musy, Jean-Pierre, 3,952,736.

Judice, Charles Norris, to Bell Telephone Laboratories, Incorporated. Method and arrangement for eliminating flicker in interlaced ordered dither images. 3,953,668, Cl. 178-6.000.

Juhasz, Attila: *See—*
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Junek, Jan; Ripka, Josef; Vobornik, Vaclav; Hortlik, Frantisek; Jaros, Frantisek; Elias, Jiri; Brynda, Vaclav; Mares, Karel; Kotrba, Zdenek; Lihtarova, Ludmila; Brozkova, Marie; and Rehackova, Bozena, to Vyzkumny ustav bavlnarsky. Open-end spinning unit with a spinning rotor. 3,952,494, Cl. 57-58.890.

Junker, Bernhard T.: *See—*
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Jusov, Mikhail Ivanovich: *See—*
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Justice, James W. H.; and Newell, George F. Television system for simultaneously transmitting and receiving a plurality of independent pictures on a single carrier screen. 3,953,666, Cl. 178-5.600.

Justrite Manufacturing Company: *See—*
Flider, Frank S., 3,953,723.

Kaarsmaker, Hendrik, to Mobil Oil Corporation. Intake piece adapted for emptying containers with liquid. 3,952,772, Cl. 137-565.000.

Kabchef, Robert G. Toy airplane. 3,952,448, Cl. 46-78.000.

Kabushiki Kaisha Hoya Lens: *See—*
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Kabushiki Kaisha Saginomiya Seisakusho: *See—*
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Kabushiki Kaisha Sokkisha: *See—*
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Kaiser Aluminum & Chemical Corporation: *See—*
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Kaiser, Hans: *See—*
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Kakihana, Hidetake: *See—*
Seko, Maomi; and Kakihana, Hidetake, 3,953,568.
Seko, Maomi; and Kakihana, Hidetake, 3,953,569.

Kaliher, Paul L.; Nelson, Fred W.; and Roos, Bryan K., to Minnesota Mining and Manufacturing Company. Electrosurgical system providing a fulguration current. 3,952,748, Cl. 128-303.140.

Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to L'Oreal. Diphenylamines for dyeing keratinous fibers. 3,953,508, Cl. 260-562.00A.

Kaltenbach & Voigt: *See—*
Lingenhole, Bernhard, 3,952,416.

Kaltmann, Hans-Joachim, to Rheinmetall GmbH. Rifle cartridge. 3,952,657, Cl. 102-38.000.

Kamada, Hatohiko; and Tashiro, Koichi, to Fuji Photo Film Co., Ltd. Process for the manufacture of mesh screen for X-ray photography sensitization. 3,953,303, Cl. 204-15.000.

Kaminski, Joseph F., to Raymond Lee Organization, Inc., The, a part interest. Fishing reel accessory. 3,952,443, Cl. 43-25.000.

Kan, Yih-Renn, to General Motors Corporation. Metallurgical vessel. 3,953,009, Cl.-266-283.000.

Kanai, Hukashi; Mori, Yasuo; and Toyoda, Kyoichi, to Nissan Motor Company, Limited. Collapsible spacer in final drive unit of motor vehicle. 3,952,608, Cl. 74-411.000.

Kanbe, Masaki: *See—*
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Kane, Daniel E., to SCM Corporation. Bond-like copy paper by cockling after coating or imaging. 3,953,208, Cl. 96-1.500.

Kanebo Kabushiki Kaisha: *See—*
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Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
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Kaneko, Yasuo: *See—*
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Kantorowicz, Gerard, to Thomson-CSF. Acoustic storage device for high-frequency electrical signals. 3,953,836, Cl. 340-173.0MS.

Kao Soap Co., Ltd.: *See—*
Fujino, Takashi; Nishimura, Masaaki; and Yamanaka, Makoto, 3,953,350.
Funatsu, Makoto; Yasuda, Shinichiro; and Hiraizumi, Toshimitu, 3,953,384.
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Karl Lautenschlaeger KG: *See—*
Lautenschlaeger, Karl, Jr., 3,952,364.

Karon, Marc A.: *See—*
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Karr, Michael A., Jr. Throttling and shut-off valve. 3,952,994, Cl. 251-210.000.

Kason Hardware Corporation: *See—*
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Kasubuchi, Takeshi: *See—*
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Kasyanov, Grigory Ivanovich: *See—*
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Katagiri, Katuo: *See—*
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Katakura, Kageyoshi, to Hitachi Medical Corporation. Velocity measurement apparatus using pulsed ultrasonic waves. 3,953,823, Cl. 340-1.00R.

Kato, Kiyoshi: *See—*
Fujimura, Hajime; Hori, Mikio; Ootani, Osamu; Ohno, Sachio; Kitamikado, Tadashi; Kato, Kiyoshi; and Nagasaka, Mitsuaki, 3,953,467.

Kato, Takashi: *See—*
Miyazaki, Tsutomu; Kato, Takashi; Yoshizawa, Toshio; and Yamada, Yasuo, 3,952,492.

Kato, Yasuo: *See—*
Furuhata, Yoshio; Kato, Yasuo; and Abe, Zenmon, 3,953,503.

Katzman, Allison W.; and Barlow, Gordon A., to Marvin Glass & Associates. Card matching apparatus including dispenser. 3,953,027, Cl. 273-1.00R.

Kawagoe, Hiroto, to Hitachi, Ltd. Circuit for converting an asynchronous signal with a long transition time to a synchronized signal. 3,953,744, Cl. 307-208.000.

Kawahara, Norio: *See—*
Murakami, Masuo; Isaka, Ichiro; Koda, Akio; Kawahara, Norio; Ashiwagi, Teruya; Murakami, Yukiyasu; Yano, Kuniichiro; Nakano, Kohzi; and Souzo, Isao, 3,953,428.

Kawai, Kiyohisa: *See—*
Noguchi, Shunsaku; Aono, Tetsuya; Araki, Yoshiaki; and Kawai, Kiyohisa, 3,953,500.

Kawakami, Genichi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument capable of generating tone signals having pitch frequency, tone color and volume envelope varied with time. 3,952,624, Cl. 84-1.260.

Kawamoto, Hirohisa; and Miller, David Joseph, to RCA Corporation. Injection laser modulator. 3,953,809, Cl. 331-94.50H.

Kawamura, Tomoaki; Ohtaki, Syohei; Nakamoto, Soichi; and Takahashi, Kiyoshi, to Canon Kabushiki Kaisha. Device for recording camera data. 3,953,868, Cl. 354-109.000.

Kawarada, Junji; Endo, Kunio; Harada, Susumu; and Sueishi, Motoharu, to Nippondenso Co., Ltd. Air-fuel ratio control system for internal combustion engines. 3,952,710, Cl. 123-32.0EA.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Nakano, Hideaki; Ozu, Tadahiro; and Okayama, Takashi, 3,952,546.

Kawase, Shoji; Shima, Takeo; Inata, Hiroo; and Kurisu, Shizuka, to Teijin Ltd. Aromatic polyester resin composition having inhibited coloration and method for inhibiting coloration. 3,953,539, Cl. 260-860.000.

Kawashima Orimono Co., Ltd.: *See—*
Matsuda, Yujiro; and Nakamura, Kazuchika, 3,953,271.

Kawecki Berylco Industries, Inc.: *See—*
Rasmussen, Robert T. C., 3,953,202.

Kay Laboratories, Inc.: *See—*
Watson, William K. R., 3,952,519.

Kayama, Kunifusa: *See—*
Shinagawa, Kiminari; Hishiyama, Sadao; Ito, Shinichi; Kayama, Kunifusa; and Taniguchi, Satoshi, 3,952,567.

Kayama, Ryuichi: *See—*
Saotome, Minoru; Yamamoto, Yoshikazu; Wakani, Nobuo; and Kayama, Ryuichi, 3,953,504.

Kazimir, Edward O.; and Weintritt, Donald J., to N L Industries, Inc. Removal of boron from $MgCl_2$ brines. 3,953,573. Cl. 423-161.000.

Keeler Brass Company: *See—*
Little, Carl H., 3,952,605.

Keerie, Donald; Hammond, John Anthony Gordon; and Hamey, Peter Michael, to Sperry Rand Limited. Flow sensors. 3,953,819, Cl. 338-36.000.

Kel-Win Manufacturing Co., Inc.: *See—*
Keller, Robert J., III, 3,952,764.

Kelch, Heinz, to Kienzle Apparate GmbH. Electronic taximeter for taxis taking a plurality of passengers on overlapping trips. 3,953,720, Cl. 235-168.000.

Kelhm, William G., Jr., to Burroughs Corporation. Vacuum-heat treated printed circuit boards. 3,953,663, Cl. 174-68.500.

Keller, Arnold Arie, to Lever Brothers Company. Liquid laundry detergent. 3,953,351, Cl. 252-132.000.

Keller, Charles Robert; and Martin, William D. Wire pulling apparatus. 3,952,999, Cl. 254-134.30R.

Keller, Robert J., III, to Kel-Win Manufacturing Co., Inc. Single lever faucet construction. 3,952,764, Cl. 137-119.000.

Keller, Wolfgang, to Siemens Aktiengesellschaft. Method and apparatus for measuring electrical conductivity. 3,953,796, Cl. 324-158.00R.

Kelley, Robert George: *See—*
Ruf, Walter; and Kelley, Robert George, 3,953,020.

Kelly Bros. (Northampton) Limited: *See—*
Goldry, Philip Edward; and Skinner, Keith Thomas, 3,952,384.

Kelly, Norman A.; and Libert, Norris R. Golfer's putting stance analyzing device. 3,953,033, Cl. 273-183.00E.

Kelver, William L.; Stuckey, Ronald L.; and Rozema, Arthur L., to CTS Corporation. Variable resistance control. 3,953,821, Cl. 338-174.000.

Kemp, Clifford B., to Procter & Gamble Company, The. Multi-ply absorbent wiping product having relatively inextensible center ply bonded to highly extensible outer plies. 3,953,638, Cl. 428-154.000.

Kendall Company, The: *See—*
Libman, Gary; and Villari, Frank K., 3,952,729.

Kendall, W. Denis: *See—*
Yarger, Frank A., 3,952,751.

Kennametal Inc.: *See—*
Friedline, Ernest J.; Mitchell, Robert N.; and Andras, Linn R., 3,953,143.

Kennedy, Carl D.: *See—*
Kerfoot, Oliver C.; Clark, Charles R.; and Kennedy, Carl D., 3,952,803.

Kennelly, Edward J.: *See—*
Erath, Robert L.; Speidel, Mathias A.; and Kennelly, Edward J., 3,952,349.

Kerff, Anton, to Aktiebolaget IRO. Yarn feed stop motion. 3,952,554, Cl. 66-163.000.

Kerfoot, Oliver C.; Clark, Charles R.; and Kennedy, Carl D., to Continental Oil Company. Oil recovery method using overbased waterflood additive containing sulfonates derived from alkylation reaction products. 3,952,803, Cl. 166-270.000.

Kern, Edmund R., to International Telephone and Telegraph Corporation. Method for preparing emissive coating for electrodes. 3,953,376, Cl. 252-521.000.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Korr, Heinrich; Maas, Douwe; and Telemann, Gerhard, 3,953,690.

Ketler, Albert E.; Campbell, Ronald P.; and Shacreaw, George, to Ocean Energy, Inc. Illuminating apparatus. 3,953,725, Cl. 240-51.11R.

Key, Alan, to National Research Development Corporation. Instrument for use in the measurement of blood gases. 3,952,730, Cl. 128-2.00G.

Khomyakov, Igor Stepanovich; and Leinek, Albert Arturovich. Apparatus for ringless spinning of fibers. 3,952,493, Cl. 57-58.890.

Khoury, Nick S., to Continental Can Company, Inc. Tab anti-rotation and hold down device. 3,952,913, Cl. 220-273.000.

Kicher, Thomas P.: *See—*
Mergler, Harry W.; Wright, Daniel K.; Kicher, Thomas P.; Savage, Michael; and Kosc, Wieslaw, 3,952,572.

Kidd, Patrick Michael, to Mackley-Ace Limited. Cable drums. 3,952,962, Cl. 242-54.00R.

Kienzle Apparate GmbH: *See—*
Kelch, Heinz, 3,953,720.

Kihlstedt, Per Gudmar; and Forssberg, Knut Sven Eric, to Advanced Mineral Research. Method for producing high alumina refractory material. 3,953,563, Cl. 264-66.000.

Kikkawa, Takahiro; and Hirata, Toshinori, to Mitsui Mining & Smelting Co., Ltd. Apparatus for peeling electrodeposited metal off cathode base plate. 3,953,312, Cl. 204-198.000.

Kim, Dong Guen; and Dubro, Gary Arnold, to United States of America, Air Force. Optical convolution velocimeter. 3,953,126, Cl. 356-28.000.

Kimberley, John A.; and Kraus, Richard D., to Ambac Industries, Inc. Diesel injection nozzle with independent opening and closing control. 3,952,711, Cl. 123-32.0JV.

Kimberly-Clark Corporation: *See—*
Aldinger, Karl E., 3,952,744.

Kimmell, Garman O., Jr. Filter and filter insertion instrument. 3,952,747, Cl. 128-303.00R.

Kimura, Ichiro: *See—*
Amano, Matsuo; Suzuki, Seiko; Kobori, Sigeyuki; and Kimura, Ichiro, 3,953,692.

Kimura, Kazuo: *See—*
Igarashi, Seiichi; Shirakawa, Kin-ichi; Kimura, Kazuo; and Ogino, Akira, 3,953,169.

Kimura, Shinichi. Device for separating air bubbles of fluids in piping, and silencing water flow. 3,952,765, Cl. 137-171.000.

Kinard, William H.: *See—*
United States of America, National Aeronautics and Space Administration; Wortman, Jimmie J.; Donovan, Robert P.; Brooks, Arthur D.; Monteith, Larry K.; Kinard, William H.; and O'Neil, Robert L., 3,953,792.

Kindl, George F., to Loc-Rite, Incorporated. Hanger rod having spring loaded suction cup. 3,952,877, Cl. 211-105.500.

King, William Roy. Antilocking braking system. 3,953,081, Cl. 303-21.0CH.

Kino, Gordon S.; Quate, Calvin F.; and Havlice, James F., to Leland Stanford Junior University, The Board of Trustees of. Electronically focused imaging system and method. 3,953,825, Cl. 340-5.0MP.

Kinoshita, Ikuma: *See—*
Takano, Sho; Okuyama, Yasushi; Suzuki, Ryokuya; and Kinoshita, Ikuma, 3,952,816.

Kinser, Vernon. Yieldable horseshoe stake. 3,953,031, Cl. 273-104.000.

Kinsey, Lewis R. Multi-layer walls for frameless buildings formed from extruded aluminum or plastic interlocking wall elements. 3,952,461, Cl. 52-57.000.

Kipling, Barry John, to Rank Xerox, Ltd. Recording stylus. 3,953,861, Cl. 346-139.00C.

Kirby, Clifton A.: *See—*
von Pragenau, George L.; Morgan, Irvin T., Jr.; and Kirby, Clifton A., 3,952,980.

Kirby, Fred E.: *See—*
Wanker, William C.; Quinn, James J.; and Kirby, Fred E., 3,952,889.

Kirchner, Henry P., to Ceramic Finishing Company. Method of improving impact resistance of ceramic bodies, and improved bodies. 3,953,636, Cl. 428-155.000.

Kisfaludy, Lajos; Low, Miklos; Schon, Istvan; Szirtes, Tamas; Sarkozi, Maria Sz.; Bajusz, Sandor; Turan, Andrae; Beks, Rosa; Juhasz, Attila; Graf, Laszlo; Medzihradszky, Kalman; and Szporny, Laszlo, to Richter Gedeon Vegyeszeti Gyar Rt. Process for the preparation of biologically active polypeptides containing aspartyl group. 3,953,415, Cl. 260-112.50R.

Kishimoto, Shinzo: *See—*
Miyano, Shizuo; Kondo, Asaji; Kishimoto, Shinzo; and Yazawa, Kenichiro, 3,953,212.

Kitamikado, Tadashi: *See—*
Fujimura, Hajime; Hori, Mikio; Ootani, Osamu; Ohno, Sachio; Kitamikado, Tadashi; Kato, Kiyoshi; and Nagasaka, Mitsuaki, 3,953,467.

Kitamura, Tsuneo: *See—*
Hatano, Itaru; Hara, Minoru; Kitamura, Tsuneo; Ando, Akira; and Suganuma, Yasuyuki, 3,953,558.

Kittrell, James R.: *See—*
Jaffe, Joseph; and Kittrell, James R., 3,953,364.

Klaue, Hermann. Spreading disc brake and actuator structure. 3,952,842, Cl. 188-71.400.

Klein, Andre, to Polycrate (Proprietary) Limited. Method of injection molding structural foam folding slat structures. 3,953,560, Cl. 264-50.000.

Klein, Gehart P., to P. R. Mallory & Co. Inc. Method of making an anode. 3,953,204, Cl. 75-211.000.

Klein, Johannes; Schneider, Wolfgang; and Fetzer, Karl, to KSB Kernkraftwerkspumpen GmbH. Method and means for accurately aligning the axes of shafts in pump assemblies or the like. 3,952,547, Cl. 64-9.00R.

Klemm, Richard O., to Food Warming Equipment Company. Food warming cabinet humidifier. 3,952,609, Cl. 99-474.000.

Klieger, Erich; Beich, Wolfgang; and Schroder, Eberhard, to Schering Aktiengesellschaft. Triiodoisophthalic acid monoamino acid amides. 3,953,501, Cl. 260-518.00A.

Kline, Richard H., to Goodyear Tire & Rubber Company, The. Age resistant polymeric compositions. 3,953,398, Cl. 260-45.85B.

Kline, Richard H., to Goodyear Tire & Rubber Company, The. Age resistant polymers of ditertiary alkyl-4-hydroxyaryl acrylate and dienes. 3,953,402, Cl. 260-62.000.

Kline, Richard H., to Goodyear Tire & Rubber Company, The. Age resistant polymers of 4-(arylamino)aryl esters of α,β unsaturated carboxylic acids. 3,953,411, Cl. 526-312.000.

Klingler, Josef F. Safety ashtray. 3,952,753, Cl. 131-235.00R.

Klipfel, Siegfried: *See—*
Weber, Karl-Arnold; Wagner, Kuno; and Klipfel, Siegfried, 3,953,559.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Aryus, Arnold Leo; Isenhardt, Friedel; and Schmitz, Bruno, 3,953,151.
Strauss, Werner, 3,953,552.

Klockner-Werke AG: *See—*
Geck, Hans Gunther; and Langhammer, Jurgen, 3,953,197.

Kloimstein, Engelbert: *See—*
Schonbeck, Rupert; Kloimstein, Engelbert; Diskus, Alfred; Auer, Engelbert; and Mayr, Hubert, 3,953,445.

Klopfenstein, Floren R.: *See—*
Williams, Don W., 3,953,830.

Kmecak, Ronald A.: *See—*
Chloupek, Frank J.; Sanford, Robert A.; Pollak, Laszlo; and Kmecak, Ronald A., 3,953,537.

Knapp, Heinrich; and Jaggle, Gunther, to Robert Bosch GmbH. Fuel injection system. 3,953,548, Cl. 261-50.00A.

Knobloch, James O.; and Ramirez, Fausto, to Standard Oil Company. Diacylium complexes of tetrahaloterephthalic acid. 3,953,481, Cl. 260-350.00R.

Knoth, Dale W.: *See—*
Lipson, Melvin A.; and Knoth, Dale W., 3,953,214.

Knudson, LeRoy Andrew. Bale loader. 3,952,881, Cl. 214-6.00B.

Ko Kondo: *See—*
Ito, Takashi; and Ohtomo, Koichiro, 3,953,236.

Kobayashi, Kenji: *See—*
Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamamoto, Hisao, 3,953,441.

Kober, Ehrenfried H.: *See—*
Scott, Peter H.; and Kober, Ehrenfried H., 3,953,488.

Kobori, Sigeyuki: *See—*
Amano, Matsuo; Suzuki, Seiko; Kobori, Sigeyuki; and Kimura, Ichiro, 3,953,692.

Kobylarz, Lawrence P.; and Mack, Ronald H., to Burroughs Corporation. Spring driven velocity controlled magnetic stripe reader. 3,953,887, Cl. 360-2.000.

Koch, Hans W., to Roller Bearing Company of America. Lock for the inner race of self-aligning bushing on a shaft. 3,953,141, Cl. 403-259.000.

Koda, Akio: *See—*
Murakami, Masuo; Isaka, Ichiro; Koda, Akio; Kawahara, Norio; Ashiwagi, Teruya; Murakami, Yukiyasu; Yano, Kuniichiro; Nakano, Kohzi; and Souzo, Isao, 3,953,428.

Kodama, Hayashi: *See—*
Tomita, Tamaki; Ishikawa, Mineo; Kodama, Hayashi; and Moriya, Kazuo, 3,952,458.

Kodis, Rudolfs, to Phillips Fibers Corporation. Tension control and drive apparatus for a fabric loom. 3,952,779, Cl. 139-110.000.

Koenig & Bauer Aktiengesellschaft: *See—*
Bolza-Schunemann, Hans Bernhard, 3,952,651.

Koeslin, Werner H., to Caterpillar Tractor Co. Fluid damped resilient drive for a governor. 3,952,545, Cl. 64-27.00C.

Kofabco, Inc.: *See—*
Striebel, Kenneth H., 3,953,071.

Kogure, Akira: *See—*
Komatsu, Koei; Nishiyama, Shigeyuki; Sakabe, Nobuyuki; and Kogure, Akira, 3,953,409.

Kohl, Karl. Guidebar compensation apparatus for use on warp knitting machines equipped with jacquard controls. 3,952,549, Cl. 66-86.00E.

Kohl, Karl. Self-aligning apparatus for use on a wrap knitting machine. 3,952,551, Cl. 66-120.000.

Kohler, Fritz, to Edouard Dubied et Cie (Societe Anonyme). Stopping apparatus for a rectilinear knitting machine. 3,952,553, Cl. 66-157.000.

Kohler, Werner: *See—*
Luttgert, Hans; and Kohler, Werner, 3,953,698.

Kojima, Katue: *See—*
Maruyama, Shoji; Kubota, Tomio; Kojima, Katue; Tamura, Hiroshi; and Harada, Masahide, 3,953,433.

Kojima, Saburo: *See—*
Harada, Morio; Kojima, Saburo; Ohta, Kazumi; and Shimomura, Hiroaki, 3,953,195.

Kokusai Electric Co., Ltd.: *See—*
Nagashima, Toshio; Imaguchi, Ichiro; and Igarashi, Shigeo, 3,953,662.

Kolesar, Joseph J. Car crane. 3,952,893, Cl. 214-450.000.

Kolibas, James A., to Addressograph Multigraph Corporation. Handling of originals to be photocopied. 3,953,124, Cl. 355-75.000.

Komatsu, Koei; Nishiyama, Shigeyuki; Sakabe, Nobuyuki; and Kogure, Akira, to Japan Synthetic Rubber Co., Ltd. Process for producing conjugated diolefinic polymers. 3,953,409, Cl. 526-82.000.

Komiya, Yasuo: *See—*
Aoki, Tadashi; and Komiya, Yasuo, 3,952,537.

Konan Electric Co., Ltd.: *See—*
Nakajima, Hiroyuki, 3,952,579.

Kondo, Asaji: *See—*
Miyano, Shizuo; Kondo, Asaji; Kishimoto, Shinzo; and Yazawa, Kenichiro, 3,953,212.

Kondo, Toshihiro, to Kondo, Toshihiro; and Fuji Photo Film Co., Ltd. Electromagnetic operating circuit for cameras. 3,953,867, Cl. 354-51.000.

Kondo, Yoshiaki. Dandruff removing device. 3,952,754, Cl. 132-120.000.

Konig, Wolfgang; Zwisler, Oswald; and Guthorlein, Gerhard, to Hoechst Aktiengesellschaft. Synthetically modified trypsin inhibitors and process for preparing them. 3,953,417, Cl. 260-112.50R.

Koppers Company, Inc.: *See—*
Greco, Nicholas P., 3,953,509.
Lambert, Roy Ralph; and Morgret, Gordon Lawrence, 3,952,637.

Kori, Seiji: *See—*
Hayashi, Masaki; Kori, Seiji; and Endo, Hirofumi, 3,953,435.
Hayashi, Masaki; Kori, Seiji; and Miyake, Hajimu, 3,953,495.

Korr, Heinrich; Maas, Douwe; and Telemann, Gerhard, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. High-current high voltage switch with incisor electrode. 3,953,690, Cl. 200-61.080.

Kosc, Wieslaw: *See—*
Mergler, Harry W.; Wright, Daniel K.; Kicher, Thomas P.; Savage, Michael; and Kosc, Wieslaw, 3,952,572.

Koshiba, Masao: *See—*
Ishizumi, Kikuo; Mori, Kazuo; Yamamoto, Michihiro; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 3,953,446.

Kostylev, Alexandr Dmitrievich: *See—*
Chepurnoi, Nikolai Prokhorovich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tupitsyn, Konstantin Konstantinovich; Tupitsyn, Sergei Konstantinovich; Nazarov, Nikolai Grigorievich; Plavskikh, Vladimir Dmitrievich; Tkach, Khaim Berkovich; Cherednikov, Evgeny Nikolaevich; Galbinshtein, Alexandr Nisovich; Borshtein, Mikhail Vladimirovich; Karavaev, Andron Trofimovich; Menzonov, Valery Anatolievich; and Makarov, Alexei Mikhailovich, 3,952,813.

Kotrba, Zdenek: *See—*
Junek, Jan; Ripka, Josef; Vobornik, Vaclav; Hortlik, Frantisek; Jaros, Frantisek; Elias, Jiri; Brynda, Vaclav; Mares, Karel; Kotrba, Zdenek; Lihtarova, Ludmila; Broskova, Marie; and Rehackova, Bozena, 3,952,494.

Kovanov, Pavel Vasilievich; Alexandrov, Adolf Moritsovich; Tsimbler, Jury Abramovich; and Aglitsky, Vladimir Efimovich. Pneumatic load transportation system. 3,952,667, Cl. 104-138.00R.

Koyanagi, Haruo; Sato, Iwao; Yasuhara, Buhei; Sakai, Jiro; Yamauchi, Nobuharu; Matsumura, Masaji; and Morimoto, Katsuhide, to Mitsubishi Denki Kabushiki Kaisha; and Nissan Motor Company Limited. Device for automatically monitoring the operating states of controlled objects in a sequence control system. 3,952,944, Cl. 235-92.0CT.

Kraco Industries: *See—*
Fohl, Fred P., 3,952,419.

Kraftwerk Union Aktiengesellschaft: *See—*
Neeb, Karl-Heinz; Stockert, Heinz; and Fuchs, Armin, 3,953,737.

Krall, Albert D.: *See—*
Anderson, Wallace E.; Krall, Albert D.; Syeles, Albert M.; and Van Sant, Oscar J., 3,953,852.

Kramer, Kenneth E.: *See—*
Dreikorn, Barry A.; and Kramer, Kenneth E., 3,953,457.

Krapcho, John, to E. R. Squibb & Sons, Inc. Benzoxozepine carboxamides and derivatives thereof. 3,953,469, Cl. 260-333.000.

Kratel, Gunther; Stohr, Gunter; Vogt, Georg; and Kaiser, Hans, to Elektroschmelzwerk Kempten GmbH. Process for preparing hydrophobic silicon dioxide. 3,953,487, Cl. 260-448.20E.

Kraus, Richard D.: *See—*
Kimberley, John A.; and Kraus, Richard D., 3,952,711.

Krauss-Maffei Aktiengesellschaft: *See—*
Schneider, Philipp, 3,952,991.

Kreeger, Elsmer W.: *See—*
Sanders, Ellsworth E.; and Kreeger, Elsmer W., 3,952,903.

Kreidl Chemico Physical Kommanditgesellschaft, The: *See—*
Trutnovsky, Helmut; and Paletta, Benno, 3,953,296.

Krekow, Gerhard: *See—*
Schramm, Jurgen; and Krekow, Gerhard, 3,953,681.

Kreling, William F.; and Sappington, Vernon W., to Plasco, Inc. Unitary wheel and tire assembly. 3,952,786, Cl. 152-323.000.

Kress, Leonard, to Lawrence Peska Associates, Inc., a part interest. Oil level indicator. 3,953,845, Cl. 340-244.00B.

Krieg, Martin: *See—*
Danner, Max; and Krieg, Martin, 3,953,584.

Kruckenberg, Winfried, to Bayer Aktiengesellschaft. Perinone dyestuffs. 3,953,452, Cl. 260-282.000.

Kruse, Jurgen M.: *See—*
French, Hollis E.; and Kruse, Jurgen M., 3,953,115.

Krzewinski, Henrietta K., to Johnson & Johnson. Folded surgical drape. 3,952,738, Cl. 128-132.00D.

KSB Kernkraftwerkspumpen GmbH: *See—*
Klein, Johannes; Schneider, Wolfgang; and Fetzer, Karl, 3,952,547.

Kube, Wolfram H. Process for the solution mining of subterranean sodium bicarbonate bearing ore bodies. 3,953,073, Cl. 299-5.000.

Kubik, Philip A. Variable speed and torque feed system. 3,952,513, Cl. 60-435.000.

Kubisiak, Helmut; and Sorgenicht, Dietrich, to Exatest Messtechnik. Method of and apparatus for measuring the thickness of objects. 3,953,736, Cl. 250-358.00R.

Kubota, Tomio: *See—*
Maruyama, Shoji; Kubota, Tomio; Kojima, Katue; Tamura, Hiroshi; and Harada, Masahide, 3,953,433.

Kubota, Yuichi: *See—*
Tokuoka, Yasumichi; Umeki, Shinji; and Kubota, Yuichi, 3,953,656.

Kudinov, Gennady Alexandrovich: *See—*
Bashinsky, Kazimir Dominikovich; Golod, Leonid Davidovich; Granovsky, Boris Ruvimovich; Dunaevsky, Leonid Markovich; Kasyanov, Grigory Ivanovich; and Kudinov, Gennady Alexandrovich, 3,953,008.

Kudo, Tetsuichi: *See—*
Obayashi, Hidehito; Gejyo, Tetsuo; and Kudo, Tetsuichi, 3,953,173.

Kuechler, Irvin R., to Vent-Cair, Inc. Apparatus and method for extracting grease and smoke, and method of installing the same. 3,952,640, Cl. 98-115.00K.

Kuhnke, Horst. Device for locking a framed picture to a wall. 3,952,436, Cl. 40-152.100.

Kuhns, Richard J., to Xerox Corporation. Bookbinder having resettable strip guides. 3,953,277, Cl. 156-360.000.

Kuipers, Egbert, to Hartmann & Braun Aktiengesellschaft. Polarized electro-magnetic relay. 3,953,814, Cl. 335-230.000.

Kulp, Rodney: *See—*
Fridolph, John; Wilson, Robert; and Kulp, Rodney, 3,952,749.

Kulyabko, Valery Anatolievich; Evstigneeve, Nikolai Andreevich; Petrov, Fedor Romanovich; Pleshivtsev, Anatoly Petrovich; Somov, Vasily Ivanovich; Cherkasov, Leonid Mikhailovich; Jusov, Mikhail Ivanovich; Sivkov, Alexandr Alexandrovich; and Lazarev, Robert Nikolaevich. Vacuum-and-pressure pneumatic conveying installation for pulverized materials. 3,953,077, Cl. 302-21.000.

Kumada, Akio, to Hitachi, Ltd. Domain switching element. 3,953,109, Cl. 350-160.00R.

Kummeke, Heinrich, to Wacker Werke KG. Thyristor circuit for conversion of direct current to alternating current. 3,953,784, Cl. 321-45.00C.

Kunter, Sona V.; and Harrison, Margaret, to Raymond Lee Organization, Inc., The, a part interest. Disposable bedpan device. 3,952,336, Cl. 4-112.000.

Kuppenbender, Georg: *See—*
Speth, Sebastian; Kuppenbender, Georg; and Jansen, Willi, 3,953,332.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Saito, Hatsuo; Shiiki, Zenya; and Nakao, Masaaki, 3,953,345.

Kurisu, Shizuka: *See—*
Kawase, Shoji; Shima, Takeo; Inata, Hiroo; and Kurisu, Shizuka, 3,953,539.

Kuriyama, Yasuhisa: *See—*
Sugano, Junichiro; Kuriyama, Yasuhisa; Ishiuchi, Yukio; and Minamikawa, Yoshitugu, 3,953,482.

Kurkowski, Leonard S.; and Burris, Clarence C. Remote control trim balancer. 3,952,612, Cl. 74-573.00R.

Kuroki, Yoshiaki: *See—*
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Martin, Fred David; and Guilbault, Lawrence James, to Calgon Corporation. Petroleum recovery process. 3,953,342, Cl. 252-8.55D.
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Matsubara, Kiyoshi, to Agency of Industrial Science & Technology. Method for ionization electrostatic plating. 3,953,619, Cl. 427-39.000.
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May, Max, to Sandoz Ltd. Improvements in or relating to organic compounds. 3,953,163, Cl. 8-94.260.
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McKinstry, Richard Bruce; and Godbout, Joseph Charles, to Data General Corporation. Tape transport system. 3,952,968, Cl. 242-182.000.
McMahan, W. Glenn, to Raymond Lee Organization, Inc., The, a part interest. Temperature registering faucet attachment. 3,952,594, Cl. 73-349.000.
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Michaelis, Eduard M., to Vereinigte Osterreichische Eisenund Stahlwerke. Process for refining pig iron. 3,953,199, Cl. 75-60.000.
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Miyazaki, Tsutomu; Kato, Takashi; Yoshizawa, Toshio; and Yamada, Yasuo, to Daiwa Boseki Kabushiki Kaisha; and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method and apparatus for continuously connecting a displaceable pneumatic conduit with a main pneumatic duct in a textile machine. 3,952,492, Cl. 57-34.500.
Miyazawa, Kenzo: *See—*
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Mizumura, Yutaka: *See—*
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Mizutani, Hiroshi; Abe, Miwako; and Nakasone, Yumio, to Kao Soap Co., Ltd. Acidic cleaning composition. 3,953,352, Cl. 252-142.000.
Mizutani, Yukio; Shikata, Kazuo; Nakamura, Shunichi; and Yoshimizu, Michio, to Tokuyama Soda Kabushiki Kaisha. Process for producing flame-retardant shaped articles of thermoplastic synthetic resins. 3,953,565, Cl. 264-210.00F.
Mobil Oil Corporation: *See—*
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Molitor, Edwin A., to Multifold-International, Inc. Device for delivering pads to a bundling machine. 3,952,882, Cl. 214-6.00D.
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Emond, Joseph Maurice; and Haigh, James Dawson, 3,953,226.
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Monfroy, Henri; and Reboul, Jean Philippe, to Thomson-CFS. New matrix for gas discharge display panels. 3,953,756, Cl. 313-220.000.
Monpetit, Louis, to Societe des Procedes Modernes d'Injection Sopromi. Control apparatus and process for combustion engines. 3,953,715, Cl. 235-150.210.
Monpetit, Louis, to Agence Nationale de Valorisation de la Recherche (ANVAR). Control apparatus and process for combustion engines. 3,953,716, Cl. 235-150.210.
Monsanto Company: *See—*
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Monte, Alexander A.; and Chiang, Ching, to Mallinckrodt, Inc. Transaminase assay. 3,953,294, Cl. 195-103.50R.
Monte, Alexander A.; and Chiang, Ching, to Mallinckrodt, Inc. Reagent formulations for glucose assay. 3,953,295, Cl. 195-103.50R.
Montecatini Edison S.p.A.: *See—*
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United States of America, National Aeronautics and Space Administration; Wortman, Jimmie J.; Donovan, Robert P.; Brooks, Arthur D.; Monteith, Larry K.; Kinard, William H.; and O'Neil, Robert L., 3,953,792.
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Mooney, Edward L. Precast wall panel and building erected on site therefrom. 3,952,471, Cl. 52-602.000.
Moore, Phillip M., to Motorola Inc. Digital phase detector. 3,953,794, Cl. 324-83.00D.

Moore, Ronald D.; and Bethel, Everett L., to Chivas Products Limited. Strap fitting for automobile interior and other uses. 3,952,383, Cl. 24-265.00R.

Moore, Sheldon John; and Day, Larry S. Independently reversible segments and random selection means therefor. 3,953,032, Cl. 273-135.00R.

Morell, Juan Coll. Conical wedges for gripping multi-ply rope or cable. 3,952,377, Cl. 24-136.00R.

Moret, Michel Antoine; Jousson, Pierre-Jean; and Musy, Jean-Pierre, to 4 P Limited. Hand-operated body care appliance. 3,952,736, Cl. 128-66.000.

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Morgan, Lawrence M., to Cornelius Company, The. Collapsible stacking cart. 3,953,047, Cl. 280-639.000.

Morgenthaler, Eugen; and Seewer, Ruedi, to Seewer AG. Method of and apparatus for the transverse folding of dough band sections. 3,953,613, Cl. 426-502.000.

Morgret, Gordon Lawrence: *See—*
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Mori, Takashi; Takaku, Sakae; Osugi, Yoshiyuki; Matsuno, Takashi; and Tomizawa, Shogo, to Chugai Seiyaku Kabushiki Kaisha. Bis(-benzamido)-benzoic acid derivatives. 3,953,496, Cl. 260-471.00R.

Mori, Yasuo: *See—*
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Morimoto, Katsuhide: *See—*
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Morris, George F.; Babcock, David L.; and Peterson, Eugene A., to Edmac Associates Inc. Adjacent channel rejector. 3,953,802, Cl. 325-474.000.

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Morton, Edwin G.: *See—*
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Moscowitz, Samuel: *See—*
Wirtschafter, Jonathan D.; Zauberman, Juan L.; and Moscowitz, Samuel, 3,952,735.

Moss, Ernest K., to Celotex Corporation, The. Phenolic polymer, related products and processes thereof. 3,953,645, Cl. 428-310.000.

Mostosi, Angelo, to Sace S.p.A. Construzioni Elettromeccaniche. Current-limiting electric switch exempt from bumps in the opening stage. 3,953,811, Cl. 335-16.000.

Motch & Merryweather Machinery Company, The: *See—*
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Copeland, Ben H.; and Schaffert, Richard L., 3,952,403.
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Vest, Clovis R., 3,952,405.

Moucka, Emil. Gravity weight trigger for a life raft. 3,952,350, Cl. 9-11.00A.

Moulds, John W., to General Motors Corporation. Fuel metering rod positioning means. 3,953,549, Cl. 261-50.00A.

Mower, Morton M.: *See—*
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Mrozik, Helmut H., to Merck & Co., Inc. Anthelmintic substituted sulfonamide derivatives. 3,953,492, Cl. 260-465.00E.

Muchnick, Bruce. Throw and catch toy. 3,953,030, Cl. 273-95.00R.

Mueller, Richard J.: *See—*
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Mukai, Kunio: *See—*
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Muller, Dietrich; Blichenberg, Hans-Jurgen; Schmidt, Dieter; Focke, Heinz; and Liedtke, Kurt, to Focke & Pfuhl. Cigarette packet of laminated sheeting and method for the production thereof. 3,952,868, Cl. 206-273.000.

Muller, Wolfgang; and Witzke, Lothar, to Th. Goldschmidt AG. Process for the treatment of carburizing salt wastes. 3,953,570, Cl. 423-155.000.

Muller, Wolfgang; and Witzke, Lothar, to TH. Goldschmidt AG. Process for the treatment of carburizing salt wastes. 3,953,571, Cl. 423-155.000.

Multifold-International, Inc.: *See—*
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Muntz, Eric P.; and Welkowsky, Murray S., to Xonics, Inc. Electrostatic image developing process. 3,953,618, Cl. 427-21.000.

Murakami, Masuo; Isaka, Ichiro; Koda, Akio; Kawahara, Norio; Ashiwagi, Teruya; Murakami, Yukiyasu; Yano, Kuniichiro; Nakano, Kohzi; and Souzo, Isao, to Yamanouchi Pharmaceutical Co., Ltd. Ampicillin derivatives substituted by heterocyclic acyl group. 3,953,428, Cl. 260-239.100.

Murakami, Masuo; Takahashi, Kozo; and Ozasa, Teruaki, to Yamanouchi Pharmaceutical Co., Ltd. Process of preparing cephalosporanic acid ester derivatives. 3,953,437, Cl. 260-243.00C.

Murakami, Nanami: *See—*
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Murakami, Yukiyasu: *See—*
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Murphy, Charles Vincent; and Zunker, David William, to Du Pont de Nemours, E. I., and Company. Aqueous emulsions containing homogeneous particles of cellulosic ester/acrylic polymers. 3,953,386, Cl. 260-17.00A.

Musy, Jean-Pierre: *See—*
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Myers, Elman B., deceased; and by Myers, Marian M., administratrix. Composition and method for separating bituminous constituents from bituminum-bearing sands. 3,953,317, Cl. 208-11.0LE.

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Naf, Ferdinand, to Firmenich S.A. Ethyl-2-trans-4-cis undecadienoate, ethyl-2-trans-4-cis dodecadienoate and ethyl-2-decadienoate perfume compositions. 3,953,377, Cl. 252-522.000.

Nagamine, Seiichi: See—
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Nagashima, Toshio; Imaguchi, Ichiro; and Igarashi, Shigeo, to Kokusai Electric Co., Ltd. Sealed container housing a mechanical filter. 3,953,662, Cl. 174-17.050.

Nagayama, Masuzo: *See—*
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Nagel, Manfred; and Seuss, Rainer, to Akzona Incorporated. Composite thread. 3,952,496, Cl. 57-144.000.

Nagumo, Shin-Ichi; and Yuta, Tatuhiro, to Nissan Motor Company Limited. Lifter mechanism for spring-loaded valve. 3,952,995, Cl. 251-232.000.

Najer, Henry: *See—*
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Nakagawa, Kazuyuki; Yoshizaki, Shiro; Murakami, Nanami; and Mori, Hideo, to Otsuka Pharmaceutical Co., Ltd. Carbostyril derivatives and process for preparing the same. 3,953,456, Cl. 260-288.00R.

Nakai, Hidekazu. Device for inserting partition lattice in carton. 3,952,633, Cl. 93-37.00R.

Nakai, Mamoru: *See—*
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Nakamoto, Soichi: *See—*
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Nakamura, Shunichi: *See—*
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Nakamura, Tadao; Detwiler, Barry C.; and Marchetti, John A., to Matsushita Electric Industrial Co., Ltd. Tuning indicator for a radio frequency receiver. 3,953,800, Cl. 325-455.000.

Nakano, Hideaki; Ozu, Tadahiro; and Okayama, Takashi, to Kawasaki Jukogyo Kabushiki Kaisha. Elastic coupling. 3,952,546, Cl. 64-27.0NM.

Nakano, Kohzi: *See—*
Murakami, Masuo; Isaka, Ichiro; Koda, Akio; Kawahara, Norio; Ashiwagi, Teruya; Murakami, Yukiyasu; Yano, Kuniichiro; Nakano, Kohzi; and Souzo, Isao, 3,953,428.

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Nalco Chemical Company: *See—*
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Narushima, Uraji, to Nippon Paint Co., Ltd. Surface treatment composition for metal working. 3,953,344, Cl. 252-32.70E.

National Research Development Corporation: *See—*
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Nazuka, Iwao, to Bunri Kogyo Kabushiki Kaisha. Magnetic substance conveying apparatus. 3,952,857, Cl. 198-41.000.

Neeb, Karl-Heinz; Stockert, Heinz; and Fuchs, Armin, to Kraftwerk Union Aktiengesellschaft. Method and apparatus for monitoring radioactive particles carried by a flowing liquid. 3,953,737, Cl. 250-432.00R.

Negley, Marvin C., to Lisle Corporation. Drill grinder. 3,952,459, Cl. 51-219.00R.

Nelson, Alfred Dwayne; and Goken, Garold L., to Minnesota Mining and Manufacturing Company. Adhesively bonded rail joint. 3,952,948, Cl. 238-243.000.

Nelson, Douglas G. Pulp screen with rotating cleaning foil. 3,953,325, Cl. 209-273.000.

Nelson, Fred W.: *See—*
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Nelson, Rodney L. Laser beam golf swing training device. 3,953,034, Cl. 273-186.00C.

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Newton, David Francis: *See—*
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Ney, Robert Johan. Solder sealed light bulb. 3,953,757, Cl. 313-222.000.

Ngo, Peter Dinh-Tuan, to Bell Telephone Laboratories, Incorporated. Planar raster scan display with gas discharge shift registers. 3,953,886, Cl. 358-56.000.

Nicholas, William: *See—*
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Nicholson, John Holt, to Plastic Seals Limited. Bushings, grommets or like devices. 3,953,665, Cl. 174-153.00G.

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Nieschulz, Otto; Rudiger, Gunther; and Maas, Jurgen, to Merck Patent Gesellschaft mit beschraenkter Haftung. Process for the production of allergen-containing extracts. 3,953,588, Cl. 424-12.000.

Nijman, John Peter; and Patterson, Terence Neil, to Bunker Ramo Corporation. Field termination tool having connector reference plane apparatus and hinged insertion arms. 3,952,392, Cl. 29-203.0MW.

Nilson, Billy. Self-closing closures. 3,952,926, Cl. 222-494.000.

Nilsson, Bruno Yngve, to Boliden Aktiebolag. Optimal determination of signals affected by interference or disturbance. 3,953,793, Cl. 324-76.00A.

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Nippen Shokubai Kogaku Kogyo Co. Ltd.: *See—*
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Nishioka, Matsuo; Takeyoshi, Yasuo; and Oka, Shunzo, to Matsushita Electric Industrial Company, Ltd. Variable resistor. 3,953,820, Cl. 338-89.000.

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Phillips, Stanley J., to Warner-Lambert Company. Automatic dispenser for periodically actuating an aerosol container. 3,952,916, Cl. 222-70.000.
Phillips, Stewart A. Automatic material feeding apparatus. 3,952,883, Cl. 214-8.50K.
Phone-Mate: *See—*
Buglewicz, Neal, 3,953,679.
Photo Systems, Inc.: *See—*
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Picard, Roland: *See—*
Astrauskas, Peter John; Blondin, Guy Michel; Picard, Roland; and Rigg, Carl Fredrik, 3,953,582.
Pichl, Heinz. Shaft protecting and propeller mounting sheath. 3,952,686, Cl. 115-17.000.
Pickerell, Fred T.; and Brignola, Dominic J., to West Company, The. Primary nurser assembly. 3,952,897, Cl. 215-11.00C.
Pickett, M. Frank: *See—*
Braun, John D.; Pickett, M. Frank; Gerrish, Howard W., Jr.; and Jonassen, Hans B., 3,953,260.
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Gindler, E. Melvin, 3,953,359.
Pike, John E.; and Schneider, William P., to Upjohn Company, The. 8,12-Dialkyl-PGE, and PGF$_{1\alpha}$. 3,953,499, Cl. 260-514.00D.
Pilling Co.: *See—*
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Pinckney Molded Plastics, Inc.: *See—*
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Soma, Hiroshi; Tamura, Yutaka; and Miyazawa, Kenzo, 3,952,834.
Pitel, Irving; Silverman, Richard S.; and Mueller, Richard J., to Rowe International, Inc. Delivery unit for helical feed merchandising machine. 3,952,915, Cl. 221-75.000.
Pittet, Rene E., Jr.; and Grant, Philip J., to Tekonsha Engineering Co. Towed vehicle electric brake control. 3,953,084, Cl. 303-24.00R.
Pittsburgh Corning Corporation: *See—*
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Platt International Limited: *See—*
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Platte, Howard J.: *See—*
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Kulyabko, Valery Anatolievich; Evstigneeve, Nikolai Andreevich; Petrov, Fedor Romanovich; Pleshivtsev, Anatoly Petrovich; Somov, Vasily Ivanovich; Cherkasov, Leonid Mikhailovich; Jusov, Mikhail Ivanovich; Sivkov, Alexandr Alexandrovich; and Lazarev, Robert Nikolaevich, 3,953,077.
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PMS Consolidated: *See—*
Pollard, Edward T., 3,953,218.
Po Wah Company: *See—*
Lee, Lurk Ming, 3,952,560.
Pocrnja, Anton; and Wenzel, Heribert, to Linde Aktiengesellschaft. Apparatus for defogging a roadway, landing strip or the like. 3,952,950, Cl. 239-14.000.
Podesva, Ctirad; Scott, William T.; and Henson, David W., to Delmar Chemicals Limited. Piperazino-anilido compounds. 3,953,448, Cl. 260-268.0BZ.
Podlesnykh, Petr Ivanovich: *See—*
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Podowski, Robert R., to Zenith Radio Corporation. Receiver digital control system. 3,953,801, Cl. 325-464.000.

Poitras, Edward J.; and Wlodyka, Edwin W., to Highland Laboratories. Fluid dispenser apparatus. 3,952,918, Cl. 222-82.000.
Pokras, Norman M.: *See—*
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Blinow, Igor, 3,952,835.
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Hoffman, Arnold, 3,953,242.
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Pollard, Edward T., to PMS Consolidated. Pigment dispersion. 3,953,218, Cl. 106-19.000.
Polska Akademia Nauk Instytut Chemii Organicznej: *See—*
Belzecki, Czeslaw; Tomasik, Witold; and Trojnar, Jerzy, 3,953,512.
Polsky, Robert A. Bicycle shoe. 3,952,428, Cl. 36-131.0WI.
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Polysius AG: *See—*
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Porsche Design: *See—*
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Porsche, Ferdinand Alexander; and Scholpp, Werner, to Porsche Design. Safety passenger seat apparatus. 3,953,068, Cl. 297-216.000.
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Potter, John M. Portable floating wave tripper. 3,952,521, Cl. 61-5.000.
Potter, Ralph A.; and Tennery, Victor J., to United States of America, Energy Research and Development Administration. Preparation of uranium nitride. 3,953,355, Cl. 252-301.10R.
PPG Industries, Inc.: *See—*
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Dowbenko, Rostyslaw; and Chang, Wen-Hsuan, 3,953,391.
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Prengaman, Raymond D., to St. Joe Minerals Corporation. Method of fabricating stable wrought lead-calcium-tin alloys by means of cold working. 3,953,244, Cl. 148-2.000.
Presto Lock Company: *See—*
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Preston, Ian; and Davidtz, John Charles, to Mandoval Vermiculite (Proprietary) Limited. Vermiculite products produced by exfoliation pulverization and calcination. 3,953,357, Cl. 252-378.00R.
Price, Anthony George: *See—*
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Price, Connor E.; and Derner, William J., to FMC Corporation. Wedge mounted machine element. 3,953,142, Cl. 403-371.000.
Price, David D. Storage rack for papers. 3,952,876, Cl. 211-50.000.
Prince, Paul R., to Hughes Aircraft Company. Adaptive video centroid tracker. 3,953,670, Cl. 178-6.800.
Pringle, William L., to United States Steel Corporation. Disc brake wear take-up. 3,952,841, Cl. 188-71.800.
Procter & Gamble Company, The: *See—*
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Kemp, Clifford B., 3,953,638.
MacMillan, Francis S. Kilmer; and Lyness, Warren I., 3,953,599.
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Youngquist, Rudolph William, 3,953,611.
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Chandross, Edwin Arthur; Pryde, Coralie Anne; Tomlinson, Walter John, III; and Weber, Heinz Paul, 3,953,620.
Pryor, Michael J.; Crane, Jacob; Friedman, Sam; and Shapiro, Eugene, to Olin Corporation. Copper base alloy. 3,953,249, Cl. 148-32.500.
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Pulak, Richard P., to Universal Oil Products Company. Regeneration apparatus. 3,953,175, Cl. 23-288.00B.
Pullman Incorporated: *See—*
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Pulsepower Systems, Inc.: *See—*
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Sheppard, Richard H., 3,952,756.
Puskas, Imre; and Cengel, John A., to Standard Oil Company. Polybutene composition containing halo-carbonyl additives. 3,953,475, Cl. 260-346.80R.
Putman, Thomas H., to White-Westinghouse Corporation. Automatic expansion valve for refrigerant. 3,952,535, Cl. 62-222.000.
Pyzel, Ewald D.; and Codding, Harold E., to Ski Safe Inc. Touring ski boot heel binding. 3,953,042, Cl. 280-631.000.
Quaintance, Harold J.; and Wainer, Eugene, to Horizons Incorporated. Process for making indicia bearing anodized article. 3,953,625, Cl. 427-258.000.
Quate, Calvin F.: *See—*
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Queen, David Stewart; Bell, Peter William; Dick, Thomas Hutcheson; and Edgar, John Black, to Sidlaw Industries Limited. Method of making composite fabric. 3,953,269, Cl. 156-79.000.
Quick, Donald Jonathon, to Massey-Ferguson Services N.V. Butt lifting roller for sugar cane harvesters. 3,952,482, Cl. 56-13.900.
Quinn, James J.: *See—*
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Raetz, Dieter; and Luderer, Fred, to Ernst Mueller K.G., Firma. Apparatus for electrostatically coating objects with liquid, solid in liquid, and/or powder-like material. 3,952,951, Cl. 239-15.000.
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Ramlow, Gerhard G.; Pizzini, Louis C.; and Patton, John T., Jr., to BASF Wyandotte Corporation. Low temperature process for the preparation of graft copolymer dispersions. 3,953,393, Cl. 260-31.80R.
Ramsay, James: *See—*
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Rank Organisation Ltd., The: *See—*
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Rao, Bhaskara M. L.; and Schlaikjer, Carl R., to P. R. Mallory & Co. Inc. Prevention of dendritic plating of lithium. 3,953,302, Cl. 204-14.00N.
Rapun, Raul: *See—*
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Rasmussen, Robert T. C., to Kawecki Berylco Industries, Inc. Phosphorus-bearing master composition for addition to hyper-eutectic silicon-aluminum casting alloys and process therefor. 3,953,202, Cl. 75-148.000.
Ratering, Hans Werner: *See—*
Baur, Edmund; Holdt, Bernd-Dieter; Ratering, Hans Werner; Thesing, Georg; and Turk, Erich, 3,952,339.
Ratzel, Neil F.: *See—*
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Raupach, Friedrich. Cast-resin insulated instrument transformer, in particular potential transformer. 3,953,815, Cl. 336-90.000.
Rausing, Ruben A. Packing container intended in particular for pressurized contents. 3,952,900, Cl. 215-232.000.
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Recherche et Industrie Therapeutiques (R.I.T.): *See—*
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Redman, Charles M., to United States of America, Army. Radar test facility communication system. 3,953,850, Cl. 343-17.700.
Reed, Dale H.; and Franklin, Alpheus A., to Atlantic Richfield Company. Method and apparatus for generating pressure waves in water by implosion. 3,952,833, Cl. 181-118.000.
Reed, Marion G.: *See—*
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Reichart, Louis W., Jr., to Xerox Corporation. Articulated development apparatus. 3,953,121, Cl. 355-3.0DD.
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Reichert, Donald G., to ABC Packaging Machine Corporation. Case erector. 3,952,636, Cl. 93-53.0SD.
Reimann, Christian; Weber, Hugo; and Ueth, Ewald, to J. & J. Marquardt. Actuator construction having releasable lock in actuated and deactuated positions. 3,953,696, Cl. 200-157.000.
Reimann, Hans. Oxygen aeration system for contaminated liquids. 3,953,326, Cl. 210-7.000.
Reinitz, Willard O., to Safetran Systems Corporation. Cantilever arm signal assembly. 3,952,978, Cl. 246-477.000.
Reisman, Emeric. Watch cases, dials and bezels. 3,952,499, Cl. 58-88.00R.
Remond, Jean-Pierre; Vitat, Jean-Claude; and Thebault, Jean-Robert, to Rhone-Progil. Composition containing diamide and halocarbon for treatment of surfaces. 3,953,381, Cl. 252-544.000.
Renold Limited: *See—*
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Rexar Industries, Inc.: *See—*
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Rhodes, William A. Oscillatory saw. 3,952,412, Cl. 30-166.00R.
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Rice, Edward K. Method of assembling building structures. 3,952,474, Cl. 52-747.000.
Rice, Lyman A., to Armor Elevator Company. Signaling system for an elevator. 3,952,837, Cl. 187-29.00R.
Rich, Dennis E. Grinder apparatus for wheat, grains, and the like. 3,952,958, Cl. 241-162.000.
Richard Heinze, Firma: *See—*
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Richard Marine Limited: *See—*
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Richardson, Edward Gregory, to National Research Development Corporation. Fire protection systems. 3,952,808, Cl. 169-61.000.
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Richt, O. Hubert. Transport system for magnetic tape recorder and reproducer sets, particularly for cassette magnetic tape recorders. 3,952,932, Cl. 226-49.000.
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Richter, Sidney B.; and Kyker, Glendon D., to Velsicol Chemical Corporation. N-(halobenzoyl)-3,4-dibromohexahydrophthalimides. 3,953,397, Cl. 260-45.75B.
Ricoh Co., Ltd.: *See—*
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Riddel, John W., to General Motors Corporation. Orbital vane rotary machine. 3,952,709, Cl. 123-8.310.
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Rigoli, Mario. Apparatus for quick freezing of aqueous solutions or suspensions to be submitted to lyophilization. 3,952,541, Cl. 62-381.000.
Ring, Thomas F., to P. R. Mallory & Co. Inc. Variable speed drive means. 3,952,607, Cl. 74-393.000.
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Rivetta, Gianfranco; and Castracani, Guido, to Societa Italiana Telecommunicazioni Siemens S.p.A. Terminal clip for micromodule. 3,953,102, Cl. 339-258.00R.
Rizzo, Rudolph R.; and Julian, Gabriel L., to Flexicade Ltd. Highway barricade. 3,952,690, Cl. 116-63.00P.
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Roberts, David B., Jr. Persistence test apparatus. 3,952,422, Cl. 35-22.00R.
Roberts, David E.; and Wind, Robert H., to General Motors Corporation. Dual rate valve assembly. 3,952,993, Cl. 251-20.000.
Roberts, Raymond J., to Consarc Corporation. Method and apparatus for casting a plurality of ingots. 3,952,792, Cl. 164-52.000.
Roberts, William Gary; and Burns, Robert, to Triplex Safety Glass Company Limited. Laminated transparent assemblies. 3,953,630, Cl. 428-38.000.
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Robinson, Jack Randall; and Hilton, Roger T., to General Tire & Rubber Company, The. Apparatus for handling and spinning tires at a trimming station. 3,952,892, Cl. 214-340.000.
Robinson, Leonard W., to Woodall Industries Inc. Resin impregnated mats and method of making the same. 3,953,632, Cl. 428-95.000.
Robinson, William Henry, to New Zealand Inventions Development Authority. Torsional extrusion energy absorber or extrusion torque limiter. 3,953,012, Cl. 267-154.000.
Rocha, Dominica R. Cord reel and writing pad attachment for telephones. 3,953,688, Cl. 179-147.000.
Rock, Erich; and Mages, Bernhard, to Blum Gesellschaft m.b.H. Hinge device. 3,952,366, Cl. 16-129.000.
Rockefeller, Winston G., to Colgate-Palmolive Company. Dispensing container manufacturing apparatus and methods. 3,952,676, Cl. 113-1.00B.
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Roitz, Nicholas Joseph; and Steinberg, Harold Eugene, to Mattel, Inc. Camera viewer toy. 3,953,104, Cl. 350-4.000.
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Roth, Walter L.; and Farrington, Gregory C., to General Electric Company. Sealed lithium-reducible phosphorous oxyhalide cell. 3,953,229, Cl. 136-6.0FS.
Roth, Walter L.; and Farrington, Gregory C., to General Electric Company. Sealed lithium-reducible metal salt cell. 3,953,232, Cl. 136-6.0LN.
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Sekiguchi, Kouichi, to Iwasaki Tsushinki Kabushiki Kaisha. AC wave switching circuit using at least one switching transistor. 3,953,747, Cl. 307-253.000.
Sekimoto, Kunio: *See—*
Arimura, Ichiro; Taniguchi, Hiroshi; and Sekimoto, Kunio, 3,953,882.
Seko, Akira: *See—*
Iino, Hiroyasu; Seko, Akira; Tsujimura, Harutoshi; Oka, Takashi; Ogawa, Naoki; and Tsuda, Hiroshi, 3,953,095.
Seko, Maomi; and Kakihana, Hidetake. Method of simultaneous concentration and dilution of isotopes. 3,953,568, Cl. 423-7.000.
Seko, Maomi; and Kakihana, Hidetake. Concentration of uranium 235 in mixtures with uranium 238 using ion exchange resins. 3,953,569, Cl. 423-7.000.
Selonke, Fritz; and Bornfleth, Ulrich, to Hauni-Werke Korber & Co., KG. Apparatus for direct and circuitous transport of cigarettes or the like from manufacturing to processing machines. 3,952,854, Cl. 198-20.00C.
Seminario, Ezekiel. Valve core extraction tool. 3,952,394, Cl. 29-263.000.
Semonsky, Miroslav: *See—*
Zikan, Viktor; Semonsky, Miroslav; Rezabek, Karel; Seda, Miroslav; and Auskova, Marie, 3,953,454.
Seragnoli, Enzo, to G. D Societa per Azioni. Apparatus for accumulating and supplying sheets. 3,953,021, Cl. 271-3.100.
Sery, Jacques; and Couture, Serge Andre Emmanuel, to Compagnie Honeywell Bull (Societe Anonyme). Character printing device. 3,952,648, Cl. 101-93.140.
Seuss, Rainer: *See—*
Nagel, Manfred; and Seuss, Rainer, 3,952,496.
Sfeir, Alberto: *See—*
Schmidt, Pablo; and Sfeir, Alberto, 3,953,004.
Shacreaw, George: *See—*
Ketler, Albert E.; Campbell, Ronald P.; and Shacreaw, George, 3,953,725.
Shannon, Edward J., Jr. Offset plate rack and holders. 3,953,065, Cl. 294-1.00R.
Shapiro, Allen L., to Technology Marketing Incorporated. Microprogrammable computer having a dual function secondary storage element. 3,953,833, Cl. 340-172.500.
Shapiro, Eugene: *See—*
Pryor, Michael J.; Crane, Jacob; Friedman, Sam; and Shapiro, Eugene, 3,953,249.
Shapiro, Stephen I.; and Ertingshausen, Gerhard, to Union Carbide Corporation. Method and apparatus for assaying liquid materials. 3,953,172, Cl. 23-230.00R.
Sharman, Samuel H.: *See—*
Straus, Alan E.; Sweeney, William A.; House, Ralph; and Sharman, Samuel H., 3,953,338.
Sharp Kabushiki Kaisha: *See—*
Fujimoto, Isao; Kasubuchi, Takeshi; and Aiba, Masahiko, 3,953,860.
Matunami, Mituo, 3,952,404.
Sharychenkov, Alexandr Alexeevich. Open-end spinning frame. 3,952,491, Cl. 57-34.00R.
Shaw, Jack; and Lane, Robert, to Platt International Limited. Textile yarn processing. 3,952,959, Cl. 242-18.0PW.
Shell Oil Company: *See—*
Brundrit, Dennis R.; and van Wijnen, Jacobus C., 3,953,826.
Deal, Carl H.; and Garnett, Stephen H., 3,953,324.
Templeton, Charles C.; Street, Evan H., Jr; and Richardson, Edwin A., 3,953,340.
Shemano, Irving, to Richardson-Merrell Inc. Pharmaceutically useful oxygen containing heterocyclic derivatives. 3,953,602, Cl. 424-283.000.
Sheppard, Richard H., to Purex Corporation. Semi automatic parts cleaning machine. 3,952,756, Cl. 134-133.000.
Sherman, Philip Leland: *See—*
Gledhill, William; and Sherman, Philip Leland, 3,952,431.
Sherwood, Charles D.: *See—*
Parsons, Hubert J.; and Sherwood, Charles D., 3,952,693.
Shettel, Ralph E. Irrigation systems automation. 3,952,522, Cl. 61-29.000.
Shibata, Kenichi: *See—*
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Shifrin, Lev Notovich: *See—*
Bron, Osip Borisovich; Molchanov, Valentin Danilovich; Shifrin, Lev Notovich; and Freivald, Adolf Rudolfovich, 3,953,695.
Shiiki, Zenya: *See—*
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Shiino, Kazuo: *See—*
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Shikata, Kazuo: *See—*
Mizutani, Yukio; Shikata, Kazuo; Nakamura, Shunichi; and Yoshimizu, Michio, 3,953,565.

Shillingford, Thomas H. Shoreline retaining wall. 3,952,520, Cl. 61-4.000.

Shillinglaw, Clifford A.: *See—*
Gupta, Ashis S.; and Shillinglaw, Clifford A., 3,953,615.

Shima, Takeo; Urasaki, Takanori; and Omae, Iwao, to Teijin Limited. Process for the preparation of alkenylbenzenes. 3,953,535, Cl. 260-668.00B.

Shima, Takeo: *See—*
Kawase, Shoji; Shima, Takeo; Inata, Hirpo; and Kurisu, Shizuka, 3,953,539.

Shima, Yoshio: *See—*
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Shimizu, Kazuaki: *See—*
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Shimomura, Hiroaki: *See—*
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Shin, Hyunkook, to Du Pont de Nemours, E. I., and Company. Firing process for alumina yarn. 3,953,561, Cl. 264-57.000.

Shinagawa, Kiminari; Hishiyama, Sadao; Ito, Shinichi; Kayama, Kunifusa; and Taniguchi, Satoshi, to Hitachi Heating Appliances Co., Ltd., The. Gas sensor. 3,952,567, Cl. 73-23.000.

Shinomiya, Tokuo: *See—*
Tabara, Yoshijiro; Akiyama, Hiroshi; Igawa, Masayuki; Maekawa, Tadashi; and Shinomiya, Tokuo, 3,953,282.

Shiraishi, Ippei: *See—*
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Shirakawa, Kin-ichi: *See—*
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Shoberg, John T.: *See—*
Meredith, Ronald D.; and Shoberg, John T., 3,953,768.

Shock, John P. Ultrasonic cataract removal method and apparatus. 3,952,732, Cl. 128-24.00A.

Shoketsu Kinzoku Kogyo Kabushiki Kaisha: *See—*
Ogata, Syunshi, 3,952,775.

Shovers, Aaron H.; and Pokras, Norman M. Bone implant. 3,952,414, Cl. 32-10.00A.

Showa Chemical Co., Ltd.: *See—*
Saotome, Minoru; Yamamoto, Yoshikazu; Watani, Nobuo; and Kayama, Ryuichi, 3,953,504.

Showa Deuko Kabushiki Kaisha: *See—*
Takezoe, Shoichiro; Ogawa, Masao; and Nakamura, Junichi, 3,953,540.

Shull, William A., to Liconix. Laser mirror mounting device. 3,953,113, Cl. 350-288.000.

Shults, George D. Mechanized service bar. 3,953,091, Cl. 312-223.000.

Shuman, Richard F., to Merck & Co., Inc. Preparation of (3-trifluoromethylphenoxy)(4-chlorophenyl)acetonitrile. 3,953,490, Cl. 260-465.00F.

Sickman, Mark Harold: *See—*
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Siddiqui, Nadeem U.: *See—*
Oshida, Otto A.; Gilmour, John B.; and Siddiqui, Nadeem U., 3,952,830.

Sidlaw Industries Limited: *See—*
Queen, David Stewart; Bell, Peter William; Dick, Thomas Hutcheson; and Edgar, John Black, 3,953,269.

Siemens Aktiengesellschaft: *See—*
Brunner, Julius; Schwendtner, Manfred; and Steinmuller, Gunter, 3,953,795.
Huttner, Robert; and Kutterer, Gerhard, 3,953,738.
Keller, Wolfgang, 3,953,796.
Luttgert, Hans; and Kohler, Werner, 3,953,698.
Schabert, Hans-Peter; Weber, Robert; and Bauer, Artur, 3,952,885.
Scheibel, Karl-Heinz; Miheilowitsch, Nikolaus; and Goerndt, Heinz, 3,953,699.
Sigusch, Reiner; and Widmann, Dietrich, 3,953,877.
Urankar, Laxmikant, 3,952,668.

Siemens Atkiengesellschaft: *See—*
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Sievertsson, Hans: *See—*
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Signetics Corporation: *See—*
Russell, Lewis K., 3,953,866.

Signode Corporation: *See—*
Antepenko, Robert F., 3,952,961.

Sigusch, Reiner; and Widmann, Dietrich, to Siemens Aktiengesellschaft. Semiconductors covered by a polymeric heat resistant relief structure. 3,953,877, Cl. 357-72.000.

Sill, Arthur D.: *See—*
Meyer, Donald R.; and Sill, Arthur D., 3,953,455.

Silverman, Richard S.: *See—*
Pitel, Irving; Silverman, Richard S.; and Mueller, Richard J., 3,952,915.

Simon-Carves Limited: *See—*
Turner, Frederick Henry, 3,952,531.

Simonin, Jean Lucien: *See—*
Bernard, Jean-Paul; Brussieux, Pierre Jules Henry; Jumelle, Louis Francois; and Simonin, Jean Lucien, 3,952,831.

Simpson, Harry Elwood, to Dresser Industries, Inc. Apparatus for borehole drilling. 3,952,799, Cl. 166-116.000.

Sindt, Melvin R., to Boeing Company, The. Induction heater apparatus and system. 3,953,700, Cl. 219-10.790.

Sinfelt, John H., to Exxon Research and Engineering Co. Polymetallic cluster compositions useful as hydrocarbon conversion catalysts. 3,953,368, Cl. 252-466.0PT.

Singh, Prithipal; and Ullman, Edwin F., to Syva Company. Cyclic and polycyclic diazadioxides as quenchers and radical inhibitors. 3,953,444, Cl. 260-250.0AC.

Sintokogio, Ltd.: *See—*
Hijikata, Itsuo; and Terada, Hideto, 3,952,793.

Sipin, Anatole J. Regulated fluid pump. 3,953,152, Cl. 417-45.000.

Sirtl, Erhard; and Currin, Cedric G., to Dow Corning Corporation. Silicon solar cell array. 3,953,876, Cl. 357-60.000.

Sistino, Alphonse J., to Olin Corporation. Flattened spherical shot. 3,952,659, Cl. 102-42.00R.

Sivkov, Alexandr Alexandrovich: *See—*
Kulyabko, Valery Anatolievich; Evstigneeve, Nikolai Andreevich; Petrov, Fedor Romanovich; Pleshivtsev, Anatoly Petrovich; Somov, Vasily Ivanovich; Cherkasov, Leonid Mikhailovich; Jusov, Mikhail Ivanovich; Sivkov, Alexandr Alexandrovich; and Lazarev, Robert Nikolaevich, 3,953,077.

Sjogreen, Carl-Axel E., to Perstorp AB. Melts of polyhydric alcohols as stabilizers for vinyl chloride polymers. 3,953,358, Cl. 252-407.000.

Sjostrand, Jan Roland; and Zetterberg, Lars Henning, to U.S. Philips Corporation. Method and device for radio transmission of binary data signals. 3,953,798, Cl. 325-30.000.

Skelly Oil Company: *See—*
Flickinger, Earl Dan; and Buess, Charles Merlyn, 3,953,426.

SKF Industrial Trading and Development Co., B.V.: *See—*
Hallerback, Stig Lennart, 3,953,754.

SKF Nova A.B.: *See—*
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Ski Safe Inc.: *See—*
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Skinner, Keith Thomas: *See—*
Goldry, Philip Edward; and Skinner, Keith Thomas, 3,952,384.

Sliney, Harold E., to United States of America, National Aeronautics and Space Administration. Bearing material. 3,953,343, Cl. 252-12.000.

Slota, William P.: *See—*
Watkins, Bruce J.; Regan, Albert M.; and Slota, William P., 3,952,526.

Smith, Charles Norman: *See—*
Winrow, Donald; and Smith, Charles Norman, 3,953,274.

Smith, Curtis P.; and Scott, Peter H., to Olin Corporation. Method for the preparation of alkoxyanilines. 3,953,510, Cl. 260-580.000.

Smith, Daniel J.: *See—*
Patarcity, Adam J.; and Smith, Daniel J., 3,953,006.

Smith, Donald L., to Caterpillar Tractor Co. Antiskid control system. 3,953,082, Cl. 303-21.00A.

Smith, Gary L.; and Cockrell, Walter T., to J. P. Stevens & Co., Inc. Sticker applicator. 3,953,278, Cl. 156-361.000.

Smith, Joseph A., to Allied Chemical Corporation. Process for the Preparation of Lactams. 3,953,438, Cl. 260-239.3A.

Smith Kline & French Laboratories Limited: *See—*
Durant, Graham John; Emmett, John Colin; Ganellin, Charon Robin; and Prain, Hunter Douglas, 3,953,460.

Smith, Peter H.: *See—*
Wilson, Thomas L.; Loring, Charles M., Jr.; and Smith, Peter H., 3,952,421.

Smith, Sven Robert E:son: *See—*
Sandberg, Sven Olof; and Smith, Sven Robert E:son, 3,952,558.

Smith, Thomas A. Rotary engine. 3,953,156, Cl. 418-35.000.

Smith, Warren H.; Taylor, William L.; and Turner, Harold L., to United States of America, Energy Research & Development Administration. Method of producing encapsulated thermonuclear fuel particles. 3,953,617, Cl. 427-6.000.

SmithKline Corporation: *See—*
Gleason, John Gerald, 3,953,439.
Pfeiffer, Francis R., 3,953,422.

Smyrl, Kenneth E., to Dresser Industries, Inc. Sand control for treating wells with ultra high-pressure zones. 3,952,804, Cl. 166-278.000.

Snam Progetti, S.p.A.: *See—*
Ginnasi, Alessandro; Vetere, Alessandro; and Martera, Pierantonio, 3,953,300.

Snell, Brian Kenneth; and Ghosh, Ranajit, to Imperial Chemical Industries Limited. Esterified 2-amino pyrimidine derivatives. 3,953,447, Cl. 260-256.40C.

Snow, A. Ray. Combined knob and permutation lock assembly for door latches. 3,952,562, Cl. 70-146.000.

Snyder, Richard F.: *See—*
Leathley, Burton R.; Garrison, Clifford L.; Garrison, Rollo L.; and Snyder, Richard F., 3,952,456.

Snyder, William Earl, to Procter & Gamble Company, The. Fatty acid, polysiloxane and water-soluble polymer containing skin conditioning emulsion. 3,953,591, Cl. 424-80.000.

Soblesky, John W., to Dale Products, Inc. Tube coupling. 3,953,058, Cl. 285-110.000.

Societa Italiana Telecommunicazioni Siemens S.p.A.: *See—*
Rivetta, Gianfranco; and Castracani, Guido, 3,953,102.

Societe Alsacienne de Constructions Mecaniques de Mulhouse: *See—*
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Societe Anonyme: Automobiles Citroen: *See—*
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Societe Anonyme Roure Bertrand Dupont: *See—*
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Corbier, Bernard Pierre; and Teisseire, Paul Jose, 3,953,515.
Corbier, Bernard Pierre; and Teisseire, Paul Jose, 3,953,516.

Societe Chimique, Routiere et d'Entreprise Generale (S.C.R.E.G.): *See—*
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Societe Civile D'Etudes et de Recherches pour L'Obtention de Fibres Minerales (S.E.R.O.F.I.M.): *See—*
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Societe des Procedes Modernes d'Injection Sopromi: *See—*
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Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Bernard, Jean-Paul; Brussieux, Pierre Jules Henry; Jumelle, Louis Francois; and Simonin, Jean Lucien, 3,952,831.

Sodastream Limited: *See—*
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Solartron Electronic Group Ltd., The: *See—*
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Solomons, William Ebenezer: *See—*
Mathison, Ian William; Solomons, William Ebenezer; and Jones, Raymond Henry, 3,953,458.

Soma, Hiroshi; Tamura, Yutaka; and Miyazawa, Kenzo, to Pioneer Electronic Corporation. Embedded type speaker with over lying grill. 3,952,834, Cl. 181-150.000.

Somerville Industries Limited: *See—*
Zimmerman, John, 3,952,941.

Sommer, August; and Urban, Martin, to Veba-Chemie Aktiengesellschaft. Process for the hydration of olefins to alcohols. 3,953,533, Cl. 260-641.000.

Somov, Vasily Ivanovich: *See—*
Kulyabko, Valery Anatolievich; Evstigneeve, Nikolai Andreevich; Petrov, Fedor Romanovich; Pleshivtsev, Anatoly Petrovich; Somov, Vasily Ivanovich; Cherkasov, Leonid Mikhailovich; Jusov, Mikhail Ivanovich; Sivkov, Alexandr Alexandrovich; and Lazarev, Robert Nikolaevich, 3,953,077.

Sone, Masao; Arai, Kojiro; and Nomura, Katsuaki, to Japan Exlan Company Limited. Acrylic synthetic fiber having animal hair-like hand. 3,953,651, Cl. 428-391.000.

Sonntag, Alois: *See—*
Goetzberger, Adolf; Schulz, Max; and Sonntag, Alois, 3,953,243.

Sono, Junji: *See—*
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Sopko, Riley M., to Sargent & Greenleaf, Inc. Electronic security control system. 3,953,769, Cl. 317-134.000.

Sorce, Peter S.; and Clifford, Earl W., to Aro Corporation, The. Laryngeal prosthesis. 3,952,335, Cl. 3-1.300.

Sorensen, Roy E., to Continental Can Company, Inc. Articulated air lead-in linkage for can body maker. 3,952,573, Cl. 72-342.000.

Sorgenicht, Dietrich: *See—*
Kubisiak, Helmut; and Sorgenicht, Dietrich, 3,953,736.

Souillard, Georges Jules; and Van Quaethoven, Frederic Francois, to Labofina S.A. Lubricating compositions. 3,953,179, Cl. 44-58.000.

Soum, Rene. Assembly of prefabricated prestressed concrete elements with the use of a poststressing link means. 3,952,468, Cl. 52-227.000.

Southern Illinois University Foundation: *See—*
Meyers, Cal Yale; and Matthews, Walter Sidney, III, 3,953,494.

Souzo, Isao: *See—*
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Sowards, Brian David, to Whirlpool Corporation. Apparatus for treating lint in an automatic washer. 3,953,146, Cl. 415-121.00B.

Spain, Stanley R., to Walter Kidde & Company, Inc. Spring-loaded wear pads for crane booms. 3,952,466, Cl. 52-118.000.

Spaller, Albert Edward, Jr., to Eastman Kodak Company. Electrolytic cell construction. 3,953,314, Cl. 204-272.000.

Spaller, Albert Edward, Jr., to Eastman Kodak Company. Electrolytic cell construction. 3,953,315, Cl. 204-272.000.

Spanoudis, Louis, to Owens-Illinois, Inc. Food service tray. 3,952,794, Cl. 165-2.000.

Sparton Corporation: *See—*
Boyle, Charles F., 3,953,829.

Spearman, Robert R. Underwater trenching and cable laying apparatus. 3,952,532, Cl. 61-72.400.

Specht, Dieter, to Interroll Fordertechnik GmbH & Co. KG. Plastic link for conveyor chain having optimal three dimensional mobility. 3,952,860, Cl. 198-189.000.

Speidel, John A. Process and apparatus for forming sheet metal structures. 3,952,574, Cl. 72-379.000.

Speidel, Mathias A.: *See—*
Erath, Robert L.; Speidel, Mathias A.; and Kennelly, Edward J., 3,952,349.

Sperry Rand Corporation: *See—*
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Jacobson, Peter E., 3,952,566.

Sperry Rand Limited: *See—*
Keerie, Donald; Hammond, John Anthony Gordon; and Hamey, Peter Michael, 3,953,819.

Speth, Sebastian; Kuppenbender, Georg; and Jansen, Willi, to Ruhrchemie Aktiengesellschaft. Purification of waste water containing organic and inorganic impurities. 3,953,332, Cl. 210-71.000.

Spicer, John William: *See—*
Warren, Brian Thomas; and Spicer, John William, 3,953,604.

Spicer, Larry Dean; Pensack, Joseph Michael; Wilbur, Robert Daniel; and Demkovich, Gary Michael, deceased (by Demkovich, Ruth Ellen, executrix), to American Cyanamid Company. Ureidotetralin compounds. 3,953,506, Cl. 260-553.00A.

Spicer, Larry Dean; Pensack, Joseph Michael; Wilbur, Robert Daniel; and Demkovich, Gary Michael, deceased (by Demkovich, Ruth Ellen, administratrix), to American Cyanamid Company. Compositions and method of using ureidotetralin compounds or derivatives thereof. 3,953,606, Cl. 424-322.000.

Spitz, Melvin P. Bed frame having releasably interlocked side rails and crossbars. 3,952,345, Cl. 5-207.000.

SPOFA, United Pharmeceutical Works: *See—*
Zikan, Viktor; Semonsky, Miroslav; Rezabek, Karel; Seda, Miroslav; and Auskova, Marie, 3,953,454.

Spry, Douglas O., to Eli Lilly and Company. 3,4-Dicarboxycephalosporins and derivatives. 3,953,436, Cl. 260-243.00C.

Spurr, Ronald Frederick; Boardman, Colin Alan; and Yewen, John D., to H. Tinsley & Co. Ltd. Apparatus for and method for testing the number of turns on a coil. 3,953,791, Cl. 324-34.00R.

Srinivasan, Kollengode V.: *See—*
Allan, John L.; Srinivasan, Kollengode V.; Readio, Philip D.; and Cestero, Judit, 3,953,304.

Staehlin, Paul M.; and Nicholas, William. Vehicle shock absorber. 3,953,011, Cl. 267-48.000.

Stafford, John P.: *See—*
Cuccio, Allen B. J.; and Stafford, John P., 3,953,835.

Stampfer, Michael; Graeber, Ewald; Oni, Helmut; and Ruede, Ernst, to Maschinenfabrik FAHR AG. Automatic steering system for row-crop harvester and sensor therefor. 3,952,828, Cl. 180-97.000.

Standard Oil Company: *See—*
Connolly, John F., 3,953,305.
Knobloch, James O.; and Ramirez, Fausto, 3,953,481.
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Lee, Richard J., 3,953,349.
Meguerian, Garbis H.; and Kaneko, Yasuo, 3,953,576.
Puskas, Imre; and Cengel, John A., 3,953,475.
Schaumburg, Ernest C.; and Larson, Robert K., 3,952,927.

Stanford Research Institute: *See—*
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Stanley, Robert K., to Textured Yarn Co., Inc. Strand treatment apparatus. 3,952,385, Cl. 28-1.300.

Stanley, Robert K.: *See—*
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Stark, Allan P., to McCormick, Robert L.; and S. Ray Simon Associates Co., part interest to each. Off-highway trailer hitch. 3,953,055, Cl. 280-504.000.

Stata-Control System SCS AG: *See—*
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Stauffer Chemical Company: *See—*
Baker, Don R.; Walker, Francis H.; and Letchworth, Peter E., 3,953,477.
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Baker, Don R.; and Walker, Francis H., 3,953,507.

Ste Superflexit: *See—*
Grihangne, Andre, 3,952,679.

Steele, James R., to Dynamic Air Inc. Bin aerator. 3,952,956, Cl. 239-289.000.

Steimann, Franz, to Didier Engineering GmbH. Coke oven door closure. 3,953,063, Cl. 292-144.000.

Stein, Werner; and Hartmann, Helmut, to Henkel & Cie G.m.b.H. Continuous process for the separation of mixtures of fatty substances of different melting points. 3,953,485, Cl. 260-428.000.

Steinberg, Harold Eugene: *See—*
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Steiner, Kurt, to Hoffmann-La Roche Inc. Catalytic hydrogenation of alpha,beta-unsaturated aldehydes to alpha,beta-unsaturated alcohols. 3,953,524, Cl. 260-617.00A.

Steinkamp, Robert A.; and Grail, Thomas J., to Exxon Research and Engineering Company. Polymers with improved properties and process therefor. 3,953,655, Cl. 428-474.000.

Steinmuller, Gunter: *See—*
Brunner, Julius; Schwendtner, Manfred; and Steinmuller, Gunter, 3,953,795.

Steinstrasser, Ralf; and Weber, Georg, to Merck Patent Gesellschaft mit beschraenkter Haftung. Phenyl esters of 4-benzoyloxybenzoic acid. 3,953,491, Cl. 260-465.00D.

Stephens, William D.: *See—*
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Cook, Martin Christopher; Lawrence, Robin; Phillipps, Gordon Hanley; Hunter, Anne Christine; Newall, Christopher Earle; Stephenson, Leslie; and Weir, Niall Galbraith, 3,953,429.

Stettner & Co., Firma: *See—*
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Stevens, Henry C.: *See—*
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Stewart, John Kenneth; and von Beckmann, Helmuth, to Canron, Inc. Device for laterally displacing a railroad track. 3,952,665, Cl. 104-8.000.

Stichting Waterbouwkundig Laboratorium: *See—*
Mann, Adriaan B.; and Vermeulen, Jacobus J. C., 3,952,600.

Stick, Danny R.: *See—*
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Thompson, Robert M., to Sun Ventures, Inc. Tertiary diamide lubricants. 3,953,346, Cl. 252-51.50A.
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B 292,054	3,915,877	Oct. 28, 1975
B 292,126	3,914,465	Oct. 21, 1975
B 292,140	3,914,340	Oct. 21, 1975
B 292,300	3,927,167	Dec. 16, 1975
B 292,563	3,923,653	Dec. 2, 1975
B 293,378	3,923,725	Dec. 2, 1975
B 293,437	3,913,414	Oct. 21, 1975
B 294,103	3,924,396	Dec. 9, 1975
B 294,579	3,916,737	Nov. 4, 1975
B 294,673	3,916,023	Oct. 28, 1975
B 295,481	3,921,593	Nov. 25, 1975
B 295,674	3,916,107	Oct. 28, 1975
B 295,860	3,923,880	Dec. 2, 1975
B 299,267	3,917,106	Nov. 4, 1975
B 300,353	3,921,734	Nov. 25, 1975
B 302,271	3,929,130	Dec. 30, 1975
B 302,692	3,924,598	Dec. 9, 1975
B 302,836	3,923,573	Dec. 2, 1975
B 302,998	3,928,233	Dec. 23, 1975
B 303,011	3,930,188	Dec. 30, 1975
B 303,655	3,924,642	Dec. 9, 1975
B 303,702	3,914,131	Oct. 21, 1975
B 304,687	3,924,783	Dec. 9, 1975
B 305,417	3,915,882	Oct. 28, 1975
B 305,868	3,921,463	Nov. 25, 1975
B 305,881	3,923,478	Dec. 2, 1975
B 306,829	3,925,411	Dec. 9, 1975
B 306,938	3,916,050	Oct. 28, 1975
B 307,677	3,915,276	Oct. 28, 1975
B 308,661	3,924,349	Dec. 9, 1975
B 308,892	3,919,624	Nov. 11, 1975
B 309,207	3,914,743	Oct. 21, 1975
B 309,499	3,922,002	Nov. 25, 1975
B 309,681	3,927,374	Dec. 16, 1975
B 309,755	3,919,468	Nov. 11, 1975
B 309,756	3,914,136	Oct. 21, 1975
B 309,860	3,922,485	Nov. 25, 1975
B 310,149	3,924,705	Dec. 9, 1975
B 310,271	3,923,689	Dec. 2, 1975
B 311,313	3,925,142	Dec. 9, 1975
B 311,317	3,918,975	Nov. 11, 1975
B 311,413	3,925,515	Dec. 9, 1975
B 311,910	3,924,357	Dec. 9, 1975
B 311,911	3,925,233	Dec. 9, 1975
B 312,139	3,925,530	Dec. 9, 1975
B 312,477	3,923,714	Dec. 2, 1975
B 313,098	3,925,045	Dec. 9, 1975
B 313,531	3,925,548	Dec. 9, 1975
B 313,594	3,924,626	Dec. 9, 1975
B 313,900	3,915,932	Oct. 28, 1975
B 314,049	3,920,588	Nov. 18, 1975
B 314,255	3,923,764	Dec. 2, 1975
B 314,271	3,921,845	Nov. 25, 1975
B 314,489	3,925,016	Dec. 9, 1975
B 314,800	3,930,087	Dec. 30, 1975
B 314,977	3,923,459	Dec. 2, 1975
B 315,363	3,920,673	Nov. 18, 1975
B 315,397	3,923,963	Dec. 2, 1975
B 315,731	3,914,108	Oct. 21, 1975
B 316,014	3,920,861	Nov. 18, 1975
B 316,239	3,913,546	Oct. 21, 1975
B 316,917	3,925,494	Dec. 9, 1975
B 317,080	3,925,324	Dec. 9, 1975
B 317,347	3,923,552	Dec. 2, 1975
B 317,624	3,925,167	Dec. 9, 1975
B 318,195	3,915,699	Oct. 28, 1975
B 318,618	3,915,365	Oct. 28, 1975
B 318,640	3,925,186	Dec. 9, 1975
B 318,745	3,916,571	Nov. 4, 1975
B 319,226	3,925,082	Dec. 9, 1975
B 319,339	3,916,056	Oct. 28, 1975
B 319,402	3,919,568	Nov. 11, 1975
B 319,414	3,928,666	Dec. 23, 1975
B 320,261	3,924,033	Dec. 2, 1975
B 320,452	3,925,083	Dec. 9, 1975
B 320,603	3,915,571	Oct. 28, 1975
B 321,018	3,921,623	Nov. 25, 1975

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER TRIAL VOLUNTARY PROTEST PROGRAM

JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 321,101	3,917,163	Nov. 4, 1975
B 321,938	3,923,889	Dec. 2, 1975
B 322,182	3,925,390	Dec. 9, 1975
B 322,239	3,920,973	Nov. 18, 1975
B 322,564	3,914,373	Oct. 21, 1975
B 322,611	3,920,863	Nov. 18, 1975
B 322,777	3,924,382	Dec. 9, 1975
B 323,127	3,923,967	Dec. 2, 1975
B 323,191	3,914,566	Oct. 21, 1975
B 323,203	3,916,165	Oct. 28, 1975
B 323,568	3,920,536	Nov. 18, 1975
B 323,666	3,924,568	Dec. 9, 1975
B 324,495	3,928,664	Dec. 23, 1975
B 324,503	3,928,524	Dec. 23, 1975
B 324,505	3,925,294	Dec. 9, 1975
B 324,739	3,924,990	Dec. 9, 1975
B 324,879	3,923,538	Dec. 2, 1975
B 325,102	3,924,355	Dec. 9, 1975
B 325,262	3,921,304	Nov. 25, 1975
B 326,514	3,925,080	Dec. 9, 1975
B 327,109	3,925,350	Dec. 9, 1975
B 327,363	3,923,504	Dec. 2, 1975
B 327,612	3,925,620	Dec. 9, 1975
B 327,674	3,918,540	Nov. 11, 1975
B 327,899	3,925,674	Dec. 9, 1975
B 328,164	3,914,703	Oct. 21, 1975
B 328,200	3,916,031	Oct. 28, 1975
B 328,205	3,914,106	Oct. 21, 1975
B 328,210	3,914,275	Oct. 21, 1975
B 328,870	3,916,486	Nov. 4, 1975
B 329,115	3,924,727	Dec. 9, 1975
B 329,476	3,920,562	Nov. 18, 1975
B 329,612	3,925,128	Dec. 9, 1975
B 329,787	3,920,688	Nov. 18, 1975
B 329,816	3,923,947	Dec. 2, 1975
B 330,536	3,925,452	Dec. 9, 1975
B 330,828	3,913,589	Oct. 21, 1975
B 331,417	3,914,157	Oct. 21, 1975
B 331,557	3,916,577	Nov. 4, 1975
B 331,895	3,916,403	Oct. 28, 1975
B 332,527	3,924,017	Dec. 2, 1975
B 332,811	3,924,359	Dec. 9, 1975
B 333,876	3,921,208	Nov. 18, 1975
B 333,928	3,927,172	Dec. 16, 1975
B 334,251	3,924,719	Dec. 9, 1975
B 334,868	3,919,469	Nov. 11, 1975
B 334,985	3,923,912	Dec. 2, 1975
B 335,670	3,928,686	Dec. 23, 1975
B 335,741	3,925,615	Dec. 9, 1975
B 335,773	3,920,953	Nov. 18, 1975
B 336,129	3,923,606	Dec. 2, 1975
B 336,243	3,925,422	Dec. 9, 1975
B 336,345	3,925,179	Dec. 9, 1975
B 336,652	3,914,211	Oct. 21, 1975
B 336,902	3,918,897	Nov. 11, 1975
B 336,946	3,919,425	Nov. 11, 1975
B 336,978	3,923,968	Dec. 2, 1975
B 337,235	3,919,386	Nov. 11, 1975
B 337,409	3,925,258	Dec. 9, 1975
B 337,442	3,913,658	Oct. 21, 1975
B 337,703	3,914,690	Oct. 21, 1975
B 337,787	3,923,506	Dec. 2, 1975
B 339,057	3,924,822	Dec. 9, 1975
B 339,218	3,925,121	Dec. 9, 1975
B 339,699	3,933,527	Jan. 20, 1976
B 339,838	3,930,221	Dec. 30, 1975
B 340,212	3,922,645	Nov. 25, 1975
B 340,833	3,925,208	Dec. 9, 1975
B 341,579	3,913,363	Oct. 21, 1975
B 342,084	3,928,694	Dec. 23, 1975
B 342,423	3,925,334	Dec. 9, 1975
B 342,886	3,923,507	Dec. 2, 1975
B 343,136	3,919,453	Nov. 11, 1975
B 343,240	3,925,693	Dec. 9, 1975
B 343,506	3,916,021	Oct. 28, 1975
B 343,577	3,921,165	Nov. 18, 1975
B 344,203	3,928,719	Dec. 23, 1975
B 344,479	3,924,042	Dec. 2, 1975
B 345,060	3,916,018	Oct. 28, 1975
B 345,384	3,916,146	Oct. 28, 1975
B 345,390	3,940,343	Feb. 24, 1976
B 345,422	3,914,392	Oct. 21, 1975
B 345,527	3,927,365	Dec. 16, 1975
B 345,567	3,913,985	Oct. 21, 1975
B 346,165	3,913,293	Oct. 21, 1975
B 346,210	3,916,142	Oct. 28, 1975
B 346,350	3,915,824	Oct. 28, 1975
B 346,487	3,927,406	Dec. 16, 1975
B 346,585	3,913,820	Oct. 21, 1975
B 346,613	3,923,545	Dec. 2, 1975
B 346,901	3,915,583	Oct. 28, 1975
B 348,083	3,923,774	Dec. 2, 1975
B 348,383	3,923,452	Dec. 2, 1975
B 348,495	3,914,654	Oct. 21, 1975
B 348,558	3,914,109	Oct. 21, 1975
B 349,141	3,915,363	Oct. 28, 1975
B 349,177	3,914,033	Oct. 21, 1975
B 349,231	3,915,831	Oct. 28, 1975
B 349,321	3,916,103	Oct. 28, 1975
B 349,948	3,914,557	Oct. 21, 1975
B 350,025	3,927,415	Dec. 16, 1975
B 350,143	3,924,419	Dec. 9, 1975
B 350,219	3,917,802	Nov. 4, 1975
B 350,245	3,914,331	Oct. 21, 1975
B 350,523	3,924,726	Dec. 9, 1975
B 350,589	3,927,419	Dec. 16, 1975
B 350,708	3,923,871	Dec. 2, 1975
B 350,843	3,915,461	Oct. 28, 1975
B 351,055	3,914,074	Oct. 21, 1975
B 351,218	3,914,186	Oct. 21, 1975
B 351,222	3,921,179	Nov. 18, 1975
B 351,348	3,923,563	Dec. 2, 1975
B 351,421	3,914,733	Oct. 21, 1975
B 351,493	3,914,758	Oct. 21, 1975
B 351,535	3,915,239	Oct. 28, 1975
B 351,665	3,919,701	Nov. 11, 1975
B 351,672	3,914,000	Oct. 21, 1975
B 351,735	3,913,385	Oct. 21, 1975
B 351,863	3,914,700	Oct. 21, 1975
B 351,883	3,924,657	Dec. 9, 1975
B 351,926	3,914,133	Oct. 21, 1975
B 351,939	3,913,480	Oct. 21, 1975
B 352,445	3,928,746	Dec. 23, 1975
B 352,934	3,913,692	Oct. 21, 1975
B 352,950	3,922,590	Nov. 25, 1975
B 352,965	3,921,926	Nov. 25, 1975
B 353,317	3,916,446	Nov. 4, 1975
B 353,387	3,924,404	Dec. 9, 1975
B 353,546	3,913,273	Oct. 21, 1975
B 354,008	3,925,081	Dec. 9, 1975
B 354,098	3,925,547	Dec. 9, 1975
B 354,145	3,927,279	Dec. 16, 1975
B 354,296	3,914,580	Oct. 21, 1975
B 354,510	3,928,658	Dec. 23, 1975
B 354,889	3,913,204	Oct. 21, 1975
B 354,979	3,914,251	Oct. 21, 1975
B 355,095	3,925,656	Dec. 9, 1975
B 355,269	3,914,561	Oct. 21, 1975
B 355,510	3,913,704	Oct. 21, 1975
B 355,595	3,925,649	Dec. 9, 1975
B 355,876	3,925,685	Dec. 9, 1975
B 356,032	3,928,636	Dec. 23, 1975
B 356,253	3,925,025	Dec. 9, 1975
B 356,602	3,927,393	Dec. 16, 1975
B 356,724	3,924,586	Dec. 9, 1975
B 357,039	3,924,406	Dec. 9, 1975
B 357,057	3,913,738	Oct. 21, 1975
B 357,131	3,924,453	Dec. 9, 1975
B 357,402	3,914,180	Oct. 21, 1975
B 357,682	3,924,973	Dec. 9, 1975
B 357,803	3,919,470	Nov. 11, 1975
B 358,174	3,924,958	Dec. 9, 1975
B 358,244	3,913,411	Oct. 21, 1975
B 358,311	3,923,561	Dec. 2, 1975
B 358,939	3,924,713	Dec. 9, 1975
B 359,174	3,914,117	Oct. 21, 1975
B 359,187	3,924,525	Dec. 9, 1975
B 359,540	3,915,235	Oct. 28, 1975
B 359,740	3,936,212	Feb. 3, 1976
B 359,791	3,929,430	Dec. 30, 1975
B 359,825	3,921,344	Nov. 25, 1975
B 359,946	3,914,132	Oct. 21, 1975
B 359,947	3,914,653	Oct. 21, 1975
B 360,208	3,923,750	Dec. 2, 1975
B 360,296	3,916,720	Nov. 4, 1975
B 360,719	3,915,715	Oct. 28, 1975
B 360,910	3,925,696	Dec. 9, 1975
B 361,265	3,923,569	Dec. 2, 1975
B 361,443	3,927,405	Dec. 16, 1975
B 361,569	3,914,554	Oct. 21, 1975
B 361,604	3,922,702	Nov. 25, 1975
B 361,734	3,915,764	Oct. 28, 1975

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JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 362,589	3,914,012	Oct. 21, 1975
B 363,205	3,923,744	Dec. 2, 1975
B 363,337	3,928,639	Dec. 23, 1975
B 363,457	3,922,595	Nov. 25, 1975
B 363,674	3,929,716	Dec. 30, 1975
B 363,892	3,913,395	Oct. 21, 1975
B 363,962	3,921,826	Nov. 25, 1975
B 364,022	3,913,499	Oct. 21, 1975
B 364,163	3,916,092	Oct. 28, 1975
B 364,241	3,916,668	Nov. 4, 1975
B 364,334	3,924,670	Dec. 9, 1975
B 364,528	3,919,510	Nov. 11, 1975
B 364,786	3,921,673	Nov. 25, 1975
B 364,910	3,925,335	Dec. 9, 1975
B 365,490	3,918,527	Nov. 11, 1975
B 365,834	3,914,702	Oct. 21, 1975
B 365,841	3,925,628	Dec. 9, 1975
B 365,855	3,917,258	Nov. 4, 1975
B 366,287	3,924,946	Dec. 9, 1975
B 366,402	3,928,053	Dec. 23, 1975
B 366,589	3,914,719	Oct. 21, 1975
B 367,021	3,914,752	Oct. 21, 1975
B 367,040	3,924,775	Dec. 9, 1975
B 367,661	3,914,158	Oct. 21, 1975
B 367,739	3,923,648	Dec. 2, 1975
B 367,812	3,924,789	Dec. 9, 1975
B 368,081	3,924,691	Dec. 9, 1975
B 368,387	3,924,923	Dec. 9, 1975
B 368,392	3,913,812	Oct. 21, 1975
B 368,397	3,914,677	Oct. 21, 1975
B 368,862	3,925,549	Dec. 9, 1975
B 369,563	3,924,449	Dec. 9, 1975
B 369,607	3,923,786	Dec. 2, 1975
B 369,997	3,913,533	Oct. 21, 1975
B 370,706	3,925,242	Dec. 9, 1975
B 371,073	3,930,135	Dec. 30, 1975
B 371,085	3,923,783	Dec. 2, 1975
B 371,787	3,921,217	Nov. 18, 1975
B 371,805	3,914,433	Oct. 21, 1975
B 371,836	3,923,541	Dec. 2, 1975
B 372,823	3,924,660	Dec. 9, 1975
B 373,297	3,924,436	Dec. 9, 1975
B 373,326	3,920,433	Nov. 18, 1975
B 373,428	3,915,511	Oct. 28, 1975
B 375,220	3,920,417	Nov. 18, 1975
B 375,652	3,921,303	Nov. 25, 1975
B 376,504	3,914,570	Oct. 21, 1975
B 376,654	3,922,513	Nov. 25, 1975
B 376,742	3,924,392	Dec. 9, 1975
B 376,799	3,913,955	Oct. 21, 1975
B 377,172	3,918,255	Nov. 11, 1975
B 377,683	3,924,433	Dec. 9, 1975
B 377,833	3,913,884	Oct. 21, 1975
B 377,869	3,917,002	Nov. 4, 1975
B 378,621	3,923,840	Dec. 2, 1975
B 379,038	3,923,994	Dec. 2, 1975
B 379,172	3,914,379	Oct. 21, 1975
B 379,282	3,913,462	Oct. 21, 1975
B 379,955	3,913,157	Oct. 21, 1975
B 380,014	3,921,915	Nov. 25, 1975
B 380,141	3,925,161	Dec. 9, 1975
B 380,310	3,921,048	Nov. 18, 1975
B 380,312	3,913,953	Oct. 21, 1975
B 380,338	3,924,873	Dec. 9, 1975
B 380,446	3,923,836	Dec. 2, 1975
B 380,900	3,913,307	Oct. 21, 1975
B 380,926	3,925,095	Dec. 9, 1975
B 381,074	3,919,583	Nov. 11, 1975
B 381,632	3,914,732	Oct. 21, 1975
B 381,847	3,921,152	Nov. 18, 1975
B 382,018	3,929,742	Dec. 30, 1975
B 382,021	3,913,212	Oct. 21, 1975
B 382,261	3,914,991	Oct. 28, 1975
B 382,290	3,924,717	Dec. 9, 1975
B 382,783	3,919,527	Nov. 11, 1975
B 382,798	3,924,435	Dec. 9, 1975
B 382,840	3,922,007	Nov. 25, 1975
B 383,465	3,927,412	Dec. 16, 1975
B 383,532	3,914,246	Oct. 21, 1975
B 383,581	3,925,318	Dec. 9, 1975
B 384,499	3,925,135	Dec. 9, 1975
B 384,658	3,913,452	Oct. 21, 1975
B 384,773	3,915,416	Oct. 28, 1975
B 385,210	3,913,406	Oct. 21, 1975
B 386,403	3,924,895	Dec. 9, 1975
B 386,592	3,925,305	Dec. 9, 1975
B 387,039	3,924,510	Dec. 9, 1975
B 387,331	3,913,701	Oct. 21, 1975
B 387,363	3,927,378	Dec. 16, 1975
B 387,687	3,918,151	Nov. 11, 1975
B 387,761	3,914,245	Oct. 21, 1975
B 387,790	925,380	Dec. 9, 1975
B 387,818	918,935	Nov. 11, 1975
B 388,580	3,923,712	Dec. 2, 1975
B 389,070	3,914,171	Oct. 21, 1975
B 389,285	3,914,631	Oct. 21, 1975
B 389,327	3,924,504	Dec. 9, 1975
B 389,639	3,914,626	Oct. 21, 1975
B 389,726	3,921,010	Nov. 18, 1975
B 389,807	3,922,623	Nov. 25, 1975
B 389,932	3,913,268	Oct. 21, 1975
B 389,933	3,913,267	Oct. 21, 1975
B 390,679	3,913,668	Oct. 21, 1975
B 390,732	3,913,878	Oct. 21, 1975
B 391,184	3,914,214	Oct. 21, 1975
B 391,210	3,914,220	Oct. 21, 1975
B 391,437	3,915,416	Oct. 28, 1975
B 391,509	3,925,175	Dec. 9, 1975
B 391,675	3,916,017	Oct. 28, 1975
B 392,154	3,923,809	Dec. 2, 1975
B 392,242	3,926,636	Dec. 16, 1975
B 392,696	3,916,175	Oct. 28, 1975
B 392,732	3,914,903	Oct. 21, 1975
B 392,753	3,916,341	Oct. 28, 1975
B 392,894	3,914,763	Oct. 21, 1975
B 393,163	3,914,535	Oct. 21, 1975
B 393,970	3,914,638	Oct. 21, 1975
B 394,088	3,914,740	Oct. 21, 1975
B 394,188	3,924,591	Dec. 9, 1975
B 394,300	3,914,159	Oct. 21, 1975
B 394,712	3,916,306	Oct. 28, 1975
B 395,478	3,922,577	Nov. 25, 1975
B 395,496	3,919,435	Nov. 11, 1975
B 395,671	3,920,418	Nov. 18, 1975
B 395,889	3,913,190	Oct. 21, 1975
B 396,025	3,913,869	Oct. 21, 1975
B 396,551	3,921,929	Nov. 25, 1975
B 397,027	3,923,736	Dec. 2, 1975
B 397,527	3,913,488	Oct. 21, 1975
B 397,990	3,914,848	Oct. 28, 1975
B 398,262	3,913,481	Oct. 21, 1975
B 398,551	3,924,924	Dec. 9, 1975
B 398,597	3,913,743	Oct. 21, 1975
B 398,625	3,920,996	Nov. 18, 1975
B 399,292	3,914,810	Oct. 28, 1975
B 399,304	3,919,567	Nov. 11, 1975
B 399,349	3,925,694	Dec. 9, 1975
B 399,766	3,915,667	Oct. 28, 1975
B 400,080	3,925,163	Dec. 9, 1975
B 400,293	3,923,719	Dec. 2, 1975
B 400,310	3,915,507	Oct. 28, 1975
B 401,133	3,924,443	Dec. 9, 1975
B 401,992	3,924,898	Dec. 9, 1975
B 402,065	3,925,413	Dec. 9, 1975
B 402,555	3,914,688	Oct. 21, 1975
B 403,140	3,913,486	Oct. 21, 1975
B 403,355	3,913,352	Oct. 21, 1975
B 403,990	3,914,684	Oct. 21, 1975
B 403,996	3,916,016	Oct. 28, 1975
B 404,290	3,924,918	Dec. 9, 1975
B 404,437	3,915,200	Oct. 28, 1975
B 405,136	3,915,565	Oct. 28, 1975
B 405,137	3,915,566	Oct. 28, 1975
B 405,160	3,924,821	Dec. 9, 1975
B 405,248	3,926,294	Dec. 16, 1975
B 405,305	3,922,111	Nov. 25, 1975
B 405,360	3,913,403	Oct. 21, 1975
B 405,495	3,924,577	Dec. 9, 1975
B 405,938	3,920,109	Nov. 18, 1975
B 406,065	3,914,199	Oct. 21, 1975
B 406,357	3,924,529	Dec. 9, 1975
B 406,800	3,952,708	Apr. 27, 1976
B 407,736	3,924,463	Dec. 9, 1975
B 407,357	3,924,614	Dec. 9, 1975
B 407,728	3,925,240	Dec. 9, 1975
B 408,487	3,924,046	Dec. 2, 1975
B 408,749	3,914,116	Oct. 21, 1975
B 409,026	3,925,497	Dec. 9, 1975
B 409,220	3,915,648	Oct. 28, 1975
B 409,251	3,922,620	Nov. 25, 1975
B 409,657	3,927,362	Dec. 16, 1975
B 409,816	3,921,317	Nov. 25, 1975

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JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 410,062	3,923,855	Dec. 2, 1975
B 410,168	3,914,717	Oct. 21, 1975
B 411,145	3,914,168	Oct. 21, 1975
B 411,356	3,919,649	Nov. 11, 1975
B 411,483	3,925,196	Dec. 9, 1975
B 411,633	3,914,741	Oct. 21, 1975
B 412,516	3,927,417	Dec. 16, 1975
B 412,619	3,925,292	Dec. 9, 1975
B 412,867	3,924,587	Dec. 9, 1975
B 413,006	3,914,850	Oct. 28, 1975
B 413,546	3,924,314	Dec. 9, 1975
B 414,129	3,925,484	Dec. 9, 1975
B 414,288	3,925,537	Dec. 9, 1975
B 415,113	3,915,717	Oct. 28, 1975
B 415,124	3,915,944	Oct. 28, 1975
B 415,845	3,925,076	Dec. 9, 1975
B 415,847	3,914,208	Oct. 21, 1975
B 415,957	3,925,635	Dec. 9, 1975
B 415,977	3,927,359	Dec. 16, 1975
B 416,598	3,923,473	Dec. 2, 1975
B 416,832	3,924,975	Dec. 9, 1975
B 416,710	3,923,746	Dec. 2, 1975
B 416,933	3,924,968	Dec. 9, 1975
B 417,299	3,918,235	Nov. 11, 1975
B 418,121	3,925,023	Dec. 9, 1975
B 418,153	3,925,251	Dec. 9, 1975
B 418,302	3,913,252	Oct. 21, 1975
B 419,327	3,921,197	Nov. 18, 1975
B 419,481	3,924,970	Dec. 9, 1975
B 420,016	3,914,572	Oct. 21, 1975
B 420,148	3,927,414	Dec. 16, 1975
B 420,514	3,923,929	Dec. 2, 1975
B 420,568	3,925,069	Dec. 9, 1975
B 421,026	3,914,785	Oct. 21, 1975
B 421,362	3,924,817	Dec. 9, 1975
B 421,383	3,925,047	Dec. 9, 1975
B 421,797	3,914,023	Oct. 21, 1975
B 422,399	3,928,656	Dec. 23, 1975
B 422,467	3,924,804	Dec. 9, 1975
B 422,949	3,921,873	Nov. 25, 1975
B 424,415	3,919,458	Nov. 11, 1975
B 424,462	3,920,522	Nov. 18, 1975
B 424,572	3,924,979	Dec. 9, 1975
B 424,748	3,924,395	Dec. 9, 1975
B 425,035	3,914,025	Oct. 21, 1975
B 425,345	3,922,015	Nov. 25, 1975
B 425,470	3,923,796	Dec. 2, 1975
B 425,539	3,916,742	Nov. 4, 1975
B 425,541	3,914,051	Oct. 21, 1975
B 425,572	3,923,822	Dec. 2, 1975
B 427,631	3,921,433	Nov. 25, 1975
B 428,177	3,914,624	Oct. 21, 1975
B 428,795	3,921,056	Nov. 18, 1975
B 429,442	3,923,485	Dec. 2, 1975
B 430,106	3,918,941	Nov. 11, 1975
B 430,140	3,922,084	Nov. 25, 1975
B 430,798	3,918,204	Nov. 11, 1975
B 430,944	3,922,096	Nov. 25, 1975
B 432,373	3,919,670	Nov. 11, 1975
B 433,587	3,914,567	Oct. 21, 1975
B 435,343	3,919,244	Nov. 11, 1975
B 435,844	3,925,170	Dec. 9, 1975
B 437,173	3,924,627	Dec. 9, 1975
B 437,172	3,913,251	Oct. 21, 1975
B 437,195	3,914,618	Oct. 21, 1975
B 437,450	3,922,479	Nov. 25, 1975
B 438,053	3,916,013	Oct. 28, 1975
B 438,706	3,925,050	Dec. 9, 1975
B 439,168	3,919,676	Nov. 11, 1975
B 439,669	3,921,499	Nov. 25, 1975
B 440,898	3,921,789	Nov. 25, 1975
B 441,024	3,913,629	Oct. 21, 1975
B 441,416	3,913,851	Oct. 21, 1975
B 442,280	3,914,054	Oct. 21, 1975
B 442,859	3,918,570	Nov. 11, 1975
B 442,919	3,925,483	Dec. 9, 1975
B 444,614	3,927,996	Dec. 23, 1975
B 445,471	3,914,711	Oct. 21, 1975
B 445,740	3,923,612	Dec. 2, 1975
B 448,571	3,924,760	Dec. 9, 1975
B 449,647	3,916,797	Nov. 4, 1975
B 450,499	3,920,526	Nov. 18, 1975
B 450,546	3,924,417	Dec. 9, 1975
B 450,927	3,913,844	Oct. 21, 1975
B 455,520	3,922,543	Nov. 25, 1975
B 455,775	3,914,356	Oct. 21, 1975
B 456,346	3,914,531	Oct. 21, 1975
B 459,425	3,928,773	Dec. 23, 1975
B 461,872	3,919,586	Nov. 11, 1975
B 467,684	3,915,119	Oct. 28, 1975
B 468,198	3,925,340	Dec. 9, 1975

LIST OF REISSUE PATENTEES

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Cardinal of Adrian, Inc.: *See—*
MacDonald, Robert D., Re. 28,786.

Chang, Catherine Teh-Lin, to Du Pont de Nemours, E. I., and Company. Photopolymerizable compositions containing cyclic cis-α-dicarbonyl compounds and selected sensitizers. Re. 28,789, Cl. 96-86.00P.

Du Pont de Nemours, E. I., and Company: *See—*
Chang, Catherine Teh-Lin, Re. 28,789.

Grozier, John David: *See—*
Korchynsky, Michael; Grozier, John David; and Mihelich, John L., Re. 28,790.
Korchynsky, Michael; Grozier, John David; and Mihelich, John L., Re. 28,791.

Jones & Laughlin Steel Corporation: *See—*
Korchynsky, Michael; Grozier, John David; and Mihelich, John L., Re. 28,790.
Korchynsky, Michael; Grozier, John David; and Mihelich, John L., Re. 28,791.

K-G Industries, Inc.: *See—*
Moore, James E., Re. 28,787.

Korchynsky, Michael; Grozier, John David; and Mihelich, John L., to Jones & Laughlin Steel Corporation. High-strength low-alloy steels having improved formability. Re. 28,790, Cl. 148-36.000.

Korchynsky, Michael; Grozier, John David; and Mihelich, John L., to Jones & Laughlin Steel Corporation. High-strength plain carbon steels having improved formability. Re. 28,791, Cl. 148-36.000.

MacDonald, Robert D., to Cardinal of Adrian, Inc. Hinge for latchless door. Re. 28,786, Cl. 16-141.000.

Mihelich, John L.: *See—*
Korchynsky, Michael; Grozier, John David; and Mihelich, John L., Re. 28,790.
Korchynsky, Michael; Grozier, John David; and Mihelich, John L., Re. 28,791.

Moore, James E., to K-G Industries, Inc. Method and system for hot de-oiling and hot briquetting. Re. 28,787, Cl. 29-403.000.

Ruka, Roswell J.; and Weissbart, Joseph, to Westinghouse Electric Corporation. Electrochemical method for separating O_2 from a gas; generating electricity; measuring O_2 partial pressure; and fuel cell. Re. 28,792, Cl. 204-1.00T.

Weissbart, Joseph: *See—*
Ruka, Roswell J.; and Weissbart, Joseph, Re. 28,792.

Westinghouse Electric Corporation: *See—*
Ruka, Roswell J.; and Weissbart, Joseph, Re. 28,792.

Williamson, George R., III. Load restrainer. Re. 28,788, Cl. 280-179.00R.

LIST OF PLANT PATENTEES

Bull, Norbert, to Mikkelsens, Inc. Kalanchoe plant. 3,871, 4-27-76, Cl. 68.

Bull, Norbert, to Mikkelsens, Inc. Kalanchoe plant. 3,872, 4-27-76, Cl. 68.

Bull, Norbert, to Mikkelsens, Inc. Kalanchoe plant. 3,873, 4-27-76, Cl. 68.

Duffett, William E., and W. W. Knicely, to Yoder Brothers, Inc. Geranium plant. 3,874, 4-27-76, Cl. 68.

Duffett, William E., and W. W. Knicley, to Yoder Brothers, Inc. Geranium plant. 3,875, 4-27-76, Cl. 68.

Knicely, Walter W.: *See—*
Duffett, William E., and Knicely. 3,874.
Duffett, William E., and Knicely. 3,875.

Mikkelsens, Inc.: *See—*
Bull, Norbert. 3,871.
Bull, Norbert. 3,872.
Bull, Norbert. 3,873.

Yoder Brothers, Inc.: *See—*
Duffett, William E., and Knicely. 3,874.
Duffett, William E., and Knicely. 3,875.

LIST OF DESIGN PATENTEES

AMI Industries, Inc.: *See—*
Smith, Harry M. 239,693.

Adkinson, Joseph E. Cocktail table. 239,672, 4-27-76, Cl. D6—177.

Alabardo, Martin. Lighting fixture. 239,729, 4-27-76, Cl. D48—23.

Allen, George D., H. D. Haubein, M. B. Goe, Jr., and K. A. Toeniskoetter, to A.B. Chance Co. Combined buss and current limiting fuse for transformers. 239,717, 4-27-76, Cl. D26—1.

Andersson, Karl G. B., to Duni Bila AB. Bowl. 239,686, 4-27-76, Cl. D7—1.

Ashton, Harold P., to Dart Industries, Inc. Container grid or the like. 239,691, 4-27-76, Cl. D7—130.

Ashton, Harold P., to Dart Industries, Inc. Container grid or the like. 239,692, 4-27-76, Cl. D7—130.

Aven Tools Ltd.: *See—*
Ward, Brian, and Scarrow. 239,694.

Baker, James W., to Daniel C. Hanna. Car wash building. 239,701, 4-27-76, Cl. D13—1.

Barleen, David G., R. L. Ridings, and T. O. Pollard, to Emergency Products Corp. Alarm system cabinet. 239,706, 4-27-76, Cl. D10—106.

Blake, Jack E. Stand for supporting a rock specimen. 239,678, 4-27-76, Cl. D6—85.

Bloch, Jack, to Foster Grant Co., Inc. Spectacle front. 239,735, 4-27-76, Cl. D57—1.

Borg-Warner Corp.: *See—*
Szucs, Robert J. 239,679.
Szucs, Robert J. 239,680.

Bouchard, Eleanor. Swim suit. 239,667, 4-27-76, Cl. D2—25.

Breger, Carl-Arne. Coffee pot. 239,687, 4-27-76, Cl. D7—65.

Bukaitz, Finley M., and George Neuser, to Delta Industries, Inc. Above ground swimming pool or similar article. 239,702, 4-27-76, Cl. D13—1.

Carter, John S. Modular pedestal unit. 239,674, 4-27-76, Cl. D6—85.

Century Wheels Research Corp.: *See—*
Morgan, Paul A. 239,704.

Chance, A. B., Co.: *See—*
Allen, George D. Haubein, Goe, and Toeniskoetter. 239,717.

Chleda, Robert A.: *See—*
Maruca, Joseph P., and Chleda. 239,700.

Dart Industries, Inc.: *See—*
Ashton, Harold P. 239,691.
Ashton, Harold P. 239,692.

Davis, Myron F., Jr., and C. A. Pycha, to International Business Machines Corp. Printer station. 239,721, 4-27-76, Cl. D26—5.

Dazey Products Co.: *See—*
McNair, Samuel L. 239,739.

Delta Industries, Inc.: *See—*
Bukaitz, Finley M., and Neuser. 239,702.

Doman, Donald W., and G. A. Rau, to Flambeau Products Corp. Cutting board. 239,688, 4-27-76, Cl. D7—46.

Doman, Donald W., and G. A. Rau, to Flambeau Products Corp. Cutting board. 239,689, 4-27-76, Cl. D7—46.

Dudley, Harvey H., R. I. Gresens, D. E. Hansen, S. H. Miller, and R. C. Sutliff, to Eastman Kodak Co. Loaded film cartridge. 239,736, 4-27-76, Cl. D61—1.

Duni Bila AB: *See—*
Andersson, Karl G. B. 239,686.

Eastman Kodak Co.: *See—*
Dudley, Harvey H., Gresens, Hansen, Miller, and Sutliff. 239,736.

Emergency Products Corp.: *See—*
Barleen, David G., Ridings, and Pollard. 239,706.

Farmer, William H. Tissue box holder. 239,682, 4-27-76, Cl. D6—85.

Feck, Norman L.: *See—*
Kuzara, James H., Feck, and Johnston. 239,724.

Fier, Edward J., Jr., to Norwesco, Inc. Container. 239,695, 4-27-76, Cl. D9—237.

Finlof, Milton. Toilet seat for invalids. 239,715, 4-27-76, Cl. D23—71.

Flambeau Products Corp.: *See—*
Doman, Donald W., and Rau. 239,688.
Doman, Donald W., and Rau. 239,689.

Foster Grant Co., Inc.: *See—*
Bloch, Jack. 239,735.

Fratelli Saporiti: *See—*
Offredi, Giovanni. 239,671.

GTE Lenkurt Inc.: *See—*
Stewart, James R. 239,720.

Gardisette International AG: *See—*
Schroeder, Peter E. 239,728.

Garrison, James R., to Textron, Inc. Light twin helicopter. 239,710, 4-27-76, Cl. D12—73.

Giurtino, Joel F., to Sandoz, Inc. Manifold nebulizer unit. 239,737, 4-27-76, Cl. D83—1.

Giurtino, Joel F., to Sandoz, Inc. Manifold nebulizer unit. 239,738, 4-27-76, Cl. D83—1.

Glaberson, Martin, to Warner-Lambert Co. Tray for releasably engaging a razor and a blade dispenser. 239,696, 4-27-76, Cl. D9—186.

Glaberson, Martin, to Warner-Lambert Co. Tray for releasably engaging a razor and a blade cartridge dispenser. 239,699, 4-27-76, Cl. D9—186.

Gresens, Robert I.: *See—*
Dudley, Harvey H., Gresens, Hansen,, Miller, and Sutliff. 239,736.

Grimaldo, Samuel. Vehicle hoisting trailer. 239,707, 4-27-76, Cl. D12—56.

Hanna, Daniel C.: *See—*
Baker, James W. 239,701.

Haubein, Harold D.: *See—*
Allen, George D., Haubein, Goe, and Toeniskoetter. D239,717.

Horino, Kazutaka, and T. Sato, to Yamaha Hatsudoki Kabushiki Kaisha. Bicycle. 239,708, 4-27-76, Cl. D12—111.

Hunt, Kenneth W., to Hunt-Wilde Corp. Bottle. 239,697, 4-27-76, Cl. D9—37.

Hunt-Wilde Corp.: *See—*
Hunt, Kenneth W. 239,697.

Intercollection Development S.A.: *See—*
Tuttle, Paul. 239,683.

International Business Machines Corp.: *See—*
Davis, Myron F., Jr., and Pycha. 239,721.

International Pretzel Corp.: *See—*
Peterson, Jeffrey E. 239,685.

Jacobs, Raymond, to Kalso Systemet, Inc. Foot sock. 239,669, 4-27-76, Cl. D2—33.

Johnston, Vincent P.: *See—*
Kuzara, Feck, and Johnston. 239,724.

Kalso Systemet, Inc.: *See—*
Jacobs, Raymond. 239,669.

Kindred, Lawrence E. Combined golf club handle and shaft. 239,725, 4-27-76, Cl. D34—5.

Kitson, Gerald L. Chain link for poultry feed conveyor. 239,731, 4-27-76, Cl. D55—1.

Kumpfer, Beverly D., to Utah State University Foundation. Microwave oven. 239,690, 4-27-76, Cl. D7—128.

Kuzara, James H., N. L. Feck, and V. P. Johnston. Stock-watering trough. 239,724, 4-27-76, Cl. D30—16.

Lund, Allan W. Windshield visor for trucks. 239,705, 4-27-76, Cl. D12—191.

Manual Arts Furniture Co.: *See—*
Smith, Donald R. 239,681.

Martin, William F. Ash collector. 239,723, 4-27-76, Cl. D27—8.

Maruca, Joseph P., and R. A. Chleda, to Textron Inc. Rotary card file. 239,700, 4-27-76, Cl. D19—76.

McGinley, Julianne L. Bassinet. 239,676, 4-27-76, Cl. D6—15.

McNair, Samuel L., to Dazey Products Co. Electric hair curling iron. 239,739, 4-27-76, Cl. D86—10.

Milross Controls, Inc.: *See—*
Tems, Adam. 239,716.

Modicon Corp.: *See—*
Powers, Howard A. 239,718.

Mommsen, Maxine T. Handbag for carrying bingo accessories. 239,741, 4-27-76, Cl. D87—3.

Moncrief, J. D. Combined highway flare and stand therefor. 239,703, 4-27-76, Cl. D10—114.

Morgan, Paul A., to Century Wheels Research Corp. Micrometer. 239,704, 4-27-76. Cl. D10—73.

Neuser, George: *See—*
Bukaitz, Finley M., and Neuser. 239,702.

Noe, Gaye P. Counter height bar table or the like. 239,675, 4-27-76, Cl. D6—27.

Norwesco, Inc.: *See—*
Fier, Edward J., Jr. 239,695.

Offredi, Giovanni, to Fratelli Saporiti. Upholstered seat. 239,671, 4-27-76, Cl. D6—47.

Pearl-Wick Corp.: *See—*
Solomon, Jack. 239,713.

Peterson, Jeffrey E., to International Pretzel Corp. Display unit. 239,685, 4-27-76, Cl. D6—175.

Pollard, Theodore O.: *See—*
Barleen, Ridings, and Pollard. 239,706.

Pommiss, David A. Cover splash guard for sinks. 239,714, 4-27-76, Cl. D23—69.

Powers, Howard A., to Modicon Corp. Programmable printer. 239,718, 4-27-76, Cl. D26—5.

Printronix: *See—*
Tooke, Michael H. 239,719.

Pycha, Charles A.: *See—*
Davis, Myron F., Jr., and Pycha. 239,721.

Rau, Gerald A.: *See—*
Doman, Donald W., and Rau. 239,688.
Doman, Donald W., and Rau. 239,689.

Rees, Arnold E., to Wilkinson Sword Ltd. Safety razor. 239,742, 4-27-76, Cl. D95—3.

Relpak Corp.: *See—*
Utlay, George D. 239,698.

Ridings, Roger L.: *See—*
Barleen, David G., Ridings, and Pollard. 239,706.

Rineman, J., and Young: *See—*
Rineman, Richard L. 239,711.

Rineman, Richard L., to J. Rineman and S. A. Young. Sport boat. 239,711, 4-27-76, Cl. D12—64.

Robertson, Stephen H., and R. L. Ward. Table or the like. 239,684, 4-27-76, Cl. D6—177.

Sandoz, Inc.: *See—*
Giurtino, Joel F. 239,737.
Giurtino, Joel F. 239,738.

Sato, Takao: *See—*
Horino, Kazutaka, and Sato. 239,708.

Scalone, Richard J. Four wheel pedal car. 239,709, 4-27-76, Cl. D12—107.

Scarrow, David: *See—*
Ward, Brian, and Scarrow. 239,694.

Schmidt, Arthur W., to Shure Brothers Inc. Microphone. 239,722, 4-27-76, Cl. D26—14.

Schroeder, Peter E., to Gardisette International AG. Curtain fabric. 239,728, 4-27-76, Cl. D47—6.

Shaw, Jack L. Floral display cart. 239,677, 4-27-76, Cl. D6—182.

Shure Brothers Inc.: *See—*
Schmidt, Arthur W. 239,722.

Smith, Donald R., to Manual Arts Furniture Co. Collapsible music stand. 239,681, 4-27-76, Cl. D6—18.

Smith, Harry M., to AMI Industries, Inc. Latching assembly for vehicle seat food tray. 239,693, 4-27-76, Cl. D8—109.

Solomon, Jack, to Pearl-Wick Corp. Combination mister and watering can. 239,713, 4-27-76, Cl. D23—11.

Stewart, James R., to GTE Lenkurt Inc. Faceplate for data set or similar article. 239,720, 4-27-76, Cl. D26—5.

Storm Plastics, Inc.: *See—*
Storm, William D. 239,712.

Storm, William D., to Storm Plastics, Inc. Fishing lure. 239,712, 4-27-76, Cl. D22—28.

Sturmer, Allen H. Surf diver foil. 239,727, 4-27-76, Cl. D34—41.

Sutliff, Robert C.: *See—*
Dudley, Gresen, Hansen, and Miller. 239,736.

Szucs, Robert J., to Borg-Warner Corp. Desk. 239,679, 4-27-76, Cl. D6—161.

Szucs, Robert J., to Borg-Warner Corp. Desk. 239,680, 4-27-76, Cl. D6—161.

Tems, Adam, to Milross Controls, Inc. Printed circuit card guide. 239,716, 4-27-76, Cl. D26—1.

Textron Inc.: *See—*
Garrison, James R. 239,710.
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Thomas, Edward W., to Unitron International Systems, Inc. Omnidirectional lamp. 239,730, 4-27-76, Cl. D48—24.

Toeniskoetter, Kenneth A.: *See—*
Allen, Haubein, Goe, and Toeniskoetter. 239,717.

Tooke, Michael H., to Printronix. Data printer. 239,719, 4-27-76, Cl. D26—5.

Tuttle, Paul, to Intercollection Development S.A. Chair. 239,683, 4-27-76, Cl. D6—49.

Unitron International Systems, Inc.: *See—*
Thomas, Edward W. 239,730.

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Kumpfer, Beverly D. 239,690.

Utlay, George D., to Relpak Corp. Bottle. 239,698, 4-27-76, Cl. D9—167.

Vanus, Anthony M. Sports fishing belt. 239,668, 4-27-76, Cl. D2—381.

Varea, Pedro A. Portable massage table. 239,670, 4-27-76, Cl. D6—177.

Vong, Hoi T. Radio. 239,732, 4-27-76, Cl. D56—4.

Vong, Hoi T. Radio. 239,733, 4-27-76, Cl. D56—4.

Vong, Hoi T. Radio. 239,734, 4-27-76, Cl. D56—4.

Ward, Brian, and David Scarrow, to Aven Tools Ltd. File or rasp also capable for use as a plane. 239,694, 4-27-76, Cl. D8—90.

Ward, Randall L.: *See—*
Robertson, Stephen H., and Ward. 239,684.

Warner-Lambert Co.: *See—*
Glaberson, Martin. 239,696.
Glaberson, Martin. 239,699.

Wilkinson Sword Ltd.: *See—*
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Winston, Woodrow. Pocket lock for a billfold. 239,740, 4-27-76, Cl. D87—2.

Wintering, Victoria. Golf aid device. 239,726, 4-27-76, Cl. D34—5.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Horino, Kazutaka, and Sato. 239,708.

Ziegler, Wilhelmine. Floatable tray for beverage glasses. 239,673, 4-27-76, Cl. D6—146.

CLASSIFICATION OF PATENTS

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589 3,952,404
592 3,952,405
598 3,952,406
600 3,952,407
611 3,952,408
3,952,409
628 3,952,410
630E 3,952,411

CLASS 30
166R 3,952,412
346.58 3,952,413

CLASS 32
10A 3,952,414
11 3,952,415
27 3,952,416

CLASS 33
75R 3,952,417
.174G 3,952,419
174L 3,952,418
361 3,952,420

CLASS 34
1 3,952,421

CLASS 35
22R 3,952,422
23R 3,952,423
29R 3,952,424
48A 3,952,426
48R 3,952,425

CLASS 36
31 3,952,429
51 3,952,430
103WI 3,952,427
131WI 3,952,428

CLASS 37
41 3,952,431
126AE 3,952,432
142A 3,952,433

CLASS 40
152 3,952,434
152.1 3,952,435
3,952,436
3,952,437
300 3,952,438
301 3,952,439

CLASS 42
1R 3,952,440
50 3,952,441

CLASS 43
25 3,952,443
34 3,952,444
42.34 3,952,445

CLASS 44
58 3,953,179

CLASS 46
1R 3,952,446
6 3,952,447
78 3,952,448
161 3,952,449
206 3,952,442
218 3,952,450
249 3,952,451

CLASS 48
215 3,953,180

CLASS 49
3 3,952,452
34 3,952,453
480 3,952,454
497 3,952,455

CLASS 51
56R 3,952,456
66 3,952,457
165.77 3,952,458
219R 3,952,459
323 3,952,460

CLASS 52
57 3,952,461
62 3,952,462
63 3,952,463
72 3,952,464
73 3,952,465
118 3,952,466
121 3,952,467
227 3,952,468
249 3,952,469
509 3,952,470
602 3,952,471
648 3,952,472
656 3,952,473
747 3,952,474
758F 3,952,475
760 3,952,476

CLASS 53
3 3,952,477
122 3,952,478
187 3,952,479
3,952,480
392 3,952,481

CLASS 55
228 3,953,181
270 3,953,182
440 3,953,183
458 3,953,184

CLASS 56
13.9 3,952,482
17.2 3,952,483
202 3,952,484
235 3,952,485
303 3,952,486
328R 3,952,487
333 3,952,488
370 3,952,489
400.14 3,952,490

CLASS 57
34R 3,952,491
34.5 3,952,492
58.89 3,952,493
3,952,494
105 3,952,495
144 3,952,496

CLASS 58
28R 3,952,497
82A 3,952,498
88R 3,952,499
126D 3,952,500

CLASS 60
39.2 3,952,502
39.23 3,952,501
39.65 3,952,503
39.69 3,952,504
219 3,952,505
255 3,952,506
278 3,952,507
330 3,952,508
403 3,952,510
422 3,952,509
430 3,952,511
431 3,952,512
435 3,952,513
445 3,952,514
447 3,952,515
477 3,952,516
502 3,952,517
553 3,952,518
641 3,952,519

CLASS 61
4 3,952,520
5 3,952,521
29 3,952,522
39 3,952,523
43 3,952,524
45D 3,952,525
46 3,952,526
46.5 3,952,527
48 3,952,528
72.1 3,952,529
72.4 3,952,532

CLASS 62
10 3,952,530
45 3,952,531
115 3,952,533
136 3,952,534
222 3,952,535
293 3,952,536
324 3,952,537
342 3,952,538
351 3,952,539
374 3,952,540
381 3,952,541
409 3,952,542
514JT 3,952,543

CLASS 64
9R 3,952,547
19 3,952,544
27NM 3,952,546
27C 3,952,545

CLASS 65
8 3,953,185
51 3,953,186
161 3,953,187
162 3,953,188
207 3,953,189
335 3,953,190

CLASS 66
57 3,952,548
86E 3,952,549
87 3,952,550
120 3,952,551
125A 3,952,552
157 3,952,553
163 3,952,554
195 3,952,555

CLASS 68
12R 3,952,556
23.3 3,952,557
177 3,952,558

CLASS 70
25 3,952,559
52 3,952,560
70 3,952,561
146 3,952,562
232 3,952,563
416 3,952,564
417 3,952,565

CLASS 71
23 3,953,191
59 3,953,192

CLASS 72
38 3,952,568
134 3,952,569
224 3,952,570
286 3,952,571
298 3,952,572
342 3,952,573
379 3,952,574
393 3,952,575

CLASS 73
10 3,952,566
23 3,952,567
54 3,952,576
55 3,952,577
61.4 3,952,579
3,952,580
64.1 3,952,578
67.8S 3,952,581
3,952,582
71.3 3,952,583
73 3,952,584
80 3,952,585
117 3,952,589
117.2 3,952,586
136R 3,952,587
147 3,952,590
155 3,952,588
157 3,952,591
194R 3,952,592
304C 3,952,593
349 3,952,594
359 3,952,595
363.9 3,952,596
371 3,952,597
415 3,952,598
425HP 3,952,599
433 3,952,600
455 3,952,601
457 3,952,602

CLASS 74
10.33 3,952,603
57 3,952,604
99R 3,952,605
377 3,952,606
393 3,952,607
411 3,952,608
421R 3,952,610
522 3,952,611
573R 3,952,612
759 3,952,613
865 3,952,614

CLASS 75
.5BC 3,953,194
.5R 3,953,193
12 3,953,195
38 3,953,196
48 3,953,197
58 3,953,198
60 3,953,199
103 3,953,200
126C 3,953,201
148 3,953,202
171 3,953,203
211 3,953,204
213 3,953,205

CLASS 76
25A 3,952,615
40 3,952,616

CLASS 81
62 3,952,617
71 3,952,618
420 3,952,619

CLASS 83
422 3,952,620
733 3,952,621
799 3,952,622

CLASS 84
1.24 3,952,623
1.26 3,952,624
454 3,952,625

CLASS 85
33 3,952,626

CLASS 86
1R 3,952,627
3,952,628

CLASS 89
14D 3,952,629

CLASS 90
15R 3,952,630

CLASS 91
372 3,952,631

CLASS 92
117R 3,952,632
184 3,953,213

CLASS 93
37R 3,952,633
49R 3,952,634
51R 3,952,635
53SD 3,952,636
58.2R 3,952,637

CLASS 96
1LY 3,953,206
1PC 3,953,207
1.5 3,953,208
38.3 3,953,209
45.2 3,953,210
73 3,953,211
75 3,953,212
86P Re.28,789
115P 3,953,214
124 3,953,215
126 3,953,216

CLASS 98
43R 3,952,638
110 3,952,639
115K 3,952,640

CLASS 99
295 3,952,641
300 3,952,642
337 3,952,643
419 3,952,644
474 3,952,609
524 3,952,645
639 3,952,646

CLASS 100
98R 3,952,647

CLASS 101
93.14 3,952,648
100 3,952,649
120 3,952,650
242 3,952,651
316 3,952,652
327 3,952,653
425 3,952,654

CLASS 102
23 3,952,655
30 3,952,656
38 3,952,657
40 3,952,658
42R 3,952,659
70.2R 3,952,660
3,952,661
73R 3,952,663
89 3,952,664
92.7 3,952,662

CLASS 104
8 3,952,665
23FS 3,952,666
138R 3,952,667
148SS 3,952,668

CLASS 105
171 3,952,669
224.1 3,952,670
498 3,952,671

CLASS 106
8 3,953,217
19 3,953,218
38.27 3,953,219
39.8 3,953,220
62 3,953,221
97 3,953,222
308N 3,953,223

CLASS 108
56 3,952,672

CLASS 112
121.15 3,952,673
199 3,952,674
212 3,952,675

CLASS 113
1B 3,952,676
120Y 3,952,677

CLASS 114
66.5S 3,952,678
74T 3,952,679
123 3,952,680
144A 3,952,681
162 3,952,682
210 3,952,683
230 3,952,684
235R 3,952,685

CLASS 115
17 3,952,686
41R 3,952,687

CLASS 116
28R 3,952,688
57 3,952,689
63P 3,952,690
65 3,952,691
102 3,952,692
115.5 3,952,693
124B 3,952,694
173 3,952,695

CLASS 118
60 3,952,696
263 3,952,697
314 3,952,698
315 3,952,699
637 3,952,700
3,952,701
3,952,702

CLASS 119
17 3,952,703
29 3,952,704
51R 3,952,705
75 3,952,706

CLASS 122
367R 3,952,707

CLASS 123
8.09 3,952,708
8.31 3,952,709
32EA 3,952,710
32JV 3,952,711
41.65 3,952,712
90.3 3,952,713
103C 3,952,714
117R 3,952,715
141 3,952,716
179BG 3,952,717
179SE 3,952,718
198DB 3,952,719

CLASS 124
35A 3,952,720

CLASS 126
63 3,952,721
141 3,952,722
247 3,952,723
271 3,952,724
3,952,725

CLASS 127
5 3,953,224

CLASS 128
1R 3,952,726
2F 3,952,729
2G 3,952,730
2R 3,952,728
2.06 3,952,731
24A 3,952,732
66 3,952,736
94 3,952,733
127 3,952,737
130 3,952,734
132D 3,952,738
145.8 3,952,739
3,952,740
163 3,952,735
172.1 3,952,742
260 3,952,741
276 3,952,743
283 3,952,727
287 3,952,744
3,952,745
3,952,746
303R 3,952,747
303.14 3,952,748
321 3,952,749
419D 3,952,750
422 3,952,751
486 3,952,752

CLASS 131
235R 3,952,753

CLASS 132
120 3,952,754
161 3,952,755

CLASS 134
9 3,953,225
104 3,953,226
133 3,952,756
134 3,952,757

CLASS 135
5AT 3,952,758

CLASS 136
6FS 3,953,227
3,953,228
3,953,229
3,953,233
6LN 3,953,230
3,953,232
3,953,234
20 3,953,235
26 3,953,236
62 3,953,231
86R 3,953,237
90 3,953,238
100R 3,953,239
107 3,953,240
145 3,953,241
155 3,953,242

CLASS 137
12 3,952,759
82 3,952,760
91 3,952,761
102 3,952,762
119 3,952,763
3,952,764
171 3,952,765
218 3,952,766
268 3,952,767
344 3,952,768
3,952,769
360 3,952,770
491 3,952,771
565 3,952,772
604 3,952,773
625.38 3,952,775
625.5 3,952,774

CLASS 138
39 3,952,776
149 3,952,777

CLASS 139
54 3,952,778
110 3,952,779
291R 3,952,780

CLASS 141
46 3,952,781
100 3,952,782

CLASS 144
3D 3,952,783
28.1 3,952,784

CLASS 148
1.5 3,953,243
2 3,953,244
3 3,953,245
11.5R 3,953,246
13 3,953,247
15 3,953,248
32.5 3,953,249
36 Re.28,790
Re.28,791
3,953,250
105 3,953,251
121 3,953,252
131 3,953,253
175 3,953,254
187 3,953,255

CLASS 149
5 3,953,256
7 3,953,257
19.3 3,953,258
19.5 3,953,259
19.92 3,953,260
36 3,953,261
3,953,262

CLASS 151
13 3,953,267
21B 3,952,785

CLASS 152
323 3,952,786
347 3,952,787

CLASS 156
7 3,953,263
3,953,264
8 3,953,265
11 3,953,266
71 3,953,268
79 3,953,269
80 3,953,270
85 3,953,271
152 3,953,272
224 3,953,273
252 3,953,274
278 3,953,275
345 3,953,276
360 3,953,277
361 3,953,278
513 3,953,279
515 3,953,280
618 3,953,281

CLASS 160
84R 3,952,788
168R 3,952,789
193 3,952,790

CLASS 162
102 3,953,282
158 3,953,283
352 3,953,284

CLASS 164
49 3,952,791
52 3,952,792
160 3,952,793

CLASS 165
2 3,952,794
30 3,952,795
40 3,952,796
80 3,952,797
105 3,952,798

CLASS 166
116 3,952,799
249 3,952,800
256 3,952,801
262 3,952,802
270 3,952,803
278 3,952,804
293 3,952,805
294 3,952,806

CLASS 168
28 3,952,807

CLASS 169
61 3,952,808
3,952,809

CLASS 172
40 3,952,810
45 3,952,811
375 3,952,812

CLASS 173
91 3,952,813
93 3,952,814

CLASS 174
17.05 3,953,662
68.5 3,953,663
3,953,664
153G 3,953,665

CLASS 175
67 3,952,816
240 3,952,817
277 3,952,818
293 3,952,819
374 3,952,815

CLASS 176
66 3,953,285
3,953,286
78 3,953,287
79 3,953,288
87 3,953,289

CLASS 178
5.6 3,953,666
6 3,953,667
3,953,668
6.6A 3,953,681
6.8 3,953,669
3,953,670
7.2 3,953,671
7.3D 3,953,672
68 3,953,673
69.5 3,953,674

CLASS 179
1HF 3,953,676
1E 3,953,675
1.5R 3,953,677
3,953,678
6E 3,953,680
6R 3,953,679
18FA 3,953,682
84A 3,953,683
90K 3,953,684
100.1DR 3,953,685
100.4ST 3,953,686
115.5R 3,953,687
147 3,953,688

CLASS 180
1R 3,952,820
19R 3,952,821
21 3,952,822
64A 3,952,823
73D 3,952,824
82R 3,952,827
97 3,952,828
105E 3,952,829
136 3,952,826
139 3,952,825

CLASS 181
33G 3,952,830
3,952,831
116 3,952,832
118 3,952,833
150 3,952,834

CLASS 185
11 3,952,835

CLASS 187
2 3,952,836
29R 3,952,837

CLASS 188
31 3,952,838
62 3,952,839
71.4 3,952,842
3,952,843
71.8 3,952,840
3,952,841
72.8 3,952,844
196D 3,952,845
264R 3,952,846

CLASS 190
41Z 3,952,847

CLASS 191
331 3,952,848

CLASS 192
41A 3,952,849

CLASS 194
1N 3,952,850
100A 3,952,851

CLASS 195
1.8 3,953,290
63 3,953,292
96 3,953,293
103.5R 3,953,294
3,953,295
3,953,296
3,953,297

CLASS 196
36P 3,953,291
133 3,953,298

CLASS 197
19 3,952,852
55 3,952,853

CLASS 198
20C 3,952,854
32 3,952,855
37 3,952,856
41 3,952,857
103 3,952,858
110 3,952,859
189 3,952,860
204 3,952,861
213 3,952,862
230 3,952,863
232 3,952,864
240 3,952,865
262 3,952,866

CLASS 200
51R 3,953,689
61.08 3,953,690
61.46 3,953,691
83P 3,953,692
144B 3,953,693
147A 3,953,694
150C 3,953,695
157 3,953,696
243 3,953,697
279 3,953,698
295 3,953,699

CLASS 202
139 3,953,299

CLASS 203
53 3,953,300
75 3,953,301

CLASS 204
1T Re.28,792
14N 3,953,302
15 3,953,303
49 3,953,304
97 3,953,305
106 3,953,306
134 3,953,307
140 3,953,308
159.16 3,953,309
181 3,953,310
197 3,953,311
198 3,953,312
267 3,953,313
272 3,953,314
3,953,315
288 3,953,316

CLASS 206
229 3,952,867
273 3,952,868
363 3,952,869
369 3,952,870
455 3,952,871
526 3,952,872
528 3,952,873

CLASS 208
11LE 3,953,317
3,953,318
25 3,953,319
111 3,953,320
216 3,953,321
255 3,953,322
3,953,323
321 3,953,324

CLASS 209
73 3,952,874
273 3,953,325

CLASS 210
7 3,953,326
3,953,327
3,953,328
22R 3,953,329
52 3,953,330
63R 3,953,331
71 3,953,332
74 3,953,333
321R 3,953,334

CLASS 211
41 3,952,875
50 3,952,876
64 3,952,878
105.5 3,952,877

CLASS 212
39MS 3,952,879

CLASS 214
1CM 3,952,880
6B 3,952,881
6D 3,952,882
8.5E 3,952,884
8.5K 3,952,883
18N 3,952,885
38BA 3,952,886
38C 3,952,887
41R 3,952,888
42R 3,952,889
82 3,953,170
138R 3,952,890
152 3,952,891
340 3,952,892
450 3,952,893
451 3,952,894
506 3,952,895
771 3,952,896

CLASS 215
11C 3,952,897
12R 3,952,898
217 3,952,899
232 3,952,900
251 3,952,901
306 3,952,902

CLASS 219
10.55M 3,953,703
10.55R 3,953,702
10.79 3,953,700
10.81 3,953,701
76 3,953,704
121L 3,953,706
121P 3,953,705
205 3,953,707
216 3,953,708
3,953,709
370 3,953,710
464 3,953,711

CLASS 220
4E 3,952,903
5R 3,952,904
14 3,952,905
18 3,952,906
3,952,907
3,952,908
21 3,952,909
90.4 3,952,910
269 3,952,911
3,952,912
273 3,952,913
339 3,952,914

CLASS 221
75 3,952,915

CLASS 222
70 3,952,916
78 3,952,917
82 3,952,918
89 3,952,919
137 3,952,920
146HE 3,952,921
148 3,952,922
174 3,952,923
181 3,952,924
485 3,952,925
494 3,952,926
510 3,952,927
564 3,952,928

CLASS 223
94 3,952,929

CLASS 224
2C 3,952,930
69 3,952,942

CLASS 225
103 3,952,931

CLASS 226
3.2 3,953,411
49 3,952,932
118 3,952,933

CLASS 227
88 3,952,934
120 3,952,935

CLASS 228
49 3,952,936
110 3,952,937
190 3,952,938
193 3,952,939

CLASS 229
41B 3,952,941
114BA 3,952,940

CLASS 234
116 3,952,943

CLASS 235
61.11D 3,953,712
92CT 3,952,944
92DN 3,953,713
150.2 3,953,714
150.21 3,953,715
3,953,716
153AK 3,953,717
156 3,953,718
3,953,719
168 3,953,720
180 3,953,721

CLASS 236
15B 3,952,945
34 3,952,946

CLASS 237
1A 3,952,947

CLASS 238
243 3,952,948

CLASS 239
2S 3,952,949
14 3,952,950
15 3,952,951
177 3,952,952
230 3,952,953
236 3,952,954
288.5 3,952,955
289 3,952,956

CLASS 240
6.4W 3,953,722
11.1 3,953,723
44.2 3,953,724
51.11R 3,953,725
61 3,953,726

CLASS 241
73 3,952,957
162 3,952,958

CLASS 242
18PW 3,952,959
25A 3,952,960
54R 3,952,961
3,952,962
68.5 3,952,963
77.1 3,952,964
96 3,952,965
107.4R 3,952,966
3,952,967
182 3,952,968
205 3,952,969

CLASS 244
3.23 3,952,970
35R 3,952,971
53B 3,952,972
54 3,952,973
137R 3,952,974
153R 3,952,975
158 3,952,976

CLASS 246
37 3,952,977
477 3,952,978

CLASS 248
20 3,952,979
22 3,952,980
124 3,952,982
173 3,952,983
282 3,952,984
291 3,952,981
317 3,952,985
354R 3,952,986
408 3,952,987
441B 3,952,988
453 3,952,989

CLASS 249
63 3,952,990
66A 3,952,991
104 3,952,992

CLASS 250
199 3,953,727
201 3,953,728
3,953,729
227 3,953,730
287 3,953,732
290 3,953,733
330 3,953,734
343 3,953,736
358R 3,953,735
363S 3,953,737
432R 3,953,738
475 3,953,739
571 3,953,739

CLASS 251
20 3,952,993
210 3,952,994
232 3,952,995
324 3,952,996

CLASS 252
8.5A 3,953,335
3,953,336
3,953,337
8.5C 3,953,338
8.55C 3,953,340
8.55D 3,953,341
3,953,342
8.9 3,953,339
12 3,953,343
32.7E 3,953,344
48.6 3,953,347
51 3,953,348
3,953,349
51.5A 3,953,346
94 3,953,350
132 3,953,351
142 3,953,352
174 3,953,353
187H 3,953,354
301.1R 3,953,355
373 3,953,356
378R 3,953,357
407 3,953,358
408 3,953,359
423 3,953,345
428 3,953,360
429R 3,953,361
431N 3,953,362
443 3,953,363
455Z 3,953,364
3,953,365
463 3,953,366
3,953,367

466PT 3,953,368
472 3,953,369
473 3,953,370
512 3,953,371
518 3,953,372
3,953,373
3,953,374
520 3,953,375
521 3,953,376
522 3,953,377
3,953,378
527 3,953,379
543 3,953,380
544 3,953,381
548 3,953,382

CLASS 254
63 3,952,997
124 3,952,998
134.3R 3,952,999
169 3,953,000

CLASS 259
4AB 3,953,002
4R 3,953,001
3,953,003
23 3,953,004
191 3,953,006

CLASS 260
2BP 3,953,383
2.5AC 3,953,384
2.5P 3,953,385
17A 3,953,386
17.3 3,953,421
18EP 3,953,388
18TN 3,953,387
23.7M 3,953,389
28.5AS 3,953,390
29.6TA 3,953,391
30.4A 3,953,392
31.8R 3,953,393
40R 3,953,394
3,953,395
45.75B 3,953,397
45.8A 3,953,396
45.85B 3,953,398
45.85H 3,953,399
47R 3,953,400
49 3,953,401
62 3,953,402
75M 3,953,404
75T 3,953,403
3,953,405
77.5AM 3,953,406
112.5LH 3,953,416
112.5R 3,953,415
3,953,417
112.7 3,953,418
143 3,953,419
152 3,953,420
210F 3,953,423
210R 3,953,422
239BF 3,953,427
239A 3,953,424
239B 3,953,425
3,953,426
239.1 3,953,428
239.3T 3,953,430
239.55R 3,953,429
239.57 3,953,431
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3,953,434
240E 3,953,432
240R 3,953,435
243C 3,953,436
3,953,437
3,953,438
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3,953,440
247.5FP 3,953,442
248A 3,953,443
250AC 3,953,444
250A 3,953,445
251QB 3,953,446
256.4C 3,953,447
268BZ 3,953,448
268PH 3,953,449
270K 3,953,450
281NH 3,953,451
282 3,953,452
284 3,953,453
285.5 3,953,454
286A 3,953,455
288CF 3,953,457
288GF 3,953,458
288R 3,953,456
293.54 3,953,441
293.89 3,953,459
294.8C 3,953,461
294.8G 3,953,460
295A 3,953,462
295R 3,953,463
302F 3,953,464
307R 3,953,465
308D 3,953,466
310R 3,953,467
332.2R 3,953,468
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340.5 3,953,470
340.9 3,953,471
343 3,953,472
343.3R 3,953,473
345.7 3,953,474
346.8R 3,953,475
347.2 3,953,476
347.3 3,953,477
347.4 3,953,478
348A 3,953,479
348.5L 3,953,480
350R 3,953,481
396R 3,953,482
397.3 3,953,483
419 3,953,484
428 3,953,485
435 3,953,486
448.2E 3,953,487
454 3,953,488
455R 3,953,489
465D 3,953,491
465E 3,953,492
3,953,493
465F 3,953,490
468D 3,953,495
468R 3,953,494
471R 3,953,496
3,953,497
475FR 3,953,498
514 3,953,499
517 3,953,500
518 3,953,501
520D 3,953,502
534S 3,953,503
536 3,953,504
553A 3,953,506
553R 3,953,505
559B 3,953,507
580 3,953,509
3,953,510
583K 3,953,511
584R 3,953,512
585C 3,953,513
586C 3,953,514
586R 3,953,515
3,953,516
593R 3,953,517
3,953,518
609D 3,953,519
609E 3,953,520
610B 3,953,521
611B 3,953,522
3,953,523
617A 3,953,524
618R 3,953,525
621A 3,953,528
621G 3,953,527
621H 3,953,526
621R 3,953,529
623R 3,953,530
625 3,953,531
632R 3,953,532
641 3,953,533
662 3,953,508
666PY 3,953,534
668A 3,953,536
668B 3,953,535
676R 3,953,537
683.48 3,953,538
836 3,953,408
860 3,953,539
878R 3,953,540
3,953,541
3,953,542
880B 3,953,543
898 3,953,545
938 3,953,546

CLASS 261
18A 3,953,547
50A 3,953,548
3,953,549
64R 3,953,550
91 3,953,551
93 3,953,552
122 3,953,553
124 3,953,554
3,953,555

CLASS 264
.5 3,953,556
22 3,953,557
3,953,558
39 3,953,559
50 3,953,560
57 3,953,561
63 3,953,562
66 3,953,563
78 3,953,564
210F 3,953,565
288 3,953,566

CLASS 266
50 3,953,005
193 3,953,007
3,953,008
283 3,953,009

CLASS 267
34 3,953,010
48 3,953,011
154 3,953,012

CLASS 269
7 3,953,013
43 3,953,014
46 3,953,015
236 3,953,016

CLASS 270
54 3,953,017
55 3,953,018
61F 3,953,019

CLASS 271
3.1 3,953,021
14 3,953,020
95 3,953,022
173 3,953,023

CLASS 272
1E 3,953,024
132 3,953,025
140 3,953,026

CLASS 273
1R 3,953,027
26EA 3,953,028
95A 3,953,029
95R 3,953,030
104 3,953,031
135R 3,953,032
183E 3,953,033
186C 3,953,034
192 3,953,035

CLASS 274
9R 3,953,036

CLASS 277
30 3,953,037
93R 3,953,038

CLASS 279
1TS 3,953,039

CLASS 280
6H 3,953,040
11.26 3,953,041
11.37E 3,953,043
33.99H 3,953,044
47.3 3,953,048
154.5R 3,953,053
179R Re.28,788
242WC 3,953,054
504 3,953,055
631 3,953,042
638 3,953,045
639 3,953,047
644 3,953,046
730 3,953,049
760 3,953,050
763 3,953,051
3,953,052

CLASS 281
29 3,953,056

CLASS 285
67 3,953,057
110 3,953,058
192 3,953,059
272 3,953,060

CLASS 292
5 3,953,061
57 3,953,062
144 3,953,063
187 3,953,064

CLASS 294
1R 3,953,065

CLASS 296
23R 3,953,066
137A 3,953,067

CLASS 297
216 3,953,068
367 3,953,069
389 3,953,070
454 3,953,071
460 3,953,072

CLASS 299
5 3,953,073

CLASS 301
5BA 3,953,074
40S 3,953,075

CLASS 302
2R 3,953,076
21 3,953,077
27 3,953,078

CLASS 303
7 3,953,079
21BE 3,953,080
21CH 3,953,081
21A 3,953,082
21P 3,953,083
24R 3,953,084

CLASS 305
16 3,953,085

CLASS 307
10R 3,953,740
87 3,953,741
95 3,953,742
205 3,953,743
208 3,953,744
221C 3,953,745
247R 3,953,746
253 3,953,747
3,953,748
277 3,953,749

CLASS 308
3A 3,953,086
22 3,953,087
147 3,953,088
237R 3,953,089

CLASS 310
25 3,953,754
91 3,953,751
154 3,953,750
156 3,953,752
168 3,953,753

CLASS 312
183 3,953,090
223 3,953,091
233 3,953,092
245 3,953,093
303 3,953,094

CLASS 313
174 3,953,755
220 3,953,756
222 3,953,757
360 3,953,758

CLASS 315
3.5 3,953,759
13C 3,953,760
71 3,953,761
169TV 3,953,762
262 3,953,763
386 3,953,764
389 3,953,765

CLASS 317
18D 3,953,766
3,953,767
31 3,953,768
134 3,953,769
146 3,953,770
248 3,953,771
262A 3,953,772

CLASS 318
52 3,953,773
147 3,953,775
312 3,953,776
474 3,953,777
594 3,953,774
683 3,953,778

CLASS 321
2 3,953,779
18 3,953,780
27R 3,953,781
28 3,953,782
43 3,953,783
3,953,785
45C 3,953,784
3,953,786

CLASS 322
13 3,953,787

CLASS 323
25 3,953,788

CLASS 324
.5AC 3,953,789
30B 3,953,790
34R 3,953,791
61R 3,953,792
76A 3,953,793
83D 3,953,794

CLASS 325
142 3,953,795
158F 3,953,797
158R 3,953,796

CLASS 326
30 3,953,798
376 3,953,799
455 3,953,800
464 3,953,801
474 3,953,802

CLASS 328
112 3,953,803
130 3,953,804
162 3,953,805

CLASS 330
2 3,953,806
35 3,953,807
3,953,808

CLASS 331
94.5H 3,953,809

CLASS 332
7.51 3,953,810

CLASS 335
16 3,953,811
23 3,953,812
112 3,953,813
230 3,953,814

CLASS 336
90 3,953,815
119 3,953,816

CLASS 337
136 3,953,817
191 3,953,818

CLASS 338
36 3,953,819
89 3,953,820
174 3,953,821

CLASS 339
6R 3,953,095
17L 3,953,096
37 3,953,097
45R 3,953,098
60M 3,953,099
112R 3,953,100
174 3,953,101
258R 3,953,102
276T 3,953,103

CLASS 340
1R 3,953,822
3,953,823
3C 3,953,824
5MP 3,953,825
7PC 3,953,826
7R 3,953,827
9 3,953,828
17R 3,953,829
52R 3,953,830
53 3,953,831
171R 3,953,832
172.5 3,953,833
3,953,834
3,953,835
173MS 3,953,836
173R 3,953,837
3,953,838
3,953,839
174EB 3,953,840
174TF 3,953,841
3,953,842
224 3,953,843
237S 3,953,844
244B 3,953,845
337 3,953,846
347AD 3,953,847
409 3,953,848

CLASS 343
7A 3,953,849
17.7 3,953,850
18E 3,953,851
100SA 3,953,852
3,953,853
106D 3,953,854
106R 3,953,855
112D 3,953,856
705 3,953,857
779 3,953,858

CLASS 346
1 3,953,859
75 3,953,860
139C 3,953,861
140R 3,953,862

CLASS 350
4 3,953,104
7 3,953,105
16 3,953,106
149 3,953,107
150 3,953,108
160R 3,953,109
161 3,953,110
189 3,953,111
227 3,953,112
288 3,953,113

CLASS 351
123 3,953,114
166 3,953,115

CLASS 352
141 3,953,116

CLASS 353
11 3,953,117
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116 3,953,119
119 3,953,120

CLASS 354
25 3,953,863
27 3,953,864
29 3,953,865
51 3,953,867
109 3,953,868
115 3,953,869
252 3,953,871
275 3,953,872
277 3,953,870
315 3,953,873

CLASS 355
3DD 3,953,121
12 3,953,122
45 3,953,123
75 3,953,124
83 3,953,125

CLASS 356
28 3,953,126
103 3,953,127
106R 3,953,128
109 3,953,129
125 3,953,130
141 3,953,131
152 3,953,132
3,953,133
155 3,953,134
175 3,953,135
181 3,953,136
222 3,953,137

CLASS 357
8 3,953,874
22 3,953,879
30 3,953,880
44 3,953,866
51 3,953,875
60 3,953,876
72 3,953,877
81 3,953,878

CLASS 358
4 3,953,881
27 3,953,883
30 3,953,884
54 3,953,885
56 3,953,886
800 3,953,882

CLASS 360
2 3,953,887
46 3,953,888
77 3,953,889
85 3,953,890
105 3,953,891

CLASS 403
3,953,138
140 3,953,139
258 3,953,140
259 3,953,141
371 3,953,142
374 3,953,143
3,953,144

CLASS 404
84 3,953,145

CLASS 415
121B 3,953,146
143 3,953,147
199R 3,953,148

CLASS 416
136 3,953,149
183 3,953,151
184 3,953,150

CLASS 417
45 3,953,152
204 3,953,153
270 3,953,154
554 3,953,155

CLASS 418
35 3,953,156
36 3,953,157
61B 3,953,158
61R 3,953,159
190 3,953,160

CLASS 423
2 3,953,567
7 3,953,568
3,953,569
155 3,953,570
3,953,571
158 3,953,572
161 3,953,573
178 3,953,574
212 3,953,575
213.7 3,953,576
236 3,953,577
242 3,953,578
263 3,953,579
283 3,953,580
321S 3,953,581
410 3,953,582
450 3,953,583
462 3,953,584
489 3,953,585
575 3,953,586
576 3,953,587

CLASS 424
12 3,953,588
60 3,953,589
65 3,953,590
80 3,953,591
89 3,953,592
114 3,953,593
117 3,953,594
230 3,953,595
248 3,953,596
253 3,953,597
258 3,953,598
265 3,953,599
273 3,953,600
275 3,953,601

CLASSIFICATION OF PATENTS

283	3,953,602	93	3,953,611		3,953,622	131	3,953,633	332	3,953,646	518	3,953,660
	3,953,603	104	3,953,612	189	3,953,623	133	3,953,634	378	3,953,647	539	3,953,656
	3,953,604	502	3,953,613	256	3,953,624	151	3,953,635		3,953,648	542	3,953,661
311	3,953,605	536	3,953,614	258	3,953,625	154	3,953,638	383	3,953,649		
322	3,953,606	594	3,953,615	346	3,953,626	155	3,953,636	389	3,953,650	CLASS 526	
341	3,953,607	637	3,953,616	427	3,953,627	156	3,953,637	391	3,953,651	22	3,953,407
361	3,953,608			442	3,953,628	160	3,953,639	406	3,953,657	82	3,953,409
		CLASS 427				188	3,953,640	412	3,953,652	247	3,953,412
CLASS 425		6	3,953,617	CLASS 428		195	3,953,641	419	3,953,653	284	3,953,410
66	3,953,161	21	3,953,618	36	3,953,629	204	3,953,642	458	3,953,658	304	3,953,544
CLASS 426		39	3,953,619	38	3,953,630	220	3,953,643	471	3,953,654	348	3,953,414
2	3,953,609	53	3,953,620	95	3,953,631		3,953,644	474	3,953,655	350	3,953,413
39	3,953,610	54	3,953,621		3,953,632	310	3,953,645	511	3,953,659		

CLASSIFICATION OF DESIGNS

D2—	25	239,667			239,680	D8—	90	239,694		107	239,709		239,719
	33C	239,669		175	239,685		109	239,693		111	239,708		239,721
	381	239,668		177	239,670	D9—	37	239,697		191	239,705	R	239,720
D6—	15	239,676			239,672		167	239,698	D13—	1B	239,701	14J	239,722
	18	239,681			239,684		186	239,696		G	239,702	D27—	8 239,723
	27	239,675		182	239,677			239,699	D19—	76	239,700	D30—	16 239,724
	47	239,671	D7—	1	239,686		237	239,695	D22—	28	239,712	D34—	5CB 239,726
	49	239,683		46	239,688	D10—	14	239,703	D23—	11	239,713		GS 239,725
	85	239,674			239,689		73	239,704		69	239,714		41 239,727
		239,678		65	239,687		106	239,706		71	239,715	D47—	6E 239,728
		239,682		128	239,690	D12—	56	239,707	D26—	1D	239,717	D48—	23R 239,729
	146	239,673		130	239,691		64	239,711		R	239,716		24 239,730
	161	239,679			239,692		73	239,710		5C	239,718		

D55—	1C	239,731											
D56—	4B	239,732											
		239,733											
		239,734											
D57—	1F	239,735											
D61—	T	239,736											
D83—	N	239,737											
		239,738											
D86—	R	239,739											
D87—	2	239,740											
	3F	239,741											
D95—	A	239,742											

CLASSIFICATION OF PLANTS

P. —	68	3,871	P. —	3,872	P. —	3,873	P. —	3,874	P. —	3,875

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
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Delaware	10	Montana	30	Vermont	50
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Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
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Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1	:	3,952,590	3,952,543	3,953,094		3,953,866	3,952,636	3,952,573
		3,952,627	3,952,562	3,953,104		3,953,889	3,952,644	3,952,578
		3,952,980	3,952,565	3,953,113	8	: 3,952,439	3,952,681	3,952,580
		3,953,002	3,952,575	3,953,138		3,952,564	3,952,693	3,952,581
		3,953,092	3,952,582	3,953,144		3,952,592	3,952,720	3,952,604
		3,953,256	3,952,618	3,953,192		3,952,594	3,952,847	3,952,606
		3,953,257	3,952,623	3,953,208		3,952,620	3,952,903	3,952,609
		3,953,258	3,952,640	3,953,214		3,952,801	3,952,920	3,952,625
		3,953,259	3,952,647	3,953,260		3,952,802	3,952,965	3,952,629
		3,953,261	3,952,649	3,953,268		3,952,919	3,953,070	3,952,630
		3,953,262	3,952,653	3,953,279		3,952,992	3,953,091	3,952,641
		3,953,824	3,952,658	3,953,294		3,953,073	3,953,125	3,952,642
4	:	3,952,403	3,952,664	3,953,295	9	: 3,952,413	3,953,205	3,952,671
		3,952,405	3,952,680	3,953,309		3,952,446	3,953,255	3,952,677
		3,952,412	3,952,698	3,953,327		3,952,598	3,953,316	3,952,697
		3,952,461	3,952,702	3,953,338		3,952,601	3,953,609	3,952,727
		3,952,566	3,952,706	3,953,353		3,952,611	3,953,645	3,952,729
		3,952,767	3,952,722	3,953,364		3,952,659	3,953,667	3,952,753
		3,952,858	3,952,725	3,953,400		3,952,711	3,953,706	3,952,810
		3,952,958	3,952,730	3,953,406		3,952,877	3,953,726	3,952,825
		3,953,217	3,952,732	3,953,444		3,952,884	3,953,821	3,952,906
		3,953,746	3,952,751	3,953,477		3,952,912	3,953,828	3,952,911
		3,953,794	3,952,756	3,953,478		3,952,916	13 : 3,952,448	3,952,913
		3,953,875	3,952,766	3,953,507		3,953,098	3,952,472	3,952,937
5	:	3,952,704	3,952,798	3,953,532		3,953,105	3,952,533	3,952,961
		3,953,847	3,952,800	3,953,544		3,953,234	3,953,051	3,952,969
6	:	3,952,334	3,952,812	3,953,551		3,953,249	3,953,114	3,952,975
		3,952,337	3,952,830	3,953,618		3,953,362	3,953,178	3,952,987
		3,952,338	3,952,832	3,953,634		3,953,466	3,953,283	3,952,997
		3,952,340	3,952,878	3,953,646		3,953,510	3,953,615	3,953,011
		3,952,345	3,952,880	3,953,670		3,953,595	3,953,631	3,953,027
		3,952,352	3,952,888	3,953,679		3,953,616	3,953,685	3,953,040
		3,952,354	3,952,894	3,953,682		3,953,637	3,953,869	3,953,041
		3,952,356	3,952,899	3,953,683		3,953,647	15 : 3,953,186	3,953,061
		3,952,359	3,952,902	3,953,688		3,953,766	16 : 3,952,522	3,953,075
		3,952,374	3,952,908	3,953,689		3,953,812	3,952,819	3,953,082
		3,952,389	3,952,914	3,953,697	10	: Re.28,789	17 : Re.28,787	3,953,085
		3,952,394	3,952,917	3,953,708		3,953,346	Re.28,788	3,953,099
		3,952,396	3,952,979	3,953,734		3,953,386	3,952,432	3,953,101
		3,952,400	3,952,981	3,953,768		3,953,561	3,952,433	3,953,118
		3,952,410	3,952,999	3,953,769		3,953,566	3,952,436	3,953,120
		3,952,414	3,953,014	3,953,788		3,953,596	3,952,449	3,953,123
		3,952,415	3,953,025	3,953,825	11	: 3,952,998	3,952,452	3,953,134
		3,952,419	3,953,029	3,953,831	12	: 3,952,351	3,952,478	3,953,153
		3,952,442	3,953,032	3,953,833		3,952,422	3,952,510	3,953,175
		3,952,457	3,953,044	3,953,838		3,952,484	3,952,514	3,953,213
		3,952,474	3,953,062	3,953,840		3,952,485	3,952,515	3,953,237
		3,952,505	3,953,066	3,953,841		3,952,488	3,952,516	3,953,276
		3,952,519	3,953,072	3,953,842		3,952,524	3,952,530	3,953,277
		3,952,526	3,953,076	3,953,844		3,952,528	3,952,536	3,953,297
		3,952,527	3,953,086	3,953,856		3,952,532	3,952,545	3,953,305

3,953,348	3,952,602	3,952,719	3,952,349	3,952,572	3,953,143
3,953,349	3,952,740	3,952,786	3,952,357	3,952,574	3,953,188
3,953,359	3,952,778	3,952,925	3,952,373	3,952,596	3,953,190
3,953,367	3,952,809	3,953,031	3,952,411	3,952,652	3,953,196
3,953,397	3,952,821	3,953,111	3,952,428	3,952,713	3,953,201
3,953,475	3,952,835	3,953,159	3,952,430	3,952,721	3,953,202
3,953,481	3,952,851	3,953,275	3,952,443	3,952,724	3,953,203
3,953,494	3,952,872	3,953,336	3,952,465	3,952,745	3,953,209
3,953,522	3,952,918	3,953,497	3,952,499	3,952,770	3,953,221
3,953,523	3,952,931	3,953,610	3,952,507	3,952,794	3,953,241
3,953,537	3,952,947	3,953,705	3,952,517	3,952,882	3,953,285
3,953,538	3,952,968	3,953,808	3,952,542	3,952,886	3,953,299
3,953,575	3,953,110	31 : 3,952,768	3,952,552	3,952,892	3,953,306
3,953,597	3,953,115	3,952,952	3,952,587	3,952,898	3,953,318
3,953,723	3,953,174	32 : 3,953,042	3,952,593	3,952,953	3,953,330
3,953,753	3,953,176	33 : 3,952,723	3,952,605	3,952,976	3,953,341
3,953,772	3,953,204	3,952,964	3,952,621	3,952,985	3,953,342
3,953,780	3,953,242	3,953,376	3,952,672	3,953,016	3,953,374
3,953,782	3,953,253	3,953,750	3,952,687	3,953,038	3,953,391
3,953,786	3,953,280	34 : 3,952,347	3,952,700	3,953,058	3,953,439
3,953,790	3,953,302	3,952,378	3,952,715	3,953,079	3,953,465
3,953,799	3,953,331	3,952,397	3,952,728	3,953,083	3,953,476
3,953,801	3,953,394	3,952,399	3,952,755	3,953,100	3,953,498
3,953,817	3,953,404	3,952,451	3,952,761	3,953,124	3,953,509
18 : 3,952,360	3,953,421	3,952,473	3,952,776	3,953,126	3,953,526
3,952,391	3,953,488	3,952,481	3,952,795	3,953,145	3,953,564
3,952,445	3,953,612	3,952,561	3,952,875	3,953,193	3,953,622
3,952,455	3,953,652	3,952,583	3,952,893	3,953,198	3,953,633
3,952,483	3,953,693	3,952,584	3,952,901	3,953,218	3,953,636
3,952,502	3,953,701	3,952,597	3,952,905	3,953,223	3,953,639
3,952,607	3,953,759	3,952,599	3,952,929	3,953,225	3,953,666
3,952,829	3,953,806	3,952,643	3,952,934	3,953,235	3,953,725
3,952,846	3,953,848	3,952,663	3,952,939	3,953,270	3,953,757
3,952,883	3,953,857	3,952,676	3,952,942	3,953,325	3,953,764
3,953,033	3,953,870	3,952,692	3,952,989	3,953,343	44 : 3,953,239
3,953,071	3,953,872	3,952,738	3,953,013	3,953,347	3,953,648
3,953,103	3,953,885	3,952,749	3,953,020	3,953,395	45 : 3,952,467
3,953,142	26 : Re.28,786	3,952,752	3,953,023	3,953,398	3,952,555
3,953,147	3,952,342	3,952,792	3,953,037	3,953,402	3,952,665
3,953,170	3,952,346	3,952,796	3,953,056	3,953,411	3,952,779
3,953,187	3,952,371	3,952,853	3,953,121	3,953,455	3,953,479
3,953,267	3,952,383	3,952,915	3,953,152	3,953,511	3,953,557
3,953,388	3,952,437	3,952,990	3,953,172	3,953,542	46 : 3,952,705
3,953,396	3,952,438	3,953,039	3,953,194	3,953,543	47 : 3,952,409
3,953,399	3,952,453	3,953,117	3,953,206	3,953,554	3,952,486
3,953,432	3,952,456	3,953,135	3,953,207	3,953,583	3,952,746
3,953,436	3,952,463	3,953,164	3,953,220	3,953,591	3,952,760
3,953,438	3,952,508	3,953,180	3,953,228	3,953,599	3,952,988
3,953,440	3,952,513	3,953,251	3,953,229	3,953,602	3,953,048
3,953,457	3,952,591	3,953,292	3,953,230	3,953,611	3,953,182
3,953,474	3,952,619	3,953,304	3,953,231	3,953,617	3,953,314
3,953,579	3,952,646	3,953,317	3,953,232	3,953,625	3,953,315
3,953,603	3,952,688	3,953,339	3,953,233	3,953,638	3,953,458
3,953,635	3,952,708	3,953,366	3,953,248	3,953,735	3,953,661
3,953,752	3,952,709	3,953,368	3,953,264	3,953,779	48 : 3,952,332
3,953,763	3,952,774	3,953,379	3,953,281	40 : 3,952,716	3,952,350
3,953,830	3,952,827	3,953,380	3,953,320	3,952,747	3,952,420
19 : 3,952,370	3,952,841	3,953,382	3,953,322	3,952,803	3,952,470
3,952,459	3,952,859	3,953,385	3,953,323	3,952,806	3,952,523
3,952,654	3,952,922	3,953,387	3,953,371	3,952,876	3,952,588
3,952,781	3,952,936	3,953,422	3,953,462	3,953,015	3,952,612
3,953,136	3,952,984	3,953,430	3,953,519	3,953,026	3,952,638
3,953,413	3,952,993	3,953,431	3,953,549	3,953,059	3,952,675
3,953,556	3,953,009	3,953,434	3,953,562	3,953,653	3,952,684
3,953,707	3,953,045	3,953,453	3,953,589	3,953,835	3,952,759
20 : 3,952,511	3,953,067	3,953,469	3,953,621	41 : 3,952,450	3,952,763
3,953,426	3,953,080	3,953,490	3,953,709	3,952,615	3,952,799
21 : 3,952,353	3,953,084	3,953,492	3,953,739	3,952,695	3,952,815
3,952,369	3,953,146	3,953,493	3,953,749	3,952,741	3,952,833
3,952,421	3,953,149	3,953,506	3,953,761	3,952,742	3,952,852
3,952,556	3,953,200	3,953,518	3,953,783	3,952,889	3,952,867
3,952,557	3,953,245	3,953,520	3,953,787	42 : Re.28,790	3,952,910
3,952,735	3,953,333	3,953,525	3,953,800	Re.28,791	3,952,954
3,952,855	3,953,425	3,953,555	3,953,802	Re.28,792	3,952,994
3,952,921	3,953,463	3,953,573	3,953,839	3,952,385	3,953,028
3,952,978	3,953,468	3,953,585	3,953,843	3,952,424	3,953,081
3,953,628	3,953,473	3,953,590	3,953,845	3,952,466	3,953,155
22 : 3,952,617	3,953,499	3,953,600	3,953,846	3,952,469	3,953,191
3,952,758	3,953,598	3,953,605	3,953,871	3,952,535	3,953,244
3,952,804	3,953,632	3,953,606	3,953,874	3,952,610	3,953,298
3,952,923	3,953,643	3,953,614	37 : 3,952,372	3,952,685	3,953,301
3,953,065	3,953,644	3,953,620	3,952,441	3,952,690	3,953,319
3,953,165	3,953,663	3,953,624	3,952,495	3,952,691	3,953,321
3,953,166	3,953,687	3,953,654	3,952,538	3,952,789	3,953,324
23 : 3,952,737	3,953,722	3,953,668	3,952,550	3,952,805	3,953,335
24 : 3,952,376	3,953,829	3,953,672	3,952,635	3,952,862	3,953,337
3,952,576	3,953,887	3,953,677	3,952,784	3,952,879	3,953,340
3,952,637	27 : 3,952,748	3,953,678	3,953,074	3,952,887	3,953,370
3,952,660	3,952,817	3,953,703	3,953,184	3,952,895	3,953,416
3,952,661	3,952,826	3,953,733	3,953,238	3,952,897	3,953,627
3,952,662	3,952,864	3,953,743	3,953,250	3,952,928	3,953,655
3,952,733	3,952,927	3,953,767	3,953,278	3,952,933	3,953,659
3,952,750	3,952,948	3,953,807	3,953,792	3,952,938	3,953,675
3,952,970	3,952,955	3,953,809	3,953,818	3,952,949	3,953,702
3,953,001	3,952,956	3,953,822	39 : 3,952,341	3,952,986	3,953,719
3,953,064	3,953,047	3,953,853	3,952,348	3,953,000	3,953,740
3,953,132	3,953,154	3,953,858	3,952,390	3,953,005	3,953,745
3,953,587	3,953,158	3,953,878	3,952,395	3,953,006	3,953,775
3,953,607	3,953,273	3,953,886	3,952,429	3,953,017	3,953,777
3,953,650	3,953,873	35 : 3,953,288	3,952,431	3,953,018	3,953,778
3,953,674	3,953,890	3,953,567	3,952,435	3,953,030	3,953,785
3,953,852	28 : 3,952,683	3,953,850	3,952,464	3,953,034	3,953,805
25 : 3,952,398	3,953,156	36 : 3,952,331	3,952,475	3,953,055	3,953,834
3,952,427	29 : 3,952,423	3,952,335	3,952,477	3,953,060	3,953,837
3,952,471	3,952,490	3,952,336	3,952,534	3,953,096	3,953,849
3,952,586	3,952,509	3,952,344	3,952,539	3,953,141	3,953,891

49 : 3,952,506	3,952,764	3,952,678	3,953,129	3,952,622	3,953,035
3,953,572	3,952,935	3,952,757	3,953,287	3,952,712	3,953,311
3,953,574	3,952,971	3,952,769	3,953,642	3,952,718	3,953,329
50 : 3,953,265	3,953,128	3,952,871	3,953,700	3,952,739	3,953,553
51 : 3,952,521	3,953,355	3,952,973	3,953,731	3,952,744	3,953,680
3,952,529	3,953,713	3,952,974	54 : 3,952,982	3,952,837	3,953,742
3,952,559	3,953,855	3,953,127	55 : 3,952,480	3,952,838	3,953,776
3,952,628	53 : 3,952,401				

Design Patents

6 : 239,668	239,738	13 : 239,730	239,725	36 : 239,669	44 : 239,691
239,683	9 : 239,696	17 : 239,679	239,729	239,676	239,692
239,701	239,699	239,680	25 : 239,667	239,698	239,700
239,703	239,708	239,685	239,718	239,702	48 : 239,678
239,706	12 : 239,675	239,695	239,735	239,713	239,690
239,707	239,697	239,704	26 : 239,711	239,736	239,710
239,715	239,709	239,722	239,731	239,740	51 : 239,677
239,719	239,714	239,741	27 : 239,705	37 : 239,684	55 : 239,688
239,720	239,721	18 : 239,681	29 : 239,717	40 : 239,682	239,689
8 : 239,693	239,726	20 : 239,739	34 : 239,670	239,712	56 : 239,724
239,737	239,727	24 : 239,672	239,723	42 : 239,716	

Plant Patents

39 : 3,874	3,875				

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MICRO PHOTO DIVISION

BELL & HOWELL